



**120**

**LEVEL II & LEVEL II ADVANCED  
INSTALLATION SERVICE MANUAL**

**February 1998**

**NEC America, Inc.**

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## PREFACE

### THIS MANUAL

The Installation Service Manual provides the information required to install, program, and maintain the Electra Professional 120/Level II/Level II Advanced systems.

This manual contains the following chapters :

#### **Chapter 1: Introduction**

Chapter 1 provides a top-level description of the Electra Professional 120/Level II/Level II Advanced systems and includes applicable FCC requirements and UL regulatory information.

#### **Chapter 2: Electra Professional 120 Hardware Specifications and Installation**

Chapter 2 provides the information required to prepare and install the Electra Professional 120

#### **Chapter 3: Electra Professional Level II/Level II Advanced Hardware Specifications and Installation**

Chapter 3 provides the information required to prepare and install the Electra Professional Level II and Level II Advanced systems.

#### **Chapter 4: Terminal Installation**

Chapter 4 provides information needed to install applicable terminals.

#### **Chapter 5: Programming**

Chapter 5 provides detailed instructions for performing System Programming.

#### **Chapter 6: Guide to Feature Programming**

Chapter 6 provides a roadmap of the Memory Blocks associated with a feature that are either required or can be programmed.

#### **Chapter 7: System Maintenance**

Chapter 7 provides maintenance instructions and flowcharts for the systems.

#### **Chapter 8: *Dterm* Cordless Terminal**

Chapter 8 provides operating instructions for the *Dterm* Cordless Terminal.

### SUPPORTING DOCUMENTS

In addition to the Installation Service Manual, the Electra Professional 120/Level II/Level II Advanced systems are supported by the following technical manuals:

#### **Electra Professional 120/Level II/Level II Advanced General Description Manual (Stock Number 722085)**

Developed to provide a general overview of the Electra Professional 120/Level II/Level II Advanced systems, including features, configuration, service features, specifications, and standards.

**Electra Professional 120/Level II/Level II Advanced Features and Specifications Manual (Stock Number 722086)**

Provides an expanded discussion of each available feature for the Electra Professional 120/Level II/Level II Advanced systems. In addition, the Features and Specifications Manual provides Station Application, Operating Procedures, and Service Conditions.

**Electra Professional 120/Level II/Level II Advanced Station Operations Manual (Stock Number 722088)**

This manual explains in detail the station operations for all station user features and is for use by installers and end users.

**Electra Professional 120/Level II/Level II Advanced Job Specifications Manual (Stock Number 722089)**

Used in conjunction with the Installation Service Manual, this manual is for the service technicians who are responsible for planning the system installation, maintaining the system, and keeping records of system programming and configuration. [This manual is included with the CPU-F( )-20 KTU.]

**Electra Professional 120/Level II/Level II Advanced Automatic Call Distribution Manual (Stock Number 720236)**

This manual is also included with the MIF-F(A)-10 KTU ( Stock Number 720233), and provides the service technician with the instructions for programming the ACD feature. This manual is also for the ACD supervisor, at the customer site, to use to become familiar with the system and take full advantage of the ACD/MIS feature.

**Electra Professional 120/Level II/Level II Advanced Least Cost Routing Manual**

This manual is included with the Least Cost Routing software (Stock No. 722309). It provides instructions for the service technician for programming the customer site for Least Cost Routing.

**Electra Professional 120/Level II/Level II Advanced System Program Technician Manual**

This manual is included with the System Program Technician Software (Stock No. 722314). It is for use by the service technician when using the PC software to program the Electra Professional 120/Level II/Level II Advanced systems. This manual explains the various screens in the PC software that allow the technician to program the system to meet the individual customer needs.

**Electra Professional 120/Level II and Level II Advanced System Program End-User Manual**

This manual is included with the System Program End-User Software (Stock No. 722315). It is for use by the end-user when using PC software to make day-to-day changes in the Electra Professional 120/Level II/Level II Advanced systems program. This manual explains the use of various screens in the PC software.

**CHAPTER 1**

**ELECTRA PROFESSIONAL**

**120/LEVEL II/LEVEL II ADVANCED**

**INTRODUCTION**

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## CHAPTER 1 INTRODUCTION

### SECTION 1 INTRODUCTION

#### 1.1 Electra Professional 120

The Electra Professional 120 basic cabinet serves a combined total of 40 ports, consisting of outside lines, terminals, or other options. This system can be expanded to accommodate a combined total of 120 ports. The two expansion KSUs support up to 40 universal ports each. Additional equipment (such as Single Line Telephones, external speakers, voice mail, or facsimile machines) can be connected to this system to enhance its abilities. Refer to Figure 1-1 - Outside View of the Electra Professional 120 KSU and Figure 1-2 - Outside View of the 3-Cabinet Electra Professional 120 KSUs.

This chapter provides the technician, installing the Electra Professional 120, a comprehensive explanation of the system specifications, hardware, and installation procedures. The technician should understand this entire chapter before installing the system to enable more efficient installation and cut-over.

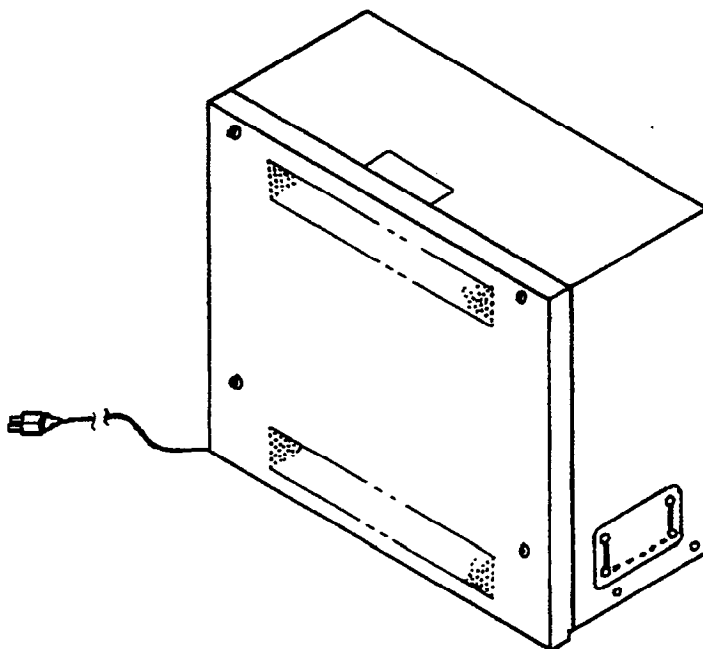


Figure 1-1 Outside View of the Electra Professional 120 KSU

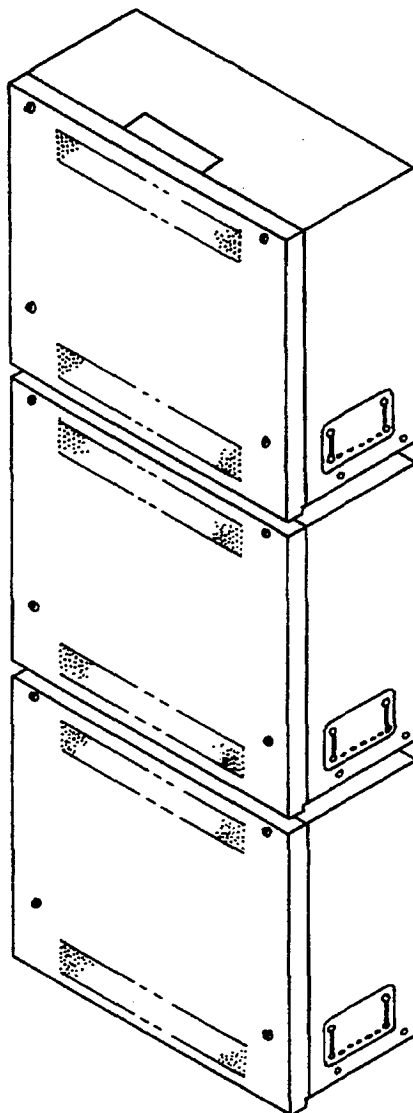


Figure 1-2 Outside View of the 3-Cabinet Electra Professional 120 KSUs

## 1.2 Electra Professional Level II and Level II Advanced

The Electra Professional Level II is a fully digital system serving a maximum of 56 outside lines and a maximum of 56 terminals. The Electra Professional Level II Advanced system serves a maximum of 64 outside lines and a maximum of 96 terminals. Both systems provide flexible configuration, allowing the customer to purchase only what is needed. The Level II basic cabinet can accommodate a combined total of 40 ports, consisting of outside lines and/or telephones and/or other options. As customer business grows, this system can be expanded to accommodate a combined total of 64 ports. The Level II Advanced system basic KSU can accommodate 64 ports. Each of the two available expansion KSUs also supports up to 64 universal ports. Additional equipment (such as Single Line Telephones, external speakers, voice mail, or facsimile machines) can be connected to these systems to enhance their abilities. Refer to Figure 1-3 - Outside View of the Electra Professional Level II KSUs and Figure 1-4 Outside View of the Electra Professional Level II Advanced KSUs.



This chapter provides the technician, installing the Electra Professional Level II or Level II Advanced, a comprehensive explanation of the systems specifications, hardware, and installation procedures. The technician should understand this entire chapter before installing the system to enable more efficient installation and cut-over.

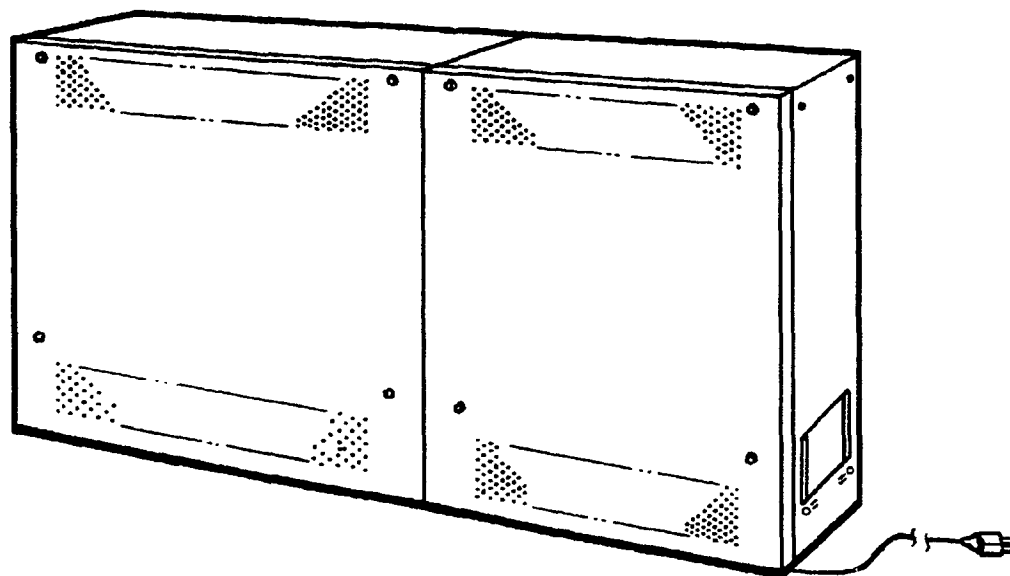


Figure 1-3 Outside View of the Electra Professional Level II KSUs

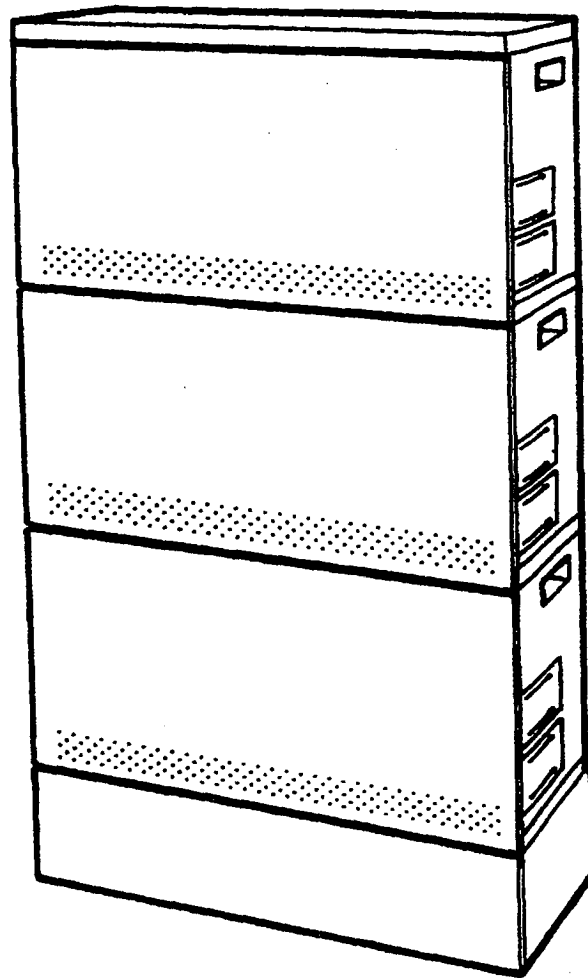


Figure 1-4 Outside View of the Electra Professional Level II Advanced KSUs

### 1.3 Regulatory Information

The Federal Communications Commission (FCC) has established rules that permit this telephone system to be directly connected to the telephone network. A jack is provided by the telephone company. Jacks are not provided on party lines or coin lines.

The telephone company may change its technical operations and procedures. If such changes affect the compatibility or use of this system, the telephone company is required to give adequate notice of the changes.

## 1.3.1 Company Notification

Before connecting this telephone system to the telephone network, the following information must be provided to the telephone company:

1. Your telephone number.
2. FCC registration number:
  - If the system is to be installed as a Key System (no dial access to Trunk Groups/Route Advance Blocks), use the following number:
 

Electra Professional 120 AY5USA-25003-KF-E

Level II System: AY5USA-73702-KF-E

Level II Advanced: AY5USA-74750-KF-E
  - If the system is to be installed as a Multifunction System, use the following number:
 

Electra Professional 120 AY5USA-25004-MF-E

Level II System: AY5USA-73705-MF-E

Level II Advanced: AY5USA-74743-MF-E
3. Facility Interface Codes (FIC), Ringer Equivalence Number (REN), Service Order Codes (SOC), and Jack types are shown in Table 1-1 - FIC, REN, SOC, and Jack Types for KTUs.

Table 1-1 FIC, REN, SOC, and Jack Types for KTUs

Interface KTU Type	FIC	REN	SOC	Jack
COI-F(4)-20 KTU by Loop Start	02LS2	0.7A	9.0F	RJ21X
COI-F(4)-30 KTU by Loop Start	02LS2	0.7A	9.0F	RJ21X
COI-F(4)-20 KTU by Ground Start	02GS2	0.7A	9.0F	RJ21X
COI-F(4)-30 KTU by Ground Start	02GS2	0.7A	9.0F	RJ21X
COI-F(8)-20 KTU by Loop Start	02LS2	0.7A	9.0F	RJ21X
COI-F(8)-30 KTU by Loop Start	02LS2	0.7A	9.0F	RJ21X
COI-F(8)-20 KTU by Ground Start	02GS2	0.7A	9.0F	RJ21X
COI-F(8)-30 KTU by Ground Start	02GS2	0.7A	9.0F	RJ21X
DID-F(4)-10 KTU	02RV2T	N/A	9.0F	RJ21X
TLI-F(2)-10 KTU of M Lead	TL31M	N/A	9.0F	RJ21X
TLI-F(2)-10 KTU of E Lead	TL31E	N/A	9.0F	RJ21X
LLT-F(2G)-10 KTU	OL13C	N/A	9.0F	RJ21X
DTI-F( )-10 KTU	04DU9-BN, 04DU9-DN, 04DU9-1KN, 04DU9-1SN, 04DU9-1ZN	N/A	6.0P	N/A
DTI-F(A)-20 KTU Series 300 or higher	04DU9-BN, 04DU9-DN, 04DU9-1KN, 04DU9-1SN, 04DU9-1ZN	N/A	6.0P	N/A

**IMPORTANT NOTE**

*"This equipment can provide user access to interstate providers of operator services using equal access codes. Modifications by aggregators to alter these abilities may be a violation of the Telephone Operator Consumer Service Improvement Act of 1990 and Part 68 of FCC Rules."*

## 1.3.2 Battery Disposal

The Electra Professional 120/Level II/Level II Advanced systems include the batteries listed in Table 1-2 - Battery Types and Quantities for KSUs and KTUs. When disposing of these batteries, KSUs, or KTUs, you must comply with applicable federal and state regulations regarding proper disposal procedures.

Table 1-2 Battery Types and Quantities for KSUs and KTUs

Unit Name	Type of Battery	Quantity
ESF-H-10 KSU	Lead Acid	2
ESF-SB-10 KSU	Lead Acid	2
ESF-SE-10 KSU	Lead Acid	2
ESF-XB-10 KSU	Lead Acid	2
ESF-XE-10 KSU	Lead Acid	2
CPU-F( )-20 KTU	NiCad	1
VRS-F(4)-11 KTU	NiCad	2
MIF-F(S)-10 KTU	Lithium	1
MIF-F(L)-10 KTU	Lithium	1
MIF-F(A)-10 KTU	Lithium	1
MIF-F(C)-10 KTU	Lithium	1
MIF-F(U)-10 KTU	Lithium	1
ETW-4R-1(BK) TEL	NiCad	1

**IMPORTANT SAFEGUARDS FOR BATTERY DISPOSAL**

DO NOT PLACE USED BATTERIES IN REGULAR TRASH! THE PRODUCT YOU PURCHASED CONTAINS A NICKEL-CADMIUM OR SEALED LEAD BATTERY. NICKEL-CADMIUM OR SEALED LEAD BATTERIES MUST BE COLLECTED, RECYCLED, OR DISPOSED OF IN AN ENVIRONMENTALLY SOUND MANNER.

The incineration, landfilling or mixing of nickel-cadmium or sealed lead batteries with the municipal solid waste stream is PROHIBITED BY LAW in most areas. Contact your local solid waste management officials for other information regarding the environmentally sound collection, recycling, and disposal of the battery.

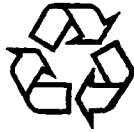
Nickel-cadmium (or sealed lead) batteries must be returned to a federal or state approved nickel-cadmium (or sealed lead) battery recycler. This may be where the batteries were originally sold or a local seller of automotive batteries. In Minnesota call 1-800-225-PRBA if further disposal information is required, or call 1-800-232-9632 for further information.

The packaging for the Electra Professional 120/Level II /Level II Advanced systems contains the following labels regarding the proper disposal.

**PRODUCT PACKAGE LABELING**

Ni-Cd

CONTAINS NICKEL-CADMIUM BATTERY.  
MUST BE RECYCLED OR DISPOSED OF  
PROPERLY. MUST NOT BE DISPOSED OF  
IN MUNICIPAL WASTE.



Pb

CONTAINS SEALED LEAD BATTERY.  
MUST BE RECYCLED OR DISPOSED OF  
PROPERLY. MUST NOT BE DISPOSED OF  
IN MUNICIPAL WASTE.

**1.3.3 Incidence of Harm**

If the system malfunctions, it may also harm the telephone network. The telephone system should be disconnected until the source of the problem can be determined, and repair is made. If this is not done, the telephone company may temporarily disconnect service.

**1.3.4 Radio Frequency Interference**

In compliance with FCC Part 15 rules, the following statement is provided:

**IMPORTANT NOTE**

*"This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the Installation Service Manual, may cause interference to radio communications. This equipment has been tested and approved for compliance with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, that are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this telephone system in a residential area is likely to cause interference, in which case, the user, at his or her own expense, is required to take whatever measures are required to correct the interference."*

**1.3.5 Hearing Aid Compatibility**

The NEC Multiline Terminals, Digital Multiline Terminals, and NEC Single Line Telephones provided for this system are hearing aid compatible. The manufacturer of other Single Line Telephones for use with the system must provide notice of hearing aid compatibility to comply with FCC rules. FCC rules prohibit the use of non-hearing aid compatible telephones (after August 16, 1989).

**1.3.6 Direct Inward Dialing**

Operating this equipment in such a manner as to not provide for proper answer supervision is a violation of Part 68 of the FCC rules.

Proper answer supervision is provided when either of the following cases exist:

- A. This equipment returns answer supervision to the Public Switched Telephone Network (PSTN) and Direct Inward Dialing (DID) calls are:
- Answered by the called station.
  - Answered by the Attendant.
  - Routed to a recorded announcement that can be administered by the Customer Premise Equipment (CPE) user.
  - Routed to a dial prompt.
- B. This equipment returns answer supervision on all DID calls forwarded to the PSTN. Permissible exceptions are:
- A call is unanswered.
  - A busy tone is received.
  - A reorder tone is received.

#### 1.3.7 Voice Announcement/Monitoring Over DID Lines

##### CAUTION

*Using the Voice Announcement feature to eavesdrop or record sound activities at the other end of the telephone line may be illegal under certain circumstances and laws. Consult a legal advisor before implementing any practice involving the monitoring or recording of a telephone conversation. Some federal and state laws require a party monitoring or recording a telephone conversation to use a beep-tone(s), make notification to, and obtain consent of all parties to the telephone conversation. In monitoring or recording sound activities at the other end of the telephone line using the Voice Announcement feature, the sound of the alert tone at the beginning of the Voice Announcement may or may not be considered sufficient under applicable laws. Some of the applicable laws provide for strict penalties for illegal monitoring or recording of telephone conversations.*

#### 1.3.8 Music On Hold

##### IMPORTANT NOTE

*"In accordance with U.S. Copyright Law, a license may be required from the American Society of Composers, Authors and Publishers, or other similar organization, if radio or TV broadcasts are transmitted through the Music On Hold feature of this telecommunication system. NEC America Inc., hereby disclaims any liability arising out of the failure to obtain such a license."*

#### 1.3.9 Service Requirements

If the equipment malfunctions, all repairs should be performed by an authorized agent of NEC America, Inc. or by NEC America, Inc. Users requiring service must report the need for service to an authorized agent of NEC America, Inc. or to NEC America, Inc.

#### 1.3.10 UL Regulatory Information

This equipment is listed by Underwriters Laboratories and found to comply with all applicable requirements of the standard for telephone equipment UL 1459.

### 1.3.11 IC Requirements

Industry Canada has established rules that permit this telephone system to be directly connected to the telephone network. Prior to connecting or disconnecting this telephone system to or from the telephone network, the telephone company must be provided with the following information.

1. Your telephone number.
2. IC registration number:
3. The Load Number of the equipment: 9

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective operational and safety requirements. Industry Canada does not guarantee the equipment to operate to user satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable connection method. In some cases, the company inside wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degrading service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

#### CAUTION

Users should not attempt to make such connections themselves, but should contact the applicable electric inspection authority or electrician.

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the load numbers total does not exceed 100.

This equipment is listed by the Canadian Standards Association and found to comply with all applicable requirements of the standard for telephone equipment C 22.2 No. 225.

This equipment meets IC requirements CS03.

Use of the LLT-F(2G)-10 KTU has not been approved by IC for support of off-premise extensions.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of Industry Canada.

and

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de Classe A prescrites dans le reglement sur le brouillage radioelectrique edicte par Industrie Canada.

#### 1.4 Equipment List

The following equipment is available for use in the Electra Professional 120/Level II/Level II Advanced systems. The maximum quantities that can be installed in each system are listed in the following tables.

Table 1-3 Electra Professional 120 KSUs and PSUs

Equipment Designation	Maximum Quantity/System	Description
ESF-H-10 KSU	3	Basic and Expansion KSU with Wall Mount Brackets
PSF-H-20 PSU	1 for each KSU	Power Supply Unit
Battery	2 for each KSU	For Battery Backup

Table 1-4 Level II KSUs and PSUs

Equipment Designation	Maximum Quantity/System	Description
ESF-SB-10 KSU	1	Basic KSU with Wall and Floor Mount Brackets
ESF-SE-10 KSU	1	Expansion KSU with Wall and Floor Mount Brackets
PSF-S-20 PSU	1 for each KSU	Power Supply Unit
Battery	2 for each KSU	For Battery Backup

Table 1-5 Level II Advanced KSUs and PSUs

Equipment Designation	Maximum Quantity/System	Description
ESF-XB-10 KSU	1	Basic KSU with Wall and Floor Mount Brackets
ESF-XE-10 KSU	2	Expansion KSU with Wall and Floor Mount Brackets
PSF-P-20 PSU	1 for each KSU	Power Supply Unit
Battery	2 for each KSU	For Battery Backup



Table 1-6 Electra Professional 120 Common Control KTUs

Equipment Designation	Maximum Quantity/System	Description	Slot
CPU-F( )-20 KTU	1	Central Processing Unit, PBR 4-channel, TNG, CNF, MOH/Station BGM Mounted	Fixed
MMC-F-11 KTU	2	Module Memory Controller for ESF-XE-10 KSU	Fixed

Table 1-7 Level II and Level II Advanced Common Control KTUs

Equipment Designation	Maximum Quantity/System		Description	Slot
	Level II	Level II Advanced		
CPU-F( )-20 KTU	1	1	Central Processing Unit, PBR 4-channel, TNG, CNF, MOH/Station BGM Mounted	Fixed
MMC-F-11 KTU	0	2	Module Memory Controller for ESF-XE-10 KSU	Fixed

Table 1-8 Electra Professional 120 Station Interface KTUs

Equipment Designation	Maximum Quantity/System	Description	Slot
ESI-F(8)-21 KTU	12	8-channel, 2-wire Electronic Station Interface	Interface
SLI-F(8G)-21 KTU	11	8-channel SLT/VM Interface with RSG, MW, PFT (2-channel)	Interface
LLT-F(2G)-10 KTU	14	2-channel Off-Premise Extension	Interface

Table 1-9 Level II and Level II Advanced Station Interface KTUs

Equipment Designation	Maximum Quantity/System		Description	Slot
	Level II	Level II Advanced		
ESI-F(8)-21 KTU	7	12	8-channel, 2-wire Electronic Station Interface	Interface
SLI-F(8G)-21 KTU	6	11	8-channel SLT/VM Interface with RSG, MW, PFT (2-channel)	Interface
LLT-F(2G)-10 KTU	6	22	2-channel Off-Premise Extension	Interface

Table 1-10 Electra Professional 120 Trunk Interface KTUs/Units

KTU/Unit	Maximum Quantity/ System	Description	Slot
COI-F(4)-20 KTU	14	4-channel, Loop/GND Start Trunk	Interface
COI-F(4)-30 KTU	14	4-channel, Loop/GND Start Trunk	Interface
COI-F(8)-20 KTU	8	8-channel, Loop/GND Start Trunk	Interface
COI-F(8)-30 KTU	8	8-channel, Loop/GND Start Trunk	Interface
DID-F(4)-10 KTU	8	4-channel, DID Line Interface	Interface
TLI-F(2)-10 KTU	14	2-channel, 4-wire E&M Tie Line Interface	Interface
DTI-F( )-10 KTU	3	T1/FT1 (Fractional T1) Trunk Interface with Loop and Ground Start Trunk Signaling ability	Interface
DTI-F(A)-20 KTU	3	T1/FT1 (Fractional T1) Trunk Interface with Loop and Ground Start Trunk Signaling ability, Tie line (E&M), and DID Signaling ability - Series 300 or higher	Interface
BRT-F(4)-10	8	ISDN Basic Rate Interface card, S/T interface, 4 BRI to support 8 voice channels	IF1~IF4 in basic and first expansion KSU
CLK-F-21 Unit	1	T1/FT1/BRI synchronization unit piggybacked on CPU-F( )-20 KTU	On CPU-F( )-20 KTU
CID-F(8)-21 Unit	8	Attaches to the COI-F(4)-30 KTU/COI-F(8)-30 KTU to detect a caller ID signal from Caller ID trunks	On COI-F(4)-30 KTU/ COI-F(8)-30 KTU

Table 1-11 Level II and Level II Advanced Trunk Interface KTUs/Units

KTU/Unit	Maximum Quantity/System		Description	Slot
	Level II	Level II Advanced		
COI-F(4)-20	7	16	4-channel, Loop/GND Start Trunk	Interface
COI-F(4)-30	7	16	4-channel, Loop/GND Start Trunk	Interface
COI-F(8)-20	7	8	8-channel, Loop/GND Start Trunk	Interface
COI-F(8)-30	7	8	8-channel, Loop/GND Start Trunk	Interface
DID-F(4)-10	7	8	4-channel, DID Line Interface	Interface
TLI-F(2)-10	7	16	2-channel, 4-wire E&M Tie Line	Interface
DTI-F( )-10	2	3	T1/FT1 (Fractional T1) Trunk Interface with Loop /Ground Start Trunk Signaling ability	Interface
DTI-F(A)-20	2	3	T1/FT1 (Fractional T1) Trunk Interface with Loop /Ground Start Trunk, Tie line (E&M), and DID Signaling ability - Series 300 or higher	Interface
BRT-F(4)-10	4	8	ISDN Basic Rate Interface card, S/T interface, 4 BRI to support 8 voice channels	IF1~IF4 in basic and first expansion KSU
CLK-F-21 Unit	1	1	T1/FT1/BRI sunchronization unit piggybacked on CPU-F( )-20 KTU	On CPU-F( )-20 KTU
CID-F(8)-21 Unit	4	8	Attaches to the COI-F(4)-30 KTU/COI-F(8)-30 KTU to detect a caller ID signal from Caller ID trunks	On COI-F(4)-30 KTU/COI-F(8)-30 KTU

Table 1-12 Electra Professional 120/Level II/Level II Advanced Other Optional KTUs

KTU	Maximum Quantity/System	Description	Slot
PBR-F(4)-11	1	4-channel, DTMF/Push Button Receiver (PBR)	Interface
VRS-F(4)-11	2	4-channel, Voice Recording Service (VRS)	Interface
ECR-F-11	1	Eight relays for Paging, External Tone Ringers, and Night Chime, two RCA jacks for input/output paging, output ring tone	Interface
MIF-F(S)-10	1	PC and SMDR Interface	Option
MIF-F(L)-10	1	PC, SMDR, and LCR Interface	Option
MIF-F(A)-10	1	ACD and MIS Interface	Option
MIF-F(C)-10	1	This feature KTU provides the Caller ID feature	Option
MIF-F(U)-10	1	UCD	Option

Table 1-13 Electra Professional 120/Level II/level II Advanced Terminals and Optional Units

Equipment Designation	Maximum Quantity/System		Description
	Level II	120/ Level II Advanced	
ETW-8-( ) (BK) TEL ETW-8-( ) (SW) TEL	55	95	8-line non-display with built-in speakerphone, large LED, eight function keys, ADA compatible, and comes in black or soft white
ETW-16DC-( ) (BK) TEL ETW-16DC-( ) (SW) TEL	56	96	16-line Display Compact with built-in speakerphone, large LED, eight function keys, ADA compatible, and comes in black or soft white
ETW-16DD-( ) (BK) TEL ETW-16DD-( ) (SW) TEL	56	96	16-line Display Deluxe with built-in speakerphone, large LED, eight function keys, 20 programmable One-Touch keys with red LEDs, ADA compatible, and comes in black or soft white
ETW-24DS-( ) (BK) TEL ETW-24DS-( ) (SW) TEL	56	96	24-line Display Special with built-in speakerphone, dual path ability, Large LED, eight function keys, 12 programmable One-Touch keys, ADA compatible, and comes in black or soft white
ETW-4R-( ) (BK) TEL	9	9	Dterm Cordless Terminal
ETW-48-( ) (BK) TEL ETW-48-( ) (SW) TEL	4	4	48-line Attendant Add-On Console with 12 function keys and comes in black or soft white
DCU-60-( ) (BK)/(WH) CONSOLE	4	4	Electra Elite Attendant Console Unit with 60 Programmable line Keys with two-color LED
DTU-8-( ) (BK)/(WH) TEL	55	95	Digital Multiline Terminal for Electra Elite with eight Programmable line Keys with two-color LED
DTU-16-( ) (BK)/(WH) TEL	55	95	Digital Multiline Terminal for Electra Elite with 16 Programmable line Keys with two-color LED
DTU-16D-( ) (BK)/(WH) TEL	56	96	Digital Multiline Terminal for Electra Elite with display and 16 Programmable line Keys with two-color LED
DTU-32-( ) (BK)/(WH) TEL	55	95	Digital Multiline Terminal for Electra Elite with 32 Programmable line Keys with two-color LED
DTU-32D-( ) (BK)/(WH) TEL	56	96	Digital Multiline Terminal for Electra Elite with display and 32 Programmable line Keys with two-color LED
ADA(1)-W (BK) TEL ADA(1)-W (SW) TEL	56	96	Ancillary Device Adapter (for connection of headset, recording interface, or external speakerphone) that comes in black or soft white
ADA(2)-W (BK) TEL ADA(2)-W (SW) TEL	16	16	Ancillary Device Adapter (for connection of an SLT, Modem, answering machine, or fax) that comes in black or soft white. Additional units may be possible depending on traffic and number of available PBR circuits.
ADA-U	56	96	Electra Elite Ancillary Device Adapter

Table 1-13 Electra Professional 120/Level II/level II Advanced Terminals and Optional Units (Continued)

Equipment Designation	Maximum Quantity/System		Description
	Level II	120/ Level II Advanced	
APR-U	16	16	Electra Elite Analog Port Ringing Adapter. Additional units may be possible depending on traffic and number of available PBR circuits.
HFU-U	56	96	Electra Elite Handsfree Unit
WMU-U	56	96	Electra Elite Wall Mount Unit
WMU-W (BK) TEL WMU-W (SW) TEL	56	96	Wall Mount Unit that comes in black or soft white
SLT-F(1G)-10 ADP	55	95	1-channel Single Line Telephone Adapter
SLT-F(1G)-20 ADP	55	95	1-channel Single Line Telephone Adapter

## 1.5 Equipment General Information

One *Electra Professional 120/Level II/Level II Advanced Job Specifications Manual* is included with the CPU-F( )-20 KTU. All optional equipment: external amplifiers, Music On Hold source, Background Music source, or external speakers must be locally provided.

## 1.6 Equipment Description - Electra Professional 120/Level II/Level II Advanced

### 1.6.1 Electra Professional 120 Key Service and Power Supply Units

#### ESF-H-10 KSU

The Key Service Unit (KSU) of the Electra Professional 120 system provides service for outside lines, Attendant Consoles, and interconnection of Multiline Terminals. The basic KSU provides 40 ports. (The 40 ports are available with five interface slots. An application slot is also available but does not affect the port count.) The KSU can be expanded to 120 ports by vertically stacking two additional ESF-H-10 KSUs on the existing KSU. Each KSU provides 40 ports. A PSF-H-20 PSU (Power Supply Unit) and backup batteries are included with each KSU.

Fixed slots are intended for the CPU, MMC, and MIF KTUs. The remaining interface slots are intended for 2-, 4-, or 8-channel KTUs: ESI, SLI, COI, DID, TLI, PBR, VRS, ECR, LLT, BRT, and DTI.

#### PSF-H-20 PSU

This power supply unit is provided with both the basic and expansion KSUs. It has a backup interface, accepts 117 Vac and outputs +5V, -5V, and -24V to the system.

### 1.6.2 Electra Professional Level II Key Service and Power Supply Units

#### ESF-SB-10 KSU

The Key Service Unit (KSU) of the system provides service for outside lines, Attendant Add-On Consoles, and interconnection of Multiline Terminals. The basic KSU provides 40 ports. (The 40 ports are available with five interface slots. An application slot is also available but does not affect the port count.) The KSU can be expanded to 64 ports with an expansion module. A PSF-S-20 PSU Power Supply Unit and backup batteries are included with this KSU.

Fixed slots are intended for the CPU and MIF KTUs. The remaining interface slots are intended for 2-, 4-, or 8-channel KTUs: ESI, SLI, COI, DID, TLI, PBR, VRS, ECR, LLT, BRT, DTI.

#### ESF-SE-10 KSU

This expansion unit provides for an additional 24 ports that can accommodate up to three KTUs.

This KSU is designed to accommodate 2-, 4-, or 8-channel interface cards. A PSF-S-20 PSU (Power Supply Unit) and backup batteries are included with this KSU.

#### PSF-S-20 PSU

This power supply unit is provided with both the basic and expansion KSUs. It has a backup interface, accepts 117 Vac and outputs +5V, -5V, and -24V to the system.

### 1.6.3 Electra Professional Level II Advanced Key Service and Power Supply Units

#### **ESF-XB-10 KSU**

The Key Service Unit (KSU) of the Electra Professional Level II Advanced system provides service for outside lines, Attendant Add-On Consoles, and interconnection of Multiline Terminals. The basic KSU provides 64 ports and can be expanded in 64-port increments up to 192 ports with expansion modules. A PSF-P-20 PSU Power Supply Unit and backup batteries are included with this KSU.

Fixed slots are intended for the CPU and MIF KTUs. The remaining interface slots are intended for 2-, 4-, or 8-channel KTUs: ESI, SLI, COL, DID, TLI, PBR, VRS, ECR, LLT, DTI. (Up to two DTIs can be installed in this KSU.)

#### **ESF-XE-10 KSU**

This Level II Advanced system expansion unit provides for an additional 64 ports that can accommodate up to 8 KTUs. Fixed slots are intended for the MMC and MIF KTUs.

This KSU accommodates 2-, 4-, or 8-channel interface cards. A PSF-P-20 PSU Power Supply Unit and backup batteries are included with this KSU.

#### **PSF-P-20 PSU**

This power supply unit is provided with both the basic and expansion KSUs. It supports the 64 ports in each KSU, has a backup interface, accepts 117 Vac and outputs +5V, -5V, and -24V to the system.

### 1.6.4 Common Control Key Telephone Unit

These units are used with the 120, Level II, and Level II Advanced systems.

#### **CPU-F( )-20 KTU**

The Central Processing Unit KTU contains a 16-bit microprocessor that has overall control of the system. This KTU provides an advanced feature package for the system user. Included with this KTU are six 4-party conference circuits, four PBR circuits, TNG, MOH input, and a built-in music source. A CLK-F-21 Unit can be installed on the CPU as an option. A maximum of one CPU-F( )-20 KTU can be installed in the system.

#### **CLK-F-21 Unit**

The CLK-F-21 (Clock) Unit provides synchronization for a T1 and/or ISDN line that is connected to the system. This unit is attached to the CPU-F( )-20 KTU and works in conjunction with the DTI-F( )-10 KTU, DTI-F(A)-20 KTU, or BRT-F(4)-10 KTU. A maximum of one CLK-F-21 Unit can be installed in the system.

#### **MMC-F-11 KTU**

The Module Memory Controller, with a 4-bit microprocessor and Controller Unit, is required for each ESF-H-10 used in the 120 system or ESF-XE-10 KSU used in the Level II Advanced system. It controls data transmission between the CPU-F( )-20 KTU and the interface cards installed in the ESF-H-10 or ESF-XE-10 KSU.

**CID-F(8)-21 Unit**

This Unit is piggybacked on the COI -F(4)-30 or COI -F(8)-30KTU. It is used to detect a Caller ID signal from Caller ID trunks.

This unit is not required when the BRT-F(4)-10 KTU is installed.

**1.6.5 Station Interface Key Telephone Units****ESI-F(8)-21 KTU**

This Electronic Station Interface KTU contains eight circuits; each can support any Multiline Terminal, EDW-48-( ) (BK)/(SW) Console, DCU-60-( ) (BK)/(WH) Console, an SLT Adapter, or *Dterm* Cordless Terminal.

A maximum of 12 ESI-F(8)-21 KTUs can be installed in the 120/Level II Advanced interface slots. A maximum of seven can be installed in Level II.

**SLI-F(8G)-21 KTU**

The Single Line Interface KTU can support eight Single Line Telephones and/or voice-mail ports. This KTU provides Ringing Signal Generator (RSG), Power Failure Transfer (PFT), and Message Waiting (MW) LED voltage to the Single Line Telephones.

A maximum of 11 SLI-F(8G)-21 KTUs can be installed in the 120/Level II Advanced system interface slots. A maximum of six can be installed in Level II.

**LLT-F(2G)-10 KTU**

The Long Line Telephone (LLT) KTU provides for the termination and operation of up to two Off-Premise Extensions (OPX). Each LLT-F(2G)-10 KTU has a built-in ringer (RSG). Up to 1500 ohms of loop resistance (including the Single Line Instrument) is acceptable between the LLT-F(2G)-10 KTU and SLT.

A maximum of 13 LLT-F(2G)-10 KTUs can be installed in the 120 system interface slots. A maximum of 22 can be installed in Level II advanced system, and a maximum of six, in Level II system.

**1.6.6 Trunk Interface Key Telephone Units**

These units are compatible with the 120, Level II, and Level II Advanced systems

**BRT-F(4)-10 KTU**

The Basic Rate Trunk Interface (BRT) KTU provides termination of ISDN basic-rate trunk lines. This unit supports four ISDN-BRI trunks; each trunk supports two channels. These eight channels can be used for CO trunks. Tip and Ring electrical fuses are provided to comply with UL 1459 requirements. One BRT KTU provides a maximum of two lines.

The BRT uses an S-type interface. When connecting to a CO, a locally provided Network Termination (NT1) unit is required.

A CLK-F-21 Unit must be connected to the CPU-F( )-20 KTU.



**COI-F(4)-20 KTU**

This Central Office Interface KTU complies with UL 1459 requirements. Electrical fuses (posistors) are built into this KTU. The COI-F(4)-20 KTU supports four outside (CO/PBX) lines. The outside lines can be any combination of Loop/Ground start, DTMF, or Dial Pulse dialing trunks.

A maximum of 14 COI-F(4)-20 KTUs can be installed in the 120 system interface slots. A maximum of 16 can be installed in Level II advanced, and a maximum of seven, in Level II.

**COI-F(4)-30 KTU**

This Central Office Interface KTU complies with UL 1459 requirements. Electrical fuses (posistors) are built into this KTU. The COI-F(4)-30 KTU supports four outside (CO/PBX) lines. The outside lines can be any combination of Loop/Ground start, DTMF, or Dial Pulse dialing trunks. This KTU also provides Caller ID trunk interface.

A maximum of 14 COI-F(4)-30 KTUs can be installed in the 120 system interface slots. A maximum of 16 can be installed in Level II advanced, and a maximum of seven, in Level II.

**COI-F(8)-20 KTU**

This Central Office Interface KTU complies with UL 1459 requirements. Electrical fuses (posistors) are built into this KTU. The COI-F(8)-20 KTU supports eight outside (CO/PBX) lines. The outside lines can be any combination of Loop/Ground Start, DTMF, or Dial Pulse dialing trunks.

A maximum of eight COI-F(8)-20 KTUs can be installed in the 120/Level II Advanced system interface slots. A maximum of seven can be installed in Level II.

**COI-F(8)-30 KTU**

This Central Office Interface KTU complies with UL 1459 requirements. Electrical fuses (posistors) are built into this KTU. The COI-F(8)-30 KTU supports eight outside (CO/PBX) lines. The outside lines can be any combination of Loop/Ground Start, DTMF, or Dial Pulse dialing trunks. This KTU also provides Caller ID trunk interface.

A maximum of eight COI-F(8)-30 KTUs can be installed in the 120/Level II Advanced system interface slots. A maximum of seven can be installed in Level II.

**DID-F(4)-10 KTU**

The Direct Inward Dialing interface KTU complies with UL 1459 2<sup>nd</sup> Edition requirements. The DID-F(4)-10 KTU supports the termination and operation of up to four DID lines. Electrical fuses (posistors) are built into this KTU. Immediate start, wink start, and delay dial are accommodated. Dial Pulse and DTMF are supported.

A maximum of eight DID-F(4)-10 KTUs can be installed in Electra Professional 120/Level II Advanced interface slots. A maximum of seven can be installed in Level II.

**TLI-F(2)-11 KTU**

This Tie Line Interface KTU supports the termination and operation of up to two E&M Tie Lines (4-wire, type I and type V, and 10/20 pps Dial Pulse or DTMF). Immediate or wink start, delay start, or second dial tone signaling is accommodated.

A maximum of 14 TLI-F(2)-11 KTUs can be installed in the 120 system interface slots. A maximum of 16 can be installed in the Level II advanced system, and a maximum of seven, in the Level II.

**DTI-F( )-10 KTU**

The Digital Trunk Interface (DTI) KTU provides for the termination of a T1/Fractional T1 (24 DS-0 channels or fewer) line. The DTI-F( )-10 KTU contains circuitry for outside ring detection, hold, dialing, and control functions.

A combination of Loop/Ground Start Trunks can be used on one DTI. DTMF or Dial Pulse dialing is also supported.

The two interface slots to the right of this KTU may need to be left vacant. A CLK-F-21 Unit must be connected to the CPU-F( )-20 KTU.

Three DTI-F( )-10 or -20 KTUs can be installed in the 120/Level II Advanced system. One can be installed in Level II.

**DTI-F(A)-20 KTU**

This Digital Trunk Interface (DTI) KTU includes the functions of the DTI-F( )-10 KTU in addition to Tie line (E&M) and DID signaling abilities.

A combination, in groups of four, of Loop/Ground Start Trunks, Tie lines, or DID Trunks can be used on one DTI KTU. DTMF or Dial Pulse dialing is also supported.

The two interface slots to the right of this KTU may need to be left vacant depending on System Programming. A CLK-F-21 Unit must be connected to the CPU-F( )-20 KTU.

Three DTI-F(A)-20 or -10 KTUs can be installed in the 120/Level II Advanced system. One can be installed in Level II.

**1.6.7 Optional Key Telephone Units****ECR-F-11 KTU**

The External Control Relay (ECR) KTU provides common audible tone signaling with relay contacts for external ringing equipment. Eight relays are provided, four for External Tone Ringer control, one for Night Chime, and three for External Paging.

A maximum of one ECR-F-11 KTU can be installed in the 120/Level II/Level II Advanced system.

**PBR-F(4)-11 KTU**

The Push Button Receiver KTU detects and translates DTMF tones generated by Single Line Telephones, modems, or facsimile machines. The PBR-F(4)-11 KTU provides four circuits.

One PBR-F(4)-11 KTU can be installed in the 120/Level II/Level II Advanced system for a maximum of eight circuits per system with a CPU-F( )-20 KTU.

**VRS-F(4)-11 KTU**

The Voice Recording Service KTU provides automatic answering of incoming CO/PBX calls by a voice recorded message, the voice prompt feature, and Delay Announcement for the ACD and UCD features.

A maximum of two VRS-F(4)-11 KTUs can be installed in interface slots providing eight channels..

**MIF-F(S)-10 KTU**

This Multipurpose Interface KTU has two abilities: it allows the connection of a personal computer to perform system programming and up/down System Data loading and provides Station Message Detail Recording (SMDR) to be output through an RS-232 cable to a printer.

One MIF-F(S)-10 KTU can be installed in the option slot or any of the first four interface slots (IF1/OP1 ~ IF4/OP4) provided in the ESF-H-10 KSU, ESF-SB-10 KSU, or the first ESF-XE-10 KSU installed.

**MIF-F(L)-10 KTU**

This Multipurpose Interface KTU has three abilities: it allows the connection of a personal computer to perform System Programming and up/down System Data loading, provides Station Message Detail Recording (SMDR) to be output through an RS-232 cable to a printer, and provides Least Cost Routing (LCR).

One MIF-F(L)-10 KTU can be installed in the option slot or any of the first four interface slots (IF1/OP1 ~ IF4/OP4) provided in the ESF-H-10 KSU, ESF-SB-10 KSU, ESF-XB-10 KTU, or the first ESF-XE-10 KSU installed.

Refer to the *Electra Professional 120/Level II/Level II Advanced Least Cost Routing Manual* (included with the LCR software) for LCR instructions.

**MIF-F(A)-10 KTU**

The MIF-F(A)-10 KTU provides the Automatic Call Distribution (ACD) feature and an interface to an MIS (ACD) terminal.

One MIF-F(A)-10 KTU can be installed in the option slot or any of the first four interface slots (IF1/OP1 ~ IF4/OP4) provided in the ESF-H-10 KSU, ESF-SB-10 KSU, ESF-XB-10 KTU, or the first ESF-XE-10 KSU installed.

**MIF-F(U)-10 KTU**

The MIF-F(U)-10 KTU provides the Uniform Call Distribution (UCD) feature.

One MIF-F(U)-10 KTU can be installed in the option slot or any of the first four interface slots (IF1/OP1 ~ IF4/OP4) provided in the ESF-H-10 KSU, ESF-SB-10 KSU, the ESF-XB-10 KTU, or the first ESF-XE-10 KSU installed.

**MIF-F(C)-10 KTU**

This KTU provides the Caller ID Indication feature. A Scroll key is available to display the last 10 incoming Caller IDs. Press the scroll key repeatedly to display additional Caller ID names or numbers,.

One MIF-F(C)-10 KTU can be installed in the option slot or any of the first four interface slots (IF1/OP1 ~ IF4/OP4) provided in the ESF-H-10 KSU, ESF-SB-10 KSU, ESF-XB-10 KTU, or the first ESF-XE-10 KSU installed.

1.6.8 **Electra Elite Digital Multiline Terminals, Electra Professional Multiline Terminals, Single Line Telephones, and Associated Equipment**

**DTU-8-( ) (BK)/(WH) TEL**

This non-display Digital Multiline Terminal has eight programmable line keys (each with a two-color LED), built-in speakerphone, headset jack, a Large LED to indicate incoming calls and messages, and compatibility with the ADA-U, APR-U, and HFU-U Units. This terminal comes in black or white.

A combined maximum of 96 Electra Professional and Electra Elite digital terminals can be installed in the 120/Level II Advanced system. The maximum for Level II is 56.

**DTU-16-( ) (BK)/(WH) TEL**

This non-display Digital Multiline Terminal has 16 programmable line keys (each with a two-color LED), built-in speakerphone, a Large LED to indicate incoming calls and messages, and compatibility with the ADA-U, APR-U, and HFU-U Units. This terminal comes in black or white.

A combined maximum of 96 Electra Professional and Electra Elite digital terminals can be installed in the 120/Level II Advanced system. The maximum for Level II is 56,

**DTU-16D-(1) (BK)/(WH) TEL**

This display Digital Multiline Terminal has 16 programmable line keys (each with a two-color LED), built-in speakerphone, a Large LED to indicate incoming calls and messages, and compatibility with the ADA-U, APR-U, and HFU-U Units. This terminal comes in black or white.

The adjustable LCD (Liquid Crystal Display) has 24 characters and 3 lines.

A combined maximum of 96 Electra Professional and Electra Elite digital terminals can be installed in the 120/Level II Advanced system. The maximum for Level II is 56.

**DTU-16D-(2) (BK)/(WH) TEL**

This display Digital Multiline Terminal is used with Series 650 and higher and differs from the DTU-16D-(1) only by the addition of four softkeys.

**DTU-32-( ) (BK)/(WH) TEL**

This non-display Digital Multiline Terminal has 32 programmable line keys (each with a two-color LED), built-in speakerphone, a Large LED to indicate incoming calls and messages, and compatibility with the ADA-U, APR-U, and HFU-U Units. This terminal comes in black or white.

A combined maximum of 96 Electra Professional and Electra Elite digital terminals can be installed in the 120/Level II Advanced system. The maximum for Level II is 56.

**DTU-32D-(1) (BK)/(WH) TEL**

This display Digital Multiline Terminal has 32 programmable line keys (each with a two-color LED), built-in speakerphone, a Large LED to indicate incoming calls and messages, and compatibility with the ADA-U, APR-U, and HFU-U Units. This terminal comes in black or white.

The adjustable LCD (Liquid Crystal Display) has 24 characters and 3 lines.

A combined maximum of 96 Electra Professional and Electra Elite digital terminals can be installed in the 120/Level II Advanced system. The maximum for Level II is 56.

**DTU-32D-(2) (BK)/(WH) TEL**

This display Digital Multiline Terminal is used with Series 650 and higher and differs from the DTU-32D-(1) only by the addition of four softkeys.

**DCU-60-( ) (BK)/(WH) CONSOLE**

The Attendant Console has 60 programmable line keys (each with a two-color, red or green, LED). The first 48 line keys can be programmed as Direct Station Selection keys or as outside line keys; the remaining 12 line keys can be programmed for features such as Paging, Night Transfer, or Message Waiting. An external power supply (AC Adapter) is required and is included with the Attendant Console.

A maximum of four consoles can be installed in the Electra Professional 120/Level II/Level II Advanced system. An attendant position can have two attached consoles. (This console cannot be installed on the Electra Professional Level I system.)

**ETW-8-( ) (BK)/(SW) TEL**

This Multiline Terminal is a fully modular instrument with tilt stand, eight Flexible Line keys (each with a two-color, LED), eight function keys, built-in speakerphone, ADA compatibility, and a large LED to indicate incoming calls and messages.

A maximum of 95 ETW-8-( ) (BK)/(SW) TELs can be installed in Electra Professional 120/Level II advanced slots. A maximum of 55 can be installed in Level II.

**ETW-16DC-( ) (BK)/(SW) TEL**

This Multiline Terminal is a fully modular instrument with tilt stand, 16 Flexible Line keys (each with a two-color LED), eight function keys, built-in speakerphone, a 16-character by two-line Liquid Crystal Display (LCD), ADA compatibility, and a large LED to indicate incoming calls and messages.

A maximum of 96 ETW-16DC-( ) (BK)/(SW) TELs can be installed in Electra Professional 120/Level II Advanced slots. A maximum of 56 can be installed in Level II.

**ETW-16DD-( ) (BK)/(SW) TEL**

This Multiline Terminal is a fully modular instrument with 16 Flexible Line keys (each with a two-color LED), eight function keys, built-in speakerphone, a 16-character by 2-Line Liquid Crystal Display (LCD), 20 programmable One-Touch keys with red LED, ADA compatibility, and a large LED to indicate incoming calls and messages.

A maximum of 96 ETW-16DD-( ) (BK)/(SW) TELs can be installed in Electra Professional 120/Level II Advanced slots. A maximum of 56 can be installed in Level II.

**ETW-24DS-( ) (BK)/(SW) TEL**

This Multiline Terminal is a fully modular instrument with 24 Flexible Line keys (each with a two-color LED), eight function keys, built-in speakerphone, dual path ability, a 16-character by 2-Line Liquid Crystal Display (LCD), 12 programmable One-Touch keys, ADA compatibility, and a large LED to indicate incoming calls and messages.

A maximum of 96 ETW-24DS-( ) (BK)/(SW) TELs can be installed in Electra Professional 120/Level II Advanced slots. A maximum of 56 can be installed in Level II.

**EDW-48-( ) (BK)/(SW) Console**

The Attendant Add-On Console has a tilt stand, 48 programmable keys with two LEDs (red or green) and 12 function keys with red LED. The 48 programmable keys can be assigned as Direct Station Selection keys, outside line keys, or function keys.

A maximum of four EDW-48-( ) (BK)/(SW) Consoles can be installed in Electra Professional 120/Level II/Level II Advanced slots.

**ETW-4R-( ) (BK) TEL**

A black ETW-4R-1 TEL, *Dterm* Cordless Terminal, can be connected to the Electra Professional 120/Level II/Level II Advanced system using an ESI port. This terminal has a cordless handset, a 10-digit by 2-line LCD, dial pad, TALK key, HOLD key, TRF key, CNF key, SPD key, MSG LED, buzzer, and four function keys with red LED. The *Dterm* Cordless Terminal can be switched to the Multiline Terminal that is connected to it by pressing the DESK key on the base unit of the idle *Dterm* Cordless Terminal.

A maximum of nine ETW-4R-( ) (BK) TEL *Dterm* Cordless Terminals is recommended for any system.

**ETJ-1-1 (SW) TEL**

This Single-Line Telephone is a fully modularized terminal with a Flash key, Redial key, three-level ring volume control, data jack, and Message Waiting

**Lamp.** Each terminal requires one port of an SLI-F(8G)-21 KTU, LLT-F(2G)-10 KTU, SLT-F(1G)-20 ADP, or SLT-F(1G)-10 ADP.

#### **ETJ-1HM-1 (SW) TEL**

This Single-Line Telephone is a fully modularized terminal with a Flash key, Redial key, three-level ring volume control, data jack, Message Waiting Lamp, and eight programmable Feature/Speed Dial keys. Each terminal requires one port of an SLI-F(8G)-21 KTU, LLT-F(2G)-10 KTU, SLT-F(1G)-20 ADP, or SLT-F(1G)-10 ADP.

#### **ADA(1)-W (BK)/(SW) Unit**

This unit (Ancillary Device Adapter) provides the Multiline Terminal with connection for a headset, external speakerphone, or tape recorder. This unit can be installed in any Electra Professional Multiline Terminal.

A maximum of 96 ADA(1)-W (BK)/(SW) Units can be installed in the Electra Professional 120/Level II Advanced slots (one per Multiline Terminal). A maximum of 56 can be installed in Level II.

#### **ADA(2)-W (BK)/(SW) Unit**

The ADA(2)-W (BK)/(SW) Unit (Ancillary Device Adapter) provides the Multiline Terminal with connection for a Single Line Telephone, Fax, answering machine or modem. This unit can be installed in any Electra Professional Multiline Terminal.

A maximum of 96 ADA(1)-W (BK)/(SW) or ADA(2)-W (BK)/(SW) units can be installed in the Electra Professional 120/Level II Advanced slots. A maximum of 56 can be installed in Level II. The maximum number of ADA(2)-W (BK)/(SW) Units installed depends on system traffic and the number of PBR circuits available.

#### **ADA-U Unit**

Ancillary Device Adapters allow connection of a tape recorder for logging/recording telephone calls to Electra Elite Digital Multiline Terminals.

The ADA-U Unit **does not** require an AC adapter (ACA-U).

One ADA-U Unit can be installed on an Electra Elite Digital Multiline Terminal.

#### **APR-U Unit**

The Analog Port Adapter with Ringing provides an interface for installing Single Line Telephones, modems, and NEC VoicePoint/VoicePoint Plus Conferencing unit. The APR-U Unit also detects incoming ringing signals. By providing ring detection, the user can install a personal fax machine or an answering machine for convenience. Two user-adjustable switches are provided on the adapter: SW3 allows for 600 ohms or a complex impedance interface to devices such as a modem or Single Line Telephone, and SW1 is set to position 2 (the Electra Professional systems do not support the B2 channel).

The APR-U **requires** an AC Adapter (ACA-U) that is ordered separately. If an APR-U and HFU-U are both installed, only one ACA-U is required.

One APR-U Unit can be installed on an Electra Elite Digital Multiline Terminal.

**HFU-U Unit**

The Handsfree Unit provides a solution for small office teleconferencing by improving the sound quality of speakerphone calls using an external microphone. This unit is useful in a working environment where handsfree calling is necessary. To provide maximum performance, two user-adjustable switches are available that allow the speakerphone to be configured for the customer environment (quiet room, noisy business environment, or a room with an acoustic echo). A push-to-mute button on the external microphone adds privacy for handsfree dialing.

The HFU-U requires an AC Adapter (ACA-U) that is ordered separately. If an APR-U and HFU-U are both installed, only one AC Adapter is required.

One HFU-U Unit can be installed on an Electra Elite Digital Multiline Terminal.

**Note:** This unit enhances the handsfree operation of a Digital Multiline Terminal by providing an echo canceling circuit. However, this unit is primarily for a typical small office environment and not for conference rooms. Its performance should not be compared to commercial audio conference units. Also, calls may not be recorded when using the HFU-U.

**WMU-U (BK)/(SW) Unit**

Wall Mount Unit accommodates adapters that are installed on the Electra Elite Digital Multiline Terminal.

**WMU-W (BK)/(SW) Unit**

This unit is a universal Wall Mount Unit that can be used to mount any Electra Professional Multiline Terminal and comes in black or soft white.

**1.6.9 Single Line Telephone Adapters****SLT-F(1G)-10 ADP**

This Single-Line Telephone Adapter provides an interface for a Single-Line Telephone or similar device from an ESI-F(8)-21 KTU channel.

A maximum of 95 SLT-F(1G)-10 ADP adapters can be installed in Electra Professional 120/Level II Advanced slots. A maximum of 55 can be installed in Level II.

**SLT-F(1G)-20 ADP**

This Single-Line Telephone Adapter provides an interface for a Single-Line Telephone or similar device from an ESI-F(8)-21 KTU channel.

A maximum of 95 SLT-F(1G)-10 ADP adapters can be installed in Electra Professional 120/Level II Advanced slots. A maximum of 55 can be installed in Level II.



**CHAPTER 2**  
**ELECTRA PROFESSIONAL 120**  
**HARDWARE SPECIFICATIONS**  
**AND INSTALLATION**

# ELECTRA PROFESSIONAL 120

## HARDWARE SPECIFICATIONS AND INSTALLATION

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## CHAPTER 2

### ELECTRA PROFESSIONAL 120 HARDWARE SPECIFICATIONS AND INSTALLATION

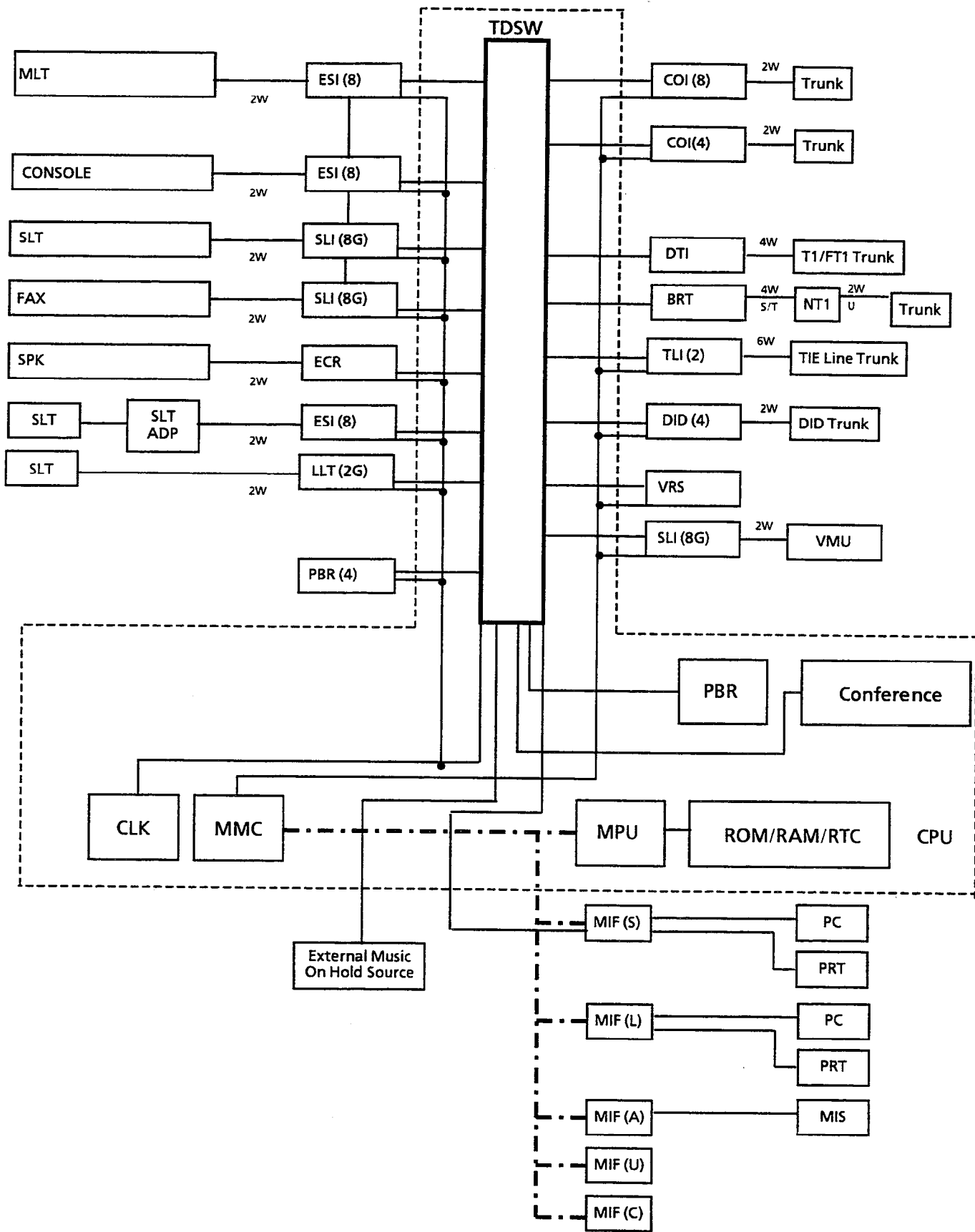
#### SECTION 1 SYSTEM SPECIFICATIONS

##### 1.1 General Information

The following diagrams and tables show specifications for the Electra Professional 120 system. The technician should review these carefully before attempting to install the systems.

##### 1.2 System Block Diagram

The system block diagram is a conceptual representation of an installed system. (Refer to Figure 2-1 - System Block Diagram. Also refer to Table 2-1 - Abbreviations for abbreviations used in the system block diagram.)



Numbers in ( ) designate the number of channels supported when using the equipment listed.

Figure 2-1 System Block Diagram

Table 2-1 Abbreviations

Abbreviation	Description
BRT	Basic Rate Trunk (ISDN)
CLK	Digital Network Synchronous Clock Oscillator
COI	Central Office Line Interface
CONSOLE	Attendant Add-On Console
CPU	Central Processing Unit
DID	Direct Inward Dial Trunk
DTI	Digital Trunk Interface
ECR	External Control Relay
ESI	Electronic Station Interface
FAX	Facsimile Transceiver
LLT	Long Line Telephone
MIF	Multipurpose Interface
MLT	Multiline Terminal
MMC	Module Memory Controller
MPU	Microprocessor
PBR	DTMF Signal Receiver Circuit Unit (Push Button Receiver)
PC	Personal Computer (with RS-232C Interface)
PRT	Printer with RS-232C Interface
ROM/RAM	Read Only Memory/Random Access Memory
RTC	Real Time Clock
SLI	Single Line Telephone Interface
SLT	Single Line Telephone
SLT ADP	Single Line Telephone Adaptor
SMDR	Station Message Detail Recording
SPK	External Speaker
TDSW	Time Division Switch
TLI	Tie Line Interface
VMU	Voice Mail Unit
VRS	Voice Recording Service

### 1.3 System Control Capacities

The control capacities of the system are shown in Table 2-2 - System Control Capacities.

Table 2-2 System Control Capacities

Item		120		Unit
		Basic	Basic + 2 Expansions	
Slot	Interface	5	15	
	Application	1	2	
Number of Outside Lines		32	64	N/A
	CO/PBX	32	64	COI
	DID	16	32	DID
	E&M	8	32	TLI
	T1	1 (24 channels)	1 (24 channels)	DTI
	ISDN (Basic Rate Trunk)	4	8	BRT
Number of Non-Blocking Intercom Lines				
Maximum number of outside lines and stations that can be simultaneously connected (Non-Blocking)		40	120	N/A
Multiline Terminal		32	96	ESI
Attendant Add-On Console		4	4	ESI
SLT		24	88	SLI
SLT Adapter		31	95	ESI
D <sup>term</sup> Cordless Terminal		9	9	ESI
External Speaker		3	3	ECR
DTMF Receiver		8	8	PBR
Voice Recording Service		8	8	VRS
Station Message Detail Recording (SMDR)		1	1	MIF (S/L)
PC Program		1	1	MIF (S/L)
Least Cost Routing (LCR)		1	1	MIF (L)
Automatic Call Distribution (ACD)		1	1	MIF (A)
Uniform Call Distribution (UCD)		1	1	MIF (U)
Caller ID		1	1	MIF (C)
Conference		6	6	CPU
Tenant		48	48	N/A
Trunk Group		32	32	N/A
Route Advance Block		16	16	N/A
System Speed Dial		1000/90	1000/90	N/A
System Speed Dial (Series 500 or higher)		1000/80	1000/80	N/A

**Note 1:** The number of Attendant Add-On Consoles is included in the number of Multiline Terminals.

**Note 2:** Four of the eight channels are accommodated in the CPU.

## 1.4 Cabling Requirements

### 1.4.1 Cabling Specifications

The KSU is connected with each of the Multiline Terminals and Single Line Telephones by a separate twisted 1-pair cable or 2-pair cable (only for Multiline Terminals). Table 2-3 - Multiline Terminal Loop Resistance and Cable Length and Table 2-4 - Single Line Telephone Connection Cable Length show the cables used for wiring between the KSU and individual terminals or adapters.

Table 2-3 Multiline Terminal Loop Resistance and Cable Length

Terminal or Adapter	Maximum Loop Resistance (Ohms)	Maximum Feet by Twisted 1-Pair Cable	Maximum Feet by Twisted 2-Pair Cable
		24 AWG	24 AWG
DTU-8-( ) (BK)/(WH) TEL	35	600	1000
DTU-16-( ) (BK)/(WH) TEL	26	450	900
DTU-16D-( ) (BK)/(WH) TEL	26	450	900
DTU-32-( ) (BK)/(WH) TEL	21	360	720
DTU-32D-( ) (BK)/(WH) TEL	21	360	720
DCU-60-( ) (BK)/(WH) Console	102	1000	10000
ETW-8-( ) (BK)/(SW) TEL	61	600	1500
ETW-16DC-( ) (BK)/(SW) TEL	46	450	1300
ETW-16DD-( ) (BK)/(SW) TEL	37	360	820
ETW-24DS-( ) (BK)/(SW) TEL	46	450	820
ETW-4R-( ) (BK) TEL	N/A	650	650
EDW-48-( ) (BK)/(SW) Attendant Add-On Console with AC Adapter	102	1000	2000
SLT-F(1G)-10 ADP	61	600	1200
SLT-F(1G)-20 ADP	61	600	1200

- Note 1:** When installing an Attendant Add-On Console, the use of an AC Adapter is required.
- Note 2:** The length for the specified SLT Adapter is the length between the ESI KTU and the SLT Adapter.
- Note 3:** When additional length is required between the ESI and a Multiline Terminal, Attendant Add-On Console, or SLT Adaptor, use twisted 2-pair cable as shown in Figure 2-2 Connecting the ESI to the Multiline Terminal Using Twisted 2-Pair Cable.



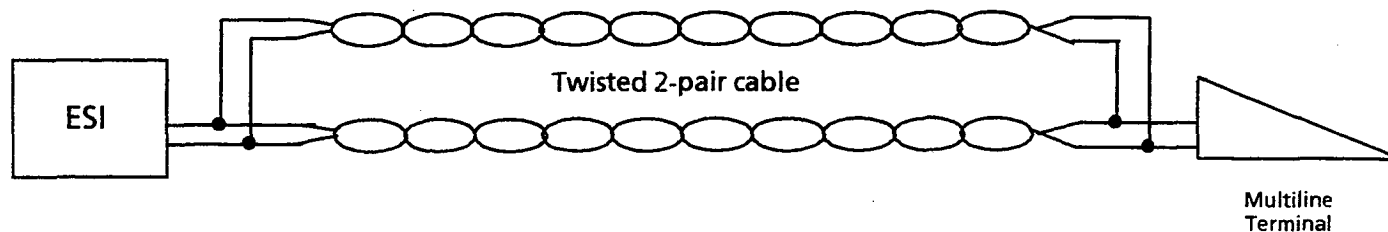


Figure 2-2 Connecting the ESI to the Multiline Terminal Using Twisted 2-Pair Cable

Table 2-4 Single Line Telephone Connection Cable Length

Connected Equipment	Cable	Maximum Loop Resistance (24 AWG) from Connected Equipment to Telephone
SLI-F(8G)-21 KTU	Twisted 1-pair	300 ohm
LLT-F(2G)-10 KTU	Twisted 1-pair	1500 ohm
SLT-F(1G)-10 ADP	Twisted 1-pair	300 ohm
SLT-F(1G)-20 ADP	Twisted 1-pair	300 ohm
ADA(2)-W (BK)/(SW) Unit	Twisted 1-pair	10 feet
APR-U (BK)/(SW) Unit	Twisted 1-pair	50 feet

**Note:** Mixing digital and analog ports through the same 25-pair cable runs is not recommended.

The following types of cabling are required for the equipment listed below:

- Music Source (for MOH and BGM inputs): Hi-Fi Shielded Audio Cable
- External Amplifier: Hi-Fi Shielded Audio Cable

#### 1.4.2 Cabling Precautions

When selecting cables and Main Distribution Frames (MDF), future expansion or assignment changes should be given due consideration. Avoid running cables in the following places:

- A place exposed to wind or rain.
- A place near heat radiating equipment or where the quality of station cable covering could be affected by gases and chemicals.
- An unstable place subject to vibration.

## 1.5 Power Requirements

### 1.5.1 Power Supply Inputs

AC Input (PSF-H-20 PSU):

- 117 Vac  $\pm$  10%
- 60 Hz  $\pm$  10%
- Single Phase
- 15A maximum current
- A dedicated outlet, separately fused and grounded, is required.

### 1.5.2 Power Supply Outputs Table

Table 2-5 Power Outputs

DC Voltage	Minimum Current	Maximum Current
-24V	0.3A	5.9A
+5V	0.3A	4.3A
-5V	0A	0.8A

### 1.5.3 Power Consumption and Dissipation Table

Table 2-6 Power Consumption and Dissipation

Module	Maximum RMS Current	Watts Used (Idle)	Watts Used (Maximum)
Basic	1.3A	120	150
Basic + Expansion	2.6A	240	300
Basic + 2 Expansions	3.9A	360	450

### 1.5.4 Fuse Replacement Table

Table 2-7 Fuse Replacement

Unit	Fuse No.	Specifications	Description	Dimensions
PSF-H-20 PSU	F1	125V, 4.0A	AC Input	1/4" X 1-1/4"
	F2	125V, 7.0A	DC Input	1/4" X 1-1/4"

**Note:** All fuses are normal blown glass tube. Do not use slow blow fuses.

**1.6 Environmental Conditions**

- Temperature
  1. Operating: +32° F ~ +104° F (0° C ~ 40° C)
  2. Recommended Long Term: +50° F ~ +90° F (10° C ~ 32.2° C)
- Operating Humidity: 10% ~ 90% noncondensing

**1.7 Outside Line Types**

- 2-wire, Loop-Start or Ground-Start Trunks
- 2-wire, Loop Dial, DID Lines (Dial Pulse or DTMF)
- 4-wire, E & M Tie Lines (Type I or V, Dial Pulse, or DTMF)
- Digital Trunk T1/FT1 (Loop Start or Ground Start, Tie Line (E&M), or DID Signaling)
- Digital Trunk, ISDN, Basic Rate

**1.8 Network and Control Specifications****1.8.1 Transmission**

- Data Length:
  - From Multiline Terminal to ESI-F(8)-21 KTU: 23 bits
  - From ESI-F(8)-21 KTU to Multiline Terminal: 23 bits
- Data Transmission Rates:
  - Between ESI-F(8)-21 KTU and Multiline Terminal: 184K bits/sec.  
(voice and signaling)
- Scanning Time for each Multiline Terminal: 32 ms.

**1.8.2 Network**

- TDM Switching: PCM ( $\mu$  Law)
- TDM Clock: 2.048 MHz
- TDM Data Bus: 8 bit
- TDM Timeframe: 125 us.

**1.8.3 Control**

- Control: Stored program with distributed processing
- Central Processor: 16-bit microprocessor
- Clock: 8 MHz
- Interface KTU: 4-bit microprocessor
- Optional KTUs (MIF and DTI): 8-bit microprocessor
- Multiline Terminal and Attendant Add-On Console: 4-bit microprocessor
- SLT Adaptor: 4-bit microprocessor

## 1.8.4 Telephones

## ● Multiline Terminal and Attendant Add-On Console:

Voltage: -11 ~ -26 Vdc

Maximum Current: 200 mA

Acoustical characteristics meet Electronic Industry Association (EIA) standard proposal SP-1286 and standard EIA RS-470.

## ● Single Line Telephone:

Standard 2500 set: 500 type network

Nominal Current: 35 mA

Ring Signal: 56 Vac RMS @ 20 Hz

## ● Single Line Telephone Adaptor:

Standard 2500 set: 500 type network

Nominal Current: 30 mA

Ring Signal: 56 Vac RMS @ 20 Hz

## ● APR-U(BK)/(SW) Unit:

Standard 2500 set: 500 type network

Nominal Current: 30 mA

Ring Signal: 56 Vac RMS @ 20 Hz

## ● ADA(2)-W(BK)/(SW) Unit:

Standard 2500 set: 500 type network

Nominal Current: 30 mA

Ring Signal: 56 Vac RMS @ 20 Hz

## 1.9 Dialing Specifications

## 1.9.1 Dial Pulse Address Signaling

Standard 2500 set: 500 type network

Nominal Current: 30 mA

Ring Signal: 56 Vac RMS @ 20 Hz

## ● APR-U(BK)/(SW) Unit/ADA(2)-W (BK)/(SW) Unit:

Standard 2500 set: 500 type network

Nominal Current: 30 mA Signaling

## ● Pulse Rate: 10 ± 0.5 pps/20 ± 1.0 pps

## ● Percent Break: 60 ± 1.5%

## ● Interdigit Interval: 10 pps/20 pps 770 ms. ~ 830 ms.

## 1.9.2 DTMF Address Signaling

## ● Frequencies:

Two sinusoidal signals, one from a high group of three frequencies and one from a low group of four frequencies.

● Frequency deviation: Less than  $\pm 1.0$  percent

## ● Signal level:

Nominal level per frequency:  $-6 \sim -4$  dBm

Minimum level per frequency: Low Group:  $-10$  dBm

High Group:  $-8$  dBm

Maximum level per frequency pair:  $0$  dBm

## ● Rise time: Within 5 ms.

## ● Duration of dual frequency signal: 100 ms. default/70 ms. minimum

## ● Interdigital time: 70 ms. default/60 ms. minimum

		Nominal High Group Frequencies (Hz)		
		1209	1336	1477
Nominal Low Group Frequencies (Hz)	697	1	2	3
	770	4	5	6
	852	7	8	9
	941	*	0	#

## 1.10 Battery Backup

The system has two battery backup functions: one is for system backup and a second for memory backup.

## 1.10.1 System Backup

The system is backed up by a rechargeable battery. This battery backup supports all of the system functions for approximately 30 minutes if power fails.

## 1.10.2 Memory Backup

A backup battery is equipped on the CPU-F( )-20 KTU, VRS-F(4)-11 KTU, MIF-F(S)-10 KTU, MIF-F(L)-10 KTU, MIF-F(A)-10 KTU, MIF-F(C)-10 KTU, and the MIF-F(U)-10 KTU. These batteries, when fully charged, retain the system memory after a power failure. Refer to Table 2-8 - KTU Battery Backup Time for the approximate backup times for the KTUs.

Table 2-8 KTU Battery Backup Time

KTUs	Approximate Backup Time
CPU-F( )-20 KTU	14 days
VRS-F(4)-11 KTU	1 hour
MIF-F(S)-10 KTU	1 month
MIF-F(L)-10 KTU	1 month
MIF-F(A)-10 KTU	1 month
MIF-F(C)-10 KTU	1 month
MIF-F(U)-10 KTU	1 month

## 1.11 Weights and Dimensions

Table 2-9 Weights and Dimensions

Unit	Shipping Weight *	Height	Width	Depth
ESF-H-10 KSU	37 lbs. 6 oz. (17 kg)	14.4" (360 mm)	15.92" (398 mm)	9.2" (230 mm)
PSF-H-20 PSU	4 lbs. 13 oz. (2.2 kg)	14.96" (380 mm)	3.54" (90 mm)	7.09" (180 mm)
DTU-8-( ) (BK)/(WH) TEL	2 lbs. (1.6 kg)	4.4" (109.9 mm)	7" (177 mm)	8.8" (223.7 mm)
DTU-16-( ) (BK)/(WH) TEL	2 lbs. 3 oz. (1 kg)	4.4" (109.9 mm)	7.9" (210 mm)	8.8" (223.7 mm)
DTU-16D-( ) (BK)/(WH) TEL	2 lbs. 4 oz. (1 kg)	4.4" (109.9 mm)	7" (177 mm)	9.1" (229 mm)
DTU-32-( ) (BK)/(WH) TEL	2 lbs. 7 oz. (1.1 kg)	4.4" (109.9 mm)	7" (177 mm)	8.8" (223.7 mm)
DTU-32D-( ) (BK)/(WH) TEL	2 lbs. 7 oz. (1.1 kg)	4.4" (109.9 mm)	7.9" (201 mm)	9.1" (229 mm)
DTU-60-( ) (BK)/(WH) CONSOLE	3.5 lbs. (1.6 kg)	2.9" (74 mm)	7" (177.4 mm)	8.5" (216 mm)
ETW-8-( ) (BK)/(SW) TEL	2 lbs. (0.9 kg)	3.98" (101 mm)	6.89" (175 mm)	8.81" (223 mm)
ETW-16DC-( ) (BK)/(SW) TEL	2 lbs. 3 oz. (1 kg)	3.98" (101 mm)	6.89" (175 mm)	8.81" (223 mm)
ETW-16DD-( ) (BK)/(SW) TEL	2 lbs. 7 oz. (1.1 kg)	3.98" (101 mm)	8.07" (205 mm)	8.81" (223 mm)

\* Shipping weight includes the shipping carton.

Table 2-9 Weights and Dimensions (continued)

Unit	Shipping Weight *	Height	Width	Depth
ETW-24DS-( ) (BK)/(SW) TEL	2 lbs. 7 oz. (1.1 kg)	3.98" (101 mm)	8.07" (205 mm)	8.81" (223 mm)
EDW-48-( ) (BK)/(SW) CONSOLE	3 lbs. 1 oz. (1.4 kg)	2.72" (69 mm)	6.89" (175 mm)	8.81" (223 mm)
ETW-4R-( ) (BK) TEL	1 lb. 10 oz. (0.74 kg)	3.42" (87 mm)	5.51" (140 mm)	7.48" (190 mm)
ETJ-1-1 (SW) TEL	2 lbs. (0.9 kg)	3.98" (101 mm)	6.89" (175 mm)	8.81" (223 mm)
ETJ-1HM-1 (SW) TEL	2 lbs. 3 oz. (1 kg)	3.98" (101 mm)	6.89" (175 mm)	8.81" (223 mm)
ETE-1-2 TEL (SLT)	1 lb. 14 oz. (0.9 kg)	3.15" (80 mm)	6.30" (160 mm)	9.06" (230 mm)
ETE-1HM-2 TEL (SLT)	1 lb. 10 oz. (0.7 kg)	2.36" (60 mm)	6.30" (160 mm)	9.06" (230 mm)
SLT-F(1G)-10 ADP	9 oz. (0.29 kg)	1.80" (45 mm)	2.80" (70 mm)	4.80" (120 mm)
SLT-F(1G)-20 ADP	9 oz. (0.29 kg)	1.80" (45 mm)	2.80" (70 mm)	4.80" (120 mm)

\* Shipping weight includes the shipping carton.

## 1.12 External Equipment Interface

- 1.12.1 Music On Hold/Station Back Ground Music (via CPU) (Series 500 or higher)
- Auxiliary Input: 0.6V RMS Signal Level
  - Input Impedance: 10K  $\Omega$
- 1.12.2 Station Background Music [via COI-F( )-20 KTU or COI-F( )-30 KTU] (Series 500 or higher)
- Auxiliary Input: 0.6V RMS Signal Level
  - Input Impedance: 600  $\Omega$
- 1.12.3 External Paging (Audio)
- Output Power: - 10 dBm Signal Level
  - Output Impedance: 600  $\Omega$
  - Relay Contact Rating: 500 mA, 24 Vdc
- 1.12.4 External Tone Ringer/Night Chime Output
- Output Level: - 10 dBm
  - Output Impedance: 600  $\Omega$
  - Relay Contact Rating: 500 mA, 24 Vdc
- 1.12.5 SMDR Output
- Female Connector (System Output) Standard RS-232C
- 1.12.6 PC Connection
- Female Connector (System Output) Standard RS-232C
- 1.12.7 Relay Contact
- All Relay Contact Ratings: 500 mA, 24 Vdc



1.13 Visual and Audible Indications

1.13.1 Tone Patterns Table

Table 2-10 Tone Patterns

Tone	Frequency (Hz)	Tone Patterns
Dial Tone	350/440	
Second Dial Tone	350/440	
Busy Tone	480/620	
Call Waiting Tone	440	
Ringback Tone (1)	440/480	
Ringback Tone (2)	440/480	
Reorder Tone	480/620	
<ul style="list-style-type: none"> <li>• Attendant/Tone Override</li> <li>• Camp-On Tone</li> <li>• Call Alert Notification</li> </ul>	440	
<ul style="list-style-type: none"> <li>• Call Forward Alert Tone</li> <li>• Call Forward Confirmation Tone</li> </ul>	350/440	
<ul style="list-style-type: none"> <li>• Confirmation</li> <li>• LCR Dial Tone</li> </ul>	440	
Error Tone Burst	620	
Recall Tone	1024	
CO/PBX Ring Tone (1)	480/606	
CO/PBX Ring Tone (2)	480/606	
Internal Ring Tone	480/606	
Attendant Ring Tone	480/606	
Tone Burst	440	
Howler Tone	2400	Continuous 16 Hz modulation
DIT Alert Tone	480/620	
CO Ring Transfer	480/606	

1.13.2 Multiline Terminal LED Flash Pattern Table

Table 2-11 Multiline Terminal LED Flash Patterns

LED	Condition	Color	Flash Patterns				
Line Key	I-Use	Green	[Solid line]				
	Busy	Red	[Solid line]				
	Incoming Call	Red	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]
	I-Hold	Green	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	Call Hold	Red	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	Hold Recall	Green	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]
	Transfer Recall	Green	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]
Microphone	ON	Red	[Solid line]				
ICM	I-Use	Red	[Solid line]				
	ICM Incoming Call	Red	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]
	Voice Over Broker	Red	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]
Large LED	Incoming Internal Call	Red	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]
	Incoming Outside Call	Green	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	Message from Attendant	Green	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	Voice Mail Message	Red	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
Speaker	ON	Red	[Solid line]				
	System Data Entry	Red	[Solid line]				
Conference	Conference in Progress	Red	[Solid line]				
	All Conference	Red	[Solid line]				
	Circuits Used	Red	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	Hold Conference Call	Red	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	ICM Call Hold	Red	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	SPD Confirmation	Red	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]
Answer	Incoming Trunk	Red	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]
	Exclusive Hold	Green	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	User Ringing Line Preference	Red	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	Voice Over with Broker's Call	Green	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]
Function	Callback Set	Red	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	Auto Repeat Set	Red	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	ON (to set function)	Red	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	Call FWD - All Call Set	Red	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]	[Dashed line]
LNR/SPD	Other Tenant	Green	[Solid line]				
	CO Line Key Seized	Green	[Solid line]				
	Exclusive Hold	Green	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
BLF or DSS Key	Use, Hold	Red	[Solid line]				
	DND, Call FWD-All Calls	Red	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	Set	Red	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]
	Special Mode (While pressing FNC key or going off-line)	Red	[Solid line]	[Solid line]	[Solid line]	[Solid line]	[Solid line]

0 0.5 1.0 1.5 2.0 sec.

## 1.13.3 DSS/BLF LED Indications Table

Table 2-12 DSS/BLF LED Indications

Function	Color	Status
Attendant Message	Green	ON
Idle	—	OFF
Talking (Other)	Red	ON
Hold	Red	ON
FWD All (DND)	Red (Flashing)	ON
Other Use (Multiline Terminal is off-line, station user is programming Feature Access/One-Touch keys, etc.)	Red (Flashing)	ON
Incoming Call	Red (Flashing)	ON
CO line in use	Red	ON

## SECTION 2 HARDWARE REQUIREMENTS

## 2.1 General Information

Before configuring the system, complete the worksheets in the *Electra Professional 120/Level II/Level II Advanced Job Specifications Manual*. Make sure all types of station equipment, timeouts, and feature options are considered when completing the worksheets. System Programming must be understood to properly complete these worksheets. (Refer to Chapter 5 - Programming in this manual.)

**Note:** One *Electra Professional 120/Level II/Level II Advanced Job Specifications Manual* is included with the CPU-F( )-20 KTU.

The Electra Professional 120 Basic KSU has five interface slots and each Expansion KSU has five interface slots. Each slot supports up to eight ports. The hardware requirements dictate the number of ports available for installing station equipment.

When possible, the same type KTUs should be paired together within a cable binder (25-pair cable binders to the MDF should be used.) This will simplify MDF wiring.

## 2.1.1 Programming Stations

A maximum of three programming positions are available in the system. Station equipment, connected to the first two ports of the first ESI-F(8)-21 KTU, are automatically programming positions and must be ETW-16DC-( ) (BK)/(SW) TEL, ETW-16DD-( ) (BK)/(SW) TEL, ETW-24DS-( ) (BK)/(SW) TEL, DTU-16D-( ) (BK)/(WH) TEL, or DTU-32D-( ) (BK)/(WH) TEL.

A third programming position becomes available when an MIF-F(S)-10 KTU or MIF-F(L)-10 KTU, and the Electra Professional 120/Level II/Level II Advanced System Program Technician software are installed.

## 2.1.2 Attendant Station

A maximum of four Attendant positions can be installed in a system with DCU-60-( ) (BK)/(WH) or EDW-48-( ) (BK)/(SW) Console. Each Attendant Add-On Console must be supported by an ESI-F(8)-21 KTU. A maximum of four Consoles can be installed in each system.

## 2.2 Determining Required Equipment

### 2.2.1 Station Equipment

Determine the type and quantity of station equipment being installed. The type of station equipment that is available includes:

- DTU-8-( ) (BK)/(WH) TEL (8-line Multiline Terminal without LCD)
- DTU-16-( ) (BK)/(WH) TEL (16-line Multiline Terminal without LCD)
- DTU-16D-( ) (BK)/(WH) TEL (16-line Multiline Terminal with LCD)
- DTU-32-( ) (BK)/(WH) TEL (16-line Multiline Terminal without LCD)
- DTU-32D-( ) (BK)/(WH) TEL (16-line Multiline Terminal with LCD)
- ETW-8-( ) (BK)/(SW) TEL (8-line Multiline Terminal without LCD)
- ETW-16DC-( ) (BK)/(SW) TEL (16-line Multiline Terminal with LCD)
- ETW-16DD-( ) (BK)/(SW) TEL (16-line Multiline Terminal with LCD)
- ETW-24DS-( ) (BK)/(SW) TEL (24-line Multiline Terminal with LCD and built-in Dual Path Adapter)
- Single Line Telephone with Message Wait Lamp
- Single Line Telephone without Message Wait Lamp
- DCU-60-( ) (BK)/(WH) Console
- EDW-48-( ) (BK)/(SW) Console
- ADA-U Unit Ancillary Device Adapter interface
- APR-U Unit Analog Port Ringer interface
- HFU-U Unit Handsfree unit
- WMU-U Unit Wall mount unit with Multiline Terminal
- ADA(1)-W (BK)/(SW) Unit
- ADA(2)-W (BK)/(SW) Unit
- WMU-W Unit
- SLT-F(1G)-10 ADP or SLT-F(1G)-20 ADP

### 2.2.2 Interface KTUs

- A. Slot and System Port Numbers are shown in Figure 2-3 - Electra Professional 120 Interface Slots and System Port Numbers.

**Note:** The two fixed slots and the first four slots in KSU3 are not labeled with the OP designation in Figure 2-3 - Electra Professional 120 Interface Slots and System Port Numbers. This is only to show that an MIF-F( )-10 KTU cannot be installed in these slots. The actual KSUs are labeled with OP.

KSU3	P S U		M M C	136	144	152	160	168
				135	143	151	159	167
				134	142	150	158	166
				133	141	149	157	165
				132	140	148	156	164
				131	139	147	155	163
				130	138	146	154	162
				129	137	145	153	161
			IF1	IF2	IF3	IF4	IF5	

KSU2	P S U	O P B	M M C	72	80	88	96	104
				71	79	87	95	103
				70	78	86	94	102
				69	77	85	93	101
				68	76	84	92	100
				67	75	83	91	99
				66	74	82	90	98
				65	73	81	89	97
			IF1/OP1	IF2/OP2	IF3/OP3	IF4/OP4	IF5	

KSU1	P S U	O P B	C P U	8	16	24	32	40
				7	15	23	31	39
				6	14	22	30	38
				5	13	21	29	37
				4	12	20	28	36
				3	11	19	27	35
				2	10	18	26	34
				1	9	17	25	33
			IF1/OP1	IF2/OP2	IF3/OP3	IF4/OP4	IF5	

Figure 2-3 Electra Professional 120 Interface Slots and System Port Numbers

**B. Telephone and CO Port Numbers**

Telephone and CO Ports Numbers are available in the system. The port numbers are used to count the number of station numbers and trunk numbers when programming System Data. (Refer to Figure 2-4 - Interface Slots and System Port Numbers.)

In Table 2-13, the KTUs installed in each slot of an Electra Professional 120 are:

Table 2-13 Telephone and CO Port Number Example

	Slot	KTU
KSU1	IF1/OP1	DT1-F( )-10 KTU or DTI-F(A)-20 KTU
	IF2/OP2	OPEN
	IF3/OP3	OPEN
	IF4/OP4	ESI-F(8)-21 KTU
	IF5	TLI-F(2)-10 KTU
KSU2	IF1	DT1-F( )-10 KTU or DTI-F(A)-20 KTU
	IF2	OPEN
	IF3	OPEN
	IF4	DID-F(4)-10 KTU
	IF5	OPEN

KSU2	C36	C39	C51		
	C35	C40	C50		
	C34	C41	C49		
	C32	C40	C48	C58	
	C31	C39	C47	C57	
	C30	C38	C46	C54	
	C29	C37	C45	C53	
	IF1	IF2	IF3	IF4	IF5
KSU1	C8	C16	C24	T8	
	C7	C15	C23	T7	
	C6	C14	C22	T6	
	C5	C13	C21	T5	
	C4	C12	C20	T4	
	C3	C11	C19	T3	
	C2	C10	C18	T2	C26
	C1	C9	C17	T1	C25
IF1	IF2	IF3	IF4	IF5	

C = CO Port Number  
T = Telephone Port Number

**Note 1:** The TLI KTU has four available channels, but only two are used.

**Note 2:** The DID KTU has eight available channels, but only four are used.

Figure 2-4 Interface Slots and System Port Numbers

### C. Interface KTUs

To determine the quantity of interface KTUs required, refer to Table 2-14 - Number of Required Interface KTUs.

Table 2-14 Number of Required Interface KTUs

KTU	Circuits per KTU	Calculations/Comments	Maximum KTUs per 120 System	Allowed Insertion Slots
COI-F(4)-20 KTU COI-F(4)-30 KTU	4	Divide the number of CO/PBX/Centrex lines being used by 4.	14	IF1/OP1~IF4/OP4 and IF5
COI-F(8)-20 KTU COI-F(8)-30 KTU	8	Divide the number of CO/PBX/Centrex lines being used by 8.	8	IF1/OP1~IF4/OP4 and IF5
ESI-F(8)-21 KTU	8	Divide number of Multiline Terminals, Attendant Add-On Consoles, SLT Adapters being used by 8.	12	IF1/OP1~IF4/OP4 and IF5
SLI-F(8G)-21 KTU	8	Divide the number of Single Line Telephones and/or Voice Mail ports being used by 8.	11	IF1/OP1~IF4/OP4 and IF5
PBR-F(4)-11 KTU	4	PBR Requirements (Refer to Section D - PBR Requirements on next page .)	1	IF1/OP1~IF4/OP4 and IF5
DID-F(4)-10 KTU	4	Divide the number of DID trunks being used by 4.	8	IF1/OP1~IF4/OP4 and IF5
TLI-F(2)-10 KTU	2	Divide the number of Tie lines being used by 2.	14	IF1/OP1~IF4/OP4 and IF5
DTI-F( )-10 KTU DTI-F(A)-20 KTU	24	The number of T1/FT1 channels being used.	3	See Note 1
ECR-F-11 KTU	8 Relays	Required when installing multiple zones for external paging, tone ring and/or chime.	1	IF1/OP1~IF4/OP4 and IF5
MIF-F(S)-10 KTU		Required when connecting an SMDR printer and/or when using System Program Technician Software.	1	OP and/or IF1/OP1~IF4/OP4
MIF-F(L)-10 KTU		Required if connecting SMDR printer, using scroll and dial CID feature, and/or if using System Program Technician Software and/or LCR.	1	OP and/or IF1/OP1~IF4/OP4
MIF-F(A)-10 KTU		Required for the ACD feature.	1	OP and/or IF1/OP1~IF4/OP4
MIF-F(C)-10 KTU		Required for the Caller ID feature.	1	OP and/or IF1/OP1~IF4/OP4
MIF-F(U)-10 KTU		Required for the UCD feature.	1	OP and/or IF1/OP1~IF4/OP4
VRS-F(4)-11 KTU	4	Automated Attendant, DISA, Voice Prompt and/or Delay Announcement.	2	IF1/OP1~IF4/OP4 and IF5
BRT-F (4)-10 KTU	4	Allows connection of up to 4 BRI circuits. Each BRI provides 2 voice channels. Divide BRI trunks by 8.	8	IF1~IF4 in basic and first expansion KSU

Note 1: Use slot IF1/OP1 and/or IF4/OP4 in the Basic KSU, and IF1/OP1 in the First Expansion KSU.



#### D. PBR Requirements

The Electra Professional 120 system has four channels of built-in PBR circuits in the CPU-F( )-20 KTU. The PBR circuit can detect DTMF signals from a Single Line Telephone, facsimile, modem, and voice mail ports. Incoming DTMF signals can also be detected from a CO trunk by an Automated Attendant and DISA feature. An optional PBR-F(4)-11 KTU can only detect DTMF signals from Single Line Telephones, facsimiles, modems, and voice mail.

The quantity of PBR-F(4)-11 KTUs that are needed depends on the number of Single Line Telephones, modems, facsimiles, voice mail ports, and whether Automated Attendant/DISA trunks are connected to the system. Up to 24 Single Line Telephones or Automated Attendant/DISA trunks can be supported by one PBR circuit.

### 2.3 Installation Example

The following example aids in understanding some of the requirements when configuring an Electra Professional 120 system. Refer to Table 2-15 - System Configuration Example. The equipment used in this example includes:

- 12 CO Lines
- 12 Multiline Terminals, DTU-32D-( ) (BK)/(SW) TEL only
- Analog Voice Mail Connection (4 ports)
- SMDR
- External Paging

Table 2-15 System Configuration Example

Device Type	Units	Quantity
Key Service Unit	ESF-H-10 KSU	2
CPU	CPU-F( )-29 KTU	1
MMC	MMC-F-11 KTU	1
Power Supply	PSF-H-20 PSU	2
CO Line	COI-F(8)-20 KTU	2
Multiline Terminal Interface	ESI-F(8)-21 KTU	2
Multiline Terminal	DTU-32D-( ) (BK) TEL	12
Voice Mail Connection	SLI-F(8G)-21 KTU	1
SMDR	MIF-F(S)-10 KTU	1
External Paging	ECR-F-11 KTU	1

## SECTION 3 KSU INSTALLATION

### 3.1 General Information

This section provides the requirements for installing the system. The installer should be familiar with this section before installing the system.

### 3.2 Site Preparation and MDF/IDF Construction

The technician should plan the installation before actual work begins. Advanced planning minimizes time, cost, and disruption of customer business activities. Additional benefits include flexibility for changes and expansion, efficient maintenance, and increased customer satisfaction.

#### 3.2.1 Precautionary Information

**The following warnings shall be observed during installation:**

1. Never install telephone wiring during a lightning storm.
2. Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
3. Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
4. Use caution when installing or modifying telephone lines.

#### 3.2.2 Site Survey

In most cases, a survey of the customer premise is needed to determine the placement of the Main Distribution Frame (MDF). A second visit to the site may be necessary to obtain the exact dimensions of the area selected for MDF, cable lengths, and possible IDF (Intermediate Distribution Frame) locations.

Collected information about the job site generally permits the MDF to be partially assembled at the technician shop, which helps to minimize time spent at the customer premise.

#### 3.2.3 Site Limitations

In selecting a permanent site for the MDF, the technician may encounter problems such as, but not limited to, the following:

- Limited space is available and must be used regardless of its suitability.
- The available space may be adequate but may pose one or more environmental hazards.
- The proposed location has limitations such as insufficient lighting or the lack of a suitable ground for grounding the KSUs.

Whatever the nature of the adversities encountered, the technician must make the necessary decisions to arrive at the best possible solution for installing the equipment. This document cannot cover all possible situations, precautions, and actions.

### 3.2.4 Site Selection Conditions

#### KSU Installation Site:

The following conditions should be met at the site selected for the key service unit (KSU).

- KSUs are normally wall mounted to protect against accident or flooding.
- The KSU should not be located directly beneath pipes, due to the possibility of leaks or condensation causing damage to the Electra Professional 120 system equipment.
- The area where the KSU is to be located must be free of corrosive and inflammable gases, excessive chemical or industrial dusts, and other materials that could cause a hazard to personnel or to the proper functioning of the equipment.
- Operating ambient temperature and humidity must be within the limits specified in Section 1.6 - Environmental Conditions.
- The operation of the system is virtually noiseless and allows a wide selection of installation sites, care should be taken to ensure the KSUs do not present a hazard to office traffic. For economy, a central location to minimize cabling is often used.
- The KSU must be located at a site where it can be easily connected to one to three AC power sources depending on the quantity of KSUs.
- The Electra Professional 120 KSUs weigh approximately 40 lb. ~ 70 lb. Therefore, select a strong wall for mounting purposes.
- Place the KSU according to the following spacing specifications:
  - Space distance between the KSU and the ceiling: 20 in. or more
  - Space distance on both sides of the KSU: 12 in. or more
  - Space distance on front of KSU: 20 in. or more
- Avoid connection of the KSU to an AC receptacle used in common with any other device (computer, facsimile machine, copier, *etc.*).
- Be sure that there is enough space on the wall to accommodate the wall mount bracket for any future system expansion.

#### Telephone Installation Site:

The following conditions should be met at the site selected for Multiline Terminals.

- Ensure the cable length and line resistance (loop), between the KSU and the telephones, comply with the specifications shown in Table 2-3 - Multiline Terminal Loop Resistance and Cable Length and Table 2-4 - Single Line Telephone Connection Table Length.
- Some devices require an external power supply. Select a place where they can be easily connected to an AC outlet.

3.2.5 MDF Construction

The Main Distribution Frame (MDF) consists of two different types of standard quick-connect terminal blocks that are mounted on a 3/4-inch plywood backboard. Mounting these blocks on standoffs for ease of access is recommended. The recommended blocks are: 66B50, for termination of the MDF Cable Assembly and 66M50, for termination of the station cables.

The Intermediate Distribution Frame (IDF) requires only the 66M50 blocks.

Both the MDF and IDF use standard bridging clips for each type of terminal block. The bridging clips are used to mate the left half of the terminal block (terminated cable run) to the right half of the terminal block (crossconnection wire) to the terminal block (crossconnection wire). The bridging clips are also useful during trouble shooting to help isolate the cable runs and terminals/telephones from the central equipment and the Central Office Network from the system. Refer to Figure 2-5 - Typical Full MDF Layout. Also refer to Section 3.3.3 - Wall Mounting the KSUs.

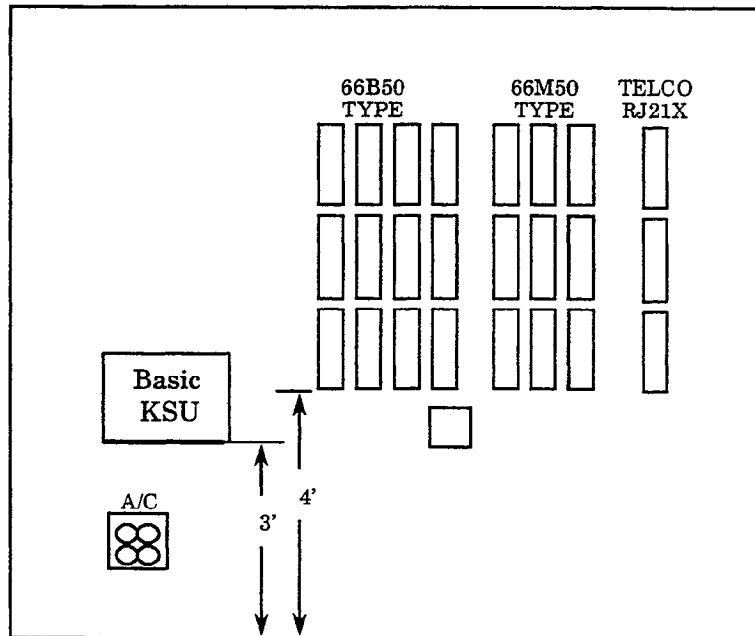


Figure 2-5 Typical Full MDF Layout

### 3.3 Installing the Electra Professional 120 Basic Key Service Unit (KSU)

Before installation and cabling of the KSU, observe these precautions:

- Before starting the work, be sure the PSU power switch is OFF and disconnect the power cord from the AC outlet.
- Do not directly touch the soldered surfaces of the KTUs with your hands.

#### 3.3.1 Basic KSU (ESF-H-10 KSU)

The ESF-H-10 KSU is the basic system cabinet. There are two fixed slots for the CPU and MIF KTUs, one PSU slot, a battery installation space, and five interface slots for the installation of telephones, CO/PBX lines, Tie lines, VRS, DID, Digital Trunk (T1), BRI trunks (ISDN), PBR, and ECR KTUs. The KSU can be wall mounted. Refer to Figure 2-6 - Electra Professional 120 Basic KSU.

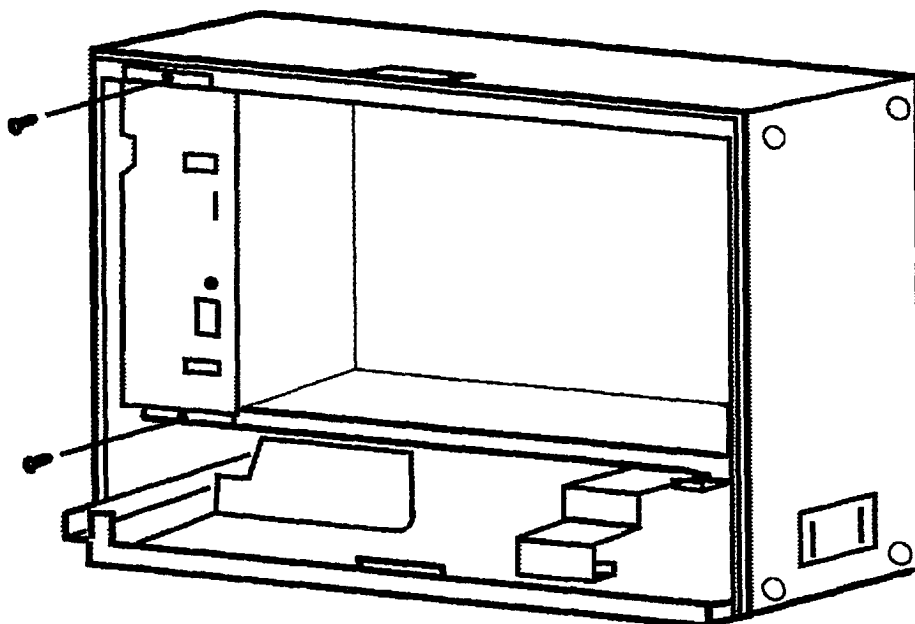


Figure 2-6 Electra Professional 120 KSU

3.3.2 Opening the KSU Cover

Before wall mounting the KSU, the KSU cover must be removed.

1. Loosen the four cover screws and remove the front cover. Refer to Figure 2-7 - Removing the KSU Cover.

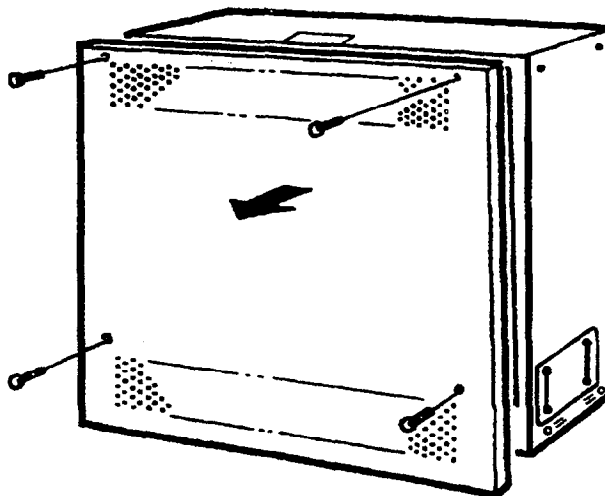


Figure 2-7 Removing the KSU Cover

3.3.3 Wall Mounting the KSUs

3.3.3.1 Wall Mounting the KSU

Before wall mounting the KSU, the wall mount bracket must be attached to plywood. Using 3/4-inch fire retardant plywood backboard is recommended.

1. Using four screws (locally provided), attach the wall mount bracket to the wall. Refer to Figure 2-8 - Attaching the Wall Mount Bracket of the KSU to the Wall.

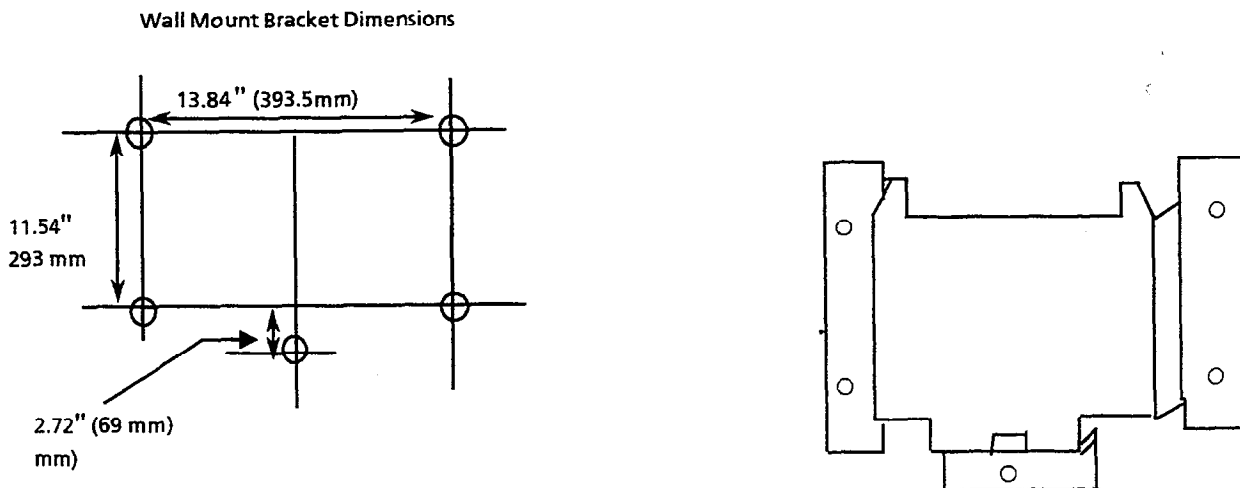


Figure 2-8 Attaching the Wall Mount Bracket of the Level II Basic KSU to the Wall

2. Holding the Basic ESF-H-10 KSU, lower the two hooks that protrude from the rear of the KSU over the wall mount bracket. Refer to Figure 2-9 - Attaching the KSU to the Wall Mount Bracket.

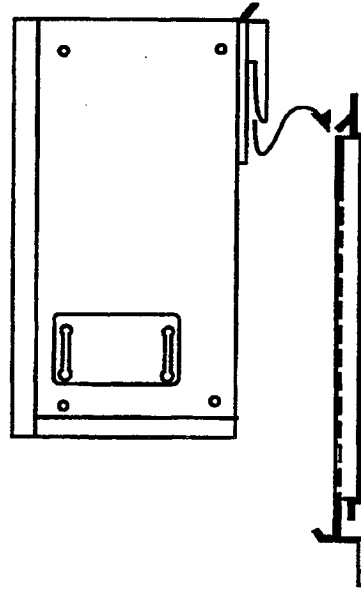


Figure 2-9 Attaching the KSU to the Wall Mount Bracket

3. Using the two provided bolts, secure the KSU to the wall mount bracket from the bottom. Refer to Figure 2-10 - Securing the KSU to the Wall Mount Bracket.

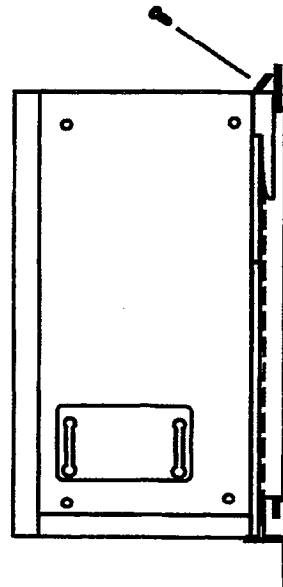


Figure 2-10 Securing the KSU to the Wall Mount Bracket

### 3.3.4 Adding the Expansion KSU to an Installed System

1. Loosen the four screws on the front cover and remove the cover panel. Refer to Section 3.3.2 - Opening the KSU Cover and to Figure 2-11 - Removing the KSU Cover.

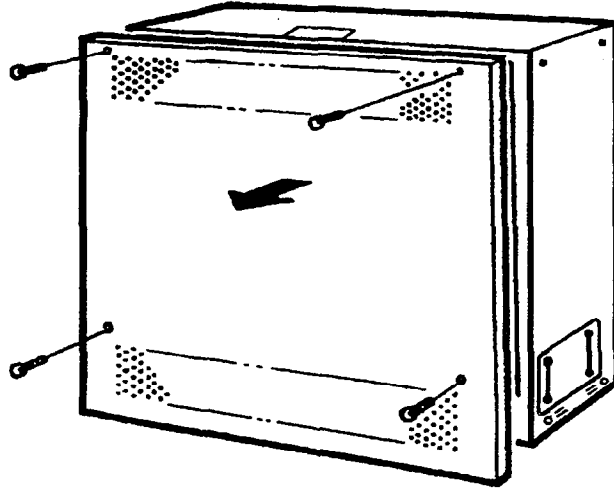


Figure 2-11 Removing the KSU Cover

2. Turn the PSU power switch, on the base KSU, to the OFF position and disconnect the KSU from the power source.

**NOTE:** The expansion and basic KSU are identical units.

3. Loosen the screws for the cable access panel at the top and bottom of all KSUs.
4. Mount the expansion KSU wall mount bracket to the wall. Note that when properly mounted the base and expansion wall mount brackets mate together.
5. Attach the expansion KSU to the wall mount bracket.
6. Install the MMC-F-11 in its assigned slot, and connect the ribbon cable to the CPU-F( )-20. Connect the ground plates that are included in the expansion kit between the lower and upper KSUs. The adjustable slot connects to the low KSU.
7. Connect the expansion KSU batteries and the AC power.
8. Install the plate and spring included with the expansion kit to the KSU covers as shown in Figure 2-12 - Installing the Plate and Spring on the KSU Covers.)



3.3.5 Floor Mounting

This unit cannot be floor mounted.

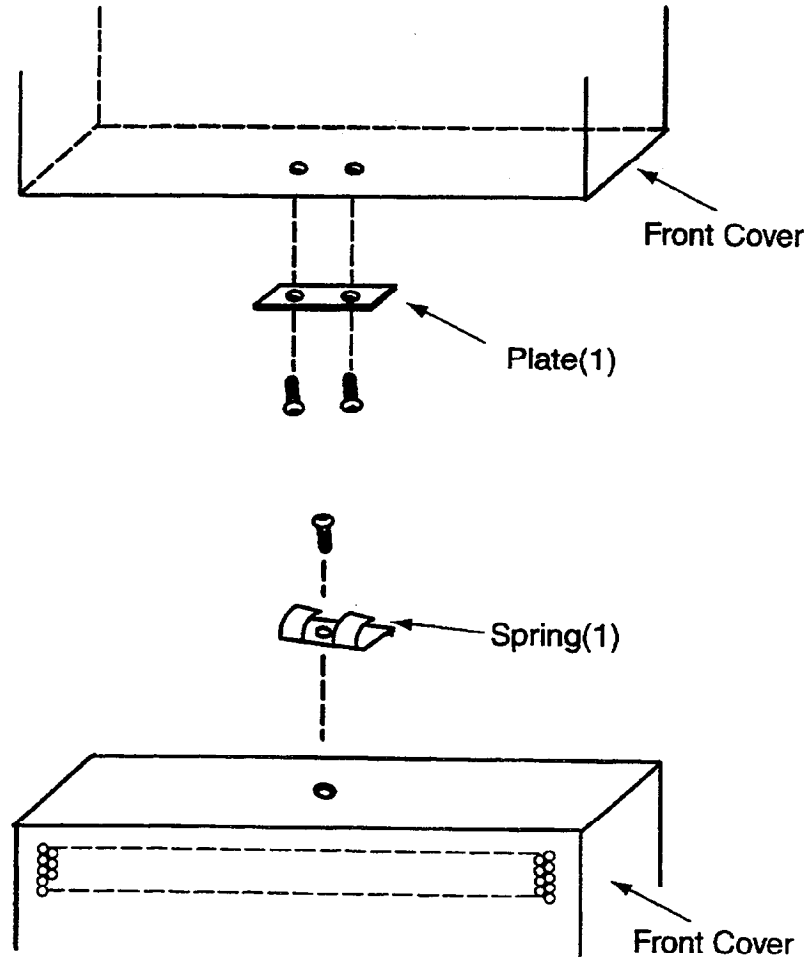


Figure 2-12 Installing the Plate and Spring on the KSU Covers

### 3.3.6 Installing a PSF-H-20 PSU in the KSUs

#### 3.3.6.1 General Information

This power supply unit is provided with both the basic and expansion KSUs. It has a backup interface, accepts 117 Vac and outputs +5V, -5V, and -24V to the system.

#### Fuse Replacement:

To replace the fuse(s) in this PSU, first remove the PSU from the KSU. (Refer to Figure 2-13 - PSF-H-20 PSU Fuse Locations.) Fuse F1 is a 125V, 4A fuse for AC input. Fuse F2 is a 125V, 7A fuse for DC input.

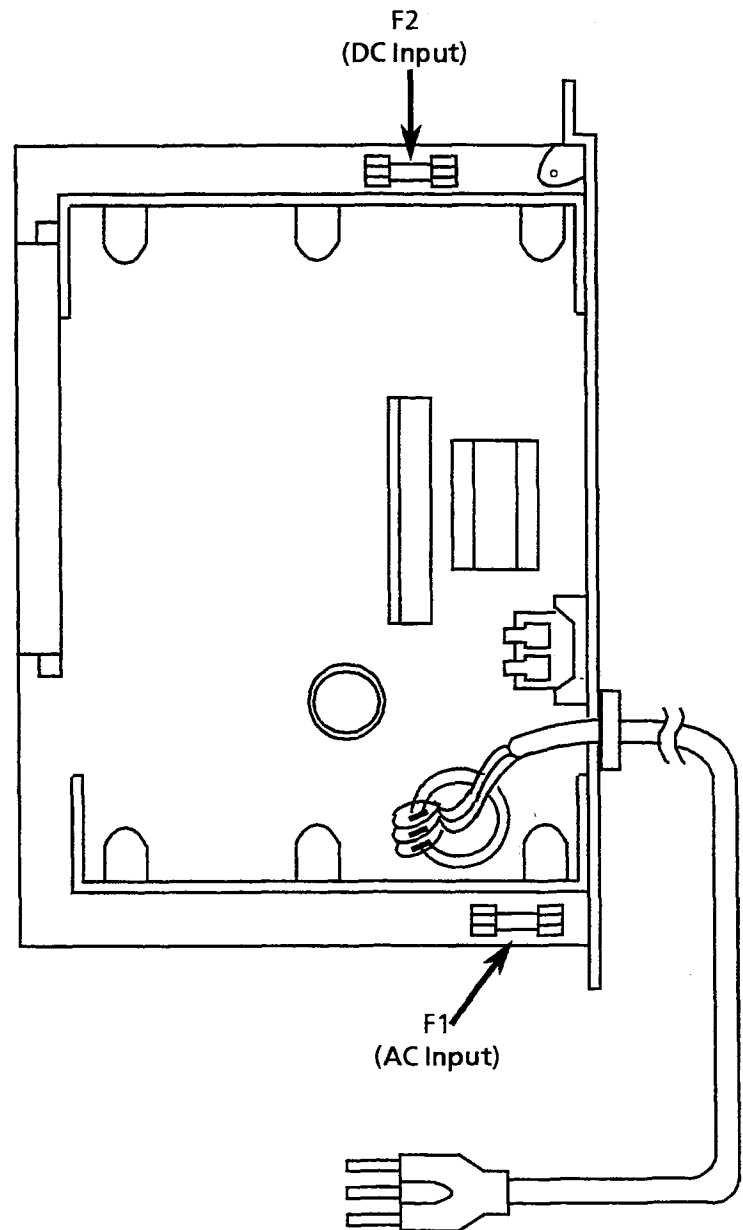


Figure 2-13 PSF-H-20 PSU Fuse Locations

## 3.3.6.2 Installing a PSF-H-20 PSU in the KSU

1. Mount the PSF-H-20 PSU into the left slot of the KSU and secure using the two provided bolts. Refer to Figure 2-14 - Installing the PSF-H-20 PSU into the KSU.

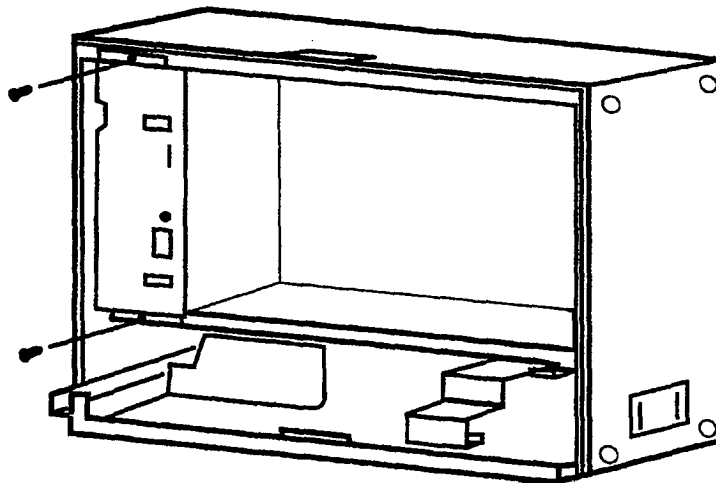


Figure 2-14 Installing the PSF-H-20 PSU in the KSU

- Using the provided clamp and screw, attach the PSU cable to the KSU as shown in the following diagram. Refer to Figure 2-15 - Attaching the PSU Cable to the KSU.

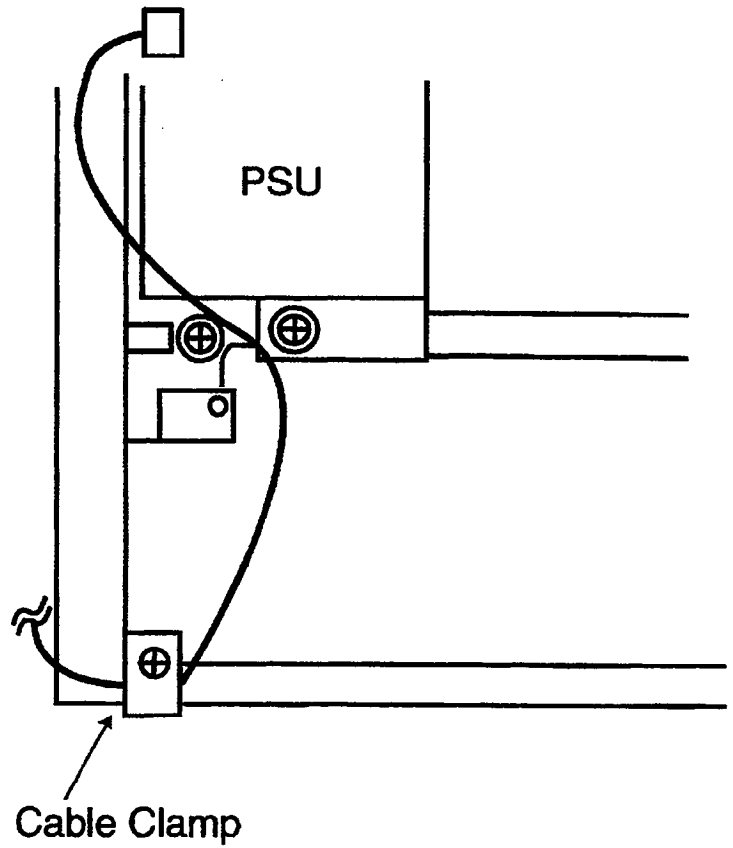


Figure 2-15 Attaching the PSU Cable to the KSU

### 3.3.7 Battery Installation

#### 3.3.7.1 Connecting the Built-In Batteries

1. Connect the two batteries in series. Refer to Figure 2-16 - Connecting the Two PSF Built-In Batteries.

Red Cord → ⊕  
 Black Cord → ⊖

#### CAUTION

Be careful not to reverse the ⊕ and ⊖ of the batteries.

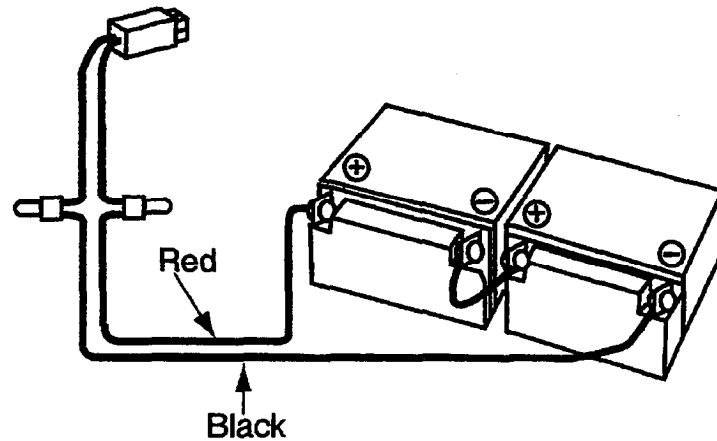


Figure 2-16 Connecting the Two PSF Built-In Batteries

2. Mount the battery hold-down plate and tighten the screw. Refer to Figure 2-17 - Placing the Batteries in the KSU.

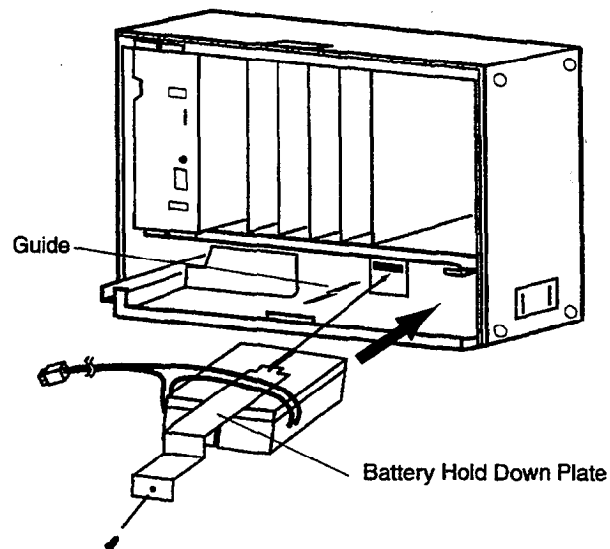


Figure 2-17 Placing the Batteries in the KSU

3. Connect the cord to the DC IN connector of the power supply unit. Refer to Figure 2-18 - Connecting the Batteries to the Power Supply Unit.

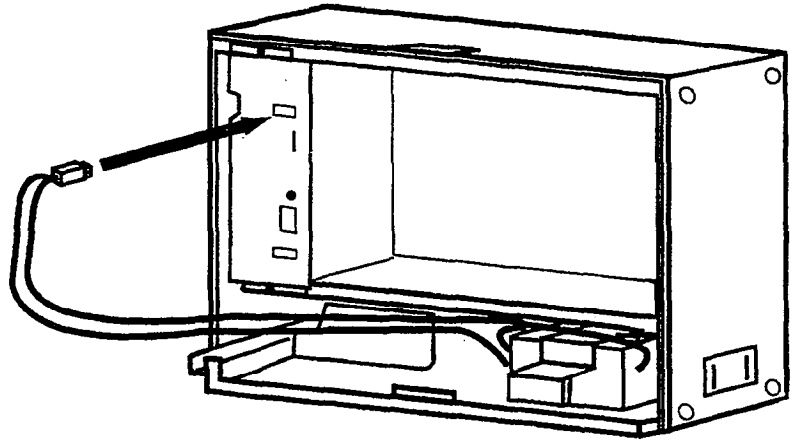


Figure 2-18 Connecting the Batteries to the Power Supply Unit

3.3.7.2 Installing and Connecting Expansion Batteries

1. Take out the original batteries and disconnect the cords from the batteries. Refer to Figure 2-19 - Connecting Expansion Batteries.

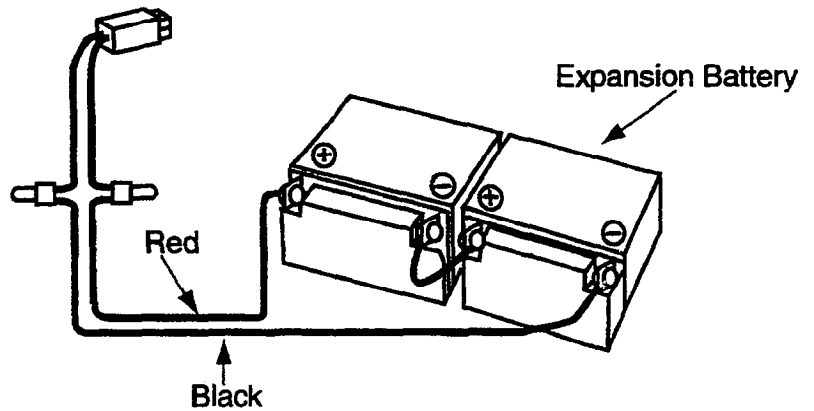


Figure 2-19 Connecting Expansion Batteries

3. Install the expansion batteries outside of the KSU.
4. Connect the cord to the DC IN on the power supply unit of the KSU. Refer to Figure 2-20 - Connecting the Expansion Batteries to the Power Supply.

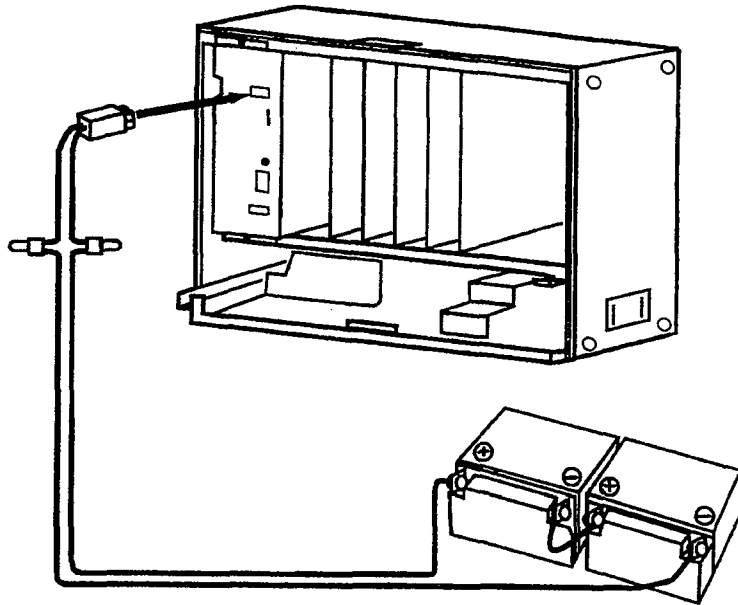


Figure 2-20 Connecting the Expansion Batteries to the Power Supply

#### CAUTION

- Make sure the cord connected to the DC IN, on the power supply unit, is disconnected **before** connecting the batteries.
- Be careful not to reverse the  $\oplus$  and  $\ominus$  polarities on the batteries.
- When the batteries are connected, be sure the batteries are not in contact with any metal on the KSU.

### 3.3.8 Grounding Requirements

The KSUs must be properly grounded. The KSU is provided with two redundant grounding methods. However, only one grounding method should be used on a system.

1. A dedicated AC outlet.
2. Provide a **suitable cold water pipe ground** in accordance with the local operating telephone company procedures.
3. If no water pipe ground is available, a ground rod should be installed in accordance with the local operating telephone company procedures.
4. A grounding terminal is provided on the ESF-H-10 KSU. Connect the grounding conductor to the hexagonal screw with the green colored head terminal. Refer to Figure 2-21 - KSU Grounding.

**Note:** The provided ferrite core should be wrapped with the ground cable.

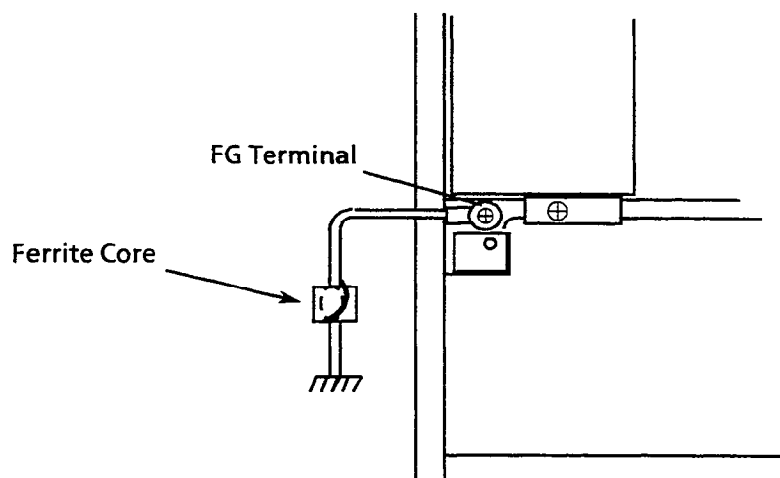


Figure 2-21 KSU Grounding



**SECTION 4 INSTALLING A KEY TELEPHONE UNIT (KTU)****4.1 General Information****4.1.1 Installation Precautions**

Before installation of the KTUs observe these precautions:

- To prevent accidental damage to equipment, power should be **OFF** during installation and maintenance, unless this seriously inconveniences the user.
- The KTUs used in this system make extensive use of CMOS technology. CMOS technology is very susceptible to static; therefore, extreme care must be taken to **avoid static discharge** when handling KTUs.

**4.1.2 KTU Installation**

1. Make any connections and switch settings on the KTUs before inserting them in the KSU. Refer to Sections 4.2 - Common Control KTUs, 4.3 - Interface KTUs, and 4.4 - Optional KTUs for the switch settings for individual KTUs.
2. A switch (MB) is provided on the KTUs (except the CPU and MMC KTUs) to protect circuitry from any damage during installation. When the system power is ON (while installing KTUs), ensure the MB switch is OFF. Refer to Figure 2-22 - KTU Positions on the KSU.

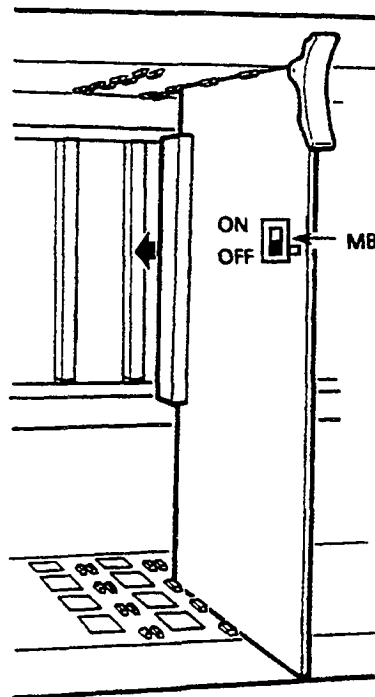


Figure 2-22 KTU Positions on the KSU

3. The component side of all KTUs must face the left side of the KSU when installed. Ejector tabs are always on the top. Refer to Figure 2-23 - Removing a KTU from the KSU.

### CAUTION

When a unit is mounted or removed, make sure the power switch of the KSU is OFF or that the MB switch of the KTU is OFF.

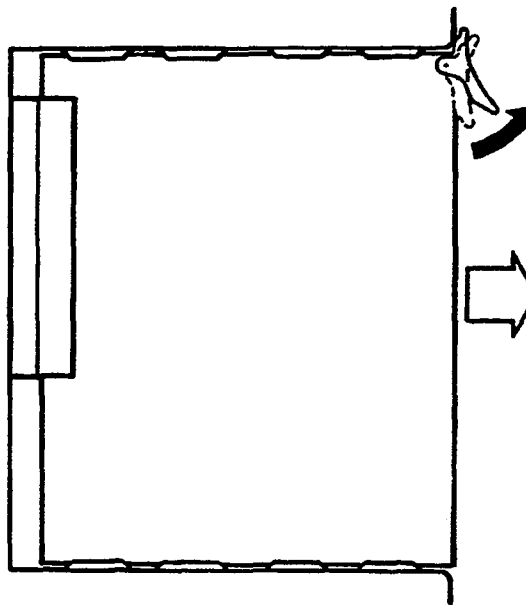


Figure 2-23 Removing a KTU from the KSU

## 4.2 Common Control KTUs

### 4.2.1 CPU-F( )-20 KTU

The CPU-F( )-20 KTU is the central processing unit (CPU). A 16-bit microprocessor executes the programs stored on the ROM ICs to control the whole system, while transferring data to and from other KTUs.

This KTU consists of a main control section and a Time Division Switch (TDSW) section. It also has a built-in external hold tone interface circuit. Other capabilities include CNF (six, 4-party) circuits, internal MOH source, DTMF receivers (PBR), and KF (Key Function ) and MF (Multi-Function) registration.

The RAM memory, on the CPU, is backed up with a rechargeable battery, which retains the memory for approximately 14 days.

This KTU must be installed in the CPU slot of the ESF-H-10 KSU. Only one CPU-F( )-20 KTU can be installed in the system.

### Switch Settings

Before programming System Data, the BTS switch must be ON to allow memory retention if a power failure or brownout occurs. Failure to activate the backup-battery circuit (BTS ON) results in System Data reset to the default values, the status of all stations reset to the default values, and the data programmed on the station to clear, if a power failure or brownout occurs. Refer to Chapter 5 - Programming in this manual for instructions, if programming using a Multiline Terminal. Refer to the *Electra Professional 120/Level II/Level II Advanced System Program Technician Manual* (included with the System Program Technician) for instructions, if programming using a PC.

Anytime a CPU-F( )-20 KTU is installed in the system, the clock/calendar must be set. This also applies when battery backup fails for any reason.

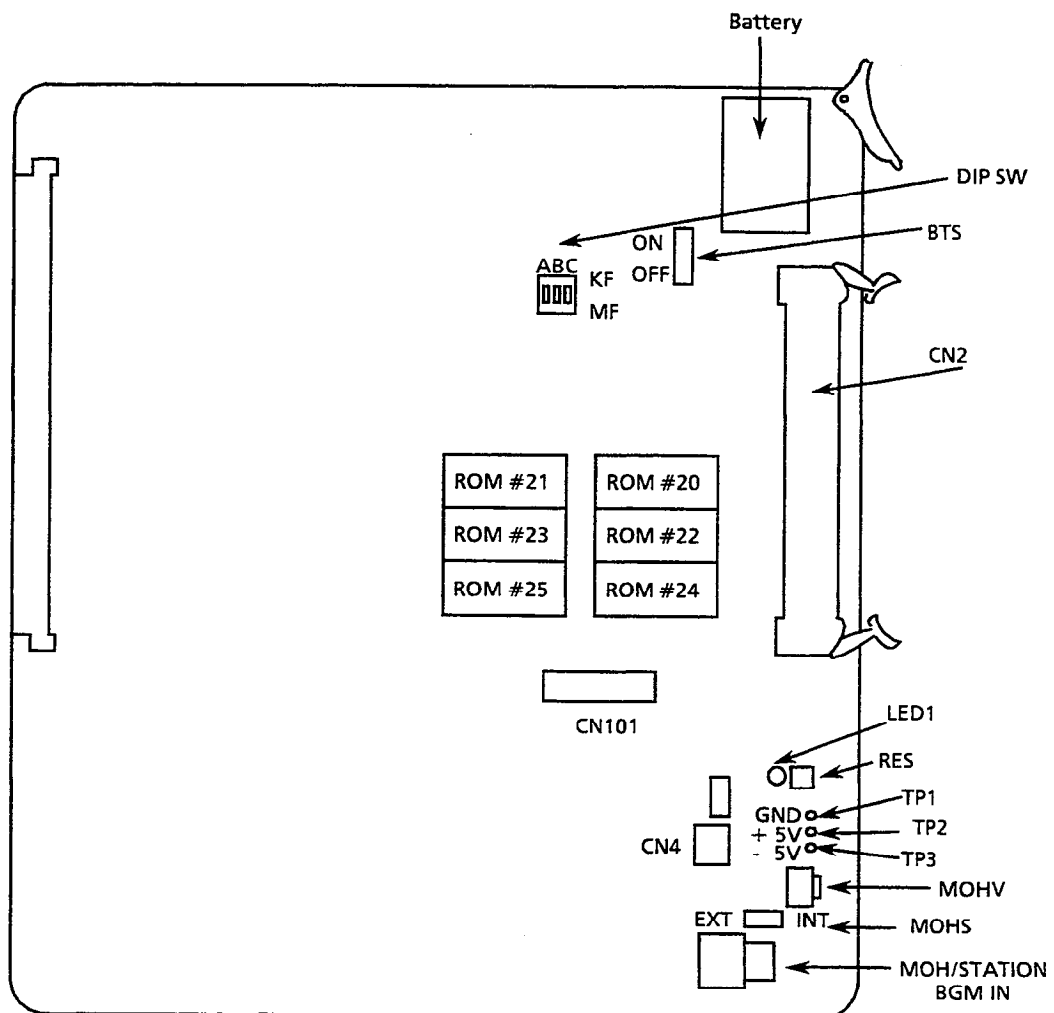
When the CPU-F( )-20 KTU is removed for long term storage, set the BTS switch to OFF. This prevents the battery from constantly discharging. The fully charged battery retains memory contents for approximately 14 days.

Switch RES is the reset switch. When pressed, this switch interrupts all service in progress, causing a Second Initialization. **This switch should not be used in an operating system unless absolutely necessary.**

MOHS INT/EXT selects the MOH source from either an internal or external source. When the built-in music is used for the MOH source, set this switch to INT. If an external MOH source is connected, set this switch to EXT. Refer to Figure 2-24 - CPU-F( )-20 KTU Switch Settings and Table 2-16 - CPU-F( )-20 KTU Adjustments.

### IMPORTANT

**DIP switch position C is used to set KF or MF mode of operation. Be sure to set this switch in the desired position before powering up the system.**



The operation verification LED (LED1) always flashes when the system is in normal operation, and is on steady when the system is reset.

Figure 2-24 CPU-F( )-20 KTU Switch Settings

Table 2-16 CPU-F( )-20 KTU Adjustments

Adjustment Item	Name of Switch	Initial Setting	Adjustment
Memory Backup	BTS	OFF	Should be set to ON to retain system data. Note: Set the switch to ON before inserting the unit.
MOH INT/EXT	MOHS	INT	Set the switch to EXT when an external hold tone source (MOH) is to be used. (Note 1)
MOH Volume Control	MOHV	Center	To adjust the volume of MOH.
DIP Switch	DIP SW A (1)	OFF	Not Used
	DIP SW B (2)		Not Used
	DIP SW C (3)	OFF ON	OFF: Multifunction System ON: Key Function System (Note 2)
Connector	CN2	N/A	Not Used
	CN4	N/A	For connecting the CLK-F-21 Unit.
	CN101	N/A	
TP	TP1	N/A	Ground voltage check terminal
	TP2	N/A	+ 5V voltage check terminal
	TP3	N/A	- 5V voltage check terminal

**Note 1:** Internal MOH has two melodies. Select by System Programming melodies:

1. Melody Fair
2. Let It Be

**Note 2:** Refer to Section 1.3.1 - Company Notification. A First Initialization is required to change this switch status.

4.2.2 MMC-F-11 KTU

The MMC-F-11 KTU is the Module Memory Controller. A 4-bit microprocessor and controller unit are required for each Expansion KSU. This KTU controls data transmission between the CPU-F( )-20 KTU and the interface cards installed in the expansion ESF-H-10 KSU where it is installed.

Switch Settings/LED Indications

LED1 on this KTU continuously flashes indicating it is receiving power. The RES button allows this KTU to be reset. This resets the entire KSU where it is installed. Refer to Figure 2-25 - MMC-F-11 KTU Switch Settings.

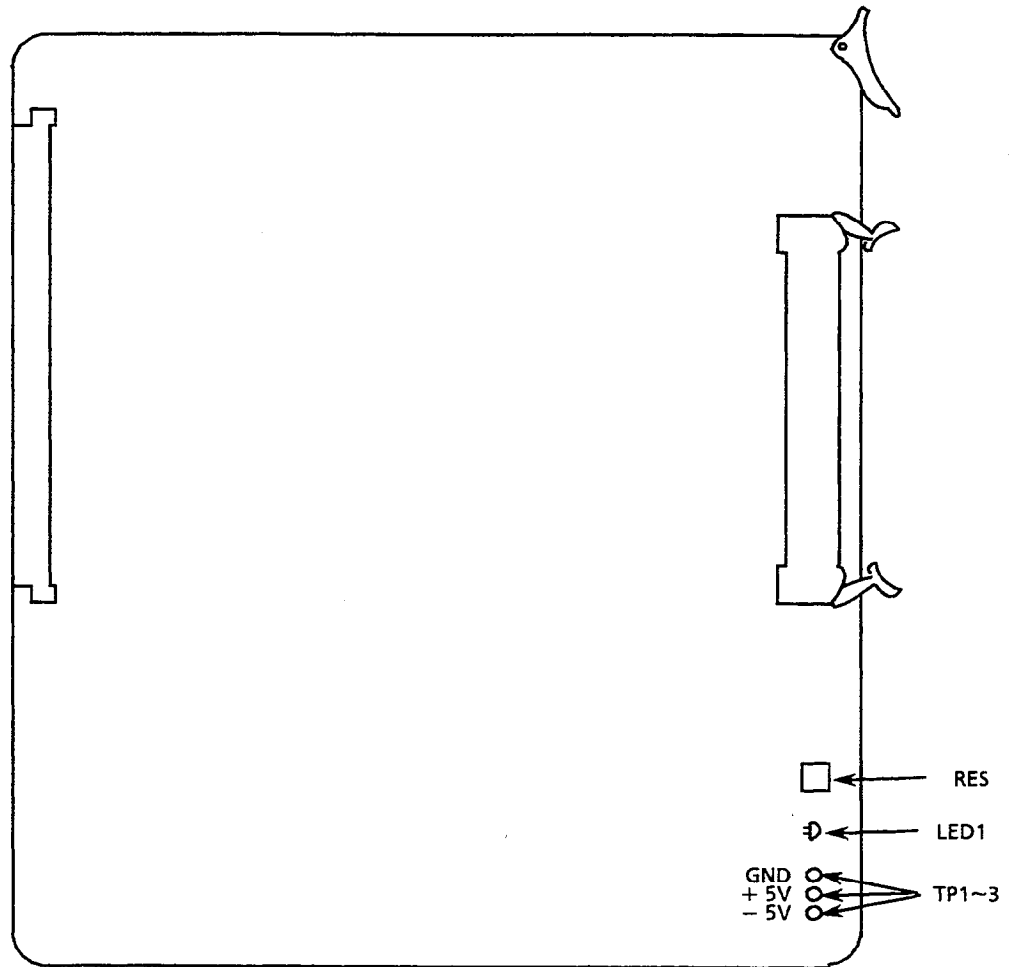


Figure 2-25 MMC-F-11 KTU Switch Settings

### Installation

The MMC-F-11 KTU is installed in a fixed MMC slot on the Expansion KSU. The mounted ribbon cable is then connected to the CPU-F( )-20 KTU, located on the Basic KSU. Before installing the MMC-F-11 KTU in the ESF-H-10 KSU, install the ferrite core to the ribbon cable as shown below. Two ferrite cores are included in the expansion accessory kit and are to be installed at each end of the MMC-F-11 ribbon cable. Refer to Figure 2-26 - Ferrite Core Installation to MMC-F-11 KTU Ribbon Cable.

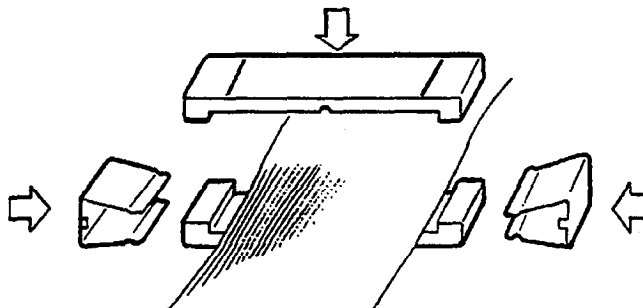


Figure 2-26 Ferrite Core Installation to MMC-F-11 KTU Ribbon Cable

### CAUTION

This procedure can only be performed when the system power is off.

If a second expansion cabinet is to be installed, the ribbon cable of the MMC-F-11 KTU in this KSU must be attached to the MMC-F-11 KTU in the first expansion cabinet. Refer to Figure 2-27 - MMC-F-11 KTU and CPU-F( )-20 KTU Installation.

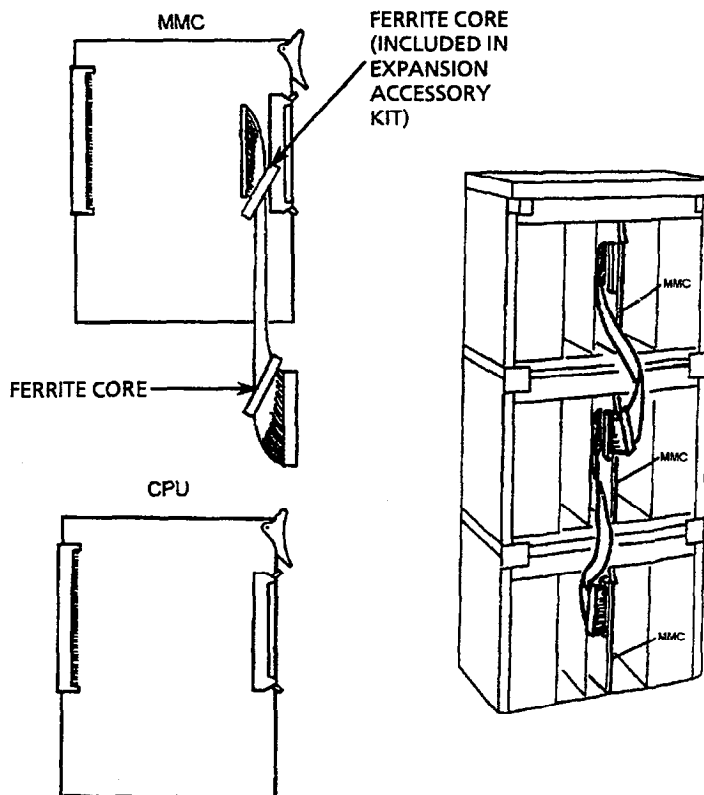


Figure 2-27 MMC-F-11 KTU and CPU-F( )-20 KTU Installation

### 4.3 Interface KTUs

#### 4.3.1 ESI-F(8)-21 KTU

This KTU is an interface for Multiline Terminals, Attendant Add-On Consoles, and SLT Adapters, SLT-F(1G)-10 ADP. The ESI allows connection of any combination of eight Multiline Terminals, Attendant Add-On Consoles, or SLT Adapters.

A maximum of 12 ESI-F(8)-21 KTUs can be installed.

#### Switch Settings/LED Indications

When the green LED2 is on, the ESI KTU is receiving power. The red LED1 indicates one or more of the eight circuits of the KTU is in use. Switch MB is the ON/OFF switch for this KTU. Refer to Figure 2-28 - ESI-F(8)-21 KTU Switch Layout.

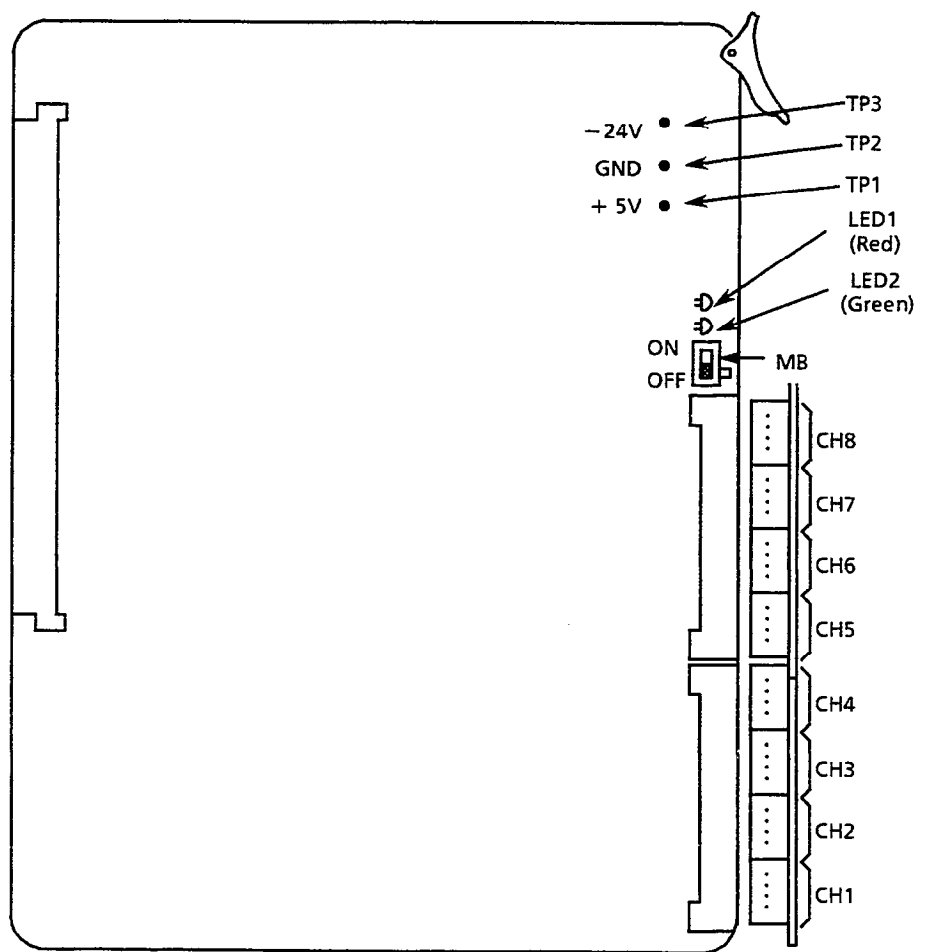


Figure 2-28 ESI-F(8)-21 KTU Switch Layout



4.3.2 SLI-F(8G)-21 KTU

The SLI-F(8G)-21 KTU is an interface for Single Line Telephones. It has a built-in ringing generator (RSG) and can support eight Single Line Telephones or Voice Mail ports. If connecting Voice Mail to an SLI-F(8G)-21 KTU, it must be assigned in System Programming.

The Single Line Telephone Interface Unit (SLI) provides circuitry for loop status detection, talk battery, sending ringing signal from the RSG unit to SLTs, and message waiting.

**Note:** The PBR circuits in the CPU-F( )-20 KTU or the PBR-F(4)-11 KTU are required with Voice Mail or Push Button Single Line Telephone connection.

A maximum of 11 SLI-F(8G)-21 KTUs can be installed.

Switch Settings/LED Indications

An SLI can support up to eight Single Line Telephones, modems, Voice Mail ports, or fax ports. This SLI is required when power failure transfer of CO lines (two maximum per KTU) and/or message wait signaling to Single Line Telephones is used in the system.

When the green LED1 is on, the SLI-F(8G)-21 KTU is receiving power. When the red LED2 is on, one or more of the eight circuits of the KTU are in use. Switch MB is the ON/OFF control for this KTU. Refer to Figure 2-29 - SLI-F(8G)-21 KTU Switch Layout.

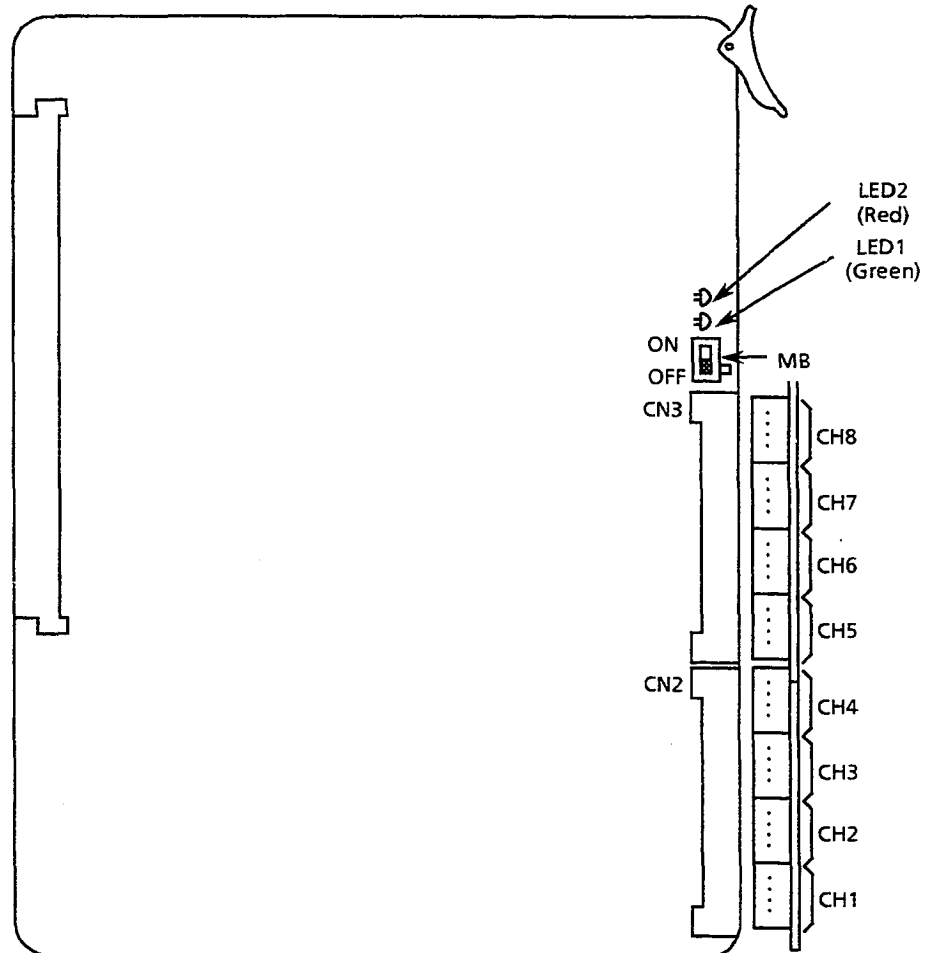
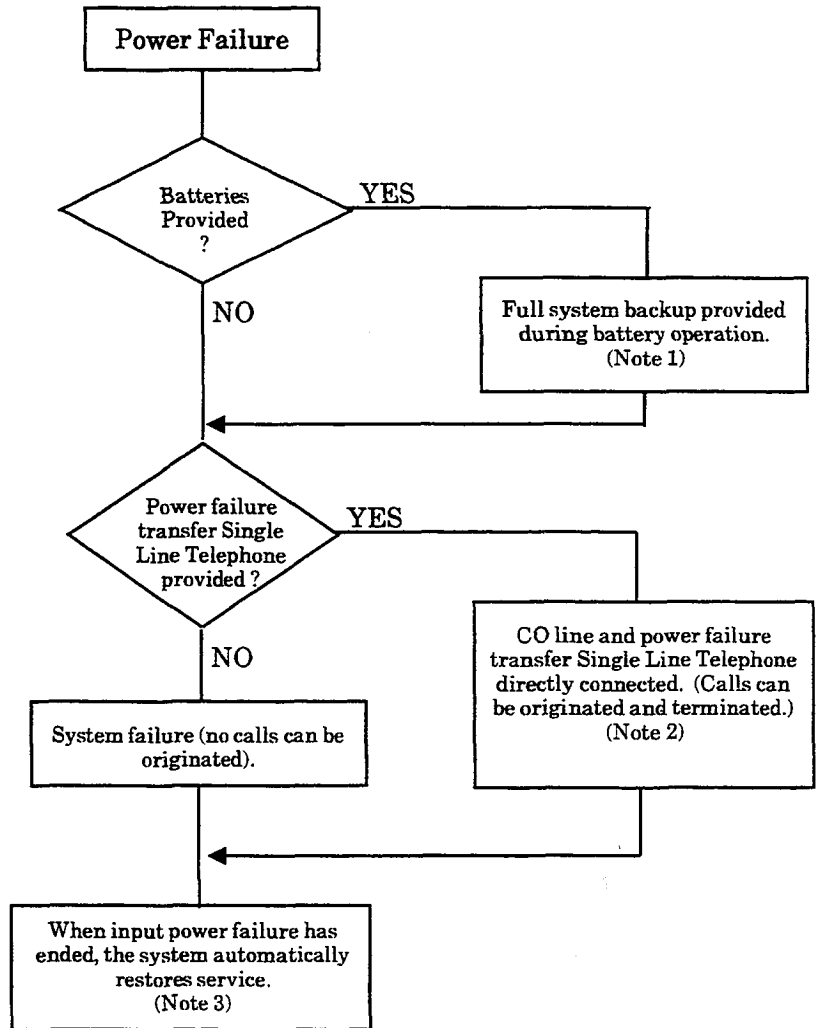


Figure 2-29 SLI-F(8G)-21 KTU Switch Layout

4.3.2.1 Power Failure Backup

Operation if Power Fails

If power fails, the built-in batteries provide full backup of system operation for 30 minutes. Backup can be longer if using external (locally provided) batteries (the time depends on the system configuration and service conditions). If a power failure transfer (PFT) Single Line Telephone Interface Unit (up to two channels can be connected to the SLI-F(8G)-21 KTU) is connected, the unit connects a Single Line Telephone directly to a CO/PBX line to allow origination and termination of calls. Refer to Figure 2-30 - Power Failure Backup Flowchart.



- Note 1:** The backup period for the Electra Professional 120 system is approximately 30 minutes (with built-in batteries) or longer (external batteries added).
- Note 2:** All calls in progress are interrupted when switchover is made to connect the power failure transfer Single Line Telephone directly to a CO/PBX line. This occurs after backup batteries expire.
- Note 3:** If the power switch of the KSU is OFF, the system does not automatically restore service.

Figure 2-30 Power Failure Backup Flowchart

### Operation When Input Power Failure Has Resumed

When input power is resumed, the system is automatically reset and restores service. A call in progress by the PFT Single Line Telephone is disconnected.

### Single Line Telephone for Power Failure Transfer

Only a Single Line Telephone can be used as a power failure transfer telephone.

#### Connections:

Connect a CO line and Single Line Telephone for power failure transfer via the SLI-F(8G)-21 KTU to the COI-F(4)-20 or COI-F(8)-20 KTU. A 4-conductor cable (locally provided) is required to connect the SLI-F(8G)-21 KTU to the 66 M150 block. Refer to Figure 2-31 - Connecting CO Line and Single Line Telephone for Power Failure Transfer.

**Note:** When selecting a Single Line Telephone for power failure transfer, make sure it matches the dialing type of the CO line (10 pps, 20 pps, or DTMF) where it will be connected. If Ground Start trunks are used, a Single Line Telephone with a ground button must be used.

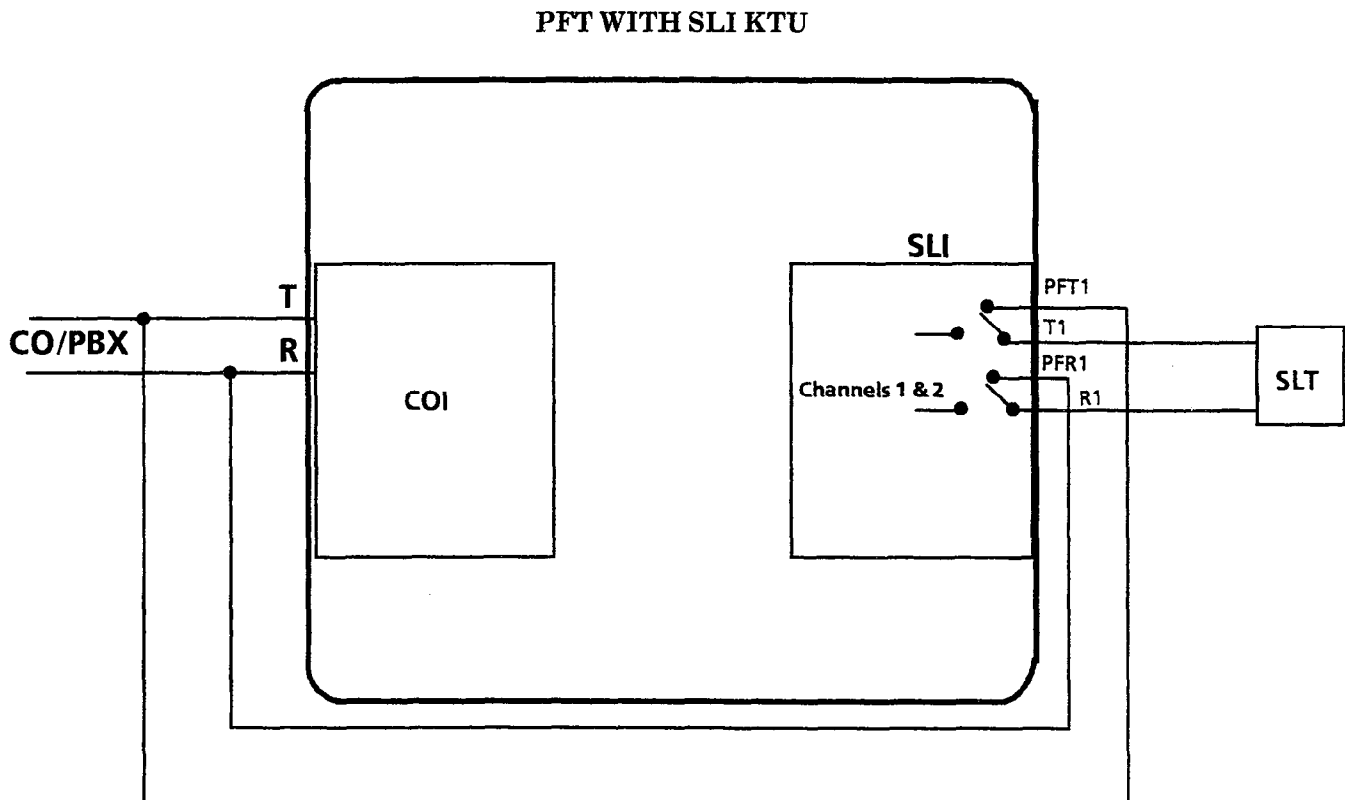


Figure 2-31 Connecting CO Line and Single Line Telephone for Power Failure Transfer

4.3.3 LLT-F(2G)-10 KTU

The Long Line Telephone (LLT) KTU provides for the termination and operation of up to two Off-Premise Extensions (OPX). Each LLT-F(2G)-10 KTU has a built-in ring supply generator (RSG). Up to 3000 ohms of loop resistance (including the Single Line Telephone) is acceptable between the LLT-F(2G)-10 KTU and a Single Line Telephone. The LLT-F(2G)-10 KTU does not support message waiting.

A maximum of 14 LLT-F(2G)-10 KTUs can be installed in the interface slots.

Switch Settings/LED Indications

When the green LED1 is on, the LLT-F(2G)-10 KTU is receiving power. When the red LED2 is on, one or more of the two circuits of the KTU are in use. Switch MB is the ON/OFF control for this KTU. Refer to Figure 2-32 - LLT-F(2G)-10 KTU Switch Layout.

**Note:** PBR in the CPU-F( )-20 KTU or PBR-F(4)-11 KTU is required with Push Button SLT Connection.

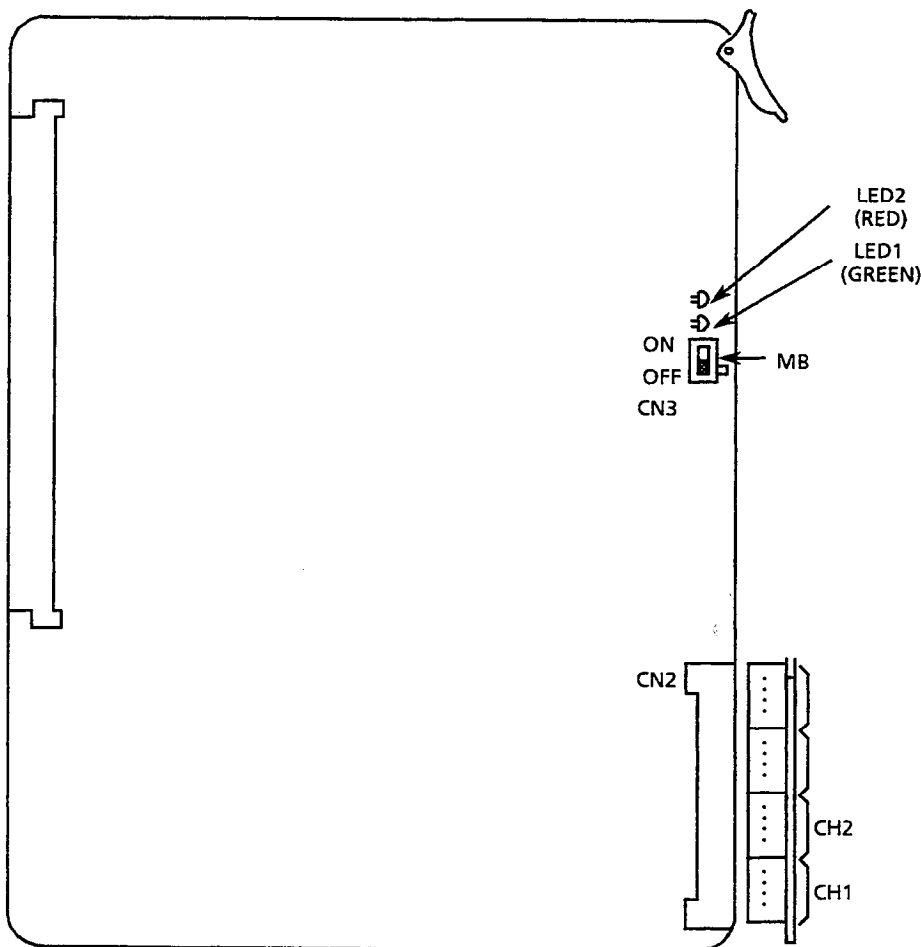


Figure 2-32 LLT-F(2G)-10 KTU Switch Layout

#### 4.3.4 COI-F(4)-20 KTU and COI-F(4)-30 KTU

The Central Office Line Interface Unit (COI) contains circuitry for outside ring detection, holding, dialing, and control function.

Each COI-F(4)-( ) KTU provides four identical circuits to support up to four CO trunks which can be any mix of Loop Start or Ground Start, DTMF or Dial Pulse dialing. In addition, Tip and Ring electrical fuses (posistors) PST101 ~ PST402 are provided to comply with UL 1459 requirements. In addition, the COI-F(4)-30 has two connectors for mounting the CID-F(8)-21.

A maximum of 14 COI KTUs can be installed.

##### Switch Settings/LED Indications

The COI-F(4)-20 KTU contains four switches (SW1 ~ SW4) for the selection of Loop or Ground Start. Each switch is associated with an individual circuit. Red LEDs (101~401) indicate the status of the circuit. Refer to Figure 2-33 - COI-F(4)-20 KTU Switch Layout.

The COI-F(4)-30 KTU contains four switches that are designated SW1 ~ SW4 for the selection of trunk type (Loop or Ground Start). Each switch is associated with an individual circuit. The LEDs are located on the back of this COI KTU. Red LEDs (1~4) indicate the status of the circuit. Refer to Figure 2-34 - COI-F(4)-30 KTU Switch Layout.

When a Loop Start trunk is connected to a circuit, its associated switch must be set to LP. If a Ground Start trunk is connected, the switch must be set to GS.

When the green LED (LED1) is on, the COI is receiving power. Switch MB is the ON/OFF control for this KTU.

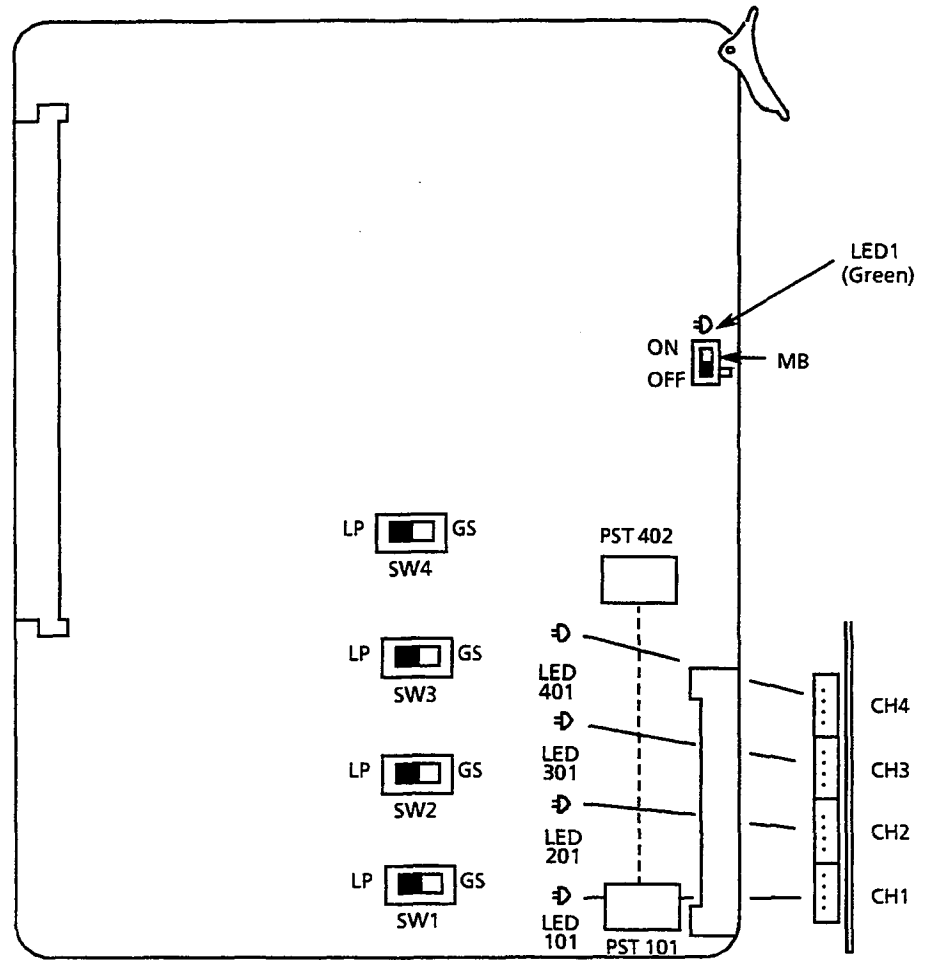


Figure 2-33 COI-F(4)-20 KTU Switch Layout

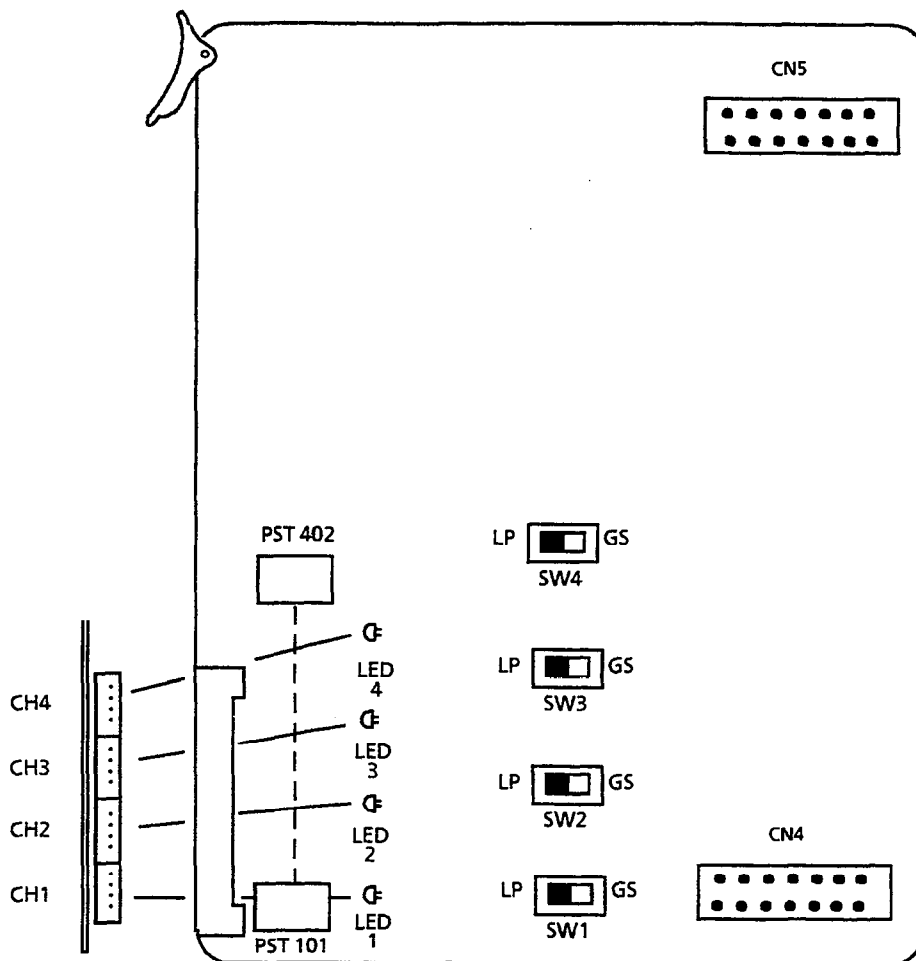


Figure 2-34 COI-F(4)-30 KTU Switch Layout

4.3.5 COI-F(8)-20 KTU and COI-F(8)-30 KTU

The Central Office Line Interface Unit (COI) contains circuitry for outside ring detection, hold, dialing, and control function.

Each COI KTU provides eight identical circuits to serve up to eight CO trunks which can be any mix of Loop Start or Ground Start, DTMF or Dial Pulse dialing. Tip and Ring electrical fuses (posistors) PST101 ~ PST802 are provided to comply with UL 1459 2nd Edition requirements. In addition, the COI-F(8)-30 has two connectors for mounting the CID-F(8)-21.

A maximum of eight COI KTUs can be installed.

**Switch Settings/LED Indications:**

The COI-F(8)-20 COI KTU contains eight switches (SW1 ~ SW8) for the selection of Loop or Ground Start. Each switch is associated with an individual circuit. LEDs (101 ~ 801) indicate the status of each circuit. Refer to Figure 2-35 - COI-F(8)-20 KTU Switch Layout.

The COI-F(8)-30 COI KTU contains eight switches that are designated SW1 ~ SW8 for the selection of trunk type (Loop or Ground Start). Each switch is associated with an individual circuit. LEDs (1 ~ 8) indicate the status of each circuit. The LEDs are located on the back of the COI-F(8)-30 KTU. Refer to Figure 2-36 - COI-F(8)-30 KTU Switch Layout.

When a Loop Start trunk is connected to a circuit, its associated switch must be set to LP. If a Ground Start trunk is connected, the switch must be set to GS.

When the green LED (LED1) is on, the COI is receiving power. Switch MB is the ON/OFF control for this KTU.

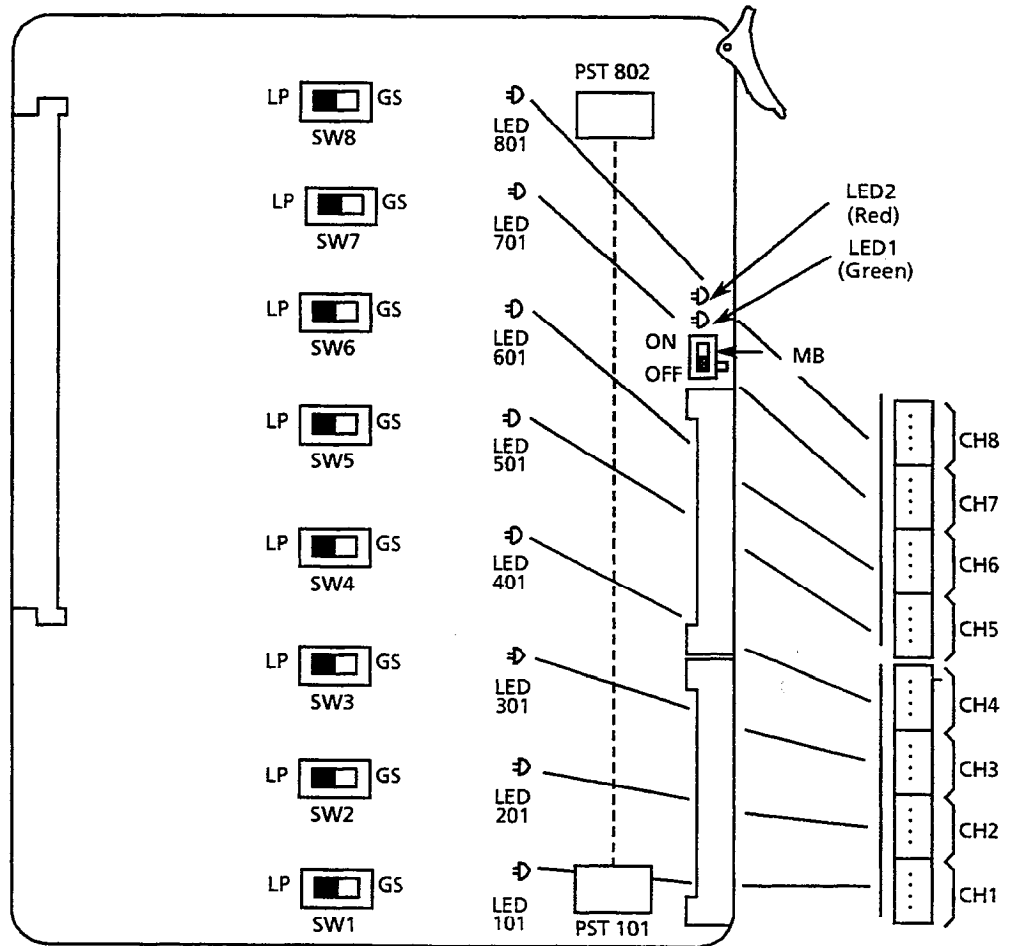


Figure 2-35 COI-F(8)-20 KTU Switch Layout



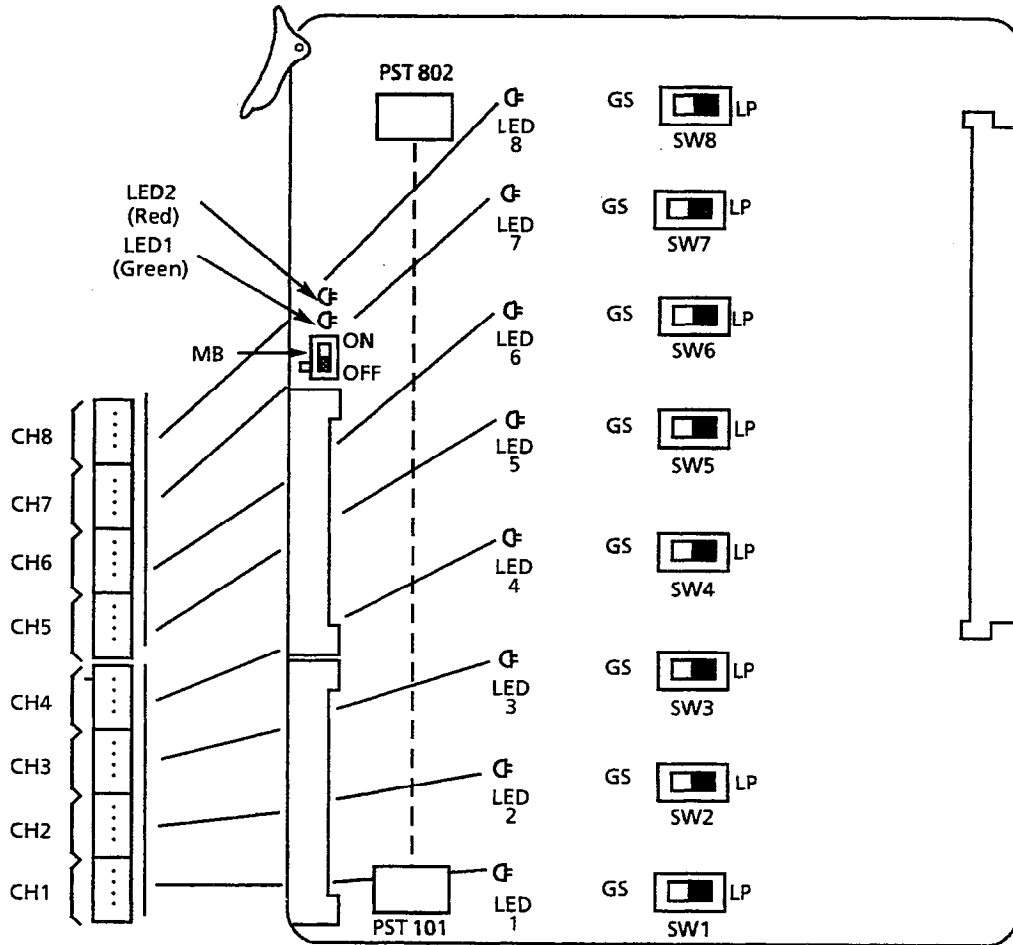


Figure 2-36 COI-F(8)-30 KTU Switch Layout

4.3.6 CID-F(8)-11 Unit

The CID unit detects Caller ID signal from Telco through COI-F(4/8)-30 KTU for Caller ID trunks connected to the system. This unit works in conjunction with the COI-F(4/8)-30 KTU and MIF-(C)-10 KTU and is piggybacked on the COI-F(4/8)-30 KTU.

One CID-F(8)-11 Unit can be installed on each COI-F(4/8)-30 KTU; a maximum of eight CID-F(8)-11 Units can be installed.

Switch Settings/LED Indications

The CID unit has three switches (SW1-1 ~ SW1-3) and two LEDs. Switches SW1-2 and SW1-3 are not currently used and should be off. When switch SW1-1 is on (default setting), the system does not detect the time when caller ID is sent from the Telco. When switch SW1-1 is off, the system does detect this time. LED1 is currently not being used. When LED2 flashes red, the CID is communicating with the CPU. Refer to Figure 2-37 - CID-F(8)-11 Unit Switch Layout.

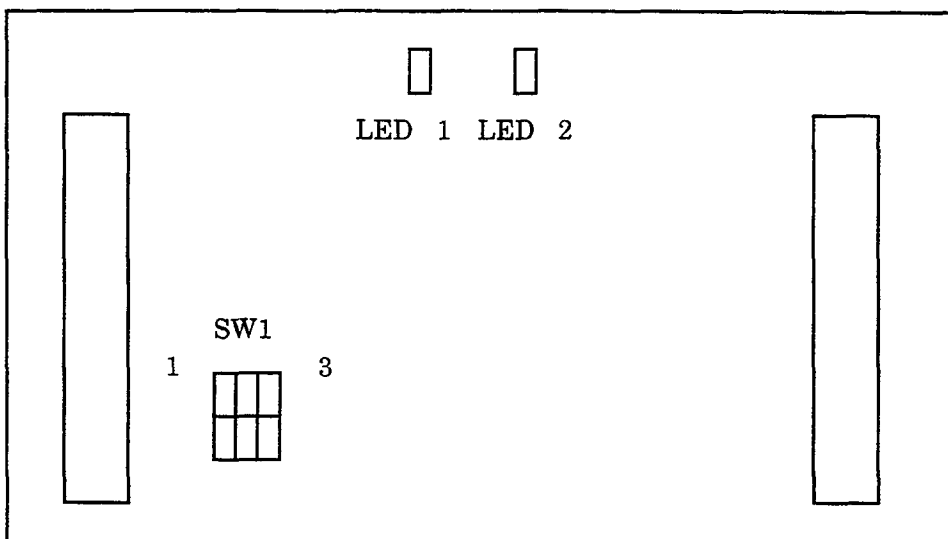


Figure 2-37 CID-F(8)-11 Unit Switch Layout

Connection to COI-F(4/8)-30 KTU

To connect the CID-F(8)-11 Unit to the COI-F(4/8)-30 KTU, refer to Figure 2-38 - Connecting the CID to the COI, and make the following connections:

- COI CN4 to CID CN1
- COI CN5 to CID CN2

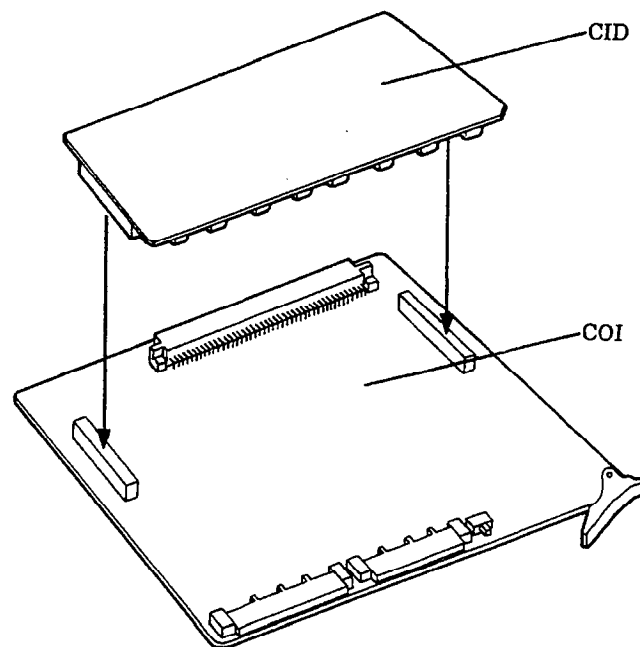


Figure 2-38 Connecting the CID to the COI

### Caller ID Considerations

#### General

Caller ID service provides the name and telephone number of the calling party to the called party on a loop start trunk.

#### Installation

Caller ID is user sensitive; the customer can activate or deactivate this service by dialing the proper access code and receives a confirmation announcement from Stored Program Control Switching (SPCS). The SPCS is the Central Office switching system.

The customer can enter several different access codes to access various functions and features. If an improper access code is dialed, the customer receives a reorder tone or special announcement. Caller ID can be denied on a class-of-service basis.

Caller ID can be provided to customers that use either DTMF or dial pulse signaling.

Electrical Specifications

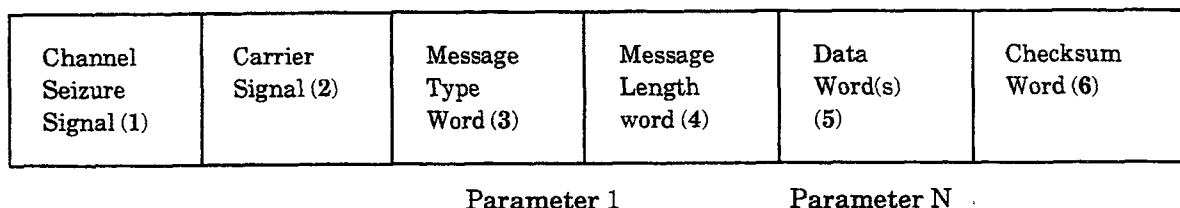
ASCII-coded information is sent from the SPCS to the Customer Premises Equipment (CPE) on the tip and ring leads of a standard local loop at 1200 bps. Other parameters are as follows:

- Link Type: simplex, two wire
- Transmission Scheme: analog, phase coherent frequency shift keying
- Logical 1 (Mark): 1200 ± 12Hz
- Logical 0 (Space): 2200 ± 22Hz
- Transmission Rate: 1200 bps
- Application of Data: serial, binary, asynchronous
- Bit Error Rate: less than 1 in 100,000,000 bits (at switch interface)
- Phase Continuity: maintained from initial service to end of message
- Transmission Level: -13.5 ± 1 dB at point of application to resistive load of 900 ohms
- Bit Duration: 833 ± 50 µsec (start/stop bit has standard duration)

The asynchronous protocol should consist of a start bit, an 8-bit data byte, and a stop bit. Caller ID is transmitted to the CPE in this 10-digit format. Possible future options may allow Personal Identification Number (PIN) instead of Caller ID.

Information should be sent in either a single or multiple data message. (Refer to Figure 2-39 - Data Message Format.)

Single (used for providing Calling Number ID only)



Multiple (used for providing both Calling Number ID and Calling Name ID)

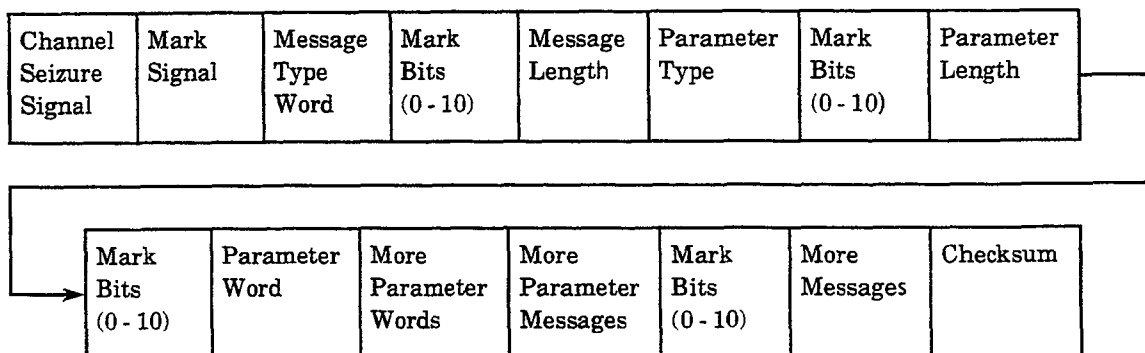


Figure 2-39 Data Message Format

A description of each parameter in the message format follows:

- 1 Channel Seizure Signal 30 continuous bytes of 01010101 provides a detectable alerting signal to CPE.
- 2 Carrier Signal 150 ms of logical 1 for line conditioning.
- 3 Message Type Word For example, Caller ID is message type 4; message waiting is message type 10.
- 4 Message Length Word Specifies number of bytes to follow; does not include checksum.
- 5 Data Word(s) Data to be transmitted. Caller ID form is WWXXYYZZ followed by the Caller ID, where  
 WW = Month  
 XX = Day  
 YY = Hour (24-hour clock)  
 ZZ = Minute
- 6 Checksum Word This is the modulo 256 sum of all other words in the message.
- 7 Parameter Type Word For example, parameter 1 is time; parameter 7 is name.
- 8 Parameter Length Word Specifies number of bytes to follow for this parameter only.

