

ITT Courier ITT 9000 Series



The ITT 9210 Basic Function Display is designed for use with the ITT 993X Application Processor, as well as for attachment to all ITT 9000 Series controllers. Standard features of the ITT 9210 include dual logical units, an enhanced setup mode, and programmable security locks.

MANAGEMENT SUMMARY

UPDATE: This report has been updated to reflect a number of additions to the ITT 9000 Series product line. These include the ITT 993X Application Processor; ITT 1778 plug-compatible display terminal; ITT 9210, ITT 9212, and ITT 9216 Basic Function Display Terminals; VTC Communications Option, Data Multiplexer, and Voice-Data Multiplexer; ITT 9344 and ITT 9348 Line Printers; and ITT 9320/9321 NIPCs. ITT Courier is no longer manufacturing the C-270 product line.

ITT Courier's introduction of the ITT 9000 Series of products in April 1984, came in direct response to IBM's wave of product announcements earlier in the year. With the addition of the ITT 9000 Series, ITT Courier is now positioned to compete effectively against the IBM 3270 product line. A traditional leader in this market with its successful C-270 family of products, ITT Courier's initial ITT 9000 Series entries included 3178-, 3179-, and 3180-compatible displays, as well as a new generation of controllers and printers. Another significant addition was the ITT Processing Terminal feature, which allows the new ITT XTRA personal computer (marketed by ITT Information Systems and ITT Courier Terminal Systems), as well as the IBM PC, PC XT, and other IBM PC-compatible microcomputers to be integrated into the ITT 9000 Series.

Since the introduction of the ITT 9000 Series, ITT Courier has continued to enhance the product line. Most significantly, ITT Courier introduced the ITT 993X Application

ITT Courier's ITT 9000 Series is the company's latest generation of IBM 3270-compatible products. Components of the ITT 9000 Series include local and remote controllers, a wide variety of monochrome and color display terminals, and printers. A unique addition to the family is the ITT 993X Application Processor, which provides ITT 9000 Series users with concurrent 3270 sessions and local processing capabilities without host computer intervention or the use of personal computers. ITT Courier is an IBM system-compatible, as well as plug-compatible, vendor.

MODELS: ITT 941X and ITT 942X Remote Controllers; ITT 944X Local Controllers; ITT 993X Application Processor; ITT 1700 and ITT 1778 Display Terminals; ITT 1900 Color Display Terminal; ITT 9210/9212 Basic Function Display Terminals; ITT 9216 Basic Function Color Display Terminals; ITT 9230/9232 Extended Function Display Terminals; ITT 9236 Extended Function Color Display Terminal; ITT 9301, ITT 9303, ITT 9304, ITT 9305, and ITT 9306 Integrated Matrix Printers; ITT 9344 and ITT 9348 Line Printers; ITT 9302 Display Attached Printer; ITT 9320 and ITT 9321 Non-Integrated Printer Controllers; ITT Processing Terminal feature.

DISPLAY: The ITT 1700 and ITT 1778 display terminals include a 12-inch display screen; the ITT 1900, ITT 9210, ITT 9212, ITT 9216, and ITT 9236 terminals feature a 14-inch screen; the ITT 9230 and ITT 9232 terminals include a 15-inch screen. The ITT 1700, ITT 1778, ITT 1900, ITT 9210, ITT 9212, and ITT 9216 feature a 1,920-character screen capacity; the ITT 9230 and ITT 9232 feature selectable display capacities of 1,920, 2,560, 3,440, and 3,564 characters. The ITT 9236 has selectable display capacities of 1,920 and 2,560 characters.

KEYBOARD: A variety of interchangeable keyboards and separate keypads are available for use with the ITT 9000 Series displays.

COMPETITION: IBM, Telex, Lee Data, AT&T, Memorex, Harris, and several others.

PRICE: Purchase prices for the ITT Courier displays range from \$1,550 to \$2,595.

CHARACTERISTICS

VENDOR: ITT Courier Terminal Systems (a division of ITT Systems, Inc.), 1515 West 14th Street, Tempe, AZ

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TABLE 1. 9000 SERIES CONFIGURATION RULES

ITT Courier Controller Model	Mode	No. of Devices Supported	Displays/PC Attach. Supported	Printers Supported
9410	Remote	8	1700, 1900, C-270*	9302, 9308, C-270*
9416	Remote	16	1700, 1900, C-270*	9302, 9308, C-270*
942X	Remote	11-32	1700, 1900, 9210, 9212, 9216, 9230, 9232, 9236, 95436, C-270*	9301, 9302, 9303, 9304, 9305, 9306, 9308, 9341, 9342, C-270*
944X	Local	11-32	1700, 1900, 9210, 9212, 9216, 9230, 9232, 9236, 95436, C-270*	9301, 9302, 9303, 9304, 9305, 9306, 9308, 9341, 9342, C-270*

*C-270 components include 2700 & 2790 displays, 7570 PC Controller Attachment Feature, and 276X, 62XX, & 87XX printers. 9302 printer attaches directly to 9000 series display.

➤ Processor in July 1985. The application processor is a unique product in the 3270 replacement market. With the ITT 993X Application Processor, users of the ITT 9000 Series products have concurrent access to both 3270-type sessions and local processing functions, such as file sharing, printer sharing, word processing, spreadsheet, menu development, electronic mail, and a number of other functions. These capabilities are implemented via the ITT 993X Application Processor, without the need for host computer intervention or the use of personal computers; they can be accessed via ITT 9000 Series displays.

The ITT 993X Application Processor is a supermicrocomputer based on the Intel 80286 microprocessor. It includes 12 Multibus I/O slots (nine of which are available for expansion), and runs under the control of the Xenix operating system. The ITT 9932 Application Processor contains a 1.2MB diskette drive and a 21MB hard disk drive; the ITT 9936 Application Processor contains a 1.2MB diskette drive, 74MB hard disk drive, and a 60MB streaming tape drive. Both models are expandable with additional memory. In addition, Application Processor Device Adapters (APDAs) can be added to the expansion slots to provide for the connection of up to 32 displays and/or printers. The APDAs are attached, via a single coaxial cable, to an ITT 942X or ITT 944X controller. A range of office automation software packages are available for use with the ITT 993X Application Processor.

ITT Courier has also introduced its first 3270 plug-compatible display terminal, the ITT 1778. The ITT 1778 is designed to attach to an IBM 3274 or 3276 controller. The ITT 1778 joins the ITT 1700 monochrome display and the ITT 1900 color display as entry-level members of the ITT 9000 Series display family. Other new display models from ITT Courier include the ITT 9210, ITT 9212, and ITT 9216 Basic Function Displays, introduced in January 1986. These models are designed specifically for use in conjunction with the ITT 993X Application Processor. The ITT

➤ 85281. Telephone (602) 894-7000; or contact your local ITT Courier sales office. In Canada: ITT Courier Ltd., 6889 Rexwood Road, Mississauga, Ontario L4V 1R2. Telephone (416) 676-9930.

DATE OF ANNOUNCEMENT: April 1984.

DATE OF FIRST DELIVERY: Summer and fall of 1984.

NUMBER DELIVERED TO DATE: Over 400,000 terminals (including older models).

SERVICED BY: ITT Servcom.

CONFIGURATION

The ITT Courier ITT 9000 Series components are functional equivalents of various members of the IBM 3270 Information Display System, as well as members of the older ITT Courier C-270 Information Display System. Additionally, ITT Courier has introduced an IBM plug-compatible terminal, the ITT 1778, that can be attached to IBM control units. The ITT 9000 Series consists of local and remote controllers, monochrome and color display terminals, and printers. The ITT Courier Processing Terminal feature provides for the addition of personal computing capabilities (via the ITT XTRA Personal Computer, IBM PC XT, or various IBM PC-compatible systems). The ITT 993X Application Processor provides concurrent local processing and 3270 sessions to ITT 9000 Series display terminal users. The ITT 9000 Series components are equivalent to IBM 3270 components for local and remote operation supported by the IBM System/360, System/370, 4300 Series, 30XX, Series/1, and 8100 computer systems, as well as IBM-compatible computer systems. Some interchangeability is permitted between the ITT 9000 Series and older C-270 components. Table 1 summarizes the configuration rules for assembling ITT 9000 Series configurations.

TRANSMISSION SPECIFICATIONS

The ITT 941X and ITT 942X Remote Controllers provide point-to-point, multipoint, or switched connection communications via modems or other data circuit terminating equipment. An RS-232-C interface is provided for connection to an external modem, DDS, or direct connection (942X only). Communications speeds of up to 9600 bps (BSC) or 19,200

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▶ 9210 (green phosphor characters) and ITT 9212 (amber phosphor characters) are monochrome displays; the ITT 9216 is a color model.

The high-end terminal models of the ITT 9000 Series are the ITT 9230 and ITT 9232 Extended Function Display Terminals, and the ITT 9236 Extended Function Color Display Terminal. All ITT Courier display terminals are ergonomically designed, with tilt/swivel displays and a choice of low-profile keyboards.

Other new additions to the ITT 9000 Series line include the Data-Voice Multiplexer, the Data Multiplexer, and the VTC Asynchronous Communications Option. The Data-Voice Multiplexer provides for the attachment of displays and/or printers and voice channels to controllers, over twisted-pair wire, at distances up to 1,000 feet. The Data Multiplexer provides for the attachment of displays and/or printers to controllers, also over twisted-pair, at distances up to 1,000 feet. The VTC option provides the ITT 923X display terminals with Digital VT100 emulation for communications with an asynchronous host.

ITT Courier's ITT 9000 Series control units include the ITT 941X and ITT 942X remote controllers, and the ITT 944X local controllers. The ITT 9410 and ITT 9416 remote controllers provide support for 8 and 16 devices, respectively. Attachable devices include the C-270 displays and printers, and the ITT 1700 and ITT 1900 displays. The ITT 9420 and ITT 9422 (redundant) remote controllers, as well as the ITT 9440 and ITT 9442 (redundant) local controllers, provide for a standard configuration of 11 devices; device adapters may be added to expand the configuration to 32 devices. The ITT 942X and ITT 944X controllers support all ITT 9000 Series displays (including the ITT 1700 and ITT 1900) and printers as well as the C-270 family.

The ITT 9301, ITT 9303, ITT 9304, ITT 9305, and ITT 9306 Integrated Matrix Printers, ITT 9344 and ITT 9348 ▶

▶ bps (SNA/SDLC) are accommodated by the ITT 941X controllers. The ITT 942X controllers can communicate over high speed connections up to 19,200 bps (BSC) and 56K/64K bps (SNA/SDLC). The ITT 944X Local Controllers interface to the host system via channel attachment to a byte multiplexer, block multiplexer, or selector channel over standard BUS and TAG interface cables. SNA/SDLC and BSC protocols are supported by all controllers, as well as X.25 packet-switching communications.

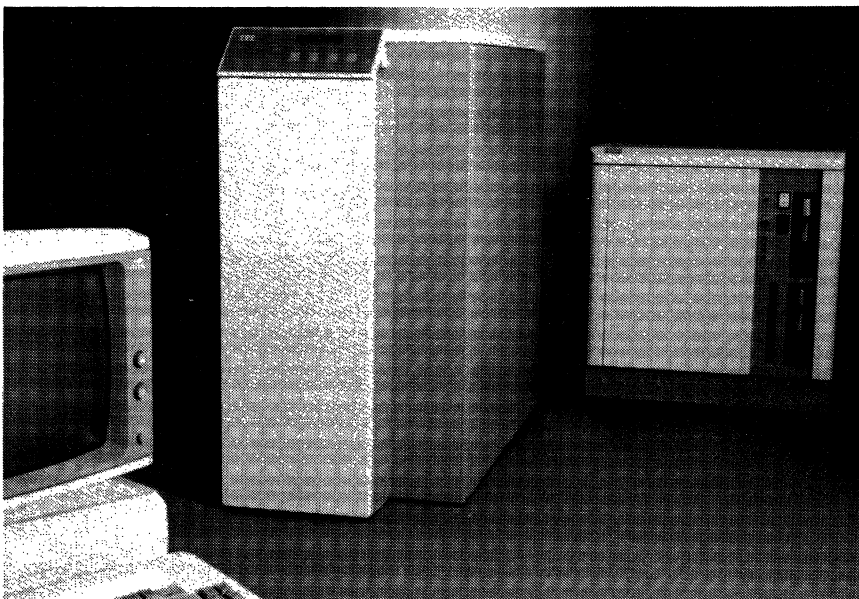
ITT 9000 Series displays and printers are connected to ITT 9000 Series controllers via coaxial cable at distances up to 5,000 feet. The Extended Terminal Multiplexer (ETM) provides for the connection of displays and/or printers to controllers over coaxial cable at distances up to 5,000 additional feet, for a total connection potential of 10,000 feet. The Data-Voice Multiplexer provides for the attachment of displays and/or printers and voice channels to controllers at distances up to 1,000 feet. The Data Multiplexer provides for the attachment of displays and/or printers to controllers at distances up to 1,000 feet.