#### Required Equipment

Refer to Table 2-17 - Required Equipment for Caller ID.

Table 2-17 Required Equipment for Caller ID

Equipment	Description	Quantity
COI-F(4)-30 KTU COI-F(8)-30 KTU	Caller ID trunk interface board -- 4-channel board or 8-channel board	1 or 2 ~ 8
CID-F(8)-11 Unit	Caller ID signal-detection board	1 per COI-F(4/8)-30 KTU
MIF-F(C)-10 KTU	Provides Caller ID feature	1 per system

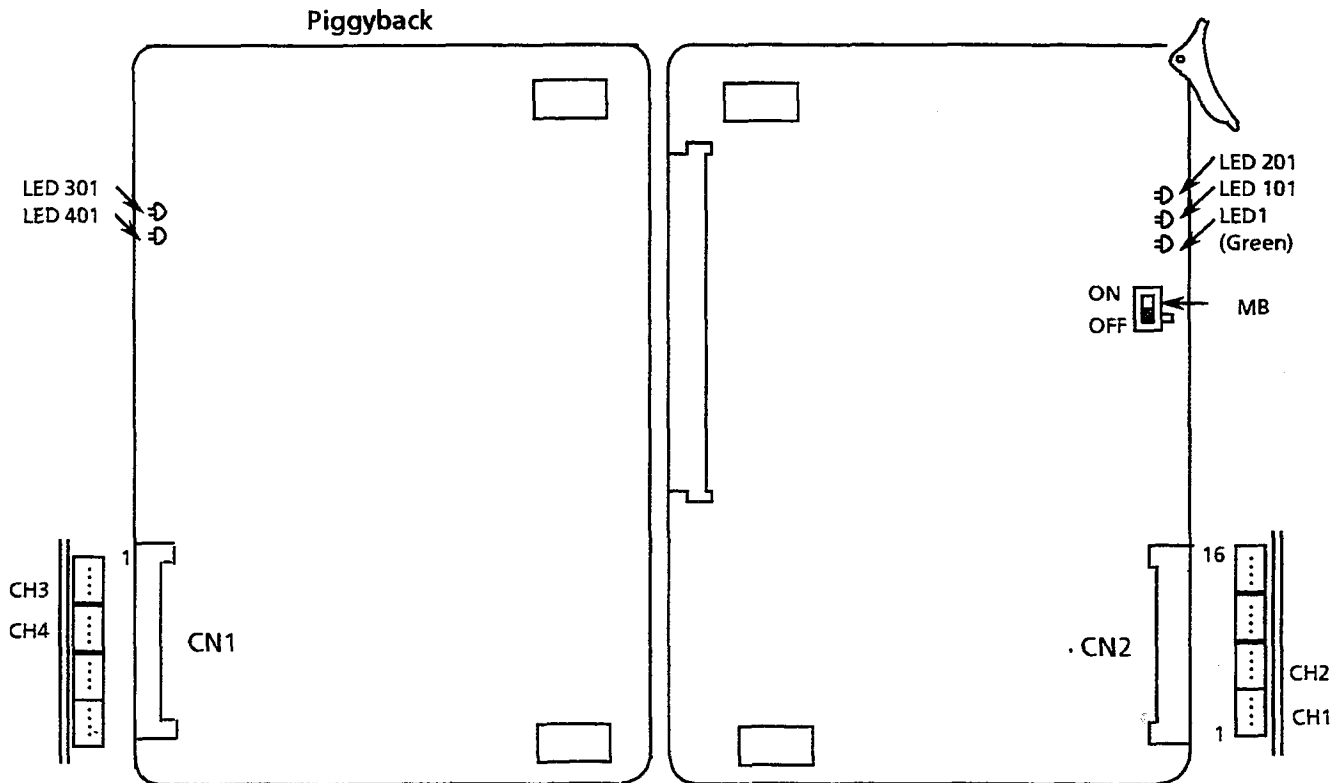
4.3.7 DID-F(4)-10 KTU

The DID KTU provides for the termination and operation of up to four DID lines. Wink start, delay start, or immediate start are accommodated. Dial Pulse and DTMF are supported.

A maximum of eight DID-F(4)-10 KTUs can be installed.

Switch Settings/LED Indications

When the green LED1 is on, the DID-F(4)-10 KTU is receiving power. Switch MB is the ON/OFF control for this KTU. LEDs 101 ~ 401 represent the four individual circuits and their status. A busy line indication lamp (LED 101 ~ LED 401) lights when the associated line (CH1 ~ CH 4) is busy. Refer to Figure 2-40 - DID-F(4)-10 KTU Switch Layout.



This KTU includes a piggybacked package and cannot be separated.

Figure 2-40 DID-F(4)-10 KTU Switch Layout

4.3.8 TLI-F(2)-10 KTU

The TLI KTU provides for the termination and operation of up to two E&M Tie lines (4-wire E&M, Type I or Type V, 10 or 20 pps, Dial Pulse, or DTMF). Immediate start, wink start, delay start, and second dial tone signaling are provided.

A maximum of 14 TLI-F(2)-10 KTUs can be installed.

Switch Settings/LED Indications

Switches SW101 and SW201 allow selection of Type I or Type V for channels 1 and 2, respectively.

Red LEDs 101 and 201 indicate the status of the two associated circuits.

When the green LED (LED1) is lit, the TLI-F(2)-10 KTU is receiving power. Switch MB is the ON/OFF control for this KTU. Refer to 5.2.3.1 - TLI-F(2)-10 KTU Cable Connections and to Figure 2-41 - TLI-F(2)-10 KTU Switch Layout.

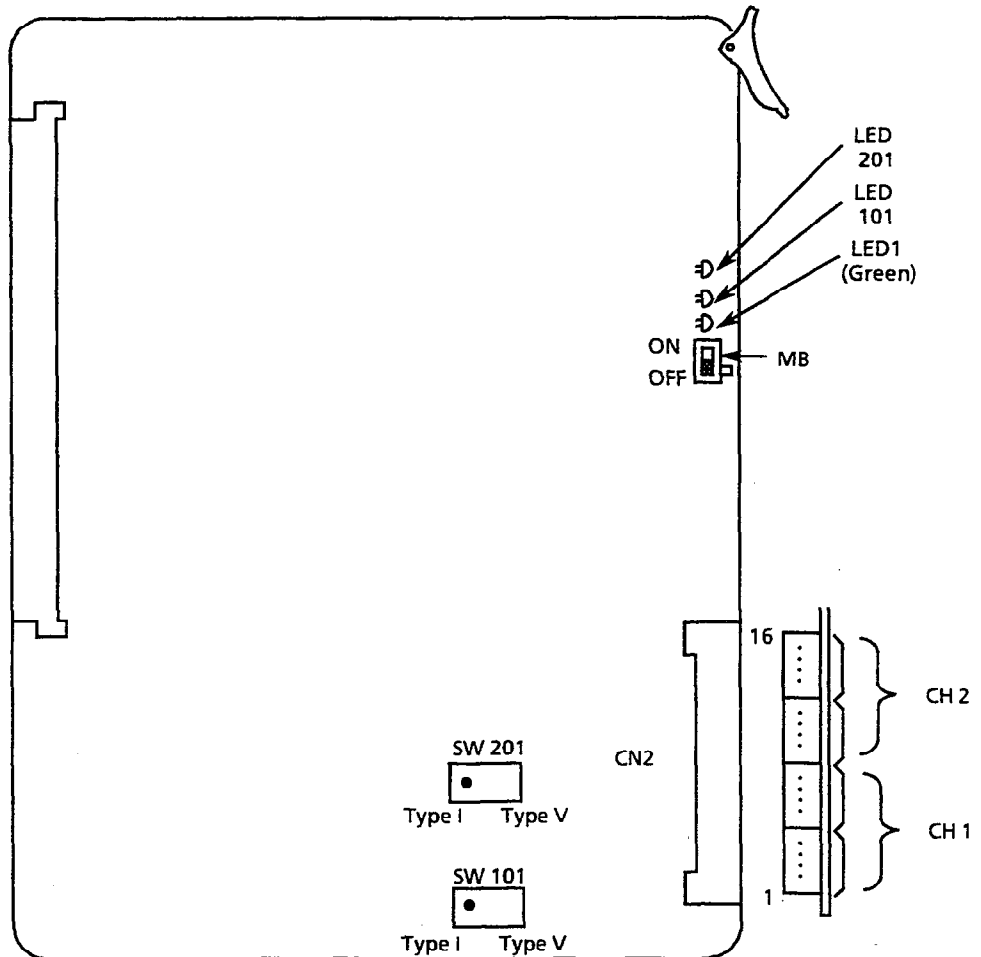


Figure 2-41 TLI-F(2)-10 KTU Switch Layout

### 4.3.9 DTI-F( )-10 KTU/DTI-F(A)-20 KTU, BRT-F(4)-10 KTU, and CLK-F-21 Unit

#### 4.3.9.1 DTI-F( )-10 KTU/DTI-F(A)-20 KTU

The Digital Trunk Interface (DTI) KTU provides for the termination of a T1/FT1, 24 DS-0 (Digital Service - Level 0), or fewer line.

A combination of Loop and Ground Start signaling can be used on one DTI-F( )-10 KTU. DTMF or Dial Pulse dialing is also supported. The DTI-F(A)-20 KTU also supports Tie lines (E&M) and DID signaling (Series 300 or higher). Refer to Figure 2-43- DTI-F(A)-20 KTU Switch Layout.

Up to three DTI KTUs can be installed in the Electra Professional 120 system and must be installed in the IF1/OP1 or IF4/OP4 slots of the Basic KSU or the IF1/OP1 slot of the first Expansion KSU that is installed. If a DTI KTU is used, the interface slot(s) adjacent to the DTI interface slot may need to be left vacant. The number of slots that must remain vacant depends on the number of DTI channels being used. To use this KTU, a CLK-F-21 synchronization unit must be connected on the CPU-F( )-20 KTU. Refer to Figure 2-49 - Installing the DTI-F( )-10 KTU or DTI-F(A)-20 KTU in the ESF-H-10 KSU and Table 2-22 - Required Slots for DTI-F( )-10 KTU or DTI-F(A)-20 KTU Installation.

When using a second DTI KTU in the Electra Professional 120 system, this KTU must be connected to the first DTI KTU installed in the system. A third DTI KTU is then connected to the second DTI KTU that is installed. Refer to Figure 2-51 - Connecting the Cable Between the DTI-F( )-10 KTUs or DTI-F(A)-20 KTUs and the CLK-F-21 Unit.

#### Switch Settings/LED Indications

When the green LED11 is on, the DTI KTU is receiving power. LEDs 1 ~ 8 indicate various statuses depending on the switch setting. The red LED9 is the operation verification lamp. LED 9 flashes when the system is operating normally; it is on steady when the system is reset. Switch MB is the ON/OFF control for this KTU. Refer to Figure 2-42 - DTI-F( )-10 KTU Switch Layout, Figure 2-43 - DTI-F(A)-20 KTU Switch Layout, Table 2-18 - DTI-F( )-10 KTU/DTI-F(A)-20 KTU Switch Settings for MB and SW1, Table 2-19 - DTI-F( )-10 KTU/DTI-F(A)-20 KTU Switch Settings for SW2, and Table 2-20 DTI-F( )-10 KTU/DTI-F(A)-20 KTU LED Indications.



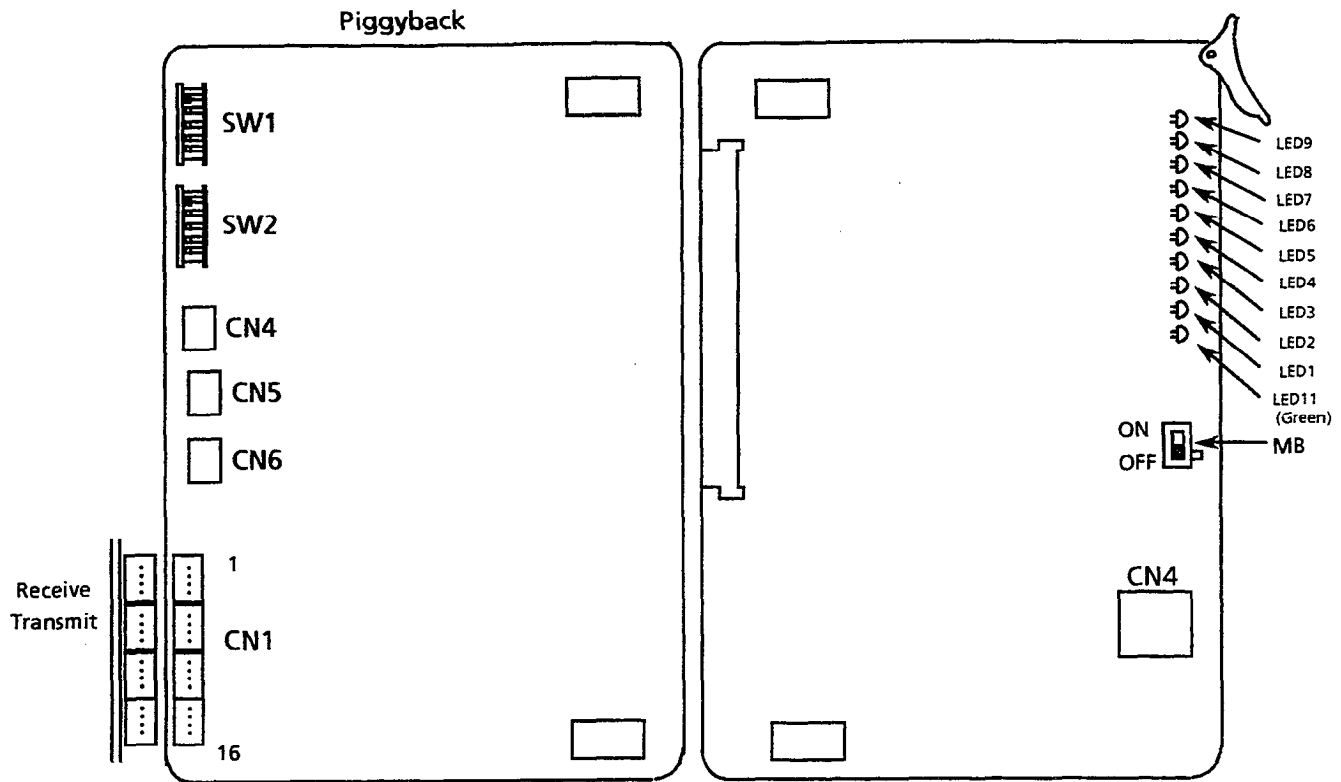


Figure 2-42 DTI-F(-)-10 KTU Switch Layout

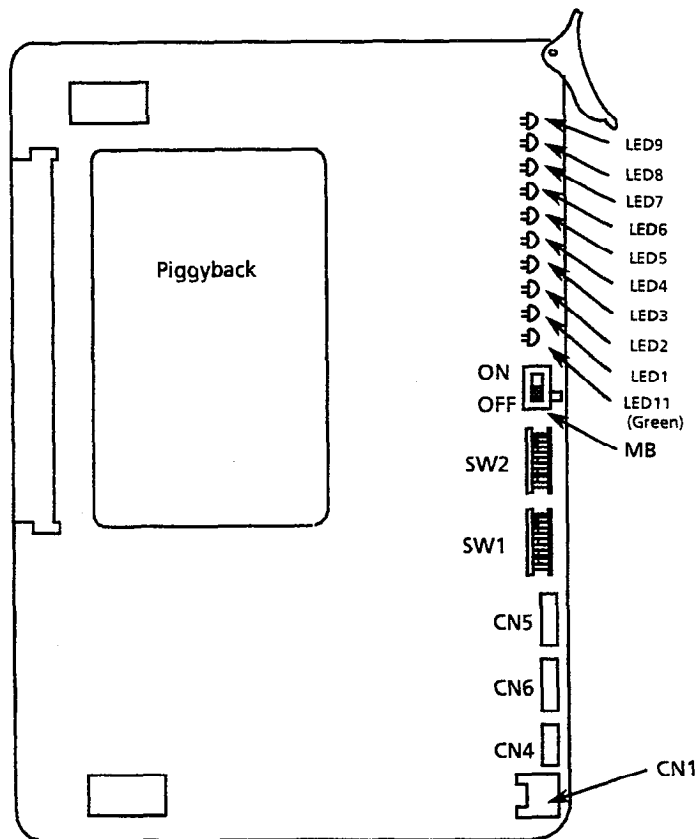


Figure 2-43 DTI-F(A)-20 KTU Switch Layout (Series 300 or higher)

Table 2-18 DTI-F( )-10 KTU/DTI-F(A)-20 KTU Switch Settings for MB and SW1

Switch	Switch Position	Initial Setting (0 = OFF 1 = ON)	Adjustment															
MB	N/A	OFF	Power supply to the KTU must be ON during operation.															
SW1	1	OFF: 0	Loop Back Setting <table border="0"> <tr> <td style="text-align: center;"><u>SW1-1</u></td> <td style="text-align: center;"><u>SW1-2</u></td> <td></td> </tr> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td>No Loop Back</td> </tr> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td>Future Use</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td>Line Loop Back ON</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td>Not Used</td> </tr> </table>	<u>SW1-1</u>	<u>SW1-2</u>		0	0	No Loop Back	0	1	Future Use	1	0	Line Loop Back ON	1	1	Not Used
	<u>SW1-1</u>	<u>SW1-2</u>																
	0	0		No Loop Back														
	0	1		Future Use														
	1	0	Line Loop Back ON															
	1	1	Not Used															
	2	OFF: 0																
	3	OFF: 0	} Not Used (Must be 0 when operating.)															
4	OFF: 0																	
5	OFF: 0																	
6	OFF: 0																	
7	OFF: 0																	
8	OFF: 0																	

**Note 1:** Alarm Indication Signal (AIS) (also known as blue signal) is provided by the Central Office to ensure continuity of the output signal. AIS is applied to ensure that no more than 80 consecutive zeros are transmitted. When a valid signal is available, the AIS may be removed. The AIS is an unframed, all ones signal. Either the Central Office or far end equipment may busy out an entire DS-1 facility by sending an AIS. If an AIS is received (and since it is unframed), the Yellow Alarm is transmitted to the far end.

**Note 2:** Explanation of Switch Positions:

- SW1-1 = 0 and SW1-2 = 0  
This position is used for normal operation (talking, idle, etc.).
- SW1-1 = 0 and SW1-2 = 1  
Future Use
- SW1-1 = 1 and SW1-2 = 0  
This position is used to receive patterns, listed for inband line loopback, without framing, to accommodate embedded equipment that sends unframed control signals. When this position is set, the data signals that are received by the system are transmitted back to the network. These data signals are regenerated, by the system, without changing the framing format or removing any bipolar violations.
- SW1-1 = 1 and SW1-2 = 1  
Not Used

Table 2-19 DTI-F( )-10 KTU/DTI-F(A)-20 KTU Switch Settings for SW2

Switch	Switch Position	Initial Setting (0 = OFF 1 = ON)	Adjustment
MB	N/A	OFF	
SW2	1	OFF: 0	If this switch is ON, LED 1 ~ 8 indicates the status of CH 1 ~ 8 of the T1 (24 DS-0) channel.
	2	OFF: 0	If this switch is ON, LED 1 ~ 8 indicates the status of CH 9 ~ 16 of the T1 (24 DS-0) channel.
	3	OFF: 0	If this switch is ON, LED 1 ~ 8 indicates the status of CH 17 ~ 24 of the T1 (24 DS-0) channel.
	4	OFF: 0	If this switch is ON, LED 1 ~ 8 indicates the status of the alarm from the T1 trunk.
	5	OFF: 0	If this switch is ON, LED 1 ~ 8 indicates the status of the alarm from the T1 trunk.
	6	OFF: 0	} Not Used (Must be 0 when operating.)
	7	OFF: 0	
	8	OFF: 0	

**Note:** If multiple switches are set to ON, the lower numbered switch has the highest priority. (This applies to SW2-1 ~ SW2-5.)

Table 2-20 DTI-F( )-10 KTU/DTI-F(A)-20 KTU LED Indications

LED	SW2-1 ON (Note 1)	SW2-2 ON (Note 1)	SW2-3 ON (Note 1)	SW2-4 ON (Notes 2 and 3)	SW2-5 ON (Notes 2, 3, and 4)
LED1	CH1	CH9	CH17	LSA detection	TSC detection
LED2	CH2	CH10	CH18	AIS detection	ESA detection
LED3	CH3	CH11	CH19	OOF detection	LOS detection
LED4	CH4	CH12	CH20	RAI detection	
LED5	CH5	CH13	CH21	CRC detection	
LED6	CH6	CH14	CH22	BPV detection	
LED7	CH7	CH15	CH23	SLIP detection	
LED8	CH8	CH16	CH24		

**Note 1:** SW2-1 ~ SW2-3 indicate the status of T1 (24 DS-0) channels.

**Note 2:** SW2-4 ~ SW2-5 indicate the status of the T1 trunk alarm.

**Note 3:** Explanation of Alarm Conditions:

- **LED1: Line Synchronization Alarm (LSA) Detection**  
If the T1 trunk has lost frame synchronization, the LED lights red.
- **LED2: Alarm Indication Signal (AIS) Detection**  
If the system is receiving AIS from the T1 trunk, the LED lights red.
- **LED3: Out-of-Frame Condition (OOF) Detection**  
If two of the four or five data framing bits that are received are in error, this LED lights red.
- **LED4: Remote Alarm Indication (RAI) Detection**  
If the remote alarm signal is received, this LED lights red.
- **LED5: Cyclic Redundancy Check (CRC) Error Event Detection**  
If a CRC error has occurred, the LED lights red.
- **LED6: Excessive Bipolar Violations (BPV) Detection**  
If an excessive bipolar violation condition is detected, the LED lights red.
- **LED7: Controlled Slip Event (Slip) Detection**  
If the difference between the timing of a synchronous receiving terminal and the received signal exceeds the buffering capability of the synchronous terminal, the LED lights red.

**Note 4:** SW2-5 = 1

- **LED1: Transmit Short Circuit (TSC) detection**
- **LED2: Jitter Attenuator Alarm (ESA) detection**
- **LED3: Loss of Signal (LOS) Detection**  
If the T1 signal from the trunk is not received, the LED lights red.

#### 4.3.9.2 BRT-F(4)-10 KTU

This KTU provides four identical circuits to support up to four ISDN Basic Rate trunks, (S/T Interface, 8 voice channels). Tip and ring electrical fuses (posistors) PTC1 through PTC16 are provided to comply with UL 1459 requirements.

A maximum of eight BRT KTUs can be installed in the Electra Professional 120 system.

This KTU has one, 4-position connector for interface to the MDF.

This KTU can be installed in IF1-IF4/OP1-OP4 slots of basic and first expansion KTUs.

A CLK-F-21 Unit must be installed on the CPU-F ( )-20 KTU to use the BRT KTU.

- When any other trunk KTU such as COI-F(4/8)-20 KTU, COI-F(4/8)-30 KTU, TLI-F(2)-10 KTU, or DID-F(4)-10 KTU is installed in slots to the left of the BRT-F(4)-10 KTU, the BRT-F(4)-10 KTU is assigned before the other trunk KTU on a first power on.
- Multipoint connection is not allowed in conjunction with the BRT-F(4)-10 KTU. Connectors CN11, CN21, CN12, CN22, CN13, CN23, CN14, and CN24 are set between pin 1 and pin 2 as default and should be set as is.
- If DTI KTU is installed, use the clock cable interconnection required for T1 circuits. Ensure that CLK-F-21 Unit jumper S1 is set for 1.5M. For this case, the BRT KTU is installed without CLK Unit considerations; clocking is derived from the T1.

To connect the BRT KTU and the CLK Unit:

Connect BRT-F(4)-10 KTU CN2 to CLK-F-21 Unit CN3 using the cable provided with the CLK-F-21 Unit. Refer to Figure 2-44 Connecting the Cable Between the BRT-F(4)-10 KTU and the CLK-F-21 Unit.

It is unnecessary to connect the second and succeeding BRT KTUs to the CLK-F-21 Unit.

- Clock cable is not required between 1<sup>st</sup> and 2<sup>nd</sup> BRT KTUs.
- The BRT KTU connected to the CLK-F-21 Unit must be connected to live ISDN Basic Rate trunks.

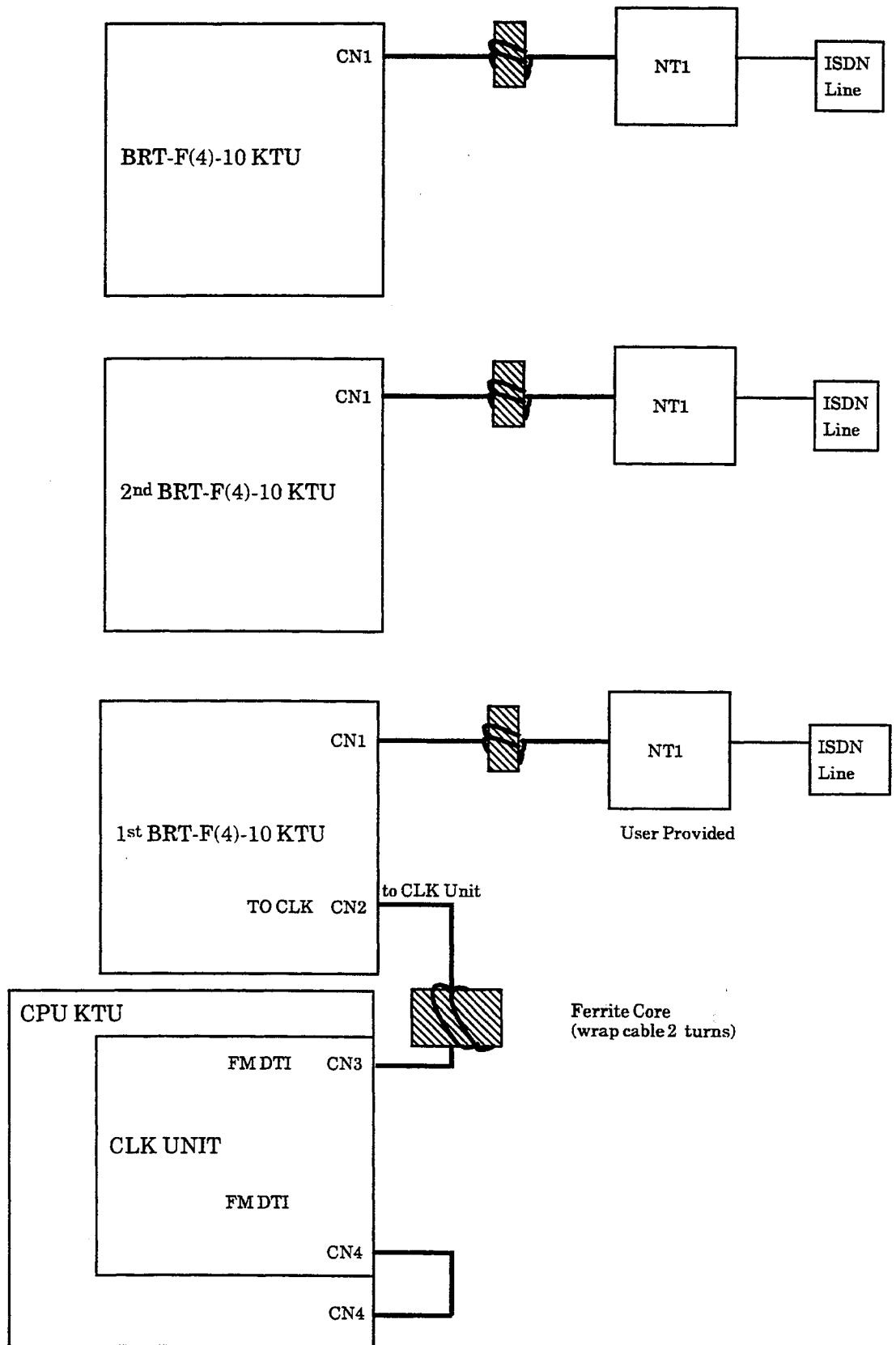


Figure 2-44 Connecting the Cable Between the BRT-F(4)-10 KTU and the CLK-F-21 Unit

**Switch Settings/LED Indications**

Refer to Figure 2-45 - BRT-F(4)-10 KTU Switch Layout. The BRT-F(4)-10 KTU has two switches, SW1 and SW2. SW1 is the ON/OFF control for the KTU. SW2 has four individual switches that are set OFF as default, and must be left OFF for operation.

Red LEDs 1 to 8 indicate status of four associated circuits. LED1 and LED5 indicate status of first BRT line. LED1 is on after the layer 2 link is established. LED5 is on when the voice path is established on B1 channel, B2 channel, or both B1 and B2 channels. LED2 and LED 6 provide the same indications as LED1 and LED6 for the second BRT line, LED3 and LED7 provide these indications for the third BRT line, and LED 4 and LED8 provide them for the fourth BRT line.

Green LED9 is on when the BRT KTU is receiving power.

**CLK-F-21 Unit for the BRT-F(4)-10 KTU**

The CLK-F-21 Unit provides sunchronization for ISDN lines connected to the system. For additional information, refer to 4.3.9.3.

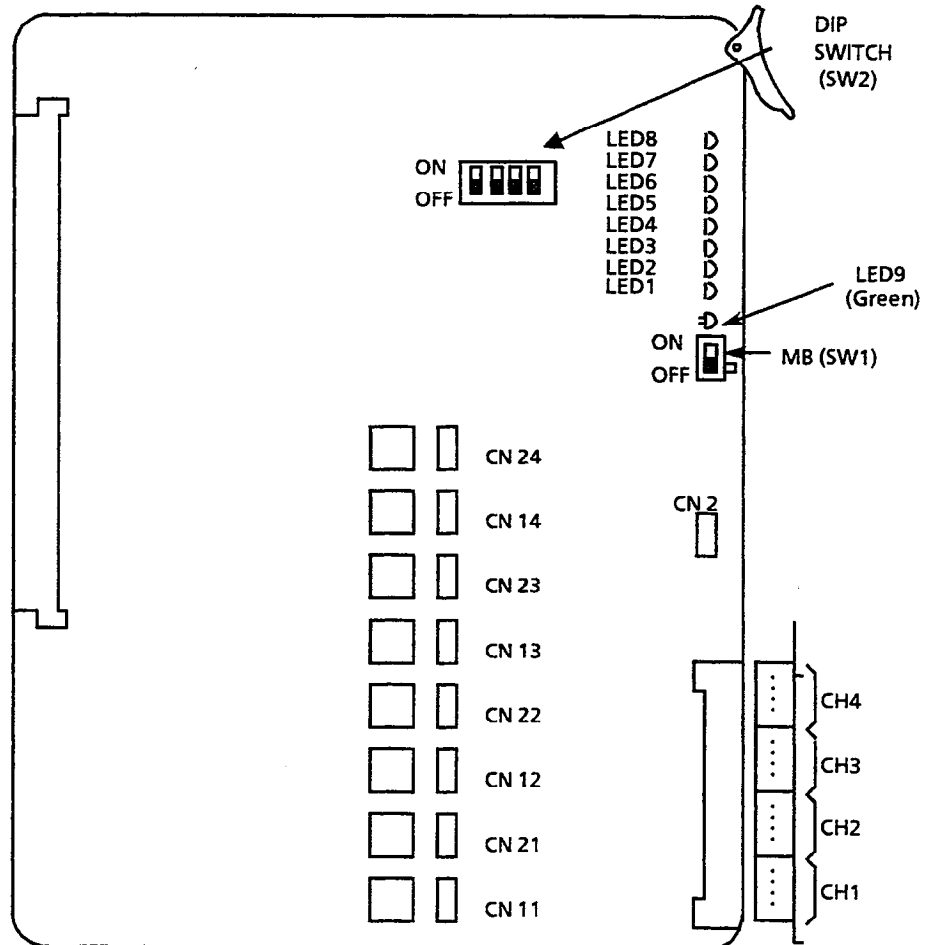


Figure 2-45 BRT-F(4)-10 KTU Switch Layout

**Install BRT-F(4)-10 KTU**

1. Install the BRT-F(4)-10 KTU in slots IF1/OP1 to IF4/OP4 in first and second cabinets of the 120/Level II Advanced system.
2. Connect cable between NT1 and BRT KTU, as shown in Figure 3-86 BRT-F(4)-10 KTU Interconnect.
3. Install cable between NT1 and ISDN Basic Rate Trunk (U interface).
4. Connect BRT U interface to the MDF.
5. Connect BRT U interface from MDF to the NT1.
6. Use two twisted-pair cables to connect cable from NT1 (S/T interface output) to BRT KTU CN1 as shown below.

Pin	Name
16	RB4
15	RA4
14	TB4
13	TA4
12	RB3
11	RA3
10	TB3
9	TA3
8	RB2
7	RA2
6	TB2
5	TA2
4	RB1
3	RA1
2	TB1
1	TA1

- The BRT KTU cannot be connected directly to a Telco providing the Basic Rate Trunk U interface. An ISDN Termination Adapter NT1 (locally provided by the customer) must be installed between Telco and BRT-F(4)-10 KTU.
- The maximum distance from the BRT-F(4)-10 KTU to NT1 is 300 feet, using 22 AWG twisted pair cable.

**4.3.9.3 CLK-F-21 Unit**

The CLK Unit provides synchronization for T1 and ISDN lines connected to the system. This unit works in conjunction with the DTI-F( )-10 KTU, DTI-F(A)-20 KTU, or BRT-F(4)-10 KTU and is piggybacked on the CPU-F( )-20 KTU.

Only one CLK-F-21 Unit can be installed in either system.



Switch Settings/LED Indications

LED1 lights if the 1.5 MHz clock is not provided from the T1 or ISDN trunk. LED2 lights if the output clock to the CPU-F( )-20 KTU (16 MHz) is not provided from the CLK-F-21 Unit. Refer to Figure 2-46 - Mounted CLK-F-21 Unit.

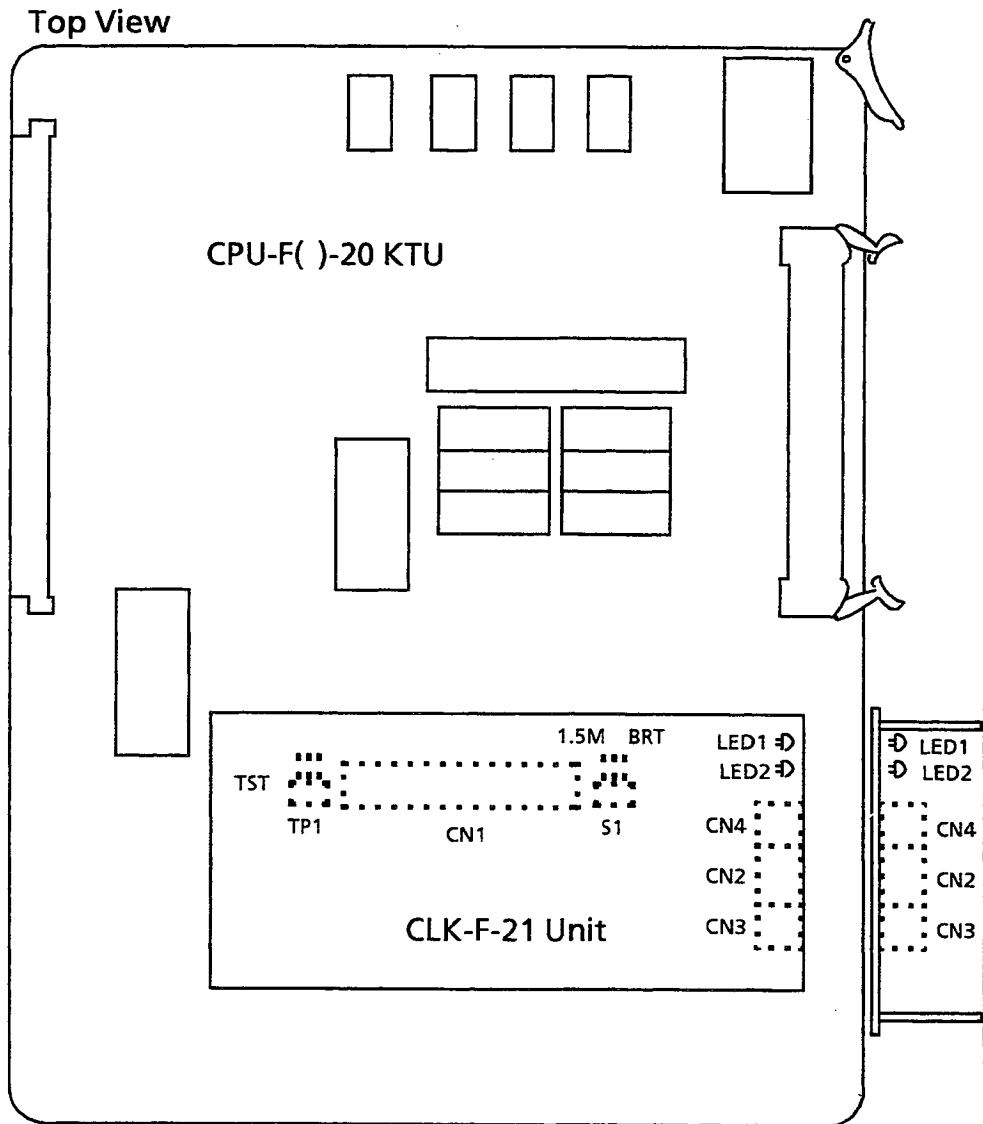


Figure 2-46 Mounted CLK-F-21 Unit

Connection:

To connect the CPU-F( )-20 KTU and the CLK-F-21 Unit make the following connections:

- CLK CN1 and CPU CN101
- CLK CN4 and CPU CN4

## 4.3.9.4 T1 Considerations

**IMPORTANT NOTE**

**Before installing the CLK-F-21 unit in the CPU-F( )-20 KTU, the S1 strap on the CLK-F-21 unit must be moved from the BRT setting to the 1.5M setting.**

General

T1/FT1 is a physical communications facility (circuit) commonly referred to as T1/FT1 pipe with 1.544 mbps of bandwidth.

The T1/FT1 pipe can be divided into 24 channels, each rated DS-0 (Digital Signal, Level 0). This is equivalent to 24 or more voice circuits and/or multiple data channels (leased lines). Each DS-0 is 64 kbps of bandwidth. The carrier uses 8 Kbps of T1/FT1 bandwidth for network supervision and diagnostics, leaving 1.536 mbps for user data.

Electrical Specifications

The electrical specifications describe the T1/FT1 interface, the T1/FT1 cross-connect interface, and the characteristics of the signals received from and transmitted to the T1/FT1 facility.

1. Support Digital Trunk Type: T1, FT1
2. Support Trunk Signal Type: DTI-F( )-10 KTU:  
CO/FX/WATS, Loop and Ground Start (Determined in System Programming)  
DTI-F(A)-20 KTU:  
CO/FX/WATS, Loop and Ground Start, Tie line (E&M), DID (Determined in System Programming)
3. Support Line Coding:\* ZCS or B8ZS Method (Determined in System Programming)
4. Output Characteristics:
 

Line Rate:	1.544 mbps + - 50 bps
Line Impedance:	100 Ω
Pulse Amplitude (Base to Peak):	CCITT G. 703
5. Input Characteristics:
 

Line Rate:	1.544 mbps + - 200 bps
Pulse Amplitude (Base to Peak):	1.5V ~ 3V
Frame Synchronization:*	12-Multiframe *
	24-Multiframe *
Input Jitter:	CCITT G. 743

Cable Length from Electra Professional 120 to CSU:

Maximum 655 ft. (with 22 AWG)

CSU:

Channel Service Unit

\* Refer to Notes for explanation.

**Notes:**

*Line Coding*

If zero data is being continuously transmitted over a T1/FT1 trunk, the end equipment cannot operate normally because there is no clock synchronization. EIA/TIA-464-A specifies two line coding methods for normal operation.

1. Zero Code Suppression (ZCS)

2. Bipolar Eight Zero Substitution (B8ZS)

This method depends on the LXC (Local Exchange)/IXC (Interexchange). The installer must ask the LXC/IXC to determine whether the configuration is ZCS or B8ZS. The installer must assign this configuration using Electra Professional 120 System Programming.

*Frame Synchronization*

According to EIA/TIA-464-A for 24-channel transmission, there are two frame configurations: 12-multiframe and 24-multiframe. This method depends on the LXC/IXC. The installer must ask the LXC/IXC to determine whether the configuration is 12- or 24-multiframe. The installer must assign this configuration using Electra Professional 120 System Programming.

*12-Multiframe*

This frame has 12-Multiframes and each Multiframe has a 24-channel PCM signal (8 bits/channel) and an F bit (Super Frame Bit). Refer to Figure 2-47 - 12-Multiframe Configuration and Bit Assignment.

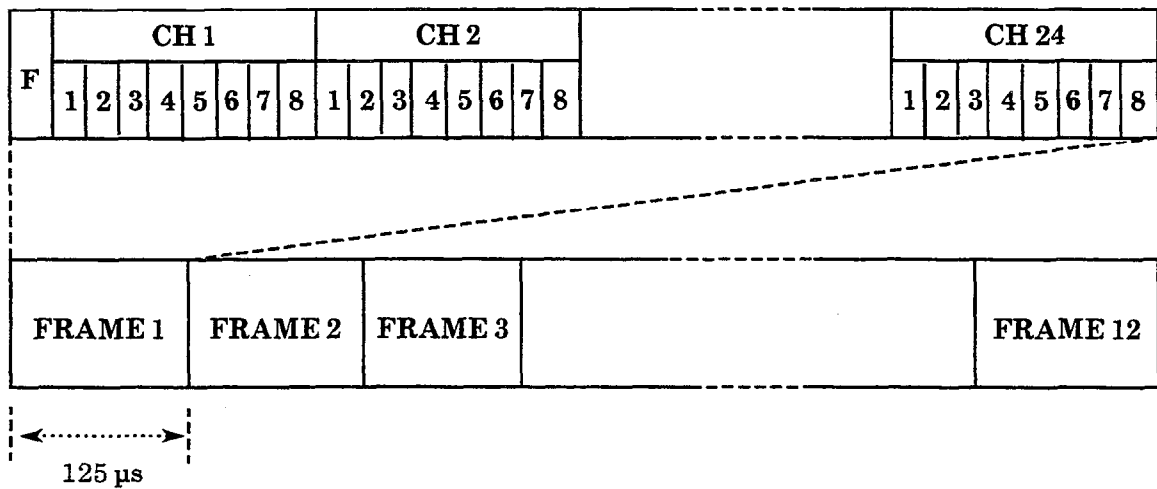


Figure 2-47 12-Multiframe Configuration and Bit Assignment

**24-Multiframe**

This frame has 24-Multiframes and each Multiframe has a 24-Channel PCM signal (8 bits/channel) and an F bit (Super Frame Bit). Refer to Figure 2-48 - 24-Multiframe Configuration and Bit Assignment.

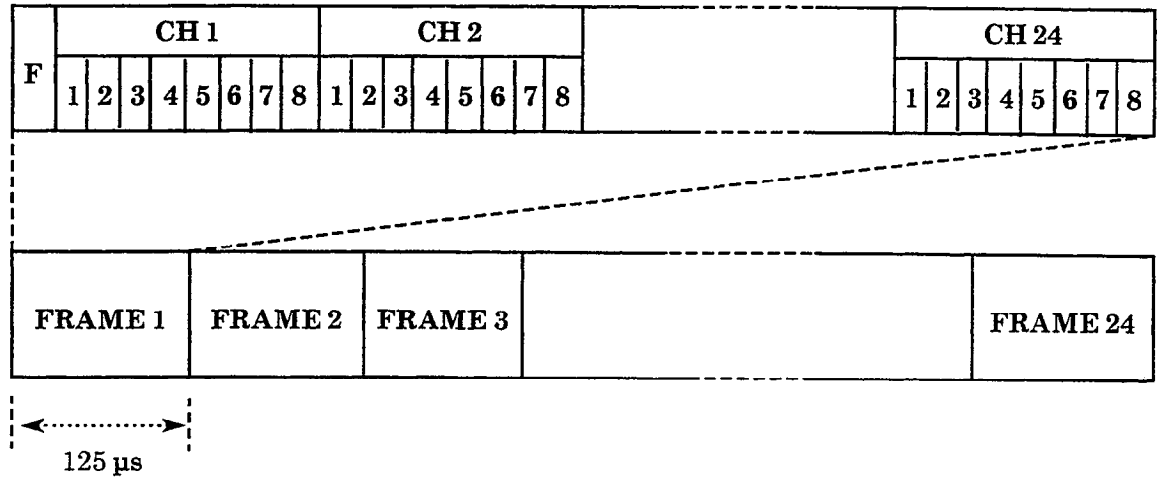


Figure 2-48 24-Multiframe Configuration and Bit Assignment

**Installation**

Table 2-21 - Equipment Required for T1 Installation shows the equipment required for T1.

Table 2-21 Equipment Required for T1 Installation

Equipment	Description	Quantity
DTI-F( )-10 KTU - OR - DTI-F(A)-20 KTU	24 channels T1/FT1 trunk interface board	1, 2, or 3
CLK-F-21 Unit	T1/FT1 Clock Synchronization Unit	1
	Connection cable between DTI and CLK package (4 MHz clock)	1 per DTI KTU and CLK interface (included with DTI KTU) - OR - 1 per DTI KTU and DTI KTU interface
Installation Cable	Twisted pair transmission cable between DTI and MDF	
	Connection cable between DTI and CLK (1.5 MHz clock)	1 per CLK Unit (included with CLK Unit)
CSU	Interface equipment between T1 Trunk and DTI KTU	1 per DTI KTU

*To install:*

1. Install the DTI-F( )-10 KTU or DTI-F(A)-20 KTU and the CLK-F-21 Unit in the ESF-H-10 KSU. Refer to Figure 2-49 - Installing the DTI-F( )-10 KTU or DTI-F(A)-20 KTU in the ESF-HB-10 KSU.

To install the DTI-F( )-10 KTU or DTI-F(A)-20 KTU use interface slots IF1/OP1 or IF4/OP4 slots on the ESF-H-10 KSU or the IF1/OP1 slot on the first two ESF-H-10 KSUs installed. Refer to Figure 2-50 - Installing the DTI-F( )-10 KTU or DTI-F(A)-20 KTU in the first two ESF-H-10 KSUs.

**Note:** If the DTI KTU is used, the interface slot(s), adjacent to the DTI interface slot, can be used. The number of slots that must remain empty depends on the number of DTI channels being used.

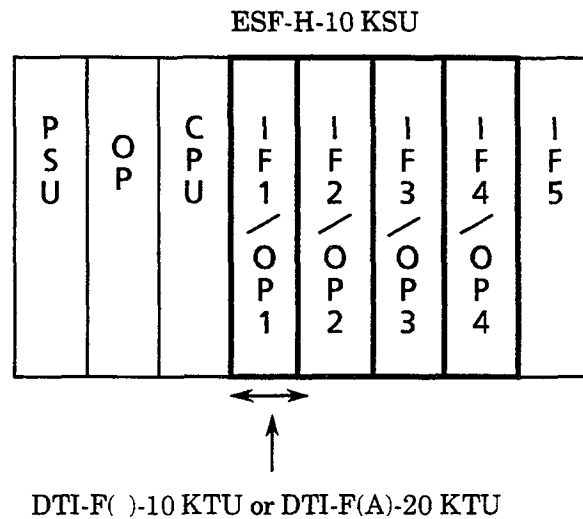


Figure 2-49 Installing the DTI-F( )-10 KTU or DTI-F(A)-20 KTU in the ESF-H-10 KSU

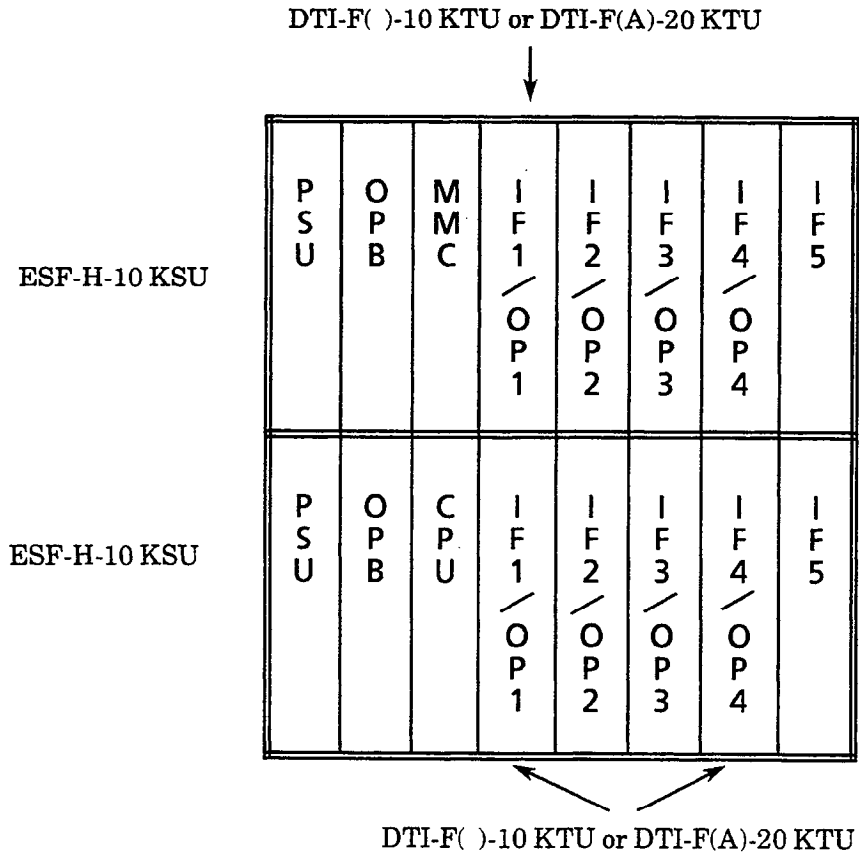


Figure 2-50 Installing the DTI-F( )-10 KTU or DTI-F(A)-20 KTU in the first two ESF-H-10 KSUs

Table 2-22 Required Slots for DTI-F( )-10 KTU or DTI-F(A)-20 KTU Installation

No. of DTI-F( )-10 KTU or DTI-F(A)-20 KTU Channels Used	Required Slots for DTI-F( )-10 KTU or DTI-F(A)-20 KTU Installation
1 ~ 8	1
9 ~ 16	2
17 ~ 24	3

2. Install the cable between the T1/FT1 trunk and the DTI-F( )-10 KTU or DTI-F(A)-20 KTU.
  - a. Connect the T1/FT1 trunk to the MDF.  
Refer to Table 2-36 - Connection Information/Connection and Port Relationships.
  - b. Connect the T1 trunk from the MDF to the CSU.

c. To connect the cable from the CSU to CN1 on the DTI-F( )-10 KTU or DTI-F(A)-20 KTU:

- (1) Wrap the cables, provided with the DTI-F( )-10 KTU or DTI-F(A)-20 KTU, twice (two turns) around a ferrite core.
- (2) Connect the cable from the CSU to CN1 on the DTI-F( )-10 KTU or DTI-F(A)-20 KTU, using the MDF Cable Assembly. Refer to 2-51 - Connecting the Cable Between the DTI-F( )-10 KTUs or DTI-F(A)-20 KTUs and the CLK-F-21 Unit.

**Note 1:** The maximum distance from the DTI-F( )-10 KTU or DTI-F(A)-20 KTU to the CSU is 655 feet, using 22 AWG.

**Note 2:** The customer must purchase the CSU equipment to install the T1 trunk.

d. To connect the DTI-F( )-10 KTU or DTI-F(A)-20 KTU and the CLK-F-21 Unit:

- (1) Wrap the cables, provided with the DTI-F( )-10 KTU or DTI-F(A)-20 KTU, twice (two turns) around a ferrite core.
- (2) Connect CN6 and CN4, on the DTI-F( )-10 KTU or DTI-F(A)-20 KTU, to CN2 and CN3, on the CLK-F-21 Unit, using the provided cable with the DTI-F( )-10 KTU or DTI-F(A)-20 KTU. Refer to Figure 2-51 - Connecting the Cable Between the DTI-F( )-10 KTUs or DTI-F(A)-20 KTUs and the CLK-F-21 Unit.
- (3) When connecting a second DTI-F( )-10 KTU or DTI-F(A)-20 KTU, connect CN6 on the second DTI-F( )-10 KTU or DTI-F(A)-20 to CN5 on the first DTI-F( )-10 KTU or DTI-F(A)-20 KTU after wrapping this cable [provided with the DTI-F( )-10 KTU or DTI-F(A)-20 KTU] twice (two turns) around a ferrite core.
- (4) When installing a third DTI-F( )-10 KTU or DTI-F(A)-20 KTU, follow the same procedure in step 3 for connection between the third and second DTI-F( )-10 KTU or DTI-F(A)-20 KTU. Refer to Figure 2-52 - Example of Three DTI-F( )-10 KTUs or DTI-F(A)-20 KTUs Attached to the CLK-F-21 Unit.

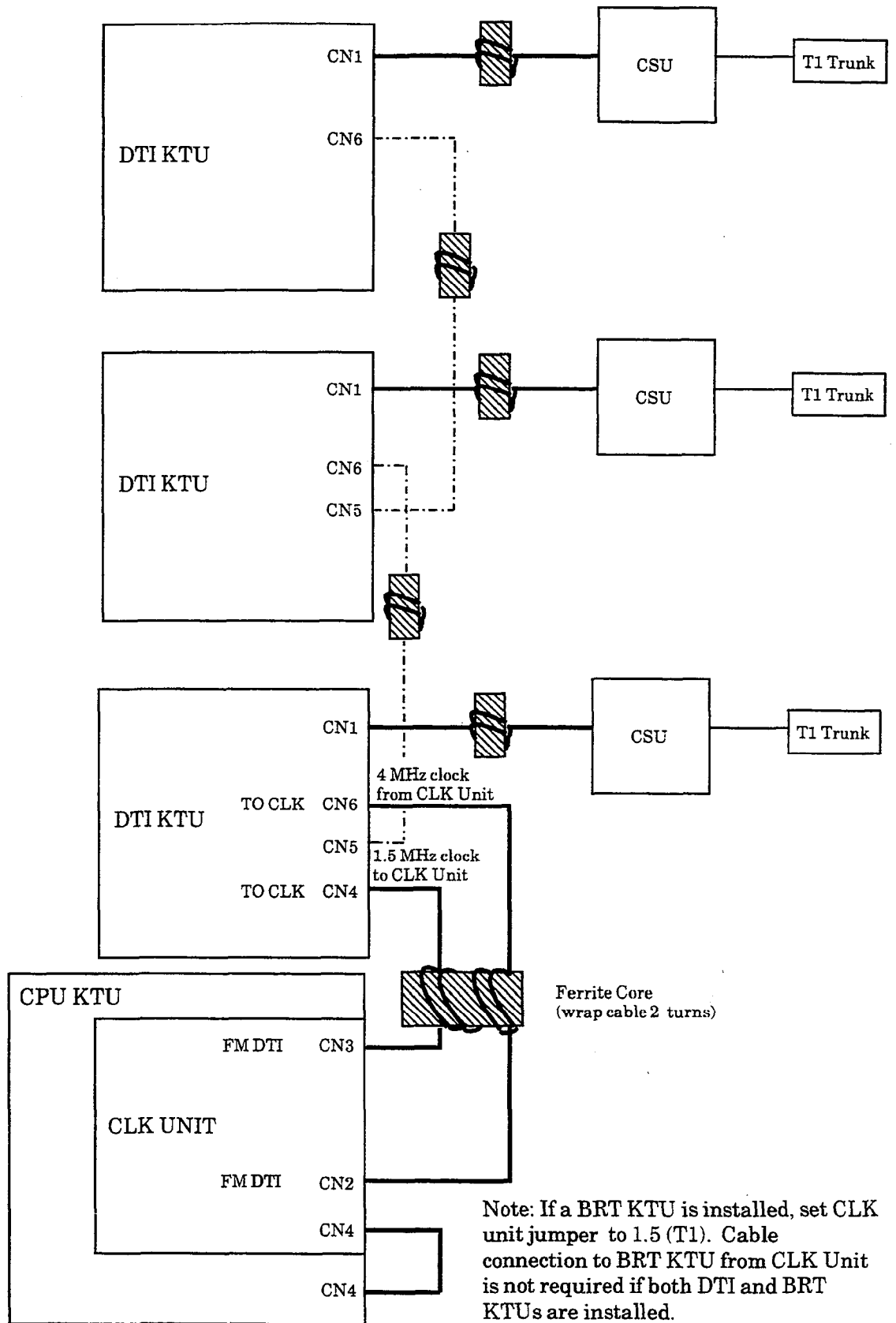


Figure 2-51 Connecting the Cable Between the DTI-F( )-10 KTUs or DTI-F(A)-20 KTUs and the CLK-F-21 Unit



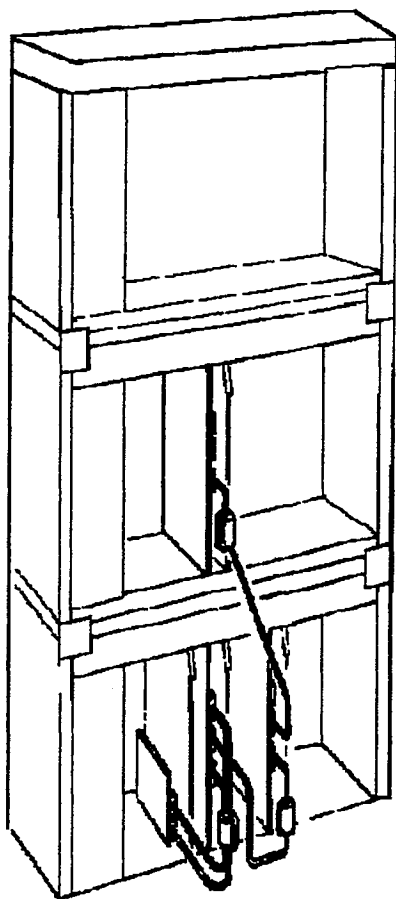


Figure 2-52 Example of Three DTI-F( )-10 KTUs or DTI-F(A)-20 KTUs Attached to the CLK-F-21 Unit

#### 4.3.9.5 ISDN Considerations

ISDN trunks connected to the ElectraProfessional 120/Level II/Level II Advanced system require clock signals the same as T1 trunks.

##### BRT Without Installed DTIs

If ISDN KTU is installed in a system without DTI KTUs, connect the clock cable from CN3 on the CLK unit to CN2 on first BRT KTU in the system. CLK unit CN2 is not used. CLK unit jumper is set to BRT.

##### BRT With Installed DTIs

In this configuration, the ElectraProfessional 120/Level II/Level II Advanced system derives clocking from the T1. Use connection scheme in Figure 2-51. CLK unit jumper is set to 1.5M. Cable connection is not required between the BRT KTU and the CLK unit or any DTI KTU.

### 4.4 Optional KTUs

#### 4.4.1 PBR-F(4)-11 KTU

The Push Button Receiver (PBR) KTU detects and translates DTMF tones generated by Single Line Telephones, modems, or facsimile machines. This KTU is required if the four built-in PBR channels (CPU) are not enough to support all single line devices of the system.

Only one PBR-F(4)-11 KTU can be installed.

##### Switch Setting/LED Indications

When the green LED1 on the PBR-F(4)-11 KTU is on, the KTU is receiving power. When red DTMF signal-indication LED2 is on, one or more DTMF signal receiver circuits are receiving DTMF signals. Switch MB is the ON/OFF control for this KTU. Refer to Figure 2-53 - PBR-F(4)-11 KTU Switch Settings.

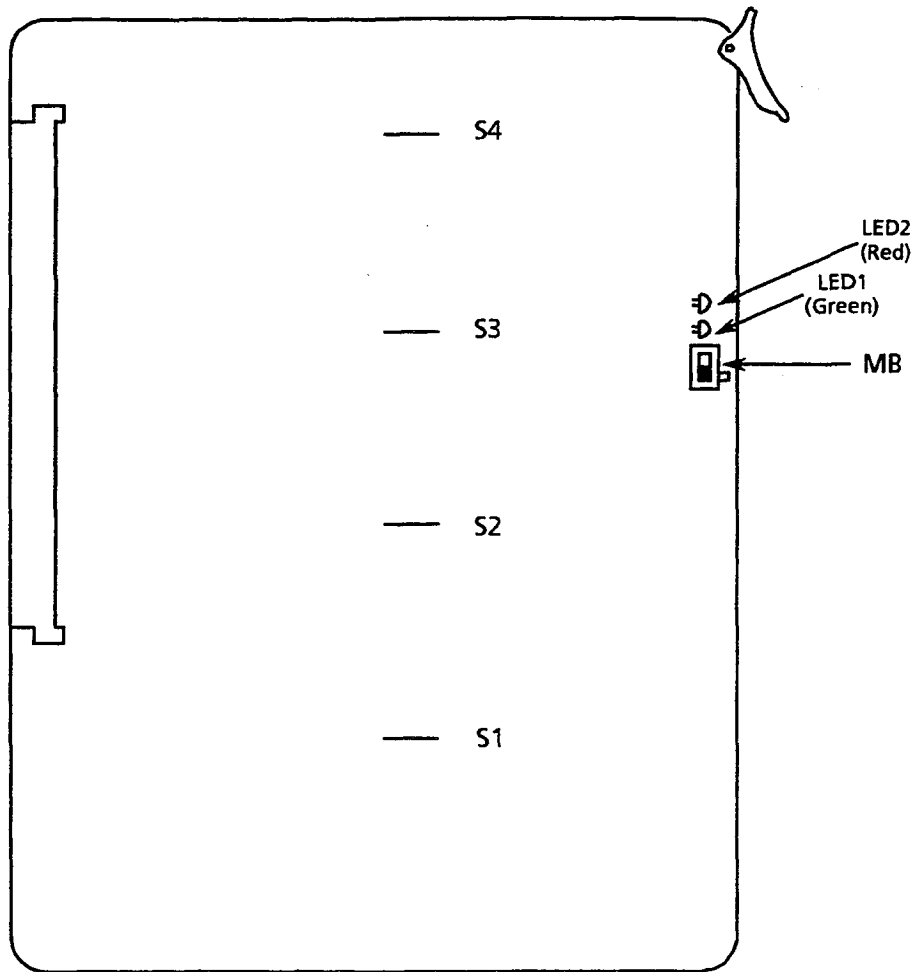


Figure 2-53 PBR-F(4)-11 KTU Switch Settings

If adjustment to the DTMF signal detection level is required, adjust using strap wire S1 ~ S4. Refer to Table 2-23 - DTMF Signal Adjustments.

Table 2-23 DTMF Signal Adjustments

Option	Strap Wire Settings	Default Settings	Adjustment
DTMF signal receiving gain	Strap wires: S1 ~ S4	Strapping wires connected	<p>Default settings are done to allow reception of -34 dBm ~ -4 dBm DTMF signals. To increase the receiving gain, cut the strap wires (-42 dBm ~ -12 dBm DTMF signals can be received).</p> <p>S1: Channel 1 receiving gain                      S2: Channel 2 receiving gain                      S3: Channel 3 receiving gain                      S4: Channel 4 receiving gain</p>

#### 4.4.2 VRS-F(4)-11 KTU

The VRS-F(4)-11 KTU provides record/playback of voice messages for the Automated Attendant, Voice Prompt, and Delay Announcement features.

A maximum of two VRS-F(4)-11 KTUs can be installed.

Each VRS-F(4)-11 KTU has four record/playback channels. The maximum recording time of each channel is 240 seconds. The recording time for each channel can be divided as follows:

- 15 sec. \* 16 messages = 240 sec.
- 30 sec. \* 8 messages = 240 sec.
- 60 sec. \* 4 messages = 240 sec.
- 120 sec. \* 2 messages = 240 sec.

#### Switch Settings/LED Indications

SW1, on both the Main and Expansion PCBs, controls battery power for memory backup. These must be turned ON for retention of VRS memory for this KTU if power fails.

**Note:** Do not separate the Main or Expansion PCBs.

LEDs 1 and 2 (on the Main PCB) represent channels 1 and 2. LEDs 1 and 2 (on the Expansion PCB) represent channels 3 and 4. These LEDs light red when in use (recording or playing messages). When the green LED 3 on the VRS-F(4)-11 KTU is on, the KTU is receiving power. Switch MB is the ON/OFF control for this KTU. Refer to Figure 2-54 - VRS-F(4)-11 KTU Switch Layout.

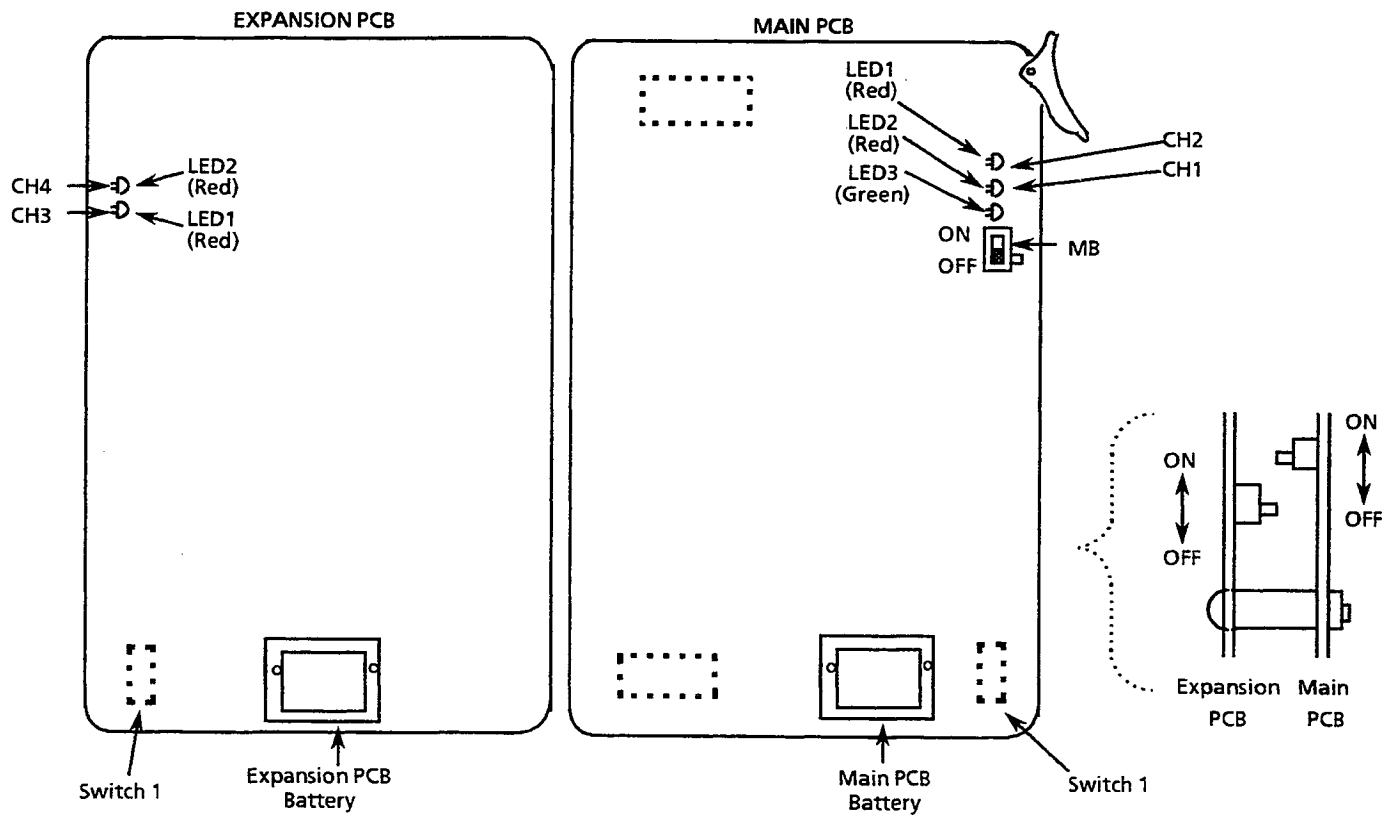


Figure 2-54 VRS-F(4)-11 KTU Switch Layout

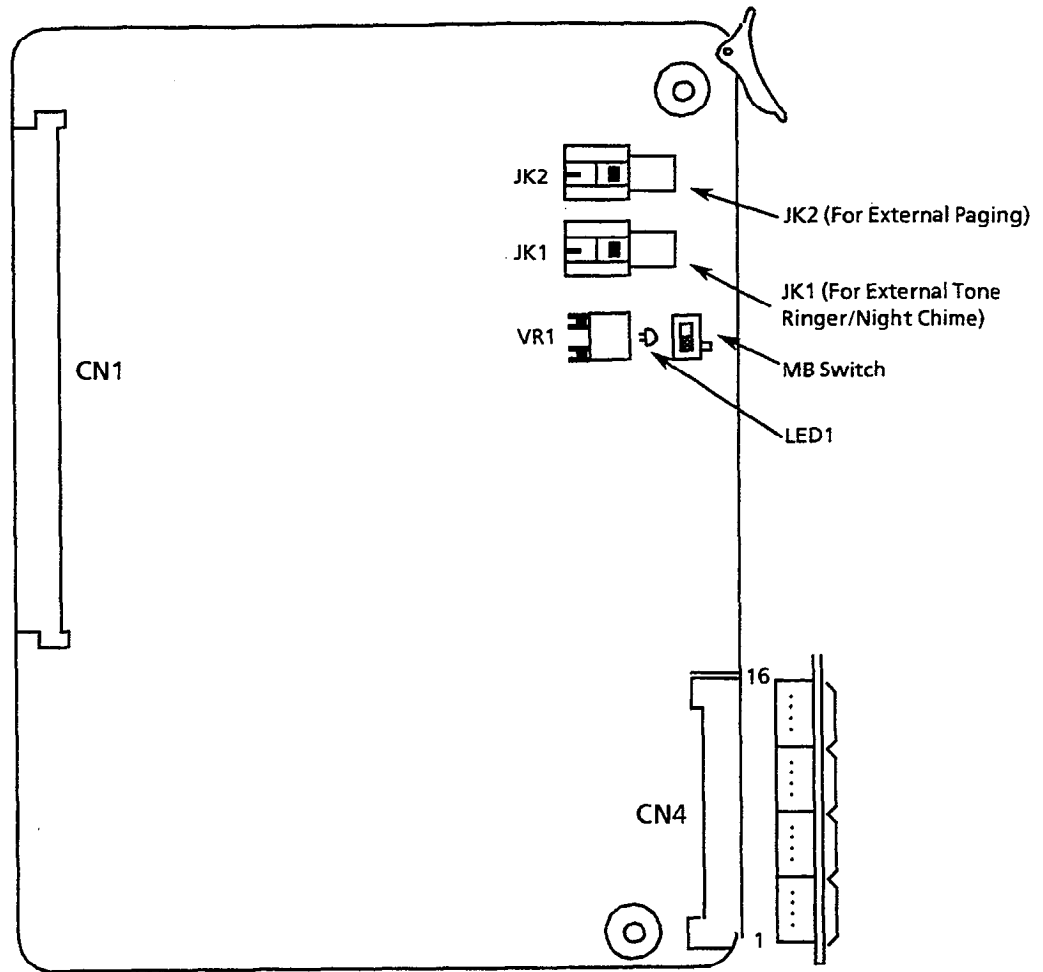
4.4.3 ECR-F-11 KTU

The ECR-F-11 KTU provides two RCA jacks and eight relay contacts. Three of the eight relays are used for External Paging contact, one is used for Night Chime contact, and the other four are used for External Tone Ringer. One of the two RCA jacks is used for External Tone Ringer/Night Chime audible output. The other RCA jack is used for External Paging audible input/output. Refer to Figure 2-55 - ECR-F-11 KTU Switch Layout and Table 2-24 - ECR-F-11 KTU Connectors/Adjustments.

Only one ECR-F-11 KTU can be installed in either system.

Switch Setting/LED Indications

When the green LED1 on the ECR-F-11 KTU is on, the KTU is receiving power. Switch MB is the ON/OFF control for this KTU. Refer to Figure 2-55 - ECR-F-11 KTU Switch Layout and Table 2-25 - ECR-F-11 KTU Optional Device Connection Terminals.



For Maximum Volume of External Ringer Output:  
Turn VR1 Counterclockwise

Figure 2-55 ECR-F-11 KTU Switch Layout

Table 2-24 ECR-F-11 KTU Connectors/Adjustments

Adjustment Item	Name of Switch	Initial Setting	Adjustment
External Tone Ringer	JK1	N/A	To connect the External Speaker for External Tone Ringer/Night Chime
External Paging	JK2	N/A	To connect the External Speaker for External Paging
External Tone Ringer/Night Chime Volume Control	VR1	Center	To adjust the External Tone Output Level

Table 2-25 ECR-F-11 KTU Optional Device Connection Terminals

Pin No.	Terminal Name	Function
16	8 RM	External Tone - Ringer 4
15	8 RC	
14	7 RM	External Tone - Ringer 3
13	7 RC	
12	6 RM	External Tone - Ringer 2
11	6 RC	
10	5 RM	External Tone - Ringer 1
9	5 RC	
8	4 RM	Night Chime
7	4 RC	
6	3 RM	External Paging - Zone C
5	3 RC	
4	2 RM	External Paging - Zone B
3	2 RC	
2	1 RM	External Paging - Zone A
1	1 RC	

#### 4.4.4 MIF-F(S)-10 KTU

The MIF KTU serves two purposes: it allows the connection of a personal computer to perform System Programming and up/down loading of System Data, and it provides Station Message Detail Recording (SMDR) to be output via the RS-232 cable to a printer. Refer to Figure 2-59 - SMDR Print Formats. These two functions can be operated at the same time.

Only one MIF-F(S)-10 KTU can be installed in either system. Refer to the *Electra Professional 120/Level II/Level II Advanced System Program Technician Manual* (included with the System Program Technician software) for programming instructions using a PC.

**Switch Settings/LED Indications**

When the green LED1 is on, the MIF-F(S)-10 KTU is receiving power. When the red LED2 flashes, the MIF is exchanging data communications with the system CPU. When the red LED3 is on, the SMDR function is outputting a call record. Refer to Figure 2-56 - MIF-F(S)-10 KTU Switch Layout. Switch MB is the ON/OFF control for the KTU. Also refer to Table 2-26 - MIF-F(S)-10 KTU Switch (SW3) Settings for PC and MNP Modem Connections, Table 2-27 - MIF-F(S)-10 KTU Switch (SW4) Settings for Prints, Table 2-28 - MIF-F(S)-10 KTU - DTE PC or Printer Connections, and Table 2-29 - MIF-F(S)-10 KTU - DCE MNP Modem Connections.

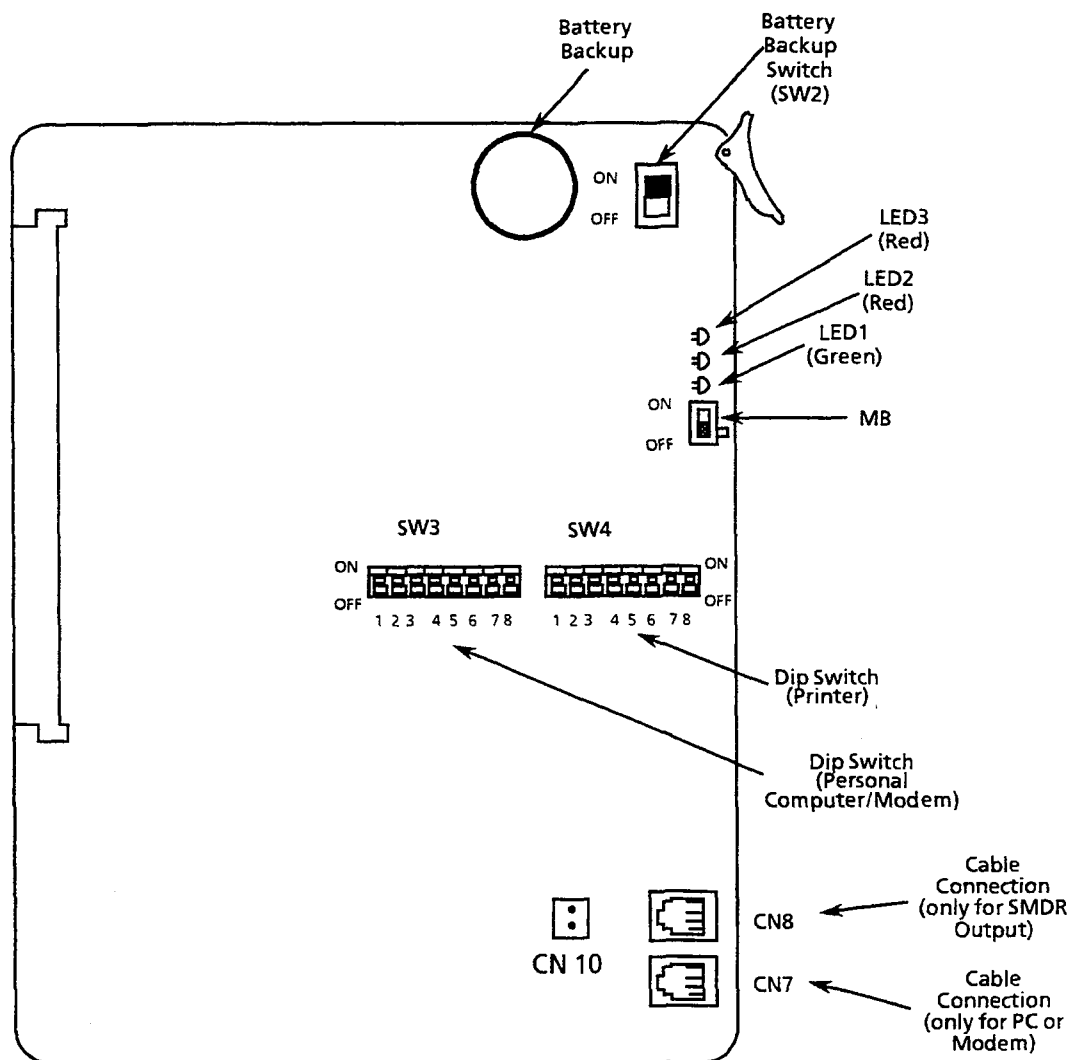


Figure 2-56 MIF-F(S)-10 KTU Switch Layout



Table 2-26 MIF-F(S)-10 KTU Switch (SW3) Settings for PC and MNP Modem Connections

Switch Position (SW3)	ON/OFF Setting	Description																				
1	OFF: 0 ON: 1	Connection to CN7 0: PC Direct 1: MNP Modem Connected																				
2	OFF: 0 ON: 1	Not Used																				
3	OFF: 0 ON: 1	Not Used																				
4	OFF: 0 ON: 1	Not Used																				
5	OFF: 0 ON: 1	Parity and Stop Bits:																				
6	OFF: 0 ON: 1	<table border="1"> <thead> <tr> <th>SW3 - 5</th> <th>SW3 - 6</th> <th>Parity</th> <th>Stop Bits</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td>2</td> </tr> <tr> <td>1</td> <td>0</td> <td>None</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>Even</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>Odd</td> <td>1</td> </tr> </tbody> </table>	SW3 - 5	SW3 - 6	Parity	Stop Bits	0	0	None	2	1	0	None	1	0	1	Even	1	1	1	Odd	1
SW3 - 5	SW3 - 6	Parity	Stop Bits																			
0	0	None	2																			
1	0	None	1																			
0	1	Even	1																			
1	1	Odd	1																			
7	OFF: 0 ON: 1	Baud Rates:																				
8	OFF: 0 ON: 1	<table border="1"> <thead> <tr> <th>SW3 - 7</th> <th>SW3 - 8</th> <th>RS-232C</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>9600 bps</td> </tr> <tr> <td>1</td> <td>0</td> <td>4800 bps</td> </tr> <tr> <td>0</td> <td>1</td> <td>2400 bps</td> </tr> <tr> <td>1</td> <td>1</td> <td>1200 bps</td> </tr> </tbody> </table>	SW3 - 7	SW3 - 8	RS-232C	0	0	9600 bps	1	0	4800 bps	0	1	2400 bps	1	1	1200 bps					
SW3 - 7	SW3 - 8	RS-232C																				
0	0	9600 bps																				
1	0	4800 bps																				
0	1	2400 bps																				
1	1	1200 bps																				

Table 2-27 MIF-F(S)-10 KTU Switch (SW4) Settings for Printers

Switch Position (SW4)	ON/OFF Setting	Description																				
1	OFF: 0 ON: 1	Mode Setting: 0: Operation Mode 1: Test Mode: <b>Note:</b> Operation of MIF stops when set to the Test Mode.																				
2	OFF: 0 ON: 1	Not Used																				
3	OFF: 0 ON: 1	Not Used																				
4	OFF: 0 ON: 1	Data Bits (RS-232C for Printer) 0: 8-bit 1: 7-bit																				
5	OFF: 0 ON: 1	Parity and Stop Bits: <table border="1"> <thead> <tr> <th>SW4 - 5</th> <th>SW4 - 6</th> <th>Parity</th> <th>Stop Bits</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td>2</td> </tr> <tr> <td>1</td> <td>0</td> <td>None</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>Even</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>Odd</td> <td>1</td> </tr> </tbody> </table>	SW4 - 5	SW4 - 6	Parity	Stop Bits	0	0	None	2	1	0	None	1	0	1	Even	1	1	1	Odd	1
SW4 - 5	SW4 - 6		Parity	Stop Bits																		
0	0	None	2																			
1	0	None	1																			
0	1	Even	1																			
1	1	Odd	1																			
6	OFF: 0 ON: 1																					
7	OFF: 0 ON: 1	Baud Rates: <table border="1"> <thead> <tr> <th>SW4 - 7</th> <th>SW4 - 8</th> <th>RS-232C</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>4800 bps</td> </tr> <tr> <td>1</td> <td>0</td> <td>2400 bps</td> </tr> <tr> <td>0</td> <td>1</td> <td>1200 bps</td> </tr> <tr> <td>1</td> <td>1</td> <td>300 bps</td> </tr> </tbody> </table>	SW4 - 7	SW4 - 8	RS-232C	0	0	4800 bps	1	0	2400 bps	0	1	1200 bps	1	1	300 bps					
SW4 - 7	SW4 - 8		RS-232C																			
0	0	4800 bps																				
1	0	2400 bps																				
0	1	1200 bps																				
1	1	300 bps																				
8	OFF: 0 ON: 1																					

Table 2-28 MIF-F(S)-10 KTU - DTE PC or Printer Connections

MIF (CN7 & CN8)	→	MIF Cable Assembly	Straight RS-232 Cable	PC or Printer
FG(FG) 1	-----	1 (FG)FG 1	-----	1 (FG)FG
RXD(RD) 5	←	2 (SD)TXD 2	---<---	2 (SD)TXD
TXD(SD) 4	→	3 (RD)RXD 3	--->---	3 (RD)RXD
CTS(CS) 6	←	4 (RS)RTS 4	---<---	4 (RS)RTS
RTS(RS) 3	→	5 (CS)CTS 5	--->---	5 (CS)CTS
DTR(ER) 7	→	6 (DR)DSR 6	--->---	6 (DR)DSR
SG(SG) 8	-----	7 (SG)SG 7	-----	7 (SG)SG
DSR(DR) 2	←	20 (ER)DTR 20	---<---	20 (ER)DTR
DCD(CN10)	←	8 (CD)DCD 8	---<---	8 (CD)DCD

**Note:** The arrows show the direction of data flow during operation.

Table 2-29 MIF-F(S)-10 KTU - DCE MNP Modem Connections

MIF (CN7)	→	MIF Cable Assembly	Reverse RS-232 Cable	MNP Modem
FG(FG) 1	-----	1 (FG)FG 1	-----	1 (FG)FG
RXD(RD) 5	←	2 (SD)TXD 2	---<---	3 (RD)RXD
TXD(SD) 4	→	3 (RD)RXD 3	--->---	2 (SD)TXD
CTS(CS) 6	←	4 (RS)RTS 4	---<---	5 (CS)CTS
RTS(RS) 3	→	5 (CS)CTS 5	--->---	4 (RS)RTS
DTR(ER) 7	→	6 (DR)DSR 6	--->---	20 (ER)DTR
SG(SG) 8	-----	7 (SG)SG 7	-----	7 (SG)SG
DCD(CN10)	←	8 (CD)DCD 8	---<---	8 (CD)DCD
DSR(DR) 2	←	20 (ER)DTR 20	---<---	6 (DR)DSR

**Note:** The arrows show the direction of data flow during operation.

### Installation

The MIF-F(S)-10 KTU can be installed into an Option Slot (OP) or into one of the four Interface/Option Slots (IF1/OP1 ~ IF4/OP4), in the ESF-H-10 KSU. This KTU is shipped with two cable assemblies (MIF cable assembly). One end of each cable has an RJ45 (8-pin) connector. The other end of the cable terminates at an RS-232 connector. This connector must be mounted on one of the above mentioned KSUs.

After installing the KTU, connect the RJ45 pin connectors to CN8 or CN7 into the MIF-F(S)-10 KTU. When connecting a PC, connect the small connector on the MIF Cable Assembly to CN10 on the MIF-F(S)-10 KTU, then remove the RS-232 connection bracket from the KSU and attach the RS-232, on the MIF Cable Assembly, to the RS-232 connection bracket using the screws on the RS-232 connectors. Refer to Figure 2-57 - Connecting the MIF Cable Assembly and the MIF-F(S)-10 KTU to the ESF-H-10 KSU.

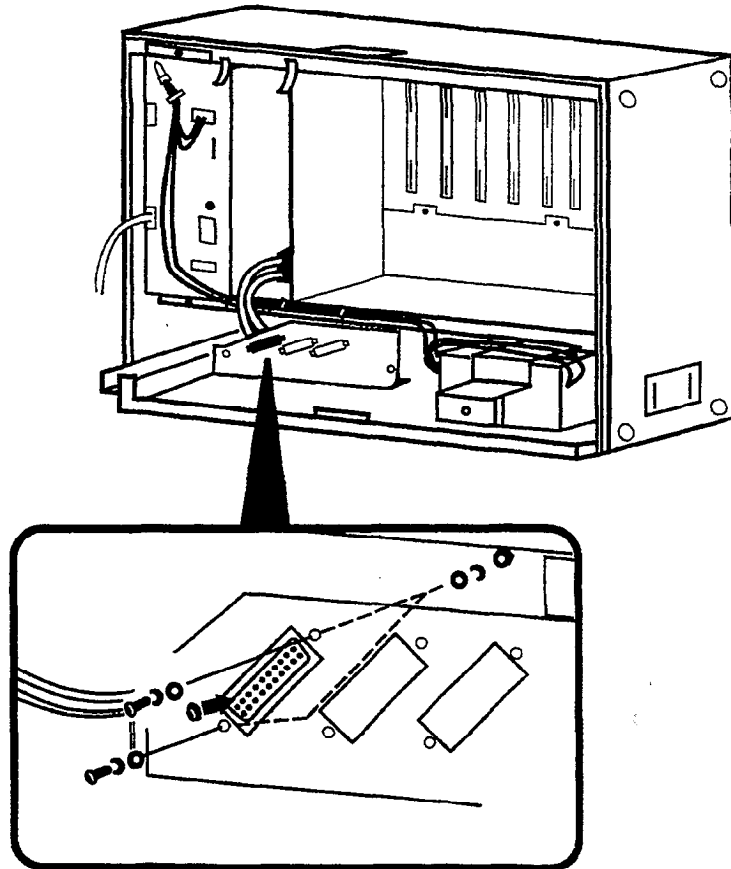


Figure 2-57

Connecting the MIF Cable Assembly and the MIF-F(S)-10 KTU to the ESF-H-10 KSU

### Printer Connection for SMDR

#### Required Equipment:

1. MIF-F(S)-10 KTU with the NEC provided MDF Cable Assembly
2. RS-232 Straight Cable
3. Standard Printer

#### To install:

1. Set SW4 DIP switch to adjust for the printer on the MIF-F(S)-10 KTU.
2. Install the MIF-F(S)-10 KTU into the KSU.
3. Connect the MIF Cable Assembly to CN8 on the MIF-F(S)-10 KTU and the Basic KSU. Refer to Figure 2-57 - Connecting the MIF Cable Assembly and the MIF-F(S)-10 KTU to the ESF-H-10 KSU.
4. Connect the standard printer using the straight RS-232 cable.
5. Turn the MB switch, on the MIF-F(S)-10 KTU, to the ON position.
6. Program Memory Blocks: System Mode (LK1) SMDR/LCR (LK5) No. 02, 13, 14, 25, and 26.

### PC or MNP Class 5 Modem Connection for Electra Professional 120 System Program Technician Software:

The information given in this section is a basic overview of System Programming using a PC. For specific information, refer to the *Electra Professional 120/Level II/Level II Advanced System Program Technician Manual* (included with the Electra Professional System Program Technician software). Also, refer to Figure 2-58 - MIF-F( ) -10 KTU Direct and Remote Connections, Figure 2-59 - SMDR Print Formats, and Figure 2-60 - SMDR Print Formats Item Numbers.

#### Required Equipment:

1. MIF-F(S)-10 KTU with NEC provided MIF Cable Assembly
2. RS-232 straight cable (for direct connection) or reverse cable (for remote connection)
3. IBM® or IBM compatible PC with 286 or higher and MS-DOS® Version 3.3 or higher<sup>1</sup>
4. NEC Electra Professional Level II and Level II Advanced System Program Technician Software
5. Standard dot matrix printer (if required for printing job specifications or station labels)
6. MNP Modem Class 5 or higher (required for remote connection)

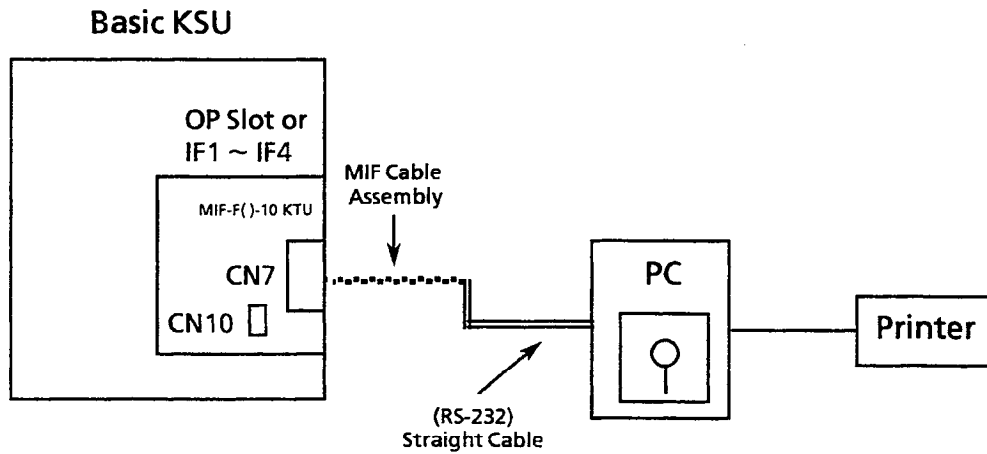
#### To install:

1. Set SW3 DIP switch to adjust for a PC or modem on the MIF-F(S)-10 KTU.
2. Install the MIF-F(S)-10 KTU into the KSU.
3. Connect the MIF Cable Assembly to CN7 and CN10 on the MIF-F(S)-10 KTU and the KSU. Refer to Figure 2-57 - Connecting the MIF Cable Assembly and the MIF-F(S)-10 KTU to the ESF-H-10 KSU.

<sup>1</sup> The following are registered trademarks of the following companies: IBM of International Business Machines. MS-DOS of Microsoft Corporation.

4. Connect the PC using a straight RS-232 cable or connect the MNP modem using a reverse RS-232 cable.
5. Place the MB switch, on the MIF-F(S)-10 KTU, to ON.

Direct Connection: PC and System



Remote Connection: MNP Modem Used

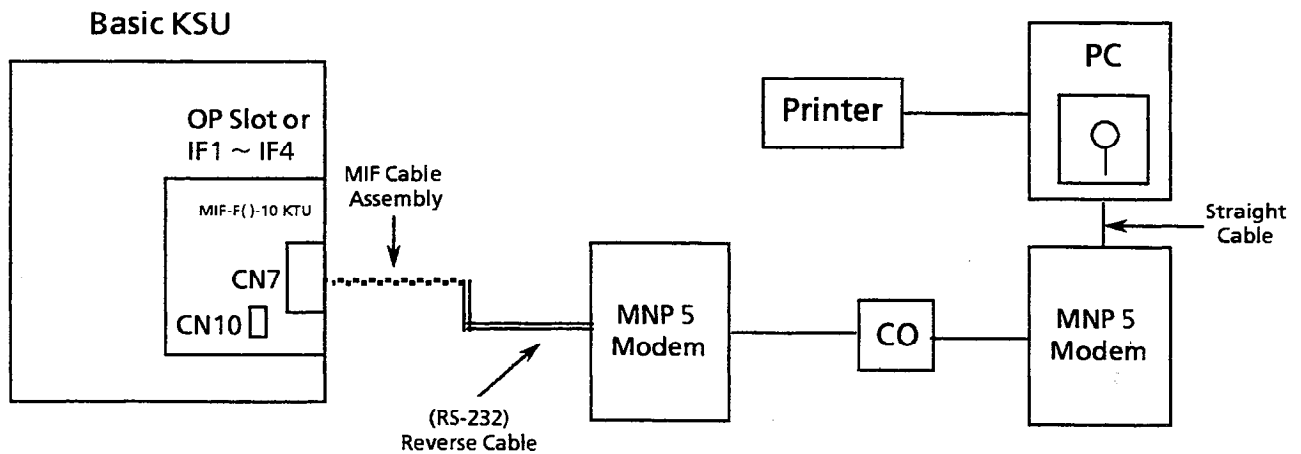


Figure 2-58 MIF-F( )-10 KTU Direct and Remote Connections

1. Outgoing Call

<u>07/03/92</u>	<u>09:00</u>	<u>08-05-12</u>	<u>OG</u>	<u>123</u>
A	B	C	D	E
<u>00:15:32</u>	<u>102885167537000</u>			
G	H			

2. Outgoing Call (LCR)

<u>07/03/92</u>	<u>09:00</u>	<u>08-05-12</u>	<u>OG</u>	<u>123</u>
A	B	C	D	E
<u>00:15:32</u>	<u>102885167537000</u>			
G	H			
				<u>LCR</u>
				K

3. Incoming Call

<u>07/03/92</u>	<u>09:00</u>	<u>05-12</u>	<u>IC</u>	<u>123</u>
A	B	C	D	E
<u>00:15:32</u>	<u>9727517622</u>			
G	H			

4. DISA (Both incoming and outgoing are printed)

<u>07/03/92</u>	<u>09:00</u>	<u>05-12</u>	<u>IC</u>	<u>999</u>	<u>234</u>
A	B	C	D	E	F
<u>00:15:32</u>					
G					
		<u>D100</u>			
		J			
<u>07/03/92</u>	<u>09:00</u>	<u>08-05-12</u>	<u>OG</u>	<u>999</u>	
A	B	C	D	E	
<u>00:15:32</u>	<u>102885167537000</u>				
G	H				
<u>1234567890</u>	<u>D100</u>				
I	J				

**Note 1:** Example number 4, above, is the SMDR output format when the incoming caller hangs up first. If the called party hangs up first, the SMDR output information is reversed.

**Note 2:** A ~ K are the printout item numbers. The temporary station number is 999. Refer to Figure 2-60 - SMDR Print Formats Item Numbers.

Figure 2-59 SMDR Print Formats

The following provides an explanation of each item that appears on the SMDR printout.

- A. Start Date: 07/03/92**  
 07 = month  
 03 = day  
 92 = year
- B. Start Time: 09:00**  
 09 = hour  
 03 = minute
- C. Trunk Information: 08-05-12**  
 08 = Route Advance Block  
 05 = Trunk Group  
 12 = Trunk Number
- D. Type of Call:**  
 IC = Incoming Call  
 OG = Outgoing Call  
 ICC = Conference on Incoming Call  
 OGC = Conference on Outgoing Call  
 IT = Transferred Incoming Call  
 OT = Transferred Outgoing Call  
 ITC = Conference on Transferred Incoming Call  
 OTC = Conference on Transferred Outgoing Call
- E. Station Number: 123**  
 This number depends on whether the system is set as 2-, 3-, or 4-digit station number in System Programming.
- F. Transferred Station Number: 234**  
 This number depends on whether the system is set as 2-, 3-, or 4-digit station number in System Programming.
- G. Call Duration: 00:15:32**  
 00 = hour  
 15 = minute  
 32 = seconds
- H. Number Dialed: 102885167537000 (outgoing call)**  
**Caller ID: 9727517622 (incoming call)**  
 Maximum number of characters is 24.
- I. Account Code Entry: 1234567890**  
 Maximum number of characters is 16.  
**Forced Account Code: A1234567890**  
 If Account Code *and* Forced Account Code are entered, SMDR Prints: 1234567890 A1234567890  
 Maximum number of characters is 13.
- J. Station Number of the DISA Caller**  
 Maximum number of characters is 4.
- K. LCR**  
 LCR = Least Cost Routing

Figure 2-60 SMDR Print Formats Item Numbers



## 4.4.5 MIF-F(L)-10 KTU

The MIF-F(L)-10 KTU allows the connection of a personal computer to perform System Programming and up/down loading of System Data, provides Station Message Detail Recording (SMDR) to be output via the RS-232 cable to a serial printer, provides Least Cost Routing (LCR) ability, and supports scroll and dial out using Caller ID.

Only one MIF-F(L)-10 KTU can be installed in either system. Refer to the *Electra Professional 120/Level II/Level II Advanced Least Cost Routing Manual* (included with the Electra Professional 120/Level II/Level II Advanced Least Cost Routing software) for LCR instructions. Refer to the *Electra Professional 120/Level II/Level II Advanced System Program Technician Manual* (included with the Electra Professional System Program Technician software) for programming instructions using a PC.

Switch Settings/LED Indications

When the green LED1 is on, the MIF-F(L)-10 KTU is receiving power. When the red LED2 is flashing, the MIF is exchanging data communications with the system CPU. When the red LED3 is on, the SMDR function is outputting a call record. Refer to Figure 2-61 - MIF-F(L)-10 KTU Switch Layout. Switch MB is the ON/OFF control for this KTU. Also refer to Table 2-30 - MIF-F(L)-10 KTU Switch (SW3) Settings for PC and MNP Modem Connections, Table 2-31 - MIF-F(L)-10 KTU Switch (SW4) Settings for Printers, Table 2-32 - MIF-F(L)-10 KTU - DTE PC or Printer Connections, Table 2-33 - MIF-F(L)-10 KTU - DCE MNP Modem Connections.

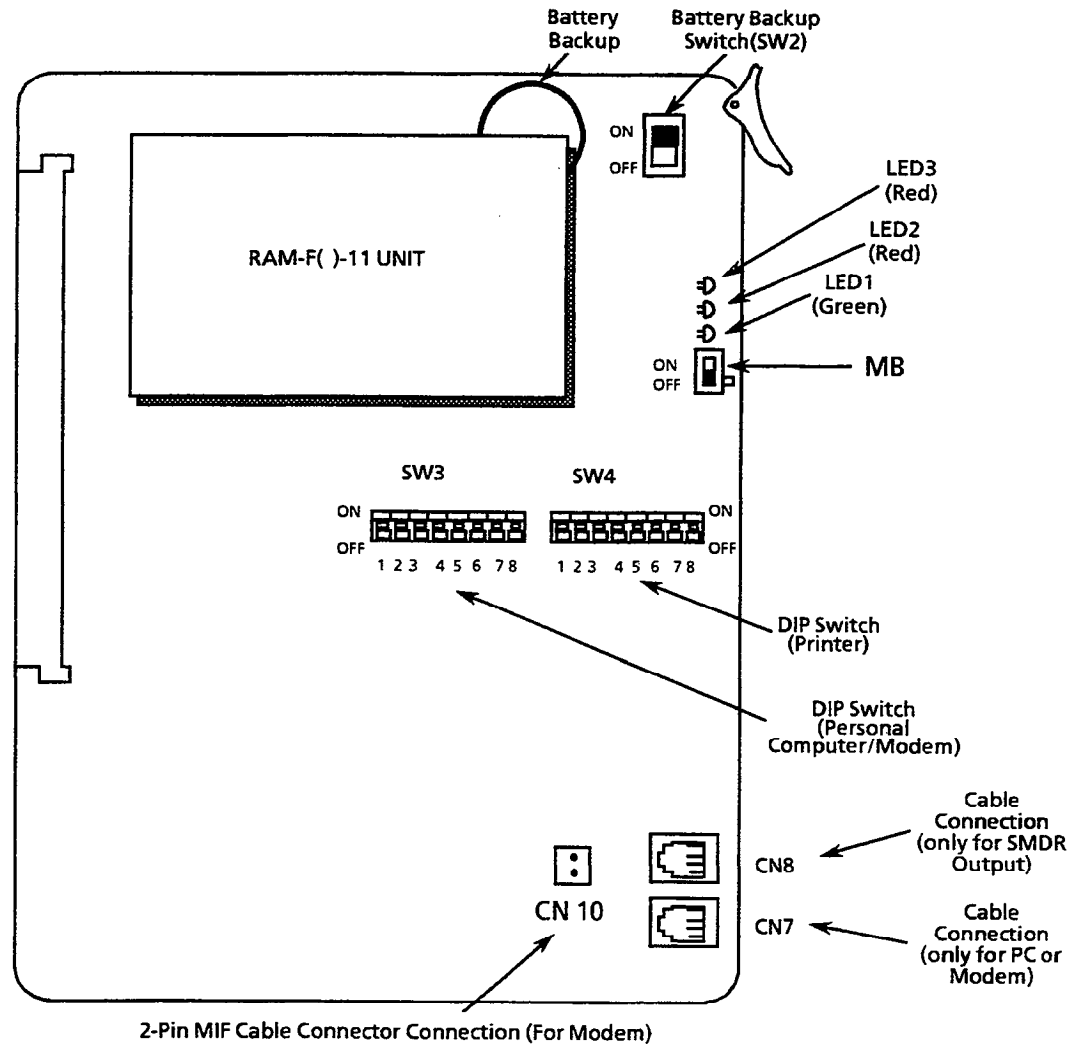


Figure 2-61 MIF-F(L)-10 KTU Switch Layout

Table 2-30 MIF-F(L)-10 KTU Switch (SW3) Settings for PC and MNP Modem Connections

Switch Position (SW3)	ON/OFF Setting	Description																				
1	OFF: 0 ON: 1	Connection to CN7 0: PC Direct 1: MNP Modem Connected																				
2	OFF: 0 ON: 1	Not Used																				
3	OFF: 0 ON: 1	Not Used																				
4	OFF: 0 ON: 1	Not Used																				
5	OFF: 0 ON: 1	Parity and Stop Bits: <table border="1"> <thead> <tr> <th>SW3 - 5</th> <th>SW3 - 6</th> <th>Parity</th> <th>Stop Bits</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td>2</td> </tr> <tr> <td>1</td> <td>0</td> <td>None</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>Even</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>Odd</td> <td>1</td> </tr> </tbody> </table>	SW3 - 5	SW3 - 6	Parity	Stop Bits	0	0	None	2	1	0	None	1	0	1	Even	1	1	1	Odd	1
SW3 - 5	SW3 - 6		Parity	Stop Bits																		
0	0		None	2																		
1	0		None	1																		
0	1	Even	1																			
1	1	Odd	1																			
6	OFF: 0 ON: 1																					
7	OFF: 0 ON: 1	Baud Rates: <table border="1"> <thead> <tr> <th>SW3 - 7</th> <th>SW3 - 8</th> <th>RS-232C</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>9600 bps</td> </tr> <tr> <td>1</td> <td>0</td> <td>4800 bps</td> </tr> <tr> <td>0</td> <td>1</td> <td>2400 bps</td> </tr> <tr> <td>1</td> <td>1</td> <td>1200 bps</td> </tr> </tbody> </table>	SW3 - 7	SW3 - 8	RS-232C	0	0	9600 bps	1	0	4800 bps	0	1	2400 bps	1	1	1200 bps					
SW3 - 7	SW3 - 8		RS-232C																			
0	0		9600 bps																			
1	0		4800 bps																			
0	1	2400 bps																				
1	1	1200 bps																				
8	OFF: 0 ON: 1																					

Table 2-31 MIF-F(L)-10 KTU Switch (SW4) Settings for Printers

Switch Position (SW4)	ON/OFF Setting	Description																				
1	OFF: 0 ON: 1	Mode Setting: 0: Operation Mode 1: Test Mode: <b>Note:</b> Operation of MIF stops when set to the test mode.																				
2	OFF: 0 ON: 1	Not Used																				
3	OFF: 0 ON: 1	Not Used																				
4	OFF: 0 ON: 1	Data Bits (RS-232C for Printer) 0: 8-bit 1: 7-bit																				
5	OFF: 0 ON: 1	Parity and Stop Bits: <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>SW4 - 5</th> <th>SW4 - 6</th> <th>Parity</th> <th>Stop Bits</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td>2</td> </tr> <tr> <td>1</td> <td>0</td> <td>None</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>Even</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>Odd</td> <td>1</td> </tr> </tbody> </table>	SW4 - 5	SW4 - 6	Parity	Stop Bits	0	0	None	2	1	0	None	1	0	1	Even	1	1	1	Odd	1
SW4 - 5	SW4 - 6		Parity	Stop Bits																		
0	0	None	2																			
1	0	None	1																			
0	1	Even	1																			
1	1	Odd	1																			
6	OFF: 0 ON: 1																					
7	OFF: 0 ON: 1	Baud Rates: <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>SW4 - 7</th> <th>SW4 - 8</th> <th>RS-232C</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>4800 bps</td> </tr> <tr> <td>1</td> <td>0</td> <td>2400 bps</td> </tr> <tr> <td>0</td> <td>1</td> <td>1200 bps</td> </tr> <tr> <td>1</td> <td>1</td> <td>300 bps</td> </tr> </tbody> </table>	SW4 - 7	SW4 - 8	RS-232C	0	0	4800 bps	1	0	2400 bps	0	1	1200 bps	1	1	300 bps					
SW4 - 7	SW4 - 8		RS-232C																			
0	0	4800 bps																				
1	0	2400 bps																				
0	1	1200 bps																				
1	1	300 bps																				
8	OFF: 0 ON: 1																					

Table 2-32 MIF-F(L)-10 KTU - DTE PC or Printer Connections

MIF (CN7 & CN8)	→	MIF Cable Assembly	Straight RS-232 Cable	PC or Printer
FG(FG) 1	-----	1 (FG)FG 1	-----	1 (FG)FG
RXD(RD) 5	←	2 (SD)TXD 2	---<---	2 (SD)TXD
TXD(SD) 4	→	3 (RD)RXD 3	--->---	3 (RD)RXD
CTS(CS) 6	←	4 (RS)RTS 4	---<---	4 (RS)RTS
RTS(RS) 3	→	5 (CS)CTS 5	--->---	5 (CS)CTS
DTR(ER) 7	→	6 (DR)DSR 6	--->---	6 (DR)DSR
SG(SG) 8	-----	7 (SG)SG 7	-----	7 (SG)SG
DSR(DR) 2	←	20 (ER)DTR 20	---<---	20 (ER)DTR
DCD(CN10)	←	8 (CD)DCD 8	---<---	8 (CD)DCD

**Note:** The arrows show the direction of data flow during operation.

Table 2-33 MIF-F(L)-10 KTU - DCE MNP Modem Connections

MIF (CN7)	→	MIF Cable Assembly	Reverse RS-232 Cable	MNP Modem
FG (FG) 1	-----	1 (FG)FG 1	-----	1 (FG)FG
RXD(RD) 5	←	2 (SD)TXD 2	---<---	3 (RD)RXD
TXD(SD) 4	→	3 (RD)RXD 3	--->---	2 (SD)TXD
CTS(CS) 6	←	4 (RS)RTS 4	---<---	5 (CS)CTS
RTS(RS) 3	→	5 (CS)CTS 5	--->---	4 (RS)RTS
DTR(ER) 7	→	6 (DR)DSR 6	--->---	20 (ER)DTR
SG(SG) 8	-----	7 (SG)SG 7	-----	7 (SG)SG
DCD(CN10)	←	8 (CD)DCD 8	---<---	8 (CD)DCD
DSR(DR) 2	←	20 (ER)DTR 20	---<---	6 (DR)DSR

**Note:** The arrows show the direction of data flow during operation.

### Installation

The MIF-F(L)-10 KTU can be installed into an Option Slot (OP) or into one of the four Interface/Option Slots (IF1/OP1 ~ IF4/OP4), in the ESF-H-10 KSU. This KTU is shipped with two cable assemblies (MIF cable assembly). One end of each cable has an RJ45 (8-pin) connector. The other end of the cable terminates at an RS-232 connector. This connector must be mounted in the KSU. Refer to Figure 2-62 - Connecting the MIF Cable Assembly and the MIF-F(L)-10 KTU to the ESF-H-10 KSU.

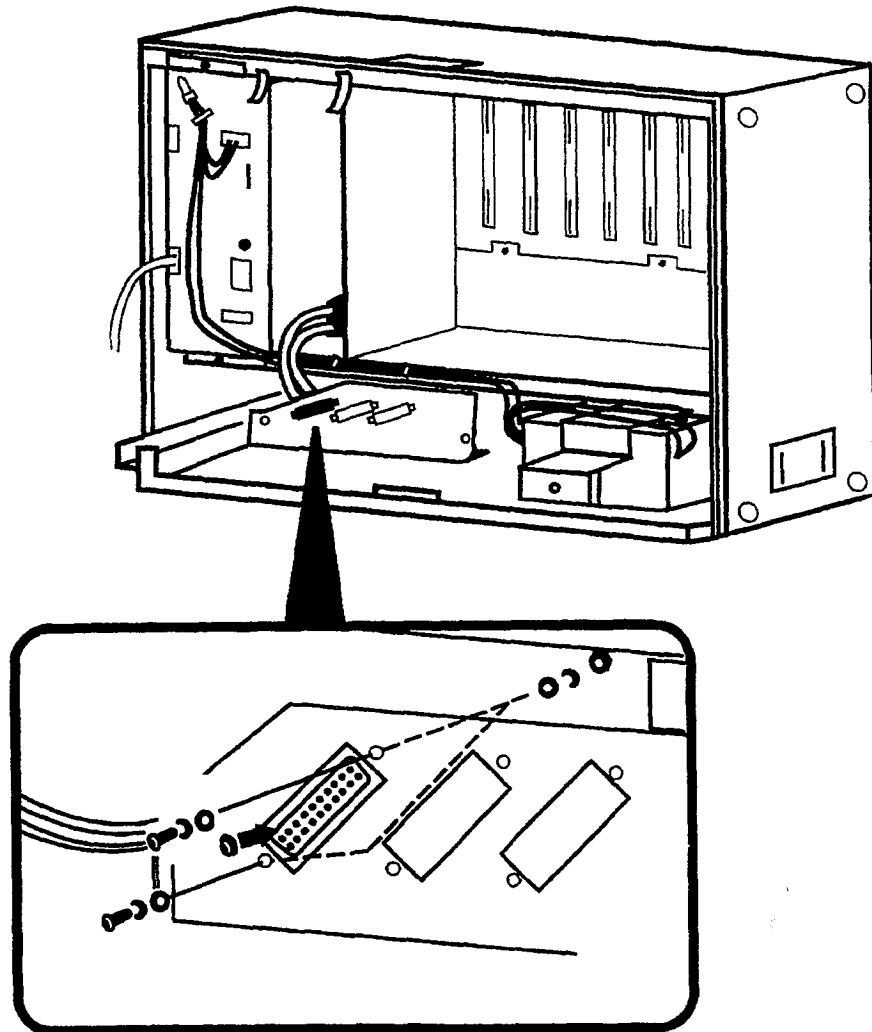


Figure 2-62 Connecting the MIF Cable Assembly and the MIF-F(L)-10 KTU to the ESF-H-10 KSU

### Printer Connection for SMDR

#### Required Equipment:

1. MIF-F(L)-10 KTU with the NEC provided MDF Cable Assembly
2. RS-232 Straight Cable
3. Standard Printer

#### To install:

1. Set SW4 DIP switch on the MIF-F(L)-10 KTU to adjust for the printer.
2. Install the MIF-F(L)-10 KTU into the KSU.
3. Connect the MIF Cable Assembly to CN8 on the MIF-F(L)-10 KTU and the KSU. Refer to Figure 2-62 - Connecting the MIF Cable Assembly and the MIF-F(L)-10 KTU to the ESF-H-10 KSU.
4. Connect the standard printer using the straight RS-232 cable.
5. Turn the MB switch on the MIF-F(L)-10 KTU to the ON position.
6. Program Memory Blocks: System Mode (LK1) SMDR/LCR (LK5) No. 02, 13, 14, 25, and 26.

### PC or MNP Class 5 Modem Connection for Electra Professional 120/Level II/Level II Advanced System Program Technician Software:

The information given in this section is a basic overview of System Programming using a PC. For specific information, refer to the *Electra Professional 120/Level II/Level II Advanced System Program Technician Manual* (included with the Electra Professional 120/Level II/Level II Advanced System Technician software).

#### Required Equipment:

1. MIF-F(L)-10 KTU with NEC provided MIF Cable Assembly
2. RS-232 straight cable (for direct connection) or reverse cable (for remote connection)
3. IBM or IBM-compatible PC with 286 or higher and MS-DOS Version 3.3 or higher
4. NEC Electra Professional 120/Level II/Level II Advanced System Program Technician Software.
5. Standard dot matrix printer (if required for printing job specifications or station labels)
6. MNP Modem Class 5 (required for remote connection)

#### To install:

1. Set SW3 DIP switch on the MIF-F(L)-10 KTU to adjust for a PC or modem.
2. Install the MIF-F(L)-10 KTU into the KSU.
3. Connect the MIF Cable Assembly to CN7 and CN10 on the MIF-F(L)-10 KTU and the KSU. Refer to Figure 2-62 - Connecting the MIF Cable Assembly and the MIF-F(L)-10 KTU to the ESF-H-10 KSU.
4. Connect the PC using a straight RS-232 cable or connect the MNP modem using a reverse RS-232 cable.
5. Place the MB switch on the MIF-F(L)-10 KTU to ON.

4.4.6 MIF-F(A)-10 KTU

The MIF-F(A)-10 KTU allows an interface to an MIS (ACD) terminal.

Only one MIF-F(A)-10 KTU can be installed. Refer to the *Electra Professional 120/Level II/Level II Advanced Automatic Call Distribution Manual* for detailed instructions for the MIF-F(A)-10 KTU.

Switch Settings/LED Indications

When the green LED1 is on, the MIF-F(A)-10 KTU is receiving power. When the red LED2 is on, the MIF is exchanging data communications with the system CPU. Refer to Figure 2-63 - MIF-F(A)-10 KTU Switch Layout, Table 2-34 - MIF-F(A)-10 KTU Switch (SW3) Settings for PC Connection, and Table 2-35 - MIF-F(A)-10 KTU - DTE PC Connections. Switch MB is the ON/OFF control for this KTU.

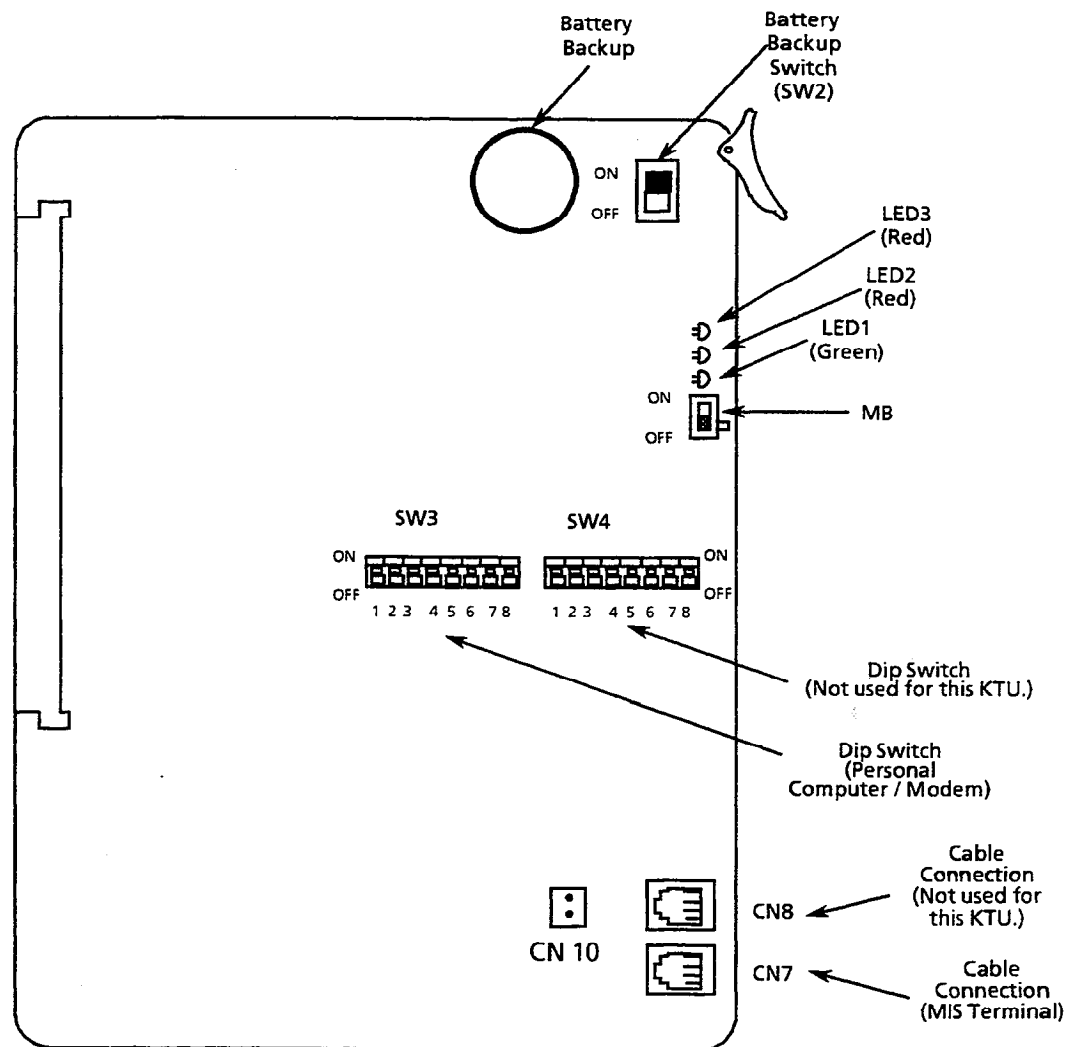


Figure 2-63 MIF-F(A)-10 KTU Switch Layout



Table 2-34 MIF-F(A)-10 KTU Switch (SW3) Settings for PC Connection

Switch Position (SW3)	ON/OFF Setting	Description																				
1	OFF: 0 ON: 1	Not Used																				
2	OFF: 0 ON: 1	Forward - No Answer 0: Allow 1: Deny																				
3	OFF: 0 ON: 1	Not Used																				
4	OFF: 0 ON: 1	Not Used																				
5	OFF: 0 ON: 1	Parity and Stop Bits: <table border="1"> <thead> <tr> <th>SW3 - 5</th> <th>SW3 - 6</th> <th>Parity</th> <th>Stop Bits</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td>2</td> </tr> <tr> <td>1</td> <td>0</td> <td>None</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>Even</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>Odd</td> <td>1</td> </tr> </tbody> </table>	SW3 - 5	SW3 - 6	Parity	Stop Bits	0	0	None	2	1	0	None	1	0	1	Even	1	1	1	Odd	1
SW3 - 5	SW3 - 6		Parity	Stop Bits																		
0	0	None	2																			
1	0	None	1																			
0	1	Even	1																			
1	1	Odd	1																			
6	OFF: 0 ON: 1																					
7	OFF: 0 ON: 1	Baud Rates: <table border="1"> <thead> <tr> <th>SW3 - 7</th> <th>SW3 - 8</th> <th>RS-232C</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>9600 bps</td> </tr> <tr> <td>1</td> <td>0</td> <td>4800 bps</td> </tr> <tr> <td>0</td> <td>1</td> <td>2400 bps</td> </tr> <tr> <td>1</td> <td>1</td> <td>1200 bps</td> </tr> </tbody> </table>	SW3 - 7	SW3 - 8	RS-232C	0	0	9600 bps	1	0	4800 bps	0	1	2400 bps	1	1	1200 bps					
SW3 - 7	SW3 - 8		RS-232C																			
0	0	9600 bps																				
1	0	4800 bps																				
0	1	2400 bps																				
1	1	1200 bps																				
8	OFF: 0 ON: 1																					

Table 2-35 MIF-F(A)-10 KTU - DTE PC Connections

MIF (CN7 & CN8)	→	MIF Cable Assembly	Straight RS-232 Cable	PC or Printer
FG(FG) 1	-----	1 (FG)FG 1	-----	1 (FG)FG
RXD(RD) 5	←	2 (SD)TXD 2	---<---	2 (SD)TXD
TXD(SD) 4	→	3 (RD)RXD 3	--->---	3 (RD)RXD
CTS(CS) 6	←	4 (RS)RTS 4	---<---	4 (RS)RTS
RTS(RS) 3	→	5 (CS)CTS 5	--->---	5 (CS)CTS
DTR(ER) 7	→	6 (DR)DSR 6	--->---	6 (DR)DSR
SG(SG) 8	-----	7 (SG)SG 7	-----	7 (SG)SG
DSR(DR) 2	←	20 (ER)DTR 20	---<---	20 (ER)DTR
DCD(CN10)	←	8 (CD)DCD 8	---<---	8 (CD)DCD

Note: The arrows show the direction of data flow during operation.

Installation

The MIF-F(A)-10 KTU can be installed into an Option Slot (OP) or into one of the four Interface/Option Slots (IF1/OP1 ~ IF4/OP4), in the first two ESF-H-10 KSUs. The MIF-F(4)-10 KTU is shipped with two cable assemblies (MIF cable assembly). One end of each cable has an RJ45 (8-pin) connector. The other end of the cable terminates at an RS-232 connector. This connector must be mounted on the KSU. Refer to Figure 2-64 - Connecting the MIF Cable Assembly and the MIF-F(A)-10 KTU to the ESF-H-10 KSU.

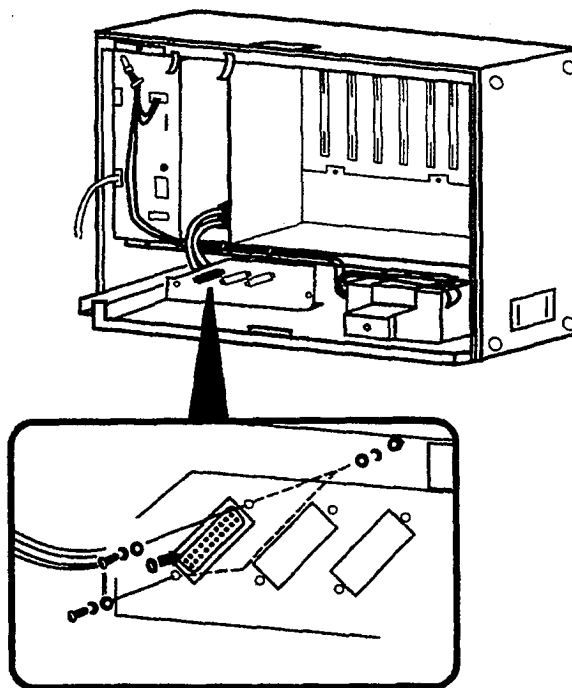


Figure 2-64 Connecting the MIF Cable Assembly and the MIF-F(A)-10 KTU to the ESF-H-10 KSU

MIS Terminal Connection for ACD:

## Required Equipment:

1. MIF-F(A)-10 KTU with NEC provided MDF Cable Assembly
2. RS-232 Straight Cable
3. IBM or IBM compatible PC with 286 or higher

## To install:

1. Set SW3 DIP switch to adjust for the PC connection on the MIF-F(A)-10 KTU.
2. Install the MIF-F(A)-10 KTU into the KSU.
3. Connect the MIF Cable Assembly to CN7 and CN10 on the MIF-F(A)-10 KTU and the KSU. Refer to Figure 2-64 - Connecting the MIF Cable Assembly and the MIF-F(A)-10 KTU to the ESF-HB-10 KSU.
4. Connect the MIS Terminal to use the straight RS-232 cable.
5. Turn the MB switch on the MIF-F(A)-10 KTU to the ON position.
6. Program Memory Block(s): 1-8-25, ACD Group Agent Assignment; 1-12-00, ACD Group Pilot Number Assignment; 1-12-01, ACD Group Overflow Destination Assignment; and 1-12-02, ACD Overflow Timer Selection.

## 4.4.7 MIF-F(C)-10 KTU

The MIF-F(C)-10 KTU provides the Caller ID feature

Only one MIF-F(C)-10 KTU can be installed in either system.

Switch Settings/LED Indications

When the green LED1 is on, the MIF-F(C)-10 KTU is receiving power. When the red LED2 is on, the MIF is exchanging data communications with the system CPU. Refer to Figure 2-65 - MIF-F(C)-10 KTU Switch Layout. Switch MB is the ON/OFF control for this KTU.

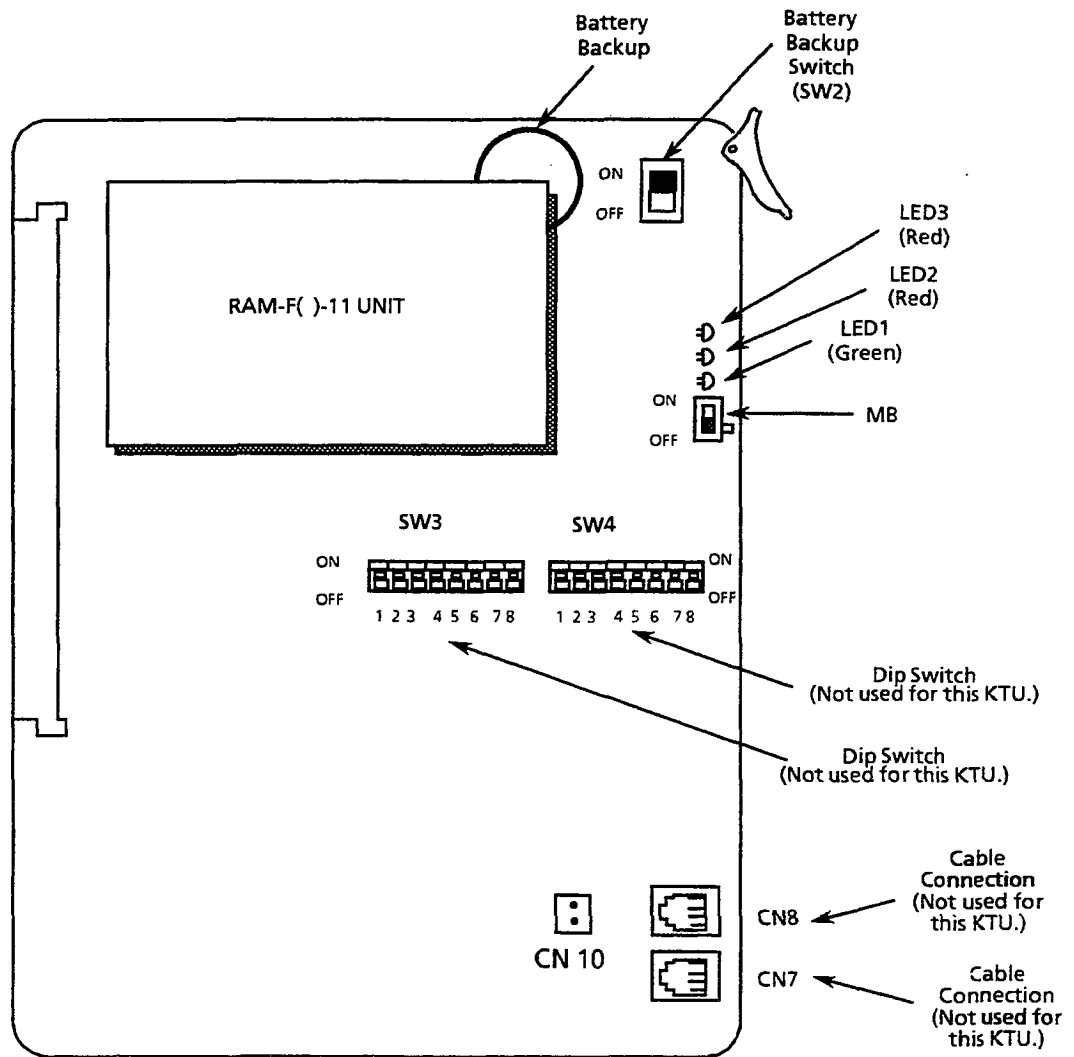


Figure 2-65 MIF-F(C)-10 KTU Switch Layout

Installation

The MIF-F(C)-10 KTU can be installed into an Option Slot (OP) or into one of the four Interface/Option Slots (IF1/OP1 ~ IF4/OP4), in the ESF-H-10 KSU, or first Expansion KSU. This KTU is shipped with two cable assemblies (MIF cable assembly). One end of each cable has an RJ45 (8-pin) connector. This cable is not needed for Caller ID.

4.4.8 MIF-F(U)-10 KTU

The MIF-F(U)-10 KTU provides the Uniform Call Distribution (UCD) feature.

Only one MIF-F(U)-10 KTU can be installed in the system.

**Note:** MIF-F(A)-10 KTU and MIF-F(U)-10 KTU cannot both be installed in the same system.

Switch Settings/LED Indications

When the green LED1 is on, the MIF-F(U)-10 KTU is receiving power. When the red LED2 is on, the MIF is exchanging data communications with the system CPU. Refer to Figure 2-66 - MIF-F(U)-10 KTU Switch Layout.

Installation

The MIF-F(U)-10 KTU can be installed in an Option Slot (OP) or in one of the four Interface/Option Slots (IF1/OP1 ~ IF4/OP4), of the first two ESF-H-10 KSUs.

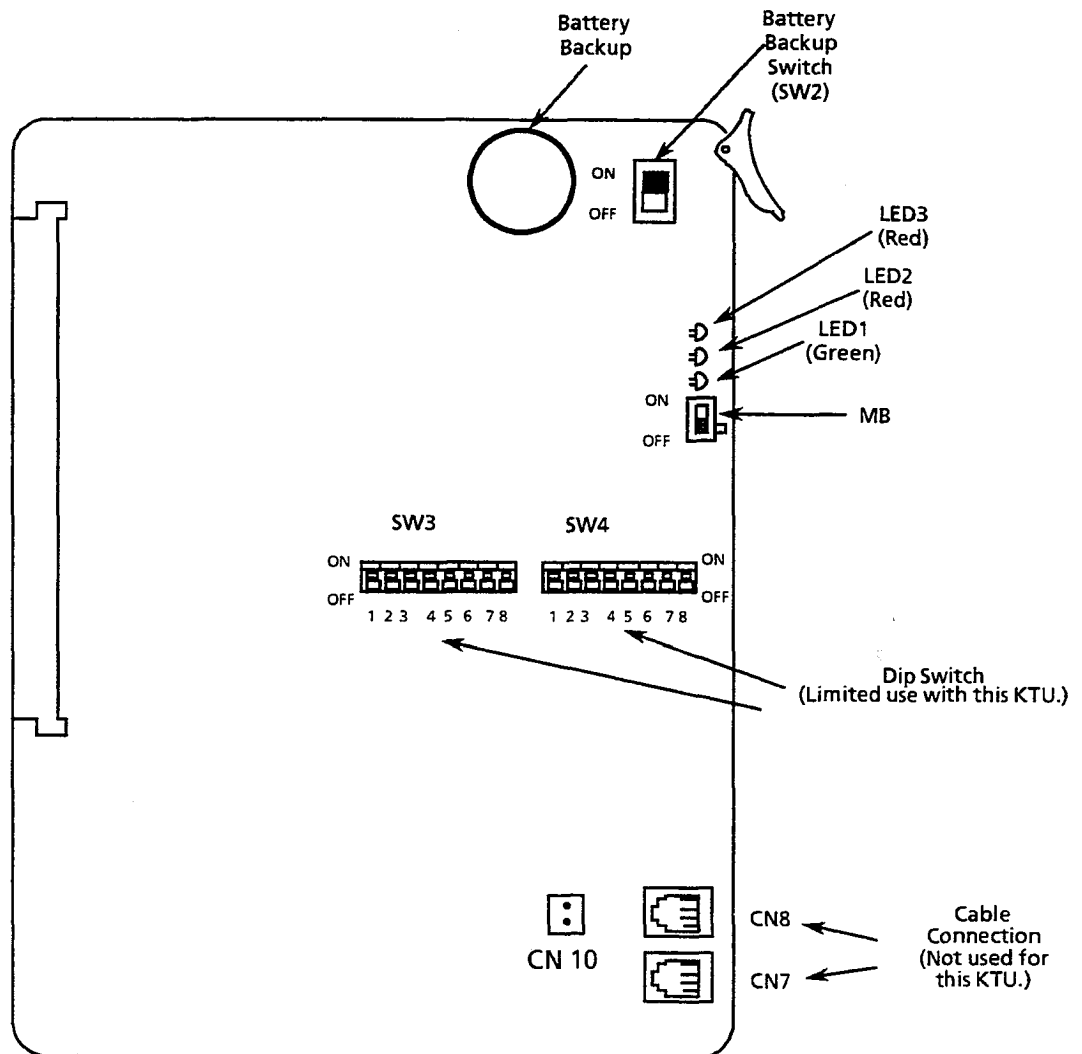


Figure 2-66 MIF-F(U)-10 KTU Switch Layout

**SECTION 5 CABLE CONNECTIONS****5.1 General Information****5.1.1 Connection Requirements**

The KSU is connected with each of the Multiline Terminals, Single Line Telephones, optional equipment, CO/PBX, DID, 4-wire E&M Tie lines (Types I and V), and digital trunks (T1/FT1) by a separate twisted-pair cable through the MDF. The 4-wire E&M Tie lines are T1/FT1 lines and require multiple twisted-pair cabling.

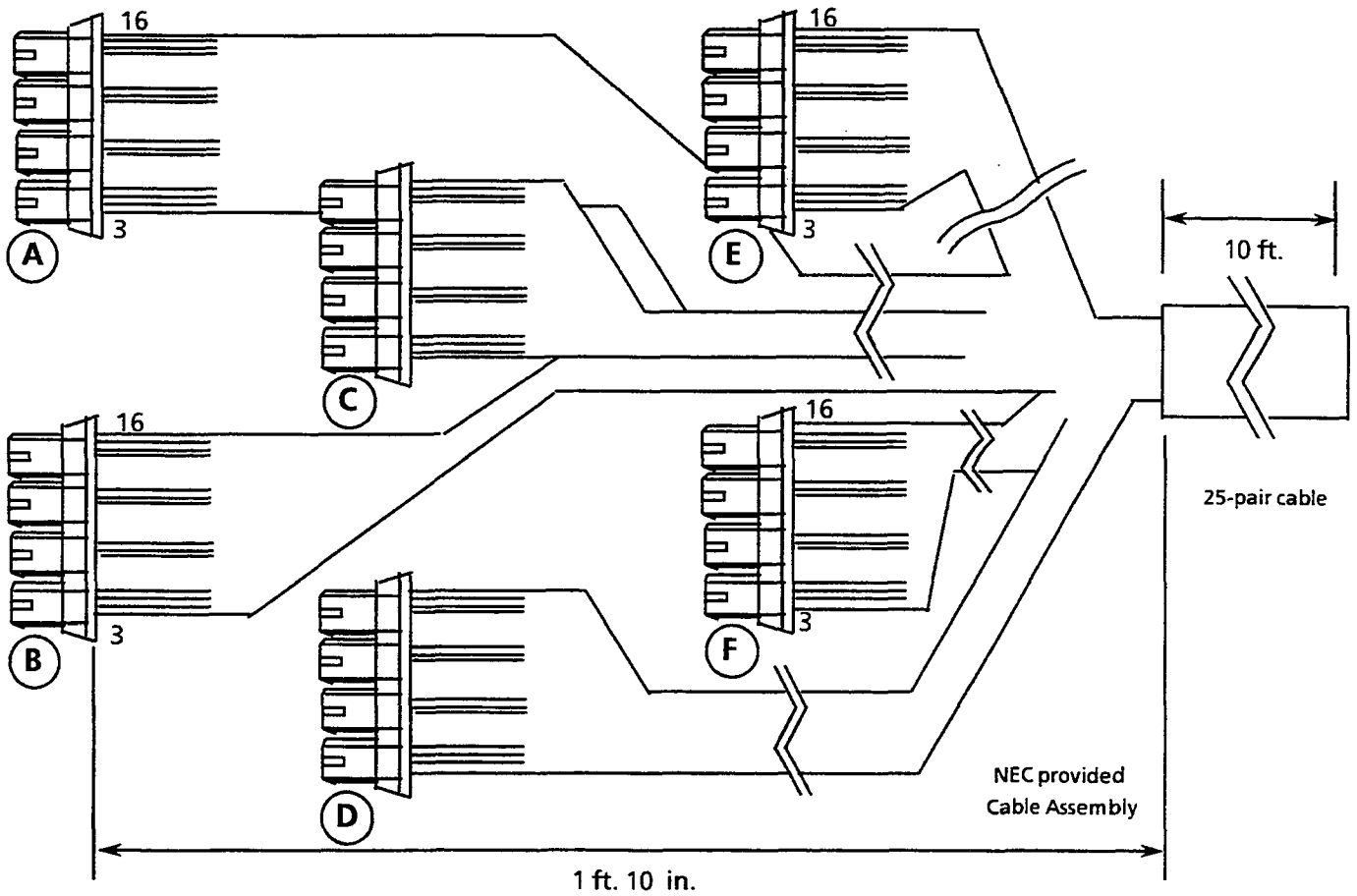
**5.1.2 Cabling Precautions**

When selecting cables and the MDF, future expansion or assignment changes should be given due consideration. Avoid running cables in the following places:

- A place exposed to wind or rain [except the LLT-F(2G)-10 KTU].
- A place near heat radiating equipment or where the quality of PVC covering could be affected by gases and chemicals.
- An unstable place subject to vibration.

**5.2 Wiring Between the KSU and the MDF****5.2.1 KSU Cables**

The KSU is equipped with two MDF Cable Assemblies. NEC recommends that the MDF Cable Assembly be used to connect the Multiline Terminals, Single Line Telephones (except PFT), CO/PBX, and DID lines. Refer to Figure 2-67 - MDF Cable Assembly Diagram and Table 2-36 - Connection Information/Connection and Port Relationships. When installing 4-wire E&M Tie lines, Single Line Telephones with PFT, and other optional equipment with the ECR-F-11 KTU, NEC provides the connector; however, the cabling must be locally provided. Refer to Section 5.2.2 - Connecting Cables to Special Connectors.



CABLE COLORS						
	A	B	C	D	E	F
1	----	----	----	----	----	----
2	----	----	----	----	----	----
3	BL-WH	SL-WH	BR-RD	GN-BK	OR-YL	BL-VI
4	WH-BL	WH-SL	RD-BR	BK-GN	YL-OR	VI-BL
5	----	----	----	----	----	----
6	----	----	----	----	----	----
7	OR-WH	BL-RD	SL-RD	BR-BK	GN-YL	OR-VI
8	WH-OR	RD-BL	RD-SL	BK-BR	YL-GN	VI-OR
9	----	----	----	----	----	----
10	----	----	----	----	----	----
11	GN-WH	OR-RD	BL-BK	SL-BK	BR-YL	GN-VI
12	WH-GN	RD-OR	BK-BL	BK-SL	YL-BR	VI-GN
13	----	----	----	----	----	----
14	----	----	----	----	----	----
15	BR-WH	GN-RD	OR-BK	BL-YL	SL-YL	BR-VI
16	WH-BR	RD-GN	BK-OR	YL-BL	YL-SL	VI-BR

Figure 2-67 MDF Cable Assembly Diagram



Table 2-36 Connection Information/Connection and Port Relationships

Con-nectors	MDF Pin No.	Running Cable	Multiline Terminals, Attendant Add-On Console, SLT Adaptor, or Digital Voice Mail			Others				
			ETW Station Cable	DTU Station Cable	Lead Functions	Station Cable	Lead Functions			
							CO Line	SLT (Note 1)	Loop Dial, DID LLT	DTI
A	26 1	WH-BL BL-WH	BK YL	GN RD	R T	GN RD	T R	T R	T R	RT RR
	27 2	WH-OR OR-WH	BK YL	GN RD	R T	GN RD	T R	T R	T R	TT TR
	28 3	WH-GN GN-WH	BK YL	GN RD	R T	GN RD	T R	T R		
	29 4	WH-BR BR-WH	BK YL	GN RD	R T	GN RD	T R	T R		
B	30 5	WH-SL SL-WH	BK YL	GN RD	R T	GN RD	T R	T R	T R	RT RR
	31 6	RD-BL BL-RD	BK YL	GN RD	R T	GN RD	T R	T R	T R	TT TR
	32 7	RD-OR OR-RD	BK YL	GN RD	R T	GN RD	T R	T R		
	33 8	RD-GN GN-RD	BK YL	GN RD	R T	GN RD	T R	T R		
C	34 9	RD-BR BR-RD	BK YL	GN RD	R T	GN RD	T R	T R	T R	RT RR
	35 10	RD-SL SL-RD	BK YL	GN RD	R T	GN RD	T R	T R	T R	TT TR
	36 11	BK-BL BL-BK	BK YL	GN RD	R T	GN RD	T R	T R		
	37 12	BK-OR OR-BK	BK YL	GN RD	R T	GN RD	T R	T R		
D	38 13	BK-GN GN-BK	BK YL	GN RD	R T	GN RD	T R	T R	T R	RT RR
	39 14	BK-BR BR-BK	BK YL	GN RD	R T	GN RD	T R	T R	T R	TT TR
	40 15	BK-SL SL-BK	BK YL	GN RD	R T	GN RD	T R	T R		
	41 16	YL-BL BL-YL	BK YL	GN RD	R T	GN RD	T R	T R		
E	42 17	YL-OR OR-YL	BK YL	GN RD	R T	GN RD	T R	T R	T R	RT RR
	43 18	YL-GN GN-YL	BK YL	GN RD	R T	GN RD	T R	T R	T R	TT TR
	44 19	YL-BR BR-YL	BK YL	GN RD	R T	GN RD	T R	T R		
	45 20	YL-SL SL-YL	BK YL	GN RD	R T	GN RD	T R	T R		
F	46 21	VI-BL BL-VI	BK YL	GN RD	R T	GN RD	T R	T R	T R	RT RR
	47 22	VI-OR OR-VI	BK YL	GN RD	R T	GN RD	T R	T R	T R	TT TR
	48 23	VI-GN GN-VI	BK YL	GN RD	R T	GN RD	T R	T R		
	49 24	VI-BR BR-VI	BK YL	GN RD	R T	GN RD	T R	T R		
	50 25	VI-SL SL-VI	N/C	N/C	R T	N/C	N/C	N/C	N/C	

Note 1: SLI PFT required assembly of one 4-position connector by the installer. Only the first two channels provide for PFT connection. Refer to Section 4.3.2.1 - Power Failure Backup for connector assembly.

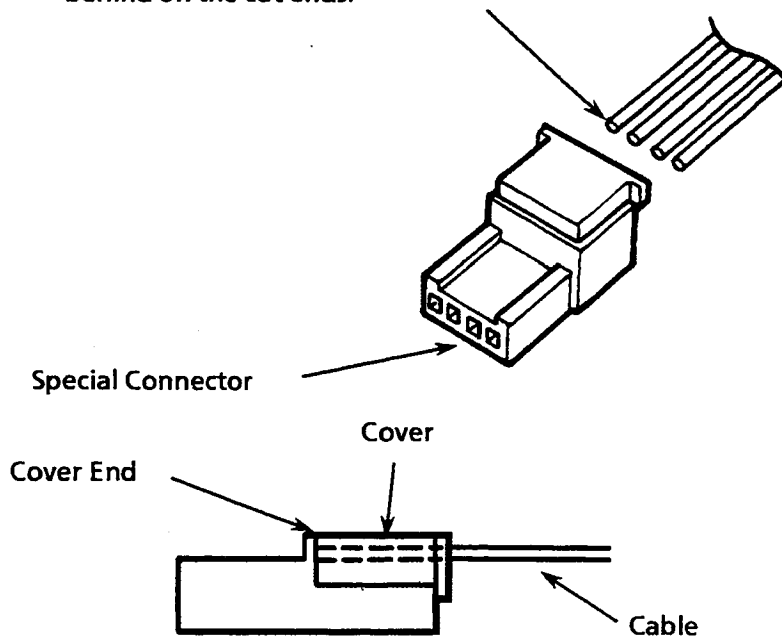
Note 2: The TLI-F(2)-10 KTU, BRT-F(4)-10 KTU, and ECR-F-11 KTU require assembly of the connectors by the installer. Refer to Section 5.2.3 - Outside Lines.

5.2.2 Connecting Cables to Special Connectors

If installing a TLI-F(2)-10 KTU, ECR-F-11 KTU and/or an SLI-F(8G)-21 KTU with PFT, the cables must be connected to the provided connectors, in the KTU packing box. The following instructions explain this procedure.

1. Cut the four cables the same length and insert them into the connector. Ensure that all four cables have been inserted all the way to the end of the cover. Refer to Figure 2-68 - Attaching the Cables to the Connector.

Make sure that no burrs are left behind on the cut ends.



Adaptable Cable		
	Core	Covering Outside Diameter
	0.40 mm.	0.66 mm.
ICT Cable	0.50 mm.	0.80 mm.
	0.65 mm.	1.20 mm. +0

Figure 2-68 Attaching the Cables to the Connector

2. Lightly hold the connector with the pliers. In this case, make sure that the crimping portion is held between the lower portion of the jaws of the plier. Refer to Figure 2-69- Holding the Connector with the Pliers.

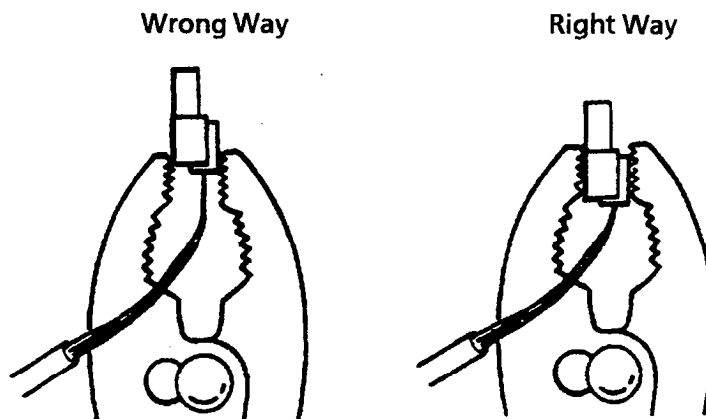


Figure 2-69 Holding the Connector with the Pliers

3. Squeeze the pliers to crimp the cables. If the cover is loose, press the cover again with the pliers.

**Note:** If sufficient pressure cannot be applied when the screw of the pliers is in the center position, change the position of the screw that allows the jaws of the pliers to close. Be careful when squeezing the hands of the pliers; excessive pressure could cause damage to the connector. Refer to Figure 2-70 - Positioning the Screw of the Pliers.

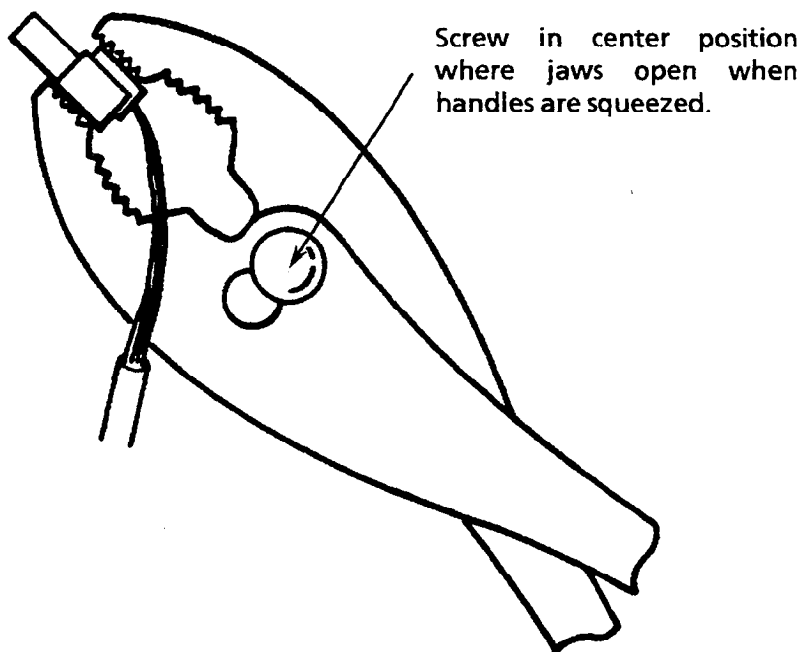


Figure 2-70 Positioning the Screw of the Pliers

5.2.3 Outside Lines

The FCC authorized connector for the connection of CO lines is an RJ21X. The CO lines are connected in sequence in this termination block. Therefore, the lines must be ordered in the appearance order best suited to the user. Refer to Table 2-36 - Connection Information/Connection & Port Relationships for information about the MDF Connector Assembly Cable positions, the cable number, and lead functions.

Ground Start and/or Loop Start, Loop Dial, DID, 4-wire E&M Tie lines (Types I and V), and T1 can be connected to this system. Using only twisted-pair wiring to crossconnect the lines from the RJ21X termination block to the MDF is recommended.

Half-tapping or parallel connections must not be used on outside lines connected to the system.

5.2.3.1 TLI-F(2)-10 KTU Cable Connections

Channel	Pins	
2	16	T12
	15	R12
	14	T2
	13	R2
	12	E2
	11	M2
	10	
	9	
1	8	T11
	7	R11
	6	T1
	5	R1
	4	E1
	3	M1
	2	
	1	

**Note 1:** TLI-F(2)-10 KTU contains one, 4-position connector for assembly by the installer.

**Note 2:** The six NEC-provided 4-position-connector cables CANNOT be used to support this KTU. Refer to Figure 2-67 - MDF Cable Assembly Diagram.

**Note 3:** Connector pins 1~16 are counted from the bottom to the top of the KTU when it is installed into an interface slot.

## 5.2.3.2 ECR-F-11 KTU Cable Connections

Pin No.	Terminal Name	Function
16	8 RM	External Tone - Ringer 4
15	8 RC	
14	7 RM	External Tone - Ringer 3
13	7 RC	
12	6 RM	External Tone - Ringer 2
11	6 RC	
10	5 RM	External Tone - Ringer 1
9	5 RC	
8	4 RM	Night Chime
7	4 RC	
6	3 RM	External Paging - Zone C
5	3 RC	
4	2 RM	External Paging - Zone B
3	2 RC	
2	1 RM	External Paging - Zone A
1	1 RC	

**Note 1:** ECR-F-11 KTU contains one, 4-position connector and two RCA plugs.

**Note 2:** The six NEC-provided 4-position-connector cables CANNOT be used to support this KTU. Refer to Figure 2-67 - MDF Cable Assembly Diagram.

**Note 3:** Connector pins 1 ~16 are counted from the bottom to the top of the KTU when it is installed in an interface slot.

**Note 4:** External speakers and amplifiers must be locally provided.

**Note 5:** External speakers must be 600  $\Omega$ .

5.2.3.3 DTI-F( )-10 KTU/DTI-F(A)-20 KTU Cable Connections

To install the cable between the T1/FT1 trunk and the DTI-F( )-10 KTU or DTI-F(A)-20 KTU:

1. Connect the T1/FT1 trunk to the MDF. Refer to Figure 2-71 - MDF Trunk Connection.
2. Connect this cable from the MDF to the DTI-F( )-10 KTU or DTI-F(A)-20 KTU by twisted-pair cable. Refer to Figure 2-71 - MDF Trunk Connection.

DTI-F( )-10 KTU	
Pins	Terminal Name
1	
2	
3	
4	
5	
6	
7	
8	
9	TA
10	TB
11	
12	
13	RA
14	RB
15	
16	

DTI-F(A)-20 KTU	
Pins	Terminal Name
1	TA
2	TB
3	RA
4	RB

**Note 1:** The maximum distance from the DTI-F( )-10 KTU or DTI-F(A)-20 KTU to CSU is 655 feet, using 22 AWG.

**Note 2:** CSU is recommended for maintenance (loop back or alarm function) or surge protection. The customer needs to purchase and install the CSU.

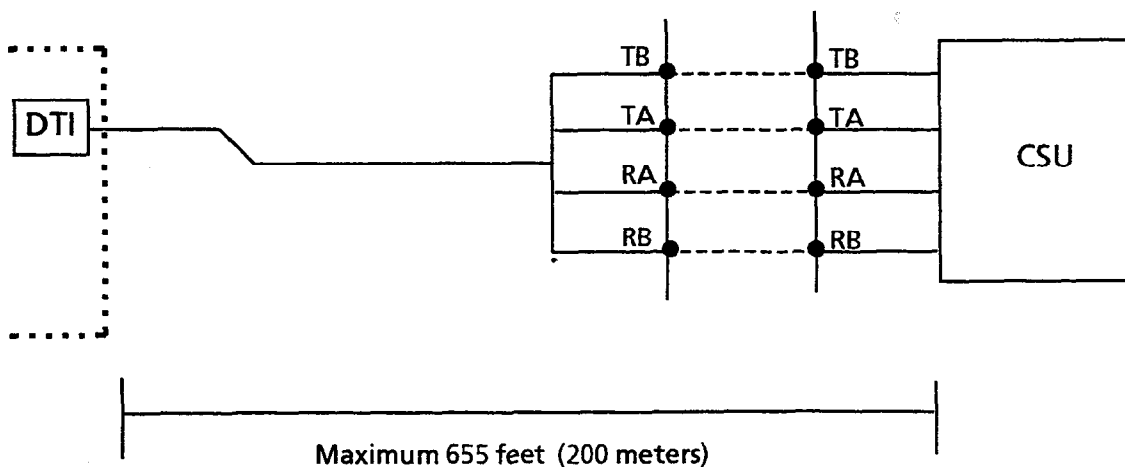


Figure 2-71 MDF Trunk Connection

## 5.2.3.4 SLI-F(8G)-21 KTU Cable Connections

## Channel Pins

4	16	T4
	15	R4
	14	
	13	
3	12	T3
	11	R3
	10	
	9	
2	8	T2
	7	R2
	6	PF T2
	5	PF R2
1	4	T1
	3	R1
	2	PF T1
	1	PF R1

**Note 1:** SLI-F(8G)-21 KTU contains two, 4-position connectors providing eight channels.

**Note 2:** Channels 1 and 2 can be used for PFT. If PFT is to be used, the six NEC-provided 4-position connector cables CANNOT be used for channels 1~ 4. However, they can be used for channels 5 ~ 8. Refer to Section 4.3.2.1 - Power Failure Backup.

## 5.2.4 Modular Terminal Connections for Electra Professional Multiline Terminals

When connecting Multiline Terminals, Attendant Add-On Consoles, or SLT Adapters to the MDF or IDF, individually twisted 1-pair cabling must be used. Refer to Table 2-36 - Connection Information/Connection and Port Relationships for lead functions. Refer to Figure 2-72 - Modular Terminal for Connection of Electra Professional Multiline Terminals and Attendant Add-On Consoles for station modular jack (RJ13C/W) connection.

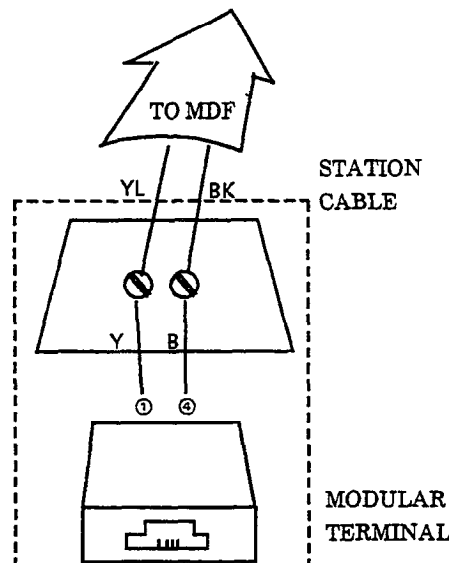


Figure 2-72 Modular Terminal for Connection of Electra Professional Multiline Terminals and Attendant Add-On Consoles

5.2.5 Modular Terminal Connections for Electra Elite Multiline Terminals

When connecting Multiline Terminals, Attendant Add-On Consoles, or SLT Adapters to the MDF or IDF, individually twisted 1-pair cabling must be used. Refer to Table 2-36 - Connection Information/Connection and Port Relationships for lead functions. Refer to Figure 2-73 - Modular Terminal for Connection of Electra Elite Multiline Terminals and Attendant Add-On Consoles for station modular jack (RJ13C/W) connection.

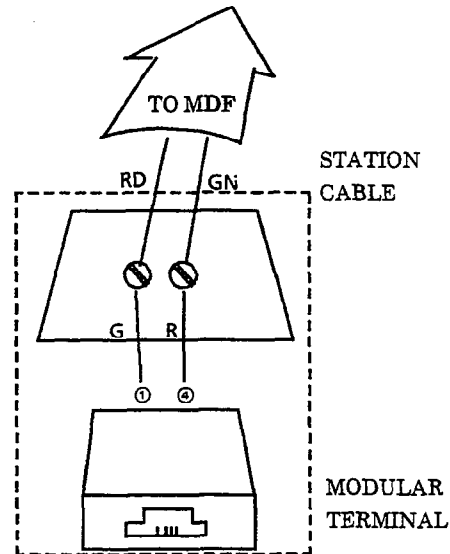


Figure 2-73 Modular Terminal for Connection of Electra Elite Multiline Terminals and Attendant Add-On Consoles

One-pair cabling is required; twisted pair cabling is recommended. Refer to Table 2-36 - Connection Information/Connection and Port Relationships for lead functions. Refer to Figure 2-74 - Simplified Schematic of Single Line Telephone Connection for station termination.

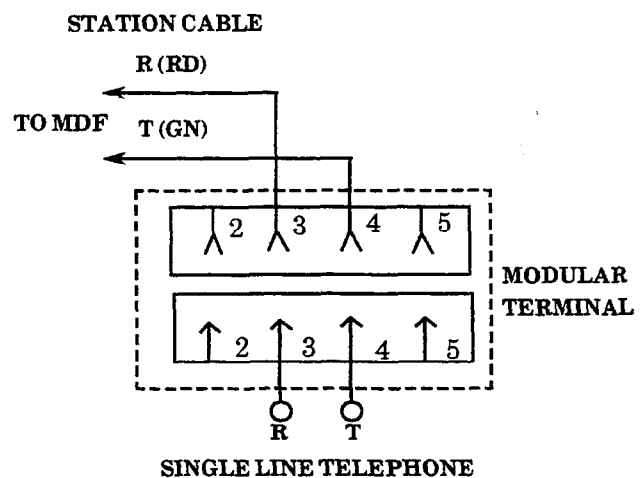


Figure 2-74 Simplified Schematic of Single Line Telephone Connection



For additional CO line connections to additional Single Line Telephones, similar crossconnections should be made.

If dialing during power failure is required, Single Line Telephones should be equipped with DP/DTMF dialing to match the outside lines. If trunks are Ground Start, Single Line Telephones must be equipped with a ground button.

When Single Line Telephones are installed, they can operate as power failure telephones, by crossconnection on the MDF. Refer to Figure 2-75 - Crossconnection of Single Line Telephones.

**Note:** Single Line Telephones used for Power Failure Transfer must be supported by an SLI-F(8G)-21 KTU.

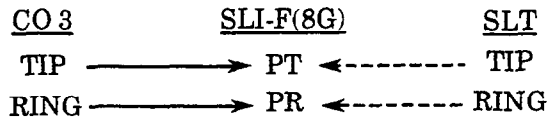


Figure 2-75 Crossconnection of Single Line Telephones

5.2.6 Modular Terminations When Connecting BRI (ISDN) Trunks to the Electra Professional System.

Refer to Figure 2-76 Simplified Schematic for BRI Connection.

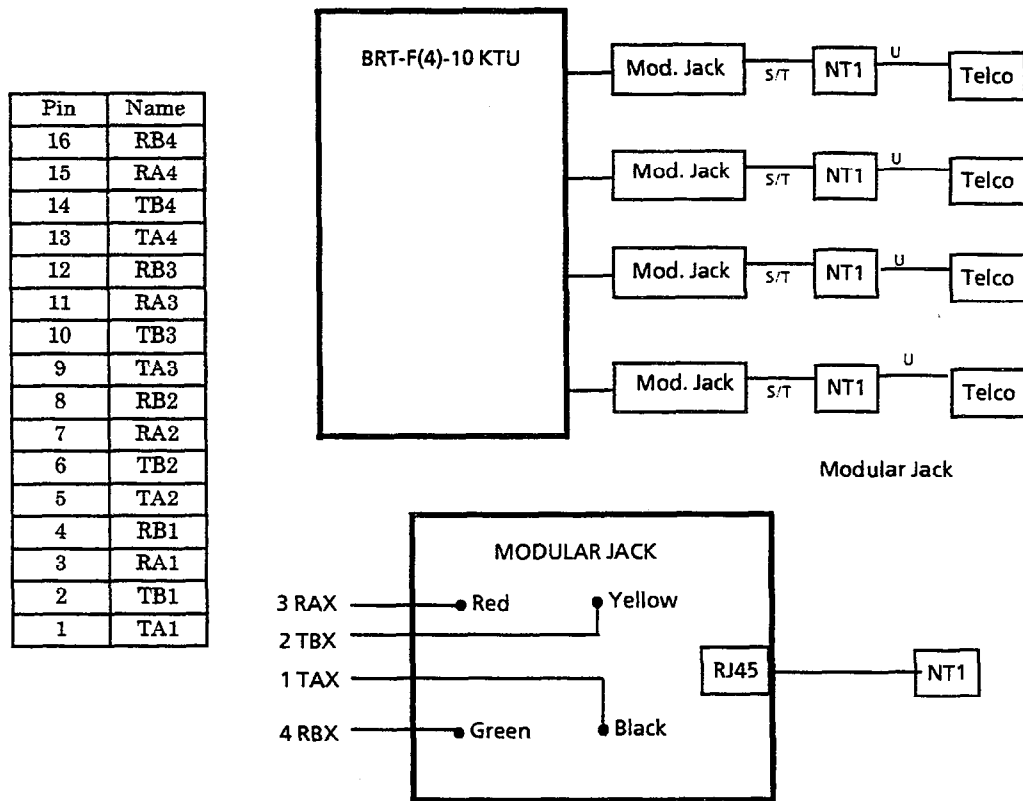


Figure 2-76 Simplified Schematic for BRI Connection

**SECTION 6 OPTIONAL EQUIPMENT CONNECTION****6.1 General Information**

The system can support the following:

- External Music On Hold
- External Paging
- External Tone Ring/Night Chime

**6.2 Music On Hold/Station Background Music**

Provision has been made to allow connection of a locally provided external music source to provide Music On Hold (MOH) for held calls and Station Background Music (BGM). (Station Background Music is available with Series 500 or higher software.)

**6.2.1 Music On Hold**

Music source input is made using the MOH jack located on the CPU-F( )-20 KTU. For music source input level and impedance, refer to Section 1.12.1 - Music On Hold/Station Background Music (via CPU), in this chapter.

To install:

1. On the cable to be connected to the MOH jack (12 inches from the plug end), make a slit in the cable insulation approximately 1-1/2 inches long. **Take special care not to cut into the shield wire and inner wire insulation.**
2. Make a circular cut in the cable insulation at one end of the slit.
3. Pull the cut insulation from the cable to expose the shield for the length of the slit and cut the insulation off.
4. Bend the cable near the middle of the exposed shield and separate the shield from the inner insulation in preparation for soldering. Refer to Figure 2-77 - MOH Cable Shield Ground Exposed.

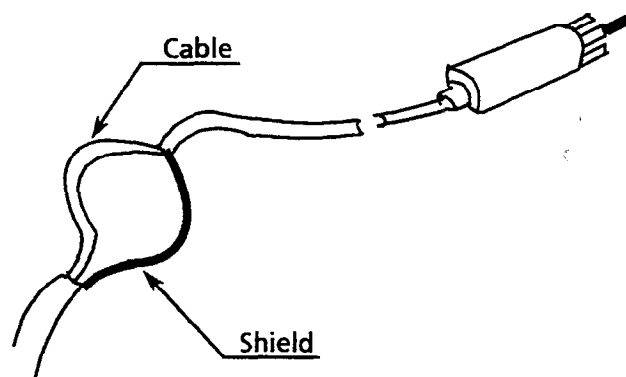


Figure 2-77 MOH Cable Shield Ground Exposed

5. Connect a ring tongue connector at one end of a 7-inch length of 20~24 AWG stranded wire.

6. Strip a 1/2 inch of insulation from the other end of the 7-inch wire. Solder this end to the shield previously exposed in step 3. Place tape around this connection to prevent possible short circuits.
7. Connect the plug end into the CPU-F( )-20 KTU MOH jack. Refer to Figure 2-78 - Music Source Connection.

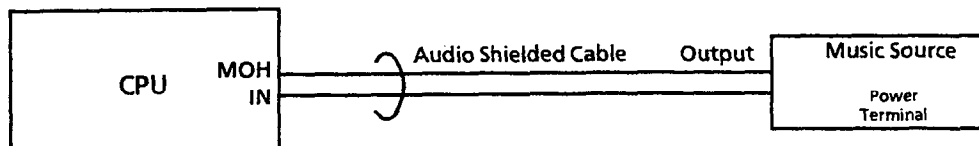


Figure 2-78 Music Source Connection

8. Route the cable down and to the right side of the KSU to avoid interference with the insertion and the removal of KTUs. Exit the other end of the cable at the right rear side of the KSU. Refer to Figure 2-79 - MOH Cable Route.

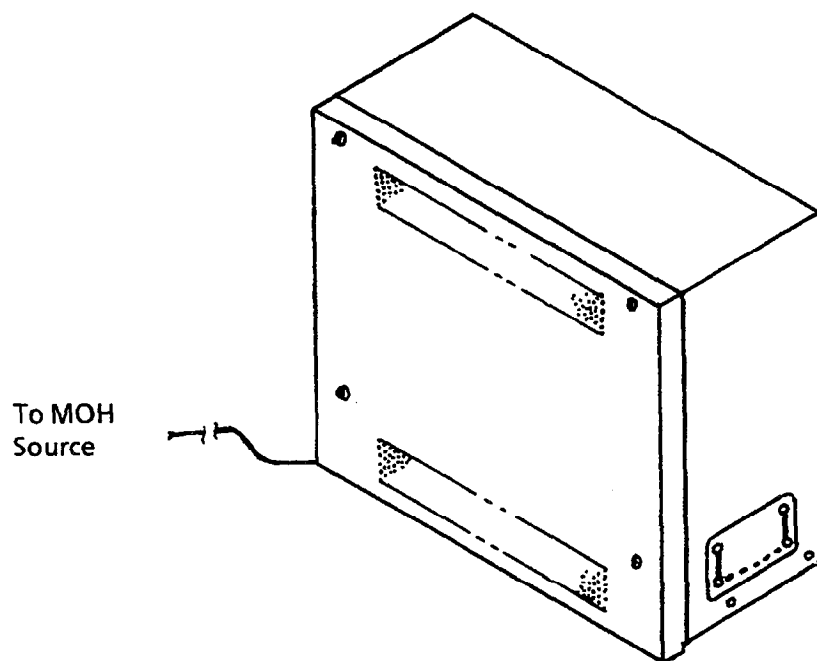


Figure 2-79 MOH Cable Route

6.2.2 Station Background Music

Station Background Music can be provided by using a COI-F( )-20 KTU or a COI-F( )-30 KTU. When station Background Music is provided using the COI-F KTU, Music On Hold and Station Background Music are separated and are provided by two independent sources.

To install Background Music using a COI-F KTU:

1. In Memory Block 1-1-79, BGM Port Assignment, set the COI port to BGM Input.
2. Connect a locally provided Valcom V-9941A or equivalent device to the COI Background Music port. Refer to the audio specifications in section 1.12.2 - Station Background Music via COI-F( )-20 KTU or COI-F( )-30 KTU.
3. Connect a locally provided Background Music source to the V-9941A (or equivalent device). Refer to Figure 2-80 - Music Source Connection and to Table 2-36 - Connection Information/Connection and Port Relationships.

**Note:** The Valcom V-9941A is a device that provides: loop connect (also referred to as talk battery) to the COI KTU, couples the audio source onto the loop current, and isolates the loop current from the music source. Any device that fits this criteria along with impedance of the COI KTU and music source is suitable.

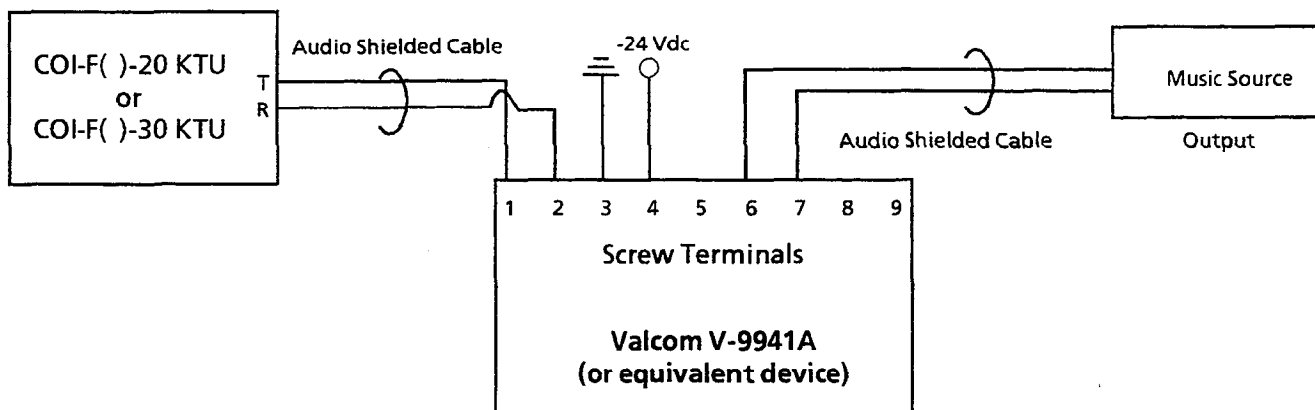


Figure 2-80 Music Source Connection

### 6.3 External Paging

The ECR-F-11 KTU provides audio output for External Paging (available at phone jack JK2 on the ECR-F-11 KTU) and three contact closures (one per zone) for use in zone paging with Meet-Me Answer. These contacts are labeled 1RC and 1RM, 2RC and 2RM, 3RC and 3RM. Refer to Section 5.2.3.2 - ECR-F-11 KTU Cable Connections. A maximum of one ECR-F-11 KTU can be installed in a system providing a total of three paging zones.

The audio output must be connected to a locally provided amplifier and speaker(s), that are connected to the output of the amplifier. If the amplifier is a 2-way amplifier, 2-way paging is available. Shielded audio cable should be used for external paging audio connections. This audio cable, from JK2 to the external amplifier, should be wrapped three turns around a ferrite core. For connection information to a locally provided amplifier, refer to Figure 2-81 - Connecting External Paging. For external paging audio output level and impedance, refer to section 1.12 - External Equipment Interface, in this chapter.

When External Paging is answered by Meet-Me Answer, the external paging audio circuit and the control circuits in the ECR-F-11 KTU are released to allow access for another page.

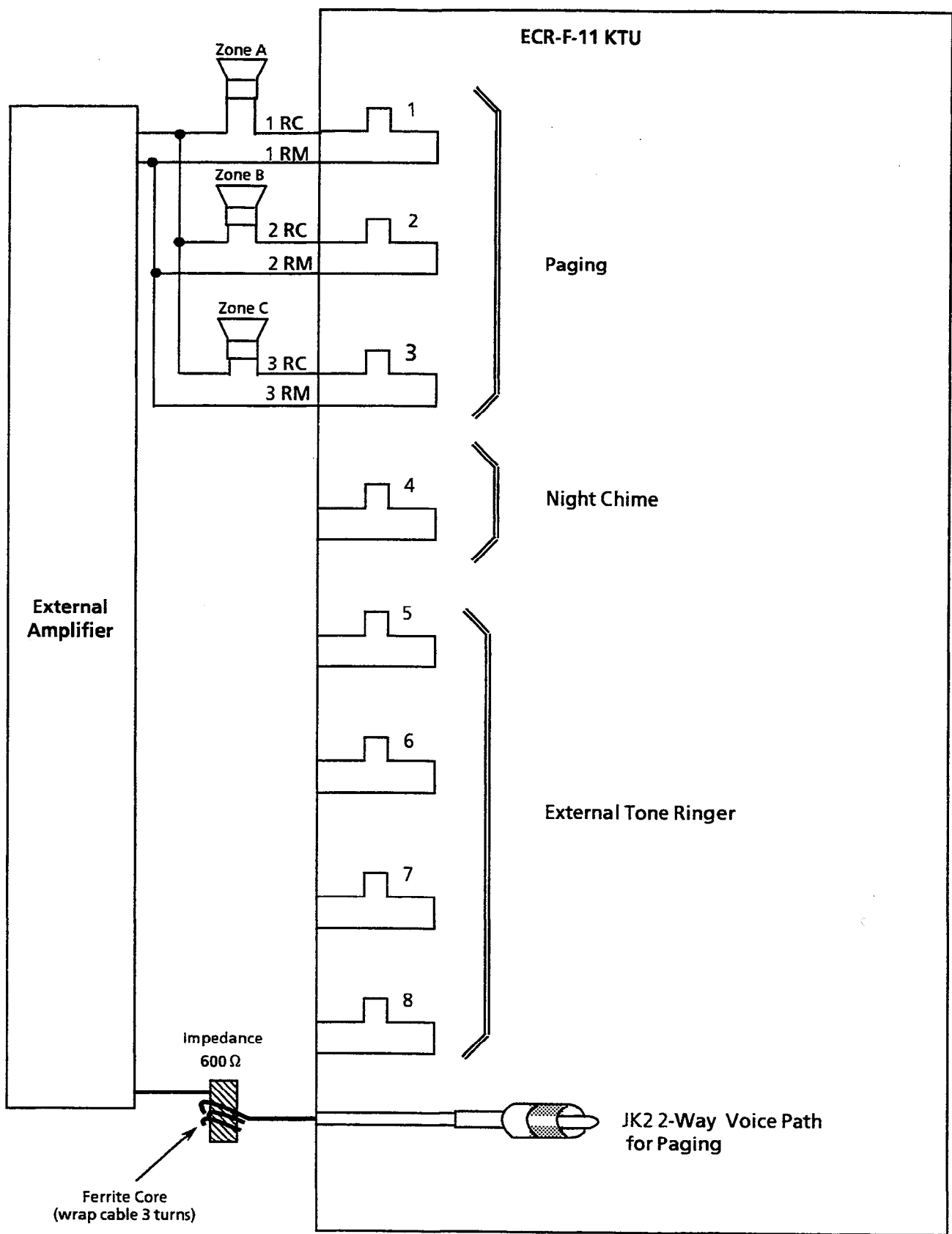


Figure 2-81 Connecting External Paging

#### 6.4 External Tone Ring/Night Chime

External Tone Ring/Night Chime is available when the ECR-F-11 KTU is installed. The ECR-F-11 KTU provides a continuous tone source for external tone ringing. The external tone can be set to any of five ringing patterns. These patterns are selected in System Programming. Refer to Chapter 5 - Programming, Manual System Mode (LK1), ESP (LK7) No. 07, in this manual.

The audio output for external tone ringing appears at the phone jack JK1 on the ECR-F-11 KTU. The level is adjustable with the volume control VR1 on the ECR-F-11 KTU.

Shielded-audio cable is required for this feature. The ECR-F-11 KTU provides five relay contacts for External Tone Ring/Night Chime. Refer to Section 5.2.3.2 - ECR-F-11 KTU Cable Connections. These contacts are labeled as follows:

4RC and 4RM	}	Night Chime
5RC and 5RM	}	External Tone Ring
6RC and 6RM		
7RC and 7RM		
8RC and 8RM		

Refer to Figure 2-82 - Connecting External Tone Ring/Night Chime for connecting locally provided amplifiers and speakers and Section 1.12 - External Equipment Interface for audio output specifications.

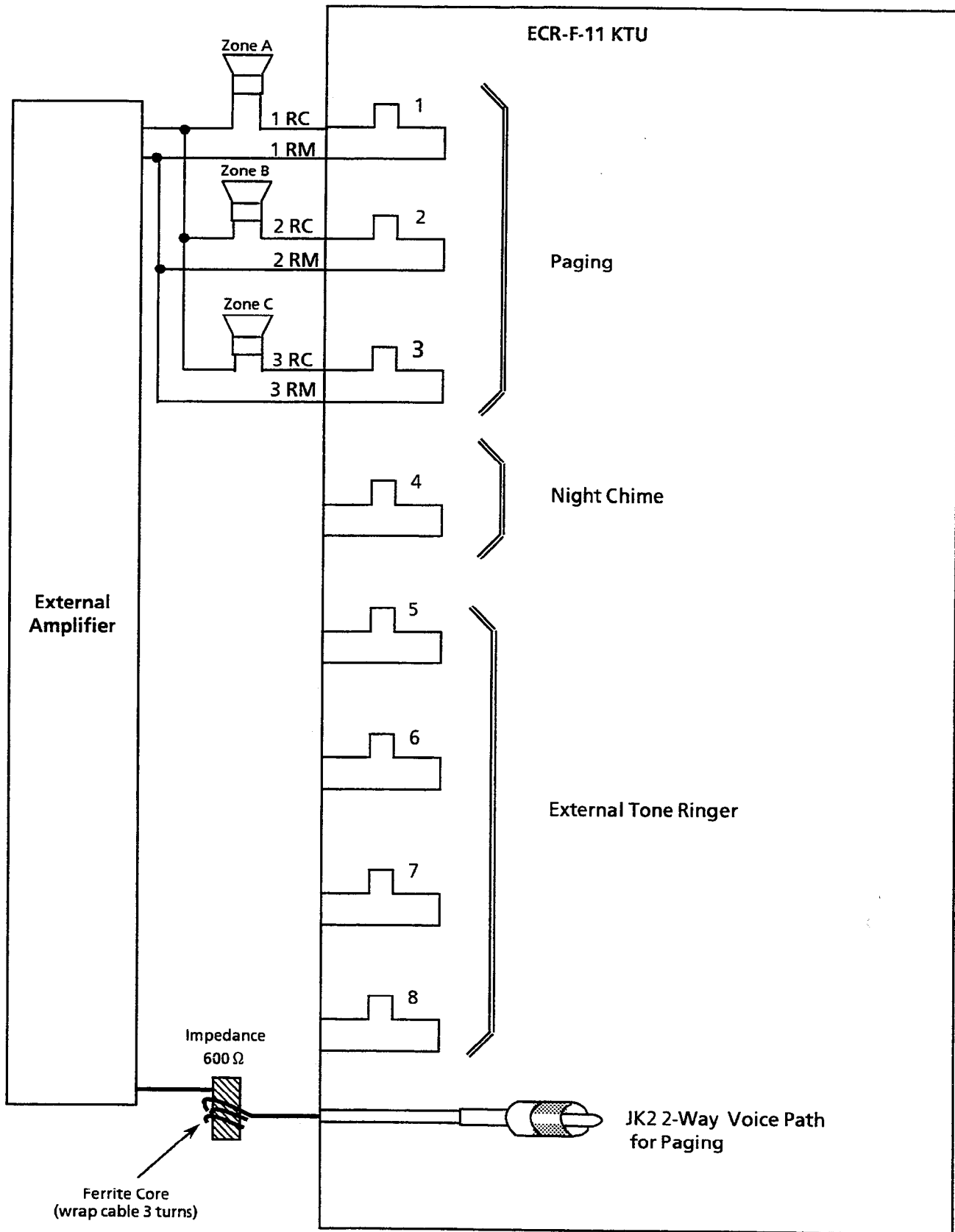


Figure 2-82 Connecting External Tone Ring/Night Chime



## SECTION 7 LCD INDICATIONS TABLE

Table 2-37 LCD Indications

Display	Location	Definition
12:24 AM WED 10	All Stations with LCD	Clock/Calendar
FWD 100 - > [ ]		Set Call Forward - All Calls
ALL FWD CANCLD		Cancel DND/Call Forward - All Calls System-Wide
FWD CANCL	Originator	Cancel DND/Call Forward - All Calls At Individual Stations
FWD SET [ ]	Originator	Set Call Forward - All Calls From Forward To Extension
FWD RESET [ ]		Reset Call Forward - All Calls From Forward To Extension
BUSY 100 -- > [ _ ]		Set Call Forward - Busy
FWD BUSY CANCLD		Cancel Call Forward - Busy
NOANS 100 - > [ ]		Set Call Forward - No Answer
FWDNA CANCLD		Cancel Call Forward - No Answer
FWD BNA - > [ ]		Set Call Forward Busy - No Answer
FWD BNA CNCL		Cancel Call Forward Busy - No Answer
BACK ???/? ??:??		Set Customized Message
MESSAGE CLEAR		Cancel Customized Message System-Wide or From Individual Station
NIGHT MODE SET		Night Mode Switch
NIGHT MODE RESET		Reset Night Mode
NT TENANT		Set Night Mode For Tenant
CALLBACK CANCLD		Cancel Callback System-Wide
FNC LAMP OFF		Reset FNC LED
CURRENT PASSWORD ?	Originator	Telephone Password (1)
NEW PASSWORD ?	Originator	Telephone Password (2)
ENTER PASSWORD	Originator	Set Password (CO/PBX Restriction)
RESTRICT SET	Originator	After Setting Password
CALL DENIED	Originator	Display on Station Outgoing Restricted Telephone
RESTRICT CANCLD	Originator	After Canceling Outgoing Call Restriction
CANCEL TEL ???		Cancel Restriction on Another Telephone
RLY 0 ON		Relay On
RLY 0 OFF		Relay Off
ALARM AM 00 : 00		Set Alarm For A.M.
ALARM PM 00 : 00		Set Alarm For P.M.
ALL ALARM CANCLD		Cancel Alarm System-Wide
SET TIME REMINDER		Set Timed Alarm for SLT
DND SET	Originator	Set Do Not Disturb
SAVE & REPEAT	Originator	Save and Repeat Number Is Stored
INT ALL PAGE	Originator	Internal All Zone Paging

(continued on next page)

Display	Location	Definition
INT PAGE [ A ]		Group Paging
TENT [ ]		Tenant Paging
SPKR [ A ]	Originator	External Speaker
TRF SET CO =		Set Automatic Tandem Trunk Transfer IN/OUT Trunk
TRF CNCL CO =		Reset Automatic Tandem Trunk Transfer
TRF TO CO =		Set or Confirm Transferred Trunk of Automatic Tandem Trunk Transfer
TRNS TO N/A		Transfer Trunk Not Assigned
00: EMPTY		No Speed Dial Number Entered
00 : 0 1 2 3 4 5 6 7 8 9		Speed Dial Number Confirmation
NO SMDR		Station Message Detail Recording Not Available
ERROR		Error Message
BUSY		Busy Message
PRINTER TROUBLE		Printer Problems
SPKR [ A , B , C ]	Originator	External All Paging
LINE IDLE	Originator	Trunk Queuing; CO/PBX Trunk Idle
TRUNK QUE SET	Originator	Trunk Queuing Set
LNR [ # ] / SPD [ ]		Press LNR/SPD Key
TRUNK QUE CANCLD	Originator	Trunk Queue Canceled
RCL : 01,02,03,04	Originator	Hold Recall
120 < - [ 1 1 0 ] TRANSF	Destination	Ring Transfer
120 = = [ 1 1 0 ] TRANSF		Automatic Ring Transfer
OVD > [ ]		Barge-In On CO/PBX Line (1)
OVD - > CO [ ]		Barge-In On CO/PBX Line (2)
100 < - TIE LNXX		Tie Line Answer
100 < - DID LNXX		DID Answer
DATA ENTRY	Port 01 and 02	Enter Data Using System Programming
T1 ALARM		T1 Transmission Difficulty
MUSIC SET	Originator	Background Music Enabled
MUSIC RESET	Originator	Background Music Disabled
CO 1 LAYER 1 DOWN	Port 01	ISDN Trunk L1 Down Difficulty
CO 1 LAYER 2 DOWN	Port 01	ISDN Trunk L2 Down Difficulty
CO 1 SPID ERROR	Port 01	ISDN Trunk SPID Error Difficulty
CO 1 SLIP ERROR	Port 01	ISDN Trunk Asynchronous Communication Difficulty (More than 50 times)

**SECTION 8 FEATURE ACCESS CODES**

Some codes are set as system defaults and some codes have no default defined but are programmable in System Programming. The table is divided according to the status of the telephone. An explanation of the notes column is listed below, these are referenced throughout the table. Refer to Table 2-38 - Access Codes Tables.

**Explanation of Notes Column:**

- Installation:** Operates only on telephones specified during installation.
- Single Line Only:** Operates only on Single Line Telephones.
- Single Line OK:** Operates on Multiline Terminals or Single Line Telephones.
- Note 1:** The controls in parentheses are not necessary for your own telephone or own tenant.
- Note 2:** Operates only when the Speed Dial number is set to 2 digits (90 mode).
- Note 3:** Enter the new values in the Access Code Table.
- Note 4:** No system default is defined; this code must be assigned in System Programming.

Table 2-38 Access Code Tables

**When the telephone is idle (handset is on-hook):**

Function	Operation	Notes
Microphone ON/OFF	FNC → Dial 1	
System Name Confirmation	FNC → Dial 3	
Verify Station Number	FNC → Dial 4	
Confirm Timed Alarm	FNC → Dial 51 → FNC	
Reset Timed Alarm System	FNC → Dial 58 → FNC	Installation
Reset Timed Alarm	FNC → Dial 59 → FNC	
Set Do Not Disturb	FNC → Dial 60 → FNC	
Set Call Forward - All Calls	FNC → Dial 60 → Dial XXX → FNC XXX = Station number where call is to be forwarded.	Installation

(continued on next page)

Function	Operation	Notes
Set Auto Trunk-to-Trunk Transfer Mode	FNC → Dial 61 → Dial XX → FNC XX = Incoming Trunk Port Number (01 ~ 64; 00 = All Trunks)	Installation
Cancel Automatic Trunk-to-Trunk Transfer to Outside Mode	FNC → Dial 62 → Dial XX → FNC XX = Incoming Trunk Port Number (01 ~ 64; 00 = All Trunks)	Installation
Set Auto Trunk-to-Trunk Transfer Outgoing Trunk	FNC → Dial 63 → Dial XX → Dial # → Dial YY~Y → FNC XX = Incoming Trunk Port Number (01 ~ 64; 00 = All Trunks) YY~Y = Transfer Telephone Number (maximum 24 digits)	Installation
Confirm Transfer Number for Auto Trunk-to-Trunk Transfer	FNC → Dial 64 → Dial XX → FNC XX = Trunk Port Number (01 ~ 64)	Installation
Cancel Call Forward - All Calls by System	FNC → Dial 68 → FNC	Installation
Cancel Do Not Disturb/Call Forward - All Calls	FNC → Dial 69 → FNC	Installation
Set Customized Message Display	FNC → Dial 70 → Dial * → Dial # → [ Dial XX:XX, YY:YY ] → FNC * = Selects Display # = Sets Display XX:XX = Date of Return YY:YY = Time of Return Operations enclosed in [ ] are optional.	
Cancel Customized Message Display by System	FNC → Dial 78 → FNC	Installation
Cancel Customized Message Display	FNC → Dial 79 → FNC	
Set/Cancel Night Mode Switch (System)	FNC → Dial 80 → FNC	Installation Attendant Only
Set Automated Attendant/DISA Mode	FNC → Dial 81 → Dial XX → FNC XX = Incoming Trunk Port Number (01 ~ 64; 00 = All Trunks)	Installation
Cancel Automated Attendant/DISA Mode	FNC → Dial 82 → Dial XX → FNC XX = Incoming Trunk Port Number (01 ~ 64; 00 = All Trunks)	Installation
Set/Cancel Set Relocation Mode	FNC → Dial 84 (Series 700 or Higher)	Installation Attendant Only
Set/Cancel Night Mode Switch (Tenant)	FNC → Dial 85 → Dial XX → FNC XX = Tenant Number (00 ~ 47)	Installation
Set/Cancel Weekend Mode Switch (Tenant)	FNC → Dial 86 → Dial XX → FNC XX = Tenant Number (00 ~ 47)	Installation

(continued on next page)

Function	Operation	Notes
Background Music On/Off	FNC → Dial 26 → FNC	
Cancel Callback Message by System	FNC → Dial 88 → FNC	Installation
Cancel FNC LED	FNC → Dial 99 → FNC	
Program System Speed Dial Buffer Number	FNC → LNR/SPD → Dial XXX → Dial YYYY → Dial ZZ ~ Z → [HOLD → Dial xx ~ x] → FNC  XXX = Speed Dial Buffer Number (00 ~ 89 / 000 ~ 999) (Series 100 ~ 450) Speed Dial Buffer Number (00 ~ 79 / 000 ~ 999) (Series 500 or higher) YYYY = Access Code (maximum 4 digits) ZZ ~ Z = Telephone Number (maximum 24 digits) xx ~ x = Name of Other Party (maximum 13 letters)  Operations enclosed in [ ] are optional.	Installation
Program Station Speed Dial Buffer Number	FNC → LNR/SPD → Dial X X → Dial YYYY → Dial ZZ ~ Z → [HOLD → Dial xx ~ x] → FNC  XX = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (80 ~ 99). (Series 500 or higher) YYYY = Access Code (maximum 4 digits) ZZ ~ Z = Telephone Number (maximum 24 digits) xx ~ x = Name of Other Party (maximum 13 letters)  Operations enclosed in [ ] are optional.	Note 2
Confirm System Speed Dial Number	CNF → LNR/SPD → Dial XXX  XXX = Speed Dial Buffer Number (00 ~ 89 / 000 ~ 999) (Series 100 ~ 450) Speed Dial Buffer Number (00 ~ 79 / 000 ~ 999) (Series 500 or higher)	
Confirm Station Speed Dial Number	CNF → LNR/SPD → Dial X X  XX = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (80 ~ 99). (Series 500 or higher)	Note 2
Cancel System Speed Dial Number	FNC → LNR/SPD → Dial XXX → FNC  XXX = Speed Dial Buffer Number (00 ~ 89 / 000 ~ 999) (Series 100 ~ 450) Speed Dial Buffer Number (00 ~ 79 / 000 ~ 999) (Series 500 or higher)	Installation
Cancel Station Speed Dial Number	FNC → LNR/SPD → Dial X X → FNC  XX = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (79 ~ 99). (Series 500 or higher)	Note 2
Place a Call - Speed Dial	LNR/SPD Key → Dial XXX  XXX = Speed Dial Buffer Number (00 ~ 99 / 000 ~ 999)	

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Function	Operation	Notes
Confirm Last Number Dialed Memory	CNF → LNR/SPD → Dial *	
Place a Call Using Store & Repeat/Save & Repeat	LNR/SPD → Dial #	
Set/Cancel Answer Preset (Ringing Line Preference)	FNC → ANS	
Last Number Dialed Memory to a Station Speed Dial Buffer Number	FNC → LNR/SPD → Dial X X → LNR/SPD → FNC  XX = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (80 ~ 99). (Series 500 or higher)	Note 2
Program Feature Access Keys (for DSS/BLF) (Series 100 ~ 450)	FNC → LNR/SPD → Feature Access Key → Dial 1 → Dial YYYY → [Dial 1] → FNC  YYYY = Station number (2, 3, or 4 digits)  Operations enclosed in [ ] are optional (when the digit 1 is dialed, the call is switched from Voice to Tone or from Tone to Voice).	Installation Note 2
Program Feature Access Keys (for DSS/BLF) (Series 500 or higher)	FNC → LNR/SPD → Feature Access Key → Dial 1 → Dial YYYY → [Dial 1] → FNC  YYYY = Station number (2, 3, or 4 digits)  Operations enclosed in [ ] are optional (when the digit 1 is dialed, the call is switched from Voice to Tone or from Tone to Voice).	Installation Note 2
Program Feature Access Keys (for Station Speed Dial)	FNC → LNR/SPD → Feature Access Key → Dial 0 → Dial Y → Dial ZZ ~ Z → [HOLD → Dial XX ~ X*] → FNC  Y = CO/PBX Access Code (maximum 4 digits) ZZ ~ Z = Telephone Number to be stored (maximum 16 digits). XX ~ X = Name to be stored using the Character Code (maximum 13 characters).  Operations enclosed in [ ] are optional.	Installation Note 2

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Function	Operation	Notes
Program Feature Access Keys (for Nesting Dial)	FNC → LNR/SPD → Feature Access Key → Dial 0 → Dial Y → ANS → Dial ZZ → [ANS → ZZ (repeat up to 3 times)] → [HOLD → Dial XX ~ X] → FNC  Y = CO/PBX Access Code (maximum 4 digits) ZZ = System or Station Speed Dial Buffer Number (00 ~ 99) XX ~ X = Name to be stored using the Character Code (maximum 13 characters).  Operations enclosed in [ ] are optional.	Installation Note 2
Program Feature Access Keys (for Feature Access)	FNC → LNR/SPD → Feature Access Key → Dial # → Dial YY → FNC  YY = Feature Access Code	Installation Note 2
Confirm Feature Access Key	FNC → Feature Access Key	Note 2
Cancel Feature Access Key	FNC → LNR/SPD → FNC	Note 2
Place a Call with Feature Access Key	Press the Feature Access Key programmed for the desired feature.	Note 2
Program One-Touch Keys (for DSS/BLF)	FNC → LNR/SPD → One-Touch Key → Dial 1 → Dial YYY → [Dial 1] → FNC  YYY = Station number (2, 3, or 4 digits)  Operations enclosed in [ ] are optional (when the digit 1 is dialed, the call is switched from Voice to Tone or from Tone to Voice).	
Program One-Touch Keys (for Station Speed Dial)	FNC → LNR/SPD → One-Touch Key → Dial 0 → Dial Y → Dial ZZ ~ Z → FNC  Y = CO/PBX Access Code (maximum 4 digits) ZZ ~ Z = Telephone Number to be stored (maximum 16 digits).	
Program One-Touch Keys (for Nesting Dial)	FNC → LNR/SPD → One-Touch Key → Dial 0 → Dial Y → ANS → Dial ZZ → [ANS → Dial ZZ (repeat up to 3 times)] → FNC  Y = CO/PBX Access Code (maximum 4 digits) ZZ = System or Station Speed Dial Buffer Number (00 ~ 99)  Operations enclosed in [ ] are optional.	