DEVICE CONTROL

The ITT 9000 Series operates under the control of the program stored at the host computer and provides complete compatibility with the addressing sequence, command code structure, and line discipline employed by the IBM 3270 Information Display System. The ITT 9000 Series responds to and executes the full repertoire of IBM 3270 commands via a microprocessor with read-only memory (ROM).

Cursor control is functionally the same as for the IBM 3270 terminals. The cursor can be moved up, down, left, or right, step-by-step or repetitively (if the key remains depressed), backspaced one character position, moved to the beginning of the next line, tabbed to the beginning of the next unprotected data field, backtabbed to the beginning of the previous unprotected data field, or returned to the first unprotected character position on the screen. Cursor wraparound is standard.

The ITT 9230/9232 and ITT 9236 extended function terminals provide Extended Data Stream Support, Extended Highlighting, and Programmed Symbols. A Set-up mode (activated by pressing the Set-up key) provides for the selection of cursor styles (blinking or nonblinking block or underline), screen sizes, and auto keystrokes. Dual Logical ▶



The ITT 993X Application Processor (center) was introduced in July 1985. The Application Processor provides a ITT 9000 Series display terminal user with concurrent access to 3270 sessions and local processing, without the need for host intervention or the use of personal computers. The Application Processor is available in two models: the ITT 9932, with a 1.2MB diskette drive and a 21MB hard disk drive; and the ITT 9936, with a 1.2MB diskette drive, 74MB hard disk drive, and 60MB streaming tape drive.

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➤ Line Printers, ITT 9320 and ITT 9321 NIPCs, and 9302 Display Attached Printer are part of the ITT 9000 Series. The printers operate in DSC (data stream-compatible) or SCS (SNA character string), and provide a wide range of speeds and capabilities. The ITT 9302 attaches directly to an ITT 9000 Series display terminal for applications requiring screen copies. The ITT 9305 and ITT 9306 are color printers. The ITT 9320/9321 NIPCs allow virtually any Centronics or RS-232-C interfaced printer to be connected to the ITT 942X and ITT 944X controllers.

The ITT Processing Terminal feature is a hardware/software combination that allows for the attachment of ITT's XTRA Personal Computer to an ITT Courier 3270-compatible network. The ITT XTRA is an IBM PC XT operationally compatible microcomputer with 128K bytes of RAM and a choice of monochrome or color monitors. The XTRA is marketed through ITT's Information Systems division, as well as through ITT Courier Terminal Systems. (*More information on the ITT XTRA can be found in DATAPRO REPORTS ON MICROCOMPUTERS.*) The Processing Terminal feature provides a personal computer user with dual concurrent 3270 sessions and a notepad. In addition to the XTRA, the IBM PC, PC XT, and other IBM PC-compatible micros can be accessed through this feature.

COMPETITIVE POSITION

ITT Courier has traditionally been a leader in the IBM 3270-compatible market, coupling a broad product line with a flexible pricing structure. Within the past two years, IBM has shaken up what had been a relatively stable market with a host of new product additions and accompanying price reductions. These moves left the independent 3270-compatible vendors scrambling to react. Some were unwilling to, and left the market. Of the remaining vendors in this still-sizable market, virtually all have overhauled their 3270-compatible product lines with new products and capabilities.

A major trend for the independents has been toward providing multifunctionality within their product lines. ITT Courier has accomplished this with the addition of several new products, the most important of which is the ITT 993X Application Processor. Lee Data, with its Series 300/400, and AT&T, with the new 6500 Multifunction Communication System, are two vendors who provide other types of multifunctionality within their 3270 product lines. Meanwhile, Telex and Memorex, two other major players in the market, have based their product lines on their plug compatibility with IBM's devices. Overall, ITT Courier's response to IBM's 3270 line renovation has been among the strongest. Backed by parent ITT Corporation, ITT Courier is now in an excellent position to assume a position of leadership among IBM's competitors and carve out an even larger share of this lucrative market.

ADVANTAGES AND RESTRICTIONS

The ITT 9000 Series represents ITT Courier's commitment to remain a major player in the 3270-replacement market. The potential ITT Courier user can choose from a wide ➤

➤ Unit Support is also provided for the ITT 923X and ITT 921X displays. The DLU feature permits an operator, in session with one primary logical unit (PLU), to simultaneously establish a session with a second PLU from the same terminal without destroying screen data. It appears to the host computer as if there are two displays in session, when there is only one physical device operating. APL/Text and Note Pad capability are also supported on the ITT 9230 and ITT 9236. All ITT 9000 Series terminals, including the ITT 1700 and ITT 1778 Display Terminals, and the ITT 1900 Color Display Terminal, support the following features: row/column indicator; high-speed cursor; and entry assist.

Diagnostic features available on all ITT 9000 Series display terminals include Reveal Mode, Test Mode, and Line Capture. Reveal Mode displays attribute characters in a hexadecimal format to aid in program development. Line Capture Mode displays all information transmitted between the host computer and the control unit to aid in problem diagnosis and debugging. Enhanced run-time diagnostics is featured on the ITT 9230 and ITT 9236 extended function terminals.

All visual attributes found on the IBM 3270 terminals are featured on the ITT 9000 Series terminals. In addition, ITT Courier supports variable field underline and blinking fields on all displays.

The ITT 9000 Series components are supported under existing IBM software support for the IBM 3270 Information Display System, which includes the following IBM access methods: BTAM under DOS, DOS/VS, OS, or OS/VS2; TCAM under OS; and VTAM under DOS/VS, OS/VS1, or OS/VS2. The ITT 9000 Series is also supported for use with the following IBM program products: Video/370, Data/360, IMS, IQF, CICS, and TSO.

Personal computing capabilities can be added to an ITT 9000 cluster using the Processing Terminal feature. This feature is a hardware/software combination for use with the ITT XTRA Personal Computer, the IBM PC XT, or IBM-compatible microcomputers. The Processing Terminal feature provides the personal computer with file transfer capability, dual concurrent 3270 sessions, and a Note Pad.

ITT Courier also provides the VTC Asynchronous Communications Option, which consists of a board that plugs into the ITT 9000 Series terminals. The VTC option allows the ITT 9000 Series terminals to emulate the Digital Equipment Corporation VT100 for asynchronous operation. Users can switch between VT100 and 3270 operating modes via the keyboard.

The ITT 993X Application Processor provides the ITT 9000 Series user with both local processing and 3270 session capability without host intervention or the use of personal computers. Expansion slots on the ITT 993X Application Processor provide for the addition of Application Processor Device Adapters (APDAs), which provide coaxial connection for up to 32 displays and/or printers through an ITT 942X or ITT 944X controller. Users can access 3270-type sessions or local processing capabilities via the same ITT 9000 Series display. Office automation software packages are available for use with the ITT 993X Application Processor, providing office automation functions such as word processing, spreadsheet, electronic mail, electronic notepad, menu development, and remote host file transfer. The ITT 9210/9212 and ITT 9216 basic function terminals are designed to act as consoles for the ITT 993X Application Processor.

COMPONENTS

ITT 941X REMOTE CONTROLLERS: The ITT 9410 and ITT 9416 are entry-level remote controllers that provide ➤

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➤ variety of controllers, display terminals, printers, and add-on options. In addition, ITT Courier now offers a terminal, the ITT 1778, that is plug-compatible with the IBM 3178 and 3278 displays. The ITT 1778 allows ITT Courier to market its products to DP shops that are strictly IBM-oriented.

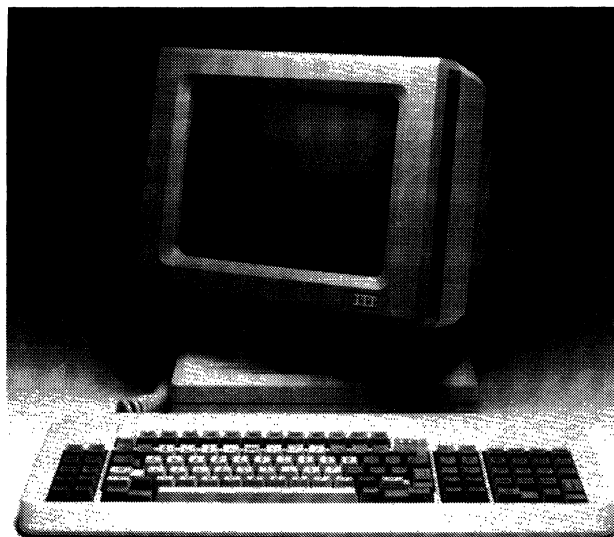
As we mentioned earlier, the independent 3270 equipment vendors have taken to providing multifunctionality within their product lines to offset IBM's strength in this market. ITT Courier has approached this from several angles. Its Processing Terminal Feature allows personal computers to access an ITT 9000 Series configuration. The VTC option provides asynchronous communications capability to an ASCII host computer. However, the most innovative move by ITT Courier is the addition of the ITT 993X Application Processor. The Application Processor provides the ITT 9000 Series user with concurrent 3270 and local processing capabilities, without the need for host computer intervention or the use of personal computers. Since the introduction of the ITT 993X Application Processor, Lee Data has unveiled a comparable product, its Series 610 Associate Processor.

ITT Courier has also provided the option of connecting displays and printers to controllers over standard telephone (twisted-pair) wire, with the Data Multiplexer and Data-Voice Multiplexer.

ITT Courier is a division of ITT Corporation. ITT is gaining a significant presence in the computer industry, particularly with the introduction of the XTRA Personal Computer by ITT Information Systems. Another ITT company, ITT Qume, is a major participant in the ASCII terminal market. □

➤ support for 8 and 16 devices, respectively. The ITT 941X controllers provide for the attachment of the ITT 1700 Display Terminal and the ITT 1900 Color Display Terminal, as well as the older C-270 Information Display System displays, terminals, printers, and the Personal Computer Controller Attachment Feature. The ITT 941X controllers do *not* support attachment of the ITT 9000 Series basic or extended function displays, printers, or the ITT 9000 Processing Terminal Feature. Dual Logical Unit support for up to 16 logical units is featured under SNA. Diagnostic capabilities resident in the controllers include self-test, error log, status panel, attribute reveal, and line/channel capture.

ITT 942X REMOTE CONTROLLERS: The ITT 9420 is a remote controller that provides support for up to 11 devices in a minimum configuration. The configuration is expandable to 32 devices through the addition of three device adapters. An alternative to device adapters is ITT Courier's Extended Terminal Multiplexer (ETM). The ETM may be connected up to 5,000 feet away from the controller via a single coaxial cable, and provides support for up to eight devices, which may be located an additional 5,000 feet away. The ITT 9422 is a redundant version of the ITT 9420, providing a reduced-cost, redundant hardware backup for the ITT 9420. The ITT 942X controllers provide for the attachment of the ITT 1700, ITT 1900, and ITT 9000 Series displays, printers, and the Processing Terminal Feature; they also support the predecessor C-270 Information Display System displays, printers, and the Personal Computer



The ITT 1778 is a plug-compatible replacement for the IBM 3178 Display Station. The ITT 1778 features a 12-inch monochrome display, a choice of 92- or 110-key keyboards, and attaches to the IBM 3274 or 3276 control units.

Controller Attachment Feature. Dual Logical Unit support for up to 64 logical units is featured. Extended data stream code support is standard with the ITT 9420 controller. Diagnostic capabilities resident in the controller include self-test, error log, status panel, attribute reveal, and line/channel capture with confidential data protect.