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Function	Operation	Notes
Program One-Touch Keys (for Feature Access)	FNC → LNR/SPD → One-Touch Key → Dial # → Dial YY → FNC  YY = Feature Access Code	
Confirm One-Touch Key	FNC → One-Touch Key { → FNC }.  Operation in { } is required only if the arrow is displayed.	
Cancel One-Touch Key	FNC → LNR/SPD → One-Touch Key → FNC	
Place Call with One-Touch Key	Press the One-Touch key programmed for the desired feature.	

While the extension is being seized (handset is lifted or the SPKR key is pressed and ICM lamp is lit):

Note: The default setting for the Access Codes are shown in this table.

Function	Operation (Default)	Notes
Trunk Group 1	Dial 9	CO/PBX Trunk (Outgoing)
Trunk Group 2	Dial 8	Tie Trunk (Outgoing)
Trunk Group 3	Dial 70	
Trunk Group 4	Dial 71	
Trunk Group 5	Dial 72	
Trunk Group 6	Dial 73	
Trunk Group 7	Dial 74	
Trunk Group 8	Dial 75	

(continued on next page)



Function	Operation (Default)	Notes
Call Pickup CO/PBX/Tie Line for Another Tenant	Dial □□	Note 4
Call Pickup Internal in Same Tenant	Dial □□	Note 4
Call Transfer in Same Tenant	Dial □□	Note 4
Specify CO/PBX Line Seizure	Dial □□ → Dial XX XX = CO/PBX Line Number (01 ~ 64)	Note 4
Set Trunk Queuing	Dial 78 → Hang Up Note: When busy tone is heard.	Installation Note 4
Cancel Trunk Queuing	Dial 79 → Hang Up	Installation Note 4
Specify Tenant CO/PBX Line Seizure	Dial □□ → Dial XX XX = Tenant Number (00 ~ 47)	Note 4
Call Pickup - Directed	Dial 67	
Intratenant Call Pickup	Dial 68	Note 4
Call Pickup (Tie) in Same Tenant	Dial □□	Note 4
Call Pickup (PBX) in Same Tenant	Dial □□	Note 4
Call Pickup (CO) in Same Tenant	Dial □□	Note 4
Internal Emergency All Call Paging	Dial □□	
All Internal Zone Paging	Dial 51	
Internal Zone A Paging	Dial 52	
Internal Zone B Paging	Dial 53	
Internal Zone C Paging	Dial 54	
Internal Meet-Me	Dial 5 *	
All External Zone Paging	Dial 55	
External Zone A Paging	Dial 56	
External Zone B Paging	Dial 57	
External Zone C Paging	Dial 58	
All Call Paging	Dial 59	

(continued on next page.)

Function	Operation (Default)	Notes
External Meet-Me	Dial 5 #	
Trunk Group (9 ~ 32)	Dial □ □	Notes 3 & 4
Route Advance (1 ~ 16)	Dial □ □	Notes 3 & 4
DSS 1 Call	Dial □ □	Note 4
DSS 2 Call	Dial □ □	Note 4
Special Station Access Code (00 ~ 23)	Dial □ □	Note 4
Timed Alarm Set at SLTs	Dial □ □ → Dial XXXX → Dial YY:YY → Hang Up XXXX = Station number YY:YY = Time (according to 24-hour clock)	Installation Note 4
Timed Alarm Cancel at SLTs	Dial □ □ → Dial XXXX → Dial 9999 → Hang Up XXXX = Station number	Installation Note 4
Station Outgoing Lockout Set	Dial □ □ → Dial XX ~ X → Hang Up XX~X = Password (maximum 10 digits)	Installation Note 4
Station Outgoing Lockout Cancel	Dial □ □ → Dial XXX → Hang Up XXX = Password (maximum 10 digits)	Note 4
Station Outgoing Lockout Password Change	Dial □ □ → Dial XX ~ X → Dial YY ~ Y → Hang Up XX~X = Old Password (maximum 10 digits) YY~Y = New Password (maximum 10 digits)	Installation Note 4
Station Outgoing Lockout Cancel from Attendant	Dial □ □ → Dial XXXX → Hang Up XXXX = Station number	Installation Note 4
Set Do Not Disturb	Dial 40 → Hang Up	Installation
Set Call Forward - All Calls	Dial 41 → Dial XXXX → Hang Up XXXX = Station number of forward destination	Installation
Cancel Call Forward - All Calls/Do Not Disturb	Dial 42 → Hang Up	Installation
Set Call Forward - No Answer	Dial □ □ → Dial XXXX XXXX = Station number of forward destination	Installation
Cancel Call Forward -No Answer	Dial □ □ → Hang Up	Installation
Set Forced/Verified Account Code from Attendant Position	Dial □ □ → Dial XXX → Dial YYY → ANS → Hang Up XXX = Forced Account Number 001 ~ 500 YYY = Forced Account Code (maximum 10 digits)	Installation Note 4

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Function	Operation (Default)	Notes
Set Call Forward - Busy	Dial □□ → Dial XXXX → Hang Up XXXX = Station number of forward destination	Installation
Cancel Call Forward - Busy	Dial □□ → Hang Up	
Set Call Forward - All Calls from Destination	Dial □□ → Dial XXX → Hang Up XXX = Station number of transfer origin	Installation
Cancel Call Forward - All Calls from Destination	Dial □□ → Dial XXX → Hang Up XXX = Station number of forwarding party	Installation
Call Forward Busy/ No Answer Set	Dial 43 → Dial XXXX XXXX = Station number of forward destination	Installation
Call Forward Busy/ No Answer Cancel	Dial 44 → Hang Up	Installation
Program Station Speed Dial Buffer Number using Single Line Telephone	Dial 76 → Dial 9 X → Dial YYYY → Dial ZZ ~ Z 9X = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (80 ~ 99). (Series 500 or higher) YYYY = Access Code (maximum 4 digits) ZZ ~ Z = Telephone Number (maximum 24 digits)	Notes 2 & 4
Clear Station Speed Dial Buffer Number by Single Line Telephone	Dial 76 → Dial 9 X → Hang Up 9X = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (80 ~ 99). (Series 500 or higher)	Notes 2 & 4
Place Call Using a Speed Dial Buffer Number by Single Line Telephone	Dial 77 / * → Dial 9 X * = MF Type 9X = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (80 ~ 99). (Series 500 or higher)	
Last Number Dialed by Single Line Telephone	Dial *	
Set Timed Alarm at Single Line Telephone	Dial □□ → Dial XX:XX XX:XX = Time (24-hour clock in 5 minute increments)	Installation Note 4
Cancel Timed Alarm at Single Line Telephone	Dial □□ → Hang Up	Installation Note 4

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Function	Operation	Notes
Barge-In by Station Number	FNC → CNF → Dial XXXX → FNC XXXX = Station number to be interrupted	Installation
Barge-In by Trunk Number	FNC → CNF → Dial * → Dial XX → FNC XX = CO/PBX Trunk Number (01 ~ 64) to be interrupted	Installation
Transfer to Call Park - System	Dial 4 * → Dial X X = Call Park Number (0 ~ 9)	
Answer or Retrieve Call Park - System	Dial 4 # → Dial X X = Call Park Number (0 ~ 9)	
Automated Attendant Message (Record/Confirm/Erase)	Dial □ □ → Dial X → Dial 1 → Dial Y → Dial Z X = 1 = Record = 2 = Confirm = 3 = Erase Y = Enter Automated Attendant Number (1 ~ 8) Z = 1 = Day Mode = 2 = Night Mode = 3 = Weekend Mode	Note 4
Voice Prompt Message (Record/Confirm/Erase)	Dial □ □ → Dial X → Dial 2 → Dial Y X = 1 = Record = 2 = Confirm = 3 = Erase Y = 1 = Message for Dial Tone = 2 = Message for Call Waiting Tone	Note 4
Delay Announcement (Record/Confirm/Erase)	Dial □ □ → Dial X → Dial 3 X = 1 = Record = 2 = Confirm = 3 = Erase	Note 4
Attendant Call	Dial 0	Installation
Set Relocation	Dial □ □ → Dial XXXX → Dial YYYYY XXXX = Station number to be exchanged YYYYY = Station Password	Note 4 Series 700 or Higher

**While calling an extension:**

Function	Operation	Notes
Tone/Voice Switching	Dial 1	
Callback Message	Dial #	Installation
Handset Receive Volume	FNC → Dial 2	Installation

(continued on next page)

**While a call is waiting (when calling an extension and Call Waiting Tone is heard):**

Function	Operation	Notes
Automatic Callback	Dial 0 → Hang Up	Installation
Step Call	Dial 1	Single Line OK (only for DP type telephones)
Tone Override	Dial *	Installation
Callback Message	Dial #	Installation
Voice Over	Dial 6	
Quick Transfer to Voice Mail	Dial 7	Series 500 or higher

**While seizing a CO/PBX Line:**

Function	Operation	Note
Microphone ON/OFF	FNC → Dial 1	
Seized Outside Line Number Display	FNC → Dial 3	
Drop Key	FNC → Dial 5	
Store and Repeat (Store)	FNC → Dial 7	
Save and Repeat (Save)	FNC → Dial 9	
Exclusive Hold	FNC → Dial HOLD	
Drop Trunk and Seize Internal Line	FNC → Dial 6 *	
Store/Save & Repeat (Dial)	LNR/SPD → Dial #	
Unsupervised Conference	Press CNF (during conference)	Series 500 or higher
Automatic Redial	FNC → LNR/SPD (Speaker Mode)	
Last Number Redial	LNR/SPD → Dial *	
Account Code Entry	FNC → Dial 66	Series 300 or higher
Quick Transfer to Voice Mail	FNC → Dial 86	Series 500 or higher
Voice Over Split (Whisper Page)	FNC → Dial 65	Series 400 or higher
Group Listening	Speaker (during off-hook)	Series 700 or higher

**CHAPTER 3**

**ELECTRA PROFESSIONAL**

**LEVEL II & LEVEL II ADVANCED**

**HARDWARE SPECIFICATIONS**

**AND INSTALLATION**

## CHAPTER 3

## ELECTRA PROFESSIONAL LEVEL II AND LEVEL II ADVANCED

## HARDWARE SPECIFICATIONS AND INSTALLATION

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**CHAPTER 3**  
**ELECTRA PROFESSIONAL LEVEL II AND LEVEL II ADVANCED**  
**HARDWARE SPECIFICATIONS AND INSTALLATION**

**SECTION 1      SYSTEM SPECIFICATIONS**

**1.1      General Information**

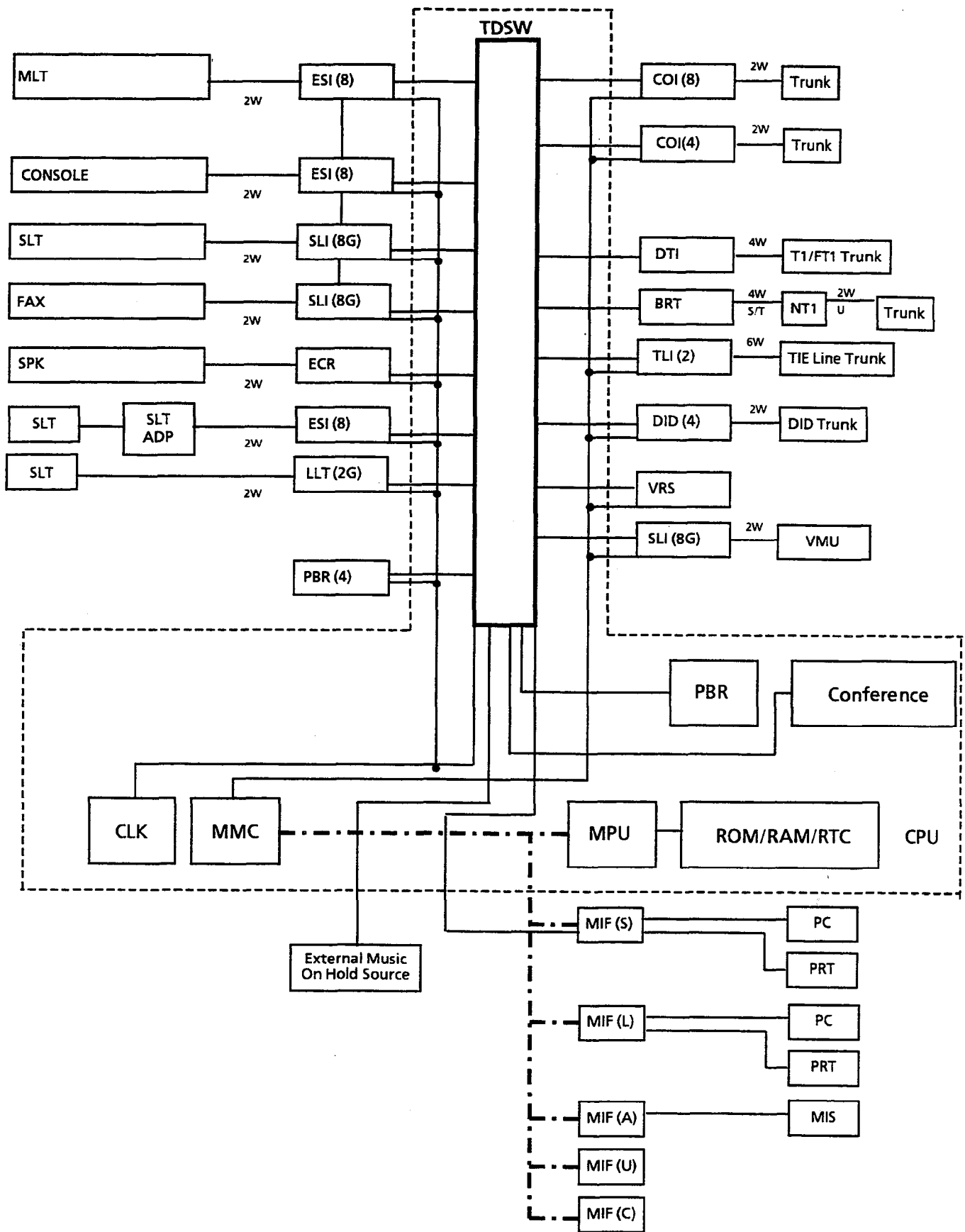
The following diagrams and tables show specifications for the Electra Professional Level II and Level II Advanced systems. The technician should review these carefully before attempting to install the systems.

## 1.2 System Block Diagram

The system block diagram is a conceptual representation of an installed system. Refer to Figure 3-1 - System Block Diagram. Table 3-1 contains a list of abbreviations used in the system block diagram.

Table 3-1 Abbreviations

Abbreviation	Description
BRT	ISDN Basic Rate Trunk Interface (S/T)
CLK	Digital Network Synchronous Clock Oscillator
COI	Central Office Line Interface
CONSOLE	Attendant Add-On Console
CPU	Central Processing Unit
DID	Direct Inward Dial Trunk
DTI	Digital Trunk Interface
ECR	External Control Relay
ESI	Electronic Station Interface
FAX	Facsimile Transceiver
LLT	Long Line Telephone
MIF	Multipurpose Interface
MLT	Multiline Terminal
MMC	Module Memory Controller
MPU	Microprocessor
PBR	DTMF Signal Receiver Circuit Unit (Push Button Receiver)
PC	Personal Computer (with RS-232C Interface)
PRT	Printer with RS-232C Interface
ROM/RAM	Read Only Memory/Random Access Memory
RTC	Real Time Clock
SLI	Single Line Telephone Interface
SLT	Single Line Telephone
SLT ADP	Single Line Telephone Adaptor
SMDR	Station Message Detail Recording
SPK	External Speaker
TDSW	Time Division Switch
TLI	Tie Line Interface
VMU	Voice Mail Unit
VRS	Voice Recording Service



Numbers in ( ) designate the number of channels supported when using the equipment listed.

Figure 3-1 System Block Diagram

### 1.3 System Control Capacities

The control capacities of the system are shown in Table 3-2 - System Control Capacities.

Table 3-2 System Control Capacities

Item		Level II		Level II Advanced		Unit
		Basic	Basic + Expansion	Basic	Basic + 2 Expansions	
Slot	Interface	5	8	8	24	
	Application	1	1	2	4	
Number of Outside Lines		32	56	56	64	N/A
	CO/PBX	32	56	56	64	COI
	DID	16	28	28	32	DID
	E&M	8	14	14	32	TLI
	T1	1 (24 channels)	1 (24 channels)	2 (48 channels)	3 (64 channels)	DTI
	ISDN (Basic Rate Trunk)	4	4	4	8	BRT
Number of Non-Blocking Intercom Lines						
Maximum number of outside lines and stations that can be simultaneously connected (Non-Blocking)		40	64	64	160	N/A
Multiline Terminal		32	56	56	96	ESI
Attendant Add-On Console		4	4	4	4	ESI
SLT		24	48	48	88	SLI
SLT Adapter		31	55	55	95	ESI
Dterm Cordless Terminal		9	9	9	9	ESI
External Speaker		3	3	3	3	ECR
DTMF Receiver		8	8	8	8	PBR
Voice Recording Service		8	8	8	8	VRS
Station Message Detail Recording (SMDR)		1	1	1	1	MIF (S/L)
PC Program		1	1	1	1	MIF (S/L)
Least Cost Routing (LCR)		1	1	1	1	MIF (L)
Automatic Call Distribution (ACD)		1	1	1	1	MIF (A)
Uniform Call Distribution (UCD)		1	1	1	1	MIF (U)
Caller ID		1	1	1	1	MIF (C)
Conference		6	6	6	6	CPU
Tenant		48	48	48	48	N/A
Trunk Group		32	32	32	32	N/A
Route Advance Block		16	16	16	16	N/A
System Speed Dial		1000/90	1000/90	1000/90	1000/90	N/A
System Speed Dial (Series 500 or higher)		1000/80	1000/80	1000/80	1000/80	N/A

**Note 1:** The number of Attendant Add-On Consoles is included in the number of Multiline Terminals.

**Note 2:** Four of the eight channels are accommodated in the CPU.

1.4 Cabling Requirements

1.4.1 Cabling Specifications

The KSU is connected to each Multiline Terminal and Single Line Telephone by a separate twisted 1-pair cable or 2-pair cable (only for Multiline Terminals). Table 3-3 - Multiline Terminal Loop Resistance and Cable Length and Table 3-4 - Single Line Telephone Connection Cable Length show the cables used for wiring between the KSU and individual terminals or adapters.

Table 3-3 Multiline Terminal Loop Resistance and Cable Length

Terminal or Adapter	Maximum Loop Resistance (Ohms)	Maximum Feet by Twisted 1-Pair Cable	Maximum Feet by Twisted 2-Pair Cable
		24 AWG	24 AWG
ETW-8-( ) (BK)/(SW) TEL	61	600	1500
ETW-16DC-( ) (BK)/(SW) TEL	46	450	1300
ETW-16DD-( ) (BK)/(SW) TEL	37	360	820
ETW-24DS-( ) (BK)/(SW) TEL	46	450	820
ETW-4R-1 (BK) TEL	N/A	650	650
DCU-60-( ) (BK)/(WH) Console	102	1000	10000
EDW-48-( ) (BK)/(SW) Attendant Add-On Console with AC Adapter	102	1000	2000
SLT-F(1G)-10 ADP	61	600	1200
SLT-F(1G)-20 ADP	61	600	1200

- Note 1:** An AC Adapter is required to install an Attendant Add-On Console.
- Note 2:** The length for the specified SLT Adapter is the distance between the ESI KTU and the SLT Adapter.
- Note 3:** When additional length is required between the ESI and a Multiline Terminal, Attendant Add-On Console, or SLT Adapter, use twisted 2-pair cable as shown in Figure 3-2 Connecting the ESI to the Multiline Terminal Using Twisted 2-Pair Cable.

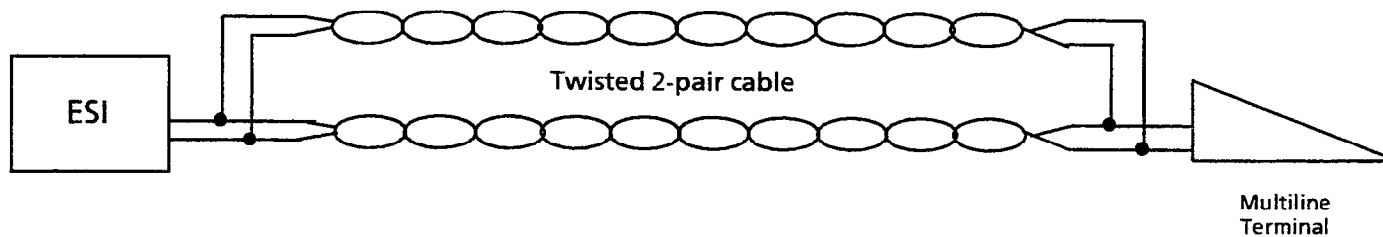


Figure 3-2 Connecting the ESI to the Multiline Terminal Using Twisted 2-Pair Cable

Table 3-4 Single Line Telephone Connection Cable Length

Connected Equipment	Cable	Maximum Loop Resistance (24 AWG) from Connected Equipment to Telephone
SLI-F(8G)-21 KTU	Twisted 1-pair	300 ohm
LLT-F(2G)-10 KTU	Twisted 1-pair	1500 ohm
SLT-F(1G)-10 ADP	Twisted 1-pair	300 ohm
SLT-F(1G)-20 ADP	Twisted 1-pair	300 ohm
ADA(2)-W (BK)/(SW) Unit	Twisted 1-pair	10 feet
APR-U	Twisted 1-pair	50 feet

**Note:** Mixing digital and analog ports through the same 25-pair cable runs is not recommended.

The following cables are required for the equipment listed below:

- Music Source (for MOH and BGM inputs): Hi-Fi Shielded Audio Cable
- External Amplifier: Hi-Fi Shielded Audio Cable.

#### 1.4.2 Cabling Precautions

When selecting cables and Main Distribution Frames (MDF), future expansion or assignment changes should be considered. Avoid running cables in the following places:

- A place exposed to wind or rain.
- A place near heat radiating equipment or where the quality of station cable covering could be affected by gases and chemicals.
- An unstable place subject to vibration.

### 1.5 Power Requirements

#### 1.5.1 Power Supply Inputs

AC Input (PSF-S-20 PSU or PSF-P-20 PSU):

- 117 Vac  $\pm$  10%
- 60 Hz  $\pm$  10%
- Single Phase
- 15A maximum current
- A dedicated outlet, separately fused and grounded, is required.

1.5.2 Power Supply Outputs Table

Table 3-5 Power Outputs

DC Voltage	Level II		Level II Advanced	
	Minimum Current	Maximum Current	Minimum Current	Maximum Current
-24V	0.3A	5.9A	0.3A	7.5A
+5V	0.3A	4.3A	0.3A	6.5A
-5V	0A	0.8A	0A	1.2A

1.5.3 Power Consumption and Dissipation Table

Table 3-6 Power Consumption and Dissipation

Module		Maximum RMS Current	Watts Used (Idle)	Watts Used (Maximum)
Level II	Basic	1.3A	120	150
	Basic + Expansion	1.9A	180	220
Level II Advanced	Basic	1.9A	180	220
	Basic + 2 Expansions	5.7A	540	660

1.5.4 Fuse Replacement Table

Table 3-7 Fuse Replacement

Unit	Fuse No.	Specifications	Description	Dimensions
PSF-S-20 PSU	F1	125V, 4.0A	AC Input	1/4" X 1-1/4"
	F2	125V, 7.0A	DC Input	1/4" X 1-1/4"
PSF-P-20 PSU	F1	125V, 6.3A	AC Input	1/4" X 1-1/4"
	F2	250V, 12.0A	DC Input	1/4" X 1-1/4"

**Note:** All fuses are normal blown glass tube. Do not use slow blow fuses.

## 1.6 Environmental Conditions

- Temperature
  1. Operating: +32° F ~ +104° F (0° C ~ 40° C)
  2. Recommended Long Term: +50° F ~ +90° F (10° C ~ 32.2° C)
- Operating Humidity: 10% ~ 90% noncondensing

## 1.7 Outside Line Types

- 2-wire, Loop-Start or Ground-Start Trunks
- 2-wire, Loop Dial, DID Lines (Dial Pulse or DTMF)
- 4-wire, E & M Tie Lines (Type I or V, Dial Pulse, or DTMF)
- Digital Trunk T1/FT1 (Loop Start or Ground Start, Tie Line E&M, or DID Signaling)
- Digital Trunk ISDN Basic Rate

## 1.8 Network and Control Specifications

### 1.8.1 Transmission

- Data Length:
  - From Multiline Terminal to ESI-F(8)-21 KTU: 23 bits
  - From ESI-F(8)-21 KTU to Multiline Terminal: 23 bits
- Data Transmission Rates:
  - Between ESI-F(8)-21 KTU and Multiline Terminal: 184K bits/sec.  
(voice and signaling)
- Scanning Time for each Multiline Terminal: 32 ms.

### 1.8.2 Network

- TDM Switching: PCM ( $\mu$  Law)
- TDM Clock: 2.048 MHz
- TDM Data Bus: 8 bit
- TDM Timeframe: 125 us.

### 1.8.3 Control

- Control: Stored program with distributed processing
- Central Processor: 16-bit microprocessor
- Clock: 8 MHz
- Interface KTU: 4-bit microprocessor
- Optional KTUs (MIF and DTI): 8-bit microprocessor
- Multiline Terminal and Attendant Add-On Console: 4-bit microprocessor
- SLT Adapter: 4-bit microprocessor



## 1.8.4 Telephones

- Multiline Terminal and Attendant Add-On Console:

Voltage: -11 ~ -26 Vdc

Maximum Current: 200 mA

Acoustical characteristics meet Electronic Industry Association (EIA) standard proposal SP-1286 and standard EIA RS-470.

- Single Line Telephone:

Standard 2500 set: 500 type network

Nominal Current: 35 mA

Ring Signal: 56 Vac RMS @ 20 Hz

- Single Line Telephone Adapter:

Standard 2500 set: 500 type network

Nominal Current: 30 mA

Ring Signal: 56 Vac RMS @ 20 Hz

- ADA(2)-W(BK)/(SW) Unit:

Standard 2500 set: 500 type network

Nominal Current: 30 mA

Ring Signal: 56 Vac RMS @ 20 Hz.

- APR-U (BK)/(SW) Unit

Standard 2500 set: 500 type network

Nominal Current: 30 mA

Ring Signal: 56 Vac RMS @ 20 Hz.-U (BK)/(SW) Unit

## 1.9 Dialing Specifications

## 1.9.1 Dial Pulse Address Signaling

Standard 2500 set: 500 type network

Nominal Current: 30 mA

Ring Signal: 56 Vac RMS @ 20 Hz

- ADA(2)-W (BK)/(SW) Unit:

Standard 2500 set: 500 type network

Nominal Current: 30 mA Signaling

- Pulse Rate: 10 ± 0.5 pps/20 ± 1.0 pps
- Percent Break: 60 ± 1.5%
- Interdigit Interval: 10 pps/20 pps 770 ms. ~ 830 ms.

## 1.9.2 DTMF Address Signaling

- Frequencies:

Two sinusoidal signals, one from a high group of three frequencies and one from a low group of four frequencies.

- Frequency deviation: Less than ± 1.0 percent

- Signal level:
  - Nominal level per frequency: -6 ~ -4 dBm
  - Minimum level per frequency:
    - Low Group: -10 dBm
    - High Group: -8 dBm
  - Maximum level per frequency pair: 0 dBm
- Rise time: Within 5 ms.
- Duration of dual frequency signal: 100 ms. default/70 ms. minimum
- Interdigital time: 70 ms. default/60 ms. minimum.

		Nominal High Group Frequencies (Hz)		
		1209	1336	1477
Nominal Low Group Frequencies (Hz)	697	1	2	3
	770	4	5	6
	852	7	8	9
	941	*	0	#

**1.10 Battery Backup**

Both systems have two battery backup functions: One is for system backup and a second for memory backup.

**1.10.1 System Backup**

The system is backed up by a rechargeable battery. This battery backup supports all system functions for approximately 30 minutes if power fails.

**1.10.2 Memory Backup**

A backup battery is equipped on the CPU-F( )-20 KTU, VRS-F(4)-11 KTU, MIF-F(S)-10 KTU, MIF-F(L)-10 KTU, MIF-F(A)-10 KTU, MIF-F(C)-10 KTU, and the MIF-F(U)-10 KTU. These batteries, when fully charged, retain the system memory after a power failure. Refer to Table 3-8 - KTU Battery Backup Time for the approximate backup times for the KTUs.

Table 3-8 KTU Battery Backup Time

KTUs	Approximate Backup Time
CPU-F( )-20 KTU	14 days
VRS-F(4)-11 KTU	1 hour
MIF-F(S)-10 KTU	1 month
MIF-F(L)-10 KTU	1 month
MIF-F(A)-10 KTU	1 month
MIF-F(C)-10 KTU	1 month
MIF-F(U)-10 KTU	1 month

## 1.11 Weights and Dimensions

Table 3-9 Weights and Dimensions

Unit	Shipping Weight *	Height	Width	Depth
ESF-SB-10 KSU	37 lbs. 6 oz. (17 kg)	14.96" (380 mm)	15.67" (398 mm)	9.06" (230 mm)
ESF-SE-10 KSU	26 lbs. 8 oz. (12 kg)	14.96" (380 mm)	11.54" (293 mm)	9.06" (230 mm)
ESF-XB-10 KSU	42 lbs. 11 oz. (19.4 kg)	18.31" (465 mm)	24.80" (630 mm)	10.67" (271 mm)
ESF-XE-10 KSU	21 lbs. 5 oz. (9.7 kg)	11.81" (300 mm)	24.80" (630 mm)	10.67" (271 mm)
PSF-S-20 PSU	4 lbs. 13 oz. (2.2 kg)	14.96" (380 mm)	3.54" (90 mm)	7.09" (180 mm)
PSF-P-20 PSU	3 lbs. 8 oz. (1.6 kg)	14.96" (380 mm)	3.54" (90 mm)	7.09" (180 mm)
ETW-8-( ) (BK)/(SW) TEL	2 lbs. (0.9 kg)	3.98" (101 mm)	6.89" (175 mm)	8.81" (223 mm)
ETW-16DC-( ) (BK)/(SW) TEL	2 lbs. 3 oz. (1 kg)	3.98" (101 mm)	6.89" (175 mm)	8.81" (223 mm)
ETW-16DD-( ) (BK)/(SW) TEL	2 lbs. 7 oz. (1.1 kg)	3.98" (101 mm)	8.07" (205 mm)	8.81" (223 mm)
ETW-24DS-( ) (BK)/(SW) TEL	2 lbs. 7 oz. (1.1 kg)	3.98" (101 mm)	8.07" (205 mm)	8.81" (223 mm)
EDW-48-( ) (BK)/(SW) CONSOLE	3 lbs. 1 oz. (1.4 kg)	2.72" (69 mm)	6.89" (175 mm)	8.81" (223 mm)
ETW-4R-1 (BK) TEL	1 lb. 10 oz. (0.74 kg)	3.42" (87 mm)	5.51" (140 mm)	7.48" (190 mm)
ETJ-1-1 (SW) TEL	2 lbs. (0.9 kg)	3.98" (101 mm)	6.89" (175 mm)	8.81" (223 mm)
ETJ-1HM-1 (SW) TEL	2 lbs. 3 oz. (1 kg)	3.98" (101 mm)	6.89" (175 mm)	8.81" (223 mm)
ETE-1-2 TEL (SLT)	1 lb. 14 oz. (0.9 kg)	3.15" (80 mm)	6.30" (160 mm)	9.06" (230 mm)
ETE-1HM-2 TEL (SLT)	1 lb. 10 oz. (0.7 kg)	2.36" (60 mm)	6.30" (160 mm)	9.06" (230 mm)
SLT-F(1G)-10 ADP	9 oz. (0.29 kg)	1.80" (45 mm)	2.80" (70 mm)	4.80" (120 mm)
SLT-F(1G)-20 ADP	9 oz. (0.29 kg)	1.80" (45 mm)	2.80" (70 mm)	4.80" (120 mm)

\* Shipping weight includes the shipping carton.

\*\* Electra Elite KSU, PSU, and Digital Multiline Terminals are included in Chapter 2, Table 2-9 - Weights and Dimensions.

**1.12 External Equipment Interface**

- 1.12.1 Music On Hold/Station Background Music through CPU (Series 500 or higher)
- Auxiliary Input: 0.6V RMS Signal Level
  - Input Impedance: 10K  $\Omega$
- 1.12.2 Station Background Music using COI-F( )-20 KTU or COI-F( )-30 KTU (Series 500 or higher)
- Auxiliary Input: 0.6V RMS Signal Level
  - Input Impedance: 600  $\Omega$
- 1.12.3 External Paging (Audio)
- Output Power: -10 dBm Signal Level
  - Output Impedance: 600  $\Omega$
  - Relay Contact Rating: 500 mA, 24 Vdc
- 1.12.4 External Tone Ringer/Night Chime Output
- Output Level: -10 dBm
  - Output Impedance: 600  $\Omega$
  - Relay Contact Rating: 500 mA, 24 Vdc
- 1.12.5 SMDR Output
- Female Connector (System Output) Standard RS-232C
- 1.12.6 PC Connection
- Female Connector (System Output) Standard RS-232C
- 1.12.7 Relay Contact
- All Relay Contact Ratings: 500 mA, 24 Vdc

1.13 Visual and Audible Indications

1.13.1 Tone Patterns Table

Table 3-10 Tone Patterns

Tone	Frequency (Hz)	Tone Patterns
Dial Tone	350/440	
Second Dial Tone	350/440	
Busy Tone	480/620	
Call Waiting Tone	440	
Ringback Tone (1)	440/480	
Ringback Tone (2)	440/480	
Reorder Tone	480/620	
<ul style="list-style-type: none"> <li>• Attendant/Tone Override</li> <li>• Camp-On Tone</li> <li>• Call Alert Notification</li> </ul>	440	
<ul style="list-style-type: none"> <li>• Call Forward Alert Tone</li> <li>• Call Forward Confirmation Tone</li> </ul>	350/440	
<ul style="list-style-type: none"> <li>• Confirmation</li> <li>• LCR Dial Tone</li> </ul>	440	
Error Tone Burst	620	
Recall Tone	1024	
CO/PBX Ring Tone (1)	480/606	
CO/PBX Ring Tone (2)	480/606	
Internal Ring Tone	480/606	
Attendant Ring Tone	480/606	
Tone Burst	440	
Howler Tone	2400	Continuous 16 Hz modulation
DIT Alert Tone	480/620	
CO Ring Transfer	480/606	

1.13.2 Multiline Terminal LED Flash Pattern Table

Table 3-11 Multiline Terminal LED Flash Patterns

LED	Condition	Color	Flash Patterns				
Line Key	I-Use	Green	[Solid]				
	Busy	Red	[Solid]				
	Incoming Call	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	I-Hold	Green	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Call Hold	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Hold Recall	Green	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Transfer Recall	Green	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
Microphone	ON	Red	[Solid]				
ICM	I-Use	Red	[Solid]				
	ICM Incoming Call	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Voice Over Broker	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
Large LED	Incoming Internal Call	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Incoming Outside Call	Green	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Message from Attendant	Green	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Voice Mail Message	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
Speaker	ON	Red	[Solid]				
	System Data Entry	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
Conference	Conference in Progress	Red	[Solid]				
	All Conference	Red	[Solid]				
	Circuits Used	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Hold Conference Call	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	ICM Call Hold	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
Answer	SPD Confirmation	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Incoming Trunk	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Exclusive Hold	Green	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	User Ringing Line Preference	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
Function	Voice Over with Broker's Call	Green	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Callback Set	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Auto Repeat Set	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	ON (to set function)	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
LNR/SPD	Call FWD - All Call Set	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Other Tenant	Green	[Solid]				
BLF or DSS Key	CO Line Key Seized	Green	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Exclusive Hold	Green	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
BLF or DSS Key	Use, Hold	Red	[Solid]				
	DND, Call FWD-All Calls	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]
	Set Special Mode (While pressing FNC key or going off-line)	Red	[Solid]	[Solid]	[Solid]	[Solid]	[Solid]

0 0.5 1.0 1.5 2.0 sec.

## 1.13.3 DSS/BLF LED Indications Table

Table 3-12 DSS/BLF LED Indications

Function	Color	Status
Attendant Message	Green	ON
Idle	—	OFF
Talking (Other)	Red	ON
Hold	Red	ON
FWD All (DND)	Red (Flashing)	ON
Other Use (Multiline Terminal is off-line, station user is programming Feature Access/One-Touch keys, etc.)	Red (Flashing)	ON
Incoming Call	Red (Flashing)	ON
CO line in use	Red	ON

## SECTION 2 HARDWARE REQUIREMENTS

## 2.1 General Information

Before configuring the system, complete the worksheets in the *Electra Professional 120/Level II/Level II Advanced Job Specifications Manual*. Make sure all station equipment, timeouts, and feature options are considered when completing the worksheets. System Programming must be understood to properly complete these worksheets. Refer to Chapter 5 - Programming in this manual.

**Note:** One *Electra Professional 120/Level II/Level II Advanced Job Specifications Manual* is included with the CPU-F( )-20 KTU.

The Level II Basic KSU has five interface slots and the Expansion KSU has three interface slots. The Level II Advanced Basic KSU and Expansion KSU each have eight interface slots. Each slot supports up to eight ports. The hardware requirements dictate the number of ports available for installing station equipment.

When possible, the same type KTUs should be paired together in a cable binder (25-pair cable binders to the MDF should be used.) This simplifies MDF wiring.

## 2.1.1 Programming Stations

A maximum of three programming positions are available in the system. Telephones, connected to the first two ports of the first ESI-F(8)-21 KTU, are automatically programming positions and must be ETW-16DC-( ) (BK)/(SW) TEL, ETW-16DD-( ) (BK)/(SW) TEL, DTU-16D-( ) (BK)/(WH) TEL, ETW-24DS-( ) (BK)/(SW) TEL, or DTU-32D-( ) (BK)/(WH) TEL.

A third programming position becomes available when an MIF-F(S)-10 KTU or MIF-F(L)-10 KTU and the *Electra Professional System Program Technician* software are installed.

## 2.1.2 Attendant Station

A maximum of four Attendant positions can be installed in a system with EDW-48-( ) (BK)/(SW) or DCU-60-( ) (BK)/(WH) Consoles. Each Attendant Add-On Console must be supported by an ESI-F(8)-21 KTU. A maximum of four EDW-48-( ) (BK)/(SW) Consoles can be installed in each system.

**2.2 Determining Required Equipment**

**2.2.1 Station Equipment**

Determine the type and quantity of station equipment being installed. Available station equipment includes:

- DTU-8-( ) (BK)/(WH) TEL (8-line Multiline Terminal without LCD)
- DTU-16-( ) (BK)/(WH) TEL (16-line Multiline Terminal without LCD)
- DTU-16D-( ) (BK)/(WH) TEL (16-line Multiline Terminal with LCD)
- DTU-32-( ) (BK)/(WH) TEL (16-line Multiline Terminal without LCD)
- DTU-32D-( ) (BK)/(WH) TEL (16-line Multiline Terminal with LCD)
- ETW-8-( ) (BK)/(SW) TEL (8-line Multiline Terminal without LCD)
- ETW-16DC-( ) (BK)/(SW) TEL (16-line Multiline Terminal with LCD)
- ETW-16DD-( ) (BK)/(SW) TEL (16-line Multiline Terminal with LCD)
- ETW-24DS-( ) (BK)/(SW) TEL (24-line Multiline Terminal with LCD and built-in Dual Path Adapter)
- Single Line Telephone with Message Wait Lamp
- Single Line Telephone without Message Wait Lamp
- DCU-60-( ) (BK)/(WH) Console
- EDW-48-( ) (BK)/(SW) Console
- ADA-U Unit Ancillary Device Adapter interface
- APR-U Unit Analog Port Ringer interface
- HFU-U Unit Handsfree unit
- WMU-U Unit Wall mount unit with Multiline Terminal
- ADA(1)-W (BK)/(SW) Unit
- ADA(2)-W (BK)/(SW) Unit
- WMU-W Unit
- SLT-F(1G)-10 ADP or SLT-F(1G)-20 ADP.

**2.2.2 Interface KTUs**

A. Slot and System Port Numbers for the Level II system are shown in Figure 3-3 - Level II Interface Slots and System Port Numbers.

			BASIC KSU					EXPANSION KSU		
P S U	O P B	C P U	8	16	24	32	40	48	56	64
			7	15	23	31	39	47	55	63
			6	14	22	30	38	46	54	62
			5	13	21	29	37	45	53	61
			4	12	20	28	36	44	52	60
			3	11	19	27	35	43	51	59
			2	10	18	26	34	42	50	58
			1	9	17	25	33	41	49	57
			IF1/OP1	IF2/OP2	IF3/OP3	IF4/OP4	IF5	IF6	IF7	IF8

Figure 3-3 Level II Interface Slots and System Port Numbers



- B. Slot and System Port Numbers for the Level II Advanced system are shown in Figure 3-4 - Level II Advanced Interface Slots and System Port Numbers.

**Note:** The two fixed slots and the first four slots in KSU3 are not labeled with the OP designation in Figure 3-4 - Level II Advanced Interface Slots and System Port Numbers. This is only to show that an MIF-F( )-10 KTU cannot be installed in these slots. The actual KSUs are labeled with OP.

KSU3	P S U			M M C	136	144	152	160	168	176	184	192
					135	143	151	159	167	175	183	191
					134	142	150	158	166	174	182	190
					133	141	149	157	165	173	181	189
					132	140	148	156	164	172	180	188
					131	139	147	155	163	171	179	187
					130	138	146	154	162	170	178	186
					129	137	145	153	161	169	177	185
					IF1	IF2	IF3	IF4	IF5	IF6	IF7	IF8

KSU2	P S U	O P A	O P B	M M C	72	80	88	96	104	112	120	128
					71	79	87	95	103	111	119	127
					70	78	86	94	102	110	118	126
					69	77	85	93	101	109	117	125
					68	76	84	92	100	108	116	124
					67	75	83	91	99	107	115	123
					66	74	82	90	98	106	114	122
					65	73	81	89	97	105	113	121
					IF1/OP1	IF2/OP2	IF3/OP3	IF4/OP4	IF5	IF6	IF7	IF8

KSU1	P S U	O P A	O P B	C P U	8	16	24	32	40	48	56	64
					7	15	23	31	39	47	55	63
					6	14	22	30	38	46	54	62
					5	13	21	29	37	45	53	61
					4	12	20	28	36	44	52	60
					3	11	19	27	35	43	51	59
					2	10	18	26	34	42	50	58
					1	9	17	25	33	41	49	57
					IF1/OP1	IF2/OP2	IF3/OP3	IF4/OP4	IF5	IF6	IF7	IF8

Figure 3-4 Level II Advanced Interface Slots and System Port Numbers

C. Telephone and CO Port Numbers

Telephone and CO Port Numbers are available in the system. The port numbers are used to count the number of station numbers and trunk numbers when programming System Data. Refer to Figure 3-5 - Level II Telephone and CO Port Number Example.

In the following example of a Level II system, the KTUs installed in each slot are:

Slot	KTU
IF1/OP1 .....	DTI-F( )-10 KTU or DTI-F(A)-20 KTU
IF2/OP2 .....	OPEN
IF3/OP3 .....	OPEN
IF4/OP4 .....	ESI-F(8)-21 KTU
IF5 .....	TLI-F(2)-10 KTU
IF6 .....	COI-F(8)-20 KTU
IF7 .....	SLI-F(8G)-21 KTU
IF8 .....	DID-F(4)-10 KTU

BASIC KSU

EXPANSION KSU

C8	C16	C24	T8		C36	T16	
C7	C15	C23	T7		C35	T15	
C6	C14	C22	T6		C34	T14	
C5	C13	C21	T5		C33	T13	
C4	C12	C20	T4		C32	T12	C42
C3	C11	C19	T3		C31	T11	C41
C2	C10	C18	T2	C26	C30	T10	C38
C1	C9	C17	T1	C25	C29	T9	C37
IF1/OP1	IF2/OP2	IF3/OP3	IF4/OP4	IF5	IF6	IF7	IF8

C = CO Port Number  
 T = Telephone Port Number

**Note 1:** The TLI KTU has four available channels, but only two are used.

**Note 2:** The DID KTU has eight available channels, but only four are used.

Figure 3-5 Level II Telephone and CO Port Number Example

D. Interface KTUs

To determine the quantity of interface KTUs that are required, refer to Table 3-13 - Number of Required Interface KTUs.

Table 3-13 Number of Required Interface KTUs

KTU	Circuits per KTU	Calculations/Comments	Maximum KTUs per System		Allowed Insertion Slots
			Level II	Level II Advanced	
COI-F(4)-20 KTU COI-F(4)-30 KTU	4	Divide the number of CO/PBX/Centrex lines being used by 4.	7	16	IF1/OP1~IF4/OP4 and IF5~IF8
COI-F(8)-20 KTU COI-F(8)-30 KTU	8	Divide the number of CO/PBX/Centrex lines being used by 8.	7	8	IF1/OP1~IF4/OP4 and IF5~IF8
ESI-F(8)-21 KTU	8	Divide number of Multiline Terminals, Attendant Add-On Consoles, SLT Adapters being used by 8.	7	12	IF1/OP1~IF4/OP4 and IF5~IF8
SLI-F(8G)-21 KTU	8	Divide Single Line Telephones and/or Voice Mail ports being used by 8.	6	11	IF1/OP1~IF4/OP4 and IF5~IF8
PBR-F(4)-11 KTU	4	PBR Requirements Refer to Section E - PBR Requirements on next page.	1	1	IF1/OP1~IF4/OP4 and IF5~IF8
DID-F(4)-10 KTU	4	Divide the number of DID trunks being used by 4.	7	8	IF1/OP1~IF4/OP4 and IF5~IF8
TLI-F(2)-10 KTU	2	Divide Tie lines being used by 2.	7	16	IF1/OP1~IF4/OP4 and IF5~IF8
DTI-F( )-10 KTU DTI-F(A)-20 KTU	24	The T1/FT1 channels being used.	1	3	See Notes 1 and 2
ECR-F-11 KTU	8 Relays	Required when installing multiple zones for external paging, tone ring and/or chime.	1	1	IF1/OP1~IF4/OP4 and IF5~IF8
MIF-F(S)-10 KTU		Required when connecting an SMDR printer and/or when using System Program Technician Software.	1	1	OP and/or IF1/OP1~IF4/OP4
MIF-F(L)-10 KTU		Required when connecting SMDR printer, using scroll and dial CID feature, and/or using System Program Technician Software and/or LCR.	1	1	OP and/or IF1/OP1~IF4/OP4
MIF-F(A)-10 KTU		Required for the ACD feature.	1	1	OP and/or IF1/OP1~IF4/OP4
MIF-F(C)-10 KTU		Required for the Caller ID feature.	1	1	OP and/or IF1/OP1~IF4/OP4
MIF-F(U)-10 KTU		Required for the UCD feature.	1	1	OP and/or IF1/OP1~IF4/OP4
VRS-F(4)-11 KTU	4	Automated Attendant, DISA, Voice Prompt and/or Delay Announcement.	2	2	IF1/OP1~IF4/OP4 and IF5~IF8
BRT-F(4)-10 KTU	4	Each KTU allows connection of up to four BRI circuits. Each BRI provides two voice channels. Divide BRI trunks by 8.	8	8	IF1~IF4 in basic and first expansion KSU

**Note 1:** For the Level II system, use slot IF1/OP1 in the Basic KSU.

**Note 2:** For the Level II Advanced system, use slot IF1/OP1 and/or IF4/OP4 in the Basic KSU, and IF1/OP1 in the First Expansion KSU.

### E. PBR Requirements

The Electra Professional Level II and Level II Advanced systems have four channels of built-in PBR circuits in the CPU-F( )-20 KTU. The PBR circuit can detect DTMF signals from a Single Line Telephone, facsimile, modem, or voice mail ports. Incoming DTMF signals can also be detected from a CO trunk by an Automated Attendant and DISA feature. An optional PBR-F(4)-11 KTU can only detect DTMF signals from Single Line Telephones, facsimiles, modems, and voice mail.

The number of PBR-F(4)-11 KTUs needed depends on the number of Single Line Telephones, modems, facsimiles, voice mail ports, and whether Automated Attendant/DISA trunks are connected to the system. Up to 24 Single Line Telephones or Automated Attendant/DISA trunks can be supported by one PBR circuit.

### 2.3 Installation Example

The following example aids in understanding some requirements when configuring an Electra Professional Level II system. Refer to Table 3-14 - System Configuration Example. The equipment used in this example includes:

- 12 CO Lines
- 12 Multiline Terminals [ETW-16DD-1 (BK)/(SW) TEL only]
- Voice Mail Connection (4 ports)
- SMDR
- External Paging

Table 3-14 System Configuration Example

Device Type	Units	Quantity
Key Service Unit	ESF-SB-10 KSU	1
	ESF-SE-10 KSU	1
Power Supply	PSF-S-20 PSU	2
CO Line	COI-F(8)-20 KTU	2
Multiline Terminal Interface	ESI-F(8)-21 KTU	2
Multiline Terminal	ETW-16DD-( ) (BK) TEL	12
Voice Mail Connection	SLI-F(8G)-21 KTU	1
SMDR	MIF-F(S)-10 KTU	1
External Paging	ECR-F-11 KTU	1

**SECTION 3 KSU INSTALLATION****3.1 General Information**

This section provides the requirements for installing the system. The installer should be familiar with this section before installing the system.

**3.2 Site Preparation and MDF/IDF Construction**

The technician should plan the installation before actual work begins. Advanced planning minimizes time, cost, and disruption of customer business activities. Additional benefits include flexibility for changes and expansion, efficient maintenance, and increased customer satisfaction.

**3.2.1 Precautionary Information**

**The following warnings shall be observed during installation:**

1. Never install telephone wiring during a lightning storm.
2. Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
3. Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface.
4. Use caution when installing or modifying telephone lines.

**3.2.2 Site Survey**

In most cases, a survey of the customer premise is needed to determine the placement of the Main Distribution Frame (MDF). A second visit to the site may be necessary to obtain the exact dimensions of the area selected for MDF, cable lengths, and possible IDF (Intermediate Distribution Frame) locations.

Collected information about the job site generally permits the MDF to be partially assembled at the technician shop and helps to minimize time spent at the customer premise.

**3.2.3 Site Limitations**

In selecting a permanent site for the MDF, the technician may encounter problems such as, but not limited to, the following:

- Limited space is available and must be used regardless of its suitability.
- The available space may be adequate but may pose one or more environmental hazards.
- The proposed location has limitations such as insufficient lighting or the lack of a suitable ground for grounding the KSUs.

Whatever the nature of the adversities encountered, the technician must make the necessary decisions to arrive at the best possible solution for installing the equipment. This document cannot cover all possible situations, precautions, and actions.

### 3.2.4 Site Selection Conditions

#### KSU Installation Site:

The following conditions should be met at the site selected for the key service unit (KSU).

- KSUs are normally wall mounted to protect against accident or flooding.
- The KSU should not be located directly beneath pipes, due to the possibility of leaks or condensation causing damage to the Electra Professional Level II system equipment.
- The area where the KSU is to be located must be free of corrosive and inflammable gases, excessive chemical or industrial dusts, and other materials that could cause a hazard to personnel or to the proper functioning of the equipment.
- Operating ambient temperature and humidity must be within the limits specified in Section 1.6 - Environmental Conditions.
- The operation of the system is virtually noiseless and allows a wide selection of installation sites. Take care to ensure the KSUs do not present a hazard to office traffic. For economy, a central location to minimize cabling is often used.
- The KSU must be located at a site where it can be easily connected to an AC power source.
- The Level II KSUs (Basic and Expansion) weigh approximately 40 lb. ~ 70 lb. The Level II Advanced KSUs (Basic and Expansion) weigh approximately 40 lb. ~ 100 lb. Therefore, select a strong wall for mounting.
- Place the KSU according to the following spacing specifications:
  - Space distance between the KSU and the ceiling: 20 in. or more
  - Space distance on both sides of the KSU: 12 in. or more
  - Space distance on front of KSU: 20 in. or more
- Avoid connection of the KSU to an AC receptacle used in common with any other device (e.g., computer, facsimile machine, or copier).

#### Telephone Installation Site:

The following conditions should be met at the site selected for Multiline Terminals.

- Ensure the cable length and line resistance (loop), between the KSU and the telephones, comply with the specifications shown in Table 3-3 - Multiline Terminal Loop Resistance and Cable Length and Table 3-4 - Single Line Telephone Connection Table Length.
- Some devices require an external power supply. Select a place where they can be easily connected to an AC outlet.

3.2.5 MDF Construction

The Main Distribution Frame (MDF) consists of two different types of standard quick-connect terminal blocks that are mounted on a 3/4-inch plywood backboard. Mounting these blocks on standoffs for ease of access is recommended. The recommended blocks are: 66B50, for termination of the MDF Cable Assembly and 66M50, for termination of the station cables.

The Intermediate Distribution Frame (IDF) requires only the 66M50 blocks.

Both the MDF and IDF use standard bridging clips for each terminal block. The bridging clips mate the left half of the terminal block (terminated cable run) to the right half of the terminal block (crossconnection wire) to the terminal block (crossconnection wire). The bridging clips are also useful during trouble shooting to help isolate the cable runs and terminals/telephones from the central equipment and the Central Office Network from the system. Refer to Figure 3-6 - Typical Full MDF Layout. Also refer to Section 3.3.4 - Wall Mounting the Basic and/or Expansion KSUs.

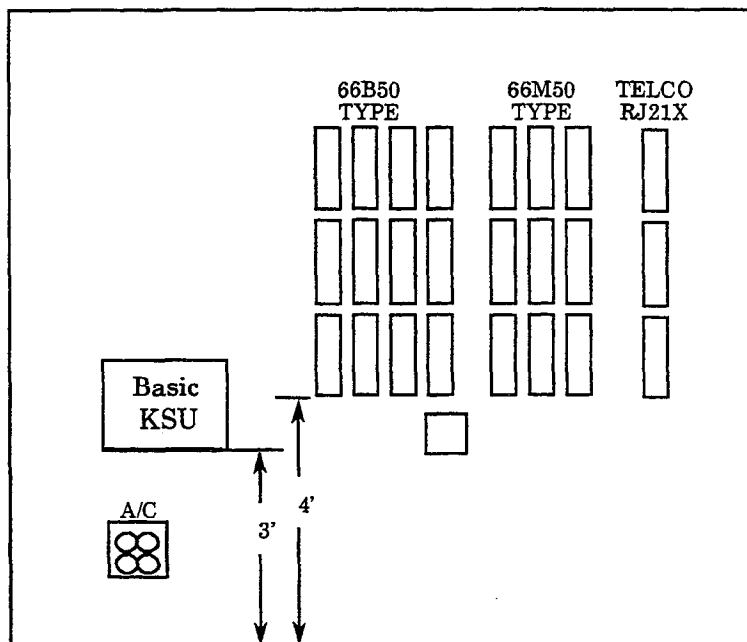


Figure 3-6 Typical Full MDF Layout



### 3.3 Installing the Level II Key Service Unit (KSU)

Before installation and cabling of the KSU, observe these precautions:

- Before starting the work, be sure the PSU power switch is OFF and disconnect the power cord from the AC outlet.
- Do not directly touch the soldered surfaces of the KTUs with your hands.

#### 3.3.1 Basic KSU (ESF-SB-10 KSU)

The ESF-SB-10 KSU is the basic system cabinet. There are two fixed slots for the CPU and MIF KTUs, one PSU slot, a battery installation space, and five interface slots for the installation of telephones, CO/PBX lines, Tie lines, VRS, DID, Digital Trunk (T1), PBR, and ECR KTUs. The KSU can be either floor mounted or wall mounted. Refer to Figure 3-7 - Level II Basic KSU.

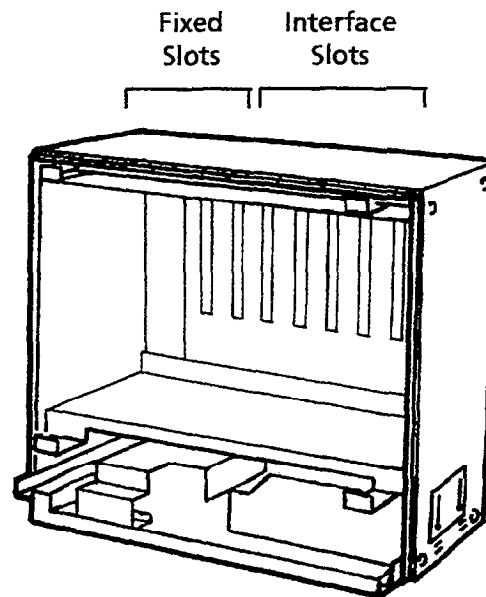


Figure 3-7 Level II Basic KSU

### 3.3.2 Expansion KSU (ESF-SE-10 KSU)

The ESF-SE-10 KSU is the expansion cabinet that provides the system with one PSU slot, battery installation space, and three additional interface slots. Only one expansion KSU can be installed with the system. This KSU is floor or wall mounted with the ESF-SB-10 KSU. Refer to Figure 3-8 - Level II Expansion KSU.

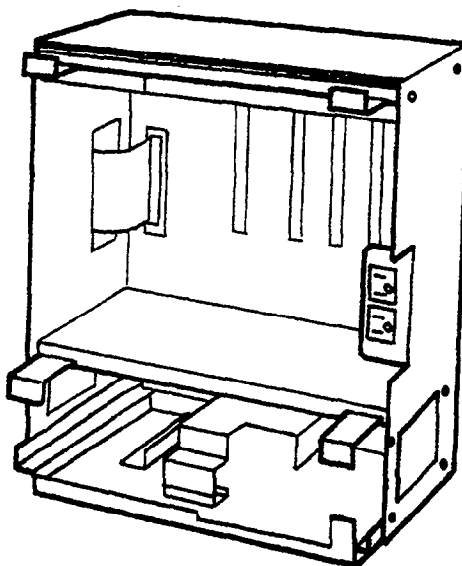


Figure 3-8 Level II Expansion KSU

### 3.3.3 Opening the KSU Cover

The cover must be removed before floor or wall mounting the KSU.

1. Loosen the four cover screws and remove the front cover. Refer to Figure 3-9 - Removing the Level II Basic KSU Cover.

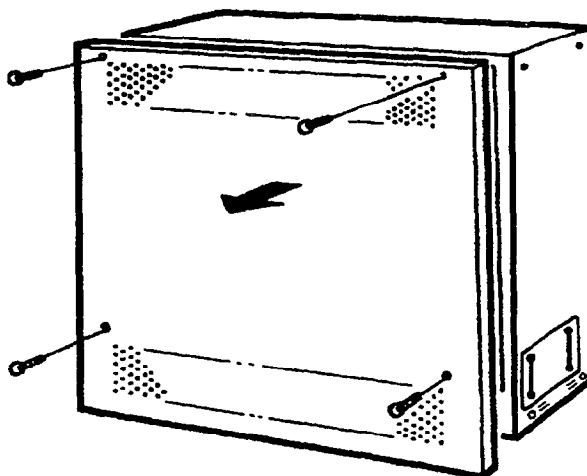


Figure 3-9 Removing the Level II Basic KSU Cover

### 3.3.4 Wall Mounting the Basic and/or Expansion KSUs

#### 3.3.4.1 Wall Mounting the Basic KSU

Before wall mounting the basic KSU, the wall mount bracket must be attached to plywood. Using 3/4-inch fire retardant plywood backboard is recommended.

1. Using five screws (locally provided), attach the wall mount bracket to the wall. Refer to Figure 3-10 - Attaching the Wall Mount Bracket of the Level II Basic KSU to the Wall.

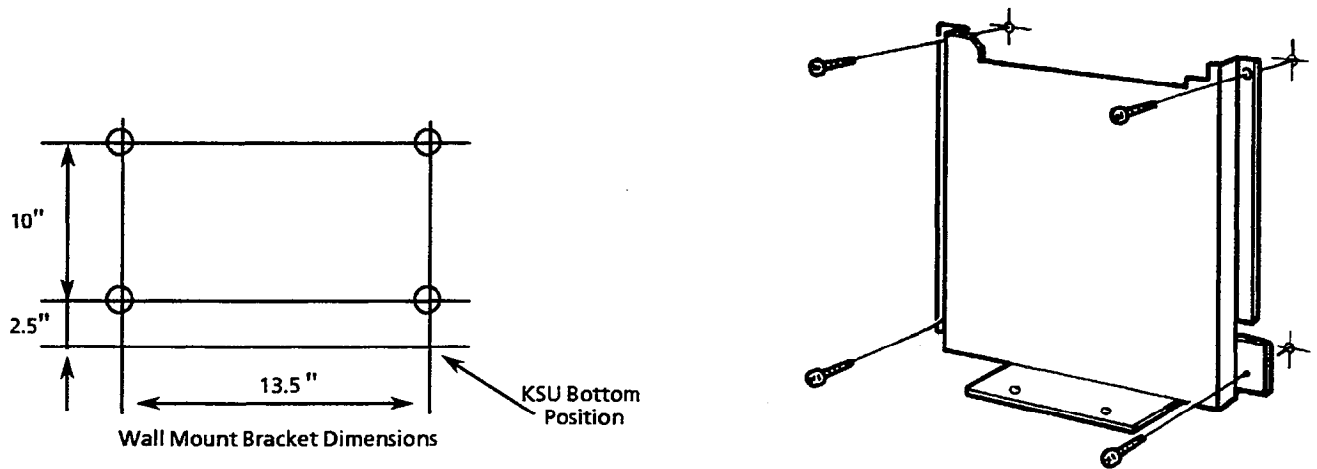


Figure 3-10 Attaching the Wall Mount Bracket of the Level II KSU to the Wall

2. Holding the Basic ESF-SB-10 KSU, lower the two hooks that protrude from the rear of the KSU over the wall mount bracket. Refer to Figure 3-11 - Attaching the Level II Basic KSU to the Wall Mount Bracket.

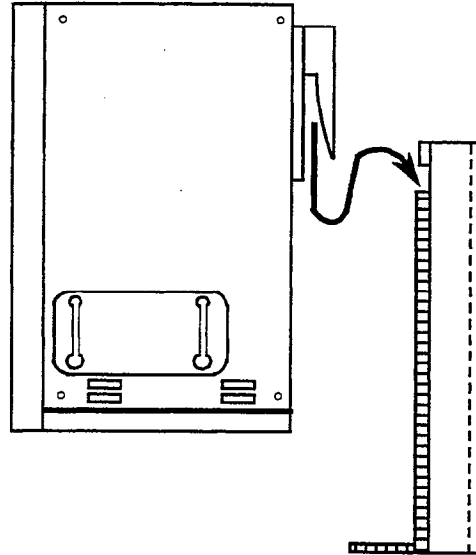


Figure 3-11 Attaching the Level II Basic KSU to the Wall Mount Bracket

3. Using the two provided bolts, secure the KSU to the wall mount bracket from the bottom. Refer to Figure 3-12 - Securing the Level II KSU to the Wall Mount Bracket.

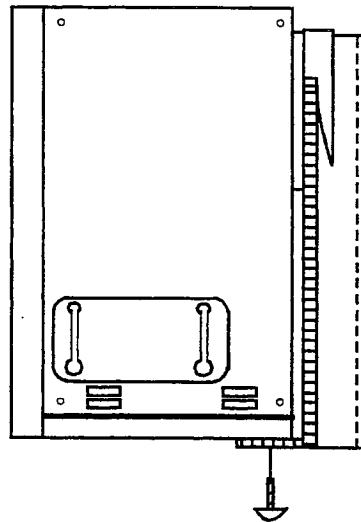


Figure 3-12 Securing the Level II KSU to the Wall Mount Bracket

3.3.4.2 Wall Mounting the Expansion KSU

1. Remove the side panel (four screws) from the Basic KSU before installing the expansion KSU. Refer to Figure 3-13 - Removing the Side Panel.

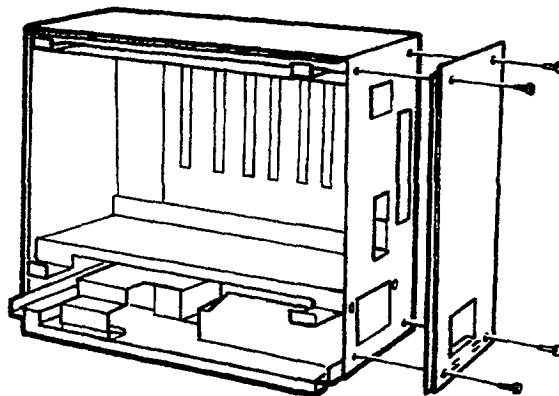


Figure 3-13 Removing the Side Panel

2. Attach the ESF-SE-10 KSU wall mount bracket to the existing ESF-SB-10 KSU wall mount bracket and secure it to the wall using two (locally provided) screws. Refer to Figure 3-14 - Attaching the Wall Mount Bracket of the Level II Expansion KSU to the Wall.

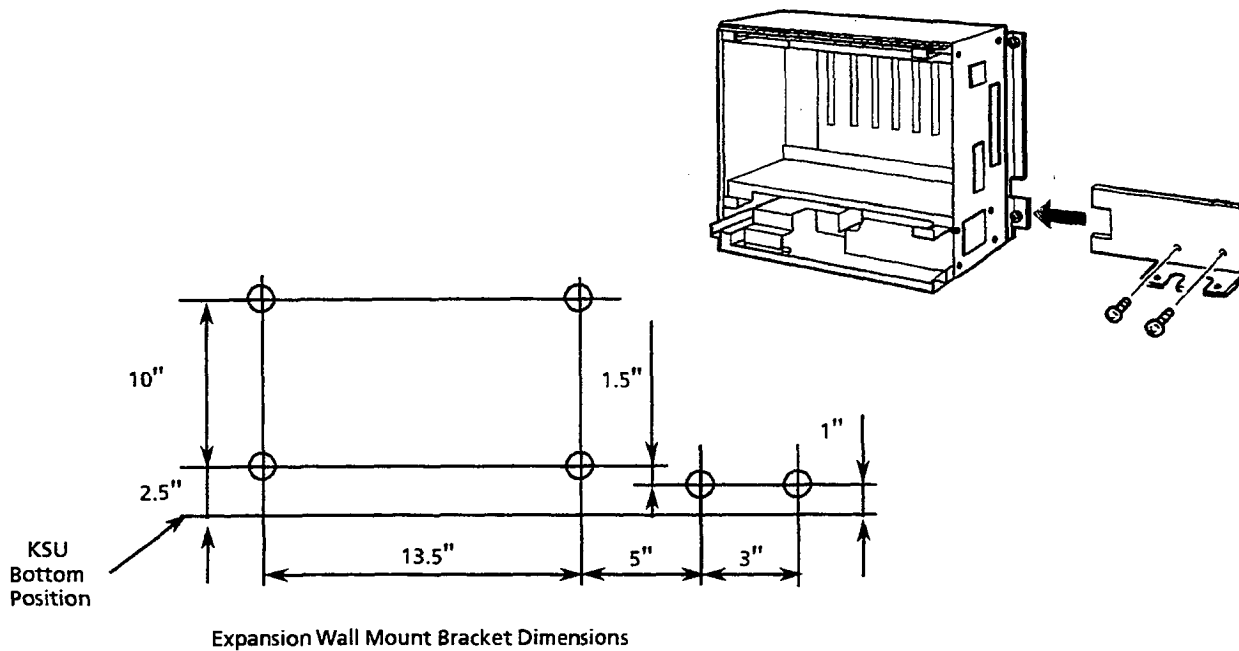


Figure 3-14 Attaching the Wall Mount Bracket of the Level II Expansion KSU to the Wall

3. Lift the Expansion KSU and attach it to the Basic KSU by placing the hook through the slot. Refer to Figure 3-15 - Hooking the Level II Basic and Expansion KSUs Together.

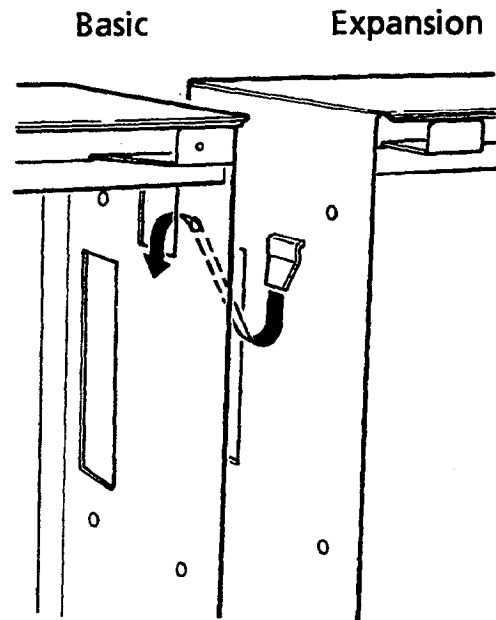


Figure 3-15 - Hooking the Level II Basic and Expansion KSUs Together

4. Bolt the Expansion KSU to the Basic KSU using the four provided bolts. Refer to Figure 3-16 - Bolting the Level II Expansion KSU to the Basic KSU.

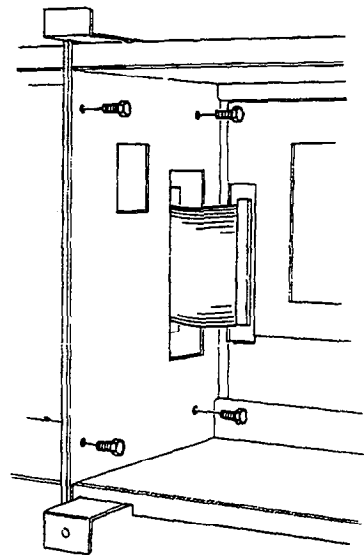


Figure 3-16 Bolting the Level II Expansion KSU to the Basic KSU

- Using the provided bolts, attach the ESF-SE-10 KSU to the expansion wall mounting bracket from the bottom. Refer to Figure 3-17 - Attaching the Level II Expansion KSU to the Wall Mounting Bracket.

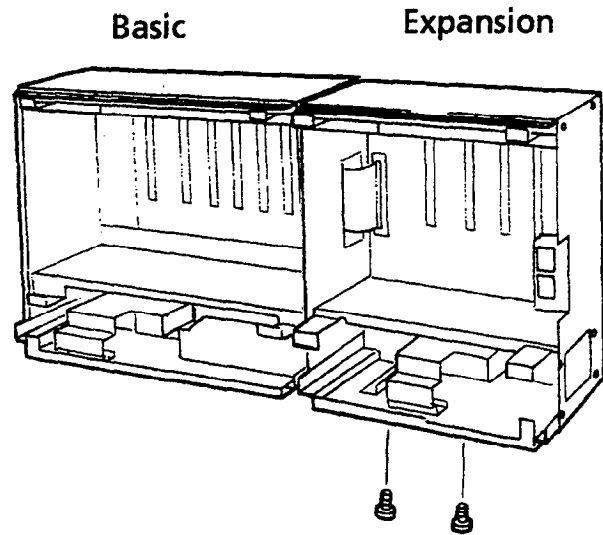


Figure 3-17 Attaching the Level II Expansion KSU to the Wall Mounting Bracket

- Attach the ribbon cable, mounted on the Expansion KSU, through the opening between the Basic and Expansion KSUs. Refer to Figure 3-18 - Connecting the Cable Between the Level II Basic and Expansion KSUs.

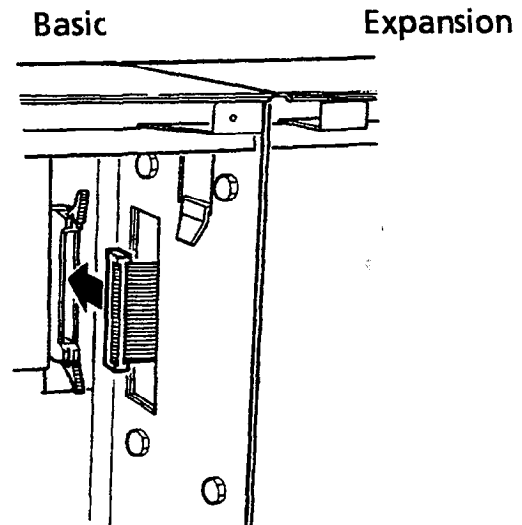


Figure 3-18 Connecting the Cable Between Level II Basic and Expansion KSUs

- Attach the side panel (taken from the Basic KSU) to the right side of the Expansion KSU.

8. Install the front covers and tighten the screws after the installation of the PSU, batteries, grounding cable, and KTUs is complete.

### 3.3.5 Floor Mounting the Basic and/or Expansion KSUs

#### 3.3.5.1 Floor Mounting the Basic KSU

1. Attach the two provided floor mounting brackets to the underside of the Basic KSU. Refer to Figure 3-19 - Bottom View of the Floor Mounting Brackets.

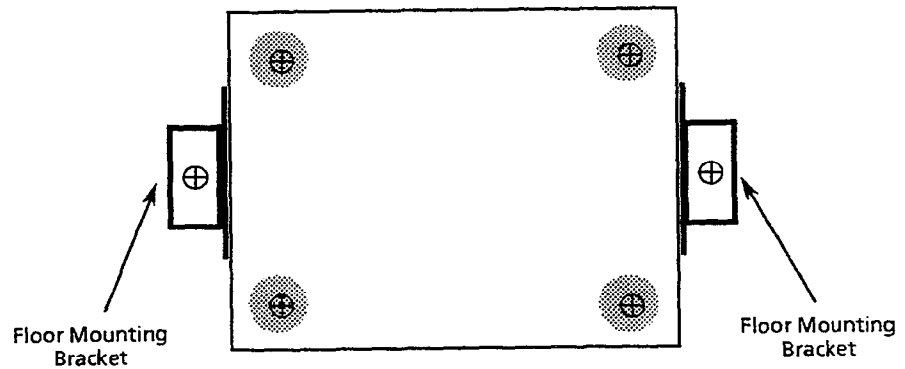


Figure 3-19 Bottom View of the Floor Mounting Brackets

2. Set the Basic KSU on a level surface, near an AC outlet and against a wall. Using two screws (locally provided) attach the KSU to the floor.

#### 3.3.5.2 Floor Mounting the Expansion KSU

1. Remove the side panel on the Basic KSU. Refer to Figure 3-20 - Removing the Level II Basic KSU Side Panel.

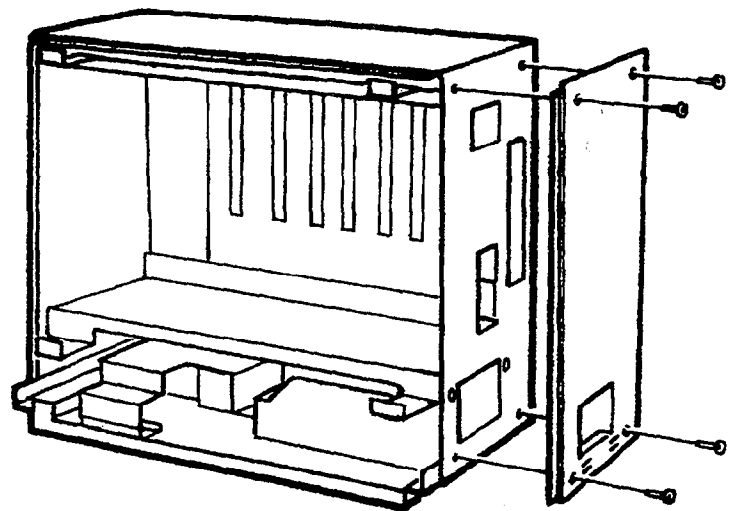


Figure 3-20 Removing the Level II Basic KSU Side Panel



2. Lift the Expansion KSU and attach it to the Basic KSU by placing the hook through the slot. Refer to Figure 3-21 - Hooking the Level II Basic and Expansion KSUs Together.

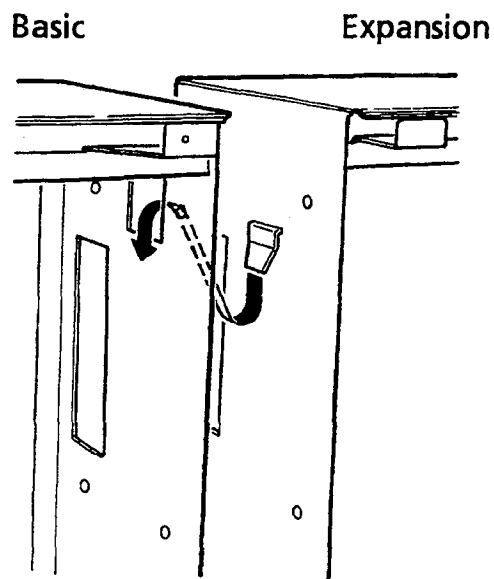


Figure 3-21 Hooking the Level II Basic and Expansion KSUs Together

3. Bolt the Expansion KSU to the Basic KSU using the four provided bolts. Refer to Figure 3-22 - Bolting the Level II Expansion KSU to the Basic KSU.

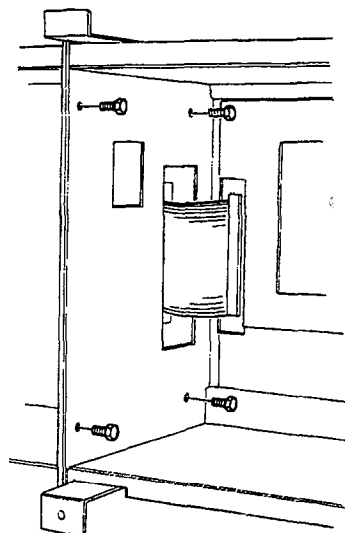


Figure 3-22 Bolting the Level II Expansion KSU to the Basic KSU

4. Attach the ribbon cable, mounted on the Expansion KSU, through the opening between the Basic and Expansion KSUs. Refer to Figure 3-23 - Connecting the Cable Between the Level II Basic and Expansion KSUs.

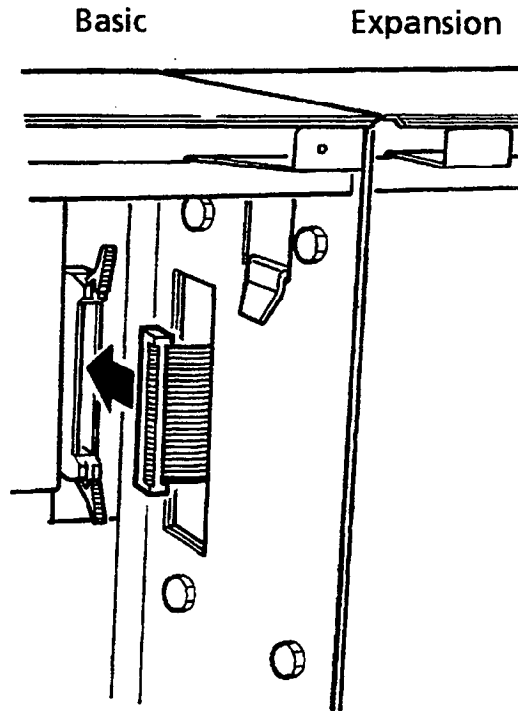


Figure 3-23 Connecting the Cable Between the Level II Basic and Expansion KSUs

5. Attach the side panel (taken from the Basic KSU) to the right side of the Expansion KSU using the four screws.
6. Install the front covers and tighten the screws after the installation of the PSU, batteries, grounding cable, and KTUs is complete.

### 3.3.6 Adding the Expansion KSU to an Installed System

1. Loosen the four screws on the front cover and remove the cover panel. Refer to Section 3.3.3 - Opening the KSU Cover and to Figure 3-24 - Removing the Level II Basic KSU Cover.

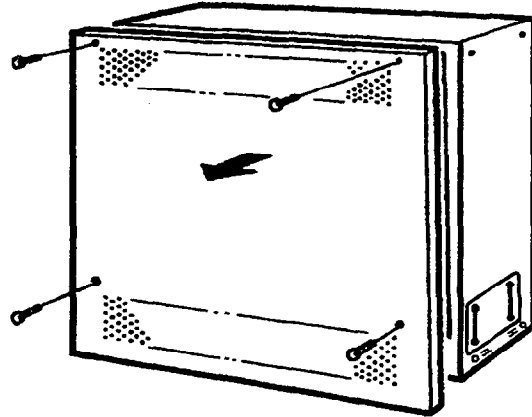


Figure 3-24 Removing the Level II Basic KSU Cover

2. Place the PSU power switch on the Basic KSU in OFF, and disconnect the KSU from the power source.
3. Disconnect the connectors from the KTU(s). When disconnecting, note the position of the special connectors on the KTU. Refer to Figure 3-25 - Disconnecting the KTUs from the Level II Basic KSU.

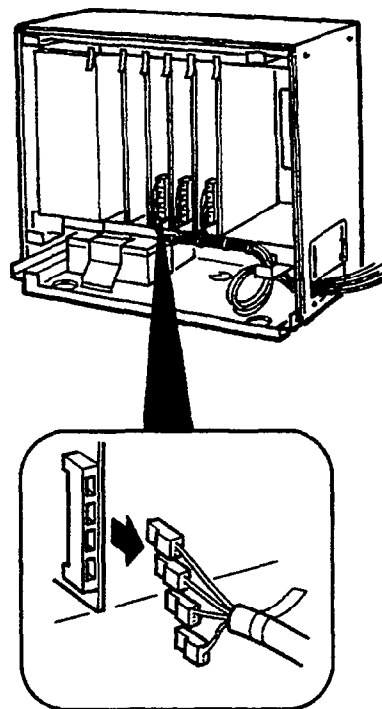


Figure 3-25 Disconnecting the KTUs from the Level II Basic KSU

4. Remove the slide bracket, on the Basic KSU, and pull the cable through the opening. Refer to Figure 3-26 - Removing the Slide Bracket on the Level II Basic KSU.

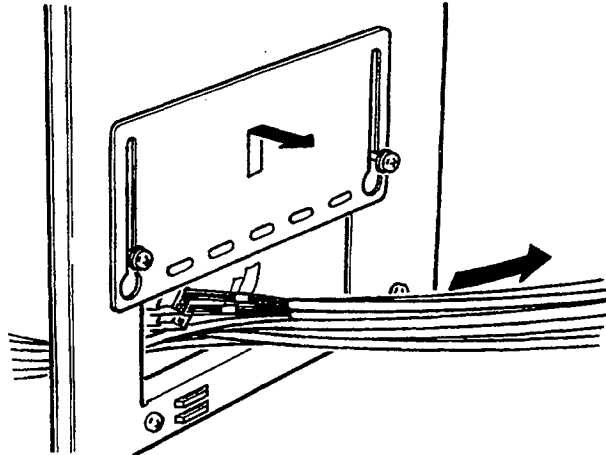


Figure 3-26 Removing the Slide Bracket on the Level II Basic KSU

5. If wall mounting the system, refer to Section 3.3.4.2 - Wall Mounting the Expansion KSU.

If floor mounting the system, refer to Section 3.3.5.2 - Floor Mounting the Expansion KSU.

### 3.3.7 Installing a PSF-S-20 PSU in the Basic and Expansion KSUs

#### 3.3.7.1 General Information

This power supply is provided with both the Basic and Expansion KSUs. It has a backup interface, accepts 117 Vac and outputs +5V, -5V, and -24V to the system.

#### Fuse Replacement:

To replace the fuse(s) in this PSU, first remove the PSU from the KSU. Refer to Figure 3-27 - PSF-S-20 PSU Fuse Locations. Fuse F1 is a 125V, 4A fuse for AC input. Fuse F2 is a 125V, 7A fuse for DC input.

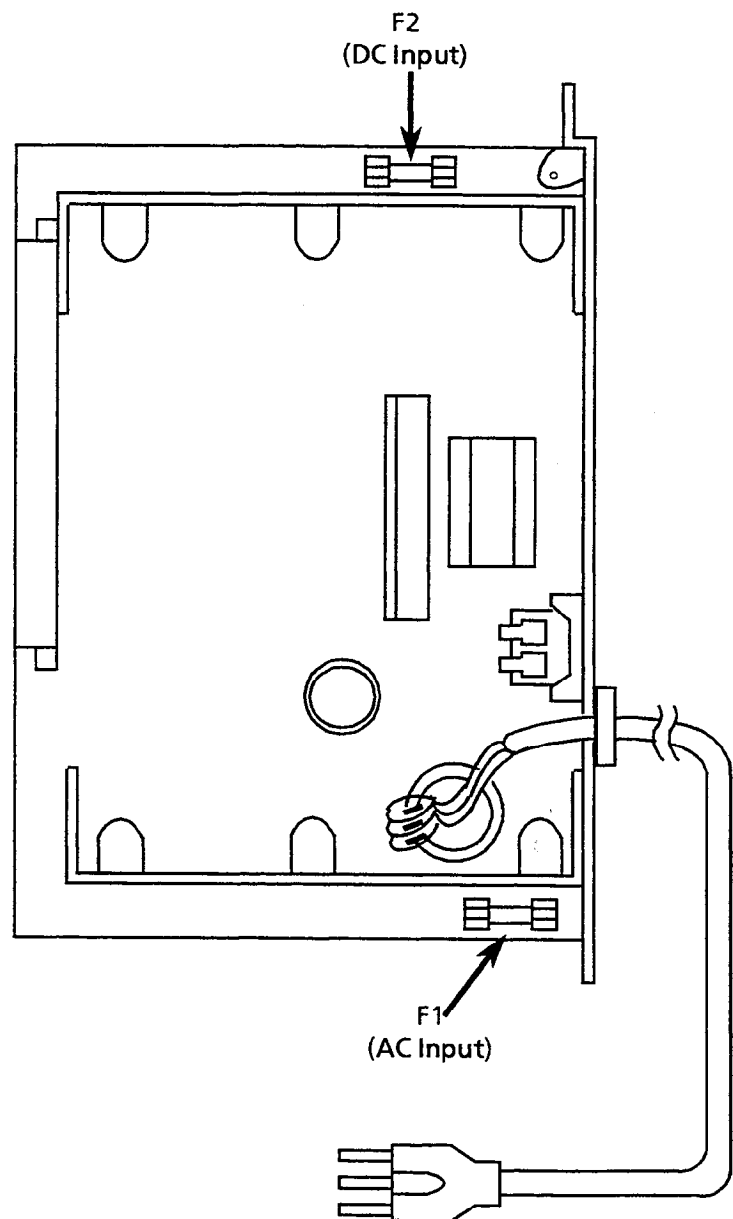


Figure 3-27 PSF-S-20 PSU Fuse Locations

### 3.3.7.2 Installing a PSF-S-20 PSU in the Basic KSU

1. Install the PSF-S-20 PSU in the left slot of the Basic KSU and secure using the two provided bolts. Refer to Figure 3-28 - Installing the PSF-S-20 PSU in the Level II Basic KSU.

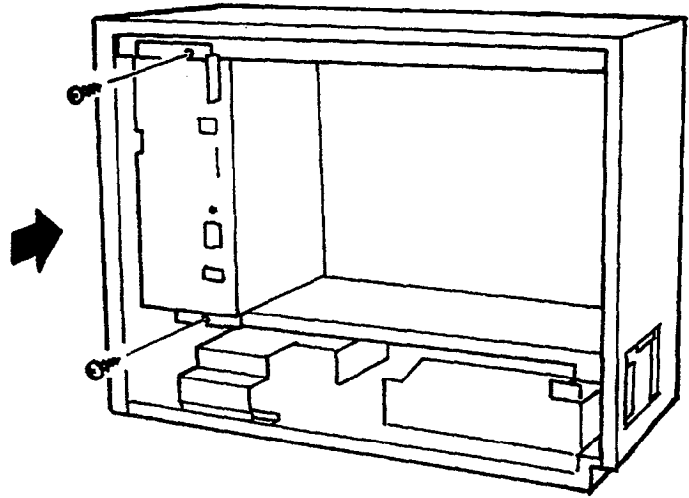


Figure 3-28 Installing the PSF-S-20 PSU in the Level II Basic KSU

### 3.3.7.3 Installing a PSF-S-20 PSU in the Expansion KSU

1. Mount the PSF-S-20 PSU in the left slot of the Expansion KSU and secure using the two provided bolts. Refer to Figure 3-29 - Installing the PSF-S-20 PSU in the Level II Expansion KSU.

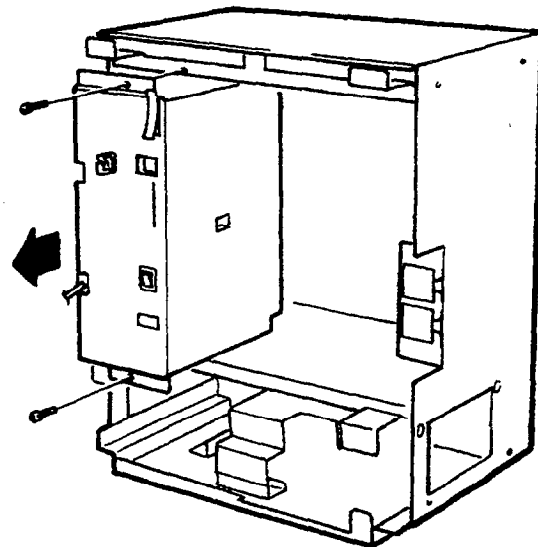


Figure 3-29 Installing the PSF-S-20 PSU in the Level II Expansion KSU

2. Attach a tie wrap (locally provided) 5 feet from the plug. Refer to Figure 3-30 - Securing the PSU Cable Using a Tie Wrap.

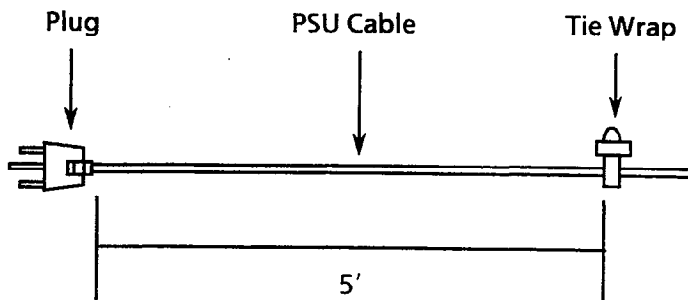


Figure 3-30 Securing the PSU Cable Using a Tie Wrap

3. Using the provided clamp and screw, attach the PSU cable to the KSU as shown in the following diagram. Refer to Figure 3-31 - Attaching the PSU Cable to the KSU.

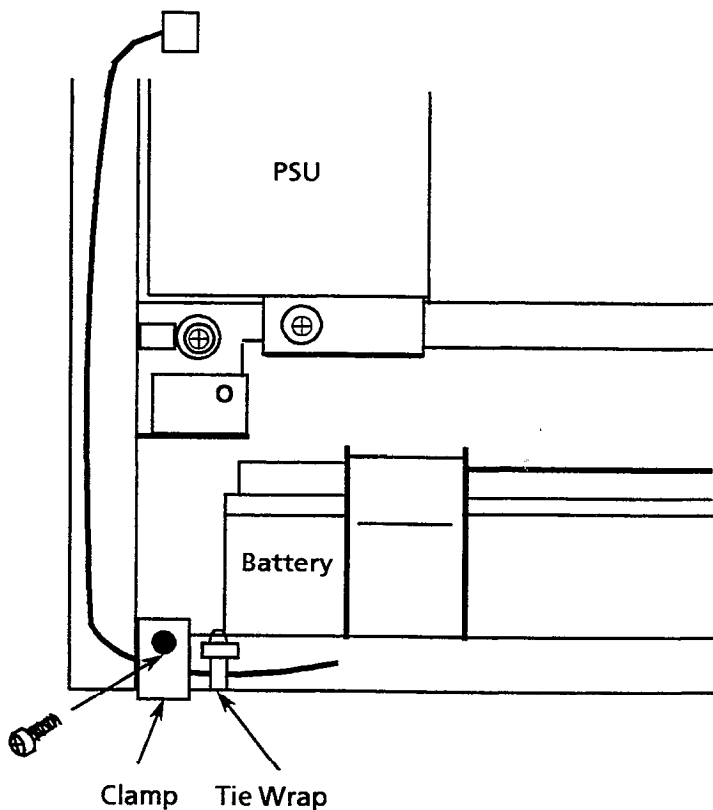


Figure 3-31 Attaching the PSU Cable to the KSU

### 3.3.8 Battery Installation

#### 3.3.8.1 Connecting the Built-In Batteries

1. Connect the two batteries in series. Refer to Figure 3-32 - Connecting the Two PSF Built-In Batteries.

Red Cord → ⊕  
Black Cord → ⊖

#### CAUTION

Be careful not to reverse the ⊕ and ⊖ of the batteries.

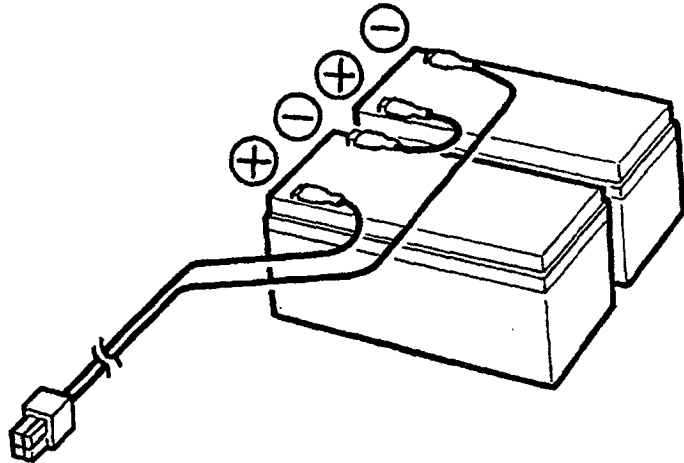


Figure 3-32 Connecting the Two PSF Built-In Batteries

2. Install the battery hold-down plate and tighten the screw. Refer to Figure 3-33 - Placing the Batteries in the Level II KSU.

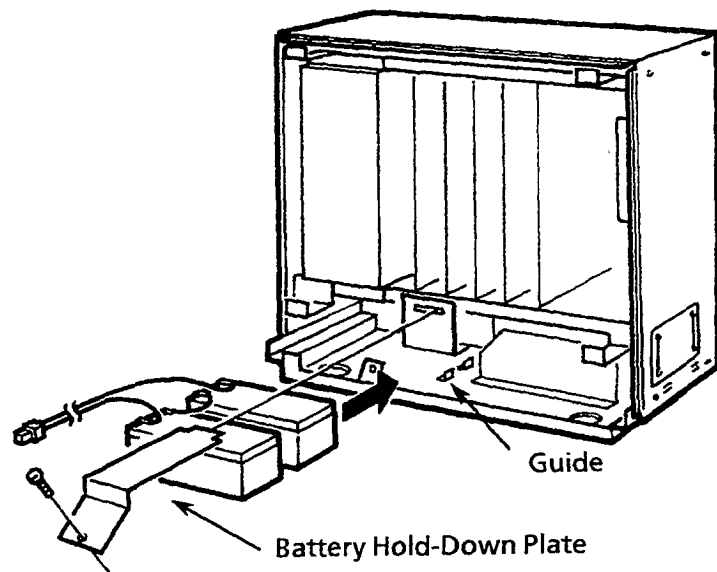


Figure 3-33 Placing the Batteries in the Level II KSU



3. Connect the cord to the DC IN connector of the power supply unit. Refer to Figure 3-34 - Connecting the Batteries to the Power Supply Unit.

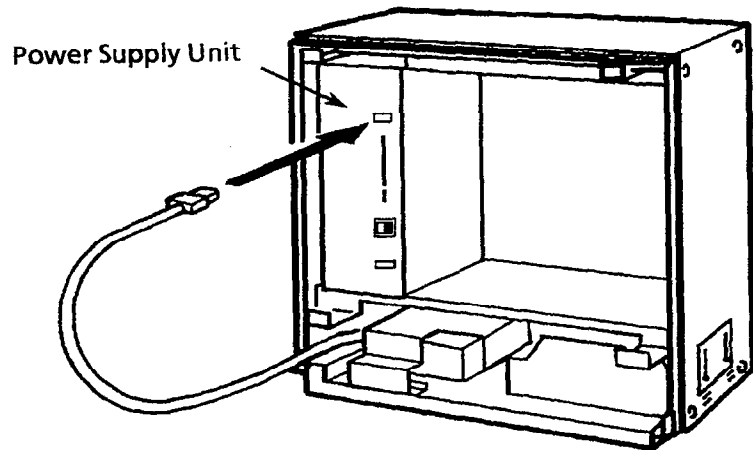


Figure 3-34 Connecting the Batteries to the Power Supply Unit

### 3.3.8.2 Installing and Connecting Expansion Batteries

1. Remove the original batteries and disconnect the cords from the batteries.
2. Using the provided cords, connect the pairs of built-in batteries and expansion batteries in parallel with each other. Refer to Figure 3-35 - Connecting Expansion Batteries to the Original Batteries.

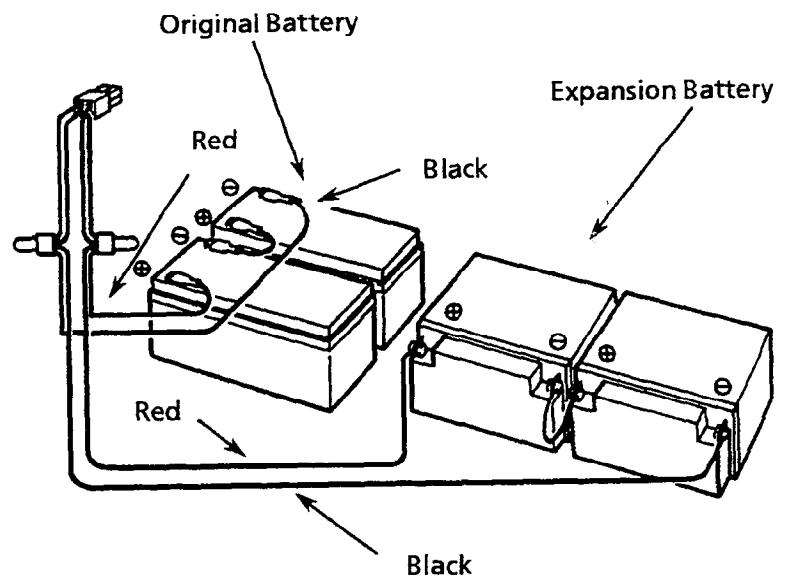


Figure 3-35 Connecting Expansion Batteries to the Original Batteries

3. Mount the original batteries into the KSU and install the expansion batteries outside of the KSU.
4. Connect the cord to the DC IN on the power supply unit of the KSU. Refer to Figure 3-36 - Connecting the Batteries to the Power Supply.

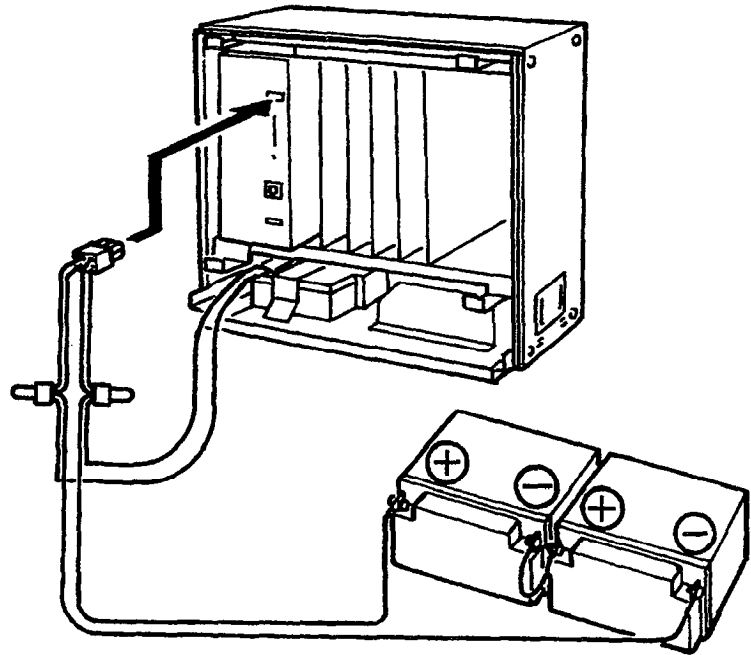


Figure 3-36 Connecting the Batteries to the Power Supply

#### CAUTION

- Ensure that the cord connected to the DC IN, on the power supply unit, is disconnected **before** connecting the batteries.
- **Do not** reverse the ⊕ and ⊖ polarities on the batteries.
- When the batteries are connected, ensure that they are not in contact with any metal on the KSU.

#### 3.3.8.3 Cable Routing

The cable routing (with only the Basic KSU) and the cable connections for built-in batteries are shown in Figure 3-37 - Cable Connections for the Expansion KSU.

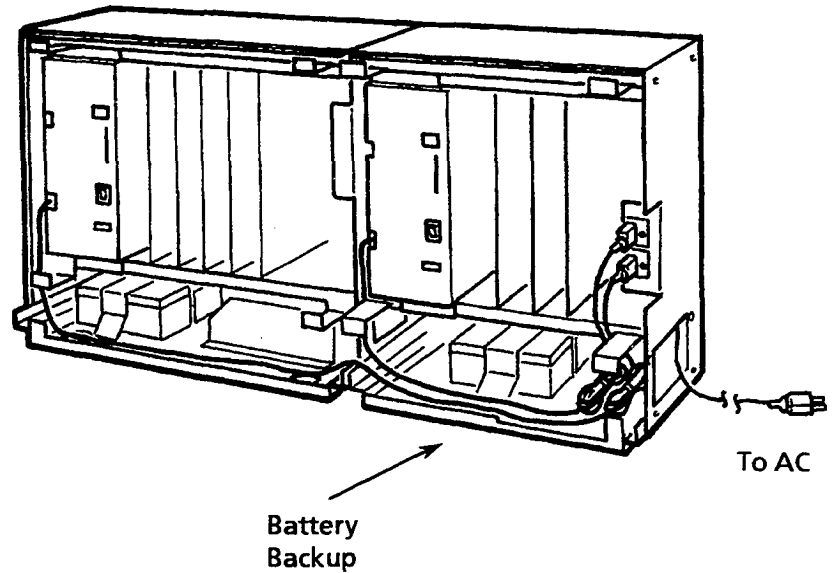


Figure 3-37 Cable Connections for the Expansion KSU

3.3.9 Grounding Requirements

The KSUs must be properly grounded. The KSU is provided with two redundant grounding methods. However, only one grounding method should be used on a system.

1. A dedicated AC outlet.
2. Provide a **suitable cold water pipe ground** in accordance with the local operating telephone company procedures.
3. If no water pipe ground is available, a ground rod should be installed in accordance with the local operating telephone company procedures.
4. A grounding terminal is provided on the ESF-SB-10 KSU. Connect the grounding conductor to the hexagonal screw with the green colored head terminal. Refer to Figure 3-38 - KSU Grounding.

**Note:** The provided ferrite core should be wrapped with the ground cable.

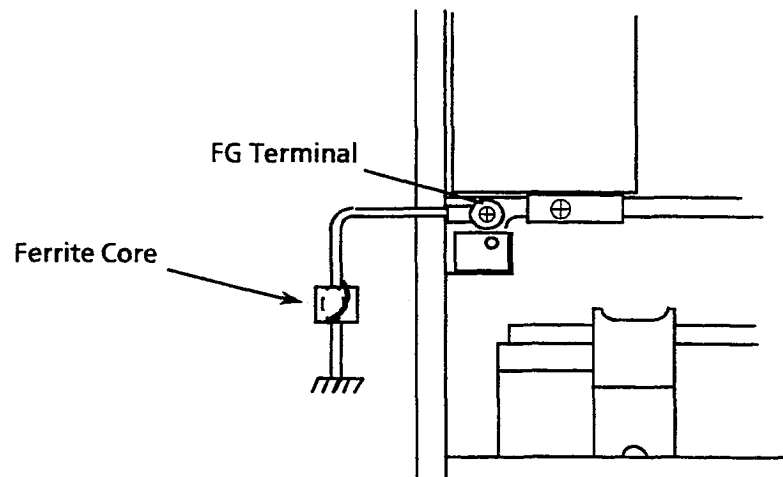


Figure 3-38 KSU Grounding

### 3.4 Installing the Level II Advanced Key Service Unit (KSU)

Observe these precautions before installation and cabling of the KSU:

- Be sure the PSU power switch is OFF, and disconnect the power cord from the AC outlet.
- Do not touch the soldered surfaces of the KTUs with your hands.

#### 3.4.1 Basic KSU (ESF-XB-10 KSU)

The ESF-XB-10 KSU, the basic system cabinet, has three fixed slots for the CPU and MIF KTUs, one PSU slot, a battery installation space, and eight interface slots for the installation of telephones, CO/PBX lines, Tie lines, VRS, DID, Digital Trunk (T1), PBR, and ECR KTUs. The KSU can be either floor mounted or wall mounted. Refer to Figure 3-39 - Level II Advanced Basic KSU.

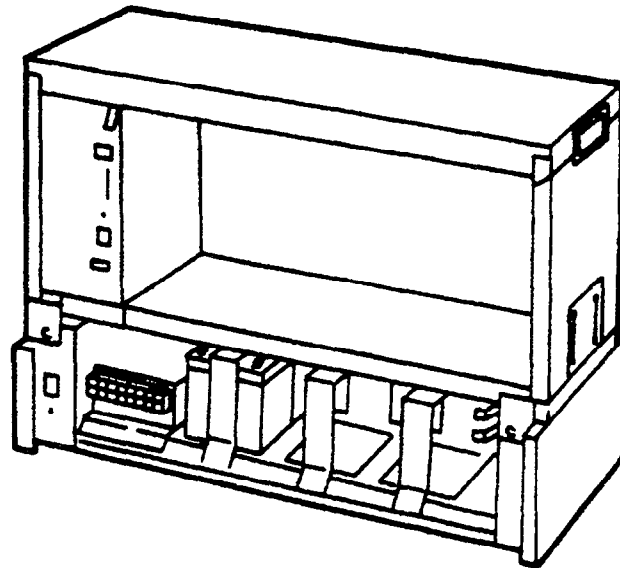


Figure 3-39 Level II Advanced Basic KSU

#### 3.4.2 Expansion KSU (ESF-XE-10 KSU)

The ESF-XE-10 KSU is the expansion cabinet that has three fixed slots for the MMC and MIF KTUs, one PSU slot, and eight additional interface slots. A maximum of two expansion KSUs can be installed with the system. This KSU is installed on the Basic KSU as a building block. Refer to Figure 3-40 - Level II Advanced Expansion KSU.

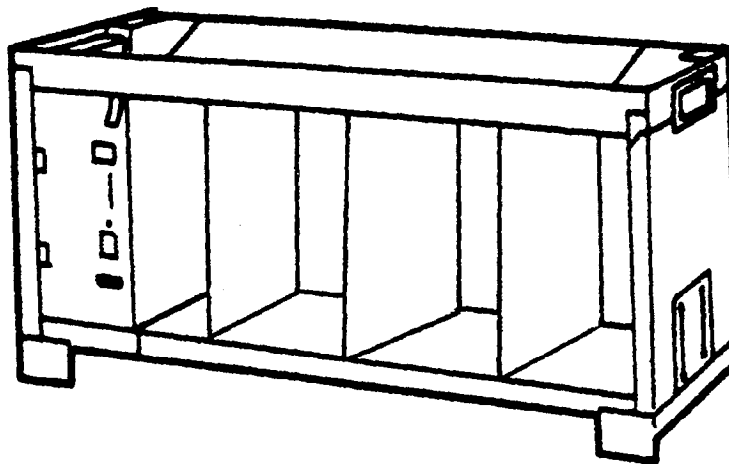


Figure 3-40 Level II Advanced Expansion KSU

### 3.4.3 Opening the KSU Cover

The cover must be removed before floor or wall mounting the KSU.

1. Loosen the eight cover screws, and remove the front cover. Refer to Figure 3-41 - Removing the Level II Advanced Basic KSU Cover.

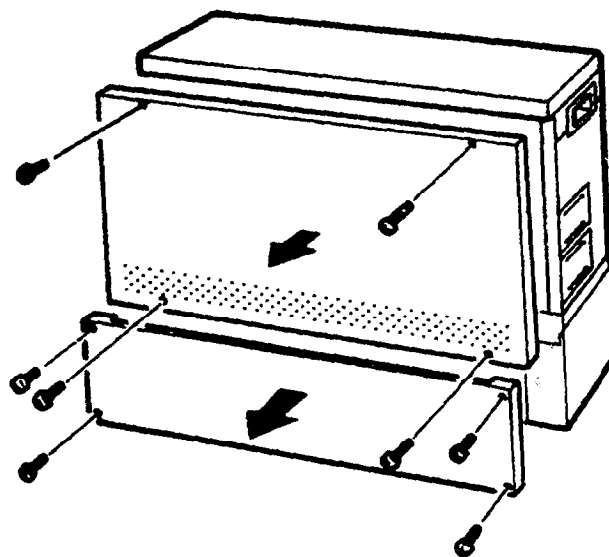


Figure 3-41 Removing the Level II Advanced Basic KSU Cover

### 3.4.4 Wall Mounting the Basic and/or Expansion KSUs

#### 3.4.4.1 Wall Mounting the Basic KSU

Before wall mounting the basic KSU, the wall mount bracket must be attached to plywood. Using 3/4-inch fire retardant plywood backboard is recommended.

1. Using seven screws (locally provided), attach the wall mount bracket to the wall using the template. Refer to Figure 3-42 - Attaching the Wall Mount Bracket of the Level II Advanced Basic KSU to the Wall.

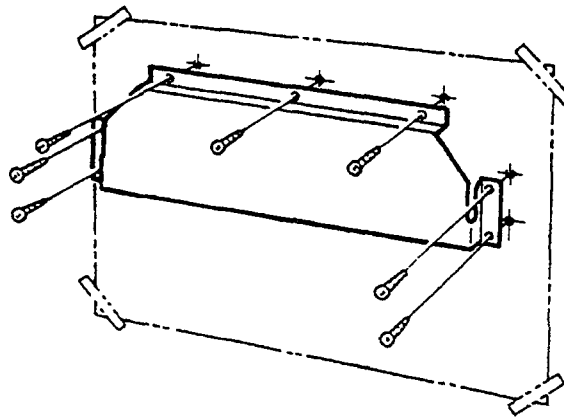
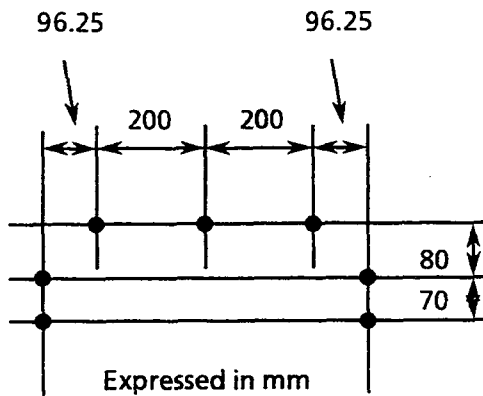


Figure 3-42 Attaching the Wall Mount Bracket of the Level II Advanced Basic KSU to the Wall

2. Holding the Basic ESF-XB-10 KSU, lower the two hooks that protrude from the rear of the KSU over the wall mount bracket and secure to the wall mount bracket from the side using the two provided bolts. Refer to Figure 3-43 - Attaching the Level II Advanced Basic KSU to the Wall Mount Bracket.

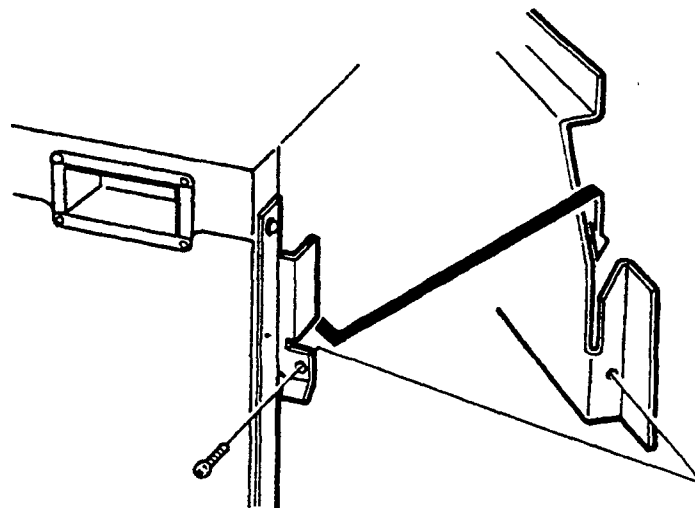


Figure 3-43 Attaching the Level II Advanced Basic KSU to the Wall Mount Bracket

3.4.4.2 Wall Mounting the Expansion KSU

1. Remove the the front and back panels from the Basic KSU before installing the expansion KSU. Refer to Figure 3-44 - Removing the Front and Top Panels.

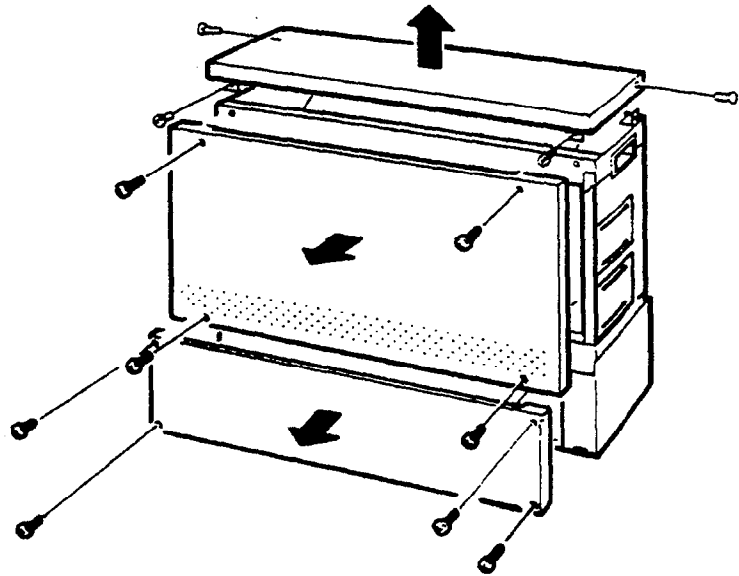


Figure 3-44 Removing the Front and Top Panels

2. Using the seven screws (locally provided) attach the wall mount bracket to the wall using the template. Refer to Figure 3-45 - Attaching the Wall Mount Bracket of the Level II Advanced Expansion KSU to the Wall.

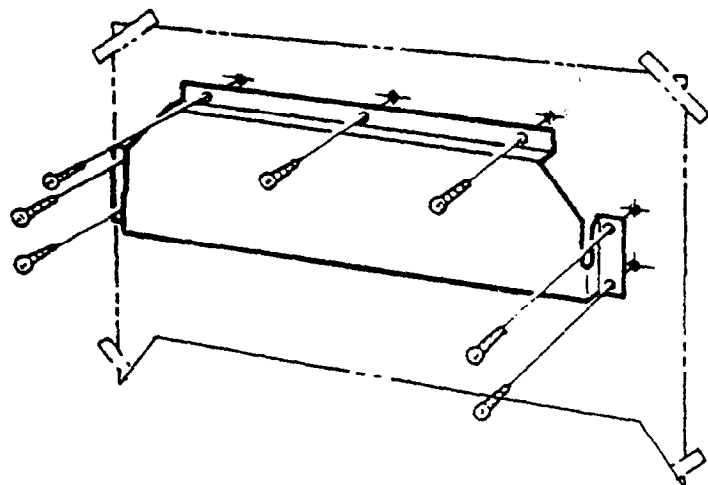
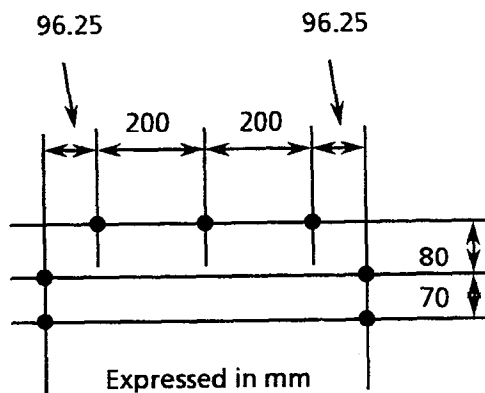


Figure 3-45 Attaching the Wall Mount Bracket of the Level II Advanced Expansion KSU to the Wall

3. Holding the Expansion KSU, lower the two hooks that protrude from the rear of the KSU over the wall mount bracket and secure to the wall mount bracket from the side using the two provided bolts. Refer to Figure 3-46 - Securing the Level II Advanced Expansion KSU to the Wall Mount Bracket.

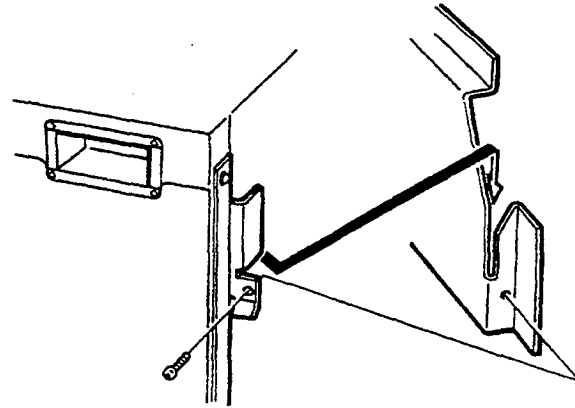


Figure 3-46 Securing the Level II Advanced Expansion KSU to the Wall Mount Bracket

4. Attach each Expansion KSU and top panel using the provided screws. Refer to Figure 3-47 - Attaching Each Level II Advanced Expansion KSU.

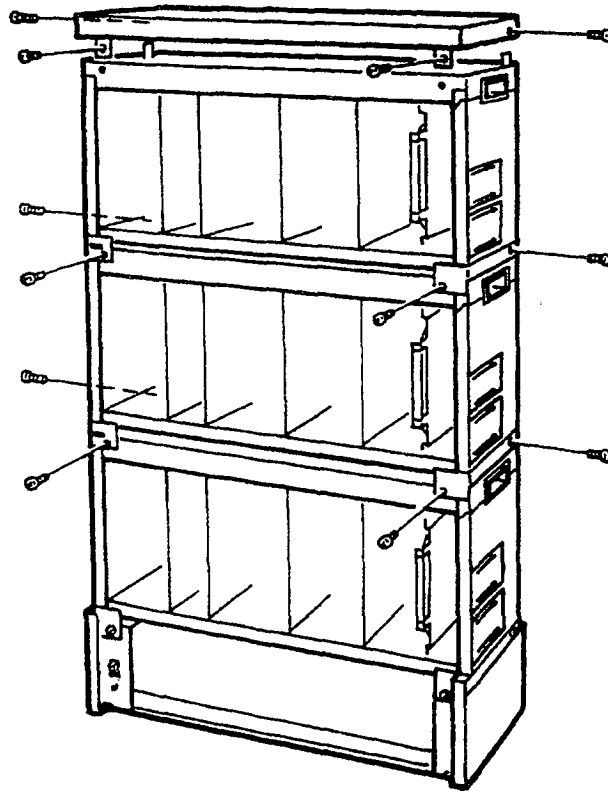


Figure 3-47 Attaching Each Level II Advanced Expansion KSU



### 3.4.5 Floor Mounting the Basic and/or Expansion KSUs

#### 3.4.5.1 Floor Mounting the Basic KSU

1. Attach the Floor Mounting Bracket to the bottom side of the Basic KSU, using the bolts provided. Refer to Figure 3-48 - Attaching the Floor Mount Bracket to Basic KSU.

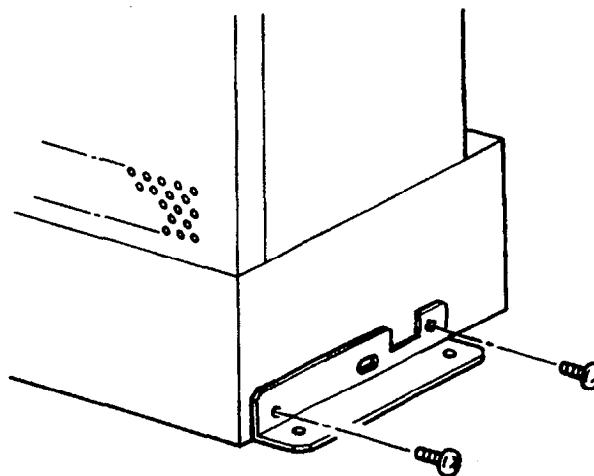


Figure 3-48 Attaching the Floor Mount Bracket to Basic KSU

2. Attach the Floor Mounting Bracket to the floor using the screws locally provided. Refer to Figure 3-49 - Attaching the Floor Mount Bracket to the Floor.

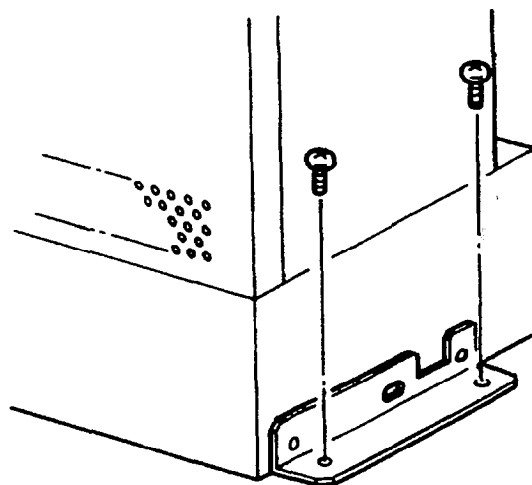


Figure 3-49 Attaching the Floor Mount Bracket to the Floor

3.4.5.2 Floor Mounting the Expansion KSU

1. Remove the top panel on the Level II Advanced Basic KSU. Refer to Figure 3-50 - Removing the Level II Advanced Basic KSU Top Panel.

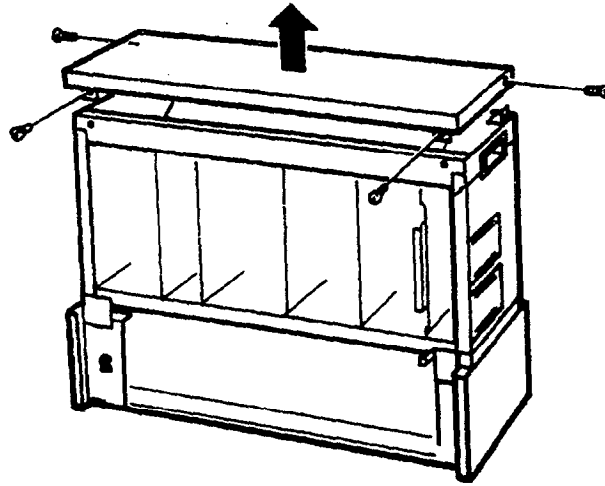


Figure 3-50 Removing the Level II Advanced Basic KSU Top Panel

2. Remove the front panel from the Level II Advanced Expansion KSU. Refer to Figure 3-51 - Removing the Level II Advanced Expansion KSU Front Panel.

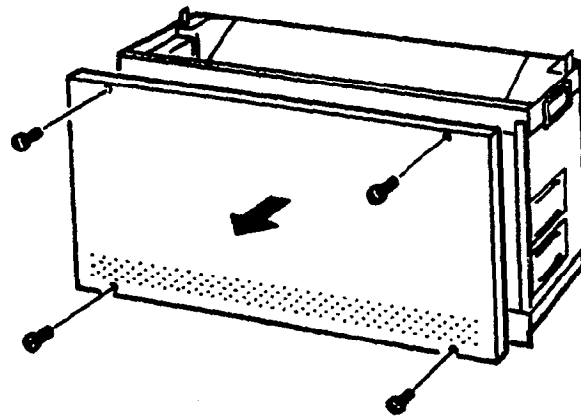


Figure 3-51 Removing the Level II Advanced Expansion KSU Front Panel

3. Attach each KSU and top panel using the provided screws. Refer to Figure 3-52 - Attaching Each Level II Advanced Expansion KSU.

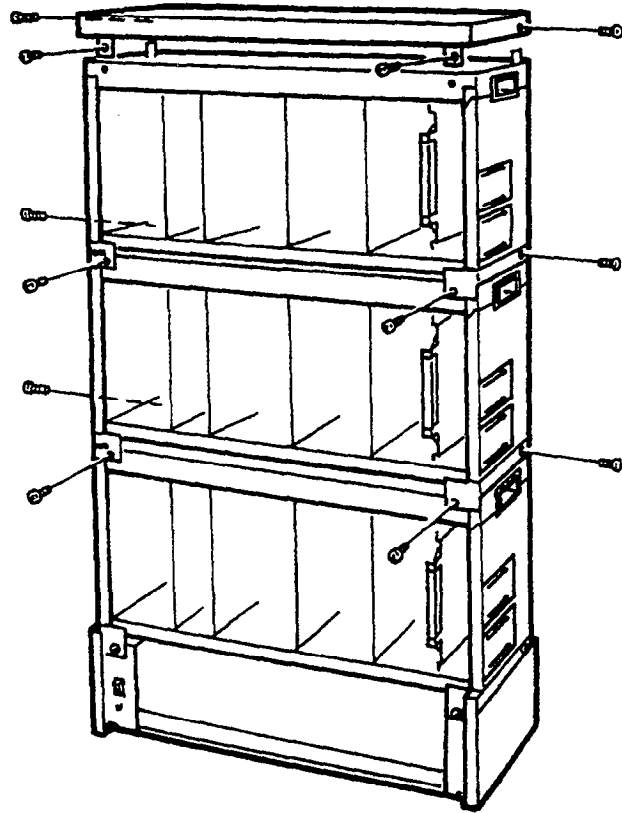


Figure 3-52 Attaching Each Level II Advanced Expansion KSU

### 3.4.6 Installing a PSF-P-20 PSU in the Basic and Expansion KSUs

#### 3.4.6.1 General Information

This power supply is supplied with both the Basic and Expansion KSUs. It has a backup interface, accepts 117 Vac, and outputs +5V, -5V, and -24V to the system.

#### Fuse Replacement:

To replace the fuse(s) in this PSU, first remove the PSU from the KSU. Fuse F1 is a 125V, 4A fuse for AC input. Fuse F2 is a 125V, 7A fuse for DC input. Refer to Figure 3-53 - PSF-P-20 PSU Fuse Locations.

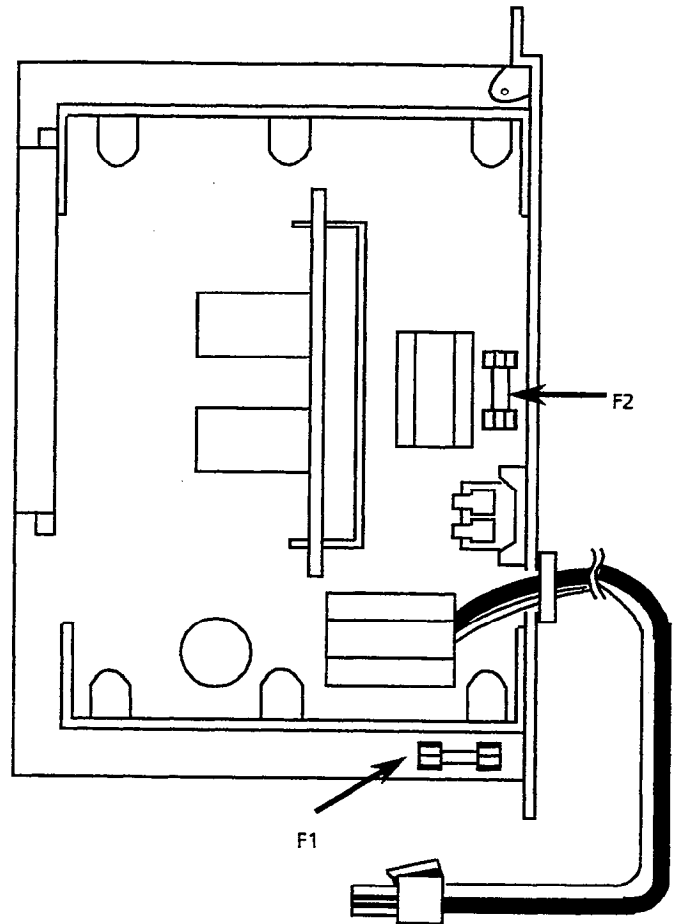


Figure 3-53 - PSF-P-20 PSU Fuse Locations

#### 3.4.6.2 Installing a PSF-P-20 PSU in the Basic KSU

1. Install the PSF-P-20 PSU in the left slot of the Level II Advanced Basic KSU and secure using the two provided bolts. Refer to Figure 3-54 - Installing the PSF-P-20 PSU into the Level II Advanced Basic KSU.

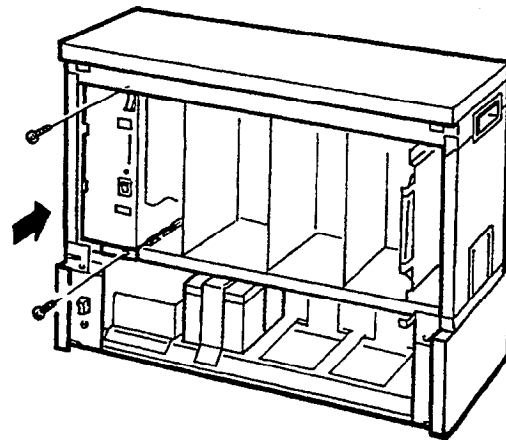


Figure 3-54 Installing the PSF-P-20 PSU in the Level II Advanced Basic KSU

2. Connect the PSU cord to the terminal board. Refer to Figure 3-55 - Connecting the PSF-P-20 PSU to the Terminal Board.

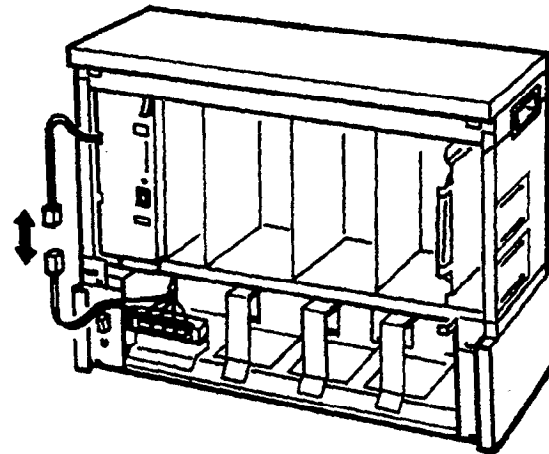


Figure 3-55 Connecting the PSF-P-20 PSU to the Terminal Board

### 3.4.6.3 Installing a PSF-P-20 PSU in the Expansion KSU

1. Install the PSF-P-20 PSU in the left slot of the Expansion KSU and secure using the two provided bolts. Refer to Figure 3-56 - Installing the PSF-P-20 PSU into the Level II Advanced Expansion KSU.

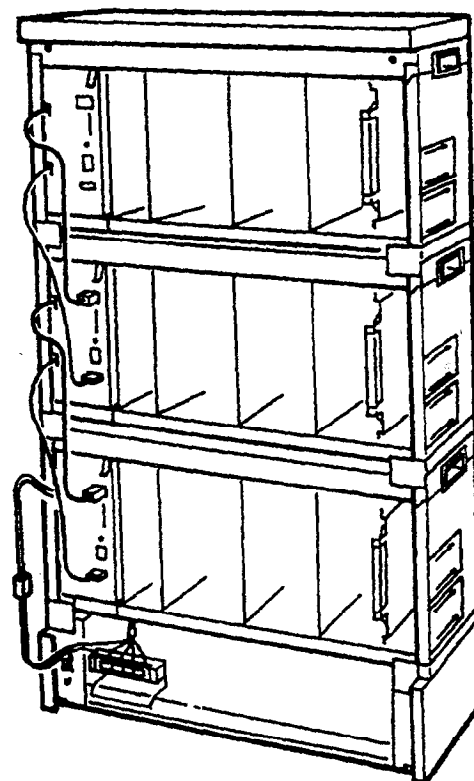


Figure 3-56 Installing the PSF-P-20 PSU in the Level II Advanced Expansion KSU

2. Connect the AC IN and AC OUT and the DC IN and DC OUT of the respective PSUs. Refer to Figure 3-57 - Connecting the PSUs in the Level II Advanced Expansion KSUs.

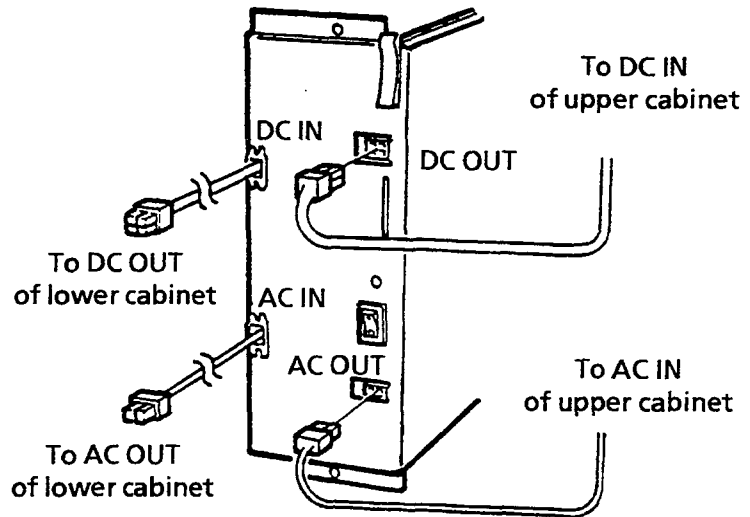


Figure 3-57 Connecting the PSUs in the Level II Advanced Expansion KSUs

### 3.4.7 Battery Installation

#### 3.4.7.1 Connecting the Built-In Batteries

1. Connect the two batteries in series. Refer to Figure 3-58 - Connecting the Two PSF Built-In Batteries.

Red Cord → ⊕

Black Cord → ⊖

#### CAUTION

Do not reverse the ⊕ and ⊖ of the batteries.

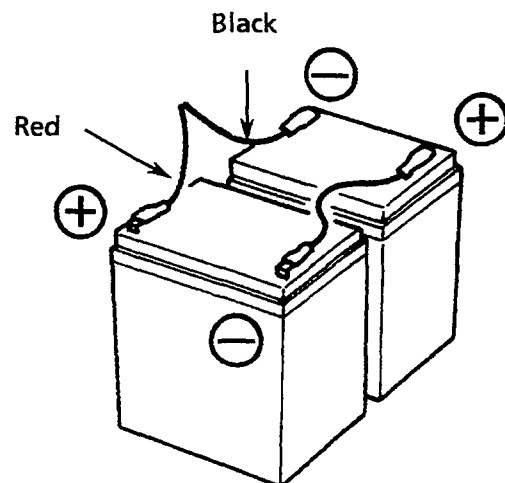


Figure 3-58 Connecting the Two PSF Built-In Batteries

2. Install the battery hold-down plate and tighten the screw. Refer to Figure 3-59 - Placing the Batteries in the Battery Box.

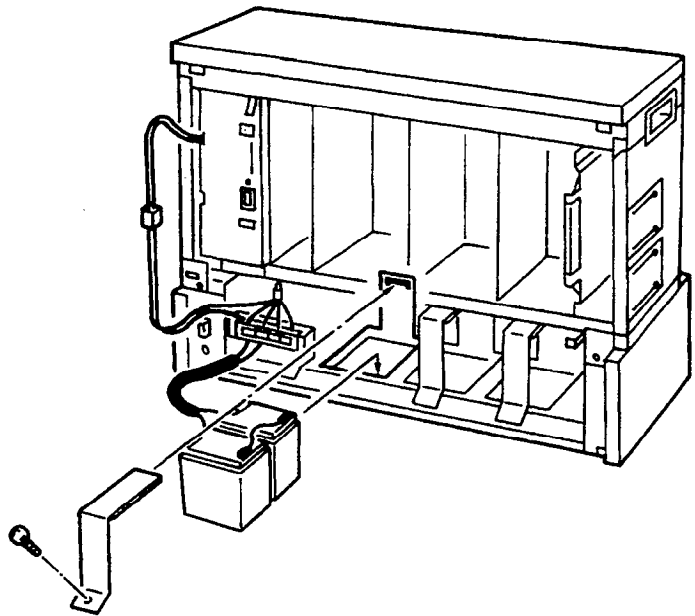


Figure 3-59 Placing the Batteries in the Battery Box

3. Connect the battery cord to the terminal board. Refer to Figure 3-60 - Connecting the Battery Cable to the Terminal Board.

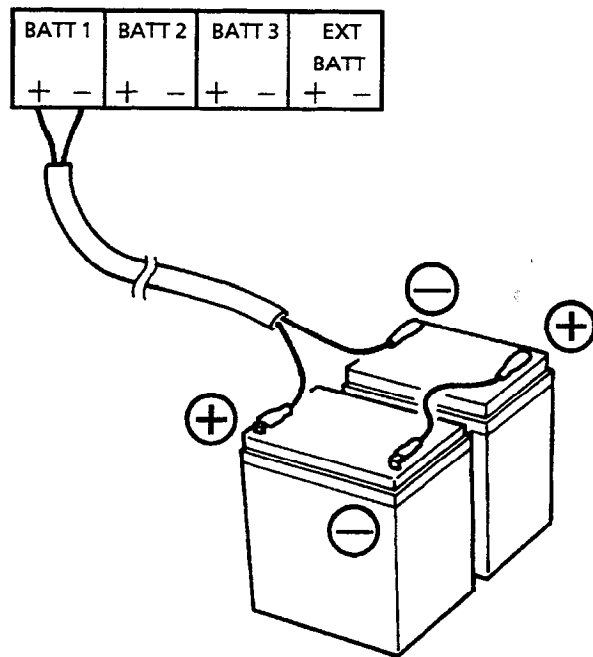


Figure 3-60 Connecting the Battery Cable to the Terminal Board

## 3.4.7.2 Installing and Connecting Level II Advanced Expansion Batteries

1. Connect the external battery cable to the battery. Refer to Figure 3-61 - Connecting the Expansion Cable and Battery.

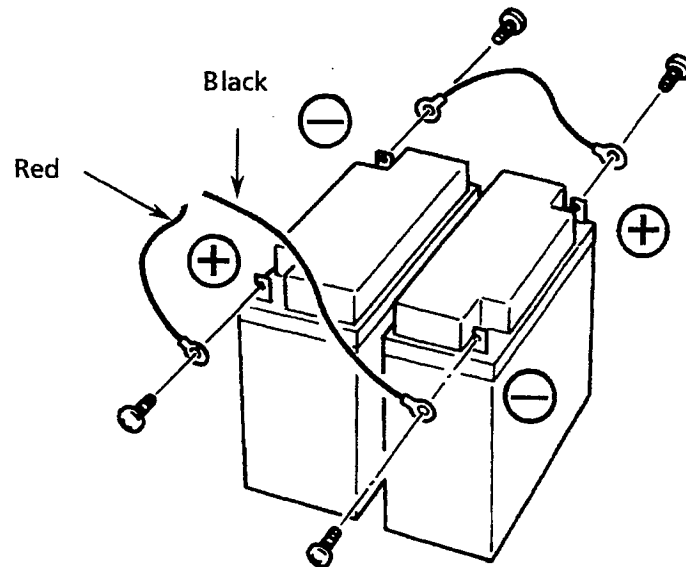


Figure 3-61 Connecting the Expansion Cable and Battery

2. Connect the external battery to the terminal board. Refer to Figure 3-62 - Connecting the External Battery to the Terminal Board.

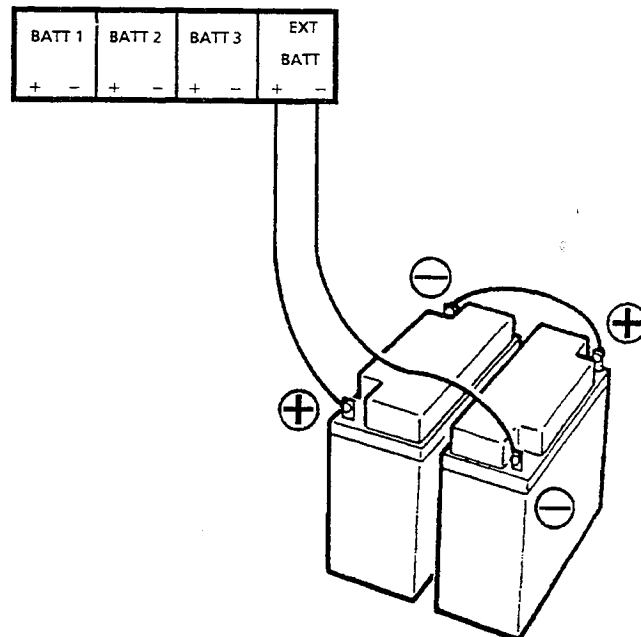


Figure 3-62 Connecting the External Battery to the Terminal Board



### 3.4.8 Grounding Requirements

The KSUs must be properly grounded. The KSU is provided with redundant grounding methods. However, only one grounding method should be used on a system.

1. A dedicated AC outlet.
- 2a. Provide a **suitable cold water pipe ground** in accordance with the local operating telephone company procedures.
- 2b. If no water pipe ground is available, a ground rod should be installed in accordance with the local operating telephone company procedures.
- 2c. A grounding terminal is provided on the ESF-XB-10 KSU. Connect the grounding conductor to the hexagonal bolt with the green colored head terminal. Refer to Figure 3-63 - Level II Advanced KSU Grounding.

**Note:** The provided ferrite core should be wrapped with the ground cable.

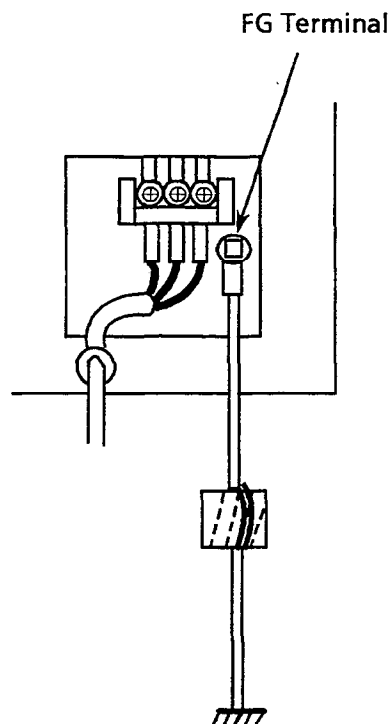


Figure 3-63 Level II Advanced KSU Grounding

**SECTION 4 INSTALLING A KEY TELEPHONE UNIT (KTU)****4.1 General Information****4.1.1 Installation Precautions**

Before installing KTU, observe these precautions:

- To prevent accidental damage to equipment, power must be OFF during installation and maintenance, unless this seriously inconveniences the user.
- The KTUs used in this system make extensive use of CMOS technology that is very susceptible to static; therefore, extreme care must be taken to avoid static discharge when handling KTUs.

**4.1.2 KTU Installation**

1. Make any connections and switch settings before inserting KTU in the KSU. Refer to Sections 4.2 - Common Control KTUs, 4.3 - Interface KTUs, and 4.4 - Optional KTUs for the switch settings for individual KTUs.
2. The MB switch on the KTUs (except the CPU and MMC KTUs) protects circuits from damage during installation. If the system power is ON (during KTU installation), ensure the MB switch is OFF. Refer to Figure 3-64 - KTU Positions on the KSU.

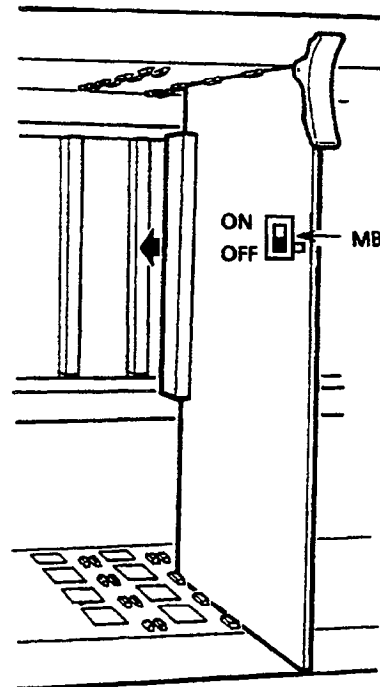


Figure 3-64 KTU Positions on the KSU

3. The component side of all KTUs must face the left side of the KSU when installed. Ejector tabs are always on the top. Refer to Figure 3-65 - Removing a KTU from the KSU.

#### CAUTION

When a unit is installed or removed, make sure the power switch of the KSU is OFF or that the MB switch of the KTU is OFF.

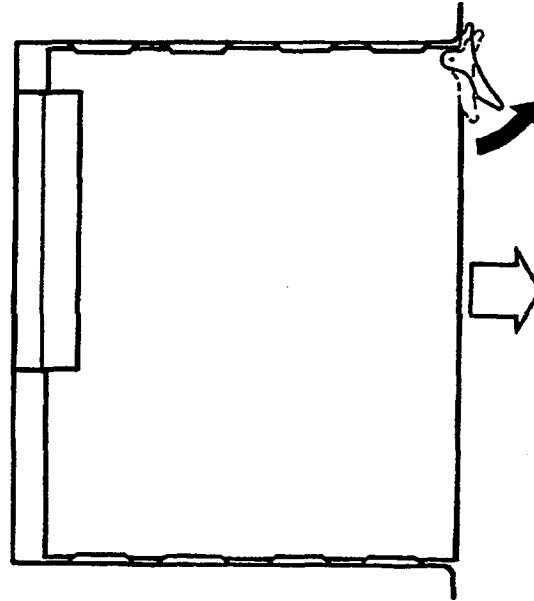


Figure 3-65 Removing a KTU from the KSU

## 4.2 Common Control KTUs

### 4.2.1 CPU-F( )-20 KTU

The CPU-F( )-20 KTU is the central processing unit (CPU). A 16-bit microprocessor executes the programs stored on the ROM ICs to control the whole system, while transferring data to and from other KTUs.

This KTU has a main control section and a Time Division Switch (TDSW) section. It also has a built-in external hold tone interface circuit. Other abilities include CNF (six, 4-party) circuits, internal MOH source, DTMF receivers (PBR), and KF (Key Function) and MF (Multifunction) registration.

The RAM memory, on the CPU, is backed up with a rechargeable battery, that retains the memory for approximately 14 days.

This KTU must be installed in the CPU slot of the ESF-SB-10 KSU or ESF-XB-10 KSU. Only one CPU-F( )-20 KTU can be installed in the system.

### Switch Settings

Before programming System Data, the BTS switch must be ON to allow memory retention if a power failure or brownout occurs. Failure to activate the backup-battery circuit (BTS ON) results in System Data reset to the default values, the status of all stations reset to the default values, and the data programmed on the station to clear, if a power failure or brownout occurs. Refer to Chapter 5 - Programming in this manual for instructions, if programming using a Multiline Terminal. Refer to the *Electra Professional Level II and Level II Advanced System Program Technician Manual* (included with the System Program Technician Software ) for instructions, if programming using a PC.

Anytime a CPU-F( )-20 KTU is installed in the system, the clock/calendar must be set. This also applies when battery backup fails for any reason.

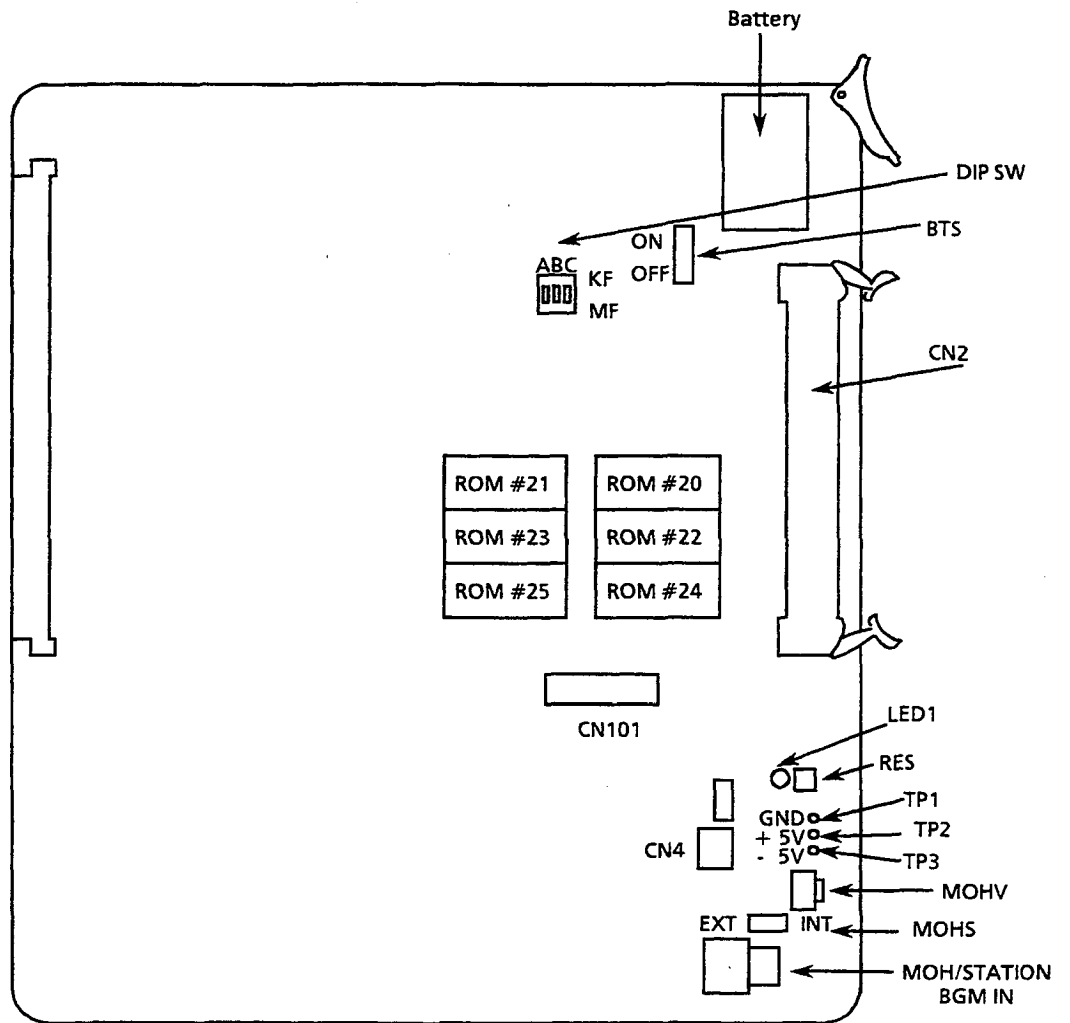
When the CPU-F( )-20 KTU is removed for long term storage, set the BTS switch to OFF. This prevents the battery from constantly discharging. The fully charged battery retains memory contents for approximately 14 days.

Switch RES is the reset switch. When pressed, this switch interrupts all service in progress, causing a Second Initialization. **This switch should not be used in an operating system unless absolutely necessary.**

MOHS INT/EXT selects the MOH source from either an internal or external source. When the built-in music is used for the MOH source, set this switch to INT. If an external MOH source is connected, set this switch to EXT. Refer to Figure 3-66 - CPU-F( )-20 KTU Switch Settings and Table 3-15 - CPU-F( )-20 KTU Adjustments.

### IMPORTANT

**DIP switch position C is used to set KF or MF mode of operation. Be sure to set this switch in the desired position before powering up the system.**



The operation verification LED (LED1) always flashes when the system is in normal operation, and is on steady when the system is reset.

Figure 3-66 CPU-F( )-20 KTU Switch Settings

Table 3-15 CPU-F( )-20 KTU Adjustments

Adjustment Item	Name of Switch	Initial Setting	Adjustment
Memory Backup	BTS	OFF	Should be ON to retain system data. Note: Set the switch to ON before inserting the unit.
MOH INT/EXT	MOHS	INT	Set the switch to EXT when an external hold tone source (MOH) is to be used. (Note 1)
MOH Volume Control	MOHV	Center	To adjust the volume of MOH.
DIP Switch	DIP SW A (1)	OFF	Not Used
	DIP SW B (2)		Not Used
	DIP SW C (3)	OFF ON	OFF: Multifunction System ON: Key Function System (Note 2)
Connector	CN2	N/A	Not Used
	CN4	N/A	For connecting the CLK-F-21 Unit.
	CN101	N/A	
TP	TP1	N/A	Ground voltage check terminal
	TP2	N/A	+ 5V voltage check terminal
	TP3	N/A	- 5V voltage check terminal

**Note 1:** Internal MOH has two melodies. Select by System Programming melodies:

1. Melody Fair
2. Let It Be

**Note 2:** Refer to Section 1.2.1 - Company Notification. A First Initialization is required to change this switch status.

4.2.2 MMC-F-11 KTU

The MMC-F-11 KTU is the Module Memory Controller. A 4-bit microprocessor and controller unit are required for each ESF-XE-10 KSU used in the Level II Advanced system. This KTU controls data transmission between the CPU-F( )-20 KTU and the interface cards installed in the ESF-XE-10 KSU where it is installed.

Switch Settings/LED Indications

LED1 on this KTU continuously flashes indicating it is receiving power. The RES button allows this KTU to be reset. This resets the entire KSU where it is installed. Refer to Figure 3-67 - MMC-F-11 KTU Switch Settings.

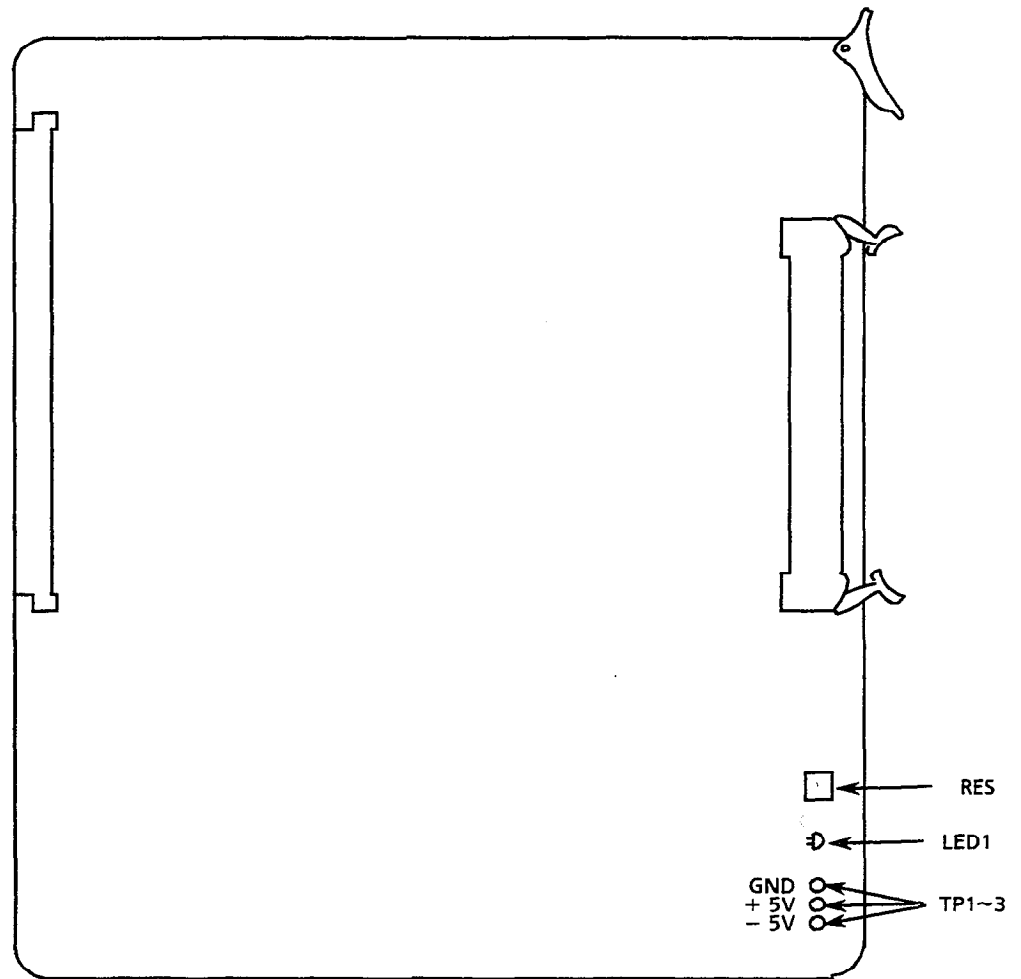


Figure 3-67 MMC-F-11 KTU Switch Settings

**Installation**

The MMC-F-11 KTU is installed in a fixed MMC slot on the ESF-XE-10 KSU. The mounted ribbon cable is then connected to the CPU-F( )-20 KTU, located on the ESF-XB-10 KSU. Before installing the MMC-F-11 KTU in the ESF-XE-10 KSU, install the attached ferrite core to the ribbon cable as shown below. Refer to Figure 3-68 - Ferrite Core Installation to MMC-F-11 KTU Ribbon Cable.

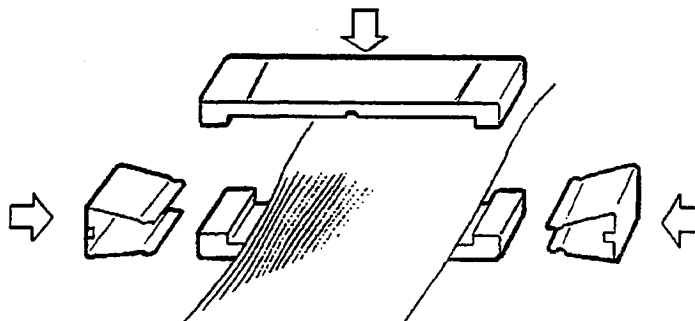


Figure 3-68 Ferrite Core Installation to MMC-F-11 KTU Ribbon Cable

**CAUTION**

This procedure can be performed only when the system power is off.

If a second expansion cabinet (ESF-XE-10 KSU) is to be installed, the ribbon cable of the MMC-F-11 KTU in this KSU must be attached to the MMC-F-11 KTU in the first expansion cabinet. Refer to Figure 3-69 - MMC-F-11 KTU and CPU-F( )-20 KTU Installation.

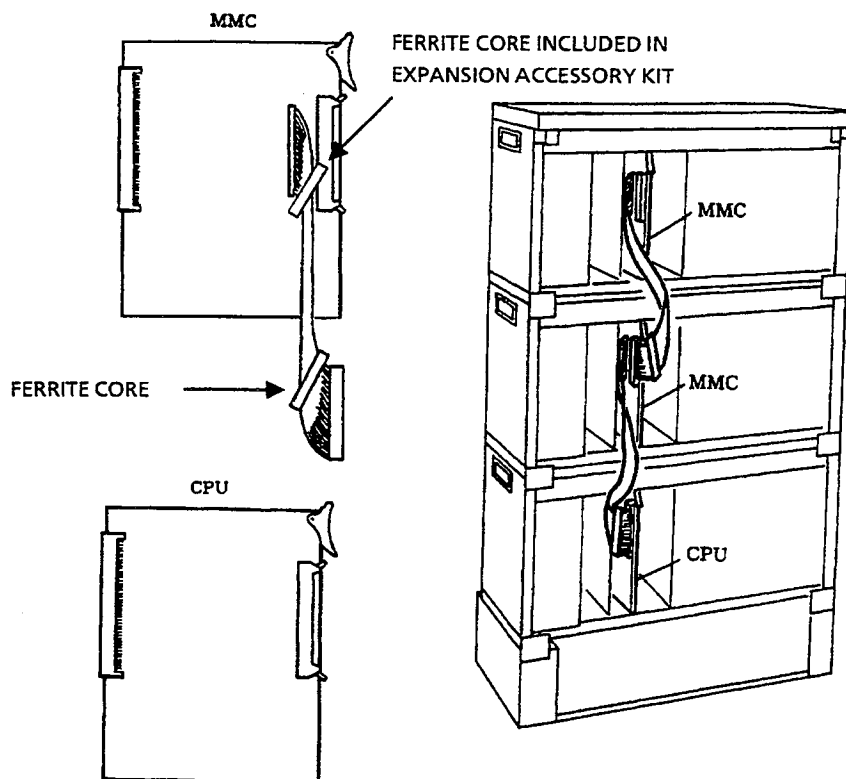


Figure 3-69 MMC-F-11 KTU and CPU-F( )-20 KTU Installation



4.3 Interface KTUs

4.3.1 ESI-F(8)-21 KTU

This KTU is an interface for Multiline Terminals, Attendant Add-On Consoles, and SLT Adapters [SLT-F(1G)-10 ADP]. The ESI allows connection of any combination of eight Multiline Terminals, Attendant Add-On Consoles, or SLT Adapters.

A maximum of seven ESI-F(8)-21 KTUs can be installed in the Level II system and a maximum of 12 in the Level II Advanced system.

Switch Settings/LED Indications

When the green LED (LED2) is on, the ESI KTU is receiving power. The red LED (LED1) indicates one or more of the eight circuits of the KTU is in use. Switch MB is the ON/OFF switch for this KTU. Refer to Figure 3-70 - ESI-F(8)-21 KTU Switch Layout.

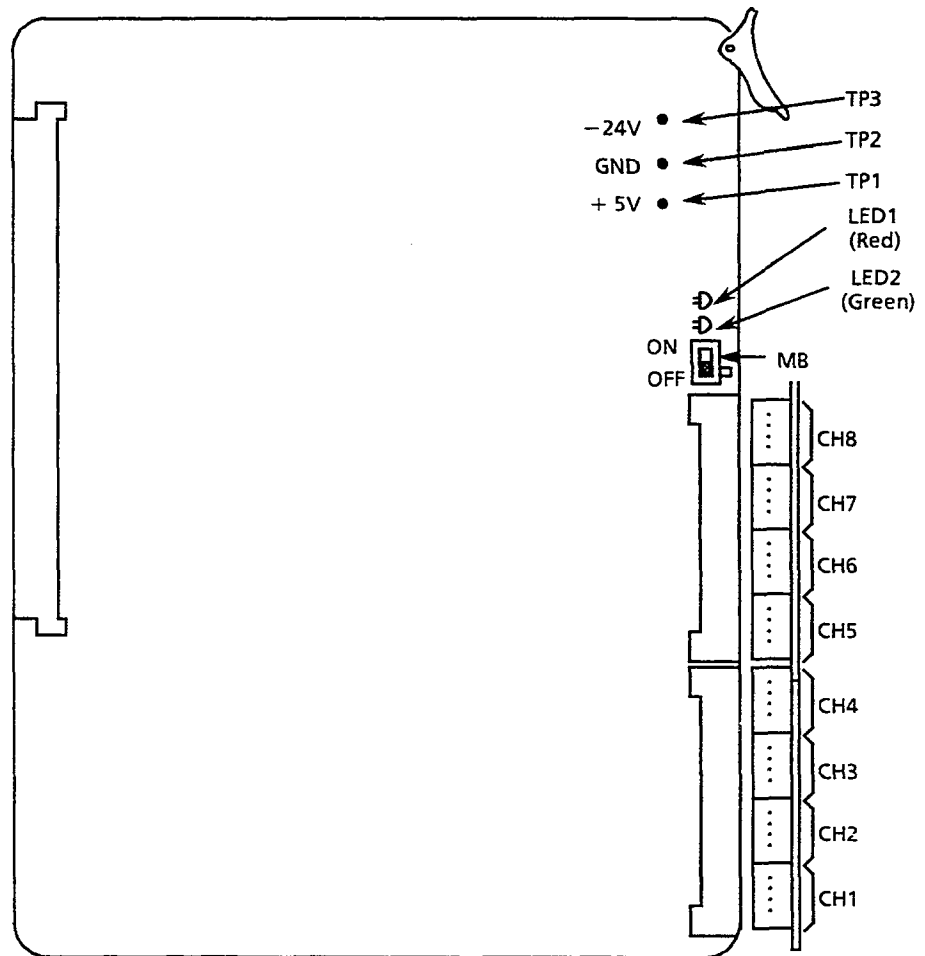


Figure 3-70 ESI-F(8)-21 KTU Switch Layout

4.3.2 SLI-F(8G)-21 KTU

The SLI-F(8G)-21 KTU is an interface for Single Line Telephones that has a built-in ringing generator (RSG) and can support eight Single Line Telephones or Voice Mail ports. If connecting Voice Mail to an SLI-F(8G)-21 KTU, it must be assigned in System Programming.

The Single Line Telephone Interface Unit (SLI) provides circuitry for loop status detection, talk battery, sending ringing signal from the RSG unit to SLTs, and message waiting.

**Note:** The PBR circuits in the CPU-F( )-20 KTU or the PBR-F(4)-11 KTU are required with Voice Mail or Push Button Single Line Telephone connection.

A maximum of six SLI-F(8G)-21 KTUs can be installed in the Level II system and a maximum of 11 in the Level II Advanced system.

Switch Settings/LED Indications

An SLI can support up to eight Single Line Telephones, modems, Voice Mail ports, or fax ports. This SLI is required when power failure transfer of CO lines (two maximum per KTU) and/or message wait signaling to Single Line Telephones is used in the system.

When the green LED1 is on, the SLI-F(8G)-21 KTU is receiving power. When the red LED2 is on, one or more of the eight circuits of the KTU are in use. Switch MB is the ON/OFF control for this KTU. Refer to Figure 3-71 - SLI-F(8G)-21 KTU Switch Layout.

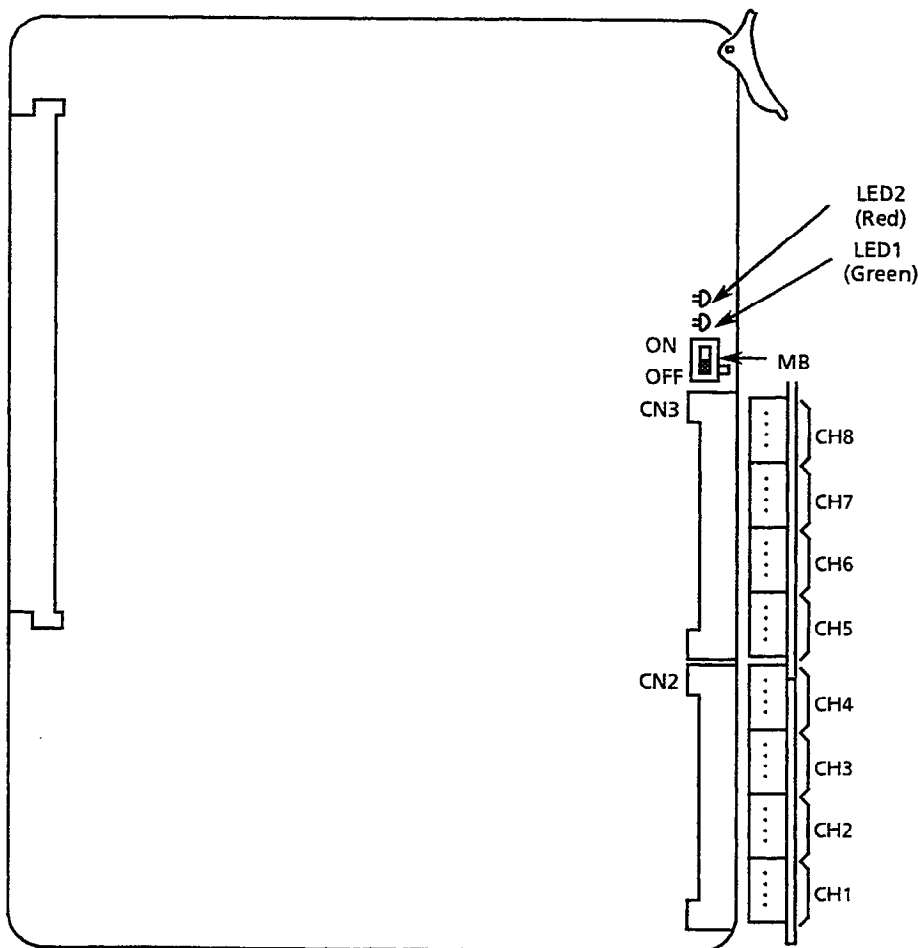
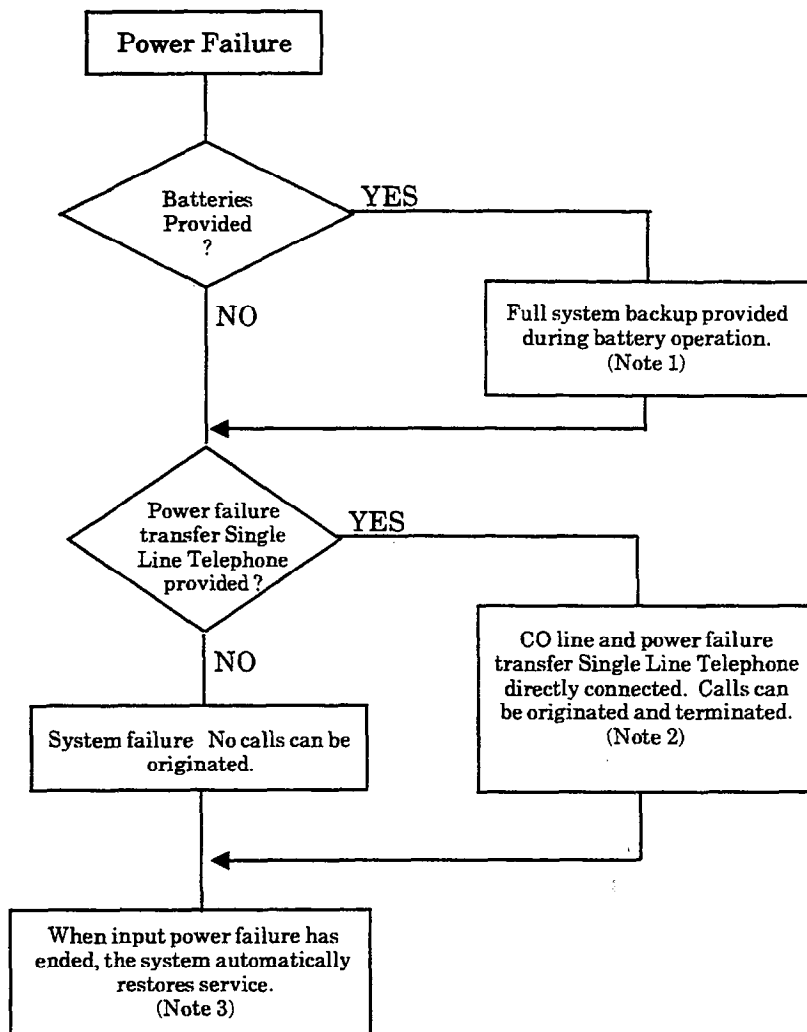


Figure 3-71 SLI-F(8G)-21 KTU Switch Layout

4.3.2.1 Power Failure Backup

Operation if Power Fails

If power fails, the built-in batteries provide full backup of system operation for 30 minutes. Backup can be longer if using locally provided external batteries (the time depends on the system configuration and service conditions). If a power failure transfer (PFT) Single Line Telephone Interface Unit (up to two channels can be connected to the SLI-F(8G)-21 KTU) is connected, the unit connects a Single Line Telephone directly to a CO/PBX line to allow origination and termination of calls. Refer to Figure 3-72 - Power Failure Backup Flowchart.



**Note 1:** The backup period for the Electra Professional Level II and Level II Advanced systems is approximately 30 minutes (with built-in batteries) or longer (external batteries added).

**Note 2:** All calls in progress are interrupted when switchover is made to connect the power failure transfer Single Line Telephone directly to a CO/PBX line. This occurs after backup batteries expire.

**Note 3:** If the power switch of the KSU is OFF, the system does not automatically restore service.

Figure 3-72 Power Failure Backup Flowchart

### Operation When Input Power Failure Has Resumed

When input power is resumed, the system is automatically reset and restores service. A call in progress by the PFT Single Line Telephone is disconnected.

### Single Line Telephone for Power Failure Transfer

Only a Single Line Telephone can be used for power failure transfer.

#### Connections:

Connect a CO line and Single Line Telephone for power failure transfer via the SLI-F(8G)-21 KTU to the COI-F(4)-20 or COI-F(8)-20 KTU. A 4-conductor cable (locally provided) is required to connect the SLI-F(8G)-21 KTU to the 66 M150 block. Refer to Figure 3-73 - Connecting CO Line and Single Line Telephone for Power Failure Transfer.

**Note:** When selecting a Single Line Telephone for power failure transfer, make sure it matches the dialing type of the CO line (10 pps, 20 pps, or DTMF) where it is connected. If Ground Start trunks are used, a Single Line Telephone with a ground button must be used.

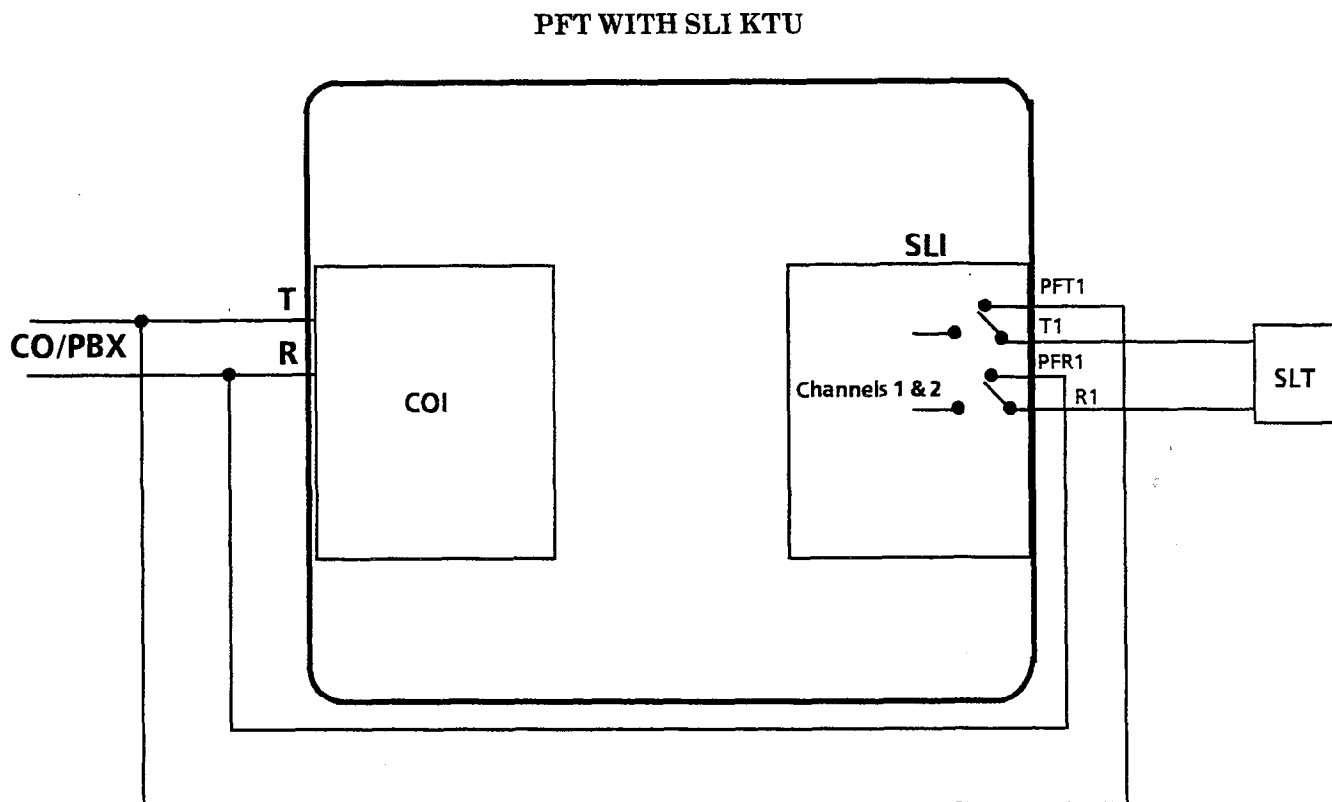


Figure 3-73 Connecting CO Line and Single Line Telephone for Power Failure Transfer

4.3.3 LLT-F(2G)-10 KTU

The Long Line Telephone (LLT) KTU provides for the termination and operation of up to two Off-Premise Extensions (OPX). Each LLT-F(2G)-10 KTU has a built-in ring supply generator (RSG). Up to 3000 ohms of loop resistance (including the Single Line Telephone) is acceptable between the LLT-F(2G)-10 KTU and a Single Line Telephone. The LLT-F(2G)-10 KTU does not support message waiting.

A maximum of six LLT-F(2G)-10 KTUs can be installed in the interface slots of the Level II system and a maximum of 22 in the Level II Advanced system.

Switch Settings/LED Indications

When the green LED1 is on, the LLT-F(2G)-10 KTU is receiving power. When the red LED2 is on, one or more of the two circuits of the KTU are in use. Switch MB is the ON/OFF control for this KTU. Refer to Figure 3-74 - LLT-F(2G)-10 KTU Switch Layout.

**Note:** PBR in the CPU-F( )-20 KTU or PBR-F(4)-11 KTU is required with Push Button SLT Connection.

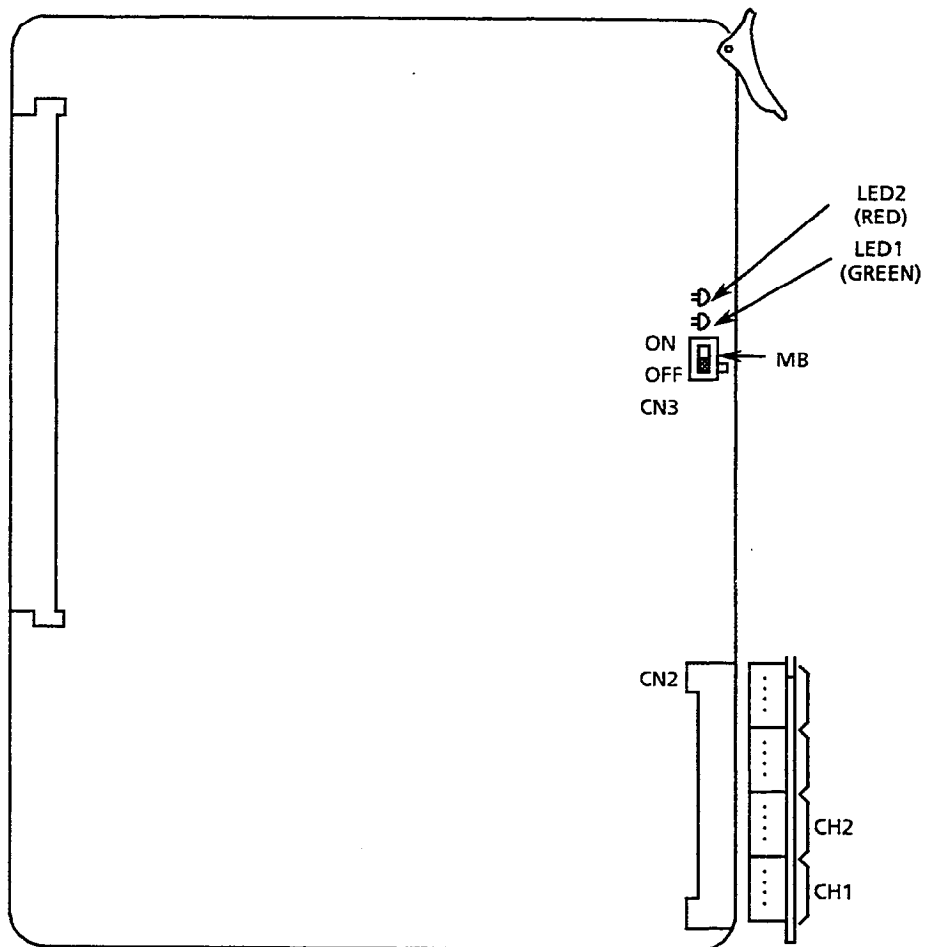


Figure 3-74 LLT-F(2G)-10 KTU Switch Layout

#### 4.3.4 COI-F(4)-20 KTU and COI-F(4)-30 KTU

The Central Office Line Interface Unit (COI) contains circuitry for outside ring detection, holding, dialing, and control function.

Each COI-F(4)-( ) KTU provides four identical circuits to support up to four CO trunks that can be any mix of Loop Start or Ground Start, DTMF or Dial Pulse dialing. Tip and Ring electrical fuses (posistors) PST101 ~ PST402 are provided to comply with UL 1459 2<sup>nd</sup> Edition requirements. The COI-F(4)-30 also has two connectors for mounting the CID-F(8)-21.

A maximum of seven COI KTUs can be installed in the Level II system and a maximum of 16 in the Level II Advanced system.

##### Switch Settings/LED Indications

The COI-F(4)-20 KTU contains four switches (designated as SW1 ~ SW4) for the selection of trunk type (Loop or Ground Start). Each switch is associated with an individual circuit. Red LEDs (101~401) indicate the status of the circuit. Refer to Figure 3-75 - COI-F(4)-(20) KTU Switch Layout.

The COI-F(4)-30 KTU contains four switches (designated SW1 ~ SW4) for the selection of trunk type (Loop or Ground Start). Each switch is associated with an individual circuit. The LEDs are located on the back of this COI KTU. Red LEDs (1~4) indicate the status of the circuit. Refer to Figure 3-76 - COI-F(4)-(30) KTU Switch Layout.

When a Loop Start trunk is connected to a circuit, its associated switch must be set to LP. If a Ground Start trunk is connected, the switch must be set to GS.

When the green LED1 is on, the COI is receiving power. Switch MB is the ON/OFF control for this KTU.

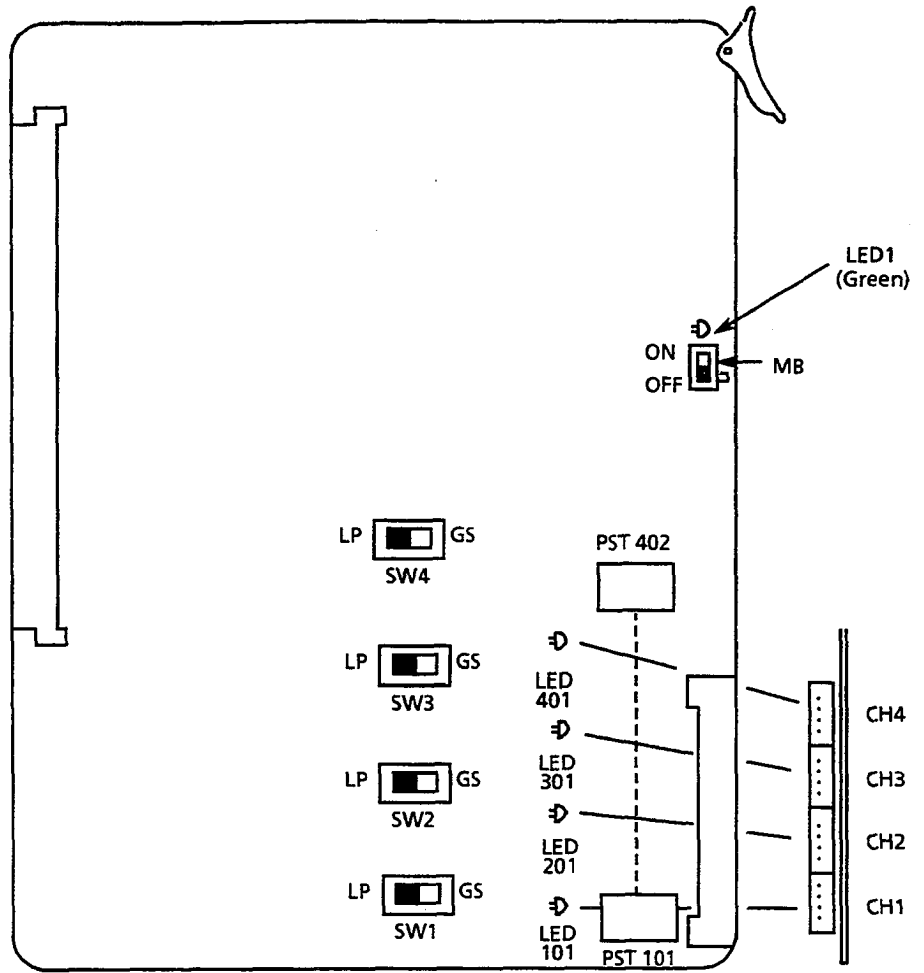


Figure 3-75 COI-F(4)-20 KTU Switch Layout

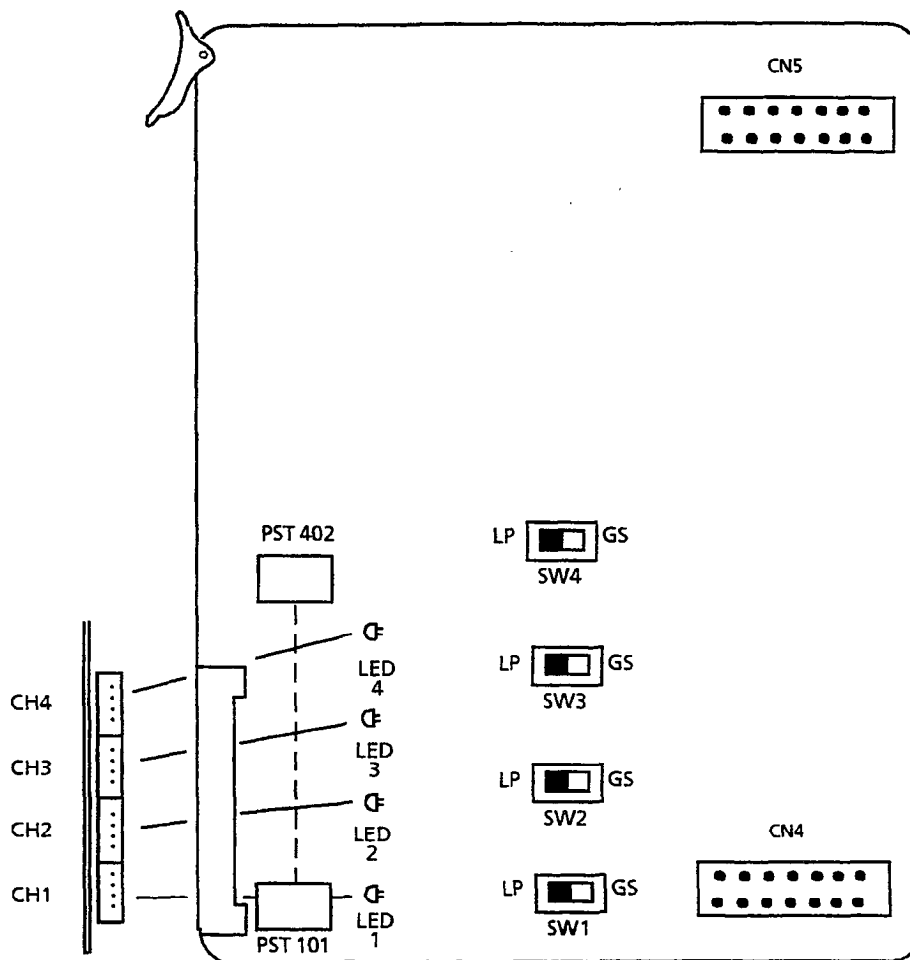


Figure 3-76 COI-F(4)-30 KTU Switch Layout

4.3.5 COI-F(8)-20 KTU and COI-F(8)-30 KTU

The Central Office Line Interface Unit (COI) contains circuitry for outside ring detection, hold, dialing, and control functions.

Each COI KTU provides eight identical circuits to serve up to eight CO trunks that can be any mix of Loop Start or Ground Start, DTMF or Dial Pulse dialing. Tip and Ring electrical fuses (posistors) PST101 ~ PST802 are provided to comply with UL 1459 2<sup>nd</sup> Edition requirements. The COI-F(8)-30 also has two connectors for mounting the CID-F(8)-21.

A maximum of seven COI KTUs can be installed in the interface slots in the Level II system and a maximum of eight in the Level II Advanced system.



**Switch Settings/LED Indications:**

The COI-F(8)-20 COI KTU contains eight switches (designated SW1 ~ SW8) for the selection of trunk type (Loop or Ground Start). Each switch is associated with an individual circuit. LEDs (101 ~ 801) indicate the status of each circuit. Refer to Figure 3-77 - COI-F(8)-20 KTU Switch Layout.

The COI-F(8)-30 COI KTU contains eight switches (designated SW1 ~ SW8) for the selection of trunk type (Loop or Ground Start). Each switch is associated with an individual circuit. LEDs (1 ~ 8) indicate the status of each circuit. The LEDs are located on the back of the COI-F(8)-30 KTU. Refer to Figure 3-78 - COI-F(8)-30 KTU Switch Layout.

When a Loop Start trunk is connected to a circuit, its associated switch must be set to LP. If a Ground Start trunk is connected, the switch must be set to GS.

When the green LED1 is on, the COI is receiving power. Switch MB is the ON/OFF control for this KTU.

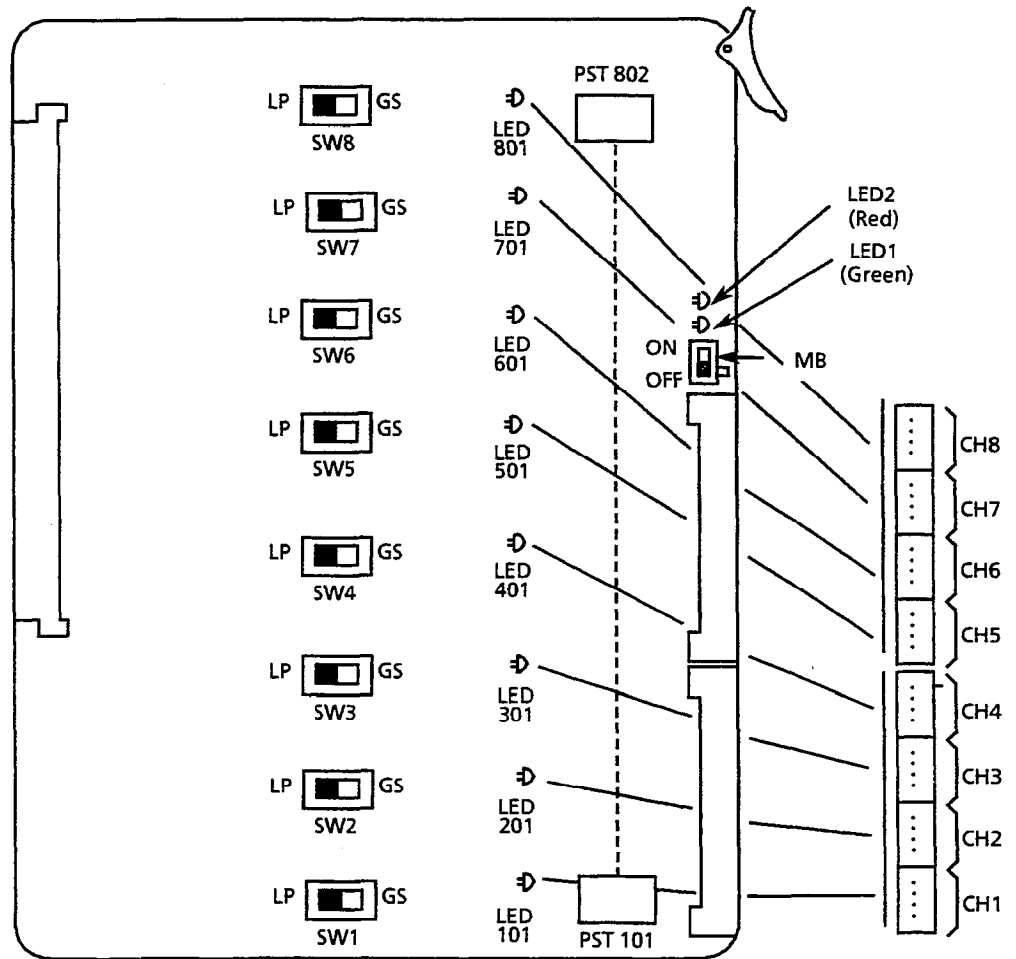


Figure 3-77 COI-F(8)-20 KTU Switch Layout

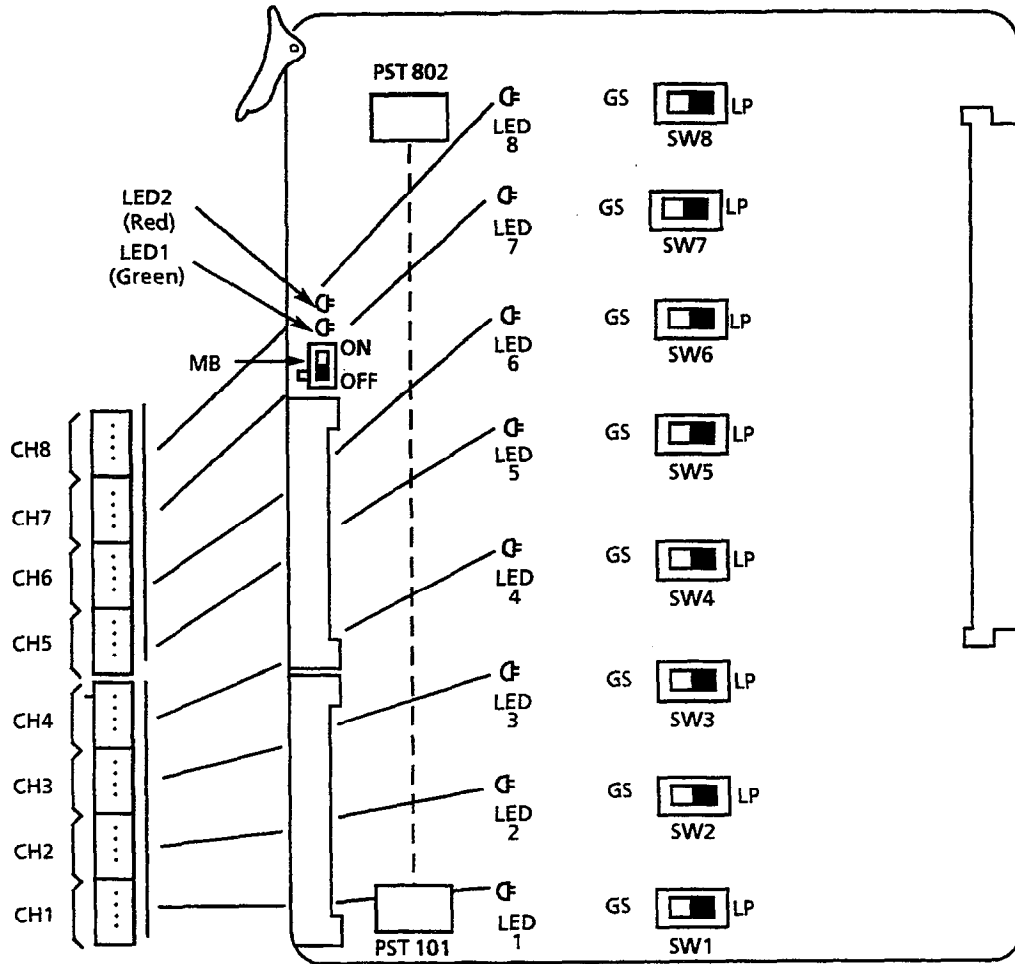


Figure 3-78 COI-F(8)-30 KTU Switch Layout

#### 4.3.6 CID-F(8)-11 Unit

The CID unit detects Caller ID signal from Telco through COI-F(4/8)-30 KTU for Caller ID trunks connected to the system. This unit works in conjunction with the COI-F(4/8)-30 KTU and MIF-(C)-10 KTU and is piggybacked on the COI-F(4/8)-30 KTU.