ITT 944X LOCAL CONTROLLERS: The ITT 9440 is a local controller that provides support for up to 11 devices in a minimum configuration. The configuration is expandable to 32 devices through the addition of three device adapters. An alternative to device adapters is ITT Courier's Extended Terminal Multiplexer (ETM). The ETM may be connected up to 5,000 feet away from the controller via a single coaxial cable, and provides support for up to eight devices, which may be located an additional 5,000 feet away. The ITT 9442 is a redundant version of the ITT 9440, providing a reduced-cost, redundant hardware backup for the ITT 9440. The ITT 944X controllers provide for the attachment of the ITT 1700, ITT 1900, and ITT 9000 Series displays, printers, and the Processing Terminal Feature; they also support the predecessor C-270 Information Display System displays, printers, and the Personal Computer Controller Attachment Feature. Dual Logical Unit support for up to 64 logical units is featured. Extended data stream code support is standard with the ITT 9420 controller. Diagnostic capabilities resident in the controller include self-test, error log, status panel, attribute reveal, and line/channel capture with confidential data protect.

ITT 993X APPLICATION PROCESSOR: The ITT 993X Application Processor (AP) is a supermicrocomputer that provides ITT 9000 Series users with concurrent local processing and 3270-type sessions, without host computer intervention or the use of personal computers. The AP is based on an Intel 80286 microprocessor and Intel's Multibus architecture, and uses the Xenix operating system. A total of 12 Multibus expansion slots are configured on the AP, nine of which are available for expansion. Two models of the AP are available. The ITT 9932 Application Processor contains a 1.2MB diskette drive and a 21MB hard disk drive. The ITT 9936 Application Processor contains a 1.2MB diskette drive, 74MB hard disk drive, and a 60MB streaming tape drive. Optional disk storage of up to 296MB is available. The ITT 993X Application Processors include coaxial con-

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► connections for up to eight ITT 9000 Series displays and/or printers, an RS-232-C console port, and a Centronics-compatible parallel printer port.

The ITT 993X APs use Application Processor Device Adapters (APDAs) to provide additional capabilities. The APDA is a plug-in circuit board that fits into the AP's expansion slots; up to four APDAs may be installed in an AP at any one time. Up to eight ITT 9000 Series displays and/or printers can be attached via coaxial cable to each APDA, for a total of 32 displays/printers per AP. Up to 16 of the 32 devices connected can access the local processing capability simultaneously. Each APDA, in turn, is attached to an ITT 942X or ITT 944X controller. Thus, the ITT 9000 Series user can access a synchronous host in 3270 mode, or access the Application Processor for local processing.

The ITT 993X Application Processor is available with two integrated office automation software packages: iDIS from Intel, and Q-Office from Quadraton Systems. The iDIS package offers iBASE, a basic systems menu package; iWORD, a word processor and tabulator; iPLAN, a spreadsheet with a database management extract; iDESK, a calendar, phone book, notepad, and calculator program; iDB, a relational database with report writer; iMENU, a menu development system; iXTRACT, for remote host file transfer; and iRJE, an IBM 2780/3780 emulation package. The Q-Office package offers Q-ONE, a word processing program; Q-MENU, a menu development system; Q-FORM, a user forms manager; Q-DATE, a calendar; Q-NOTE, a user notepad; Q-CALL, a phone directory; Q-MATH, a calculator; and Q-MAIL, an electronic mail program. The ITT 993X Application processor provides file sharing, printer sharing, and message functions.

MULTIPLEXERS: Three multiplexers are available from ITT Courier. The Extended Terminal Multiplexer (ETM) serves as an alternative to device adapters for the ITT 9420 and ITT 9422 controllers. The ETM may be connected up to 5,000 feet away from the controller via a single coaxial cable, and provides support for up to eight devices (display terminals and/or printers), which may be located an additional 5,000 feet away. The Data Multiplexer provides eight ports for connecting display terminals and/or printers over twisted-pair wires to cluster controllers, at distances up to 1,000 feet. The Data-Voice Multiplexer provides eight ports for connecting display terminals and/or printers and voice channels over twisted-pair wires to controllers, also at distances up to 1,000 feet.

ITT 1700 DISPLAY TERMINAL: The ITT 1700 Display Terminal is functionally equivalent to the IBM 3178 Display Station. The ITT 1700 includes a 12-inch (diagonally measured) display screen with a 1,920-character (24 lines by 80 columns) capacity. The display can be tilted or swiveled, and features a small footprint. Green or amber phosphor characters are available, and are formed using a 7-by-8 dot matrix in a 9-by-12 character cell. Other standard features include a row-column indicator, variable field underline, and blinking fields for rapid data recognition; optional features include a light pen and a display-attached printer. The ITT 1700 Display Terminal is supported for attachment to all ITT 9000 Series controllers.

ITT 1778 DISPLAY TERMINAL: The ITT 1778 Display Terminal is a plug-compatible replacement for the IBM 3178 Display Station. The ITT 1778 includes a 12-inch (diagonally measured) display screen with a 1,920-character (24 lines by 80 columns) capacity. The display can be tilted or swiveled, and features a small footprint. Green or amber phosphor characters are available, and are formed using a 7-by-8 dot matrix in a 9-by-12 character cell. The ITT 1778 Display Terminal is designed to attach to IBM 3274 and 3276 control units.

ITT 1900 COLOR DISPLAY TERMINAL: The ITT 1900 Color Display Terminal is functionally equivalent to the IBM 3179 Color Display Station. The ITT 1900 is equipped with a 14-inch (diagonally measured) display screen with a 1,920-character capacity, arranged in 24 lines of 80 columns each. Seven colors are displayable (red, green, blue, white, yellow, turquoise, and pink) using ITT Courier's dynamic color assignment. Characters are formed using a 7-by-8 dot matrix in a 9-by-12 character cell. The display can be tilted or swiveled, and features a small footprint. Standard features include a security keylock, row-column indicator, variable field underline, and blinking fields for rapid data recognition; optional features include a light pen and a display-attached printer. The ITT 1900 is supported for attachment to all ITT 9000 Series controllers.

ITT 9210/9212 BASIC FUNCTION DISPLAY TERMINALS: The ITT 9210 and ITT 9212 Basic Function Display Terminals are functional equivalents to the IBM 3178. The ITT 9210 and ITT 9212 are equipped with a 14-inch (diagonally measured) display screen with a 1,920-character capacity, arranged in 24 lines of 80 columns each. Characters are displayed in green phosphor on the ITT 9210 and in amber phosphor on the ITT 9212, and are formed using a 7-by-9 dot matrix in a 9-by-14 character cell. The displays can be tilted or swiveled, and feature a small footprint. Standard features include all of the features found on the ITT 1700 plus 3270 extended data stream, dual logical units for two simultaneous sessions, a non-volatile setup mode, and a programmable security keylock. The ITT 9210 and ITT 9212 are supported for attachment to all ITT 9000 Series controllers, and are designed for use in conjunction with the ITT 993X Application Processor.

ITT 9216 BASIC FUNCTION COLOR DISPLAY TERMINAL: The ITT 9216 Basic Function Color Display Terminal is functionally equivalent to the IBM 3179. The ITT 9216 is equipped with a 14-inch (diagonally measured) display screen with a 1,920-character capacity, arranged in 24 lines of 80 columns each. Seven colors are displayable (red, green, blue, white, yellow, turquoise, and pink) using extended data stream and dynamic color assignment. Characters are formed using a 7-by-9 dot matrix in a 9-by-14 character cell. The display can be tilted or swiveled, and features a small footprint. Standard features include all of the features found on the ITT 1900 plus 3270 extended data stream, extended color, dual logical units for two simultaneous sessions, a non-volatile setup mode, and a programmable security keylock. The ITT 9216 is supported for attachment to all ITT 9000 Series controllers, and is designed for use in conjunction with the ITT 993X Application Processor.

ITT 9230/9232 EXTENDED FUNCTION DISPLAY TERMINALS: The ITT 9230 and ITT 9232 Extended Function Display Terminals are functionally equivalent to the IBM 3180 Model 1 and 3278 Models 2 through 5 Display Stations. The ITT 9230 and ITT 9232 are equipped with a 15-inch (diagonally measured) display screen with user-selectable display capacities of 1,920 (24 lines by 80 columns), 2,560 (32 lines by 80 columns), 3,440 (43 lines by 80 columns), and 3,564 (27 lines by 132 columns) characters. Characters are displayed in green phosphor on the ITT 9230 and in amber phosphor on the ITT 9232, and are displayed within a 7-by-10 (1,920- or 2,560-character format) or 7-by-8 (3,440- or 3,564-character format) dot matrix. The ITT 9230 and ITT 9232 feature a three-piece modular design consisting of a tilt/swivel monitor, logic base, and keyboard. The ITT 9230 and ITT 9232 are supported for attachment to the ITT 942X and ITT 944X controllers, as well as to the ITT 993X Application Processor.

ITT 9236 EXTENDED FUNCTION COLOR DISPLAY TERMINAL: The ITT 9236 Extended Function Color Dis-

ITT Courier ITT 9000 Series

► **play Terminal** is functionally equivalent to the IBM 3279 Color Display Station. The ITT 9236 is equipped with a 14-inch (diagonally measured) display screen with user-selectable display capacities of 1,920 (24 lines by 80 columns) or 2,560 (32 lines by 80 columns) characters. Seven colors are displayable: red, green, blue, white, yellow, turquoise, and pink. Characters are formed within a 7-by-10 dot matrix. The ITT 9236 features a three-piece modular design consisting of a tilt/swivel monitor, logic base, and keyboard. The ITT 9236 is supported for attachment to the ITT 942X and ITT 944X controllers, as well as to the ITT 993X Application Processor.

KEYBOARDS: All display terminal models include a keyboard that features a low-profile, "slim line" design with a height adjustment capability (5 or 11.5 degrees). The keyboards are detachable, and are connected to the terminal's logic base via an extended coiled cable. The available layout styles are: Typewriter; Data Entry; Typewriter/Text; and Typewriter/APL. All keyboard models contain 24 program function keys, color differentiation between data and control keys, and positive tactile feedback. In addition to the keyboard, three separate keypad module styles are available. These include a numeric keypad, a 24-program function keypad, and an attribute select keypad (for the selection of extended character highlighting, color attributes, or programmed symbol sets).

ITT 95436 PROCESSING TERMINAL FEATURE: This feature provides the capability to connect an ITT XTRA Personal Computer, IBM PC XT, or IBM PC-compatible microcomputer to an ITT 942X or ITT 944X controller. The feature consists of an interface board and a 5¼-inch diskette. The interface board, incorporating a coax receptacle, is installed in a standard ITT XTRA or IBM PC XT input/output expansion slot. A standard coax cable connects the expansion card to an ITT 942X or ITT 944X controller. The diskette uses the standard IBM PC format and is loaded into the microcomputer at the time of execution. IBM 3270 terminal emulation with file transfer, as well as Note Pad capability, are added to the microcomputer.

ITT XTRA PERSONAL COMPUTER: The ITT XTRA, marketed by ITT Information Systems, is a 16-bit, IBM PC XT-compatible personal computer. The XTRA features 128K bytes of RAM, and is available with a 14-inch monochrome or 12-inch color display. ITT provides a variety of applications software for use with the XTRA; in addition, the XTRA can run IBM PC XT software. *For more information on the ITT XTRA Personal Computer, see DATAPRO REPORTS ON MICROCOMPUTERS, an information service dedicated to the microcomputer industry.*

VTC ASYNCHRONOUS COMMUNICATIONS OPTION: The VTC option consists of a plug-in printed circuit card that provides protocol conversion for the ITT 9000 Series displays. When equipped with this option, the ITT 9000 Series displays are compatible with the Digital VT100 terminal for communication with asynchronous hosts at speeds up to 9600 bps.

ITT 930X INTEGRATED MATRIX PRINTERS: ITT Courier provides a wide variety of matrix printers for use with the ITT 9000 Series. All ITT 930X printers provide the following standard features: DSC (datastream compatible) or SCS (SNA character string) print compatibility; 132-column printing at horizontal spacing of 10, 12, 13.5, 15, and 16.67 characters per inch; vertical spacing at 3, 4, 6, and 8 lines per inch; bidirectional logic seeking; 7-by-8 dot matrix draft mode or 15-by-16 dot matrix near-letter-quality (NLQ) mode; control panel with 8-character LED display for diagnostics; and cut sheet and continuous fanfold forms handling with printing of an original plus five copies. All models (except the ITT 9302) connect to the ITT 942X and ITT

944X controllers. The following models make up the ITT 930X printer series:

- ITT 9301—provides print speeds of 120 cps (draft) or 55 cps (NLQ);
- ITT 9302—a display attached printer with print speeds of 150 cps (draft); can be attached directly to a C-270 or ITT 9000 Series display terminal;
- ITT 9303—provides print speeds of 200 cps (draft) or 55 cps (NLQ); functionally compatible with the IBM 3287 Models 1 and 2;
- ITT 9304—provides print speeds of 400 cps (draft) or 100 cps (NLQ); functionally compatible with the IBM 3268;
- ITT 9305—a four- or seven-color printer that provides monochrome and color printing at speeds of 200 cps (draft) or 100 cps (NLQ); functionally compatible with the IBM 3268; and
- ITT 9306—a four- and seven-color printer that provides monochrome and color printing at speeds of 400 cps (draft) or 100 cps (NLQ), as well as single- and triple-plane PSS support; functionally compatible with the IBM 3268.