One CID-F(8)-11 Unit can be installed on each COI-F(4/8)-30 KTU; a maximum of seven CID-F(8)-11 Units can be installed in the Level II system and a maximum of eight, in the Level II Advanced system.

##### Switch Settings/LED Indications

The CID unit has three switches (designated SW1-1 ~ SW1-3) and two LEDs. Switches SW1-2 and SW1-3 are not currently used and should be off. When switch SW1-1 is on (default setting), the system does not detect the time when caller ID is sent from the Telco. When switch SW1-1 is off, the system does detect this time. LED1 is currently not being used. When LED2 flashes red, the CID is communicating with the CPU. Refer to Figure 3-79 - CID-F(8)-11 Unit Switch Layout.

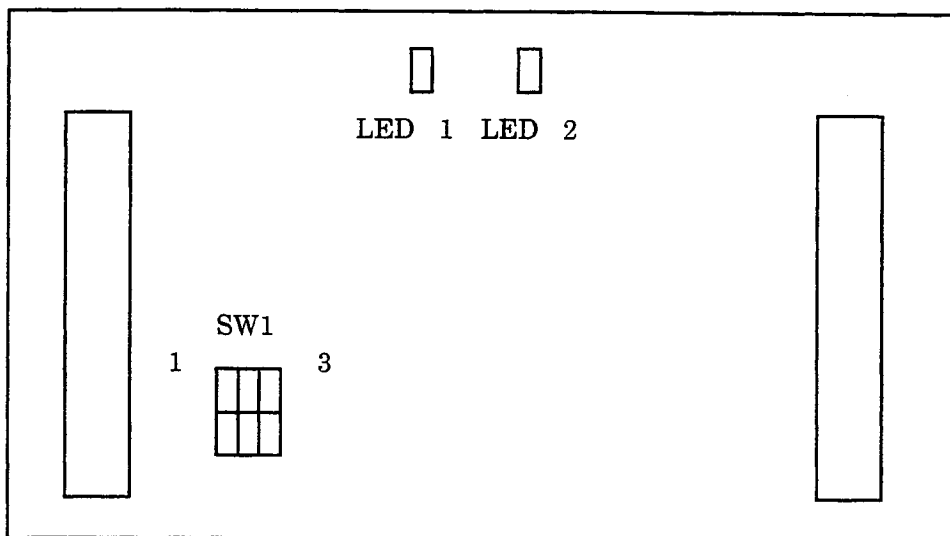


Figure 3-79 CID-F(8)-11 Unit Switch Layout

##### Connection to COI-F(4/8)-30 KTU

To connect the CID-F(8)-11 Unit to the COI-F(4/8)-30 KTU, refer to Figure 3-80 - Connecting the CID to the COI, and make the following connections:

- COI CN4 to CID CN1
- COI CN5 to CID CN2

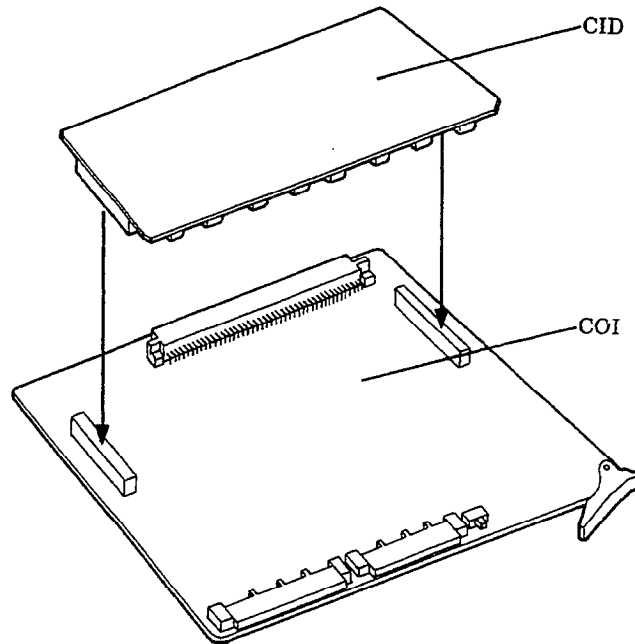


Figure 3-80 Connecting the CID to the COI

### Caller ID Considerations

#### General

Caller ID service provides the name and telephone number of the calling party to the called party on a loop start trunk.

#### Installation

Caller ID is user sensitive; the customer can activate or deactivate this service by dialing the proper access code and receives a confirmation announcement from Stored Program Control Switching (SPCS). The SPCS is the Central Office switching system.

The customer can enter several different access codes to access various functions and features. If an improper access code is dialed, the customer receives a reorder tone or special announcement. Caller ID can be denied by class-of-service.

Caller ID can be provided to customers that use either DTMF or dial pulse signaling. If Caller ID is to be installed, the SPCS may need new transmission equipment and should be equipped with Common Channel Signaling (CCS) to send data to other SPCSs.

Each SPCS keeps data records of all customers connected to it. Data records include: Traffic, Maintenance, Billing, and other measurements.

Electrical Specifications

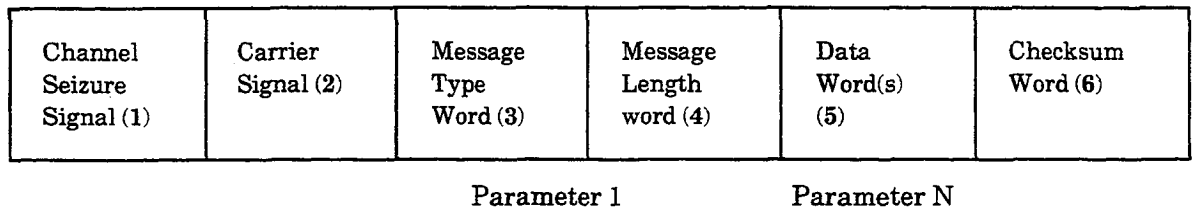
ASCII-coded information is sent from the SPCS to the Customer Premise Equipment (CPE) on the tip and ring leads of a standard local loop at 1200 bps. Other parameters are as follows:

- Link Type: simplex, two wire
- Transmission Scheme: analog, phase coherent frequency shift keying
- Logic 1 (Mark): 1200 ± 12Hz
- Logic 0 (Space): 2200 ± 22Hz
- Transmission Rate: 1200 bps
- Application of Data: serial, binary, asynchronous
- Bit Error Rate: less than 1 in 100,000,000 bits (at switch interface)
- Phase Continuity: maintained from initial service to end of message
- Transmission Level: -13.5 ± 1 dB at point of application to resistive load of 900 ohms
- Bit Duration: 833 ± 50 µsec (start/stop bit has standard duration)

The asynchronous protocol should have a start bit, an 8-bit data byte, and a stop bit. Caller ID is transmitted to the CPE in this 10-digit format. Possible future options may allow Personal Identification Number (PIN) instead of Caller ID.

Information should be sent in either a single or multiple data message. Refer to Figure 3-81 - Data Message Format.

Single (used for providing Calling Number ID only)



Multiple (used for providing both Calling Number ID and Calling Name ID)

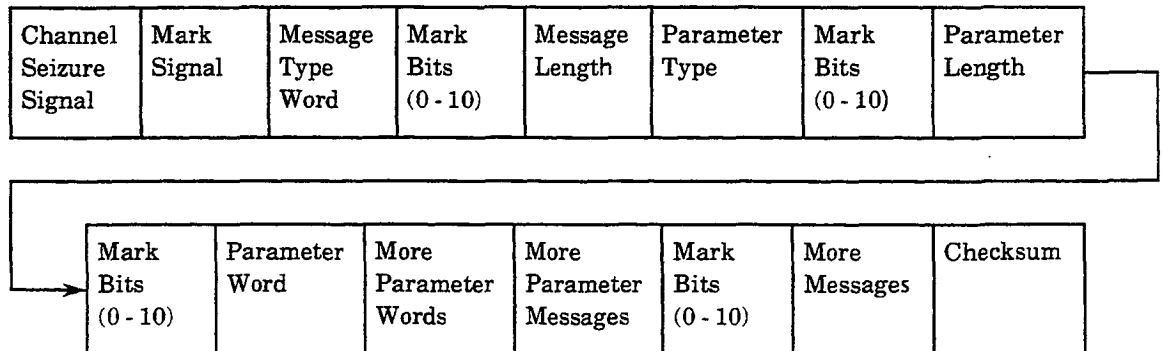


Figure 3-81 Data Message Format

A description of each parameter in the message format follows:

- 1 Channel Seizure Signal 30 continuous bytes of 01010101 provides a detectable alerting signal to CPE.
- 2 Carrier Signal 150 ms of logical 1 for line conditioning.
- 3 Message Type Word For example, Caller ID is message type 4; message waiting is message type 10.
- 4 Message Length Word Specifies number of bytes to follow; does not include checksum.
- 5 Data Word(s) Data to be transmitted. Caller ID form is WWXXYYZZ followed by the Caller ID, where  
 WW = Month  
 XX = Day  
 YY = Hour (24-hour clock)  
 ZZ = Minute
- 6 Checksum Word This is the modulo 256 sum of all other words in the message.
- 7 Parameter Type Word For example, parameter 1 is time; parameter 7 is name.
- 8 Parameter Length Word Specifies number of bytes to follow for this parameter only.

#### Required Equipment

Refer to Table 3-16 - Required Equipment for Caller ID.

Table 3-16 Required Equipment for Caller ID

Equipment	Description	Quantity
COI-F(4)-30 KTU COI-F(8)-30 KTU	Caller ID trunk interface board -- 4-channel board or 8-channel board	1 or 2 ~ 8
CID-F(8)-11 Unit	Caller ID signal-detection board	1 per COI-F(4/8)-30 KTU
MIF-F(C)-10 KTU	Provides Caller ID feature	1 per system

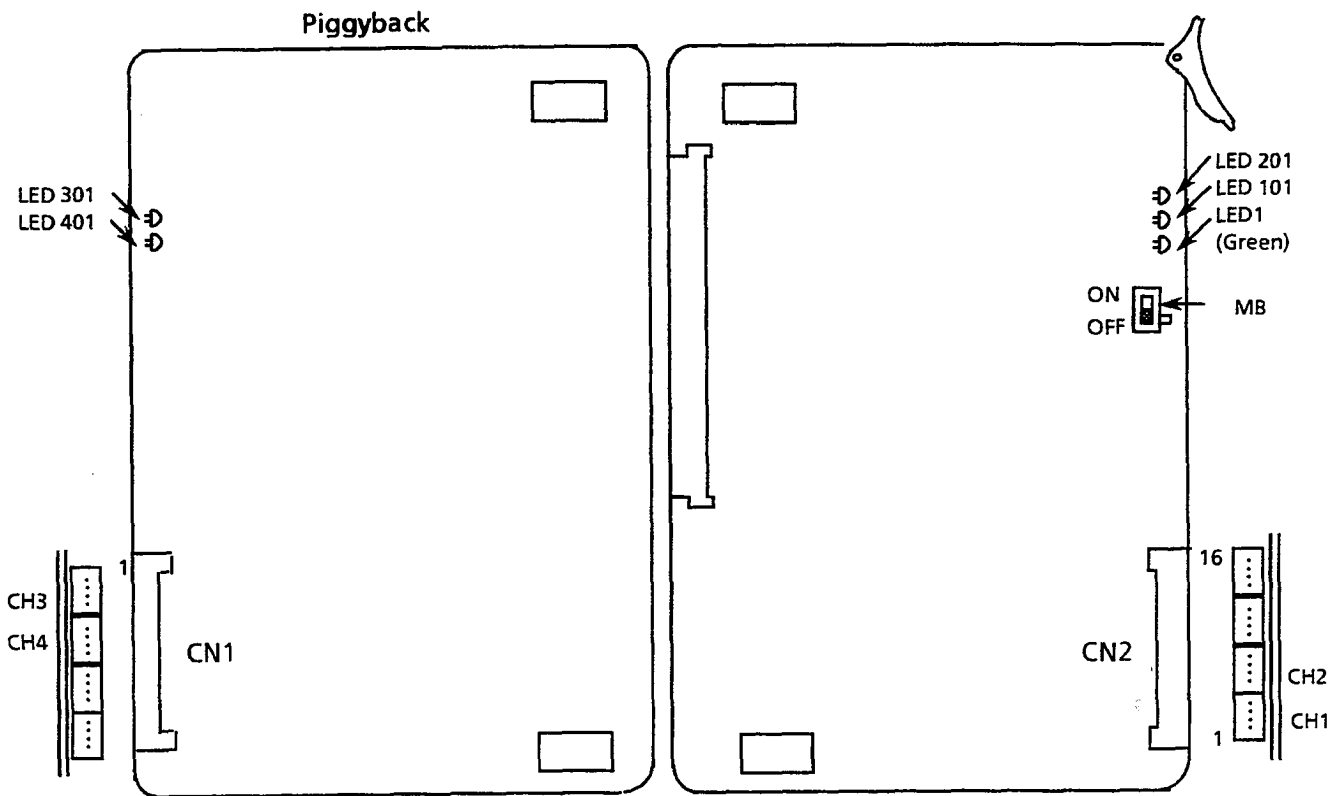
4.3.7 DID-F(4)-10 KTU

The DID KTU provides for the termination and operation of up to four DID lines. Wink start, delay start, and immediate start are accommodated. Dial Pulse and DTMF are supported.

A maximum of seven DID-F(4)-10 KTUs can be installed in the Level II system and a maximum of eight in the Level II Advanced system.

Switch Settings/LED Indications

When the green LED1 is on, the DID-F(4)-10 KTU is receiving power. Switch MB is the ON/OFF control for this KTU. LEDs 101 ~ 401 represent the four individual circuits and their status. A busy line indication lamp (LED 101 ~ LED 401) lights when the associated line (CH1 ~ CH 4) is busy. Refer to Figure 3-82 - DID-F(4)-10 KTU Switch Layout.



This KTU includes a piggybacked package and cannot be separated.

Figure 3-82 DID-F(4)-10 KTU Switch Layout

4.3.8 TLI-F(2)-10 KTU

The TLI KTU provides for the termination and operation of up to two E&M Tie lines (4-wire E&M, Type I or Type V, 10 or 20 pps, Dial Pulse, or DTMF). Immediate start, wink start, delay start, and second dial tone signaling are provided.

A maximum of seven TLI-F(2)-10 KTUs can be installed in the Level II system and a maximum of 16 in the Level II Advanced system.

Switch Settings/LED Indications

Switches designated SW101 and SW201 allow selection of Type I or Type V for channels 1 and 2 respectively.

Red LEDs 101 and 201 indicate the status of the two associated circuits.

When the green LED1 is on, the TLI-F(2)-10 KTU is receiving power. Switch MB is the ON/OFF control for this KTU. Refer to 5.2.3.1 - TLI-F(2)-10 KTU Cable Connections and to Figure 3-83 - TLI-F(2)-10 KTU Switch Layout.

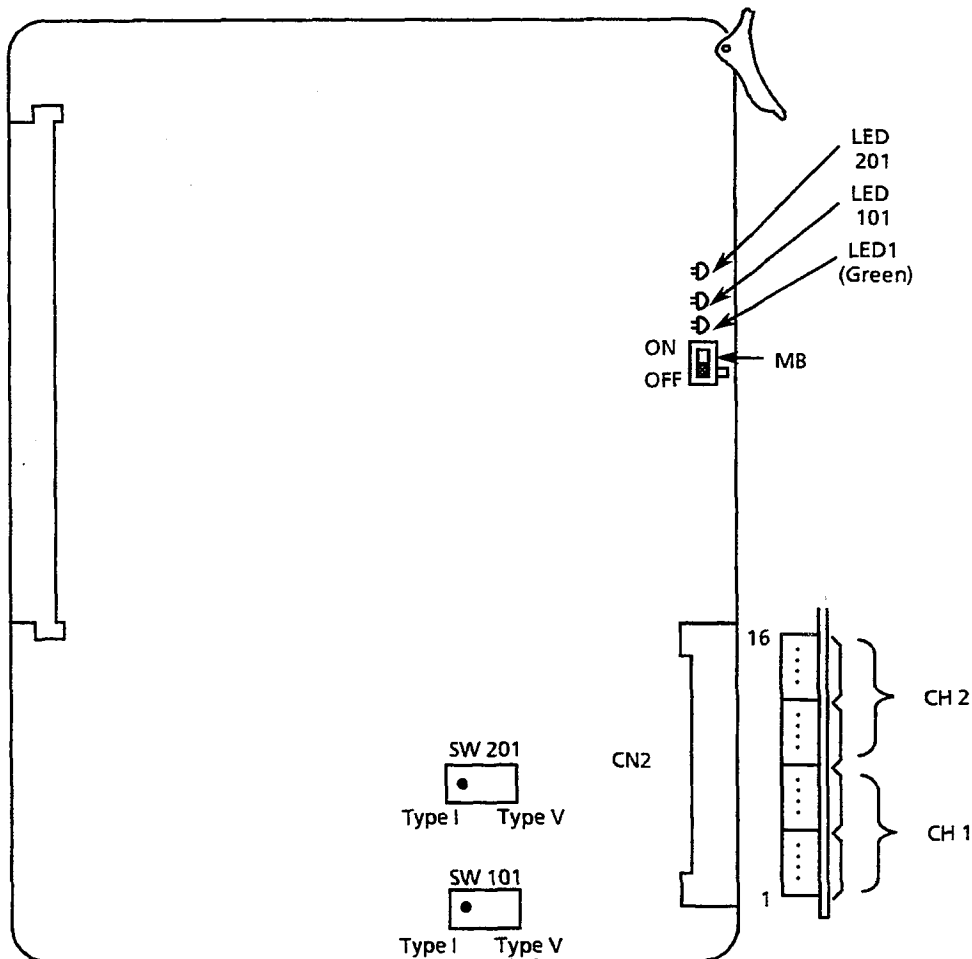


Figure 3-83 TLI-F(2)-10 KTU Switch Layout



## 4.3.9 DTI-F( )-10 KTU/DTI-F(A)-20 KTU, BRT-F(4)-10 KTU, and CLK-F-21 Unit

## 4.3.9.1 DTI-F( )-10 KTU/DTI-F(A)-20 KTU

The Digital Trunk Interface (DTI) KTU provides for the termination of a T1/FT1, 24 DS-0 (Digital Service - Level 0) or fewer, line.

A combination of Loop and Ground Start signaling can be used on one DTI-F( )-10 KTU. DTMF or Dial Pulse dialing is also supported. The DTI-F(A)-20 KTU also supports Tie lines (E&M) and DID signaling. Refer to Figure 3-85 - DTI-F(A)-20 KTU Switch Layout (Series 300 or higher).

Only one DTI KTU can be supported in the Level II system and must be installed in the IF1/OP1 slot. Up to three DTI KTUs can be installed in the Level II Advanced system and must be installed in the IF1/OP1 or IF4/OP4 slots of the Basic KSU or the IF1/OP1 slot of the first Expansion KSU that is installed. If a DTI KTU is used, the interface slot(s) adjacent to the DTI interface slot may need to be left vacant. The number of slots that must remain vacant depends on the number of DTI channels being used. To use this KTU, a CLK-F-21 synchronization unit must be connected on the CPU-F( )-20 KTU. Refer to Figure 3-91 - Installing the DTI-F( )-10 KTU or DTI-F(A)-20 KTU in the ESF-SB-10 KSU and Table 3-21 - Required Slots for DTI-F( )-10 KTU or DTI-F(A)-20 KTU Installation.

When using a second DTI KTU in the Level II Advanced system, this KTU must be connected to the first DTI KTU installed in the system. A third DTI KTU is then connected to the second DTI KTU that is installed. Refer to Figure 3-93 - Connecting the Cable Between the DTI-F( )-10 KTUs or DTI-F(A)-20 KTUs and the CLK-F-21 Unit.

#### Switch Settings/LED Indications

When the green LED11 is on, the DTI KTU is receiving power. LEDs 1 ~ 8 indicate various statuses depending on the switch setting. The red LED9 is the operation verification lamp. LED 9 flashes when the system is operating normally; it is on steady when the system is reset. Switch MB is the ON/OFF control for this KTU. Refer to Figure 3-84 - DTI-F( )-10 KTU Switch Layout, Figure 3-85 - DTI-F(A)-20 KTU Switch Layout, Table 3-17 - DTI-F( )-10 KTU/DTI-F(A)-20 KTU Switch Settings for MB and SW1, Table 3-18 - DTI-F( )-10 KTU/DTI-F(A)-20 KTU Switch Settings for SW2, and Table 3-19 DTI-F( )-10 KTU/DTI-F(A)-20 KTU LED Indications.

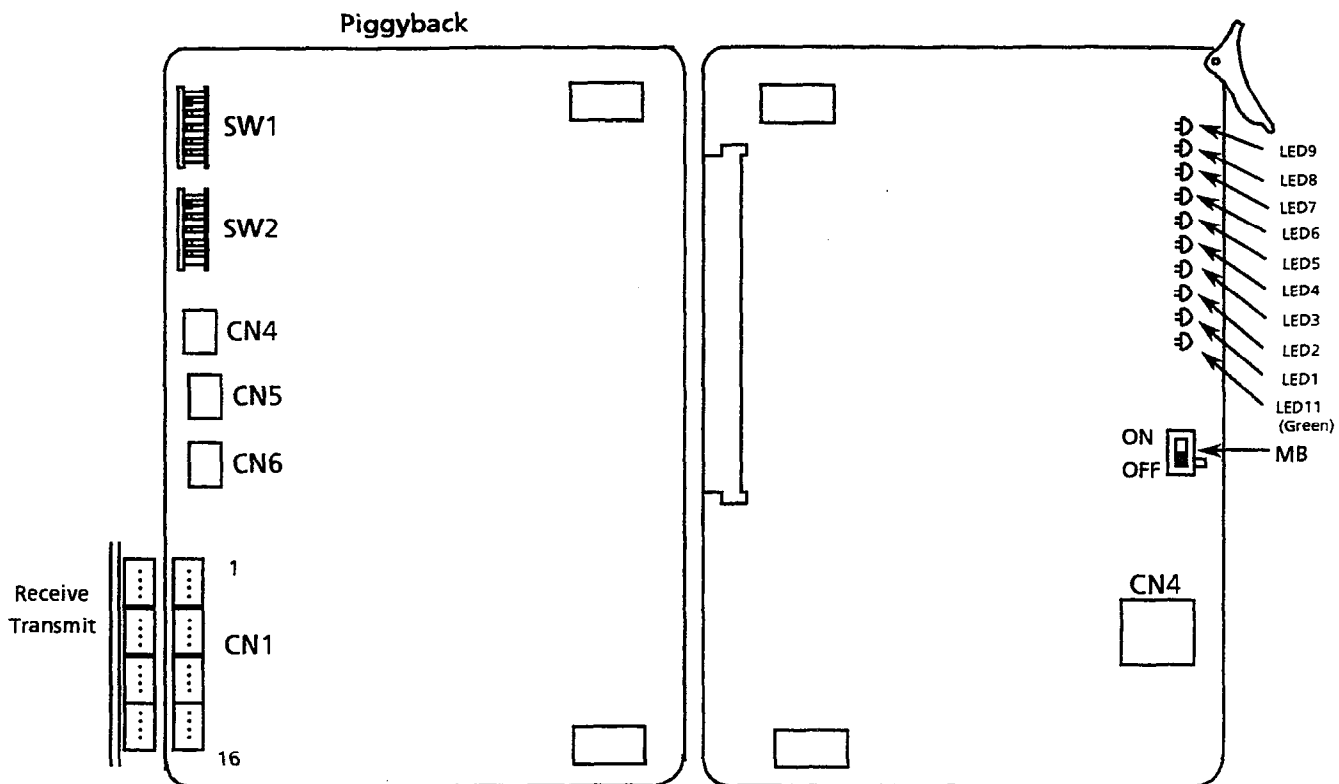


Figure 3-84 DTI-F(-)-10 KTU Switch Layout

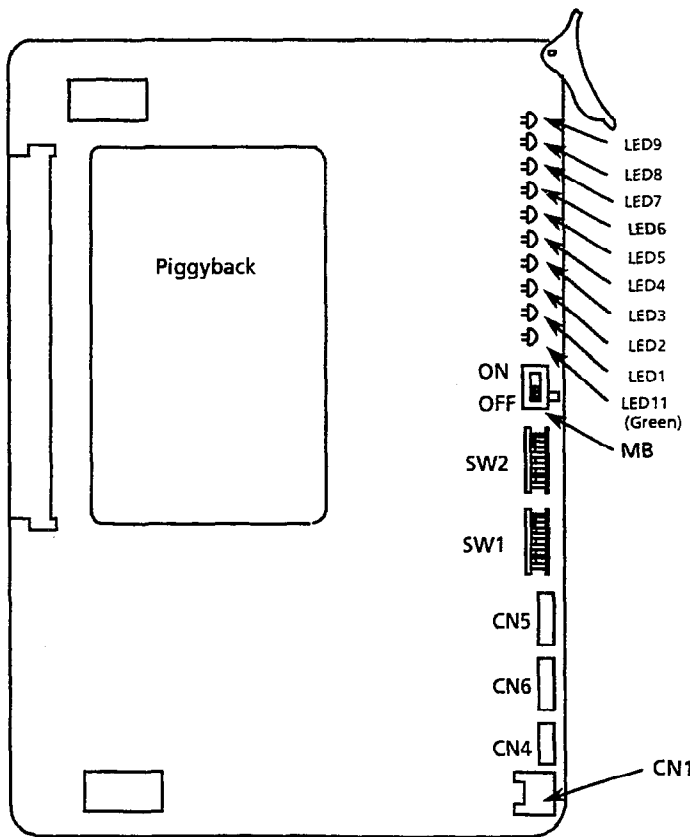


Figure 3-85 DTI-F(A)-20 KTU Switch Layout (Series 300 or higher)

Table 3-17 DTI-F( )-10 KTU/DTI-F(A)-20 KTU Switch Settings for MB and SW1

Switch	Switch Position	Initial Setting (0 = OFF 1 = ON)	Adjustment															
MB	N/A	OFF	Power supply to the KTU must be ON during operation.															
SW1	1	OFF: 0	Loop Back Setting <table border="0"> <tr> <td style="text-align: center;"><u>SW1-1</u></td> <td style="text-align: center;"><u>SW1-2</u></td> <td></td> </tr> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">0</td> <td>No Loop Back</td> </tr> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td>Future Use</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> <td>Line Loop Back ON</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">1</td> <td>Not Used</td> </tr> </table>	<u>SW1-1</u>	<u>SW1-2</u>		0	0	No Loop Back	0	1	Future Use	1	0	Line Loop Back ON	1	1	Not Used
	<u>SW1-1</u>	<u>SW1-2</u>																
	0	0		No Loop Back														
	0	1		Future Use														
	1	0	Line Loop Back ON															
	1	1	Not Used															
	2	OFF: 0																
	3	OFF: 0	} Not Used (Must be 0 when operating.)															
4	OFF: 0																	
5	OFF: 0																	
6	OFF: 0																	
7	OFF: 0																	
8	OFF: 0																	

**Note 1:** Alarm Indication Signal (AIS) (also known as blue signal) is provided by the Central Office to ensure continuity of the output signal. AIS is applied to ensure that no more than 80 consecutive zeros are transmitted. When a valid signal is available, the AIS may be removed. The AIS is an unframed, all ones signal. Either the Central Office or far end equipment may busy out an entire DS-1 facility by sending an AIS. If an AIS is received (because it is unframed), the Yellow Alarm is transmitted to the far end.

**Note 2:** Explanation of Switch Positions:

- SW1-1 = 0 and SW1-2 = 0  
This position is used for normal operation (e.g., talking, or idle).
- SW1-1 = 0 and SW1-2 = 1  
Future Use
- SW1-1 = 1 and SW1-2 = 0  
This position is used to receive patterns, listed for inband line loopback, without framing, to accommodate embedded equipment that sends unframed control signals. When this position is set, the data signals that are received by the system are transmitted back to the network. These data signals are regenerated, by the system, without changing the framing format or removing any bipolar violations.
- SW1-1 = 1 and SW1-2 = 1  
Not Used

**Table 3-18 DTI-F( )-10 KTU/DTI-F(A)-20 KTU Switch Settings for SW2**

Switch	Switch Position	Initial Setting (0 = OFF 1 = ON)	Adjustment
MB	N/A	OFF	
SW2	1	OFF: 0	If this switch is ON, LED 1 ~ 8 indicates the status of CH 1 ~ 8 of the T1 (24 DS-0) channel.
	2	OFF: 0	If this switch is ON, LED 1 ~ 8 indicates the status of CH 9 ~ 16 of the T1 (24 DS-0) channel.
	3	OFF: 0	If this switch is ON, LED 1 ~ 8 indicates the status of CH 17 ~ 24 of the T1 (24 DS-0) channel.
	4	OFF: 0	If this switch is ON, LED 1 ~ 8 indicates the status of the alarm from the T1 trunk.
	5	OFF: 0	If this switch is ON, LED 1 ~ 8 indicates the status of the alarm from the T1 trunk.
	6	OFF: 0	} Not Used (Must be 0 when operating.)
	7	OFF: 0	
	8	OFF: 0	

**Note:** If multiple switches are set to ON, the lower numbered switch (SW2-1 ~ SW2-5.) has the highest priority.

Table 3-19 DTI-F( )-10 KTU/DTI-F(A)-20 KTU LED Indications

LED	SW2-1 ON (Note 1)	SW2-2 ON (Note 1)	SW2-3 ON (Note 1)	SW2-4 ON (Notes 2 and 3)	SW2-5 ON (Notes 2, 3, and 4)
LED1	CH1	CH9	CH17	LSA detection	TSC detection
LED2	CH2	CH10	CH18	AIS detection	ESA detection
LED3	CH3	CH11	CH19	OOF detection	LOS detection
LED4	CH4	CH12	CH20	RAI detection	
LED5	CH5	CH13	CH21	CRC detection	
LED6	CH6	CH14	CH22	BPV detection	
LED7	CH7	CH15	CH23	SLIP detection	
LED8	CH8	CH16	CH24		

**Note 1:** SW2-1 ~ SW2-3 indicate the status of T1 (24 DS-0) channels.

**Note 2:** SW2-4 ~ SW2-5 indicate the status of the T1 trunk alarm.

**Note 3:** Explanation of Alarm Conditions:

- LED1: Line Synchronization Alarm (LSA) Detection  
If the T1 trunk has lost frame synchronization, the LED lights red.
- LED2: Alarm Indication Signal (AIS) Detection  
If the system is receiving AIS from the T1 trunk, the LED lights red.
- LED3: Out-of-Frame Condition (OOF) Detection  
If two of the four or five data framing bits that are received are in error, this LED lights red.
- LED4: Remote Alarm Indication (RAI) Detection  
If the remote alarm signal is received, this LED lights red.
- LED5: Cyclic Redundancy Check (CRC) Error Event Detection  
If a CRC error has occurred, the LED lights red.
- LED6: Excessive Bipolar Violations (BPV) Detection  
If an excessive bipolar violation condition is detected, the LED lights red.
- LED7: Controlled Slip Event (Slip) Detection  
If the difference between the timing of a synchronous receiving terminal and the received signal exceeds the buffering ability of the synchronous terminal, the LED lights red.

**Note 4:** SW2-5 = 1

- LED1: Transmit Short Circuit (TSC) detection
- LED2: Jitter Attenuator Alarm (ESA) detection
- LED3: Loss of Signal (LOS) Detection  
If the T1 signal from the trunk is not received, the LED lights red.

## 4.3.9.2 BRT-F(4)-10 KTU

This KTU provides four identical circuits to serve up to four ISDN Basic Rate Trunks (S/T Interface, 8 Voice channels). Tip and Ring electrical fuses (posistors) PTC1 through PTC16 are provided to comply with UL 1459 requirements.

A maximum of four BRT -F(4)-10 KTUs can be installed in Level II system, and a maximum of eight can be installed in the Level II Advanced system.

This KTU has one, 4-position connector for connection to the MDF.

This KTU can be installed in IF1/OP1, IF2/OP2, IF3/OP3, or IF4/OP4 slots of basic KSU and first Expansion KSU.

CLK-F-21 Unit must be installed on the CPU-F( )-20 KTU to use the BRT-F (4)-10 KTU.

- When any other trunk KTU such as COI-F(4/8)-20 KTU, COI-F(4/8)-30 KTU, TLI-F(2)-10 KTU, or DID-F(4)-10 KTU is installed in slots to the left of the BRT-F(4)-10 KTU, the BRT -F(4)-10 KTU is assigned before the other trunk KTU on a first power on.
- Multipoint connection is not allowed in conjunction with the BRT-F(4)-10 KTU. Connectors CN11, CN21, CN12, CN22, CN13, CN23, CN14, and CN24 are set between pin 1 and pin 2 as default and should be set as is.
- If DTI KTU is installed, use the clock cable interconnection required for T1 circuits. Ensure that CLK-F-21 Unit jumper S1 is set for 1.5M. For this case, the BRT KTU is installed without CLK Unit considerations; clocking is derived from the T1.

To connect the BRT KTU and the CLK Unit:

Connect BRT-F(4)-10 KTU CN2 to CLK-F-21 Unit CN3 using the cable provided with the CLK-F-21 unit. Refer to Figure 3-86 - Connecting the Cable Between the BRT-F(4)-10 KTU and the CLK-F-21 Unit.

It is unnecessary to connect the second and succeeding BRT KTUs to the CLK-F-21 Unit.

- Clock cable is not required between 1<sup>st</sup> and 2<sup>nd</sup> BRT KTU.
- The BRT KTU connected to the CLK-F-21 Unit must be connected to live ISDN Basic Rate trunks.

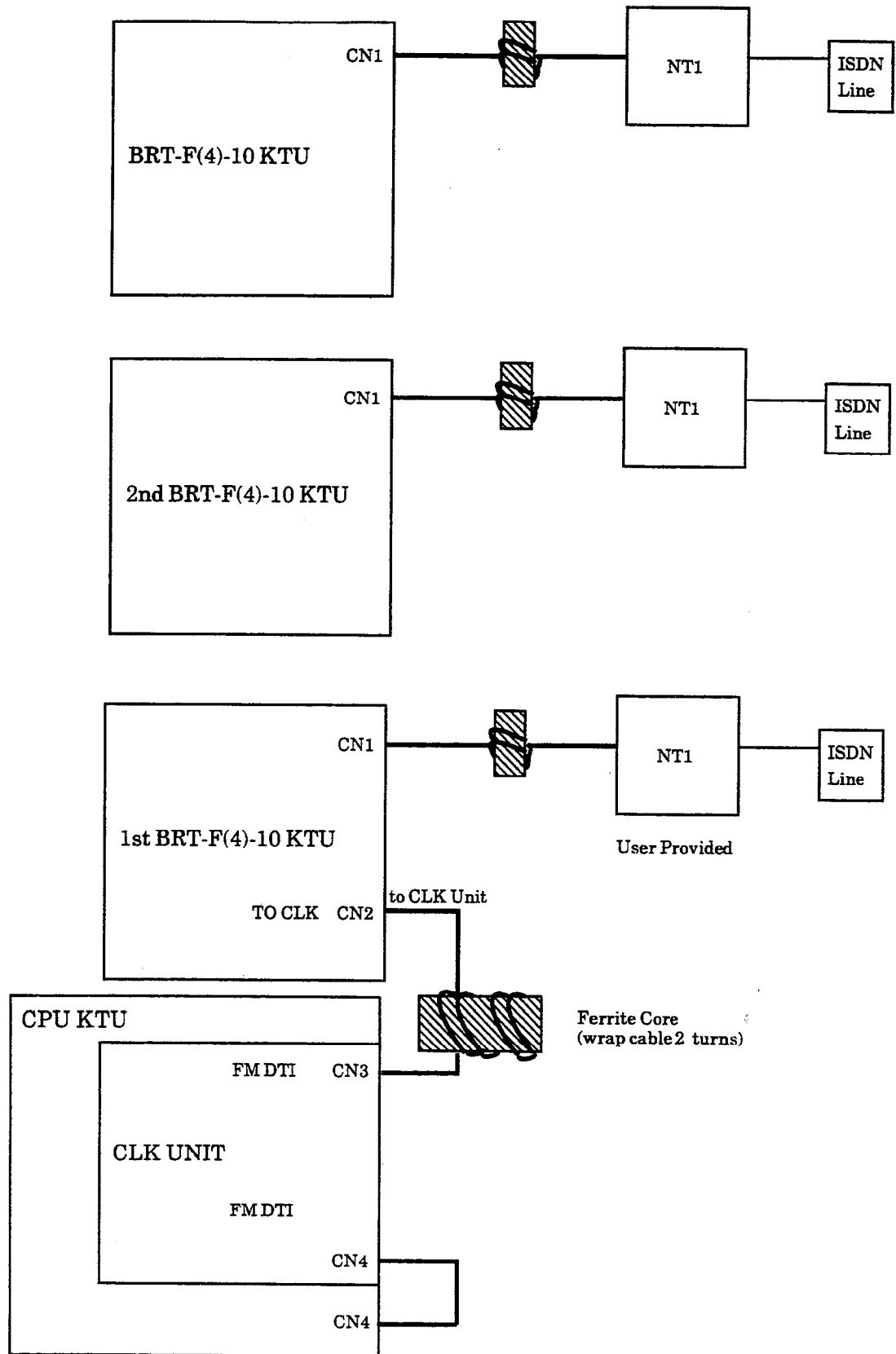


Figure 3-86 Connecting the Cable Between the BRT-F(4)-10 KTU and the CLK-F-21 Unit

Switch Settings/LED Indications

Refer to Figure 3-87 - BRT-F(4)-10 KTU Switch Layout. The BRT-F(4)-10 KTU has two switches, SW1 and SW2. SW1 is the ON/OFF control for the KTU. SW2 has four individual switches that are set OFF as default, and must be left OFF for operation.

Red LEDs 1 to 8 indicate status of four associated circuits. LED1 and LED5 indicate status of first BRT line. LED1 is on after the layer 2 link is established. LED5 is on when the voice path is established on B1 channel, B2 channel, or both B1 and B2 channels. LED2 and LED 6 provide the same indications as LED1 and LED6 for the second BRT line, LED3 and LED7 provide these indications for the third BRT line, and LED 4 and LED8 provide them for the fourth BRT line.

Green LED9 is on when the BRT KTU is receiving power.

CLK-F-21 Unit for the BRT-F(4)-10 KTU

The CLK-F-21 Unit provides sunchronization for ISDN lines connected to the system. For additional information, refer to Section 4.3.9.3 CLK-F-21 Unit.

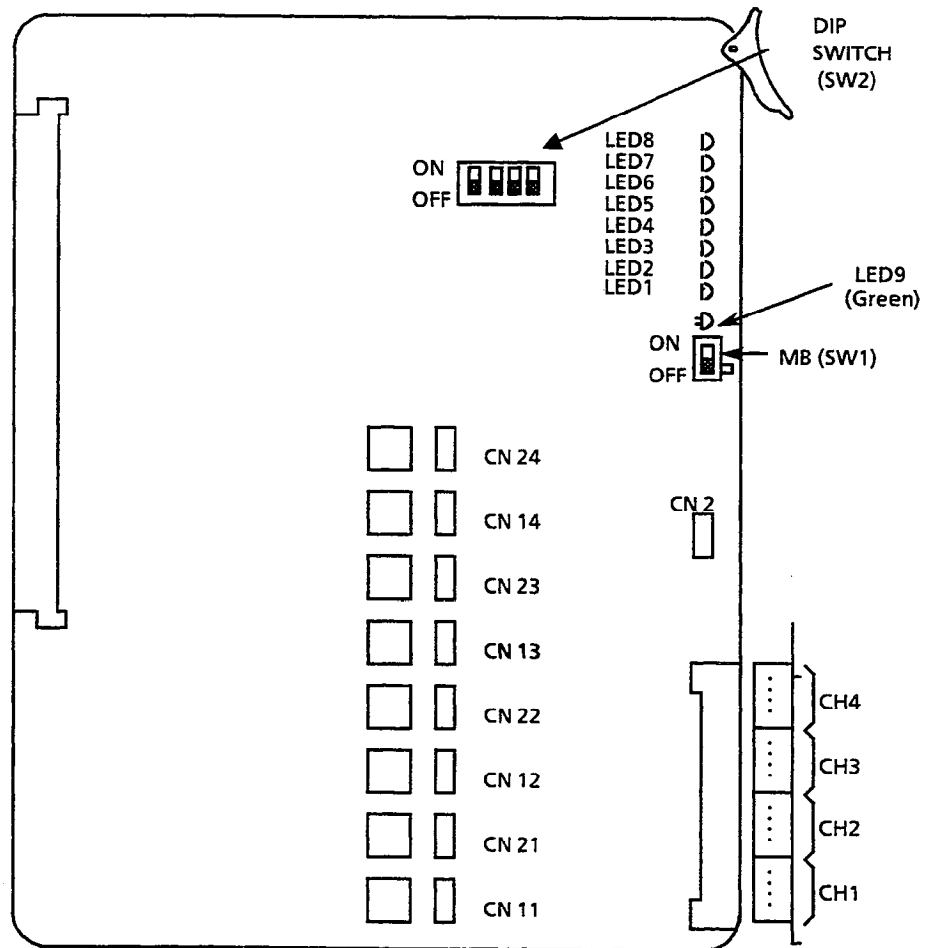


Figure 3-87 BRT-F(4)-10 KTU Switch Layout



Install BRT-F(4)-10 KTU

1. Install the BRT-F(4)-10 KTU in slots IF1/OP1 to IF4/OP4 in first and second cabinets of the Level II Advanced system or first cabinet of Level II system.
2. Connect cable between NT1 and BRT KTU. as shown in Figure 3-86 BRT-F(4)-10 KTU Interconnect.
3. Install cable between NT1 and ISDN Basic Rate Trunk (U interface).
4. Connect BRT U interface to the MDF.
5. Connect BRT U interface from MDF to the NT1.
6. Use two twisted-pair cables to connect cable from NT1(S/T interface output) to BRT KTU CN1 as shown below.

Pin	Name
16	RB4
15	RA4
14	TB4
13	TA4
12	RB3
11	RA3
10	TB3
9	TA3
8	RB2
7	RA2
6	TB2
5	TA2
4	RB1
3	RA1
2	TB1
1	TA1

- The BRT KTU cannot be connected directly to a Telco providing the Basic Rate Trunk U interface. An ISDN Termination Adapter NT1 (locally provided by the customer) must be installed between Telco and BRT-F(4)-10 KTU.
- The maximum distance from the BRT-F(4)-10 KTU to NT1 is 300 feet, using 22 AWG twisted pair cable.

## 4.3.9.3 CLK-F-21 Unit

The CLK Unit provides synchronization for T1 and ISDN lines connected to the system. This unit works in conjunction with the DTI-F( )-10 KTU, DTI-F(A)-20 KTU, or BRT-F(4)-10 KTU and is piggybacked on the CPU-F( )-20 KTU.

Only one CLK-F-21 Unit can be installed in either system.

Switch Settings/LED Indications

LED1 is off if the 1.5 MHz clock is provided from the T1 or ISDN trunk. LED2 is off if the output clock to the CPU-F( )-20 KTU (16 MHz) is provided from the CLK-F-21 Unit. Refer to Figure 3-88 - Mounted CLK-F-21 Unit.

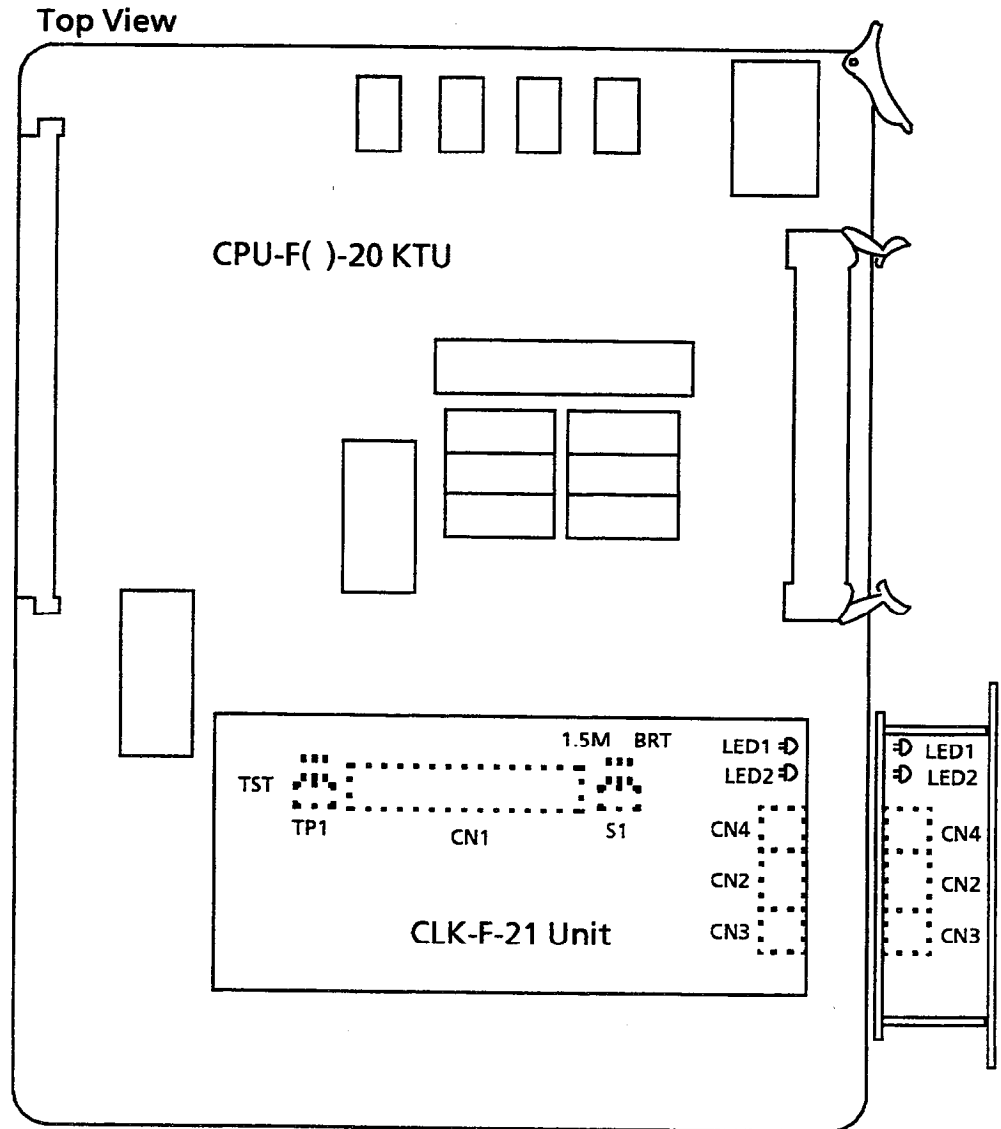


Figure 3-88 Mounted CLK-F-21 Unit

Connection:

To connect the CPU-F( )-20 KTU and the CLK-F-21 Unit make the following connections:

- CLK CN1 and CPU CN101
- CLK CN4 and CPU CN4

## 4.3.9.4 T1 Considerations

**IMPORTANT NOTE**

**Before installing the CLK-F-21 unit in the CPU-F( )-20 KTU, the S1 strap on the CLK-F-21 unit must be moved from the BRT setting to the 1.5M setting.**

General

T1/FT1 refers to a physical communications facility (circuit) commonly referred to as T1/FT1 pipe with 1.544 mbps of bandwidth.

The T1/FT1 pipe can be divided into 24 channels, each rated DS-0 (Digital Signal, Level 0). This is equivalent to 24 or more voice circuits and/or multiple data channels (leased lines). Each DS-0 is 64 kbps of bandwidth. The carrier uses 8 Kbps of T1/FT1 bandwidth for network supervision and diagnostics, leaving 1.536 mbps for user data.

Electrical Specifications

The electrical specifications describe the T1/FT1 interface, the T1/FT1 crossconnect interface, and the characteristics of the signals received from and transmitted to the T1/FT1 facility.

1. Support Digital Trunk Type: T1, FT1
2. Support Trunk Signal Type: DTI-F( )-10 KTU:  
CO/FX/WATS, Loop and Ground Start (Determined in System Programming)  
DTI-F(A)-20 KTU:  
CO/FX/WATS, Loop and Ground Start, Tie line (E&M), DID (Determined in System Programming)
3. Support Line Coding:\* ZCS or B8ZS Method (Determined in System Programming)
4. Output Characteristics:
 

Line Rate:	1.544 mbps + - 50 bps
Line Impedance:	100 Ω
Pulse Amplitude (Base to Peak):	CCITT G. 703
5. Input Characteristics:
 

Line Rate:	1.544 mbps + - 200 bps
Pulse Amplitude (Base to Peak):	1.5V ~ 3V
Frame Synchronization:*	12-Multiframe *

	24-Multiframe *
Input Jitter:	CCITT G. 743
Cable Length from Electra Professional Level II to CSU:	Maximum 655 ft. (with 22 AWG)
CSU:	Channel Service Unit

\* Refer to the notes for an explanation.

#### Notes:

##### *Line Coding*

If zero data is being continuously transmitted over a T1/FT1 trunk, the end equipment (Electra Professional Level II system, Level II Advanced system, or digital PBX) cannot operate normally because there is no clock synchronization. EIA/TIA-464-A specifies two line coding methods for normal operation.

1. Zero Code Suppression (ZCS)
2. Bipolar Eight Zero Substitution (B8ZS)  
This method depends on the LXC (Local Exchange)/IXC (Interexchange). The installer must ask the LXC/IXC to determine whether the configuration is ZCS or B8ZS. The installer must assign this configuration using the Electra Professional Level II and Level II Advanced System Programming.

##### *Frame Synchronization*

According to EIA/TIA-464-A for 24-channel transmission, there are two types of frame configurations: 12-multiframe and 24-multiframe. This method depends on the LXC/IXC. The installer must ask the LXC/IXC to determine whether the configuration is 12- or 24-Multiframe. The installer must assign this configuration using the Electra Professional Level II and Level II Advanced System Programming.

##### *12-Multiframe*

This frame has 12-Multiframes and each Multiframe has a 24-channel PCM signal (8 bits/channel) and an F bit (Super Frame Bit). Refer to Figure 3-89 - 12-Multiframe Configuration and Bit Assignment.

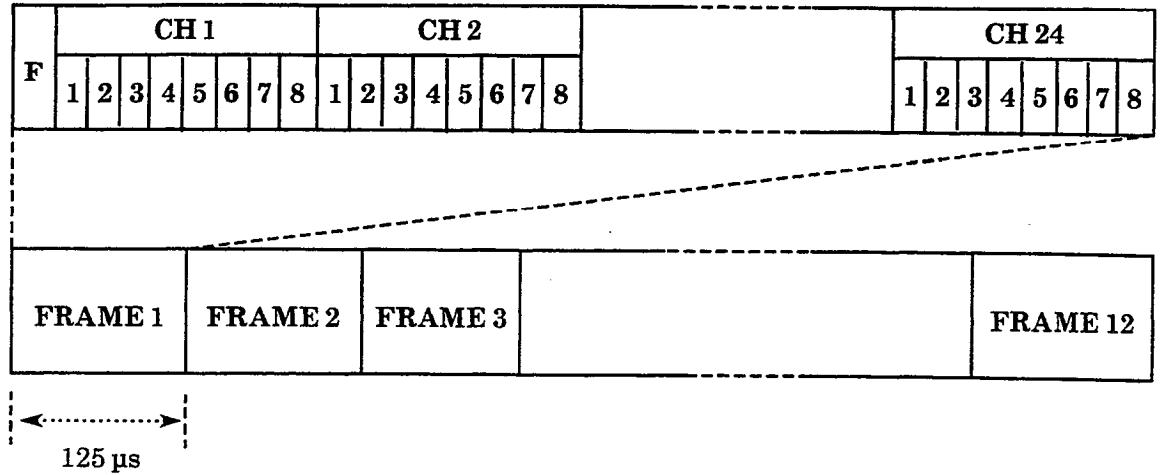


Figure 3-89 12-Multiframe Configuration and Bit Assignment

*24-Multiframe*

This frame has 24-Multiframes and each Multiframe has a 24-Channel PCM signal (8 bits/channel) and an F bit (Super Frame Bit). Refer to Figure 3-90 - 24-Multiframe Configuration and Bit Assignment.

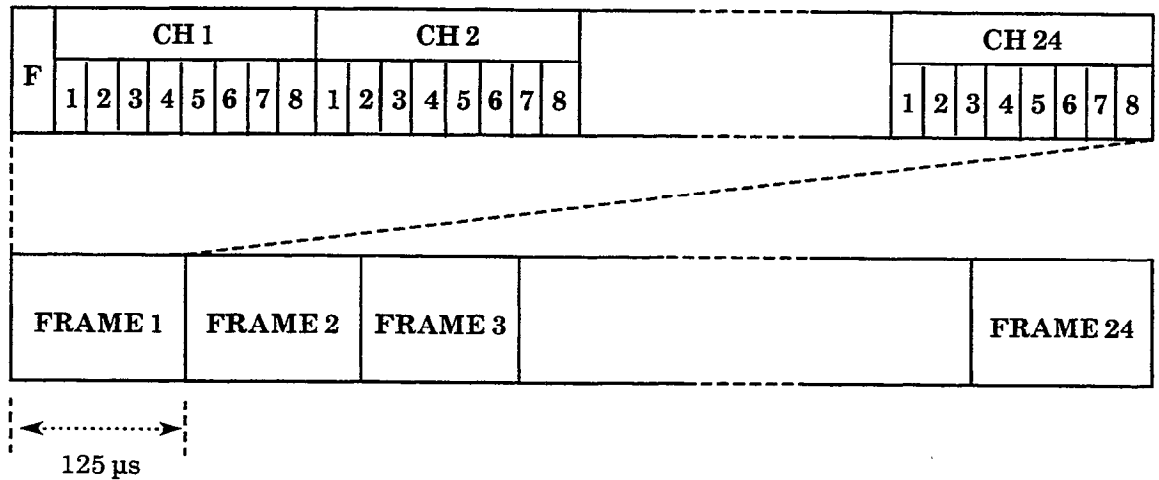


Figure 3-90 24-Multiframe Configuration and Bit Assignment

Installation

Table 3-20 - Equipment Required for T1 Installation shows the equipment required for T1.

Table 3-20 Equipment Required for T1 Installation

Equipment	Description	Quantity
DTI-F( )-10 KTU - OR - DTI-F(A)-20 KT	24 channels T1/FT1 trunk interface board	1, 2, or 3
CLK-F-21 Unit	T1/FT1 Clock Synchronization Unit	1
	Connection cable between DTI and CLK package (4 MHz clock)	1 per DTI KTU and CLK interface (included with DTI KTU) - OR - 1 per DTI KTU and DTI KTU interface
Installation Cable	Twisted pair transmission cable between DTI and MDF	
	Connection cable between DTI and CLK (1.5 MHz clock)	1 per CLK Unit (included with CLK Unit)
CSU	Interface equipment between T1 Trunk and DTI KTU	1 per DTI KTU

*To install:*

1. Install the DTI-F( )-10 KTU or DTI-F(A)-20 KTU and the CLK-F-21 Unit in the Level II ESF-SB-10 KSU. Refer to Figure 3-91 - Installing the DTI-F( )-10 KTU or DTI-F(A)-20 KTU in the ESF-SB-10 KSU.

To install the DTI-F( )-10 KTU or DTI-F(A)-20 KTU in the Level II Advanced system use interface slots IF1/OP1 or IF4/OP4 slots on the ESF-XB-10 KSU or the IF1/OP1 slot on the first ESF-XE-10 KSU installed. Refer to Figure 3-92 - Installing the DTI-F( )-10 KTU or DTI-F(A)-20 KTU in the ESF-XB-10 KSU or ESF-XE-10 KSU.

**Note:** If the DTI KTU is used, the interface slot(s), adjacent to the DTI interface slot, can be used. The number of slots that must remain empty depends on the number of DTI channels being used.

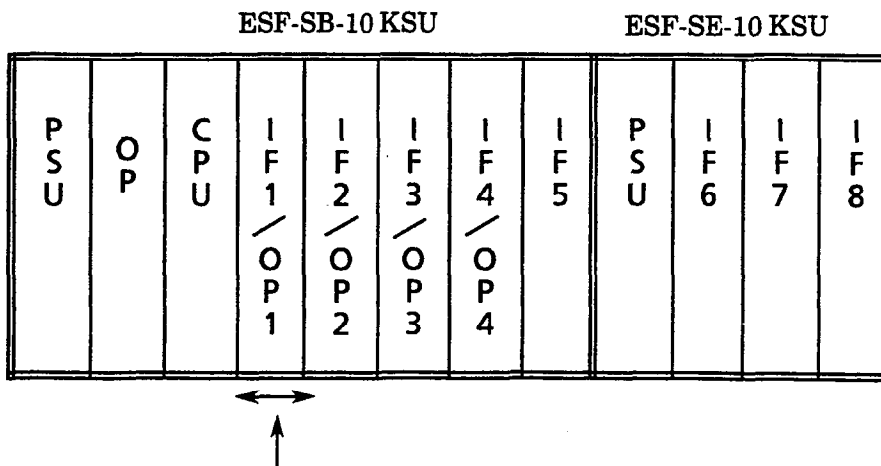


Figure 3-91 Installing the DTI-F( )-10 KTU or DTI-F(A)-20 KTU in the ESF-SB-10 KSU

2. Install the cable between the T1/FT1 trunk and the DTI-F( )-10 KTU or DTI-F(A)-20 KTU.
  - a. Connect the T1/FT1 trunk to the MDF.  
Refer to Table 3-35 - Connection Information/Connection and Port Relationships.
  - b. Connect the T1 trunk from the MDF to the CSU.
  - c. To connect the cable from the CSU to CN1 on the DTI-F( )-10 KTU or DTI-F(A)-20 KTU:
    - (1) Wrap the cables, provided with the DTI-F( )-10 KTU or DTI-F(A)-20 KTU, twice (two turns) around a ferrite core.
    - (2) Connect the cable from the CSU to CN1 on the DTI-F( )-10 KTU or DTI-F(A)-20 KTU, using the MDF Cable Assembly. Refer to Figure 3-93 - Connecting the Cable Between the DTI-F( )-10 KTUs or DTI-F(A)-20 KTUs and the CLK-F-21 Unit.

**Note 1:** The maximum distance from the DTI-F( )-10 KTU or DTI-F(A)-20 KTU to the CSU is 655 feet, using 22 AWG.

**Note 2:** The customer must purchase the CSU equipment to install the T1 trunk.

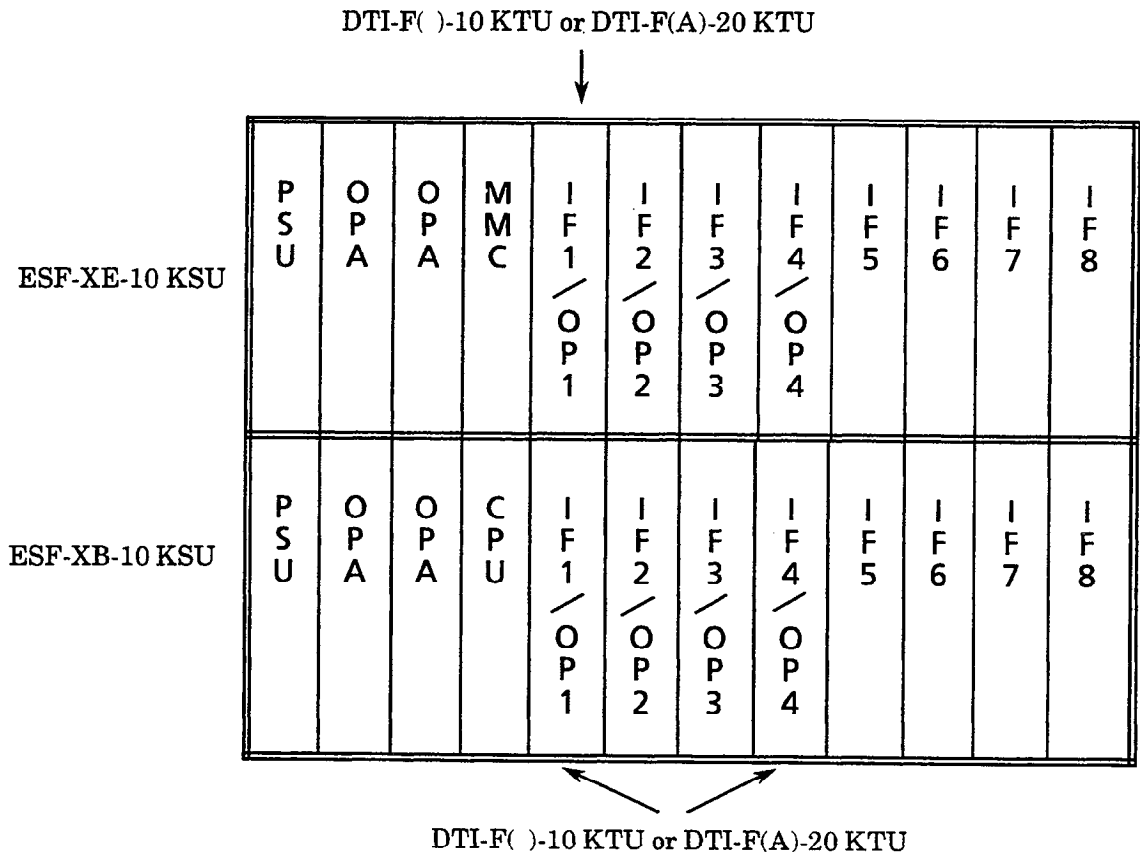


Figure 3-92 Installing the DTI-F( )-10 KTU or DTI-F(A)-20 KTU in the ESF-XB-10 KSU or ESF-XE-10 KSU

Table 3-21 Required Slots for DTI-F( )-10 KTU or DTI-F(A)-20 KTU Installation

No. of DTI-F( )-10 KTU or DTI-F(A)-20 KTU Channels Used	Required Slots for DTI-F( )-10 KTU or DTI-F(A)-20 KTU Installation
1 ~ 8	1
9 ~ 16	2
17 ~ 24	3



- d. To connect the DTI-F( )-10 KTU or DTI-F(A)-20 KTU and the CLK-F-21 Unit:
- (1) Wrap the cables, provided with the DTI-F( )-10 KTU or DTI-F(A)-20 KTU, twice (two turns) around a ferrite core.
  - (2) Connect CN6 and CN4, on the DTI-F( )-10 KTU or DTI-F(A)-20 KTU, to CN2 and CN3, on the CLK-F-21 Unit, using the provided cable with the DTI-F( )-10 KTU or DTI-F(A)-20 KTU. Refer to Figure 3-93 - Connecting the Cable Between the DTI-F( )-10 KTUs or DTI-F(A)-20 KTUs and the CLK-F-21 Unit.
  - (3) When connecting a second DTI-F( )-10 KTU or DTI-F(A)-20 KTU in the Level II Advanced system, connect CN6 on the second DTI-F( )-10 KTU or DTI-F(A)-20 to CN5 on the first DTI-F( )-10 KTU or DTI-F(A)-20 KTU after wrapping this cable [provided with the DTI-F( )-10 KTU or DTI-F(A)-20 KTU] twice (two turns) around a ferrite core.
  - (4) When installing a third DTI-F( )-10 KTU or DTI-F(A)-20 KTU in the Level II Advanced system, follow the same procedure in step 3 for connection between the third and second DTI-F( )-10 KTU or DTI-F(A)-20 KTU. Refer to Figure 3-94 - Example of Three DTI-F( )-10 KTUs or DTI-F(A)-20 KTUs Attached to the CLK-F-21 Unit.

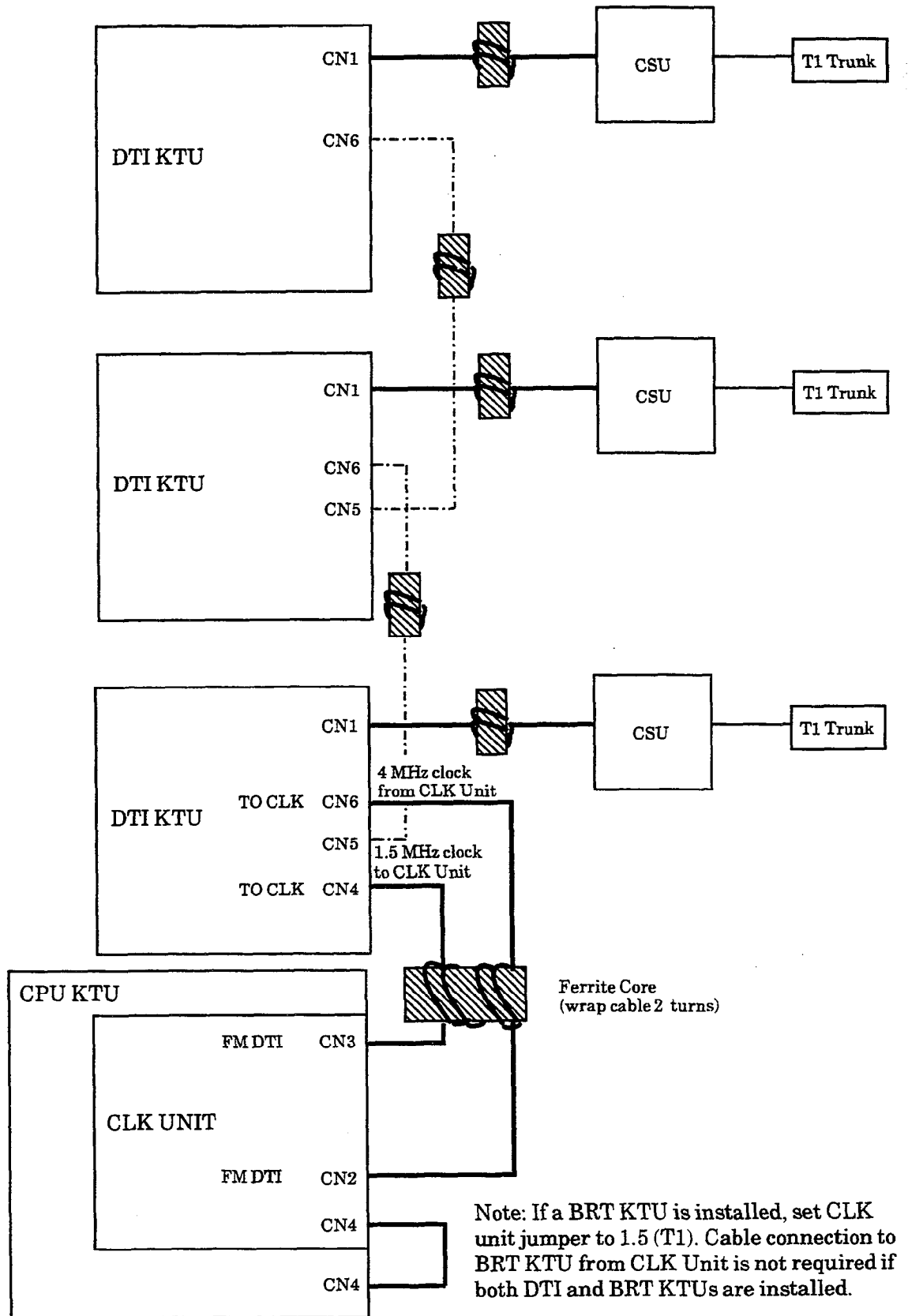


Figure 3-93 Connecting the Cable Between the DTI-F( )-10 KTUs or DTI-F(A)-20 KTUs and the CLK-F-21 Unit

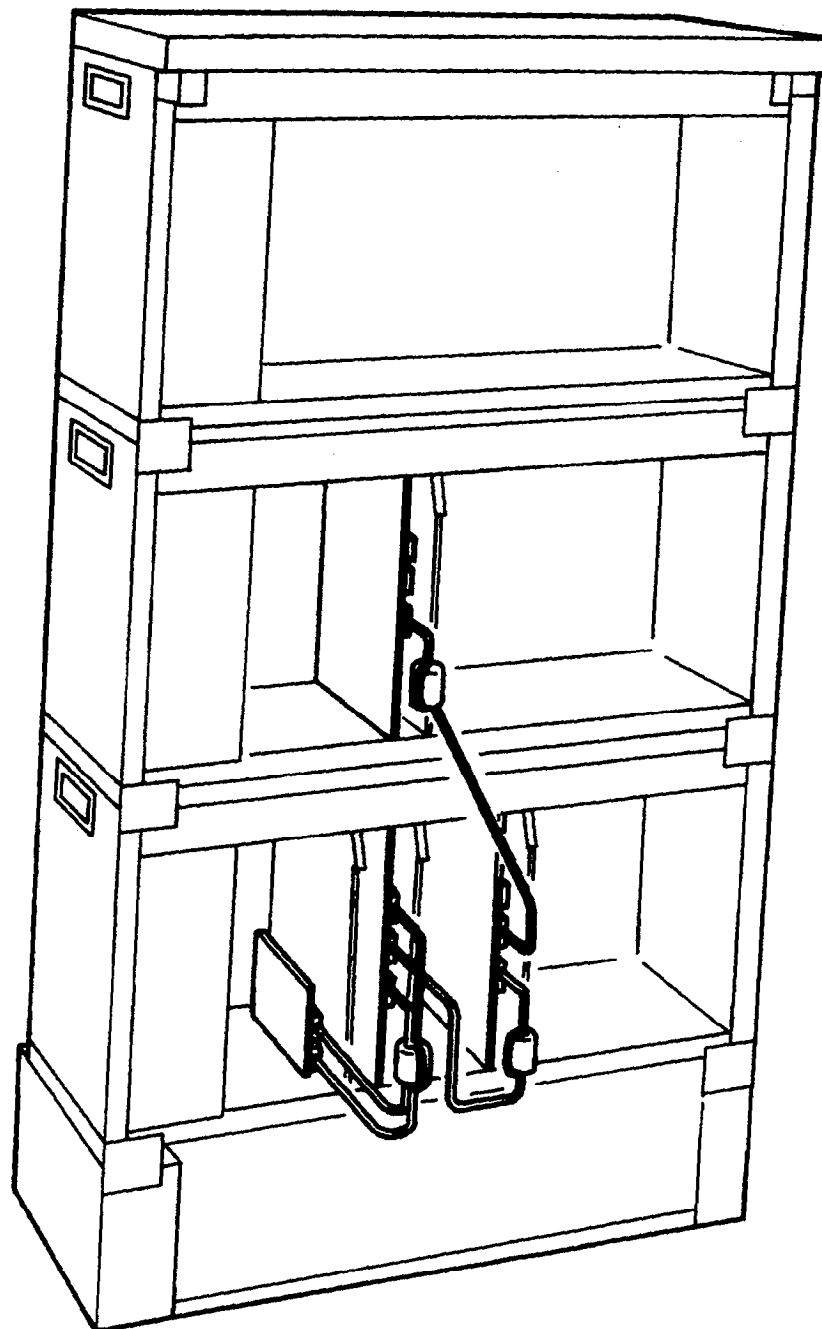


Figure 3-94 Example of Three DTI-F( )-10 KTUs or DTI-F(A)-20 KTUs Attached to the CLK-F-21 Unit

#### 4.3.9.5 ISDN Considerations

ISDN trunks connected to the ElectraProfessional Level II/Level II Advanced system require clock signals the same as T1

##### BRT Without Installed DTIs

If an ISDN KTU is installed in a system without DTI KTUs, connect the clock cable from CN3 on the CLK unit to CN2 on first BRT KTU in the system. The CLK unit CN2 is not used. The CLK unit jumper is set to BRT.

##### BRT With Installed DTIs

In this configuration, the ElectraProfessional Level II/Level II Advanced system derives clocking from the T1. Use connection scheme in Figure 2-49. The CLK unit jumper is set to 1.5M. A cable connection is not required between the BRT KTU and the CLK unit or any DTI KTU.

### 4.4 Optional KTUs

#### 4.4.1 PBR-F(4)-11 KTU

The Push Button Receiver (PBR) KTU detects and translates DTMF tones generated by Single Line Telephones, modems, or facsimile machines. This KTU is required if the four built-in PBR channels (CPU) are not enough to support all of the single-line devices of the system.

Only one PBR-F(4)-11 KTU can be installed in the Level II and Level II Advanced systems.

##### Switch Setting/LED Indications

When the green LED1 on the PBR-F(4)-11 KTU is on, the KTU is receiving power. When the red DTMF signal-indication LED2 is on, one or more DTMF signal receiver circuits are receiving DTMF signals. Switch MB is the ON/OFF control for this KTU. Refer to Figure 3-95 - PBR-F(4)-11 KTU Switch Settings.

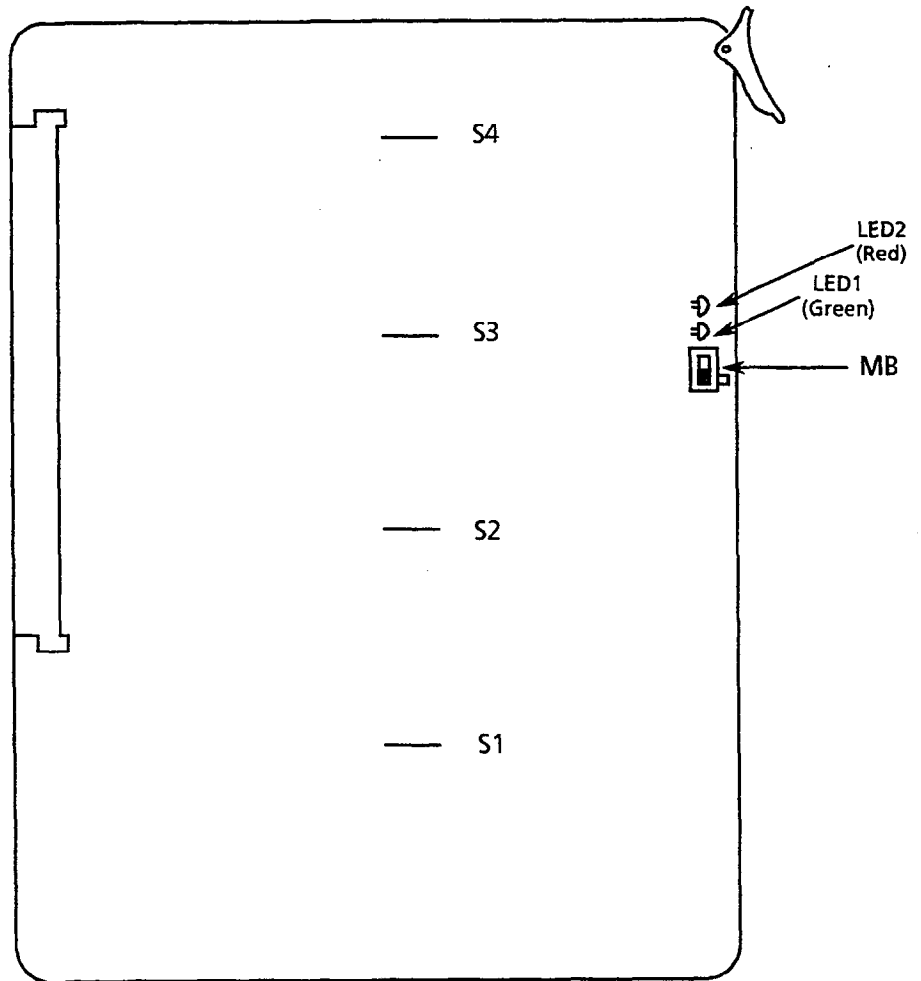


Figure 3-95 PBR-F(4)-11 KTU Switch Settings

If adjustment to the DTMF signal detection level is required, adjust using strap wire S1 ~ S4. Refer to Table 3-22 - DTMF Signal Adjustments.

Table 3-22 DTMF Signal Adjustments

Option	Strap Wire Settings	Default Settings	Adjustment
DTMF signal receiving gain	Strap wires: S1 ~ S4	Strapping wires connected	<p>Default settings are done to allow reception of -34 dBm ~ -4 dBm DTMF signals. To increase the receiving gain, cut the strap wires (-42 dBm ~ -12 dBm DTMF signals can be received).</p> <p>S1: Channel 1 receiving gain                      S2: Channel 2 receiving gain                      S3: Channel 3 receiving gain                      S4: Channel 4 receiving gain</p>

## 4.4.2 VRS-F(4)-11 KTU

The VRS-F(4)-11 KTU provides record/playback of voice messages for the Automated Attendant, Voice Prompt, and Delay Announcement features.

A maximum of two VRS-F(4)-11 KTUs can be installed in either system.

Each VRS-F(4)-11 KTU has four record/playback channels. The maximum recording time of each channel is 240 seconds. The recording time for each channel can be divided as follows:

- 15 sec. \* 16 messages = 240 sec.
- 30 sec. \* 8 messages = 240 sec.
- 60 sec. \* 4 messages = 240 sec.
- 120 sec. \* 2 messages = 240 sec.

Switch Settings/LED Indications

SW1, on both the Main and Expansion PCBs, controls battery power for memory backup. These must be turned ON for retention of VRS memory for this KTU if power fails.

**Note:** Do not separate the Main or Expansion PCBs.

LEDs 1 and 2 (on the Main PCB) represent channels 1 and 2. LEDs 1 and 2 (on the Expansion PCB) represent channels 3 and 4. These LEDs light red when in use (recording or playing messages). When the green LED 3 on the VRS-F(4)-11 KTU is on, the KTU is receiving power. Switch MB is the ON/OFF control for this KTU. Refer to Figure 3-96 - VRS-F(4)-11 KTU Switch Layout.

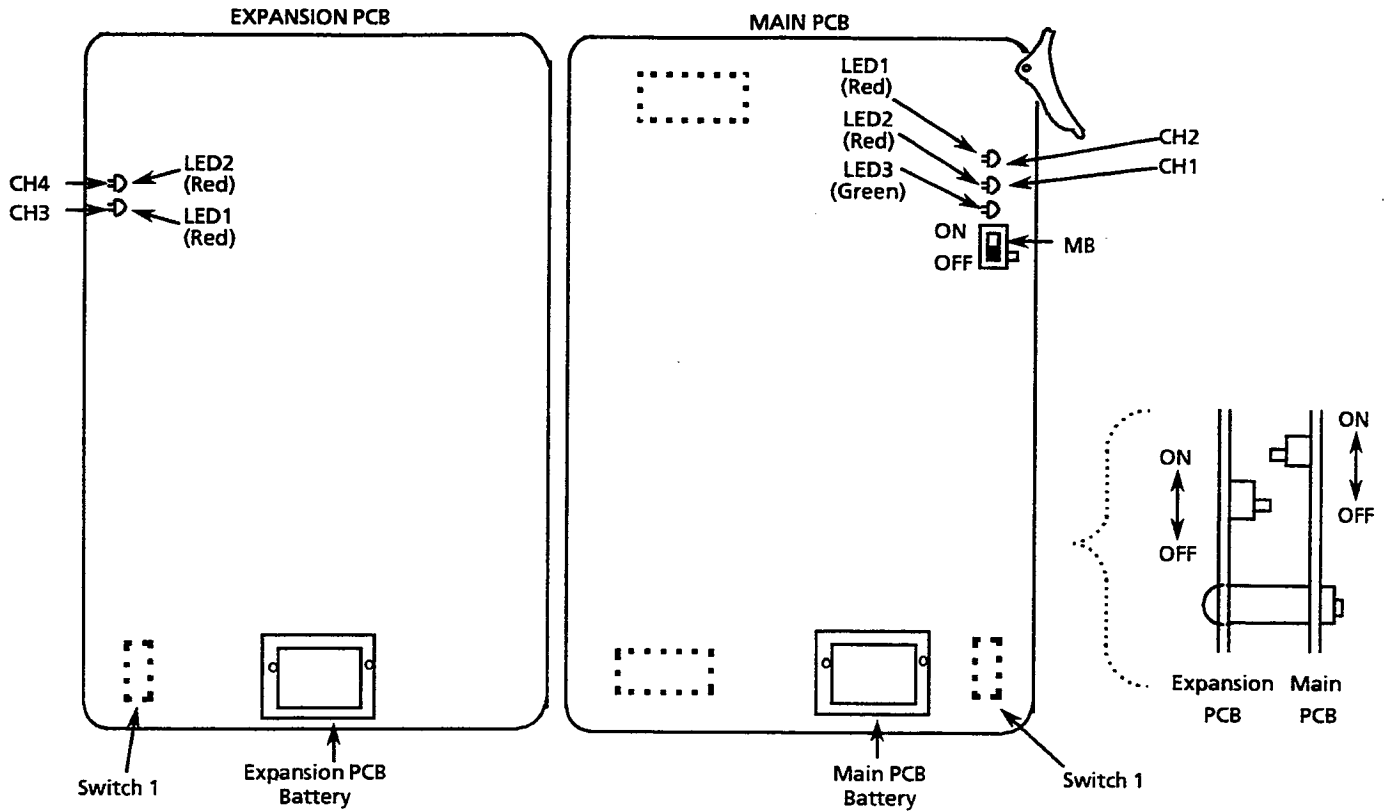


Figure 3-96 VRS-F(4)-11 KTU Switch Layout

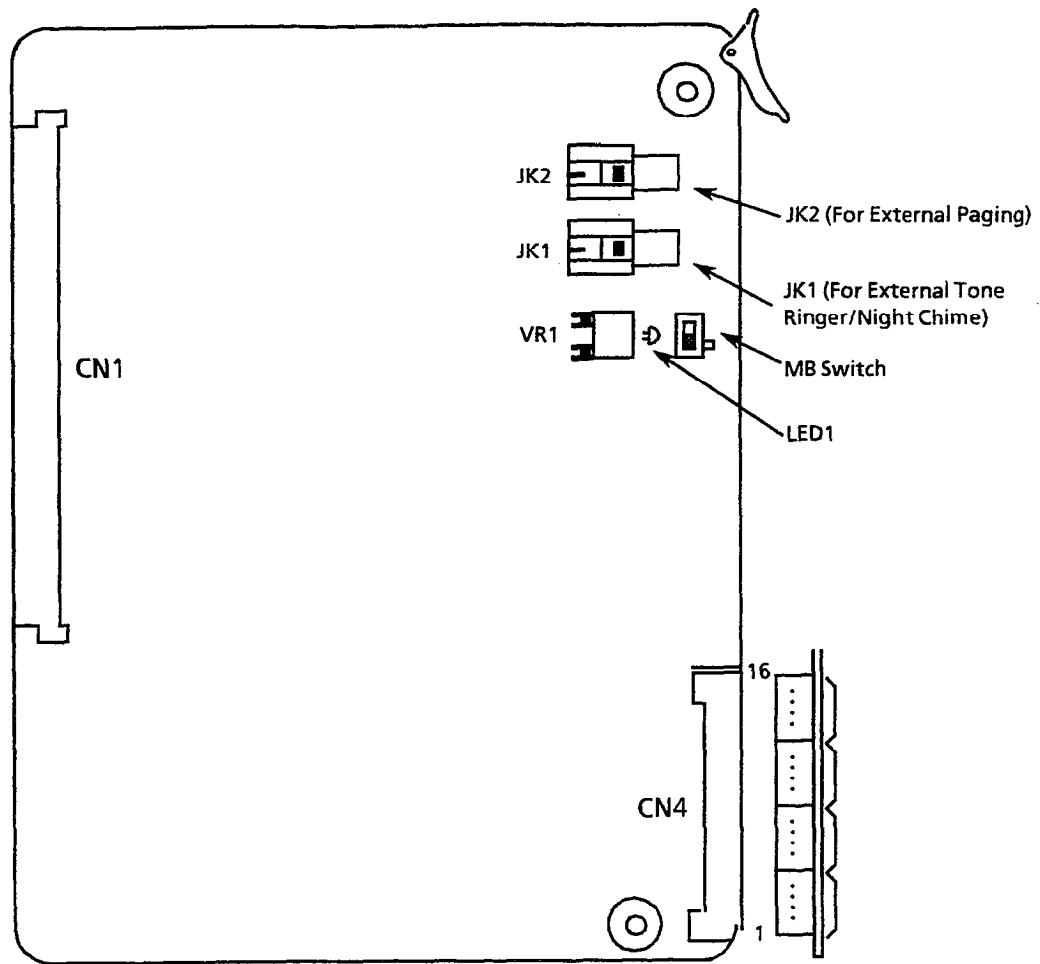
4.4.3 ECR-F-11 KTU

The ECR-F-11 KTU provides two RCA jacks and eight relay contacts. Three of the eight relays are used for External Paging contact, one is used for Night Chime contact, and the other four are used for External Tone Ringer. One of the two RCA jacks is used for External Tone Ringer/Night Chime audible output. The other RCA jack is used for External Paging audible input/output. Refer to Figure 3-97 - ECR-F-11 KTU Switch Layout and Table 3-23 - ECR-F-11 KTU Connectors/Adjustments.

Only one ECR-F-11 KTU can be installed in either system.

Switch Setting/LED Indications

When the green LED1 on the ECR-F-11 KTU is on, the KTU is receiving power. Switch MB is the ON/OFF control for this KTU. Refer to Figure 3-97 - ECR-F-11 KTU Switch Layout and Table 3-24 - ECR-F-11 KTU Optional Device Connection Terminals.



For Maximum Volume of External Ringer Output:  
Turn VR1 Counterclockwise

Figure 3-97 ECR-F-11 KTU Switch Layout



Table 3-23 ECR-F-11 KTU Connectors/Adjustments

Adjustment Item	Name of Switch	Initial Setting	Adjustment
External Tone Ringer	JK1	N/A	To connect the External Speaker for External Tone Ringer/Night Chime
External Paging	JK2	N/A	To connect the External Speaker for External Paging
External Tone Ringer/Night Chime Volume Control	VR1	Center	To adjust the External Tone Output Level

Table 3-24 ECR-F-11 KTU Optional Device Connection Terminals

Pin No.	Terminal Name	Function
16	8 RM	External Tone - Ringer 4
15	8 RC	
14	7 RM	External Tone - Ringer 3
13	7 RC	
12	6 RM	External Tone - Ringer 2
11	6 RC	
10	5 RM	External Tone - Ringer 1
9	5 RC	
8	4 RM	Night Chime
7	4 RC	
6	3 RM	External Paging - Zone C
5	3 RC	
4	2 RM	External Paging - Zone B
3	2 RC	
2	1 RM	External Paging - Zone A
1	1 RC	

#### 4.4.4 MIF-F(S)-10 KTU

The MIF KTU allows the connection of a personal computer to perform System Programming and up/down loading of System Data and provides Station Message Detail Recording (SMDR) to be output using the RS-232 cable to a printer. Refer to Figure 3-102 - SMDR Print Formats. These two functions can be operated at the same time.

Only one MIF-F(S)-10 KTU can be installed in either system. Refer to the *Electra Professional Level II and Level II Advanced System Program Technician Manual* (included with the System Program Technician software) for programming instructions using a PC.

**Switch Settings/LED Indications**

When the green LED1 is on, the MIF-F(S)-10 KTU is receiving power. When the red LED2 flashes, the MIF is exchanging data communications with the system CPU. When the red LED3 is on, the SMDR function is outputting a call record. Refer to Figure 3-98 - MIF-F(S)-10 KTU Switch Layout. Switch MB is the ON/OFF control for the KTU. Also refer to Table 3-25 - MIF-F(S)-10 KTU Switch (SW3) Settings for PC and MNP Modem Connections, Table 3-26 - MIF-F(S)-10 KTU Switch (SW4) Settings for Printers, Table 3-27 - MIF-F(S)-10 KTU - DTE PC or Printer Connections, and Table 3-28 - MIF-F(S)-10 KTU - DCE MNP Modem Connections.

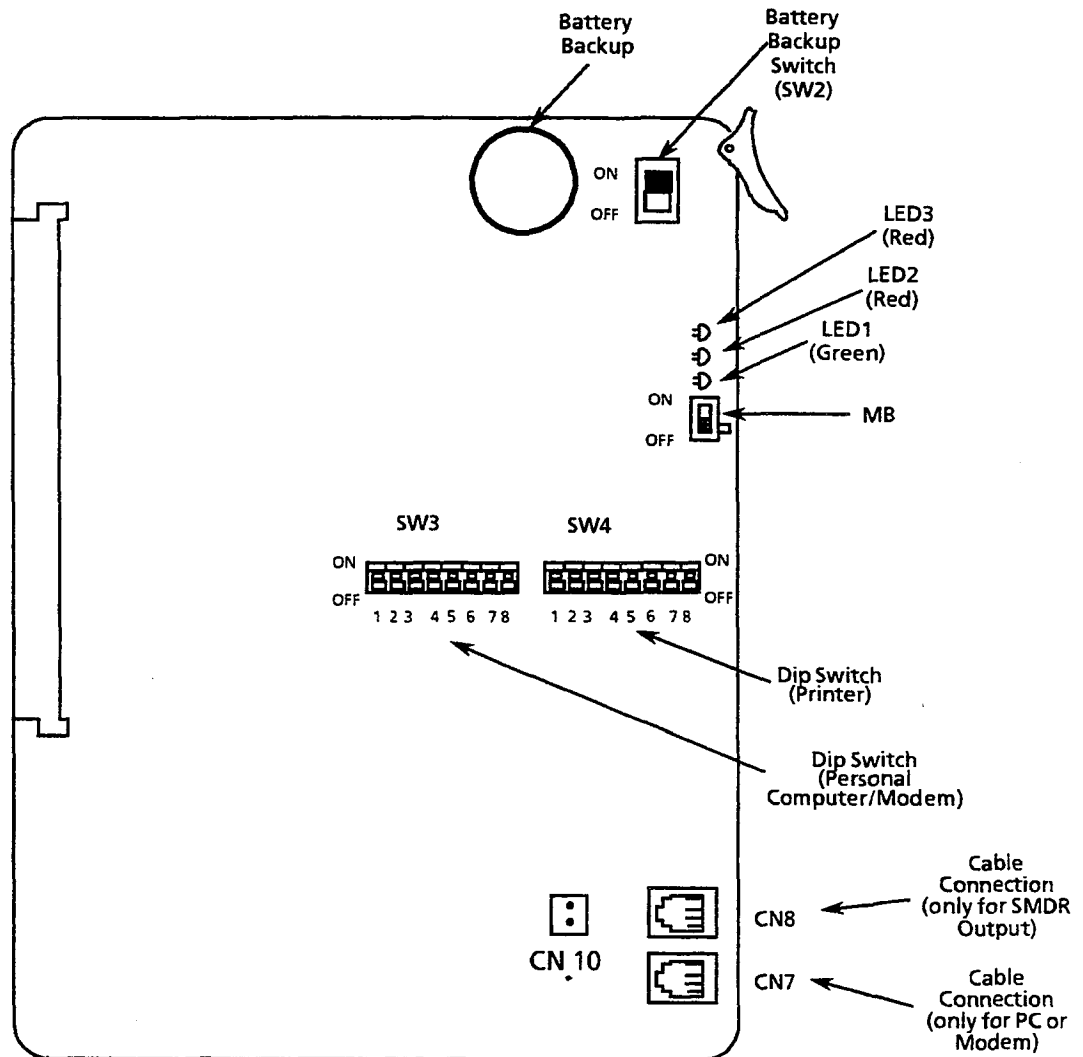


Figure 3-98 MIF-F(S)-10 KTU Switch Layout

Table 3-25 MIF-F(S)-10 KTU Switch (SW3) Settings for PC and MNP Modem Connections

Switch Position (SW3)	ON/OFF Setting	Description																				
1	OFF: 0 ON: 1	Connection to CN7 0: PC Direct 1: MNP Modem Connected																				
2	OFF: 0 ON: 1	Not Used																				
3	OFF: 0 ON: 1	Not Used																				
4	OFF: 0 ON: 1	Not Used																				
5	OFF: 0 ON: 1	Parity and Stop Bits: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>SW3 - 5</th> <th>SW3 - 6</th> <th>Parity</th> <th>Stop Bits</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td>2</td> </tr> <tr> <td>1</td> <td>0</td> <td>None</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>Even</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>Odd</td> <td>1</td> </tr> </tbody> </table>	SW3 - 5	SW3 - 6	Parity	Stop Bits	0	0	None	2	1	0	None	1	0	1	Even	1	1	1	Odd	1
SW3 - 5	SW3 - 6		Parity	Stop Bits																		
0	0		None	2																		
1	0		None	1																		
0	1	Even	1																			
1	1	Odd	1																			
6	OFF: 0 ON: 1																					
7	OFF: 0 ON: 1	Baud Rates: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>SW3 - 7</th> <th>SW3 - 8</th> <th>RS-232C</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>9600 bps</td> </tr> <tr> <td>1</td> <td>0</td> <td>4800 bps</td> </tr> <tr> <td>0</td> <td>1</td> <td>2400 bps</td> </tr> <tr> <td>1</td> <td>1</td> <td>1200 bps</td> </tr> </tbody> </table>	SW3 - 7	SW3 - 8	RS-232C	0	0	9600 bps	1	0	4800 bps	0	1	2400 bps	1	1	1200 bps					
SW3 - 7	SW3 - 8		RS-232C																			
0	0		9600 bps																			
1	0		4800 bps																			
0	1	2400 bps																				
1	1	1200 bps																				
8	OFF: 0 ON: 1																					

Table 3-26 MIF-F(S)-10 KTU Switch (SW4) Settings for Printers

Switch Position (SW4)	ON/OFF Setting	Description																				
1	OFF: 0 ON: 1	Mode Setting: 0: Operation Mode 1: Test Mode: Note: Operation of MIF stops when set to the Test Mode.																				
2	OFF: 0 ON: 1	Not Used																				
3	OFF: 0 ON: 1	Not Used																				
4	OFF: 0 ON: 1	Data Bits (RS-232C for Printer) 0: 8-bit 1: 7-bit																				
5	OFF: 0 ON: 1	Parity and Stop Bits: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>SW4 - 5</th> <th>SW4 - 6</th> <th>Parity</th> <th>Stop Bits</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td>2</td> </tr> <tr> <td>1</td> <td>0</td> <td>None</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>Even</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>Odd</td> <td>1</td> </tr> </tbody> </table>	SW4 - 5	SW4 - 6	Parity	Stop Bits	0	0	None	2	1	0	None	1	0	1	Even	1	1	1	Odd	1
SW4 - 5	SW4 - 6		Parity	Stop Bits																		
0	0	None	2																			
1	0	None	1																			
0	1	Even	1																			
1	1	Odd	1																			
6	OFF: 0 ON: 1																					
7	OFF: 0 ON: 1	Baud Rates: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>SW4 - 7</th> <th>SW4 - 8</th> <th>RS-232C</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>4800 bps</td> </tr> <tr> <td>1</td> <td>0</td> <td>2400 bps</td> </tr> <tr> <td>0</td> <td>1</td> <td>1200 bps</td> </tr> <tr> <td>1</td> <td>1</td> <td>300 bps</td> </tr> </tbody> </table>	SW4 - 7	SW4 - 8	RS-232C	0	0	4800 bps	1	0	2400 bps	0	1	1200 bps	1	1	300 bps					
SW4 - 7	SW4 - 8		RS-232C																			
0	0	4800 bps																				
1	0	2400 bps																				
0	1	1200 bps																				
1	1	300 bps																				
8	OFF: 0 ON: 1																					

Table 3-27 MIF-F(S)-10 KTU - DTE PC or Printer Connections

MIF (CN7 & CN8)	→	MIF Cable Assembly	Straight RS-232 Cable	PC or Printer
FG(FG) 1	-----	1 (FG)FG 1	-----	1 (FG)FG
RXD(RD) 5	←	2 (SD)TXD 2	---<---	2 (SD)TXD
TXD(SD) 4	→	3 (RD)RXD 3	--->---	3 (RD)RXD
CTS(CS) 6	←	4 (RS)RTS 4	---<---	4 (RS)RTS
RTS(RS) 3	→	5 (CS)CTS 5	--->---	5 (CS)CTS
DTR(ER) 7	→	6 (DR)DSR 6	--->---	6 (DR)DSR
SG(SG) 8	-----	7 (SG)SG 7	-----	7 (SG)SG
DSR(DR) 2	←	20 (ER)DTR 20	---<---	20 (ER)DTR
DCD(CN10)	←	8 (CD)DCD 8	---<---	8 (CD)DCD

Note: The arrow shows the direction of data flow during operation.

Table 3-28 MIF-F(S)-10 KTU - DCE MNP Modem Connections

MIF (CN7)	→	MIF Cable Assembly	Reverse RS-232 Cable	MNP Modem
FG(FG) 1	-----	1 (FG)FG 1	-----	1 (FG)FG
RXD(RD) 5	←	2 (SD)TXD 2	---<---	3 (RD)RXD
TXD(SD) 4	→	3 (RD)RXD 3	--->---	2 (SD)TXD
CTS(CS) 6	←	4 (RS)RTS 4	---<---	5 (CS)CTS
RTS(RS) 3	→	5 (CS)CTS 5	--->---	4 (RS)RTS
DTR(ER) 7	→	6 (DR)DSR 6	--->---	20 (ER)DTR
SG(SG) 8	-----	7 (SG)SG 7	-----	7 (SG)SG
DCD(CN10)	←	8 (CD)DCD 8	---<---	8 (CD)DCD
DSR(DR) 2	←	20 (ER)DTR 20	---<---	6 (DR)DSR

Note: The arrow shows the direction of data flow during operation.

### Installation

The MIF-F(S)-10 KTU can be installed in an Option Slot (OP) or in one of the four Interface/Option Slots (IF1/OP1 ~ IF4/OP4), in the ESF-SB-10 KSU, ESF-XB-10 KSU, or the first ESF-XE-10 KSU installed. This KTU is shipped with two cable assemblies (MIF cable assembly). One end of each cable has an RJ35 (8-pin) connector. The other end of the cable terminates at an RS-232 connector. This connector must be mounted on one of the above mentioned KSUs.

After installing the KTU, connect the RJ35 pin connectors to CN8 or CN7 in the MIF-F(S)-10 KTU. When connecting a PC, connect the small connector on the MIF Cable Assembly to CN10 on the MIF-F(S)-10 KTU, then remove the RS-232 connection bracket from the KSU and attach the RS-232, on the MIF Cable Assembly, to the RS-232 connection bracket using the screws on the RS-232 connectors. This same connection procedure must also be performed on the ESF-XB-10 KSU or ESF-XE-10 KSUs. Refer to Figure 3-99 - Connecting the MIF Cable Assembly and the MIF-F(S)-10 KTU to the ESF-SB-10 KSU and Figure 3-100 - Connecting the MIF Cable Assembly and the MIF-F(S)-10 KTU to the ESF-XB-10 KSU.

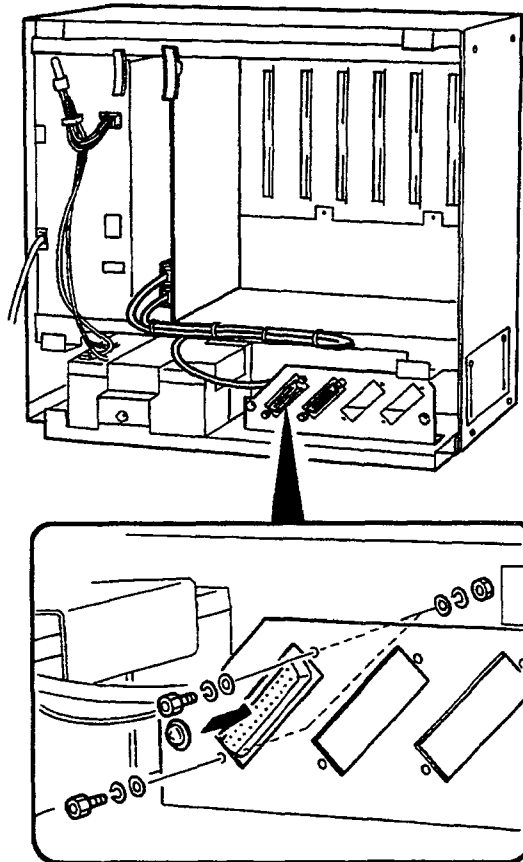


Figure 3-99 Connecting the MIF Cable Assembly and the MIF-F(S)-10 KTU to the ESF-SB-10 KSU

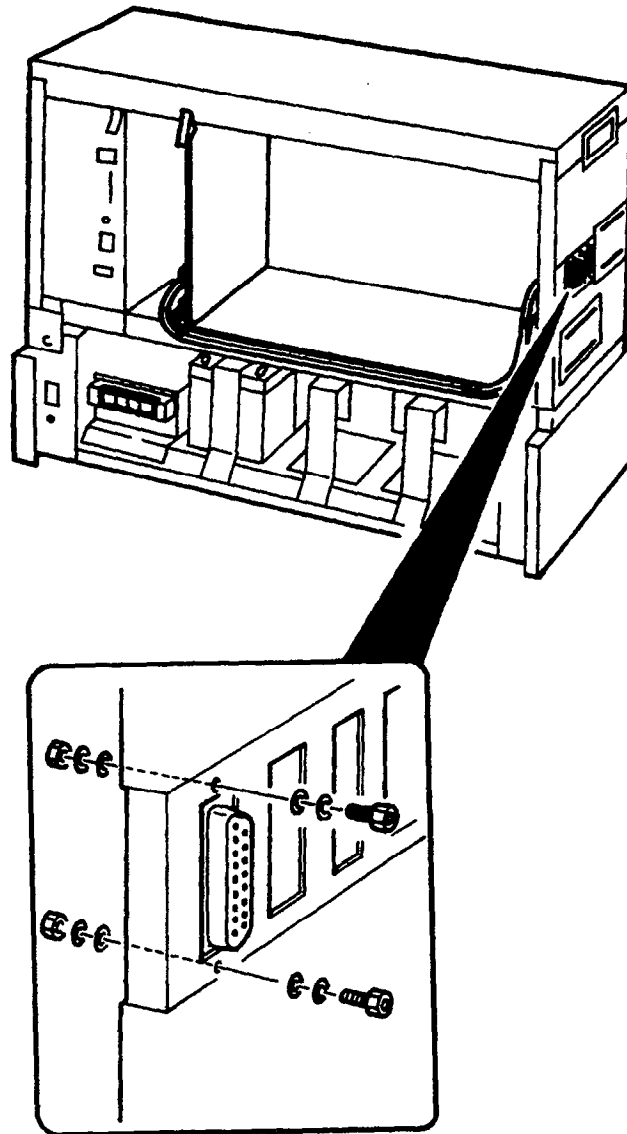


Figure 3-100 Connecting the MIF Cable Assembly and the MIF-F(S)-10 KTU to the ESF-XB-10 KSU

### Printer Connection for SMDR

#### Required Equipment:

1. MIF-F(S)-10 KTU with the NEC provided MDF Cable Assembly
2. RS-232 Straight Cable
3. Standard Printer

#### To install:

1. Set SW4 DIP switch to adjust for the printer on the MIF-F(S)-10 KTU.
2. Install the MIF-F(S)-10 KTU in the KSU.
3. Connect the MIF Cable Assembly to CN8 on the MIF-F(S)-10 KTU and the Basic KSU. Refer to Figure 3-99 - Connecting the MIF Cable Assembly and the MIF-F(S)-10 KTU to the ESF-SB-10 KSU.
4. Connect the standard printer using the straight RS-232 cable.
5. Place the MIF-F(S)-10 KTU MB switch ON.
6. Program Memory Blocks: System Mode (LK1) SMDR/LCR (LK5) No. 02, 13, 14, 25, and 26.

### PC or MNP Class 5 Modem Connection for Electra Professional Level II and Level II Advanced System Program Technician Software:

This section is a basic overview of System Programming using a PC. For specific information, refer to the *Electra Professional 120/Level II/Level II Advanced System Program Technician Manual* (included with the Electra Professional System Program Technician software). Also, refer to Figure 3-101 - MIF-F( ) -10 KTU Direct and Remote Connections, Figure 3-102 - SMDR Print Formats, and Figure 3-103 - SMDR Print Formats Item Numbers.

#### Required Equipment:

1. MIF-F(S)-10 KTU with NEC provided MIF Cable Assembly
2. RS-232 straight cable (for direct connection) or reverse cable (for remote connection)
3. IBM® or IBM compatible PC with 286 or higher and MS-DOS® Version 3.3 or higher<sup>1</sup>
4. NEC Electra Professional System Program Technician Software
5. Standard dot matrix printer (if required for printing job specifications or station labels)
6. MNP Modem Class 5 or higher (required for remote connection)

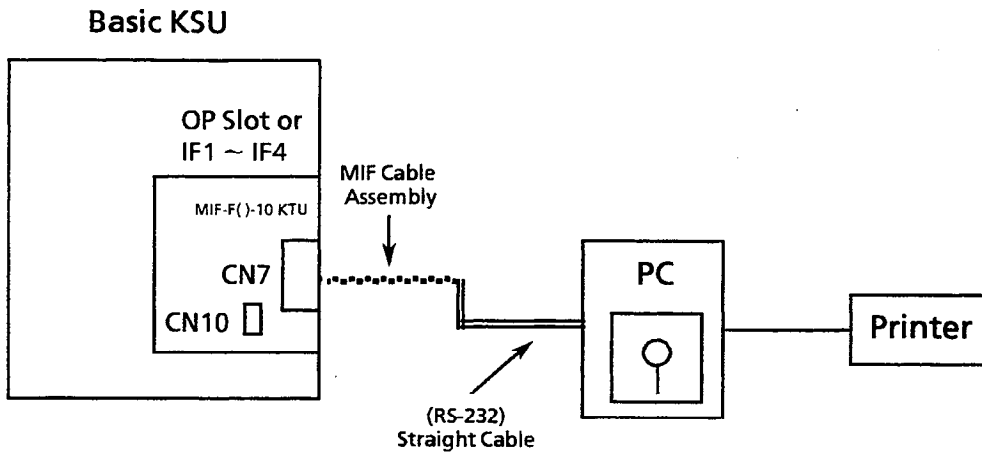
#### To install:

1. Set SW3 DIP switch to adjust for a PC or modem on the MIF-F(S)-10 KTU.
2. Install the MIF-F(S)-10 KTU in the KSU.
3. Connect the MIF Cable Assembly to CN7 and CN10 on the MIF-F(S)-10 KTU and the KSU. Refer to Figure 3-99 - Connecting the MIF Cable Assembly and the MIF-F(S)-10 KTU to the ESF-SB-10 KSU.
4. Connect the PC using a straight RS-232 cable or connect the MNP modem using a reverse RS-232 cable.
5. Turn the MB switch, on the MIF-F(S)-10 KTU, to ON.

<sup>1</sup> The following are registered trademarks of the following companies: IBM of International Business Machines. MS-DOS of Microsoft Corporation.



### Direct Connection: PC and System



### Remote Connection: MNP Modem Used

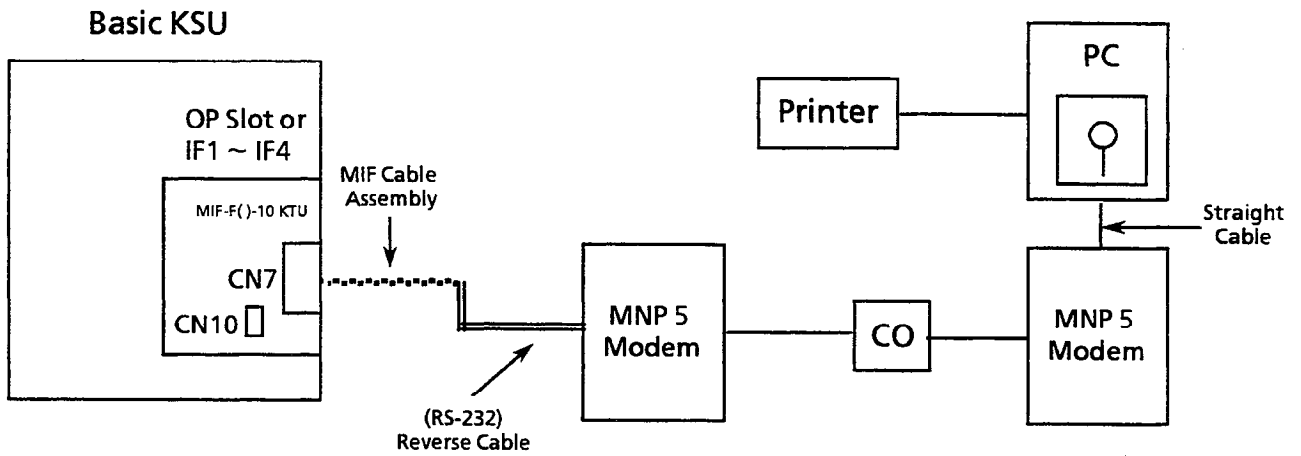


Figure 3-101 MIF-F( )-10 KTU Direct and Remote Connections

1. Outgoing Call

<u>07/03/92</u>	<u>09:00</u>	<u>08-05-12</u>	<u>OG</u>	<u>123</u>
A	B	C	D	E
<u>00:15:32</u>	<u>102885167537000</u>			
G	H			

2. Outgoing Call (LCR)

<u>07/03/92</u>	<u>09:00</u>	<u>08-05-12</u>	<u>OG</u>	<u>123</u>
A	B	C	D	E
<u>00:15:32</u>	<u>102885167537000</u>			
G	H			
				<u>LCR</u>
				K

3. Incoming Call

<u>07/03/92</u>	<u>09:00</u>	<u>05-12</u>	<u>IC</u>	<u>123</u>
A	B	C	D	E
<u>00:15:32</u>	<u>9727517622</u>			
G	H			

4. DISA (Both incoming and outgoing are printed)

<u>07/03/92</u>	<u>09:00</u>	<u>05-12</u>	<u>IC</u>	<u>999</u>	<u>234</u>
A	B	C	D	E	F
<u>00:15:32</u>					
G					
		<u>D100</u>			
		J			
<u>07/03/92</u>	<u>09:00</u>	<u>08-05-12</u>	<u>OG</u>	<u>999</u>	
A	B	C	D	E	
<u>00:15:32</u>	<u>102885167537000</u>				
G	H				
<u>1234567890</u>	<u>D100</u>				
I	J				

Note 1: Example number 4, above, is the SMDR output format when the incoming caller hangs up first. If the called party hangs up first, the SMDR output information is reversed.

Note 2: A ~ K are the printout item numbers. The temporary station number is 999. Refer to Figure 1-103 - SMDR Print Formats Item Numbers.

Figure 3-102 SMDR Print Formats

The following provides an explanation of each item that appears on the SMDR printout.

- A. Start Date: 07/03/92**  
07 = month  
03 = day  
92 = year
- B. Start Time: 09:00**  
09 = hour  
03 = minute
- C. Trunk Information: 08-05-12**  
08 = Route Advance Block  
05 = Trunk Group  
12 = Trunk Number
- D. Type of Call:**  
IC = Incoming Call  
OG = Outgoing Call  
ICC = Conference on Incoming Call  
OGC = Conference on Outgoing Call  
IT = Transferred Incoming Call  
OT = Transferred Outgoing Call  
ITC = Conference on Transferred Incoming Call  
OTC = Conference on Transferred Outgoing Call
- E. Station Number: 123**  
This number depends on whether the system is set as 2-, 3-, or 4-digit station number in System Programming.
- F. Transferred Station Number: 234**  
This number depends on whether the system is set as 2-, 3-, or 4-digit station number in System Programming.
- G. Call Duration: 00:15:32**  
00 = hour  
15 = minute  
32 = seconds
- H. Number Dialed: 102885167537000**  
Maximum number of characters is 24.  
Caller ID Number: 9727517622
- I. Account Code Entry: 1234567890**  
Maximum number of characters is 16.  
**Forced Account Code: A1234567890**  
If Account Code *and* Forced Account Code are entered, SMDR Prints: 1234567890 A1234567890  
Maximum number of characters is 13.
- J. Station Number of the DISA Caller**  
Maximum number of characters is 4.
- K. LCR (Least Cost Routing)**

Figure 3-103 SMDR Print Formats Item Numbers

## 4.4.5 MIF-F(L)-10 KTU

The MIF-F(L)-10 KTU allows the connection of a personal computer to perform System Programming and up/down loading of System Data, provides Station Message Detail Recording (SMDR) to be output via the RS-232 cable to a serial printer, provides Least Cost Routing (LCR), and supports scroll and dial out using Caller ID.

Only one MIF-F(L)-10 KTU can be installed in either system. Refer to the *Electra Professional 120/Level II/Level II Advanced Least Cost Routing Manual* (included with the Electra Professional Level II and Level II Advanced Least Cost Routing software) for LCR instructions. Refer to the *Electra Professional 120/Level II/Level II Advanced System Program Technician Manual* (included with the Electra Professional System Program Technician software) for programming instructions using a PC.

Switch Settings/LED Indications

When the green LED1 is on, the MIF-F(L)-10 KTU is receiving power. When the red LED2 is flashing, the MIF is exchanging data communications with the system CPU. When the red LED3 is on, the SMDR function is outputting a call record. Refer to Figure 3-104 - MIF-F(L)-10 KTU Switch Layout. Switch MB is the ON/OFF control for this KTU. Also refer to Table 3-29 - MIF-F(L)-10 KTU Switch (SW3) Settings for PC and MNP Modem Connections, Table 3-30 - MIF-F(L)-10 KTU Switch (SW4) Settings for Printers, Table 3-31 - MIF-F(L)-10 KTU - DTE PC or Printer Connections, Table 3-32 - MIF-F(L)-10 KTU - DCE MNP Modem Connections.

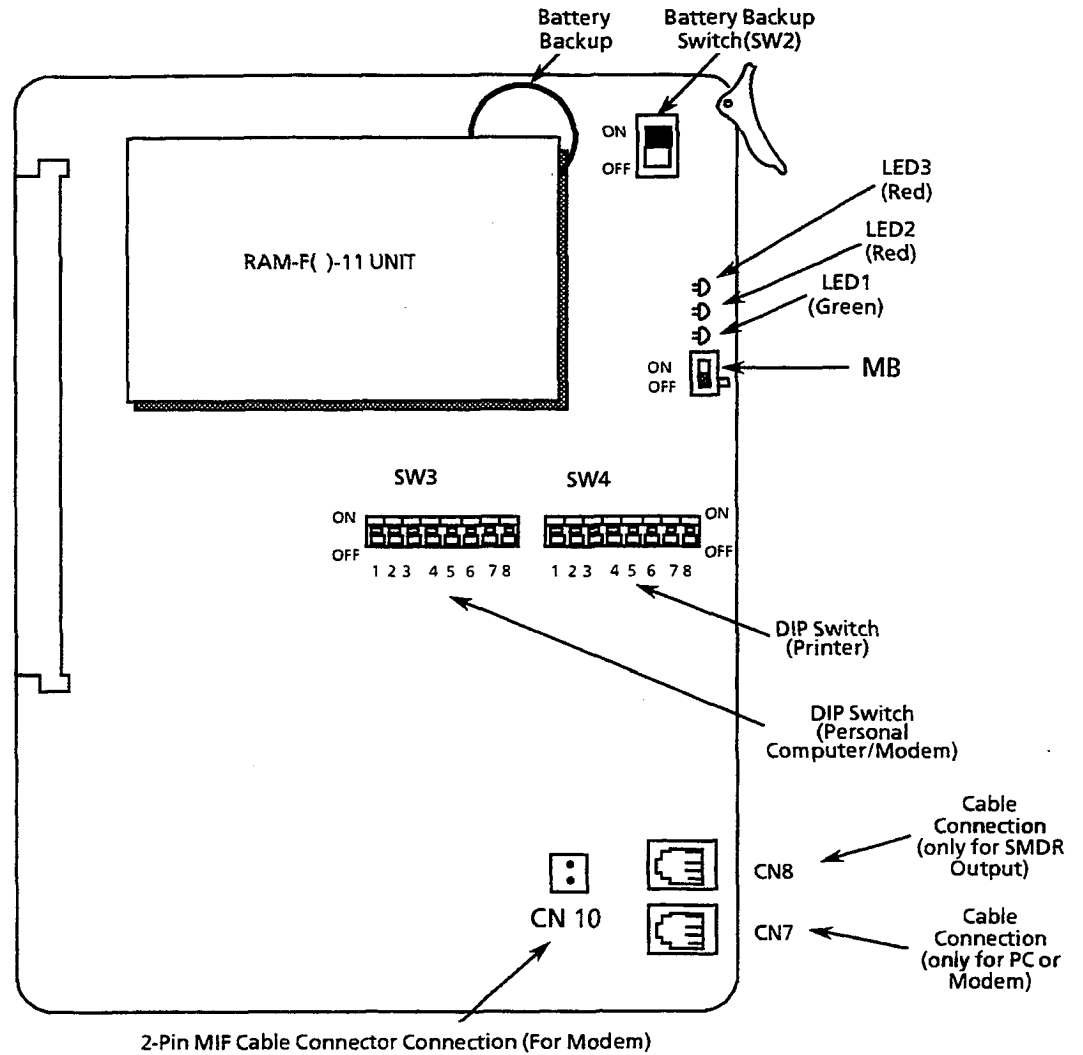


Figure 3-104 MIF-F(L)-10 KTU Switch Layout

Table 3-29 MIF-F(L)-10 KTU Switch (SW3) Settings for PC and MNP Modem Connections

Switch Position (SW3)	ON/OFF Setting	Description																				
1	OFF: 0 ON: 1	Connection to CN7 0: PC Direct 1: MNP Modem Connected																				
2	OFF: 0 ON: 1	Not Used																				
3	OFF: 0 ON: 1	Not Used																				
4	OFF: 0 ON: 1	Not Used																				
5	OFF: 0 ON: 1	Parity and Stop Bits: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>SW3 - 5</th> <th>SW3 - 6</th> <th>Parity</th> <th>Stop Bits</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td>2</td> </tr> <tr> <td>1</td> <td>0</td> <td>None</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>Even</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>Odd</td> <td>1</td> </tr> </tbody> </table>	SW3 - 5	SW3 - 6	Parity	Stop Bits	0	0	None	2	1	0	None	1	0	1	Even	1	1	1	Odd	1
SW3 - 5	SW3 - 6		Parity	Stop Bits																		
0	0	None	2																			
1	0	None	1																			
0	1	Even	1																			
1	1	Odd	1																			
6	OFF: 0 ON: 1																					
7	OFF: 0 ON: 1	Baud Rates: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>SW3 - 7</th> <th>SW3 - 8</th> <th>RS-232C</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>9600 bps</td> </tr> <tr> <td>1</td> <td>0</td> <td>4800 bps</td> </tr> <tr> <td>0</td> <td>1</td> <td>2400 bps</td> </tr> <tr> <td>1</td> <td>1</td> <td>1200 bps</td> </tr> </tbody> </table>	SW3 - 7	SW3 - 8	RS-232C	0	0	9600 bps	1	0	4800 bps	0	1	2400 bps	1	1	1200 bps					
SW3 - 7	SW3 - 8		RS-232C																			
0	0	9600 bps																				
1	0	4800 bps																				
0	1	2400 bps																				
1	1	1200 bps																				
8	OFF: 0 ON: 1																					

Table 3-30 MIF-F(L)-10 KTU Switch (SW4) Settings for Printers

Switch Position (SW4)	ON/OFF Setting	Description																				
1	OFF: 0 ON: 1	Mode Setting: 0: Operation Mode 1: Test Mode: <b>Note:</b> Operation of MIF stops when set to the test mode.																				
2	OFF: 0 ON: 1	Not Used																				
3	OFF: 0 ON: 1	Not Used																				
4	OFF: 0 ON: 1	Data Bits (RS-232C for Printer) 0: 8-bit 1: 7-bit																				
5	OFF: 0 ON: 1	Parity and Stop Bits: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>SW4 - 5</th> <th>SW4 - 6</th> <th>Parity</th> <th>Stop Bits</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td>2</td> </tr> <tr> <td>1</td> <td>0</td> <td>None</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>Even</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>Odd</td> <td>1</td> </tr> </tbody> </table>	SW4 - 5	SW4 - 6	Parity	Stop Bits	0	0	None	2	1	0	None	1	0	1	Even	1	1	1	Odd	1
SW4 - 5	SW4 - 6		Parity	Stop Bits																		
0	0	None	2																			
1	0	None	1																			
0	1	Even	1																			
1	1	Odd	1																			
6	OFF: 0 ON: 1																					
7	OFF: 0 ON: 1	Baud Rates: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>SW4 - 7</th> <th>SW4 - 8</th> <th>RS-232C</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>4800 bps</td> </tr> <tr> <td>1</td> <td>0</td> <td>2400 bps</td> </tr> <tr> <td>0</td> <td>1</td> <td>1200 bps</td> </tr> <tr> <td>1</td> <td>1</td> <td>300 bps</td> </tr> </tbody> </table>	SW4 - 7	SW4 - 8	RS-232C	0	0	4800 bps	1	0	2400 bps	0	1	1200 bps	1	1	300 bps					
SW4 - 7	SW4 - 8		RS-232C																			
0	0	4800 bps																				
1	0	2400 bps																				
0	1	1200 bps																				
1	1	300 bps																				
8	OFF: 0 ON: 1																					

Table 3-31 MIF-F(L)-10 KTU - DTE PC or Printer Connections

MIF (CN7 & CN8)	→	MIF Cable Assembly	Straight RS-232 Cable	PC or Printer
FG(FG) 1	-----	1 (FG)FG 1	-----	1 (FG)FG
RXD(RD) 5	←	2 (SD)TXD 2	---<---	2 (SD)TXD
TXD(SD) 4	→	3 (RD)RXD 3	--->---	3 (RD)RXD
CTS(CS) 6	←	4 (RS)RTS 4	---<---	4 (RS)RTS
RTS(RS) 3	→	5 (CS)CTS 5	--->---	5 (CS)CTS
DTR(ER) 7	→	6 (DR)DSR 6	--->---	6 (DR)DSR
SG(SG) 8	-----	7 (SG)SG 7	-----	7 (SG)SG
DSR(DR) 2	←	20 (ER)DTR 20	---<---	20 (ER)DTR
DCD(CN10)	←	8 (CD)DCD 8	---<---	8 (CD)DCD

**Note:** The arrow shows the direction of data flow during operation.

Table 3-32 MIF-F(L)-10 KTU - DCE MNP Modem Connections

MIF (CN7)	→	MIF Cable Assembly	Reverse RS-232 Cable	MNP Modem
FG (FG) 1	-----	1 (FG)FG 1	-----	1 (FG)FG
RXD(RD) 5	←	2 (SD)TXD 2	---<---	3 (RD)RXD
TXD(SD) 4	→	3 (RD)RXD 3	--->---	2 (SD)TXD
CTS(CS) 6	←	4 (RS)RTS 4	---<---	5 (CS)CTS
RTS(RS) 3	→	5 (CS)CTS 5	--->---	4 (RS)RTS
DTR(ER) 7	→	6 (DR)DSR 6	--->---	20 (ER)DTR
SG(SG) 8	-----	7 (SG)SG 7	-----	7 (SG)SG
DCD(CN10)	←	8 (CD)DCD 8	---<---	8 (CD)DCD
DSR(DR) 2	←	20 (ER)DTR 20	---<---	6 (DR)DSR

**Note:** The arrow shows the direction of data flow during operation.



### Installation

The MIF-F(L)-10 KTU can be installed in an Option Slot (OP) or in one of the four Interface/Option Slots (IF1/OP1 ~ IF4/OP4), in the ESF-SB-10 KSU, ESF-XB-10 KSU, or the first ESF-XE-10 KSU installed. This KTU is shipped with two cable assemblies (MIF cable assembly). One end of each cable has an RJ35 (8-pin) connector. The other end of the cable terminates at an RS-232 connector. This connector must be mounted in the KSU. This same connection procedure must be performed on the ESF-XB-10 KSU or ESF-XE-10 KSUs. Refer to Figure 3-105 - Connecting the MIF Cable Assembly and the MIF-F(L)-10 KTU to the ESF-SB-10 KSU and Figure 3-106 - Connecting the MIF Cable Assembly and the MIF-F(L)-10 KTU to the ESF-XB-10 KSU.

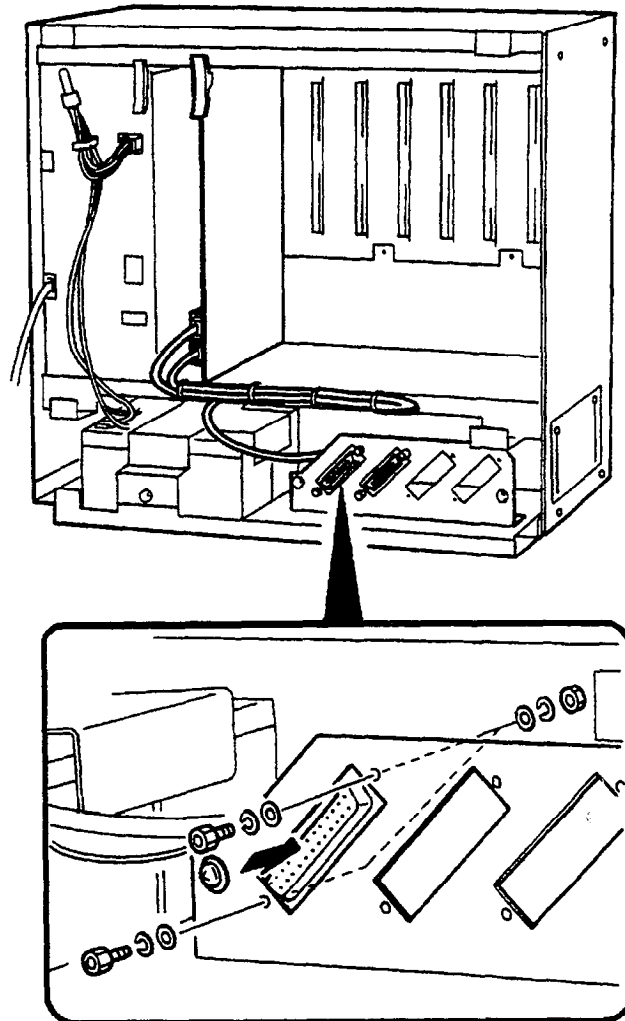


Figure 3-105 Connecting the MIF Cable Assembly and the MIF-F(L)-10 KTU to the ESF-SB-10 KSU

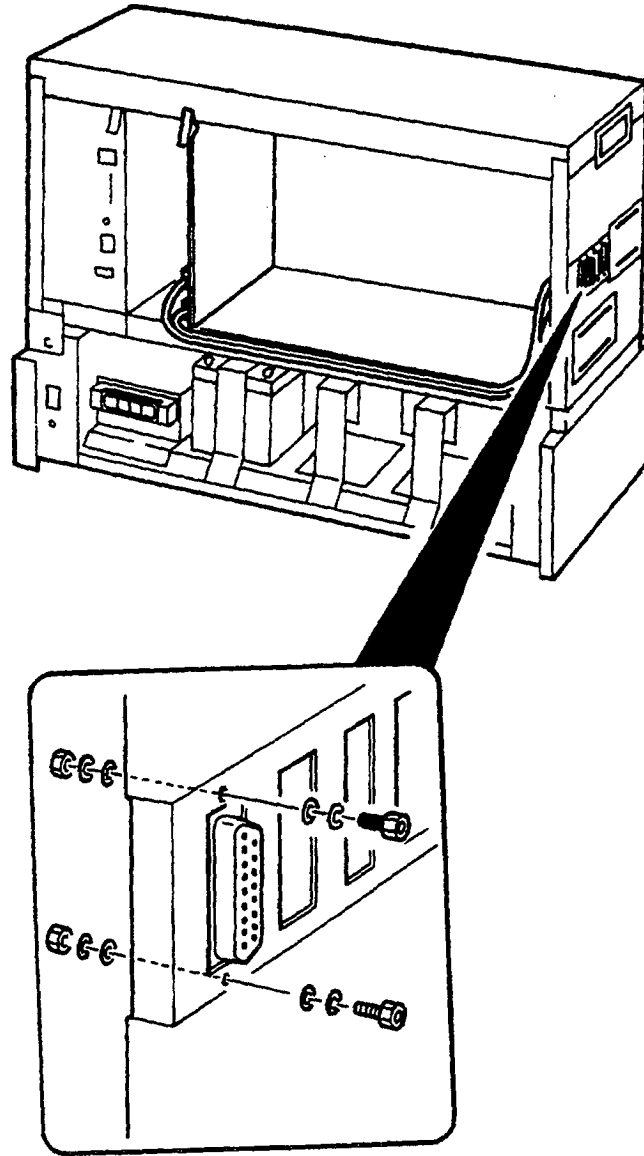


Figure 3-106 Connecting the MIF Cable Assembly and the MIF-F(L)-10 KTU to the ESF-XB-10 KSU

### Printer Connection for SMDR

#### Required Equipment:

1. MIF-F(L)-10 KTU with the NEC provided MDF Cable Assembly
2. RS-232 Straight Cable
3. Standard Printer

#### To install:

1. Set SW4 DIP switch on the MIF-F(L)-10 KTU to adjust for the printer.
2. Install the MIF-F(L)-10 KTU in the KSU.
3. Connect the MIF Cable Assembly to CN8 on the MIF-F(L)-10 KTU and the KSU. Refer to Figure 3-104 - Connecting the MIF Cable Assembly and the MIF-F(L)-10 KTU to the ESF-SB-10 KSU.
4. Connect the standard printer using the straight RS-232 cable.
5. Place the MIF-F(L)-10 KTU MB switch ON.
6. Program Memory Blocks: System Mode (LK1) SMDR/LCR (LK5) No. 02, 13, 14, 25, and 26.

### PC or MNP Class 5 Modem Connection for Electra Professional System Program Technician Software:

This section is a basic overview of System Programming using a PC. For specific information, refer to the *Electra Professional 120/Level II/Level II Advanced System Program Technician Manual* (included with the Electra Professional System Program Technician software).

#### Required Equipment:

1. MIF-F(L)-10 KTU with NEC provided MIF Cable Assembly
2. RS-232 straight cable (for direct connection) or reverse cable (for remote connection)
3. IBM or IBM-compatible PC with 286 or higher and MS-DOS Version 3.3 or higher
4. NEC Electra Professional System Program Technician Software.
5. Standard dot matrix printer (if required for printing job specifications or station labels)
6. MNP Modem Class 5 (required for remote connection)

#### To install:

1. Set the MIF-F(L)-10 KTU SW3 DIP switch to adjust for a PC or modem.
2. Install the MIF-F(L)-10 KTU in the KSU.
3. Connect the MIF Cable Assembly to CN7 and CN10 on the MIF-F(L)-10 KTU and the KSU. Refer to Figure 3-105 - Connecting the MIF Cable Assembly and the MIF-F(L)-10 KTU to the ESF-SB-10 KSU.
4. Connect the PC using a straight RS-232 cable or connect the MNP modem using a reverse RS-232 cable.
5. Place the MIF-F(L)-10 KTU MB switch ON.

4.4.6 MIF-F(A)-10 KTU

The MIF-F(A)-10 KTU allows an interface to an MIS (ACD) terminal.

Only one MIF-F(A)-10 KTU can be installed in either system. Refer to the *Electra Professional 120/Level II/Level II Advanced Automatic Call Distribution Manual* for detailed instructions for the MIF-F(A)-10 KTU.

Switch Settings/LED Indications

When the green LED1 is on, the MIF-F(A)-10 KTU is receiving power. When the red LED2 is on, the MIF is exchanging data communications with the system CPU. Refer to Figure 3-107 - MIF-F(A)-10 KTU Switch Layout, Table 3-33 - MIF-F(A)-10 KTU Switch (SW3) Settings for PC Connection, and Table 3-34 - MIF-F(A)-10 KTU - DTE PC Connections. Switch MB is the ON/OFF control for this KTU.

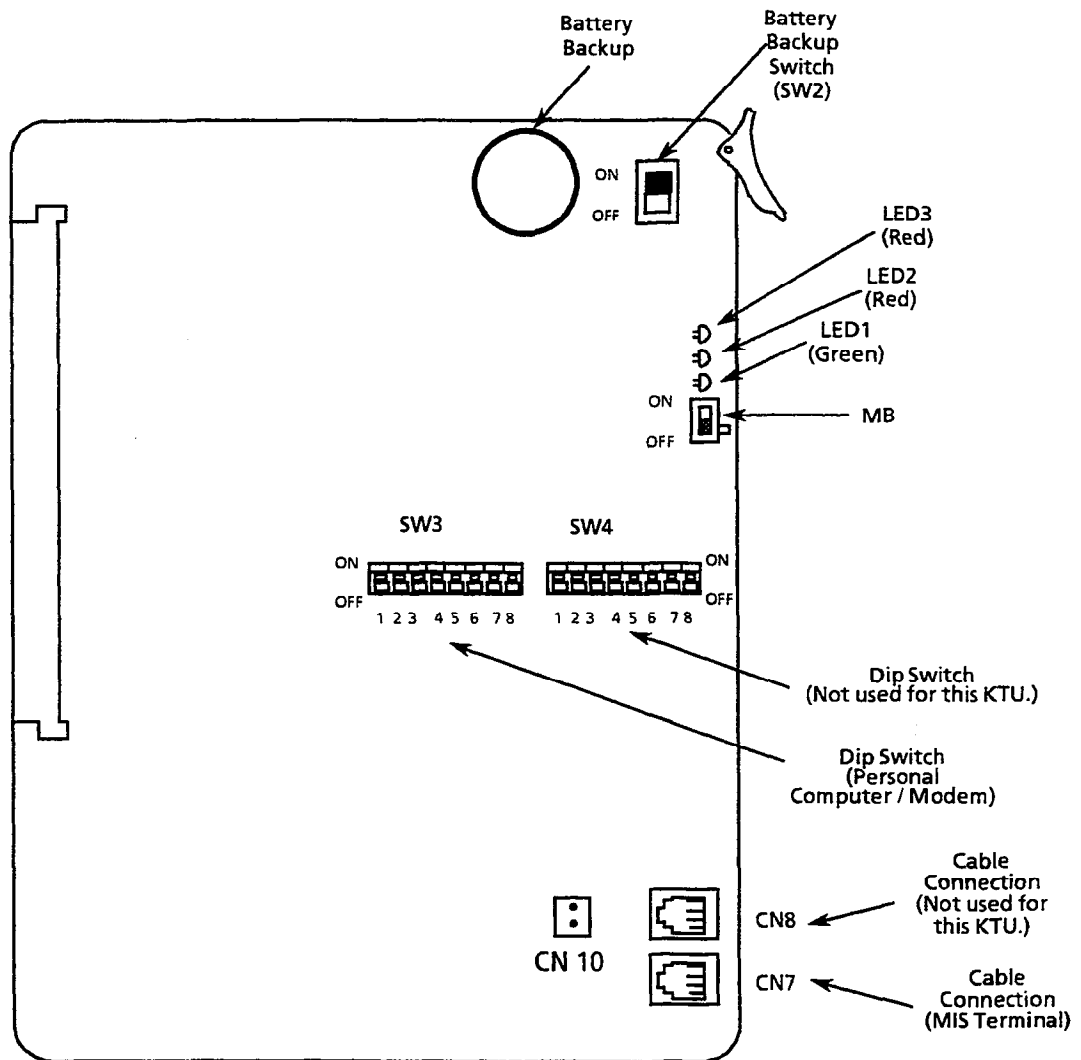


Figure 3-107 MIF-F(A)-10 KTU Switch Layout

Table 3-33 MIF-F(A)-10 KTU Switch (SW3) Settings for PC Connection

Switch Position (SW3)	ON/OFF Setting	Description																				
1	OFF: 0 ON: 1	Not Used																				
2	OFF: 0 ON: 1	Forward - No Answer 0: Allow 1: Deny																				
3	OFF: 0 ON: 1	Not Used																				
4	OFF: 0 ON: 1	Not Used																				
5	OFF: 0 ON: 1	Parity and Stop Bits: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>SW3 - 5</th> <th>SW3 - 6</th> <th>Parity</th> <th>Stop Bits</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>None</td> <td>2</td> </tr> <tr> <td>1</td> <td>0</td> <td>None</td> <td>1</td> </tr> <tr> <td>0</td> <td>1</td> <td>Even</td> <td>1</td> </tr> <tr> <td>1</td> <td>1</td> <td>Odd</td> <td>1</td> </tr> </tbody> </table>	SW3 - 5	SW3 - 6	Parity	Stop Bits	0	0	None	2	1	0	None	1	0	1	Even	1	1	1	Odd	1
SW3 - 5	SW3 - 6		Parity	Stop Bits																		
0	0		None	2																		
1	0		None	1																		
0	1	Even	1																			
1	1	Odd	1																			
6	OFF: 0 ON: 1																					
7	OFF: 0 ON: 1	Baud Rates: <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>SW3 - 7</th> <th>SW3 - 8</th> <th>RS-232C</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>9600 bps</td> </tr> <tr> <td>1</td> <td>0</td> <td>4800 bps</td> </tr> <tr> <td>0</td> <td>1</td> <td>2400 bps</td> </tr> <tr> <td>1</td> <td>1</td> <td>1200 bps</td> </tr> </tbody> </table>	SW3 - 7	SW3 - 8	RS-232C	0	0	9600 bps	1	0	4800 bps	0	1	2400 bps	1	1	1200 bps					
SW3 - 7	SW3 - 8		RS-232C																			
0	0		9600 bps																			
1	0		4800 bps																			
0	1	2400 bps																				
1	1	1200 bps																				
8	OFF: 0 ON: 1																					

Table 3-34 MIF-F(A)-10 KTU - DTE PC Connections

MIF (CN7 & CN8)	→	MIF Cable Assembly	Straight RS-232 Cable	PC or Printer
FG(FG) 1	-----	1 (FG)FG 1	-----	1 (FG)FG
RXD(RD) 5	←	2 (SD)TXD 2	---<---	2 (SD)TXD
TXD(SD) 4	→	3 (RD)RXD 3	--->---	3 (RD)RXD
CTS(CS) 6	←	4 (RS)RTS 4	---<---	4 (RS)RTS
RTS(RS) 3	→	5 (CS)CTS 5	--->---	5 (CS)CTS
DTR(ER) 7	→	6 (DR)DSR 6	--->---	6 (DR)DSR
SG(SG) 8	-----	7 (SG)SG 7	-----	7 (SG)SG
DSR(DR) 2	←	20 (ER)DTR 20	---<---	20 (ER)DTR
DCD(CN10)	←	8 (CD)DCD 8	---<---	8 (CD)DCD

**Note:** The arrow shows the direction of data flow during operation.

#### Installation

The MIF-F(A)-10 KTU can be installed in an Option Slot (OP) or in one of the four Interface/Option Slots (IF1/OP1 ~ IF4/OP4), in the ESF-SB-10 KSU, ESF-XB-10 KSU, or the first ESF-XE-10 KSU installed. This KTU is shipped with two cable assemblies (MIF cable assembly). One end of each cable has an RJ35 (8-pin) connector. The other end of the cable terminates at an RS-232 connector. This connector must be mounted on the KSU. This same connection procedure must be performed on the ESF-XB-10 KSU of ESF-XE-10 KSUs. Refer to Figure 3-108 - Connecting the MIF Cable Assembly and the MIF-F(A)-10 KTU to the ESF-SB-10 KSU and Figure 3-109 - Connecting the MIF Cable Assembly and the MIF-F(A)-10 KTU to the ESF-XB-10 KSU.

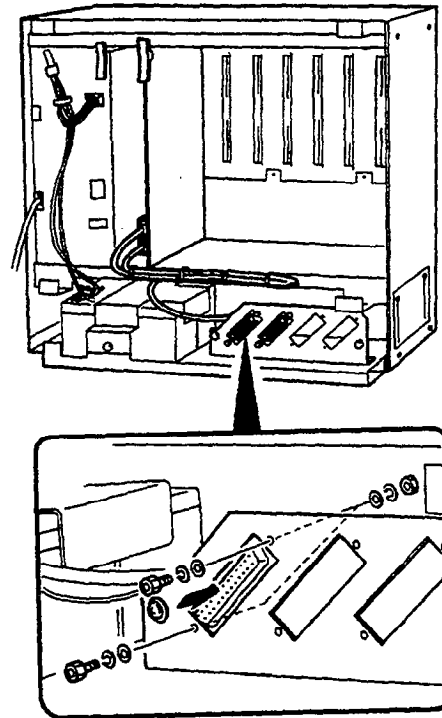


Figure 3-108 Connecting the MIF Cable Assembly and the MIF-F(A)-10 KTU to the ESF-SB-10 KSU

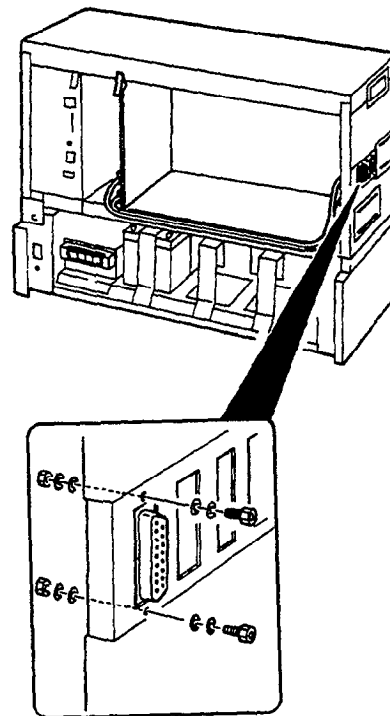


Figure 3-109 Connecting the MIF Cable Assembly and the MIF-F(A)-10 KTU to the ESF-XB-10 KSU

MIS Terminal Connection for ACD:

## Required Equipment:

1. MIF-F(A)-10 KTU with NEC provided MDF Cable Assembly
2. RS-232 Straight Cable
3. IBM or IBM compatible PC with 286 or higher

## To install:

1. Set MIF-F(A)-10 KTU SW3 DIP switch to adjust for the PC connection.
2. Install the MIF-F(A)-10 KTU in the KSU.
3. Connect the MIF Cable Assembly to CN7 and CN10 on the MIF-F(A)-10 KTU and the KSU. Refer to Figure 3-108 - Connecting the MIF Cable Assembly and the MIF-F(A)-10 KTU to the ESF-SB-10 KSU.
4. Connect the MIS Terminal to use the straight RS-232 cable.
5. Place the MIF-F(A)-10 KTU MB switch ON.
6. Program Memory Block(s): 1-8-25, ACD Group Agent Assignment, 1-12-00, ACD Group Pilot Number Assignment, 1-12-01, ACD Group Overflow Destination Assignment, and 1-12-02, ACD Overflow Timer Selection.

## 4.4.7 MIF-F(C)-10 KTU

The MIF-F(C)-10 KTU provides the Caller ID feature

Only one MIF-F(C)-10 KTU can be installed in either system.

Switch Settings/LED Indications

When the green LED1 is on, the MIF-F(C)-10 KTU is receiving power. When the red LED2 is on, the MIF is exchanging data communications with the system CPU. Refer to Figure 3-110 - MIF-F(C)-10 KTU Switch Layout. Switch MB is the ON/OFF control for this KTU.



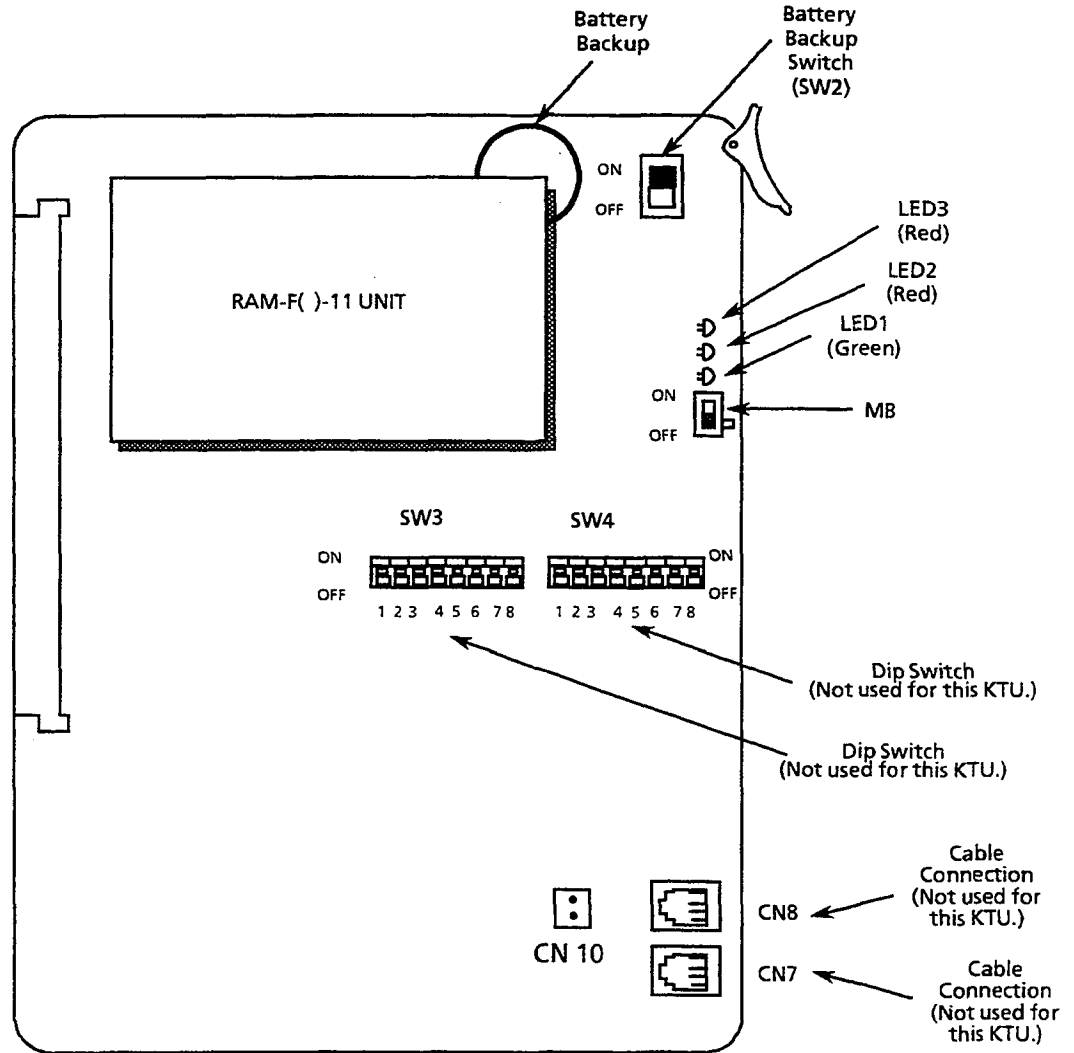


Figure 3-110 MIF-F(C)-10 KTU Switch Layout

**Installation**

The MIF-F(C)-10 KTU can be installed in an Option Slot (OP) or in one of the four Interface/Option Slots (IF1/OP1 ~ IF4/OP4), in the ESF-SB-10 KSU, ESF-XB-10 KSU, or the first ESF-XE-10 KSU installed. This KTU is shipped with two cable assemblies (MIF cable assembly). One end of each cable has an RJ35 (8-pin) connector.

4.4.8 MIF-F(U)-10 KTU

The MIF-F(U)-10 KTU provides the Uniform Call Distribution (UCD) feature.

Only one MIF-F(U)-10 KTU can be installed in either system.

**Note:** MIF-F(A)-10 KTU and MIF-F(U)-10 KTU cannot both be installed in the same system.

Switch Settings/LED Indications

When the green LED1 is on, the MIF-F(U)-10 KTU is receiving power. When the red LED2 is on, the MIF is exchanging data communications with the system CPU. Refer to Figure 3-111 - MIF-F(U)-10 KTU Switch Layout.

Installation

The MIF-F(U)-10 KTU can be installed in an Option Slot (OP) or in one of the four Interface/Option Slots (IF1/OP1 ~ IF4/OP4), in the ESF-SB-10 KSU, ESF-XB-10 KSU, or the first ESF-XE-10 KSU installed.

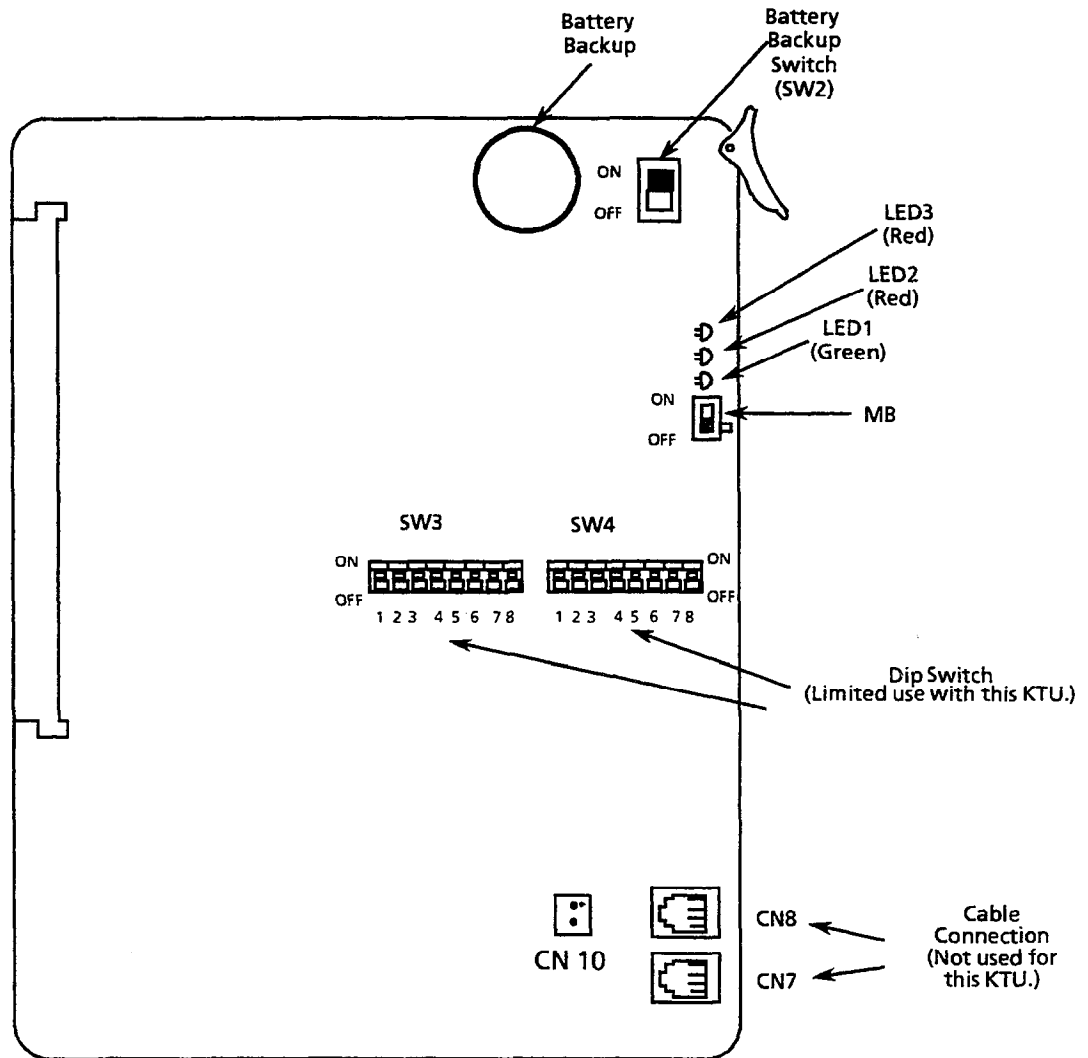


Figure 3-111 MIF-F(U)-10 KTU Switch Layout

**SECTION 5 CABLE CONNECTIONS****5.1 General Information****5.1.1 Connection Requirements**

The KSU is connected with each Multiline Terminals, Single Line Telephone, optional equipment, CO/PBX, DID, 4-wire E&M Tie lines (Types I and V), and digital trunk (T1/FT1) by a separate twisted-pair cable through the MDF. The 4-wire E&M Tie lines are T1/FT1 lines and require multiple twisted-pair cabling.

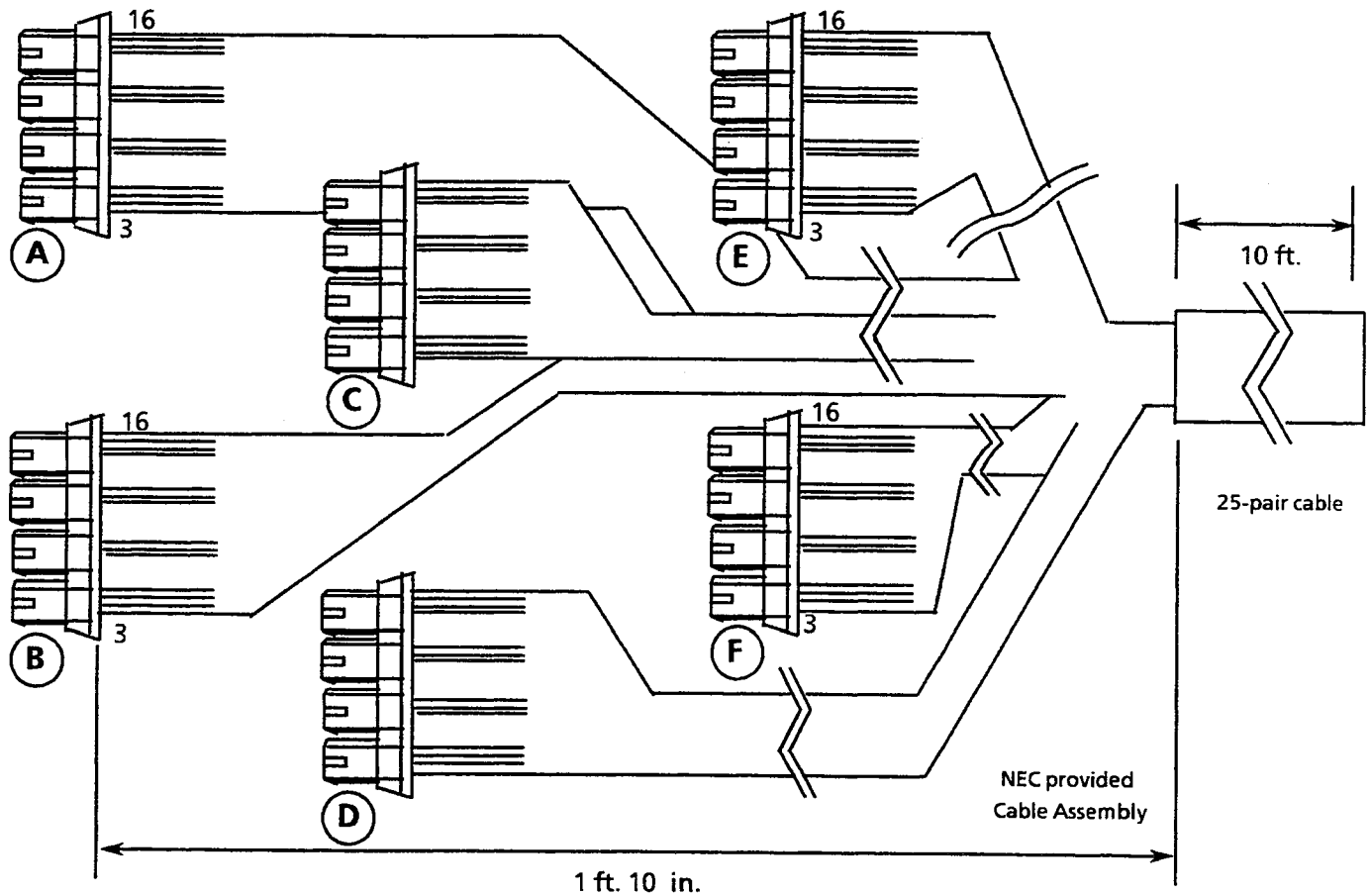
**5.1.2 Cabling Precautions**

When selecting cables and the MDF, future expansion or assignment changes should be considered. Avoid running cables in the following places:

- A place exposed to wind or rain [except the LLT-F(2G)-10 KTU].
- A place near heat radiating equipment or where the quality of PVC covering could be affected by gases and chemicals.
- An unstable place subject to vibration.

**5.2 Wiring Between the KSU and the MDF****5.2.1 KSU Cables**

The Level II Basic KSU has two MDF Cable Assemblies and the Expansion KSU has one MDF Cable Assembly. Each Level II Advanced Basic and Expansion KSU has three MDF Cable Assemblies. NEC recommends that the MDF Cable Assembly be used to connect the Multiline Terminals, Single Line Telephones (except PFT), CO/PBX, and DID lines. Refer to Figure 3-112 - MDF Cable Assembly Diagram and Table 3-35 - Connection Information/Connection and Port Relationships. When installing 4-wire E&M Tie lines, Single Line Telephones with PFT, and other optional equipment with the ECR-F-11 KTU, NEC provides the connector; however, the cabling must be locally provided. Refer to Section 5.2.2 - Connecting Cables to Special Connectors.



CABLE COLORS						
	A	B	C	D	E	F
1	----	----	----	----	----	----
2	----	----	----	----	----	----
3	BL-WH	SL-WH	BR-RD	GN-BK	OR-YL	BL-VI
4	WH-BL	WH-SL	RD-BR	BK-GN	YL-OR	VI-BL
5	----	----	----	----	----	----
6	----	----	----	----	----	----
7	OR-WH	BL-RD	SL-RD	BR-BK	GN-YL	OR-VI
8	WH-OR	RD-BL	RD-SL	BK-BR	YL-GN	VI-OR
9	----	----	----	----	----	----
10	----	----	----	----	----	----
11	GN-WH	OR-RD	BL-BK	SL-BK	BR-YL	GN-VI
12	WH-GN	RD-OR	BK-BL	BK-SL	YL-BR	VI-GN
13	----	----	----	----	----	----
14	----	----	----	----	----	----
15	BR-WH	GN-RD	OR-BK	BL-YL	SL-YL	BR-VI
16	WH-BR	RD-GN	BK-OR	YL-BL	YL-SL	VI-BR

Figure 3-112 MDF Cable Assembly Diagram

Table 3-35 Connection Information/Connection and Port Relationships

Connectors	MDF Pin No.	Running Cable	Multiline Terminals, Attendant Add-On Console, SLT Adaptor, or Digital Voice Mail		Station Cable	Others			
			Station Cable	Lead Functions		CO Line	Lead Functions		
							SLT (Note 1)	Loop Dial, DID LLT	DTI
A	26	WH-BL	BK	R	GN	T	T	T	RT
	1	BL-WH	YL	T	RD	R	R	R	RR
	27	WH-OR	BK	R	GN	T	T	T	TT
	2	OR-WH	YL	T	RD	R	R	R	TR
B	28	WH-GN	BK	R	GN	T	T		
	3	GN-WH	YL	T	RD	R	R		
	29	WH-BR	BK	R	GN	T	T		
	4	BR-WH	YL	T	RD	R	R		
C	30	WH-SL	BK	R	GN	T	T	T	RT
	5	SL-WH	YL	T	RD	R	R	R	RR
	31	RD-BL	BK	R	GN	T	T	T	TT
	6	BL-RD	YL	T	RD	R	R	R	TR
D	32	RD-OR	BK	R	GN	T	T		
	7	OR-RD	YL	T	RD	R	R		
	33	RD-GN	BK	R	GN	T	T		
	8	GN-RD	YL	T	RD	R	R		
E	34	RD-BR	BK	R	GN	T	T	T	RT
	9	BR-RD	YL	T	RD	R	R	R	RR
	35	RD-SL	BK	R	GN	T	T	T	TT
	10	SL-RD	YL	T	RD	R	R	R	TR
F	36	BK-BL	BK	R	GN	T	T		
	11	BL-BK	YL	T	RD	R	R		
	37	BK-OR	BK	R	GN	T	T		
	12	OR-BK	YL	T	RD	R	R		
G	38	BK-GN	BK	R	GN	T	T	T	RT
	13	GN-BK	YL	T	RD	R	R	R	RR
	39	BK-BR	BK	R	GN	T	T	T	TT
	14	BR-BK	YL	T	RD	R	R	R	TR
H	40	BK-SL	BK	R	GN	T	T		
	15	SL-BK	YL	T	RD	R	R		
	41	YL-BL	BK	R	GN	T	T		
	16	BL-YL	YL	T	RD	R	R		
I	42	YL-OR	BK	R	GN	T	T	T	RT
	17	OR-YL	YL	T	RD	R	R	R	RR
	43	YL-GN	BK	R	GN	T	T	T	TT
	18	GN-YL	YL	T	RD	R	R	R	TR
J	44	YL-BR	BK	R	GN	T	T		
	19	BR-YL	YL	T	RD	R	R		
	45	YL-SL	BK	R	GN	T	T		
	20	SL-YL	YL	T	RD	R	R		
K	46	VI-BL	BK	R	GN	T	T	T	RT
	21	BL-VI	YL	T	RD	R	R	R	RR
	47	VI-OR	BK	R	GN	T	T	T	TT
	22	OR-VI	YL	T	RD	R	R	R	TR
L	48	VI-GN	BK	R	GN	T	T		
	23	GN-VI	YL	T	RD	R	R		
M	49	VI-BR	BK	R	GN	T	T		
	24	BR-VI	YL	T	RD	R	R		
N	50	VI-SL		R					
O	25	SL-VI	N/C	T	N/C	N/C	N/C	N/C	

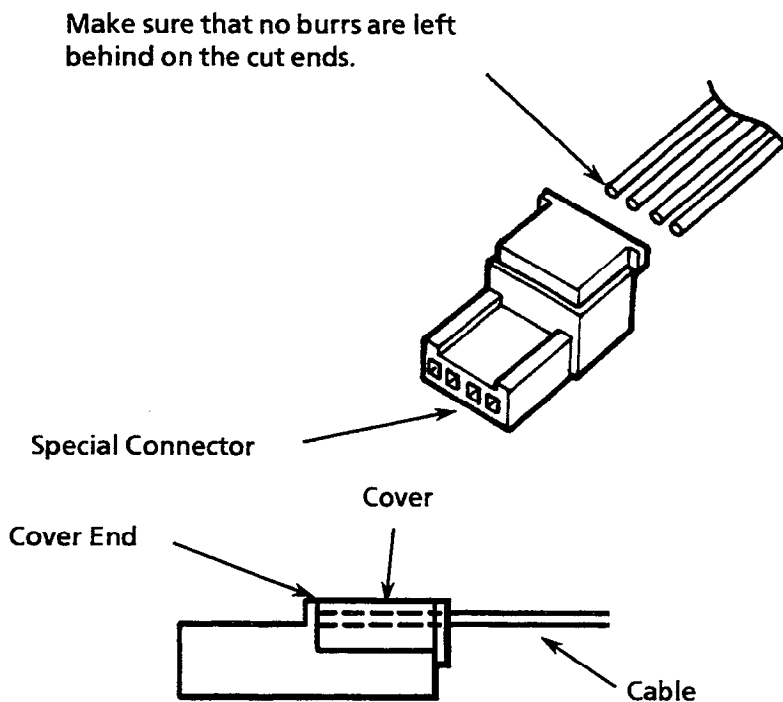
Note 1: SLI PFT required assembly of one 4-position connector by the installer. Only the first two channels provide for PFT connection. Refer to Section 4.3.2.1 - Power Failure Backup for connector assembly.

Note 2: The TLI-F(2)-10 KTU, BRT-F(4)-10 KTU, and ECR-F-11 KTU require assembly of the connectors by the installer. Refer to Section 5.2.3 - Outside Lines.

5.2.2 Connecting Cables to Special Connectors

If installing a TLI-F(2)-10 KTU, ECR-F-11 KTU and/or an SLI-F(8G)-21 KTU with PFT, the cables must be connected to the provided connectors, in the KTU packing box. The following instructions explain this procedure.

1. Cut the four cables the same length and insert them into the connector. Ensure that all four cables are inserted all the way to the end of the cover. Refer to Figure 3-113 - Attaching the Cables to the Connector.



Adaptable Cable		
	Core	Covering Outside Diameter
	0.40 mm.	0.66 mm.
ICT Cable	0.50 mm.	0.80 mm.
	0.65 mm.	1.20 mm. +0

Figure 3-113 Attaching the Cables to the Connector

2. Lightly hold the connector with the pliers. In this case, make sure that the crimping portion is held between the lower portion of the jaws of the plier. Refer to Figure 3-114- Holding the Connector with the Pliers.

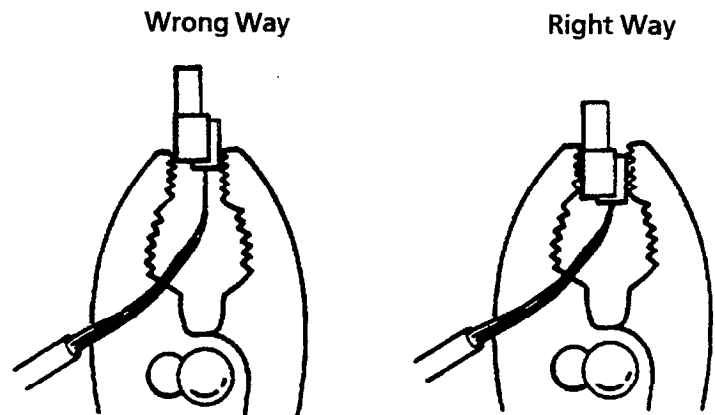


Figure 3-114 Holding the Connector with the Pliers

3. Squeeze the pliers to crimp the cables. If the cover is loose, press the cover again with the pliers.

**Note:** If sufficient pressure cannot be applied when the screw of the pliers is in the center position, change the position of the screw that allows the jaws of the pliers to close. Be careful when squeezing the hands of the pliers; excessive pressure could cause damage to the connector. Refer to Figure 3-115 - Positioning the Screw of the Pliers.

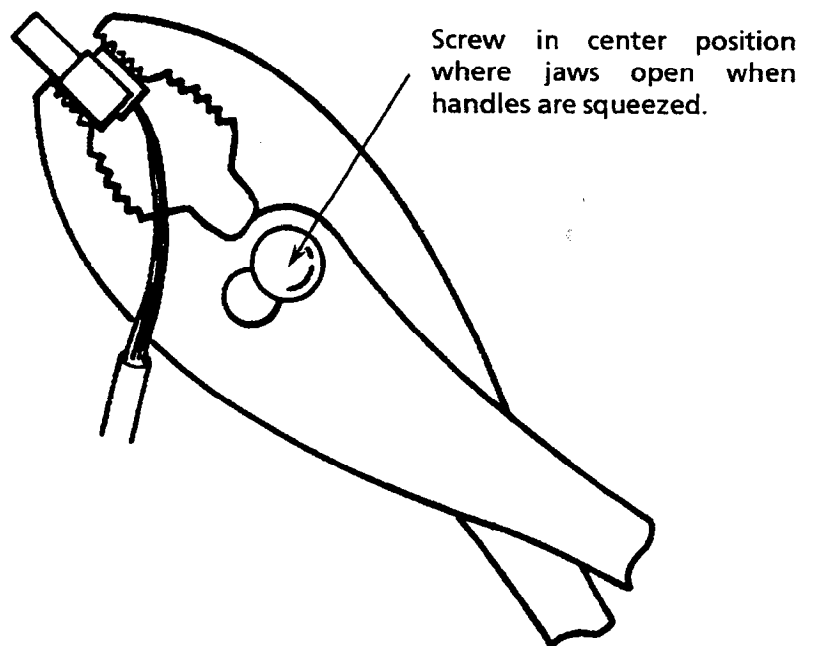


Figure 3-115 Positioning the Screw of the Pliers

### 5.2.3 Outside Lines

The RJ21X is the FCC authorized connector for the connection of CO lines. The CO lines are connected in sequence in this termination block. Therefore, the lines must be ordered in the appearance order best suited to the user. Refer to Table 3-35 - Connection Information/Connection and Port Relationships for information about the MDF Connector Assembly Cable positions, the cable number, and lead functions.

Ground Start and/or Loop Start, Loop Dial, DID, 4-wire E&M Tie lines (Types I and V), and T1 can be connected to this system. Using only twisted-pair wiring to crossconnect the lines from the RJ21X termination block to the MDF is recommended.

Half-tapping or parallel connections must not be used on outside lines connected to the system.

#### 5.2.3.1 TLI-F(2)-10 KTU Cable Connections

Channel	Pins	
2	16	T12
	15	R12
	14	T2
	13	R2
	12	E2
	11	M2
	10	
	9	
1	8	T11
	7	R11
	6	T1
	5	R1
	4	E1
	3	M1
	2	
	1	

**Note 1:** TLI-F(2)-10 KTU contains one, 4-position connector for assembly by the installer.

**Note 2:** The six NEC-provided 4-position-connector cables CANNOT be used to support this KTU. Refer to Figure 3-112 - MDF Cable Assembly Diagram.

**Note 3:** Connector pins 1~16 are counted from the bottom to the top of the KTU when it is installed in an interface slot.



## 5.2.3.2 ECR-F-11 KTU Cable Connections

Pin No.	Terminal Name	Function
16	8 RM	External Tone - Ringer 4
15	8 RC	
14	7 RM	External Tone - Ringer 3
13	7 RC	
12	6 RM	External Tone - Ringer 2
11	6 RC	
10	5 RM	External Tone - Ringer 1
9	5 RC	
8	4 RM	Night Chime
7	4 RC	
6	3 RM	External Paging - Zone C
5	3 RC	
4	2 RM	External Paging - Zone B
3	2 RC	
2	1 RM	External Paging - Zone A
1	1 RC	

**Note 1:** ECR-F-11 KTU contains one, 4-position connector and two RCA plugs.

**Note 2:** The six NEC-provided 4-position-connector cables CANNOT be used to support this KTU. Refer to Figure 3-112 - MDF Cable Assembly Diagram.

**Note 3:** Connector pins 1 ~ 16 are counted from the bottom to the top of the KTU when it is installed in an interface slot.

**Note 4:** External speakers and amplifiers must be locally provided.

**Note 5:** External speakers must be 600  $\Omega$ .

5.2.3.3 DTI-F( )-10 KTU/DTI-F(A)-20 KTU Cable Connections

To install the cable between the T1/FT1 trunk and the DTI-F( )-10 KTU or DTI-F(A)-20 KTU:

1. Connect the T1/FT1 trunk to the MDF. Refer to Figure 3-116 - MDF Trunk Connection.
2. Connect this cable from the MDF to the DTI-F( )-10 KTU or DTI-F(A)-20 KTU by twisted-pair cable. Refer to Figure 3-116 - MDF Trunk Connection.

Pins	Terminal Name
1	
2	
3	
4	
5	
6	
7	
8	
9	TA
10	TB
11	
12	
13	RA
14	RB
15	
16	

Pins	Terminal Name
1	TA
2	TB
3	RA
4	RB

**Note 1:** The maximum distance from the DTI-F( )-10 KTU or DTI-F(A)-20 KTU to CSU is 655 feet, using 22 AWG.

**Note 2:** CSU is recommended for maintenance (loop back or alarm function) or surge protection. The customer should purchase and install the CSU.

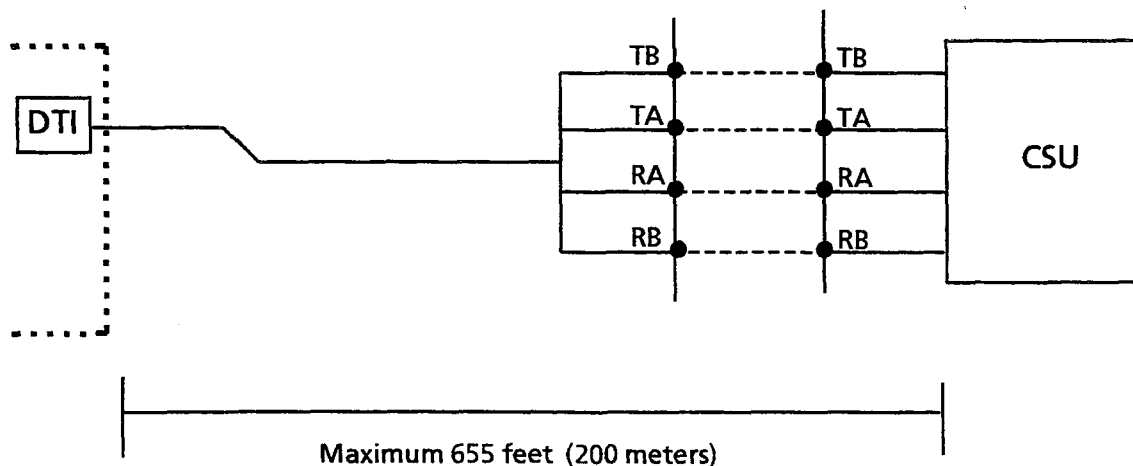


Figure 3-116 MDF Trunk Connection

5.2.3.4 SLI-F(8G)-21 KTU Cable Connections

**Channel Pins**

4	16	T4
	15	R4
	14	
	13	
3	12	T3
	11	R3
	10	
	9	
2	8	T2
	7	R2
	6	PF T2
	5	PF R2
1	4	T1
	3	R1
	2	PF T1
	1	PF R1

- Note 1:** SLI-F(8G)-21 KTU contains two, 4-position connectors providing eight channels.
- Note 2:** Channels 1 and 2 can be used for PFT. If PFT is used, the six NEC-provided 4-position connector cables CANNOT be used for channels 1 ~ 4. However, they can be used for channels 5 ~ 8. Refer to Section 4.3.2.1 - Power Failure Backup.

5.2.4 Modular Terminal Connections

When connecting Multiline Terminals, Attendant Add-On Consoles, or SLT Adapters to the MDF or IDF, individually twisted 1-pair cabling must be used. Refer to Table 3-35 - Connection Information/Connection and Port Relationships for lead functions. Refer to Figure 3-117 - Modular Terminal for Connection of Multiline Terminals and Attendant Add-On Consoles for station modular jack (RJ13C/W) connection.

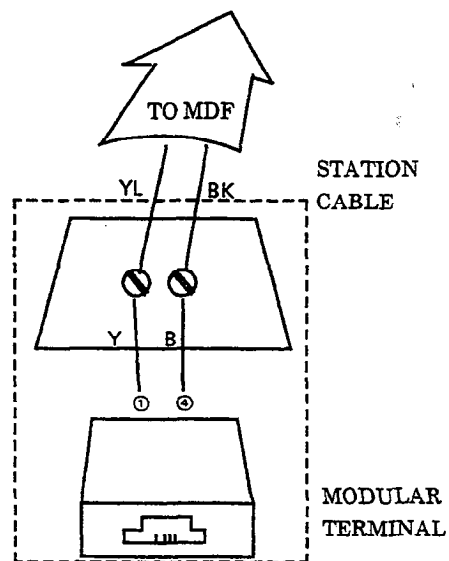


Figure 3-117 Modular Terminal for Connection of Multiline Terminals and Attendant Add-On Consoles

One-pair cabling is required; twisted pair cabling is recommended. Refer to Table 3-35 - Connection Information/Connection and Port Relationships for lead functions. Refer to Figure 3-118 - Simplified Schematic of Single Line Telephone Connection for station termination.

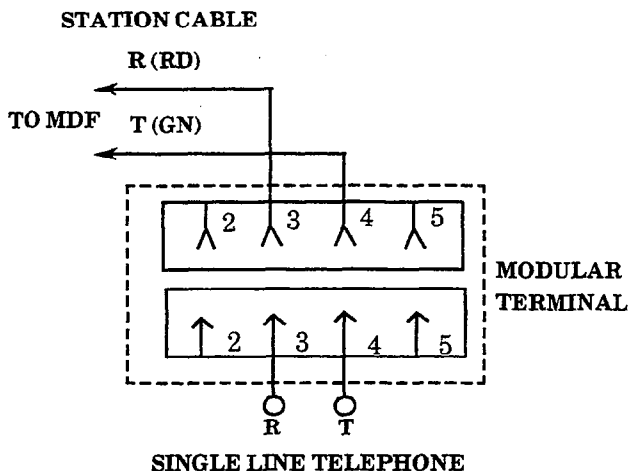


Figure 3-118 Simplified Schematic of Single Line Telephone Connection

For additional CO line connections to additional Single Line Telephones, similar crossconnections should be made.

If dialing during power failure is required, Single Line Telephones should be equipped with DP/DTMF dialing to match the outside lines. If trunks are Ground Start, Single Line Telephones must be equipped with a ground button.

When Single Line Telephones are installed, they can operate as power failure telephones, through crossconnection on the MDF. Refer to Figure 3-119 - Crossconnection of Single Line Telephones.

**Note:** Single Line Telephones used for Power Failure Transfer must be supported by an SLI-F(8G)-21 KTU.

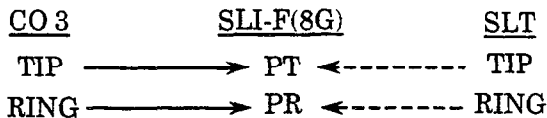


Figure 3-119 Crossconnection of Single Line Telephones

5.2.5 Modular Terminations When Connecting BRI (ISDN) Trunks to the Electra Professional System

Refer to Figure 3-120 Simplified Schematic for BRI Connection.

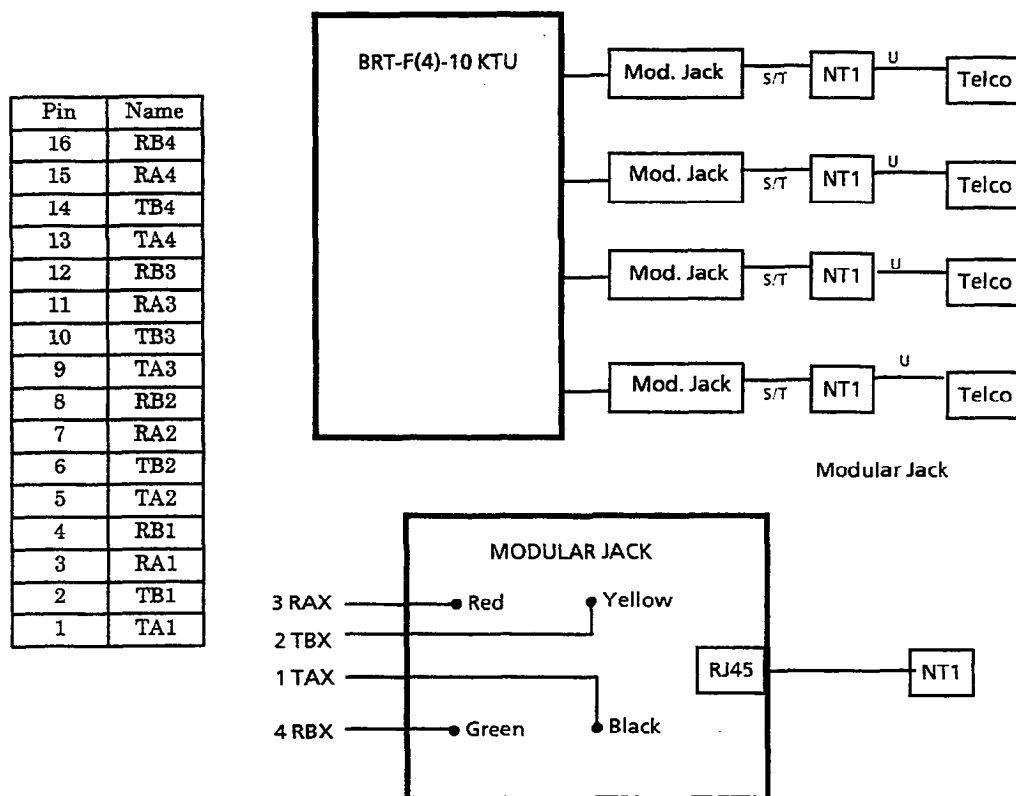


Figure 3-120 Simplified Schematic for BRI Connection

**SECTION 6      OPTIONAL EQUIPMENT CONNECTION****6.1      General Information**

The system supports the following:

- External Music On Hold
- External Paging
- External Tone Ring/Night Chime

**6.2      Music On Hold/Station Background Music**

Provision has been made to allow connection of a locally provided external music source to provide Music On Hold (MOH) for held calls and Station Background Music (BGM). Station Background Music is available with Series 500 or higher software.

**6.2.1      Music On Hold**

Music source input is made using the MOH jack located on the CPU-F( )-20 KTU. For music source input level and impedance, refer to section 1.12.1 - Music On Hold/Station Background Music (using CPU), in this chapter.

To install:

1.      On the cable to be connected to the MOH jack (12 inches from the plug end), make a slit in the cable insulation approximately 1-1/2 inches long. **Take special care not to cut into the shield wire and inner wire insulation.**
2.      Make a circular cut in the cable insulation at one end of the slit.
3.      Pull the cut insulation from the cable to expose the shield for the length of the slit and cut the insulation off.
4.      Bend the cable near the middle of the exposed shield and separate the shield from the inner insulation in preparation for soldering. Refer to Figure 3-121 - MOH Cable Shield Ground Exposed.

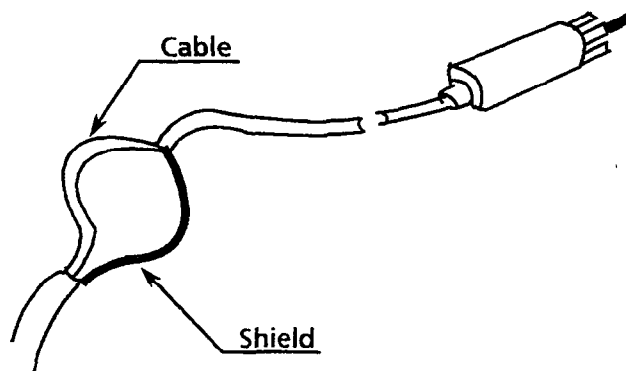


Figure 3-121 MOH Cable Shield Ground Exposed

5. Get a 7-inch 20~24 AWG stranded wire and connect a ring tongue type connector at one end.
6. Strip 1/2 inch of insulation from the other end of the 7 inch wire. Solder this end to the shield exposed in step 3. Place tape around this connection to prevent possible short circuits.
7. Connect the plug end into the CPU-F( )-20 KTU MOH jack. Refer to Figure 3-122 - Music Source Connection.

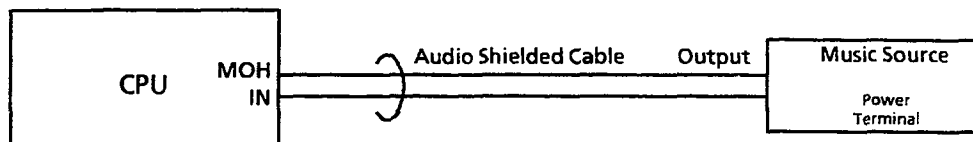


Figure 3-122 Music Source Connection

8. Route the cable down and to the right side of the KSU to avoid interference with the insertion and the removal of KTUs. Exit the other end of the cable at the right rear side of the KSU. Refer to Figure 3-123 - MOH Cable Route.

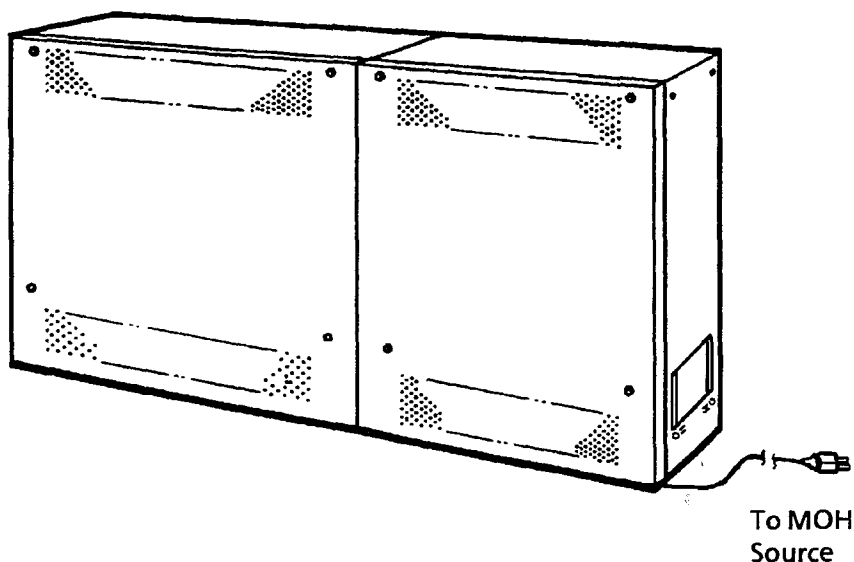


Figure 3-123 MOH Cable Route

### 6.2.2 Station Background Music

Station Background Music can be provided by using a COI-F( )-20 KTU or a COI-F( )-30 KTU. When station Background Music is provided using the COI-F KTU, Music On Hold and Station Background Music are separated and are provided by two independent sources.

To install Background Music using a COI-F KTU:

1. In Memory Block 1-1-79, BGM Port Assignment, set the COI port to BGM Input.

2. Connect a locally provided Valcom V-9941A or equivalent device to the COI Background Music port. Refer to the audio specifications in Section 1.12.2 - Station Background Music using COI-F( )-20 KTU or COI-F( )-30 KTU.
3. Connect a locally provided Background Music source to the V-9941A (or equivalent device). Refer to Figure 3-124 - Music Source Connection and to Table 3-35 - Connection Information/Connection and Port Relationships.

**Note:** The Valcom V-9941A provides: loop connect (also called talk battery) to the COI KTU, couples the audio source onto the loop current, and isolates the loop current from the music source. Any device that fits this criteria along with impedance of the COI KTU and music source is suitable.

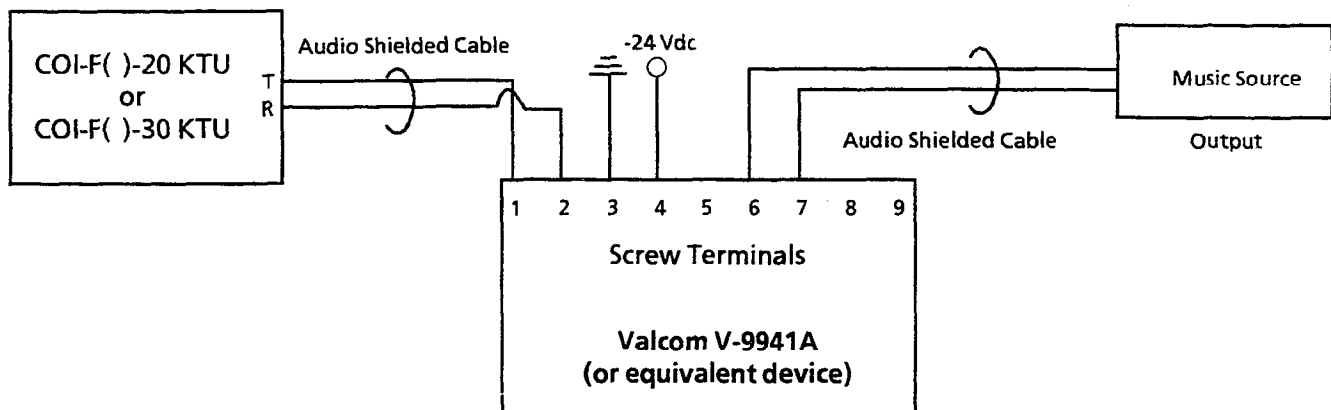


Figure 3-124 Music Source Connection

### 6.3 External Paging

The ECR-F-11 KTU provides audio output for External Paging (available at phone jack JK2 on the ECR-F-11 KTU) and three contact closures (one per zone) for use in zone paging with Meet-Me Answer. These contacts are labeled 1RC and 1RM, 2RC and 2RM, 3RC and 3RM. Refer to Section 5.2.3.2 - ECR-F-11 KTU Cable Connections. A maximum of one ECR-F-11 KTU can be installed in a system providing a total of three paging zones.

The audio output must be connected to a locally provided amplifier and speaker(s), that are connected to the output of the amplifier. If the amplifier is a 2-way amplifier, 2-way paging is available. Shielded audio cable should be used for external paging audio connections. This audio cable, from JK2 to the external amplifier, should be wrapped three turns around a ferrite core. For connection information to a locally provided amplifier, refer to Figure 1-125 - Connecting External Paging. For external paging audio output level and impedance, refer to Section 1.12 - External Equipment Interface, in this chapter.

When External Paging is answered by Meet-Me Answer, the external paging audio circuit and the control circuits in the ECR-F-11 KTU are released to allow access for another page.



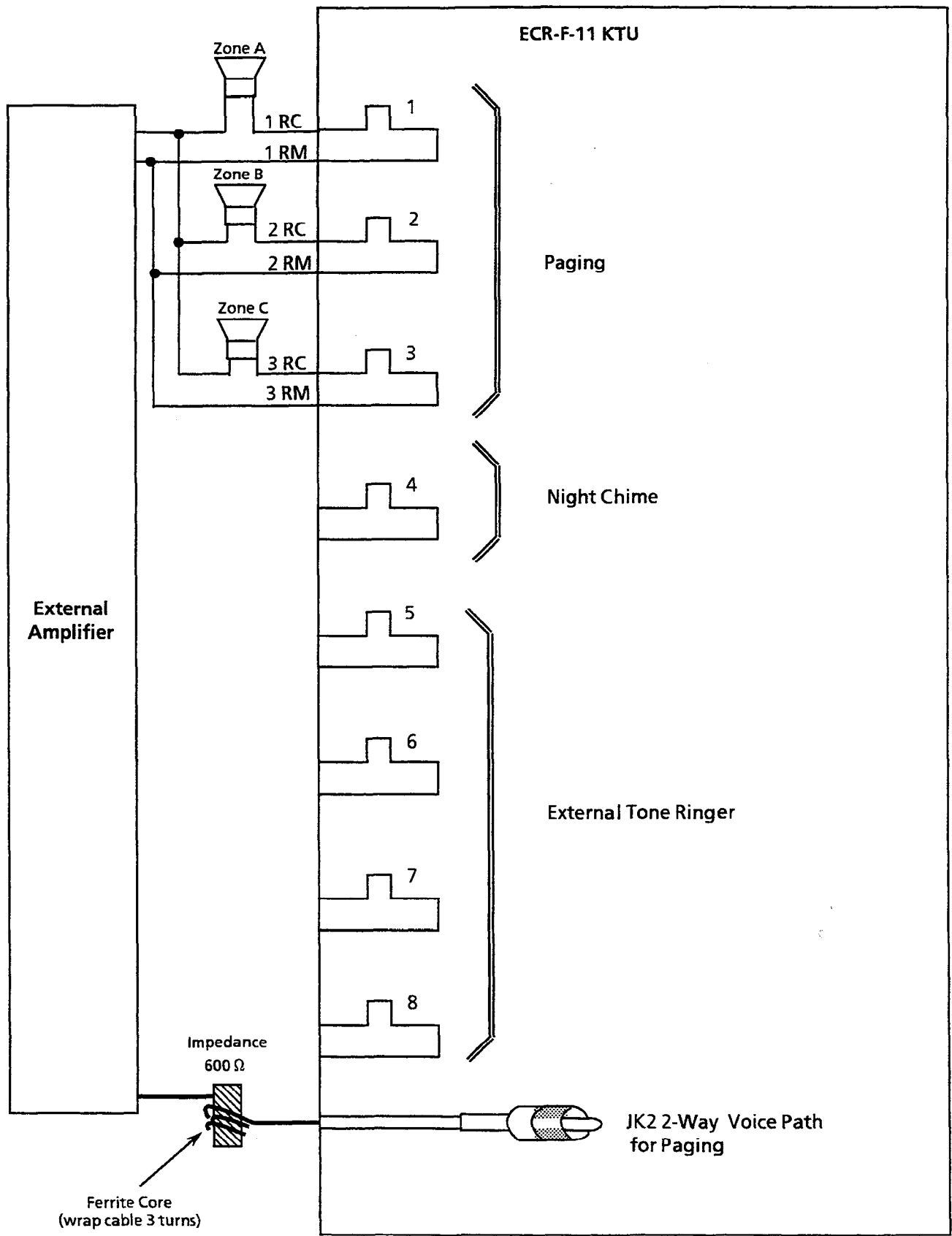


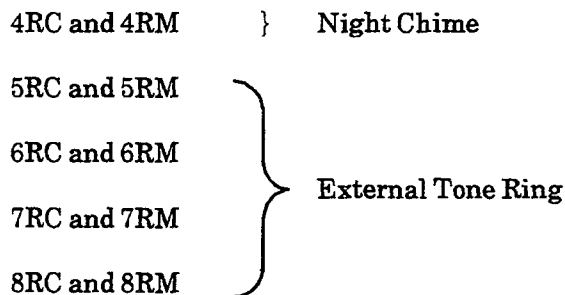
Figure 3-125 Connecting External Paging

### 6.4 External Tone Ring/Night Chime

External Tone Ring/Night Chime is available when the ECR-F-11 KTU is installed. The ECR-F-11 KTU provides a continuous tone source for external tone ringing. The external tone can be set to one of five ringing patterns. These patterns are selected in System Programming. Refer to Chapter 5 - Programming, Manual System Mode (LK1), ESP (LK7) No. 07, in this manual.