ITT 9344/9348 LINE PRINTERS: The ITT 9344 and ITT 9348 are DSC and SCS datastream-compatible line printers that can connect via the ITT 9320 NIPC to the ITT 942X and ITT 944X controllers. The ITT 9344 prints at 400 lpm and the ITT 9348 at 800 lpm. The ITT 9344 and ITT 9348 Line Printers are functionally equivalent to the IBM 3262 Model 13 and 3262 Model 3, respectively. Both printers print 132 columns at a horizontal spacing of 10 characters per inch and vertical spacing of 3, 4, 6, or 8 lines per inch. A variety of print bands are available. Other standard features include index scale; page length control of up to 127 lines per page; upper/lowercase or uppercase only; and a four-digit alphanumeric display for diagnostics. Forms are advanced via an adjustable tractor feed; an original plus five copies can be printed. A 55DB enclosure, for quiet operation, is also standard.

ITT 9320/9321 NON-INTEGRATED PRINTER CONTROLLERS (NIPC): The ITT 9320/9321 are DSC and SCS data stream-compatible printer controllers that attach directly to the ITT 942X and ITT 944X controllers. The NIPCs offer ITT 9000 Series users the ability to connect various printer and plotter output devices to an ITT 9000 Series cluster. The ITT 9320/9321 NIPCs allow virtually any Centronics-compatible parallel printer, or RS-232-C interfaced device, to be attached to an ITT 942X or ITT 944X controller. The 9320 NIPC is also required to connect an ITT 9344 or ITT 9348 Line Printer to an ITT 942X or ITT 944X controller.

PRICING

The ITT Courier ITT 9000 Series products are available for purchase and/or lease. ITT provides maintenance service from 150 locations in North America. Three service plans are available:

- **Platinum Plan**—complete maintenance service at the customer site is provided. Applicable preventive maintenance is scheduled at a mutually agreed upon time. A customer

ITT Courier ITT 9000 Series

- ▶ problem is reported via a call to ITT's COMSAC center; service is provided immediately.
- **Gold Plan**—provides all of the features of the Platinum Plan except that ITT does not respond immediately to calls to the COMSAC center; instead, response is deferred in one of two ways: a field engineer visits the customer site according to a prearranged schedule; a field engineer visits the customer site after a certain number of elements require service.

- **Silver Plan**—provides mail-in/carry-in service to 30 Mail-In/Carry-In centers in North America.

ITT Courier provides quantity discounts for all members of the ITT 9000 Series. ITT Courier supplied single-quantity purchase prices for the following products. For more detailed pricing information, contact ITT Courier or your local ITT Courier sales office.

EQUIPMENT PRICES

	Purchase Price (\$)	Monthly Maint. (\$)			
ITT 9410 Remote Controller (8-port)	4,400	25			
ITT 9416 Remote Controller (16-port)	5,100	40			
ITT 9420 Remote Controller (11-port)	5,700	29			
ITT 9422 Remote Controller (11-port)	10,950	34			
ITT 9440 Local Controller (11-port)	10,700	43			
ITT 9442 Local Controller (11-port)	21,200	49			
Device Adapter (7-port)	2,400	5			
Extended Terminal Multiplexer (ETM)	2,750	—			
Data Multiplexer (per pair)	118	—			
Data-Voice Multiplexer (per pair)	248	—			
ITT 9932 Application Processor	18,500	—			
ITT 9936 Application Processor	24,000	—			
ITT 1700 Display Terminal (w/keyboard)	1,550	—			
ITT 1778 Display Terminal (w/keyboard)	1,550	—			
ITT 1900 Color Display Terminal (w/keyboard)	2,100	—			
ITT 9210 Basic Function Display Terminal (w/keyboard)	1,550	—			
			ITT 9212 Basic Function Display Terminal (w/keyboard)	1,550	—
			ITT 9216 Basic Function Color Display Terminal (w/keyboard)	2,180	—
			ITT 9230 Extended Function Display Terminal (w/keyboard)	2,180	—
			ITT 9232 Extended Function Display Terminal (w/keyboard)	2,230	—
			ITT 9236 Extended Function Color Display Terminal (w/keyboard)	2,595	—
			ITT 9301 Integrated Matrix Printer	4,400	44
			ITT 9302 Display-Attached Printer	725	—
			ITT 9303 Integrated Matrix Printer	5,100	50
			ITT 9304 Integrated Matrix Printer	6,600	60
			ITT 9305 Color Integrated Matrix Printer	5,700	60
			ITT 9306 Color Integrated Matrix Printer	8,100	80 ■

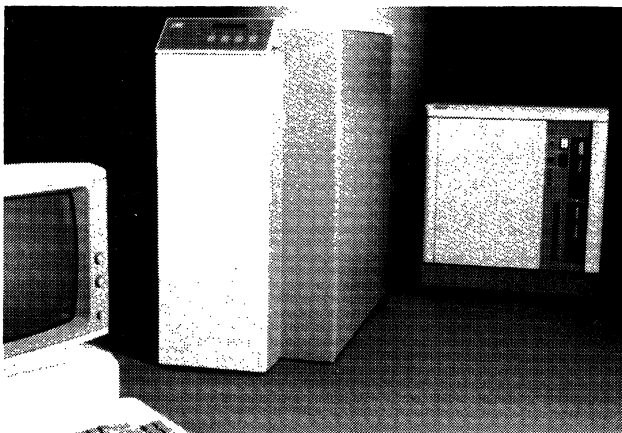
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MANAGEMENT SUMMARY

UPDATE: *This report has been updated to reflect a number of additions to the 9000 Series product line. These include the 993X Application Processor, 1778 plug-compatible display terminal, 9210, 9212, and 9216 Basic Function Display Terminals, VTC Communications Option, Data Multiplexer, and Voice-Data Multiplexer. ITT Courier is no longer marketing the C-270 product line.*

ITT Courier's introduction of the 9000 Series of products in April 1984, came in direct response to IBM's wave of product announcements earlier in the year. With the addition of the 9000 Series, ITT Courier is now positioned to compete effectively against the IBM 3270 product line. A traditional leader in this market with its successful C-270 family of products, ITT Courier's initial 9000 Series entries included IBM 3178-, 3179-, and 3180-compatible displays, as well as a new generation of controllers and printers. Another significant addition was the ITT Processing Terminal feature, which allows the new ITT XTRA personal computer (marketed by ITT Information Systems), as well as the IBM PC, PC XT, and other IBM PC-compatible microcomputers to be integrated into the 9000 Series.

Since the introduction of the 9000 Series, ITT Courier has made several moves. First, it removed from marketing the C-270 product line. Then, the company made some dramatic additions to the 9000 Series. First and foremost, ITT Courier introduced the 993X Application Processor in July 1985. The Application Processor is a unique product in the 3270 replacement market. With the Application Processor, users of the 9000 Series products have concurrent access to both 3270-type sessions and local processing functions, such as file sharing, printer sharing, word processing, ➤



The 993X Application Processor (center) was introduced in July 1985. The Application Processor provides a 9000 Series display terminal user with concurrent access to 3270 sessions and local processing, without the need for host intervention or the use of personal computers. The Application Processor is available in two models: the 9932, with a 1.2MB diskette drive and a 21MB hard disk drive; and the 9936, with a 1.2MB diskette drive, 74MB hard disk drive, and 60MB streaming tape drive.

ITT Courier's 9000 Series is the company's latest generation of IBM 3270-compatible products. Components of the 9000 Series include local and remote controllers, a wide variety of monochrome and color display terminals, and printers. A unique addition to the family is the 993X Application Processor, which provides 9000 Series users with concurrent 3270 sessions and local processing capabilities without host computer intervention or the use of personal computers. Other new features of the 9000 Series include asynchronous operation, and voice/data communication over twisted-pair wire.

MODELS: 941X and 942X Remote Controllers; 944X Local Controllers; 993X Application Processor; 1700 and 1778 Display Terminals; 1900 Color Display Terminal; 9210/9212 Basic Function Display Terminals; 9216 Basic Function Color Display Terminals; 9230/9232 Extended Function Display Terminals; 9236 Extended Function Color Display Terminal; 9301, 9303, 9304, 9305, 9306, and 9308 Matrix Printers; 9302 Display Attached Printer; 9341 and 9342 Line Printers; ITT Processing Terminal feature.

DISPLAY: The 1700 and 1778 display terminals include a 12-inch display screen; the 1900, 9210, 9212, 9216, and 9236 terminals feature a 14-inch screen; the 9230 and 9232 terminals include a 15-inch screen. The 1700, 1778, 1900, 9210, 9212, and 9216 feature a 1,920-character screen capacity; the 9230 and 9232 feature selectable display capacities of 1,920, 2,560, 3,440, and 3,564 characters. The 9236 has selectable display capacities of 1,920 and 2,560 characters. The 1900, 9216, and 9236 have seven-color display capability; all other models feature a monochrome display. All display monitors feature tilt/swivel capability.

KEYBOARD: A variety of interchangeable keyboards and separate keypads are available for use with the 9000 Series displays. All keyboards feature a low-profile design and are detachable.

COMPETITION: IBM, Telex, Lee Data, AT&T, Memorex, Harris, and several others.

PRICE: Purchase prices for the ITT Courier displays range from \$1,550 to \$2,595.

CHARACTERISTICS

VENDOR: ITT Courier Terminal Systems (a division of ITT Systems, Inc.), 1515 West 14th Street, Tempe, AZ ➤

ITT Courier 9000 Series

TABLE 1. 9000 SERIES CONFIGURATION RULES

ITT Courier Controller Model	Mode	No. of Devices Supported	Displays/PC Attach. Supported	Printers Supported
9410	Remote	8	1700, 1900, C-270*	9302, 9308, C-270*
9416	Remote	16	1700, 1900, C-270*	9302, 9308, C-270*
942X	Remote	11-32	1700, 1900, 9210, 9212, 9216, 9230, 9232, 9236, 95436, C-270*	9301, 9302, 9303, 9304, 9305, 9306, 9308, 9341, 9342, C-270*
944X	Local	11-32	1700, 1900, 9210, 9212, 9216, 9230, 9232, 9236, 95436, C-270*	9301, 9302, 9303, 9304, 9305, 9306, 9308, 9341, 9342, C-270*

*C-270 components include 2700 & 2790 displays, 7570 PC Controller Attachment Feature, and 276X, 62XX, & 87XX printers. 9302 printer attaches directly to 9000 series display.

➤ spreadsheet, menu development, electronic mail, and a number of other functions. These capabilities are implemented via the Application Processor, without the need for host computer intervention or the use of personal computers; they can be accessed via 9000 Series displays.

The Application Processor is a supermicrocomputer based on an Intel 80286 microprocessor. It includes 12 Multibus I/O slots (nine of which are available for expansion), and runs under the control of the Xenix operating system. The 9932 Application Processor contains a 1.2MB diskette drive and a 21MB hard disk drive; the 9936 Application Processor contains a 1.2MB diskette drive, 74MB hard disk drive, and a 60MB streaming tape drive. Both models are expandable with additional memory. In addition, Application Processor Device Adapters (APDAs) can be added to the expansion slots to provide for the connection of up to 32 displays and/or printers. The APDAs are attached, via a single coaxial cable, to a 942X or 944X controller. A range of office automation software packages are available for use with the Application Processor.

ITT Courier has also introduced its first 3270 plug-compatible display terminal, the 1778. The 1778 is designed to attach to an IBM 3274 or 3276 controller. The 1778 joins the 1700 monochrome display and the 1900 color display as entry-level members of the 9000 Series display family. Other new display models from ITT Courier include the 9210, 9212, and 9216 Basic Function Displays. These models are designed specifically for use in conjunction with the 993X Application Processor. The 9210 (green phosphor characters) and 9212 (amber phosphor characters) are monochrome displays; the 9216 is a color model.

The high-end terminal models of the 9000 Series are the 9230 and 9232 Extended Function Display Terminals, and the 9236 Extended Function Color Display Terminal. All ITT Courier display terminals are modularly designed, with tilt/swivel displays and a choice of low-profile keyboards.

➤ 85281. Telephone (602) 894-7000; or contact your local ITT Courier sales office. In Canada: ITT Courier Ltd., 6889 Rexwood Road, Mississauga, Ontario L4V 1R2. Telephone (416) 676-9930.

DATE OF ANNOUNCEMENT: April 1984.

DATE OF FIRST DELIVERY: Summer and fall of 1984.

NUMBER DELIVERED TO DATE: Over 400,000 terminals (including older models).

SERVICED BY: ITT SERVCOM.

CONFIGURATION

The ITT Courier 9000 Series components are functional equivalents of various members of the IBM 3270 Information Display System, as well as members of the older ITT Courier C-270 Information Display System. Additionally, ITT Courier has recently introduced an IBM plug-compatible terminal, the 1778, that can be attached to IBM control units. The 9000 Series consists of local and remote controllers, monochrome and color display terminals, and printers. The ITT Courier Processing Terminal feature provides for the addition of personal computing capabilities (via the ITT XTRA Personal Computer, IBM PC XT, or various IBM PC-compatible systems). The new 993X Application Processor provides concurrent local processing and 3270 sessions to 9000 Series display terminal users. The 9000 Series components are equivalent to IBM 3270 components for local and remote operation supported by the IBM System/360, System/370, 4300 Series, 30XX, Series/1, and 8100 computer systems, as well as IBM-compatible computer systems. Some interchangeability is permitted between the 9000 Series and older C-270 components. Table 1 summarizes the configuration rules for assembling 9000 Series configurations.

TRANSMISSION SPECIFICATIONS

The 941X and 942X Remote Controllers provide point-to-point, multipoint, or switched connection communications via modems or other data circuit terminating equipment. An RS-232-C interface is provided for connection to an external modem, DDS, or direct connection (942X only). Communications speeds of 2400 to 9600 (BSC) or 19,200 (SDLC) bps are accommodated by the 941X and 942X controllers. The

ITT Courier 9000 Series

➤ Other new additions to the 9000 Series line include the Data-Voice Multiplexer, the Data Multiplexer, and the VTC Asynchronous Communications Option. The Data-Voice Multiplexer provides for the attachment of displays and/or printers and voice channels to controllers, over twisted-pair wire, at distances up to 1,000 feet. The Data Multiplexer provides for the attachment of displays and/or printers to controllers, also over twisted-pair, at distances up to 1,000 feet. The VTC option provides all Series 9000 display terminals with Digital Equipment Corporation VT100 emulation for communications with an asynchronous host.

ITT Courier's 9000 Series control units include the 941X and 942X remote controllers, and the 944X local controllers. The 9410 and 9416 remote controllers provide support for 8 and 16 devices, respectively. Attachable devices include the C-270 displays and printers, and the 1700 and 1900 displays. The 9420 and 9422 (redundant) remote controllers, as well as the 9440 and 9442 (redundant) local controllers, provide for a standard configuration of 11 devices; device adapters may be added to expand the configuration to 32 devices. The 942X and 944X controllers support all 9000 Series displays (including the 1700 and 1900) and printers as well as the C-270 family.

The 9301, 9303, 9304, 9305, 9306, and 9308 Matrix Printers, 9341 and 9342 Line Printers, and 9302 Display Attached Printer were introduced as part of the 9000 Series. The printers operate in DSC (data stream-compatible) or SCS (SNA character string), and provide a wide range of speeds and capabilities. The 9302 attaches directly to a 9000 Series display for applications requiring screen copies. The 9305 and 9306 are color printers.

The ITT Processing Terminal feature is a hardware/software combination that allows for the attachment of ITT's XTRA Personal Computer to an ITT Courier 3270-compatible network. The newly introduced XTRA is an IBM PC XT operationally compatible microcomputer with 128K bytes of RAM and a choice of monochrome or color monitors. The XTRA is marketed through ITT's Information Systems division. (More information on the ITT XTRA can be found in DATAPRO REPORTS ON MICROCUMPUTERS.) The Processing Terminal feature provides a personal computer user with dual concurrent 3270 sessions and a notepad. In addition to the XTRA, the IBM PC, PC XT, and other IBM PC-compatible micros can be accessed through this feature.

COMPETITIVE POSITION

ITT Courier has traditionally been a leader in the IBM 3270-compatible market, coupling a broad product line with a flexible pricing structure. Within the past two years, IBM has shaken up what had been a relatively stable market with a host of new product additions and accompanying price reductions. These moves left the independent 3270-compatible vendors scrambling to react. Some were unwilling to, and left the market. Of the remaining vendors in this still-sizable market, virtually all have overhauled their 3270-compatible product lines with new products and capabilities.

➤ 944X Local Controllers interface to the host system via channel attachment to a byte multiplexer, block multiplexer, or selector channel over standard BUS and TAG interface cables. SNA/SDLC and BSC protocols are supported by all controllers, as well as X.25 packet-switching communications.

9000 Series displays and printers are connected to 9000 Series controllers via coaxial cable at distances up to 5,000 feet. The Extended Terminal Multiplexer (ETM) provides for the connection of displays and/or printers to controllers over coaxial cable at distances up to 5,000 additional feet. The Data-Voice Multiplexer provides for the attachment of displays and/or printers and voice channels to controllers at distances up to 1,000 feet. The Data Multiplexer provides for the attachment of displays and/or printers to controllers at distances up to 1,000 feet.

DEVICE CONTROL

The 9000 Series operates under the control of the program stored at the host computer and provides complete compatibility with the addressing sequence, command code structure, and line discipline employed by the IBM 3270 Information Display System. The 9000 Series responds to and executes the full repertoire of IBM 3270 commands via a microprocessor with read-only memory (ROM).

Cursor control is functionally the same as for the IBM 3270 terminals. The cursor can be moved up, down, left, or right, step-by-step or repetitively (if the key remains depressed), backspaced one character position, moved to the beginning of the next line, tabbed to the beginning of the next unprotected data field, backtabbed to the beginning of the previous unprotected data field, or returned to the first unprotected character position on the screen. Cursor wraparound is standard.

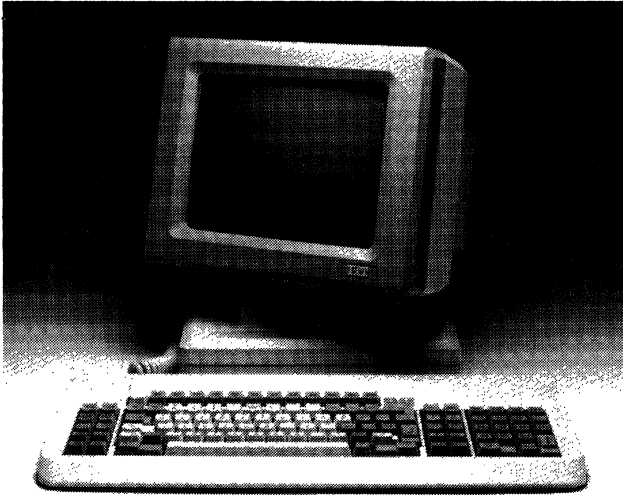
The 9230/9232 and 9236 extended function terminals provide Extended Data Stream Support, and Extended Highlighting, and Programmed Symbol. A Set-up mode (activated by pressing the Set-up key) provides for the selection of cursor styles (blinking or nonblinking block or underline), screen sizes, and auto keystrokes. Dual Logical Unit Support is also provided for the 9230/9232 and 9236. The DLU feature permits an operator, in session with one primary logical unit (PLU), to simultaneously establish a session with a second PLU from the same terminal without destroying screen data. It appears to the host computer as if there are two displays in session, when there is only one physical device operating. APL/Text and Note Pad capability are also supported on the 9230 and 9236. All 9000 Series terminals, including the 1700 and 1778 Display Terminals, and the 1900 Color Display Terminal, support the following features: row/column indicator; high-speed cursor; and entry assist.

Diagnostic features available on all 9000 Series display terminals include Reveal Mode, Test Mode, and Line Capture. Reveal Mode displays attribute characters in a hexadecimal format to aid in program development. Line Capture Mode displays all information transmitted between the host computer and the control unit to aid in problem diagnosis and debugging. Run-time Diagnostics is featured on the 9230 and 9236 extended function terminals.

All visual attributes found on the IBM 3270 terminals are featured on the 9000 Series terminals. In addition, blink and underscore highlighting are featured on the 9230 and 9236.

The 9000 Series components are supported under existing IBM software support for the IBM 3270 Information Display System, which includes the following IBM access methods: BTAM under DOS, DOS/VS, OS, or OS/VS2; TCAM under OS; and VTAM under DOS/VS, OS/VS1, or

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The ITT Courier 1778 is a plug-compatible replacement for the IBM 3178 Display Station. The 1778 features a 12-inch monochrome display, a choice of 92- or 110-key keyboards, and attaches to the IBM 3274 or 3276 control units.

▶ A major trend for the independents has been toward providing multifunctionality within their product lines. ITT Courier has accomplished this with the addition of several new products, the most important of which is the 993X Application Processor. Lee Data, with its Series 300/400, and AT&T, with the new 6500 Multifunction Communication System, are two vendors who provide other types of multifunctionality within their 3270 product lines. Meanwhile, Telex and Memorex, two other major players in the market, have based their product lines on their plug compatibility with IBM's devices. Overall, ITT Courier's response to IBM's 3270 line renovation has been among the strongest. Backed by parent ITT Corporation, ITT Courier is now in an excellent position to assume a position of leadership among IBM's competitors and carve out an even larger share of this lucrative market.

ADVANTAGES AND RESTRICTIONS

The 9000 Series represents ITT Courier's commitment to remain a major player in the 3270-replacement market. The potential ITT Courier user can choose from a wide variety of controllers, display terminals, printers, and add-on options. In addition, ITT Courier now offers a terminal, the 1778, that is plug-compatible with the IBM 3178 and 3278 displays. The 1778 allows ITT Courier to "get its foot in the door" of DP shops that are strictly IBM-oriented.

As we mentioned earlier, the independent 3270 equipment vendors have taken to providing multifunctionality within their product lines to offset IBM's strength in this market. ITT Courier has approached this from several angles. Its Processing Terminal Feature allows personal computers to be added to a 9000 Series configuration. The VTC option provides asynchronous communications capability. However, the most innovative move by ITT Courier is the addition of the 993X Application Processor. The Applica-

▶ OS/VS2. The 9000 Series is also supported for use with the following IBM program products: Video/370, Data/360, IMS, IQF, CICS, and TSO.

Personal computing capabilities can be added to an ITT Courier 9000 cluster using the Processing Terminal feature. This feature is a hardware/software combination for use with the ITT XTRA Personal Computer, the IBM PC XT, or IBM-compatible microcomputers. The Processing Terminal feature provides the personal computer with file transfer capability, dual concurrent 3270 sessions, and a Note Pad.

ITT Courier also provides the VTC Asynchronous Communications Option, which consists of a board that plugs into the 9000 Series terminals. The VTC option allows the 9000 Series terminals to emulate the Digital Equipment Corporation VT100 for asynchronous operation. Users can switch between VT100 and 3270 operating modes via the keyboard.

The 993X Application Processor provides the 9000 Series user with both local processing and 3270 session capability without host intervention or the use of personal computers. Expansion slots on the 993X Application Processor provide for the addition of Application Processor Device Adapters (APDAs), which provide coaxial connection for up to 32 displays and/or printers through a 942X or 944X controller. Users can access 3270-type sessions or local processing capabilities via the same 9000 Series display. Office automation software packages are available for use with the 993X Application Processor, providing office automation functions such as word processing, spreadsheet, electronic mail, electronic notepad, menu development, and remote host file transfer. The 9210/9212 and 9216 basic function terminals are designed to act as consoles for the 993X Application Processor.