The audio output for external tone ringing appears at the phone jack JK1 on the ECR-F-11 KTU. The level is adjustable using volume control VR1 on the ECR-F-11 KTU.

Shielded-audio cable is required for this feature. The ECR-F-11 KTU provides five relay contacts for External Tone Ring/Night Chime. Refer to Section 5.2.3.2 - ECR-F-11 KTU Cable Connections. These contacts are labeled as follows:



Refer to Figure 3-126 - Connecting External Tone Ring/Night Chime for connecting locally provided amplifiers and speakers and Section 1.12 - External Equipment Interface for audio output specifications.

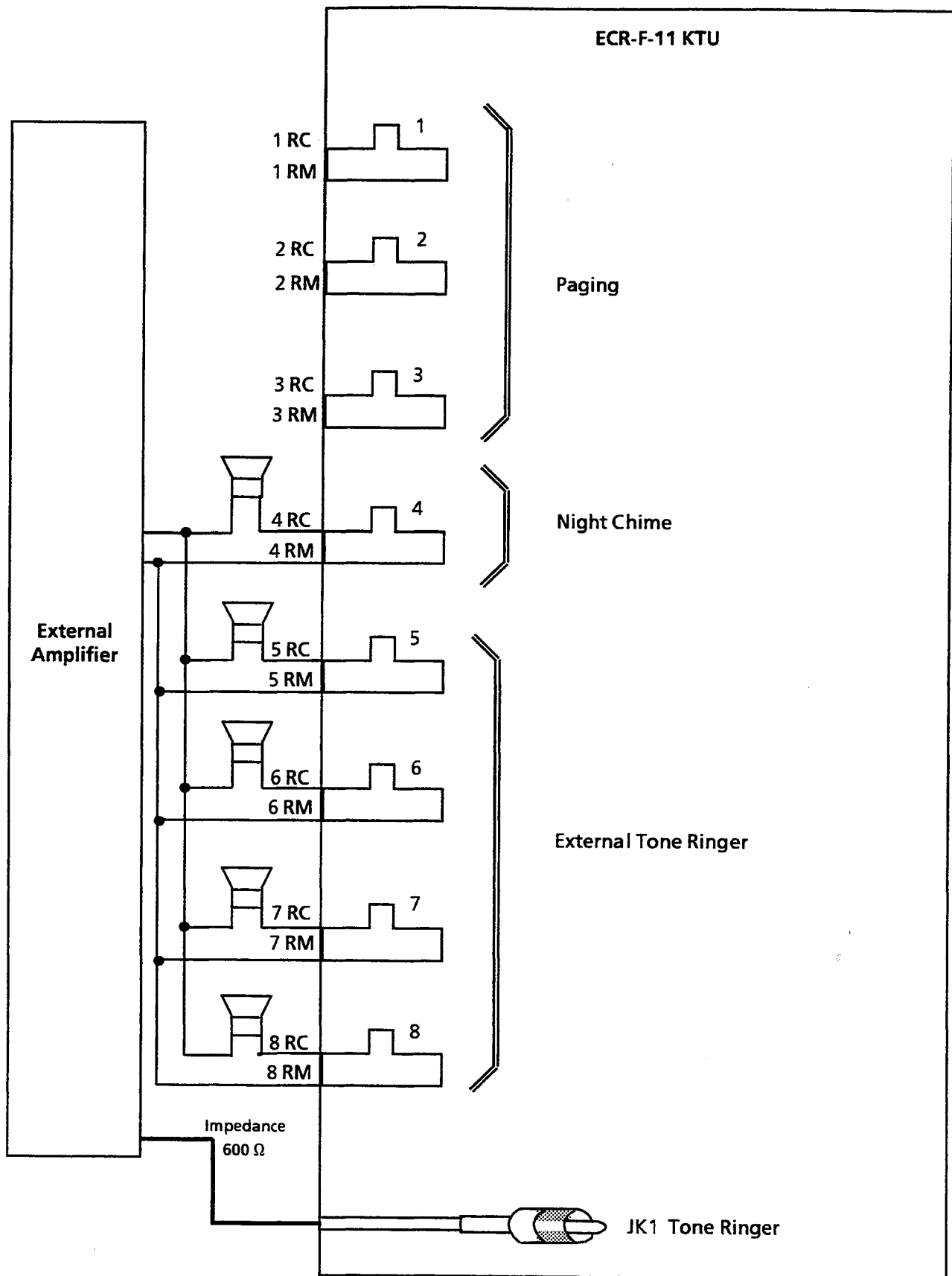


Figure 3-126 Connecting External Tone Ring/Night Chime

## SECTION 7 LCD INDICATIONS TABLE

Table 3-36 LCD Indications

Display	Location	Definition
12:24 AM WED 10	All Stations with LCD	Clock/Calendar
FWD 100 - > [ ]		Set Call Forward - All Calls
ALL FWD CANCLD		Cancel DND/Call Forward - All Calls System-Wide
FWD CANCL	Originator	Cancel DND/Call Forward - All Calls At Individual Stations
FWD SET [ ]	Originator	Set Call Forward - All Calls From Forward To Extension
FWD RESET [ ]		Reset Call Forward - All Calls From Forward To Extension
BUSY 100 -- > [ _ ]		Set Call Forward - Busy
FWD BUSY CANCLD		Cancel Call Forward - Busy
NOANS 100 - > [ ]		Set Call Forward - No Answer
FWDNA CANCLD		Cancel Call Forward - No Answer
FWD BNA - > [ ]		Set Call Forward Busy - No Answer
FWD BNA CNCL		Cancel Call Forward Busy - No Answer
BACK ???/?? ??:??		Set Customized Message
MESSAGE CLEAR		Cancel Customized Message System-Wide or From Individual Station
NIGHT MODE SET		Night Mode Switch
NIGHT MODE RESET		Reset Night Mode
NT TENANT		Set Night Mode For Tenant
CALLBACK CANCLD		Cancel Callback System-Wide
FNC LAMP OFF		Reset FNC LED
CURRENT PASSWORD ?	Originator	Telephone Password (1)
NEW PASSWORD ?	Originator	Telephone Password (2)
ENTER PASSWORD	Originator	Set Password (CO/PBX Restriction)
RESTRICT SET	Originator	After Setting Password
CALL DENIED	Originator	Display on Station Outgoing Restricted Telephone
RESTRICT CANCLD	Originator	After Canceling Outgoing Call Restriction
CANCEL TEL ???		Cancel Restriction on Another Telephone
RLY 0 ON		Relay On
RLY 0 OFF		Relay Off
ALARM AM 00 : 00		Set Alarm For A.M.
ALARM PM 00 : 00		Set Alarm For P.M.
ALL ALARM CANCLD		Cancel Alarm System-Wide
SET TIME REMINDER		Set Timed Alarm for SLT
DND SET	Originator	Set Do Not Disturb
SAVE & REPEAT	Originator	Save and Repeat Number Is Stored
INT ALL PAGE	Originator	Internal All Zone Paging

(continued on next page)

Display	Location	Definition
INT PAGE [ A ]		Group Paging
TENT [ ]		Tenant Paging
SPKR [ A ]	Originator	External Speaker
TRF SET CO =		Set Automatic Tandem Trunk Transfer IN/OUT Trunk
TRF CNCL CO =		Reset Automatic Tandem Trunk Transfer
TRF TO CO =		Set or Confirm Transferred Trunk of Automatic Tandem Trunk Transfer
TRNS TO N/A		Transferred Trunk Not Assigned
00 : EMPTY		No Speed Dial Number Entered
00 : 0 1 2 3 4 5 6 7 8 9		Speed Dial Number Confirmation
NO SMDR		Station Message Detail Recording Not Available
ERROR		Error Message
BUSY		Busy Message
PRINTER TROUBLE		Printer Problems
SPKR [ A , B , C ]	Originator	External All Paging
LINE IDLE	Originator	Trunk Queuing; CO/PBX Trunk Idle
TRUNK QUE SET	Originator	Trunk Queuing Set
LNR [ # ] / SPD [ ]		Press LNR/SPD Key
TRUNK QUE CANCLD	Originator	Trunk Queue Canceled
RCL : 01, 02, 03, 04	Originator	Hold Recall
120 < - [ 1 1 0 ] TRANSF	Destination	Ring Transfer
120 = = [ 1 1 0 ] TRANSF		Automatic Ring Transfer
OVD > [ ]		Barge-In On CO/PBX Line (1)
OVD - > CO [ ]		Barge-In On CO/PBX Line (2)
100 < - TIE LNXX		Tie Line Answer
100 < - DID LNXX		DID Answer
DATA ENTRY		Enter Data Using System Programming
T1 ALARM		T1 Transmission Difficulty
MUSIC SET	Originator	Background Music Enabled
MUSIC RESET	Originator	Background Music Disabled
CO 1 LAYER 1 DOWN	Port 01	ISDN Trunk L1 Down Difficulty
CO 1 LAYER 2 DOWN	Port 01	ISDN Trunk L2 Down Difficulty
CO 1 SPID ERROR	Port 01	ISDN Trunk SPID Error Difficulty
CO 1 SLIP ERROR	Port 01	ISDN Trunk Asynchronous Communication Difficulty (More than 50 times)

**SECTION 8 FEATURE ACCESS CODES**

Some codes are set as system defaults and some codes have no default defined but are programmable in System Programming. The table is divided according to the status of the telephone. An explanation of the notes column is listed below; these are referenced throughout the table. Refer to Table 1-37 - Access Codes Tables.

**Explanation of Notes Column:**

- Installation:** Operates only on telephones specified during installation.
- Single Line Only:** Operates only on Single Line Telephones.
- Single Line OK:** Operates on Multiline Terminals or Single Line Telephones.
- Note 1:** The controls in parentheses are not necessary for your own telephone or own tenant.
- Note 2:** Operates only when the Speed Dial number is set to 2 digits (90 mode).
- Note 3:** Enter the new values in the Access Code Table.
- Note 4:** No system default is defined; this code must be assigned in System Programming.

Table 3-37 Access Code Tables

**When the telephone is idle (handset is on-hook):**

Function	Operation	Notes
Microphone ON/OFF	FNC → Dial 1	
System Name Confirmation	FNC → Dial 3	
Verify Station Number	FNC → Dial 4	
Confirm Timed Alarm	FNC → Dial 51 → FNC	
Reset Timed Alarm System	FNC → Dial 58 → FNC	Installation
Reset Timed Alarm	FNC → Dial 59 → FNC	
Set Do Not Disturb	FNC → Dial 60 → FNC	
Set Call Forward - All Calls	FNC → Dial 60 → Dial XXX → FNC XXX = Station number where call is to be forwarded.	Installation

(continued on next page)

Function	Operation	Notes
Set Automatic Trunk-to-Trunk Transfer Mode	FNC → Dial 61 → Dial XX → FNC XX = Incoming Trunk Port Number (01 ~ 64; 00 = All Trunks)	Installation
Cancel Automatic Trunk-to-Trunk Transfer to Outside Mode	FNC → Dial 62 → Dial XX → FNC XX = Incoming Trunk Port Number (01 ~ 64; 00 = All Trunks)	Installation
Set Automatic Trunk-to-Trunk Transfer Outgoing Trunk	FNC → Dial 63 → Dial XX → Dial # → Dial YY~Y → FNC XX = Incoming Trunk Port Number (01 ~ 64; 00 = All Trunks) YY~Y = Transfer Telephone Number (maximum 24 digits)	Installation
Confirm Transfer Number for Automatic Trunk-to-Trunk Transfer	FNC → Dial 64 → Dial XX → FNC XX = Trunk Port Number (01 ~ 64)	Installation
Cancel Call Forward - All Calls by System	FNC → Dial 68 → FNC	Installation
Cancel Do Not Disturb/Call Forward - All Calls	FNC → Dial 69 → FNC	Installation
Set Customized Message Display	FNC → Dial 70 → Dial * → Dial # → [ Dial XX:XX, YY:YY ] → FNC * = Selects Display # = Sets Display XX:XX = Date of Return YY:YY = Time of Return Operations enclosed in [ ] are optional.	
Cancel Customized Message Display by System	FNC → Dial 78 → FNC	Installation
Cancel Customized Message Display	FNC → Dial 79 → FNC	
Set/Cancel Night Mode Switch (System)	FNC → Dial 80 → FNC	Installation Attendant Only
Set Automated Attendant/DISA Mode	FNC → Dial 81 → Dial XX → FNC XX = Incoming Trunk Port Number (01 ~ 64; 00 = All Trunks)	Installation
Cancel Automated Attendant/DISA Mode	FNC → Dial 82 → Dial XX → FNC XX = Incoming Trunk Port Number (01 ~ 64; 00 = All Trunks)	Installation
Set/Cancel Set Relocation Mode	FNC → Dial 84 (Series 700 or higher)	Installation Attendant Only
Set/Cancel Night Mode Switch (Tenant)	FNC → Dial 85 → Dial XX → FNC XX = Tenant Number (00 ~ 47)	Installation
Set/Cancel Weekend Mode Switch (Tenant)	FNC → Dial 86 → Dial XX → FNC XX = Tenant Number (00 ~ 47)	Installation

(continued on next page)

Function	Operation	Notes
Background Music On/Off	FNC → Dial 26 → FNC	
Cancel Callback Message by System	FNC → Dial 88 → FNC	Installation
Cancel FNC LED	FNC → Dial 99 → FNC	
Program System Speed Dial Buffer Number	FNC → LNR/SPD → Dial XXX → Dial YYYY → Dial ZZ ~ Z → [HOLD → Dial xx ~ x] → FNC  XXX = Speed Dial Buffer Number (00 ~ 89 / 000 ~ 999) (Series 100 ~ 450) Speed Dial Buffer Number (00 ~ 79 / 000 ~ 999) (Series 500 or higher) YYYY = Access Code (maximum 4 digits) ZZ ~ Z = Telephone Number (maximum 24 digits) xx ~ x = Name of Other Party (maximum 13 letters)  Operations enclosed in [ ] are optional.	Installation
Program Station Speed Dial Buffer Number	FNC → LNR/SPD → Dial X X → Dial YYYY → Dial ZZ ~ Z → [HOLD → Dial xx ~ x] → FNC  XX = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (80 ~ 99). (Series 500 or higher) YYYY = Access Code (maximum 4 digits) ZZ ~ Z = Telephone Number (maximum 24 digits) xx ~ x = Name of Other Party (maximum 13 letters)  Operations enclosed in [ ] are optional.	Note 2
Confirm System Speed Dial Number	CNF → LNR/SPD → Dial XXX  XXX = Speed Dial Buffer Number (00 ~ 89 / 000 ~ 999) (Series 100 ~ 450) Speed Dial Buffer Number (00 ~ 79 / 000 ~ 999) (Series 500 or higher)	
Confirm Station Speed Dial Number	CNF → LNR/SPD → Dial X X  XX = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (80 ~ 99). (Series 500 or higher)	Note 2
Cancel System Speed Dial Number	FNC → LNR/SPD → Dial XXX → FNC  XXX = Speed Dial Buffer Number (00 ~ 89 / 000 ~ 999) (Series 100 ~ 450) Speed Dial Buffer Number (00 ~ 79 / 000 ~ 999) (Series 500 or higher)	Installation
Cancel Station Speed Dial Number	FNC → LNR/SPD → Dial X X → FNC  XX = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (79 ~ 99). (Series 500 or higher)	Note 2
Place a Call - Speed Dial	LNR/SPD Key → Dial XXX  XXX = Speed Dial Buffer Number (00 ~ 99 / 000 ~ 999)	

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Function	Operation	Notes
Confirm Last Number Dialed Memory	CNF → LNR/SPD → Dial *	
Place Call Using Store & Repeat/Save & Repeat	LNR/SPD → Dial #	
Set/Cancel Answer Preset (Ringing Line Preference)	FNC → ANS	
Last Number Dialed Memory to a Station Speed Dial Buffer Number	FNC → LNR/SPD → Dial X X → LNR/SPD → FNC  XX = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (80 ~ 99). (Series 500 or higher)	Note 2
Program Feature Access Keys (for DSS/BLF) (Series 100 ~ 450)	FNC → LNR/SPD → Dial 9 X → Feature Access Key → Dial 1 → Dial YYYY → [Dial 1] → FNC  9X = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. YYYY = Station number (2, 3, or 4 digits)  Operations enclosed in [ ] are optional (when the digit 1 is dialed, the call is switched from Voice to Tone or from Tone to Voice).	Installation Note 2
Program Feature Access Keys (for DSS/BLF) (Series 500 or higher)	FNC → LNR/SPD → Feature Access Key → Dial 1 → Dial YYYY → [Dial 1] → FNC  YYYY = Station number (2, 3, or 4 digits)  Operations enclosed in [ ] are optional (when the digit 1 is dialed, the call is switched from Voice to Tone or from Tone to Voice).	Installation Note 2
Program Feature Access Keys (for Station Speed Dial)	FNC → LNR/SPD → Dial 9 X* → Feature Access Key → Dial 0 → Dial Y → Dial ZZ ~ Z → [HOLD → Dial XX ~ X*] → FNC  9X = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. * = Omit this step for for Series 500 or higher. Y = CO/PBX Access Code (maximum 4 digits) ZZ ~ Z = Telephone Number to be stored (maximum 16 digits). XX ~ X = Name to be stored using the Character Code (maximum 13 characters).  Operations enclosed in [ ] are optional.	Installation Note 2

(continued on next page)

Function	Operation	Notes
Program Feature Access Keys (for Nesting Dial)	<p>FNC → LNR/SPD → 9 X* → Feature Access Key → Dial 0 → Dial Y → ANS → Dial ZZ → [ANS → ZZ (repeat up to 3 times)] → [HOLD → Dial XX ~ X] → FNC</p> <p>9X = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit.            * = Omit this step for for Series 500 or higher.            Y = CO/PBX Access Code (maximum 4 digits)            ZZ = System or Station Speed Dial Buffer Number (00 ~ 99)            XX ~ X = Name to be stored using the Character Code (maximum 13 characters).</p> <p>Operations enclosed in [ ] are optional.</p>	Installation Note 2
Program Feature Access Keys (for Feature Access)	<p>FNC → LNR/SPD → 9 X* → Feature Access Key → Dial # → Dial YY → FNC</p> <p>9X = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit.            * = Omit this step for for Series 500 or higher.            YY = Feature Access Code</p>	Installation Note 2
Confirm Feature Access Key	FNC → Feature Access Key	Note 2
Cancel Feature Access Key	<p>FNC → LNR/SPD → Dial 9 X* → FNC</p> <p>9X = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit.            * = Omit this step for for Series 500 or higher.</p>	Note 2
Place Call with Feature Access Key	Press the Feature Access Key programmed for the desired feature.	Note 2
Program One-Touch Keys (for DSS/BLF)	<p>FNC → LNR/SPD → One-Touch Key → Dial 1 → Dial YYY → [Dial 1] → FNC</p> <p>YYY = Station number (2, 3, or 4 digits)</p> <p>Operations enclosed in [ ] are optional (when the digit 1 is dialed, the call is switched from Voice to Tone or from Tone to Voice).</p>	
Program One-Touch Keys (for Station Speed Dial)	<p>FNC → LNR/SPD → One-Touch Key → Dial 0 → Dial Y → Dial ZZ ~ Z → FNC</p> <p>Y = CO/PBX Access Code (maximum 4 digits)            ZZ ~ Z = Telephone Number to be stored (maximum 16 digits).</p>	
Program One-Touch Keys (for Nesting Dial)	<p>FNC → LNR/SPD → One-Touch Key → Dial 0 → Dial Y → ANS → Dial ZZ → [ANS → Dial ZZ (repeat up to 3 times)] → FNC</p> <p>Y = CO/PBX Access Code (maximum 4 digits)            ZZ = System or Station Speed Dial Buffer Number (00 ~ 99)</p> <p>Operations enclosed in [ ] are optional.</p>	

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Function	Operation	Notes
Program One-Touch Keys (for Feature Access)	FNC → LNR/SPD → One-Touch Key → Dial # → Dial YY → FNC  YY = Feature Access Code	
Confirm One-Touch Key	FNC → One-Touch Key { → FNC }  Operation in { } is required only if the arrow is displayed.	
Cancel One-Touch Key	FNC → LNR/SPD → One-Touch Key → FNC	
Place Call with One-Touch Key	Press the One-Touch key programmed for the desired feature.	

**While the extension is being seized (handset is lifted or the SPKR key is pressed and ICM lamp is lit):**

**Note:** The default setting for the Access Codes are shown in this table.

Function	Operation (Default)	Notes
Trunk Group 1	Dial 9	CO/PBX Trunk (Outgoing)
Trunk Group 2	Dial 8	Tie Trunk (Outgoing)
Trunk Group 3	Dial 70	
Trunk Group 4	Dial 71	
Trunk Group 5	Dial 72	
Trunk Group 6	Dial 73	
Trunk Group 7	Dial 74	
Trunk Group 8	Dial 75	

*(continued on next page)*

Function	Operation (Default)	Notes
Call Pickup CO/PBX/Tie Line for Another Tenant	Dial □ □	Note 4
Call Pickup Internal in Same Tenant	Dial □ □	Note 4
Call Transfer in Same Tenant	Dial □ □	Note 4
Specified CO/PBX Line Seizure	Dial □ □ → Dial XX XX = CO/PBX Line Number (01 ~ 64)	Note 4
Set Trunk Queuing	Dial 78 → Hang Up Note: When busy tone is heard.	Installation Note 4
Cancel Trunk Queuing	Dial 79 → Hang Up	Installation Note 4
Specified Tenant CO/PBX Line Seizure	Dial □ □ → Dial XX XX = Tenant Number (00 ~ 47)	Note 4
Call Pickup - Directed	Dial 67	
Intra-Tenant Call Pickup	Dial 68	Note 4
Call Pickup (Tie) in Same Tenant	Dial □ □	Note 4
Call Pickup (PBX) in Same Tenant	Dial □ □	Note 4
Call Pickup (CO) in Same Tenant	Dial □ □	Note 4
Internal Emergency All Call Paging	Dial □ □	
All Internal Zone Paging	Dial 51	
Internal Zone A Paging	Dial 52	
Internal Zone B Paging	Dial 53	
Internal Zone C Paging	Dial 54	
Internal Meet-Me	Dial 5 *	
All External Zone Paging	Dial 55	
External Zone A Paging	Dial 56	
External Zone B Paging	Dial 57	
External Zone C Paging	Dial 58	
All Call Paging	Dial 59	

(continued on next page.)

Function	Operation (Default)	Notes
External Meet-Me	Dial 5 #	
Trunk Group (9 ~ 32)	Dial □ □	Notes 3 & 4
Route Advance (1 ~ 16)	Dial □ □	Notes 3 & 4
DSS 1 Call	Dial □ □	Note 4
DSS 2 Call	Dial □ □	Note 4
Special Station Access Code (00 ~ 23)	Dial □ □	Note 4
Timed Alarm Set at SLTs	Dial □ □ → Dial XXXX → Dial YY:YY → Hang Up XXXX = Station number YY:YY = Time (according to 24-hour clock)	Installation Note 4
Timed Alarm Cancel at SLTs	Dial □ □ → Dial XXXX → Dial 9999 → Hang Up XXXX = Station number	Installation Note 4
Station Outgoing Lockout Set	Dial □ □ → Dial XX ~ X → Hang Up XX~ X = Password (maximum 10 digits)	Installation Note 4
Station Outgoing Lockout Cancel	Dial □ □ → Dial XXX → Hang Up XXX = Password (maximum 10 digits)	Note 4
Station Outgoing Lockout Password Change	Dial □ □ → Dial XX ~ X → Dial YY ~ Y → Hang Up XX~ X = Old Password (maximum 10 digits) YY~ Y = New Password (maximum 10 digits)	Installation Note 4
Station Outgoing Lockout Cancel from Attendant	Dial □ □ → Dial XXXX → Hang Up XXXX = Station number	Installation Note 4
Set Do Not Disturb	Dial 40 → Hang Up	Installation
Set Call Forward - All Calls	Dial 41 → Dial XXXX → Hang Up XXXX = Station number of forward destination	Installation
Cancel Call Forward - All Calls/Do Not Disturb	Dial 42 → Hang Up	Installation
Set Call Forward - No Answer	Dial □ □ → Dial XXXX XXXX = Station number of forward destination	Installation
Cancel Call Forward -No Answer	Dial □ □ → Hang Up	Installation
Set Forced/Verified Account Code from an Attendant Position	Dial □ □ → Dial XXX → Dial YYY → ANS → Hang Up XXX = Forced Account Number 001 ~ 500 YYY = Forced Account Code (maximum 10 digits)	Installation Note 4

(continued on next page)

Function	Operation (Default)	Notes
Set Call Forward -Busy	Dial □□ → Dial XXXX → Hang Up XXXX = Station number of forward destination	Installation
Cancel Call Forward - Busy	Dial □□ → Hang Up	
Set Call Forward - All Calls from Destination	Dial □□ → Dial XXX → Hang Up XXX = Station number of transfer origin	Installation
Cancel Call Forward - All Calls from Destination	Dial □□ → Dial XXX → Hang Up XXX = Station number of forwarding party	Installation
Call Forward Busy/ No Answer Set	Dial 43 → Dial XXXX XXXX = Station number of forward destination	Installation
Call Forward Busy/ No Answer Cancel	Dial 44 → Hang Up	Installation
Program Station Speed Dial Buffer Number by Single Line Telephone	Dial 76 → Dial 9 X → Dial YYYY → Dial ZZ ~ Z 9X = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (80 ~ 99). (Series 500 or higher) YYYY = Access Code (maximum 4 digits) ZZ ~ Z = Telephone Number (maximum 24 digits)	Notes 2 & 4
Clear Station Speed Dial Buffer Number by Single Line Telephone	Dial 76 → Dial 9 X → Hang Up 9X = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (80 ~ 99). (Series 500 or higher)	Notes 2 & 4
Place Call Using a Speed Dial Buffer Number by Single Line Telephone	Dial 77 / * → Dial 9 X * = MF Type 9X = Speed Dial Buffer Number (90 ~ 99). Enter 0 ~ 9 for last digit. (Series 100 ~ 450) Speed Dial Buffer Number (80 ~ 99). (Series 500 or higher)	
Last Number Dialed by Single Line Telephone	Dial *	
Set Timed Alarm at Single Line Telephone	Dial □□ → Dial XX:XX XX:XX = Time (24-hour clock in 5 minute increments)	Installation Note 4
Cancel Timed Alarm at Single Line Telephone	Dial □□ → Hang Up	Installation Note 4

(continued on next page)

Function	Operation	Notes
Barge-In by Station Number	FNC → CNF → Dial XXXX → FNC XXXX = Station number to be interrupted	Installation
Barge-In by Trunk Number	FNC → CNF → Dial * → Dial XX → FNC XX = CO/PBX Trunk Number (01 ~ 64) to be interrupted	Installation
Transfer to Call Park - System	Dial 4 * → Dial X X = Call Park Number (0 ~ 9)	
Answer or Retrieve Call Park - System	Dial 4 # → Dial X X = Call Park Number (0 ~ 9)	
Automated Attendant Message (Recording/Confirmation/Erasing)	Dial □ □ → Dial X → Dial 1 → Dial Y → Dial Z X = 1 = Recording = 2 = Confirmation = 3 = Erasing Y = Enter Automated Attendant Number (1 ~ 8) Z = 1 = Day Mode = 2 = Night Mode = 3 = Weekend Mode	Note 4
Voice Prompt Message (Recording/Confirmation/Erasing)	Dial □ □ → Dial X → Dial 2 → Dial Y X = 1 = Recording = 2 = Confirmation = 3 = Erasing Y = 1 = Message for Dial Tone = 2 = Message for Call Waiting Tone	Note 4
Delay Announcement (Recording/Confirmation/Erasing)	Dial □ □ → Dial X → Dial 3 X = 1 = Recording = 2 = Confirmation = 3 = Erasing	Note 4
Attendant Call	Dial 0	Installation
Set Relocation	Dial □ □ → Dial XXXX → Dial YYYYY XXXX = Station number to be interrupted YYYYY = Station Password	Note 4 Series 700 or higher

**While calling an extension:**

Function	Operation	Notes
Tone/Voice Switching	Dial 1	
Callback Message	Dial #	Installation
Handset Receive Volume	FNC → Dial 2	Installation

(continued on next page)

**While a call is waiting (when calling an extension and Call Waiting Tone is heard):**

Function	Operation	Notes
Automatic Callback	Dial 0 → Hang Up	Installation
Step Call	Dial 1	Single Line OK (only for DP type telephones)
Tone Override	Dial *	Installation
Callback Message	Dial #	Installation
Voice Over	Dial 6	
Quick Transfer to Voice Mail	Dial 7	Series 500 or higher

**While seizing a CO/PBX Line:**

Function	Operation	Note
Microphone ON/OFF	FNC → Dial 1	
Seized Outside Line Number Display	FNC → Dial 3	
Drop Key	FNC → Dial 5	
Store and Repeat (Store)	FNC → Dial 7	
Save and Repeat (Save)	FNC → Dial 9	
Exclusive Hold	FNC → Dial HOLD	
Drop Trunk and Seize Internal Line	FNC → Dial 6 *	
Store/Save & Repeat (Dial)	LNR/SPD → Dial #	
Unsupervised Conference	Press CNF (during conference)	Series 500 or higher
Automatic Redial	FNC → LNR/SPD (Speaker Mode)	
Last Number Redial	LNR/SPD → Dial *	
Account Code Entry	FNC → Dial 66	Series 300 or higher
Quick Transfer to Voice Mail	FNC → Dial 86	Series 500 or higher
Voice Over Split (Whisper Page)	FNC → Dial 65	Series 400 or higher
Group Listening	Speaker (during off-hook)	Series 700 or higher



**CHAPTER 4**  
**TERMINAL INSTALLATION**

## CHAPTER 4

### TERMINAL INSTALLATION

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## CHAPTER 4

### TERMINAL INSTALLATION

#### SECTION 1 GENERAL INFORMATION

The system has four models of Electra Professional Multiline Terminals for the Level II/Level II Advanced system, five models of Electra Elite Digital Multiline Terminals for the 120 system, Attendant Add-On Console for Level II/Level II Advanced, Attendant Add-On Console for 120, an SLT Adapter that allows connection of Single Line Telephones, an ADA connection for a headset, external speakerphone or other ancillary device for Electra Professional terminals, an ADA-U ancillary device for the Electra Elite terminal, an APR-U analog port adapter with ringing for Electra Elite terminals, and an HFU-U handsfree unit that enhances small office teleconferencing for Electra Elite terminals. WMU-U and WMU-W wall mounts for Electra Elite and Electra Professional terminals, respectively, are also described.

#### SECTION 2 ELECTRA PROFESSIONAL MULTILINE TERMINALS

This section describes multiline terminals for Level II/Level II Advanced system and provides the instructions for wall mounting a Multiline Terminal and installing the plastic panels provided with the telephones.

##### 2.1 ETW-8-( ) (BK)/(SW) TEL

This Multiline Terminal is a fully modularized instrument with tilt stand, eight Flexible Line keys (each with a two-color LED), eight function keys, built-in speakerphone, Ancillary Device Adapter (ADA) compatibility, and a large LED to indicate incoming calls and messages. Refer to Figure 4-1 - ETW-8-( ) (BK)/(SW) TEL Multiline Terminal.

A maximum of 55 ETW-8-( ) (BK)/(SW) TEL terminals can be installed in a Level II system and a maximum of 95 in a 120/Level II Advanced system.



Figure 4-1 ETW-8-( ) (BK)/(SW) TEL Multiline Terminal



## 2.2 ETW-16DC-( ) (BK)/(SW) TEL

This Multiline Terminal is a fully modularized instrument with tilt stand, 16 Flexible Line keys (each with a two-color LED), eight function keys, built-in speakerphone, 16-character by 2-line Liquid Crystal Display (LCD), ADA compatibility, and a large LED to indicate incoming calls and messages. Refer to Figure 4-2 - ETW-16DC-( ) (BK)/(SW) TEL Multiline Terminal.

A maximum of 56 ETW-16DC-( ) (BK)/(SW) TEL terminals can be installed in a Level II system and a maximum of 96 in a 120/Level II Advanced system.



Figure 4-2 ETW-16DC-( ) (BK)/(SW) TEL Multiline Terminal

## 2.3 ETW-16DD-( ) (BK)/(SW) TEL

This Multiline Terminal is a fully modularized instrument with tilt stand, 16 Flexible Line keys (each with a two-color LED), eight function keys, built-in speakerphone, a 16-character by 2-line Liquid Crystal Display (LCD), 20 programmable One-Touch keys with red LEDs, ADA compatibility, a large LED to indicate incoming calls and messages. Refer to Figure 4-3 - ETW-16DD-( ) (BK)/(SW) TEL Multiline Terminal.

A maximum of 56 ETW-16DD-( ) (BK)/(SW) TEL terminals can be installed in a Level II system and a maximum of 96 in a 120/Level II Advanced system.



Figure 4-3 ETW-16DD-( ) (BK)/(SW) TEL Multiline Terminal

## 2.4 ETW-24DS-( ) (BK)/(SW) TEL

This Multiline Terminal is a fully modular instrument with tilt stand, 24 Flexible Line keys (each with a two-color LED), eight function keys, built-in speakerphone, built-in dual path ability, 16-character by 2-line Liquid Crystal Display (LCD), 12 programmable One-Touch keys, ADA compatibility, and a large LED to indicate incoming calls and messages. Refer to Figure 4-4 - ETW-24DS-( ) (BK)/(SW) TEL Multiline Terminal.

A maximum of 56 ETW-24DS-( ) (BK)/(SW) TEL terminals can be installed in a Level II system and a maximum of 96 in a 120/Level II Advanced system.



Figure 4-4 ETW-24DS-( ) (BK)/(SW) TEL Multiline Terminal

## 2.5 Connect a Multiline Terminal to the System

1. Plug a telephone cord into the modular jack on the bottom side of the Multiline Terminal. Refer to Figure 4-5 - Connecting a Multiline Terminal to the System.
2. Lead the cord out through the cord groove.

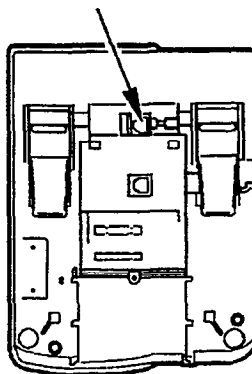


Figure 4-5 Connecting a Multiline Terminal to the System

## 2.6 Install the Designation Card, Plastic Panel, and Labels on a Multiline Terminal

1. Place the designation card over the keys on the Multiline Terminal. Refer to Figure 4-6 - Installing the Designation Card, Plastic Panel, and Labels on a Multiline Terminal.
2. Insert the top hooks of the clear plastic panel in the applicable holes on the Multiline Terminal, then place the bottom hooks in the Multiline Terminal. Snap the plastic panel into place to secure it.
3. Remove the station number label and place on the handset hook.
4. Remove the Directory Card from the sheet and put it on the Directory Tray.

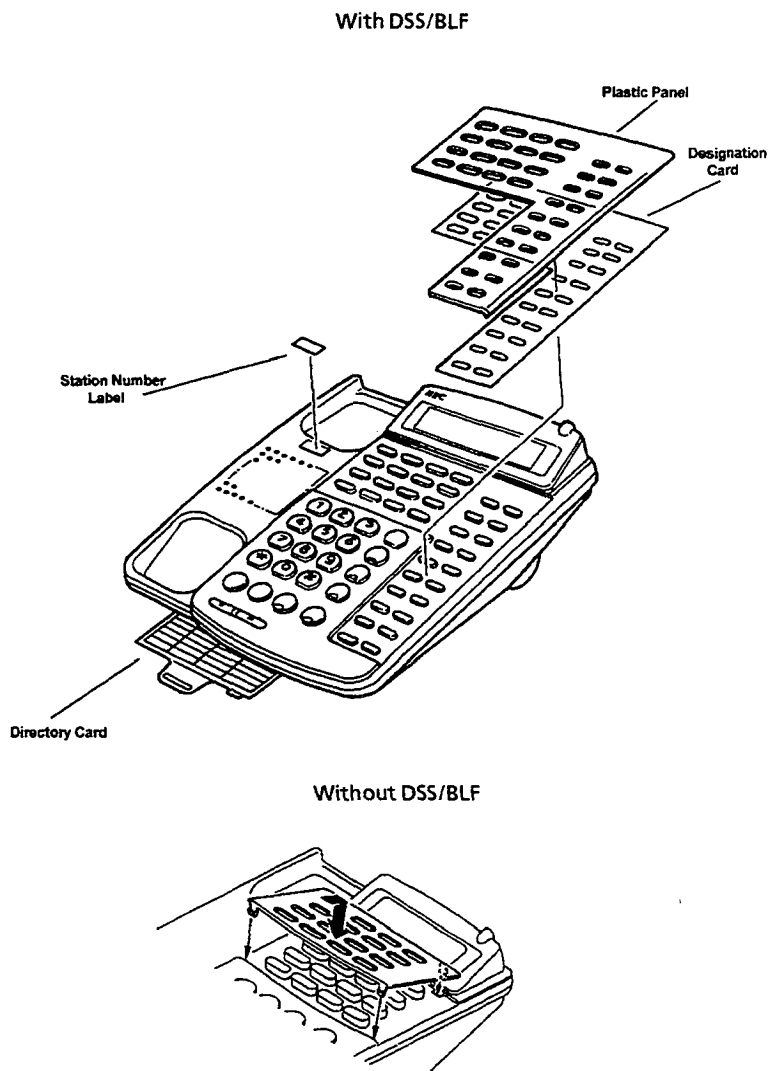


Figure 4-6 Installing the Designation Card, Plastic Panel, and Labels on a Multiline Terminal

## 2.7 Tilt Stand Adjustment

1. To unfold the legs on the tilt stand:
  - a. Turn the Multiline Terminal upside down.
  - b. Unfold the legs until they lock. Refer to Figure 4-7 - Unfolding the Legs on the Tilt Stand.

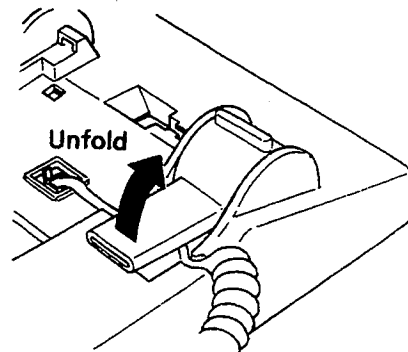


Figure 4-7 Unfolding the Legs on the Tilt Stand

2. To fold the legs on the tilt stand:
  - a. Turn the Multiline Terminal upside down.
  - b. Press the mold under the legs.
  - c. Fold the legs toward the body of the telephone. Refer to Figure 4-8 - Folding the Legs on the Tilt Stand.

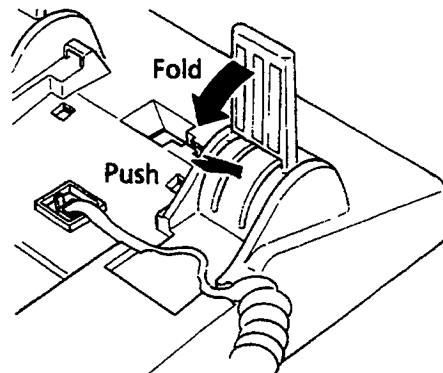


Figure 4-8 Folding the Legs on the Tilt Stand

## 2.8 Connect the EDW-48-( ) (BK)/(SW) Console to the System

The Attendant Add-On Console has 48 programmable keys with two LEDs (red and green), 12 function keys with one-color LED (red), and a tilt stand. Refer to Figure 4-9 - EDW-48-( ) (BK)/(SW) Console.

A maximum of four EDW-48-( ) (BK)/(SW) consoles can be installed in the system.

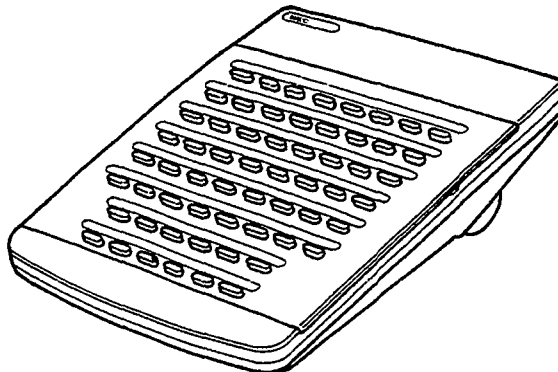


Figure 4-9 EDW-48-( ) (BK)/(SW) Console

The EDW-48-( ) (BK)/(SW) Console may be associated with any of the following Multiline Terminals: ETW-16DC-( ) (BK)/(SW) TEL, ETW-16DD-( ) (BK)/(SW) TEL, or ETW-24DS-( ) (BK)/(SW) TEL.

1. Plug a telephone cord in the modular jack on the bottom of the Attendant Add-On Console.
2. Lead the cord out through the cord groove. Refer to Figure 4-10 - Connecting an Attendant Add-On Console to the System.

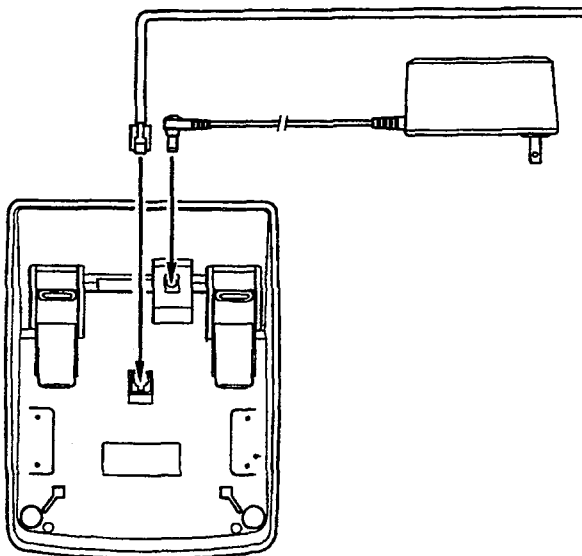


Figure 4-10 Connecting an Attendant Add-On Console to the System

3. Plug the AC/DC Adapter in the jack on the bottom of the Attendant Add-On Console.

**2.9 Install the Plastic Panel on an Attendant Add-On Console**

1. Place the Designation Card over the keys on the Attendant Add-On Console.
2. Insert the bottom hooks of the clear plastic panel in the applicable holes in the Attendant Add-On Console and snap the panel into place.

**SECTION 3 SLT-F(1G)-10 ADP AND SLT-F(1G)-20 ADP**

This adapter provides an interface for a Single Line Telephone or similar devices to an ESI-F(8)-21 KTU port and includes a built-in ringing signal generator (RSG).

One cable, with RJ11 connection at both ends, is provided with this unit to connect the adapter to an ESI-F(8)-21 KTU port. Another cable with RJ11 connectors connects an SLT or other similar device.

**3.1 Connection**

Figure 4-11 - Connecting a Single Line Telephone using the SLT-F(1G)-( ) ADP, shows the connection from an ESI-F(8)-21 KTU port to a Single Line Telephone using the SLT-F(1G)-( ) ADP.

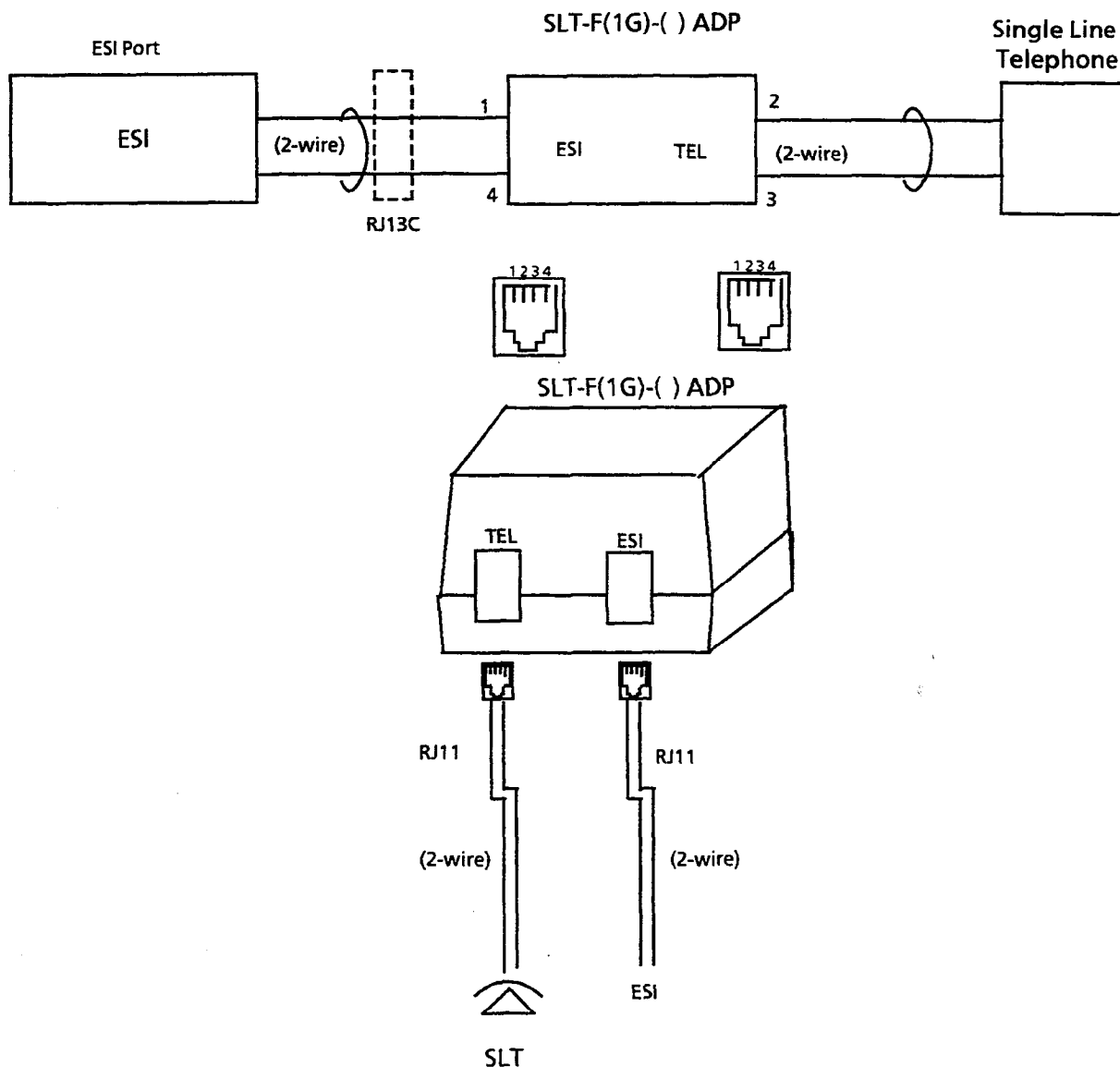


Figure 4-11 Connecting a Single Line Telephone using the SLT-F(1G)-( ) ADP

### 3.2 Wall Mount the SLT-F(1G)-10 ADP and SLT-F(1G)-20 ADP

There are two ways to wall mount this adapter.

1. Use the wall mount location on the rear with one screw.

- OR -

1. Remove the two screws from the top to open the SLT-F(1G)-( ) ADP. Refer to Figure 4-12 - Removing the Screws from the SLT-F(1G)-( ) ADP.

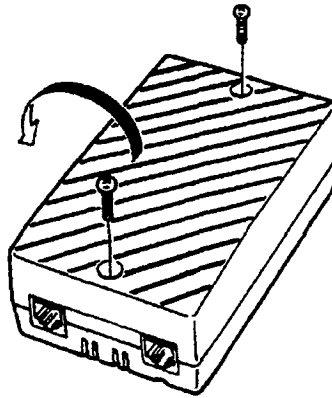


Figure 4-12 Removing the Screws from the SLT-F(1G)-( ) ADP

2. Use the two provided wood screws to attach the unit to the wall. Close the unit and secure with the two screws previously removed. Refer to Figure 4-13 - Attaching the SLT-F(1G)-( ) ADP to a Wall.

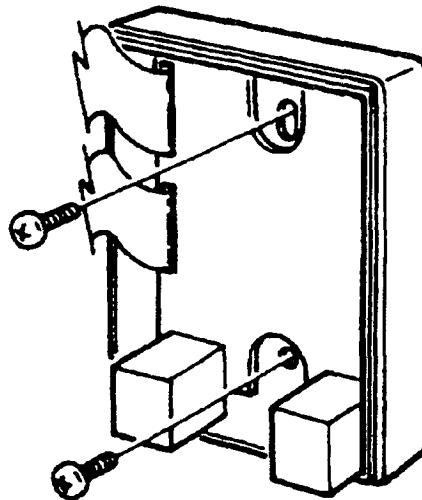


Figure 4-13 Attaching the SLT-F(1G)-( ) ADP to a Wall

**SECTION 4 WALL MOUNTING UNIT****4.1 General Information**

The WMU-W (BK/SW) Unit is a universal Wall Mount Unit.

**4.2 Install the Electra Professional WMU-W (BK)/(SW) Unit**

The WMU-W Unit can be connected to any Electra Professional Multiline Terminal in the system.

1. Remove the station number plate and designation strip.
2. Slide the hanger out. Face the projected side upward, and install it back in the original position. Refer to Figure 4-14 - Wall Mounting Preparation.

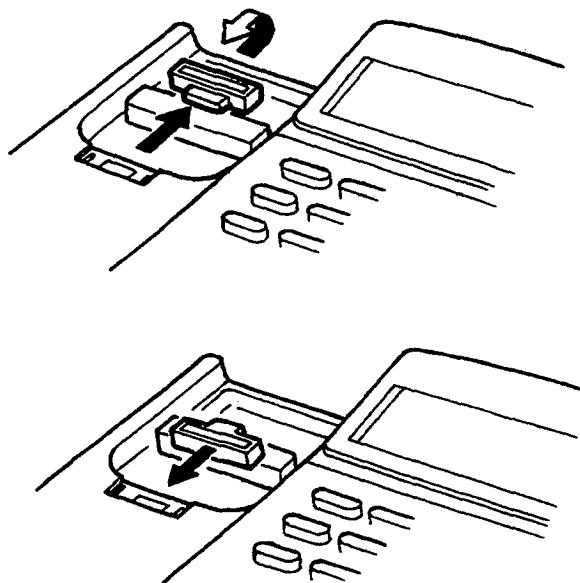


Figure 4-14 Wall Mounting Preparation

3. Reinstall the station number plate and designation strip.



4. Fasten the optional WMU-W (BK)/(SW) Unit to the wall using the two provided screws. Refer to Figure 4-15 - Fastening the WMU-W (BK)/(SW) Unit to the Wall.

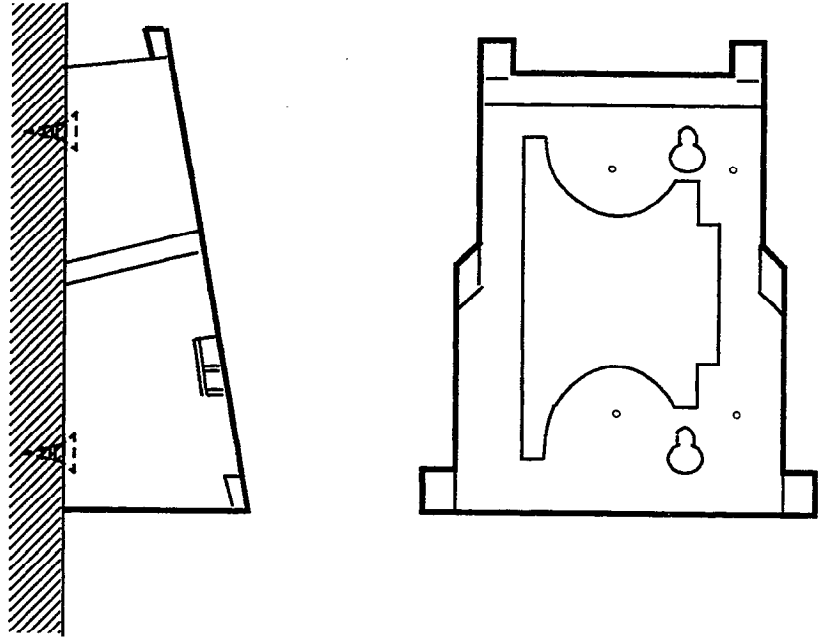


Figure 4-15 Fastening the WMU-W (BK)/(SW) Unit to the Wall

5. Install the Multiline Terminal on the wall mounting unit by aligning the notches on the bottom of the Multiline Terminal with the rails on the wall mounting unit. Refer to Figure 4-16 - Installing the Multiline Terminal on the WMU-W (BK)/(SW) Unit.

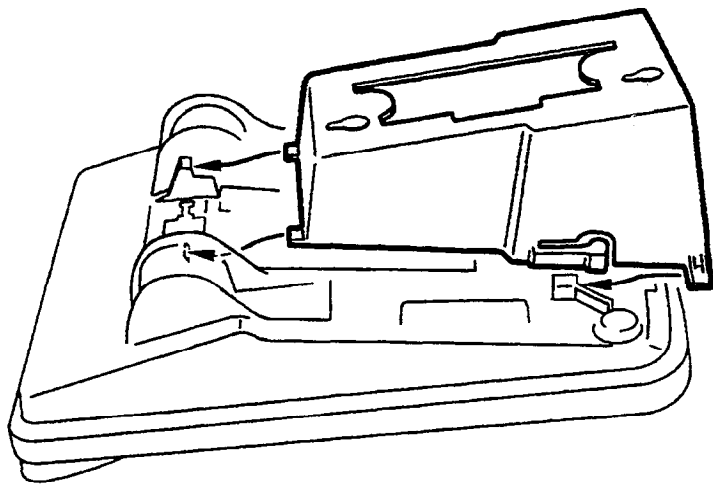


Figure 4-16 Installing the Multiline Terminal on the WMU-W (BK)/(SW) Unit

### 4.3 Install the Electra Elite WMU-U Unit

Any Electra Professional 120 Digital Multiline Terminal can be mounted on a wall using the base unit that comes with the terminal or using the WMU-U Unit to accommodate adapters that are installed on the terminal.

#### 4.3.1 Remove and Remount the Handset Hanger

Slide the hanger out of the slot. Place it back in its original position so that the hanger protrudes providing a rest for the handset. (This procedure applies when using either the base unit or the WMU-U Unit.) Refer to Figure 4-17 Positioning the Handset Hanger for the steps to remove and remount the handset hanger.

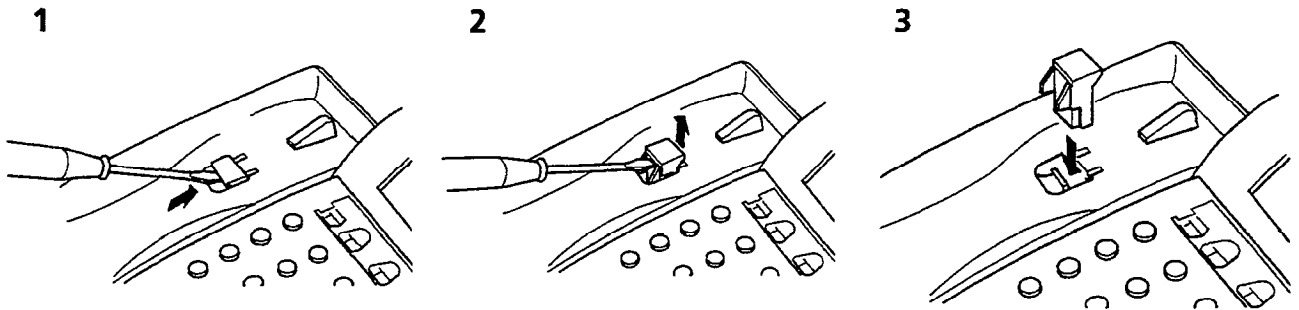


Figure 4-17 Positioning the Handset Hanger

#### 4.3.2 Wall Mount Using the Base Unit

1. Remove the base unit by pressing the tabs on each side of the base plate and lifting upward. Refer to Figure 4-18 Removing the Base unit

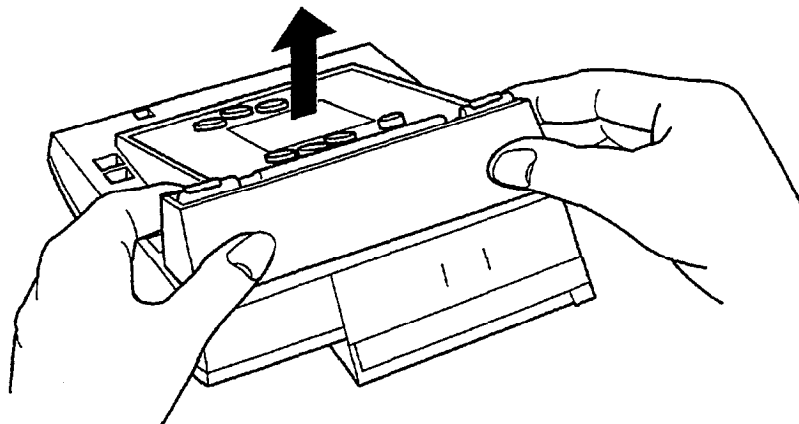


Figure 4-18 Removing the Base Unit

2. Remove the knockout on the base unit with nippers. The shaded area in Figure 4-19 Removing the Knockout is the knockout.

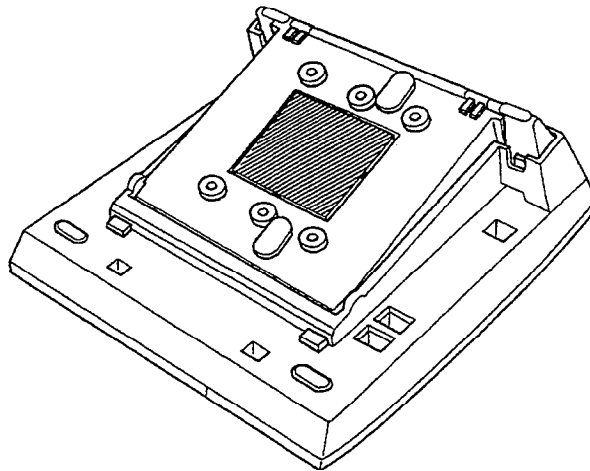


Figure 4-19 Removing the Knockout

3. Attach the base unit to the posts on the locally provided wall plate. Using locally provided screws, secure the base unit to the wall. Place the screws in the nodes provided on the base unit. (Place the wider end of the base unit down.) Attach the base unit to the wall plate as shown in Figure 4-20 Attaching the Base Unit to the Wall.

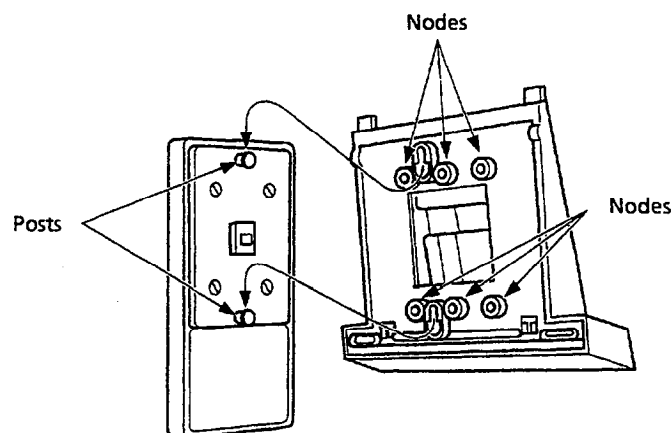


Figure 4-20 Attaching the Base Unit to the Wall

If using a modular jack instead of a wall plate, put the modular jack inside the base unit as shown in Figure 4-21 Wall Mounting Using a Modular Jack. Use the locally provided screws to attach the base unit directly to the wall.

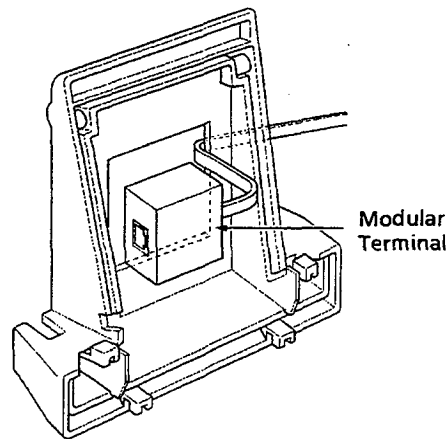


Figure 4-21 Wall Mounting Using a Modular Jack

4. Plug the line cord in the jack on the wall plate, wrap the extra cord and secure it with a tie wrap, and lead the line cord out through the groove in the side of the base unit.

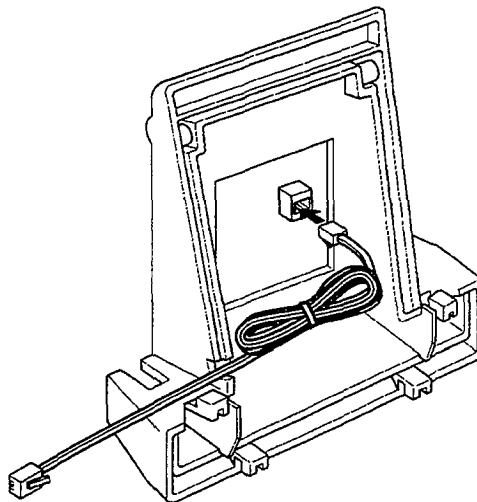


Figure 4-22 Plugging in the Line Cord Using a Wall Jack

If using a modular jack instead of a wall plate, plug the line cord in the modular jack, wrap the extra cord and secure it with a tie wrap, and lead the line cord out through the groove in the side of the base unit.

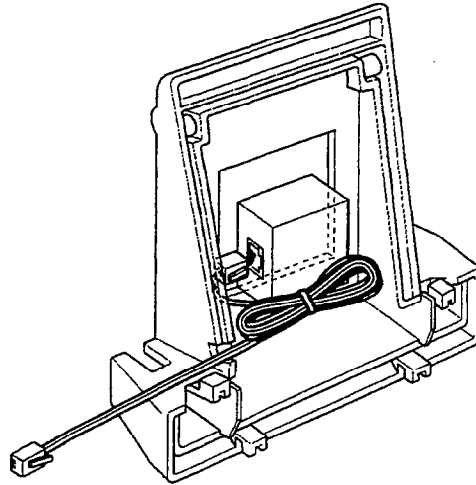


Figure 4-23 Plugging in the Line Cord Using a Modular Jack

5. With the base unit attached to the wall, hook the two bottom tabs on the base unit in the tab slots on the Digital Multiline Terminal.

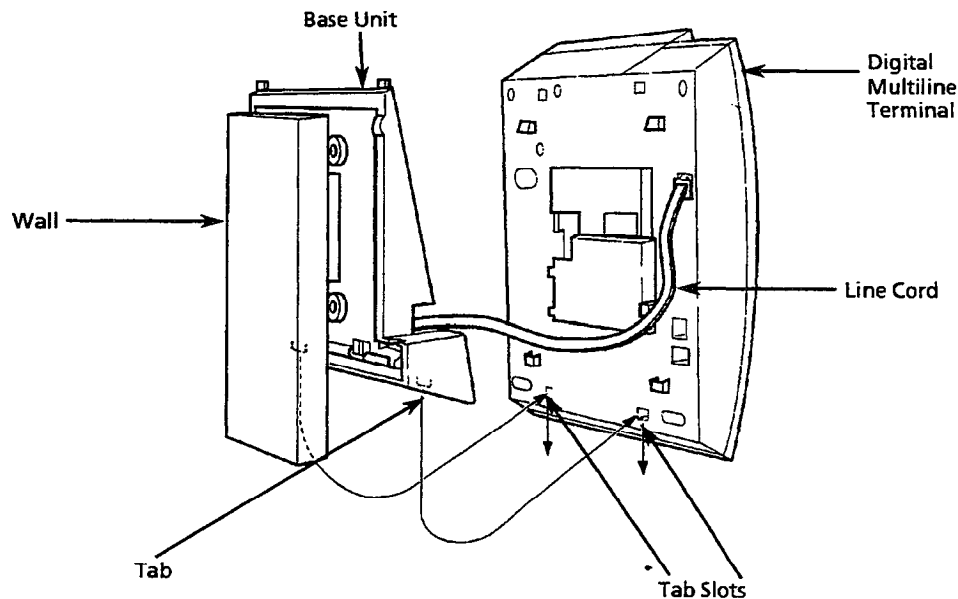


Figure 4-24 Attaching the Bottom Tabs of the Digital Multiline Terminal to the Base Unit

6. Push up on the terminal and lock the top tabs on the base unit in the tab slots on the Digital Multiline Terminal. Refer to Figure 4-25 Attaching the Top Tabs of the Digital Multiline Terminal to the Base Unit.

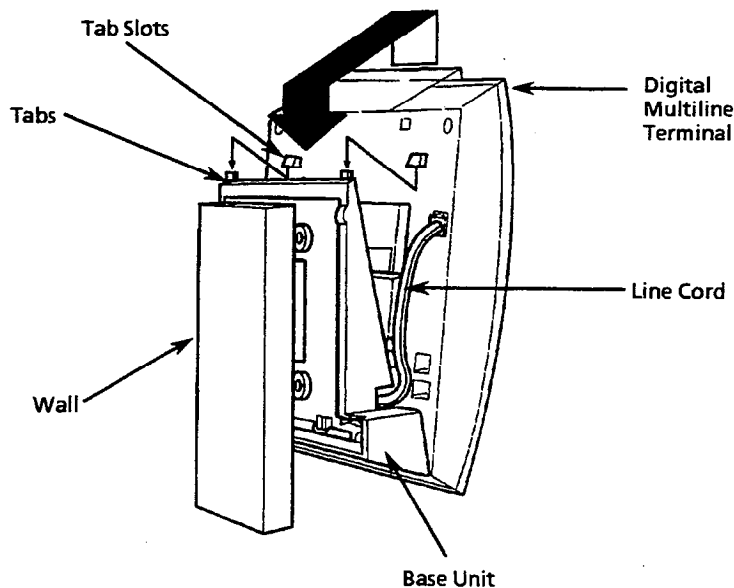


Figure 4-25 Attaching the Top Tabs of the Digital Multiline Terminal to the Base Unit

7. When properly installed, the wall mounted Digital Multiline Terminal looks similar to the one shown in Figure 4-26 Installed Wall Mount Unit.

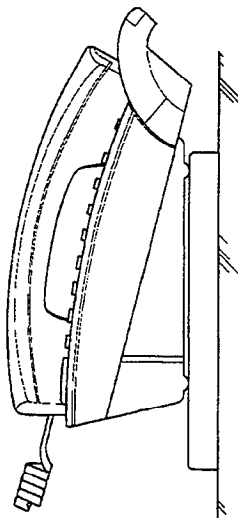


Figure 4-26 Installed Wall Mount Unit

4.3.3 Install the Wall Mount Unit and Mount the Digital Multiline Terminal using the WMU-U Unit

1. Remove the line cord and the tilt leg from the terminal. Cut off the tabs shown in Figure 4-27 Removing the Tabs from the Adapter.

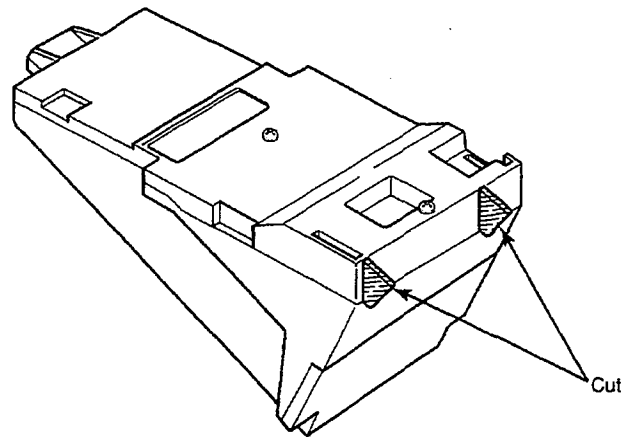
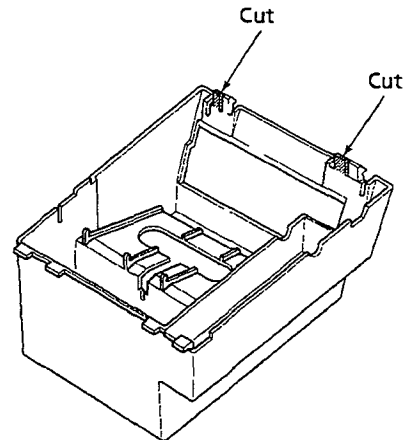
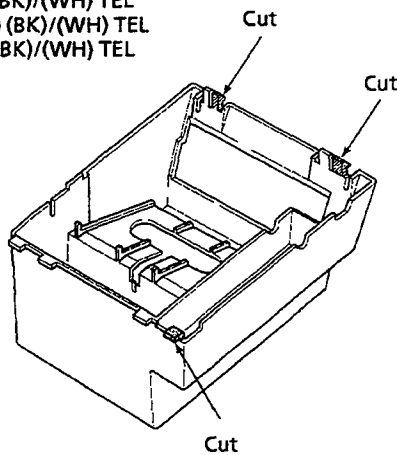


Figure 4-27 Removing the Tabs from the Adapter

2. Remove the tabs from the WMU-U Unit as shown in Figure 4-28 Removing the Tabs from the WMU-U Unit for the applicable digital terminal.

DTU-8-( ) (BK)/(WH) TEL  
DTU-16-( ) (BK)/(WH) TEL  
DTU-16D-( ) (BK)/(WH) TEL  
DCU-60-( ) (BK)/(WH) TEL



DTU-32-( ) (BK)/(WH) TEL  
DTU-32D-( ) (BK)/(WH) TEL

Figure 4-28 Removing the Tabs from the WMU-U Unit

3. Bundle the cord from the modular jack leaving approximately 8 inches. Use a tie wrap to secure the bundled cord.
4. Place the bundled line cord in the space between the WMU-U Unit and the wall. Lead the line cord out through the slits as shown in Figure 4-29 Leading the Line Cord out of the WMU-U Unit.

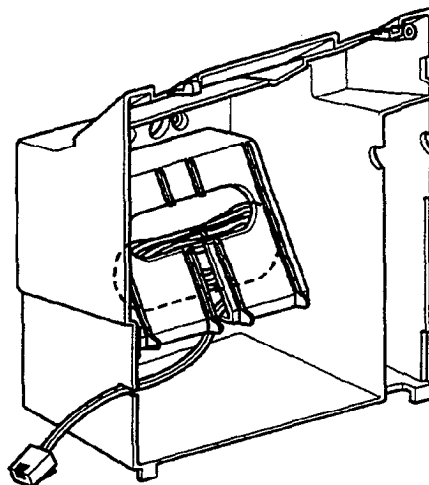


Figure 4-29 Leading the Line Cord out of the WMU-U Unit

5. Attach the WMU-U Unit to the posts on the locally provided wall plate. Using locally provided screws, secure the WMU-U Unit to the wall. Place the screws in the nodes on the WMU-U Unit.

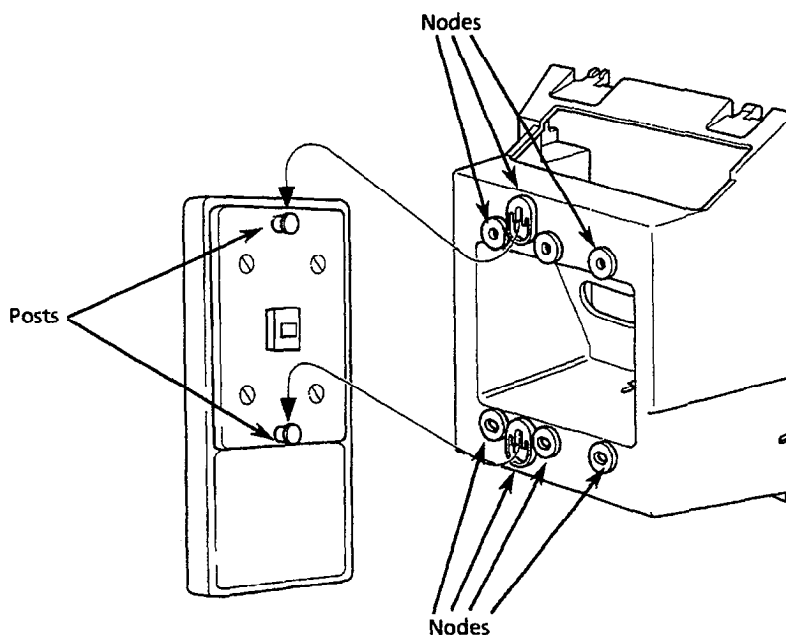


Figure 4-30 Attaching the Wall Mount Unit to the Wall



6. Connect the line cord to the Digital Multiline Terminal.
7. With the WMU-U Unit attached to the wall, hook the two bottom tabs on the WMU-U Mount Unit in the tab slots on the terminal. Then push the two top tabs on the WMU-U Unit in the tab slots on the terminal. If the adapter has a power supply, lead the AC adapter cord out through the opening at the bottom of the terminal. Refer to Figure 4-31 Attaching the Digital Multiline Terminal to the WMU-U Unit.

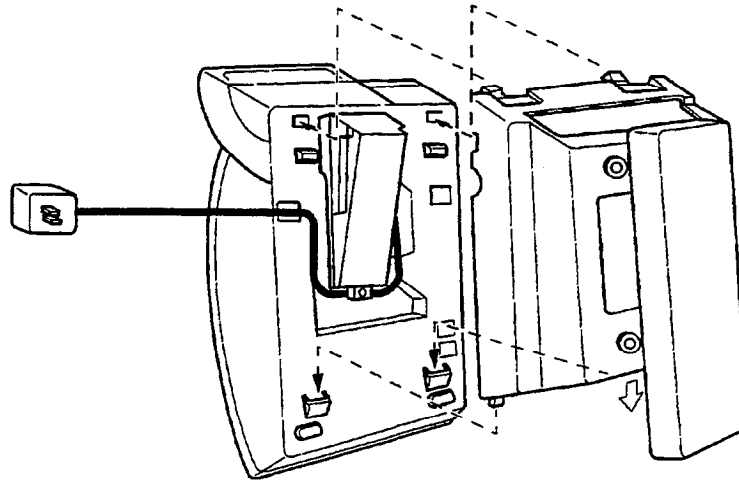


Figure 4-31 Attaching the Digital Multiline Terminal to the WMU-U Unit

- 5.3.4 Remove the Digital Multiline Terminal from the Base Unit or the WMU-U Unit  
To remove the terminal, pull up on the bottom and lift it from the base unit or WMU-U Unit.

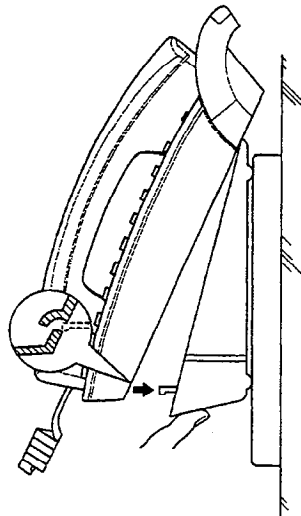


Figure 4-32 Removing the Digital Multiline Terminal from the Base Unit or WMU-U Unit

**SECTION 5 DIGITAL MULTILINE TERMINALS**

This section describes different Electra Elite digital multiline terminals and the digital attendant console for all Electra Professional systems. Each terminal comes with a cable with an RJ11 connector at both ends with one end already connected to the LINE receptacle. A green number display card and an adapter to connect it to the terminal are also included. The Electra Professional telephones with displays also have softkeys.

**5.1 DTU-8-( ) (BK)/(WH) TEL**

This non-display digital multiline terminal has eight programmable line keys (each with a two-color LED), built-in speakerphone, headset jack, a Large LED to indicate incoming calls and messages, and compatibility with the ADA-U, APR-U, and HFU-U Units. Refer to Figure 4-33 - DTU-8-( ) (BK)/(WH) TEL.

A combined maximum of 96 Electra Professional and Electra Elite digital terminals can be installed in the Electra Professional 120/Level II Advanced system. The maximum for Level II is 56.

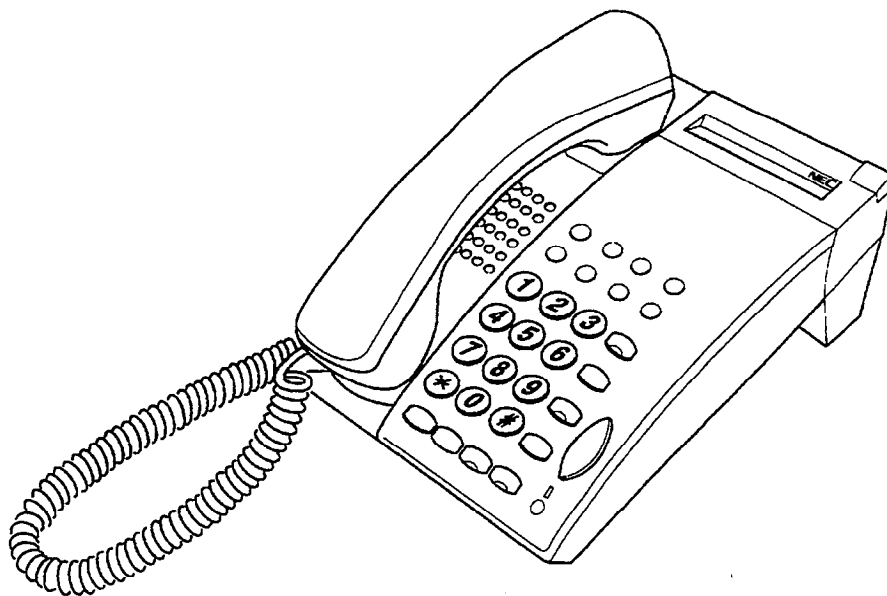


Figure 4-33 DTU-8-( ) (BK)/(WH) TEL

## 5.2 DTU-16-( ) (BK)/(WH) TEL

This non-display digital multiline terminal has 16 programmable line keys (each with a two-color LED), built-in speakerphone, a built-in headset jack, a Large LED to indicate incoming calls and messages, and compatibility with the ADA-U, APR-U, and HFU-U Units. Refer to Figure 4-34 - DTU-16-( ) (BK)/(WH) TEL.

A combined maximum of 96 Electra Professional and Electra Elite digital terminals can be installed in the Electra Professional 120/Level II Advanced system. The maximum for Level II is 56.

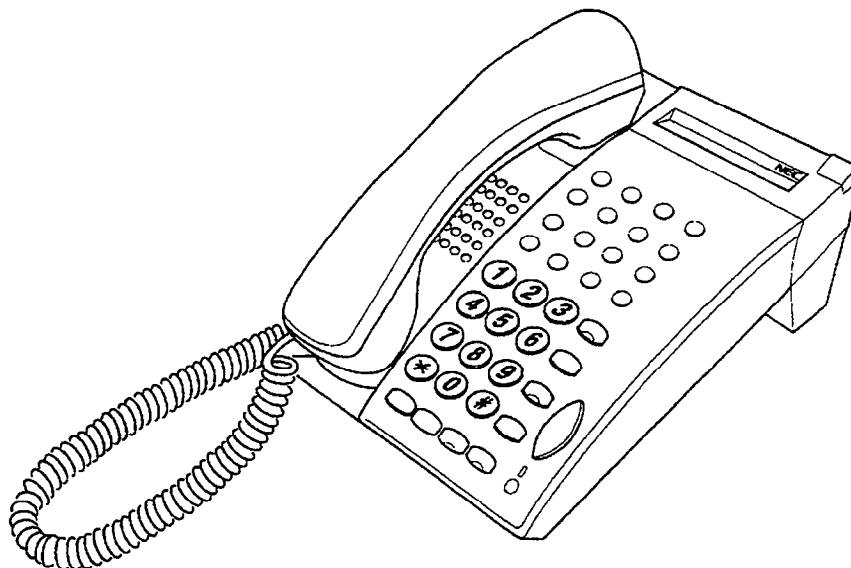


Figure 4-34 DTU-16-( ) (BK)/(WH) TEL

### 5.3 DTU-16D-( ) (BK)/(WH) TEL

This display digital multiline terminal has 16 programmable line keys (each with a two-color LED), built-in speakerphone, a built-in headset jack, a Large LED to indicate incoming calls and messages, and compatibility with the ADA-U, APR-U, and HFU-U Units. This terminal comes in black or white. Refer to Figure 4-35 - DTU-16D-( ) (BK)/(WH) TEL.

The adjustable LCD (Liquid Crystal Display) has 24 characters and 3 lines.

Four softkeys are provided with the DTU-16D-(1) (BK)/(WH) TEL.

A combined maximum of 96 Electra Professional and Electra Elite digital terminals can be installed in the Electra Professional 120/Level II Advanced system. The maximum for Level II is 56.



Figure 4-35 DTU-16D-( ) (BK)/(WH) TEL

#### 5.4 DTU-32-( ) (BK)/(WH) TEL

This non-display digital multiline terminal has 32 programmable line keys (each with a two-color LED), built-in speakerphone, built-in headset jack, a Large LED to indicate incoming calls and messages, and compatibility with the ADA-U, APR-U, and HFU-U Units. Refer to Figure 4-36 - DTU-32-( ) (BK)/(WH) TEL.

A combined maximum of 96 Electra Professional and Electra Elite digital terminals can be installed in the Electra Professional 120/Level II Advanced system. The maximum for Level II is 56.

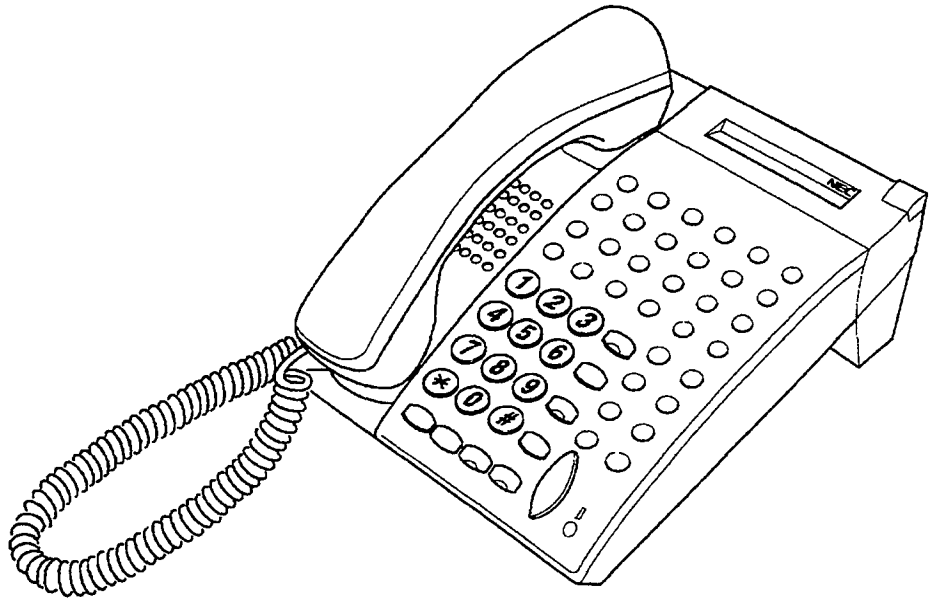


Figure 4-36 DTU-32-( ) (BK)/(WH) TEL

### 5.5 DTU-32D-( ) (BK)/(WH) TEL

This display digital multiline terminal has 32 programmable line keys (each with a two-color LED), built-in speakerphone, built-in headset jack, a Large LED to indicate incoming calls and messages, and compatibility with the ADA-U, APR-U, and HFU-U Units. This terminal comes in black or white. Refer to Figure 4-37 - DTU-32D-( ) (BK)/(WH) TEL.

The adjustable LCD (Liquid Crystal Display) has 24 characters and 3 lines.

Four softkeys are provided with the DTU-32D-2 (BK)/(WH) TEL.

A combined maximum of 96 Electra Professional and Electra Elite digital terminals can be installed in the Electra Professional 120/Level II Advanced system. The maximum for Level II is 56.

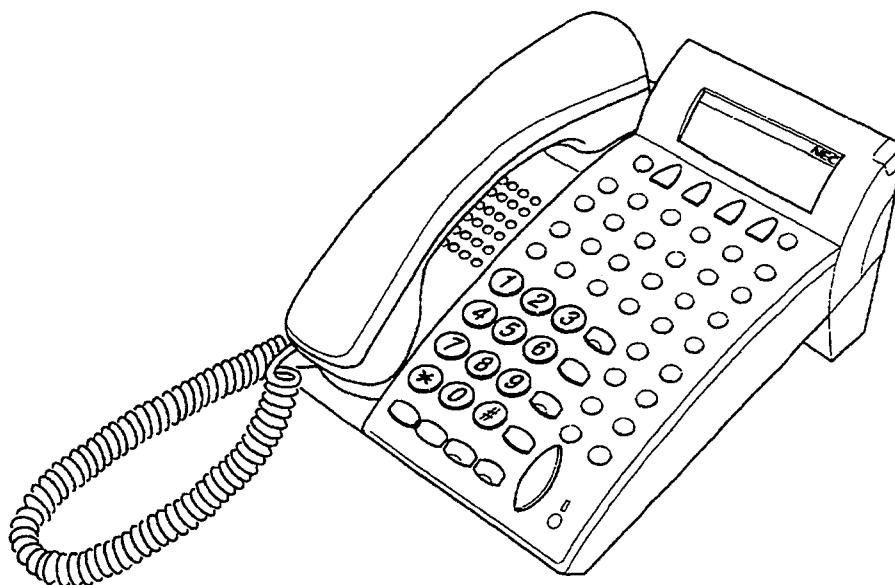


Figure 4-37 DTU-32D-( ) (BK)/(WH) TEL

## 5.6 DCU-60-( ) (BK)/(WH) CONSOLE

The Attendant Console has 60 programmable line keys (each with a two-color LED). The first 48 line keys can be programmed as Direct Station Selection keys, or as outside line keys; the remaining 12 line keys can be programmed as features such as Paging, Night Transfer, or Message Waiting. An external power supply (AC Adapter) is required and is included with the console. Refer to Figure 4-38 - DCU-60-( ) (BK)/(WH) Console.

A maximum of four consoles can be installed in any Electra Professional system. An Attendant Position can have two attached consoles. (This console cannot be installed on the Electra Professional Level I system).

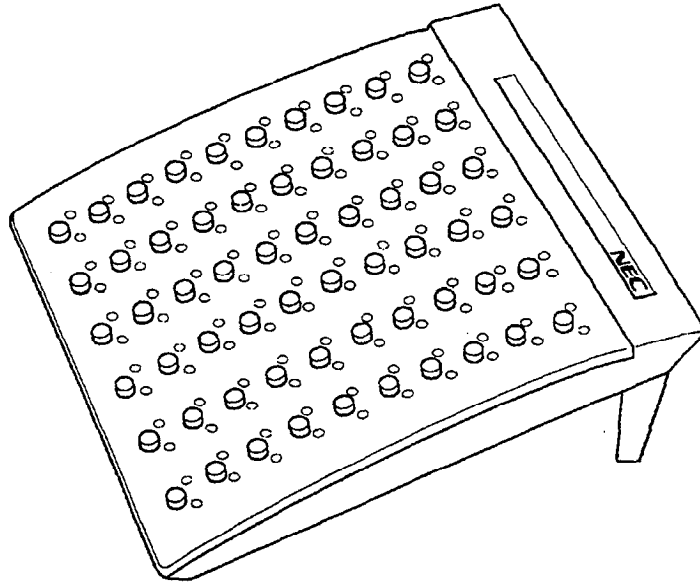


Figure 4-38 DCU-60-( ) (BK)/(WH) Console

## SECTION 6 ANCILLARY DEVICE CONNECTION

### 6.1 General Information

#### ADA-U Unit

This ancillary device adapter allows connection of a tape recorder to log/record telephone calls to Electra Elite Multiline Terminals. Dedicated input connectors are also provided for a recording tone to inform parties that a call is being recorded.

A maximum of 96 ADA-U units can be installed in the 120 system.

#### ADA(1)-W (BK)/(WH) Unit

This ancillary device adapters provides the multiline terminal with connection for a headset, external speakerphone, or other ancillary devices. An ADA(1)-W (BK)/(SW) Unit can be installed in any Electra Professional multiline terminal.

A maximum of 96 ADA(1)-W (BK)/(WH) Units can be installed in the Level II Advanced system. A maximum of 56 can be installed in the Level II system

#### ADA(2)-W (BK)/(SW) Unit

This ancillary device adapter provides the Electra Professional multiline terminal with a single-line telephone interface. An ADA(2)-W (BK)/(SW) Unit can be installed in any Electra Professional multiline terminal and allows connection of a single-line telephone, cordless telephone, fax, modem, an automatic dialer (that generates DTMF tones for dialing), or an answering machine. The maximum distance between the ADA(2)-W (BK)/(SW) Unit and the equipment is 10 feet, using 24 AWG. An AC/DC adapter is required for power supply to the ADA(2)-W (BK)/(SW) Unit. The ADA(2)-W (BK)/(SW) Unit has a built-in RSG. Hookflash detection, Message Wait, and disconnect signal are not supported.

The recommended maximum is 16 ADA(2)-W (BK)/(SW) Units, however, additional units can be installed depending on system traffic and the number of PBR circuits available.

### 6.2 Install the Electra Elite ADA-U Unit

Install the Electra Elite Digital Multiline Terminals using the *green/red* pair at the wall jack instead of the yellow/black pair used with the Electra Professional Multiline Terminals.

When installing an ADA-U Unit, connect the cable to the ADA-U Unit, set the dip switches, and then install the ADA-U Unit on the terminal. The ADA-U Unit **does not** require an AC Adapter.



**6.2.1 Install an ADA-U Unit on a Digital Multiline Terminal**

1. Unplug the telephone cord from the terminal.
2. Press both the left and right ends of the tilt panel on the back of the terminal and remove it.

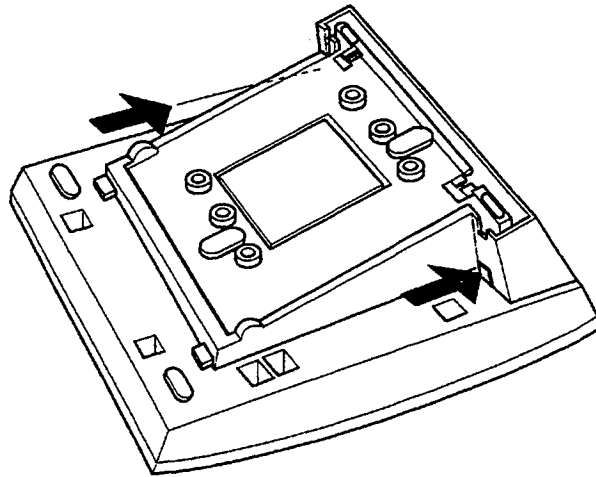


Figure 4-39 Removing the Tilt Panel on the Digital Multiline Terminal

3. Unlatch the cover by pressing the areas indicated in Figure 4-40 Unlatching the Cover on the Digital Multiline Terminal. Using a straight blade screwdriver, press the blade between the cover and the base to release the tabs.

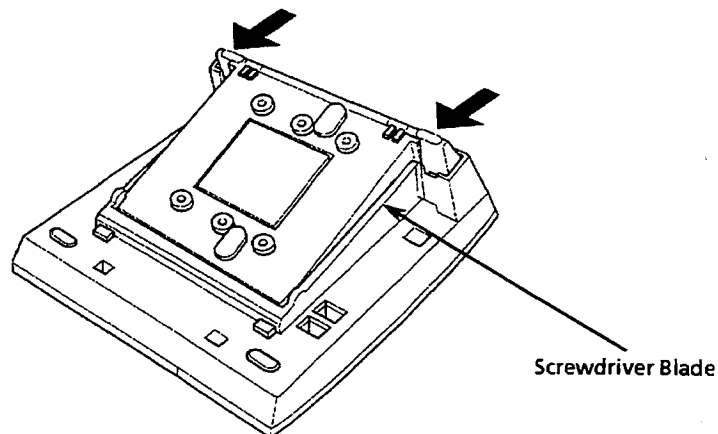


Figure 4-40 Unlatching the Cover on the Digital Multiline Terminal

4. Open the cover to allow access to the ADA receptacle.

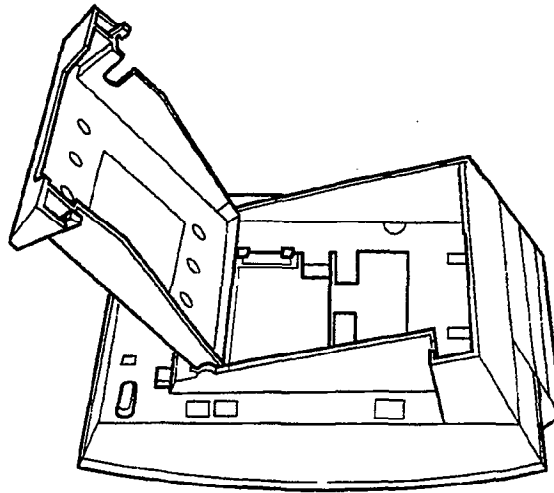


Figure 4-41 Opening the Cover on the Digital Multiline Terminal

5. Plug the ADA-U Unit connector in the receptacle connector on the back of the terminal (Connector in the diagram). Snap the ADA-U Unit between Hooks on the diagram to secure it.

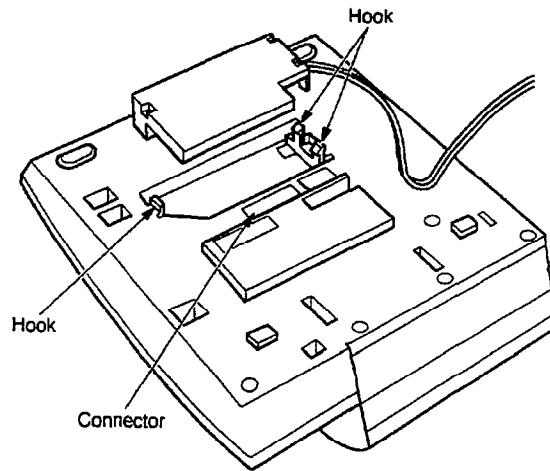


Figure 4-42 Attaching the ADA-U Unit to the Digital Multiline Terminal

6. Lead the Telephone cord out through the groove on the tilt panel. Plug in the telephone cord.

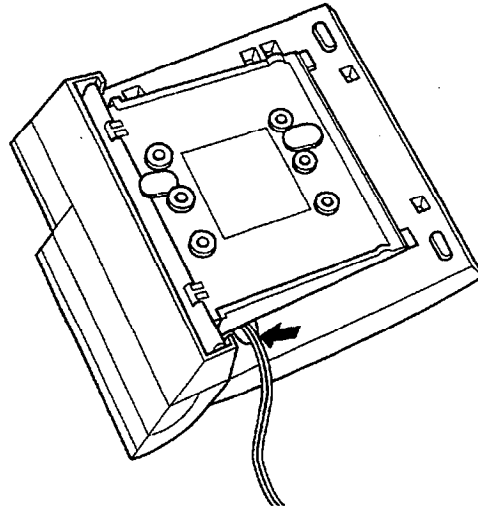


Figure 4-43 Leading the Telephone Cord out from the ADA-U Unit

6.2.2 Connecting Cables to the ADA-U Unit

Cable terminal connectors are located on the right side of the ADA-U Unit. Cables should be connected on this unit before installing the unit on the Digital Multiline Terminal.

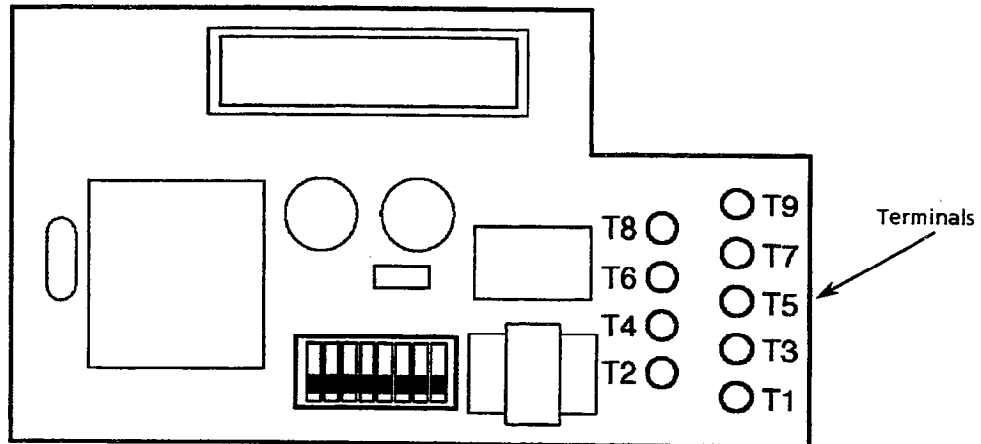


Figure 4-44 ADA-U Unit

1. Cut off the plug on one end of the cable.
2. Locate the adapter terminals on the right side of the unit shown in Figure 4-44 ADA-Unit.
3. Remove the cap on the adapter terminal to expose the metal receptacle. Push the cable in the applicable receptacle and replace the cap. Be sure to line up the slot on the cap with the slot on the metal receptacle to ensure proper contact. Refer to Figure 4-45 Attaching Cables to the ADA-U Unit.

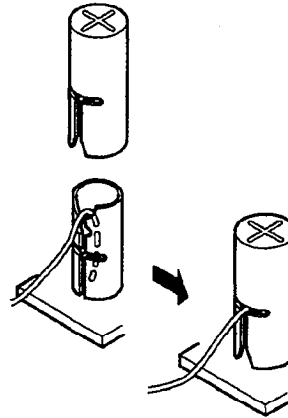


Figure 4-45 Attaching Cables to the ADA-U Unit

4. Insulate the end of the cable that needs to be shielded with insulating tape.  
Table 4-1 ADA-U Cable Connections provides a list of cable connections to ADA-U ADP terminals and describes the specifications for the terminals.

Table 4-1 ADA-U Cable Connections

Terminal Number	Cables to Connect	Terminal Specifications
T1	Connect to T3 and T4.	Input Terminal: Terminal is enabled only when DIP switches 3 and 4 are OFF.
T2	T1 and T2 are input from a recording input generator. They are input-only and provide an audio path to the recording device when connected to T3 and T4.)	If switches 3 and 4 are ON, a humming sound may be recorded due to impedance mismatch. Input Impedance: 100K $\Omega$ Input Level: -15 dB ~ 40 dB (approximately)
T3	Connect the audio recording cable (2-way path).	Input/Output Terminal: To switch between line jack and the mic jack on the recorder, place impedance DIP switches 5 and 6 ON.  Line jacks or other similar (600 $\Omega$ ) devices: Input/Output Level: -15 dB ~ 40 dB (approximately)
T4	Connect the shielded end of the audio recording cable (2-way path).	Mic jacks or other similar low impedance devices: Input/Adapter Level: -40 dB ~ 60 dB (approximately)
T5	Connect the bare end of the control cable.	When a Digital Multiline Terminal is idle, this contact is open. When the terminal goes off-hook (using the handset, headset, or built-in speakerphone), this contact is closed. <b>With the open contact, use both T5 and T6.</b>
T6	Connect the shielded end of the control cable.	This provides common connection for control cable.
T7	Connect the bare end of the control cable.	When the Digital Multiline Terminal is idle, this contact is closed. When the terminal is busy (using the handset, headset, or built-in speakerphone), this contact is open. <b>With the closed contact, use both T6 and T7.</b>
T8	Connect to Off-Hook Control Lead A	A short between T8 and T9 causes the Digital Multiline Terminal to go off-hook and send audio to T3 and T4.
T9	Connect to Off-Hook Control Lead B	

**Notes:**

- \* When the built-in microphone is used to record, a low recording level may occur for the transmit part of the conversation.
- \* When recording in the handsfree (half-duplex) mode using the built-in speakerphone, the record notice tone may not be audible to the far-end party and/or speech may be interrupted or distorted when the tone is generated.
- \* The transmit recording level is lower than the receiving voice level for intercom calls. The transmit recording levels for CO calls are matched.
- \* If the record tone generator is separate from the recorder, a separate pair of cables is required. For this configuration, connect the record notice tone cables to input terminals T1 and T2 on the ADA-U. (T3 and T4 are used as the tape recorder input.)
- \* If a remote control terminal is provided on a recorder and a control cable is used, the record start/stop control is provided by connecting the terminal to T5 (or T7) and T6 on the ADA-U. (Connecting to T5 or T7 is determined by the specifications of the recorder.)
- \* If a Beep Tone is provided from the recording equipment, the Beep Tone should be input using T3 and T4 on ADA-U ADP. (Do not use T1 and T2 to input Beep Tone.)
- \* Single Line Telephones connected to an APR-U Unit cannot be used to record conversations via the ADA-U Unit.

**6.2.3 Switch Settings on the ADA-U Unit**

The DIP switch, located at the bottom center of the ADA-U Unit, allows a technician to configure the board to specific settings. Figure 4-46 ADA-U Unit Switch Settings shows the default settings.

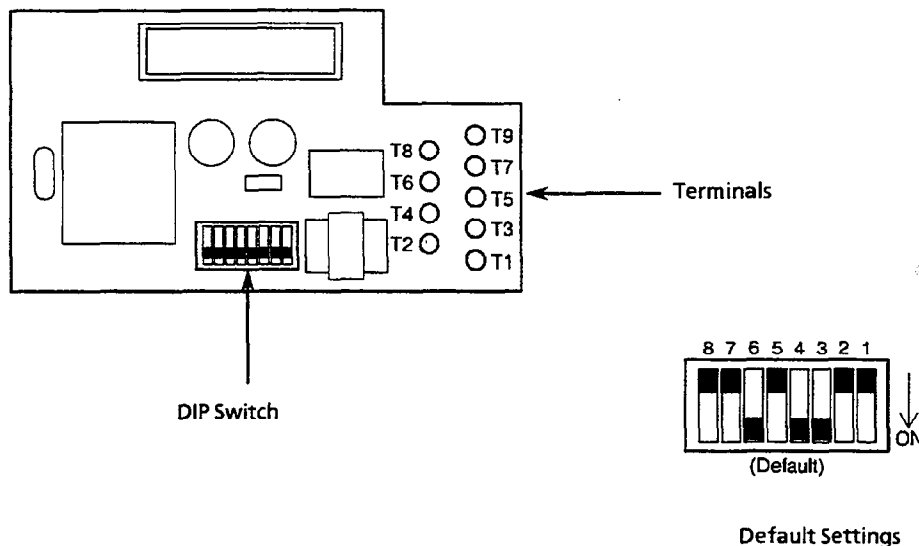


Figure 4-46 ADA-U Unit Switch Settings

The following switch settings should be made on the ADA-U Unit to enable or disable the record start notice tone. Switch settings should be made before installing the ADA-U Unit in the Digital Multiline Terminal. Refer to Table 4-2 ADA-U Unit Switch Settings.

Table 4-2 ADA-U Unit Switch Settings

Switch	Setting		Description
SW1-1	ON		Enables the relay control at T5, T6 or T6, T7.
SW1-2	OFF		N/A
SW1-3 and SW1-4	SW1-3 ON	SW1-4 ON	Beep Tone provided by the recording device, connected by T3 and T4. (Do not connect T1 and T2)
	SW1-3 OFF	SW1-4 OFF	Beep Tone provided by an external devices, connected by T1 and T2
SW1-5 and SW1-6	SW1-5 ON	SW1-6 ON	Input impedance for T5 and T6 are set to 600 $\Omega$ .
	SW1-5 OFF	SW1-6 OFF	Input impedance for T5 and T6 are set to 30 $\Omega$ .
SW1-7	ON		Enables the record tone input
SW1-8	OFF		N/A

**Note:** Do not connect T1 and T2 when switches 3 and 4 are ON.

### 6.3 Install the APR-U Unit

The Analog Port Adapter with Ringing provides an interface to install Single Line Telephones, modems, and NEC VoicePoint/VoicePoint Plus Conferencing units. The APR-U Unit also detects incoming ringing signals. By providing ring detection, the user can install a personal fax machine or an answering machine for convenience. Two user-adjustable switches are provided on the adapter; SW3 allows for 600 ohms or a complex impedance interface to devices such as a modem or Single Line Telephone, and SW1 is set to position 2 (the Electra Professional System does not support the B2 channel). The APR-U **requires** an AC Adapter, that is ordered separately. If an APR-U and HFU-U are both installed, only one AC Adapter is required.

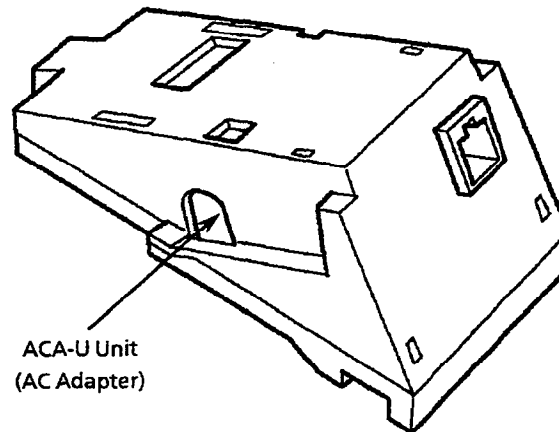


Figure 4-47 APR-U Unit

#### 6.3.1 Install an APR-U Unit on a Digital Multiline Terminal

1. Unplug the telephone cord from the terminal.
2. On the back of the terminal, press the areas indicated in the diagram to raise the inner area of the tilt panel.

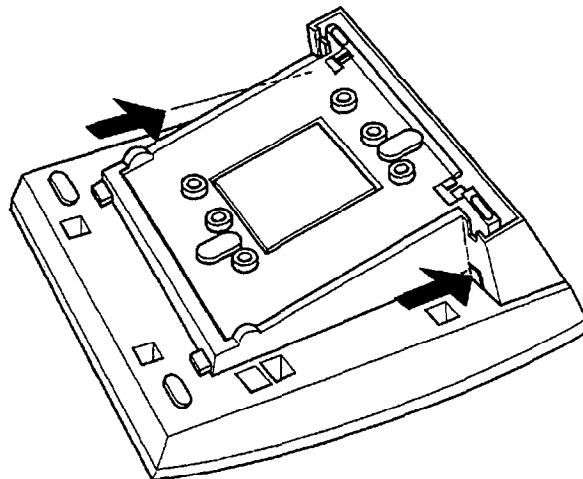


Figure 4-48 Raising the Tilt Panel



3. Unlatch the cover by pressing the areas indicated by arrows in Figure 4-49 Unlatching the Cover on the Digital Multiline Terminal. Press a straight-blade screwdriver blade between the cover and the base to release the tabs. When both tabs are released, lift the cover.

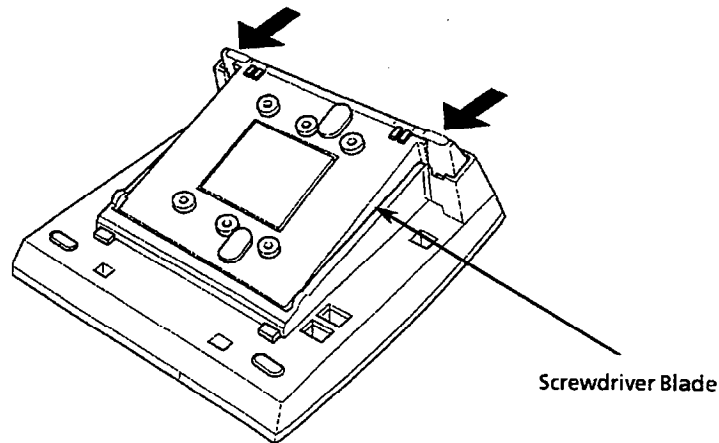


Figure 4-49 Unlatching the Cover on the Digital Multiline Terminal

4. Plug the receptacle connector on the unit in the receptacle connector inside the tilt panel on the terminal. Refer to Figure 4-50 Attaching the Unit to the Digital Multiline Terminal.

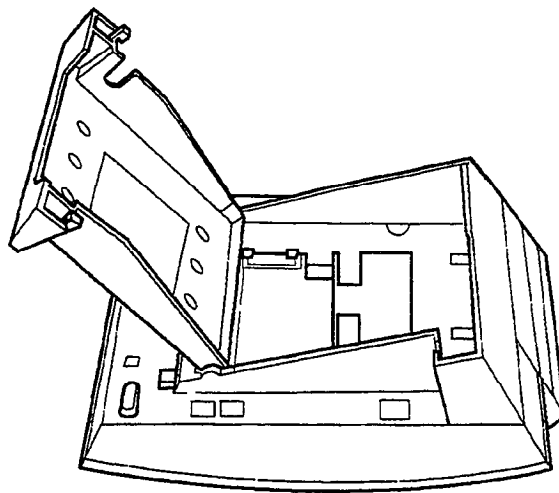


Figure 4-50 Attaching the Unit to the Digital Multiline Terminal

5. Plug the cord of the ACA-U Unit in the jack on the APR-U Unit. The ACA-U Unit is a separate unit that can be purchased from NEC. Lead the AC Adapter cord out through the groove in the base as shown in Figure 4-51 Leading the AC Adapter Cord out from the Unit.

When connecting the AC Adapter (ACA-U Unit), connect it to the device in the left side of the adapter bay to allow the ACA-U Unit to supply power to all devices installed in the adapter bay

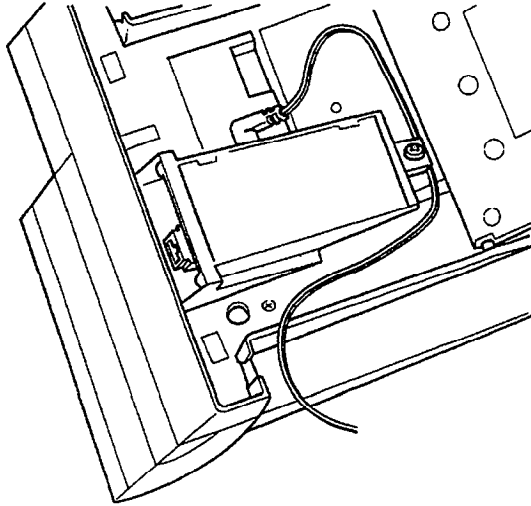


Figure 4-51 Leading the AC Adapter Cord out from the Unit

6. Close the tilt panel cover, lead the AC Adapter cord out through the hole and snap the cover in place.

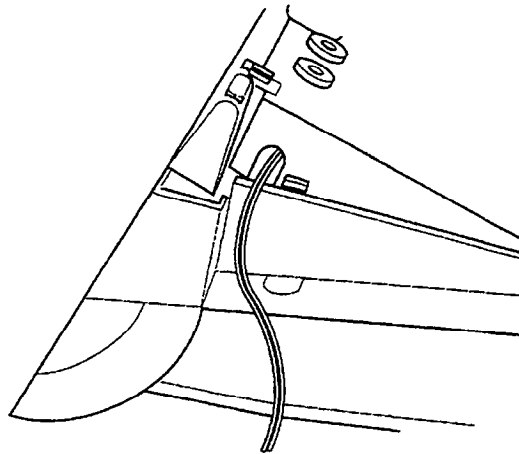


Figure 4-52 Closing the Tilt Panel Cover

7. Plug in the power cord on the AC Adapter and the telephone cord in the jack.
8. Install the ferrite core one inch from the Digital Multiline Terminal.

Take the cord through the ferrite core and then make a loop back to the starting end and come through the ferrite core again to lead the cord out when using an APR-U Unit.

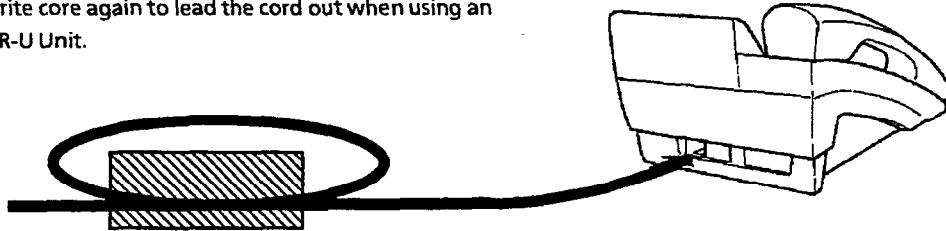


Figure 4-53 Ferrite Core Installation

### 6.3.2 Switch Settings

There are two switches on the APR-U Unit.

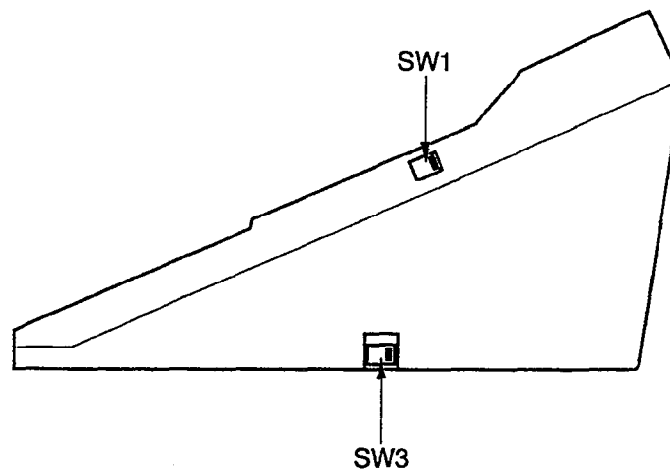


Figure 4-54. APR-U Unit Switches

Table 4-3 lists the switch settings for SW1 and SW3.

Table 4-3 APR-U Unit Switch Settings for SW1 and SW3

Switch	Description
SW1-1	A Single Line Telephone and Digital Multiline Terminal are used simultaneously.  The Digital Multiline Terminal uses the B1 channel and the APR-U Unit would use the B2 channel if it were supported.
SW1-2	A Single Line Telephone and Digital Multiline Terminal are used alternately.  The Digital Multiline Terminal and the APR-U Unit share the B1 channel. Position 2 must be selected because the Electra Professional system does not now support the B2 channel.
SW3-1	Sets impedance to 600 $\Omega$ for devices such as modems or facsimile machines
SW3-2	Used for complex impedance devices such as Single Line Telephones

#### 6.4 Install the HFU-U Unit

The Handsfree Unit enhances small office teleconferencing by improving the sound quality of speakerphone calls using an external microphone. This unit is useful in a working environment where handsfree calling is a necessity. To provide maximum performance, two user-adjustable switches are available that allow the speaker phone to be configured for the customer environment (quiet room, noisy business environment, or a room with an acoustic echo).

Note: This unit provides an echo canceling circuit. However, it is primarily for a typical small office environment and not for conference rooms. Performance should not be compared to commercial audio conference units. Calls may not be recorded when using the HFU-U.

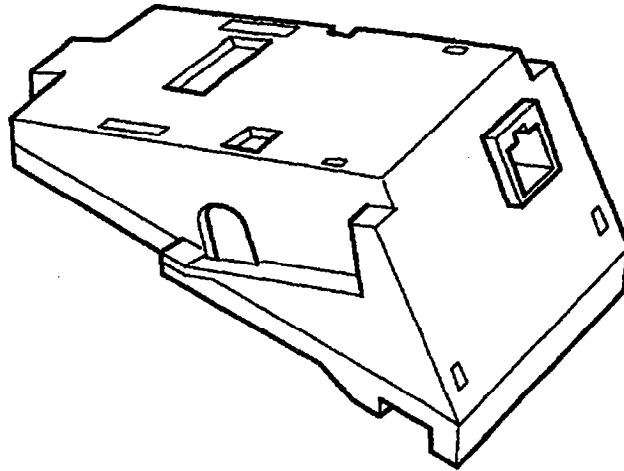
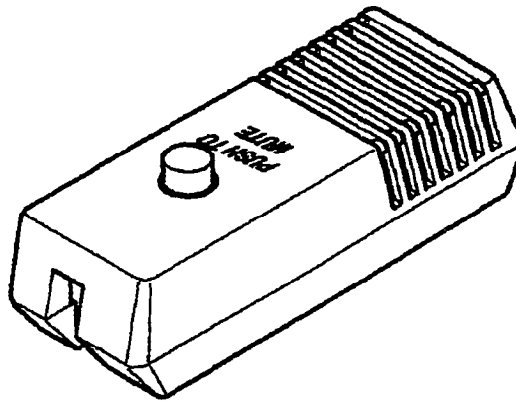


Figure 4-55 HFU-U Unit

#### 6.4.1 Installing an HFU-U Unit on a Digital Multiline Terminal

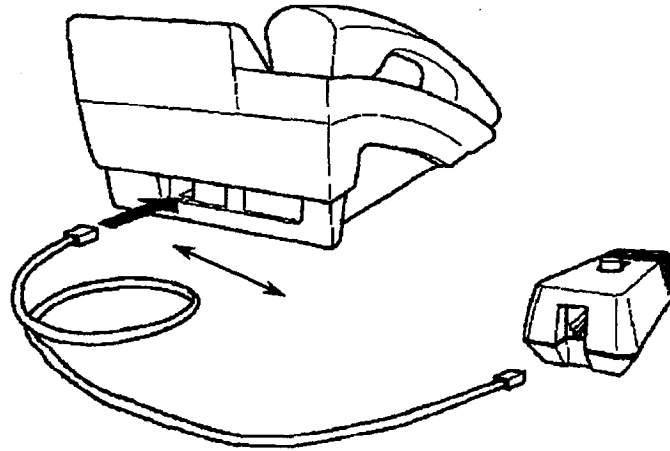
An external microphone can be installed on the HFU-U Unit. These instructions apply to the external microphone included with the HFU-U Unit. This microphone has a push-to-mute button.



Minimum 2  
Feet from  
Multiline  
Terminal

Figure 4-56 Microphone with Mute

1. Plug the microphone cord in the jack on the HFU-U Unit as shown in Figure 4-57 Attaching a Microphone to a Digital Multiline Terminal.



Minimum 2  
Feet from  
Multiline  
Terminal

Figure 4-57 Attaching a Microphone to a Digital Multiline Terminal

2. Set the switches on the HFU-U Unit as indicated in Table 4-4 HFU-U Unit Switch Settings.

Table 4-4 HFU-U Unit Switch Settings

Switch	Position	Switch	Position	Setting
SW1	2	SW2	2	Full Duplex
SW1	1	SW2	2	Half Duplex 6 dB Attenuation
SW1	2	SW2	1	Half Duplex 12 dB Attenuation
SW1	1	SW2	1	Half Duplex 18 dB Attenuation

### 6.5 Install the Ancillary Device Adapter Unit [ADA(1)-W (BK)/(SW) or ADA(2)-W (BK)/(SW)] in the Multiline Terminal

The ADA(1)-W (BK)/(SW) Unit or ADA(2)-W (BK)/(SW) Unit can be connected to any Electra Professional multiline terminal in the system.

1. Unplug the line and handset cords.
2. Turn the multiline terminal upside down and place it on a dry surface.
3. Remove the knockout (second from the top) on the bottom of the multiline terminal. Refer to Figure 4-58 - Removing the Knockouts to Install ADA(1)-W (BK)/(SW) Unit or ADA(2)-W (BK)/(SW) Unit.

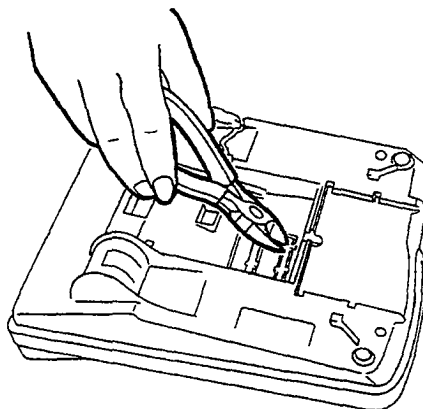


Figure 4-58 Removing the Knockouts to Install ADA(1)-W (BK)/(SW) Unit or ADA(2)-W (BK)/(SW) Unit

4. Plug the CN1 connector from the ADA(1)-W (BK)/(SW) Unit or ADA(2)-W (BK)/(SW) Unit in the CN 4 jack on the main board. Refer to Figure 4-59 - ADA(1)-W (BK)/(SW) Unit or ADA(2)-W (BK)/(SW) Unit Installation, Table 4-5 - ADA(1)-W (BK)/(SW) Unit Cable Connection, and Table 4- 6 - ADA(2)-W (BK)/(SW) Unit Cable Connection.
5. Install the ADA(1)-W (BK)/(SW) Unit in the multiline terminal (component side down) using the screw provided.
6. Connect the external device (e.g., fax, modem or answering machine) using the information provided in ETIs.

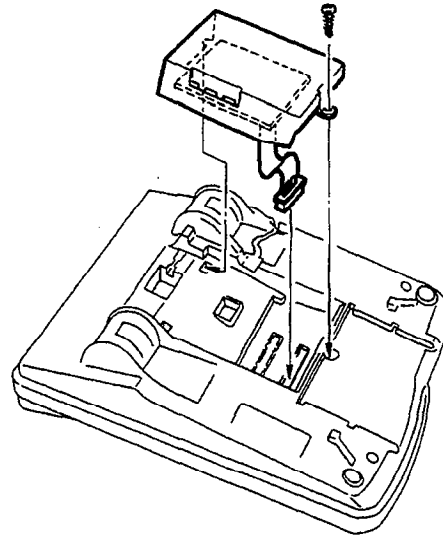


Figure 4-59 ADA(1)-W (BK)/(SW) Unit or ADA(2)-W (BK)/(SW) Unit Installation

Table 4-5 ADA(1)-W (BK)/(SW) Unit Cable Connection

ADA(1)-W (BK)/(SW) Unit	
From	To
CN1	CN4

Table 4-6 ADA(2)-W (BK)/(SW) Unit Cable Connection

ADA(2)-W (BK)/(SW) Unit	
From	To
CN1	CN4

- 7a. For ADA(2)-W (BK)/(SW) Unit only:  
Plug the AC/DC adapter in the jack on the side of the unit.
- 7b. Plug in the handset and line cords.
- 8. Test operation of the multiline terminal and then test operation of the external device.



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**CHAPTER 5**  
**PROGRAMMING**

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## CHAPTER 5

### PROGRAMMING

#### SECTION 1 GENERAL

##### 1.1 Introduction

The Electra Professional systems are stored-program controlled. When these systems are initially powered up, the CPU-F( )-20 KTU scans each possible interface slot to determine the hardware configuration. The systems store this information and the default values in Resident System Program memory. After the system is initially powered up, a trained technician can change the Resident System Program to meet the specific needs of the individual customer.

Before attempting to program these systems, the Job Specifications Worksheets should be completed. These worksheets help organize the customer programming needs. Copies of the worksheets should be retained at the job site and on file at the technician office. Refer to the *Electra Professional 120/Level II/Level II Advanced Job Specifications Manual* included with the CPU-F( )-20 KTU.

#### WARNING

The battery on the CPU-F( )-20 KTU must be on. Failure to ensure the battery is on, before programming begins, may result in the loss of data if a power outage occurs.

##### 1.2 Using This Chapter

This chapter has the following sections:

###### Section 1 - General

Gives a general overview of System Programming.

###### Section 2 - System Programming

Presents in outline format the terms and structure that the technician should be familiar with before attempting to program the Electra Professional systems.

###### Section 3 - System Data List

Presents a complete list of Data Numbers, Timer and Function Names, Default values, and Timing values.

###### Section 4 - Programming Procedures

Gives detailed instructions and procedures for programming all Memory Blocks.

###### Section 5 - Function Timer Chart

Presents the parameters of the various timers used in the Electra Professional systems.

###### Section 6 - Code Restriction

Defines the parameters of dial restrictions that can be assigned per station.

###### Section 7 - Character Code Tables

Defines Setting Data for some functions available in the Electra Professional systems.

###### Section 8 - Display Abbreviations

Defines abbreviations used in the Electra Professional systems.

**1.3 Entering the Programming Mode**

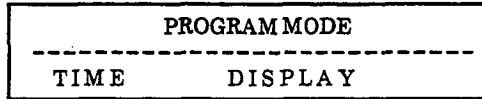
To program information in the system, an ETW-16DC-( ) (BK)/(SW), ETW-16DD-( ) (BK)/(SW) or ETW-24DS-( ) (BK)/(SW) Multiline Terminal or any digital multiline terminal for the Electra Professional 120 system can be used as programming stations. Two stations, ports 01 and 02 are automatically assigned as programming stations.

Before you enter any programming, the programming station must be OFF-LINE.

**TO GO OFF-LINE**

1. Press the FNC key, then the HOLD key.
2. Dial #, 0, \* in sequence.

After step 2 is completed, the LCD on the Multiline Terminal displays:



While OFF-LINE, the programming terminal cannot be signaled by any system station.

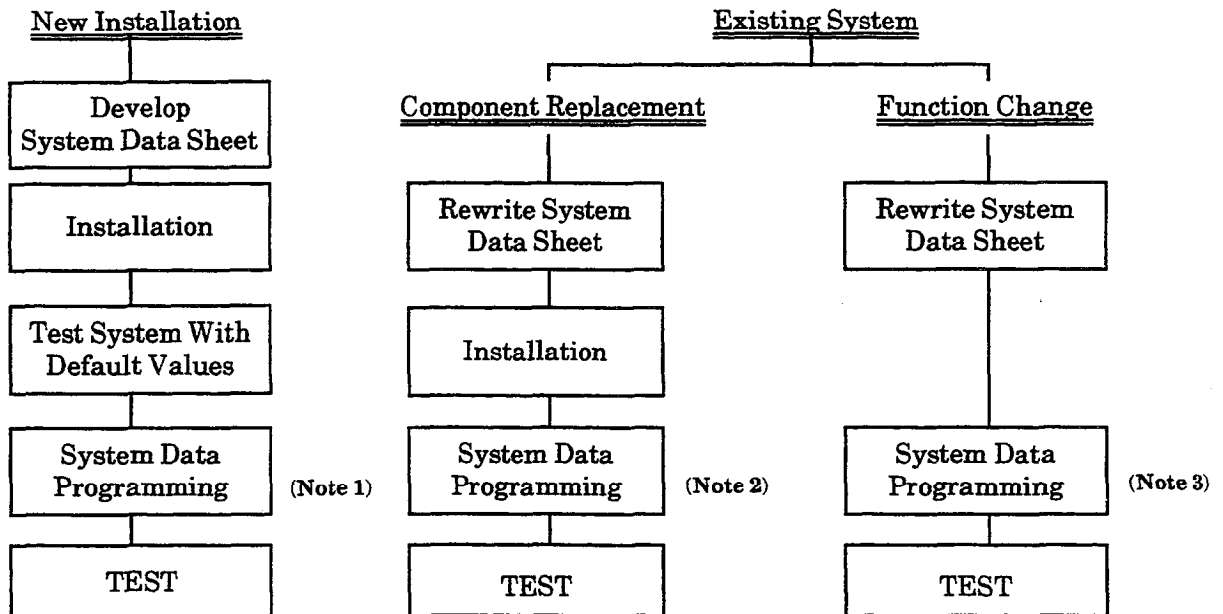
**Note:** The off-line mode does not timeout.

**1.4 System Data Programming**

System Data Programming may be required for the following reasons:

- When the system is installed for the first time.
- When components of an existing system are replaced.
- When functions of an existing system are changed.

Refer to Figure 2-1 - Programing Flowchart.



**Note 1:** For new installations, system default values are assigned when the power is turned on. Therefore, program only the System Data to be changed.

**Note 2:** For component replacements, program the relevant System Data.

**Note 3:** For function changes, program the System Data to be revised.

Figure 2-1 Programing Flowchart

## SECTION 2 SYSTEM PROGRAMMING

### 2.1 Features

- The system operates from a default program after initial power up. Program only the parameters that need to be changed from the default assignments.
- The System Programming characters are displayed on the LCD.
- Several types of System Programming can be entered at the same time.
- Data programmed for one telephone (e.g., Tenant Mode, CO/PBX Line Mode, or Telephone Mode) can be copied to another telephone.
- Two multiline terminals, connected to Ports 01 and 02, can be used to program at the same time.

### 2.2 System Programming

System Programming has eight modes and some modes have submodes. Modes and submodes for the Level II and Level II Advanced systems include the following:

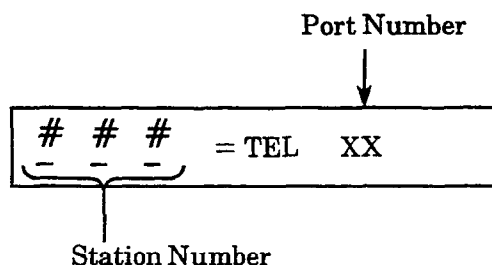
<u>Mode</u>	<u>Sub-Mode</u>
LK 1    System Mode	LK 1    CO Line
	LK 2    ICM
	LK 3    SLT
	LK 4    Transfer/Automated Attendant (A.A.)
	LK 5    SMDR/LCR
	LK 6    DSS
	LK 7    ESP
	LK 8    PBR/Miscellaneous
	LK 9    DISA
	LK 10    CAR
	LK 11    DTI
	LK 12    ACD/UCD
LK 2    Tenant Mode	
LK 3    CO/PBX Line Mode	
LK 4    Telephone Mode	
LK 5    Trunk Group Mode	
LK 6    Copy Mode	LK 2    Tenant Mode Copy Assignment
	LK 3    CO Line Mode Copy Assignment
	LK 4    Telephone Mode Copy Assignment
	LK 5    Trunk Group Mode Copy Assignment
LK 7    KTU Mode	
	LK 1    Card Interface Slot Assignment
	LK 2    Telephone Type Assignment
	LK 3-00 MIF (ACD) Assignment
	LK 3-01 MIF (LCR) Assignment
	LK 3-02 MIF (SMDR) Assignment
	LK 3-03 MIF (UCD) Assignment
	LK3-04 MIF (CID) Assignment
LK 8    Special Mode	
	LK 1    ROM Version Confirmation
	LK 2    System Speed Dial Memory Clear
	LK 3    Station Speed Dial Memory Clear
	LK 8    Second Initialization

### 2.3 Preparation Before Programming

1. Check Points:

- Confirmation of ROM version ----- Available features depends on the ROM version. Refer to Memory Block 8-1 (ROM Version Confirmation).
- Confirmation of Port Number ----- Port numbers are used for System Programming. Refer to Memory Block 7-1 (Card Interface Slot Assignment).

To confirm station numbers from display terminals, press: FNC → 4



2. Preliminary Points:

- Selection of System Programming ----- Refer to Section 1.4 - System Data Programming to select the data to be programmed.
- Prepare System Programming sheet ----- Refer to Section 4 - Programming Procedures to enter the data.

### 2.4 Writing of System Data

After turning the system power on, programming System Data can be performed from a multiline terminal connected to Port 01 or 02 (the terminal must be idle). Although System Programming can be performed while other multiline terminals are in use, some data is written in memory immediately after the programming process, while other data is not written until the stations or trunks are idle.

In the latter case, the programming station displays DATA ENTRY even after the programming process is completed, indicating the System Programming is still underway. When the in-use stations become idle, the data is written and the station displays only the time.

The following System Programming is not written while certain equipment is in use:

- When telephones are in use: Memory Block 2-01 (Trunk to Tenant Assignment)
  - Memory Block 2-05 (Line Key Selection)
  - Memory Block 2-07 (System Speed Dial Display Assignment)
  - Memory Block 4-09 (Telephone to Tenant Assignment)
- When PBR is in use: Memory Block 1-8-01 (SLT or Automated Attendant/DISA to PBR Selection)
  - Memory Block 1-8-02 (PBR Receive Level Assignment for Automated Attendant/DISA)



## 2.5 Programming Methods

### 2.5.1 Initializing the System

Turn the Key Service Unit (KSU) power supply on. After 30 seconds, the system operates with system default values.

### 2.5.2 How to Use the Multiline Terminal for Programming

Perform System Programming using a multiline terminal (with LCD) connected to station ports 01 or 02.

Key operations, LED indications, and the display for System Programming are described below.

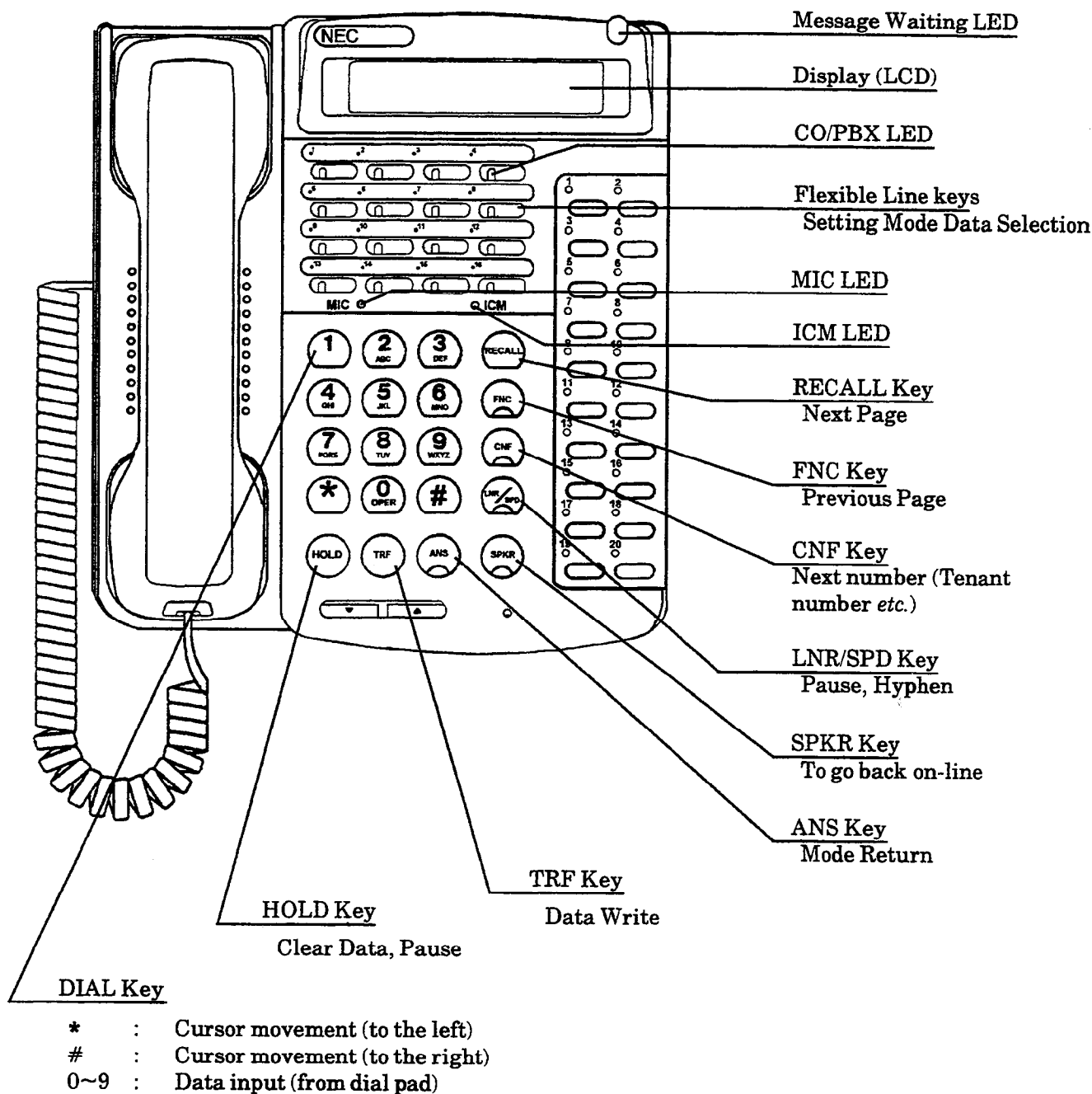






Figure 2-2 Electra Professional Level II and Level II Advanced System Multiline Terminal

**Key Functions:**


 ----- Flexible Line keys specify a mode or submode when selecting a memory block or select programming data for input.


 ----- Use this key to proceed to the next page in System Programming.


 ----- Use the FNC key to return to the preceding page in registering System Programming.


 ----- Each time the CNF key is pressed, Memory Block item changes are as follows:


- Tenant Mode: The tenant number increments by one.
- CO/PBX Line Mode: The CO/PBX line number increments by one.
- Telephone Mode: The telephone port number increments by one.
- Trunk Group Mode: The Trunk Group number increments by one.

 ----- Use to exit the programming mode (go back on-line).


 ----- Use to move the cursor left. The cursor moves one character space to the left each time \* is pressed.


 ----- Use to move the cursor right. The cursor moves one character space to the right each time # is pressed.

 ----- Use to write data. After entering data, press TRF; the data is written into memory, and the Memory Block Data No. increments by one.

 ----- Use to select another mode. Press ANS to switch modes as follows:



- Mode or SubMode selection: Returns to PROGRAM MODE.
- Data No. Mode: Returns to a Mode or Submode selection, or PROGRAM MODE (if no Submode exists).

 ----- The HOLD key enters a pause in Speed Dial Programming Mode or clears data in System Programming Mode.

 ----- The LNR/SPD key enters a pause, hyphen, \*, and #.



After pressing the LNR/SPD key (the Message Waiting LED turns on and turns off after pressing \* or #), the desired selection is entered.

  ----- Use to enter data from the dial pad and to specify a Memory Block location in each input mode.

LED Indications (MIC and ICM)

These LED indications for mode selection status indicate the following:

MIC	ICM	
●	●	Both LEDs off: Waiting for mode selection.
○	●	Only MIC LED on: Mode selected. Waiting for submode selection.
○	○	Both LEDs on: Submode selected. (If no submode exists, both LEDs light when a mode is selected.)

Off-Line Program Mode:

A. To go off-line, press: --- FNC → HOLD → # → 0 → \*

After the off-line mode for programming is entered, the following items are displayed:

B. Selecting Memory Block locations

System Mode

LK 1

LK = Line Key

→ LK 1

Tenant Mode

LK 2

CO/PBX Line Mode

LK 3

Telephone Mode

LK 4

Trunk Group Mode

LK 5

Copy Mode

LK 6

→ LK 2

KTU Mode

LK 7

Special Mode

LK 8

→ LK 1

PROGRAM	MODE
-----	
TIME DISPLAY	
SYSTEM	BASE   1
-----	
TIME DISPLAY	
00 : PAUSE	3.0s
-----	
TIME DISPLAY	
00 / 00	: NOT USED
-----	
TIME DISPLAY	
01 /	
-----	
TIME DISPLAY	
01 / 01	: RING DY   01
-----	
TIME DISPLAY	
01 / 00	: ADD/DEL 000
-----	
TIME DISPLAY	
COPY	MODE
-----	
TIME DISPLAY	
TNAT	---
-----	
TIME DISPLAY	
ASSIGNMENT	MODE
-----	
TIME DISPLAY	
SPECIAL	MODE
-----	
TIME DISPLAY	
SP 171	: MMC = 01
-----	
TIME DISPLAY	
1 - 0C	: CPU = 1.00

2.5.3 Page Switching

To select System Programming data, CO/PBX line numbers, or tenant numbers, use the Flexible Line keys.

In Memory Block 1-1-18 (System Speed Dial Restriction by Tenant) tenant numbers 00~07 are assigned to the Flexible Line keys on the first page. Tenant numbers 08~15 are assigned to the Flexible Line keys on the second page. The tenant number corresponding to Flexible Line key 1 of the current page is displayed at the right side of the display.

Example: CO/PBX line keys on each page and corresponding tenant numbers.

24-Key Multiline Terminal

16-Key Multiline Terminal

(Display)

(Flexible Line Keys)

(Flexible Line Keys)

Page 1

00	00	01	02	03	04	05
06	07	08	09	10	11	
12	13	14	15	16	17	
18	19	20	21	22	23	

00	00	01	02	03
04	05	06	07	
08	09	10	11	
12	13	14	15	

Page 2

08	08	09	10	11	12	13
14	15	16	17	18	19	
20	21	22	23	24	25	
26	27	28	29	30	31	

08	08	09	10	11
12	13	14	15	
16	17	18	19	
20	21	22	23	

For System Programming, a value (data) is assigned to each Flexible Line key. When there are more value assignments than Flexible Line keys, entering value assignments can continue on the following page. The page number is displayed at the right side of the display.

Example: Flexible Line keys and corresponding data on each page (with 10 data entries).

16 Key Multiline Terminal

(Display)

(Flexible Line Key)

Page 1

01	Data 1	Data 2	Data 3	Data 4
	Data 5	Data 6	Data 7	Data 8

Page 2

02	Data 9	Data 10		

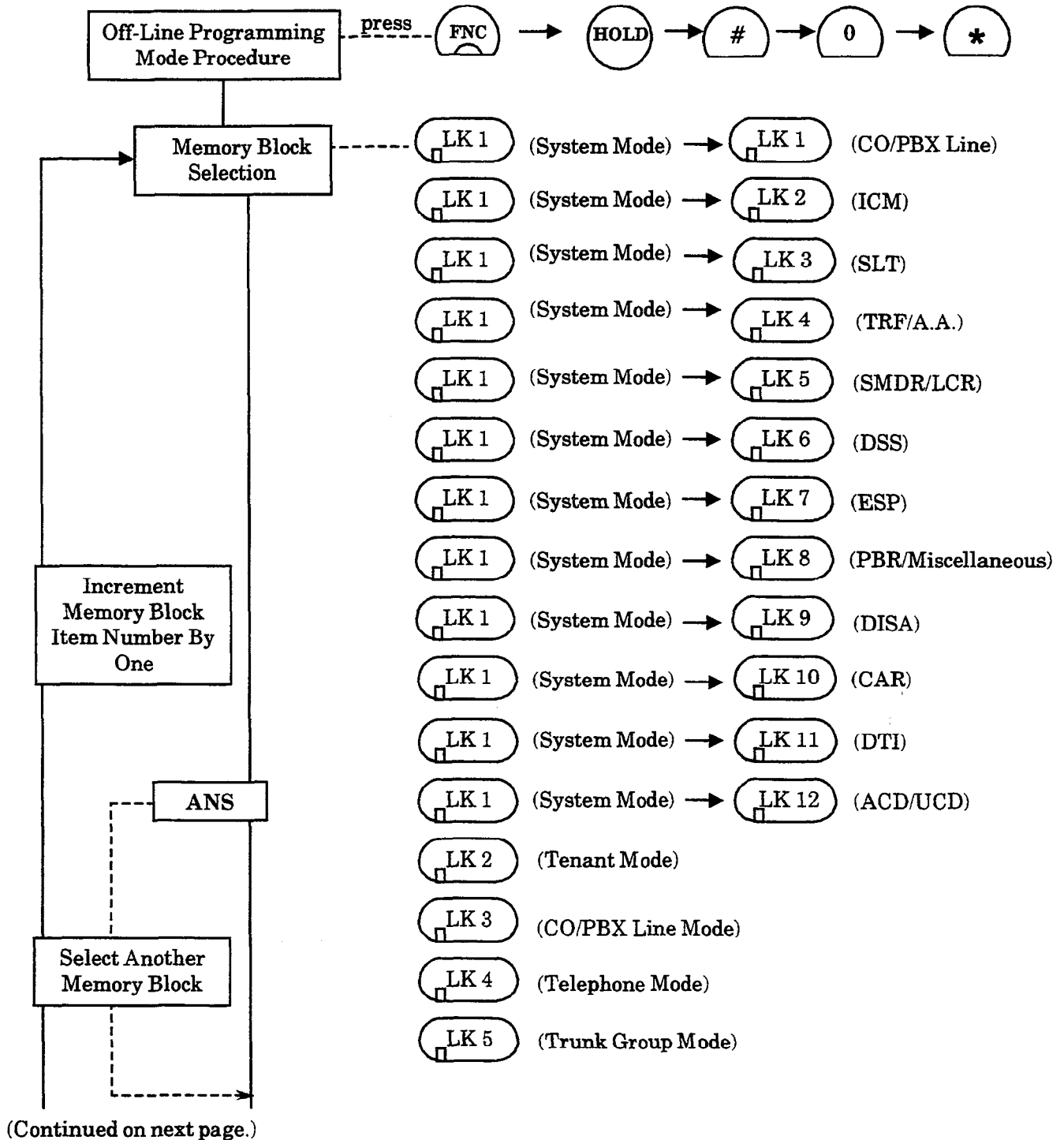
Note: Press the RECALL key to advance to the next page. Press the FNC key to return the previous page.

2.5.4 Data Copy

Data entry for a multiline terminal in CO/PBX Line Mode, Tenant Mode, or Trunk Group Mode can all be copied simultaneously to another multiline terminal. Refer to Section 4 – Programming Procedures ( LK6 Copy Mode).

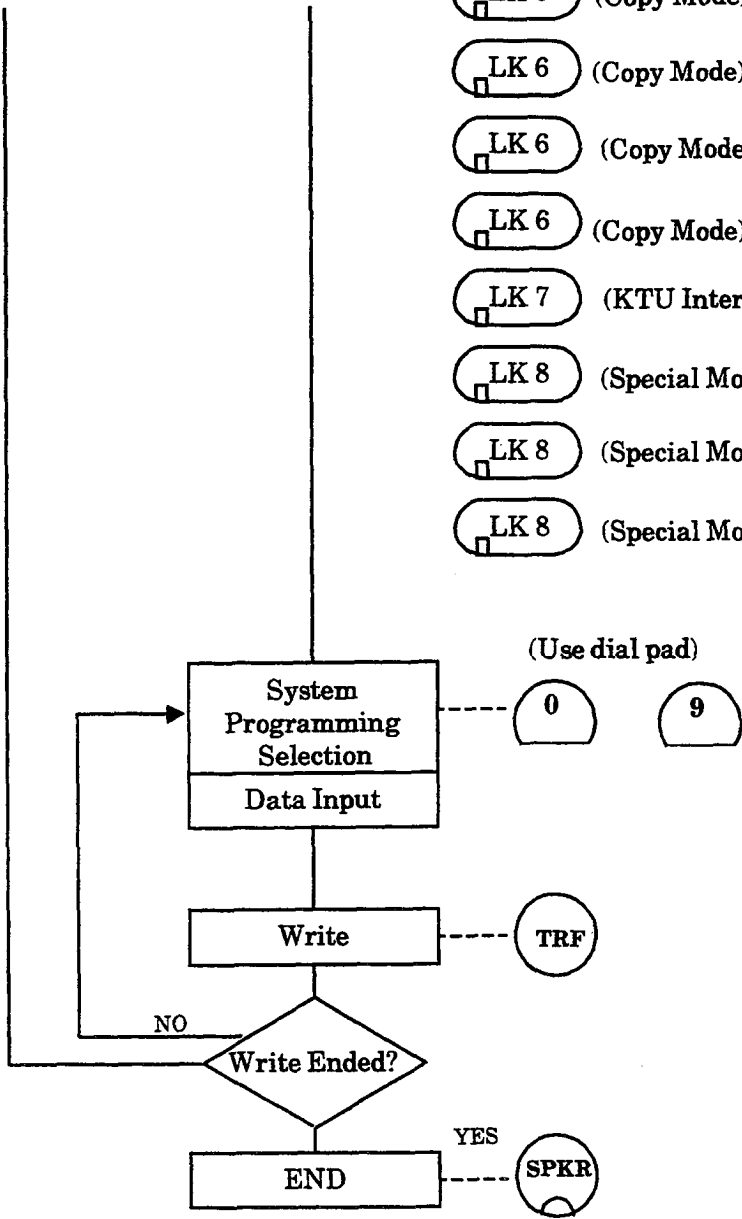
2.5.5 Data Entry Selection

System Programming is performed by using the keys on multiline terminals connected to Ports 01 and 02. During programming, System Data is shown on the LCD of the off-line terminal.

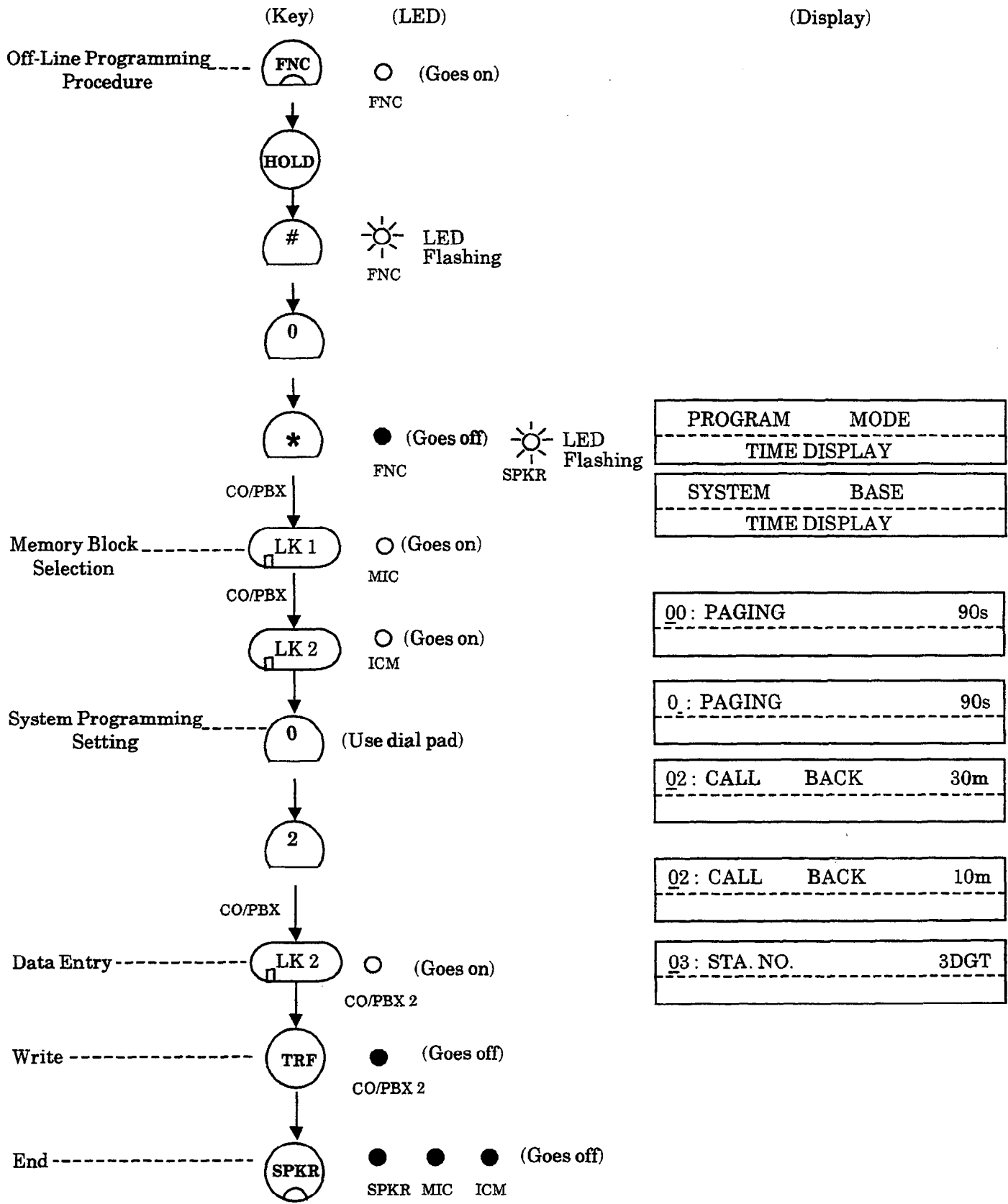


(Continued)

- LK 6 (Copy Mode) →  LK 2 (Tenant Mode Copy)
- LK 6 (Copy Mode) →  LK 3 (CO/PBX Line Mode Copy)
- LK 6 (Copy Mode) →  LK 4 (Telephone Mode Copy)
- LK 6 (Copy Mode) →  LK 5 (Trunk Group Mode Copy)
- LK 7 (KTU Interface Mode)
- LK 8 (Special Mode) →  LK 1 (ROM Version Confirmation)
- LK 8 (Special Mode) →  LK 2 System Speed Dial Memory Clear
- LK 8 (Special Mode) →  LK 3 Station Speed Dial Memory Clear

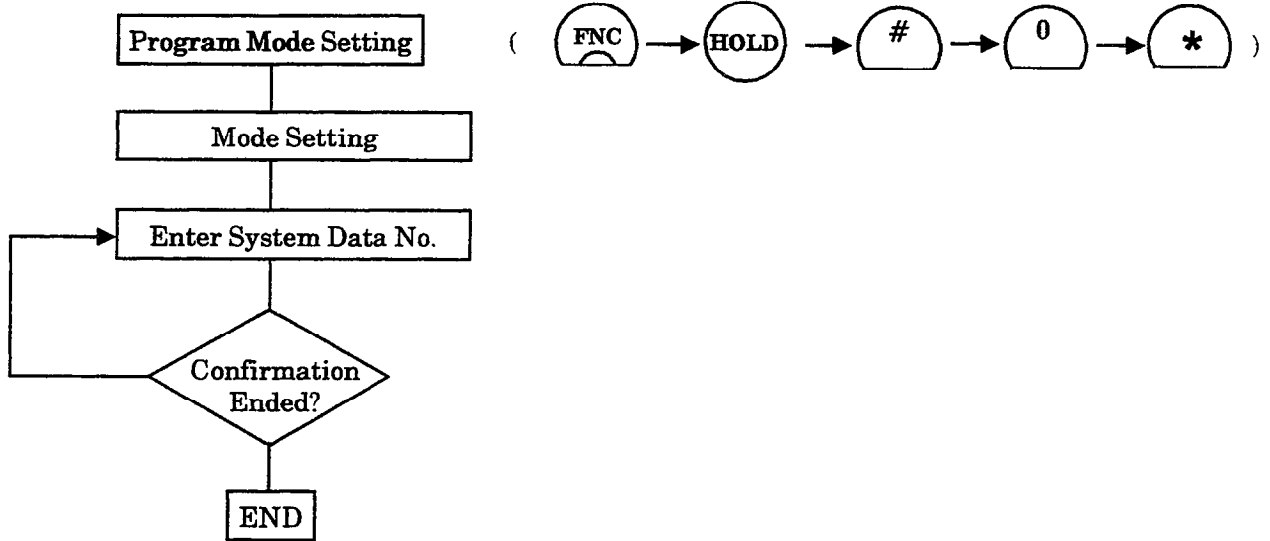


Example: Memory Block 1-2-02 Automatic Callback Release Timer Selection  
3 minutes (default) → 1 minute



2.5.6 Confirmation

To confirm programmed data, select the desired Memory Block after entering the off-line programming mode and enter the Data Entry Number. The data is shown on the display.



2.6 Test

After completion of programming, test the functions of System Programming for proper operation.



## SECTION 3 SYSTEM DATA LIST

## LK 1 System Mode

## LK 1 CO Line

Data No.	Function Name	Default	Programming Value
00	Pause Time Selection	3 sec.	1 sec. 3 sec.
01	DP Interdigit Time Selection	Pattern B	Pattern A, Pattern B
02	Hookflash Time Selection	600 ms.	Page 1: 20 ms., 40 ms., 60 ms., 80 ms., 100 ms., 140 ms., 160 ms., 200 ms. Page 2: 400 ms., 600 ms., 800 ms., 1 sec., 1.5 sec., 2 sec., 3 sec., 5 sec.
03	Hold Recall Timer Selection (Non-Exclusive Hold)	25 sec.	25 sec., 45 sec., 90 sec., No Limit
04	Automatic Redial Time Selection	Table 1 30 sec. Table 2 60 sec. Table 3 2 times	Table 1 1 ~ 100 sec. Table 2 1 ~ 100 sec. Table 3 1 ~ 255 times
05	Start Timer Selection	20 sec.	2 sec., 10 sec., 20 sec., 30 sec., 40 sec., 50 sec., 60 sec., 70 sec.,
06	CO/PBX Incoming Ringing Alarm Time Selection	No Limit	10 sec., 20 sec., 30 sec., No Limit
07	Tie/DID Line Delay Ringing Timer Selection	No Limit	10 sec., 20 sec., 30 sec., No Limit
09	Manual Pause Selection	No	No, Yes
11	System Transfer/Camp-On Selection	Yes	No, Yes
12	Station Transfer/Camp-On Recall Timer Selection	45 sec.	25 sec., 45 sec., 90 sec., No Limit
13	CO Transfer Ring Pattern Selection	Pattern C	Tone Off, Tone On, Pattern(s) A~ H
14	CO Transfer Ring Tone Selection	Tone A	Tone A~ H
18	System Speed Dial Restriction by Tenant	Not Restricted	LED ON: Not Restricted LED OFF: Restricted
24	PBX/CTX Access Code Assignment I	9 -	Up to six digits (three numeric, three pauses)
25	PBX/CTX Access Code Assignment II	8 -	Up to six digits (three numeric, three pauses)
26	Off-Hook Ringing Selection	Yes	Yes, No
27	Automatic Day/Night Mode Switching Time Assignment	Not Specified	Day/Night Mode Start Time (24 hours)
28	Distinctive Ringing by Telephone or CO Selection	Tel	Tel, CO
29	Private Line Assignment	Not Specified	CO/PBX Line Number, Tel Port Number, up to two lines
30	Route Advance Block Assignment	All Block 00 (not set)	Priority Trunk Group Number

## LK 1 CO Line (continued)

Data No.	Function Name	Default	Programming Value
32	Automatic Day/Night Mode by Day of Week Selection	Sunday~Saturday = Pattern 1	Pattern 1, Pattern 2
33	Speed Dial Number/Name Display Selection	Dialed Number	Number or Name
34	Tie/DID Line First Ring Pattern Selection	Pattern 3	Pattern 1, Pattern 2, Pattern 3, Pattern 4, ICM, Voice
35	Speed Dial Buffer Allocation	100 memories	100 memories, 1000 memories
36	CO/PBX Call Forward - All Calls Selection	No	No, Yes
37	Trunk Queuing Timeout Selection	10 sec.	10 sec., 20 sec., 30 sec., 60 sec.
46	Access Code (1-Digit) Assignment	Refer to Memory Block	
47	Access Code (2-Digit) Assignment	Refer to Memory Block	
48	Access Code (3-Digit) Assignment	All Dial 000 (Not Used)	
49	Networking Trunk Group/Route Advance Assignment	Not Specified	
50	CO/PBX Outgoing Digit Add Assignment	Not Specified	
51	CO Line First Ringing Pattern Selection	Ring Pattern A	Pattern A~H, Nil
52	PBX Line First Ringing Pattern Selection	Ring Pattern B	Pattern A~H, Nil
53	Tie/DID Line Delay Ring Pattern Selection	Ring Pattern D	Pattern A~H, Nil
54	Automated Attendant Transfer Ring Pattern	Ring Pattern C	Pattern A~H, Nil
56	CO/PBX Ringing Pattern Selection	Ring Pattern H	Pattern A~H, Nil
57	CO/PBX Prepause Timer Selection	1 sec.	None 1 sec.~15 sec.
59	Synchronous Ringing Selection	Yes	Yes, No
60	8-Digit Matching Table Assignment	Refer to Memory Block	
61	8-Digit Matching Table to Class Assignment	Refer to Memory Block	

## LK 1 CO Line (continued)

Data No.	Function Name	Default	Programming Value
62	System Speed Dial Override by Class Selection	Override (YS)	No = No Override Yes = Override
63	Hold Recall Time Selection (Exclusive)	1 min.	0.5 min. 1 min. 1.5 min. 2 min. 3 min. 5 min. 8 min. No Limit
64	Attendant Add-On Console Transfer/Camp-On Recall Timer Selection	1 min.	0.5 min. 1 min. 1.5 min. 2 min. 3 min. 5 min. 8 min. 10 min.
65	Class Allow/Deny Selection	Class 01~04 Allow Class 05~14 Deny	
66	8-Digit Matching Table to Normal Dial Assignment	Tables 00~14 Used Table 15 Unused	
67	OCC Table Assignment	Tables 00~15 Blank Table 16 10XXX	
68	8-Digit Matching Table to OCC Table Assignment	Refer to Memory Block	
69	Tie Line Code Restriction Assignment	(YS) Restriction	No Restriction (NO), Restriction (YES)
70	Code Restriction Class Assignment When Lockout is Set	Class 15	
71	First Delay Announcement Start Time Selection	20 sec.	0 sec. 10 sec. 20 sec. 30 sec. 40 sec. 50 sec. 60 sec.
72	First Delay Announcement Repeat Selection	1 Time	1, 2, 3, 4, 5, 6, 7, 8 times
73	First to Second Delay Announcement Interval Time Selection	20 sec.	0 sec. 10 sec. 20 sec. 30 sec. 40 sec. 50 sec. 60 sec., No Limit
74	Second Delay Announcement Repeat Selection	1 Time	1, 2, 3, 4, 5, 6, 7, 8 times
75	Second Delay Announcement Repeat Interval Time Selection	20 sec.	0 sec. 10 sec. 20 sec. 30 sec. 40 sec. 50 sec. 60 sec. No Limit
76	Barge-In Alert Tone Assignment	Yes	Yes = Send Alert Tone No = Do not send Alert Tone
77	Delayed Ringing Timer Assignment (CO)	15 sec.	00~99
78	Caller ID Display Assignment for System Mode	Not Specified	Combination No. = 1 or 2 Tel Port No. = 01~90
79	BGM Port Assignment	No	00~64
80	ISDN DTMF Duration and Interdigit Selection	100/70	100/70, 400/100, 600/100, 900/200

## LK 2 ICM

Data No.	Function Name	Default	Programming Value
00	Internal Paging Timeout Selection	90 sec.	90 sec., 120 sec., No Limit
01	Intercom Call Voice/Tone Signal Selection	Voice	Tone, Voice
02	Automatic Callback Release Timer Selection	30 min.	5 min., 10 min., 20 min., 30 min.
03	2-, 3-, 4-Digit Station Number Selection	3-digit	2-digit, 3-digit, 4-digit
04	Call Arrival Key Block Assignment	No CAR Blocks are Assigned	CAR Blocks 01~08, 09~16, 17~24, 25~32, 33~40, 41~48, 49~56, 57~64, 65~72, 73~80, or 81~88
08	Specified Station Access Code Assignment	00            01 01~23    Not Set	Station No.
09 ∫ 18	Absence Message 1~10 Assignment	09) DND 10) Meeting 11) Business Trip 12) Not In 13) With Guest 14) Out of Office 15~18) Not Specified	A maximum of 13 characters. (Refer to Character Code Table.)
19	Intercom Ring Pattern Selection	Pattern B	Tone Off, Tone On, Pattern A~Pattern H
20	Intercom Ring Tone Selection	Tone A	Tone A~Tone H
22	Call Forward No Answer Timer Selection	8 sec.	8 sec., 12 sec., 18 sec., 24 sec., 30 sec., 60 sec.
23	System Call Park Recall Time Selection	1 min.	.5 min., 1 min., 1.5 min., 2 min., 3 min., 5 min., 8 min., 10 min.
24	Intercom Feature Access Code Assignment	Refer to Memory Block	
25	Internal Paging Alert Tone Selection	Tone YS	Tone YS Tone No
26	Delayed Ringing Timer Assignment (ICM)	10 sec.	00~99

## LK 3 SLT

Data No.	Function Name	Default	Programming Value
01	Bounce Protect Time Selection	300 ms.	Page 1: 0 ms., 100 ms., 200 ms., 300 ms., 400 ms., 500 ms., 600 ms., 700 ms. Page 2: 800 ms., 900 ms., 1000 ms., 1100 ms., 1200 ms., 1300 ms., 1400 ms., 1500 ms.
02	SLT Hookflash Signal Selection	Hold	Hold, Flash
03	First Digit PBR Release Timer Selection	10 sec.	10 sec., 20 sec., 30 sec., 40 sec., 50 sec., 60 sec.
04	Dial 1 (DP) Hookflash Selection	Yes	Yes, No
05	Hookflash Start Time Selection	300 ms.	Page 1: 100 ms., 150 ms., 200 ms., 250 ms., 300 ms., 350 ms., 400 ms., 450 ms., Page 2: 500 ms., 550 ms., 600 ms., 650 ms., 700 ms., 750 ms., 800 ms., 850 ms.
06	Hookflash End Time Selection	HST + 700ms.	Refer to Memory Block
07	Voice Mail Digit Add Assignment	All Blank	
08	Voice Mail DTMF Delay Timer Selection	1 sec.	0 sec., 1 sec., 2 sec., 3 sec., 4 sec., 5 sec., 6 sec., 8 sec.
09	Voice Mail Disconnect Time Selection	1.5 sec.	0.6 sec., 1 sec., 1.5 sec., 2 sec., 3 sec., 5 sec.
10	Voice Mail DTMF Duration/Interdigit Time Selection	100/70 ms.	70/60 ms., 100/70 ms., 400/100 ms., 600/100 ms., 900/200 ms.

## LK 4 Transfer/Automated Attendant (A.A.)

Data No.	Function Name	Default	Programming Value
00	Tandem Transfer Automatic Disconnect Timer Selection	1 hr.	30 min., 1 hr., 2 hr., 3 hr.
01	Automated Attendant First Digit PBR Release Timer Selection	20 sec.	10 sec., 20 sec., 30 sec., 40 sec., 50 sec., 60 sec.
02	Automated Attendant Transfer Delayed Ringing Time Selection	No limit	10 sec., 20 sec., 30 sec., No Limit
03	Automated Attendant No Answer Disconnect Time Selection	2 min.	1 min., 2 min., 3 min., 4 min.
04	Tandem Transfer SMDR Print Extension Assignment	999	2-digit = 99 3-digit = 999 4-digit = 9999
05	Automatic Tandem Trunk by Night Mode Selection	No	Yes, No
08	Automated Attendant PBR Timeout Response Selection	Normal Call	Normal Call, Release
09	Automated Attendant PBR Start Time Selection	FR	FR = Same time AF = After
11	Automated Attendant Message Day/Night Mode Selection	No	Yes, No
12	Automated Attendant Message to Tenant Assignment	Tel 01~96: LK 01~08 assigned to CO/PBX LINES 01~08	All Automated Attendant Messages: Tenant Number 00
13	Automated Attendant Answer Delay Time Assignment	4 sec.	00 ~ 99 sec., 1 ~ 8
14	Automated Attendant Message Access Code (1-Digit) Assignment	Refer to Memory Block	
15	Automated Attendant Message Access Code (2-Digit) Assignment	Refer to Memory Block	
16	Automated Attendant Message Repeat Selection	All Messages One Time	One Time, Two Times, Three Times, Four Times, Five Times, Six Times, Seven Times, Eight Times

## LK 5 SMDR/LCR

Data No.	Function Name	Default	Programming Value
02	SMDR Print Format	All	All, Mask
13	Printer Connected (Alarm) Selection	No	No, Non, Yes
14	Printer Line Feed Control Selection	Yes	Yes, No
24	DISA ID Code Digit Selection	3-digit	2-digit, 3-digit, 4-digit
25	SMDR Valid Call Timer Assignment	40 sec.	0~990 sec. (in 10 second increments)
26	SMDR Incoming/Outgoing Print Selection	Outgoing	All, Outgoing, Incoming

## LK 6 DSS

Data No.	Function Name	Default	Programming Value
01	Attendant Add-On Console to Telephone Port Assignment	Refer to Memory Block	
03	DSS Call Voice/Tone Signal Selection	Voice	Tone, Voice
05	Attendant Add-On Console Key Selection	Refer to Memory Block	

## LK 7 ESP

Data No.	Function Name	Default	Programming Value
02	External Speaker Connection Selection	All Speakers (A~C)	Yes, No
03	External Paging Alert Tone Selection	Yes	Yes, No
06	External Paging Timeout Selection	5.0 min.	0.5 min. 1 min. 1.5 min. 2 min. 3 min. 5 min. 8 min. No Limit
07	External Ring Relay Cycle Selection	Pattern 3	Refer to Memory Block

## LK 8 PBR/Miscellaneous

Data No.	Function Name	Default	Programming Value
01	SLT or Automated Attendant/DISA to PBR Selection	(OFF) Single Line Telephone	Off = Single Line Telephone On = Automated Attendant/DISA
02	PBR Receive Level Assignment for Automated Attendant/DISA	- 36.1 dBm	Refer to Memory Block
04	Time Display (12h/24h) Selection	12 hr. Display	12 hr. Display, 24 hr. Display
07	Class of Service (Attendant) Feature Selection 1	Refer to Memory Block	
08	Class of Service (Station) Feature Selection 2	Refer to Memory Block	
09	Music On Hold Pattern Selection	Pattern A	Pattern A, ~ Pattern D
10	PBR Interdigit Release Timer Selection	7 sec.	3 sec., 4 sec., 5 sec., 6 sec., 7 sec., 8 sec., 9 sec., 10 sec.
11	System Refresh Timer Assignment	4 hr.	No Refresh, 4 hr., 8 hr., 12 hr., 24 hr.
12	VRS Message Recording Time Selection	15 sec. / 16 messages	15 sec./16 messages, 30 sec./8 messages, 60 sec./4 messages, 120 sec./2 messages
13	VRS Message Function Assignment	No Message	
15	Tone Assignment	Tone A	Refer to Memory Block
16	Voice Prompt to Tone Assignment	Refer to Memory Block	
17	PC Programming Password Assignment	Class 1, 2 All Blank	
18	Site Name Assignment	No Assignment	
25	ACD/UCD Group Agent Assignment	Not Specified	Agent Extension Number and ACD/UCD Group Number
26	Voice Mail Quick Transfer Master Hunt Assignment	Not Specified	
27	Forced Account Code Length Assignment	10 Digits	1 ~ 13 Digits

## LK 9 DISA

Data No.	Function Name	Default	Programming Value
00	DISA ID Code Assignment	Refer to Memory Block	
02	DISA Password Effect/Invalid Selection	DISA Password Effect (YES)	DISA Password Invalid DISA Password Effect



## LK 10 CAR

Data No.	Function Name	Default	Programming Value
01	Call Arrival Key Number Assignment	Not Specified (000)	
02	Call Arrival Key Master Hunt Number Selection	No	No, Yes
03	Call Arrival Key Hunt Number Forward Assignment	Not Specified (000)	
04	Call Arrival Key Port Name Assignment	Not Specified	
05	Call Arrival Key to Call Appearance Block Assignment	All CARS assigned to Block (00)	
06	Caller ID Display Assignment for Call Arrival Key	Not Specified	

## LK 11 DTI

Data No.	Function Name	Default	Programming Value
00	Signal Format Selection	ESF (24)	SF (12) ESF (24)
01	Clear Channel Selection	ZCS	B8ZS ZCS
02	Line Length Selection	0 - 131 ft.	Refer to Memory Block
03	Robbed Bit Signaling Channel Selection	4-State (A and B)	4-State (A and B) 16-State (A, B, C, and D)
04	DTI Maintenance Selection	Remote Loopback	Remote Loopback, Local Loopback
05	TI Channel Selection	Refer to Memory Block	
06	Signaling Selection	Loop Start	Loop Start, Ground Start
07	DTI Trunk Type Assignment	CO	CO E&M DID

## LK 12 ACD/UCD

Data No.	Function Name	Default	Programming Value
00	ACD/UCD Group Pilot Number Assignment	Not Specified	
01	ACD/UCD Group Overflow Destination Assignment	Not Specified	
02	ACD/UCD Overflow Timer Selection	60 sec.	∞, 10 sec., 20 sec., 30 sec., 60 sec., 120 sec. 180sec., 240sec.

**LK 2 Tenant Mode**

Data No.	Function Name	Default	Programming Value
01	Trunk to Tenant Assignment	Refer to Memory Block	
05	Line Key Selection	Telephone Mode	Tenant-Wide Mode, Telephone Mode
06	Line Key Selection for Tenant Mode	Refer to Memory Block	
07	System Speed Dial Display Assignment	All Speed Dial Confirmation Allowed	
08	ECR Relay to Tenant Assignment	All Tenant No Assignment	

**LK 3 CO/PBX Line Mode**

Data No.	Function Name	Default	Programming Value
00	Telephone Number to Trunk or ISDN Directory Number Assignment	Not Specified	A maximum of 13 digits (numbers, hyphens, spaces)
02	Trunk Status Selection	Out and In	Out and In, In
03	Trunk-to-Trunk Group Assignment	Refer to Memory Block	
04	Trunk-to-Trunk Transfer Yes/No Selection	No	No, Yes
05	Trunk Incoming Answer Mode Selection	Normal	Normal, Automatic Trunk-to-Trunk Transfer, Automated Attendant/DISA
06	Automatic Tandem Trunk Assignment	Not Specified	
07	CO/PBX Ringing Variation Selection	Medium (M)	Medium (M), Low (L), High (H)
14	Tie/DID Line Type Assignment	2 <sup>nd</sup> Dial Tone	2 <sup>nd</sup> Dial Tone, Immediate, Delayed, Wink Start
15	Trunk DTMF Duration/Interdigit Selection	Duration: 100 ms. Interdigit Time: 70 ms.	70 ms. - 60 ms.    100 ms. - 70 ms. 400 ms. - 100 ms.    600 ms. - 100 ms. 900 ms. - 200 ms.
16	Tie Line Prepause Time Selection	0 sec.	0 sec.    0.5 sec.    1 sec. 1.5 sec.    2 sec.    3 sec. 4 sec.    5 sec.    6 sec. 7 sec.    8 sec.    9 sec. 10 sec.    11 sec.    12 sec. 13 sec.

LK 3 CO/PBX Line Mode (continued)

Data No.	Function Name	Default	Programming Value				
17	Tie Line Answer Detect Time Selection	520 ms.	0 ms.	130 ms.	260 ms.		
			390 ms.	520 ms.	650 ms.		
			780 ms.	910 ms.	1040 ms.		
			1170 ms.	1300 ms.	1430 ms.		
			1560 ms.	1690 ms.	1820 ms.		
			1950 ms.				
18	Tie Line Release Detect Time Selection	520 ms.	0 ms.	130 ms.	260 ms.		
			390 ms.	520 ms.	650 ms.		
			780 ms.	910 ms.	1040 ms.		
			1170 ms.	1300 ms.	1430 ms.		
			1560 ms.	1690 ms.	1820 ms.		
			1950 ms.				
19	Tie Line/CO/PBX Incoming Signal Detect Time Selection	Refer to Memory Block					
20	Tie Line Loop Off-Guard Time Selection	2 sec.	0 sec.	0.5 sec.	1 sec.		
			1.5 sec.	2 sec.	3 sec.		
			4 sec.	5 sec.	6 sec.		
			7 sec.	8 sec.	9 sec.		
			10 sec.	11 sec.	12 sec.		
			13 sec.				
21	Tie Line Length of Wink Signal Selection	180 ms.	30 ms.	60 ms.	90 ms.		
			120 ms.	150 ms.	180 ms.		
			210 ms.	240 ms.	270 ms.		
			300 ms.	330 ms.	360 ms.		
			390 ms.	420 ms.	450 ms.		
			480 ms.				
22	Tie Line Length of Delay Signal Selection	300 ms.	0 ms.	300 ms.	600 ms.		
			900 ms.	1200 ms.	1500 ms.		
			1800 ms.	2100 ms.	2400 ms.		
			2700 ms.	3000 ms.	3300 ms.		
			3600 ms.	3900 ms.	4200 ms.		
			4500 ms.				
23	Tie Line Outgoing Timeout Selection	12 sec.	1 sec.	2 sec.			
			3 sec.	4 sec.	5 sec.		
			6 sec.	7 sec.	8 sec.		
			9 sec.	10 sec.	11 sec.		
			12 sec.	13 sec.	14 sec.		
			15 sec.	No Limit			
24	Tie Line Incoming Interdigit Timeout Selection	6 sec.	1 sec.	2 sec.	3 sec.	4 sec.	
			5 sec.	6 sec.	7 sec.	8 sec.	9 sec.
			10 sec.	11 sec.	12 sec.	13 sec.	14 sec.
			15 sec.	No Limit			
25	Tie Line Wink/Delay Signal Detect Timeout Selection	7 sec.	1 sec.	2 sec.	3 sec.	4 sec.	
			5 sec.	6 sec.	7 sec.	8 sec.	9 sec.
			10 sec.	11 sec.	12 sec.	13 sec.	14 sec.
			15 sec.	No Limit			

## LK 3 CO/PBX Line Mode (continued)

Data No.	Function Name	Default	Programming Value			
26	Tie Line Outgoing Guard Time Selection	3 sec.	0.02 sec. 4 sec. 8 sec. 12 sec.	1 sec. 5 sec. 9 sec. 13 sec.	2 sec. 6 sec. 10 sec. 14 sec.	3 sec. 7 sec. 11 sec. 15 sec.
27	Tie Line Dial Tone Selection	Yes	Yes, No			
28	Tie Line Reorder Tone Selection	Sending (Yes)	Sending (Yes) Not Sending (No)			
29	Tie Line Internal Transmit Pad Selection	Page 1 = 2dB Page 2 = 0dB	2 dB 8 dB S1	4 dB 12 dB S2	6 dB 16 dB 0 dB	
30	Tie Line Internal Receive Pad Selection	8 dB	2 dB 8 dB S1	4 dB 12 dB S2	6 dB 16 dB 0 dB	
31	Tie Line External Transmit Pad Selection	2 dB	2 dB 8 dB S1	4 dB 12 dB S2	6 dB 16 dB 0 dB	
32	Tie Line External Receive Pad Selection	2 dB	2 dB 8 dB S1	4 dB 12 dB S2	6 dB 16 dB 0 dB	
33	Disconnect Recognition Time Selection	.3 sec.	0 sec. .3 sec. .6 sec. .9 sec. 1.2 sec. 1.5 sec.	.1 sec. .4 sec. .7 sec. 1.0 sec. 1.3 sec.	.2 sec. .5 sec. .8 sec. 1.1 sec. 1.4 sec.	
38	Automated Attendant Message to Trunk Selection	Message 1				
40	Automatic Release Signal Detection Time Selection	350 ms.	0 ms. 200 ms. 400 ms. 600 ms.	50 ms. 250 ms. 450 ms. 650 ms.	100 ms. 300 ms. 500 ms. 700 ms.	150 ms. 350 ms. 550 ms. No Limit
41	Delay Announcement Assignment	Refer to Memory Block				
42	DIT Assignment	No Assignment				
43	ANA Assignment	No Assignment				
44	Caller ID Display Assignment for CO/PBX Line	Not Specified				

## LK 3 CO/PBX Line Mode (continued)

Data No.	Function Name	Default	Programming Value
45	Live Recording Trunk Selection	No	No = No Live Recording, Yes=Live Recording
46	ISDN Line Internal Transmit Pad Selection	2dB	0 dB, 2 dB, 4 dB, 6 dB, 8 dB, 12 dB, 16 dB, and -3 dB
47	ISDN Line Internal Receive Pad Selection	2dB	0 dB, 2 dB, 4 dB, 6 dB, 8 dB, 12 dB, 16 dB, and -3 dB
48	ISDN Line External Transmit Pad Selection	2dB	0 dB, 2 dB, 4 dB, 6 dB, 8 dB, 12 dB, 16 dB, and -3 dB
49	ISDN Line External Receive Pad Selection	2dB	0 dB, 2 dB, 4 dB, 6 dB, 8 dB, 12 dB, 16 dB, and -3 dB
91	Trunk Type Selection	CO	CO, PBX, Tie/DID line
92	Trunk (Installed, DP/DTMF) Selection	MF	Nil, DP 10 pps, DP 20 pps, MF

**LK 4 Telephone Mode**

<b>Data No.</b>	<b>Function Name</b>	<b>Default</b>	<b>Programming Value</b>
01	CO/PBX Ring Assignment (Day Mode)	Refer to Memory Block	No Ring, Immediate Ring, Delayed Ring
02	CO/PBX Ring Assignment (Night Mode)	Refer to Memory Block	No Ring, Immediate Ring, Delayed Ring
07	Code Restriction Class Assignment (Day Mode)	All Stations Class 00	
08	Code Restriction Class Assignment (Night Mode)	All Stations Class 00	
09	Telephone to Tenant Assignment	All Telephones Tenant 00	Tenant Number
10	Station Number Assignment	Refer to Memory Block	
11	Ringing Line Preference Selection	No	No, Yes
12	Line Key Selection for Telephone Mode	Refer to Memory Block	
13	CO/PBX Busy Forward Station Assignment	Not Specified	
14	Intercom Master Hunt Number Selection	No	No, Yes
15	Intercom Master Hunt Number Forward Assignment	All Telephones Not Specified	Station Number
17	Station to Class of Service Feature Assignment	Refer to Memory Block	
18	Station Name Assignment	Not Specified	Up to 6 digits (characters)
19	Trunk Outgoing Restriction	Not Restricted	No (Not Restricted) Yes (Restricted)
20	Off-Hook Voice Announcement Terminal Assignment	No	No = Off-hook Voice Deny Yes = Off-hook Voice Allow
23	Prime Line/Hot Line Assignment	Not Specified	Up to 10 digits
24	SLT Hookflash Assignment	Hold	Hold, Disconnect
26	DISA ID Number Station Assignment	Refer to Memory Block	
28	Bilingual LCD Indication Selection	English	English, Japanese
29	HFU Selection	No	No, Yes
30	Hold/Transfer Recall Display Selection	Yes	Yes, No

## LK 4 Telephone Mode (continued)

Data No.	Function Name	Default	Programming Value
31	Receiving Internal/All Call Page Selection	Yes	Yes, No
32	Trunk Digit Restriction	00 (No Limit)	00 ~ 99
33	Fax Indication Station Assignment	00 for all ports	
34	Fax Indication Networking Assignment	00 for all ports	
35	Voice Mail/SLT Selection	No	No, Yes
36	Voice Prompt Selection	No	No, Yes
37	Extension Line Key Ring Assignment (Day Mode)	All Telephones: No Ring	No Ring, Immediate Ring, Delayed Ring
38	Extension Line Key Ring Assignment (Night Mode)	All Telephones: No Ring	No Ring, Immediate Ring, Delayed Ring
39	ADA (2) Ring Mode Assignment	Station Number (only)	No Ring, Station Number (only), All Ring
40	LCR Class Selection	Class 0	Class 0~Class 4
41	SIE/CAR Ringing Line Preference Selection	Yes	Yes, No
42	Call Forward - Busy Immediately/Delay Selection	Yes	No = Immediately Yes = Delay
43	Station to Call Appearance Block Assignment	All stations are assigned Call Appearance Block 00	
44	Caller ID Outgoing CO Selection	Not Specified	
90	SLT Data Line Security Assignment	SLT Norm	SLT Norm - SLT Data
91	Telephone Ringing Variation Selection	Medium (M)	Medium (M), Low (L), High (H)
92	Receiving Volume Selection	Down	Down, Up
93	Internal Zone Paging Selection	No	No, Zone A, Zone B, Zone C
94	3-Minute Alarm Selection	No	No, Yes
95	DTMF/DP SLT Type Selection	DTMF	DP, DTMF

**LK 5 Trunk Group Mode**

Data No.	Function Name	Default	Programming Value
00	Digit Add/Del For Tie Line Networking	No Add and Delete = 000	Delete up to two digits, add up to two digits
01	Tie Line Networking Tandem Connection Assignment	All Trunk Groups	On = Yes (Enabled) Off = No (Disabled)
02	8-Digit Matching Table to Trunk Group Assignment	Enabled	On = Use (Enabled) Off = Not Used (Disabled)
03	OCC Table to Trunk Group Assignment	Use All Tables	On = Use (Enabled) Off = Not Used (Disabled)

**LK 6 Copy Mode**

Data No.	Function Name	Default	Programming Value
2	Tenant Mode Copy Assignment	N/A	N/A
3	CO Line Mode Copy Assignment	N/A	N/A
4	Telephone Mode Copy Assignment	N/A	N/A
5	Trunk Group Mode Copy Assignment	N/A	N/A

**LK 7 KTU Mode**

Data No.	Function Name	Default	Programming Value
1	Card Interface Slot Assignment	Refer to Memory Block	
2	Telephone Type Assignment	Telephone	Non, Telephone, DSS Console, SLT Adaptor, Digital Voice Mail
3-00	MIF (ACD) Assignment	No Assignment (00)	
3-01	MIF (LCR) Assignment	No Assignment (00)	
3-02	MIF (SMDR) Assignment	No Assignment (00)	
3-03	MIF (UCD) Assignment	No Assignment (00)	
3-04	MIF (CALLER ID) Assignment	No Function (00)	

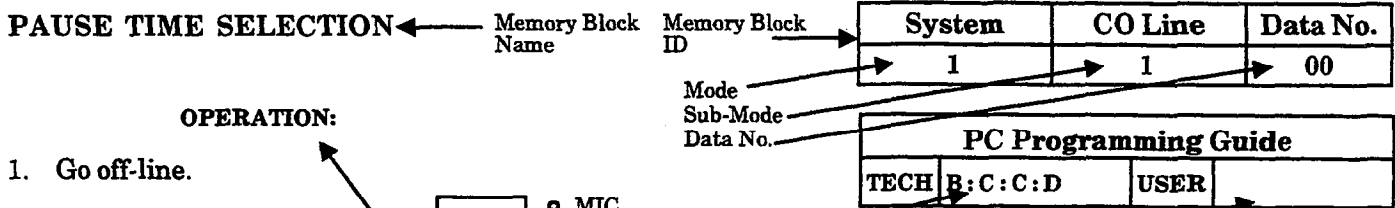


**LK 8 Special Mode**

<b>Data No.</b>	<b>Function Name</b>	<b>Default</b>	<b>Programming Value</b>
1	ROM Version Confirmation	N/A	
2	System Speed Dial Memory Clear	N/A	
3	Station Speed Dial Memory Clear	N/A	
8800	Second Initialization	N/A	
	Clock/Calendar Setting	N/A	

**SECTION 4 PROGRAMMING PROCEDURES**

Section 4 contains detailed instructions for programming System Data. The example below describes the format of programming procedures for each data item (Memory Block) function.



TECH refers to the *System Program Technician Manual* to be used by the Technician for PC Programming Procedures. USER refers to the *System Program End-User Manual* to be used by the End-User for PC Programming Procedures.

**NOTES:**

The NOTES section alerts the Technician of exceptions to programming.

**Status indication LEDs**

When CO/PBX line key 1 (System Mode) is pressed, the MIC LED lights. When CO/PBX line key 1 is pressed a second time (CO line), the ICM LED lights.

The OPERATIONS are for guiding the Technician through the procedures for programming a specific Memory Block.

Press these keys in this sequence.

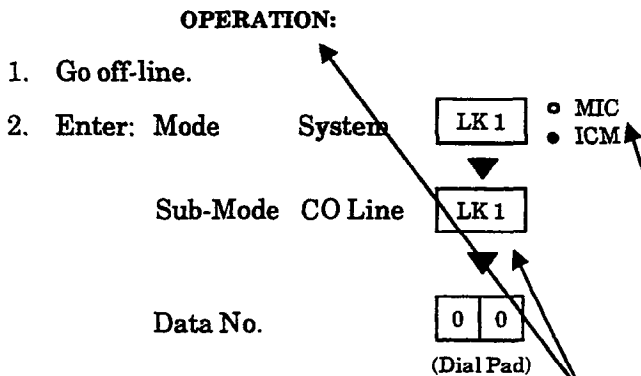
**Display**

Data assigned to associated CO/PBX line keys.

In some instances, additional data must be programmed before or after a specific Memory Block can be programmed. This table contains those additional Memory Blocks.

If additional information is needed on this page, some or all of the notes in the NOTES section continue on the next page.

A brief description of the function(s) of a specific Memory Block.



Data No.	Title	Setting Data
0 0	PAUSE	3.0s
	TIME DISPLAY	

3. Press the corresponding CO/PBX line key to change data entry.

LK 1	LK 2	LK 3	LK 4
1 s	3 s		
LK 5	LK 6	LK 7	LK 8

CO/PBX line key Default

- To change Pause Time from 3 seconds to 1 second, press CO/PBX line key 1.

- Press the TRF key to write the data.
- Press the SPKR key to go back on-line.

**Additional Programming**

Memory Block No.	Memory Block Name	Required
1-1-09	Manual Pause Selection	
1-1-24	PBX/CTX Access Code Assignment I	
1-1-25	PBX/CTX Access Code Assignment II	
3-91	Trunk Type Selection	

**GENERAL INFORMATION - PAUSE TIME SELECTION**

A pause may be inserted between digits dialed on CO/PBX and Tie lines. This Memory Block specifies the length of the pause that automatically inserted following a behind a CO/PBX Access Code (e.g., 9) by registering Memory Blocks 24 and 25 for CO line in the System Mode.

## PAUSE TIME SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode System  LK 1  MIC  
 ICM  
 Sub-Mode CO Line  LK 1  MIC  
 ICM

Data No.    
 (Dial Pad)

Data No.	Title	Setting Data
0 0 :	PAUSE	3.0s
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change Pause Time from 3 seconds to 1 second, press CO/PBX line key 1.

LK 1	LK 2	LK 3	LK 4
1 sec.	3 sec.		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-01, DP Interdigit Time Selection.

5. Press the SPKR key to go back on-line.

#### Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-09	Manual Pause Selection	
1-1-24	PBX/CTX Access Code Assignment I	
1-1-25	PBX/CTX Access Code Assignment II	
3-91	Trunk Type Selection	

System	CO Line	Data No.
1	1	00

PC Programming Guide			
TECH	B:C:C:D	USER	

### NOTES:

- A pause is automatically inserted following a behind CO/PBX Access Code (e.g., 9) by programming CO/PBX lines as PBX in Memory Block 3-91, Trunk Type Selection, and 1-1-24/25, PBX/CTX Access Code Assignments I/II.
- Manual pauses can be stored to be used when dialing outside lines by the Last Number Redial or Save/Store and Repeat features when Memory Block 1-1-09, Manual Pause Selection, is programmed.
- Pauses can be stored as part of System and Station Speed Dial buffers when needed.

## GENERAL INFORMATION - PAUSE TIME SELECTION

A pause can be inserted between digits dialed on CO/PBX and Tie lines. This Memory Block specifies the length of the pause.

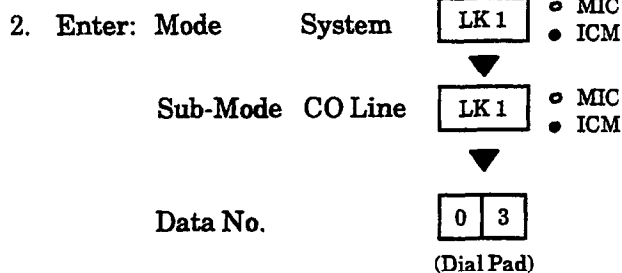




### HOLD RECALL TIMER SELECTION (NON-EXCLUSIVE HOLD)

**OPERATION:**

1. Go off-line.



Data No.	Title	Setting Data
0 3 :	HOLD RECL	25s
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change 25 seconds to 45 seconds, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
25 seconds	45 seconds	90 seconds	No Limit
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys



Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-04, Automatic Redial Time Selection.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-63	Hold Recall Time Selection (Exclusive)	
1-2-23	System Call Park Recall Time Selection	

System	CO Line	Data No.
1	1	03

PC Programming Guide			
TECH	B:I:D	USER	S:E

**NOTES:**

1. Calls put on Exclusive Hold recall using the data selected in Memory Block 1-1-63, Hold Recall Time Selection (Exclusive).
2. Calls placed on Hold on call appearance keys recall using this Memory Block.
3. Calls parked in System Call Park locations recall using Memory Block 1-2-23, System Call Park Recall Time Selection.
4. In series 500 or lower, the timer values are:  
 LK1 = 1 minute, LK2 = 2 minutes, LK3 = 4 minutes, LK4 = No Limit.

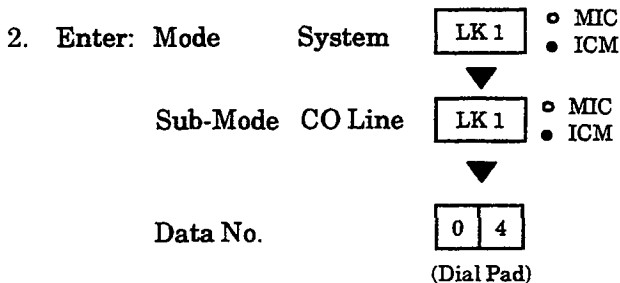
### GENERAL INFORMATION - HOLD RECALL TIMER SELECTION (NON-EXCLUSIVE HOLD)

This Memory Block specifies the time interval of a Non-Exclusive held outside call until a recall tone is generated. If No Limit is selected, no hold alarm tone is generated.

# AUTOMATIC REDIAL TIME SELECTION

## OPERATION:

1. Go off-line.



Data No.	Title	Table	Setting Data
0 4 :	REDIAL	(1/2/3)	030
-----			
TIME		DISPLAY	

3. Use the dial pad to enter the table number and Setting Data.

← **\*** , **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter data.

Default	Table 1: Calling Time	30 sec.
	Table 2: Call Waiting Time	60 sec
	Table 3: Call Attempts	2

4. After entering data for Table 3, press the TRF key to write the selected data and advance to Memory Block 1-1-05, Start Timer Selection.

5. Press the SPKR key to go back on-line.

### Additional Programming

Refer to Guide to Feature Programming in this manual.

System	CO Line	Data No.
1	1	04

PC Programming Guide			
TECH	B: J: A - C	USER	

## NOTES:

- Definitions:**

**Calling Time:** The time that the system automatically rings the busy CO/PBX number. After the specified time limit is reached, ringing stops.

**Call Waiting Time:** The time the system waits before redialing the called party number.

**Call Attempts:** The number of times the system redials the busy CO/PBX number.
- Setting Data (Allowed)**

Table 1: Calling Time (001~100 sec.)

Table 2: Call Waiting Time (001~100 sec.)

Table 3: Call Attempts (001~255 times)

(000 cannot be entered.)
- If call Pickup groups are assigned using Memory Block 4-09, Telephone to Tenant Assignment, the CO limits must be assigned to the same Tenant Group in Memory Block 2-01, Trunk to Tenant Assignment, for this feature to work.

## GENERAL INFORMATION - AUTOMATIC REDIAL TIME SELECTION

When the called party is busy, the station user dials an Access Code and restores the handset. As programmed in this Memory Block, the system automatically redials the busy CO/PBX number. After the specified number of call attempts with no answer, the system stops dialing.