COMPONENTS

941X REMOTE CONTROLLERS: The 9410 and 9416 are entry-level remote controllers which provide support for 8 and 16 devices, respectively. The 941X controllers are not expandable. The 941X controllers provide for the attachment of the 1700 Display Terminal and the 1900 Color Display Terminal, as well as the older C-270 Information Display System displays, terminals, printers, and the Personal Computer Controller Attachment Feature. The 941X controllers do *not* support attachment of the 9000 Series basic or extended function displays, printers, or the Processing Terminal Feature. Dual Logical Unit support for up to 16 logical units is featured. Diagnostic capabilities resident in the controllers include self-test, error log, status panel, attribute reveal, and line/channel capture.

942X REMOTE CONTROLLERS: The 9420 is a remote controller that provides support for up to 11 devices in a minimum configuration. The configuration is expandable to 32 devices through the addition of three device adapters. An alternative to device adapters is ITT Courier's Extended Terminal Multiplexer (ETM). The ETM may be connected up to 5,000 feet away from the controller via a single coaxial cable, and provides support for up to eight devices, which may be located an additional 5,000 feet away. The 9422 is a redundant version of the 9420, providing an extra-cost backup for the 9420. The 942X controllers provide for the attachment of the 1700, 1900, and 9000 Series displays, printers, and the Processing Terminal Feature; they also support the older C-270 Information Display System displays, printers, and the Personal Computer Controller Attachment Feature. Dual Logical Unit support for up to 64 logical units is featured. Graphics capability may be added using Programmed Symbol Sets. Diagnostic capabilities resident in the controller include self-test, error log, status panel, attribute reveal, and line/channel capture.

ITT Courier 9000 Series

► tion Processor provides the 9000 Series user with concurrent 3270 and local processing capabilities, without the need for host computer intervention or the use of personal computers. No other 3270 vendor offers anything like the Application Processor.

ITT Courier has also provided the option of connecting displays and printers to controllers over standard telephone (twisted-pair) wire, with the Data Multiplexer and Data-Voice Multiplexer.

ITT Courier is a division of ITT Corporation. ITT is gaining a significant presence in the computer industry, particularly with the introduction of the XTRA Personal Computer by ITT Information Systems. Another ITT company, ITT Qume, is a major participant in the ASCII terminal market. □

► **944X LOCAL CONTROLLERS:** The 9440 is a local controller that provides support for up to 11 devices in a minimum configuration. The configuration is expandable to 32 devices through the addition of three device adapters. An alternative to device adapters is ITT Courier's Extended Terminal Multiplexer (ETM). The ETM may be connected up to 5,000 feet away from the controller via a single coaxial cable, and provides support for up to eight devices, which may be located an additional 5,000 feet away. The 9442 is a redundant version of the 9440, providing an extra-cost backup for the 9440. The 944X controllers provide for the attachment of the 1700, 1900, and 9000 Series displays, printers, and the Processing Terminal Feature; they also support the older C-270 Information Display System displays, printers, and the Personal Computer Controller Attachment Feature. Dual Logical Unit support for up to 64 logical units is featured. Graphics capability may be added using Programmed Symbol Sets. Diagnostic capabilities resident in the controller include self-test, error log, status panel, attribute reveal, and line/channel capture.

993X APPLICATION PROCESSOR: The 993X Application Processor (AP) is a supermicrocomputer that provides 9000 Series users with concurrent local processing and 3270-type sessions, without host computer intervention or the use of personal computers. The AP is based on an Intel 80286 microprocessor and Intel's Multibus architecture, and uses the Xenix operating system. A total of 12 Multibus expansion slots are configured on the AP, nine of which are available for expansion. Two models of the AP are available. The 9932 Application Processor contains a 1.2MB diskette drive and a 21MB hard disk drive. The 9936 Application Processor contains a 1.2MB diskette drive, 74MB hard disk drive, and a 60MB streaming tape drive. Optional disk storage of up to 296MB is available. The 993X Application Processors include coaxial connections for up to eight 9000 Series displays and/or printers, an RS-232-C console port, and a Centronics-compatible parallel printer port.

The 993X APs use Application Processor Device Adapters (APDAs) to provide additional capabilities. The APDA is a plug-in circuit board that fits into the AP's expansion slots; up to four APDAs may be installed in an AP at any one time. Up to eight 9000 Series displays and/or printers can be attached via coaxial cable to each APDA, for a total of 32 displays/printers per AP. Up to 16 of the 32 devices connected can access the local processing capability simultaneously. Each APDA, in turn, is attached to a 942X or 944X controller. Thus, the 9000 Series user can access a synchronous host in 3270 mode, or access the Application Processor for local processing.

The 993X Application Processor is available with two integrated office automation software packages: iDIS from Intel, and Q-Office from Quadraton Systems. The iDIS package offers iBASE, a basic systems menu package; iWORD, a word processor and tabulator; iPLAN, a spreadsheet with a database management extract; iDESK, a calendar, phone book, notepad, and calculator program; iDB, a relational database with report writer; iMENU, a menu development system; iXTRACT, for remote host file transfer; and iRJE, an IBM 2780/3780 emulation package. The Q-Office package offers Q-ONE, a word processing program; Q-MENU, a menu development system; Q-FORM, a user forms manager; Q-DATE, a calendar; Q-NOTE, a user notepad; Q-CALL, a phone directory; Q-MATH, a calculator; and Q-MAIL, an electronic mail program. The 993X Application processor provides file sharing, printer sharing, and message functions.

MULTIPLEXERS: Three multiplexers are available from ITT Courier. The Extended Terminal Multiplexer (ETM) serves as an alternative to device adapters for the 9420 and 9422 controllers. The ETM may be connected up to 5,000 feet away from the controller via a single coaxial cable, and provides support for up to eight devices (display terminals and/or printers), which may be located an additional 5,000 feet away. The Data Multiplexer provides eight ports for connecting display terminals and/or printers over twisted-pair wires to cluster controllers, at distances up to 1,000 feet. The Data-Voice Multiplexer provides eight ports for connecting display terminals and/or printers and voice channels over twisted-pair wires to controllers, also at distances up to 1,000 feet.

1700 DISPLAY TERMINAL: The 1700 Display Terminal is functionally equivalent to the IBM 3178 Display Station. The 1700 includes a 12-inch (diagonally measured) display screen with a 1,920-character (24 lines by 80 columns) capacity. The display can be tilted or swiveled, and features a small footprint. Green or amber phosphor characters are available, and are formed using a 7-by-8 dot matrix in a 9-by-12 character cell. The 1700 Display Terminal is supported for attachment to all 9000 Series controllers.

1778 DISPLAY TERMINAL: The 1778 Display Terminal is a plug-compatible replacement for the IBM 3178 Display Station. The 1778 includes a 12-inch (diagonally measured) display screen with a 1,920-character (24 lines by 80 columns) capacity. The display can be tilted or swiveled, and features a small footprint. Green or amber phosphor characters are available, and are formed using a 7-by-8 dot matrix in a 9-by-12 character cell. The 1778 Display Terminal is designed to attach to IBM 3274 and 3276 control units.

1900 COLOR DISPLAY TERMINAL: The 1900 Color Display Terminal is functionally equivalent to the IBM 3179 Color Display Station. The 1900 is equipped with a 14-inch (diagonally measured) display screen with a 1,920-character capacity, arranged in 24 lines of 80 columns each. Seven colors are displayable: red, green, blue, white, yellow, turquoise, and pink. Characters are formed using a 7-by-8 dot matrix in a 9-by-12 character cell. The display can be tilted or swiveled, and features a small footprint. A security keylock is standard. The 1900 is supported for attachment to all 9000 Series controllers.

9210/9212 BASIC FUNCTION DISPLAY TERMINALS: The 9210 and 9212 Basic Function Display Terminals are functional equivalents to the IBM 3178. The 9210 and 9212 are equipped with a 14-inch (diagonally measured) display screen with a 1,920-character capacity, arranged in 24 lines of 80 columns each. Characters are displayed in green phosphor on the 9210 and in amber phosphor on the 9212, and are formed using a 7-by-9 dot matrix in a 9-by-14 character cell. The displays can be tilted or swiveled, and feature a small footprint. A programmable security lock is

ITT Courier 9000 Series

► standard. The 9210 and 9212 are supported for attachment to all 9000 Series controllers, and are designed for use in conjunction with the 993X Application Processor.

9216 BASIC FUNCTION COLOR DISPLAY TERMINAL: The 9216 Basic Function Color Display Terminal is functionally equivalent to the IBM 3179. The 9216 is equipped with a 14-inch (diagonally measured) display screen with a 1,920-character capacity, arranged in 24 lines of 80 columns each. Seven colors are displayable: red, green, blue, white, yellow, turquoise, and pink. Characters are formed using a 7-by-9 dot matrix in a 9-by-14 character cell. The display can be tilted or swiveled, and features a small footprint. A programmable security lock is standard. The 9216 is supported for attachment to all 9000 Series controllers, and is designed for use in conjunction with the 993X Application Processor.

9230/9232 EXTENDED FUNCTION DISPLAY TERMINALS: The 9230 and 9232 Extended Function Display Terminals are functionally equivalent to the IBM 3180 Model 1 and 3278 Models 2 through 5 Display Stations. The 9230 and 9232 are equipped with a 15-inch (diagonally measured) display screen with user-selectable display capacities of 1,920 (24 lines by 80 columns), 2,560 (32 lines by 80 columns), 3,440 (43 lines by 80 columns), and 3,564 (27 lines by 132 columns) characters. Characters are displayed in green phosphor on the 9230 and in amber phosphor on the 9232, and are displayed within a 7-by-10 (1,920- or 2,560-character format) or 7-by-8 (3,440- or 3,564-character format) dot matrix. The 9230 and 9232 feature a three-piece modular design consisting of a tilt/swivel monitor, logic base, and keyboard. A security keylock and adjustable audible alarm are standard. The 9230 and 9232 are supported for attachment to the 942X and 944X controllers only.

9236 EXTENDED FUNCTION COLOR DISPLAY TERMINAL: The 9236 Extended Function Color Display Terminal is functionally equivalent to the IBM 3279 Color Display Station. The 9236 is equipped with a 14-inch (diagonally measured) display screen with user-selectable display capacities of 1,920 (24 lines by 80 columns) or 2,560 (32 lines by 80 columns) characters. Seven colors are displayable: red, green, blue, white, yellow, turquoise, and pink. Characters are formed within a 7-by-10 dot matrix. The 9236 features a three-piece modular design consisting of a tilt/swivel monitor, logic base, and keyboard. A security keylock and adjustable audible alarm are standard. The 9236 is supported for attachment to the 942X and 944X controllers only.

1700/1778/1900/9210/9212/9216 KEYBOARDS: The 1700, 1778, 1900, 9210, 9212, and 9216 display terminals can be configured with one of two low-profile, detachable keyboards equipped with height adjustments. Keyboards available include a 92-key data entry layout keyboard, and a 110-key typewriter-style keyboard. Standard features on both keyboards include 24 PF keys, color differentiation between control and alphanumeric keys, typematic keys, tactile feedback, audible alarm, and security keylock. Optional features include a separate numeric keypad and a separate PF keypad.

9230/9232/9236 KEYBOARDS: A choice of four keyboard styles is available for use with the 9230 Extended Function Display Terminal and 9236 Extended Function Color Display Terminal. All models feature a low-profile, "slim-line" design with a height adjustment capability (5 or 11.5 degrees). The keyboards are detachable, attached to the terminal's logic base via an extendable coiled cable. The available layout styles are Typewriter, Data Entry, Typewriter/Text, and Typewriter/APL. All models contain 24 program function keys, a Reveal Mode key, Note Pad key, Setup Mode key, Help Mode key, Dual Logical Unit keys, color differentiation between data and control keys, and tactile feedback. In addition to the keyboards, three separate keypad module

styles are available. These include a Numeric Keypad, a 24 Program Function Keypad, and an Attribute Select Keypad (for the selection of extended character highlighting, color attributes, or Programmed Symbol Sets). Keyboard layout styles that feature integrated keypad modules are also available from ITT Courier.

95436 PROCESSING TERMINAL FEATURE: This feature provides the capability to connect an ITT XTRA Personal Computer, IBM PC XT, or IBM PC-compatible microcomputer to a 942X or 944X controller. The feature consists of an interface board and a 5¼-inch diskette. The interface board, incorporating a coax receptacle, is installed in a standard ITT XTRA or IBM PC XT input/output expansion slot. A standard coax cable connects the expansion card to a 942X or 944X controller. The diskette uses the standard IBM PC format and is loaded into the microcomputer at the time of execution. IBM 3270 terminal emulation with file transfer, as well as Note Pad capability are added to the microcomputer.