## START TIMER SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode System LK 1  MIC  
 ICM

Sub-Mode CO Line LK 1  MIC  
 ICM

Data No. 0 5  
 (Dial Pad)

Data No.	Title	Setting Data
0 5 :	CALL START	20 s
-----		
TIME DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change 20 sec. to 10 sec., press CO/PBX line key 1.

LK 1	LK 2	LK 3	LK 4
10 sec.	20 sec.	30 sec.	40 sec.
LK 5	LK 6	LK 7	LK 8
50 sec.	60 sec.	70 sec.	2 sec.

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-06, CO/PBX Incoming Ringing Alarm Time Selection.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-5-25	SMDR Valid Call Timer Assignment	

System	CO Line	Data No.
1	1	05

PC Programming Guide			
TECH	B:I:C	USER	

### NOTES:

- This timer is used for three different features and their function that are described below:
  - Elapsed Call Timer:** The time needed after dialing until the Elapsed Call Timer is displayed and started.
  - SMDR Start Timer:** The time needed after dialing until the SMDR Valid Call Timer is started. Refer to Memory Block 1-5-25, SMDR Valid Call Timer Assignment. For outgoing calls, both timers (SMDR Start Timer and SMDR Valid Call Timer) must elapse before a call record is generated.
  - Talk Start Timer:** The time needed after dialing on a CO/PBX line to establish a Trunk-to-Trunk transfer. (Software version V2.25 or V2.77 or lower.)
- In series 500 and lower version software, LK8 = 80 seconds.

### GENERAL INFORMATION - START TIMER SELECTION

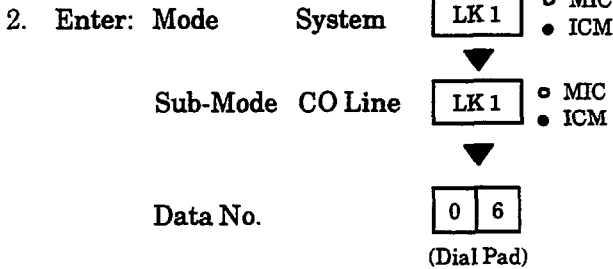
This Memory Block specifies the time needed after dialing for the system to start the Elapsed Call Timer, SMDR Start Timer and/or Talk Start Timer. Refer to the notes above for a description of each timer.



## CO/PBX INCOMING RINGING ALARM TIME SELECTION

### OPERATION:

1. Go off-line.



Data No.	Title	Setting Data
0 6 :	RING ALM	∞
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change No Limit to 10 sec., press CO/PBX line key 1.

LK 1	LK 2	LK 3	LK 4
10 sec.	20 sec.	30 sec.	∞
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

 Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-07, Tie/DID Line Delay Ringing Timer Selection.

5. Press the SPKR key to go back on-line.

System	CO Line	Data No.
1	1	06

PC Programming Guide			
TECH	B:I:F	USER	S:G

### NOTES:

- Memory Blocks 4-01 and 4-02, CO/PBX Ring Assignment (Day Mode/Night Mode), must be set to RING.
- CO/PBX lines assigned for DIT/ANA do not activate this feature.
- Tie/DID lines assigned for Delayed Ringing follow this assignment after the delayed ringing starts.
- This feature uses the same ringing tone (Low, Medium, High) that can be selected in Memory Blocks 3-07, CO/PBX Ringing Variation Selection, and 4-91, Telephone Ringing Variation Selection. If High is selected in those Memory Blocks, this feature does not function.
- Selection of No Limit (∞) disables this feature.

### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-07	Tie/DID Line Delay Ringing Timer Selection	
3-07	CO/PBX Ringing Variation Selection	
4-01	CO/PBX Ring Assignment (Day Mode)	✓
4-02	CO/PBX Ring Assignment (Night Mode)	✓
4-91	Telephone Ringing Variation Selection	

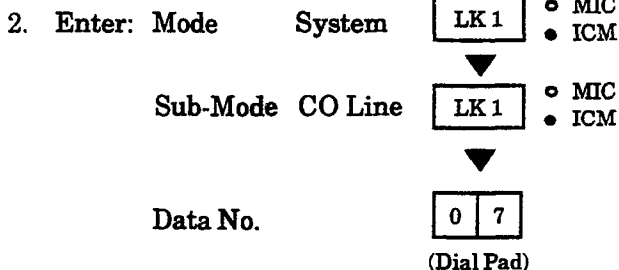
## GENERAL INFORMATION - CO/PBX INCOMING RINGING ALARM TIME SELECTION

This Memory Block specifies the time interval from the incoming of a CO/PBX call until the ringing tone changes to a higher pitch ringing tone if the call is not answered. If No Limit is selected, the ringing tone does not change.

## TIE/DID LINE DELAY RINGING TIMER SELECTION

### OPERATION:

1. Go off-line.



Data No.	Title	Setting Data
07	TL DLYRNG	∞
-----		
TIME DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change No Limit to 10 sec., press CO/PBX line key 1.

LK 1	LK 2	LK 3	LK 4
10 sec.	20 sec.	30 sec.	∞
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-09, Manual Pause Selection.

5. Press the SPKR key to go back on-line.

#### Additional Programming

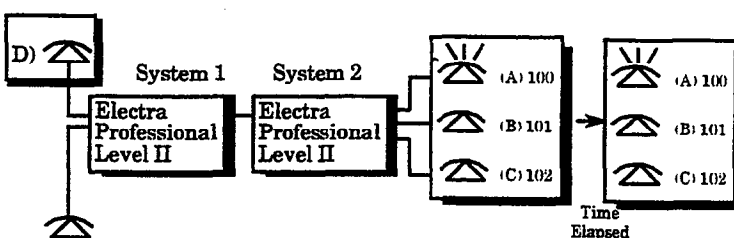
Memory Block No.	Memory Block Name	Required
1-1-34	Tie/DID Line First Ring Pattern Selection	
4-01	CO/PBX Ring Assignment (Day Mode)	✓
4-02	CO/PBX Ring Assignment (Night Mode)	✓
4-12	Line Key Selection for Telephone Mode	

System	CO Line	Data No.
1	1	07

### PC Programming Guide

TECH	A:D:C:B	USER

### Example:



- Systems 1 and 2 are connected to each other.
- Station A (ext. 100) and Station C (ext. 102) are assigned to ring on the Tie line in Memory Blocks 4-01 and 4-02, CO/PBX Ring Assignment (Day/Night) Mode.

### NOTES:

- When station user D wants to speak to station user A, dial ext. 100.
- At Station A:
  - The ICM LED blinks and a ring tone different from the normal ringing tone is heard.
  - The call can be answered by lifting the handset.
  - In this instance, Station B and C cannot answer the call by pressing the line key on the Multiline Terminals.
- If station user A does not answer within the specified time:
  - The ringing tone changes to the normal tone and Station C starts ringing.
  - Any Station (A, B, or C) can answer the call by pressing the flashing line key.
- After timeout, the system uses the Day and Night Ringing Assignment and rings the assigned station.
- Selection of No Limit (∞) disables this feature.

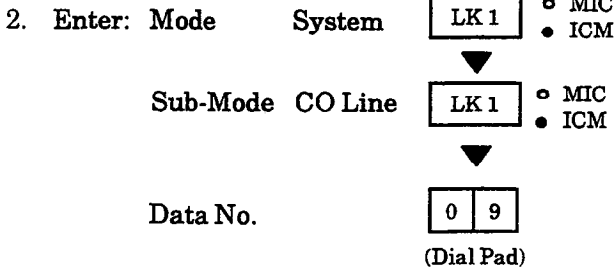
## GENERAL INFORMATION - TIE/DID LINE DELAY RINGING TIMER SELECTION

This Memory Block specifies the delay interval between the time a telephone (accessed by a ringing call on a Tie line) is not answered (within a specified time) and the time other telephones (assigned to ring on that Tie line) start ringing. Refer to the example and the notes above.

**MANUAL PAUSE SELECTION**

**OPERATION:**

1. Go off-line.



Data No.	Title	Setting Data
0 9 :	MAN PAUSE	NO
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change NO to YES, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-11, System Transfer/Camp-On Selection.

5. Press the SPKR key to go back on-line.

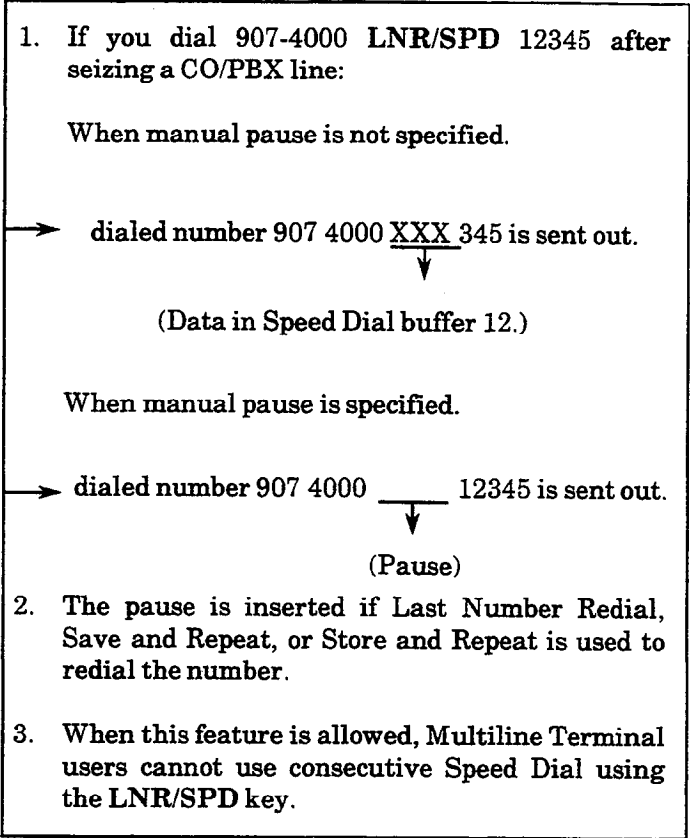
■ Additional Programming

Refer to Guide to Feature Programming in this manual.

System	CO Line	Data No.
1	1	09

PC Programming Guide			
TECH	B:B:A:G	USER	

**NOTES:**



**GENERAL INFORMATION - MANUAL PAUSE SELECTION**

This Memory Block specifies either Pause Insertion or Last Number Dialed/Speed Dial to be executed using the LNR/SPD key if it is pressed after one or more digits of a dialed number are entered. Refer to the notes above.

## SYSTEM TRANSFER/CAMP-ON SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode System **LK 1**  MIC  
 ICM

Sub-Mode CO Line **LK 1**  MIC  
 ICM

Data No. **1 1**  
 (Dial Pad)

Data No.	Title	Setting Data
<u>1</u> 1 :	RING TRF	YS
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change YES to NO, press CO/PBX line key 1.

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

 Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-12, Station Transfer/Camp-On Recall Timer Selection.
5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-12	Station Transfer/Camp-On Recall Timer Selection	

System	CO Line	Data No.
1	1	11

PC Programming Guide		
TECH	B: B:A:I	USER

### NOTES:

1. Transfers/Camp-Ons from Attendant Add-On Consoles are also activated by this Memory Block.

## GENERAL INFORMATION - SYSTEM TRANSFER/CAMP-ON SELECTION

This Memory Block allows or denies system-wide station users the ability to perform a Ring Transfer or Station Camp-On. If allowed, multiline terminal users can perform a Ring Transfer by pressing the TRF key

**STATION TRANSFER/CAMP-ON RECALL  
TIMER SELECTION**

System	CO Line	Data No.
1	1	12

**OPERATION:**

PC Programming Guide			
TECH	B:I:H	USER	S:K

1. Go off-line.

2. Enter: Mode System [ LK 1 ] ○ MIC  
● ICM

Sub-Mode CO Line [ LK 1 ] ○ MIC  
● ICM

Data No. [ 1 | 2 ]  
(Dial Pad)

Data No.	Title	Setting Data
<u>1</u> 2 :	TRF RECL	45 s
	-----	
	TIME	DISPLAY

**NOTES:**

1. When a station with an Attendant Add-On Console assigned to it transfers or camps on a call and the call goes unanswered, the call recalls using Memory Block 1-1-64, Attendant Add-On Console Transfer/Camp-On Recall Timer Selection.
2. In series 500 or lower version software, the timer values are: LK1 = 30 seconds, LK2 = 60 seconds (default), LK3 = 120 seconds, LK4 = 240 seconds.

3. Press the corresponding CO/PBX line key to change data option.

- To change 45 sec. to 90 sec., press CO/PBX line key 3.

LK 1	LK 2	LK 3	LK 4
25 sec.	45 sec.	90 sec.	No Limit
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys [ Shaded Box ] Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-18, System Speed Dial Restriction by Tenant.

5. Press the SPKR key to go back on-line.

**■ Additional Programming**

Memory Block No.	Memory Block Name	Required
1-1-11	System Transfer/Camp-On Selection	
1-6-01	Attendant Add-On Console to Telephone Port Assignment	
1-8-08	Class of Service (Station) Feature Selection 2	

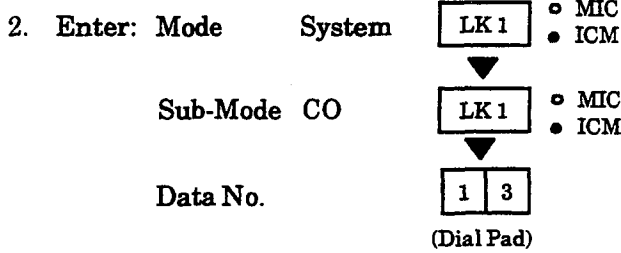
**GENERAL INFORMATION - STATION TRANSFER/CAMP-ON RECALL TIMER SELECTION**

This Memory Block specifies the time interval before a Ring Transfer or Station Camp-On from a station without an Attendant Add-On Console recalls back to the originating station if the call is not answered.

# CO TRANSFER RING PATTERN SELECTION

## OPERATION:

1. Go off-line.



Data No.	Title	Setting Data	Page
13 :	COT PTN	C	1
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change Pattern C to Pattern A, press CO/PBX line key 3.

Page 1

LK 1	LK 2	LK 3	LK 4
Tone Off	Tone On	Pattern A	Pattern B
LK 5	LK 6	LK 7	LK 8
Pattern C	Pattern D	Pattern E	Pattern F

Page 2

LK 1	LK 2	LK 3	LK 4
Pattern G	Pattern H		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys       Default

RECALL key : Next page.

FNC key : Previous page.

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-14, CO Transfer Ring Tone Selection.

■ Additional Programming  
Refer to Guide to Feature Programming in this manual.

5. Press the SPKR key to go back on-line.

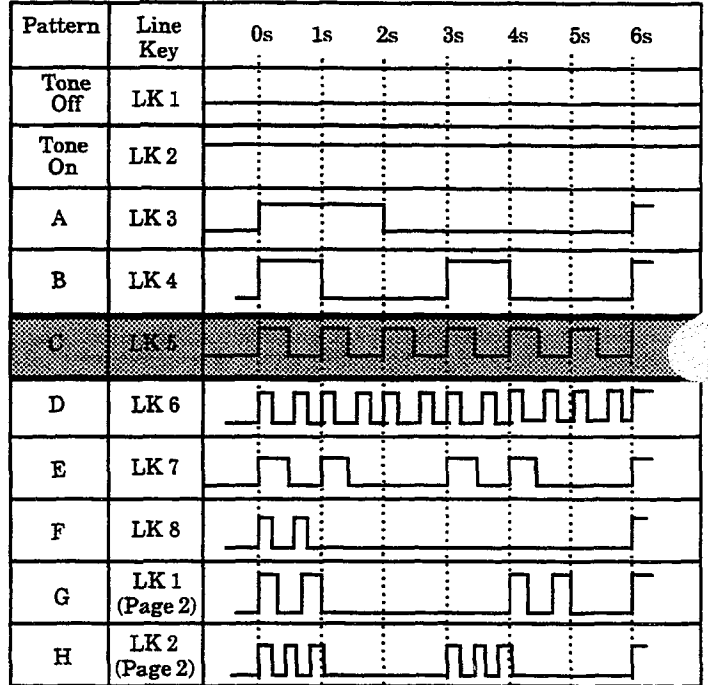
System	CO Line	Data No.
1	1	13

PC Programming Guide			
TECH	B:C:A:J	USER	

### NOTES:

1. This feature requires version 4.0 software or higher.



## GENERAL INFORMATION - CO RING TRANSFER RING PATTERN SELECTION

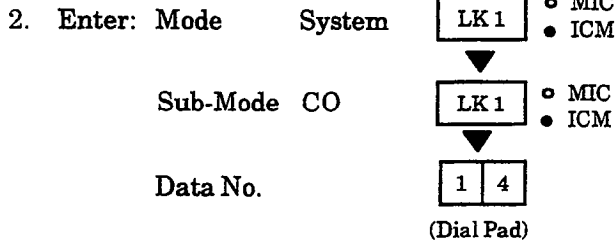
This Memory Block selects a Ring Pattern when CO Transfers are made.

# CO TRANSFER RING TONE SELECTION

System	CO	Data No.
1	1	14
<b>PC Programming Guide</b>		
TECH	B:C:A:K	USER

### OPERATION:

1. Go off-line.



Data No.	Title	Setting Data
1 4:	TRF TONE	A
-----		
TIME DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change Tone A to Tone B, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
Tone A	Tone B	Tone C	Tone D
LK 5	LK 6	LK 7	LK 8
Tone E	Tone F	Tone G	Tone H

CO/PBX Line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-2-22, Call Forward No Answer Timer Selection.

5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Refer to Guide to Feature Programming in this manual.

### NOTES:

1. The available tones are shown below.	
Tone A = (480/606):	Modulation (16 Hz)
Tone B = (480/606):	Modulation (8 Hz)
Tone C = (1024/1285)	
Tone D = (1024)	
Tone E = (500)	
Tone F = (1024/1285):	Modulation (16 Hz)
Tone G = (600/700):	Modulation (16 Hz)
Tone H = (1024):	Envelope 2 sec.
2. This feature requires version 4.0 software or higher.	

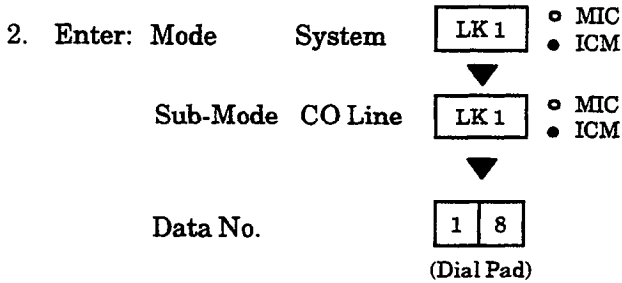
## GENERAL INFORMATION - CO TRANSFER RING TONE SELECTION

This Memory Block selects a ring tone for CO Transfers.

## SYSTEM SPEED DIAL RESTRICTION BY TENANT

### OPERATION:

1. Go off-line.



Data No.	Title	Speed Dial No. 0X~XX	Tenant No. in groups of 8
1 8 :	SPEED	(0X)	00
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key for each tenant.

- RECALL** key : Next page.  
**FNC** key : Previous page.  
 ← **\*** , **#** → : To move cursor.  
 Dial pad **0** ~ **9** : To enter data.

CO/PBX Line LED	<input checked="" type="checkbox"/> OFF	<input type="checkbox"/> ON	Default
Data	Restricted	No. Restricted	

- The LED indication changes to indicate the option entry each time the CO/PBX line key is pressed.
- After entering all pages of Access Code 0X, press the TRF key to display the next 1X.
- Use the dial pad to change the Access Code.
- After entering all pages of 8X, press the TRF key to write the selected data and advance to Memory Block 1-1-24, PBX/CTX Access Code Assignment I.
- Press the SPKR key to go back on-line.

System	CO Line	Data No.
1	1	18

PC Programming Guide		
TECH	A:A:M	USER

### Page Switching:

Tenant Number (00~47) corresponds to CO/PBX line key.

#### Page 1 (Tenants 00~07)

LK 1	LK 2	LK 3	LK 4
00	01	02	03
LK 5	LK 6	LK 7	LK 8
04	05	06	07

#### Page 2 (Tenants 08~15)

LK 1	LK 2	LK 3	LK 4
08	09	10	11
LK 5	LK 6	LK 7	LK 8
12	13	14	15

#### Page 3 (Tenants 16~23)

LK 1	LK 2	LK 3	LK 4
16	17	18	19
LK 5	LK 6	LK 7	LK 8
20	21	22	23

#### Page 4 (Tenants 24~31)

LK 1	LK 2	LK 3	LK 4
24	25	26	27
LK 5	LK 6	LK 7	LK 8
28	29	30	31

#### Page 5 (Tenants 32~39)

LK 1	LK 2	LK 3	LK 4
32	33	34	35
LK 5	LK 6	LK 7	LK 8
36	37	38	39

#### Page 6 (Tenants 40~47)

LK 1	LK 2	LK 3	LK 4
40	41	42	43
LK 5	LK 6	LK 7	LK 8
44	45	46	47

CO/PBX line keys

(Continued on next page.)



**SYSTEM SPEED DIAL RESTRICTION BY TENANT**  
(continued)

System	CO Line	Data No.
1	1	18

**System Speed Dial Number  
Access Code Tables**

Series 100~450

Access Code	Speed Dial Number	
	90 Codes	1000 Codes
0X	00 ~ 09	000 ~ 099
1X	10 ~ 19	100 ~ 199
f	f	f
7X	70 ~ 79	700 ~ 799
8X	80 ~ 89	800 ~ 899

Series 500

Access Code	Speed Dial Number	
	80 Codes	1000 Codes
0X	00 ~ 09	000 ~ 099
1X	10 ~ 19	100 ~ 199
f	f	f
6X	60 ~ 69	600 ~ 699
7X	70 ~ 79	700 ~ 799
8X	N/A	800 ~ 899

Default	All System Speed Dial buffers can be dialed from any tenant.
---------	--

**NOTES:**

1. Speed Dial buffers have nine groups. Refer to System Speed Dial Number Access Code Table.
2. One or more tenants can be enabled to use each of the groups.
3. This Memory Block determines which tenants can use each group.
4. When Speed Dial is set to 1000, 900 ~ 999 cannot be restricted.
5. X in each Access Code is displayed even if it is not entered.
6. X = any digit 0~9.
7. With Series 500 or higher, 80 System Speed Dial buffers are available.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-33	Speed Dial Number/Name Display Selection	
1-1-35	Speed Dial Buffer Allocation	
4-09	Telephone to Tenant Assignment	

**GENERAL INFORMATION - SYSTEM SPEED DIAL RESTRICTION BY TENANT**

This Memory Block specifies whether or not System Speed Dial is enabled for each tenant.

# PBX/CTX ACCESS CODE ASSIGNMENT I

System	CO Line	Data No.
1	1	24

PC Programming Guide			
TECH	B:G:E	USER	

### OPERATION:

1. Go off-line.

2. Enter: Mode System   MIC  
 ICM

Sub-Mode CO Line   MIC  
 ICM

Data No.    
 (Dial Pad)

Data No.	Title	Setting Data
2 4 :	PBX AC	9 -
-----		
TIME	DISPLAY	

3. Enter data by using the dial pad.

Example: To program 91 pause, dial: 91 LNR/SPD.

(Use the LNR/SPD key to insert a pause.)

←  ,  → : To move cursor.

Dial pad  ~  : To enter data.

key : To insert a pause.

key : To clear all data.

Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-25, PBX/CTX Access Code Assignment II.

5. Press the SPKR key to go back on-line.

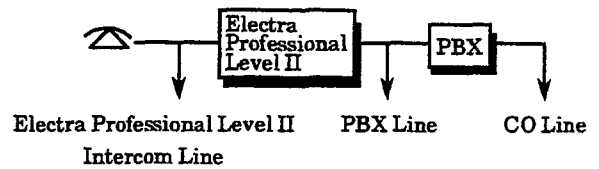
■ Additional Programming

Memory Block No.	Memory Block Name	Required
3-91	Trunk Type Selection	

### NOTES:

1. Features, such as Code Restriction, do not operate properly unless a behind PBX/CTX Access Code is specified (Only PBX lines assigned in Memory Block 3-91, Trunk Type Selection).
2. A pause is not inserted in the number of an outgoing call on a CO line.
3. Up to three numeric characters and three pauses can be specified.
4. A pause cannot be inserted as the first or as consecutive digits.

Example:



## GENERAL INFORMATION - PBX/CTX ACCESS CODE ASSIGNMENT I

This Memory Block specifies a CO line PBX/CTX Access Code together with pauses for outgoing calls from station of the system that is connected behind a PBX or Centrex.

## PBX/CTX ACCESS CODE ASSIGNMENT II

System	CO Line	Data No.
1	1	25

PC Programming Guide			
TECH	B:G:F	USER	

### OPERATION:

1. Go off-line.

2. Enter: Mode System **LK 1**  MIC  ICM

Sub-Mode CO Line **LK 1**  MIC  ICM

Data No. **2 5**  
(Dial Pad)

Data No.	Title	Setting Data
2 5 :	PBX AC	8 -
-----		
TIME DISPLAY		

3. Enter option by using the dial pad.

Example: To program 81 pause, dial: 81 LNR/SPD.

(Use the LNR/SPD key to insert a pause.)

← **\*** , **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter data.

**LNR/SPD** key : To insert a pause.  
(Cannot be inserted as first digit.)

**HOLD** key : To clear all data.

**Default** **8**

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-26, Off-Hook Ringing Selection.

5. Press the SPKR key to go back on-line.

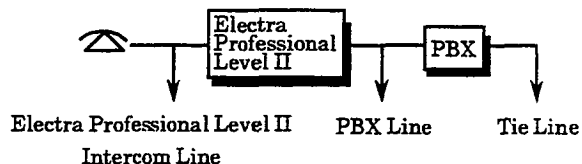
#### Additional Programming

Memory Block No.	Memory Block Name	Required
3-91	Trunk Type Selection	

### NOTES:

1. Features, such as Code Restriction, do not operate properly unless behind a PBX/CTX Access Code is specified (Only PBX lines assigned in Memory Block 3-91, Trunk Type Selection).
2. A pause is not inserted in the number of an outgoing call on a CO line.
3. Up to three numeric characters and three pauses can be specified.
4. A pause cannot be inserted as the first or as consecutive digits.

Example:



## GENERAL INFORMATION - PBX/CTX ACCESS CODE ASSIGNMENT II

This Memory Block specifies a Tie line PBX/CTX Access Code, together with pauses for outgoing calls from a location of the system that is connected behind a PBX or Centrex.

## OFF-HOOK RINGING SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode System  LK 1  MIC  
 ICM
- Sub-Mode CO Line  LK 1  MIC  
 ICM
- Data No.    
 (Dial Pad)

Data No.	Title	Setting Data
2 6 :	OFF RING	YS
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change the data option.
- To change YES to NO, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
YES	NO		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-27, Automatic Day/Night Mode Switching Time Assignment.
5. Press the SPKR key to go back on-line.

#### Additional Programming

Memory Block No.	Memory Block Name	Required
4-01	CO/PBX Ring Assignment (Day Mode)	✓
4-02	CO/PBX Ring Assignment (Night Mode)	✓

System	CO Line	Data No.
1	1	26

### PC Programming Guide

TECH	B : B : A : H	USER	S : J
------	---------------	------	-------

### NOTES:

- Off-hook ring tone volume is lower than on-hook ring volume.
- Off-hook ringing selection is made system-wide .

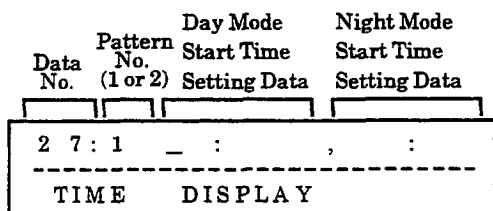
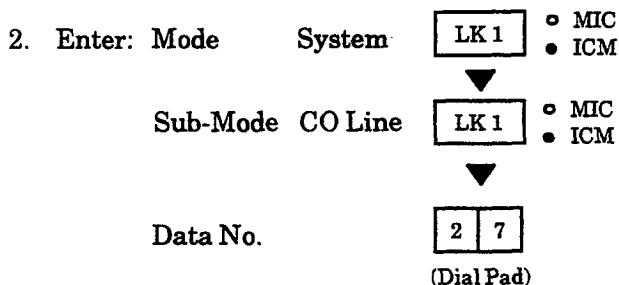
## GENERAL INFORMATION - OFF-HOOK RINGING SELECTION

This Memory Block specifies whether or not a ringing tone is generated to a station for calls coming to ring-assigned CO/PBX line at a station that is off-hook.

# AUTOMATIC DAY/NIGHT MODE SWITCHING TIME ASSIGNMENT

## OPERATION:

1. Go off-line.



3. Enter data by using the dial pad.

- Example: To switch Time number 1, enter 08:00 and 20:00.

← **\*** , **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter data.

**HOLD** key : To clear all data when cursor is at Data No. position.

**Default** **Not Specified**

4. Press the TRF key to write the data.

- Number 2 Switching Time is displayed.

5. Use dial pad to change Time numbers.

6. Press the TRF key to write the selected data and advance to Memory Block 1-1-28, Distinctive Ringing by Telephone or CO Selection.

7. Press the SPKR key to go back on-line.

System	CO Line	Data No.
1	1	27

PC Programming Guide			
TECH	B: J: E/F	USER	S: B / S: C

## NOTES:

1. The system can be placed in Day or Night Mode anytime from a terminal assigned this feature.
2. The start times of Day Mode and Night Mode can be specified in System Programming to automatically switch modes at the specified times.
3. A start time for Day Mode only or Night Mode only cannot be programmed.
4. Day Mode and Night Mode cannot be programmed to have the same start time.
5. The time is entered in 24-hour time only.
6. The first time input is when Day Mode begins. The second time input is the beginning of Night Mode.

## ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-32	Automatic Day/Night Mode By Day of Week Selection	
1-4-05	Automatic Tandem Trunk By Night Mode Selection	
1-8-07	Class of Service (Attendant) Feature Selection 1	
4-07	Code Restriction Class Assignment (Day Mode)	
4-08	Code Restriction Class Assignment (Night Mode)	
4-09	Telephone to Tenant Assignment	
4-17	Station to Class of Service Feature Assignment	
4-37	Extension Line Key Ring Assignment (Day Mode)	
4-38	Extension Line Key Ring Assignment (Night Mode)	

## GENERAL INFORMATION - AUTOMATIC DAY/NIGHT MODE SWITCHING TIME ASSIGNMENT

This Memory Block allows automatic switching of the system between Day Mode and Night Mode.





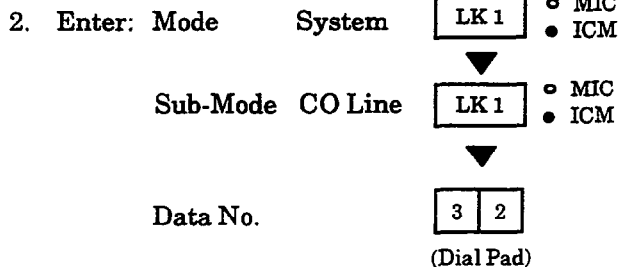




# AUTOMATIC DAY/NIGHT MODE BY DAY OF WEEK SELECTION

## OPERATION:

1. Go off-line.



Data No.	Title	Setting Data
32:	D/N BY DAY	----- TIME                  DISPLAY

3. Press the corresponding CO/PBX line key to change the day of week.
- The LED indication changes to indicate the data set when a CO/PBX line key is pressed.

LK 1	LK 2	LK 3	LK 4
SUN	MON	TUE	WED
LK 5	LK 6	LK 7	LK 8
THU	FRI	SAT	

CO/PBX line keys  Default

CO LED	<input checked="" type="checkbox"/> Off	<input type="checkbox"/> On
Data	Day/Night Automatic Switching Pattern 1	Day/Night Automatic Switching Pattern 2

Default	Sunday – Saturday – Pattern 1
---------	-------------------------------

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-33, Speed Dial Number/Name Display Selection.
5. Press the SPKR key to go back on-line.

System	CO Line	Data No.
1	1	32

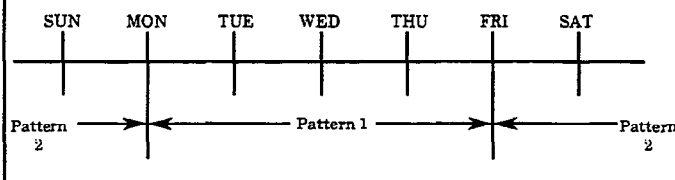
PC Programming Guide			
TECH	B:J:D	USER	S:D

## NOTES:

1. By designating two time settings in Memory Block 1-1-27, Automatic Day/Night Mode Switching Time Assignment, one of the two settings can be assigned to each day of the week.

### Example:

- To specify Day/Night Mode automatic switching time 1 for Monday~Friday, and Day/Night Mode automatic switching time 2 for Saturday and Sunday, press CO/PBX line keys 1 and 7.



## Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-27	Automatic Day/Night Mode Switching Time Assignment	✓
1-8-07	Class of Service (Attendant) Feature Selection 1	
4-09	Telephone to Tenant Assignment	
4-17	Station to Class of Service Feature Assignment	

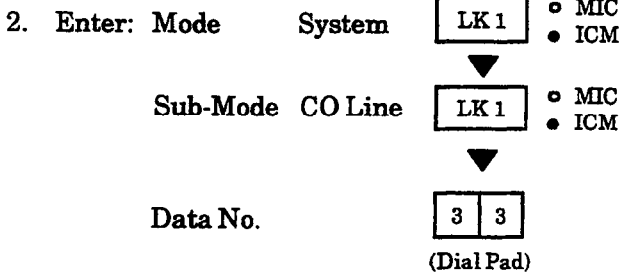
## GENERAL INFORMATION - AUTOMATIC DAY/NIGHT MODE BY DAY OF WEEK SELECTION

This Memory Block specifies automatic switching between Day Mode and Night Mode by day of the week.

## SPEED DIAL NUMBER/NAME DISPLAY SELECTION

### OPERATION:

1. Go off-line.



Data No.	Title	Setting Data	Title
33	SPD	DIAL	DISP
-----			
	TIME		DISPLAY

3. Press the corresponding CO/PBX line key to change data option.
- To change Dialed Number to Name, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
Dialed Number	Name		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys       Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-34, Tie/DID Line First Ring Pattern Selection.
5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-18	System Speed Dial Restriction by Tenant	
1-1-35	Speed Dial Buffer Allocation	

System	CO Line	Data No.
1	1	33

PC Programming Guide			
TECH	B:H:B	USER	

### NOTES:

1. If a message (the name of the dialed party) has not been entered, only the dialed number is displayed regardless of programming in this Memory Block.

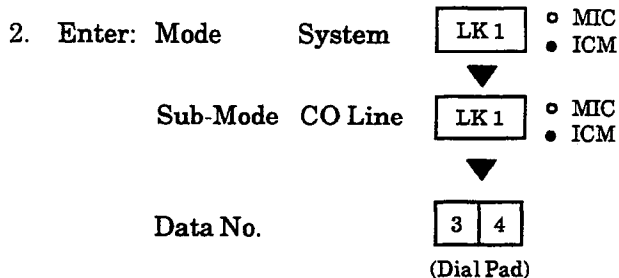
## GENERAL INFORMATION - SPEED DIAL NUMBER/NAME DISPLAY SELECTION

This Memory Block specifies whether the dialed number or name is displayed first on the LCD of the originating station when an outgoing call is made using Speed Dial.

## TIE/DID LINE FIRST RING PATTERN SELECTION

### OPERATION:

1. Go off-line.



Data No.	Title	Setting Data
3 4	TLI RNG	PAT 3
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change Pattern 3 to Pattern 2, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
PATTERN 1	PATTERN 2	PATTERN 3	PATTERN 4
LK 5	LK 6	LK 7	LK 8
ICM	VOICE		

CO/PBX line keys

  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-35, Speed Dial Buffer Allocation.

5. Press the SPKR key to go back on-line.

#### Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-07	Tie/DID Line Delay Ringing Timer Selection	
1-1-53	Tie/DID Line Delay Ring Pattern Selection	
1-2-19	Intercom Ring Pattern Selection	
4-01	CO/PBX Ring Assignment (Day Mode)	
4-02	CO/PBX Ring Assignment (Night Mode)	

System	CO Line	Data No.
1	1	34

PC Programming Guide			
TECH	A:D:B:D	USER	

### NOTES:

- Specify one of the following ringing tones for incoming calls on Tie lines.
  - Pattern 1  
f f
  - Pattern 4
  - Internal Ring (Signal Tone)
  - Voice Announce
- If Voice is selected, switching from Voice to Tone is not allowed, Memory Block 1-1-07, Tie/DID Line Delay Ringing Timer Selection is not used and Handsfree Answerback is not allowed at the receiving station.

Pattern	0s	1s	2s	3s	4s	5s	6s
1							
2							
3	2 sec: On 4 sec: Off						
4							
5	Same as Internal Ring (See M.B. 1-2-19.)						
6	Voice Announce						

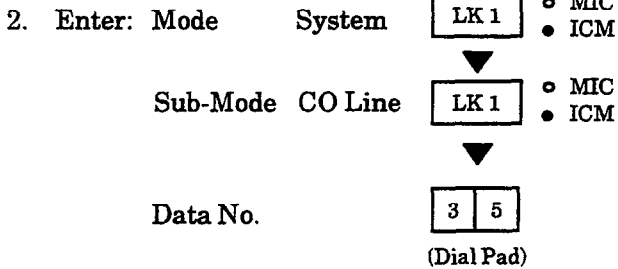
## GENERAL INFORMATION - TIE/DID LINE FIRST RING PATTERN SELECTION

This Memory Block allows specific ringing tones for incoming calls on Tie lines.

# SPEED DIAL BUFFER ALLOCATION

## OPERATION:

1. Go off-line.



Data No.	Title	Setting Data
<u>3</u> 5 :	SPD ALLO	100
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change 100 to 1000, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
100 memories	1000 memories		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-36, CO/PBX Call Forward - All Calls Selection.

5. Press the SPKR key to go back on-line.

### Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-18	System Speed Dial Restriction by Tenant	
1-1-33	Speed Dial Number/Name Display Selection	

System	CO Line	Data No.
1	1	35

PC Programming Guide			
TECH	B:H:A	USER	

## NOTES:

### Series 100~450

- The 100 code option allows for 90 System Speed Dial memories and 10 Station Speed Dial memories.
- The 1000 code option does not allow for Station Speed Dial memories.

### Series 500 or higher

- The dial code option allows for 80 System Speed Dial memories and 20 Station Speed Dial memories.
- The 1000 code option does not allow for Station Speed Dial memories.

## GENERAL INFORMATION - SPEED DIAL BUFFER ALLOCATION

This Memory Block specifies either the 100 memories or 1000 memories allocation.

## CO/PBX CALL FORWARD - ALL CALLS SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode System **LK 1**  MIC  ICM  
 Sub-Mode CO Line **LK 1**  MIC  ICM  
 Data No. **3 6**  
 (Dial Pad)

Data No.	Title	Setting Data
3 6 :	CO FWDG	NO
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.
- To change NO to YES, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-37, Trunk Queuing Timeout Selection.
5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
4-01	CO/PBX Ring Assignment (Day Mode)	✓
4-02	CO/PBX Ring Assignment (Night Mode)	✓

System	CO Line	Data No.
1	1	36

PC Programming Guide			
TECH	B:C:A:B	USER	

### NOTES:

1. If YES is programmed, and outside lines are assigned to ring at a station that has Call Forward - All Calls set to another Multiline Terminal or Single-Line Telephone, the second telephone rings instead of the first telephone.

## GENERAL INFORMATION - CO/PBX CALL FORWARD-ALL CALLS SELECTION

This Memory Block determines whether or not incoming CO/PBX calls follow a Call Forward - All Calls setting.

## TRUNK QUEUING TIMEOUT SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode System  LK 1  MIC  
 ICM
- Sub-Mode CO Line  LK 1  MIC  
 ICM
- Data No.    
 (Dial Pad)

Data No.	Title	Setting Data
3 7 :	TRUNK QUE	10s
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.
- To change 10 sec. to 30 sec., press CO/PBX line key 3.

LK 1	LK 2	LK 3	LK 4
10 sec.	20 sec.	30 sec.	60 sec.
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-46, Access Code (1-Digit) Assignment.
5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Refer to Guide to Feature Programming in this manual.

System	CO Line	Data No.
1	1	37

### PC Programming Guide

TECH	B:I:K	USER
------	-------	------

### NOTES:

1. When all trunks in a particular Trunk Group are busy, the station user can dial an Access Code to queue onto the busy Trunk Group. When a Trunk (in that group) becomes idle, the queued station is signaled.

## GENERAL INFORMATION - TRUNK QUEUING TIMEOUT SELECTION

This Memory Block determines the time that a station, where Trunk Queue was set, rings before the queue automatically canceled.

## ACCESS CODE (1-DIGIT) ASSIGNMENT

### OPERATION:

1. Go off-line.

2. Enter: Mode System **LK 1** ○ MIC  
● ICM

Sub-Mode CO Line **LK 1** ○ MIC  
● ICM

Data No. **4 6**  
(Dial Pad)

Data No.	Title	Dial No. 0~9, #, *	Function No.
4 6 :	IDG	(0) =	176
----- TIME DISPLAY			

3. Enter option using the dial pad.

Example: To dial digit 1 for Call Forward enter the Function Number 030.

← **\*** , **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter data.

Data: Function Number:  
000~132, 140~143, 176~199, 201~216,  
250~253, 301~304, 401~416, 501~503.

Dial Number:  
0~9, \*, # (LNR/SPD, \*, #)

4. Press the TRF key; data of dial 2~9, \*, and # are displayed successively.
5. Enter the Function Number for the Dial Number to be assigned.
6. Press the TRF key; next data is displayed.
7. Press the TRF key to write the selected data and advance to Memory Block 1-1-47, Access Code (2-Digit) Assignment.
8. Press the SPKR key to go back on-line.

System	CO Line	Data No.
1	1	46

PC Programming Guide		
TECH	B:G:A	USER

### NOTES:

1. The assigned Access Code can be dialed after lifting the handset or after the SPKR key is pressed.
2. Select options from the list of function numbers in Memory Block 1-1-46, Access Code (1-Digit) Assignment, and assign a number (from 0~9, \* or #) to each selected function.
  - When a function is assigned a 1-digit Access Code, 2-digit Access Codes with the same first digit become invalid (i.e., if a function is assigned to Access Code 5, Access Codes 50~59, 5\*, and 5# cannot be used.)
3. To enter # or \* as part of an Access Code: Press LNR/SPD then # or \*.
4. This Memory Block is used when 2- or 3-Digit Station Numbering Plan is programmed.

### Default

Dial No.	Function No.	Function Name
0	176	Specified Intercom Call
1 ~ 3	001	Station Number
4 ~ 7	000	Not Used
8	102	Trunk Group 2
9	101	Trunk Group 1
*	096	Last Number Redial
#	026	Callback Message Answer

Continued on next page.

**ACCESS CODE (1-DIGIT) ASSIGNMENT**  
(continued)

System	CO Line	Data No.
1	1	46

Note: This table applies to Data Numbers 46, 47 and 48.

Default Dial No.	Function No.	Function Name
4, 5, 6, 7	000	Not Used
1, 2, 3	001	Station Number
	002	Not Used
	f	f
	019	Not Used
	020	Call Forward No Answer Set
	021	Call Forward No Answer Cancel
	022	Call Forward Busy Set
	023	Call Forward Busy Cancel
43	024	Call Forward Busy/No Answer Set
44	025	Call Forward Busy/No Answer Cancel
#	026	Callback Message Answer
6#	027	SLT Hookflash
	028	Not Used
	029	Not Used
41	030	Call Forward All Call Set
40	031	DND Set
42	032	Call Forward All Call/DND Cancel
	033	Call Forward All Call Set from Destination
	034	Call Forward All Call Cancel from Destination
	035	Station Outgoing Lockout Set
	036	Station Outgoing Lockout Cancel
	037	Change Password
	038	Reset Password from Attendant
	039	Fax Status Indication (Tie/DID lines)
	040	Log - ON/OFF (Series 200 or higher)
	041	Account Code Entry (Series 300 or higher)
67	042	Call Pickup Direct
	043	Not Used

Default Dial No.	Function No.	Function Name
	044	Timed Alarm Set at SLTs
	045	Timed Alarm Cancel at SLTs
	046	Set and Cancel of Timed Alarm for Single Line Telephone from Attendant
4*	047	Call Park System Transfer
4#	048	Call Park System Answer
60	049	Volume/LCD Control
	050	Specified Tenant on CO/PBX/Centrex Line Seizure (1-digit)
	051	Specified Tenant on CO/PBX/Centrex Line Seizure (2-digit)
	052	Call Pickup CO/PBX by Tenant (1-digit)
	053	Call Pickup CO/PBX/Centrex by Tenant (2-digit)
	054	Specified Tenant Internal Paging (1-digit)
	055	Specified Tenant Internal Paging (2-digit)
	056	Internal Emergency All Call Paging
68	057	Intra-Tenant Call Pickup
69	058	Night Chime Call Pickup
	059	Not Used
	060	Call Pickup CO/PBX for other Tenants
	061	Internal/CO/PBX Transfer Call Pickup in Same Tenant
	062	SLT Park to Non-Exclusive Hold
	063	Specified CO/PBX/Centrex Line Seizure (1-digit)
	064	Specified CO/PBX/Centrex Line Seizure (2-digit)
	065	Not Used
6*	066	Call Pickup CO/PBX in Same Tenant
	067	Call Pickup (Tie only) in Same Tenant
	068	Call Pickup (PBX only) in Same Tenant
	069	Call Pickup (CO only) in Same Tenant

Continued on next page.



**ACCESS CODE (1-DIGIT) ASSIGNMENT**  
(continued)

System	CO Line	Data No.
1	1	46

Note: This table applies to Data Numbers 46, 47 and 48.

Default Dial No.	Function No.	Function Name	Default Dial No.	Function No.	Function Name
51	070	All Internal Zone Paging	8	102	Trunk Group 02
52	071	Internal Zone A Paging	70	103	Trunk Group 03
53	072	Internal Zone B Paging	71	104	Trunk Group 04
54	073	Internal Zone C Paging	72	105	Trunk Group 05
5*	074	Internal/External Meet-Me	73	106	Trunk Group 06
55	075	All External Zone Paging	74	107	Trunk Group 07
56	076	External Zone A Paging	75	108	Trunk Group 08
57	077	External Zone B Paging		f	f
58	078	External Zone C Paging		132	Trunk Group 32
5#	079	External Meet-Me		133	Not Used
	080	Outgoing (CO only) Access in Same Tenant		f	f
59	081	All Internal/External Zone Paging		139	Not Used
	082	System I.D. Number for Tie Line Networking	45	140	Call Forward Busy / No Answer Set for Call Arrival Key (Series 250 or higher)
	083	Not Used	46	141	Call Forward Busy / No Answer Cancel for Call Arrival Key (Series 250 or higher)
	084	f	47	142	Call Forward All Call Set for Call Arrival Key (Series 250 or higher)
	085	Not Used	48	143	Call Forward All Call Cancel for Call Arrival Key (Series 250 or higher)
	086	Tie Line Seizure in Same Tenant		146	Forced Account Code Programming (Series 600 or higher)
	087	PBX Line Seizure in Same Tenant		147	Forced Account Code Access (Series 600 or higher)
78	088	Trunk Queuing Set		148	Station Relocation (Series 700 or higher)
79	089	Trunk Queuing Cancel		159	Not Used
76	090	Station Speed Dial Programming (Single Line Telephone)		f	f
77	095	Station/System Speed Dial Call (Single Line Telephone)		175	Not Used
*	096	Last Number Redial	0	176	Specified Station Access Code 00
	097	Not Used		177	Specified Station Access Code 01
	098	DSS 1 CALL		178	Specified Station Access Code 02
	099	DSS 2 CALL		179	Specified Station Access Code 03
	100	Not Used		180	Specified Station Access Code 04
9	101	Trunk Group 01		181	Specified Station Access Code 05

Continued on next page.

**ACCESS CODE (1-DIGIT) ASSIGNMENT**

(continued)

System	CO Line	Data No.
1	1	46

Note: This table applies to Data Numbers 46, 47 and 48.

Default Dial No.	Function No.	Function Name
	182	Specified Station Access Code 06
	183	Specified Station Access Code 07
	184	Specified Station Access Code 08
	185	Specified Station Access Code 09
	186	Specified Station Access Code 10
	187	Specified Station Access Code 11
	188	Specified Station Access Code 12
	189	Specified Station Access Code 13
	190	Specified Station Access Code 14
	191	Specified Station Access Code 15
	192	Specified Station Access Code 16
	193	Specified Station Access Code 17
	194	Specified Station Access Code 18
	195	Specified Station Access Code 19
	196	Specified Station Access Code 20
	197	Specified Station Access Code 21
	198	Specified Station Access Code 22
	199	Specified Station Access Code 23
	200	Not Used
	201	Route Advance Block 01
	f	f
	216	Route Advance Block 16
	217	Not Used
	f	f
	250	Not Used
	251	DISA Password Set (Any station)
	252	DISA Password Reset (Attendant only)
	253	DISA Password Confirmation (Attendant only)

Default Dial No.	Function No.	Function Name
	254	Not Used
	255	Not Used
	301	Third Digit Table Number 01 (2-digit Numbering Plan can only be entered.)
	f	f
	304	Third Digit Table Number 04 (2-digit Numbering Plan can only be entered.)
	401	Closed Number Block 01
	f	f
	416	Closed Number Block 16
	501	VRS Voice Message Record/Verify/Erase (Voice Prompt, Automated Attendant)
	502	Voice Mail Message Set
	503	Voice Mail Message Cancel

Note: For Series 100 software, these Default Dial Numbers have the following settings:

Default Dial No.	Function No.	Function Name
	45	000 Not Used
	46	000 Not Used
	47	033 Call Forward All Call Set from Destination
	48	034 Call Forward All Call Cancel from Destination

Note: Call Forward-Off Premise relates to the following functions: 020-025, 030, 032, 140-143.

**GENERAL INFORMATION - ACCESS CODE (1-DIGIT) ASSIGNMENT**

This Memory Block allows assignment of a 1-digit number as an Access Code or station number.

### ACCESS CODE (2-DIGIT) ASSIGNMENT

**OPERATION:**

1. Go off-line.

2. Enter: Mode System LK 1  MIC  ICM

Sub-Mode CO Line LK 1  MIC  ICM

Data No. 4 7  
(Dial Pad)

Data No.	Title	Dial No. 00~99, *, #	Function No.
4 7 :	2DG	00 =	000
-----			
TIME		DISPLAY	

3. Enter data using the dial pad.

Example: Enter 030 (Call Forward) on dial 11 using dial pad.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter data.

Data: Function Number:  
000~132, 140~143, 176~199, 201~216,  
250~253, 401~416, 501~503.

Dial Number:  
0~9, \*, # (LNR/SPD, \*, #)

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-46	Access Code (1-Digit) Assignment	

System	CO Line	Data No.
1	1	47

PC Programming Guide		
TECH	B:G:B	USER

4. Press the TRF key; data of the next Dial No. is displayed successively.

The order of Dial No. to be displayed.  
11~19, 10  
→ 21~29, 20  
↓  
→ 91~99, 90  
→ 01~09, 00

5. Dial 00.

6. Press the TRF key; next data is displayed.

7. Press the TRF key to write the selected data and advance to memory block 1-1-48, Access Code (3-Digit) Assignment.

8. Press the SPKR key to go back on-line.

**NOTES:**

1. The assigned Access Code can be dialed after lifting the handset or after the SPKR key is pressed.
2. Select options from the list of function numbers in Memory Block 1-1-46, Access Code (1-Digit) Assignment, and assign an Access Code (from 00~99 including \* and #) to each selected function.
  - When a function is assigned a 1-digit Access Code, 2-digit Access Codes with the same first digit become invalid (i.e., if a function is assigned to Access Code 5, Access Codes 50~59, 5\*, and 5# cannot be used.)
3. To enter # or \* as part of the Access Code: Press LNR/SPD, then # or \*.
4. This Memory Block is used when 4-Digit Station Numbering Plan is programmed.

**GENERAL INFORMATION - ACCESS CODE (2-DIGIT) ASSIGNMENT**

his Memory Block allows assignment of a 2-digit number as an Access Code.

# ACCESS CODE (3-DIGIT) ASSIGNMENT

System	CO Line	Data No.
1	1	48

PC Programming Guide		
TECH	B:G:C	USER

## OPERATION:

1. Go off-line.

2. Enter: Mode System   MIC  ICM

Sub-Mode CO Line   MIC  ICM

Data No.   (Dial Pad)

Data No.	Title	Third Digit Table No. 01~04	Dial No. 0~9, *, #	Function No.
4 8 :	3DG / 01	(0) =	000	
-----				
TIME		DISPLAY		

3. Enter option using the dial pad.

Example: Enter 101 (Trunk Group 01) on Table No. 01.

←  ,  → : To move cursor.

Dial pad  ~  : To enter data.

,  : LNR + \*, #.

Data:	Table No.	Dial No.	Function No.
	01~04	0 ~ 9, *, #	000 ~ 132, 140 ~ 143, 176 ~ 199, 201 ~ 216, 250 ~ 253, 401 ~ 416, 501 ~ 503

Default	All Dial 000 (Not Used)
---------	-------------------------

4. Press the TRF key; numbers 2~9 and 0 are displayed successively.

5. Dial 04.

6. Press the TRF key; next data is displayed.

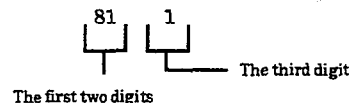
7. Press the TRF key to write the selected data and advance to Memory Block 1-1-49, Networking Trunk Group/Route Advance Assignment.

8. Press the SPKR key to go back on-line.

## NOTES:

- The assigned Access Code can be dialed after lifting the handset or after the SPKR key is pressed.
- Select options from the list of function numbers in Memory Block 1-1-46, Access Code (1-Digit) Assignment, and assign a 3-digit Access Code.
  - When a function is assigned a 1-digit Access Code, 3-digit Access Codes with the same first digit become invalid (i.e., if a function is assigned to Access Code 5, Access Codes 50~59, 5\*, and 5# or 5XX cannot be used.)
- A Station Number is not assigned in this Memory Block.
- To enter # or \* as part of the Access Code: Press LNR/SPD, then # or \*.
- All items except function number 001 (Station Number) in 1-digit Assignment are valid in this Memory Block.
- Four groups of Access Codes can be used (0~9, \* and # on four Tables).
- Before using this function, assign function numbers 301~304 (table number for third digit) in Memory Block 1-1-47, Access Code (2-Digit) Assignment.
- To program this Memory Block, refer to the following example:

Example:



- Assign function number 301 (Third Digit Table Number 01) to 81. [Make the assignment using Access Code (2-Digit) Assignment.]

### Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-46	Access Code (1-Digit) Assignment	
1-1-47	Access Code (2-Digit) Assignment	

Continued on next page.

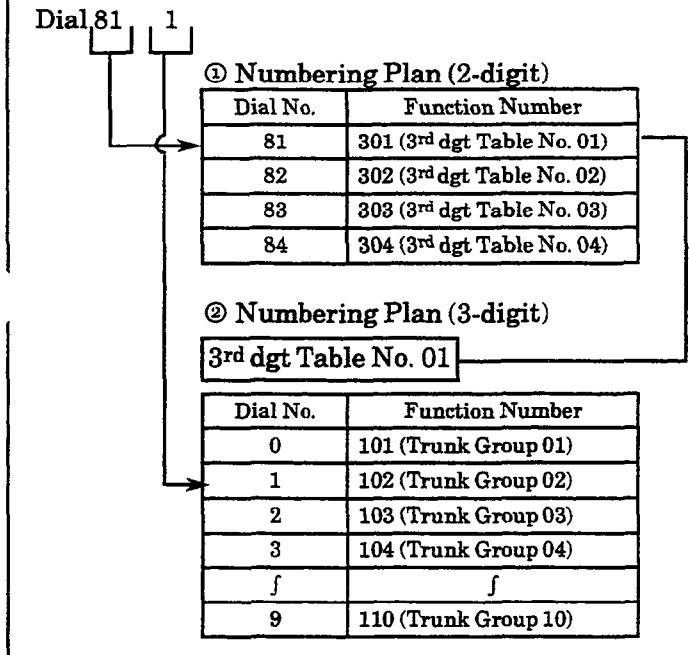
**ACCESS CODE (3-DIGIT) ASSIGNMENT**

(continued)

System	CO Line	Data No.
1	1	48

**NOTES:**

- The third digit number automatically corresponds to one of the numbers (00~09) in Table 01. Set the applicable function number.  
Example: To set Access Code 811 for Trunk Group 02.
- Refer to Memory Block 1-1-47, Access Code (2-Digit) Assignment.



**GENERAL INFORMATION - ACCESS CODE (3-DIGIT) ASSIGNMENT**

This Memory Block allows assignment of a 3-digit number as an Access Code.

## NETWORKING TRUNK GROUP/ROUTE ADVANCE ASSIGNMENT

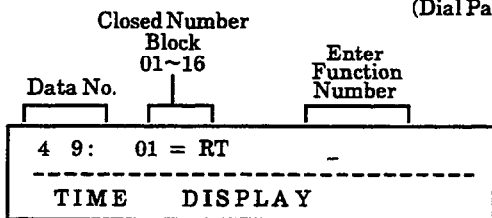
### OPERATION:

1. Go off-line.

2. Enter: Mode      System      [ LK 1 ]      • MIC  
  • ICM

                      Sub-Mode CO Line      [ LK 1 ]      • MIC  
  • ICM

                      Data No.                      [ 4 ] [ 9 ]  
  (Dial Pad)



3. Use the dial pad to enter the Function No. of the Trunk Group or Route Advance Block to be used.

← [ \* ] , [ # ] → : To move cursor.

Dial pad [ 0 ] ~ [ 9 ] : To enter data.

[ HOLD ] key: : To clear all data.

Default	Not Specified
---------	---------------

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-50, CO/PBX Outgoing Digit Add Assignment.

5. Press SPKR to go back on-line.

System	CO Line	Data No.
1	1	49

### PC Programming Guide

TECH	A : D : B : E	USER	
------	---------------	------	--

### NOTES:

1. Function Number 101~132 (Trunk Group 1~32 respectively) or 201~216 (Route Advance Block 1~16 respectively) is assigned to Closed Number blocks 1~16.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-30	Route Advance Block Assignment	
3-03	Trunk-to-Trunk Group Assignment	

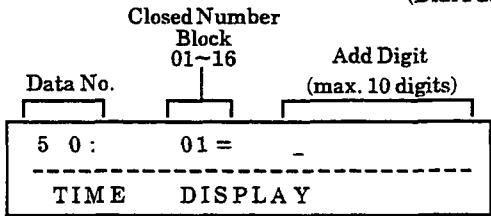
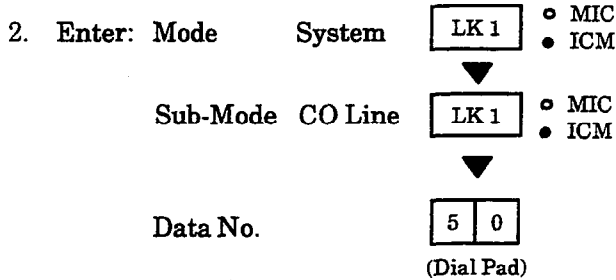
## GENERAL INFORMATION - NETWORKING TRUNK GROUP/ROUTE ADVANCE ASSIGNMENT

This Memory Block assigns the number of the Trunk Group to be used when connecting an Electra Professional Level II or Level II Advanced system to another system or to CO/PBX/CTX lines.

## CO/PBX OUTGOING DIGIT ADD ASSIGNMENT

### OPERATION:

1. Go off-line.



3. Use the dial pad to enter the digits to be added.

← **\*** , **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter data.

**LNR/SPD** **+** **\*** , **#** : To enter Add Digits.

**HOLD** key: : To clear all data.

**Default** **Not Specified**

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-51, CO Line First Ringing Pattern Selection.

5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

System	CO Line	Data No.
1	1	50

PC Programming Guide			
TECH	A:D:B:E	USER	

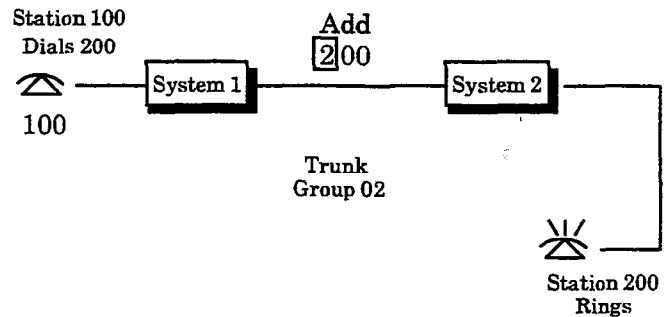
### NOTES:

1. Digits are added when the Access Code is dialed from Internal Dial Tone.

### Example:

To assign the following in System Programming:

1. System 1  
 Memory Block 1-1-46, Access Code (1-Digit) Assignment 1 → 082 (System ID Number for Tie Line Networking).
2. System 1  
 1-1-46, Access Code (1-Digit) Assignment 2 → 401 (Closed Number Block 01).
3. System 1  
 1-1-49, Networking Trunk Group/Route Advance Assignment Block 01 → 102 (Trunk Group 02).
4. System 1  
 1-1-50, CO/PBX Outgoing Digit Add Assignment (1-Digit) Block 01 → Assign 2.



## GENERAL INFORMATION - CO/PBX OUTGOING DIGIT ADD ASSIGNMENT

This Memory Block allows an additional 10 digits (maximum) to be specified when a Trunk in the Trunk Group or Route Advance Block assigned in Memory Block 1-1-49, Networking Trunk Group/Route Advance Assignment, is seized and a number is dialed.

# CO LINE FIRST RINGING PATTERN SELECTION

## OPERATION:

1. Go off-line.

2. Enter: Mode System **LK 1**  MIC  ICM

Sub-Mode CO Line **LK 1**  MIC  ICM

Data No. **5 1**  
(Dial Pad)

Data No.	Title	Setting Data	Page No.
5 1	CO PTN	A	11
	TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change Setting Data option.

- To change Ring Pattern A to Ring Pattern B, press CO/PBX line key 2.

**RECALL** key : Next page.

**FNC** key : Previous page.

Page 1

<b>LK 1</b>	LK 2	LK 3	LK 4
Ring Pattern A	Ring Pattern B	Ring Pattern C	Ring Pattern D
LK 5	LK 6	LK 7	LK 8
Ring Pattern E	Ring Pattern F	Ring Pattern G	Ring Pattern H

CO/PBX line keys Default

Page 2

LK 1	LK 2	LK 3	LK 4
NIL			
LK 5	LK 6	LK 7	LK 8

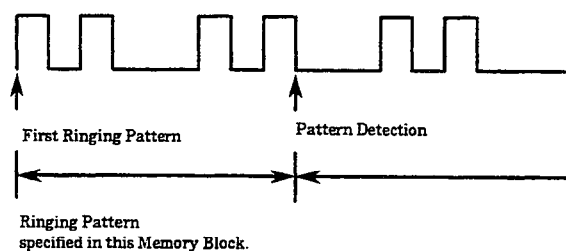
- Press the TRF key to write the selected data and advance to Memory Block 1-1-52, PBX Line First Ringing Pattern Selection.
- Press the SPKR key to go back on-line.

System	CO Line	Data No.
1	1	51

PC Programming Guide			
TECH	B:C:A:A	USER	

## NOTES:

- After an actual ringing pattern is detected, ringing in the pattern specified in Memory Block 1-1-56, CO/PBX Ringing Pattern Selection, is used.
- Do not program this Memory Block if Memory Block 1-1-59, Synchronous Ringing Selection, is assigned YES.



Ring patterns are as follows:

s = second(s)

Pattern	0s	1s	2s	3s	4s	5s	6s
A	[Long pulse]						[Short pulse]
B	[Short pulse]	[Long pulse]	[Short pulse]	[Long pulse]	[Short pulse]	[Long pulse]	[Short pulse]
C	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]
D	[High frequency pulse train]						
E	[Short pulse]	[Long pulse]	[Short pulse]	[Long pulse]	[Short pulse]	[Long pulse]	[Short pulse]
F	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]
G	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]
H	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]	[Short pulse]
Nil	No Ring						

### Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-56	CO/PBX Ringing Pattern Selection	

## GENERAL INFORMATION - CO LINE FIRST RINGING PATTERN SELECTION

This Memory Block selects an initial ringing pattern for incoming calls on a CO line.





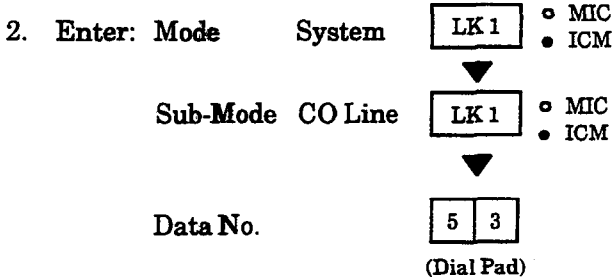
## TIE/DID LINE DELAY RING PATTERN SELECTION

System	CO Line	Data No.
1	1	53

### OPERATION:

PC Programming Guide			
TECH	A : D : B : C	USER	

1. Go off-line.



Setting Data			
Data No.	Title	Page No.	
5 3 :	TLI PTN D	1	
-----			
TIME	DISPLAY		

Ring patterns are as follows:

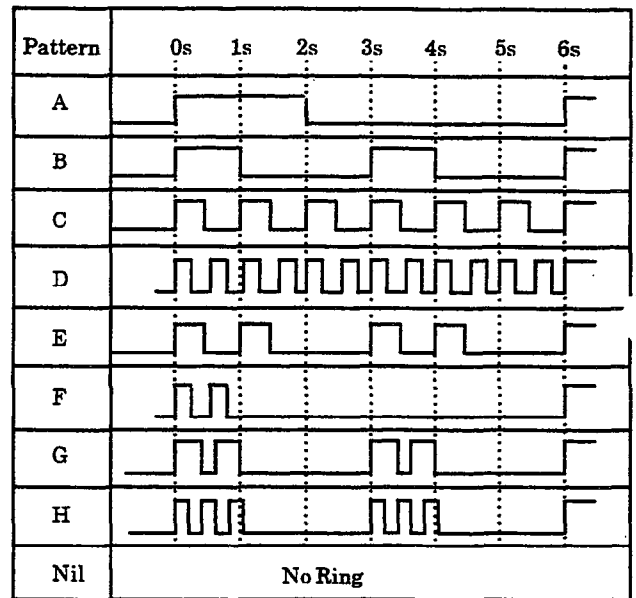
s = second(s)

3. Press the corresponding CO/PBX line key to change data option.

- To change D to F, press CO/PBX line key 6.

key : Next page.

key : Previous page.



Page 1

LK 1	LK 2	LK 3	LK 4
Ring Pattern A	Ring Pattern B	Ring Pattern C	Ring Pattern D
LK 5	LK 6	LK 7	LK 8
Ring Pattern E	Ring Pattern F	Ring Pattern G	Ring Pattern H

CO/PBX line keys  Default

Page 2

LK 1	LK 2	LK 3	LK 4
NIL			
LK 5	LK 6	LK 7	LK 8

### Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-07	Tie/DID Line Delay Ringing Timer Selection	
1-1-34	Tie/DID Line First Ring Pattern Selection	
4-01	CO/PBX Ring Assignment (Day Mode)	
4-02	CO/PBX Ring Assignment (Night Mode)	

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-54, Automated Attendant Transfer Ring Pattern.

5. Press the SPKR key to go back on-line.

## GENERAL INFORMATION - TIE/DID LINE DELAY RING PATTERN SELECTION

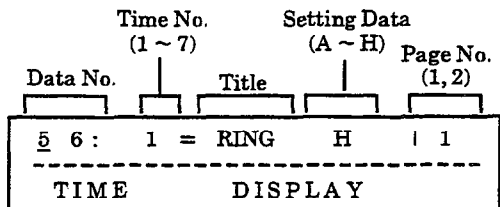
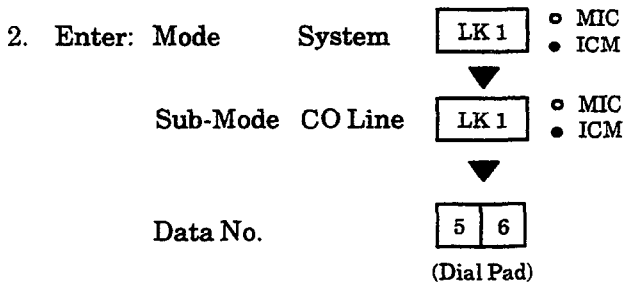
This Memory Block selects a ringing pattern for incoming calls on a Tie line after the Timeout set in Memory Block 1-1-07, Tie/DID Line Delay Ringing Timer Selection.



# CO/PBX RINGING PATTERN SELECTION

## OPERATION:

1. Go off-line.



3. Press the corresponding CO/PBX line key to change data option.

- To change Ring Pattern H on Time No. 1 to Ring Pattern G, press CO/PBX line key 7.

key : Next page.  
 key : Previous page.

Page 1

LK 1	LK 2	LK 3	LK 4
Ring Pattern A	Ring Pattern B	Ring Pattern C	Ring Pattern D
LK 5	LK 6	LK 7	LK 8
Ring Pattern E	Ring Pattern F	Ring Pattern G	Ring Pattern H

CO/PBX line keys  Default shown on next page

Page 2

LK 1	LK 2	LK 3	LK 4
NIL			
LK 5	LK 6	LK 7	LK 8

System	CO Line	Data No.
1	1	56
PC Programming Guide		
TECH	B:C:A:C	USER

4. Press the TRF key to write the selected data and advance to the next Ring Pattern.
5. After all Ring pattern data has been entered, press the TRF key to write the selected data and advance to Memory Block 1-1-57, CO/PBX Prepause Timer Selection.
6. Press the SPKR key to go back on-line.

## NOTES:

1. Ringing Tone for calls on CO/PBX lines are sent to the telephones as is.
2. The default value shown is for Time No. 1 only. Default ring patterns are also assigned to Time No. 2~7. Refer to the Default Table on the following page for a complete list of defaults.
3. Ringing Tones A~H are available.
4. Continuous ringing time is divided into several ranges (1~7). Refer to the Ringing Time Range Table on the following page.
5. If a ringing pattern is not specified in this Memory Block, a ringing tone that has been specified in 1-1-51, CO Line First Ringing Pattern Selection, or 1-1-52, PBX Line First Ringing Pattern Selection, is used, even after the continuous ringing time is detected.

### Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-51	CO Line First Ringing Pattern Selection	
1-1-52	PBX Line First Ringing Pattern Selection	

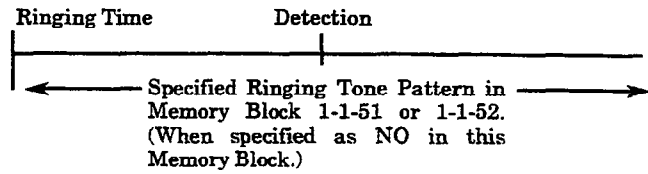
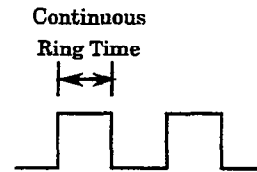
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**CO/PBX RINGING PATTERN SELECTION**  
(continued)

System	CO Line	Data No.
1	1	56

Defaults for Continuous Ringing Time are as follows:

Default		
Time No.	Continuous Ringing Time Range	Ring Time Pattern
1	0.10 - 0.30 sec.	H
2	0.30 - 0.45 sec.	G
3	0.45 - 0.65 sec.	E
4	0.65 - 0.90 sec.	E
5	0.90 - 1.50 sec.	B
6	1.50 - 2.50 sec.	A
7	over 2.5 sec.	A



Patterns for ringing tones are as follows:

s = second(s)

Pattern	0s	1s	2s	3s	4s	5s	6s
A	[Square wave pulse]						
B	[Square wave pulse]						
C	[Square wave pulse]						
D	[Square wave pulse]						
E	[Square wave pulse]						
F	[Square wave pulse]						
G	[Square wave pulse]						
H	[Square wave pulse]						
Nil	No Ring						

**GENERAL INFORMATION - CO/PBX RINGING PATTERN SELECTION**

This Memory Block selects a continuous ringing pattern (A~H) for incoming calls on a CO/PBX line.



# SYNCHRONOUS RINGING SELECTION

System	CO Line	Data No.
1	1	59

PC Programming Guide			
TECH	B:C:A:G	USER	

### OPERATION:

1. Go off-line.

2. Enter: Mode System **LK 1**  MIC  
 ICM  
 Sub-Mode CO Line **LK 1**  MIC  
 ICM  
 Data No. **5 9**  
 (Dial Pad)

Data No.	Title	Function No.
59	SYNCHRONUS	YS
-----		
	TIME	DISPLAY

3. Press the corresponding CO/PBX line key to change data option.

- To change YES to NO, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
YES	NO		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-60, 8-Digit Matching Table Assignment.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Refer to Guide to Feature Programming in this manual.

### NOTES:

- Synchronous Ringing is supported only with the following:  
 COI-F(8)-20 KTU  
 COI-F(4)-20 KTU  
 ESI-F(8)-21 KTU  
 SLI-F(8G)-21 KTU
- Synchronous Ringing does not apply to incoming DID calls, off-hook ringing calls, or CO/PBX ring transfer calls.

## GENERAL INFORMATION - SYNCHRONOUS RINGING SELECTION

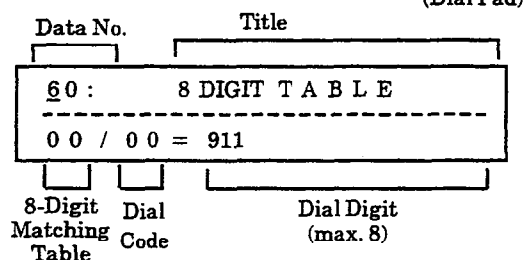
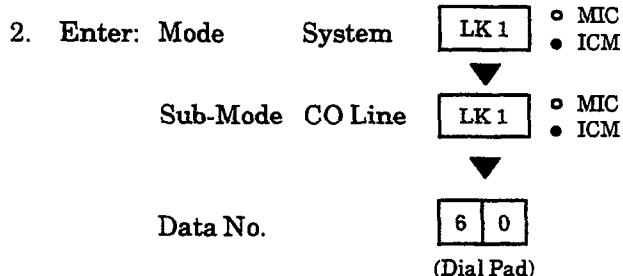
This Memory Block specifies whether or not CO/PBX calls follow Synchronous Ringing.

### 8-DIGIT MATCHING TABLE ASSIGNMENT

System	CO Line	Data No.
1	1	60
<b>PC Programming Guide</b>		
TECH	A:A:E	USER

**OPERATION:**

1. Go off-line.



3. Use the dial pad to enter the data.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter data.

Operation Data	Dial Number	Operation
X	0 ~ 9, *, #	LNR/SPD key + 7
P	0 ~ 1	LNR/SPD key + 8
N	2 ~ 9,	LNR/SPD key + 9
*	*	LNR/SPD key + *
#	#	LNR/SPD key + #

Data: Matching Table: 00 ~ 15 (8-digit)  
Dial Code: 00 ~ 15  
Dial Digit: 0 ~ 9, \*, #,  
NANP = X, P, N  
(Maximum eight digits)

HOLD key: Data Clear  
Operation Data: (Move cursor to the left)

4. Press the TRF key to write the selected data and advance to the next Dial Code. After all Dial Codes have been entered, press the TRF key to advance to Memory Block 1-1-61, 8-Digit Matching Table to Class Assignment.
5. Press the SPKR key to go back on-line.

**NOTES:**

1. There are 16, 8-Digit Matching Tables. Each Table contains 16 Dial Codes. Each Dial Code can be assigned a maximum of eight digits, including \*, #, X, P, and N.
2. NANP = North American Numbering Plan.

Default		
Matching Table	Dial Code	Setting Data
00	00	911
11	00	0
12	00	976
13	00	1800
	01	1888
	02	1877
14	00	1X
15	00	X

■ Additional Programming

Refer to Section 6 - Code Restriction in this chapter.

### GENERAL INFORMATION - 8-DIGIT MATCHING TABLE ASSIGNMENT

This Memory Block assigns the outgoing dial digit for Code Restriction (except OCC Dial Digit-Normal Dial). This assignment can be programmed in two ways: a) If the user dials a digit(s) and there is a match, the system can allow free dialing or deny dialing by disconnecting. This is programmed in Memory Block 1-1-61, 8-Digit Matching Table to Class Assignment. b) If the user dials a digit(s) and there is no match, the system can allow free dialing or deny dialing by disconnecting. This is programmed in Memory Block 1-1-65, Class Allow/Deny Selection.



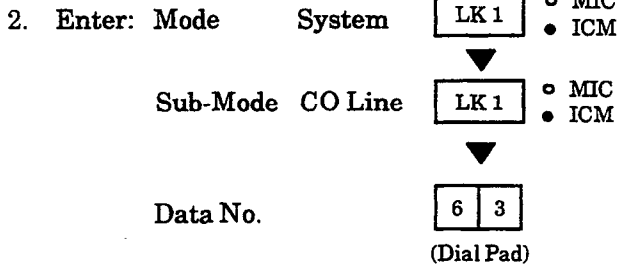




## HOLD RECALL TIME SELECTION (EXCLUSIVE)

### OPERATION:

1. Go off-line.



System	CO Line	Data No.
1	1	63
<b>PC Programming Guide</b>		
TECH	B:I:E	USER S:F

### NOTES:

1. When an Exclusive Hold call recalls, the held call switches to a Non-Exclusive Hold call.

Data No.	Title	Setting Data
6 3 :	HOLD RECL	1.0
-----		
TIME DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change 1 min. to 1.5 min., press CO/PBX line key 3.

LK 1	LK 2	LK 3	LK 4
0.5 min.	1 min.	1.5 min.	2 min.
LK 5	LK 6	LK 7	LK 8
3 min.	5 min.	8 min.	No Limit

CO/PBX line keys



Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-64, Attendant Add-On Console Transfer/Camp-On Recall Timer Selection.

5. Press the SPKR key to go back on-line.

### Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-03	Hold Recall Timer Selection (Non-Exclusive Hold)	
1-2-23	System Call Park Recall Time Selection	

## GENERAL INFORMATION - HOLD RECALL TIME SELECTION (EXCLUSIVE)

This Memory Block specifies the time interval for Exclusive Hold Recall tone. If No Limit is selected, no exclusive Hold Recall tone is provided.



### CLASS ALLOW/DENY SELECTION

<b>System</b>	<b>CO Line</b>	<b>Data No.</b>
1	1	65
<b>PC Programming Guide</b>		
<b>TECH</b>	A:A:A	<b>USER</b>

**OPERATION:**

1. Go off-line.

2. Enter: Mode System LK 1  MIC  
 ICM

Sub-Mode CO Line LK 1  MIC  
 ICM

Data No. 6 5  
 (Dial Pad)

Data No.	Title	Class 01~14	Function
6 5	CLASS	(01) =	YS
-----			
TIME		DISPLAY	

Data: Class: 01 ~ 14

3. Press the corresponding CO/PBX line key to change data option.

LK 1	LK 2	LK 3	LK 4
Allow (YS)	Deny (NO)		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

Default	Class 01~04	Allow (Yes)
	Class 05~14	Deny (No)

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-66, 8-Digit Matching Table to Normal Dial Assignment.

5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Section 6 - Code Restriction in this chapter.

**NOTES:**

1. If no match is found or a duplicate match is made in opposite Allow/Deny 8-Digit Matching Tables, the system uses this Memory Block. If the Class is assigned as Allow, the call is allowed and if the Class is assigned as Deny, the call is denied.
2. If the interdigit time duration of the dialing party exceeds 10 seconds, while a restricted station user is dialing on an outside line and the system is searching the assigned tables, the system automatically drops the call.

**GENERAL INFORMATION - CLASS ALLOW/DENY SELECTION**

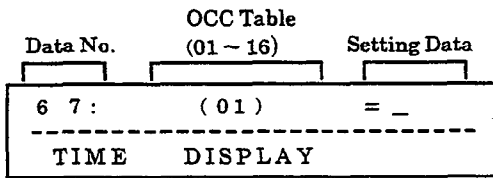
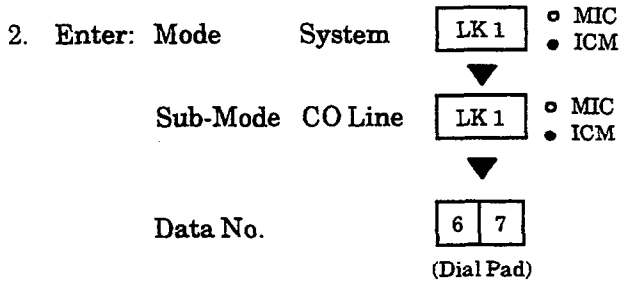
This Memory Block assigns the Code Restriction Classes (01~14) as Allow or Deny. This assignment is used when there is no match or when there is an overlap (duplicate numbers in tables with opposite Allow/Deny assignments) of numbers in the 8-Digit Matching Tables.



### OCC TABLE ASSIGNMENT

**OPERATION:**

1. Go off-line.



3. Use the dial pad to change data option.

← **\*** , **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter data.

Operation Data	Dial Number	Operation
X	0 ~ 9, *, #	LNR/SPD key + 7
P	0, 1	LNR/SPD key + 8
N	2 ~ 9	LNR/SPD key + 9
*	*	LNR/SPD key + *
#	#	LNR/SPD key + #

Data: OCC Table: 01~16  
 Setting Data: 0~9, \*, #, X, P, N  
 (maximum 8 digits)

**HOLD** key: Set Data Clear

Operation Data:

Default	OCC Table 01 ~ 15 Blank
	OCC Table 16 10XXX

System	CO Line	Data No.
1	1	67

PC Programming Guide			
TECH	A:A:I	USER	

4. Press the TRF key to write the selected data and advance to the next OCC Table.
5. After data for all OCC Tables has been entered, press the TRF to advance to Memory Block 1-1-68, 8-Digit Matching Table to OCC Table Assignment.
6. Press the SPKR key to go back on-line.

### GENERAL INFORMATION - OCC TABLE ASSIGNMENT

This Memory Block allows an OCC code (maximum of eight digits) to be assigned in this table. Up to 16 OCC codes can be assigned in this table.

- Additional Programming  
 Refer to Section 6 - Code Restriction in this chapter.

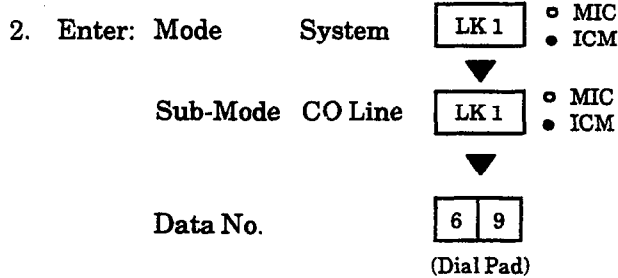




### TIE LINE CODE RESTRICTION ASSIGNMENT

**OPERATION:**

1. Go off-line.



Data No.	Title	Setting Data
6 9:	TIE REST =	YS
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.
  - To change Restriction to No Restriction, press CO/PBX line key 1.

LK 1	LK 2	LK 3	LK 4
No Restriction (NO)	Restriction (YS)		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

Default	Restriction
---------	-------------

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-70, Code Restriction Class Assignment When Lockout is Set.
5. Press the SPKR key to go back on-line.

■ Additional Programming

Refer to Section 6 - Code Restriction in this chapter.

System	CO Line	Data No.
1	1	69

PC Programming Guide			
TECH	A:A:N	USER	

**NOTES:**

1. When Tie lines are assigned code restriction, the Access Code used to dial out of the distant system must be entered in front of the dialed number in the 8-Digit Matching Tables.

### GENERAL INFORMATION - TIE LINE CODE RESTRICTION ASSIGNMENT

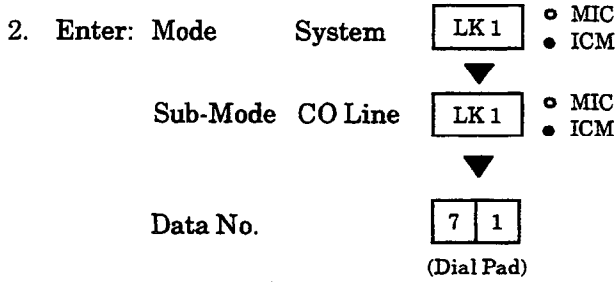
This Memory Block assigns Restriction/No Restriction to outgoing Tie line dialed digits.



### FIRST DELAY ANNOUNCEMENT START TIME SELECTION

#### OPERATION:

1. Go off-line.



Data No.	Title	Setting Data
7 1 :	MSG START	= 20
-----		
TIME DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change 20 sec. to 10 sec., press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
0 sec.	10 sec.	20 sec.	30 sec.
LK 5	LK 6	LK 7	LK 8
40 sec.	50 sec.	60 sec.	

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-72, First Delay Announcement Repeat Selection.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-72	First Delay Announcement Repeat Selection	
1-8-13	VRS Message Function Assignment	✓
3-41	Delay Announcement Assignment	✓

System	CO Line	Data No.
1	1	71

PC Programming Guide			
TECH	A:H:C	USER	

#### NOTES:

1. This feature requires system software version 2.00 or higher.
2. MIF-F(A)-10 or MIF-F(U)-10 KTU and a VRS-F(4)-11 KTU are required to support this feature.

### GENERAL INFORMATION - FIRST DELAY ANNOUNCEMENT START TIME SELECTION

This Memory Block specifies the delayed time between receiving a CO call and sending a First Delay Announcement to the calling party.



# FIRST TO SECOND DELAY ANNOUNCEMENT INTERVAL TIME SELECTION

## OPERATION:

1. Go off-line.

2. Enter: Mode System **LK 1**  MIC  ICM

Sub-Mode CO Line **LK 1**  MIC  ICM

Data No. **7 3**  
(Dial Pad)

Data No.	Title	Setting Data
7 3 :	MSG INTVL	= 20
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change 20 sec. to 10 sec., press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
0 sec.	10 sec.	20 sec.	30 sec.
LK 5	LK 6	LK 7	LK 8
40 sec.	50 sec.	60 sec.	No Limit

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-74, Second Delay Announcement Repeat Selection.

5. Press the SPKR key to go back on-line.

### Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-74	Second Delay Announcement Repeat Selection	
1-1-75	Second Delay Announcement Repeat Interval Time Selection	
1-8-13	VRS Message Function Assignment	✓
3-41	Delay Announcement Assignment	✓

System	CO Line	Data No.
1	1	73

PC Programming Guide			
TECH	A:H:D	USER	

### NOTES:

- This feature requires system software version 2.00 or higher.
- MIF-F(A)-10 or MIF-F(U)-10 KTU and a VRS-F(4)-11 KTU are required to support this feature.

## GENERAL INFORMATION - FIRST TO SECOND DELAY ANNOUNCEMENT INTERVAL TIME SELECTION

This Memory Block specifies the interval time between First Delay Announcement sending time finish and the end start time of Second Delay Announcement to the calling party.



# SECOND DELAY ANNOUNCEMENT REPEAT INTERVAL TIME SELECTION

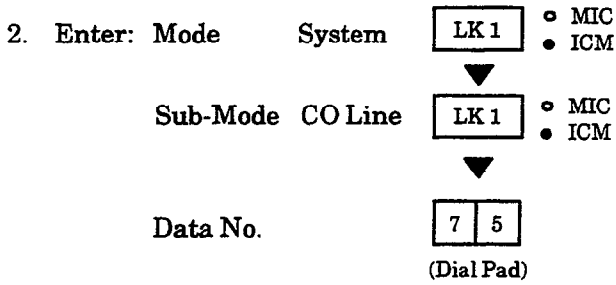
System	CO Line	Data No.
1	1	75

PC Programming Guide	
TECH	A:H:E
USER	

### OPERATION:

1. Go off-line.



### NOTES:

- 1. This function requires system software version 2.00 or higher.
- 2. MIF-F(A)-10 or MIF-F(U)-10 KTU and a VRS-F(4)-11 KTU are required to support this feature.

Data No.	Title	Setting Data
7 5 :	MSG2 RPET	= 20 s
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change 20 sec. to 10 sec., press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
0 sec.	10 sec.	20 sec.	30 sec.
LK 5	LK 6	LK 7	LK 8
40 sec.	50 sec.	60 sec.	No Limit

CO/PBX line keys

 Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-76, Barge-In Alert Tone Assignment.

5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-73	First to Second Delay Announcement Interval Time Selection	
1-1-74	Second Delay Announcement Repeat Selection	
3-41	Delay Announcement Assignment	√

## GENERAL INFORMATION - SECOND DELAY ANNOUNCEMENT REPEAT INTERVAL TIME SELECTION

This Memory Block specifies the interval time to repeat Second Delay Announcement.

### BARGE-IN ALERT TONE ASSIGNMENT

**OPERATION:**

1. Go off-line.

2. Enter: Mode System   MIC  
 ICM

▼

Sub-Mode CO Line   MIC  
 ICM

▼

Data No.   (Dial Pad)

Data No.	Title	Setting Data
7 6 :	ALERT TONE =	YS
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX Line key to change data option.

- To change YES to NO, press CO/PBX line key 2.
- YES = Send Alert Tone  
 NO = Do Not Send Alert Tone

<input checked="" type="button" value="LK 1"/>	<input type="button" value="LK 2"/>	<input type="button" value="LK 3"/>	<input type="button" value="LK 4"/>
<input checked="" type="button" value="YES"/>	<input type="button" value="NO"/>		
<input type="button" value="LK 5"/>	<input type="button" value="LK 6"/>	<input type="button" value="LK 7"/>	<input type="button" value="LK 8"/>

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-1-77, Delayed Ringing Timer Assignment (CO).
5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-8-08	Class of Service (Station) Feature Selection 2	
4-17	Station to Class of Service Feature Assignment	
4-90	SLT Data Line Security Assignment	

System	CO Line	Data No.
1	1	76

**PC Programming Guide**

TECH	B:B:A:B	USER	S:N

**NOTES:**

1. Monitoring telephone conversations may be illegal under certain circumstances and laws. Consult a legal advisor before implementing the monitor of telephone conversations. Some federal and state laws require a party monitoring a telephone conversation to use an alert tone to notify all parties to the telephone conversation, and/or obtain consent from all parties to the telephone conversation. Some of these laws provide strict penalties for illegal monitoring of telephone conversations.
2. When YES is assigned, both parties (internal and external) receive the Alert Tone.

**GENERAL INFORMATION - BARGE-IN ALERT TONE ASSIGNMENT**

This Memory Block specifies whether Barge-In Alert Tone is allowed or denied.







## BGM PORT ASSIGNMENT

System	CO Line	Data No.
1	1	79
<b>PC Programming Guide</b>		
TECH		USER

### OPERATION:

1. Go off-line.

2. Enter: Mode

System

LK 1

○ MIC  
● ICM

Sub-Mode

PBR/Misc

LK 1

Data No.

7 9

(Dial Pad)

### NOTES:

1. This feature requires system software version 5.00 or higher.
2. If separate MOH and BGM are required, use the COI-F(4) or COI-F(8) to support this feature.

Data No.	Title	CO No. (01 ~ 64)
79:	BGM	CO = 00
-----		
TIME	DISPLAY	

3. Use the dial pad to enter the CO No. (01 ~ 64).

← [ \* ] , [ # ] → : To move cursor.

Dial pad [ 0 ] ~ [ 9 ] : To enter data.

Default

Not Specified

4. Press the TRF key to write the selected data and advance to Memory Block 1-2-00, Internal Paging Timeout Selection.
5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-8-08	Class of Service (Station) Feature Selection 2	
2-06	Line Key Selection for Tenant Mode	
4-12	Line Key Selection for Telephone Mode	

### GENERAL INFORMATION - BGM PORT ASSIGNMENT

This Memory Block assigns an outside line for use as a BGM port.



































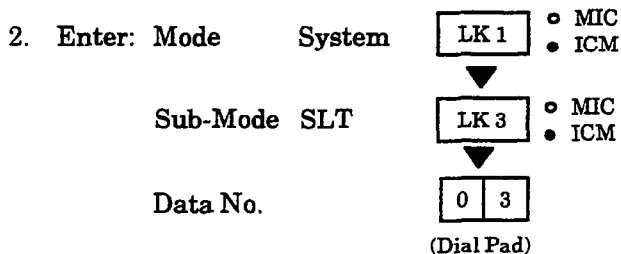




# FIRST DIGIT PBR RELEASE TIMER SELECTION

## OPERATION:

1. Go off-line.



Data No.	Title	Setting Data
0 3 :	PBR RLS	10 s
-----		
TIME DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change 10 sec. to 20 sec., press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
10 sec.	20 sec.	30 sec.	40 sec.
LK 5	LK 6	LK 7	LK 8
50 sec.	60 sec.		

CO/PBX line keys   Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-3-04, Dial 1 (DP) Hookflash Selection.

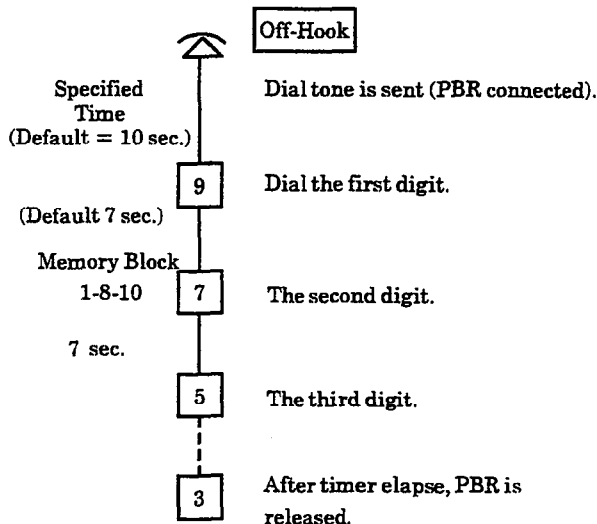
5. Press the SPKR key to go back on-line.

### Additional Programming

Memory Block No.	Memory Block Name	Required
1-8-10	PBR Interdigit Release Timer Selection	
4-95	DTMF/DP SLT Type Selection	

System	SLT	Data No.
1	3	03

PC Programming Guide			
TECH	B : B : D : F	USER	



## GENERAL INFORMATION - FIRST DIGIT PBR RELEASE TIMER SELECTION

This Memory Block specifies the time that a receiver circuit is connected when a DTMF type single-line telephone user goes off-hook and dials the first digit.



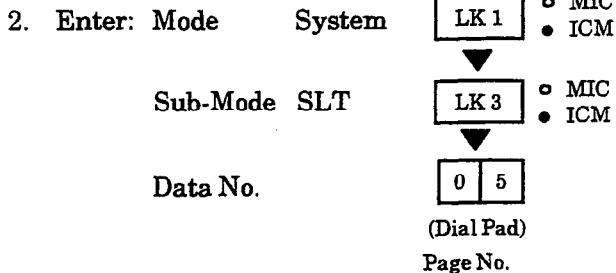
# HOOKFLASH START TIME SELECTION

System	SLT	Data No.
1	3	05

PC Programming Guide			
TECH	B:B:D:E	USER	

### OPERATION:

1. Go off-line.



Data No.	Title	Setting Data	Page No.
0 5 :	FLSHST	300	1
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change 300 ms. to 400 ms., press CO/PBX line key 7 while in Page 1.

Page 1

LK 1	LK 2	LK 3	LK 4
100 ms.	150 ms.	200 ms.	250 ms.
<b>LK 5</b>	LK 6	LK 7	LK 8
<b>300 ms.</b>	350 ms.	400 ms.	450 ms.

Page 2

LK 1	LK 2	LK 3	LK 4
500 ms.	550 ms.	600 ms.	650 ms.
LK 5	LK 6	LK 7	LK 8
700 ms.	750 ms.	800 ms.	850 ms.

CO/PBX line keys



4. Press the TRF key to write the selected data and advance to Memory Block 1-3-06, Hookflash End Time Selection.

5. Press the SPKR key to go back on-line.

### NOTES:

1. Performing a hookflash during a CO/PBX call places the line on hold or sends a hookflash to the CO/PBX.
2. When a hookflash is 0.1 second or less, or 0.85 seconds or more, it is not considered a flash.
3. Bounce Protect Time (1-3-01) and HF Start Time should be equal.

**Example:**

BP = 300 ms.  
 HFS = 300 ms.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-3-01	Bounce Protect Time Selection	√
1-3-06	Hookflash End Time Selection	

## GENERAL INFORMATION - HOOKFLASH START TIME SELECTION

This Memory Block specifies a minimum hookflash duration from a single-line telephone to receive second dial tone.











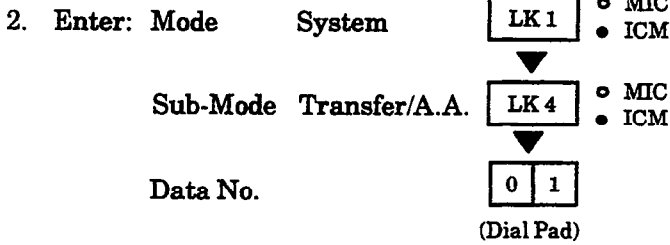




## AUTOMATED ATTENDANT FIRST DIGIT PBR RELEASE TIMER SELECTION

### OPERATION:

1. Go off-line.



Data No.	Title	Setting Data
0 1 :	AA PBR TIME	20s
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.
- To change 20 sec. to 30 sec., press CO/PBX line key 3.

LK 1	LK 2	LK 3	LK 4
10 sec.	20 sec.	30 sec.	40 sec.
LK 5	LK 6	LK 7	LK 8
50 sec.	60 sec.		

CO/PBX line keys      Default

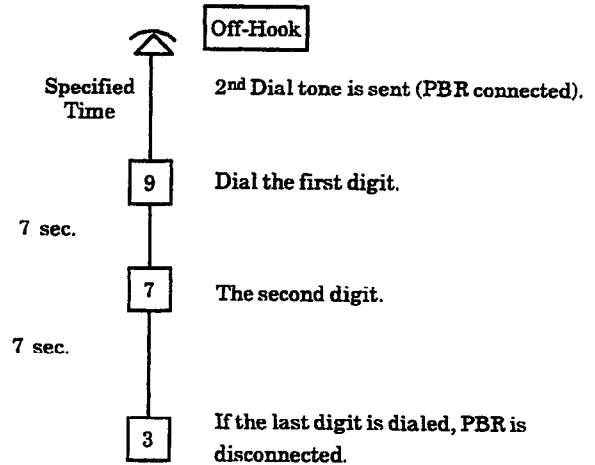
4. Press the TRF key to write the selected data and advance to Memory Block 1-4-02, Automated Attendant Transfer Delayed Ringing Time Selection.
5. Press the SPKR key to go back on-line.

■ Additional Programming

Refer to Guide to Feature Programming in this manual.

System	Transfer/A.A.	Data No.
1	4	01

PC Programming Guide			
TECH	A:I:J	USER	



### GENERAL INFORMATION - AUTOMATED ATTENDANT FIRST DIGIT PBR RELEASE TIMER SELECTION

This Memory Block specifies the time a PBR circuit remains connected after the Automated Attendant message is played when a calling party calls in through an Automated Attendant trunk.

# AUTOMATED ATTENDANT TRANSFER DELAYED RINGING TIME SELECTION

## OPERATION:

1. Go off-line.

2. Enter: Mode System **LK 1**  MIC  ICM  
 Sub-Mode Transfer/A.A. **LK 4**  MIC  ICM  
 Data No. **0 2**  
 (Dial Pad)

Data No.	Title	Setting Data
0 2	AA DLYRNG	∞
TIME DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change No Limit to 30 sec., press CO/PBX line key 3.

LK 1	LK 2	LK 3	LK 4
10 sec.	20 sec.	30 sec.	∞
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-4-03, Automated Attendant No Answer Disconnect Time Selection.

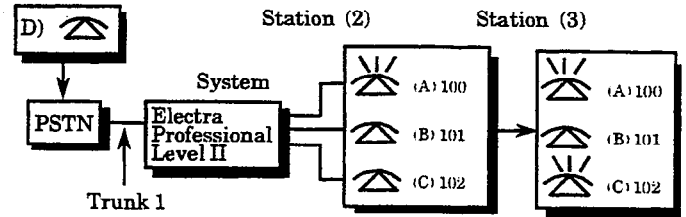
5. Press the SPKR key to go back on-line.

■ Additional Programming  
 Refer to Guide to Feature Programming in this manual.

System	Transfer/A.A.	Data No.
1	4	02

PC Programming Guide			
TECH	A : I : M	USER	



100~102 = Station Number

PSTN = Public Switching Telephone Network

- Station A (ext. 100) and Station C (ext. 102) are ring assigned on Trunk 1.
- Trunk 1 is assigned to A.A. Trunk.

## NOTES:

**Example (Notes 1~3):**

- When outside party D wishes to speak to station user A:
  - Dial the telephone number corresponding to Trunk 1.
  - Confirm Automated Attendant message.
  - Dial Ext. 100.
- At Station A:
  - The ICM LED blinks, and a ring tone different from the normal ringing tone is heard.
  - The call can be answered by lifting the handset.
- If station user A does not answer within the specified time:
  - The system uses Day or Night Mode Ring Assignment and Station C starts ringing.
  - Any station (A, B, or C) can answer the call.
- Selection of No Limit (∞) disables this feature.

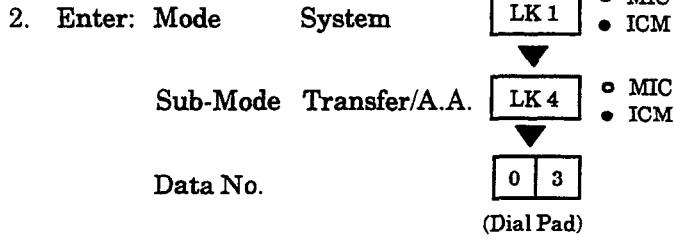
## GENERAL INFORMATION - AUTOMATED ATTENDANT TRANSFER DELAYED RINGING TIME SELECTION

This Memory Block specifies the time for a No Answer at the transferred station before the Automated Attendant rings a predetermined station.

# AUTOMATED ATTENDANT NO ANSWER DISCONNECT TIME SELECTION

## OPERATION:

1. Go off-line.



Data No.	Title	Setting Data
0 3	AA DIS	2m
-----		
TIME		DISPLAY

3. Press the corresponding CO/PBX line key to change data option.

- To change 2 min. to 3 min., press CO/PBX line key 3.

LK 1	LK 2	LK 3	LK 4
1 min.	2 min.	3 min.	4 min.
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-4-04, Tandem Transfer SMDR Print Extension Assignment.

5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

System	Transfer/A.A.	Data No.
1	4	03

PC Programming Guide			
TECH	A:I:I	USER	

## NOTES:

1. If the called party does not answer within the predetermined time, the call is dropped.

### GENERAL INFORMATION - AUTOMATED ATTENDANT NO ANSWER DISCONNECT TIME SELECTION

This Memory Block determines how long the Automated Attendant rings a station before automatically disconnecting the caller.



### TANDEM TRANSFER SMDR PRINT EXTENSION ASSIGNMENT

System	Transfer/A.A.	Data No.
1	4	04

PC Programming Guide			
TECH	A:C:D	USER	

**OPERATION:**

1. Go off-line.

2. Enter: Mode System 

LK 1
------

 MIC  
 ICM  
 Sub-Mode Transfer/A.A. 

LK 4
------

 MIC  
 ICM  
 Data No. 

0	4
---	---

  
 (Dial Pad)

Data No.	Title	Setting Data
0 4 :	TAND EXT =	999
TIME	DISPLAY	

Setting Data: 2-digit number = 00~99  
 3-digit number = 000~999  
 4-digit number = 0000~9999

Default	3 digit number = 999
---------	----------------------

- Press the TRF key to write the selected data and advance to Memory Block 1-4-05, Automatic Tandem Trunk by Night Mode Selection.
- Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-2-03	2-, 3-, or 4-Digit Station Number Selection	

**NOTES:**

- When the system is initially powered up, this Memory Block defaults to 3-digit number 999.
- If 2-digit station numbers are selected, this Memory Block defaults to 2-digit number 99.
- If 4-digit station numbers are selected, this Memory Block defaults to 4-digit number 9999.

**GENERAL INFORMATION - TANDEM TRANSFER SMDR PRINT EXTENSION  
ASSIGNMENT**

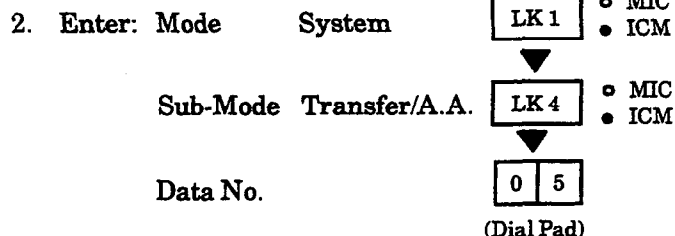
This Memory Block specifies a special number to be output from SMDR for an automatic Trunk-to-Trunk transfer.

# AUTOMATIC TANDEM TRUNK BY NIGHT MODE SELECTION

## OPERATION:

System	Transfer/A.A.	Data No.
1	4	05
PC Programming Guide		
TECH	A: C: B	USER

1. Go off-line.



Data No.	Title	Setting Data
0 5 :	TANDBYNT	NO
	TIME	DISPLAY

3. Press the corresponding CO/PBX line key to change data option.

- To change NO to YES, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys      Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-4-08, Automated Attendant PBR Timeout Response Selection.

5. Press the SPKR key to go back on-line.

### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-27	Automatic Day/Night Mode Switching Time Assignment	
1-1-33	Speed Dial Number/Name Display Selection	
3-05	Trunk Incoming Answer Mode Selection	✓
3-06	Automatic Tandem Trunk Assignment	✓

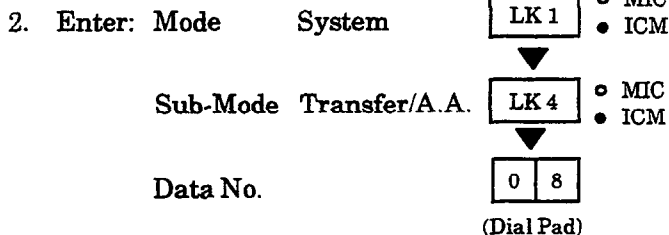
## GENERAL INFORMATION - AUTOMATIC TANDEM TRUNK BY NIGHT MODE SELECTION

This Memory Block determines whether or not the Automatic Trunk-to-Trunk Transfer feature follows the Night Mode assignment.

## AUTOMATED ATTENDANT PBR TIMEOUT RESPONSE SELECTION

### OPERATION:

1. Go off-line.



Data No.	Title	Setting Data
0 8 :	AA RES	NORMAL
---		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.
- To change Normal Call to Release, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
Normal Call	Release		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-4-09, Automated Attendant PBR Start Time Selection.
5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

System	Transfer/A.A.	Data No.
1	4	08
<b>PC Programming Guide</b>		
TECH	A:I:L	USER

### NOTES:

1. When Normal Call is selected, if a DTMF tone is not received during the Automated Attendant message or during the Automated Attendant PBR Release Timer time (Memory Block 1-4-01, Automated Attendant First Digit PBR Release Timer Selection), default: 20 seconds, after the Automated Attendant message, the system rings selected stations using the CO/PBX Ring Assignment (Day/Night Mode).
2. When Release is selected, if a DTMF tone is not received during the Automated Attendant message or during the Automated Attendant PBR Release Timer time (default: 20 seconds) after the Automated Attendant message, the system drops the call after 30 seconds. The 30 second timer is fixed.

**GENERAL INFORMATION - AUTOMATED ATTENDANT PBR TIMEOUT  
RESPONSE SELECTION**

This Memory Block specifies how a call answered by the Automated Attendant should be processed if a DTMF tone is not received.

# AUTOMATED ATTENDANT PBR START TIME SELECTION

System	Transfer/A.A.	Data No.
1	4	09
PC Programming Guide		
TECH	A:I:K	USER

### OPERATION:

1. Go off-line.

2. Enter: Mode            System            LK 1    ○ MIC  
    ● ICM

▼

                  Sub-Mode Transfer/A.A.    LK 4    ○ MIC  
    ● ICM

▼

                  Data No.                    0 9

(Dial Pad)

Data No.	Title	Setting Data
0 9 :	PBR STRT	FR
	TIME	DISPLAY

### NOTES:

1. If FR is assigned, Automated Attendant message send start time and the PBR connected to Automated Attendant trunk start time are the same.

3. Press the corresponding CO/PBX line key to change data option.
  - To change FR to AF, press CO/PBX line key 2.

**Setting Data:**

FR = Same time the Automated Attendant sends the message

AF = After the Automated Attendant sends the message

LK 1	LK 2	LK 3	LK 4
FR	AF		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys             Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-4-11, Automated Attendant Message Day/Night Mode Selection.
5. Press the SPKR key to go back on-line.

■ Additional Programming

Refer to Guide to Feature Programming in this manual.

## GENERAL INFORMATION - AUTOMATED ATTENDANT PBR START TIME SELECTION

The Automated Attendant automatically answers incoming calls. This Memory Block determines when the PBR can receive DTMF signaling, while the Automated Attendant is sending the message or only after the message is completed.

# AUTOMATED ATTENDANT MESSAGE DAY/NIGHT MODE SELECTION

## OPERATION:

1. Go off-line.

2. Enter: Mode System LK 1  MIC  
• ICM
- ▼
- Sub-Mode Transfer/A.A. LK 4  MIC  
• ICM
- ▼
- Data No. 1 1  
 (Dial Pad)

Data No.	Title	A.A. Msg. No. 1~8	Day/Night Mode	Setting Data
1 1 :	AAMSG	1	(DY) =	NO
-----				
TIME		DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.
- To change NO to YES, press CO/PBX line key 1.

LK 1	LK 2	LK 3	LK 4
YES	NO		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

Press LNR/SPD key to toggle Day/Night Mode.

Use the Dial pad 1 ~ 8 to specify the A.A. message number.

4. Press the TRF key to enter selected data and advance to the next Automated Attendant No.
5. After entering all data, press the TRF key to write the selected data and advance to Memory Block 1-4-12, Automated Attendant Message to Tenant Assignment.
6. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

System	Transfer/A.A.	Data No.
1	4	11

PC Programming Guide			
TECH	A:I:E	USER	

## GENERAL INFORMATION - AUTOMATED ATTENDANT MESSAGE DAY/NIGHT MODE SELECTION

This Memory Block specifies which Automated Attendant messages are available for use in a Day/Night Mode setting.

## AUTOMATED ATTENDANT MESSAGE TO TENANT ASSIGNMENT

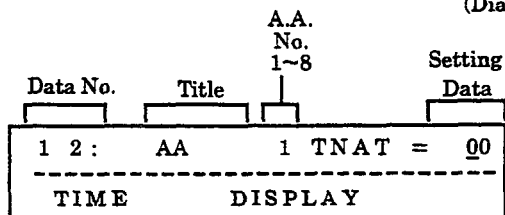
System	Transfer/A.A.	Data No.
1	4	12

PC Programming Guide			
TECH	A:I:G	USER	

### OPERATION:

1. Go off-line.

2. Enter: Mode          System          LK 1      ○ MIC  
    ● ICM  
    ▼  
         Sub-Mode Transfer/A.A. LK 4      ○ MIC  
    ● ICM  
    ▼  
         Data No.                          1   2  
    (Dial Pad)



Data:

- Automated Attendant Message No:          1 ~ 8  
 Setting Data:                                    Tenant No.  
     00 ~ 47  
 HOLD key:                                         Data Clear

Default	All Automated Attendant Messages Tenant No. 00
---------	---

3. Use the dial pad to enter the Tenant Number.

Dial pad [0] ~ [9] : To enter Tenant Number

4. Press the TRF key to write the selected data and advance to next Tenant Number.
5. After all data has been entered, press the TRF key to write the selected data and advance to Memory Block 1-4-13, Automated Attendant Answer Delay Time Assignment.
6. Press the SPKR key to go back on-line.

■ Additional Programming

Refer to Guide to Feature Programming in this manual.

## GENERAL INFORMATION - AUTOMATED ATTENDANT MESSAGE TO TENANT ASSIGNMENT

This Memory Block assigns Tenant Numbers to one of eight automated messages. If the tenant is not assigned to a specific automated message, the Automated Attendant sends the message assigned in Memory Block 1-4-11, Automated Attendant Assignment Day/Night Mode Selection.

## AUTOMATED ATTENDANT ANSWER DELAY TIME ASSIGNMENT

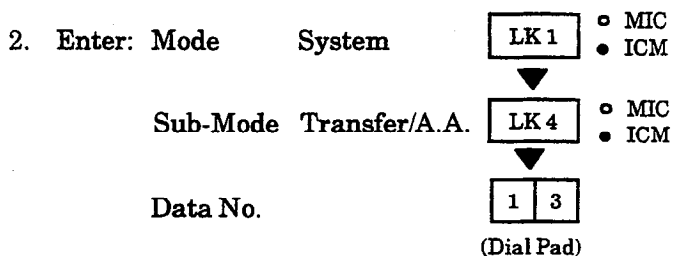
System	Transfer/A.A.	Data No.	
1	4	13	

PC Programming Guide			
TECH	A:I:A	USER	

### OPERATION:

1. Go off-line.



Data No.	Title	A.A. No. 1~8	Setting Data	
1 3 :	AADLY 1	1	=	04s
-----				
TIME                  DISPLAY				

**Data:**

Automated Attendant Message No: 1 ~ 8  
 Setting Data: 00 ~ 99 sec.

Default	All Automated Attendant Messages 4 sec.
---------	--

3. Use the dial pad to enter the message number and seconds.
4. Press the TRF key to write the selected data and advance to the next Automated Attendant No.
5. After all data has been entered, press the TRF key to write the selected data and advance to Memory Block 1-4-14, Automated Attendant Message Access Code (1-Digit) Assignment.
6. Press the SPKR key to go back on-line.

■ **Additional Programming**  
 Refer to Guide to Feature Programming in this manual.

**GENERAL INFORMATION - AUTOMATED ATTENDANT ANSWER DELAY TIME  
ASSIGNMENT**

This Memory Block assigns the number of seconds before the Automated Attendant answers an incoming CO/PBX call.

## AUTOMATED ATTENDANT MESSAGE ACCESS CODE (1-DIGIT) ASSIGNMENT

### OPERATION:

1. Go off-line.

2. Enter: Mode System

LK 1    ○ MIC  
          ● ICM

Sub-Mode Transfer/A.A.

LK 4    ○ MIC  
          ● ICM

Data No.

1	4
---	---

(Dial Pad)

Data No.	Title	A.A. No. 1~8	Dial No. 0~9	Setting Data
<u>1</u> 4 :	AAAC	1	- 0	= 030

TIME                  DISPLAY

3. Enter data using the dial pad.

Automated Attendant 

1
---

 ~ 

8
---

 : Message No.

Dial pad 

0
---

 ~ 

9
---

 : To enter data.

Setting Data: A.A. Message Function Code  
000 (unused), 001~053

4. Press the TRF key to write the selected data and advance to the next Dial No., then Automated Attendant No.

5. After all data has been entered, press the TRF key to write the selected data and advance to Memory Block 1-4-15, Automated Attendant Message Access Code (2-Digit) Assignment.

6. Press the SPKR key to go back on-line.

■ Additional Programming

Refer to Guide to Feature Programming in this manual.

System	Transfer/A.A.	Data No.
1	4	14

PC Programming Guide			
TECH	A:I:C	USER	

Function Code	Contents
000	Unregistered
001	Automated Attendant Message (1)
002	Automated Attendant Message (2)
003	Automated Attendant Message (3)
004	Automated Attendant Message (4)
005	Automated Attendant Message (5)
006	Automated Attendant Message (6)
007	Automated Attendant Message (7)
008	Automated Attendant Message (8)
009	
010	Internal Number (Station Number)
011	Bypass Automated Attendant
012	
013	
014	
015	Paging Zone A Call
016	Paging Zone B Call
017	Paging Zone C Call
018	Fax Status Indication (CO/PBX lines)
019	
020	DSS 1 Call
021	DSS 2 Call
022	DISA Access Code
023	
024	
025	
026	
027	
028	
029	
030	Specified Station Call (00) Refer to Memory Block 1-2-08, Specified Station Access Code Assignment
031	Specified Station Call (01)
032	Specified Station Call (02)
033	Specified Station Call (03)

Continued on next page.



**AUTOMATED ATTENDANT MESSAGE ACCESS  
CODE (1-DIGIT) ASSIGNMENT**

(continued)

System	Transfer/A.A.	Data No.
1	4	14

Function Code	Contents
034	Specified Station Call (04)
035	Specified Station Call (05)
036	Specified Station Call (06)
037	Specified Station Call (07)
038	Specified Station Call (08)
039	Specified Station Call (09)
040	Specified Station Call (10)
041	Specified Station Call (11)
042	Specified Station Call (12)
043	Specified Station Call (13)
044	Specified Station Call (14)
045	Specified Station Call (15)
046	Specified Station Call (16)
047	Specified Station Call (17)
048	Specified Station Call (18)
049	Specified Station Call (19)
050	Specified Station Call (20)
051	Specified Station Call (21)
052	Specified Station Call (22)
053	Specified Station Call (23)

**NOTES:**

- Function 011, Bypass Automated Attendant, uses Memory Blocks 4-01 and 4-02, CO/PBX Ring Assignment (Day/Night Mode).
- If a caller receives a busy signal after being transferred by the Automated Attendant, the following Fixed Access Codes apply:
 

<u>Dial</u>	<u>Action</u>
1	Step Call
*	Receive 2nd Dial Tone
#	CO rings based on Day/Night Ring Assignment. In system software version 2.25 or version 2.77 or higher Ringback is provided.

**Default**

Dial Number	Function Code	Contents
0	030	Specified Station Call (0)
1	010	Station Number
2	010	Station Number
3	010	Station Number
4-9	000	Unregistered

**GENERAL INFORMATION - AUTOMATED ATTENDANT MESSAGE ACCESS  
CODE (1-DIGIT) ASSIGNMENT**

This Memory Block enters a 1-digit code to route an incoming call to the Automated Attendant.





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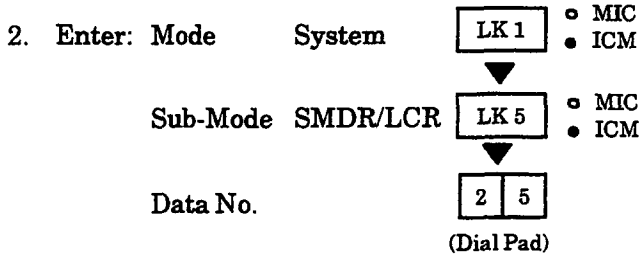




# SMDR VALID CALL TIMER ASSIGNMENT

## OPERATION:

1. Go off-line.



Data No.	Title	Setting Data
2 5 :	SMDR TIM	= 040 s
-----		
TIME		DISPLAY

Default	00 sec.
---------	---------

3. Enter data using the dial pad.

- Minimum time assignment is 000 sec.
- Time assignment can be set from 000 sec. ~990 sec. in increments of 10.

Example: To change 040 sec. to 090 sec., enter 09 from the dial pad.

4. Press the TRF key to write the selected data and advance to Memory Block 1-5-26, SMDR Incoming/Outgoing Print Selection.

5. Press the SPKR key to go back on-line.

### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-05	Start Timer Selection	✓
1-5-13	Printer Connected (Alarm) Selection	✓

System	SMDR/LCR	Data No.
1	5	25

PC Programming Guide			
TECH	A:B:E	USER	

## GENERAL INFORMATION - SMDR VALID CALL TIMER ASSIGNMENT

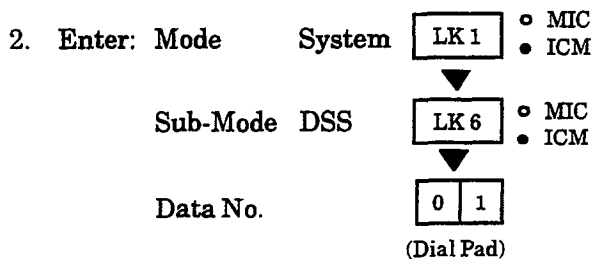
This Memory Block assigns the minimum time before the SMDR outputs a record of an outgoing CO/PBX call.



## ATTENDANT ADD-ON CONSOLE TO TELEPHONE PORT ASSIGNMENT

### OPERATION:

1. Go off-line.



Data No.	Title	DSS No. 1~4	Setting	Data
0 1	DSS	1	= P	01

TIME                                  DISPLAY

3. Enter data using the dial pad.

Example: Enter Tel port No. 01 on DSS 1.

← **\***, **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter data.

Default	DSS 1 → Port No. 01
	DSS 2 → Port No. 02
	DSS 3 → Port No. 01
	DSS 4 → Port No. 02

4. Press the TRF key to write the data.

- DSS 2 is displayed.

5. Change data using the dial pad.

6. After all data has been entered, press the TRF key to write the selected data and advance to Memory Block 1-6-03, DSS Call Voice/Tone Signal Selection.

7. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
7-2	Telephone Type Assignment	✓

System	DSS	Data No.
1	6	01

PC Programming Guide		
TECH	B : B : E : B	USER

### NOTES:

1. The telephone to which an Attendant Add-On Console is connected must be specified by port number.
2. A maximum of four Attendant Add-On Consoles can be connected to a system.
3. A maximum of four Attendant Add-On Consoles can be connected to one telephone.

**GENERAL INFORMATION - ATTENDANT ADD-ON CONSOLE TO TELEPHONE PORT ASSIGNMENT**

This Memory Block assigns an Attendant Add-On Console to a telephone port number.

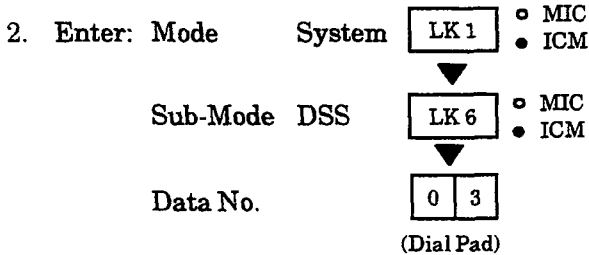
### DSS CALL VOICE/TONE SIGNAL SELECTION

System	DSS	Data No.
1	6	03

#### OPERATION:

PC Programming Guide		
TECH	B : B : E : C	USER

1. Go off-line.



Data No.	Setting Data	Title
0 3	VOICE	CALL
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change VOICE to TONE, press CO/PBX line key 1.

LK 1	<b>LK 2</b>	LK 3	LK 4
TONE	<b>VOICE</b>		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

 Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-6-05, Attendant Add-On Console Key Selection.

5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Refer to Guide to Feature Programming in this manual.

#### NOTES:

1. Voice/Tone Signaling can also be switched by dialing 1 from a station.
2. If Tone Signaling is programmed in this Memory Block, the called party cannot answer handsfree unless the DSS station switches it to Voice by dialing 1.

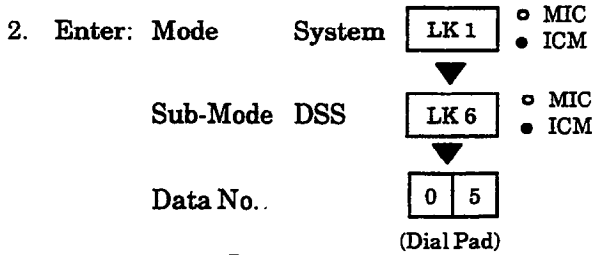
### **GENERAL INFORMATION - DSS CALL VOICE/TONE SIGNAL SELECTION**

This Memory Block specifies which is to be used first, Voice or Tone signaling, when calling an extension from an Attendant Add-On Console.

## ATTENDANT ADD-ON CONSOLE KEY SELECTION

### OPERATION:

1. Go off-line.



Data No.	DSS No. 1~4	Button No. 01~60	Setting Data	Page No.
0 5 :	1 /	01 =	TEL 01	1 1
-----				
TIME		DISPLAY		

← **\*** ; **#** → : To move cursor.  
Dial pad **0** ~ **9** : To enter data.

**HOLD** key : To set data when assigning TEL No. 01~96.

**RECALL** key : Next page.

**FNC** key : Previous page.

3. Press the corresponding CO/PBX line key and dial pad keys to change data option.

Example: To change TEL 01 assigned to key 1 on DSS 1 to External Speaker A:

- Press CO/PBX line key 6.
- New data is displayed.
- Press the TRF key.
- No. 02~60 is displayed successively, after entering data for key 60 on DSS 4.

4. Press the TRF key to write the selected data and advance to Memory Block 1-7-0, External Speaker Connection Selection.

5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-6-01	Attendant Add-On Console to Telephone Port Assignment	✓
7-2	Telephone Type Assignment	✓

System	DSS	Data No.
1	6	05

PC Programming Guide			
TECH	B : B : E : A	USER	

#### Page 1

LK 1	LK 2	LK 3	LK 4
Vacant	TEL No. 01~96	Internal Paging Zone A	Internal Paging Zone B
LK 5	LK 6	LK 7	LK 8
Internal Paging Zone C	All Internal Zone Paging	External Zone A	External Zone B

SPKR = Speaker ICM TEL = Intercom Telephone

#### Page 2

LK 1	LK 2	LK 3	LK 4
External Zone C	All External Zone Paging	Message Waiting	Night Mode Change
LK 5	LK 6	LK 7	LK 8
Transfer	Attendant Station Outgoing Lockout	*Call Arrival Key	Trunk (01~64)

CO/PBX line keys

\*Series 250 or higher.

#### Page 3

LK 1	LK 2	LK 3	LK 4
‡Live Recording Feature	‡Mail Box Number		
LK 5	LK 6	LK 7	LK 8

‡Series 400 or higher.

Continued on next page.

**ATTENDANT ADD-ON CONSOLE KEY SELECTION**

(continued)

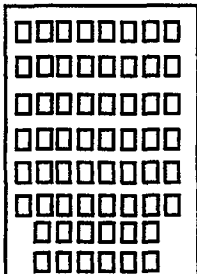
Functions can be assigned to keys 01~60 on Attendant Add-On Consoles 1~4.

Functions to be programmed

1. Station No. 01~96
2. Internal Paging Zone A
3. Internal Paging Zone B
4. Internal Paging Zone C
5. Internal Paging Zone ALL
6. External Paging Zone A
7. External Paging Zone B
8. External Paging Zone C
9. External Zone Paging ALL
10. Message Waiting
11. Night Mode Switching
12. Trunk (01~64) [Series 200 or higher]
13. Transfer
14. Attendant Station Outgoing Lockout
15. Call Arrival Key (01~88) [Series 250 or higher]
16. Feature Access Key with Live Recording
17. Digital Voice Mail Mailbox number

DSS Key Number

1 2 3 4 5 6 7 8



- 01→08 Key Number
- 09→16 01~48: Two-color LED (green and red)  
49~60: red LED only
- 17→24
- 25→32
- 33→40
- 41→48
- 49→54
- 55→60

**NOTES:**

1. When TEL is assigned to a key with only a red LED, the message function cannot be confirmed.
2. When a function (e.g., Message or Paging) that does not require a green LED is assigned to a two-color LED key, the green LED does not function.

System	DSS	Data No.
1	6	05

Default		
DSS No.	Key No.	Setting Data
1~4	01	TEL No. 01
	02	TEL No. 02
	f	f
	48	TEL No. 48
	49	Night Mode Switching
	50	Internal Paging Zone A (INT A)
	51	Internal Paging Zone B (INT B)
	52	Internal Paging Zone C (INT C)
	53	All Internal Zone Paging (INT ALL)
	54	Vacant
	55	Message Waiting (MSG)
	56	External Paging Zone A (EXT A)
	57	External Paging Zone B (EXT B)
	58	External Paging Zone C (EXT C)
59	External Zone Paging All (EXT ALL)	
60	Transfer (TRF)	

3. Telephone number setting data for telephone sets is determined by number of installed ESI-F(8)-21 KTUs.
4. Message Waiting and Attendant Station Outgoing Lockout cannot be assigned on the same console.
5. DSS/CO lines must be programmed on DSS keys 1~48 only.
6. Call Arrival Keys assigned on the console are used to make DSS calls and for BLF indications. Calls cannot be received at these keys. Assignment of Call Arrival Keys requires system software version 2.50 or higher.
7. Feature Access Key with Live Recording has seven features:

Feature No.	Feature
00	Record Start
01	Record Pause/Restart
02	Record Erase
03	Record Finish
04	Record Erase/Restart
05	Pager
06	Record Confirmation

Each function can be assigned by dialing the Feature No. using the dial pad after pressing LK1 on page 3.

8. Digital Voice Mail Mailbox Number can be entered using two, three or four digits of the Mailbox number on the dial pad.

**GENERAL INFORMATION - ATTENDANT ADD-ON CONSOLE KEY SELECTION**

This Memory Block assigns functions to the Attendant Add-On Console keys.



## EXTERNAL PAGING ALERT TONE SELECTION

### OPERATION:

<b>System</b>	<b>ESP</b>	<b>Data No.</b>
1	7	03
PC Programming Guide		
<b>TECH</b>	<b>B:F:A</b>	<b>USER</b>


1. Go off-line.

2. Enter: Mode      System      LK 1       MIC  
     ICM  
    ▼  
    Sub-Mode ESP      LK 7       MIC  
     ICM  
    ▼  
    Data No.      0 3  
    (Dial Pad)

Data No.	Title	Setting Data
0 3 :	ESP TONE	YS
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to to change the data option.
  - To change YES to NO, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
YES	NO		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys       Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-7-06, External Paging Timeout Selection.
  5. Press the SPKR key to go back on-line.
- Additional Programming

Memory Block No.	Memory Block Name	Required
1-7-02	External Speaker Connection Selection	✓

## **GENERAL INFORMATION - EXTERNAL PAGING ALERT TONE SELECTION**

This Memory Block specifies whether or not a Paging Alert Tone is sent on External Zone Paging (all speakers/individual speakers).







# SLT OR AUTOMATED ATTENDANT/DISA TO PBR SELECTION

System	PBR/Misc.	Data No.
1	8	01
<b>PC Programming Guide</b>		
TECH	B:B:D:I	USER

### OPERATION:

1. Go off-line.

2. Enter: Mode System **LK 1**  MIC  
 ICM  
 Sub-Mode PBR/Misc. **LK 8**  MIC  
 ICM  
 Data No. **0 1**  
 (Dial Pad)

Data No.	Title
0 1 :	PBR(SLT/AA)
-----	
TIME	DISPLAY

3. Press the corresponding CO/PBX line key to change the data option.

- The LED indication changes to indicate the data each time the CO/PBX line key is pressed.

LK 1	LK 2	LK 3	LK 4
PBR 1	PBR 2		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

CO LED	<input checked="" type="checkbox"/> OFF	<input type="checkbox"/> ON
Data	Single Line Telephone	A.A./DISA

4. Press the TRF key to write the selected data and advance to Memory Block 1-8-02, PBR Receive Level Assignment for Automated Attendant/DISA.

5. Press the SPKR key to go back on-line.

■ Additional Programming  
 Refer to Guide to Feature Programming in this manual.

### NOTES:

- Specify if PBR 1 (Channel 1 and 2 in the CPU KTU) and 2 (Channel 3 and 4 in the CPU KTU) are to be used for single-line telephones.
- If both line key 1 and line key 2 are assigned to the Automated Attendant/DISA feature, the PBR-F(4)-11 KTU must be installed in the system if single-line telephones are used.

## GENERAL INFORMATION - SLT OR AUTOMATED ATTENDANT/DISA TO PBR SELECTION

This Memory Block specifies whether the PBR circuits in the CPU KTU are to be used for single-line telephones or the Automated Attendant/DISA.







**CLASS OF SERVICE (ATTENDANT) FEATURE  
SELECTION 1  
(continued)**

System	PBR/Misc.	Data No.
1	8	07

Classes 00~15 programmed in this Memory Block are programmed as feature restriction classes. In Telephone Mode, Station to Class of Service Feature Assignment, Data No. 17, specify any of the classes for each telephone to assign the features that the user can or cannot activate.

## Page 01

Corresponding CO/PBX Line Key	Function Name	Default Class 00	Default Class 01~15
LK 1	Night Mode Switching (System-Wide)	Allow	Deny
LK 2	Night Mode Switching (Tenant Basis)	Allow	Deny
LK 3	System Speed Dial Programming	Allow	Deny
LK 4	Not Used	N/A	N/A
LK 5	Not Used	N/A	N/A
LK 6	Not Used	N/A	N/A
LK 7	Automatic Trunk-to-Trunk Transfer (Set/Reset) and Programming of Outgoing Numbers	Allow	Deny
LK 8	Automated Attendant/DISA Mode (Set/Reset)	Allow	Deny

## Page 02

Corresponding CO/PBX Line Key	Function Name	Default Class 00	Default Class 01~15
LK 1	Timed Alarm (Set/Reset) for Single Line Telephones	Allow	Deny
LK 2	<ul style="list-style-type: none"> <li>● Call Forward-All Calls (Set/Reset) from Destination Station</li> <li>● Call Forward CAR Keys</li> <li>● Call Forward All Call Set</li> <li>● Call Forward Busy/No Answer Set</li> </ul>	Allow	Deny
LK 3	System-Wide Reset of Timed Alarm, Call Forward - All Calls, Do Not Disturb, Customized Message, and Callback Request	Deny	Deny
LK 4	Cancel Station Lockout and Default Password for another Station	Allow	Deny
LK 5	DISA Password Cancel	Allow	Deny
LK 6	DISA Password Confirmation	Allow	Deny
LK 7	Automated Attendant Weekend Mode (Set/Reset) Tenant Basis	Allow	Deny
LK 8	Forced Account Code Programming	Allow	Deny

Continued on next page.

**CLASS OF SERVICE (ATTENDANT) FEATURE  
SELECTION 1  
(continued)**

System	PBR/Misc.	Data No.
1	8	07

Classes 00~15 programmed in this Memory Block are programmed as feature restriction classes. In Telephone Mode, Station to Class of Service Feature Assignment, Data No. 17, specify any of the classes for each telephone to assign the features that the user can or cannot activate.

Page 03

Corresponding CO/PBX Line Key	Function Name	Default Class 00	Default Class 01~15
LK 1	Terminal Exchange Mode Set (Series 700 or higher)	Allow	Deny
LK 2	Not Used	N/A	N/A
-	-	-	-
LK 8	Not Used	N/A	N/A

**GENERAL INFORMATION - CLASS OF SERVICE (ATTENDANT) FEATURE  
SELECTION 1**

This Memory Block allows or denies specific attendant-type features for each Class of Service. When individual stations are assigned to a Class of Service, the station user can access only those attendant features specified as allow for that Class of Service.



## CLASS OF SERVICE (STATION) FEATURE SELECTION 2

### OPERATION:

1. Go off-line.

2. Enter: Mode System LK 1 ○ MIC  
● ICM

Sub-Mode PBR/Misc. LK 8 ○ MIC  
● ICM

Data No. 0 8  
(Dial Pad)

Data No.	Title	Class No. (00~15)	Page No. (01~04)
0 8 :	CLS 2	(00)	1 0 1
---			
TIME		DISPLAY	

RECALL key : Next page.

FNC key : Previous page.

CO/PBX Line LED	<input checked="" type="checkbox"/> OFF	<input type="checkbox"/> ON
Data	Deny	Allow

3. Press the corresponding CO/PBX line key to change the data option.
  - The LED indication changes to indicate the data each time the CO/PBX line key is pressed.
  - To assign CLASS 00, Voice/Tone Override, press CO/PBX line key 8 to turn CO/PBX LED off or on.
4. Press the TRF key; data for class 01~15 is displayed successively.
5. After entering data for Class 15, press the TRF key to write the selected data and advance to Memory Block 1-8-09, Music On Hold Pattern Selection.
6. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
4-17	Station to Class of Service Feature Assignment	

System	PBR/Misc.	Data No.
1	8	08

PC Programming Guide			
TECH	B:B:A:D	USER	

### NOTES:

1. Sixteen classes (00~15) of feature restriction patterns allow a station user to activate particular features while restricting the user from other features.
2. At default, all stations are in Class 00.
3. Stations are assigned to a Class of Service in Memory Block 4-17, Station to Class of Service Feature Assignment.

*Continued on next page.*

**CLASS OF SERVICE (STATION) FEATURE  
SELECTION 2  
(continued)**

System	PBR/Misc.	Data No.
1	8	08

## Page 01

LK 1	LK 2	LK 3	LK 4
Call Forward, All Call, DND, **Break Mode	Trunk Queuing	Automatic Callback	Barge-In (Calling Party)
LK 5	LK 6	LK 7	LK 8
Rejection of Barge-In (Called Party)	Timed Alarm For SLT	Not Used	Voice(**)/ Tone Override

## Page 02

LK 1	LK 2	LK 3	LK 4
Absence Message	Callback Message	Station Outgoing Lockout Set	Not Used
LK 5	LK 6	LK 7	LK 8
Call Forward Busy/No Ans Set	VRS Voice Message	Not Used.	DISA Password Set

## Page 03

LK 1	LK 2	LK 3	LK 4
Not Used	User Ringing Line Preference Set/Reset	Voice(**)/Tone Override (Receive)	LCR Bypass
LK 5	LK 6	LK 7	LK 8
Station Trunk- to-Trunk Transfer	‡Account Code Entry	Not Used	‡Call Alert Notification

## Page 04

LK 1	LK 2	LK 3	LK 4
*LCR Recall	‡DSS Key Transfer Operation	**Caller ID	**Caller ID Number Selection
LK 5	LK 6	LK 7	LK 8
**Manual Live Record Activate	** Auto Live Record Activate	*** BGM	***Unsuper- vised Conference

## Page 05

LK 1	LK 2	LK 3	LK 4
★Forced Account Code	+Group Listening Selection	+ Station Relocation	+ Set Call Forward-Off Premise
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

- ‡ Series 300 or higher.
- ‡ V2.16 and V2.60 or higher.
- \* V2.77C or higher.
- \*\* Series 400 or higher.
- \*\*\* Series 500 or higher.
- ★ Series 600 or higher.
- + Series 700 or higher

*Continued on next page.*

**CLASS OF SERVICE (STATION) FEATURE  
SELECTION 2  
(continued)**

<b>System</b>	<b>PBR/Misc.</b>	<b>Data No.</b>
1	8	08

Page 01

Corresponding CO/PBX Line Key	Function Name	Default Class 00	Default Class 01~15
LK 1	Set Call Forward - All Calls, Do Not Disturb (DND), Break Mode(Series 400 or higher)	Allow	Deny
LK 2	Trunk Queuing	Allow	Deny
LK 3	Automatic Callback	Allow	Deny
LK 4	Barge-In Originate on a CO/PBX Line	Deny	Deny
LK 5	Barge-In Receive	Allow	Deny
LK 6	Timed Alarm (Set/Cancel)	Allow	Deny
LK 7	Not Used	N/A	N/A
LK 8	Voice Override (Series 400 or higher)/ Tone Override Originate	Allow	Deny

Page 02

Corresponding CO/PBX Line Key	Function Name	Default Class 00	Default Class 01~15
LK 1	Absence Message	Allow	Deny
LK 2	Callback Request Originate	Allow	Deny
LK 3	Station Outgoing Lockout (Set/Cancel)	Allow	Deny
LK 4	Not Used	N/A	N/A
LK 5	Call Forward Busy, No Answer, Busy/No Answer Set	Allow	Deny
LK 6	VRS Voice Message Record/Verify/Erase	Allow	Deny
LK 7	Not Used	N/A	N/A
LK 8	DISA Password Set	Allow	Deny

Page 03

Corresponding CO/PBX Line Key	Function Name	Default Class 00	Default Class 01~15
LK 1	Not Used	N/A	N/A
LK 2	User Ringing Line Preference Set/Reset	Allow	Deny
LK 3	Voice Override (Series 400 or higher)/Tone Override/Camp-On Receive	Allow	Deny
LK 4	LCR Bypass (Trunk Groups 02 ~ 32)	Deny	Deny
LK 5	Station Trunk-to-Trunk Transfer	Deny	Deny
LK 6	Account Code Entry (Series 300 or higher)	Deny	Deny
LK 7	Not Used	N/A	N/A
LK 8	Call Alert Notification (version 2.16 and 2.60 or higher)	Allow	Deny

*Continued on next page.*

**CLASS OF SERVICE (STATION) FEATURE  
SELECTION 2  
(continued)**

System	PBR/Misc.	Data No.
1	8	08

Page 04

Corresponding CO/PBX Line Key	Function Name	Default Class 00	Default Class 01~15
LK 1	LCR Recall (version 2.77C or higher)	Allow	Deny
LK 2	DSS Key Transfer Operation (Series 300 or higher) (Refer to Note 1 below.)	Deny	Deny
LK 3	Caller ID (Series 450 or higher)	Deny	Deny
LK 4	Caller ID Number Selection (Series 450 or higher) (Refer to Note 2)	Deny	Deny
LK 5	Manual Live Record Activate (Series 400 or higher)	Deny	Deny
LK 6	Auto Live Record Activate (Series 400 or higher) (LK 5 must also be on for automatic live recording)	Deny	Deny
LK 7	BGM Selection (Series 500 or higher)	Allow	Deny
LK 8	Unsupervised Conference (Series 500 or higher)	Deny	Deny

Page 05

Corresponding CO/PBX Line Key	Function Name	Default Class 00	Default Class 01~15
LK 1	Forced Account Code (Series 600 or higher)	Deny	Deny
LK 2	Group Listening Selection (Series 700 or higher)	Deny	Deny
LK 3	Station Relocation (Series 700 or higher)	Allow	Deny
LK 4	Set Call Forward-Off Premise (Series 700 or higher)	Deny	Deny
LK 5 ~ LK 8	Not Used	N/A	N/A

**Note 1:** Operation applies to Feature Access/One-Touch keys and Attendant Add-On keys programmed for DSS. The following applies on a call, after you press a DSS key and then go on-hook:

DENY = Call is not transferred

ALLOW = Call is transferred

**Note 2:** Caller ID Number Selection:

- If set for Deny, the name is displayed if both name and number are received.
- If set for Allow, the number is displayed if both name and number are received.

**Note 3:** Call Forward-Off Premise is related to: Page 1 LK1 and Page 2 LK5.

**GENERAL INFORMATION - CLASS OF SERVICE (STATION) FEATURE  
SELECTION 2**

This Memory Block allows or denies specific station features for each Class of Service. When individual stations are assigned to a Class of Service, the station user can access only those features specified as Allow for that Class of Service.

# MUSIC ON HOLD PATTERN SELECTION

System	PBR/Misc.	Data No.
1	8	09

PC Programming Guide			
TECH	B:C:A:D	USER	

## OPERATION:

1. Go off-line.

2. Enter: Mode System **LK 1**  MIC  
 ICM
- Sub-Mode PBR/Misc. **LK 8**  MIC  
 ICM
- Data No. **0 9**  
 (Dial Pad)

Data No.	Title	Setting Data
0 9 :	MOH	= A
-----		
TIME	DISPLAY	

## NOTES:

- Music On Hold can be provided to CO/PBX and intercom calls that are put on hold.
- One of four melodies (A~D) for Music On Hold can be selected in this Memory Block.

A = Let It Be  
 B = Melody Fair  
 C = Chime  
 D = Chime

3. Press the corresponding CO/PBX line key to change data option.
- To change Pattern A to Pattern B, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
A	B	C	D
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-8-10, PBR Interdigit Release Timer Selection.
5. Press the SPKR key to go back on-line.

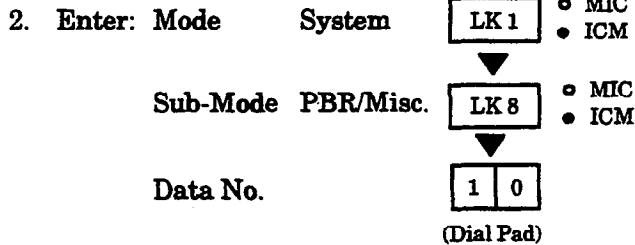
## GENERAL INFORMATION - MUSIC ON HOLD PATTERN SELECTION

This Memory Block specifies the Music On Hold Pattern Selection.

# PBR INTERDIGIT RELEASE TIMER SELECTION

## OPERATION:

1. Go off-line.



Data No.	Title	Setting Data
1 0	PBR RELEAS	7s
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change 7.0 sec. to 5.0 sec., press CO/PBX line key 3.

LK 1	LK 2	LK 3	LK 4
3.0 sec.	4.0 sec.	5.0 sec.	6.0 sec.
LK 5	LK 6	LK 7	LK 8
7.0 sec.	8.0 sec.	9.0 sec.	10.0 sec.

CO/PBX line keys Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-8-11, System Refresh Timer Assignment.
5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-3-03	First Digit PBR Release Timer Selection	
1-8-01	SLT or Automated Attendant/DISA to PBR Selection	

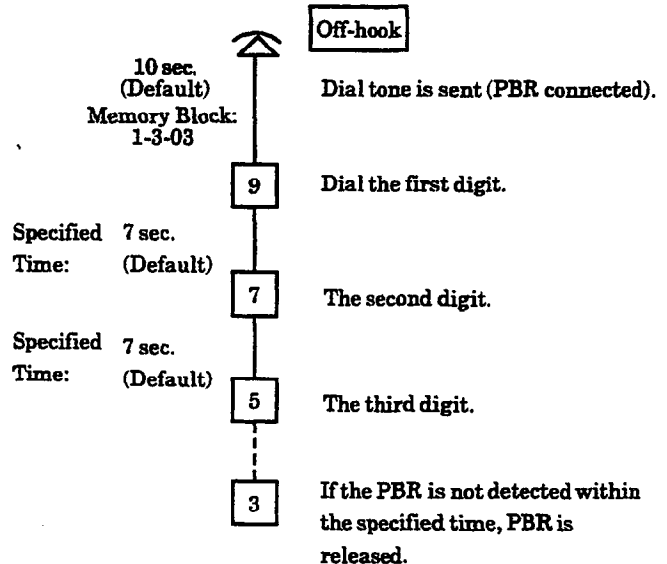
System	PBR/Misc.	Data No.
1	8	10

PC Programming Guide		
TECH	B:I:G	USER

### NOTES:

1. A DTMF Single Line Telephone connected to the Level II and/or Level II Advanced system must be supported by PBR that receives DTMF signals.



**GENERAL INFORMATION - PBR INTERDIGIT RELEASE TIMER SELECTION**

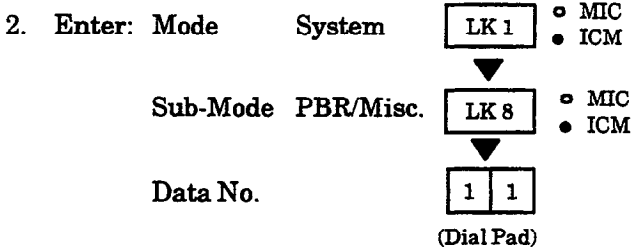
This Memory Block specifies the interdigit release time for the PBR.

SYSTEM REFRESH TIMER ASSIGNMENT

OPERATION:

System	PBR/Misc.	Data No.
1	8	11
PC Programming Guide		
TECH	B:I:M	USER

1. Go off-line.



NOTES:

1. The system automatically refreshes itself during idle periods based on the time specified in this Memory Block.

Data No.	Title	Setting Data
<u>1</u> 1 :	REFRESH	4 H
-----		
	TIME	DISPLAY

3. Press the corresponding CO/PBX line key to change data option.
  - To change 4 hr. to 8 hr., press CO/PBX line key 3.

LK 1	LK 2	LK 3	LK 4
No Refresh	4 hr.	8 hr.	12 hr.
LK 5	LK 6	LK 7	LK 8
24 hr.			

CO/PBX line keys Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-8-12, VRS Message Recording Time Selection.
5. Press the SPKR key to go back on-line.

■ Additional Programming  
Refer to Guide to Feature Programming in this manual.

**GENERAL INFORMATION - SYSTEM REFRESH TIMER ASSIGNMENT**

This Memory Block assigns the System Refresh Time. (The system refreshes itself during idle periods.)



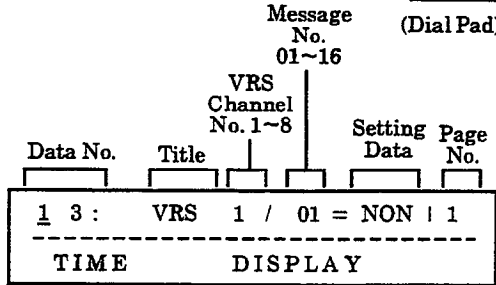
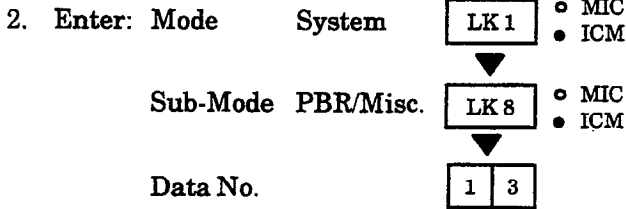


# VRS MESSAGE FUNCTION ASSIGNMENT

<b>System</b>	<b>PBR/Misc.</b>	<b>Data No.</b>
1	8	13
<b>PC Programming Guide</b>		
<b>TECH</b>	<b>A:H:G</b>	<b>USER</b>

## OPERATION:

1. Go off-line.



3. Press the corresponding CO/PBX line key to change data option.

- To change No Message to Voice Prompt 1, press CO/PBX line key 2.

Page 1

LK 1	LK 2	LK 3	LK 4
No Message	Voice Prompt 1	Voice Prompt 2	1st Delay Announce.
LK 5	LK 6	LK 7	LK 8
2nd Delay Announce.	Not Used	Not Used	Not Used

CO/PBX line keys

Default	All Channels of Block: No Message
---------	-----------------------------------

4. Use the dial pad to enter VRS Channel 1~8 and Message No. 01~16. (Maximum of 16 messages per channel when Message record time is 15.0 sec.)

Dial pad **0** ~ **9** : To enter data.

5. Press the TRF key to write the selected data and advance to Memory Block 1-8-15, Tone Assignment.

6. Press the SPKR key to go back on-line.

Page 2

LK 1	LK 2	LK 3	LK 4
Day Mode Auto Attendant 1	Day Mode Auto Attendant 2	Day Mode Auto Attendant 3	Day Mode Auto Attendant 4
LK 5	LK 6	LK 7	LK 8
Day Mode Auto Attendant 5	Day Mode Auto Attendant 6	Day Mode Auto Attendant 7	Day Mode Auto Attendant 8

Page 3

LK 1	LK 2	LK 3	LK 4
Night Mode Auto Attendant 1	Night Mode Auto Attendant 2	Night Mode Auto Attendant 3	Night Mode Auto Attendant 4
LK 5	LK 6	LK 7	LK 8
Night Mode Auto Attendant 5	Night Mode Auto Attendant 6	Night Mode Auto Attendant 7	Night Mode Auto Attendant 8

Page 4

LK 1	LK 2	LK 3	LK 4
Weekend Mode Auto Attendant 1	Weekend Mode Auto Attendant 2	Weekend Mode Auto Attendant 3	Weekend Mode Auto Attendant 4
LK 5	LK 6	LK 7	LK 8
Weekend Mode Auto Attendant 5	Weekend Mode Auto Attendant 6	Weekend Mode Auto Attendant 7	Weekend Mode Auto Attendant 8

### Additional Programming

Refer to Guide to Feature Programming in this manual.

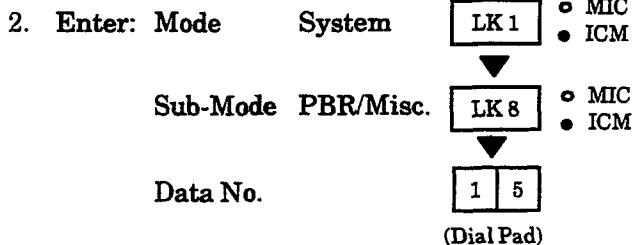
## GENERAL INFORMATION - VRS MESSAGE FUNCTION ASSIGNMENT

This Memory Block assigns the recorded voice prompt Automated Attendant Message type to the VRS Message Block Division. Refer to Memory Block 1-8-12, VRS Message Recording Time Selection.

# TONE ASSIGNMENT

## OPERATION:

1. Go off-line.



Data No.	Item No.	Tone	Setting Data	Page No.
<u>1</u> 5 :	(00)	DT	= A	1
-----		TIME            DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

Page 1

<b>LK 1</b>	LK 2	LK 3	LK 4
<b>Tone A</b>	Tone B	Tone C	Tone D
LK 5	LK 6	LK 7	LK 8
Tone E	Tone F	Tone G	Tone H

Page 2

LK 1	LK 2	LK 3	LK 4
Tone I	Tone J	Tone K	Tone L
LK 5	LK 6	LK 7	LK 8
Tone M			

CO/PBX line keys

- Use the Dial pad to enter Table No. 00~12.
- Setting Data:  
Tone A~M
- Press the TRF key to advance to the next Table.
- After all data has been entered, press the TRF key to write the selected data and advance to Memory Block 1-8-16, Voice Prompt to Tone Assignment.
- Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

System	PBR/Misc.	Data No.
1	8	15

PC Programming Guide			
TECH	B:D:N	USER	

## NOTES:

- Tone Burst 2 is used for Transfer Inform Tone, Tone Override (calling party), or External Speaker Call Notice Tone.
- The 2nd Dial Tone is used for DISA Dial Tone.

Default Table

Item No.	Tone	LCD Indication	Default
00	ICM Dial Tone	(DT)	A
01	2nd Dial Tone	(2DT)	B
02	Special Dial Tone	(SPDT)	C
03	Busy Tone	(BT)	D
04	Reorder/Error Tone	(ROT)	E
05	Howler Tone	(HWT)	F
06	Service Set Tone	(SST)	G
07	ICM Ringback Tone	(RBT1)	I
08	Tie/DID Ringback Tone	(RBT2)	H
09	Call Waiting Tone	(CWT)	J
10	LCR Dial Tone	(SDT)	K
11	Tone Burst 1	(TB1)	G
12	Tone Burst 2	(TB2)	K

*Continued on next page.*

**TONE ASSIGNMENT**  
(continued)

TONE	FREQ.	INTERMIT	CYCLE
A	350/440	Continuous	
B	350/440	120 IPM	
C	440	240 IPM	
D	480/620	60 IPM	
E	480/620	120 IPM	
F	240 16 Modulation	Continuous	
G	440	Continuous	
H	440/480	ON: 2s OFF: 4s	
I	440/480	ON: 1s OFF: 2s	
J	440	60 IPM	
K	400	Continuous	
L	800	60 IPM	
M	No Tone	Continuous	

**GENERAL INFORMATION - TONE ASSIGNMENT**

This Memory Block assigns each system tone to the flexible tables.



## PC PROGRAMMING PASSWORD ASSIGNMENT

System	PBR/Misc.	Data No.
1	8	17
PC Programming Guide		
TECH	C:A:A	USER

### OPERATION:

1. Go off-line.

2. Enter: Mode System LK 1  MIC  
 ICM  
 Sub-Mode PBR/Misc. LK 8  MIC  
 ICM  
 Data No. 

1	7
---	---

  
 (Dial Pad)

Data No.	Class No. 1,2	Setting Data
1 7 :	(1)	=
-----		
TIME	DISPLAY	

Class No. 1: Technician Mode  
 No. 2: End user Mode  
 Setting Data: 0~9 (maximum eight digits)

Dial pad 

0
---

 ~ 

9
---

 : To enter data.  
 **HOLD** key: : To clear data.

Default	Class 1, 2 All Blank
---------	----------------------

3. Press the TRF key to write the selected data and advance to the next Class No.
4. After all data has been entered, press the TRF key to write the selected data and advance to Memory Block 1-8-18, Site Name Assignment.
5. Press the SPKR key to go back on-line.

- Additional Programming  
 Refer to Guide to Feature Programming in this manual.

### NOTES:

1. Programming from a Multiline Terminal allows a maximum of eight digits to be entered for both classes.
2. PC Programming allows only five digits to be entered. If more than five digits are entered in the memory block, PC Programming recognizes only the first five.
3. Only digits can be entered.

## GENERAL INFORMATION - PC PROGRAMMING PASSWORD ASSIGNMENT

This Memory Block sets a system password that must be entered when using PC Programming.





## VOICE MAIL QUICK TRANSFER MASTER HUNT NUMBER

### OPERATION:

1. Go off-line.

2. Enter: Mode            System         ♂ MIC  
    ♀ ICM

Sub-Mode                 PBR/Misc.     ♂ MIC  
    ♀ ICM

Data No.                        
(Dial Pad)

Data No.	Title	Setting Data
2 6	VMMASTER	_      000
-----		
TIME      DISPLAY		

3. Enter data using the dial pad.

,  : To move cursor.

Dial pad  ~  : To enter data.

**Setting Data:**

Station Number (00~9999)

- 2 digit (00~99)
- 3 digit (000~999)
- 4 digit (0000~9999)

Default	Not Specified
---------	---------------

4. Press the TRF key to advance to write the selected data and advance to Memory Block 1-8-27, Forced Account Code Length Assignment.

5. Press the SPKR key to go back on-line.

System	PBR/Misc.	Data No.
1	8	26

PC Programming Guide			
TECH	A:G:F	USER	

### NOTES:

1. This feature requires system software version 5.00 or higher.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-46	Access Code (1-Digit) Assignment	
1-1-47	Access Code (2-Digit) Assignment	
1-1-48	Access Code (3-Digit) Assignment	
1-2-03	2-, 3-, or 4-Digit Station Number Selection	
1-2-24	Intercom Feature Access Code Assignment	
4-35	Voice Mail/SLT Selection	
4-14	Intercom Master Hunt Number Selection	
4-15	Intercom Master Hunt Number Forward Assignment	

GENERAL INFORMATION - VOICE MAIL QUICK TRANSFER MASTER  
NUMBER ASSIGNMENT

This Memory Block specifies the Voice Mail master number when operating Quick Transfer to Voice Mail.



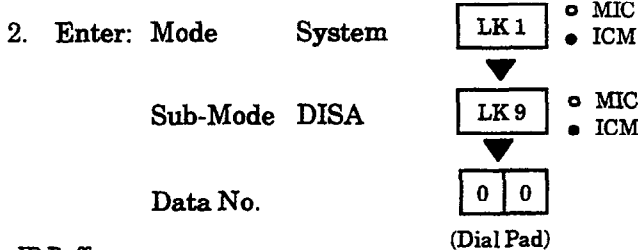


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**DISA ID CODE ASSIGNMENT**

**OPERATION:**

1. Go off-line.



ID Buffer No. (01~96)	Data No.	Title	Setting Data
0 1	: 00	CODE	= 100
-----			
TIME		DISPLAY	

3. Enter data using the dial pad.

Setting Data: 2-digit DISA ID Code: 00~99  
 (00 no data)  
 3-digit DISA ID Code: 000~999  
 (000 no data)  
 4-digit DISA ID Code: 0000~9999  
 (0000 no data)

← [\*], [#] → : To move cursor.

Dial pad [0] ~ [9] : To enter data.

[CNF] key : To access next ID Buffer Number

Default	Description
	If DISA ID Code is assigned as 2-digit: ID Buffer Number 01 ~ 10 = DISA ID Code 10 ~ 19 ID Buffer Number 11 ~ 20 = DISA ID Code 20 ~ 29, etc.
	If DISA ID Code is assigned as 3-digit: ID Buffer Number 01 ~ 96 = DISA ID Code 100 ~ 195
	If DISA ID Code is assigned as 4-digit: ID Buffer Number 01 ~ 10 = DISA ID Code 1000 ~ 1009 ID Buffer Number 11 ~ 20 = DISA ID Code 1010 ~ 1019, etc.

4. Press the TRF key to write the selected data and advance to Memory Block 1-9-02, DISA Password Effect/Invalid Selection.

5. Press the SPKR key to go back on-line.

System	DISA	Data No.
1	9	00

**PC Programming Guide**

TECH	B:E:B	USER	
------	-------	------	--

**NOTES:**

1. DISA ID Code Selection is performed in Memory Block 1-5-24, DISA ID Code Digit Selection.
2. Different DISA ID Codes cannot be assigned to the same ID Buffer Number.
3. If Memory Block 1-5-24, DISA ID Code Digit Selection, is changed from 3 to 4 or 2 digits, each ID buffer must be reassigned.
4. Assign 000 (No Data) for stations that are not installed or stations that are denied DISA access.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-5-24	DISA ID Code Digit Selection	✓

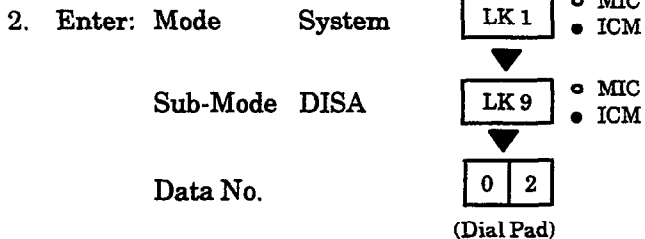
**GENERAL INFORMATION - DISA ID CODE ASSIGNMENT**

This Memory Block specifies the DISA ID Code numbers.

### DISA PASSWORD EFFECT/INVALID SELECTION

#### OPERATION:

1. Go off-line.



System	DISA	Data No.
1	9	02

<b>PC Programming Guide</b>		
TECH	B : E : C	USER

#### ID Buffer

No. (01~96)	Data No.	Title	Setting Data
01	02	PASSWORD	YES
-----			
		TIME	DISPLAY

3. Press the corresponding CO/PBX line key to change data option.

- To change NO to YES, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

Default

#### Setting Data:

NO (LK1) = DISA Password Invalid (Password is not required)

YES (LK2) = DISA Password in Effect (Password is required. Assign with MB 1-1-46~48)

4. Press the TRF key to write the selected data and advance to Memory Block 1-9-00, DISA ID Code Assignment.

5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Refer to Guide to Feature Programming in this manual.

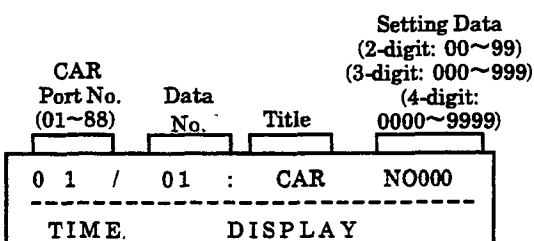
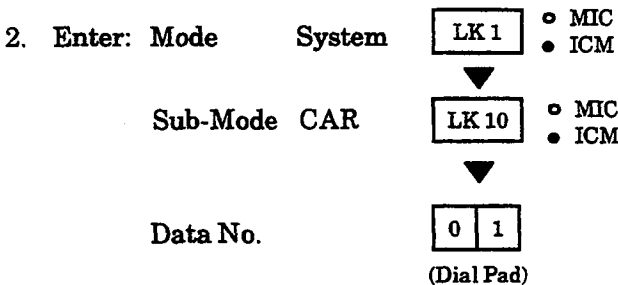
**GENERAL INFORMATION - DISA PASSWORD EFFECT/INVALID SELECTION**

This Memory Block assigns DISA Password as Invalid (LK1) or Effective (LK2). If invalid is assigned, the calling party can use the DISA feature without a DISA Password.

# CALL ARRIVAL KEY NUMBER ASSIGNMENT

**OPERATION:**

1. Go off-line.



3. Enter data using the dial pad.

**Example:** To assign CAR Port Number 01 as CAR No. 200, enter 200 using the dial pad.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter setting data.

CNF key : Next-CAR No.

4. Press the TRF key to write the selected data and advance to Memory Block 1-10-02, Call Arrival Key Master Hunt Number Selection.

5. Press the SPKR key to go back on-line.

Default	All Call Arrival Keys Not Specified (000)
---------	---

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

System	CAR	Data No.	
1	10	01	
<b>PC Programming Guide</b>			
TECH	B:L:C	USER	

**NOTES:**

1. To display Caller ID Indication for normal incoming CO calls and CAR incoming calls, both Caller ID Indication and Ring assignment, must be assigned for the terminal in System Programming. A maximum of two multiline terminals can be assigned system-wide to display caller identification for normal incoming CO calls and CAR incoming calls. A third multiline terminal can be assigned to display caller identification for normal incoming calls per-CO line and for CAR incoming calls per-CAR, using another Memory Block.

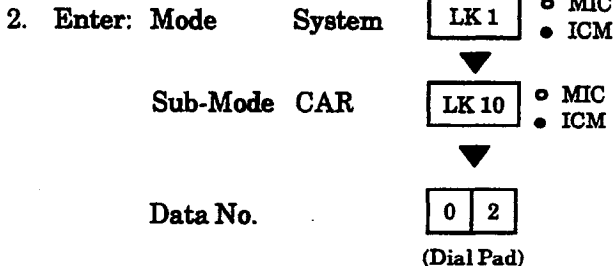
**GENERAL INFORMATION - CALL ARRIVAL KEY NUMBER ASSIGNMENT**

This Memory Block specifies the Call Arrival Key number.

**CALL ARRIVAL KEY MASTER HUNT NUMBER SELECTION**

**OPERATION:**

1. Go off-line.



<b>System</b>		<b>CAR</b>	<b>Data No.</b>
1		10	02
<b>PC Programming Guide</b>			
<b>TECH</b>	<b>B:L:D</b>		<b>USER</b>

**NOTES:**

1. This feature requires system software version 2.50 or higher.

CAR Port No. (01~88)	Data No.	Title	Setting Data
0 1 /	0 2	: MASTER	NO
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change NO to YES, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

■ Default

**CNF** key : Next CAR No.

4. Press the TRF key to write the selected data and advance to Memory Block 1-10-03, Call Arrival Key Hunt Number Forward Assignment.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Refer to Guide to Feature Programming in this manual.

**GENERAL INFORMATION - CALL ARRIVAL KEY MASTER HUNT NUMBER SELECTION**

This Memory Block specifies the assignment of a Master Hunt Number for a Call Arrival Key.







**CALL ARRIVAL KEY TO CALL APPEARANCE BLOCK ASSIGNMENT**

**OPERATION:**

1. Go off-line.

2. Enter: Mode System  ◦ MIC  
● ICM

Sub-Mode CAR  ◦ MIC  
● ICM

Data No.    
(Dial Pad)

CAR Port No. (01~88)	Data No.	Title	Call Appearance Block (00 ~ 47)
0 1 /	05 :	CAP	N000
-----			
TIME	DISP L A Y		

3. Enter data using the dial pad.

Example: To assign CAR Port Number 01 to Call Appearance Block 01, enter 01 using the dial pad.

←  ,  → : To move cursor.

Dial pad  ~  : To enter setting data.

key : Next CAR No.

4. Press the TRF key to write the selected data and advance to Memory Block 1-10-06, Caller ID Display Assignment for Call Arrival Key.

5. Press the SPKR key to go back on-line.

Default	All CARs assigned to Block (06)
---------	---------------------------------

■ Additional Programming

Refer to Guide to Feature Programming in this manual.

System	CAR	Data No.
1	10	05

PC Programming Guide			
TECH	B:L:F	USER	

**NOTES:**

1. This function requires system software version 2.50 or higher.

**GENERAL INFORMATION - CALL ARRIVAL KEY TO CALL APPEARANCE BLOCK ASSIGNMENT**

This Memory Block assigns the Call Arrival Key to a Call Appearance Block.

# CALLER ID DISPLAY ASSIGNMENT FOR CALL ARRIVAL KEY

System	CAR	Data No.
1	10	06
PC Programming Guide		
TECH	A:J:B	USER

### OPERATION:

1. Go off-line.

2. Enter: Mode              System     LK 1    ○ MIC  
     ● ICM

Sub-Mode CAR              LK 10   ○ MIC  
     ● ICM

Data No.                      0 6  
     (Dial Pad)

CAR Port No.	Data No.	Title	Tel Port No. (01~96)
0 1	0 6	CALL ID	0 0
TIME		DISPLAY	

3. Enter data using the dial pad.

Example: To assign CAR Port Number 01 to Call Appearance Block 01, enter 01 using the dial pad.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter setting data.

CNF key : Next CAR No.

- Press the TRF key to write the selected data and advance to Memory Block 1-10-01, Call Arrival Key Number Assignment.
- Press the SPKR key to go back on-line.

Default	Not Specified
---------	---------------

### ■ Additional Programming

Refer to Guide to Feature Programming in this manual.

## GENERAL INFORMATION - CALLER ID ASSIGNMENT FOR CALL ARRIVAL KEY

This Memory Block assigns one multiline terminal per CAR to display Caller ID Indication on incoming CAR calls.

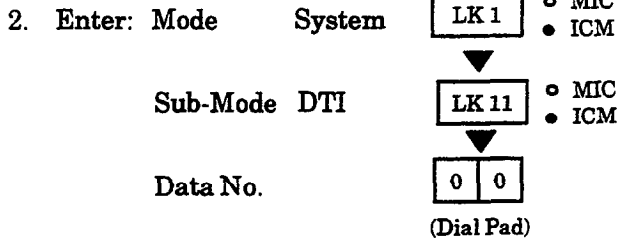
**NOTES:**

- To display Caller ID Indication for normal incoming CO calls and CAR incoming calls, both Caller ID Indication and Ring assignment must be assigned for the terminal in System Programming. A maximum of two multiline terminals can be assigned system-wide to display caller identification for normal incoming CO calls and CAR incoming calls (using Memory Block 1-1-78, Caller ID Display Assignment, for System Mode). A third multiline terminal can be assigned to display caller identification for CAR incoming calls per-CAR, using this Memory Block.

**SIGNAL FORMAT SELECTION**

**OPERATION:**

1. Go off-line.



DTINo. (01~03)	Data No.	Title	Setting Data
01	/ 00	: FRAME	= 24
-----			
TIME	DISPLAY		

3. Press the corresponding CO/PBX Line key to change data option.

- To change ESF to SF, press CO/PBX line key 1.

SF = Superframe Format (12 Multiframe)

ESF = Extended Superframe Format (24 Multiframe)

LK 1	LK 2	LK 3	LK 4
SF (12)	ESF (24)		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-11-01, Clear Channel Selection.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
7-1	Card Interface Slot Assignment	

System	DTI	Data No.
1	11	00

PC Programming Guide			
TECH	A : E : A - C : G	USER	

**NOTES:**

1. A DTI-F( )-10 or DTI-F(A)-20 KTU must be assigned in the system to set this Memory Block.
2. The DTI-F(A)-20 KTU is supported by system software version 3.00 or higher.

**GENERAL INFORMATION - SIGNAL FORMAT SELECTION**

This Memory Block specifies the signal format of the T1 trunk connected to the system. The Signal Format used (12- or 24-Multiframe) depends on the CSU/D mark equipment being used.

## CLEAR CHANNEL SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode System   MIC  
 ICM

Sub-Mode DTI   MIC  
 ICM

Data No.    
 (Dial Pad)

DTI No. (01~03)	Data No.	Title	Setting Data
01 / 01		OBYTE =	ZCS
-----			
TIME	DISPLAY		

3. Press the corresponding CO/PBX Line key to change data option.

- To change ZCS to B8ZS, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
ZCS	B8ZS		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys



Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-11-02, Line Length Selection.

5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
7-1	Card Interface Slot Assignment	

System	DTI	Data No.
1	11	01

PC Programming Guide			
TECH	A:E:A-C:B	USER	

### NOTES:

1. A DTI-F( )-10 or DTI-F(A)-20 KTU must be assigned in the system to set this Memory Block.
2. The DTI-F(A)-20 KTU is supported by system software version 3.00 or higher.

## GENERAL INFORMATION - CLEAR CHANNEL SELECTION

This Memory Block specifies the clear channel ability. If the Zero Byte Time channel is available, the CLK-F-11 Unit cannot extract a clock signal from the T1 trunk. The T1 trunk modifies the Zero Byte Time channel to extract a clock signal for the CLK-F-11 Unit.

## LINE LENGTH SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode System   MIC  
 ICM
- Sub-Mode DTI   MIC  
 ICM
- Data No.
- (Dial Pad)

DTI No. (01~03)	Data No.	Title	Setting Data
01 / 02 :		LINE =	1
-----			
TIME DISPLAY			

3. Press the corresponding CO/PBX line key to change data option.

- To change 0 - 131 Feet to 132 - 262 Feet, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
0 - 131 Feet (1)	132 - 262 Feet (2)	263 - 393 Feet (3)	394 - 524 Feet (4)
LK 5	LK 6	LK 7	LK 8
525 - 655 Feet (5)			

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-11-03, Robbed Bit Signaling Channel Selection.

5. Press the SPKR key to go back on-line.

#### Additional Programming

Memory Block No.	Memory Block Name	Required
7-1	Card Interface Slot Assignment	

System	DTI	Data No.
1	11	02

### PC Programming Guide

TECH	A:E:A-C:C	USER

### NOTES:

- A DTI-F( )-10 or DTI-F(A)-20 KTU must be assigned in the system to set this Memory Block.
- The DTI-F(A)-20 KTU is supported by system software version 3.00 or higher.

### Setting Data:

Line Key	LCD Indication	Description
LK 1	1	0~131 feet
LK 2	2	132~262 feet
LK 3	3	263~393 feet
LK 4	4	394~524 feet
LK 5	5	525~655 feet

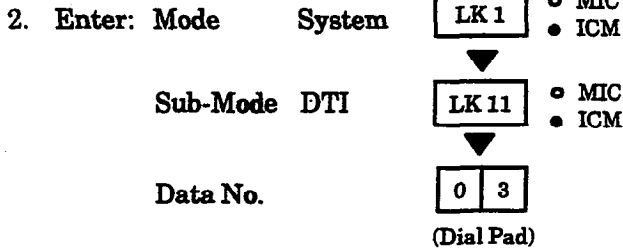
## GENERAL INFORMATION - LINE LENGTH SELECTION

This Memory Block specifies the line length between the CSU/D mark and the DTI KTU. This specifies the equalization values of the detect signal in the DTI KTU.

# ROBBED BIT SIGNALING CHANNEL SELECTION

### OPERATION:

1. Go off-line.



DTI No. (01~03)	Data No.	Title	Setting Data
01 / 03	/ 03	: SIGNAL	AB
-----			
TIME      DISPLAY			

3. Press the corresponding CO/PBX Line key to change data option.

- To change 4-State to 16-State, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
4-State (A and B)	16-State (A, B, C, and D)		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys          Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-11-04, DTI Maintenance Selection.

5. Press the SPKR key to go back on-line.

### Additional Programming

Refer to Guide to Feature Programming in this manual.

System	DTI	Data No.
1	11	03

PC Programming Guide		
TECH	A:E:A-C:E	USER

### NOTES:

1. A DTI-F( )-10 or DTI-F(A)-20 KTU must be assigned in the system to set this Memory Block.
2. The DTI-F(A)-20 KTU is supported by system software version 3.00 or higher.

**WARNING**

| This Memory Block should not be programmed; |  
 | leave it at the default setting. |

| Option LK2 [16-State (A, B, C, and D)] is |  
 | reserved for future use. If programmed, it has no |  
 | affect. |

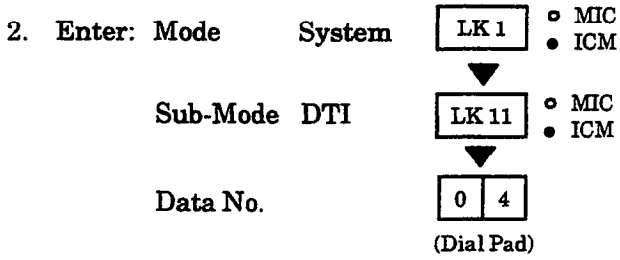
**GENERAL INFORMATION - ROBBED BIT SIGNALING CHANNEL SELECTION**

This Memory Block specifies the robbed bit signaling method (4-state or 16-state) if Extended Superframe Format (ESF) is specified in Memory Block 1-11-00, Signal Format Selection.

## DTI MAINTENANCE SELECTION

### OPERATION:

1. Go off-line.




DTI No. (01~03)	Data No.	Title	Setting Data
01 /	04 :	LBK =	REMOTE
-----			
TIME	DISPLAY		

3. Press the corresponding CO/PBX Line key to change data option.

- To change Remote Loopback to Local Loopback, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
Remote Loopback	Local Loopback		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys       Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-11-05, T1 Channel Selection.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
7-1	Card Interface Slot Assignment	

System	DTI	Data No.
1	11	04
PC Programming Guide		
TECH	A : E : A - C : D	USER

### NOTES:

1. A DTI-F( )-10 or DTI-F(A)-20 must be assigned in the system to set this Memory Block.
2. The DTI-F(A)-20 KTU is supported by system software version 3.00 or higher.

### WARNING

This Memory Block should not be programmed; leave it at the default setting.

Option LK2 (Local Loopback) is reserved for future use. If programmed, it has no affect.

## GENERAL INFORMATION - DTI MAINTENANCE SELECTION

This Memory Block specifies the maintenance method: Remote Loopback or Local Loopback.





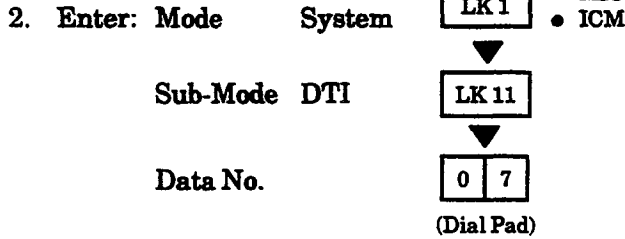


# DTI TRUNK TYPE ASSIGNMENT

System	DTI	Data No.
1	11	07
<b>PC Programming Guide</b>		
TECH	A:E:A-C:H	USER

## OPERATION:

1. Go off-line.



## NOTES:

1. This function requires system software version 3.00 or higher.
2. A DTI-F( )-10 or DTI-F(A)-20 must be assigned in the system to set this Memory Block.
3. If the default setting is changed to E&M or DID, the affected trunks are automatically reassigned to Trunk Group 00. If trunks 00 ~ 08 are affected, default line key assignment for all multiline terminals changes to Not Used and must be reassigned.

DTI No. Data (01~03) No.	Title	Block No. 1~6	Setting Data
01 / 07 :	TRK	(1)	CO
-----			
TIME      DISPLAY			

3. Press the corresponding CO/PBX line key to change data.

- To change DTI Trunk Type from CO to DID, press CO/PBX line key 3.

4. Enter the next TRK No. using the dial pad, and select the corresponding CO/PBX line key to change data.
5. Press the TRF key to write the selected data and advance to Memory Block 1-11-00, Signal Format Selection.
6. Press the SPKR key to go back on-line.

LK 1	LK 2	LK 3	LK 4
CO	E&M	DID	
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys       Default

### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-11-06	Signaling Selection	
7-1	Card Interface Slot Assignment	

### Data

TRK No.	4-Channel Unit		
	DTI No. 1	DTI No. 2	DTI No. 3
1	01~04	25~28	49~52
2	05~08	29~32	53~56
3	09~12	33~36	57~60
4	13~16	37~40	61~64
5	17~20	41~44	N/A
6	21~24	45~48	N/A

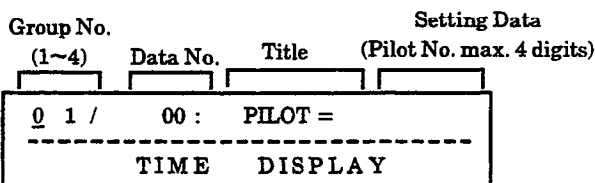
## GENERAL INFORMATION - DTI TRUNK TYPE ASSIGNMENT

This Memory Block assigns the trunk type (CO/DID/E & M Tie line) by 4-channel unit.

## ACD/UCD GROUP PILOT NUMBER ASSIGNMENT

### OPERATION:

- Go off-line.
- Enter: Mode System LK 1 ○ MIC  
○ ICM  
 Sub-Mode ACD/UCD LK 12 ○ MIC  
○ ICM  
 Data No. 0 0  
 (Dial Pad)



- Enter data using the dial pad.
- ← \*, # → : To move cursor.
- Dial pad 0 ~ 9 : To enter data.

Default	Not Specified
---------	---------------

Setting Data:  
 Pilot No. (00~9999)  
 2-digit (00~99)  
 3-digit (000~999)  
 4-digit (0000~9999)

- Press the TRF key to write the selected data and advance to Memory Block 1-12-01, ACD/UCD Group Overflow Destination Assignment.
- Press the SPKR key to go back on-line.

System	ACD/UCD	Data No.
1	12	00

PC Programming Guide			
TECH	A : F : B	USER	

### NOTES:

- The ACD/UCD feature requires system software version 2.00 software or higher.
- The UCD feature requires installation of an MIF-F(U)-10 KTU. The ACD feature requires installation of an MIF-F(A)-10 KTU.
- UCD and ACD cannot be installed in the same system.

#### Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-46	Access Code (1-Digit) Assignment	
1-1-47	Access Code (2-Digit) Assignment	
1-1-48	Access Code (3-Digit) Assignment	
1-2-03	2-, 3-, or 4-Digit Station Number Selection	
1-8-25	ACD/UCD Group Agent Assignment	
1-12-01	ACD/UCD Group Overflow Destination Assignment	

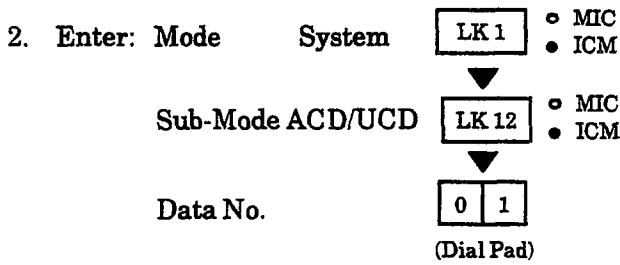
**GENERAL INFORMATION - ACD/UCD GROUP PILOT NUMBER ASSIGNMENT**

This Memory Block specifies the Pilot Number of each ACD/UCD Group where incoming calls are terminated.

### ACD/UCD GROUP OVERFLOW DESTINATION ASSIGNMENT

#### OPERATION:

1. Go off-line.



Group No. (1~4)	Data No.	Title	Setting Data (Sta. No. max. 4 digits)
0 1 /	01:	OVFLW =	
-----			
		TIME	DISPLAY

3. Enter data using the dial pad.

← ,  → : To move cursor.

Dial pad  ~  : To enter data.

Default	Not Specified

#### Setting Data:

- Station No. (00~9999)
  - 2-digit (00~99)
  - 3-digit (000~999)
  - 4-digit (0000~9999)

4. Press the TRF key to write the selected data and advance to Memory Block 1-12-02, ACD/UCD Overflow Timer Selection.
5. Press the SPKR key to go back on-line.

System	ACD/UCD	Data No.
1	12	01

PC Programming Guide			
TECH	A:F:C	USER	

#### NOTES:

1. ACD/UCD Group Pilot Numbers cannot be programmed as the overflow destination.
2. The ACD/UCD feature requires system software version 2.00 or higher.
3. The UCD feature requires installation of an MIF-F(U)-10 KTU. The ACD feature requires installation of an MIF-F(A)-10 KTU.
4. UCD and ACD cannot be installed in the same system.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-46	Access Code (1-Digit) Assignment	
1-1-47	Access Code (2-Digit) Assignment	
1-1-48	Access Code (3-Digit) Assignment	
1-2-03	2-, 3-, or 4-Digit Station Number Selection	
1-8-25	ACD/UCD Group Agent Assignment	

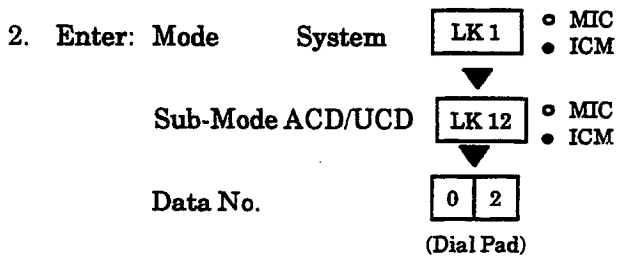
### GENERAL INFORMATION - ACD/UCD GROUP OVERFLOW DESTINATION ASSIGNMENT

This Memory Block specifies the station or Station Hunt Group where the call of each ACD/UCD Group is routed when incoming calls overflow.

## ACD/UCD OVERFLOW TIMER SELECTION

### OPERATION:

1. Go off-line.



Group No. (1~4)	Data No.	Title	Setting Data
0 1 /	02:	OVFTMR=	60
-----			
TIME DISPLAY			

3. Press the corresponding CO/PBX line key to change data option.
- To change 60 seconds to 10 seconds, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
∞	10 sec.	20 sec.	30 sec.
LK 5	LK 6	LK 7	LK 8
60 sec.	120 sec.	180 sec.	240 sec.

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 1-12-00, ACD/UCD Group Pilot Number Assignment.
5. Press the SPKR key to go back on-line.

- Additional Programming  
Refer to Guide to Feature Programming in this manual.

System	ACD/UCD	Data No.
1	12	02
PC Programming Guide		
TECH	A : F : D	USER

### NOTES:

- ACD/UCD Group Pilot Numbers cannot be programmed as the overflow destination.
- The ACD/UCD feature requires system software version 2.00 or higher.
- The UCD feature requires installation of an MIF-F(U)-10 KTU. The ACD feature requires installation of an MIF-F(A)-10 KTU.
- UCD and ACD cannot be installed in the same system.

### GENERAL INFORMATION - ACD/UCD OVERFLOW TIMER SELECTION


This Memory Block specifies the maximum time a waiting ACD/UCD call remains at an ACD/UCD Group before overflowing to a specified Station or Station Hunt Group.

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# TRUNK TO TENANT ASSIGNMENT



## OPERATION:

1. Go off-line.

2. Enter: Mode      Tenant      LK 2       MIC  
     ICM  
      
    Data No.         
    (Dial Pad)

Tenant No. (00-47)	Data No.	Title	Page No.
00 /	01	: TRK-TNT	101
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

  ,   : To move cursor.  
 Dial pad  ~  : To enter data.

- key : Next Tenant No.
- key : Next page.
- key : Previous page.

CO/PBX Line LED	<input checked="" type="checkbox"/> OFF	<input type="checkbox"/> ON
Data	NO (Not Assigned)	YES (Assigned)

- The LED indication changes to indicate the data each time the CO/PBX line key is pressed.

4. Press the TRF key to write the selected data and advance to Memory Block 2-05, Line Key Selection.
5. Press the SPKR key to go back on-line.

### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
2-05	Line Key Selection	
4-09	Telephone to Tenant Assignment	

Tenant	-	Data No.
2	-	01

PC Programming Guide		
TECH	B:K:D	USER

## NOTES:

1. If data is changed while the system is busy, DATA ENTRY is displayed at the programming station until the system becomes idle.

### TRUNK TO TENANT ASSIGNMENT

(continued)

Tenant	-	Data No.
2	-	01

CO/PBX Number (01~64) corresponds to CO/PBX line key.

Page 01 ( CO/PBX 01~08)

LK 1	LK 2	LK 3	LK 4
01	02	03	04
LK 5	LK 6	LK 7	LK 8
05	06	07	08

Page 05 ( CO/PBX 33~40)

LK 1	LK 2	LK 3	LK 4
33	34	35	36
LK 5	LK 6	LK 7	LK 8
37	38	39	40

Default Series 100 and 200	Tenant 00: All CO/PBX lines (01~64) assigned (YES)
	Tenant 01~47: Not assigned

Page 02 ( CO/PBX 09~16)

LK 1	LK 2	LK 3	LK 4
09	10	11	12
LK 5	LK 6	LK 7	LK 8
13	14	15	16

Page 06 ( CO/PBX 41~48)

LK 1	LK 2	LK 3	LK 4
41	42	43	44
LK 5	LK 6	LK 7	LK 8
45	46	47	48

Default Series 250 or higher	Tenant 00: CO/PBX lines 01~64 assigned (YES)
	Tenant 01~47: Not assigned

Page 03 ( CO/PBX 17~24)

LK 1	LK 2	LK 3	LK 4
17	18	19	20
LK 5	LK 6	LK 7	LK 8
21	22	23	24

Page 07 ( CO/PBX 49~56)

LK 1	LK 2	LK 3	LK 4
49	50	51	52
LK 5	LK 6	LK 7	LK 8
53	54	55	56

Page 04 ( CO/PBX 25~32)

LK 1	LK 2	LK 3	LK 4
25	26	27	28
LK 5	LK 6	LK 7	LK 8
29	30	31	32

Page 08 (CO/PBX 57~64)

LK 1	LK 2	LK 3	LK 4
57	58	59	60
LK 5	LK 6	LK 7	LK 8
61	62	63	64

CO/PBX line keys

### GENERAL INFORMATION - TRUNK TO TENANT ASSIGNMENT

This Memory Block specifies assignment of CO/PBX lines to each tenant.

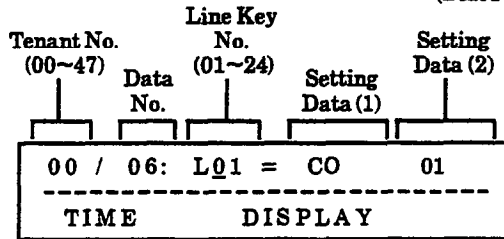
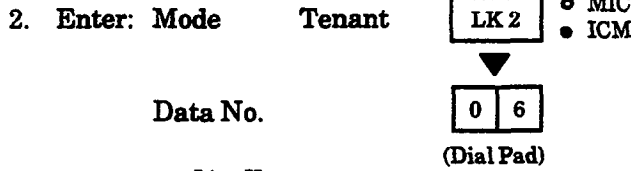




# LINE KEY SELECTION FOR TENANT MODE

## OPERATION:

1. Go off-line.



3. Press the corresponding CO/PBX line key to change data option.

LK 1	LK 2	LK 3	LK 4
Not Specified	CO/PBX Line	*CFW - BNA	*CFW - ALL
LK 5	LK 6	LK 7	LK 8
† Call Appearance	Feature Access	Trunk Group	Route Advance

LK 9	LK 10	LK 11	LK 12
Secondary Incoming Extension	† Call Arrival Key	Microphone Key	Headset
LK 13	LK 14	LK 15	LK 16
‡ Scroll Key (Used with Caller ID)	* DND On/Off	* Log On/Off	* BGM On/Off

CO/PBX line keys      † Series 250 or higher.  
                                  ‡ Series 450 or higher.  
                                  \* Series 500 or higher.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter data.

CNF key : Next Tenant No.

Default	Tenant 00: CO/PBX lines 01~05
	Tenant 01~47: Not assigned

Tenant	-	Data No.
2	-	06

### PC Programming Guide

TECH	B:K:C	USER
------	-------	------

Example: To assign Trunk Group 05 to CO/PBX line key 1.

4. Press CO/PBX line key 7; TKGP is displayed.

5. Enter 05 (for RT 05) using the dial pad.

6. Press the TRF key; data of CO/PBX line keys 01~24 is displayed successively.

7. After entering data for CO/PBX line key 24, press the TRF key to write the selected data and advance to Memory Block 2-07, System Speed Dial Display Assignment.

8. Press the SPKR key to go back on-line.

This Memory Block assigns the following functions to each of the CO/PBX line keys on each telephone in a tenant specified as Tenant Mode in Memory Block 2-05, Line Key Selection.

#### Functions:

- Not specified (NON)
  - CO/PBX Line (CO) 01~64
  - \*CFW - BNA
  - \*CFW - ALL
  - † Call Appearance (C) 00 ~ 47 - 01~24 (Refer to Note below)
  - Feature Access (FA) 01~10
  - Trunk Group (TKGP) 01~32
  - Route Advance Block (ADV) 01~16
  - Secondary Incoming Extension (SIE) 01~96
  - † Call Arrival Keys (CAR) 01~88
  - Microphone (MIC)
  - Headset (H SET)
  - ‡ Scroll Key
  - \* DND/Break Mode
  - \* Log On/Off
  - \* BGM On/Off
- † Series 250 or higher.  
 ‡ Series 450 or higher.  
 \* Series 500 or higher.

Note: Each Call Appearance Block may have a maximum of 24 Call Appearance Keys.

#### Additional Programming

Memory Block No.	Memory Block Name	Required
2-05	Line Key Selection	✓

Continued on next page.

**LINE KEY SELECTION FOR TENANT MODE**

(continued)

Tenant	-	Data No.
2	-	06

Line Key	Setting Data 1	LCD Indication	Setting Data 2
1	Not Specified	NON	N/A
2	CO	CO	01~64
3	*CFW - BNA	FW BNA	N/A
4	*CFW - ALL	FW ALL	N/A
5	Call Appearance Block (00~47)	C	Call Appearance Key 01~24
6	Feature Access	FA	01~10
7	Trunk Group	TKGP	01~32
8	Route Advance	ADV	01~16
9	Secondary Incoming Extension	SIE	Telephone Port No. 01~96
10	Call Arrival Key	CAR	01~88
11	Microphone	MIC	N/A
12	Headset	H SET	N/A
13	‡ Scroll Key	SCROLL	N/A
14	*DND On/Off	DND	N/A
15	*Log On/Off	LOG	N/A
16	*BGM On/Off	BGM	N/A

‡ Series 450 or higher.

\* Series 500 or higher.

**NOTES:**

1. Specify CO/PBX line for square system and Call Appearance for call appearance system.
2. Specify Call Appearance as the call appearance (number of Call Appearance Block numbers from Memory Block 4-43, Station to Call Appearance Block Assignment).
3. A maximum of 56 station ports in the Level II system and 96 station ports in the Level II Advanced system are available to be shared by the ESI, SLI, and LLT KTUs.
4. The Call Arrival Key and Call Appearance features require system software version 2.50 or higher.
5. The Scroll Key is used for confirming Caller ID Number.

**GENERAL INFORMATION - LINE KEY SELECTION FOR TENANT MODE**

This Memory Block allows the assignment of functions to each of the CO/PBX line keys on each telephone in a tenant specified as Tenant Mode in Memory Block 2-05, Line Key Selection.





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**TELEPHONE NUMBER TO TRUNK OR  
DIRECTORY NUMBER TO ISDN TRUNK  
ASSIGNMENT  
OPERATION:**

<b>CO/PBX</b>	-	<b>Data No.</b>
3	-	00
<b>PC Programming Guide</b>		
<b>TECH</b>	<b>B:C:B:I</b>	<b>USER</b>

1. Go off-line.

2. Enter: Mode CO/PBX   MIC  
 ICM

CO/PBX No. (01~64)      Setting Data (13 digits max.)

0 1 / -	-
TIME	DISPLAY

**NOTES:**

- If the Trunk is an ISDN trunk, data must be assigned using the Directory Number that is provided by the local telco. When assigning phone numbers in the system, do not use the area code; use only the 7-digit phone number.

3. Enter data using the dial pad.  
 • To program 214-751-7600, enter 214-751-7600 using the dial pad.

←  ,  → : To move cursor  
 Dial pad  ~  : To enter data (13 digits maximum)

key : - (Hyphen)  
 key : Space (Clear after hold)  
 key : Next CO/PBX Line No.

Default

4. Press the **TRF** key to write the selected data and advance to Memory Block 3-02, Trunk Status Selection.  
 5. Press the **SPKR** key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

**GENERAL INFORMATION - TELEPHONE NUMBER TO TRUNK ASSIGNMENT**

This Memory Block specifies telephone numbers for the CO/PBX lines accommodated so that the telephone number of a seized CO/PBX line is displayed on the LCD of the telephone when originating or answering a CO/PBX call. (13 digits maximum)

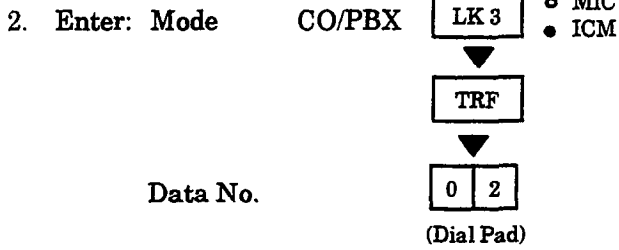
# TRUNK STATUS SELECTION

CO/PBX	-	Data No.
3	-	02

PC Programming Guide			
TECH	B : C : B : K	USER	

### OPERATION:

1. Go off-line.



CO/PBX No. (01~64)	Data No.	Setting Data
0 1 /	02	OUT & IN
-----		
TIME		DISPLAY

3. Press the corresponding CO/PBX line key to change data option.

- To change OUT & IN to IN, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
OUT & IN	IN		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys   Default

**CNF** key : Next CO/PBX Line No.

4. Press the TRF key to write the selected data and advance to Memory Block 3-03, Trunk-to-Trunk Group Assignment.

5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

## GENERAL INFORMATION - TRUNK STATUS SELECTION

This Memory Block specifies whether a CO/PBX line is used for call origination and termination or termination only.





# TRUNK-TO-TRUNK TRANSFER YES/NO SELECTION

## OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX **LK 3**  MIC  ICM

**TRF**

Data No.

**0 4**

(Dial Pad)

CO/PBX No. (01~64)	Data No.	Title	Setting Data
0 1 /	04 :	TRF	NO
-----		TIME DISPLAY	

← **\*** , **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter data.

**CNF** key : Next CO/PBX Line No.

3. Enter data using the dial pad.

- To change NO to YES, press CO/PBX line key 2.

<b>LK 1</b>	LK 2	LK 3	LK 4
<b>NO</b>	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-05, Trunk Incoming Answer Mode Selection.

5. Press the SPKR key to go back on-line.

### Additional Programming

Memory Block No.	Memory Block Name	Required
1-8-07	Class of Service (Attendant) Feature Selection 1	
1-8-08	Class of Service (Station) Feature Selection 2	
3-05	Trunk Incoming Answer Mode Selection	
3-06	Automatic Tandem Trunk Assignment	
5-01	Tie Line Networking Tandem Connection Assignment	

CO/PBX	-	Data No.
3	-	04
PC Programming Guide		
TECH	B:C:B:M	USER

### NOTES:

- YES must be assigned for both trunks to be connected via the Trunk-to-Trunk Transfer or an Automatic Trunk-to-Trunk Transfer feature.

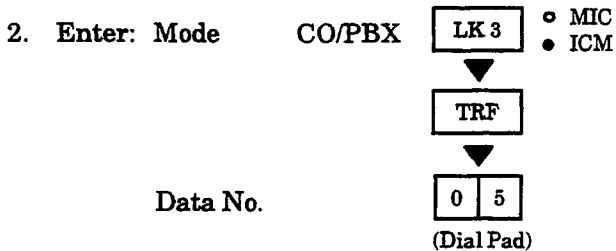
## GENERAL INFORMATION - TRUNK-TO-TRUNK TRANSFER YES/NO SELECTION

This Memory Block specifies whether or not to allow Trunk-to-Trunk Transfer.

# TRUNK INCOMING ANSWER MODE SELECTION

## OPERATION:

1. Go off-line.



Data No.

CO/PBX No. (01~64)	Data No.	Setting Data
0 1 /	05	NO ASSIGN
-----		
TIME		DISPLAY

3. Press the corresponding CO/PBX line key to change data option.

- To change Normal to Automated Attendant/DISA, press CO/PBX line key 3.

LK 1	LK 2	LK 3	LK 4
Normal	Automatic Trunk-to-Trunk Transfer	Automated Attendant / DISA	
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

Default

**CNF** key : Next CO Port No.

4. Press the TRF key to write the selected data and advance to Memory Block 3-06, Automatic Tandem Trunk Assignment.

5. Press the SPKR key to go back on-line.

### ■ Additional Programming

Refer to Guide to Feature Programming in this manual.

CO/PBX	-	Data No.
3	-	05
<b>PC Programming Guide</b>		
TECH	B : C : B : J	USER

### Setting Data:

Line Key	LCD Indication when selected	Definition
LK1	NO ASSIGN	Normal
LK2	TANDEM TRF	Automatic Trunk-to-Trunk Transfer
LK3	AA	Automated Attendant / DISA

## GENERAL INFORMATION - TRUNK INCOMING ANSWER MODE SELECTION

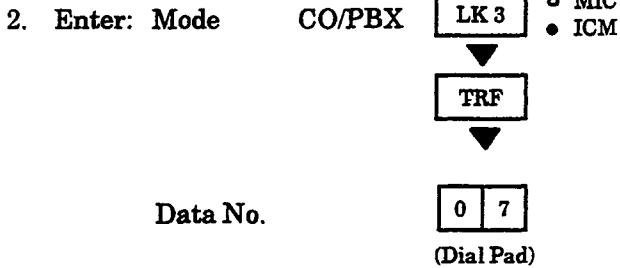
This Memory Block specifies the incoming answer mode (Automatic Trunk-to-Trunk Transfer, Automated Attendant, or DISA) per-outside line.



# CO/PBX RINGING VARIATION SELECTION

## OPERATION:

1. Go off-line.




CO/PBX No. (01~64)	Data No.	Title	Setting	Data
0 1 /	0 7	DSTRING	=	M
-----				
TIME		DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change M to H, press CO/PBX line key 3.

LK 1	LK 2	LK 3	LK 4
Medium (M)	Low (L)	High (H)	
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

**CNF** key : Next CO/PBX Line No.

4. Press the TRF key to write the selected data and advance to Memory Block 3-14, Tie/DID Line Type Assignment.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-28	Distinctive Ringing by Telephone or CO Selection	

CO/PBX	-	Data No.
3	-	07
PC Programming Guide		
TECH	B:C:B:C	USER

## NOTES:

- This Memory Block is not applicable if Telephone is selected in Memory Block 1-1-28, Distinctive Ringing by Telephone or CO Selection.
- High, medium or low ringing tone follows when transferring calls.

### GENERAL INFORMATION - CO/PBX RINGING VARIATION SELECTION

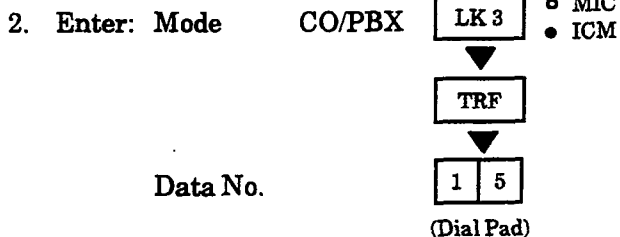
This Memory Block specifies a ringing tone (Low, Medium, or High) for each CO/PBX line.



### TRUNK DTMF DURATION/INTERDIGIT SELECTION

**OPERATION:**

1. Go off-line.



CO/PBX No.	Data	Title	Setting Data
(01~64)	No.		
0 1 /	15 :	MF	100/70
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change Digit DTMF Duration - 100 ms. and Interdigit Time - 70 ms. to D.T - 70 ms. and I.T. to 60 ms., press CO/PBX line key 1.

LK 1		LK 2		LK 3		LK 4	
D.D.	I.T.	D.D.	I.T.	D.D.	I.T.	D.D.	I.T.
70 ms.	60 ms.	100 ms.	70 ms.	400 ms.	100 ms.	600 ms.	100 ms.
LK 5		LK 6		LK 7		LK 8	
D.D.	I.T.						
900 ms.	200 ms.						

CO/PBX line keys  Default

**CNF** key : Next CO/PBX Line No.

\*D.D. = DTMF Digit Duration  
 I.T. = Interdigit Time

4. Press the TRF key to write the selected data and advance to Memory Block 3-16, Tie Line Prepause Time Selection.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
3-92	Trunk (Installed, DP/DTMF) Selection	

CO/PBX	-	Data No.
3	-	15

PC Programming Guide			
TECH	B : C : B : D	USER	

**NOTES:**

1. When DTMF is selected for the CO line in Memory Block 3-92, Trunk (Installed, DP/DTMF) Selection, specify the time duration between sending the DTMF signal and sending the next signal.
2. This is also used for Tie lines.
3. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and system software version 3.00 or higher are required.

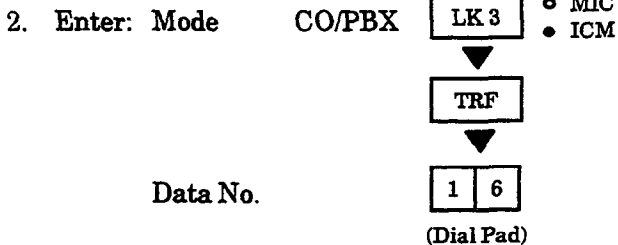
### GENERAL INFORMATION - TRUNK DTMF DURATION/INTERDIGIT SELECTION

This Memory Block specifies the tone duration and interdigit time of DTMF signals.

# TIE LINE PREPAUSE TIME SELECTION

## OPERATION:

1. Go off-line.



CO/PBX	-	Data No.
3	-	16
<b>PC Programming Guide</b>		
TECH	A:D:C:I	USER

## NOTES:

1. Prepause time differs according to the acknowledgment signaling method.
2. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and system software version 3.00 or higher are required.

CO/PBX No. (01~64)	Data No.	Setting Title	Page Data	Page No.
0 1 /	16	PRE	0	1
-----		TIME DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change 0 seconds to 5.0 seconds, press CO/PBX line key 8.

- RECALL** key : Next page.
- FNC** key : Previous page.
- CNF** key : Next CO/PBX Line No.

### Page 1

LK 1	LK 2	LK 3	LK 4
0 sec.	0.5 sec.	1.0 sec.	1.5 sec.
LK 5	LK 6	LK 7	LK 8
2.0 sec.	3.0 sec.	4.0 sec.	5.0 sec.

### Page 2

LK 1	LK 2	LK 3	LK 4
6.0 sec.	7.0 sec.	8.0 sec.	9.0 sec.
LK 5	LK 6	LK 7	LK 8
10.0 sec.	11.0 sec.	12.0 sec.	13.0 sec.

CO/PBX line keys   Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-17, Tie Line Answer Detect Time Selection.
5. Press the SPKR key to go back on-line.

- Additional Programming  
Refer to Guide to Feature Programming in this manual.

## GENERAL INFORMATION - TIE LINE PREPAUSE TIME SELECTION

This Memory Block specifies the time (prepause) when the originating side becomes able to send dial pulse or DTMF to the distant system.



# TIE LINE ANSWER DETECT TIME SELECTION

CO/PBX	-	Data No.
3	-	17

PC Programming Guide			
TECH	A:D:C:A	USER	

## OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX **LK 3**  MIC  ICM



Data No.

CO/PBX No.	Data No.	Title	Setting Data	Page No.
0 1 /	17	ANS	520	1
-----				
TIME DISPLAY				

3. Press the corresponding CO/PBX line key to change data option.

- To change 520 ms. to 910 ms., press CO/PBX line key 8.

- RECALL** key : Next page.
- FNC** key : Previous page.
- CNF** key : Next CO/PBX Line No.

### Page 1

LK 1	LK 2	LK 3	LK 4
0 ms.	130 ms.	260 ms.	390 ms.
LK 5	LK 6	LK 7	LK 8
520 ms.	650 ms.	780 ms.	910 ms.

### Page 2

LK 1	LK 2	LK 3	LK 4
1040 ms.	1170 ms.	1300 ms.	1430 ms.
LK 5	LK 6	LK 7	LK 8
1560 ms.	1690 ms.	1820 ms.	1950 ms.

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-18, Tie Line Release Detect Time Selection.
5. Press the SPKR key to go back on-line.

■ Additional Programming  
Refer to Guide to Feature Programming in this manual.

## NOTES:

1. Answering a call may not be possible if the CO answer detect time is too long.
2. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and system software version 3.00 or higher are required.

## GENERAL INFORMATION - TIE LINE ANSWER DETECT TIME SELECTION

This Memory Block specifies the duration between the time when the receiving 120/Level II/Level II Advanced system answers (off-hook) and the time when it is recognized as an answer.

## TIE LINE RELEASE DETECT TIME SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX **LK 3** • MIC  
• ICM



Data No. 1 8  
 (Dial Pad)

CO/PBX No. (01-64)	Data No.	Title	Setting Data	Page No.
0 1 /	18 :	RLS	520	1
-----				
TIME		DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change 520 ms. to 910 ms., press CO/PBX line key 8.

- RECALL** key : Next page.
- FNC** key : Previous page.
- CNF** key : Next CO/PBX Line No.

Page 1

LK 1	LK 2	LK 3	LK 4
0 ms.	130 ms.	260 ms.	390 ms.
LK 5	LK 6	LK 7	LK 8
520 ms.	650 ms.	780 ms.	910 ms.

Page 2

LK 1	LK 2	LK 3	LK 4
1040 ms.	1170 ms.	1300 ms.	1430 ms.
LK 5	LK 6	LK 7	LK 8
1560 ms.	1690 ms.	1820 ms.	1950 ms.

CO/PBX Line Key ■ Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-19, Tie Line/CO/PBX Incoming Signal Detect Time Selection.
5. Press the SPKR key to go back on-line.

CO/PBX	-	Data No.
3	-	18
<b>PC Programming Guide</b>		
TECH	A:D:C:J	USER

### NOTES:

1. Specify distinguishing circuit release from on-hook, noise, and temporary interruption. There are four probable situations for CO release detection.
  - a. Called side hangs up first. The circuit is considered to be released 92 ms. + specified time after the other party disconnects the call.
  - b. Called side hangs up second. The circuit is considered to be released when the specified time has elapsed after the other party hangs up.
  - c. Originating side hangs up first. The circuit is considered to be released 92 ms. + specified time after the other party hangs up.
  - d. Originating side hangs up second. The circuit is considered to be released when the specified time has elapsed after the other party hangs up.
2. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and system software version 3.00 or higher are required.

- Additional Programming  
 Refer to Guide to Feature Programming in this manual.

## GENERAL INFORMATION - TIE LINE RELEASE DETECT TIME SELECTION

This Memory Block specifies the duration between the time when the circuit disconnection is detected on the Tie line on the distant system side or intrasystem side and the time when it is recognized as Tie line release.

### TIE LINE/CO/PBX INCOMING SIGNAL DETECT TIME SELECTION

**OPERATION:**

1. Go off-line.

2. Enter: Mode CO/PBX **LK 3** ● MIC  
● ICM

**TRF**

Data No.

**1 9**

(Dial Pad)

CO/PBX No. (01~64)	Data No.	Setting Title	Page Data	Page No.
0 1 /	19 :	INC	03	1
-----				
TIME DISPLAY				

3. Press the corresponding CO/PBX line key to change data option.

Example: In Wink Start method.

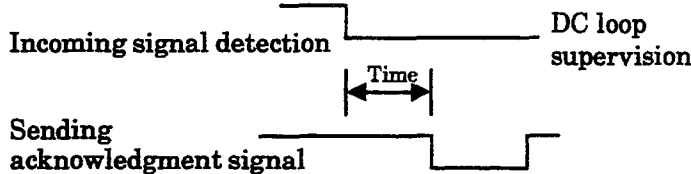
- To change 390 ms. to 910 ms., press CO/PBX line key 8.

- RECALL** key : Next page.
- FNC** key : Previous page.
- CNF** key : Next CO/PBX Line No.

4. Press the TRF key to write the selected data and advance to Memory Block 3-20, Tie Line Loop Off-Guard Time Selection.

5. Press the SPKR key to go back on-line.

**Receiving Side**



Sending acknowledgment signal

■ Additional Programming

Memory Block No.	Memory Block Name	Required
3-14	Tie/DID Line Type Assignment	

CO/PBX	-	Data No.
3	-	19
<b>PC Programming Guide</b>		
TECH	A : D : C : E	USER

\* In Wink Start method

Page 1

LK 1	LK 2	LK 3	LK 4
0 ms. (00)	130 ms. (01)	260 ms. (02)	390 ms. (03)
LK 5	LK 6	LK 7	LK 8
520 ms. (04)	650 ms. (05)	780 ms. (06)	910 ms. (07)

Page 2

LK 1	LK 2	LK 3	LK 4
1040 ms. (08)	1170 ms. (09)	1300 ms. (10)	1430 ms. (11)
LK 5	LK 6	LK 7	LK 8
1560 ms. (12)	1690 ms. (13)	1820 ms. (14)	1950 ms. (15)

\* In Delay method

Page 1

LK 1	LK 2	LK 3	LK 4
0 ms. (00)	30 ms. (01)	60 ms. (02)	90 ms. (03)
LK 5	LK 6	LK 7	LK 8
120 ms. (04)	150 ms. (05)	180 ms. (06)	210 ms. (07)

Page 2

LK 1	LK 2	LK 3	LK 4
240 ms. (08)	270 ms. (09)	300 ms. (10)	330 ms. (11)
LK 5	LK 6	LK 7	LK 8
360 ms. (12)	390 ms. (13)	420 ms. (14)	450 ms. (15)

\* In COI

Page 1

LK 1	LK 2	LK 3	LK 4
50 ms. (00)	100 ms. (01)	150 ms. (02)	200 ms. (03)
LK 5	LK 6	LK 7	LK 8
250 ms. (04)	300 ms. (05)	350 ms. (06)	400 ms. (07)

Page 2

LK 1	LK 2	LK 3	LK 4
450 ms. (08)	500 ms. (09)	550 ms. (10)	600 ms. (11)
LK 5	LK 6	LK 7	LK 8
650 ms. (12)	700 ms. (13)	750 ms. (14)	800 ms. (15)

CO/PBX line keys

Default

**NOTES:**

1. For second dial tone method and immediate method, the time is fixed at 30 ms.
2. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and system software version 3.00 or higher are required.

### GENERAL INFORMATION - TIE LINE/CO/PBX INCOMING SIGNAL DETECT TIME SELECTION

This Memory Block specifies the duration between the time when the incoming signal from another system is detected and the time when acknowledgment signal is sent out.



### TIE LINE LENGTH OF WINK SIGNAL SELECTION

#### OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX **LK 3**  MIC  ICM



Data No.

(Dial Pad)

CO/PBX No. (01~64)	Data No.	Title	Setting Data	Page No.
0 1 /	21	WINK	180	1 1
-----				
TIME		DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change 180 ms. to 240 ms., press CO/PBX line key 8.

- RECALL** key : Next page.
- FNC** key : Previous page.
- CNF** key : Next CO/PBX Line No.

Page 1

LK 1	LK 2	LK 3	LK 4
30 ms.	60 ms.	90 ms.	120 ms.
LK 5	LK 6	LK 7	LK 8
150 ms.	180 ms.	210 ms.	240 ms.

Page 2

LK 1	LK 2	LK 3	LK 4
270 ms.	300 ms.	330 ms.	360 ms.
LK 5	LK 6	LK 7	LK 8
390 ms.	420 ms.	450 ms.	480 ms.

CO/PBX line keys Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-22, Tie Line Length of Delay Signal Selection.

5. Press the SPKR key to go back on-line.

CO/PBX	-	Data No.
3	-	21

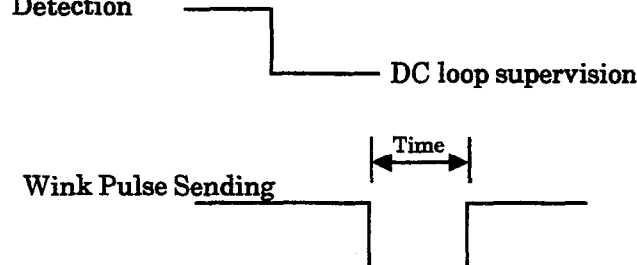
PC Programming Guide			
TECH	A:D:C:L	USER	

#### NOTES:

- Specify Wink Start method in Memory Block 3-14 (Tie/DID Line Type Assignment).
- This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and System software version 3.00 or higher are required.

Receiving Side

Receiving Signal Detection



#### Additional Programming

Memory Block No.	Memory Block Name	Required
3-14	Tie/DID Line Type Assignment	

### GENERAL INFORMATION - TIE LINE LENGTH OF WINK SIGNAL SELECTION

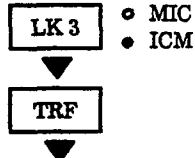
This Memory Block specifies the time a wink pulse is sent to another system.

## TIE LINE LENGTH OF DELAY SIGNAL SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX **LK 3** • MIC • ICM



Data No. 2 2  
(Dial Pad)

CO/PBX No. (01~64)	Data No.	Title	Setting Data	Page No.
0 1 /	22	DELY	300	1
-----				
TIME		DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change 300 ms. to 2100 ms., press CO/PBX line key 8.

- RECALL key : Next page.
- FNC key : Previous page.
- CNF key : Next CO/PBX Line No.

Page 1

LK 1	LK 2	LK 3	LK 4
0 ms.	300 ms.	600 ms.	900 ms.
LK 5	LK 6	LK 7	LK 8
1200 ms.	1500 ms.	1800 ms.	2100 ms.

Page 2

LK 1	LK 2	LK 3	LK 4
2400 ms.	2700 ms.	3000 ms.	3300 ms.
LK 5	LK 6	LK 7	LK 8
3600 ms.	3900 ms.	4200 ms.	4500 ms.

CO/PBX line keys  Default

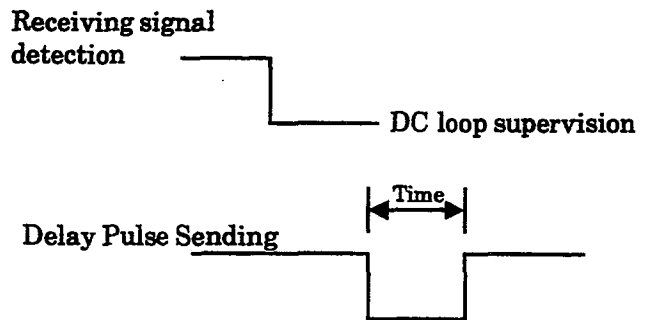
4. Press the TRF key to write the selected data and advance to Memory Block 3-23, Tie Line Outgoing Timeout Selection.
5. Press the SPKR key to go back on-line.

CO/PBX	-	Data No.
3	-	22
<b>PC Programming Guide</b>		
TECH	A:D:C:C	USER

### NOTES:

1. Specify Delay Method in Memory Block 3-14, Tie/DID Line Type Assignment.

Receiving Side



2. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and System software version 3.00 or higher are required.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
3-14	Tie/DID Line Type Assignment	

**GENERAL INFORMATION - TIE LINE LENGTH OF DELAY SIGNAL SELECTION**

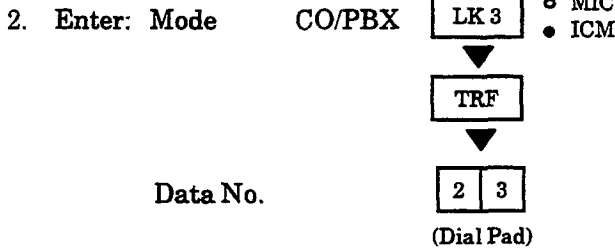
This Memory Block specifies the time a delay pulse is sent to another system.

# TIE LINE OUTGOING TIMEOUT SELECTION

CO/PBX	-	Data No.
3	-	23
<b>PC Programming Guide</b>		
TECH	A:D:C:H	USER

## OPERATION:

1. Go off-line.



CO/PBX No.	Data No.	Title	Setting Data	Page No.
0 1 /	23	OGTM	12s	2
-----				
TIME		DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change 12 sec. to 7 sec., press the **RECALL** key to turn to Page 1.
- Press CO/PBX line key 8.

- RECALL** key : Next page.
- FNC** key : Previous page.
- CNF** key : Next CO/PBX Line No.

### Page 1

LK 1	LK 2	LK 3	LK 4
No Limit	1 sec.	2 sec.	3 sec.
LK 5	LK 6	LK 7	LK 8
4 sec.	5 sec.	6 sec.	7 sec.

### Page 2

LK 1	LK 2	LK 3	LK 4
8 sec.	9 sec.	10 sec.	11 sec.
LK 5	LK 6	LK 7	LK 8
12 sec.	13 sec.	14 sec.	15 sec.

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-24, Tie Line Incoming Interdigit Timeout Selection.

5. Press the SPKR key to go back on-line.

## NOTES:

1. Specify a maximum interval before the Tie line sender times out.
2. A timeout occurs when:
  - The calling station fails to send dial pulses within the time interval specified in this Memory Block after the prepause time.
  - The calling station, after sending dial pulses, fails to send the next dial pulse within the time interval specified.
3. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and System software version 3.00 or higher are required.

- Additional Programming
- Refer to Guide to Feature Programming in this manual.

## GENERAL INFORMATION - TIE LINE OUTGOING TIMEOUT SELECTION

This Memory Block specifies the maximum time interval between the origination of an outgoing call and when the call is dropped.

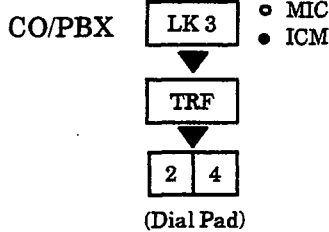
## TIE LINE INCOMING INTERDIGIT TIMEOUT SELECTION

CO/PBX	-	Data No.
3	-	24
<b>PC Programming Guide</b>		
TECH	A:D:C:D	USER

### OPERATION:

1. Go off-line.

2. Enter: Mode



4. Press the TRF key to write the selected data and advance to Memory Block 3-25, Tie Line Wink/Delay Signal Detect Timeout Selection.

5. Press the SPKR key to go back on-line.

Data No.

### NOTES:

1. Specify a maximum effective interval between the gaps of incoming address signals.
2. A timeout occurs when:
  - A dial pulse is not received within the time specified by this Memory Block after the receiving side detects the off-hook signal.
  - The next dial pulse is not received within the time specified by this Memory Block after the receiving side detects (receives) a dial pulse.
3. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and System software version 3.00 or higher are required.

CO/PBX No. (01~64)	Data No.	Setting Title	Setting Data	Page No.
0 1 /	24	INCOM	6s	1 1
-----				
TIME		DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change 6 sec. to 7 sec., press CO/PBX line key 8.

<b>RECALL</b> key	:	Next page.
<b>FNC</b> key	:	Previous page.
<b>CNF</b> key	:	Next CO/PBX Line No.

Page 1

LK 1	LK 2	LK 3	LK 4
No Limit	1 sec.	2 sec.	3 sec.
LK 5	LK 6	LK 7	LK 8
4 sec.	5 sec.	6 sec.	7 sec.

Page 2

LK 1	LK 2	LK 3	LK 4
8 sec.	9 sec.	10 sec.	11 sec.
LK 5	LK 6	LK 7	LK 8
12 sec.	13 sec.	14 sec.	15 sec.

CO/PBX line keys  Default

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

## GENERAL INFORMATION - TIE LINE INCOMING INTERDIGIT TIMEOUT SELECTION

This Memory Block specifies a time interval during the incoming call detection process. If an address signal is not received within a specified time, an error tone is returned to the other system.







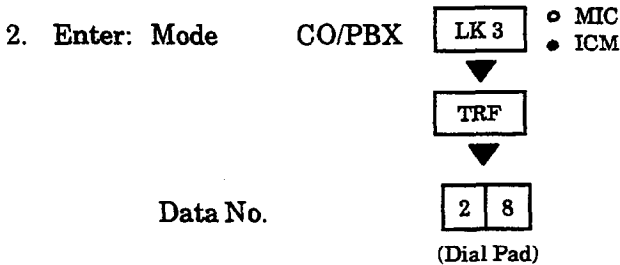


# TIE LINE REORDER TONE SELECTION

CO/PBX	-	Data No.
3	-	28
<b>PC Programming Guide</b>		
TECH	A:D:A:F	USER

### OPERATION:

1. Go off-line.

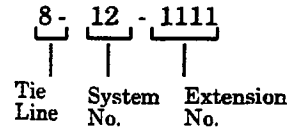


### NOTES:

1. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and System software version 3.00 or higher are required.

CO/PBX No. (01~64)	Data No.	Title	Setting Data
0 1 /	28	ROT	YS
-----			
TIME		DISPLAY	

[Example]



3. Press the corresponding CO/PBX line key to change data option.

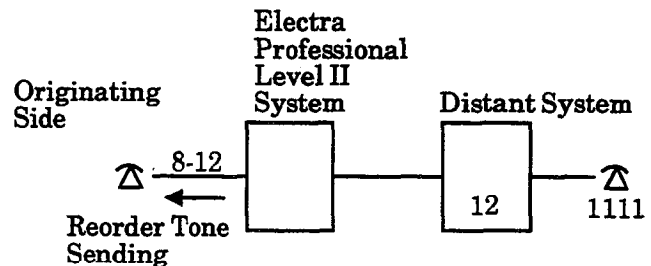
- To change YES to NO, press CO/PBX line key 1.

CNF key : Next CO/PBX Line No.

LK 1	LK 2	LK 3	LK 4
Not Sending (NO)	Sending (YES)		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

Default



4. Press the TRF key to write the selected data and advance to Memory Block 3-29, Tie Line Internal Transmit Pad Selection.

5. Press the SPKR key to go back on-line.

#### Additional Programming

Memory Block No.	Memory Block Name	Required
3-14	Tie/DID Line Type Assignment	

## GENERAL INFORMATION - TIE LINE REORDER TONE SELECTION

This Memory Block specifies whether or not to send a reorder tone to the originating station when the number of a distant system is used to originate a call over a Tie line.

## TIE LINE INTERNAL TRANSMIT PAD SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX LK 3 ● MIC  
● ICM



Data No. 2 9  
(Dial Pad)

CO/PBX No. (01~64)	Data No.	Title	Setting Data	Page No.
0 1 /	29	PADIT	2	1
-----				
TIME		DISPLAY		

3. Press the corresponding CO/PBX line key to change data-option.

- To change 2 dB to 6 dB sec., press CO/PBX line key 3.

- RECALL key : Next page.
- FNC key : Previous page.
- CNF key : Next CO/PBX Line No.

Page 1

LK 1	LK 2	LK 3	LK 4
2 dB	4 dB	6 dB	8 dB
LK 5	LK 6	LK 7	LK 8
12 dB	16 dB	S1	S2

Page 2

LK 1	LK 2	LK 3	LK 4
0 dB			
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-30, Tie Line Internal Receive Pad Selection.
5. Press the SPKR key to go back on-line.

CO/PBX	-	Data No.
3	-	29
<b>PC Programming Guide</b>		
TECH	A:D:A:D	USER

### NOTES:

1. Setting data options S1 and S2 allows any desired level to be set by installing a resistor on the KTU. (If S1 and S2 are specified with no resistor installed, the level is set at 0 dB.)
2. When two or more 120/Level II/Level II Advanced systems are connected by Tie lines, the volume level (circuit loss) may differ from circuit to circuit, depending on the connection.
3. The 120/Level II/Level II Advanced systems divide the connections into the following patterns:  
(Specify the sending and receiving levels of each pattern for each of the Tie lines.)  
  - Pattern A (Intercom Mode) Connections established between the intercom stations of the local system and another system.
  - Sending level (To be specified in this Memory Block.)
  - Receiving level
  - Pattern B (Tandem Mode) Connections established between two systems, with the local system as a tandem system.
  - Sending level
  - Receiving level
4. Setting data option S1 on DTI allows 3 dB. Setting data option S2 on DTI allows -3 dB.
5. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and System software version 3.00 or higher are required.

■ Additional Programming

Refer to Guide to Feature Programming in this manual.

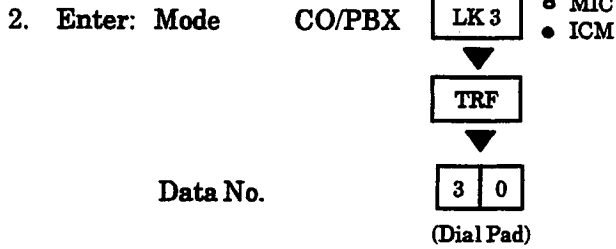
**GENERAL INFORMATION - TIE LINE INTERNAL TRANSMIT PAD SELECTION**

This Memory Block specifies a volume level for calls originated from the extensions of a local system to a distant system.

## TIE LINE INTERNAL RECEIVE PAD SELECTION

### OPERATION:

1. Go off-line.



CO/PBX No. (01~64)	Data No.	Title	Setting Data	Page No.
0 1 /	3 0 :	PADIR	2	1 1
-----				
TIME                      DISPLAY				

3. Press the corresponding CO/PBX line key to change data option.

- To change 2 dB to 6 dB sec., press CO/PBX line key 3.

- RECALL key : Next page.
- FNC key : Previous page.
- CNF key : Next CO/PBX Line No.

Page 1

LK 1	LK 2	LK 3	LK 4
2 dB	4 dB	6 dB	8 dB
LK 5	LK 6	LK 7	LK 8
12 dB	16 dB	S1	S2

Page 2

LK 1	LK 2	LK 3	LK 4
0 dB			
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys       Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-31, Tie Line External Transmit Pad Selection.
5. Press the SPKR key to go back on-line.

CO/PBX	-	Data No.
3	-	30
<b>PC Programming Guide</b>		
TECH	A:D:A:C	USER

### NOTES:

1. Setting data options S1 and S2 allows any desired volume level to be set by installing a resistor on the KTU. (If S1 and S2 are specified with no resistor installed, the level is set at 0 dB.)
2. When two or more 120/Level II/Level II Advanced systems are connected by Tie lines, the volume level (circuit loss) may differ from circuit to circuit, depending on the connection.
3. The 120/Level II/Level II Advanced systems divide the connections into the following patterns:  
  
 (Specify the sending and receiving levels of each pattern for each of the Tie lines.)  
  
**Pattern A (Intercom Mode)** Connections established between the intercom stations of the local system and another system.  
  
 — Sending level  
 — Receiving level (To be specified in this Memory Block.)  
  
**Pattern B (Tandem Mode)** Connections established between two systems, with the local system as a tandem system.  
  
 — Sending level  
 — Receiving level
4. Setting data option S1 on DTI allows 3 dB. Setting data option S2 on DTI allows -3 dB.
5. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and System software version 3.00 or higher are required.

■ Additional Programming  
Refer to Guide to Feature Programming in this manual.

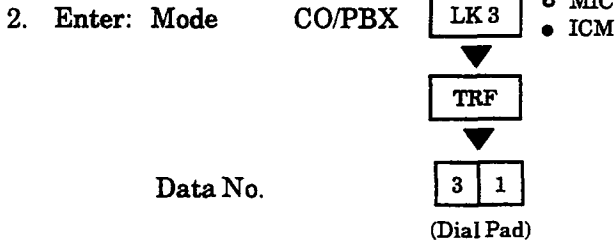
## GENERAL INFORMATION - TIE LINE INTERNAL RECEIVE PAD SELECTION

This Memory Block specifies a volume level for calls coming to extensions of a local system from a distant system.

### TIE LINE EXTERNAL TRANSMIT PAD SELECTION

**OPERATION:**

1. Go off-line.



CO/PBX No. (01~64)	Data No.	Title	Setting Data	Page No.
0 1 /	31	PADET	2	1 1
-----				
TIME		DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change 2 dB to 6 dB, press CO/PBX line key 3.

- RECALL** key : Next page.
- FNC** key : Previous page.
- CNF** key : Next CO/PBX Line No.

Page 1

LK 1	LK 2	LK 3	LK 4
2 dB	4 dB	6 dB	8 dB
LK 5	LK 6	LK 7	LK 8
12 dB	16 dB	S1	S2

Page 2

LK 1	LK 2	LK 3	LK 4
0 dB			
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-32, Tie Line External Receive Pad Selection.

5. Press the SPKR key to go back on-line.

CO/PBX	-	Data No.
3	-	31

PC Programming Guide			
TECH	A : D : A : B	USER	

**NOTES:**

- Setting data options S1 and S2 allows any desired volume level to be set by installing a resistor on the KTU. If S1 and S2 are specified with no resistor installed, the level is set at 0 dB.
- When two or more 120/Level II/Level II Advanced systems are connected by Tie lines, the volume level (circuit loss) may differ from circuit to circuit, depending on the connection.
- The 120/Level II/Level II Advanced systems divide the connections into the following patterns:  
(Specify the sending and receiving levels of each pattern for each of the Tie lines.)  
  - Pattern A (Intercom Mode)** Connections established between the intercom stations of the local system and another system.  
 Sending level  
 Receiving level
  - Pattern B (Tandem Mode)** Connections established between two systems, with the local system as a tandem system.  
 Sending level (To be specified in this Memory Block.)  
 Receiving level
- Setting data option S1 on DTI allows 3 dB. Setting data option S2 on DTI allows -3 dB.
- This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and system software version 3.00 or higher are required.

■ Additional Programming  
Refer to Guide to Feature Programming in this manual.

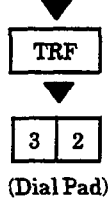
**GENERAL INFORMATION - TIE LINE EXTERNAL TRANSMIT PAD SELECTION**  
This Memory Block specifies a volume level for the outgoing calls of the local system to a distant system.

## TIE LINE EXTERNAL RECEIVE PAD SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX LK 3 ○ MIC  
● ICM



Data No.

CO/PBX No. (01~64)	Data No.	Title	Setting Data	Page No.
0 1 /	3 2	PADER	2	1
-----				
TIME		DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.

- To change 2 dB to 6 dB, press CO/PBX line key 3.

- RECALL key : Next page.
- FNC key : Previous page.
- CNF key : Next CO/PBX Line No.

Page 1

LK 1	LK 2	LK 3	LK 4
2 dB	4 dB	6 dB	8 dB
LK 5	LK 6	LK 7	LK 8
12 dB	16 dB	S1	S2

Page 2

LK 1	LK 2	LK 3	LK 4
0 dB			
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-33, Disconnect Recognition Time Selection.

5. Press the SPKR key to go back on-line.

CO/PBX	-	Data No.
3	-	32
<b>PC Programming Guide</b>		
TECH	A:D:A:A	USER

### NOTES:

1. Setting data options S1 and S2 allows any desired volume level to be set by installing the corresponding resistor on the unit. If S1 and S2 are specified with no resistor installed, the volume level is set at 0 dB.
2. When two or more 120/Level II/Level II Advanced systems are connected by Tie lines, the volume level (circuit loss) may differ from circuit to circuit, depending on the connection.
3. The 120/Level II/Level II Advanced systems divide the connections into the following patterns:
 

(Specify the sending and receiving levels of each pattern for each of the Tie lines.)

**Pattern A (Intercom Mode)** Connections established between the intercom stations of the local system and another system.

  - Sending level
  - Receiving level

**Pattern B (Tandem Mode)** Connections established between two systems, with the local system as a tandem system.

  - Sending level
  - Receiving level (To be specified in this Memory Block.)
4. Setting data option S1 on DTI allows 3 dB. Setting data option S2 on DTI allows -3 dB.
5. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and system software version 3.00 or higher are required.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

## GENERAL INFORMATION - TIE LINE EXTERNAL RECEIVE PAD SELECTION

This Memory Block specifies a volume level for incoming calls from a distant system.



## DISCONNECT RECOGNITION TIME SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX LK 3 ○ MIC  
● ICM

▼  
TRF  
 ▼

Data No.

3 3

(Dial Pad)

CO/PBX No. (01~64)	Data No.	Title	Setting Data	Page No.
0 1 /	3 3	: DISTM	0.3	1 1
-----				
TIME                  DISPLAY				

3. Press the corresponding CO/PBX line key to change data option.

- To change 0.3 sec. to 0.5 sec., press CO/PBX line key 6.

- RECALL key : Next page.
- FNC key : Previous page.
- CNF key : Next CO/PBX Line No.

Page 1

LK 1	LK 2	LK 3	LK 4
0 sec.	.1 sec.	.2 sec.	.3 sec.
LK 5	LK 6	LK 7	LK 8
.4 sec.	.5 sec.	.6 sec.	.7 sec.

Page 2

LK 1	LK 2	LK 3	LK 4
.8 sec.	.9 sec.	1.0 sec.	1.1 sec.
LK 5	LK 6	LK 7	LK 8
1.2 sec.	1.3 sec.	1.4 sec.	1.5 sec.

CO/PBX line keys

Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-38, Automated Attendant Message to Trunk Selection.
5. Press the SPKR key to go back on-line.

- Additional Programming  
 Refer to Guide to Feature Programming in this manual.

CO/PBX	-	Data No.
3	-	33

### PC Programming Guide

TECH	B : C : B : G	USER	
------	---------------	------	--

### NOTES:

1. When a call origination on a CO/PBX line or Tie line is interrupted or dropped while in progress, and an attempt is made to re seize the line, the seized line must be disconnected and cleared before it can be accessed again.

## GENERAL INFORMATION - DISCONNECT RECOGNITION TIME SELECTION

This Memory Block specifies the minimum time for a disconnected circuit to be accessed again.





## DELAY ANNOUNCEMENT ASSIGNMENT

CO/PBX	-	Data No.
3	-	41

PC Programming Guide			
TECH	A:H:A	USER	

### OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX **LK 3** ○ MIC  
● ICM

▼  
**TRF**  
▼

Data No.

4 1

(Dial Pad)

CO/PBX No. (01~64)	Data No.	Title	Setting Data
0 1 /	41	MSG D/N	= NN
-----			
TIME		DISP LAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change NN to YN (Delay Announcement Day only), press CO/PBX line key 2.

**CNF** key : Next CO/PBX Line No.

LK 1	LK 2	LK 3	LK 4
NN	YN	NY	YY
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

Default

### Setting Data

Line Key	LCD Indication	Delay Announcement
1	NN	No
2	YN	Day only
3	NY	Night only
4	YY	Day and Night

4. Press the TRF key to write the selected data and advance to Memory Block 3-42, DIT Assignment.

■ Additional Programming

Refer to Guide to Feature Programming in this manual.

5. Press the SPKR key to go back on-line.

## GENERAL INFORMATION - DELAY ANNOUNCEMENT ASSIGNMENT

This Memory Block specifies whether or not Delay Announcement is sent to the calling party (per-CO Port) for Day and/or Night Mode.

## DIT ASSIGNMENT

<b>CO/PBX</b>	-	<b>Data No.</b>
3	-	42

PC Programming Guide			
TECH	B : C : B : H	USER	

### OPERATION:

1. Go off-line.

2. Enter: Mode

CO/PBX

LK 3    ○ MIC  
                  ● ICM



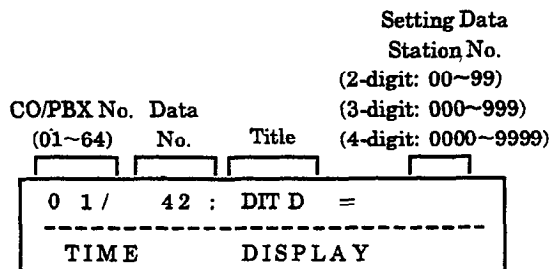
Data No.

4 2

(Dial Pad)

### NOTES:

1. A trunk can terminate at only one station, but any number of trunks can terminate at the same station.



3. Use the dial pad to enter data.

- Station No. (2-, 3-, or 4-digits 00~9999)
- CO Port No. (01~64)

Dial pad 0 ~ 9 : To enter data.

CNF key : Next CO Port No.

Default No Assignment

4. Press the TRF key to write the selected data and advance to Memory Block 3-43, ANA Assignment.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
3-43	ANA Assignment	

### GENERAL INFORMATION - DIT ASSIGNMENT

This Memory Block independently assigns Day Mode station terminations to incoming trunk calls.

## ANA ASSIGNMENT

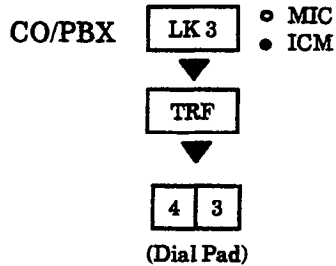
CO/PBX	-	Data No.
3	-	43

PC Programming Guide			
TECH	B:C:B:H	USER	

### OPERATION:

1. Go off-line.

2. Enter: Mode



Data No.

### NOTES:

1. A trunk can terminate at only one station, but any number of trunks can terminate at the same station.

CO/PBX No.	Data	Title	Setting Data
(01~64)	No.		(2-digit: 00~99)
			(3-digit: 000~999)
			(4-digit: 0000~9999)
0 1 /	4 3	: DITN =	
-----			
TIME	DISPLAY		

3. Use the dial pad to enter data.

- Station No. (2-, 3-, or 4-digits 00~9999)
- CO Port No. (01~64)

Dial pad 0 ~ 9 : To enter data.

CNF key : Next CO Port No.

Default No Assignment

4. Press the TRF key to write the selected data and advance to Memory Block 3-44, Caller ID Display Assignment for CO/PBX Line.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
3-42	DIT Assignment	

### GENERAL INFORMATION - ANA ASSIGNMENT

This Memory Block assigns Night Answer Mode (ANA) station terminations for incoming CO/PBX calls.

### CALLER ID DISPLAY ASSIGNMENT FOR CO/PBX LINE

CO/PBX	-	Data No.
3	-	44

PC Programming Guide			
TECH	A:J:C	USER	

#### OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX **LK 3** ○ MIC  
● ICM

**LK 3**



**TRF**



Data No.

**4 4**

(Dial Pad)

CO/PBX No. (01 ~ 64)	Data No.	Title	Tel Port No. (01 ~ 96)
01 /	44	CALL ID	00
TIME		DISPLAY	

3. Enter data using the dial pad.  
 Example: To assign CO/PBX Number 01 to Tel Port No. 01, enter 01 using the dial pad.

← **\*** , **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter setting data.

**CNF** key : Next CO/PBX No.

4. Press the TRF key to write the selected data and advance to Memory Block 3-45, Live Recording Trunk Selection.
5. Press the SPKR key to go back on-line.

#### NOTES:

1. To display Caller ID Indication for normal incoming CO calls and CAR incoming calls, both Caller ID Indication and Ring assignment must be assigned for the terminal in System Programming. A maximum of two multiline terminals can be assigned system-wide to display caller identification for normal incoming CO calls and CAR incoming calls (using Memory Block 1-1-78, Caller ID Display Assignment for System Mode). A third multiline terminal can be assigned to display caller identification for normal incoming CO calls per-CO line using this Memory Block.
2. This function requires system software version 4.50 or higher.

Default	Not Specified
---------	---------------

■ Additional Programming

Refer to Guide to Feature Programming in this manual.

### GENERAL INFORMATION - CALLER ID DISPLAY ASSIGNMENT FOR CO/PBX LINE

This Memory Block assigns one multiline terminal per CO/PBX line to display Caller ID Indication on incoming CO/PBX calls.

# LIVE RECORDING TRUNK SELECTION

CO/PBX	-	Data No.
3	-	45
<b>PC Programming Guide</b>		
TECH	A : G : E	USER

## OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX **LK 3**  MIC  ICM



Data No.



CO/PBX No.	Data No.	Title	Setting Data
0 1 /	45	: LIVREC	NO
-----		TIME DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

4. To change NO to YES, press CO/PBX line key 2.

← **\*** , **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter setting data.

**CNF** key : Next CO/PBX Port No.

5. Press the TRF key to write the selected data and advance to Memory Block 3-91, Trunk Type Selection.

6. Press the SPKR key to go back on-line.

Default	<b>NO</b>
---------	-----------

LK 1	LK 2
NO	YES

**NO** Default

## NOTES:

1. YES must be assigned for Digital Voice Mail Live Recording feature per-trunk.
2. This feature requires system software version 4.00 or higher.

### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-8-08	Class of Service (Station) Feature Selection 2	

## GENERAL INFORMATION - LIVE RECORDING TRUNK SELECTION

This Memory Block specifies Live Recording Service Mode or No Live Recording Service Mode per-Trunk for Digital Voice Mail.



### ISDN LINE INTERNAL TRANSMIT PAD SELECTION

CO/PBX	-	Data No.
3	-	46

PC Programming Guide			
TECH	B:C:B:F	USER	

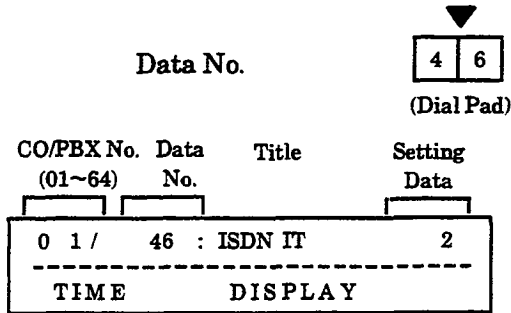
#### OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX LK 3  MIC  ICM

#### NOTES:

1. This memory block can be assigned for each port. If CO No. 01 and CO No. 02 are assigned different data, the system recognizes CO No. 01 data.
  2. This feature requires system software Version 7.00 or higher.



3. Press the corresponding CO/PBX line key to change data option.

- To change 2dB to 6 dB, press CO/PBX line key 4.

CNF key : Next CO/PBX Line No.

LK 1	LK 2	LK 3	LK 4
0 dB	2 dB	4 dB	6 dB
LK 5	LK 6	LK 7	LK 8
8 dB	12 dB	16 dB	-3 dB

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-47, ISDN Line Internal Receive Pad Selection.

5. Press the SPKR key to go back on-line.

### GENERAL INFORMATION - ISDN LINE INTERNAL TRANSMIT PAD SELECTION

This Memory Block is used to assign attenuation levels (transmit only) to software controlled pads used in ISDN lines between the local station and a distant trunk.

## ISDN LINE INTERNAL RECEIVE PAD SELECTION

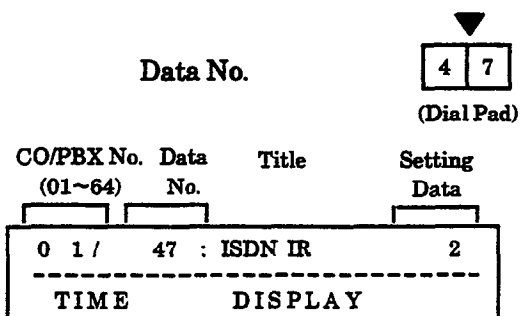
CO/PBX	-	Data No.
3	-	47

PC Programming Guide			
TECH	B:C:B:F	USER	

### OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX LK 3 ○ MIC  
● ICM



### NOTES:

1. This memory block can be assigned for each port. If CO No. 01 and CO No. 02 are assigned different data, the system recognizes CO No. 01 data.
2. This feature requires system software Version 7.00 or higher.

3. Press the corresponding CO/PBX line key to change data option.

- To change 2dB to 6 dB, press CO/PBX line key 4.

CNF key : Next CO/PBX Line No.

LK 1	LK 2	LK 3	LK 4
0 dB	2 dB	4 dB	6 dB
LK 5	LK 6	LK 7	LK 8
8 dB	12 dB	16 dB	-3 dB

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-48, ISDN Line External Transmit Pad Selection .

5. Press the SPKR key to go back on-line.

## GENERAL INFORMATION - ISDN LINE INTERNAL RECEIVE PAD SELECTION

This Memory Block is used to assign attenuation levels (receive only) to software controlled pads used in the ISDN lines between the local station and a distant trunk.

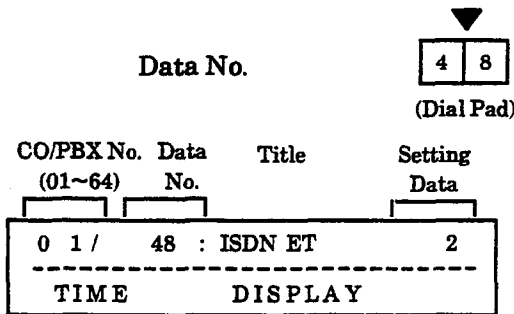
**ISDN LINE EXTERNAL TRANSMIT PAD SELECTION**

CO/PBX	-	Data No.
3	-	48

PC Programming Guide			
TECH	B:C:B:F	USER	

**OPERATION:**

- Go off-line.
- Enter: Mode CO/PBX  LK 3  MIC  ICM



**NOTES:**

- This memory block can be assigned for each port. If CO No. 01 and CO No. 02 are assigned different data, the system recognizes CO No. 01 data.
- This feature requires system software Version 7.00 or higher.

- Press the corresponding CO/PBX line key to change data option.
  - To change 2dB to 6 dB, press CO/PBX line key 4.

CNF key : Next CO/PBX Line No.

LK 1	LK 2	LK 3	LK 4
0 dB	2 dB	4 dB	6 dB
LK 5	LK 6	LK 7	LK 8
8 dB	12 dB	16 dB	-3 dB

CO/PBX line keys  Default

- Press the TRF key to write the selected data and advance to Memory Block 3-49, ISDN Line External Receive Pad Selection .
- Press the SPKR key to go back on-line.

**GENERAL INFORMATION - ISDN LINE INTERNAL TRANSMIT PAD SELECTION**

This Memory Block is used to assign attenuation levels (transmit only) to software controlled pads used in the ISDN between ISDN lines and trunks.

### ISDN LINE EXTERNAL RECEIVE PAD SELECTION

CO/PBX	-	Data No.
3	-	49

PC Programming Guide		
TECH	B : C : B : F	USER

**OPERATION:**

- Go off-line.
- Enter: Mode CO/PBX 
  - MIC
  - ICM

Data No.

(Dial Pad)

CO/PBX No. (01~64)	Data No.	Title	Setting Data
0 1 /	49	ISDN IT	2
-----			
TIME		DISPLAY	

- Press the corresponding CO/PBX line key to change data option.
  - To change 2dB to 6 dB, press CO/PBX line key 4.

key : Next CO/PBX Line No.

LK 1	LK 2	LK 3	LK 4
0 dB	2 dB	4 dB	6 dB
LK 5	LK 6	LK 7	LK 8
8 dB	12 dB	16 dB	-3 dB

CO/PBX line keys

Default

- Press the TRF key to write the selected data and advance to Memory Block 3-50, ISDN Line SPID Assignment.
- Press the SPKR key to go back on-line.

**NOTES:**

- This memory block can be assigned for each port. If CO No. 01 and CO No. 02 are assigned different data, the system recognizes CO No. 01 data.
- This feature requires system software Version 7.00 or higher.

### GENERAL INFORMATION - ISDN LINE EXTERNAL RECEIVE PAD SELECTION

This Memory Block is used to assign attenuation levels (receive only) to software controlled pads used in ISDN between ISDN lines and trunks.

**ISDN LINE SPID ASSIGNMENT**

<b>CO/PBX</b>	-	<b>Data No.</b>
3	-	50
<b>PC Programming Guide</b>		
<b>TECH</b>	A : G : E	<b>USER</b>

**OPERATION:**

1. Go off-line.
2. Enter: Mode CO/PBX 

LK 3
------

  - o MIC
  - ICM

**NOTES:**

1. This feature requires system software Version 7.00 or higher.
--

Data No.			5	0
			(Dial Pad)	

CO/PBX No.	Data No.	Setting Data (20 digits maximum)
0 1 /	50 :	

3. Enter data using the dial pad. To program 11223344556677, enter 11223344556677 using the dial pad.

← 

*
---

 , 

#
---

 → : To move cursor.

Dial pad 

0
---

 ~ 

9
---

 : To enter setting data.

CNF
-----

 key : Next CO/PBX Port No.

4. Press the TRF key to write the selected data and advance to Memory Block 3-51, ISDN Line Ringing Pattern Selection.
5. Press the SPKR key to go back on-line.

**GENERAL INFORMATION - ISDN LINE SPID ASSIGNMENT**

This Memory Block is used to assign the ISDN SPID number.

# ISDN LINE RINGING PATTERN SELECTION

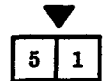
CO/PBX	-	Data No.
3	-	51
<b>PC Programming Guide</b>		
TECH	B:C:B:F	USER

## OPERATION:

1. Go off-line.

2. Enter: Mode CO/PBX LK 3   
 • MIC  
 • ICM

Data No.



(Dial Pad)

CO/PBX No. (01-64)	Data No.	Title	Setting Data	Page
0 1 /	46 :	ISPTN	A	1
-----				
TIME			DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change Pattern A to Pattern C, press CO/PBX line key 5.

Page 1

LK 1	LK 2	LK 3	LK 4
Tone Off	Tone On	Pattern A	Pattern B
LK 5	LK 6	LK 7	LK 8
Pattern C	Pattern D	Pattern E	Pattern F

Page 2

LK 1	LK 2	LK 3	LK 4
Pattern G	Pattern H		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys



Default

CNF key : Next CO/PBX Line No.

4. Press the TRF key to write the selected data and advance to Memory Block 3-91, ISDN Trunk Type Selection.
5. Press the SPKR key to go back on-line.

## NOTES:

1. This feature requires system software Version 7.00 or higher.

Pattern	Line Key	0s	1s	2s	3s	4s	5s	6s
Tone Off	LK 1	[Waveform]						
Tone On	LK 2	[Waveform]						
A	LK 3	[Waveform]						
B	LK 4	[Waveform]						
C	LK 5	[Waveform]						
D	LK 6	[Waveform]						
E	LK 7	[Waveform]						
F	LK 8	[Waveform]						
G	LK 1 (Page 2)	[Waveform]						
H	LK 2 (Page 2)	[Waveform]						

## GENERAL INFORMATION - ISDN LINE RINGING PATTERN SELECTION

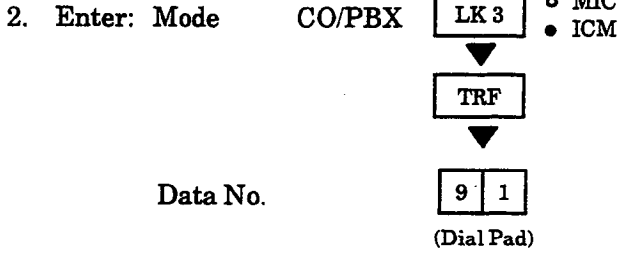
This Memory Block specifies the ringing pattern sent to the telephone for incoming calls on an ISDN line.

### TRUNK TYPE SELECTION

CO/PBX	-	Data No.
3	-	91
<b>PC Programming Guide</b>		
TECH	B:C:B:N	USER

#### OPERATION:

1. Go off-line.



#### NOTES:

1. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and system software version 3.00 or higher are required.
2. LK4 (CTX Assume - 9) requires system software version 4.00 or higher.

CO/PBX No. (01~64)	Data No.	Title
0 1 /	91	CO
-----		
TIME	DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change CO to Tie/DID, press CO/PBX line key 3.

CNF key : Next CO/PBX Line No.

LK 1	LK 2	LK 3	LK 4
CO	PBX/CTX	Tie/DID	CTX Assume - 9
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-92, Trunk (Installed, DP/DTMF) Selection.
5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Refer to Guide to Feature Programming in this manual.

### GENERAL INFORMATION - TRUNK TYPE SELECTION

This Memory Block specifies each external line as CO Line, PBX/CTX line, Tie/DID line, or CTX Assume - 9.

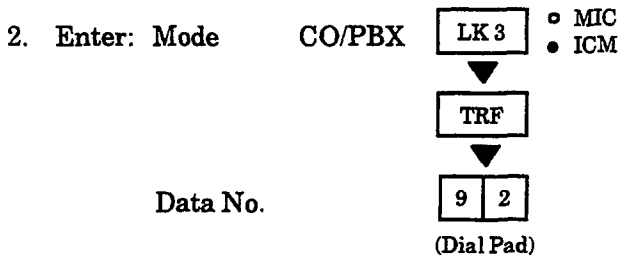
### TRUNK (INSTALLED, DP/DTMF) SELECTION

CO/PBX	-	Data No.
3	-	92

PC Programming Guide			
TECH	B:C:B:F	USER	

#### OPERATION:

1. Go off-line.



CO/PBX No. Data (01~64) No.	Setting Data
0 1 / 92 :	MF
-----	
TIME	DISPLAY

3. Press the corresponding CO/PBX line key to change data option.

- To change MF to DP 10 pps, press CO/PBX line key 2.

**CNF** key : Next CO/PBX Line No.

LK 1	LK 2	LK 3	LK 4
NIL	DP 10 pps	DP 20 pps	MF
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

 Default

4. Press the TRF key to write the selected data and advance to Memory Block 3-91, Trunk Type Selection.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
3-14	Tie/DID Line Type Assignment	
4-12	Line Key Selection for Telephone Mode	

**GENERAL INFORMATION - TRUNK (INSTALLED, DP/DTMF) SELECTION**

This Memory Block specifies each external line as a DP (10 pps or 20 pps) or DTMF line or not connected (NIL).



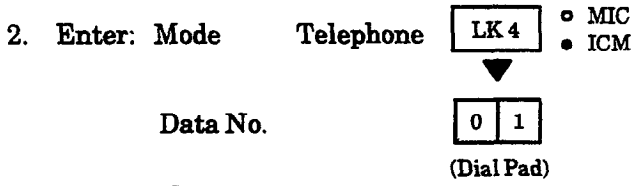
### CO/PBX RING ASSIGNMENT (DAY MODE)

Telephone	-	Data No.
4	-	01

PC Programming Guide			
TECH	B : B : B : B	USER	T : B

#### OPERATION:

1. Go off-line.



Tel Port No. (01~96)	Data No.	Title	Page
0 1 /	01 :	RNG DY	1 01
-----			
TIME		DISPLAY	

3. Press the CO/PBX line key corresponding to each CO/PBX number.

- The LED indication changes to indicate the data each time a CO/PBX line key is pressed.

← \* , # → : To move cursor.

- RECALL key : Next page.
- FNC key : Previous page.
- CNF key : Next Tel No.

CO/PBX Line LED	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	OFF	ON (green)	ON (red)
Data	No Ring	Immediate Ring	‡Delayed Ring

‡Series 300 or higher.

Default Series 100 and 200	Tel Port numbers 01 and 02 ring on all incoming CO/PBX calls.
	Tel Port numbers 03~96 do not ring on any incoming CO/PBX calls.

Default Series 250 or Higher	Tel Port numbers 01 and 02 ring on CO/PBX lines 01~06.
	Tel Port numbers 03~96 do not ring on any incoming CO/PBX calls.

■ Additional Programming

Refer to Guide to Feature Programming in this manual.

4. After entering all data for all pages, press the TRF key to write the selected data and advance to Memory Block 4-02, CO/PBX Ring Assignment (Night Mode).
5. Press the SPKR key to go back on-line.

CO/PBX Number (01~64) correspond to CO/PBX line key.

Page 01 (Port 01~08)				Page 05 (Port 33~40)			
LK 1	LK 2	LK 3	LK 4	LK 1	LK 2	LK 3	LK 4
01	02	03	04	33	34	35	36
LK 5	LK 6	LK 7	LK 8	LK 5	LK 6	LK 7	LK 8
05	06	07	08	37	38	39	40

CO/PBX line keys

Page 02 (Port 09~16)				Page 06 (Port 41~48)			
LK 1	LK 2	LK 3	LK 4	LK 1	LK 2	LK 3	LK 4
09	10	11	12	41	42	43	44
LK 5	LK 6	LK 7	LK 8	LK 5	LK 6	LK 7	LK 8
13	14	15	16	45	46	47	48

Page 03 (Port 17~24)				Page 07 (Port 49~56)			
LK 1	LK 2	LK 3	LK 4	LK 1	LK 2	LK 3	LK 4
17	18	19	20	49	50	51	52
LK 5	LK 6	LK 7	LK 8	LK 5	LK 6	LK 7	LK 8
21	22	23	24	53	54	55	56

Page 04 (Port 25~32)				Page 08 (Port 57~64)			
LK 1	LK 2	LK 3	LK 4	LK 1	LK 2	LK 3	LK 4
25	26	27	28	57	58	59	60
LK 5	LK 6	LK 7	LK 8	LK 5	LK 6	LK 7	LK 8
29	30	31	32	61	62	63	64

### GENERAL INFORMATION - CO/PBX RING ASSIGNMENT (DAY MODE)

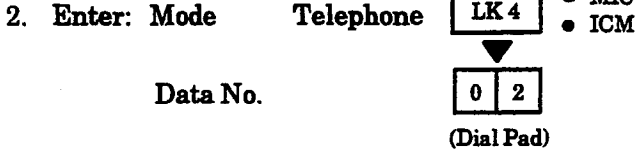
This Memory Block assigns multiline terminals to ring on incoming CO/PBX calls in Day Mode.

# CO/PBX RING ASSIGNMENT (NIGHT MODE)

Telephone	-	Data No.
4	-	02
<b>PC Programming Guide</b>		
TECH	B: B: B: C	USER T: C

## OPERATION:

1. Go off-line.



Tel Port No. (01~96)	Data No.	Title	Page
0 2 /	02	: RNG NT	1 01
-----		TIME	DISPLAY

3. Press the CO/PBX line key corresponding to each CO/PBX number.

- The LED indication changes to indicate the data each time a CO/PBX line key is pressed.

← \* , # → : To move cursor.

- |        |
|--------|
| RECALL |
|--------|

 key : Next page.
- |     |
|-----|
| FNC |
|-----|

 key : Previous page.
- |     |
|-----|
| CNF |
|-----|

 key : Next Tel No.

CO/PBX Line LED	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	OFF	ON (green)	ON (red)
Data	No Ring	Immediate Ring	‡Delayed Ring

‡Series 300 or higher.

Default Series 100 and 200	Tel Port numbers 01 and 02 ring on all incoming CO/PBX calls.
	Tel Port numbers 03~96 do not ring on any incoming CO/PBX calls.

Default Series 250 or Higher	Tel Port numbers 01 and 02 ring on CO/PBX lines 01~08.
	Tel Port numbers 03~96 do not ring on any incoming CO/PBX calls.

- Additional Programming  
Refer to Guide to Feature Programming in this manual.

- 4. After entering all data for all pages, press the TRF key to write the selected data and advance to Memory Block 4-07, Code Restriction Class Assignment (Day Mode).
- 5. Press the SPKR key to go back on-line.

CO/PBX Number (01~64) correspond to CO/PBX line key.

Page 01 (Port 01~08)

LK 1	LK 2	LK 3	LK 4
01	02	03	04
LK 5	LK 6	LK 7	LK 8
05	06	07	08

Page 05 (Port 33~40)

LK 1	LK 2	LK 3	LK 4
33	34	35	36
LK 5	LK 6	LK 7	LK 8
37	38	39	40

CO/PBX line keys

Page 02 (Port 09~16)

LK 1	LK 2	LK 3	LK 4
09	10	11	12
LK 5	LK 6	LK 7	LK 8
13	14	15	16

Page 06 (Port 41~48)

LK 1	LK 2	LK 3	LK 4
41	42	43	44
LK 5	LK 6	LK 7	LK 8
45	46	47	48

Page 03 (Port 17~24)

LK 1	LK 2	LK 3	LK 4
17	18	19	20
LK 5	LK 6	LK 7	LK 8
21	22	23	24

Page 07 (Port 49~56)

LK 1	LK 2	LK 3	LK 4
49	50	51	52
LK 5	LK 6	LK 7	LK 8
53	54	55	56

Page 04 (Port 25~32)

LK 1	LK 2	LK 3	LK 4
25	26	27	28
LK 5	LK 6	LK 7	LK 8
29	30	31	32

Page 08 (Port 57~64)

LK 1	LK 2	LK 3	LK 4
57	58	59	60
LK 5	LK 6	LK 7	LK 8
61	62	63	64

## GENERAL INFORMATION - CO/PBX RING ASSIGNMENT (NIGHT MODE)

This Memory Block assigns multiline terminals to ring on incoming CO/PBX calls in Night Mode.

## CODE RESTRICTION CLASS ASSIGNMENT (DAY MODE)

Telephone	-	Data No.
4	-	07

PC Programming Guide			
TECH	A:A:B	USER	

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4 ○ MIC  
● ICM

▼

Data No. 0 7  
(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Setting Data (00~15)
0 1 /	0 7	CLS DAY =	0 0
TIME DISPLAY			

Restriction Class 00~15.

3. Enter data using the dial pad.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter setting data.

CNF key : Next Tel No.

Default All Stations Class 00

4. Press the TRF key to write the selected data and advance to Memory Block 4-08, Code Restriction Class Assignment (Night Mode).

5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Section 6 - Code Restriction in this chapter.

### GENERAL INFORMATION - CODE RESTRICTION CLASS ASSIGNMENT (DAY MODE)

This Memory Block specifies Code Restriction Class in Day Mode per station.

## CODE RESTRICTION CLASS ASSIGNMENT (NIGHT MODE)

Telephone	-	Data No.
4	-	08
<b>PC Programming Guide</b>		
TECH	A:A:C	USER

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4 ○ MIC  
● ICM

Data No. 0 8  
(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Setting Data (00~15)
0 1 /	0 8 :	CLS NT =	00
-----		TIME DISPLAY	

Restriction Class 00~15.

3. Enter data using the dial pad.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter setting data.

CNF key : Next Tel No.

Default All Stations Class 00

4. Press the TRF key to write the selected data and advance to Memory Block 4-09, Telephone to Tenant Assignment.

5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Section 6 - Code Restriction in this chapter.

### GENERAL INFORMATION - CODE RESTRICTION CLASS ASSIGNMENT (NIGHT MODE)

This Memory Block specifies Code Restriction Class in Night Mode per station.

# TELEPHONE TO TENANT ASSIGNMENT

Telephone	-	Data No.
4	-	09
<b>PC Programming Guide</b>		
TECH	B : B : B : K	USER

## OPERATION:

1. Go off-line.

2. Enter: Mode Telephone **LK 4**  MIC  
 ICM  
 Data No. **0 9**  
 (Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Setting Data (00~47)
0 1 /	09	TENANT	= 00
-----		TIME DISPLAY	

3. Enter data using the dial pad.

Example: To enter TENANT 08 for TEL 01, enter 08 using the dial pad.

← **\*** , **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter setting data.

**CNF** key : Next Tel No.

Default **All Telephones Tenant 09**

4. Press the TRF key to write the selected data and advance to Memory Block 4-10, Station Number Assignment.

5. Press the SPKR key to go back on-line.

### Additional Programming

Memory Block No.	Memory Block Name	Required
2-01	Trunk to Tenant Assignment	
2-05	Line Key Selection	
2-06	Line Key Selection for Tenant Mode	
2-07	System Speed Dial Display Assignment	
2-08	ECR Relay to Tenant Assignment	

## NOTES:

1. Stations can be assigned to 48 possible Tenant Numbers (00~47).
2. Call Pickup Group is determined by Tenant assignment.

## GENERAL INFORMATION - TELEPHONE TO TENANT ASSIGNMENT

This Memory Block specifies Tenant Assignment per station.

## STATION NUMBER ASSIGNMENT

Telephone	-	Data No.
4	-	10
<b>PC Programming Guide</b>		
TECH	B:A:D	USER

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone **LK 4**  MIC  ICM

Data No. **1 0**  
(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Setting Data (2-digit: 00~99) (3-digit: 000~999) (4-digit: 0000~9999)
0 1 /	10	STA	= 100
-----			
TIME		DISP L A Y	

3. Enter data using the dial pad.

Example: To change Tel 01 to Station No. 11, enter 11 using the dial pad.

← **\*** , **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter setting data.

**CNF** key : Next Tel No.

4. Press the TRF key to write the selected data and advance to Memory Block 4-11, Ringing Line Preference Selection.

5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-46	Access Code (1-Digit) Assignment	✓
1-1-47	Access Code (2-Digit) Assignment	✓
1-2-03	2-, 3-, or 4-Digit Station Number Selection	✓

### NOTES:

1. Station Number Assignment is per station. (A telephone cannot have two station numbers, and a station number cannot be assigned to more than one telephone.)
2. At default, the valid station numbers are 100 to 399.
3. When changing Station Numbers to a different numbering plan (e.g., 3 digit to 4 digit), these steps should be performed in the following order:
  - a. Select 2-, 3-, or 4-digit Station Numbers in Memory Block 1-2-03 (2-, 3-, or 4-Digit Station Number Selection).
  - b. Program the applicable Access Codes for Function 001 in Memory Blocks 1-1-46, Access Code (1-Digit) Assignment) or 1-1-47, Access Code (2-Digit) Assignment).
  - c. Program all Station Numbers using this Memory Block.

## GENERAL INFORMATION - STATION NUMBER ASSIGNMENT

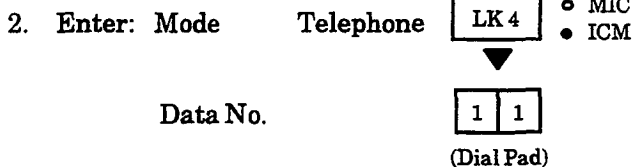
This Memory Block assigns a station number to each telephone.

# RINGING LINE PREFERENCE SELECTION

Telephone	-	Data No.
4	-	11
<b>PC Programming Guide</b>		
TECH	B : B : C : K	USER T : L

## OPERATION:

1. Go off-line.



Tel Port No. (01~96)	Data No.	Title	Setting data
0 1 /	11	RNG PRF	NO
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change the data option.

- To change NO to YES, press CO/PBX line key 2.

CNF key : Next Tel No.

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 4-12, Line Key Selection for Telephone Mode.

5. Press the SPKR key to go back on-line.

### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
4-01	CO/PBX Ring Assignment (Day Mode)	✓
4-02	CO/PBX Ring Assignment (Night Mode)	✓

## NOTES:

1. This Memory Block programming applies to Ring Assigned telephones only.
2. An intercom call cannot be originated when a ring assigned CO/PBX line call has terminated on the telephone.

## GENERAL INFORMATION - RINGING LINE PREFERENCE SELECTION

This Memory Block specifies whether or not each station user can answer incoming CO/PBX calls on ring assigned CO/PBX lines by going off-hook.

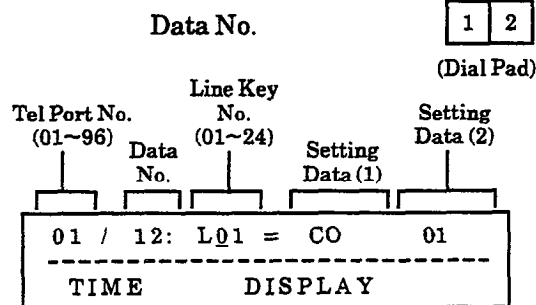
### LINE KEY SELECTION FOR TELEPHONE MODE

#### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4  MIC

ICM



3. Press the corresponding CO/PBX line key to change data option.

LK 1 Not Specified	LK 2 CO/PBX Line	LK 3 *CFW - BNA	LK 4 *CFW - ALL
LK 5 †Call Appearance	LK 6 Feature Access	LK 7 Trunk Group	LK 8 Route Advance

LK 9 2nd Incoming Extension	LK 10 †Call Arrival Key	LK 11 Microphone Key	LK 12 Headset
LK 13 ‡ Scroll Key (Used for Caller ID)	LK 14 *DND On/Off	LK 15 *LOG On/Off	LK 16 *BGM On/Off

CO/PBX line keys

- \*Series 250 or higher.
- ‡Series 450 or higher.
- \*Series 500 or higher.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter data.

CNF key : Next Tel No.

Default	Tel 01 ~ 96: LK 01 ~ 08 assigned CO/PBX LINES 01 ~ 08
---------	--

Telephone	-	Data No.
4	-	12

PC Programming Guide			
TECH	B: B: C: I	USER	T: J

Example: To assign Trunk Group 05 to CO/PBX line key 1.

4. Press CO/PBX line key 7; TKGP is displayed.
5. Enter 05 (for RT 05) using the dial pad.
6. Press the TRF key to write new data entry.
7. The next line key assignment is displayed.
8. Repeat these steps until all line key assignments are completed.
9. Press the TRF key to advance to Memory Block 4-13, CO/PBX Busy Forward Station Assignment.
10. Press the SPKR key to go back on-line.

This Memory Block assigns the following functions to each of the CO/PBX line keys on each telephone within a tenant specified as Telephone Mode in Memory Block 2-05 (Line Key Selection).

Functions:

- Not specified (NON)
  - CO/PBX Line (CO) 01~64
  - \* Call Forward - Busy/No Answer
  - \* Call Forward - All Calls
  - † Call Appearance (C) 01~24
  - Feature Access (FA) 01~10
  - Trunk Group (TKGP) 01~32
  - Route Advance Block (ADV) 01~16
  - Secondary Incoming Extension (SIE) 01~96
  - † Call Arrival Keys (CAR) 01~88
  - Microphone (MIC)
  - Headset (H SET)
  - ‡ Scroll Key
  - \* Do Not Disturb (DND) - Break Mode
  - \* Log On/Off (LOG)
  - \* BGM On/Off (BGM)
- † Series 250 or higher.  
‡ Series 450 or higher.  
\* Series 500 or higher.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
2-05	Line Key Selection	√

Continued on next page.



**LINE KEY SELECTION FOR TELEPHONE MODE**

(continued)

Telephone	-	Data No.
4	-	12

**NOTES:**

Line Key	Setting Data 1	LCD Indication	Setting Data 2
1	Not Specified	NON	N/A
2	CO	CO	01~64
3	* CFW - BNA	FW BNA	N/A
4	* CFW - ALL	FW ALL	N/A
5	†Call Appearance Block (00~47) (See Note 6.)	C	Call Appearance Key 01~24
6	Feature Access	FA	01~10
7	Trunk Group	TKGP	01~32
8	Route Advance	ADV	01~16
9	Secondary Incoming Extension	SIE	Telephone Port No. 01~96
10	Call Arrival Key	CAR	01~88
11	Microphone	MIC	N/A
12	Headset	H SET	N/A
13	‡ Scroll Key	SCROLL	N/A
14	* Do Not Disturb - break Mode On/Off	DND	N/A
15	* Log On/Off	LOG	N/A
16	* BGM On/Off	BGM	N/A

1. If the 120/Level II/Level II Advanced system is installed as a KF system, all COs must be assigned to the line keys.
  - Trunk Groups, Route Advance and LCR may not be assigned if the Level II or Level II Advanced system is installed as a KF system.
2. If the 120/Level II/Level II Advanced system is installed as an MF system, at least one Call Appearance Key must be assigned.
  - Call Appearance Key must be assigned per block,.
3. Repetitive assignments cannot be copied to a multiline terminal (Secondary Incoming Extension) port.
4. An ADA(1)-W (BK)/(SW) Unit is required to use a headset.
5. At system default, CO/PBX lines 01~08 are assigned to line keys 01~08, respectively; the remaining line keys 09~24 are not assigned.
6. Each Call Appearance Block may have a maximum of 24 Call Appearance Keys.
7. The Scroll Key is used to confirm the Caller ID Number.

†Series 250 or higher.

‡Series 450 or higher.

\* Series 500 or higher.

**GENERAL INFORMATION - LINE KEY SELECTION FOR TELEPHONE MODE**

This Memory Block allows the assignment of functions to each of the CO/PBX line keys on each telephone in a tenant specified as Telephone Mode in Memory Block 2-05 (Line Key Selection).

# CO/PBX BUSY FORWARD STATION ASSIGNMENT

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4
  - MIC
  - ICM

Data No. 1 3  
 (Dial Pad)

Tel Port No.. (01~96)	Data No.	Title	Forward No. (1 or 2)	Setting Data
10 /	13 :	FWD	1 =	-
-----				
TIME DISPLAY				

3. Use the dial pad to change data.

← \*, # → : To move cursor.

Dial pad 0 ~ 9 : To enter data.

CNF key : Next Tel. No.

Default Not Specified

Telephone Port No.: 01~96  
 Forward No.: 1, 2  
 Setting Data: Port No. 01~96

4. Press the TRF key to write the data for the first transfer to station.
5. Enter the second transfer to station.
6. Press the TRF key to write the selected data and advance to Memory Block 4-14, Intercom Master Hunt Number Selection.
7. Press the SPKR key to go back on-line.

- Additional Programming  
 Refer to Guide to Feature Programming in this manual.

Telephone	-	Data No.
4	-	13

PC Programming Guide			
TECH	B:B:B:A	USER	

### NOTES:

1. If the multiline terminal, where the forward is initially set (Forward 1) is busy, the call is forwarded to a second specified station (Forward 2).
2. If all three stations are busy, the first station rings.

## GENERAL INFORMATION - CO/PBX BUSY FORWARD STATION ASSIGNMENT

This Memory Block specifies up to two telephones to ring on a CO/PBX call terminating at a busy station.

## INTERCOM MASTER HUNT NUMBER SELECTION

<b>Telephone</b>	-	<b>Data No.</b>
4	-	14
<b>PC Programming Guide</b>		
<b>TECH</b>	B:B:B:D	<b>USER</b>

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4 ○ MIC  
 ● ICM

▼

Data No. 1 4  
 (Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	14	MSTER	NO
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change NO to YES, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

CNF

key : Next Tel No.

4. Press the TRF key to write the selected data and advance to Memory Block 4-15, Intercom Master Hunt Number Forward Assignment.

5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
4-15	Intercom Master Hunt Number Forward Assignment	

### NOTES:

1. If assigned YES, incoming internal calls from another station, Automated Attendant transferred call, or a DIT/ANA/DID/Tie line designated call, are forwarded to a specified station when busy in Memory Block 4-15, Intercom Master Hunt Number Forward Assignment.

### GENERAL INFORMATION - INTERCOM MASTER HUNT NUMBER SELECTION

This Memory Block specifies the assignment of a master intercom number to each telephone.

## INTERCOM MASTER HUNT NUMBER FORWARD ASSIGNMENT

Telephone	-	Data No.
4	-	15
<b>PC Programming Guide</b>		
TECH	B:B:B:D	USER

**OPERATION:**

1. Go off-line.

2. Enter: Mode Telephone LK 4 ○ MIC  
● ICM

Data No. 1 5  
(Dial Pad)

	Setting Data				
	FWD Station No.				
	(2-digit: 00-99)				
	(3-digit: 000-999)				
	(4-digit: 0000-9999)				
Tel Port No. (01-96)	Data No.	Title			
0 1 /	15 :	ICMFWD	-		
-----					
TIME			DISPLAY		

3. Enter data using the dial pad.

**Example:** To set Tel. Port 01 to forward to Station Number 300, enter 300 using the dial pad.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter data.

HOLD key : To clear all data when the cursor is at the setting data position.

CNF key : Next Tel. No.

Default All Telephones Not Specified

4. Press the TRF key to write the selected data and advance to Memory Block 4-17, Station to Class of Service Feature Assignment.

5. Press the SPKR key to go back on-line.

**Additional Programming**

Memory Block No.	Memory Block Name	Required
4-14	Intercom Master Hunt Number Selection	

**Example:**

To assign the following by Memory Block:

1. Memory Block 4-14

Telephone Port No. 01 → YES

Another Port No. → NO

2. Memory Block 4-10

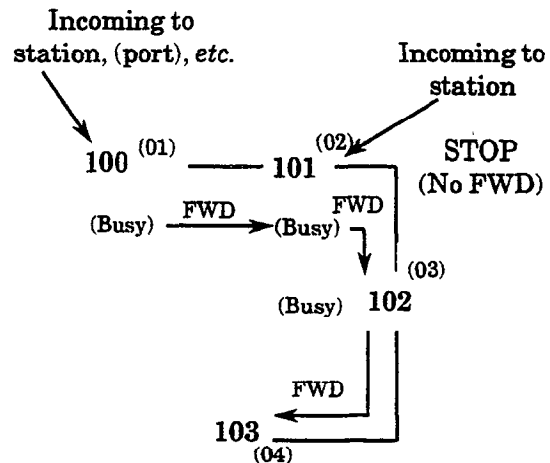
Telephone Port No. and related Station No.

	Port	Station
	No.	No.
01	→	100
02	→	101
03	→	102
04	→	103

3. This Memory Block

Telephone Port No. (Port No. forwards to Station No.)

	Port	Station
	No.	No.
01	→	101
02	→	102
03	→	103



### GENERAL INFORMATION - INTERCOM MASTER HUNT NUMBER FORWARD ASSIGNMENT

This Memory Block specifies a telephone to ring when a telephone Master Hunt Number specified as a master number station in Memory Block 4-14, Intercom Master Hunt Number Selection, is busy.

**STATION TO CLASS OF SERVICE FEATURE ASSIGNMENT**

Telephone	-	Data No.
4	-	17
<b>PC Programming Guide</b>		
TECH	B:B:B:I	USER

**OPERATION:**

1. Go off-line.

2. Enter: Mode Telephone **LK 4** ○ MIC ○ ICM

Data No. 

1	7
---	---

  
(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Table No. (1 or 2)	Setting Service Class (00~15)
0 1 /	17 :	CLS	(1)	= 00
-----				
TIME		DISPLAY		

3. Enter data using the dial pad.

Example: To enter CLASS 02 to Table 1, enter 02 using the Dial pad.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter data.

4. Press the TRF key, data of Table 2 is displayed.

5. After all data is entered into Table 2, press the TRF key to write the selected data, and advance to Memory Block 4-18, Station Name Assignment.

6. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-8-07	Class of Service (Attendant) Feature Selection 1	
1-8-08	Class of Service (Station) Feature Selection 2	

**NOTES:**

1. Refer to Memory Blocks 1-8-07, Class of Service (Attendant) Feature Selection 1, and 1-8-08, Class of Service (Station) Feature Selection 2.

2. Enable/Disable patterns are specified in the above for individual classes.

- Table 1 = The features that telephone Port Numbers 01 and 02 are normally allowed to activate.

Specify any class (00~15) whose pattern is specified in Memory Block 1-8-07, Class of Service (Attendant) Feature Selection 1.

- Table 2 = The features that all the telephones are normally allowed to activate.

Specify any class (00~15) whose pattern is specified in Memory Block 1-8-08, Class of Service (Station) Feature Selection 2.

Default		
Tel No.	Table No.	Setting Data
01	1 ATTN	Service Class 00
	2 STA	Service Class 00
02	1 ATTN	Service Class 00
	2 STA	Service Class 00
03	1 ATTN	Service Class 15
	2 STA	Service Class 00
f	f	f
96	1 ATTN	Service Class 15
	2 STA	Service Class 00

**GENERAL INFORMATION - STATION TO CLASS OF SERVICE FEATURE ASSIGNMENT**

This Memory Block specifies a class for each Table (1 and 2) to enable or disable features per station.

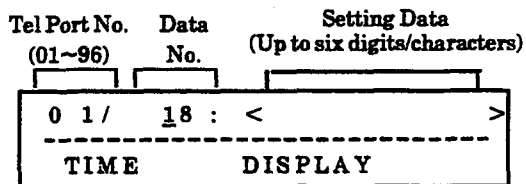
# STATION NAME ASSIGNMENT

## OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4 
 MIC  
 ICM

Data No. 
1
8
  
 (Dial Pad)



3. Enter data using the dial pad.

**Example:** To assign DANE to Tel 01, enter characters. For a list of characters, refer to Section 7-Character Code Tables.

After the 3-digit code is entered, the character is displayed automatically.

Setting Data: Enter by Character Code.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter data.

HOLD key : To clear all data when the cursor is at the setting data position.

CNF key : Next Tel No.

Default	Not Specified
---------	---------------

4. Press the TRF key to write the selected data and advance to Memory Block 4-19, Trunk Outgoing Restriction.

5. Press the SPKR key to go back on-line.

- Additional Programming
- None.

**GENERAL INFORMATION - STATION NAME ASSIGNMENT**

This Memory Block assigns names corresponding to the telephones.

Telephone	-	Data No.
4	-	18
<b>PC Programming Guide</b>		
TECH	B:B:B:J	USER T:M

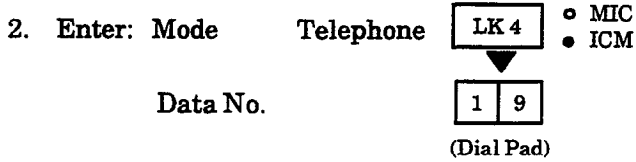
## NOTES:

1. While ringing or talking take place on an internal line, the station number and the name of the other party are displayed.
2. The name is not displayed when Tone Override, Automatic Callback, or Callback Request is displayed.
3. A maximum of six digits/characters can be used for each name.

# TRUNK OUTGOING RESTRICTION

## OPERATION:

1. Go off-line.



Tel Port No. (01~96)	Data No.	Title	Page
0 1 /	19	TRK RST	1 01
-----		TIME	DISPLAY

3. Press the CO/PBX key corresponding to each CO/PBX line.

- The LED indication changes to indicate the data each time a CO/PBX line key is pressed.
- Press **RECALL** or **FNC** key to turn pages.

← **\*** , **#** → : To move cursor.

- RECALL** key : Next page.
- FNC** key : Previous page.
- CNF** key : Next Tel Port No.

CO/PBX Line LED	<input checked="" type="checkbox"/> OFF	<input type="checkbox"/> ON
Data	<input checked="" type="checkbox"/> Not Restricted	<input type="checkbox"/> Restricted

Default

4. After entering all data for all pages, press the **TRF** key to write the selected data, and advance to Memory Block 4-20, Off-Hook Voice Announcement Terminal Assignment.

5. Press the **SPKR** key to go back on-line.

- Additional Programming  
 Refer to Guide to Feature Programming in this manual.

Telephone	-	Data No.
4	-	19

PC Programming Guide			
TECH	B:B:B:M	USER	

CO/PBX Number (01~64) corresponds to CO/PBX line key:

Page 01 (Port 01~08)

LK 1	LK 2	LK 3	LK 4
01	02	03	04
LK 5	LK 6	LK 7	LK 8
05	06	07	08

Page 05 (Port 33~40)

LK 1	LK 2	LK 3	LK 4
33	34	35	36
LK 5	LK 6	LK 7	LK 8
37	38	39	40

Page 02 (Port 09~16)

LK 1	LK 2	LK 3	LK 4
09	10	11	12
LK 5	LK 6	LK 7	LK 8
13	14	15	16

Page 06 (Port 41~48)

LK 1	LK 2	LK 3	LK 4
41	42	43	44
LK 5	LK 6	LK 7	LK 8
45	46	47	48

Page 03 (Port 17~24)

LK 1	LK 2	LK 3	LK 4
17	18	19	20
LK 5	LK 6	LK 7	LK 8
21	22	23	24

Page 07 (Port 49~56)

LK 1	LK 2	LK 3	LK 4
49	50	51	52
LK 5	LK 6	LK 7	LK 8
53	54	55	56

Page 04 (Port 25~32)

LK 1	LK 2	LK 3	LK 4
25	26	27	28
LK 5	LK 6	LK 7	LK 8
29	30	31	32

Page 08 (Port 57~64)

LK 1	LK 2	LK 3	LK 4
57	58	59	60
LK 5	LK 6	LK 7	LK 8
61	62	63	64

## NOTES:

1. A restricted CO/PBX line allows the station user to answer an incoming call or access a held call, but does not allow the user to originate a CO/PBX call.
2. If restricted is specified in this section, the following data, even if specified, is treated as invalid.
  - Memory Blocks 4-07 and 4-08, Code Restriction Class Assignment (Day/Night) Mode.

## GENERAL INFORMATION - TRUNK OUTGOING RESTRICTION

This Memory Block specifies whether or not to restrict line seizure for an outgoing call per CO/PBX line.

## OFF-HOOK VOICE ANNOUNCEMENT TERMINAL ASSIGNMENT

<b>Telephone</b>	-	<b>Data No.</b>
4	-	20

PC Programming Guide			
<b>TECH</b>	B : B : C : J	<b>USER</b>	

**OPERATION:**

1. Go off-line.

2. Enter: Mode      Telephone **LK 4**      
 MIC  
 ICM

Data No.      2 0  
(Dial Pad)

Tel Port No. (01~92)	Data No.	Title	Setting Data
0 1 /	20 :	DPATH	NO
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change NO to YES, press CO/PBX line key 2.

YES    =   Off-Hook Voice Allow  
NO     =   Off-Hook Voice Deny

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys       Default

4. Press the CNF key to advance to the next Telephone Port No.

5. Press the TRF key to write the selected data, and advance to Memory Block 4-23, Prime Line/Hot Line Assignment.

6. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

**NOTES:**

- If Off-Hook Voice Announcement is assigned as allow, the maximum telephone port numbers is reduced by one, corresponding to the number of Off-Hook Voice channels.
  - Multiline terminals assigned for Off-Hook Voice Announcement must be installed in the first four ESI-F(8)-21 KTU ports.
  - The following lists the port relations on an ESI-F(8)-21 KTU if Off-Hook Voice Announcement is assigned:
- | <u>ESI-F(8)-21 KTU Port</u> |   | <u>Dual Path Port</u> |
|-----------------------------|---|-----------------------|
| 1                           | → | 5                     |
| 2                           | → | 6                     |
| 3                           | → | 7                     |
| 4                           | → | 8                     |
| 9                           | → | 13                    |
| 10                          | → | 14                    |
| 11                          | → | 15                    |
| 12                          | → | 16                    |
| f                           | → | f                     |
| 59                          | → | 63                    |
| 60                          | → | 64                    |

**GENERAL INFORMATION - OFF-HOOK VOICE ANNOUNCEMENT  
TERMINAL ASSIGNMENT**

This Memory Block specifies whether to allow or deny Off-Hook Voice Announcement function for ETW-24DS-1 (BK)/(SW) TEL terminals.



# PRIME LINE/HOT LINE ASSIGNMENT

Telephone	-	Data No.
4	-	23
<b>PC Programming Guide</b>		
TECH	B:B:B:F	USER

## OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4 ○ MIC  
● ICM

Data No. 2 3  
(Dial Pad)

Tel No. (01~96)	Data No.	Setting Data
0 1 /	23	-
-----		
TIME		DISPLAY

3. Use the dial pad to enter data.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter data.

LNR/SPD key + \* : \* input

LNR/SPD key + # : # input

Setting Data: 0 ~ 9, \*, #

Default	Not Specified
---------	---------------

- 4. Press the TRF key to write the selected data and advance to Memory Block 4-24, SLT Hookflash Assignment.
- 5. Press the SPKR key to go back on-line.

■ Additional Programming

Refer to Guide to Feature Programming in this manual.

## NOTES:

1. Prime Line function enables the user to seize a specified trunk when the multiline terminal goes off-hook. Refer to Memory Blocks 1-1-46 and 1-1-47; Access Code (1-Digit/2-digit) Assignment, function codes 063 and 064.
2. To call a specified station number or CO Line while on Hot Line, go off-hook.
3. When using Prime Line, an Access Code must be entered to seize the ICM for internal call processing (FNC + 6 + \*).
4. To use the Hot Line function, one of the following must be entered:
  - Station Number
  - Access Code + Dial Number
  - Speed Dial Access Code + Speed Dial Buffer Number
5. Up to 10 digits can be assigned.

### Example:

1. Hot Line

Tel No. (01~96)	Data No.	Setting Data
0 1 /	23	92149074000
-----		
TIME		DISPLAY

2. Prime Line

Tel No. (01~96)	Data No.	Setting Data
0 1 /	23	8
-----		
TIME		DISPLAY

8 = Tie Line Access Code

**GENERAL INFORMATION - PRIME LINE/HOT LINE ASSIGNMENT**

This Memory Block enables the user to access various features when going off-hook.

# SLT HOOKFLASH ASSIGNMENT

Telephone	-	Data No.
4	-	24
<b>PC Programming Guide</b>		
TECH	B:B:D:G	USER

## OPERATION:

1. Go off-line.

2. Enter: Mode Telephone **LK 4**  MIC  
 ICM  
 Data No. **2 4**  
 (Dial Pad)

Tel No. (01~96)	Data No.	Title	Setting Data
0 1 /	24 :	SLT HK	HOLD
-----		TIME DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change HOLD to DISC (Disconnect), press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
HOLD	DISC		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys Default

4. Press the TRF key to write the selected data and advance to Memory Block 4-26, DISA ID Number Station Assignment.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-3-02	SLT Hookflash Signal Selection	

## NOTES:

- This Memory Block affects only the single-line telephone station assigned Prime Line in Memory Block 4-23, Prime Line/Hot Line Assignment.
- When Prime Line is assigned to a single-line telephone, hookflash drops the CO and issues ICM dial tone if this Memory Block is set to disconnect.
- After the single-line telephone begins to dial out 9+ hookflash follows in Memory Block 1-3-02, SLT Hookflash Signal Selection.

## GENERAL INFORMATION - SLT HOOKFLASH ASSIGNMENT

This Memory Block specifies the single-line telephone hooking operation to either HOLD or disconnect the trunk.

## DISA ID NUMBER STATION ASSIGNMENT

Telephone	-	Data No.
4	-	26
<b>PC Programming Guide</b>		
TECH	B:E:D	USER

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4 ○ MIC  
● ICM

Data No. 2 6  
(Dial Pad)

Station Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	26 :		01
-----			
TIME		DISPLAY	

3. Use the dial pad to enter data.

- Assign DISA ID Buffer Number (01~96).

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter data.

CNF key : Next Station Port No.

- Press the TRF key to write the selected data and advance to Memory Block 4-28, Bilingual LCD Indication Selection.
- Press the SPKR key to go back on-line.

#### Default

Station Port Number	DISA ID Buffer Number
01	01
02	02
∫	∫
96	96

- Additional Programming

Refer to Guide to Feature Programming in this manual.

### GENERAL INFORMATION - DISA ID NUMBER STATION ASSIGNMENT

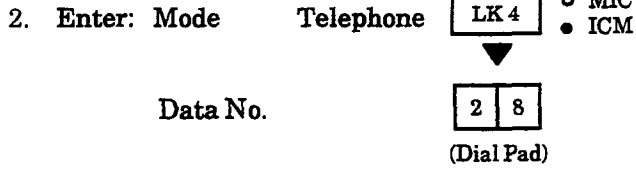
This Memory Block assigns the DISA ID Buffer Number corresponding to the station port number. The SMDR printout of the station number corresponds to the calling party who dialed the DISA ID number.

# BILINGUAL LCD INDICATION SELECTION

Telephone	-	Data No.
4	-	28
<b>PC Programming Guide</b>		
TECH	B:B:C:B	USER T:A

## OPERATION:

1. Go off-line.



## NOTES:

1. English or Japanese can be displayed on the LCD of a multiline terminal.

Tel No. (01~96)	Data No.	Title	Setting Data
0 1 /	28 :	LANGU	ENG
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change ENG (English) to JAPA (Japanese), press CO/PBX line key 1.

LK 1	LK 2	LK 3	LK 4
JAPA	ENG		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 4-29, HFU Selection.

5. Press the SPKR key to go back on-line.

### ■ Additional Programming

Refer to Guide to Feature Programming in this manual.

## GENERAL INFORMATION - BILINGUAL LCD INDICATION SELECTION

This Memory Block specifies which language (Japanese/English) is displayed on the multiline-terminal LCD.

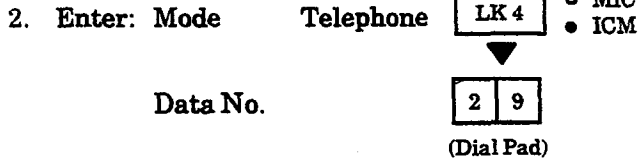
## HFU SELECTION

<b>Telephone</b>	-	<b>Data No.</b>
4	-	29

PC Programming Guide			
<b>TECH</b>	<b>B:B:C:F</b>	<b>USER</b>	<b>T:F</b>

### OPERATION:

1. Go off-line.



Tel Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	29	HFU	NO
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.
- To change NO to YES, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

NO = Handsfree Unit not operational  
 YES = Handsfree Unit operational

4. Press the TRF key to write the selected data and advance to Memory Block 4-30, Hold/Transfer Recall Display Selection.
5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

### GENERAL INFORMATION - HFU SELECTION

This Memory Block enables or disables the built-in Handsfree Unit per station.



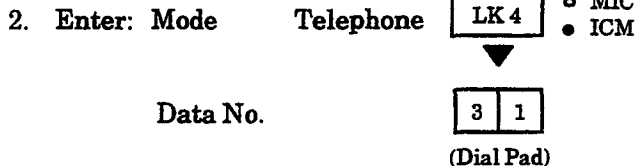
## RECEIVING INTERNAL/ALL CALL PAGE SELECTION

<b>Telephone</b>	-	<b>Data No.</b>
4	-	31

PC Programming Guide			
<b>TECH</b>	B:B:B:G	<b>USER</b>	T:H

**OPERATION:**

1. Go off-line.



**NOTES:**

1. Internal Emergency All Call Page and Internal Paging by Tenant Group overrides this Memory Block. Refer to Memory Block 1-1-46, Access Code (1-Digit) Assignment.

Tel No. (01~96)	Data No.	Title	Setting Data
0 1 /	31	: PAGING	YS
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change YES to NO, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
YB	NO		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

Default

4. Press the TRF key to write the selected data and advance to Memory Block 4-32, Trunk Digit Restriction.

5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

### GENERAL INFORMATION - RECEIVING INTERNAL/ALL CALL PAGE SELECTION

This Memory Block enables or disables receiving an Internal Zone or Internal All Zone Page per station.

# TRUNK DIGIT RESTRICTION

Telephone	-	Data No.
4	-	32
<b>PC Programming Guide</b>		
TECH	B:B:B:L	USER

## OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4 ○ MIC  
● ICM

Data No. 3 2  
(Dial Pad)

Tel No. (01~96)	Data No.	Title	Setting Data
0 1 /	3 2	: DG REST	= 00
-----			
TIME		DISPLAY	

3. Enter data using the dial pad.

Setting Data : 00, 01~99  
digits (00 :  
No Limit)

CNF key : Next Tel. No.

Default 00 (No Limit)

4. Press the TRF key to write the selected data and advance to Memory Block 4-33, Fax Indication Station Assignment.
5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Section 6 - Code Restriction in this chapter.

## NOTES:

1. Enter the digit that when dialed drops the call.
2. Code Restriction must be assigned before this feature is used.
3. Trunk Digit Restriction applies to all CO/PBX lines.
4. Tie Line Code Restriction must be assigned before this feature works on Tie lines.

### GENERAL INFORMATION - TRUNK DIGIT RESTRICTION

This Memory Block specifies, per station, the maximum number of digits that can be dialed while on any outside line.



# FAX INDICATION STATION ASSIGNMENT

Telephone	-	Data No.
4	-	33

PC Programming Guide			
TECH	B : B : C : E	USER	

## OPERATION:

1. Go off-line.

2. Enter: Mode Telephone **LK 4**  MIC  ICM

Data No. 

3	3
---	---

  
(Dial Pad)

## NOTES:

1. The station number of the Fax station must be programmed under a Feature Access or a One-Touch key on a multiline terminal.

Fax Port No. (01~96)	Data No.	Title	Tel Port No. (01~96)
0 1 /	33	FAX TEL	00
-----		DIS PLAY	

3. Enter the data using the dial pad.

← **\*** , **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter data.

Telephone Port No.: 00 (Not Assigned)

Fax Port No.: 01 ~ 96

Default **00 for all ports**

4. Press the TRF key to write the selected data and advance to Memory Block 4-34, Fax Indication Networking Assignment.

5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

## GENERAL INFORMATION - FAX INDICATION STATION ASSIGNMENT

This Memory Block specifies which multiline terminal displays the Fax indication.

## FAX INDICATION NETWORKING ASSIGNMENT

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4 ○ MIC  
● ICM

Data No. 3 4  
(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Fax Port No. (01~96)
0 1 /	3 4 :	FAX NET =	00
----- TIME                      DISPLAY			

3. Use the dial pad to enter the data.

Setting Data:                      00 (Not Assigned)  
   01 ~ 96 (Fax Port No.)

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter data.

CNF key : Next Tel. Port No.

Default	00 for all ports
---------	------------------

4. Press the TRF key to write the selected data and advance to Memory Block 4-35, Voice Mail/SLT Selection.

5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

Telephone	-	Data No.
4	-	34
<b>PC Programming Guide</b>		
TECH	B : B : C : D	USER

### NOTES:

1. This Memory Block must be programmed when requiring Fax messages over Tie/DID lines or the Automated Attendant with CO/PBX lines.

**GENERAL INFORMATION - FAX INDICATION NETWORKING ASSIGNMENT**

This Memory Block specifies the station port that receives a Fax message over a Tie line network or when using the Automated Attendant feature with CO/PBX lines.

## VOICE MAIL/SLT SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone **LK 4**  MIC

ICM

Data No.

**3 5**

(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	<u>3</u> 5 :	VMAIL	NO
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change NO to YES, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys



Default

4. Press the TRF key to write the selected data and advance to Memory Block 4-36, Voice Prompt Selection.

5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Refer to Guide to Feature Programming in this manual.

Telephone	-	Data No.
4	-	35

### PC Programming Guide

TECH	B:B:D:J	USER

### NOTES:

1. The SLT Adapter and the ADA (2) do not support Voice Mail.
2. A maximum number of 16 voice mail ports is supported by this system.

## GENERAL INFORMATION - VOICE MAIL/SLT SELECTION

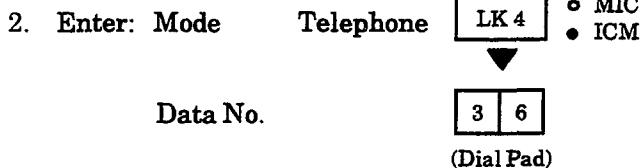
This Memory Block specifies whether or not a Voice Mail system is to be interfaced with the system for SLT ports.

# VOICE PROMPT SELECTION

Telephone	-	Data No.
4	-	36
<b>PC Programming Guide</b>		
TECH	B : B : B : N	USER T : P

## OPERATION:

1. Go off-line.



Tel Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	36	PROMPT	NO
		TIME	DISPLAY

3. Press the corresponding CO/PBX line key to change data option.

- To change NO to YES, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

Default

YES = Allow

NO = Deny

4. Press the TRF key to write the selected data and advance to Memory Block 4-37, Extension Line Key Ring Assignment (Day Mode).

5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

### GENERAL INFORMATION - VOICE PROMPT SELECTION

This Memory Block specifies whether to allow or deny the Voice Prompt feature per station.

## EXTENSION LINE KEY RING ASSIGNMENT (DAY MODE)

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4 ○ MIC  
● ICM

Data No. 3 7

(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Page
0 1 /	3 7	EXT DAY	1 01
-----			
TIME		DISPLAY	

3. Use the dial pad to enter data.

- RECALL key : Next page.
- FNC key : Previous page.
- CNF key : Next Tel. No.

Page 01 (Line Keys 1~8)

LK 1	LK 2	LK 3	LK 4
1	2	3	4
LK 5	LK 6	LK 7	LK 8
5	6	7	8

Page 02 (Line Keys 9~16)

LK 1	LK 2	LK 3	LK 4
9	10	11	12
LK 5	LK 6	LK 7	LK 8
13	14	15	16

Page 03 (Line Keys 17~24)

LK 1	LK 2	LK 3	LK 4
17	18	19	20
LK 5	LK 6	LK 7	LK 8
21	22	23	24

4. Press the TRF key to write the selected data and advance to Memory Block 4-38, Extension Line Key Ring Assignment (Night Mode).

5. Press the SPKR key to go back on-line.

■ Additional Programming

Refer to Guide to Feature Programming in this manual.

Telephone	-	Data No.
4	-	37

PC Programming Guide			
TECH	B:B:C:I	USER	

### NOTES:

1. When Ring is set, the LED lights green.
2. This Memory Block applies only when a Secondary Incoming Extension or a Call Arrival Key is programmed for line key appearance.
3. The Call Arrival Key feature requires system software version 2.50 or higher.

CO/PBX Line LED	<input checked="" type="checkbox"/> OFF	<input type="checkbox"/> ON (green)	<input type="checkbox"/> ON (red)
Data	No Ring	Immediate Ring	‡Delayed Ring

‡Series 300 or higher.

Default All telephones No Ring

### GENERAL INFORMATION - EXTENSION LINE KEY RING ASSIGNMENT (DAY MODE)

This Memory Block specifies the ringing assignment on incoming calls to a Secondary Incoming Extension or a Call Arrival Key.

## EXTENSION LINE KEY RING ASSIGNMENT (NIGHT MODE)

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4 • MIC  
• ICM

Data No. 3 8  
(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Page
0 1 /	38 :	EXT NT	1 01
-----			
TIME		DISPLAY	

3. Use the dial pad to enter data.

- RECALL key : Next page.
- FNC key : Previous page.
- CNF key : Next Tel No.

Page 01 (Line Key 1~8)

LK 1	LK 2	LK 3	LK 4
1	2	3	4
LK 5	LK 6	LK 7	LK 8
5	6	7	8

Page 02 (Line Key 9~18)

LK 1	LK 2	LK 3	LK 4
9	10	11	12
LK 5	LK 6	LK 7	LK 8
13	14	15	16

Page 03 (Line Key 17~24)

LK 1	LK 2	LK 3	LK 4
17	18	19	20
LK 5	LK 6	LK 7	LK 8
21	22	23	24

4. Press the TRF key to write the selected data and advance to Memory Block 4-39, ADA (2) Ring Mode Assignment.

5. Press the SPKR key to go back on-line.

■ Additional Programming  
Refer to Guide to Feature Programming in this manual.

Telephone	-	Data No.
4	-	38

PC Programming Guide			
TECH	B: B: C: I	USER	

### NOTES:

1. When Ring is set, the LED lights green.
2. This Memory Block applies only when a Secondary Incoming Extension or a Call Arrival Key is programmed for line key appearance.
3. The Call Arrival Key feature requires system software version 2.50 or higher.

CO/PBX Line LED	<input checked="" type="checkbox"/> OFF	<input type="checkbox"/> ON (green)	<input type="checkbox"/> ON (red)
Data	No Ring	Immediate Ring	#Delayed Ring

#Series 300 or higher.

Default All telephones No Ring

### GENERAL INFORMATION - EXTENSION LINE KEY RING ASSIGNMENT (NIGHT MODE)

This Memory Block specifies the ringing assignment on an incoming call to a Secondary Incoming Extension or a Call Arrival Key.

## ADA (2) RING MODE ASSIGNMENT

### OPERATION:

- Go off-line.
- Enter: Mode Telephone **LK 4**  MIC  ICM  
 Data No. **3 9**  
 (Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	39	: ADA 2	= STA
-----			
TIME		DISPLAY	

- Press the corresponding CO/PBX line key to change data option.
  - To change Station No. Ring to All Ring, press CO/PBX line key 3.

LK 1	LK 2	LK 3	LK 4
No Ring	Station Number (only)	All Ring	
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

 Default

**CNF** key : Next Tel. Port No.

- Press the TRF key to write the selected data and advance to Memory Block 4-40, LCR Class Selection.
- Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

Telephone	-	Data No.
4	-	39

PC Programming Guide			
TECH	B:B:C:A	USER	

### NOTES:

- No Ring: No calls ring at the single-line Telephone.
- Station Number Ring: Only calls directed to the multiline terminal Station Number ring at the single-line telephone.
- All Ring: All calls that ring at the multiline terminal also ring at the single-line telephone.
- A maximum of 16 ADA(2)-W (BK)/(SW) units can be installed in the system.

## GENERAL INFORMATION - ADA (2) RING MODE ASSIGNMENT

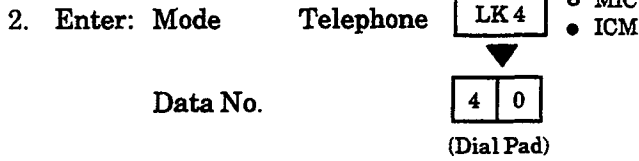
This Memory Block specifies the SLT to be connected to the ADA(2)-W (BK)/(SW) Unit ringing mode.

## LCR CLASS SELECTION

Telephone	-	Data No.	
4	-	40	
<b>PC Programming Guide</b>			
TECH	B: B: B: E	USER	T: 0

### OPERATION:

1. Go off-line.



Tel Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	4 0	: LCR CLS	= 0
-----		-----	
TIME	DISPLAY		

3. Press the corresponding CO/PBX line key to change data option.
- To change Class 0 to Class 1, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
Class 0	Class 1	Class 2	Class 3
LK 5	LK 6	LK 7	LK 8
Class 4			

CO/PBX line keys  Default

4. Press the TRF key to write the selected data and advance to Memory Block 4-41, SIE/CAR Ringing Line Preference Selection.
5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

### NOTES:

- LCR Class Selection corresponds to Area Code Tables as follows:  
 Class 0 No LCR  
 Class 1 Use Area Code Table 1  
 Class 2 Use Area Code Table 2  
 Class 3 Use Area Code Table 3  
 Class 4 Use Area Code Table 4
- Stations cannot be assigned to multiple LCR classes.
- An MIF-F(L)-10 KTU must be installed in the system to support this feature.

### GENERAL INFORMATION - LCR CLASS SELECTION

This Memory Block specifies the LCR Class per-station. The 120/Level II/Level II Advanced system has four Area Code Tables. Each LCR Class can be allowed different Trunk Group access, allowing priority levels for the station user.



## SIE/CAR RINGING LINE PREFERENCE SELECTION

Telephone	-	Data No.
4	-	41
<b>PC Programming Guide</b>		
TECH	B:B:C:M	USER T:O

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4 ○ MIC  
● ICM

Data No. 4 1

(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	41	S.C. PRF	YS
-----			
TIME		DISPLAY	

### NOTES:

1. This function requires system software version 2.00 or higher.
2. The Call Arrival Key feature requires system software version 2.50 software or higher.

3. Press the corresponding CO/PBX line key to change the data option.

- To change YES to NO, press CO/PBX line key 1.

CNF key : Next Tel No.

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

4. Press the TRF key to write the selected data, and advance to Memory Block 4-42, Call Forward-Busy Immediately/Delay Selection.
5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

**GENERAL INFORMATION - SIE/CAR RINGING LINE PREFERENCE SELECTION**

This Memory Block specifies whether to allow or deny Ringing Line Preference (go off-hook or press SPKR) on all telephones that are assigned Secondary Incoming Extensions and/or Call Arrival Keys.

# CALL FORWARD-BUSY IMMEDIATELY/DELAY SELECTION

Telephone	-	Data No.
4	-	42
<b>PC Programming Guide</b>		
TECH	B:B:B:P	USER T:O

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone **LK 4**  MIC  
 ICM  
 Data No. 

4	2
---	---

  
 (Dial Pad)

### NOTES:

- Setting Data:  
 YES = Delay forward  
 NO = Immediately forward
- Requires system software version 2.00 or higher.

TEL Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	4 2	: BUSYFWD	YS
-----		TIME	DISPLAY

3. Press the corresponding CO/PBX line key to change data option.
- To change YES to NO, press CO/PBX line key 1.

LK 1	LK 2	LK 3	LK 4
NO	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

**CNF** key : Next TEL No.

- Press the TRF key to write the selected data and advance to Memory Block 4-43, Station to Call Appearance Block Assignment.
- Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-2-22	Call Forward No Answer Timer Selection	

## GENERAL INFORMATION - CALL FORWARD-BUSY IMMEDIATELY/DELAY SELECTION

This Memory Block specifies an immediate forward or delay forward for a Call Waiting incoming call if the station is set for Call Forward Busy.

## STATION TO CALL APPEARANCE BLOCK ASSIGNMENT

Telephone	-	Data No.
4	-	43
<b>PC Programming Guide</b>		
TECH	B:B:B:0	USER

### OPERATION:

1. Go off-line.

2. Enter: Mode System LK 4 ○ MIC  
● ICM



TEL Port No. (01~96)	Data No.	Title	Call Appearance Block (00 ~ 47)
0 1 /	43 :	CAP	NO00
-----			
TIME		DISPLAY	

### NOTES:

1. This feature requires system software version 2.50 or higher.

3. Enter data using the dial pad.  
Example: To assign TEL Port Number 01 to Call Appearance Block 01, enter 01 using the dial pad.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter setting data.

CNF key : Next CAR No.

4. Press the TRF key to write the selected data and advance to Memory Block 4-44, Caller ID Outgoing CO Selection.
5. Press the SPKR key to go back on-line.

Default	All Stations are assigned to Call Appearance Block 00.
---------	--

#### ■ Additional Programming

Refer to Guide to Feature Programming in this manual.

### GENERAL INFORMATION - STATION TO CALL APPEARANCE BLOCK ASSIGNMENT

This Memory Block assigns a multiline terminal to a Call Appearance Block.

# CALLER ID OUTGOING CO SELECTION

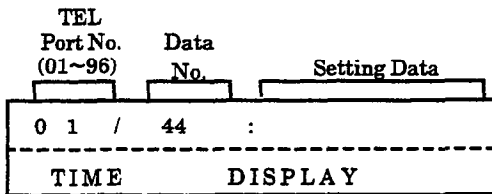
Telephone	-	Data No.
4	-	44
<b>PC Programming Guide</b>		
TECH	A:J:D	USER

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4 ○ MIC  
● ICM

Data No. 4 4  
(Dial Pad)



3. Enter data using the dial pad.

Example: To assign TEL Port Number 01 to seize Trunk Group 01, enter 9 using the dial pad. Access Code 9 is assigned using MB 1-1-46, Access Code (1-Digit) Assignment.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter setting data.

CNF key

Default	Not specified.
---------	----------------

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

### NOTES:

1. Setting Data is Access Code Assignment. (Memory Block 1-1-46, 47, 48, Access Code (1-Digit/2-Digit/3-Digit) Assignment ex: Dial 9 (101) → Trunk Group 1.
2. The Caller ID Scroll Key is assigned using Memory Blocks 2-06, Line Key Selection for Tenant Mode, and 4-12, Line Key Selection for Telephone Mode.
3. This feature requires system software version 4.50 or higher.

## GENERAL INFORMATION - CALLER ID OUTGOING CO SELECTION

This Memory Block assigns the Trunk Group, Route Advanced Group, or Closed Numbering Group that is seized for Caller ID Outgoing Calls. The Caller ID Scroll Key is used to access the Caller ID to be called.

# SLT DATA LINE SECURITY ASSIGNMENT

## OPERATION:

1. Go off-line.

2. Enter: Mode Telephone **LK 4**  MIC  ICM

Data No. 

9	0
---	---

  
(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	9 0	SLT	NORMAL
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change SLT NORMAL to SLT DATA, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
SLT NORMAL	SLT DATA		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

**CNF** key : Next Tel. Port No.

4. Press the TRF key to write the selected data and advance to Memory Block 4-91, Telephone Ringing Variation Selection.

5. Press the SPKR key to go back on-line.

■ **Additional Programming**

Refer to Guide to Feature Programming in this manual.

Telephone	-	Data No.
4	-	90
<b>PC Programming Guide</b>		
TECH	B : B : B : Q	USER

## NOTES:

1. If connecting SLT/VM, assign SLT NORMAL; if connecting FAX/Modem, assign SLT DATA.
2. If a multiline terminal is assigned for data line security, Tone Override and Call Alert Notification tones are not heard from the handset; however, the tone is still sent and heard from the speaker when off-hook.
3. Data Line Security denies a station from barging in, even if Barge-In is allowed in Class of Service.
4. If this MB is set to SLT Data the Voice Override Tone is not heard when doing a Voice Over Split.

### GENERAL INFORMATION - SLT DATA LINE SECURITY ASSIGNMENT

This Memory Block specifies the Normal/Data position for single-line telephones.

## TELEPHONE RINGING VARIATION SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone LK 4 ○ MIC  
● ICM

Data No. 9 1  
(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	91	: RNG TONE =	M
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change M to H, press CO/PBX line key 3.

LK 1	LK 2	LK 3	LK 4
Medium (M)	Low (L)	High (H)	
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

Default

CNF key : Next Tel. No.

4. Press the TRF key to write the selected data and advance to Memory Block 4-92, Receiving Volume Selection.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-28	Distinctive Ringing by Telephone or CO Selection	

Telephone	-	Data No.
4	-	91
<b>PC Programming Guide</b>		
TECH	B:B:C:C	USER T:D

### NOTES:

1. This Memory Block is applicable if Telephone is selected in Memory Block 1-1-28, Distinctive Ringing by Telephone or CO Selection.
2. High, medium or low ringing tone follows when transferring calls.

## GENERAL INFORMATION - TELEPHONE RINGING VARIATION SELECTION

Refer to Memory Block 1-1-28, Distinctive Ringing by Telephone or CO Selection. If Telephone is specified in this Memory Block, then each telephone in the system can be assigned a ringing tone frequency (Low, Medium, or High).

## RECEIVING VOLUME SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode

Telephone

LK 4

- MIC
- ICM

Data No.

9 2

(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	92	RCV	DOWN
-----		-----	
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change DOWN to UP, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
LK 2	UP		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

Default

CNF key : Next Tel No.

4. Press the TRF key to write the selected data and advance to Memory Block 4-93, Internal Zone Paging Selection.

5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-28	Distinctive Ringing by Telephone or CO Selection	

Telephone	-	Data No.
4	-	92

PC Programming Guide			
TECH	B:B:B:H	USER	T:K

### NOTES:

1. Receiving Volume Down

Multiline terminal: The volume (increased by FNC + 2) is reset when you hang up.

Single-line telephone: Normal

2. Receiving Volume Up

Multiline terminal: The volume (increased by FNC + 2) is not reset when you hang up.

Single-line telephone: The volume is up by 6 dB.

This Memory Block specifies one of the above two modes.

3. This feature applies to internal and external calls.

## GENERAL INFORMATION - RECEIVING VOLUME SELECTION

This Memory Block specifies whether the receiving volume is returned to normal (down) or kept as is (up) on a call after hanging up.

# INTERNAL ZONE PAGING SELECTION

Telephone	-	Data No.
4	-	93

PC Programming Guide			
TECH	B:B:C:H	USER	T:I

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone **LK 4**  MIC  ICM

Data No. **9 3**  
(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	93	: ZONE	NO
-----			
TIME	DISPLAY		

### NOTES:

- Any of the following three zones can be specified.  
All Internal Zones: Paged by Dialing 51  
Zone A: Paged by Dialing 52.  
Zone B: Paged by Dialing 53.  
Zone C: Paged by Dialing 54.
- Telephones can be assigned to No Zone. An All Internal Zone (51) pages the telephone unless assignment of No Page Receive is assigned Memory Block 4-31, Receiving Internal/All Call Page Selection.
- All Internal Zone Paging pages all idle Multiline Terminals.

3. Press the corresponding CO/PBX line key to change data option.
- To change NO to Zone A, press CO/PBX line key 2.

LK 1	LK 2	LK 3	LK 4
NO	Zone A	Zone B	Zone C
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

**CNF** key : Next Tel. No.

4. Press the TRF key to write the selected data and advance to Memory Block 4-94, 3-Minute Alarm Selection.
5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-28	Distinctive Ringing by Telephone or CO Selection	

## GENERAL INFORMATION - INTERNAL ZONE PAGING SELECTION

This Memory Block places stations into Internal Page Zones.



### 3-MINUTE ALARM SELECTION

#### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone **LK 4**  MIC

ICM

Data No.

**9 4**

(Dial Pad)

Tel Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	94	3mALM	NO
-----		-----	
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change NO to YES, press CO/PBX line key 2.

<b>LK 1</b>	LK 2	LK 3	LK 4
<b>NO</b>	YES		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys

 Default

**CNF** key : Next Tel. No.

4. Press the TRF key to write the selected data and advance to Memory Block 4-95, DTMF/DP SLT Type Selection.

5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Refer to Guide to Feature Programming in this manual.

Telephone	-	Data No.
4	-	94

#### PC Programming Guide

TECH	B:B:C:L	USER

#### NOTES:

1. Approximately a one-second warning signal sounds every three minutes during CO/PBX calls.
2. The Alarm Tone sounds only through the terminal speaker.
3. If the built-in speakerphone is used, the warning signal is not used.

### GENERAL INFORMATION - 3-MINUTE ALARM SELECTION

This Memory Block specifies whether or not a warning signal tone is generated at 3-minute intervals during an outgoing or incoming call per station.

## DTMF/DP SLT TYPE SELECTION

### OPERATION:

1. Go off-line.

2. Enter: Mode Telephone **LK 4**  MIC  ICM  
 Data No. **9 5**  
 (Dial Pad)

Telephone	-	Data No.
4	-	95

PC Programming Guide			
TECH	B:B:D:C	USER	

### NOTES:

1. Both 10pps or 20pps are supported under the DP selection.

Tel Port No. (01~96)	Data No.	Title	Setting Data
0 1 /	95	SLT	= MF
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to change data option.

- To change DTMF to DP, press CO/PBX line key 1.

LK 1	LK 2	LK 3	LK 4
DP	DTMF		
LK 5	LK 6	LK 7	LK 8

CO/PBX line keys  Default

**CNF** key : Next Tel. No.

4. Press the TRF key twice to write the selected data and advance to Memory Block 4-90, SLT Data Line Security Assignment.

5. Press the SPKR key to go back on-line.

#### ■ Additional Programming

Refer to Guide to Feature Programming in this manual.

### GENERAL INFORMATION - DTMF/DP SLT TYPE SELECTION

This Memory Block specifies the type of single-line telephone that is connected to the system (DP or DTMF) per port.

# DIGIT ADD/DEL FOR TIE LINE NETWORKING

## OPERATION:

1. Go off-line.

2. Enter: Mode Trunk Group **LK 5** ○ MIC  
● ICM



Data No.



(Dial Pad)

Trunk Group No. (01~32)	Data No.	Title	Setting Data
0 1 /	00 :	ADD/DEL	000
-----			
TIME		DISPLAY	

3. Enter data using the dial pad.

← **\*** , **#** → : To move cursor.

Dial pad **0** ~ **9** : To enter data.

**CNF** key : Next Trunk Group No.

Default **No Addition and Delete - 000**

### Setting Data

- 000 : No Addition or Deletion
- 001~009 : [1]~[9] Addition
- 010 : [0] Digit Addition
- 100~199 : [00]~[99] Addition
- 201 : 1 Digit Deletion
- 202 : 2 Digit Deletion
- 301~309 : 1 digit Delete and "1" ~ "9" Add
- 310 : 1 digit Delete and "0" Add
- 400~499 : 1 digit Delete and "00" ~ "99" Add
- 501~509 : 2 digit Delete and "1" ~ "9" Add
- 510 : 2 digit Delete and "0" Add
- 600~699 : 2 digit Delete and "00" ~ "99" Add

4. Press the TRF key to write the selected data and advance to Memory Block 5-01, Tie Line Networking Tandem Connection Assignment.

5. Press the SPKR key to go back on-line.

Trunk Group	-	Data No.
5	-	00
<b>PC Programming Guide</b>		
TECH	A:D:B:A	USER

## NOTES:

1. This Memory Block applies only when two or more systems are connected by Tie lines or when the systems are connected by a DID line.
2. A call directed to the local system is connected to an intercom line that is served by the system.
3. If the call is intended for another system, the Tie line is directed to resend the number.
4. At default, DID lines are not assigned to a Trunk Group.
5. This Memory Block affects T1 Channels assigned as Tie/DID lines. DT1-F(A)-20 KTU and system software version 3.00 or higher are required.

### Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-46	Access Code (1-Digit) Assignment	
3-03	Trunk-to-Trunk Group Assignment	✓

## GENERAL INFORMATION - DIGIT ADD/DEL FOR TIE LINE NETWORKING

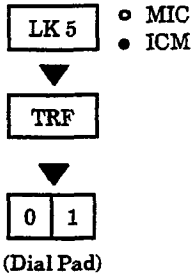
This Memory Block specifies the number of digits to be added to and/or deleted from the telephone number sent from a distant system over Tie lines or from DID lines. The digits enable the system to determine whether a call is directed to itself (local) or another system (distant). Refer to the notes above.

# TIE LINE NETWORKING TANDEM CONNECTION ASSIGNMENT

## OPERATION:

1. Go off-line.

2. Enter: Mode Trunk Group



Data No.

(Incoming) Trunk Group No. (01~32)	Data No.	Title	(Outgoing) Trunk Group No. (01~32) Page No.
0 1 /	01 :	TANDEM	01
-----		TIME	DISPLAY

3. Press the corresponding CO/PBX line key to enter the data.

- Press **RECALL** or **FNC** key to change page.

← \* , # → : To move cursor.

**RECALL** key : Next page.

**FNC** key : Previous page.

**CNF** key : Next Trunk Group No.

CO/PBX Line LED	<input type="checkbox"/> OFF	<input checked="" type="checkbox"/> ON
Data	Disabled	Enabled

Default

4. After entering all data for all pages, press the **TRF** key to write the selected data and advance to Memory Block 5-02, 8-Digit Matching Table to Trunk Group Assignment.

5. Press the **SPKR** key to go back on-line.

Trunk Group	-	Data No.
5	-	01
PC Programming Guide		
TECH	A:D:B:B	USER

Trunk Group Number (01~32) corresponds to CO/PBX line key.

Page 1 (01)

LK 1	LK 2	LK 3	LK 4
01	02	03	04
LK 5	LK 6	LK 7	LK 8
05	06	07	08

Page 3 (17)

LK 1	LK 2	LK 3	LK 4
17	18	19	20
LK 5	LK 6	LK 7	LK 8
21	22	23	24

CO/PBX line keys

Page 2 (09)

LK 1	LK 2	LK 3	LK 4
09	10	11	12
LK 5	LK 6	LK 7	LK 8
13	14	15	16

Page 4 (25)

LK 1	LK 2	LK 3	LK 4
25	26	27	28
LK 5	LK 6	LK 7	LK 8
29	30	31	32

Default  All Trunk Groups

## NOTES:

1. Tandem connection of Trunk Group-to-Trunk Group must be specified separately.

### Additional Programming

Memory Block No.	Memory Block Name	Required
3-03	Trunk-to-Trunk Group Assignment	
4-09	Telephone to Tenant Assignment	

## GENERAL INFORMATION - TIE LINE NETWORKING TANDEM CONNECTION ASSIGNMENT

This Memory Block specifies whether or not Trunk Groups connected to the system allow incoming Trunk Groups to be connected to outgoing Trunk Groups for tandem connections.

## 8-DIGIT MATCHING TABLE TO TRUNK GROUP ASSIGNMENT

### OPERATION:

1. Go off-line.

2. Enter: Mode Trunk Group LK 5 ○ MIC  
● ICM



TRF



Data No. 0 2

(Dial Pad)

Trunk Group No. (01~32)	Data No.	Title	Page No.
0 1 /	02 :	8DG = TRKG	1
-----			
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to enter the data option.

- Press the **RECALL** or **FNC** key to turn pages.

← \* , # → : To move cursor.

RECALL key : Next page.

FNC key : Previous page.

CNF key : Next Trunk Group No.

CO/PBX Line LED	<input type="checkbox"/> OFF	<input checked="" type="checkbox"/> ON	
Data	Disabled	Enabled	<span style="display: inline-block; width: 15px; height: 15px; background-color: #cccccc; border: 1px solid black;"></span> Default

**Page 1**

LK 1	LK 2	LK 3	LK 4
Table 00	Table 01	Table 02	Table 03
LK 5	LK 6	LK 7	LK 8
Table 04	Table 05	Table 06	Table 07

**Page 2**

LK 1	LK 2	LK 3	LK 4
Table 08	Table 09	Table 10	Table 11
LK 5	LK 6	LK 7	LK 8
Table 12	Table 13	Table 14	Table 15

- Additional Programming  
Refer to Section 6 - Code Restriction in this chapter.

Trunk Group	-	Data No.
5	-	02
<b>PC Programming Guide</b>		
TECH	A:A:H	USER

4. After entering all data for all pages; press the **TRF** key to write the selected data, and advance to Memory Block 5-03, OCC Table to Trunk Group Assignment.
5. Press the **SPKR** key to go back on-line.

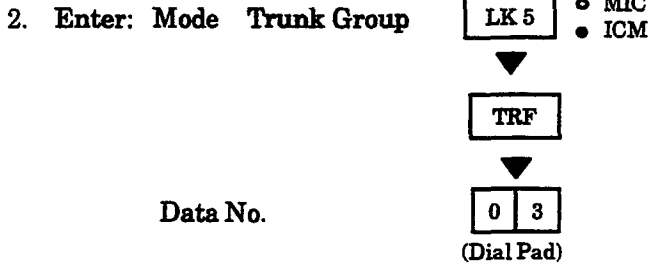
## GENERAL INFORMATION - 8-DIGIT MATCHING TABLE TO TRUNK GROUP ASSIGNMENT

This Memory Block assigns each Trunk Group to the 8-Digit Matching Tables.

## OCC TABLE TO TRUNK GROUP ASSIGNMENT

### OPERATION:

1. Go off-line.



Trunk Group	-	Data No.
5	-	03

PC Programming Guide		
TECH	A:A:K	USER

4. After entering all data for all pages, press the TRF key to write the selected data, and advance to Memory Block 5-00, Digit Add/Del for Tie Line Networking.
5. Press the SPKR key to go back on-line.

Trunk Group No. (01~32)	Data No.	Title	Page No.
0 1 /	03 :	OCC - TRKG	1 1
TIME		DISPLAY	

3. Press the corresponding CO/PBX line key to enter the data option.

- Press the RECALL or FNC key to change pages.

← \* , # → : To move cursor.

**RECALL** key : Next page.

**FNC** key : Previous page.

**CNF** key : Next Trunk Group No.

CO/PBX Line LED	<input checked="" type="checkbox"/> OFF	<input type="checkbox"/> ON	
Data	Disabled	Enabled	<input checked="" type="checkbox"/> Default

Page 1

LK 1	LK 2	LK 3	LK 4
Table 00	Table 01	Table 02	Table 03
LK 5	LK 6	LK 7	LK 8
Table 04	Table 05	Table 06	Table 07

Page 2

LK 1	LK 2	LK 3	LK 4
Table 08	Table 09	Table 10	Table 11
LK 5	LK 6	LK 7	LK 8
Table 12	Table 13	Table 14	Table 15

Default	<input checked="" type="checkbox"/> Use all tables
---------	--

■ Additional Programming

Refer to Section 6 - Code Restriction in this chapter.

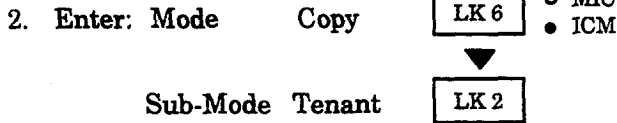
## GENERAL INFORMATION - OCC TABLE TO TRUNK GROUP ASSIGNMENT

This Memory Block assigns each of the 16 OCC Tables to each Trunk Group.

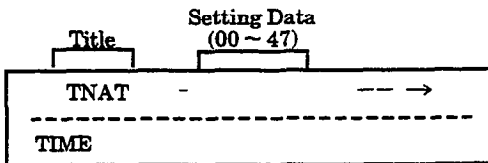
# TENANT MODE COPY ASSIGNMENT

## OPERATION:

1. Go off-line.



Copy	Tenant	Data No.
6	2	-
<b>PC Programming Guide</b>		
TECH	F-3 COPY	USER



Dial pad 0 ~ 9 : To enter data.

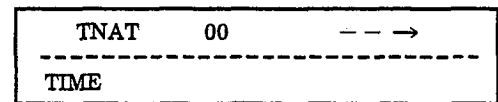
HOLD key : To clear all data when placed at cursor position.

For example, to copy data of Tenant 00 to Tenant 05~07.

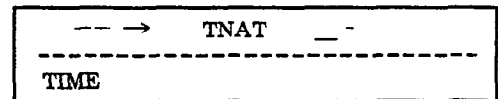
- Enter original Tenant No. 00 using the dial pad, and press the TRF key.
- Enter Start Tenant No. 05, and press the TRF key.
- Enter End Tenant No. 07, and press the TRF key.
- The upper line in the display returns to the setting above to copy another Tenant.

## EXAMPLE:

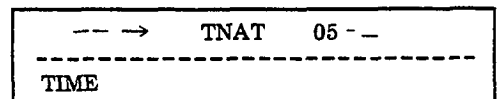
1. Enter the original Tenant No. Using the dial pad, press 0 0.



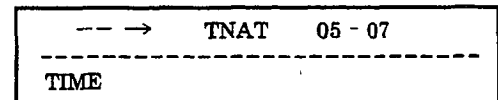
2. Press the TRF key.



3. Enter the destination TNAT No. (00 ~ 47). Using the dial pad, press 0 5.



4. Using the dial pad, press 0 7.



5. Press the TRF key.

## GENERAL INFORMATION - TENANT MODE COPY ASSIGNMENT

This Memory Block enables copying data from one tenant to another tenant or multiple consecutive tenants.

# CO LINE MODE COPY ASSIGNMENT

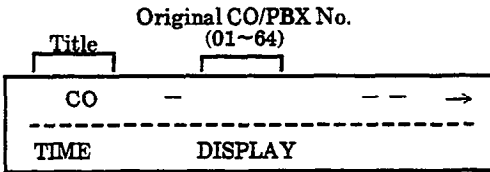
## OPERATION:

1. Go off-line.

2. Enter: Mode Copy LK 6 ○ MIC  
● ICM

▼  
Sub-Mode CO/PBX LK 3

Copy	CO/PBX	Data No.
6	3	-
<b>PC Programming Guide</b>		
TECH	F3-COPY	USER



Dial pad 0 ~ 9 : To enter data.

HOLD key : To clear all data when placed at cursor position.

For example, to copy data of CO/PBX line 01 to CO/PBX line 05~07:

- Enter original CO/PBX Line 01 using the dial pad; press the TRF key.

Original

CO/PBX No.      \* CO/PBX No.  
(01~64)                      (01~64)

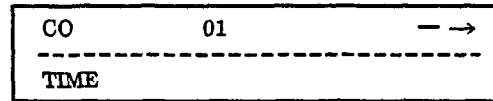
- Enter the Start CO/PBX No., and press the TRF key.
- Enter the End CO/PBX No., and press the TRF key.

\* Entry is not needed when copying to a single CO/PBX number only.

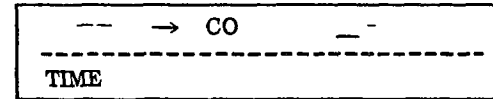
- The upper line in the display disappears, leaving only the time display in the lower line.

## EXAMPLE:

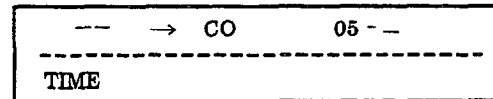
1. Enter the original CO/PBX No. Using the dial pad, press 01.



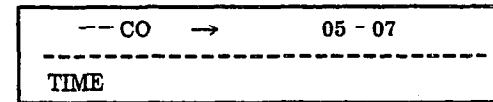
2. Press the TRF key.



3. Enter the destination CO/PBX No. (02 ~ 64). Using the dial pad, press 05.



4. Using the dial pad, press 07.



5. Press the TRF key.

## GENERAL INFORMATION - CO LINE MODE COPY ASSIGNMENT

This Memory Block enables copying data from one CO/PBX line to another CO/PBX line or multiple consecutive CO/PBX lines.



# TELEPHONE MODE COPY ASSIGNMENT

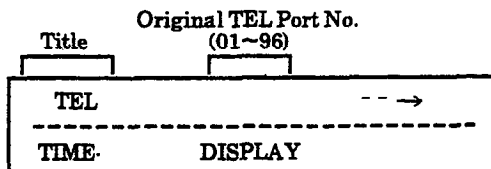
## OPERATION:

1. Go off-line.

2. Enter: Mode Copy LK 6 ● MIC

● ICM

Sub-Mode Telephone LK 4



Dial pad 0 ~ 9 : To enter data.

HOLD key : To clear all data when placed at cursor position.

For example, to copy data of telephone port 10 to telephone ports 20~30.

- Enter original telephone port number 01 using the dial pad; press the TRF key.

Original

Port No.      \* Port No.  
(01~96)          (01~96)

- Enter the Start Tel. No., and press the TRF key.
- Enter the End Tel. No., and press the TRF key.

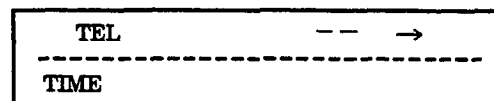
\* Entry is not needed when copying to a single Tel. No. only.

- The upper line in the display disappears, leaving only the time display in the lower line.

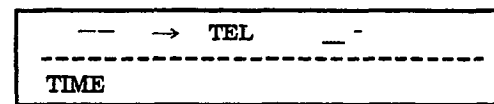
Copy	Telephone	Data No.
6	4	-
<b>PC Programming Guide</b>		
TECH	F3-COPY	USER

## EXAMPLE:

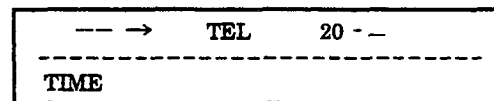
1. Enter the original Tel No. Using the dial pad, press 0 0.



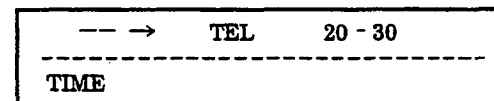
2. Press the TRF key.



3. Enter the destination Tel Port No. (01 ~ 96). Using the dial pad, press 20.



4. Using the dial pad, press 30.



5. Press the TRF key.

## GENERAL INFORMATION - TELEPHONE MODE COPY ASSIGNMENT

This Memory Block enables copying data from one telephone port to another telephone port or multiple consecutive telephone ports.

# TRUNK GROUP MODE COPY ASSIGNMENT

## OPERATION:

1. Go off-line.

2. Enter: Mode Copy

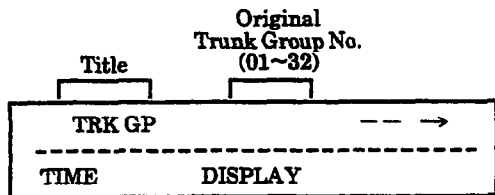


Sub-Mode Trunk Group



Copy	Trunk Group	Data No.
6	5	.

PC Programming Guide			
TECH	F3-COPY	USER	



Dial pad 0 ~ 9 : To enter data.

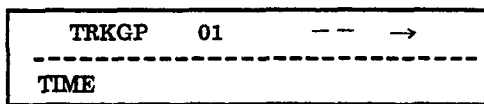
**HOLD** key : To clear all data when placed at cursor position.

For example, to copy data of Trunk Group 01 to Trunk Groups 10~14.

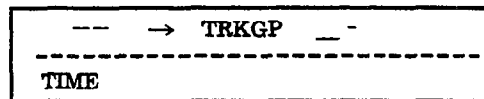
- Enter original Trunk Group number 01 using the dial pad, and press the TRF key.
- Enter Start Trunk Group Number 10.
- Enter End Trunk Group No. 14, and press the TRF key.
  - \* Entry is not needed when copying to a single Trunk Group number only.
- The upper line in the display disappears, leaving only the time display in the lower line.

## EXAMPLE:

1. Enter the original Trunk Group using the dial pad; press 01~32.



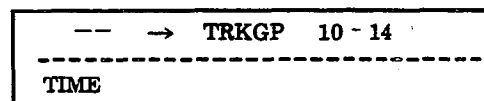
2. Press the TRF key.



3. Enter the Start Trunk Group No. (01 ~ 32). Using the dial pad, press 10.



4. Enter the End Trunk Group (01~32). Using the dial pad, press 14.



5. Press the TRF key.

### GENERAL INFORMATION - TRUNK GROUP MODE COPY ASSIGNMENT

This Memory Block enables copying data from one Trunk Group to another Trunk Group or multiple consecutive Trunk Groups.

# CARD INTERFACE SLOT ASSIGNMENT

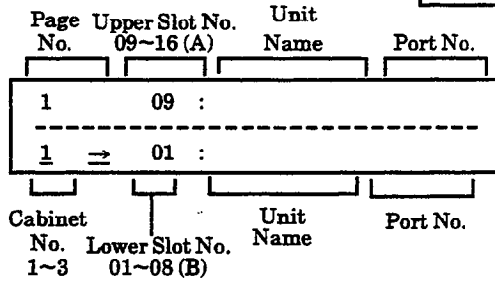
## OPERATION:

1. Go off-line.

2. Enter: Mode Copy LK 7  MIC

ICM

▼  
LK 1



3. Enter data using the line key.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To change lower Slot No. and Cabinet No.

RECALL key : Next page.

FNC key : Previous page.

Enter Slot No. A using dial pad (9)

Enter Slot No. B using dial pad (0)

To assign upper Slot No. for DTI-F( )-10/DTI-F(A)-20 KTU, press the LNR/SPD key.

4. Press the TRF key to write the selected data and advance to the next lower Slot No.

5. Press the SPKR key to go back on-line.

■ Additional Programming

Memory Block No.	Memory Block Name	Required
1-1-46	Access Code (1-Digit) Assignment	
3-03	Trunk-to-Trunk Group Assignment	

KTU	Slot	-
7	1	-

PC Programming Guide		
TECH	B:A:A/B	USER

Page 1

Line Key	Setting Data	LCD Indication
1	NON	
2	COI-F(4)-20 or COI-F(4)-30	COI 4
3	COI-F(8)-20 or COI-F(4)-30	COI 8
4	NON	
5	NON	
6	ESI-F(8)-21	ESI 8-21
7	NON	
8	SLI-F(8G)-21	SLI 8G-21

Page 2

Line Key	Setting Data	LCD Indication
1	LLT-F(2G)-10	LLT2G-10
2	TLL-F(2)-10	TLI 2-10
3	DID-F(4)-10	DID 4-10
4	NON	
5	NON	
6	PBR-F(4)-11	PBR 4-11
7	NON	
8	ECR-F-11	ECR-11

Page 3

Line Key	Setting Data	LCD Indication
1	NON	
2	VRS-F(4)-11	VRS 4-11
3	DTI-F( )-10/ DTI-F(A)-20 KTU	DTI
4	MIF	MIF
5	BRT-F(4)-10	BRT
6	NON	
7	NON	
8	NON	

*Continued on next page.*

## CARD INTERFACE SLOT ASSIGNMENT (continued)

KTU	Slot	-
7	1	-

KTU UNIT	PORT NO. *1	UPPER *2	SLOT *3 1~8	OPTION SLOT *3 A/B	SLOT *3 1~6	SLOT *3 1~4
COI-F(4)-20	C	O	O			
COI-F(8)-20	C	X	O			
COI-F(4)-30	C	O	O			O
COI-F(8)-30	C	X	O			O
ESI-F(8)-21	T	X	O			
SLI-F(8G)-21	T	X	O			
LLT-F(2G)-10	C	O	O			
TLI-F(2)-11	C	O	O			
DID-F(4)-10	C	O	O			
PBR-F(4)-11	-	X	O			
ECR-F-11	-	X	O			
VRS-F(4)-11	V	X	O			
DTI-F( )-10	C	X			O	
DTI-F(A)-20	C	X			O	
MIF-F(S)-10	-	X		O		O
MIF-F(L)-10	-	X		O		O
MIF-F(A)-10	-	X		O		O
MIF-F(U)-10	-	X		O		O
MIF-F(C)-10	-	X		O		O
BRT-F(4)-10	C	X				O

## NOTES:

- \*1 C : Port Number of CO/PBX Line  
 T : Telephone Port Number (smallest number is displayed)  
 V : Voice Recording Service Package  
 - : No Display
- \*2 O : When the KTU is assigned to a lower slot, it can be assigned also to an upper slot in the same manner.  
 X : When the KTU is assigned to a lower slot, it cannot be assigned to another unit in an upper slot.
- \*3 O : Enabled  
 Space : Disabled

- KTU interface cards are assigned automatically during initial power up.
- ESI KTU with ports 01 and 02 can't be changed.
- If KTU system capacity is exceeded, ERROR is displayed on the LCD, and using the TRF key to write the data is not accepted.
- DTI KTU must be assigned in both the upper and lower slot. The DTI KTU is installed in slot 1 or 4 of the first and second KSU only.
- When changing an interface slot assignment to a different KTU, use the following procedure:
  - Remove the KTU installed in the slot.
  - Program slot for new KTU in this Memory Block.
  - Install the new KTU.
- COI-F(4)-30 and COI-F(8)-30 can be assigned in slots 1~8, but with Caller ID they must be assigned in slots 1~4.

### GENERAL INFORMATION - CARD INTERFACE SLOT ASSIGNMENT

This Memory Block specifies the type of installed KTUs.



## MIF (ACD) ASSIGNMENT

KTU	MIF	Data No.
7	3	00

PC Programming Guide		
TECH	B : A : E-H	USER

### OPERATION:

1. Go off-line.

2. Enter: Mode      KTU      LK 7      ○ MIC



\*



(Dial Pad)

### NOTES:

1. MIF KTUs can be installed only in the ESF-SB-10 KSU in any of the following Interface Slots:

OP, IF1/OP1 ~ IF4/OPS4

In the ESF-XB-10 KSU or the first ESF-XE-10 KSU installed, the following slots are available:

OPA, OPB, IF1/OP1 ~ IF4/OP4

2. This Memory Block allows assignment of the MIF KTU(s) in order sequence.

Example: Beginning with slot IF/OP1, the first installed MIF KTU is assigned 01 (regardless of which slot it is installed in). The second MIF KTU is assigned 02 (regardless of which slot it is installed in).

3. MIF-F(A)-10 KTU and MIF-F(U)-10 KTU cannot be installed in the same system.

Data No.	Title	Setting Data
00	ACD	MIF = 00
-----		
TIME	DISPLAY	

3. Enter data using the dial pad.

← \* , # →      : To move cursor.

Dial pad 0 ~ 9      : To enter data.

Default	No Assignment (00)
---------	--------------------

Setting Data : 00, 01, 02

4. Press the TRF key to write the selected data and advance to Memory Block 7-3-01, MIF (LCR) Assignment.

5. Press the SPKR key to go back on-line.

### GENERAL INFORMATION - MIF (ACD) ASSIGNMENT

This Memory Block enables the ACD function and allows the assignment of KTU order for an MIF-F(A)-10 KTU.

## MIF (LCR) ASSIGNMENT

KTU	MIF	Data No.
7	3	01
<b>PC Programming Guide</b>		
TECH	B:A:F	USER

### OPERATION:

1. Go off-line.

2. Enter: Mode      KTU            ○ MIC

▼

\*

\*

▼

(Dial Pad)

Data No.	Title	Setting Data
01	LCR	MIF = 00
-----		
TIME	DISPLAY	

3. Enter data using the dial pad.

←  ,  →      : To move cursor.

Dial pad  ~       : To enter data.

Default

Setting Data    :    00, 01, 02

4. Press the TRF key to write the selected data, and advance to Memory Block 7-3-02, MIF (SMDR) Assignment.

5. Press the SPKR key to go back on-line.

### NOTES:

1. MIF KTUs can be installed only in the ESF-SB-10 KSU in any of the following Interface Slots:

OP, IF1/OP1 ~ IF4/OP4

In the ESF-XB-10 KSU or the first ESF-XE-10 KSU installed, the following slots are available:

OPA, OPB, IF1/OP1 ~ IF4/OP4

2. This Memory Block allows assignment of the MIF KTU(s) in order sequence.

Example: Beginning with slot AP/IF 1, the first installed MIF KTU is assigned 01 (regardless of which slot it is installed in). The second MIF KTU is assigned 02 (regardless of which slot it is installed in).

### GENERAL INFORMATION - MIF (LCR) ASSIGNMENT

This Memory Block enables the LCR function and allows the assignment of KTU order for an MIF-F(L)-10 KTU.





# MIF (UCD) ASSIGNMENT

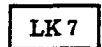
KTU	MIF	Data No.
7	3	03

PC Programming Guide			
TECH	B : A : H	USER	

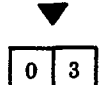
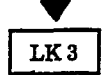
## OPERATION:

1. Go off-line.

2. Enter: Mode **KTU**     **LK 7**     ○ MIC



● ICM



(Dial Pad)

Data No.	Title	Setting Data
03	UCD	MIF = 00
-----		
TIME	DISPLAY	

3. Enter data using the dial pad.

- Enter the slot number of installed MIF-F(U)-10 KTU.

← [ \* ] , [ # ] → : To move cursor.

Dial pad [ 0 ] ~ [ 9 ] : To enter data.

Default **No Assignment (00)**

Setting Data : 00, 01, 02

- Press the TRF key to write the selected data, and advance to Memory Block 7-3-04, MIF (Caller ID) Assignment.
- Press the SPKR key to go back on-line.

## NOTES:

- MIF KTUs can be installed only in the ESF-SB-10 KSU in any of the following Interface Slots:

OP, IF1/OP1 ~ IF/OP44

In the ESF-XB-10 KSU or the first ESF-XE-10 KSU installed, the following slots are available:

OPA, OPB, IF1/OP1 ~ IF4/OP4

- This Memory Block allows assignment of the MIF KTU(s) in order sequence.

Example: Beginning with slot AP/IF 1, the first installed MIF KTU is assigned 01 (regardless of which slot it is installed in). The second MIF KTU is assigned 02 (regardless of which slot it is installed in).

- MIF-F(A)-10 KTU and MIF-F(U)-10 KTU cannot be installed in the same system.

## GENERAL INFORMATION - MIF (UCD) ASSIGNMENT

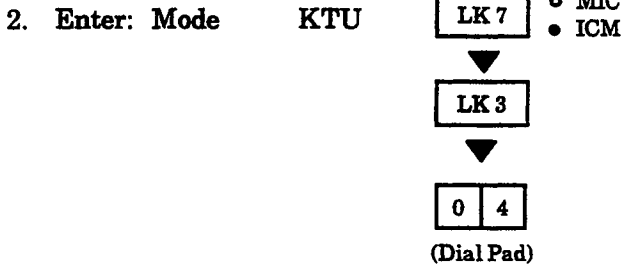
This Memory Block enables the UCD function and allows the assignment of KTU order for an MIF-F(U)-10 KTU.

# MIF (CALLER ID) ASSIGNMENT

<b>KTU</b>	<b>MIF</b>	<b>Data No.</b>
<b>7</b>	<b>3</b>	<b>04</b>
<b>PC Programming Guide</b>		
<b>TECH</b>	<b>B:A:I</b>	<b>USER</b>

## OPERATION:

1. Go off-line.



## NOTES:

- MIF KTUs can be installed only in the Basic KSU in any of the following Interface Slots:  
IF, IF/OP1 ~ IF/OP4  
In the ESF-XB-10 KSU or the first ESF-XE-10 KSU installed, the following slots are available:  
IFA, IFB, IF/OP1 ~ IF/OP4
- This Memory Block allows assignment of the MIF KTU(s) in order sequence.  
Example: Beginning with slot IF/OP1, the first installed MIF KTU is assigned 01 (regardless of the slot where it is installed). The second MIF KTU is assigned 02 (regardless of the slot where it is installed).
- This feature requires system software version 4.50 or higher.

Data No.	Title	Setting Data
04	CLASS	MIF = 00
-----		
TIME	DISPLAY	

3. Enter data using the dial pad.

- Enter the slot number of installed MIF-F(C)-10 KTU.

← \* , # → : To move cursor.

Dial pad 0 ~ 9 : To enter data.

Default	No Function (00)
---------	------------------

Setting Data : 00, 01, 02

- Press the TRF key to write the selected data, and advance to Memory Block 7-3-00, MIF (ACD) Assignment.
- Press the SPKR key to go back on-line.

## GENERAL INFORMATION - MIF (CALLER ID) ASSIGNMENT

This Memory Block enables the Caller ID function and allows the assignment of KTU order for an MIF-F(C)-10 KTU.

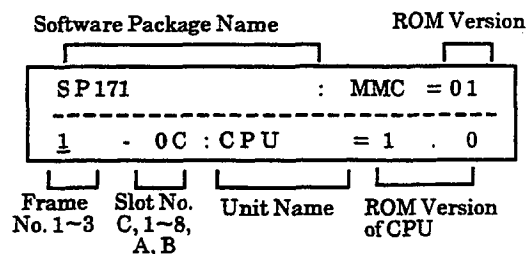
## ROM VERSION CONFIRMATION

### OPERATION:

1. Go off-line.

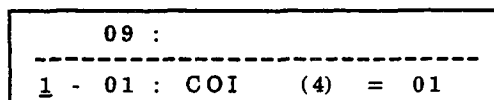
2. Enter: Mode Special LK 8 ○ MIC  
● ICM

Sub-Mode ROM LK 1



- ← \* , # → : To move cursor.
- Dial pad 0 ~ 9 } : To change frame No. and slot No.
- RECALL
- ( Enter 1 ~ 8 : Frame No. 1~3, Slot No. 1~8
- 9 : Slot Number A
- 0 : Slot number B
- RECALL : Slot number C

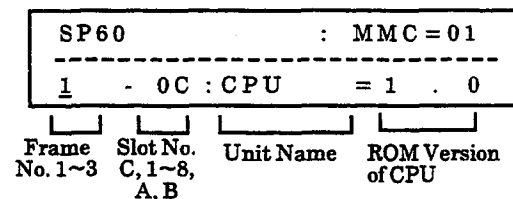
Type of unit, in the order of slot number and ROM version, is displayed each time a CO/PBX line key is pressed.



Frame number, slot number, interface name, and ROM Version are shown on the display.

There are three display patterns.

① For basic frame (frame 1 or slot C) CPU:

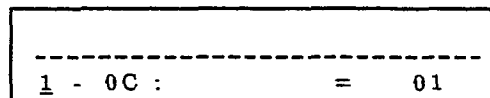


Special	ROM	Data No.
8	1	-

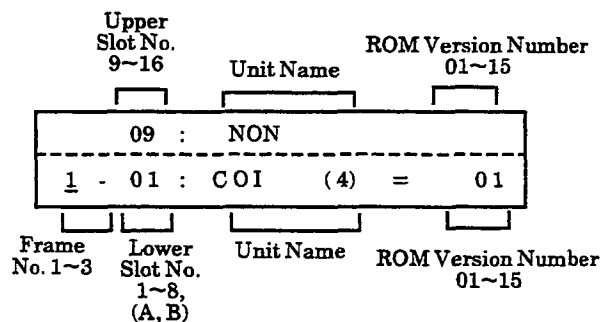
  

PC Programming Guide			
TECH	F2-INFO	USER	

② For slot C of expansion frame:



③ For another slot type:



- When both upper and lower slots are occupied by COI, ESI, or SLI card, an 8-channel unit [COI (8)] is displayed in lower slot.

Display of the order is as follows:

- ① Frame 1  
Slot C → 1 → 2 ---  
→ 8 → A → B
- ② Frame 2  
Slot C → 1 → 2 ---  
→ 8 → A → B
- ③ Frame 3  
Slot C → 1 → 2 → 8
- After the input of slot 8 of frame 3, press TRF key; slot C of frame 1 is displayed.
- The upper line in the display disappears, leaving only the time display in the lower line.

## GENERAL INFORMATION - ROM VERSION CONFIRMATION

This Memory Block confirms the program version without removing the card from the KSU.

# SYSTEM SPEED DIAL MEMORY CLEAR

## OPERATION:

1. Go off-line.

2. Enter: Mode Special

Sub-Mode SPD-CLR-SYS

LK 8  MIC  
 ICM

LK 2

Special	SPD-CLR-SYS	Data No.
8	2	-

PC Programming Guide	
TECH	B:H:C
USER	

Enter Password

CO/PBX lines

CO 1	CO 1	CO 1	CO 1
Red	Red	Red	Red

- Enter the password using the dial pad.
- CO/PBX line LEDs change from red to green each time a password is entered.

8

CO 1	CO 1	CO 1	CO 1
Green	Red	Red	Red

1

CO 1	CO 1	CO 1	CO 1
Green	Green	Red	Red

8

CO 1	CO 1	CO 1	CO 1
Green	Green	Green	Red

9

CO 1	CO 1	CO 1	CO 1
Green	Green	Green	Green

All Speed Dial numbers are erased.

- The upper line in the display disappears, leaving only the time display in the lower line.

TRF

SPKR

CLR	SYS	SPD?
-----		
TIME	DISPLAY	

Use dial pad 0 ~ 9 : To enter password

### WARNING

Before performing this procedure, understand completely the meaning and implications of erasing all System Speed Dial buffers in the system.

### NOTES:

- Areas to be erased:
  - Series 100~450
    - In 100 code mode; Speed Dial numbers 00~89.
    - In 1000 code mode; Speed Dial numbers 000~999.
  - Series 500 or higher
    - In 100 code mode; Speed Dial numbers 00~79.
    - In 1000 code mode; Speed Dial numbers 000~999.

## GENERAL INFORMATION - SYSTEM SPEED DIAL MEMORY CLEAR

This Memory Block clears all System Speed Dial programming in the system.

# STATION SPEED DIAL MEMORY CLEAR

## OPERATION:

1. Go off-line.

2. Enter: Mode Special LK 8 ○ MIC  
● ICM  
 Sub-Mode SPD-CLR-STA LK 3

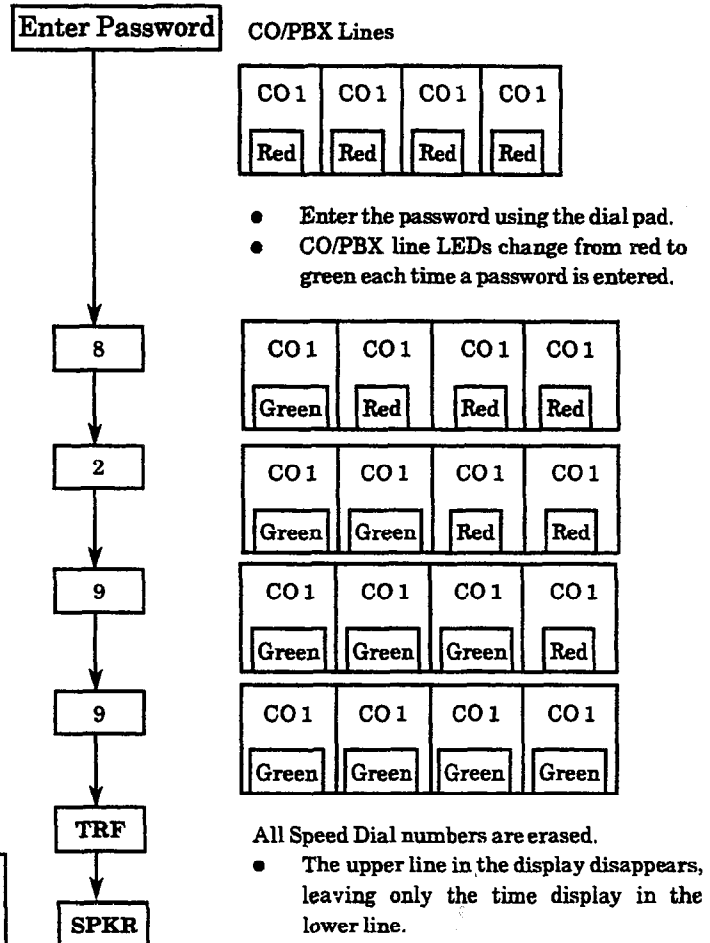
Special	SPD-CLR-STA	Data No.
8	3	-
PC Programming Guide		
TECH	B:H:D	USER

CLR	TEL	SPD?
-----		
TIME	DISPLAY	

Dial pad 0 9 : To enter password

### WARNING

Before performing this procedure, understand completely the meaning and implications of erasing all Station Speed Dial buffers in the system.



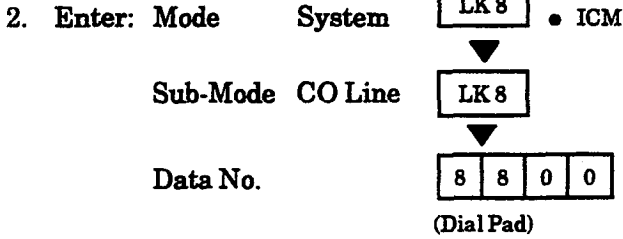
## GENERAL INFORMATION - STATION SPEED DIAL MEMORY CLEAR

This Memory Block clears the Station Speed Dial memories of all programmed Speed Dial numbers.

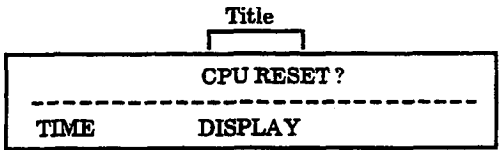
### SECOND INITIALIZATION

#### OPERATION:

- 1. Go off-line.



Special	CO Line	Data No.
8	8	8800
PC Programming Guide		
TECH	C:J	USER



- 3. Press the TRF key; begin the initialization process.

- Additional Programming
  - Refer to Guide to Feature Programming in this manual.

**GENERAL INFORMATION - SECOND INITIALIZATION**

This Memory Block initializes all the system hardware. All system software and user programming is retained after the Second Initialization.

# CLOCK/CALENDAR SETTING

## OPERATION:

FNC



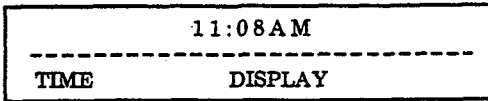
9

(Dial Pad)



#

(Dial Pad)



← [\*] [#] → : To move cursor.

Dial pad [0] ~ [9] : To enter Time, Date, Month, Year

**RECALL** key : To switch a.m./p.m.  
To switch month and weekdays.

- Press the **RECALL** key while the cursor is at the Day or Month to allow the user to scroll through the selections.
- All other items can be changed by moving the cursor to the desired position and entering the data using the dial pad.

*(Refer to the example on the next page.)*

-	Clock/Calendar Setting	Data No.
-	-	-

PC Programming Guide			
TECH		USER	

## NOTES:

- |   |
|---|
| <ol style="list-style-type: none"> <li>1. This is a station operation performed by the Attendant station.</li> <li>2. The Clock/Calendar cannot be set using PC Programming.</li> </ol> |
|---|

*Continued on next page.*

**CLOCK/CALENDAR SETTING (continued)**

**EXAMPLE:**

To change the time and date to 12:00 p.m. Sunday, December 31, 1992:

7. Press the **RECALL** key, and select **DEC**.

11:08 AM
-----
TIME

SUN	31	DEC	1991
-----			
TIME			

1. Using the dial pad, press 1 2 0 0.

8. Move the cursor to the 1991 position.

12:00 AM
-----
TIME

SUN	31	DEC	1991
-----			
TIME			

2. Press the **RECALL** key.

9. Using the dial pad, press 9 2.

12:00 PM
-----
TIME

SUN	31	DEC	1992
-----			
TIME			

3. Press the **HOLD** key.

10. Press the **FNC** key.

MON	01	JAN	1991
-----			
TIME			

-----			
TIME			

4. Press the **RECALL** key, and select **SUN**.

SUN	01	JAN	1991
-----			
TIME			

5. Move the cursor to the 01 position.

SUN	01	JAN	1991
-----			
TIME			

6. Using the dial pad, press 3 1.

SUN	31	JAN	1991
-----			
TIME			

**GENERAL INFORMATION - CLOCK/CALENDAR SETTING**

This Memory Block programs the year, month, day, hour, and minute, and a.m. or p.m.



## SECTION 5 FUNCTION TIMER CHART

Function Timer Chart

Timer	Memory Block	Definition	Timing Value		
			Minimum	Default	Maximum
Pause Time Selection	1-1-00	Duration when no signal is being sent to a CO/PBX line.	1 sec.	3 sec.	3 sec.
DP Interdigit Time Selection	1-1-01	Minimum interval between dialing signals in DP dialing.	650/500 ms.	800/800 ms	800/800 ms.
Hookflash Time Selection	1-1-02	Timing of a CO/PBX hookflash from the RECALL key of a Multiline Terminal or a Single Line Telephone to the CO/PBX line.	20 ms.	600 ms.	5000 ms. (5 sec.)
Hold Recall Timer Selection (Non-Exclusive Hold)	1-1-03	Specify the time before a held CO/PBX line recalls the station that put that line on hold.	25 sec.	25 sec.	No Limit
Start Timer Selection	1-1-05	Specify the time for after dialing and the start of call duration display and Talk Start Timer.	2 sec.	20 sec.	70 sec.
CO/PBX Incoming Ringing Alarm Time Selection	1-1-06	Specify the time from receiving an incoming CO/PBX call until the ringing tone changes to a different ringing tone level if the call is not answered.	10 sec.	No Limit	No Limit
Tie/DID Line Delay Ringing Timer Selection	1-1-07	Specify the delay interval between the time a telephone rings (accessed by a ringing call in the Tie/DID) line and the time other telephones start ringing.	10 sec.	No Limit	No Limit
Station Transfer/Camp-On Recall Timer Selection	1-1-12	The time before a ring transferred call recalls to the station that transferred the call.	25 sec.	45 sec.	No Limit
Trunk Queuing Timeout Selection	1-1-37	Specify the time queuing for a CO/PBX line recalls before being automatically canceled.	10 sec.	10 sec.	60 sec.
CO/PBX Prepause Timer Selection	1-1-57	Specify the pause time before dialed digits are sent over a CO/PBX line.	None	1 sec.	15 sec.
Hold Recall Time Selection (Exclusive)	1-1-63	Specify the time for Exclusive Hold Recall.	30 sec.	1 min.	No Limit
Attendant Add-On Console Transfer/Camp-On Recall Timer Selection	1-1-64	Specify the time for a ring transfer from DSS Console until recall alarm is sent.	30 sec.	1 min.	10 min.

Continued on next page.

Timer	Memory Block	Definition	Timing Value		
			Minimum	Default	Maximum
First Delay Announcement Start Time Selection	1-1-71	Specify the time between receiving an incoming CO call and sending the First Delay Announcement to the caller.	0 sec.	20 sec.	60 sec.
First to Second Delay Announcement Interval Time Selection	1-1-73	Specify the time between the First and Second Delay Announcement.	0 sec.	20 sec.	No Limit
Second Delay Announcement Repeat Interval Time Selection	1-1-75	Specify the time between repeated Second Delay Announcement.	0 sec.	20 sec.	No Limit
Delayed Ringing Timer Assignment (CO)	1-1-77	Specify the time for delayed ringing on incoming outside line calls.	0 sec.	15 sec.	99 sec.
Internal Paging Timeout Selection	1-2-00	Specify the time allowed for paging.	90 sec.	90 sec.	No Limit
Automatic Callback Release Timer Selection	1-2-02	Time duration before Automatic Callback is automatically canceled.	5 min.	30 min.	30 min.
Call Forward No Answer Timer Selection	1-2-22	Specify time before ICM or Trunk calls are forwarded.	8 sec.	8 sec.	240 sec.
System Call Park Recall Time Selection	1-2-23	Time before a parked call recalls to the station that parked the call.	30 sec.	1 min.	10 min.
Delayed Ringing Timer Assignment (ICM)	1-2-26	Specify the time for delayed ringing on internal calls.	0 sec.	10 sec.	99 sec.
Bounce Protect Time Selection	1-3-01	Specify the time before a valid hookflash is detected from a Single Line Telephone or Voice Mail System.	0 ms.	300 ms.	1500 ms.
First Digit PBR Release Timer Selection	1-3-03	Specify the time during which a receiver is connected when a DTMF Single Line Telephone user is dialing.	10 sec.	10 sec.	60 sec.
Hookflash Start Time Selection	1-3-05	Specify a minimum hookflash duration for a Single Line Telephone to receive a second dial tone.	100 ms.	300 ms.	850 ms.
Hookflash End Time Selection	1-3-06	Specify a maximum duration from a Single Line Telephone to receive a second dial tone. (HST = Hookflash Start Time.)	HST + 0 ms.	HST + 700 ms.	HST + 1500 ms.
Voice Mail DTMF Delay Timer Selection	1-3-08	Specify the delay time before DTMF tones are sent to the VMI port.	0 sec.	1 sec.	8 sec.
Voice Mail Disconnect Time Selection	1-3-09	Specify the sending time of a disconnect signal that is sent to the connected equipment.	.6 sec.	1.5 sec.	5 sec.

Continued on next page.

Timer	Memory Block	Definition	Timing Value		
			Minimum	Default	Maximum
Voice Mail DTMF Duration/Interdigit Time Selection	1-3-10	Used to specify the DTMF duration/interdigit time for voice mail.	70/60 ms.	100/70 ms.	900/200 ms.
Tandem Transfer Automatic Disconnect Timer Selection	1-4-00	Used to specify a maximum time before automatic disconnect of a Trunk-to-Trunk transfer occurs.	30 min.	1 hr.	3 hr.
Automated Attendant First Digit PBR Release Timer Selection	1-4-01	Used to specify the PBR connection time to the Automated Attendant trunk to receive DTMF signal from the calling party before automatically disconnecting.	10 sec.	20 sec.	60 sec.
Automated Attendant Transfer Delayed Ringing Time Selection	1-4-02	Used to specify the time for a No Answer at the transferred station before the Automated Attendant rings a predetermined station.	10 sec.	No Limit	No Limit
Automated Attendant No Answer Disconnect Time Selection	1-4-03	Used to determine how long the Automated Attendant rings a station before dropping the call.	1 min.	2 min.	4 min.
Automated Attendant Answer Delay Time Assignment	1-4-13	Assign the number of seconds before the Automated Attendant answers an incoming CO/PBX call, when there is no answer.	0 sec.	4 sec.	99 sec.
SMDR Valid Call Timer Assignment	1-5-25	Minimum duration of an outside call before the system provides an SMDR report. (Set from 0~990 seconds in 10 second increments.)	0 sec.	40 sec.	990 sec.
External Paging Timeout Selection	1-7-06	The time before an external paging is automatically disconnected.	30 sec.	5 min.	No Limit
PBR Interdigit Release Timer Selection	1-8-10	Specify the interdigit release time for the PBR.	3 sec.	7 sec.	10 sec.
System Refresh Timer Assignment	1-8-11	Assign the system refresh time.	No Refresh	4 hr.	24 hrs.
Trunk DTMF Duration/Interdigit Selection	3-15	Specify the tone duration and interdigit time of DTMF signals. (Expressed as duration/interdigit time.)	70/60 ms.	100/70 ms.	900/200 ms.
Tie Line Prepause Time Selection	3-16	Specify the prepause time for when the originating side can send dial pulse or DTMF to a distant system.	0 sec.	0 sec.	13 sec.
Tie Line Answer Detect Time Selection	3-17	Specify the duration between the time when the receiving system answers and the time when it is recognized as an answer.	0 ms.	520 ms.	1950 ms.

Continued on next page.

Timer	Memory Block	Definition	Timing Value		
			Minimum	Default	Maximum
Tie Line Release Detect Time Selection	3-18	Specify the duration between the circuit disconnection detection on the Tie Line on the distant system side and the time it is recognized as Tie Line Release.	0 ms.	520 ms.	1950 ms.
Tie Line/CO/PBX Incoming Signal Detect Time Selection	3-19	Specify the time between the detection of an incoming signal from another 120/Level II/Level II Advanced system and the time when acknowledgement signal is sent. (Expressed as Wink Start/Delay/COI ms.)	0/0/50	520/120/200	1950/450/800
Tie Line Loop Off-Guard Time Selection	3-20	Use to assign loop off-guard protection to prevent noise that may cause the system to be unable to answer an incoming Tie Line.	0 sec.	2 sec.	13 sec.
Tie Line Length of Wink Signal Selection	3-21	Specify the time between the incoming signal detection from another 120/Level II/Level II Advanced system and when the acknowledgement signal is sent out.	30 ms.	180 ms.	480 ms.
Tie Line Length of Delay Signal Selection	3-22	Specify the time a delay pulse is sent to another system.	0 ms.	300 ms.	4500 ms.
Tie Line Outgoing Timeout Selection	3-23	Specify the maximum time interval between the origination of an outgoing call and, if dialing is delayed, when the call is dropped.	1 sec.	12 sec.	No Limit
Tie Line Incoming Interdigit Timeout Selection	3-24	Specify the maximum time during the incoming call detection process. If an address signal is not received within a specified time, an error tone is returned to the other system.	1 sec.	6 sec.	No Limit
Tie Line Wink/Delay Signal Detect Timeout Selection	3-25	Specify the maximum time for receiving an acknowledgement signal from a distant system before sending a busy tone.	1 sec.	7 sec.	No Limit
Tie Line Outgoing Guard Time Selection	3-26	Specify the duration between the time a Tie Line is released and the time the other side is notified of circuit disconnection.	.02 sec.	3 sec.	15 sec.
Disconnect Recognition Time Selection	3-33	Specify a minimum time for a disconnected circuit to be accessed again.	0 sec.	0.3 sec.	1.5 sec.
Automatic Release Signal Detection Time Selection	3-40	Specify Allow or Deny of Automatic Release for each CO/PBX line.	0 ms.	350 ms.	No Limit

## SECTION 6 CODE RESTRICTION

### 6.1 General

The Electra Professional systems provide an advanced method of restricting outgoing calls based on the first eight digits dialed. Code Restriction denies placement of outside calls based on Trunk Groups and accommodates equal access to other common carriers (OCC). This eliminates unauthorized calls and configures system calling functions to provide cost control.

System Programming has 16 Code Restriction Classes. Class 00 is fixed and allows free dialing. Class 15 is fixed and denies all outside calls. Classes 01~14 are programmable in system software. Stations are assigned per station to a Code Restriction Class. A separate Day Mode and Night Mode station to Code Restriction Class assignment is available.

### 6.2 Default Assignments

At default, all stations are assigned to Code Restriction Class 00 for both Day and Night Mode, that allows free dialing.

At default, the Code Restriction Classes are setup with the following restrictions to provide the most common Code Restriction requirements and simplify Code Restriction programming.

Class 01:	Deny: 0 and 1+ calls	
Class 02:	Deny: 0 and 1+ calls	Allow: 1-800 calls
Class 03:	Deny: 0, 1+, and 976 calls	Allow: 1-800 calls
Class 04:	Deny: 1+ calls	Allow: 1-800 calls
Class 05~14:	Allow: 911 calls only	

At default, all OCC calls are denied for Code Restriction Classes 01~14.

At default, System Speed Dial buffers override Code Restriction Classes 01~14.

At default, Code Restriction is not applied to Tie lines.

At default, when Station Lockout is set at a station, the station is outgoing restricted.

At default, Digit Restriction is not assigned.

**Note:** Refer to Section 6.5 - Code Restriction Tables (Default Values).

### 6.3 Memory Blocks

The following related Memory Blocks are used when assigning Code Restriction.

Title	Memory Block
Trunk-to-Tenant Assignment .....	2-01
Trunk-to-Trunk Group Assignment .....	3-03
Trunk Type Selection .....	3-91
PBX/CTX Access Code Assignment I .....	1-1-24
PBX/CTX Access Code Assignment II .....	1-1-25
OCC Table Assignment .....	1-1-67
OCC Table to Trunk Group Assignment .....	5-03
8-Digit Matching Table to OCC Table Assignment .....	1-1-68
8-Digit Matching Table to Normal Dial Assignment .....	1-1-66
8-Digit Matching Table to Trunk Group Assignment .....	5-02
8-Digit Matching Table Assignment .....	1-1-60
8-Digit Matching Table to Class Assignment .....	1-1-61
Class Allow/Deny Assignment .....	1-1-65
System Speed Dial Restriction by Tenant .....	1-1-18
System Speed Dial Override by Class Selection .....	1-1-62
Tie Line Code Restriction Assignment .....	1-1-69
Code Restriction Class Assignment When Lockout is Set .....	1-1-70
Trunk Digit Restriction .....	4-32
Code Restriction Class Assignment (Day Mode) .....	4-07
Code Restriction Class Assignment (Night Mode) .....	4-08
Telephone to Tenant Assignment .....	4-09

### 6.4 Memory Block Description

#### 6.4.1 General

This section describes the function of the Memory Blocks directly related to Code Restriction. Some Memory Blocks from the previous list are not described here but are included because of their effect on Code Restriction (e.g., Trunk to Tenant Assignment). Code Restriction is based on Trunk Group and consideration should be given to this Memory Block because stations are assigned to a tenant, and trunks are assigned to a Trunk Group.

#### 6.4.2 OCC Assignment/Operation

OCC Table Assignment (Memory Block 1-1-67)

This Memory Block allows an OCC Access Code (maximum of eight digits to be assigned. System Programming has 16 OCC Tables (01~16). Each Table can have one OCC Access Code assigned.

**OCC Table to Trunk Group Assignment (Memory Block 5-03)**

This Memory Block assigns Trunk Groups to the OCC Tables. Any combination of Trunk Groups can be assigned to the OCC Tables.

**8-Digit Matching Table to OCC Table Assignment (Memory Block 1-1-68)**

This Memory Block assigns the 8-Digit Matching Table to the OCC Tables. Any combination of 8-Digit Matching Tables can be assigned to the OCC Tables.

**OCC Operation**

When a restricted station user dials an OCC Access Code, the system searches the OCC Tables for a match. If no match is found, the user is allowed free dialing. If a match is found, the system monitors the next eight digits dialed and searches the 8-Digit Matching Tables assigned to the OCC Table. The system searches only the 8-Digit Matching Tables assigned to the Code Restriction Class the station is assigned to and has the Trunk Group assigned to it for the in-use trunk the station is on. If the interdigit time of the dialing party exceeds 10 seconds while the station user is dialing on an outside line, and the system is searching the assigned tables, the system automatically drops the call.

**6.4.3 8-Digit Matching Table Assignment/Operation****8-Digit Matching Table to Normal Dial Assignment (Memory Block 1-1-66)**

This Memory Block assigns the 8-Digit Matching Table to be Used or Unused for non-OCC calls. If an 8-Digit Matching Table is assigned as Unused, the table is used only for OCC calls. There are 16, 8-Digit Matching Tables (00~15) in System Programming. Each table is independently assigned to be Used or Unused.

**8-Digit Matching Table to Trunk Group Assignment (Memory Block 5-02)**

This Memory Block assigns Trunk Groups to the 8-Digit Matching Tables. Any combination of Trunk Groups can be assigned to the 8-Digit Matching Tables.

**8-Digit Matching Table Assignment (Memory Block 1-1-60)**

This Memory Block assigns the 8-Digit Matching Tables. Each 8-Digit Matching Table can have 16, 8-digit entries. To cover the many possible combinations (without listing each individual number), code restriction letters can be used in place of digits. The code restriction letters used and their numerical values are as follows:

X = 0~9, \*, and #

P = 0 and 1

N = 2~9

When 1X is entered in a table, and the table is assigned as a day table in the 8-Digit Matching Table to Class Assignment, any 1 + any digit call is denied if the table is used. Using X, P, and N accommodates several combinations with just one entry.

**Note:** The Trunk Access Code should not be placed in the 8-Digit Matching Table. Code Restriction starts after a trunk is seized.

#### 8-Digit Matching Table to Class Assignment (Memory Block 1-1-61)

This Memory Block assigns the 8-Digit Matching Tables to the Code Restriction Classes. The 8-Digit Matching Tables are also assigned as Allow/Deny Tables in this Memory Block. Any combination of 8-Digit Matching Tables (Allow, Deny, or Not Used) can be assigned to Code Restriction Classes 01~14. Classes 00 and 15 are fixed and are nonprogrammable.

#### Class Allow/Deny Selection (Memory Block 1-1-65)

This Memory Block assigns the Code Restriction Classes (01~14) as Allow or Deny. This assignment is used when there is no match or when there is an overlap (duplicate numbers in tables with opposite Allow/Deny assignments) of numbers in the 8-Digit Matching Tables.

#### 8-Digit Matching Table Operations

The 8-Digit Matching Tables are used to restrict or allow OCC calls and non-OCC calls. To understand the relationship of the 8-Digit Matching Tables with OCC calls, refer to Section 6.4.2 - OCC Assignment/Operation.

When a restricted station user makes a non-OCC call, the system monitors the first eight digits dialed and searches the 8-Digit Matching Tables assigned for Used in Memory Block 1-1-66, 8-Digit Matching Table to Normal Dial Assignment. The system searches only the 8-Digit Matching Tables assigned to the Code Restriction Class the station is assigned to and has the Trunk Group assigned to it for the in-use trunk the station is on.

If a match is found, the system looks at the 8-Digit Matching Table to Class Assignment for the Allow or Deny Assignment. If the table is assigned as Allow, the call is allowed. If the table is assigned as Deny, the call is denied.

If no match is found or a duplicate match is made with opposite Allow/Deny assignments, the system looks at the class Allow/Deny Assignment. If the class is assigned as Allow, the call is allowed. If the Class is assigned as Deny, the call is denied. If the interdigit time of the dialing party exceeds 10 seconds while the station user is dialing on an outside line, and the system is searching the assigned tables, the system automatically drops the call.

#### 6.4.4 System Speed Dial Override by Class Selection (Memory Block 1-1-62)

This Memory Block allows System Speed Dial buffers to override or not override Code Restriction. Each Code Restriction Class (01~14) is assigned as Allow or Deny.

#### 6.4.5 Tie Line Code Restriction Assignment (Memory Block 1-1-69)

This Memory Block assigns system-wide Code Restriction to be used or not used for calls made on Tie Line.

#### 6.4.6 Code Restriction Class Assignment When Lockout is Set (Memory Block 1-1-70)

This Memory Block assigns the Code Restriction Class to be used when Station Lockout (Outgoing) is set at a station. Station Lockout can be set by the Attendant or from any station if allowed in System Programming.



6.4.7 Trunk Digit Restriction Assignment (Memory Block 4-32)

This Memory Block specifies, per station, the maximum number of digits that can be dialed while on any outside line.

6.4.8 Code Restriction Class Assignment (Day Mode) (Memory Block 4-07)

This Memory Block specifies, per station, the Code Restriction Class used when the system or stations assigned tenant is in the Day Mode.

6.4.9 Code Restriction Class Assignment (Night Mode) (Memory Block 4-08)

This Memory Block specifies, per station, the Code Restriction Class used when the system or stations assigned tenant is in the Night Mode.

6.5 Code Restriction Tables (Default Values)

6.5.1 OCC Tables with Default Values

The following Memory Blocks are displayed:

OCC Table Assignment (1-1-67)

OCC Table to Trunk Group Assignment (5-03)

8-Digit Matching Table to OCC Table Assignment (1-1-68)

	TABLE 01	TABLE 02	TABLE 03	TABLE 04
Memory Block (1-1-67)				
Memory Block (5-03)	T.G. 01~32	T.G. 01~32	T.G. 01~32	T.G. 01~32
Memory Block (1-1-68)				
	TABLE 05	TABLE 06	TABLE 07	TABLE 08
Memory Block (1-1-67)				
Memory Block (5-03)	T.G. 01~32	T.G. 01~32	T.G. 01~32	T.G. 01~32
Memory Block (1-1-68)				
	TABLE 09	TABLE 10	TABLE 11	TABLE 12
Memory Block (1-1-67)				
Memory Block (5-03)	T.G. 01~32	T.G. 01~32	T.G. 01~32	T.G. 01~32
Memory Block (1-1-68)				
	TABLE 13	TABLE 14	TABLE 15	TABLE 16
Memory Block (1-1-67)				10xxx
Memory Block (5-03)	T.G. 01~32	T.G. 01~32	T.G. 01~32	T.G. 01~32
Memory Block (1-1-68)				Table 15

Note: X = 0~9, \*, #  
 P = 0, 1  
 N = 2~9

6.5.2 8-Digit Matching Tables with Default Values

The following Memory Blocks are displayed:

8-Digit Matching Table to Normal Dial Assignment (1-1-66)

8-Digit Matching Table to Trunk Group Assignment (5-02)

8-Digit Matching Table Assignment (1-1-60).

	TABLE 00	TABLE 01	TABLE 02	TABLE 03
Memory Block (1-1-66)	Use Table	Use Table	Use Table	Use Table
Memory Block (5-02)	T.G. 01~32	T.G. 01~32	T.G. 01~32	T.G. 01~32
Memory Block (1-1-60)	00 9 1 1 	00	00	00
	01	01	01	01
	02	02	02	02
	03	03	03	03
	04	04	04	04
	05	05	05	05
	06	06	06	06
	07	07	07	07
	08	08	08	08
	09	09	09	09
	10	10	10	10
	11	11	11	11
	12	12	12	12
	13	13	13	13
	14	14	14	14
	15	15	15	15

Note: X = 0~9, \*, #  
 P = 0, 1  
 N = 2~9

(Continued on next page.)

8-Digit Matching Tables with default values:

The following Memory Blocks are displayed:

8-Digit Matching Table to Normal Dial Assignment (1-1-66)

8-Digit Matching Table to Trunk Group Assignment (5-02)

8-Digit Matching Table Assignment (1-1-60)

	TABLE 04	TABLE 05	TABLE 06	TABLE 07
Memory Block (1-1-66)	Use Table	Use Table	Use Table	Use Table
Memory Block (5-02)	T.G. 01~32	T.G. 01~32	T.G. 01~32	T.G. 01~32
Memory Block (1-1-60)	00	00	00	00
	01	01	01	01
	02	02	02	02
	03	03	03	03
	04	04	04	04
	05	05	05	05
	06	06	06	06
	07	07	07	07
	08	08	08	08
	09	09	09	09
	10	10	10	10
	11	11	11	11
	12	12	12	12
	13	13	13	13
	14	14	14	14
	15	15	15	15

Note: X = 0~9, \*, #  
 P = 0, 1  
 N = 2~9

(Continued on next page.)

8-Digit Matching Tables with Default Values

The following Memory Blocks are displayed:

8-Digit Matching Table to Normal Dial Assignment (1-1-66)

8-Digit Matching Table to Trunk Group Assignment (5-02)

8-Digit Matching Table Assignment (1-1-60)

Memory Block (1-1-66)  
 Memory Block (5-02)  
 Memory Block (1-1-60)

TABLE 08		TABLE 09		TABLE 10		TABLE 11	
Use Table		Use Table		Use Table		Use Table	
T.G. 01~32		T.G. 01~32		T.G. 01~32		T.G. 01~32	
00		00		00		00	0
01		01		01		01	
02		02		02		02	
03		03		03		03	
04		04		04		04	
05		05		05		05	
06		06		06		06	
07		07		07		07	
08		08		08		08	
09		09		09		09	
10		10		10		10	
11		11		11		11	
12		12		12		12	
13		13		13		13	
14		14		14		14	
15		15		15		15	

Note: X = 0~9, \*, #  
 P = 0, 1  
 N = 2~9

(Continued on next page.)

8-Digit Matching Tables with Default Values

The following Memory Blocks are displayed:

8-Digit Matching Table to Normal Dial Assignment (1-1-66)

8-Digit Matching Table to Trunk Group Assignment (5-02)

8-Digit Matching Table Assignment (1-1-60)

	TABLE 12	TABLE 13	TABLE 14	TABLE 15
Memory Block (1-1-66)	Use Table	Use Table	Use Table	Unused Table
Memory Block (5-02)	T.G. 01~32	T.G. 01~32	T.G. 01~32	T.G. 01~32
Memory Block (1-1-60)	00 9 7 6 	00 1 8 0 0 	00 1 X 	00 X 
	01 	01 1 8 8 8 	01 	01 
	02 	02 1 8 7 7 	02 	02 
	03 	03 	03 	03 
	04 	04 	04 	04 
	05 	05 	05 	05 
	06 	06 	06 	06 
	07 	07 	07 	07 
	08 	08 	08 	08 
	09 	09 	09 	09 
	10 	10 	10 	10 
	11 	11 	11 	11 
	12 	12 	12 	12 
	13 	13 	13 	13 
	14 	14 	14 	14 
	15 	15 	15 	15 

Note: X = 0~9, \*, #  
 P = 0, 1  
 N = 2~9

(Continued on next page.)