ITT XTRA PERSONAL COMPUTER: The ITT XTRA, marketed by ITT Information Systems, is a 16-bit, IBM PC XT-compatible personal computer. The XTRA features 128K bytes of RAM, and is available with a 14-inch monochrome or 12-inch color display. ITT provides a variety of applications software for use with the XTRA; in addition, the XTRA can run IBM PC XT software. For more information on the ITT XTRA Personal Computer, see DATAPRO REPORTS ON MICROCOMPUTERS, an information service dedicated to the microcomputer industry.

VTC ASYNCHRONOUS COMMUNICATIONS OPTION: The VTC option consists of a plug-in printed circuit card that provides protocol conversion for the 9000 Series displays. When equipped with this option, the 9000 Series displays are compatible with the Digital VT100 terminal for communication with asynchronous hosts at speeds up to 9600 bps.

930X MATRIX PRINTERS: ITT Courier provides a wide variety of matrix printers for use with the 9000 Series. All 93XX printers provide the following standard features: DSC (datastream compatible) or SCS (SNA character string) print compatibility; 132-column printing at horizontal spacing of 10, 12, 13.3, 15, and 16.67 characters per inch; vertical spacing at 3, 4, 6, and 8 lines per inch; bidirectional logic seeking; 7-by-8 dot matrix draft mode or 15-by-16 dot matrix near-letter-quality (NLQ) mode; control panel with 8-character LED display for diagnostics; and cut sheet and continuous fanfold forms handling with printing of an original plus five copies. All models (except the 9302) connect to the 942X and 944X controllers. The following models make up the 93XX printer series:

- 9301—provides print speeds of 120 cps (draft) or 55 cps (NLQ);
- 9302—a display attached printer with print speeds of 150 cps (draft); can be attached directly to a C-270 or 9000 Series display terminal;
- 9303—provides print speeds of 200 cps (draft) or 55 cps (NLQ); functionally compatible with the IBM 3287 Models 1 and 2;
- 9304—provides print speeds of 400 cps (draft) or 100 cps (NLQ); functionally compatible with the IBM 3268;
- 9305—a four- and seven-color printer that provides monochrome and color printing at speeds of 200 cps (draft) or 100 cps (NLQ); functionally compatible with the IBM 3268; and

ITT Courier 9000 Series

- 9306—a four- and seven-color printer that provides monochrome and color printing at speeds of 400 cps (draft) or 100 cps (NLQ), as well as single- and triple-plane PSS support; functionally compatible with the IBM 3268.

9308 MATRIX PRINTER: An SCS and DSC datastream compatible printer for use with the ITT Courier 9410 and 9416 controllers. A maximum print speed of 120 cps (draft quality) is supported. The 9308 features 132-column printing at a horizontal spacing of 10 or 16.5 (compressed print) characters per inch, and vertical spacing of six or eight lines per inch. Characters are printed via a 9-by-9 dot matrix. Other standard features include bidirectional logic seeking print; self-diagnostics and self-test; and expanded print. Forms are advanced via an adjustable tractor feed mechanism; an original plus three copies can be printed.

9341/9342 LINE PRINTERS: The 9341 and 9342 are DSC and SCS datastream-compatible line printers that can connect to the 942X and 944X controllers. The 9341 prints at 300 lpm and the 9342 at 600 lpm. The 9341 and 9342 Line Printers are functionally equivalent to the IBM 3262 Model 13 and 3262 Model 3, respectively. Both printers print 132 columns at a horizontal spacing of 10 characters per inch and vertical spacing of 3, 4, 6, or 8 lines per inch. A variety of print bands are available. Other standard features include index scale, page length control of up to 127 lines per page, upper/lowercase or uppercase only, and an eight-digit, alphanumeric display for diagnostics. Forms are advanced via an adjustable tractor feed; an original plus five copies can be printed.

PRICING

The ITT Courier 9000 Series products are available for purchase and/or lease. ITT provides maintenance service from 150 locations in North America. Three service plans are available:

- Platinum Plan**—complete maintenance service at the customer site is provided. Applicable preventive maintenance is scheduled at a mutually agreed upon time. A customer problem is reported via a call to ITT's COMSAC center; service is provided immediately.
- Gold Plan**—provides all of the features of the Platinum Plan except that ITT does not respond immediately to calls to the COMSAC center; instead, response is deferred in one of two ways: a field engineer visits the customer site according to a prearranged schedule; a field engineer visits the customer site after a certain number of elements require service.

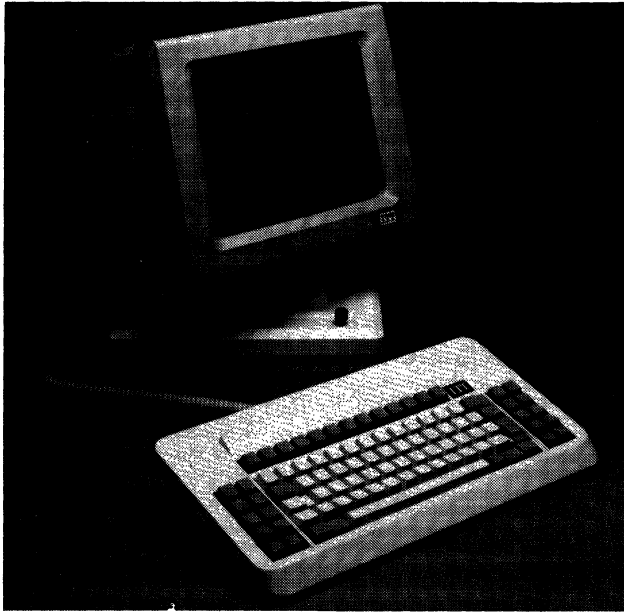
- Silver Plan**—provides mail-in/carry-in service to 30 Mail-In/Carry-In centers in North America.

ITT Courier provides quantity discounts for all members of the 9000 Series. ITT Courier supplied single-quantity purchase prices for the following products. For more detailed pricing information, contact ITT Courier or your local ITT Courier sales office.

EQUIPMENT PRICES

	Purchase Price (\$)	Monthly Maint. (\$)
9410 Remote Controller (8-port)	4,400	25
9416 Remote Controller (16-port)	5,100	40
9420 Remote Controller (11-port)	5,700	29
9422 Remote Controller (11-port)	10,950	34
9440 Local Controller (11-port)	10,700	43
9442 Local Controller (11-port)	21,200	49
Device Adapter (7-port)	2,400	5
Extended Terminal Multiplexer (ETM)	2,750	—
Data Multiplexer (per pair)	118	—
Data-Voice Multiplexer (per pair)	248	—
9932 Application Processor	18,500	—
9936 Application Processor	24,000	—
1700 Display Terminal w/keyboard	1,550	—
1778 Display Terminal w/keyboard	1,550	—
1900 Color Display Terminal w/keyboard	2,100	—
9210 Basic Function Display Terminal w/keyboard	1,550	—
9212 Basic Function Display Terminal w/keyboard	1,550	—
9216 Basic Function Color Display Terminal w/keyboard	2,180	—
9230 Extended Function Display Terminal w/keyboard	2,180	—
9232 Extended Function Display Terminal w/keyboard	2,230	—
9236 Extended Function Color Display Terminal w/keyboard	2,595	—
9301 Matrix Printer	4,400	44
9302 Display Attached printer	725	—
9303 Matrix Printer	5,100	50
9304 Matrix Printer	6,600	60
9305 Color Matrix Printer	5,700	60
9306 Color Matrix Printer	8,100	80
9308 Matrix Printer	2,500	—
9341 Line Printer	11,350	125
9342 Line Printer	13,550	175

ITT Courier C-270 Information Display System



The 1700 Display Terminal is ITT Courier's equivalent to the IBM 3178. The 1700 features a 12-inch tilt/swivel display, compact enclosure style, and a low-profile detachable keyboard. The terminal attaches to any ITT Courier terminal controller.

MANAGEMENT SUMMARY

ITT Courier Terminal Systems is a major competitor in the IBM 3270 emulation marketplace. The company began shipping the C-270 Information Display System products in 1974. Today, the C-270 family consists of a full line of IBM 3270 functionally equivalent displays, controllers, and printers, as well as attachment options for incorporating personal computers into the system. The ITT Courier products support both BSC and SNA/SDLC protocols.

Components of the C-270 Information Display System include: the 7411 Terminal Controller (and 7412 redundant controller), equivalent to the IBM 3274; 7601 Terminal Controller, equivalent to the IBM 3276; 2700 Display Terminals, equivalent to the IBM 3278; 2780 Display Terminals, plug-compatible replacements for the IBM 3278; 2790 Color Display Terminals, equivalent to the IBM 3279; 1700 Display Terminals, equivalent to the IBM 3178; and a variety of printer models. ITT Courier has also recently introduced personal computing capabilities for the C-270 system.

The 7601 small cluster controllers provide support for up to 8 or 16 devices (depending on the controller model selected) in a remote environment. The 7411 (and 7412) controllers are available in models for remote and local environments; up to 32 devices are supported per controller. The 2700 display is available in four models with screen capacities ranging from 1920 to 3564 characters. The 2780 display is available in three models with screen capacities

ITT Courier's C-270 Information Display System is a family of controllers, displays, and printers designed to emulate components of the IBM 3270 Information Display System. Recent additions to the C-270 product line include a small screen monochrome display and personal computer attachment features.

MODELS: 7601, 7411, and 7412 Terminal Controllers; 1700, 2700, and 2780 Display Terminals; 2790 Color Display Terminal; 87XX, 62XX, and 276X Printers; Personal Computer Controller Attachment Feature; Personal Computer Display Attachment.

DISPLAY: The 2700, 2780, and 2790 Display Terminals feature a 14-inch screen; the 1700 Display Terminals contain a 12-inch screen. The 2700 terminals feature display capacities ranging from 1920 to 3564 characters. The 2780 and 2790 displays feature capacities ranging from 1920 to 3440 characters. The 1700 displays provide a 1920-character capacity. The 2700, 2780, and 1700 are monochrome displays; the 2790 has seven-color display capability.

KEYBOARD: A variety of detachable keyboards are available for the 2700, 2780, and 2790 displays; the 1700 display features a low-profile detachable keyboard with a typewriter or data entry layout.

COMPETITION: IBM, Raytheon, Telex, Harris, Lee Data, Harris, Teletype, Memorex, and several others.

PRICE: ITT Courier C-270 components are available for purchase or lease (except for the 1700, which is available for purchase only). The company provides a flexible pricing structure, with quantity discounts available. Purchase prices for the controllers range from \$5,000 to \$24,500; purchase prices for the displays range from \$1,550 to \$3,350.

CHARACTERISTICS

VENDOR: ITT Courier Terminal Systems, 1515 West 14th Street, Tempe, AZ 85281. Telephone (602) 894-7000. Or contact your local ITT Courier sales office.

DATE OF ANNOUNCEMENT: 1973.

DATE OF FIRST DELIVERY: 1974.

NUMBER DELIVERED TO DATE: 350,000 display units.

SERVICED BY: ITT Courier.

ITT Courier C-270 Information Display System

TABLE 1. C-270 INFORMATION DISPLAY SYSTEM
CONFIGURATION RULES

ITT Courier Controller Model	IBM Control Unit Replaced	Protocol	Mode	Max. No. of Devices Supported	Displays Supported	Printers Supported
7601-0	3276-1/-2/-3/-4	BSC	Remote	8	1700-XX, 2700-XX, 2790-XX	87XX, 62XX, 276X
7601-1	3276-11/-12/-13/-14	SNA	Remote	8	1700-XX, 2700-XX, 2790-XX	87XX, 62XX, 276X
7601-16	3276-XX	BSC/SNA	Remote	16	1700-XX, 2700-XX, 2790-XX	87XX, 62XX, 276X
7411-A	3274-41A	SNA	Local	32	1700-XX, 2700-XX, 2790-XX	87XX, 62XX, 276X
7411-B	3274-41D	BSC	Local	32	1700-XX, 2700-XX, 2790-XX	87XX, 62XX, 276X
7411-C	3274-41C	BSC/SNA	Remote	32	1700-XX, 2700-XX, 2790-XX	87XX, 62XX, 276X
7412-A	3274-41A	SNA	Local	32	1700-XX, 2700-XX, 2790-XX	87XX, 62XX, 276X
7412-B	3274-41D	BSC	Local	32	1700-XX, 2700-XX, 2790-XX	87XX, 62XX, 276X
7412-C	3274-41C	BSC/SNA	Remote	32	1700-XX, 2700-XX, 2790-XX	87XX, 62XX, 276X

▷ ranging from 1920 to 3440 characters. The 2790 is a seven-color display available in models with screen capacities of 1920, 2560, and 3440 characters. A variety of detachable keyboard layout styles is available for the 2700, 2780, and 2790 displays. ITT Courier's newest display is the 1700, a replacement for the IBM 3178. The 1700 offers a more compact design than other ITT Courier displays, with a 12-inch tilt/swivel display and smaller footprint. The unit also includes a low-profile keyboard, selectable in data entry or typewriter layout styles.