8-Digit Matching Tables with Default Values

The following Memory Blocks are displayed:

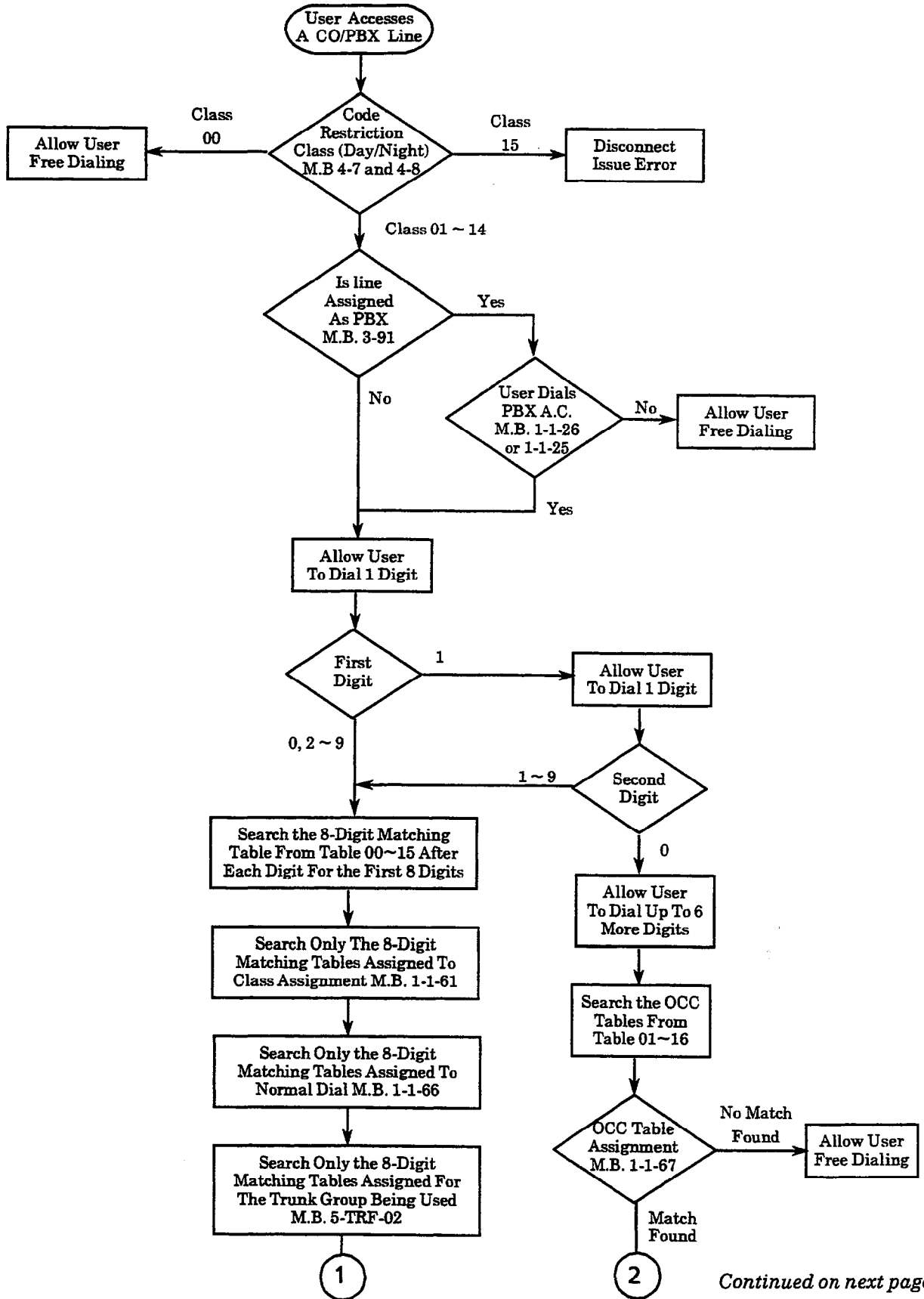
8-Digit Matching Table to Class Assignment (1-1-61)

Class Allow/Deny Selection (1-1-65)

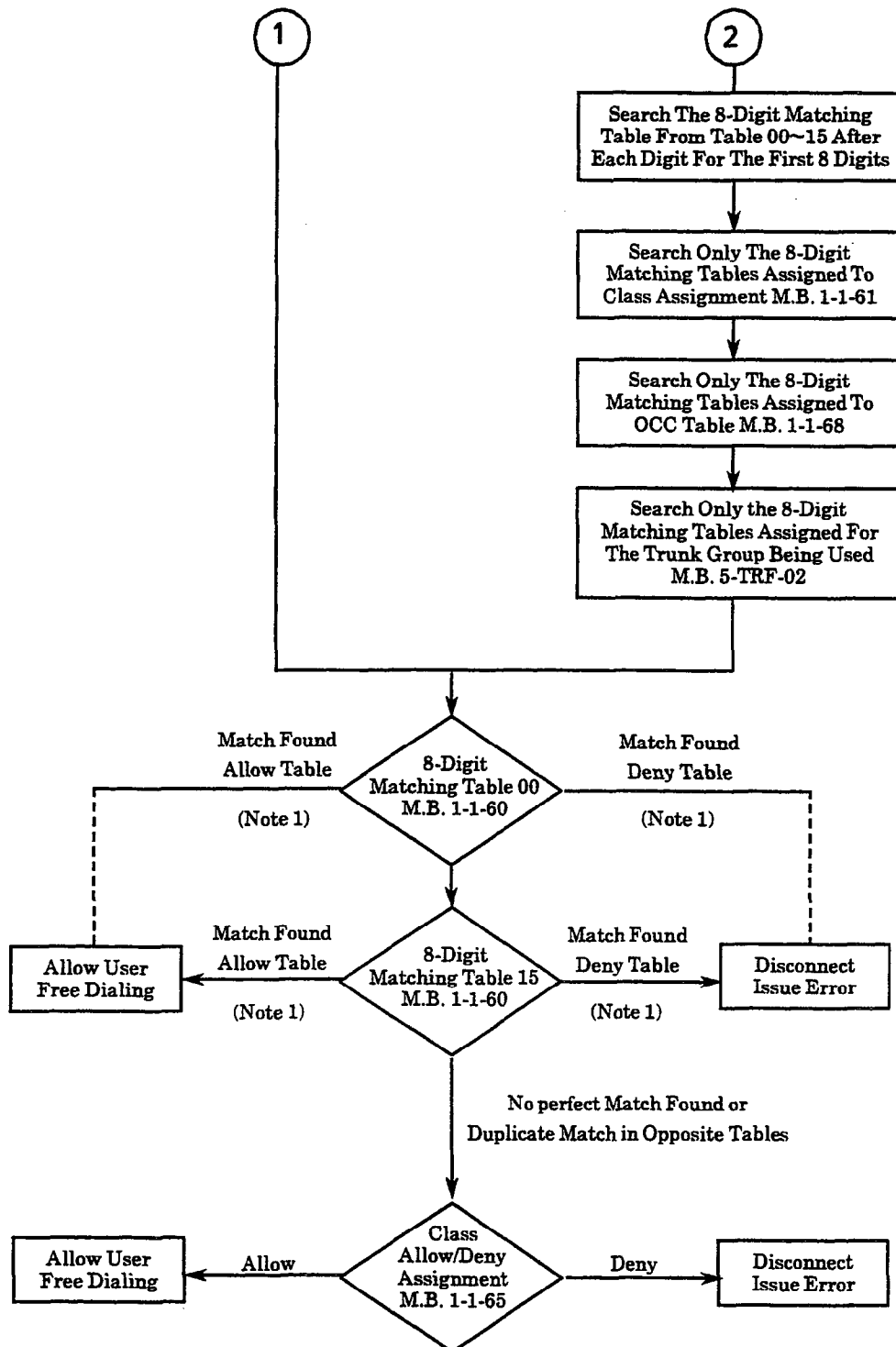
		8-Digit Matching Table															Class Allow/Deny Assignment Memory Block (1-1-65)	
Memory Block (1-1-61)		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14		15
Class 01	A												D			D	D	ALLOW
Class 02	A												D		A	D	D	ALLOW
Class 03	A												D	D	A	D	D	ALLOW
Class 04	A														A	D	D	ALLOW
Class 05	A																	DENY
Class 06	A																	DENY
Class 07	A																	DENY
Class 08	A																	DENY
Class 09	A																	DENY
Class 10	A																	DENY
Class 11	A																	DENY
Class 12	A																	DENY
Class 13	A																	DENY
Class 14	A																	DENY

Note: A = Allow  
 D = Deny  
 Blank = Not used

6.6 Code Restriction Algorithm



Continued on next page.



**Note 1:** Tables are assigned as Allow or Deny in the 8-Digit Matching Table to Class Assignment (Memory Block 1-1-61).

**Note 2:** If the interdigit time duration of the dialing party exceeds 10 seconds while the Code Restriction Tables are being searched, the system automatically drops the call.



**SECTION 7 CHARACTER CODE TABLES**

These tables are used for some of the functions available to the Electra Professional systems.

Note: Codes 166~221 and 250~252 are used for Japanese characters only.

Character	Code
Blank	032
!	033
"	034
#	035
\$	036
%	037
&	038
'	039
(	040
)	041
*	042
+	043
,	044
-	045
.	046
/	047
0	048
1	049
2	050
3	051
4	052
5	053
6	054
7	055
8	056
9	057
:	058
;	059
<	060
=	061
>	062
?	063

Character	Code
@	064
A	065
B	066
C	067
D	068
E	069
F	070
G	071
H	072
I	073
J	074
K	075
L	076
M	077
N	078
O	079
P	080
Q	081
R	082
S	083
T	084
U	085
V	086
W	087
X	088
Y	089
Z	090
[	091
\	092
]	093
^	094
_	095

Character	Code
r	096
a	097
b	098
c	099
d	100
e	101
f	102
g	103
h	104
i	105
j	106
k	107
l	108
m	109
n	110
o	111
p	112
q	113
r	114
s	115
t	116
u	117
v	118
w	119
x	120
y	121
z	122
{	123
	124
}	125
>	126
<	127

Continued on next page.

Character	Code
Blank	160
。	161
「	162
」	163
、	164
・	165
ヲ	166
ア	167
イ	168
ウ	169
エ	170
オ	171
ヤ	172
ユ	173
ヨ	174
ツ	175
、	176
ア	177
イ	178
ウ	179
エ	180
オ	181
カ	182
キ	183
ク	184
ケ	185
コ	186
サ	187
シ	188
ス	189
セ	190
ソ	191

Character	Code
タ	192
チ	193
ツ	194
テ	195
ト	196
ナ	197
ニ	198
ヌ	199
ネ	200
ノ	201
ハ	202
ヒ	203
フ	204
ヘ	205
ホ	206
マ	207
ミ	208
ム	209
メ	210
モ	211
ヤ	212
ユ	213
ヨ	214
ラ	215
リ	216
ル	217
レ	218
ロ	219
ワ	220
ン	221
〃	222
。	223

Character	Code
α	224
ä	225
β	226
e	227
μ	228
σ	229
ρ	230
ƒ	231
√	232
ι	233
j	234
×	235
ε	236
£	237
ñ	238
ö	239
ρ	240
q	241
θ	242
∞	243
Ω	244
ü	245
Σ	246
π	247
̄	248
¶	249
千	250
万	251
円	252
+	253
Blank	254
■	255

## SECTION 8 DISPLAY ABBREVIATIONS

Abbreviations in the display have the following meanings:

ADD/DEL	: Addition/Deletion	IMDT	: Immediate
AL	: All	IN	: Incoming
ALM	: Alarm	INC	: Incoming Signal Detection Time Assignment
ANS	: Answer	INDV	: Individual
ANSWR	: Answer	INTRPT	: Interruption
ASSGN	: Assignment	L	: Low
AUT	: Automatic	LCD	: Liquid Crystal Display
AUTANS	: Autoanswer	LN	: Line
BLANK	: Service Class	LOOP	: Loop Off-Guard Assignment
BNCE	: Bounce	LNR/SPD	: Last Number/Speed Dial
BTN	: Button	M	: Medium
CAL	: Call	MAN	: Manual
CANCLD	: Canceled	MF	: Dual-Tone Multifrequency (DTMF)
CKT	: Circuit	MIN	: Minimum
CNF	: Confirmation	M O H	: Music On Hold
CL	: Class	MSTER	: Master
CLD	: CO Line Display	NBR	: Number
CLR	: Clear	NT	: Night Mode
CLS	: Class	OUT	: Outgoing
CONN	: Connection	OG TM	: Outgoing Time Out Assignment
DESG	: Designation	OV	: Over
DGT	: Digit	PAD AT	: PAD Pattern A Transmission Assignment
DISP	: Display	PAD AR	: PAD Pattern A Receiving Assignment
DISTM	: Disconnection Recognition Time	PAD BT	: PAD Pattern B Transmission Assignment
DIVERT	: Diversion	PAD BR	: PAD Pattern B Receiving Assignment
DLY	: Delay Signal Time	PRE	: Prepause Time Selection
DP	: Dial Pulse	PBR	: Push Button Signal Receiver
DSS	: Direct Station Selection	PBX	: Private Branch Exchange
DY	: Day Mode	PRNT	: Print
ESP	: External Speaker	PTRN	: Pattern
FWDG	: Forwarding	PV	: Tie Line
FLSH	: Flash	PVT	: Tie Line
GUARD	: Outgoing Guard Time	PWRFAIL	: Power Failure
H	: High	RCV	: Receiving
HR	: Hour	RCVR	: Receiver
ICM	: Intercom (Extension)	RES	: Restriction

*Continued on next page.*

RINGTONE	: Ringing Tone	SPD	: Speed Dial
RLY	: Relay	ST	: Start
RNGTONE	: Ringing Tone	TEL	: Telephone
RT	: Route	TERM	: Terminating
RT ADV	: Route Advance Block	TMR	: Timer
RVS	: Reversal	TMD	: Timed
SDT	: Second Dial Tone Assignment	TRNS	: Transfer
SEND	: Transmission	TRK	: Trunk
SEL	: Selection	TRK GP	: Trunk Group
SLT	: Single Line Telephone	WDSD	: Wink/Delay Signal Detection Time Out

**CHAPTER 6**  
**GUIDE TO FEATURE PROGRAMMING**

**CHAPTER 6**  
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**SECTION 1 INTRODUCTION**

This chapter provides a guide or roadmap of the Memory Blocks associated with a feature that are either required or can be programmed for a feature.

**SECTION 2 GUIDE TO FEATURE PROGRAMMING**

This section lists several features and the associated Memory Blocks that must be programmed to use the feature. Additional Memory Blocks that may affect use of the feature are also listed.

The \* in front of the Memory Block Title indicates that this Memory Block must be programmed before the associated feature can be used.

The \*\* in front of the Memory Block Title indicates that at least one Memory Block must be programmed before the associated feature can be used.

**ACCOUNT CODE ENTRY**

Title	Memory Block	PC Menu Item
Start Timer Selection .....	1-1-05	B:I:C
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
* Printer Connected (Alarm) Selection .....	1-5-13	A:B:A
SMDR Valid Call Timer Assignment .....	1-5-25	A:B:E
* Class of Service (Station) Feature Selection 2 .....	1-8-08 (P3, LK 6)	B:B:A:D
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**ACCOUNT CODE FORCED/VERIFIED**

Title	Memory Block	PC Menu Item
** Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Class of Service (Attendant) Feature Selection 1 .....	1-8-07	B:B:A:C
* Class of Service (Station) Feature Selection 2 .....	1-8-08 (P5, LK 1)	B:B:A:D
Forced Account Code Length Assignment .....	1-8-27	B:M:A/B:M:B
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**ALL CALL PAGE**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Internal Paging Timeout Selection .....	1-2-00	B:F:I
Internal Paging Alert Tone Selection .....	1-2-25	B:F:G
External Speaker Connection Selection .....	1-7-02	B:F:B
External Paging Alert Tone Selection .....	1-7-03	B:F:A
External Page Timeout Selection .....	1-7-06	B:F:H
Receiving Internal/All Call Page Selection .....	4-31	B:B:B:G
Internal Zone Paging Selection .....	4-93	B:B:C:H

**ALPHANUMERIC DISPLAY**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Speed Dial Number/Name Display Selection .....	1-1-33	B:H:B
Absence Message 1-10 Assignment .....	1-2-09~18	B:D:A~J
Call Arrival Key Port Name Assignment .....	1-10-04	B:L:B
* Telephone Number to Trunk Assignment .....	3-00	B:C:B:I
* Station Name Assignment .....	4-18	B:B:B:J
Bilingual LCD Indication Selection .....	4-28	B:B:C:B

**ANCILLARY DEVICE CONNECTION**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
ADA(2) Ring Mode Assignment .....	4-39	B:B:C:A

**ANSWER HOLD**

	<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
	Hold Recall Timer Selection (Non-Exclusive Hold) .....	1-1-03	B:I:D
*	Off-Hook Ringing Selection .....	1-1-26	B:B:A:H
	Trunk to Tenant Assignment .....	2-01	B:K:D
*	CO/PBX Ring Assignment (Day Mode) .....	4-01	B:B:B:B
*	CO/PBX Ring Assignment (Night Mode) .....	4-02	B:B:B:C

**ANSWER KEY**

	<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
	Off-Hook Ringing Selection .....	1-1-26	B:B:A:H
	Trunk to Tenant Assignment .....	2-01	B:K:D
	DIT Assignment .....	3-42	B:C:B:H
	ANA Assignment .....	3-43	B:C:B:H
*	CO/PBX Ring Assignment (Day Mode) .....	4-01	B:B:B:B
*	CO/PBX Ring Assignment (Night Mode) .....	4-02	B:B:B:C
	Ring Line Preference Selection .....	4-11	B:B:C:K

**ASSIGNED NIGHT ANSWER (ANA)**

	<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
*	ANA Assignment .....	3-43	B:C:B:H

**ATTENDANT ADD-ON CONSOLE (SERIES 200 OR HIGHER)**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
* Attendant Add-On Console to Telephone Port Assignment .....	1-6-01	B:B:E:B
* Attendant Add-On Console Key Selection .....	1-6-05	B:B:E:A
CO/PBX Ring Assignment (Day Mode) .....	4-01	B:B:B:B
CO/PBX Ring Assignment (Night Mode) .....	4-02	B:B:B:C
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
Prime Line/Hot Line Assignment .....	4-23	B:B:B:F
Telephone Type Assignment .....	7-2	B:A:D

**ATTENDANT CAMP-ON**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
System Transfer/Camp-On Selection .....	1-1-11	B:B:A:I
Attendant Add-On Console Transfer/Camp-On Recall Timer Selection .....	1-1-64	B:I:I
Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
SLT Data Line Security Assignment .....	4-90	B:B:B:Q

**ATTENDANT POSITIONS**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
* Attendant Add-On Console to Telephone Port Assignment .....	1-6-01	B:B:E:B
* Class of Service (Attendant) Feature Selection 1 .....	1-8-07	B:B:A:C
* Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**ATTENDANT STATION OUTGOING LOCKOUT**

Title	Memory Block	PC Menu Item
Code Restriction Class Assignment when Lockout is Set .....	1-1-70	A:A:D
* Attendant Add-On Console Key Selection .....	1-6-05	B:B:E:A
Code Restriction Class Assignment (Day Mode) .....	4-07	A:A:B
Code Restriction Class Assignment (Night Mode) .....	4-08	A:A:C

**ATTENDANT TRANSFER**

Title	Memory Block	PC Menu Item
* System Transfer/Camp-On Selection .....	1-1-11	B:B:A:I
CO Transfer Ring Pattern Selection .....	1-1-13 (Series 400 or higher)	B:C:A:J
CO Transfer Ring Tone Selection .....	1-1-14 (Series 400 or higher)	B:C:A:K
Attendant Add-On Console Transfer/Camp-On		
Recall Timer Selection .....	1-1-64	B:I:I
Attendant Add-On Console Key Assignment .....	1-6-05	B:B:E:A

**AUTOMATED ATTENDANT**

Title	Memory Block	PC Menu Item
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48 (Item 501)	B:G:A/B/C
Automated Attendant Transfer Ring Pattern .....	1-1-54	A:I:N
Specified Station Access Code Assignment .....	1-2-08	B:G:G
Automated Attendant First Digit PBR Release Timer Selection .....	1-4-01	A:I:J
Automated Attendant Transfer Delayed Ringing Time Selection .....	1-4-02	A:I:M
Automated Attendant No Answer Disconnect Time Selection .....	1-4-03	A:I:I
Tandem Transfer SMDR Print Extension Assignment .....	1-4-04	A:C:D
Automated Attendant PBR Timeout Response Selection .....	1-4-08	A:I:L
Automated Attendant PBR Start Time Selection .....	1-4-09	A:I:K
* Automated Attendant Message Day/Night Mode Selection .....	1-4-11	A:I:E
Automated Attendant Message to Tenant Assignment .....	1-4-12	A:I:G
Automated Attendant Answer Delay Time Assignment .....	1-4-13	A:I:A

**AUTOMATED ATTENDANT (continued)**

Title	Memory Block	PC Menu Item
Automated Attendant Message Access Code (1-Digit) Assignment .....	1-4-14	A:I:C
Automated Attendant Message Access Code (2-Digit) Assignment .....	1-4-15	A:I:D
Automated Attendant Message Repeat Selection .....	1-4-16	A:I:F
* SLT or Automated Attendant/DISA to PBR Selection .....	1-8-01	B:B:D:I
PBR Receive Level Assignment for Automated Attendant/DISA .....	1-8-02	A:I:B
Class of Service (Attendant) Feature Selection 1 .....	1-8-07 (Pg. 1 LK8 & Pg. 2 LK7)	B:B:A:C
Class of Service (Station) Feature Selection 2 .....	1-8-08 (Pg. 2 LK 6)	B:B:A:D
VRS Message Recording Time Selection .....	1-8-12	A:H:H
* VRS Message Function Assignment .....	1-8-13	A:H:G
Tone Assignment .....	1-8-15 (Table 1)	B:D:N
* Trunk Incoming Answer Mode Selection .....	3-05	B:C:B:J
Automated Attendant Message to Trunk Selection .....	3-38	A:I:H
CO/PBX Ring Assignment (Day Mode) .....	4-01	B:B:B:B
CO/PBX Ring Assignment (Night Mode) .....	4-02	B:B:B:C

**AUTOMATIC CALLBACK**

Title	Memory Block	PC Menu Item
Automatic Callback Release Timer Selection .....	1-2-02	B:I:A
Intercom Feature Access Code Assignment .....	1-2-24	B:G:D
Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D

**AUTOMATIC CALL DISTRIBUTION (ACD) (SERIES 200 OR HIGHER)**

Title	Memory Block	PC Menu Item
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48 (Items 031 & 032)	B:G:A/B/C
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48 (Item 040)	B:G:A/B/C
Barge-In Alert Tone Assignment .....	1-1-76	B:B:A/B
Call Forward No Answer Timer Selection .....	1-2-22	B:I:B
Class of Service (Station ) Feature Selection 2 .....	1-8-08 (Pg. 1 LK1 Series 400 or higher) (Pg. 1 LK4 & LK 5)	B:B:A:D
* ACD/UCD Group Agent Assignment .....	1-8-25	A:F:A
* ACD/UCD Group Pilot Number Assignment .....	1-12-00	A:F:B
ACD/UCD Group Overflow Destination Assignment .....	1-12-01	A:F:C
ACD/UCD Overflow Timer Selection .....	1-12-02	A:F:D
* DIT Assignment .....	3-42	B:C:B:H
* ANA Assignment .....	3-43	B:C:B:H
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
Card Interface Slot Assignment .....	7-1	B:A:A/B
MIF (ACD) Assignment .....	7-3-00	B:A:G

**Note:** Refer to Delay Announcement Memory Blocks in this chapter.

**AUTOMATIC DAY/NIGHT MODE SWITCHING**

Title	Memory Block	PC Menu Item
* Automatic Day/Night Mode Switching Time Assignment .....	1-1-27	B:J:E/F
Automatic Day/Night Mode by Day of Week Selection .....	1-1-32	B:J:D
Class of Service (Attendant) Feature Selection 1 .....	1-8-07	B:B:A:C
CO/PBX Ring Assignment (Day Mode) .....	4-01	B:B:B:B
CO/PBX Ring Assignment (Night Mode) .....	4-02	B:B:B:C
Code Restriction Class Assignment (Day Mode) .....	4-07	A:A:B
Code Restriction Class Assignment (Night Mode) .....	4-08	A:A:C



**AUTOMATIC HOLD**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Hold Recall Timer Selection (Non-Exclusive Hold) .....	1-1-03	B:I:D
Attendant Add-On Console to Telephone Port Assignment .....	1-6-01	B:B:E:B
Attendant Add-On Console Key Assignment .....	1-6-05	B:B:E:A
Line Key Selection for Tenant Mode .....	2-06	B:K:C
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I

**AUTOMATIC REDIAL**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Automatic Redial Time Selection .....	1-1-04	B:J:A/B/C

**AUTOMATIC RELEASE**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Automatic Release Signal Detection Time Selection .....	3-40	B:C:B:B

**AUTOMATIC TRUNK-TO-TRUNK TRANSFER**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Tandem Transfer Automatic Disconnect Timer Selection .....	1-4-00	A:C:C
Automatic Tandem Trunk by Night Mode Selection .....	1-4-05	A:C:B
Class of Service (Attendant) Feature Selection 1 .....	1-8-08	B:B:A:D
* Trunk-to-Trunk Transfer Yes/No Selection .....	3-04	B:C:B:M
* Trunk Incoming Answer Mode Selection .....	3-05	B:C:B:J
* Automatic Tandem Trunk Assignment .....	3-06	A:C:A
Automatic Release Signal Detection Time Selection .....	3-40	B:C:B:B

**BACKGROUND MUSIC PORT ASSIGNMENT**

Title	Memory Block	PC Menu Item
BGM Port Assignment (Series 500 or Higher) .....	1-1-79	B:C:A:L

**BARGE-IN**

Title	Memory Block	PC Menu Item
Start Timer Selection .....	1-1-05	B:I:C
Private Line Assignment .....	1-1-29	B:C:A:H/I
Barge-In Alert Tone Assignment .....	1-1-76	B:B:A:B
* Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
Trunk to Tenant Assignment .....	2-01	B:K:D
SLT Data Line Security Assignment .....	4-90	B:B:B:Q

**BILINGUAL LCD INDICATION**

Title	Memory Block	PC Menu Item
Absence Message 1 ~ 10 Assignment .....	1-2-09~18	B:D:A~J
Call Arrival Key Port Name Assignment .....	1-10-04	B:L:B
Station Name Assignment .....	4-18	B:B:B:J
* Bilingual LCD Indication Selection .....	4-28	B:B:C:B

**BUSY LAMP FIELD ON MULTILINE TERMINALS**

Title	Memory Block	PC Menu Item
Speed Dial Buffer Allocation .....	1-1-35	B:H:A
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I

**CALL ALERT NOTIFICATION (SERIES 200 OR HIGHER)**

Title	Memory Block	PC Menu Item
Call Forward No Answer Timer Selection .....	1-2-22	B:I:B
Call Forward-Busy Immediately/Delay Selection .....	4-42	B:B:B:P
SLT Data Line Security Assignment .....	4-90	B:B:B:Q

**CALL APPEARANCE KEYS (SERIES 250 OR HIGHER)**

Title	Memory Block	PC Menu Item
* Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
* Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
* Station to Call Appearance Block Assignment .....	4-43	B:B:B:O

**CALL ARRIVAL KEYS (SERIES 250 OR HIGHER)**

Title	Memory Block	PC Menu Item
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
* Call Arrival Key Block Assignment .....	1-2-04	B:L:A
Attendant Add-On Console Key Selection .....	1-6-05	B:B:E:A
* Call Arrival Key Number Assignment .....	1-10-01	B:L:C
Call Arrival Key Master Hunt Number Selection .....	1-10-02	B:L:D
Call Arrival Key Hunt Number Forward Assignment .....	1-10-03	B:L:E
Call Arrival Key Port Name Assignment .....	1-10-04	B:L:B
* Call Arrival Key Appearance Block Assignment .....	1-10-05	B:L:F
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
* Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
* Extension Line Key Ring Assignment (Day Mode) .....	4-37	B:B:C:I
* Extension Line Key Ring Assignment (Night Mode) .....	4-38	B:B:C:I
SIE/CAR Ringing Line Preference Selection .....	4-41	B:B:C:M
Station to Call Appearance Block Assignment .....	4-43	B:B:B:O

**Note:** The Call Arrival Keys feature requires version 2.50 software or higher.

**CALLBACK REQUEST**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Intercom Feature Access Code Assignment .....	1-2-24	B:G:D
Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**CALLER ID INDICATION**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
**Caller ID Display Assignment for System Mode .....	1-1-78	A:J:A
* Class of Service (Station) Feature Selection 2 .....	1-8-08 (P4, LK3 & LK4)	B:B:A:D
Caller ID Display Assignment for Call Arrival Key .....	1-10-06	A:J:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
**DIT Assignment .....	3-42	B:C:B:H
**ANA Assignment .....	3-43	B:C:B:H
**Caller ID Display Assignment for CO/PBX Line .....	3-44	A:J:C
CO/PBX Ring Assignment (Day Mode) .....	4-01	B:B:B:B
CO/PBX Ring Assignment (Night Mode) .....	4-02	B:B:B:C
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
Extension Line Key Ring Assignment (Day Mode) .....	4-37	B:B:C:I
Extension Line Key Ring Assignment (Night Mode) .....	4-38	B:B:C:I
Caller ID Outgoing CO Selection .....	4-44	A:J:D
Card Interface Slot Assignment .....	7-1	B:A:A/B
MIF (Caller ID) Assignment .....	7-3-04	B:A:I

**CALL FORWARD - ALL CALLS**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
CO/PBX Call Forward - All Calls Selection .....	1-1-36	B:C:A:B
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Class of Service (Attendant) Feature Selection 1 .....	1-8-07	B:B:A:C
Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**CALL FORWARD - BUSY/NO ANSWER**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Class of Service (Attendant) Feature Selection 1 .....	1-8-07	B:B:A:C
Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**CALL FORWARD - OFF PREMISE**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
CO/PBX Call Forward - All Calls Selection .....	1-1-36	B:C:A:B
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Tandem Transfer Automatic Disconnect Timer Selection .....	1-4-00	A:C:C
Class of Service (Attendant) Feature Selection 1 .....	1-8-07 (Pg, 2, LK2/LK3)	B:B:A:C
Class of Service (Station) Feature Selection 2 .....	1-8-08 (Pg. 5, LK4)	B:B:A:D
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
* Trunk-to-Trunk Transfer Yes/No Selection .....	3-04	B:C:B:M
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**CALL PARK - SYSTEM**

Title	Memory Block	PC Menu Item
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
System Call Park Recall Time Selection .....	1-2-23	B:I:L

**CALL PICKUP DIRECT**

Title	Memory Block	PC Menu Item
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48 (Item 042)	B:G:A/B/C

**CALL PICKUP GROUP**

Title	Memory Block	PC Menu Item
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Trunk to Tenant Assignment .....	2-01	B:K:D
Telephone to Tenant Assignment .....	4-09	B:B:B:K

**CLASS OF SERVICE**

Title	Memory Block	PC Menu Item
Class of Service (Attendant) Feature Selection 1 .....	1-8-07	B:B:A:C
Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**CLOCK / CALENDAR DISPLAY**

Title	Memory Block	PC Menu Item
* Time Display (12h/24h) Selection .....	1-8-04	B:I:J

**Note:** The Clock/Calendar can only be set from Ports 01 and 02.

## CODE RESTRICTION

Title	Memory Block	PC Menu Item
System Speed Dial Restriction by Tenant .....	1-1-18	A:A:M
PBX/CTX Access Code Assignment I .....	1-1-24	B:G:E
PBX/CTX Access Code Assignment II .....	1-1-25	B:G:F
8-Digit Matching Table Assignment .....	1-1-60	A:A:E
8-Digit Matching Table to Class Assignment .....	1-1-61	A:A:F
System Speed Dial Override by Class Assignment .....	1-1-62	A:A:L
Class Allow/Deny Assignment .....	1-1-65	A:A:A
8-Digit Matching Table to Normal Dial Assignment .....	1-1-66	A:A:G
OCC Table Assignment .....	1-1-67	A:A:I
8-Digit Matching Table to OCC Table Assignment .....	1-1-68	A:A:J
Tie Line Code Restriction Assignment .....	1-1-69	A:A:N
Code Restriction Class Assignment When Lockout is Set .....	1-1-70	A:A:D
Trunk to Tenant Assignment .....	2-01	B:K:D
Trunk-to-Trunk Group Assignment .....	3-03	B:C:B:L
Trunk Type Selection .....	3-91	B:C:B:N
Code Restriction Class Assignment (Day Mode) .....	4-07	A:A:B
* Code Restriction Class Assignment (Night Mode) .....	4-08	A:A:C
Telephone to Tenant Assignment .....	4-09	B:B:B:K
Trunk Outgoing Restriction .....	4-19	B:B:B:M
Trunk Digit Restriction .....	4-32	B:B:B:L
8-Digit Matching Table to Trunk Group Assignment .....	5-02	A:A:H
OCC Table to Trunk Group Assignment .....	5-03	A:A:K

Note: Refer to Section 6 (Code Restriction) in Chapter 2 for additional information.

**CO/PBX/TIE LINE DIGIT RESTRICTION**

Title	Memory Block	PC Menu Item
Trunk Digit Restriction .....	4-32	B:B:B:L

**Note 1:** Refer to Section 6 (Code Restriction) in Chapter 2 for additional information.

**Note 2:** Refer to E&M Tie Lines (4-Wire) Memory Blocks in this chapter.

**CORDLESS TELEPHONE CONNECTION**

Title	Memory Block	PC Menu Item
ADA(2) Ring Mode Assignment .....	4-39	B:B:C:A

**CUSTOMIZED MESSAGE**

Title	Memory Block	PC Menu Item
Absence Message 1 ~ 10 Assignment .....	1-2-09~18	B:D:A~J
Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**DATA LINE SECURITY**

Title	Memory Block	PC Menu Item
* SLT Data Line Security Assignment .....	4-90	B:B:B:Q



**DELAY ANNOUNCEMENT (SERIES 200 OR HIGHER)**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48 (Item 501)	B:G:A/B/C
First Delay Announcement Start Time Selection .....	1-1-71	A:H:C
First Delay Announcement Repeat Selection .....	1-1-72	A:H:B
First to Second Delay Announcement Interval Time Selection .....	1-1-73	A:H:D
Second Delay Announcement Repeat Selection .....	1-1-74	A:H:F
Second Delay Announcement Repeat Interval Time Selection .....	1-1-75	A:H:E
VRS Message Recording Time Selection .....	1-8-12	A:H:H
* VRS Message Function Assignment .....	1-8-13	A:H:G
* Delay Announcement Assignment .....	3-41	A:H:A

**Note 1:** To record the Delay Announcements:

First Announcement - Dial Access Codes (Set in Memory Blocks 1-1-46, 1-1-47 and/or 1-1-48)  
→ Dial 1 → Dial 3 → Dial 1.

Second Announcement - Dial Access Codes (Set in Memory Blocks 1-1-46, 1-1-47 and/or 1-1-48)  
→ Dial 1 → Dial 3 → Dial 2.

**Note 2:** Requires MIF-F(A) or MIF-F(U) KTU before Memory Block can be programmed.

**DELAYED RINGING**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
* Delayed Ringing Timer Assignment (CO) .....	1-1-77	B:C:C:E
Delayed Ringing Timer Assignment (ICM) .....	1-2-26	B:D:O
CO/PBX Ring Assignment (Day Mode) .....	4-01	B:B:B:B
CO/PBX Ring Assignment (Night Mode) .....	4-02	B:B:B:C
Line Selection for Telephone Mode .....	4-12	B:B:C:I
Extension Line Key Ring Assignment (Day Mode) .....	4-37	B:B:C:I
Extension Line Key Ring Assignment (Night Mode) .....	4-38	B:B:C:I

**DIAL 0 FOR ATTENDANT**

Title	Memory Block	PC Menu Item
Access Code (1-Digit) Assignment .....	1-1-46	B:G:A
Specified Station Access Code Assignment .....	1-2-08	B:G:G
Class of Service (Attendant) Feature Selection 1 .....	1-8-07	B:B:A:C
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**DIGIT INSERTION**

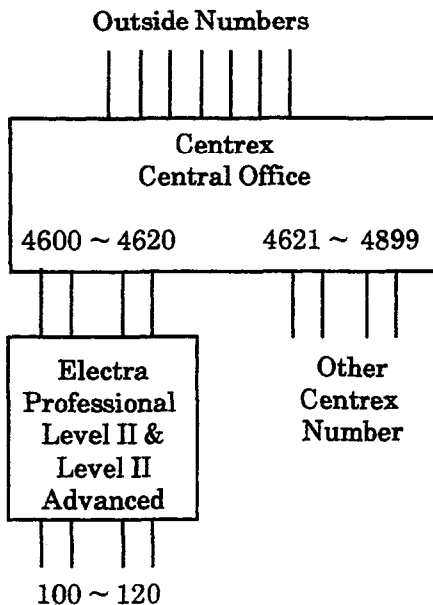
Title	Memory Block	PC Menu Item
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
* Network Trunk Group/Route Advance Assignment .....	1-1-49	A:D:B:E
* CO/PBX Outgoing Digit Add Assignment .....	1-1-50	A:D:B:E
Trunk-to-Trunk Group Assignment .....	3-03	B:C:B:L
Station Number Assignment .....	4-10	B:A:D

Refer to the diagram for an example of the Memory Blocks programmed for Digit Insertion. Listed below is an explanation of the abbreviations used in the example.

**Example:**

Abbreviations:

- AC = Access Code
- BLK = Block
- MB = Memory Block



MB 1-1-46

AC 9 = Item 401

MB 1-1-47

- AC 46 = Item 402
- AC 47 = Item 403
- AC 48 = Item 404

MB 1-1-49

- BLK 01 = 101
- BLK 02 = 101
- BLK 03 = 101
- BLK 04 = 101

MB 1-1-50

- BLK 01 = Add 9
- BLK 02 = Add 46
- BLK 03 = Add 47
- BLK 04 = Add 48

Calling

- Outside Call: Dial 9 (System add a '9')
- Centrex Call: 46XX ~ 48XX

**DIGITAL VOICE MAIL**

Attendant Add-On Console Key Selection .....	1-6-05	B:B:E:A
Class of Service (Station) Feature Selection 2 .....	1-8-08 (P4, LK5 & LK6)	B:B:A:D
Line Key Selection for Tenant Mode .....	2-06	B:K:C
DIT Assignment .....	3-42	B:C:B:H
ANA Assignment .....	3-43	B:C:B:H
Live Recording Trunk Selection .....	3-45	A:G:E
Telephone Type Assignment .....	7-2	B:A:D
Station Number Assignment .....	4-10	B:A:D
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
Intercom Master Hunt Number Selection .....	4-14	B:B:B:D
Intercom Master Hunt Number Forward Selection .....	4-15	B:B:B:D
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**DIRECT INWARD DIALING (DID)**

Title	Memory Block	PC Menu Item
Tie/DID Line Delay Ringing Timer Selection .....	1-1-07	A:D:C:B
Tie/DID Line First Ring Pattern Selection .....	1-1-34	A:D:B:D
Tie/DID Line Delay Ring Pattern Selection .....	1-1-53	A:D:B:C
Trunk-to-Trunk Group Assignment .....	3-03	B:C:B:L
Tie/DID Line Type Assignment .....	3-14	A:D:A:G
Tie Line Length of Wink Signal Selection .....	3-21	A:D:C:L
Tie Line Length of Delay Signal Selection .....	3-22	A:D:C:C
Tie Line Dial Tone Selection .....	3-27	A:D:A:E
Digit Add/Delete for Tie Line Networking .....	5-00	A:D:B:A
Card Interface Slot Assignment .....	7-1	B:A:A/B

**DIRECT INWARD SYSTEM ACCESS (DISA)****Direct Inward System Access (DISA) without VRS Message**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48 (Items 251, 252 & 253)	B:G:A/B/C
Automated Attendant First Digit PBR Release Timer Selection .....	1-4-01	A:I:J
Automated Attendant PBR Timeout Response Selection .....	1-4-08	A:I:L
* Automated Attendant Message Day/Night Mode Selection .....	1-4-11	A:I:E
Automated Attendant Message Access Code (1-Digit) Assignment .....	1-4-14	A:I:C
Automated Attendant Message Access Code (2-Digit) Assignment .....	1-4-15	A:I:D
DISA ID Code Digit Selection .....	1-5-24	B:E:A
* SLT or Automated Attendant/DISA to PBR Selection .....	1-8-01	B:B:D:I
PBR Receive Level Assignment for Automated Attendant/DISA .....	1-8-02	A:I:B
Class of Service (Attendant) Feature Selection 1 .....	1-8-07 (Pg. 2 LK5 & LK6)	B:B:A:C
Class of Service (Station) Feature Selection 2 .....	1-8-08 (Pg. 2 LK8)	B:B:A:D
DISA ID Code Assignment .....	1-9-00	B:E:B
DISA Password Effect/Invalid Selection .....	1-9-02	B:E:C
* Trunk Incoming Answer Mode Selection .....	3-05	B:C:B:J
DISA ID Number Station Assignment .....	4-26	B:E:D

**Direct Inward System Access (DISA) with VRS Message**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48 (Items 251, 252 & 253)	B:G:A/B/C
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48 (Item 501)	B:G:A/B/C
Automated Attendant First Digit PBR Release Timer Selection .....	1-4-01	A:I:J
Tandem Transfer SMDR Print Extension Assignment .....	1-4-04	A:C:D
Automated Attendant PBR Timeout Response Selection .....	1-4-08	A:I:L
Automated Attendant PBR Start Time Selection .....	1-4-09	A:I:K
* Automated Attendant Message Day/Night Mode Selection .....	1-4-11	A:I:E
Automated Attendant Message to Tenant Assignment .....	1-4-12	A:I:G
Automated Attendant Answer Delay Time Assignment .....	1-4-13	A:I:A
Automated Attendant Message Access Code (1-Digit) Assignment .....	1-4-14	A:I:C
Automated Attendant Message Access Code (2-Digit) Assignment .....	1-4-15	A:I:D

**Direct Inward System Access (DISA) with VRS Message (continued)**

Title	Memory Block	PC Menu Item
Automated Attendant Message Repeat Selection .....	1-4-16	A:I:F
DISA ID Code Digit Selection .....	1-5-24	B:E:A
* SLT or Automated Attendant/DISA to PBR Selection .....	1-8-01	B:B:D:I
PBR Receive Level Assignment for Automated Attendant/DISA .....	1-8-02	A:I:B
Class of Service (Attendant) Feature Selection 1 .....	1-8-07 (Pg. 2 LK5 & LK6)	B:B:A:C
Class of Service (Station) Feature Selection 2 .....	1-8-08 (Pg. 2 LK8)	B:B:A:D
VRS Message Recording Time Selection .....	1-8-12	A:H:H
* VRS Message Function Assignment .....	1-8-13	A:H:G
Tone Assignment .....	1-8-15 (Table 2)	B:D:N
DISA ID Code Assignment .....	1-9-00	B:E:B
DISA Password Effect/Invalid Selection .....	1-9-02	B:E:C
* Trunk Incoming Answer Mode Selection .....	3-05	B:C:B:J
Automated Attendant Message to Trunk Selection .....	3-38	A:I:H
DISA ID Number Station Assignment .....	4-26	B:E:D

**DIRECT INWARD TERMINATION**

Title	Memory Block	PC Menu Item
Call Forward No Answer Timer Selection .....	1-2-22	B:I:B
* DIT Assignment .....	3-42	B:C:B:H
* ANA Assignment .....	3-43	B:C:B:H
Call Forward-Busy Immediately/Delay Selection .....	4-42	B:B:B:P

**DIRECT PAGING ACCESS**

Title	Memory Block	PC Menu Item
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Attendant Add-On Console Key Selection .....	1-6-05	B:B:E:A
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I

**DIRECT STATION SELECTION**

Title	Memory Block	PC Menu Item
Attendant Add-on Console to Telephone Port Assignment .....	1-6-01	B:B:E:B
DSS Call Voice/Tone Signal Selection .....	1-6-03	B:B:E:C
Attendant Add-on Console Key Selection .....	1-6-05	B:B:E:A
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
Telephone Type Assignment .....	7-2	B:A:D

**DISTINCTIVE RINGING**

Title	Memory Block	PC Menu Item
CO/PBX Incoming Ringing Alarm Time Selection .....	1-1-06	B:I:F
Distinctive Ringing by Telephone or CO Selection .....	1-1-28	B:B:A:E
CO Line First Ringing Pattern Selection .....	1-1-51	B:C:A:A
PBX Line First Ringing Pattern Selection .....	1-1-52	B:C:A:E
Tie/DID Line Delay Ring Pattern Selection .....	1-1-53	A:D:B:C
CO/PBX Ringing Pattern Selection .....	1-1-56	B:C:A:C
Synchronous Ringing Selection .....	1-1-59	B:C:A:G
CO/PBX Ringing Variation Selection .....	3-07	B:C:B:C

**DO NOT DISTURB**

Title	Memory Block	PC Menu Item
Class of Service (Attendant) Feature Selection 1 .....	1-8-07	B:B:A:C
Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**DROP KEY**

Title	Memory Block	PC Menu Item
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I

**DTI**

Title	Memory Block	PC Menu Item
Signal Format Selection .....	1-11-00	A:E:A:G
Clear Channel Selection .....	1-11-01	A:E:A:B
Line Length Selection .....	1-11-02	A:E:A:C
Robbed Bit Signaling Channel Selection .....	1-11-03	A:E:A:E
DTI Maintenance Selection .....	1-11-04	A:E:A:D
T1 Channel Selection .....	1-11-05	A:E:A:A
Signaling Selection .....	1-11-06	A:E:A:F
DTI Trunk Type Assignment .....	1-11-07	A:E:A:H
Card Interface Slot Assignment .....	7-1	B:A:A/B

**ELAPSED CALL TIMER**

Title	Memory Block	PC Menu Item
Start Timer Selection .....	1-1-05	B:I:C
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
Card Interface Slot Assignment .....	7-1	B:A:A/B

**E&M TIE LINES (4-WIRE)**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Tie/DID Line Delay Ringing Timer Selection .....	1-1-07	A:D:C:B
Tie/DID Line First Ring Pattern Selection .....	1-1-34	A:D:B:D
Tie/DID Line Delay Ring Pattern Selection .....	1-1-53	A:D:B:C
Tie Line Code Restriction Assignment .....	1-1-69	A:A:N
Trunk-to-Trunk Group Assignment .....	3-03	B:C:B:L
Tie/DID Line Type Assignment .....	3-14	A:D:A:G
Trunk DTMF Duration/Interdigit Selection .....	3-15	B:C:B:D
Tie Line Prepause Time Selection .....	3-16	A:D:C:I
Tie Line Answer Detect Time Selection .....	3-17	A:D:C:A
Tie Line Release Detect Time Selection .....	3-18	A:D:C:J
Tie Line CO/PBX Incoming Signal Detect Time Selection .....	3-19	A:D:C:E
Tie Line Loop Off-Guard Time Selection .....	3-20	A:D:C:F
Tie Line Length of Wink Signal Selection .....	3-21	A:D:C:L
Tie Line Length of Delay Signal Selection .....	3-22	A:D:C:C
Tie Line Outgoing Timeout Selection .....	3-23	A:D:C:H
Tie Line Incoming Interdigit Timeout Selection .....	3-24	A:D:C:D
Tie Line Wink/Delay Signal Detect Timeout Selection .....	3-25	A:D:C:K
Tie Line Outgoing Guard Time Selection .....	3-26	A:D:C:G
Tie Line Dial Tone Selection .....	3-27	A:D:A:E
Tie Line Reorder Tone Selection .....	3-28	A:D:A:F
Tie Line Internal Transmit Pad Selection .....	3-29	A:D:A:D
Tie Line Internal Receive Pad Selection .....	3-30	A:D:A:C
Tie Line External Transmit Pad Selection .....	3-31	A:D:A:B
Tie Line External Receive Pad Selection .....	3-32	A:D:A:A
Trunk Type Selection .....	3-91	B:C:B:N
Trunk (Installed DP/DTMF) Selection .....	3-92	B:C:B:F



**EQUAL ACCESS ACCOMMODATION**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
8-Digit Matching Table to Class Assignment .....	1-1-61	A:A:F
OCC Table Assignment .....	1-1-67	A:A:I
8-Digit Matching Table to OCC Table Assignment .....	1-1-68	A:A:J
* Code Restriction Class Assignment (Day Mode) .....	4-07	A:A:B
* Code Restriction Class Assignment (Night Mode) .....	4-08	A:A:C
OCC Table to Trunk Group Assignment .....	5-03	A:A:K

**EXTERNAL TONE RINGER**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
External Ring Relay Cycle Selection .....	1-7-07	B:F:C~F
* ECR Relay to Tenant Assignment .....	2-08	B:K:A

**EXTERNAL ZONE PAGING (MEET-ME)**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Attendant Add-On Console Key Assignment .....	1-6-05	B:B:E:A
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I

**FAX STATUS INDICATION**

Title	Memory Block	PC Menu Item
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/488	B:G:A/B/C
Automated Attendant Message Access Code (1-Digit) Assignment .....	1-4-14	A:I:C
Automated Attendant Message Access Code (2-Digit) Assignment .....	1-4-15	A:I:D
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
* Fax Indication Station Assignment .....	4-33	B:B:C:E
* Fax Indication Networking Assignment .....	4-34	B:B:C:D

**FEATURE ACCESS - USER PROGRAMMABLE**

Title	Memory Block	PC Menu Item
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I

**FLEXIBLE LINE ASSIGNMENT**

Title	Memory Block	PC Menu Item
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I

**FLEXIBLE NUMBERING PLAN**

Title	Memory Block	PC Menu Item
Access Code (1-or 2-Digit) Assignment .....	1-1-46/47	B:G:A:B
2-, 3-, or 4-Digit Station Numbering Selection .....	1-2-03	B:A:C
* Station Number Assignment .....	4-10	B:A:D

**FLEXIBLE RINGING ASSIGNMENT**

Title	Memory Block	PC Menu Item
* Off-Hook Ringing Selection .....	1-1-26	B:B:A:H
Distinctive Ring by Telephone or CO Selection .....	1-1-28	B:B:A:E
CO/PBX Ringing Variation Selection .....	3-07	B:C:B:C
CO/PBX Ring (Day) Mode .....	4-01	B:B:B:B
CO/PBX Ring (Night) Mode .....	4-02	B:B:B:C
Extension Line Key Ring Assignment (Day Mode) .....	4-37	B:B:C:I
Extension Line Key Ring Assignment (Night Mode) .....	4-38	B:B:C:I
Telephone Ringing Variation Selection .....	4-91	B:B:C:C

**FLEXIBLE TIMEOUTS**

Title	Memory Block	PC Menu Item
Pause Time Selection .....	1-1-00	B:C:C:D
DP Interdigit Time Selection .....	1-1-01	B:C:C:B
Hookflash Time Selection .....	1-1-02	B:C:C:C
Hold Recall Time Selection (Non-Exclusive Hold) .....	1-1-03	B:I:D
Start Timer Selection .....	1-1-05	B:I:C
CO/PBX Incoming Ringing Alarm Time Selection .....	1-1-06	B:I:F
Tie/DID Line Delay Ringing Timer Selection .....	1-1-07	A:D:C:B
Station Transfer/Camp-On Recall Timer Selection .....	1-1-12	B:I:H
Trunk Queuing Timeout Selection .....	1-1-37	B:I:K
CO/PBX Prepause Timer Selection .....	1-1-57	B:C:C:A
Hold Recall Time Selection (Exclusive) .....	1-1-63	B:I:E
Attendant Add-On Console Transfer/Camp-On Recall Timer Selection .....	1-1-64	B:I:I
First Delay Announcement Start Time Selection .....	1-1-71	A:H:C
First to Second Delay Announcement Interval Time Selection .....	1-1-73	A:H:D
Second Delay Announcement Repeat Interval Time Selection .....	1-1-75	A:H:E
Internal Paging Timeout Selection .....	1-2-00	B:F:I
Automatic Callback Release Timer Selection .....	1-2-02	B:I:A
Call Forward No Answer Timer Selection .....	1-2-22	B:I:B
System Call Park Recall Time Selection .....	1-2-23	B:I:L
Bounce Protect Time Selection .....	1-3-01	B:B:D:A
First Digit PBR Release Timer Selection .....	1-3-03	B:B:D:F

**FLEXIBLE TIMEOUTS (continued)**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Hookflash Start Time Selection .....	1-3-05	B:B:D:E
Hookflash End Time Selection .....	1-3-06	B:B:D:D
Voice Mail DTMF Delay Timer Selection .....	1-3-08	A:G:C
Voice Mail Disconnect Time Selection .....	1-3-09	A:G:B
Voice Mail DTMF Duration/Interdigit Time Selection .....	1-3-10	A:G:D
Tandem Transfer Automatic Disconnect Timer Selection .....	1-4-00	A:C:C
Automated Attendant First Digit PBR Release Timer Selection .....	1-4-01	A:I:J
Automated Attendant Transfer Delayed Ringing Time Selection .....	1-4-02	A:I:M
Automated Attendant No Answer Disconnect Time Selection .....	1-4-03	A:I:I
Automated Attendant Answer Delay Time Assignment .....	1-4-13	A:I:A
SMDR Valid Call Timer Assignment .....	1-5-25	A:B:E
External Page Timeout Selection .....	1-7-06	B:F:H
PBR Interdigit Release Timer Selection .....	1-8-10	B:I:G
System Refresh Timer Assignment .....	1-8-11	B:I:M
Trunk DTMF Duration/Interdigit Selection .....	3-15	B:C:B:D
Tie Line Prepause Time Selection .....	3-16	A:D:C:I
Tie Line Answer Detect Time Selection .....	3-17	A:D:C:A
Tie Line Release Detect Time Selection .....	3-18	A:D:C:J
Tie Line CO/PBX Incoming Signal Detect Time Selection .....	3-19	A:D:C:E
Tie Line Loop Off-Guard Time Selection .....	3-20	A:D:C:F
Tie Line Length of Wink Signal Selection .....	3-21	A:D:C:L
Tie Line Length of Delay Signal Selection .....	3-22	A:D:C:C
Tie Line Outgoing Timeout Selection .....	3-23	A:D:C:H
Tie Line Incoming Interdigit Timeout Selection .....	3-24	A:D:C:D
Tie Line Wink/Delay Signal Detect Timeout Selection .....	3-25	A:D:C:K
Tie Line Outgoing Guard Time Selection .....	3-26	A:D:C:G
Disconnect Recognition Time Selection .....	3-33	B:C:B:G
Automatic Release Signal Detection Time Selection .....	3-40	B:C:B:B

**FULL HANDSFREE OPERATION**

Title	Memory Block	PC Menu Item
* HFU Selection .....	4-29	B:B:C:F

**GROUP LISTENING**

Title	Memory Block	PC Menu Item
* Class of Service (Station) Feature Selection 2	1-8-08	B:B:A:D
Station to Class of Service Feature Assignment .....	4-17	B:B:B:1

**HEADSET CONNECTION VIA ADA(1)-W(BK)/(SW) UNIT**

Title	Memory Block	PC Menu Item
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
* Line Key Selection for Telephone Mode .....	4-12	B:B:C:I

**HOLD WITH RECALL (EXCLUSIVE AND NON-EXCLUSIVE)**

Title	Memory Block	PC Menu Item
Hold Recall Timer Selection (Non-Exclusive Hold) .....	1-1-03	B:I:D
Hold Recall Time Selection (Exclusive) .....	1-1-63	B:I:E
Hold/Transfer Recall Display Selection .....	4-30	B:B:C:G

**HOT LINE**

Title	Memory Block	PC Menu Item
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Prime Line/Hot Line Assignment .....	4-23	B:B:B:F

**HOWLER TONE SERVICE**

Title	Memory Block	PC Menu Item
Tone Assignment .....	1-8-15	B:D:N

**INCOMING CALL IDENTIFICATION**

Title	Memory Block	PC Menu Item
Telephone Number to Trunk Assignment .....	3-00	B:C:B:I
Station Name Assignment .....	4-18	B:B:B:J

**INTERNAL VOICE/TONE SIGNALING**

Title	Memory Block	PC Menu Item
Intercom Call Voice/Tone Signal Selection .....	1-2-01	B:D:K
DSS Call Voice/Tone Signal Selection .....	1-6-03	B:B:E:C

**INTERNAL ZONE PAGING (MEET-ME)**

Title	Memory Block	PC Menu Item
Internal Paging Timeout Selection .....	1-2-00	B:F:I
Internal Paging Alert Tone Selection .....	1-2-25	B:F:G
Receiving Internal/All Call Page Selection .....	4-31	B:B:B:G
* Internal Zone Paging Selection .....	4-93	B:B:C:H

## ISDN

Title	Memory Block	PC Menu Item
* Telephone Number to Trunk and Directory Number Assignment *1	3-00	B:C:B:I
ISDN Trunk DTMF Duration/Interdigit Selection	1-1-80	A:K:A:A
ISDN Line Internal Transmit Pad Selection	3-46	A:K:A:B
ISDN Line Internal Receive Pad Selection	3-47	A:K:A:C
ISDN Line External Transmit Pad Selection	3-48	A:K:A:D
ISDN Line External TransmitPad Selection	3-49	A:K:A:E
* ISDN Line SPID Assignment	3-50	A:K:A:G
ISDN Line Ringing Pattern Selection	3-51	A:K:A:F
Card Interface Slot Assignment	7-1	B:A:A:B

## Caller ID

Caller ID Display Assignment for System Mode	1-1-78	A:J:A
Caller ID Display Assignment for Call Arrival Key	1-10-06	A:J:B
Caller ID Display Assignment for CO/PBX Line	3-44	A:J:C
Class of Service (Station) Feature Selection 2	1-8-08 (Pg. 4, LK3/LK4)	B:B:A:D

## KEY FUNCTION/MULTI-FUNCTION REGISTRATION

Title	Memory Block	PC Menu Item
This function is set on the CPU-F( )-20 KTU	N/A	N/A
* Dip Switch (Switch 3 is set to MF or KF)	N/A	N/A
** A First Initialization is required to change the switch status	N/A	N/A

**LEAST COST ROUTING (LCR)**

Title	Memory Block	PC Menu Item
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Trunk-to-Trunk Group Assignment .....	3-03	B:C:B:L
Trunk Type Selection .....	3-91	B:C:B:N
* LCR Class Selection .....	4-40	B:B:B:E
Card Interface Slot Assignment .....	7-1	B:B:A/B
MIF (LCR) Assignment .....	7-3-01	B:A:F

**MESSAGE WAITING**

Title	Memory Block	PC Menu Item
Attendant Add-On Console Key Selection .....	1-06-05	B:B:E:A

**MULTIPLE TRUNK GROUPS**

Title	Memory Block	PC Menu Item
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Trunk-to-Trunk Group Assignment .....	3-03	B:C:B:L

**MUSIC ON HOLD**

Title	Memory Block	PC Menu Item
Music On Hold Pattern Selection .....	1-8-09	B:C:A:D

**NIGHT CALL PICKUP**

Title	Memory Block	PC Menu Item
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
ECR Relay to Tenant Assignment .....	2-08	B:K:A



**NIGHT CHIME**

Title	Memory Block	PC Menu Item
* ECR Relay to Tenant Assignment .....	2-08	B:K:A
Card Interface Slot Assignment .....	7-1	B:A:A/B

**NIGHT TRANSFER**

Title	Memory Block	PC Menu Item
Attendant Add-On Console Key Selection .....	1-6-05	B:B:E:A
Class of Service (Attendant) Feature Selection 1 .....	1-8-07	B:B:A:C
Trunk to Tenant Assignment .....	2-01	B:K:D
Trunk-to-Trunk Group Assignment .....	3-03	B:C:B:L
CO/PBX Ring Assignment (Day Mode) .....	4-01	B:B:B:B
CO/PBX Ring Assignment (Night Mode) .....	4-02	B:B:B:C
Code Restriction Class Assignment (Day Mode) .....	4-07	A:A:B
Code Restriction Class Assignment (Night Mode) .....	4-08	A:A:C
Telephone to Tenant Assignment .....	4-09	B:B:B:K
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I
Extension Line Key Ring Assignment (Day Mode) .....	4-37	B:B:C:I
Extension Line Key Ring Assignment (Night Mode) .....	4-38	B:B:C:I

**OFF-HOOK RINGING**

Title	Memory Block	PC Menu Item
Off-Hook Ringing Selection .....	1-1-26	B:B:A:H

**OFF-HOOK VOICE ANNOUNCEMENT TERMINAL ASSIGNMENT**

Title	Memory Block	PC Menu Item
* Off-Hook Voice Announcement Terminal Assignment .....	4-20	B:B:C:J

**PC PROGRAMMING**

Title	Memory Block	PC Menu Item
PC Programming Password Assignment .....	1-8-17	C:A:A
Site Name Assignment .....	1-8-18	Login Menu
Card Interface Slot Assignment .....	7-1	B:A:A/B
MIF (LCR) Assignment .....	7-3-01	B:A:F
MIF (SMDR) Assignment .....	7-3-02	B:A:E

**POOLED LINE (OUTGOING)**

Title	Memory Block	PC Menu Item
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
Trunk-to-Trunk Group Assignment .....	3-03	B:C:B:L
* Line Key Selection for Telephone Mode .....	4-12	B:B:C:I

**PRIME LINE ASSIGNMENT**

Title	Memory Block	PC Menu Item
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
* Prime Line/Hot Line Assignment .....	4-23	B:B:B:F

**PRIVATE LINES**

Title	Memory Block	PC Menu Item
** Private Line Assignment .....	1-1-29	B:C:A:H/I

**RECALL KEY**

Title	Memory Block	PC Menu Item
** Hookflash Time Selection .....	1-1-02	B:C:C:C

**RESTRICTION (OUTGOING)**

Title	Memory Block	PC Menu Item
* Trunk Outgoing Restriction .....	4-19	B:B:B:M

**RINGING LINE PREFERENCE**

Title	Memory Block	PC Menu Item
* Ringing Line Preference Selection .....	4-11	B:B:C:K
Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
SIE/CAR Ringing Line Preference Selection .....	4-41	B:B:C:M

**ROUTE ADVANCE BLOCK**

Title	Memory Block	PC Menu Item
* Route Advance Block Assignment .....	1-1-30	B:C:A:F
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
Trunk-to-Trunk Group Assignment .....	3-03	B:C:B:L
* Line Key Selection for Telephone Mode .....	4-12	B:B:C:I

**SCROLLING DIRECTORIES**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
System Speed Dial Restriction by Tenant .....	1-1-18	B:K:E
Speed Dial Number/Name display Selection .....	1-1-33	B:H:B
Speed Dial Buffer Allocation .....	1-1-35	B:H:A
System Speed Dial Display Assignment .....	2-07	B:K:E

**SECONDARY INCOMING EXTENSION**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
* Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
Extension Line Key Ring Assignment (Day Mode) .....	4-37	B:B:C:I
Extension Line Key Ring Assignment (Night Mode) .....	4-38	B:B:C:I
SIE/CAR Ringing Line Preference Selection .....	4-41	B:B:C:M

**SEIZED TRUNK NUMBER DISPLAY**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
* Telephone Number to Trunk Assignment .....	3-00	B:C:B:I

**STATION RELOCATION**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Class of Service (Attendant) Feature Selection 1 .....	1-8-07 (Pg. 3, LK1)	B:B:A:C
Class of Service (Station) Feature Selection 2 .....	1-8-08 (Pg. 5, LK3)	B:B:A:D
Station to Class of Service Feature Assignment .....	4-17	B:B:B:1

**SINGLE LINE TELEPHONE ACCESS**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Bounce Protect Time Selection .....	1-3-01	B:B:D:A
SLT Hookflash Signal Selection .....	1-3-02	B:B:D:H
First Digit PBR Release Timer Selection .....	1-3-03	B:B:D:F
Dial 1 (DP) Hookflash Selection .....	1-3-04	B:B:D:B
Hookflash Start Time Selection .....	1-3-05	B:B:D:E
Hookflash End Time Selection .....	1-3-06	B:B:D:D
SLT or Automated Attendant/DISA to PBR Selection .....	1-8-01	B:B:D:I
DIT Assignment .....	3-42	B:C:B:H
ANA Assignment .....	3-43	B:C:B:H
CO/PBX Ring Assignment (Day Mode) .....	4-01	B:B:B:B
CO/PBX Ring Assignment (Night Mode) .....	4-02	B:B:B:C
Telephone to Tenant Assignment .....	4-09	B:B:B:K
Station Name Assignment .....	4-18	B:B:B:J
SLT Hookflash Assignment .....	4-24	B:B:D:H
Voice Mail/SLT Selection .....	4-35	B:B:D:J
SLT Data Line Security Assignment .....	4-90	B:B:B:Q
DTMF/DP SLT Type Selection 4-95	B:B:D:C	

**SLT ADAPTER**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Station Number Assignment .....	4-10	B:A:D
Telephone Type Assignment .....	7-2	B:A:D

**SLT TIMED ALARM**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Class of Service (Attendant) Feature Selection 1 .....	1-8-07	B:B:A:C
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**SPEED DIAL STORED CHARACTERS**

Title	Memory Block	PC Menu Item
Speed Dial Number/Name Display Selection .....	1-1-33	B:H:B
Speed Dial Buffer Allocation .....	1-1-35	B:H:A

**SPEED DIAL STATION**

Title	Memory Block	PC Menu Item
Speed Dial Buffer Allocation .....	1-1-35	B:H:A

**SPEED DIAL SYSTEM**

Title	Memory Block	PC Menu Item
System Speed Dial Restriction by Tenant .....	1-1-18	B:K:E
Speed Dial Number/Name Display Selection .....	1-1-33	B:H:B
Speed Dial Buffer Allocation .....	1-1-35	B:H:A
System Speed Dial Override by Class Selection .....	1-1-62	A:A:L
Class of Service (Attendant) Feature Selection 1 .....	1-8-07	B:B:A:C
System Speed Dial Display Assignment .....	2-07	B:K:E
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**STATION HUNTING**

Title	Memory Block	PC Menu Item
* Intercom Master Hunt Number Selection .....	4-14	B:B:B:D
** Intercom Master Hunt Number Forward Assignment .....	4-15	B:B:B:D

**STATION MESSAGE DETAIL RECORDING (SMDR)**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Start Timer Selection .....	1-1-05	B:I:C
SMDR Print Format .....	1-5-02	A:B:C
* Printer Connected (Alarm) Selection .....	1-5-13	A:B:A
Printer Line Feed Control Selection .....	1-5-14	A:B:B
SMDR Valid Call Timer Assignment .....	1-5-25	A:B:E
SMDR Incoming/Outgoing Print Selection .....	1-5-26	A:B:D
Card Interface Slot Assignment .....	7-1	B:A:A/B
MIF (LCR) Assignment .....	7-3-01	B:A:F
MIF (SMDR) Assignment .....	7-3-02	B:A:E

**STATION OUTGOING LOCKOUT**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Code Restriction Class Assignment When Lockout is Set .....	1-1-70	A:A:D
Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**STATION TRANSFER**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
System Transfer/Camp-On Selection .....	1-1-11	B:B:A:I
System Transfer/Camp-On Recall Timer Selection .....	1-1-12	B:I:H
CO Transfer Ring Pattern Selection .....	1-1-13 (Series 400 or higher)	B:C:A:J
CO Transfer Ring Tone Selection .....	1-1-14 (Series 400 or higher)	B:C:A:K

**STEP CALL**

Title	Memory Block	PC Menu Item
Intercom Feature Access Code Assignment .....	1-2-24	B:G:D
Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**STORED HOOKFLASH**

Title	Memory Block	PC Menu Item
Hookflash Time Selection .....	1-1-02	B:C:C:C

**SYNCHRONOUS RINGING**

Title	Memory Block	PC Menu Item
Synchronous Ringing Selection .....	1-1-59	B:C:A:G

**T1 CONNECTION**

Title	Memory Block	PC Menu Item
Signal Format Selection .....	1-11-00	A:E:A~C:G
Clear Channel Selection .....	1-11-01	A:E:A~C:B
Line Length Selection .....	1-11-02	A:E:A~C:C
Robbed Bit Signal Channel Selection .....	1-11-03	A:E:A~C:E
DTI Maintenance Selection .....	1-11-04	A:E:A~C:D
T1 Channel Selection .....	1-11-05	A:E:A~C:A
Signaling Selection .....	1-11-06	A:E:A~C:F
Trunk to Tenant Assignment .....	2-01	B:K:D
Trunk-to-Trunk Group Assignment .....	3-03	B:C:B:L
Card Interface Slot Assignment .....	7-1	B:A:A/B



**TANDEM SWITCHING OF 4-WIRE E&M TIE LINES**

Title	Memory Block	PC Menu Item
Tie Line Networking Tandem Connection Assignment .....	5-01	A:D:B:B

**Note 1:** Refer to E&M Tie Lines (4-Wire).

**Note 2:** Refer to Uniform Numbering Network (Closed or Open Plan).

**TENANT SERVICE**

Title	Memory Block	PC Menu Item
Automated Attendant Message to Tenant Assignment .....	1-4-12	A:I:G
Trunk to Tenant Assignment .....	2-01	B:K:D
Line Key Selection .....	2-05	B:K:B
Line Key Selection for Tenant Mode .....	2-06	B:K:C
System Speed Dial Display Assignment .....	2-07	B:K:E
ECR Relay to Tenant Assignment .....	2-08	B:K:A
Telephone to Tenant Assignment .....	4-09	B:B:B:K

**THREE MINUTE REMINDER**

Title	Memory Block	PC Menu Item
3-Minute Alarm Selection .....	4-94	B:B:C:L

**STONE OVERRIDE**

Title	Memory Block	PC Menu Item
Class of Service (Station ) Feature Selection 2 .....	1-8-08	B:B:A:D
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**TRUNK QUEUING**

Title	Memory Block	PC Menu Item
Trunk Queuing Timeout Selection .....	1-1-37	B:I:K
Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**TRUNK-TO-TRUNK TRANSFER**

Title	Memory Block	PC Menu Item
Tandem Transfer Automatic Disconnect Timer Selection .....	1-4-00	A:C:C
Class of Service (Attendant) Feature Selection 1 .....	1-8-07	B:B:A:C
* Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
* Trunk-to-Trunk Transfer Yes/No Selection .....	3-04	B:C:B:M
Station to Class of Service Feature Assignment .....	4-17	B:B:B:I

**UNIFORM CALL DISTRIBUTION (UCD) (SERIES 200 OR HIGHER)**

Title	Memory Block	PC Menu Item
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48 (Items 031/032)	B:G:A/B/C
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48 (Item 040)	B:G:A/B/C
Barge-In Alert Tone Assignment .....	1-1-76	B:B:A:B
Call Forward No Answer Timer Selection .....	1-2-22	B:I:B
Class of Service (Station) Feature Selection 2 .....	1-8-08 (Pg. 1 LK 4 & LK 5) (Pg. 1 LK1 Series 400 or higher)	B:B:A:D
* ACD/UCD Group Agent Assignment .....	1-8-25	A:F:A
* ACD/UCD Group Pilot Number Assignment .....	1-12-00	A:F:B
ACD/UCD Group Overflow Destination Assignment .....	1-12-01	A:F:C
ACD/UCD Group Overflow Timer Selection .....	1-12-02	A:F:D
* DIT Assignment .....	3-42	B:C:B:H
* ANA Assignment .....	3-43	B:C:B:H
Line Key Selection for Telephone Mode .....	4-12	B:B:C:I
Card Interface Slot Assignment .....	7-1	B:A:A/B

MIF (UCD) Assignment ..... 7-3-03 B:A:H

**Note:** Refer to Delay Announcement Memory Blocks in this chapter.

## UNIFORM NUMBERING NETWORK

### Uniform Numbering Network (Closed Numbering Plan)

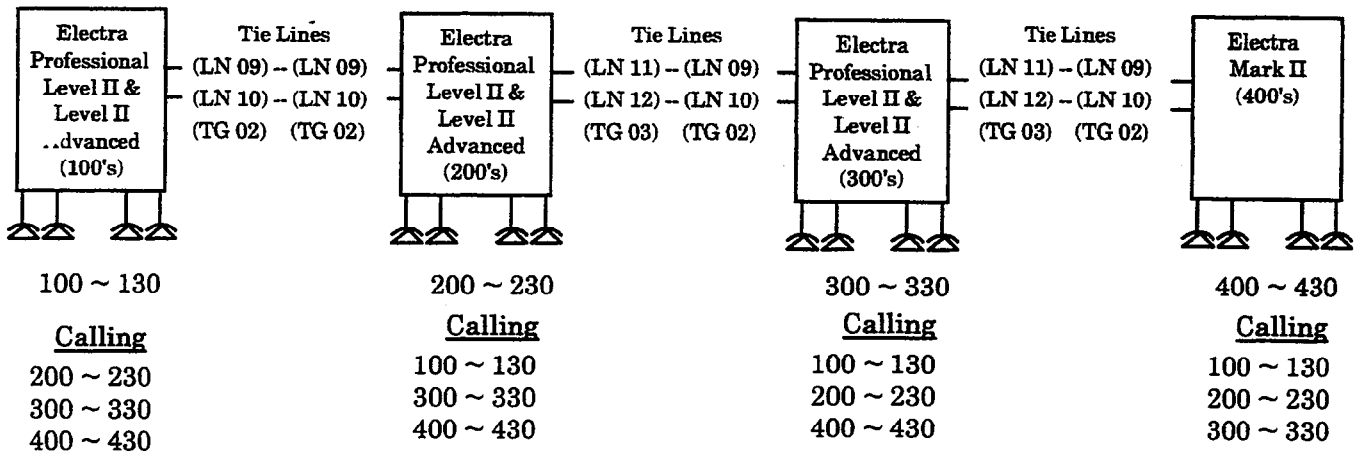
Title	Memory Block	PC Menu Item
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
* Networking Trunk Group/Route Advance Assignment .....	1-1-49	A:D:B:E
* CO/PBX Outgoing Digit Add Assignment .....	1-1-50	A:D:B:E
Trunk-to-Trunk Group Assignment .....	3-03	B:C:B:L
Trunk (Installed, DP/DTMF) Selection .....	3-92	B:C:B:F
Station Number Assignment .....	4-10	B:A:D
Tie Line Networking Tandem Connection Assignment .....	5-01	A:D:B:B

Refer to the diagram on the next page for an example of the Memory Blocks programmed for the Closed Numbering Plan. Listed below is an explanation of the abbreviations used in the example.

#### Abbreviations:

AC = Access Codes  
 ACG = Access Item Code  
 BLK = Block  
 MB = Memory Block  
 LN = Line  
 TRK = Trunk  
 TG = Trunk Group  
 UD = Uniform Dial

**Example:**



MB 1-1-46

AC 2 = Item 401  
AC 3 = Item 402  
AC 4 = Item 403

MB 1-1-46

AC 1 = Item 401  
AC 2 = Item 001  
AC 3 = Item 402  
AC 4 = Item 403

MB 1-1-46

AC 1 = Item 401  
AC 2 = Item 402  
AC 3 = Item 001  
AC 4 = Item 403

MB 2E1

Item 36 = 4  
Item 60 = 1  
Item 61 = 2  
Item 62 = 3

MB 1-1-49

BLK 01 = 102  
BLK 02 = 102  
BLK 03 = 102

MB 1-1-49

BLK 01 = 102  
BLK 02 = 103  
BLK 03 = 103

MB 1-1-49

BLK 01 = 102  
BLK 02 = 102  
BLK 03 = 103

MB 2C6

UD 01 = 2  
UD 02 = 2  
UD 03 = 2

MB 1-1-50

BLK 01 = Add 2  
BLK 02 = Add 3  
BLK 03 = Add 4

MB 1-1-50

BLK 01 = Add 1  
BLK 02 = Add 3  
BLK 03 = Add 4

MB 1-1-50

BLK 01 = Add 1  
BLK 02 = Add 3  
BLK 03 = Add 4

MB 2C1

TRK 09 = TG 02  
TRK 10 = TG 02

MB 3-03

TRK 09 = TG 02  
TRK 10 = TG 02

MB 3-03

TRK 09 = TG 02  
TRK 10 = TG 02  
TRK 11 = TG 03  
TRK 12 = TG 03

MB 3-03

TRK 09 = TG 02  
TRK 10 = TG 02  
TRK 11 = TG 03  
TRK 12 = TG 03

MB 2C3

TG 02 = ACG 2

MB 4-10

All Phones = 2XX

MB 4-10

All Phones = 3XX

MB 5-01

Default OK

MB 5-01

Default OK

MB 5-01

Default OK

**Uniform Numbering Network (Open Numbering Plan)**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
* Networking Trunk Group/Route Advance Assignment .....	1-1-49	A:D:B:E
* CO/PBX Outgoing Digit Add Assignment .....	1-1-50	A:D:B:E
Trunk-to-Trunk Group Assignment .....	3-03	B:C:B:L
Trunk (Installed, DP/DTMF) Selection .....	3-92	B:C:B:F
Station Number Assignment .....	4-10	B:A:D
Tie Line Networking Tandem Connection Assignment .....	5-01	A:D:B:B

- \* Indicates the Memory Blocks that must be programmed before the Uniform Numbering Network feature can be used.

Refer to the diagram on the next page for an example of the Memory Blocks programmed for the Open Numbering Plan. Listed below is an explanation of the abbreviations used in the example.

**Abbreviations:**

AC = Access Codes

BLK = Block

MB = Memory Block

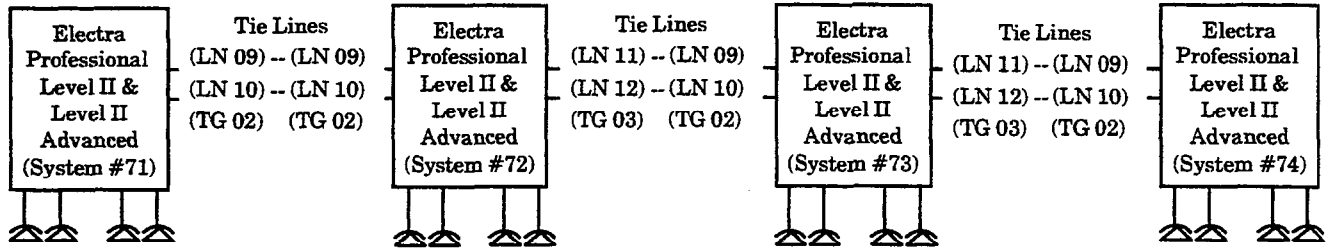
LN = Line

TBL = Table

TRK = Trunk

TG = Trunk Group

**Example:**



100 ~  
130  
Calling  
8 72 100 ~ 130  
8 73 100 ~ 130  
8 74 100 ~ 130

100 ~  
130  
Calling  
8 71 100 ~ 130  
8 73 100 ~ 130  
8 74 100 ~ 130

100 ~  
130  
Calling  
8 71 100 ~ 130  
8 72 100 ~ 130  
8 74 100 ~ 130

100 ~  
130  
Calling  
8 71 100 ~ 130  
8 72 100 ~ 130  
8 73 100 ~ 130

MB 1-1-46  
AC 8 = Item 000

MB 1-1-46  
AC 8 = Item 000

MB 1-1-46  
AC 8 = Item 000

MB 1-1-46  
AC 8 = Item 000

MB 1-1-47  
AC 71 = Item 082  
AC 87 = Item 301

MB 1-1-47  
AC 71 = Item 401  
AC 72 = Item 082  
AC 73 = Item 402  
AC 74 = Item 403  
AC 87 = Item 301

MB 1-1-47  
AC 71 = Item 401  
AC 72 = Item 402  
AC 73 = Item 082  
AC 74 = Item 403  
AC 87 = Item 301

MB 1-1-47  
AC 74 = Item 082  
AC 87 = Item 301

MB 1-1-48  
TBL 1 (# 2) = Item 401  
TBL 1 (# 3) = Item 402  
TBL 1 (# 4) = Item 403

MB 1-1-48  
TBL 1 (# 1) = Item 401  
TBL 1 (# 3) = Item 402  
TBL 1 (# 4) = Item 403

MB 1-1-48  
TBL 1 (# 1) = Item 401  
TBL 1 (# 2) = Item 402  
TBL 1 (# 4) = Item 403

MB 1-1-48  
TBL 1 (# 1) = Item 401  
TBL 1 (# 2) = Item 402  
TBL 1 (# 3) = Item 403

MB 1-1-49  
BLK 01 = 102  
BLK 02 = 102  
BLK 03 = 102

MB 1-1-49  
BLK 01 = 102  
BLK 02 = 103  
BLK 03 = 103

MB 1-1-49  
BLK 01 = 102  
BLK 02 = 102  
BLK 03 = 103

MB 1-1-49  
BLK 01 = 102  
BLK 02 = 102  
BLK 03 = 102

MB 1-1-50  
BLK 01 = Add 72  
BLK 02 = Add 73  
BLK 03 = Add 74

MB 1-1-50  
BLK 01 = Add 71  
BLK 02 = Add 73  
BLK 03 = Add 74

MB 1-1-50  
BLK 01 = Add 71  
BLK 02 = Add 72  
BLK 03 = Add 74

MB 1-1-50  
BLK 01 = Add 71  
BLK 02 = Add 72  
BLK 03 = Add 73

MB 3-03  
TRK 09 = TG 02  
TRK 10 = TG 02

MB 3-03  
TRK 09 = TG 02  
TRK 10 = TG 02  
TRK 11 = TG 03  
TRK 12 = TG 03

MB 3-03  
TRK 09 = TG 02  
TRK 10 = TG 02  
TRK 11 = TG 03  
TRK 12 = TG 03

MB 3-03  
TRK 09 = TG 02  
TRK 10 = TG 02

MB 5-01  
Default OK

MB 5-01  
Default OK

MB 5-01  
Default OK

MB 5-01  
Default OK

**UNIVERSAL SLOTS**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
Card Interface Slot Assignment .....	7-1	B:A:A/B
MIF (ACD) Assignment .....	7-3-00	B:A:G
MIF (LCR) Assignment .....	7-3-01	B:A:F
MIF (SMDR) Assignment .....	7-3-02	B:A:E
MIF (UCD) Assignment .....	7-3-03	B:A:H

**UNSUPERVISED CONFERENCE**

* Class of Service (Station) Feature Selection 2 .....	1-8-08	B:B:A:D
--	--------	---------

**VOICE MAIL INTEGRATION**

<b>Title</b>	<b>Memory Block</b>	<b>PC Menu Item</b>
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48	B:G:A/B/C
Bounce Protect Time Selection .....	1-3-01	B:B:D:A
Hookflash Start Time Selection .....	1-3-05	B:B:D:E
Hookflash End Time Selection .....	1-3-06	B:B:D:D
Voice Mail Digit Add Assignment .....	1-3-07	A:G:A
Voice Mail DTMF Delay Time Selection .....	1-3-08	A:G:C
Voice Mail Disconnect Time Selection .....	1-3-09	A:G:B
Voice Mail DTMF Duration/Interdigit Time Selection .....	1-3-10	A:G:D
* Voice Mail/SLT Connection .....	4-35	B:B:D:K
Voice Mail Quick Transfer Master Number Assignment (Series 500) ....	1-8-26	A:G:F

**VOICE OVER SPLIT**

Intercom Feature Access Code Assignment .....	1-2-24 (Item 006)	B:G:D
Class of Service (Station) Feature Selection 2 .....	1-8-08 (P1, LK8 & P3, LK3)	B:B:A:D

**VOICE PROMPT**

Title	Memory Block	PC Menu Item
* Access Code (1-, 2-, or 3-Digit) Assignment .....	1-1-46/47/48 (Item 501)	B:G:A/B/C
VRS Message Recording Time Selection .....	1-8-12	A:H:H
* VRS Message Function Assignment .....	1-8-13	A:H:G
Voice Prompt to Tone Assignment .....	1-8-16	A:H:I:J
**Voice Prompt Selection .....	4-36	B:B:B:N



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**CHAPTER 7**  
**SYSTEM MAINTENANCE**

**CHAPTER 7**  
**SYSTEM MAINTENANCE**  
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A2	No LED or Display Indications on any Multiline Terminal .....	7-7
B1	Radio Frequency Interference (RFI) .....	7-8
C1	No CO/PBX Ring or Intermittent CO/PBX Ring Problems .....	7-9
C2	Call Dropping .....	7-10
C3	No Outside Dial Tone Access .....	7-11
C4	CO/PBX Dialing Problem (Cannot Dial Out on CO) .....	7-12
D1	Multiline Terminal Function Problems .....	7-13
D2	Multiline Terminal Ringing Problems .....	7-14
D3	Multiline Terminal Dial Tone Access Problems .....	7-15
E1	No Dial Tone Access on SLT (Including LLTs) .....	7-16
E2	Ringing Problem on SLT or LLT .....	7-17
E3	No Dial Access to Features on SLT .....	7-18
F1	Low Volume Problems .....	7-19
G1	External Paging Problem .....	7-20
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## CHAPTER 7

### SYSTEM MAINTENANCE

#### SECTION 1 INTRODUCTION

This chapter is a guide to diagnose and troubleshoot problems during and after system installation. The troubleshooting flow charts and general test procedures help the technician to identify the possible cause of a problem by defining the problem area and isolating the valid symptoms.

In addition, with the System Data Up/Down Load feature, all System Programming and Speed Dial Data can be stored on diskette. Refer to *The Electra Professional System Program Technician Manual*. After all System Programming is completed, it should be down loaded on a diskette for a backup copy of the System Programming. If system memory fails, the system can be up loaded from the backup diskette.

#### SECTION 2 POWER REQUIREMENTS

The effectiveness of this section depends on the ability of the technician to answer all questions posed as accurately as possible. Due to external factors, no answer should be assumed. For example, don't assume that a new power supply that replaced another power supply is working properly. You should test the output of the power supply using a volt meter.

In the Basic KSU, this can be done by measuring +5V and -5V from the CPU-F( )-20 KTU. The ESI-F(8)-21 KTU allows the measurement of +5V and -24V. This KTU can be used in the expansion KSU for power output measurements. Refer to Table 7 - 1 - Voltage Measurement. Before a technician can attempt troubleshooting, the correct tools should be available.

- A. Digital or Analog Multimeter, able to read:
  - 1. DC current and voltage
  - 2. AC current and voltage
  - 3. DC Resistance
  
- B. Test Set (lineman) capable of:
  - 1. Termination and Monitor Modes
  - 2. DTMF and Dial Pulse dialing
  
- C. Hand tools:
  - 1. Set of screwdrivers (flat blade and Phillips)
  - 2. Set of pliers, long nose and diagonals
  - 3. Punch down tool
  
- D. The current issue of the this manual, and the **completed Job Specifications Worksheets**. The *Electra Professional 120/Level II/Level II Advanced Job Specifications Manual* is included with the CPU KTU.

## SECTION 3 OPERATIONAL TEST PROCEDURES

### 3.1 General

When the Electra Professional system is first powered up, it performs an initialization process. During this process, the CPU-F( )-20 KTU, in the Basic KSU, scans each interface slot to determine the hardware configuration used. This information is stored in the Resident System Program memory with the system default values. This section provides test procedures to be used before, during, and after the initialization process.

### 3.2 Before Initialization

The following steps must be taken by the installation technician:

#### A. Cable Connections

All wiring for power supplies or flat cable connectors should be checked for solid connections. Refer to Chapter 3 – Hardware Specifications and Installation in this manual for connection instructions.

#### B. AC/DC Power

Check all power with an AC/DC multimeter. Refer to Table 7-1 – Voltage Measurement. Running this test with only the CPU-F( )-20 KTU and one ESI-F(8)-21 KTU installed is recommended.

Table 7-1 Voltage Measurement

Voltages	Tolerance	Measuring Points
<u>CPU-F( )-20 KTU</u> +5V -5	+5 ± 0.25V -5 ± 0.25V	CPU-F( ) TP1 GND TP2 +5V TP3 -5V
<u>ESI-F(8)-21KTU</u> + 5V - 24V	+ 5 ± 0.25V -24 ± 0.25V	ESI-F( ) TP1 +5V TP2 GND TP3 -24V
<u>AC Voltage (117 Vac)</u> Line to Neutral Line to Conduit Ground Neutral to Conduit Ground	117 ± 15% Vac 117 ± 15% Vac .05 Vac (max.)	AC TERMINAL STRIP Line L to N Line L to G N to G
Ring Generator (SLT)	70~120 Vac @ 20 Hz (Refer to Note below.)	Across TIP & RING of ringing SLT
<u>CO Line</u> Off-hook line current	25 to 50 mA	In series with TIP side of CO line at MDF

**Note:** Ring voltage Measurement may be lower if the meter measures 60 Hz signals only.

#### C. Initialization Check

To determine if the system is initializing correctly, only the Basic KSU should be powered up with the CPU-F( )-20 KTU and one ESI-F(8)-21 KTU with terminals installed. After initialization, all the terminals assigned to the ESI-F(8)-21 KTU should be able to make internal calls to each other. These stations, by default, are assigned station numbers 100~107.

### 3.3 System Initialization

After all steps in Section 3.2 (Before Installation) are completed and verified, the entire system should be initialized.

**With the power off**, all the interface and option cards can be installed in the basic KSU as indicated on the Job Specifications Worksheet. You must ensure that the battery switch (BTS) on the CPU-F( )-20 KTU is OFF and all interface and optional KTU switches are ON. At this point, the technician can power up the system to perform a First Initialization of the system. After the initialization process, each station display shows default time and date indication.

Example: 12:00 A.M. WED 01.

### 3.4 After Initialization

Before any programming is attempted, the battery switch (BTS) on the CPU-F( )-20 KTU should be ON to prevent all completed programming from being lost if the system loses power.

All KTU slots should be checked in software to ensure the initialization process scanned all hardware correctly. This can be done by displaying the contents of Memory Block 7-1 – Card Interface Slot Assignment from the System Programming terminal. Refer to Chapter 5, Programming, for an explanation of Memory Blocks.]

A general system operation check should be performed using default values prior to System Programming.

After all previous steps are performed and all problems corrected, the System Programming can be completed. Using the Job Specifications Worksheets from the *Electra Professional 120/Level II/Level II Advanced Job Specifications Manual* (supplied with the CPU KTU) helps to simplify the programming process.

#### CAUTION

**Ensure the battery switch (BTS) on the CPU-F( )-20 KTU is ON.**

After System Programming is complete, the technician should perform a **Second Initialization**. Repeating a First Initialization causes all programming memory to be lost, whereas the Second Initialization refreshes the system RAM without memory loss.

This completes the installation procedure for the Electra Professional system. The technician should check the operation of each Multiline Terminal to ensure the system is working properly.

**SECTION 4      PROBLEM SOLVING**

To find the cause of a problem, first consider all the symptoms carefully. As each aspect of the problem is considered, the technician is guided to a probable solution. The problem must be defined as accurately as possible, so the most efficient steps to a solution can be taken. The troubleshooting flow charts in this section help define problems and direct the technician through the troubleshooting steps.

**A.      System Down**

This term describes one of the following situations:

1. No access to internal dial tone on any Multiline Terminal or Single Line Telephone installed.
2. No LED or display indications on any Multiline Terminal installed.
3. No system tones generated.

**B.      Partial Operation**

This term refers to any situation that cannot be completely described under the conditions of a **SYSTEM DOWN**. (Refer to Table 7-2 - Index Table of Flowcharts listing these conditions.)

**C.      Reset Definition**

In the troubleshooting flow charts, the technician is at times directed to reset the station and/or KTU.

1. Terminal Reset - Unplug the station line cord from the station and then plug it back in.
2. KTU Reset - Place the MB switch on the KTU to **OFF** and then place it back to **ON**. To give capacitors in the KTU time to discharge, allow approximately five seconds before turning the switch back to **ON**.
3. Before reinstalling the following KTUs, leave the battery **ON/OFF** switch **OFF** for at least two minutes.

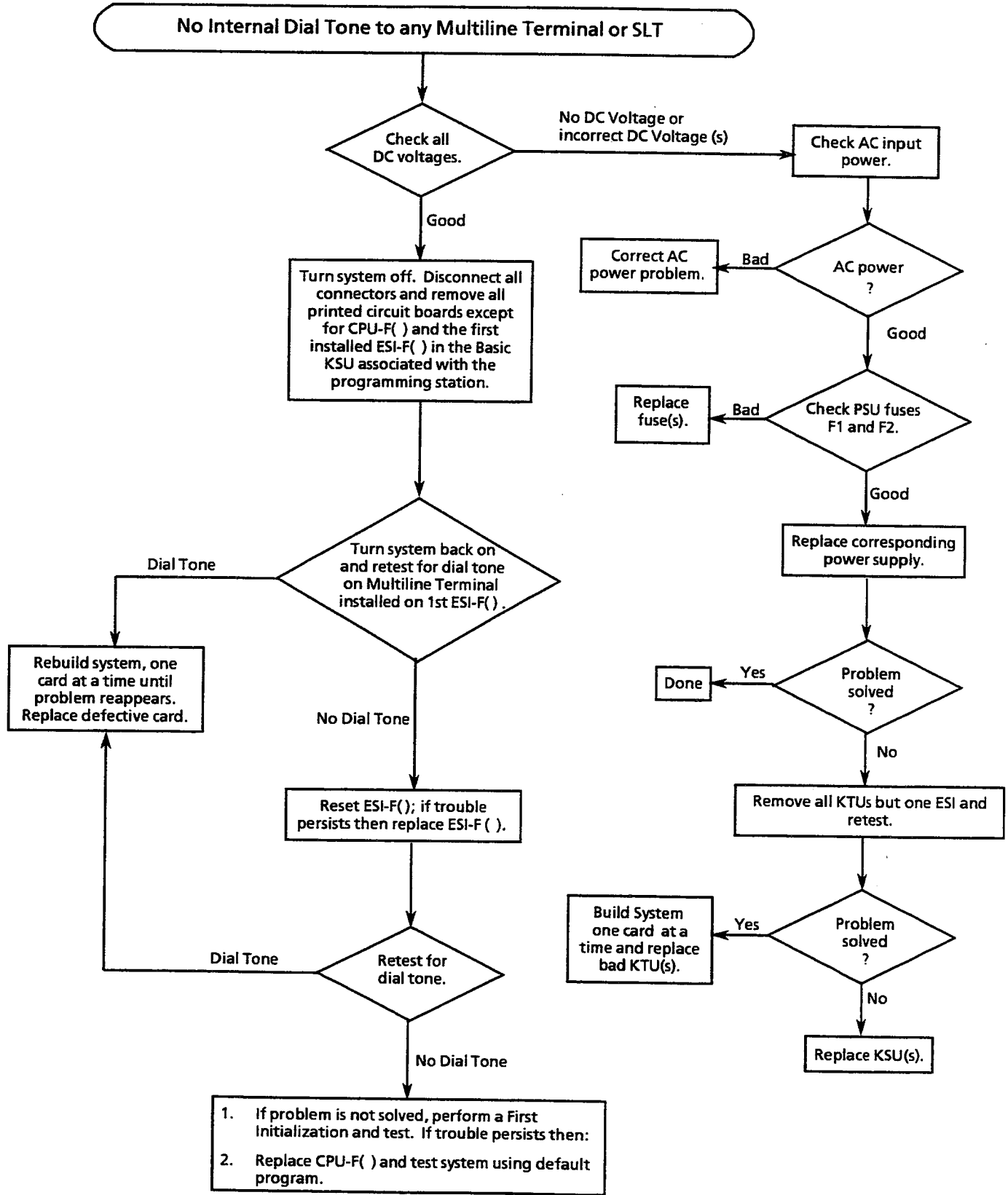
MIF-F( )-10	(SW2)
CPU-F( )-20	(BTS)
VRS-F(4)-11	(SW1) (Both packages)



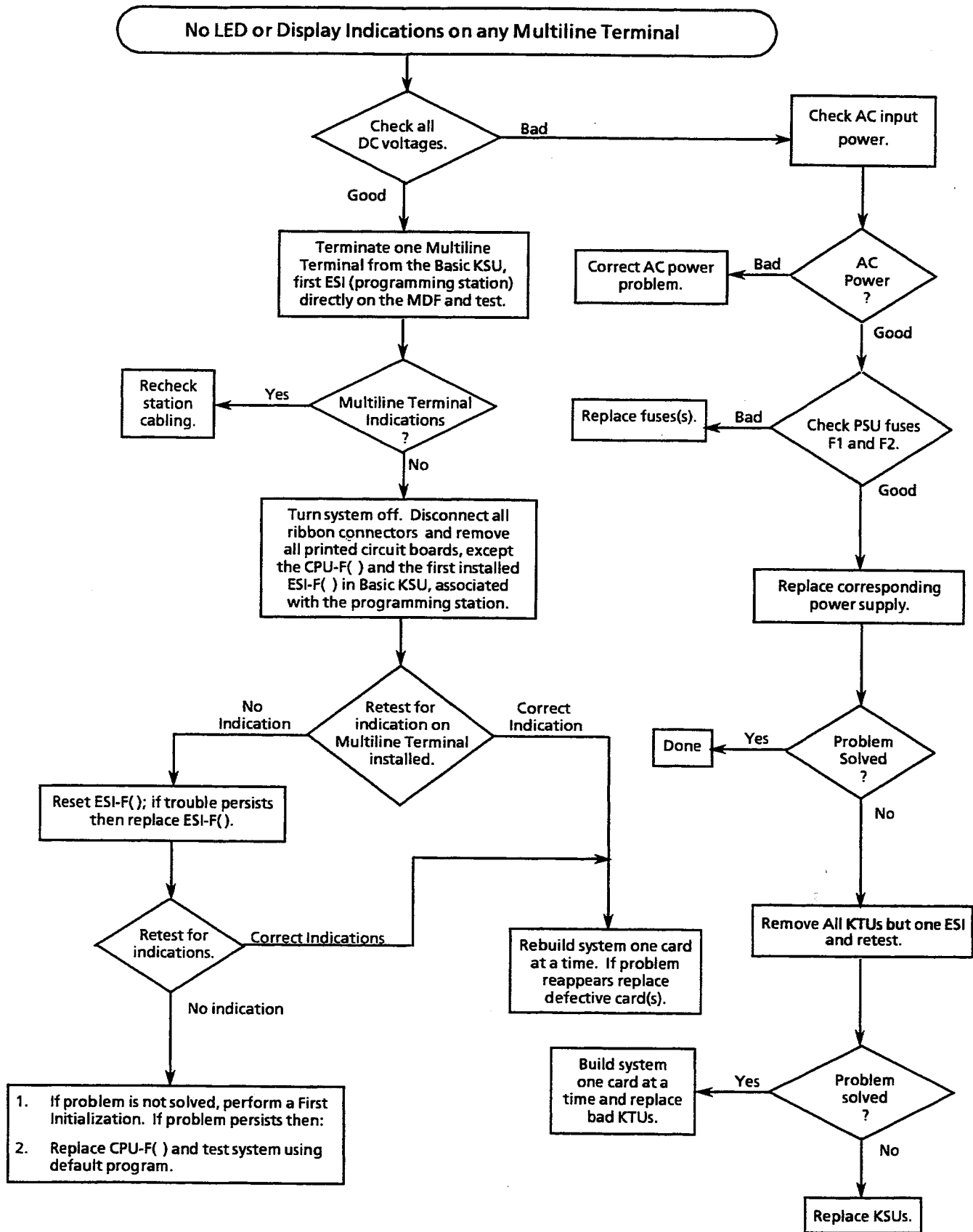
Table 7-2 Index Table of Flowcharts

Condition	Flowchart Number	Page Number
<b>A. System Down</b>		
1. No Internal Dial Tone to any Multiline Terminal or SLT	A1	4 - 6
2. No LED or Display Indications on any Multiline Terminal	A2	4 - 7
<b>B. Partial Operations</b>		
1. Radio Frequency Interference (RFI)	B1	4 - 8
2. Central Office Line Problems:		
a. No CO/PBX Ring or Intermittent CO/PBX Ring Problems	C1	4 - 9
b. Call Dropping	C2	4 - 10
c. No Outside Dial Tone Access	C3	4 - 11
d. CO/PBX Dialing Problem (Cannot Dial Out on CO)	C4	4 - 12
3. Multiline Terminal Problems:		
a. Multiline Terminal Function Problems	D1	4 - 13
b. Multiline Terminal Ringing Problems	D2	4 - 14
c. Multiline Terminal Dial Tone Access Problems	D3	4 - 15
4. Single Line Telephone Problems:		
a. No Dial Tone Access on SLT (including LLTs)	E1	4 - 16
b. Ringing Problem on SLT or LLT	E2	4 - 17
c. No Dial Access to Features on SLT	E3	4 - 18
5. Low Volume Problems	F1	4 - 19
6. External Paging Problem	G1	4 - 20
7. SMDR Output Problems (No Call Accounting System)	H1	4 - 21

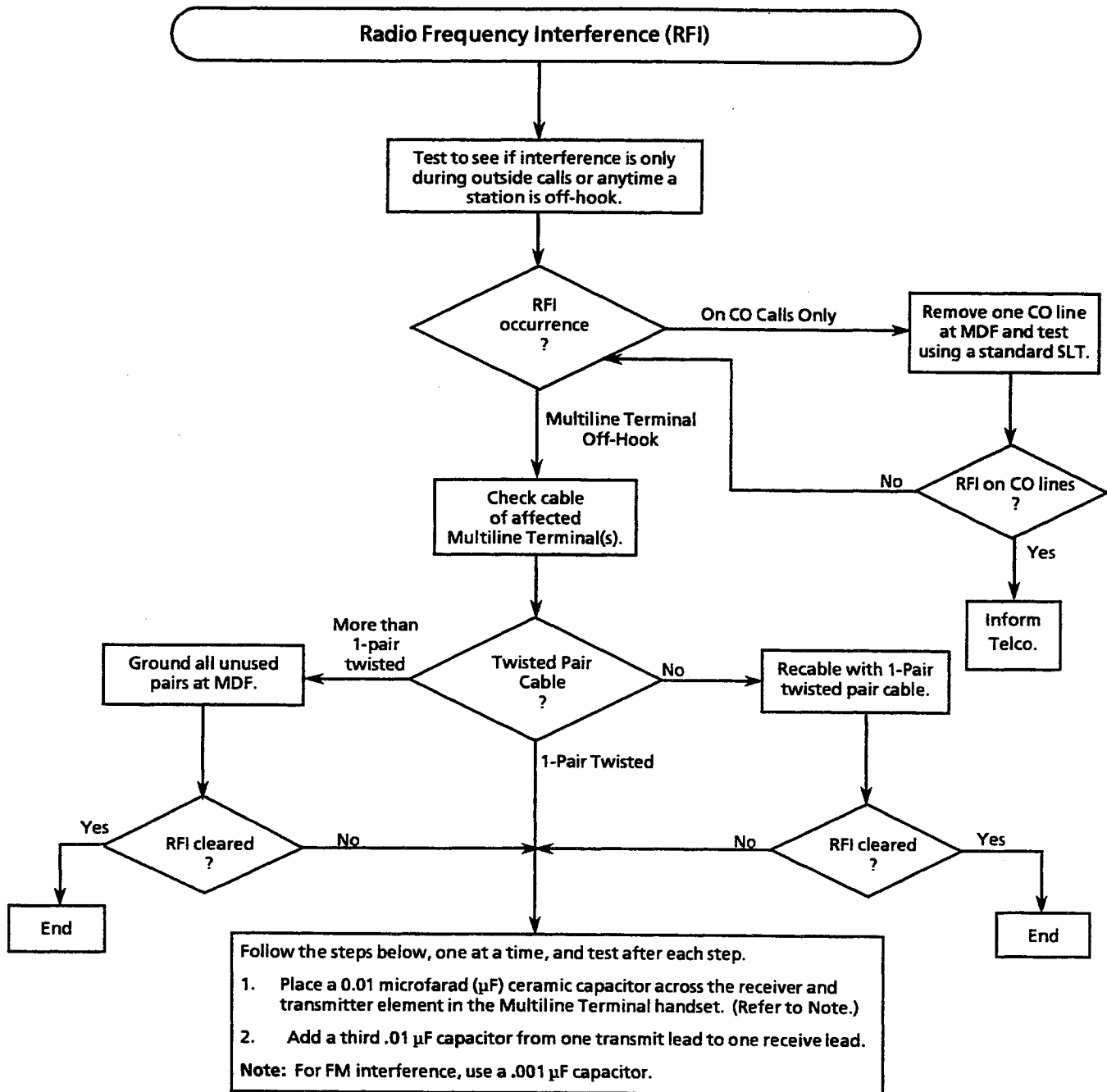
A1



A2

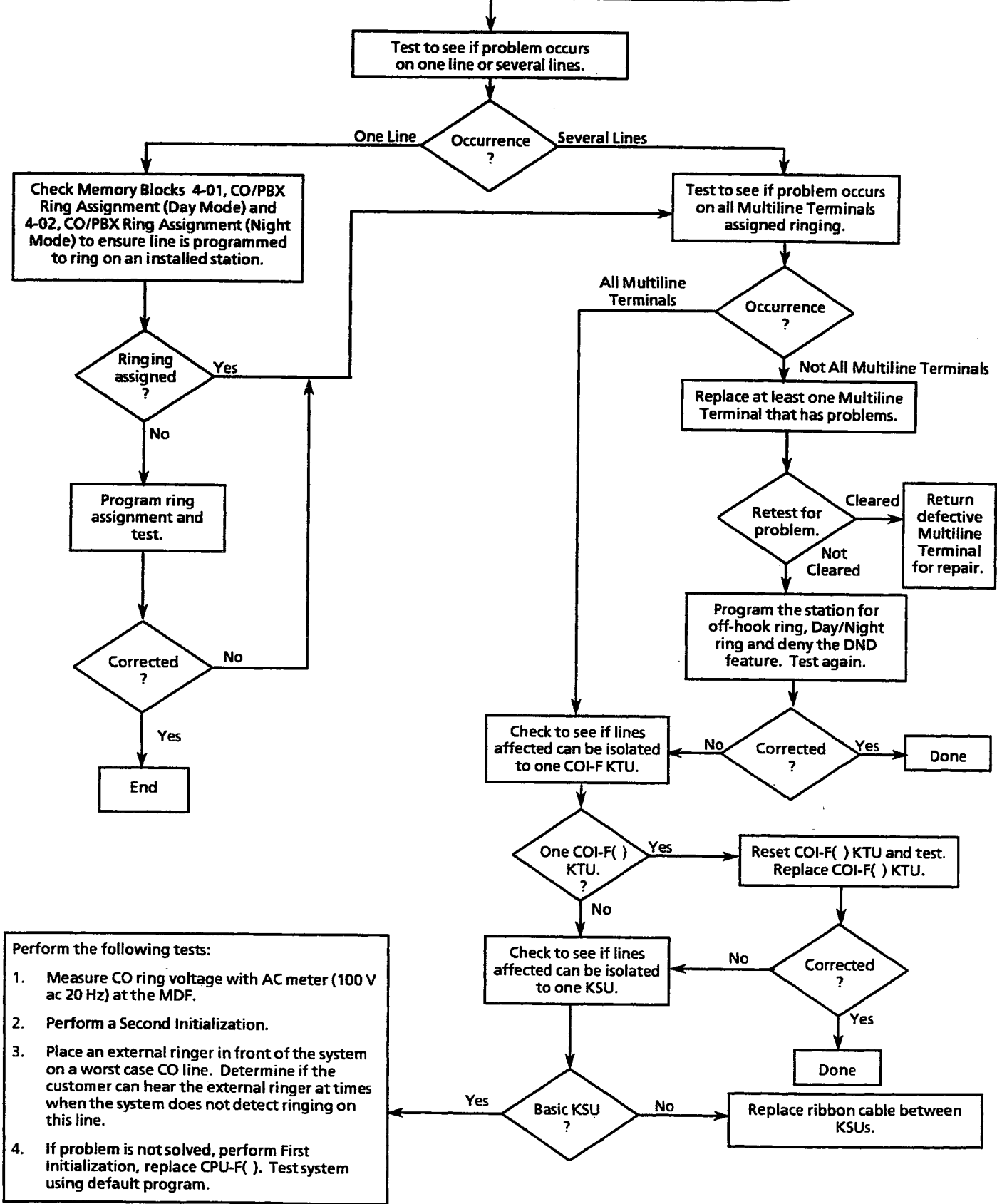


B1



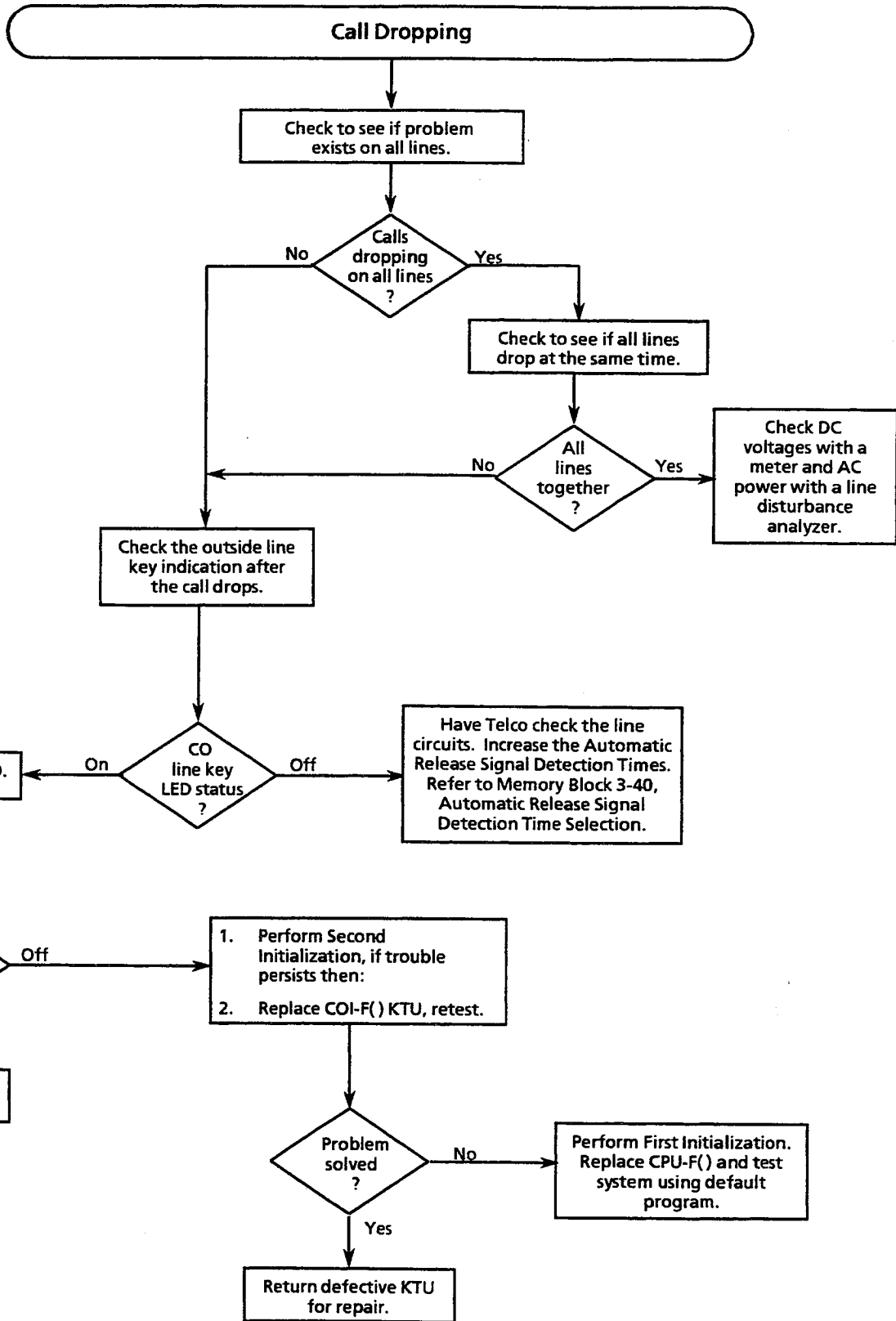
C1

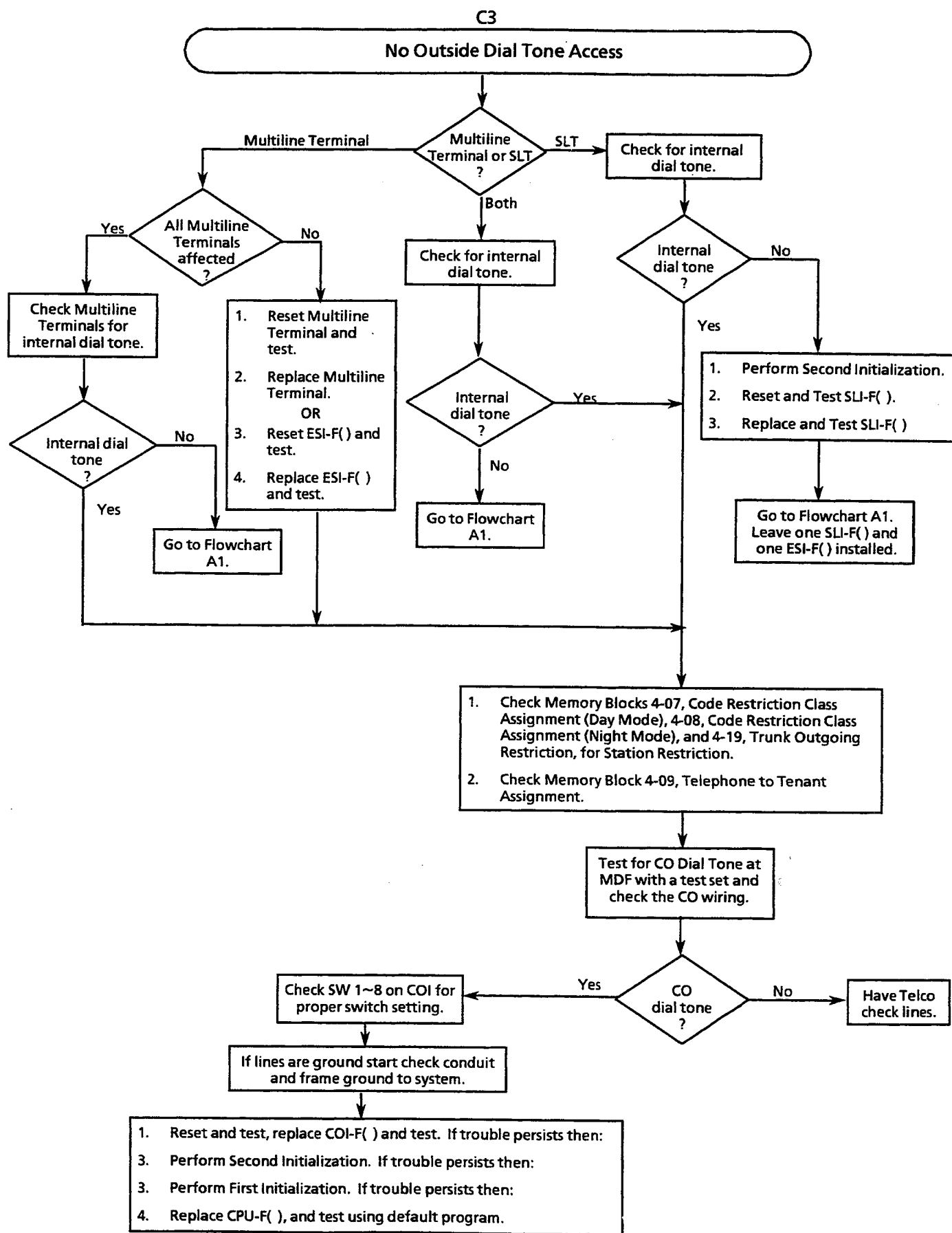
No CO/PBX Ring or Intermittent CO/PBX Ring Problems



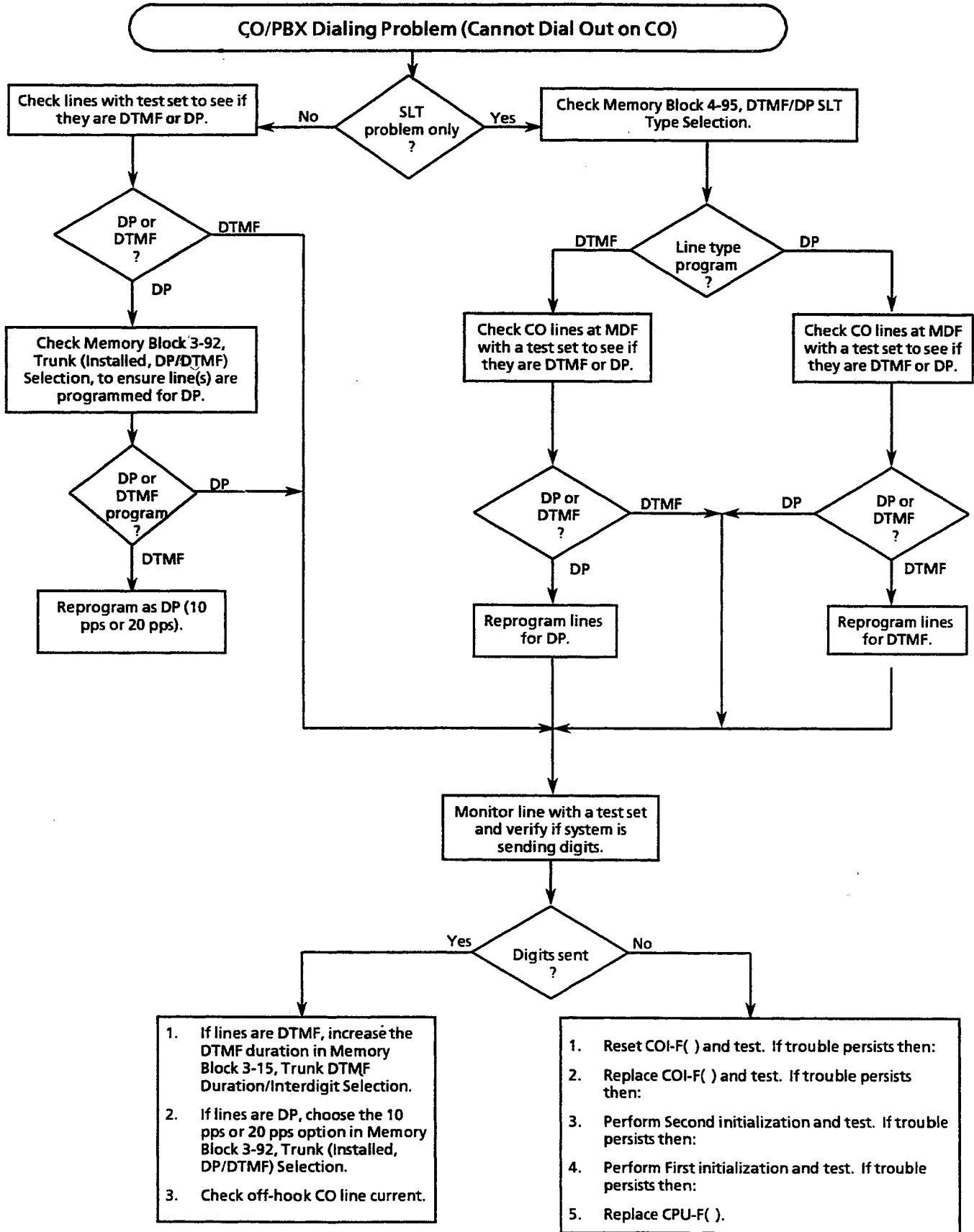
- Perform the following tests:
1. Measure CO ring voltage with AC meter (100 V ac 20 Hz) at the MDF.
  2. Perform a Second Initialization.
  3. Place an external ringer in front of the system on a worst case CO line. Determine if the customer can hear the external ringer at times when the system does not detect ringing on this line.
  4. If problem is not solved, perform First Initialization, replace CPU-F ( ). Test system using default program.

C2

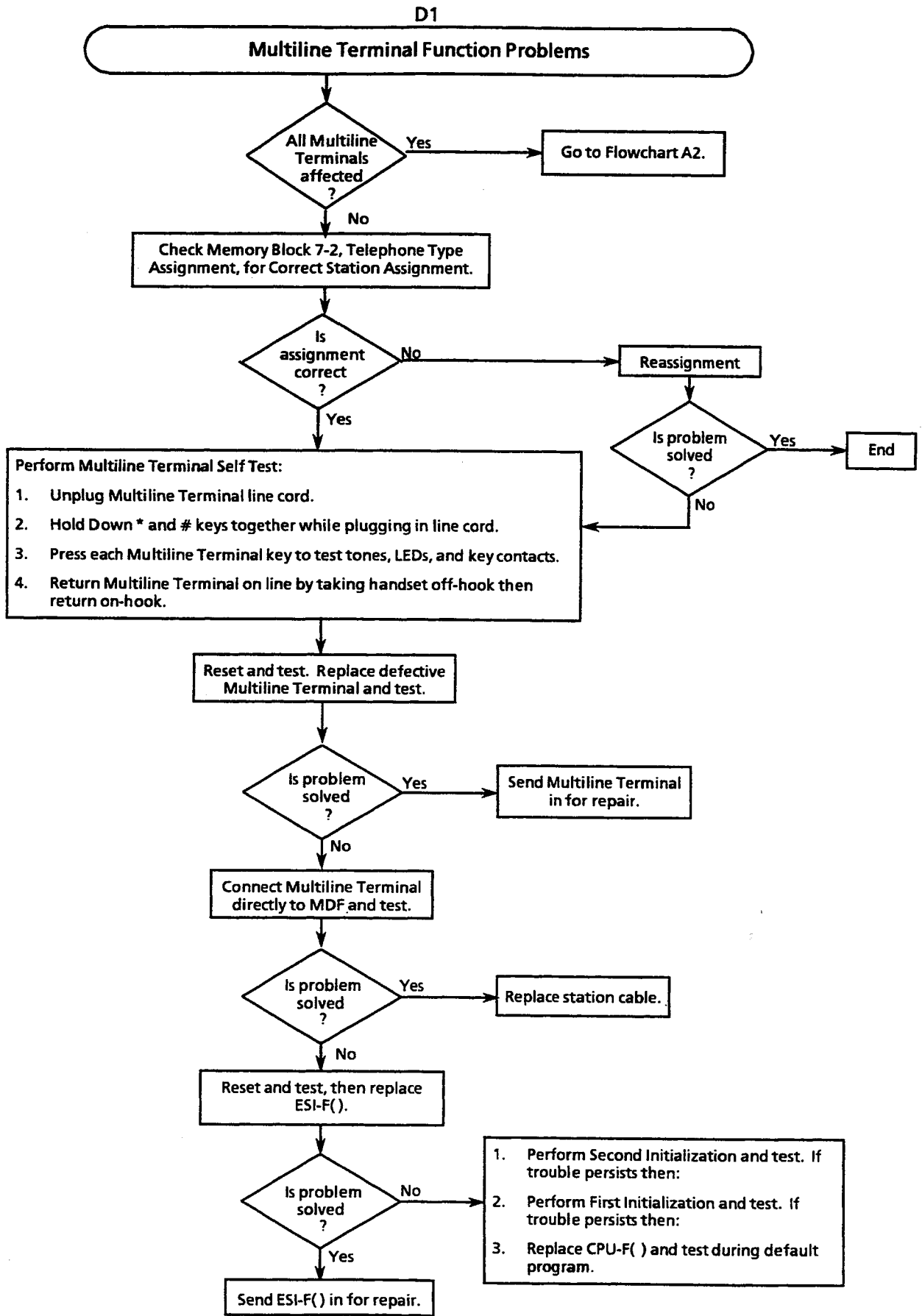




C4

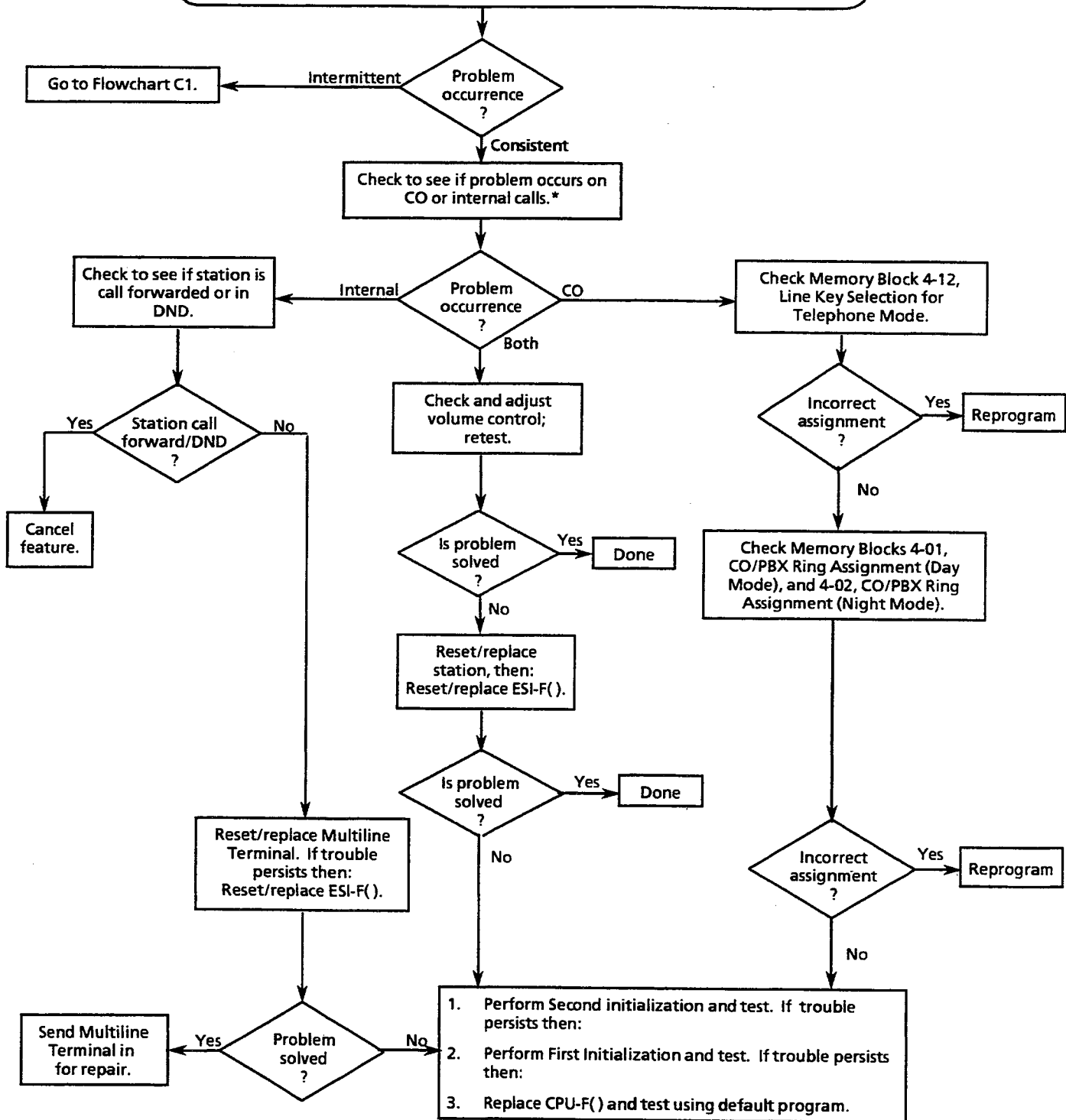




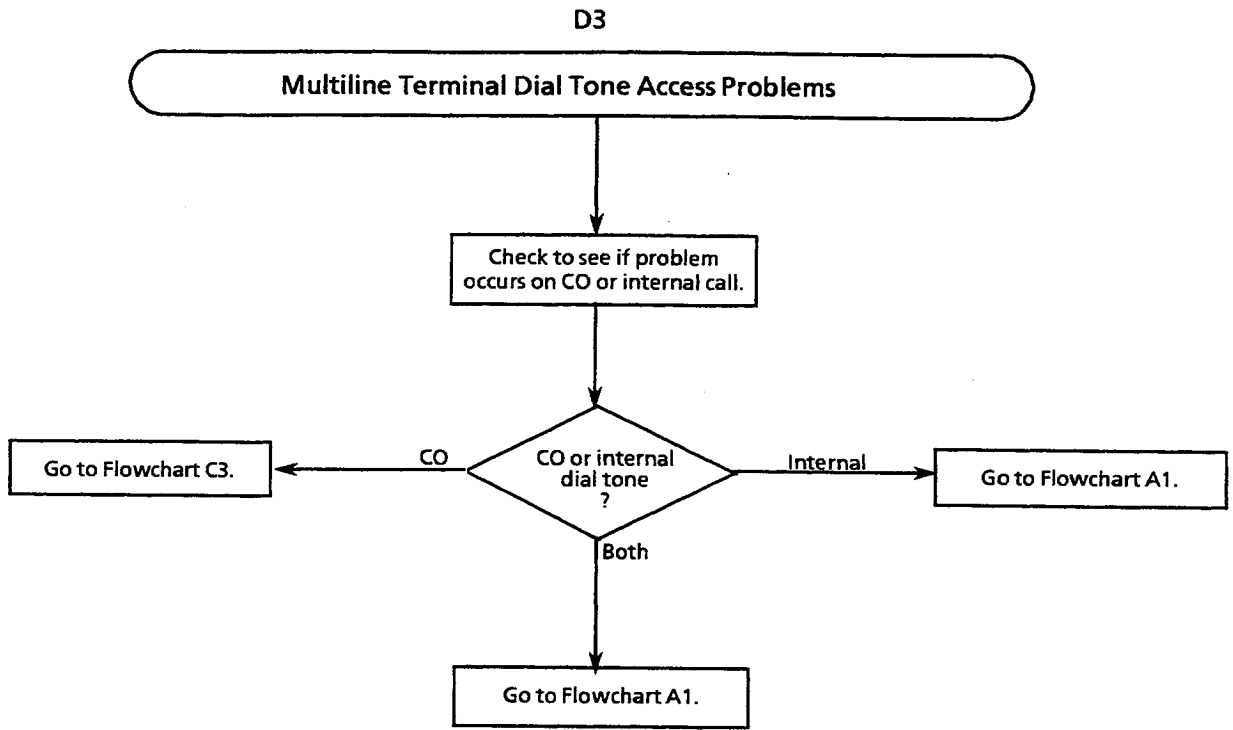


D2

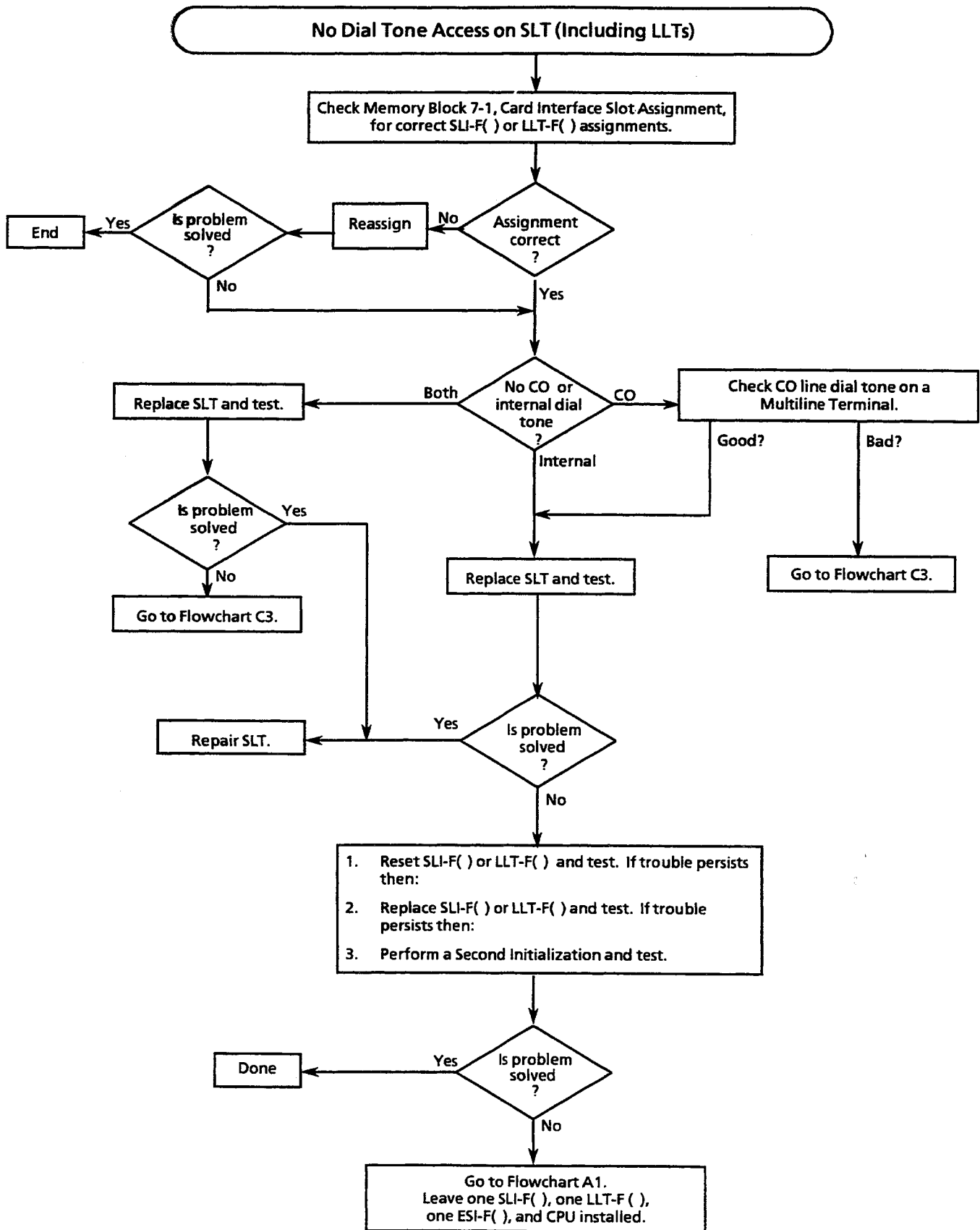
Multiline Terminal Ringing Problems

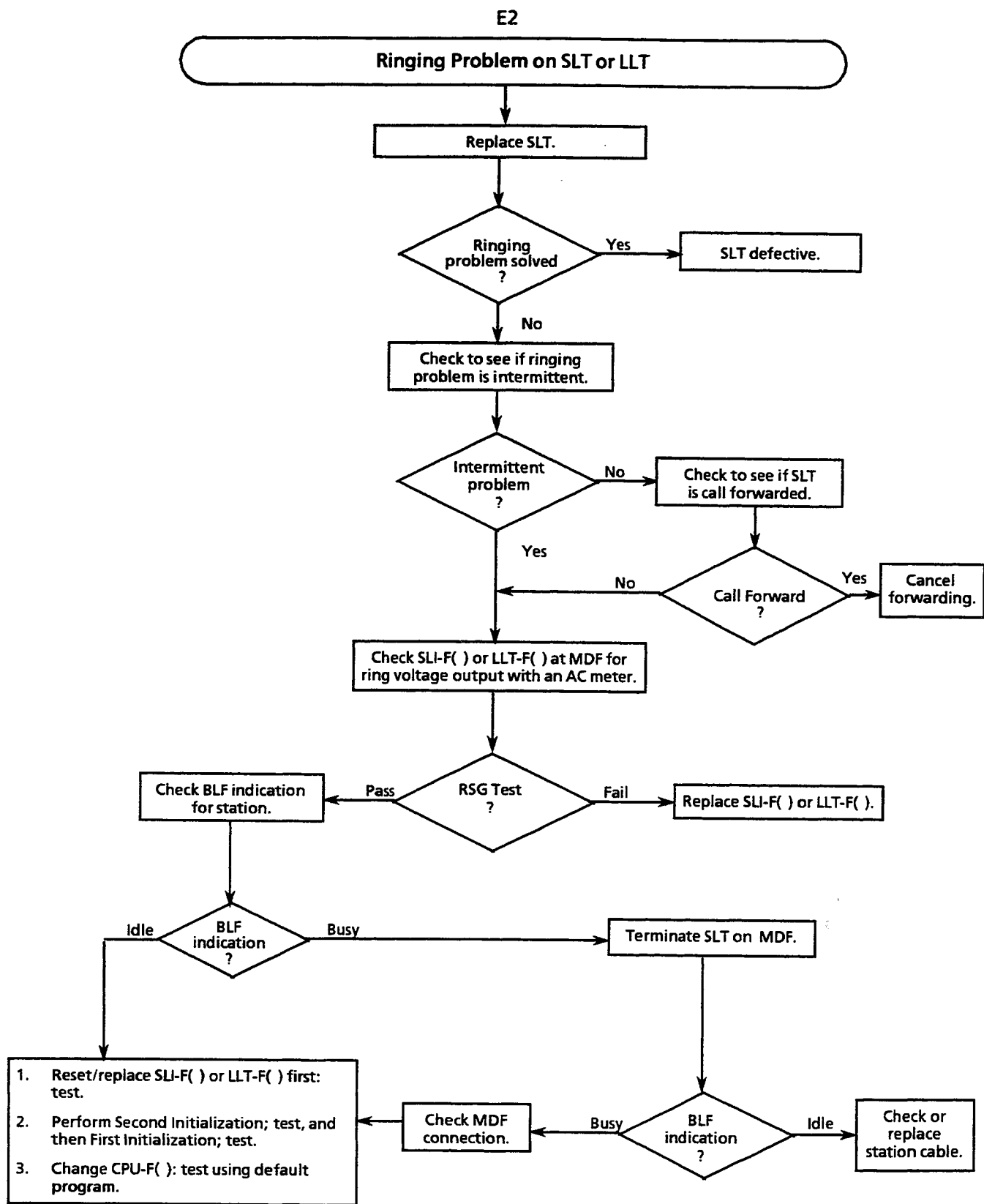


\*Internal calls include station to station as well as transferred calls.

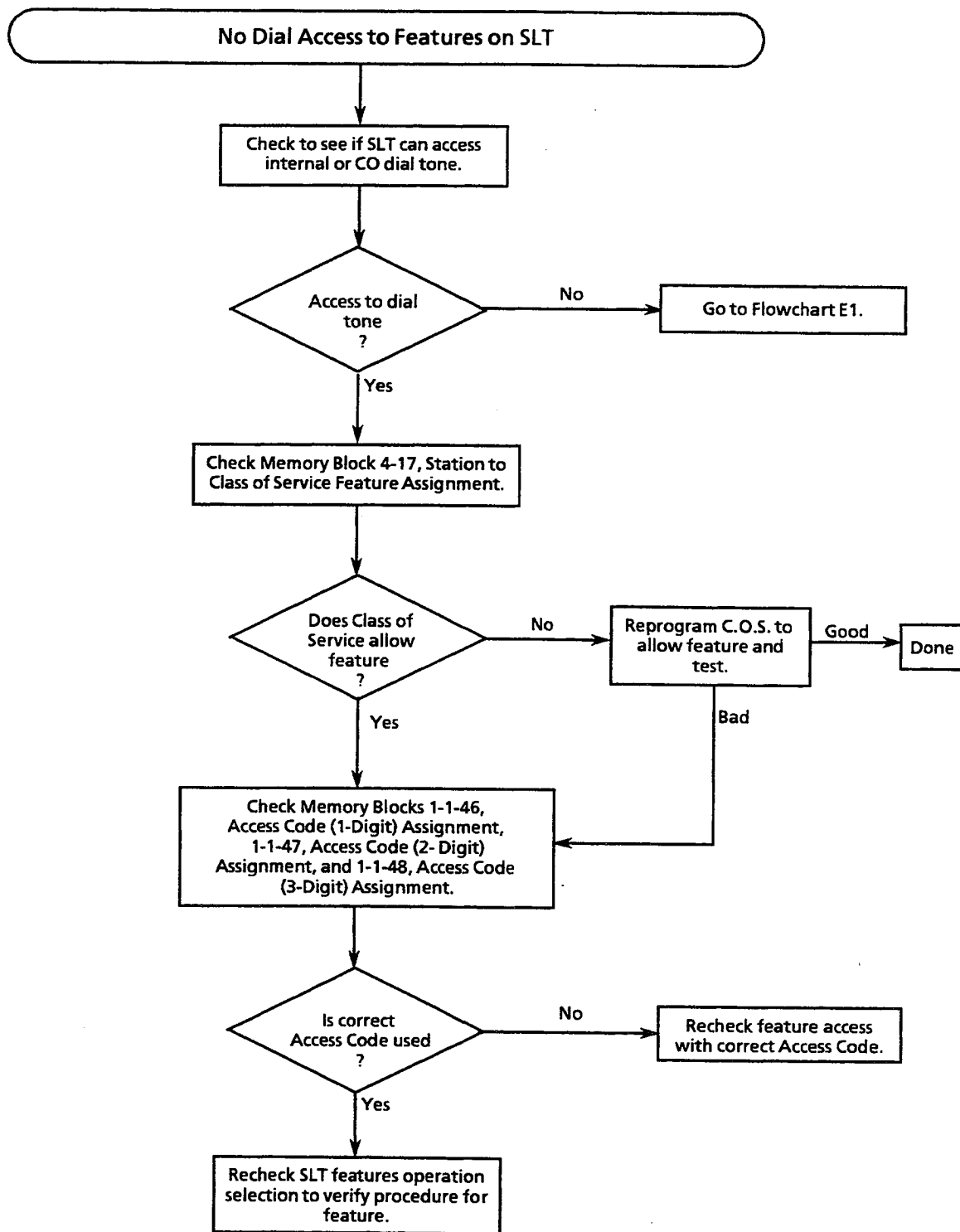


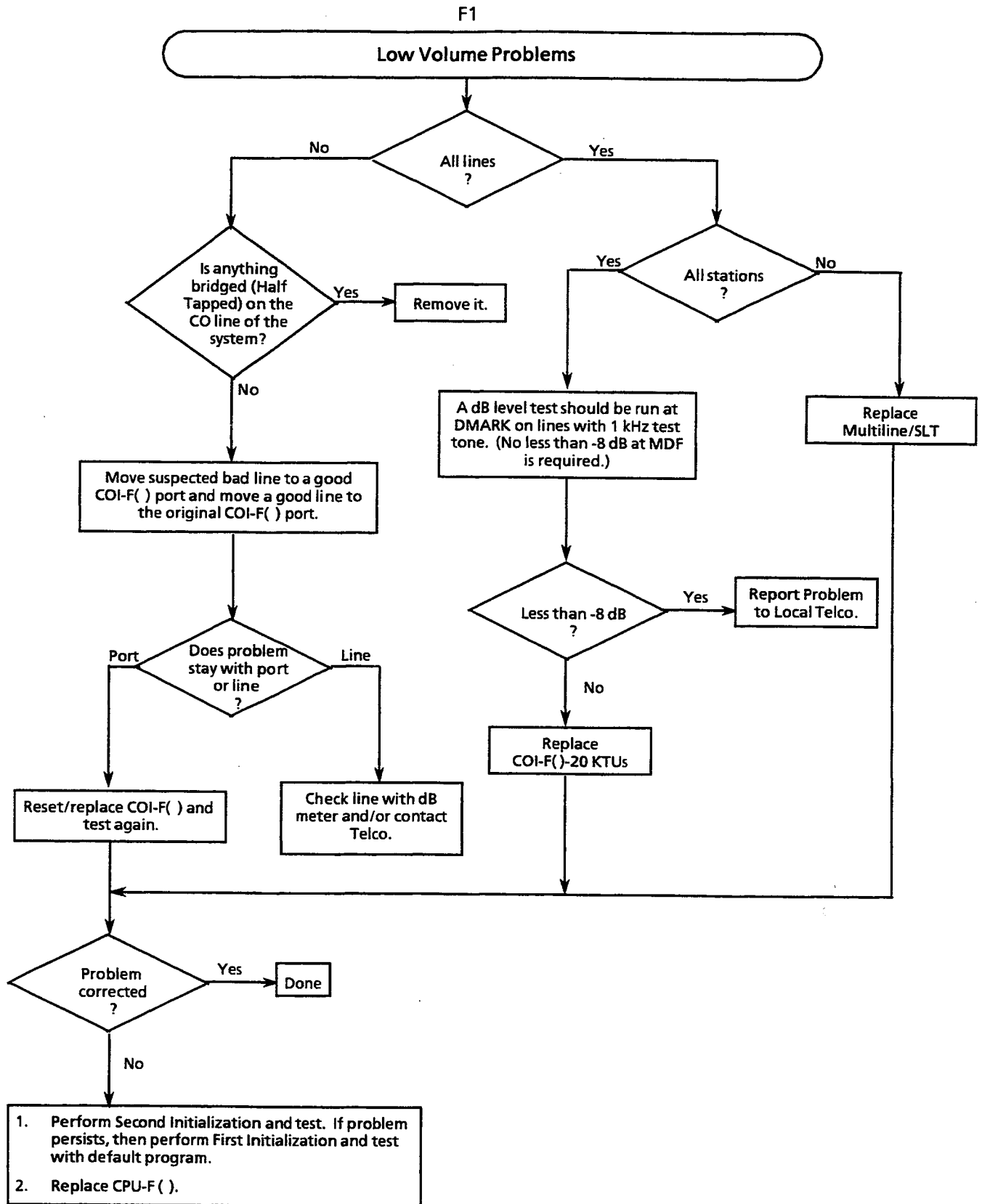
E1



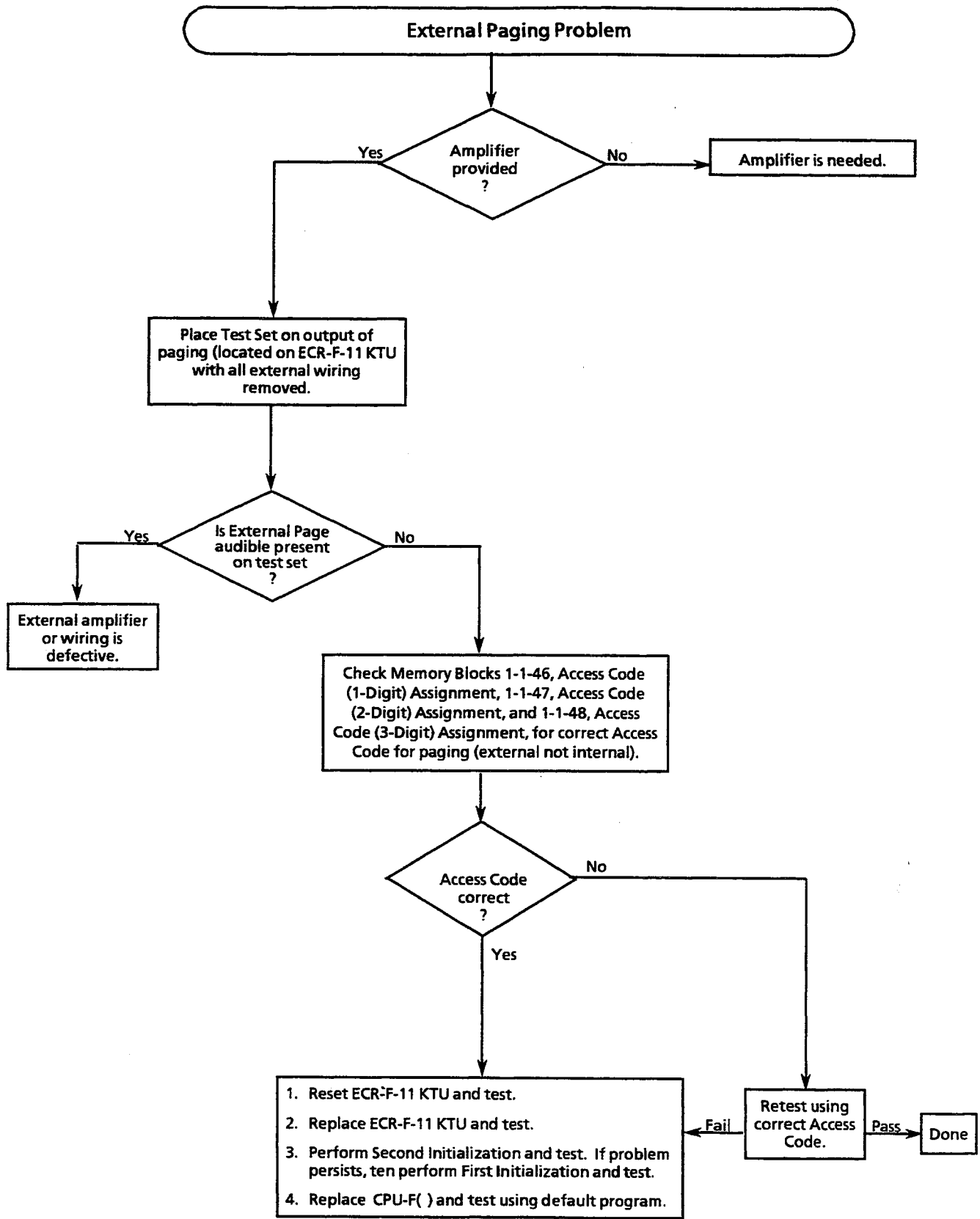


E3





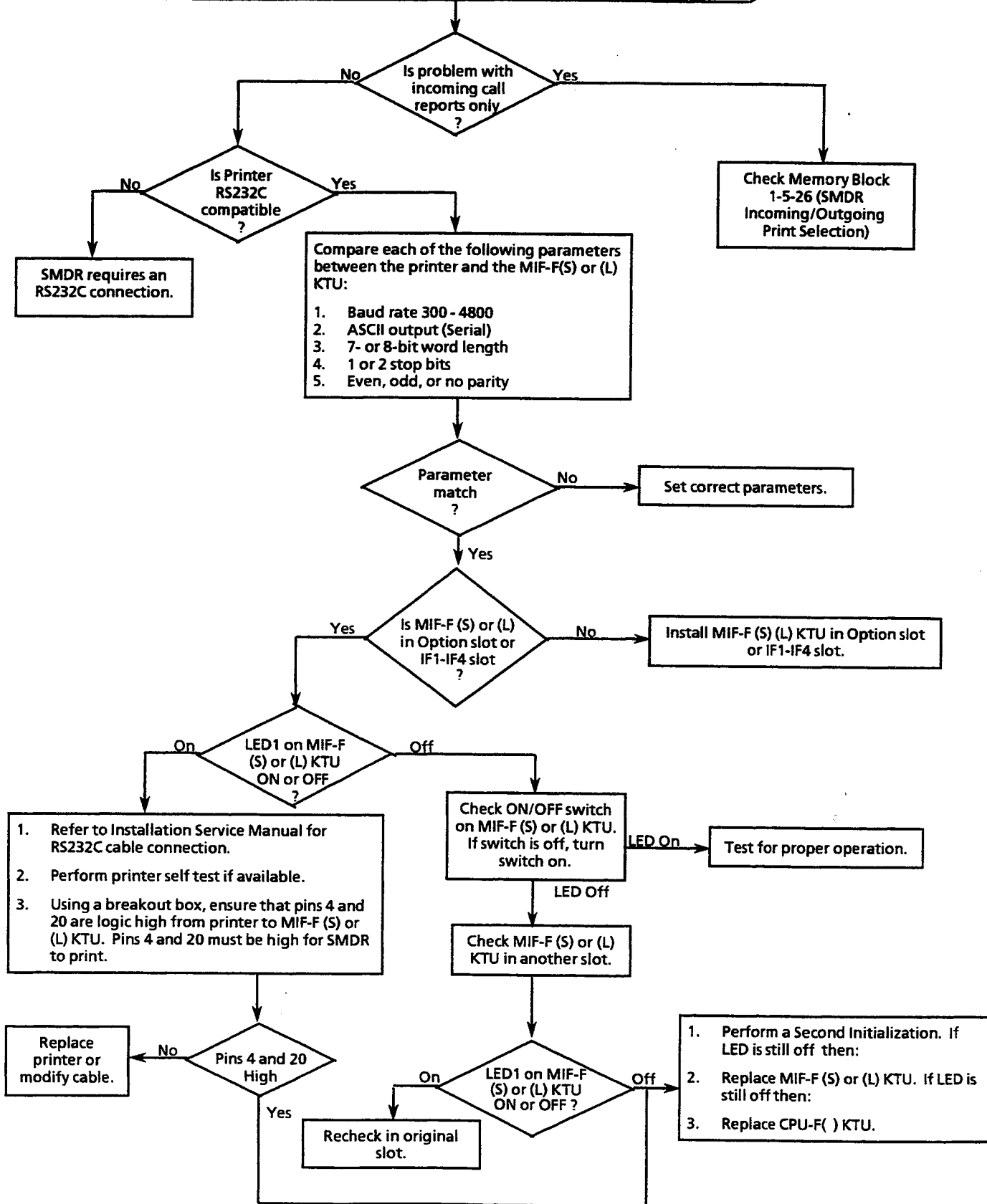
G1





H1

**SMDR Output Problems (No Call Accounting System)**



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**CHAPTER 8**  
***D*<sup>term</sup><sup>®</sup> CORDLESS TERMINAL**

## CHAPTER 8

*Dterm*® CORDLESS TERMINAL

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**CHAPTER 8*****Dterm*<sup>®</sup> CORDLESS TERMINAL****SECTION 1 INTRODUCTION****1.1 General Information**

The *Dterm* Cordless Terminal provides reliability, long life, and outstanding performance. It works with the Electra Professional systems. To get the most from your *Dterm* Cordless Terminal, please read this chapter thoroughly. Refer to Figure 8-1 - Base Unit Controls and Functions and Figure 8-2 - Handset Controls and Functions to help familiarize you with the features of your *Dterm* Cordless Terminal.

Your *Dterm* Cordless Terminal includes the following items:

- Base Unit
- Handset
- Telephone Line Cord
- AC Adapter
- Rechargeable Battery Pack
- Belt Clip

If your *Dterm* Cordless Terminal is not performing to your expectations, please try the simple steps listed in Section 6 - Trouble Shooting. If you are still unable to resolve the problem, contact NEC Field Support.

*Dterm* Cordless Terminal features include:

- 2-line, 10-digit LCD Display
- Function Keys
- Headset Jack
- Ringer Volume Control
- Conference
- Message Waiting LED
- Hold
- Transfer
- Handset Volume Control
- Four Programmable Function Keys
- 20 Number Speed Dial
- Mute Key



- *AutoTalk*<sup>TM1</sup>
- *AutoStandby*<sup>TM2</sup>
- 2-Way Handset Mounting
- Optional Vibrator Ringer Alert
- Handset Display
- Voice Quality Plus
- System Flexibility and Expandability
- Easy Installation
- Super Long Range

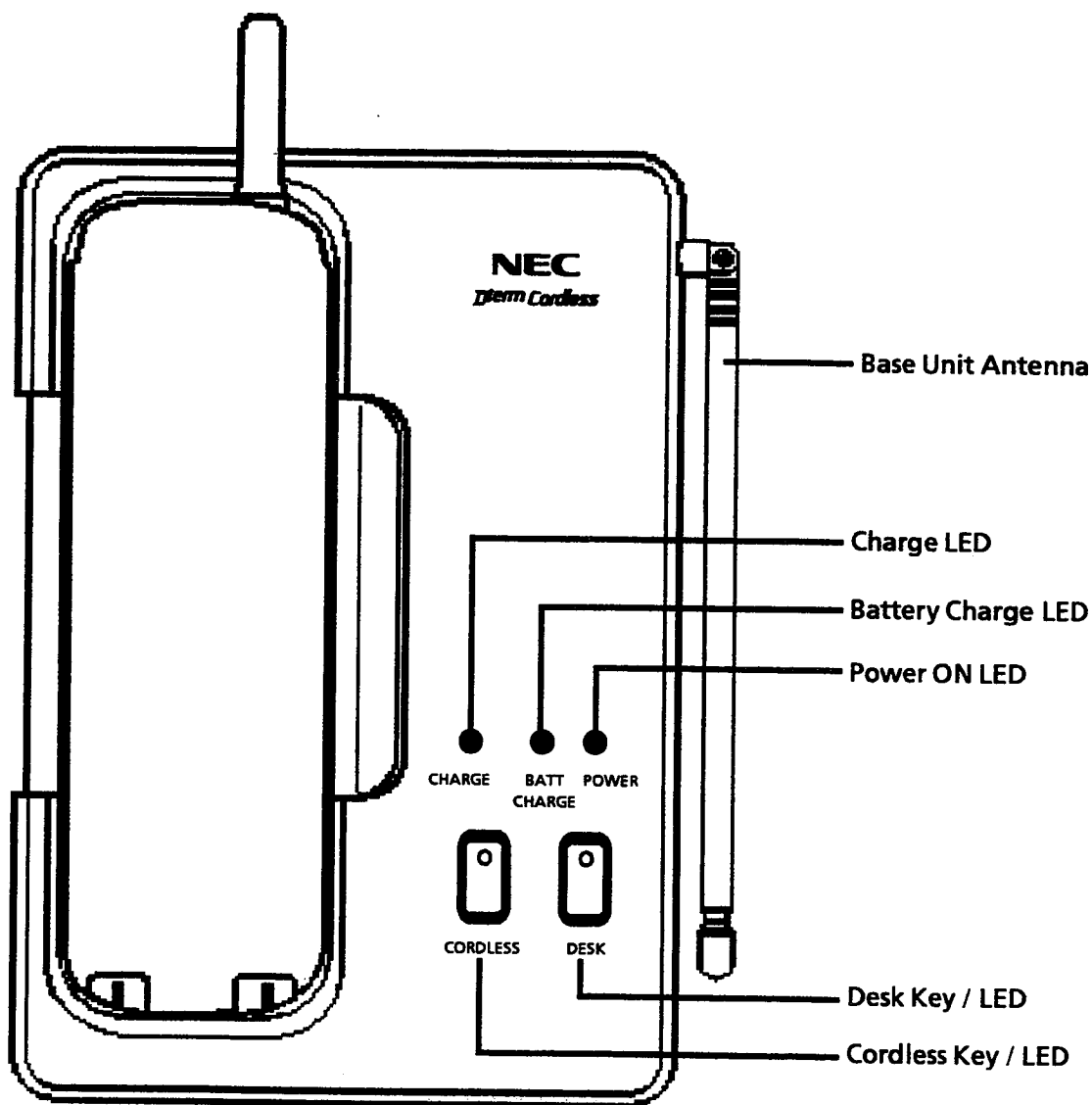


Figure 8-1 Base Unit Controls and Functions

1. *AutoTalk* is a trademark of Uniden America Corporation.
2. *AutoStandby* is a trademark of Uniden America Corporation. *AutoStandby* is a patented invention of Uniden America Corporation.

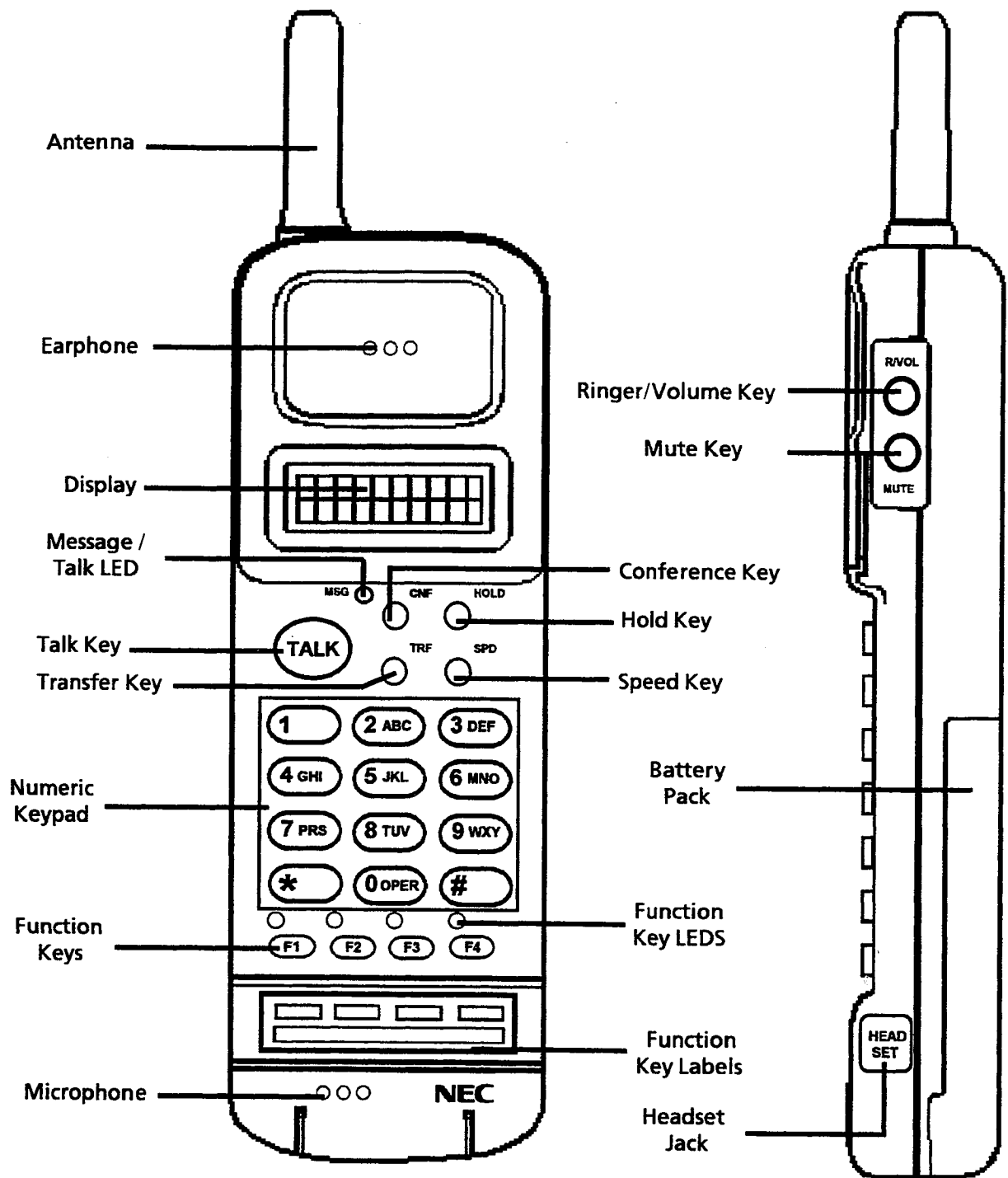


Figure 8-2 Handset Controls and Functions

## 1.2 Additional Information

The following conditions apply to the *Dterm* Cordless Terminal.

- The *Dterm* Cordless Terminal can interface to every ESI port available in the system. Nine voice channels must be shared by all *Dterm* Cordless Terminals in the system.
- The *Dterm* Cordless Terminal operating frequency ranges from 902.75 MHz to 925.70 MHz and shares this frequency range with several different devices. Depending on the environment, interference or channel blockage might be experienced from these other devices. Only nine simultaneous *Dterm* Cordless Terminal channels can operate in this frequency range in each business environment. The tenth *Dterm* Cordless Terminal to go off-hook receives a SYSTEM BUSY message in the LCD of the *Dterm* Cordless Terminal.
- Calls in progress cannot be switched from the Multiline Terminal to the Cordless Terminal or from the Cordless Terminal to the Multiline Terminal. This causes the call in progress to be dropped.
- Switching from the *Dterm* Cordless Terminal to the Multiline Terminal or from the Multiline Terminal to the Cordless Terminal while a call is holding is not recommended. When this occurs, no hold indication is displayed on the Multiline Terminal or *Dterm* Cordless Terminal handset.
- The *Dterm* Cordless Terminal and associated Multiline Terminals cannot be used simultaneously.
- A maximum communication distance between the base unit and the *Dterm* Cordless Terminal handset is 3300 feet (without obstacles).
- During an internal call from a Multiline Terminal to a *Dterm* Cordless Terminal, no ringback tone is provided to the calling party if the station port for the *Dterm* Cordless Terminal is assigned for Voice Announcement. The called *Dterm* Cordless Terminal rings instead.
- Hookflashes and pauses cannot be programmed in the 20 Speed Dial buffers on the *Dterm* Cordless Terminal handset.
- Multiline Terminal features requiring the use of handsfree operation are not supported by the *Dterm* Cordless Terminal. Using the following features is not recommended:
  - ▶ Dual Path
  - ▶ Automatic Redial
  - ▶ Station Background Music
  - ▶ System Programming
  - ▶ Ring Tone Variation
  - ▶ Synchronous Ringing
- When base units are located within 17 feet of one another, interference can occur, to cause a temporary interruption of the transmit and receive paths of the *Dterm* Cordless Terminal handset and reduce the range.


- After continuous charging, the handset battery can fail to charge, or discharge quickly due to Memory Effect. If either occurs, operate the handset until low battery tone sounds, auto shutoff occurs, and the battery fully discharges; then charge the battery without interruption for 12 ~ 16 hours. If the battery is still not charged, replace it.
- Radio interference can occasionally cause interruptions in conversations. When this happens, remember that your unit may not be defective. If these noises continue and are too distracting, move to a different location while talking on the phone. (You might need to move the base unit as well.) If the situation persists, contact NEC Field Support.

**SECTION 2 SYSTEM SPECIFICATIONS**

**2.1 General**

Frequency Control	Crystal controlled transmission
Modulation	MSK
Operating Temperature	-10° C ~ 50° C

**2.2 Base Unit**

Receive/Transmit Frequency	904.45, 906.95, 909.45, 911.95, 914.45, 916.95, 919.45, 921.95, and 924.45 MHz (9 Channels) Channel Deviation ±1.25 MHz	
Power Requirements	AC Input	12V, 60 Hz, 14W
	DC Output	10V, 500 mA
	Polarity	
Power Level	100 mW	
Size	7-3/4 inches wide by 5 inches deep by 3-5/32 inches high	
Weight	Approximately 1 lb., 5 oz.	
Color	Black	

**2.3 Handset**

<b>Receive/Transmit Frequency</b>	904.45, 906.95, 909.45, 911.95, 914.45, 916.95, 919.45, 921.95, and 924.45 MHz (9 Channels) Channel Deviation $\pm 1.25$ MHz	
<b>Power Source</b>	Rechargeable Ni-Cd Battery Pack	
<b>Size</b>	2-1/8 inches wide by 7/8 inches deep by 6-1/2 inches high with antenna	
<b>Weight</b>	Approximately 10.5 oz. with battery	
<b>Standard Battery</b>	<b>Capacity</b>	400 mA <sub>H</sub> , 4.8V
	<b>Talk Mode</b>	2.5 hours (typical)
	<b>Standby Mode</b>	44 hours (typical)
<b>Extended Battery</b>	<b>Capacity</b>	730 mA <sub>H</sub>
	<b>Talk Mode</b>	4.5 hours (typical)
	<b>Standby Mode</b>	80 hours (typical)
<b>Range from Base Unit</b>	3300 feet (unobstructed)	
<b>Headset Jack</b>	<b>Plug</b>	Minijack
	<b>Input (Microphone)</b>	5.5 mV @ 1 KHz
	<b>Output (Speaker)</b>	160 mV

**Note:** Specifications shown are typical and subject to change without notice.

**SECTION 3 SAFETY PRECAUTIONS**

When using telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electrical shock, and injury to persons, including the following:

1. Read and understand all instructions.
2. Follow all warnings and instructions marked on the product.
3. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a dry cloth for cleaning.
4. Do not use this product near a sink or in a wet area.
5. Do not place this product on an unstable cart, stand, or table. The telephone may fall, causing serious damage to the unit.
6. To protect the product from overheating, do not block or cover any slot or opening in the base Unit. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation without proper ventilation.
7. This product should be operated only from the power source indicated on the marking label.
8. Do not allow anything to rest on the power cord. Do not locate this product where the cord can be damaged by persons walking on it.
9. Do not overload wall outlets and extension cords, as this can result in the risk of fire or electrical shock.

10. Never push objects of any kind into this product through the Base Unit slots, as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
11. To reduce the risk of electric shock, do not disassemble this product. Contact qualified service personnel when service or repair work is required. Opening or removing covers may expose you to dangerous voltages or other risks. Incorrect reassembly can cause electric shock when the appliance is subsequently used.
12. Unplug this product from the wall outlet and refer servicing to qualified service personnel for the following conditions:
  - The power supply cord is damaged or frayed.
  - Liquid has been spilled into the product.
  - The product has been exposed to rain or water.
  - The product does not operate normally when following the operating instructions. Adjust only those controls covered by the operating instructions. Improper adjustment of other controls may result in damage, that often requires extensive work by a qualified technician to restore the product to normal operation.
  - The product is dropped, or the cabinet is damaged.
  - The product exhibits a distinct change in performance.
13. Do not use the telephone to report a gas leak in the vicinity.

#### SECTION 4 Proper Use and Disposal of Batteries

To reduce the risk of fire or injury to persons by the battery, read and follow these instructions:

1. Use only the applicable Battery Pack specified in this chapter.
2. Do not dispose of the Battery Pack in a fire. The cell may explode. Check the Nickel-Cadmium Battery Disposal information at the beginning of this manual for disposal instructions.
3. Do not open or mutilate the Battery Pack. Released electrolyte is corrosive and may damage the eyes or skin. It may be toxic if swallowed.
4. Exercise care in handling the battery to prevent shorting the battery with conducting materials such as rings, bracelets, and keys. The battery or conductor may overheat and cause burns.
5. Charge the Battery Pack provided with or identified for use with this product only in accordance with the instructions and limitations specified in the instruction manual provided for this product.
6. Observe proper polarity orientation between the Battery Pack and battery charger.

**SECTION 5      INSTALLATION****5.1      Select the Installation Location**

Select a location for the *Dterm* Cordless Terminal that avoids excessive heat or humidity. The Base Unit of your *Dterm* Cordless Terminal should be placed on a desk or tabletop near a standard 120 Vac outlet and within reach of the telephone line connection to your Electra Professional Multiline Terminal. Keep the Base Unit and Handset away from sources of electrical noise (motors, fluorescent lighting).

**5.2      Connect the Telephone Cords**

The *Dterm* Cordless Terminal can be connected to either the telephone line or a line with the Host Telephone. Begin by unplugging the telephone line cord from your Host Telephone to the telephone line.

There are two telephone line jacks on the back of the Base Unit of the *Dterm* Cordless Terminal: LINE IN and LINE OUT.

Using the telephone line cord supplied with your *Dterm* Cordless Terminal, make the following connections:

- Connect the LINE IN jack to the telephone line.
- Connect the LINE OUT jack to your Host telephone.

**CAUTION**

- Never install telephone wiring during a lightning storm.
- Never touch uninsulated telephone wires or terminals unless the telephone line is disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

**5.3      Apply Power to the Base Unit**

1. Plug the AC Adapter cord in the AC Adapter input jack on the Base Unit.

**Note:** Use only the AC Adapter supplied with the *Dterm* Cordless Terminal.

2. Plug the AC Adapter in a standard 120 Vac wall outlet.
3. Route the power cord where it does not create a trip hazard or where it could become chafed and create a fire or other electrical hazards.

Refer to Figure 8-3 - Supplying Power to the Base Unit.

**Note 1:** The AC Adapter furnished with this phone may be equipped with a polarized line plug that fits into the power outlet only one way. If you cannot insert the plug in the outlet, reverse it. If the plug still fails to fit, contact your facilities coordinator about replacing the obsolete plug. Do not alter the shape of the blades of the polarized plug.

**Note 2:** The *Dterm* Cordless Terminal uses the black/yellow pair of the station cable. Always short the red wire to the black wire and the green wire to the yellow wire inside the wall jack to reduce interference.

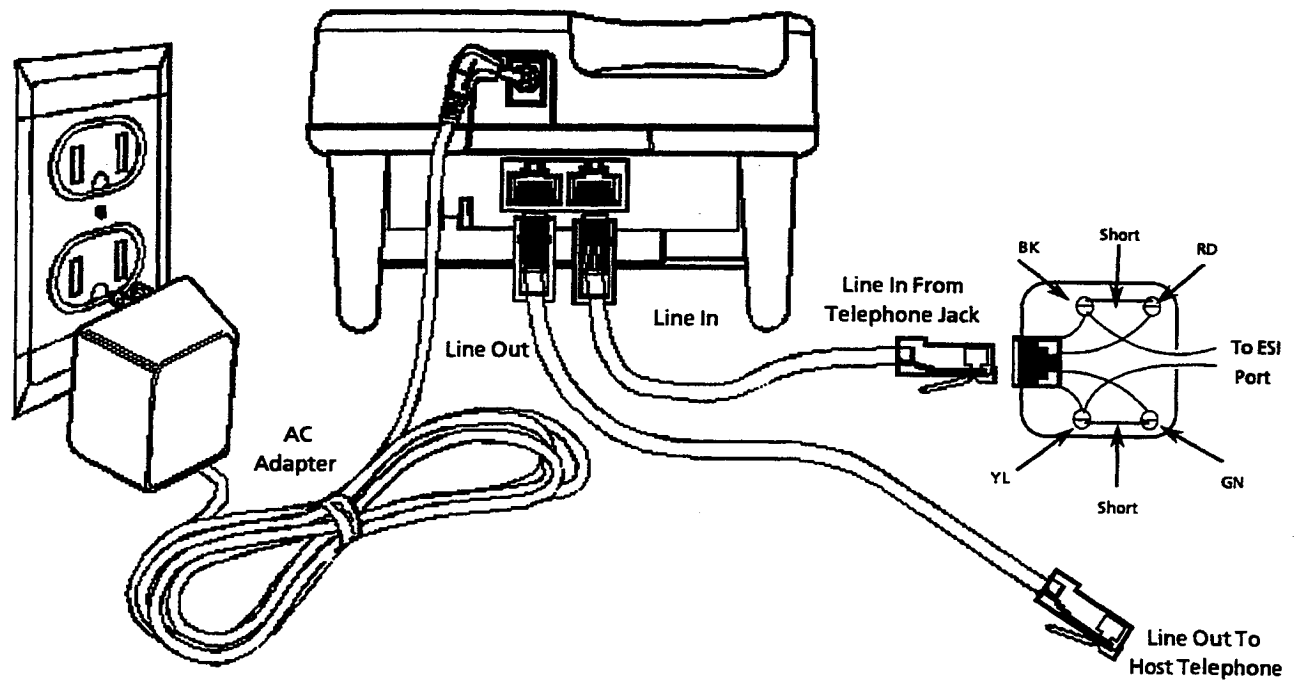
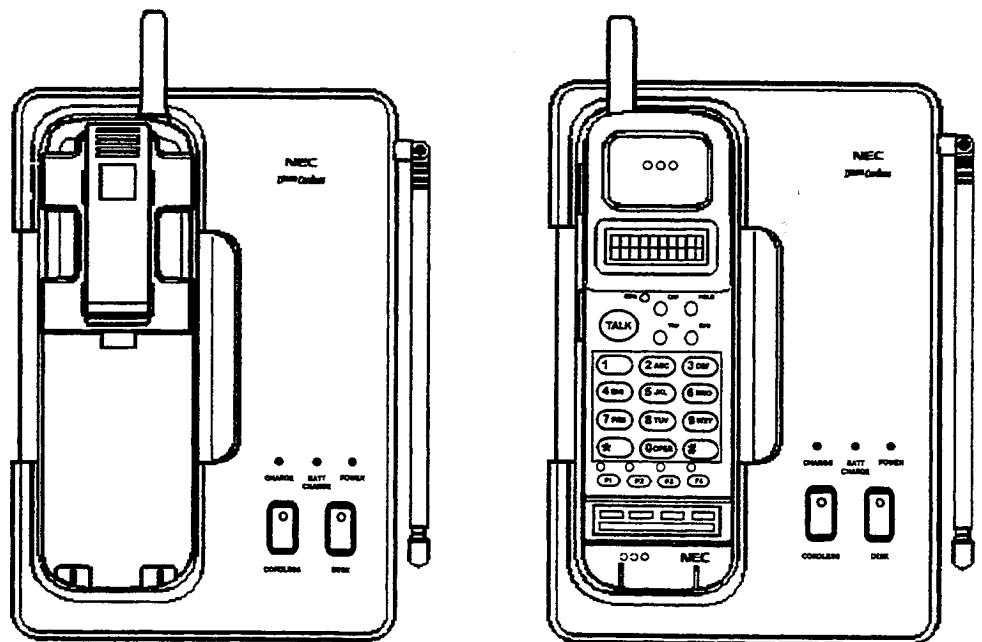


Figure 8-3 Supplying Power to the Base Unit

The unique design of your *Dterm* Cordless Terminal allows you to place the Handset on the Base Unit either face down or face up, with or without the Belt Clip attached. The Battery Pack in the Handset automatically recharges in either position. Refer to Figure 8-4 - Placing the Handset on the Base Unit.



8-4 Placing the Handset on the Base Unit



## 5.4 Attach or Remove the Belt Clip

A belt clip is provided to attach the Handset to your belt or pocket for convenient portability.

### 5.4.1 Attach the Belt Clip to the Handset

Snap the tabs of the Belt Clip into the notches on the sides of the Handset. Refer to Figure 8-5 - Attaching the Belt Clip to the Handset.

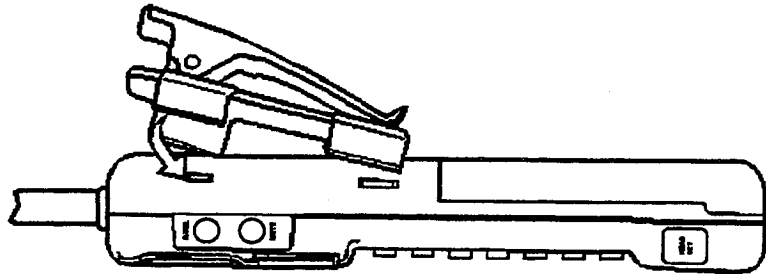


Figure 8-5 Attaching the Belt Clip to the Handset

### 5.4.2 Remove the Belt Clip from the Handset

Pry one tab at a time from the notch on the side of the Handset. Carefully lift the Belt Clip off.

**Note:** The Belt Clip fits snugly against the Handset.

## 5.5 Rechargeable Battery Pack

A rechargeable Nickel-Cadmium battery pack is provided with the *Dterm* Cordless Terminal.

### 5.5.1 Install the Battery Pack

1. Place the Battery Pack on the Handset so that it slides easily along the ridges.
2. Slide the Battery Pack up until it clicks into place.

Refer to Figure 8-6 - Installing the Battery Pack on the Handset.

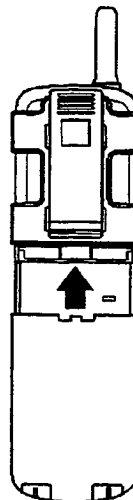


Figure 8-6 Installing the Battery Pack on the Handset

### 5.5.2 Charge the Handset Battery Pack

The rechargeable Nickel-Cadmium Battery Pack must be fully charged before using your *Dterm* Cordless Terminal for the first time. **Allow the unit to charge without interruption for 12-16 hours.**

1. Place the Handset on the Base Unit.
2. Make sure the CHARGE LED is on. If the CHARGE LED is not on, check to see that the AC Adapter is plugged in, and that the Handset is making good contact with the Base Unit.

### 5.5.3 Charge Extra Battery Packs

The Base Unit of your *Dterm* Cordless Terminal has a Spare Battery Charger for charging an extra Battery Pack.

1. Position the Battery Pack so the inner side is facing toward the top of the Base Unit.
2. Slide the Battery Pack in the Charging Compartment until it clicks into place. Refer to Figure 8-7 - Sliding an Extra Battery Pack into the Spare Battery Charger.

**Note:** The Battery Pack Charging Compartment has a latch that keeps the Battery Pack in place during charging.

3. Make sure the BATTERY CHARGE LED is on. If the BATTERY CHARGE LED is not on, check to see that the AC Adapter is plugged in, and that the Battery Pack is seated into the Charging Compartment. **Allow the Battery Pack to charge without interruption for 12-16 hours.**
4. When charging is complete, press the latch down to remove the Battery Pack for use. If you don't need the Battery pack immediately, leave it in the Charging Compartment (it can't overcharge).

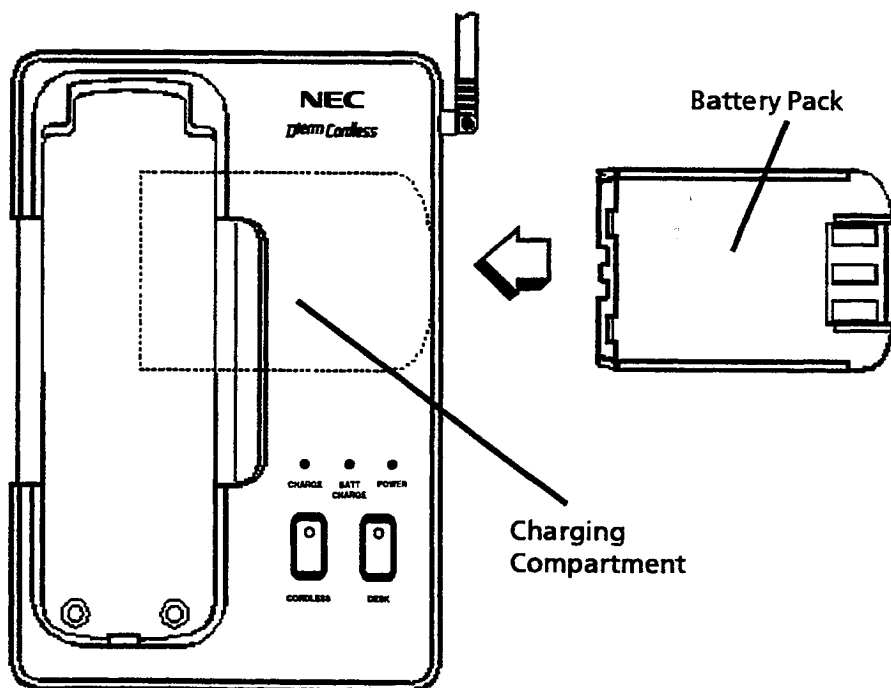


Figure 8-7 Sliding an Extra Battery Pack in the Spare Battery Charger

#### 5.5.4 Low Battery Indicator

##### 5.5.4.1 When You Are Not on a Call

When the Battery Pack in the Handset is very low and needs to be charged, the Handset beeps and the following message is displayed. You can't use the phone without recharging the Battery Pack. Keys are not operable.

### LOW BATT

Return the Handset to the Base Unit for charging. Allow 12-16 hours without interruption for the Battery Pack to fully recharge. Or, replace the Handset Battery Pack with another charged Battery Pack.

##### 5.5.4.2 When You Are on a Call

When the Battery Pack in the Handset is very low and needs to be charged, the Handset beeps and the following message is displayed. Only the Talk Key operates. The Handset beeps every three seconds.

### LOW BATT

1. Complete your call as quickly as possible.
2. Return the Handset to the Base Unit for charging. *Allow 12-16 hours without interruption for the Battery Pack to fully recharge.* Or, replace the Handset Battery Pack with another charged Battery Pack.

#### 5.5.5 Clean the Battery Contacts

To maintain a good charge, you should clean all charge contacts on the Handset and Base Unit at least once a month. Use a pencil eraser or other contact cleaner. **Do not** use any liquid or solvent. Refer to Figure 8-8 - Battery Contact Points.

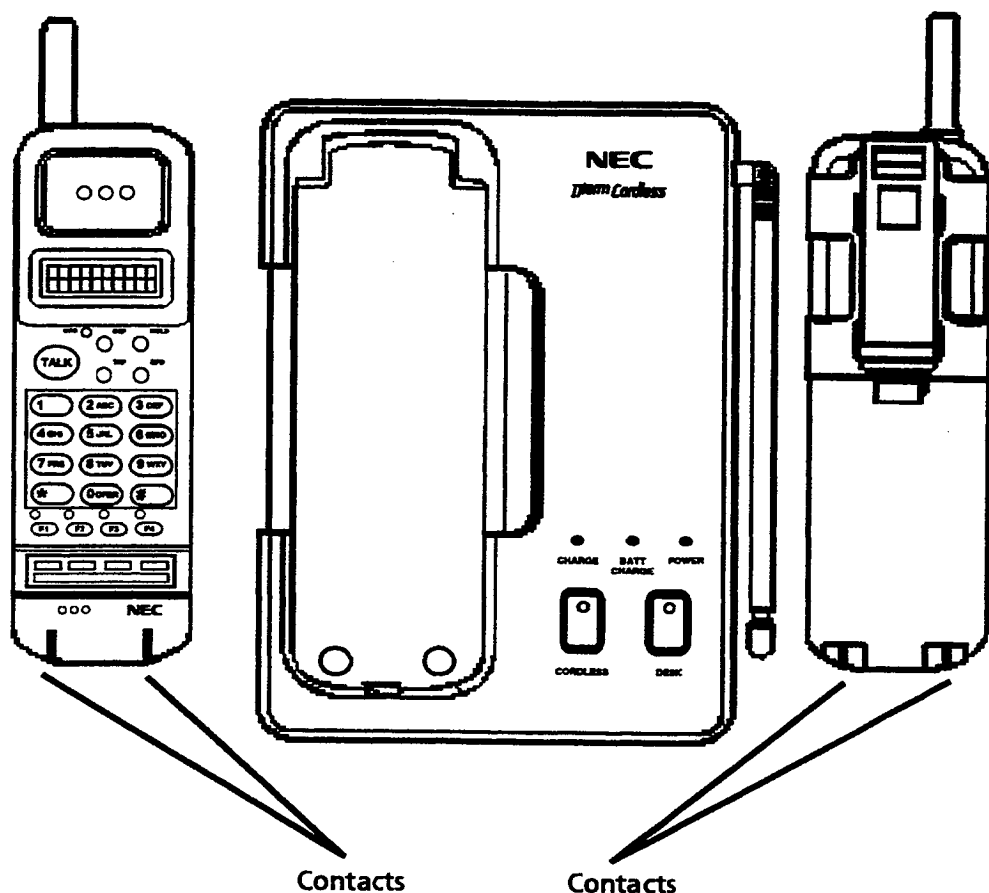


Figure 8-8 Battery Contact Points

### 5.6 Configure the *Dterm* Cordless Terminal

Before you can place or receive calls, you must configure your *Dterm* Cordless Terminal to match the operation of your Host Telephone. You must configure one of the Function Keys (F1 ~ F4) as your primary extension. Four Function Keys on the *Dterm* Cordless Terminal Handset can be programmed as line keys 1 ~ 16, FNC, RECALL, LNR/SPD, or ANS keys.

1. Remove the Handset from the Base Unit.
2. Press and hold the \* and # keys at the same time, then press the TALK key to enter the programming mode.
3. Press the R/VOL key consecutively to select the required function for the F1 key. The following message is displayed on the LCD prompting you to configure the F1 Function Key.

F1 = LK01

4. Press the MUTE key to advance to the next Function Key. Repeat step 3 for line keys F2 ~ F4. After the keys are configured, the following message is displayed:

**LCD MODE = 1**

Normally, this is already set up for the Electra Professional systems. You should not have to program it.

5. Repeat steps 2 ~ 4 to program Function Keys F2 ~ F4.
6. Press the MUTE key to enter the LCD mode, and the following message is displayed:

**LCD MODE = 1**

7. Press the R/VOL key to set to LCD mode 1.
8. Press the MUTE key to enter the Off-Hook Ring mode. The following message is displayed:

**OFF-HOOK  
RING = ON**

9. Press the R/VOL key to set to OFF-HOOK RING OFF.
10. Press the TALK key to exit the program mode.

## 5.7 Use Your *Dterm* Cordless Terminal

All operations using your Host Telephone are performed as you normally would without the *Dterm* Cordless Terminal connected.

### 5.7.1 *Dterm* Cordless Terminal Handset Controls

#### 5.7.1.1 Handset Earpiece Volume

During a call, press R/VOL, located on the side of the Handset, to select a loud or soft volume level in the Handset earpiece.

#### 5.7.1.2 Ringer Select

Press R/VOL (while idle ) on the side of the Handset to select from RING HIGH, RING LOW, or RING OFF. Each time you press R/VOL, you change the Ringer Volume, and hear a sample of the Ringer Tone.

**Note:** If you have the optional Silent Vibrating Alarm installed, you get a vibrating alert instead of a ring tone when you set the Ringer Volume to RING OFF.

#### 5.7.1.3 Mute

Press and hold MUTE on the side of the Handset to consult another person in the room without the caller hearing you. Release MUTE to resume the phone conversation.

#### 5.7.1.4 Out of Service Indicator

When the Handset is close to the end of the range limit of the *Dterm* Cordless Terminal, you hear a warning tone, and the following message is displayed.

## OUT OF SERVICE

If you move back in range within five seconds, the call resumes, and the LCD displays the previous information about the call. If you do not move back in range, you lose the call.

### 5.7.2 Answer a Call with the *Dterm* Cordless Terminal

#### 5.7.2.1 Make a Call

1. Remove the Handset from the Base Unit.
2. Press TALK, or a designated Function Key.
3. When you finish the call, place the Handset back on the Base Unit. *AutoStandby* automatically hangs up the phone. There is no need to press TALK to hang up.

-OR-

If the Handset is away from the Base Unit, press TALK to hang up the phone.

#### 5.7.2.2 If the Handset is on the Base Unit

1. When you receive a call, the Handset rings and the red LED on one of the Function Keys flashes.
2. Pick up the Handset. If the incoming call is on your primary extension, the *AutoTalk* feature allows you to answer the call immediately.

-OR-

If the incoming call is not on your primary extension, press the Function Key with the flashing LED to answer the call.

3. After you finish the call, place the Handset back on the Base Unit. *AutoStandby* automatically hangs up the phone.

-OR-

If the Handset is away from the Base Unit, press TALK to hang up the phone.

**5.7.2.3 If the Handset is not on the Base Unit**

1. When you receive a call, the Handset rings and the red LED on one of the Function Keys flashes.
2. Press the Function Key with the flashing LED to answer the call.

**Note:** If you press TALK instead of the Function Key with the flashing LED, you may get a dial tone instead of answering the call. This depends on whether or not the incoming call is on your primary extension.

3. When you finish the call, place the Handset back on the Base Unit. *AutoStandby* automatically hangs up the phone.

-OR-

If the Handset is away from the Base Unit, press TALK to hang up the phone.

**5.7.2.4 Dial a Stored Number**

1. Remove the Handset from the Base Unit.
2. Press TALK, or a designated Function Key.
3. Press SPD and the memory number (01 ~ 20) for that number.
4. Your *Dterm* Cordless Terminal then dials the previously stored number. To store a number, refer to section 5.9 - Using Your *Dterm* Cordless Terminal Speed Dial.

**Note:** If you select a memory location that does not have a stored number, the Handset beeps rapidly, and you cannot dial. Hookflashes and pauses cannot be programmed as part of the stored number.

**5.7.3 Answer a Call with the Host Telephone**

When you receive a call, answer with the Host Telephone as you normally do.

**5.7.3.1 Complete the Call with the Host Telephone**

When you finish the call, hang up the Host Telephone.

**5.7.3.2 Chain Dialing**

On certain occasions, after dialing a number, you may be requested by the party or service you are calling to enter a special Access Code, such as when performing a banking transaction. The Access Code can be stored in one of the 20 memory locations.

1. Remove the Handset from the Base Unit.
2. Make the call by dialing directly or from one of the stored numbers in memory.

3. When prompted by the called party, press the SPD key and the 2-digit Access Code.

**Example:**

- a. Dial the number for your bank.
- b. When the bank requests your account number, press the SPD key and the 2-digit Speed Dial Access Code.

Your Handset dials the number and you may proceed with your transaction.

#### 5.7.3.3 Last Number Redial

You can easily redial the last number that you called with the *Dterm* Cordless Terminal. This feature is extremely useful when the number you called is busy. To dial the last number called with any Function key:

Press the Function Key programmed for LNR/SPD, then press \* from the dial pad.

### 5.8 Fixed Operations

You can place a call on hold, transfer a call to another extension, or connect two or more parties in a conference call.

#### 5.8.1 Place a Call On Hold

1. Press the HOLD key on the Handset during the call. The LED for the Function Key you are using flashes.
2. To resume call holding, press the flashing Function Key again.

**Note:** Press the CNF key to retrieve internal calls on hold.

#### 5.8.2 Transfer a Call

1. Press the TRF key on the Handset during the call. The LED for the Function Key you are using flashes, indicating that you have placed that call on hold. The internal dial tone is present at the Handset.
2. Call the station number where you are transferring the call.
3. When that party answers, press the TRF key on the Handset again or hang up the Handset.

#### 5.8.3 Set up a Conference Call

1. Press the CNF key on the Handset during the call. The LED for the Function Key you are using flashes, indicating that you have placed that call on hold.
2. Establish a second call.
3. When that party answers, press the CNF key on the Handset again.



## 5.9 Use Your *Dterm* Cordless Terminal Speed Dial

### 5.9.1 Store a Number

1. Remove the Handset from the Base Unit.
2. Press the SPD key. You hear a beep, and the following message is displayed on the LCD.

**PHONE #-**

3. Enter the number (up to 16 digits) you want to store. (No hookflashes or pauses are allowed.)
4. Press the SPD key. The following message is displayed on the LCD.

**MEMORY #-**

5. Enter the buffer number (01 ~ 20) for the memory location you want to use.

**Note:** After pressing the SPD key the second time, you have 20 seconds to enter the number to store. Otherwise, an error tone sounds and the unit returns to Standby.

You hear a confirmation beep, and the following message is displayed on the LCD.

**STORED**

The *Dterm* Cordless Terminal then returns to Standby mode.

Example: Store 555-1234 in memory location 12:

- a. Press SPD.

**PHONE #-**

- b. Press 5551234.
- c. Press SPD.

**MEMORY #-**

- d. Press 12.

The Handset beeps confirmation, and the following message is displayed on the LCD.

**STORED**

The phone then returns to Standby.

5.9.2 Erase a Stored Number

1. Remove the Handset from the Base Unit.
2. Press the SPD key twice. The following message is displayed .

**DELETE#-**

3. Enter the 2-digit Speed Dial Access Code you want to clear. You hear a long beep, and the following message is displayed on the LCD, confirming that you erased that number from memory.

**DELETED**

**SECTION 6 TROUBLE SHOOTING**

If your *Dterm* Cordless Terminal is not performing to your expectations, please try these simple steps. If you are still unable to resolve the problems, contact NEC Field Support.

Problem	Suggested Solutions
Charge light won't come on when Handset is placed in Base Unit.	<ul style="list-style-type: none"> <li>● Ensure the AC Adapter is plugged in the Base Unit and wall outlet.</li> <li>● Ensure Handset is properly seated in Base Unit.</li> <li>● Ensure the Nickel-Cadmium Battery Pack is properly placed on the Handset.</li> <li>● Ensure that the charging contacts on the Handset and Base Unit are clean.</li> </ul>
Conversation interrupted frequently.	<ul style="list-style-type: none"> <li>● Ensure that the Base Unit antenna is fully extended.</li> <li>● Move closer to the Base Unit.</li> </ul>
Warning tone and NO SERVICE message.	<ul style="list-style-type: none"> <li>● Move closer to the Base Unit.</li> </ul>
Can't configure the <i>Dterm</i> Cordless Terminal.	<ul style="list-style-type: none"> <li>● Resynchronize the Handset to the Base Unit.</li> <li>● Check both ends of all telephone line cords for good connections.</li> <li>● Ensure the AC Adapter is plugged in the Base Unit and wall outlet.</li> </ul>
Handset doesn't ring.	<ul style="list-style-type: none"> <li>● Nickel-Cadmium Battery may be weak. Charge the Battery Pack for 12 ~ 16 hours.</li> <li>● Check the Ringer Alert setting. It may be on RING OFF without the optional Vibrator Alert installed.</li> <li>● Make sure the Base Unit antenna is fully extended.</li> <li>● The Handset may be too far away from the Base Unit.</li> <li>● Resynchronize the Handset to the Base Unit.</li> </ul>

**Range**

The *Dterm* Cordless Terminal achieves the best possible range by transmitting and receiving according to the highest specifications set forth by the FCC. We have rated this phone to operate at a maximum distance with the qualification that the range depends on the environment where the telephone is used. Many factors limit range, and it is impossible to include all the variables in our rating. The Maximum Range rating of the *Dterm* Cordless Terminal is given as a comparison against other range claims.

**Radio Interference**

Radio interference may occasionally cause interruptions in your conversations. When this happens, remember that your unit may not be defective. If these noises continue and are too distracting, move to a different location while you are talking on the phone. You may need to move the Base Unit as well. If the situation persists, contact NEC Field Support.