ITT Courier now offers two personal computer attachment options for use with the C-270 system. The Personal Computer Controller Attachment Feature allows the user to connect an IBM Personal Computer (or other personal computer model prequalified by ITT Courier) to a 7411, 7412, or 7601 terminal controller. The Personal Computer Display Attachment provides for the connection of an IBM Personal Computer logic element to a 2700-13 or 2790-2A display terminal.

The C-270 system components provide complete compatibility with the IBM 3270 Information Display System with respect to line discipline, commands and command code structure, and addressing sequence.

COMPETITIVE POSITION

ITT Courier has been an active participant in the IBM 3270 emulation market since it began shipments of the first members of its C-270 family in 1974. The 3270 market accounts for about half of the total domestic shipments of display terminals. IBM accounts for approximately 50 percent of the installed base of 3270-type terminals in the U.S.; the remainder is divided among the large number of competitors who vie for a share of this lucrative market. ITT Courier ranks with the leaders of the independent manufacturers of 3270 replacement equipment. Others active in this market include Raytheon, Telex, Lee Data, Memorex, Harris, Teletype, MDS Trivex, Phaze Information Machines, and Racal-Milgo.

ADVANTAGES AND RESTRICTIONS

A requirement for survival in the 3270 market is the ability to react quickly to whatever moves IBM may make. This ▷

► CONFIGURATION

ITT Courier C-270 Information Display System components provide functional equivalents for the following IBM models: 3274 Control Unit; 3276 Control Unit; 3178 and 3278 Display Stations; and 3279 Color Display Station. In addition, ITT Courier supplies a display terminal that is a plug-compatible replacement for the 3278, for attachment to the IBM 3274 and 3276 Control Units. The C-270 system also provides a variety of printers, as well as features that provide personal computer attachability. The C-270 components are equivalent to the IBM 3270 components, for local and remote operation supported by the IBM System/360, System/370, 4300 Series, 30XX, Series/1, and 8100 computer systems. Table 1 summarizes the configuration rules for assembling C-270 systems; see also the Configuration Diagrams.

TRANSMISSION SPECIFICATIONS

Transmission is half-duplex synchronous at transmission speeds of 1200, 2000, 2400, 4800, 7200, 9600, or 19,200 bits per second, using 8-level EBCDIC or ASCII (with parity) transmission code. Transmission compatibility with IBM BSC or SNA/SDLC protocol is provided. Point-to-point or multipoint transmission is supported. All terminals are equipped with an RS-232-C interface and connect to a voice-grade communications facility via a modem.

DEVICE CONTROL

The C-270 system operates under the control of the program stored at the host computer and provides complete compatibility with the addressing sequence, command code structure, and line discipline employed by the IBM 3270 Information Display System. The C-270 responds to and executes the full repertoire of IBM 3270 commands via a microprocessor with read-only memory. In addition, the C-270 system features some user enhancements based on the IBM standard attribute bytes such as blinking field function.

Cursor control is functionally the same as for the IBM 3270, with the addition of a Home position. The cursor can be moved up, down, left, or right, step-by-step or repetitively (if the key remains depressed), backspaced one character position, moved to the beginning of the next line, tabbed to the beginning of the next unprotected data field, backtabbed to the beginning of the previous unprotected data field, or returned to the first unprotected character position on the screen (Home). Like the 3270, the C-270 features cursor wraparound.

Program Function and Program Attention keys (designated PFn and PAN, respectively), a standard feature of the 3270, are also standard on the C-270. Each of these keys gener- ▶

ITT Courier C-270 Information Display System

➤ requirement has never been more important than in the last several months, in which IBM has taken several important steps designed to protect their huge installed base of 3270 equipment. The most important of these moves are: the addition of personal computing capabilities as an integral part of the 3270 system; the addition of an inexpensive, compact display (the 3178); and a general reduction of purchase prices for most 3270 components. ITT Courier has responded to these moves—the company introduced personal computing attachment features (integrating the IBM PC into its system), added the 1700 Display Terminal (equivalent to the 3178), and lowered prices in several areas. Look for ITT Courier to continue to enhance the C-270 product line, a line that offers a complete choice of IBM 3270 replacement products. Look also for a new personal computer product from a recently formed personal computer operations division of ITT, a product which should have the ability to be integrated into the C-270 system. ITT is also involved in the ASCII terminal market via Qume Corporation, another ITT subsidiary.

USER REACTION

In Datapro's 1983 Terminal Users Survey, a total of 18 responses were received from users of ITT Courier's C-270 Information Display System. Regarding display terminals, these users reported on their experiences with an installed base of approximately 1875 terminals; various C-270 terminal models were represented in this mix. The users were asked to rate their terminals in seven specific categories. Their ratings are summarized in the following table.

	Excellent	Good	Fair	Poor	WA*
Overall performance	2	14	1	1	2.9
Ease of operation	4	10	4	0	3.0
Display clarity	5	9	3	1	3.0
Keyboard feel & usability	5	10	3	0	3.1
Ergonomics	2	10	6	0	2.8
Hardware reliability	3	10	4	0	2.9
Mfr.'s maintenance service technical support	3	10	4	1	2.8

*Weighted Average on a scale of 4.0 for Excellent.

The users were also asked to rate their terminal cluster controllers. Their responses covered an installed base of 72 controllers (including 7601, 7411, and unspecified models). The users were asked to rate the controllers in seven categories. The following table summarizes these ratings.

	Excellent	Good	Fair	Poor	WA*
Overall performance	3	11	1	3	2.8
Ease of installation	3	11	3	0	3.0
Ease of operation	5	9	4	0	3.1
Ease of expansion	5	9	4	0	3.1
Reliability of controller	3	10	2	3	2.7
Reliability of peripherals	3	11	3	1	2.9
Mfr.'s maintenance service technical support	4	9	4	1	2.9

*Weighted Average on a scale of 4.0 for Excellent.

When asked whether or not they would recommend the ITT Courier display terminals to another user, 12 of the respondents indicated that they would, and 4 stated that

➤ ates a unique code recognized by the controlling software as a specific program request or data identifier. The two key functions differ in that the Program Function code accompanies the displayed data as it is transmitted to the computer, while the Program Attention code is transmitted separately.

Features include all of those provided by the IBM 3270 plus a few extra features including display functions. The display functions include blink and underscore, which are implemented via the use of attribute codes. The blink and underscore features permit one or more characters to blink or to be underscored via manual or program control.

Line/Channel Capture and Reveal modes are provided as user diagnostic aids. The Line/Channel Capture mode displays all information, data, and control codes transmitted between the host computer and control unit to aid in problem diagnosis and debugging. The Reveal mode displays attribute characters in a hexadecimal format to aid in program development.

The Local Copy feature prints displayed data on shared or local printers without host computer intervention. Printers can be designated as system printers, shared, or local printers. System printers receive only host computer messages.

ITT Courier has recently introduced Dual Logical Unit Support (DLU), a feature for use with the 7601-1 Terminal Controller with Mod IV display terminals. The DLU feature permits an operator, in session with one primary logical unit (PLU), to simultaneously establish a session with a second PLU from the same terminal without destroying screen data. It appears to the host computer as if there are two displays in session, when there is only one physical device operating.

The C-270 is supported under existing IBM software support for the IBM 3270, which includes the following IBM access methods: BTAM under DOS, DOS/VS, OS, or OS/VS2; TCAM under OS; and VTAM under DOS/VS, OS/VS1, or OS/VS2. The C-270 is also supported for use with the following IBM program products: Video/370, Data/360, IMS, IQF, CICS, and TSO.

COMPONENTS

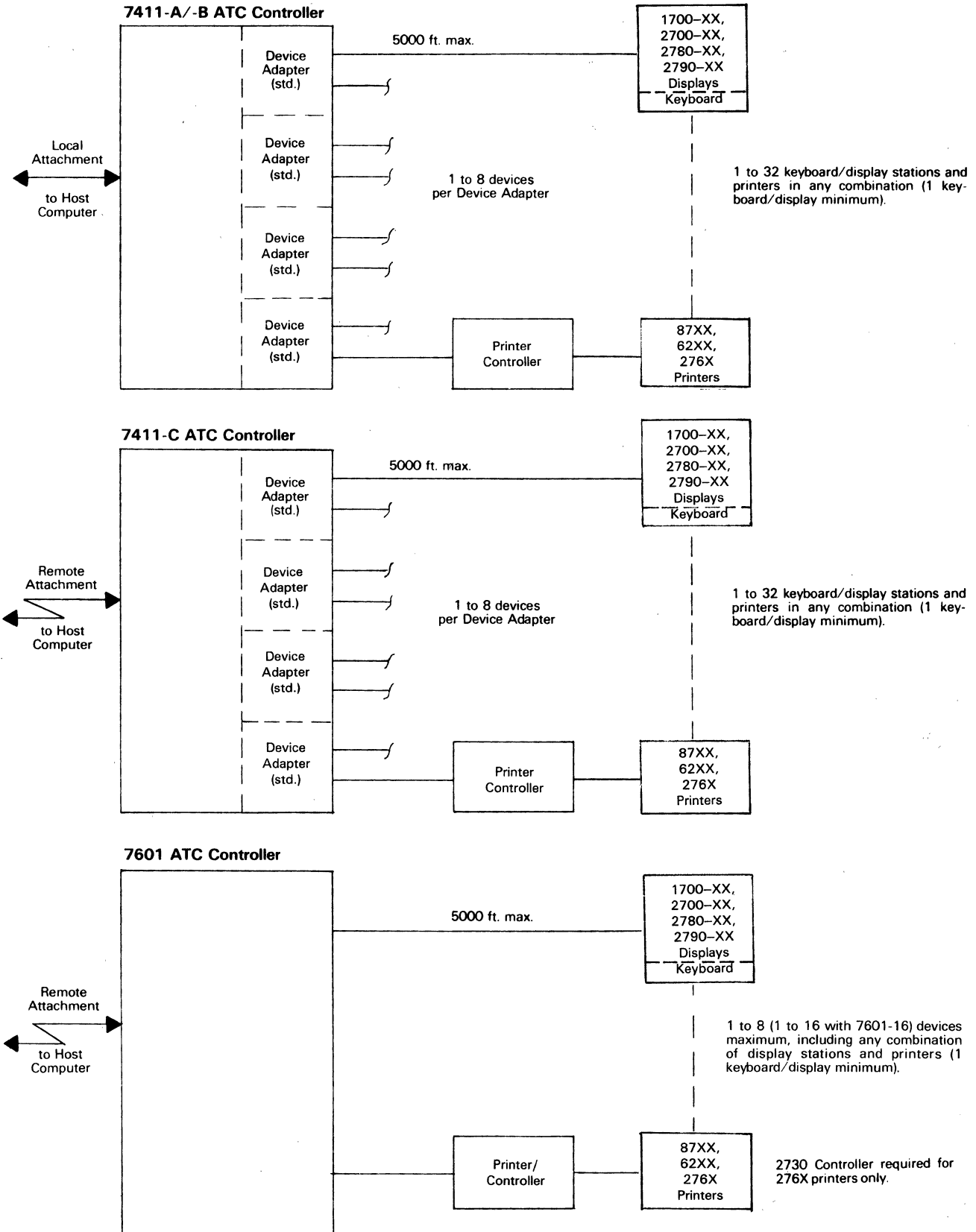
7411/7412 ATC TERMINAL CONTROLLERS: The 7411 ATC Terminal Controllers are direct replacements for the IBM 3274 Control Units. Three models are available. The 7411-A replaces the 3274-41A in a local cluster environment; it operates in SNA/SDLC mode. The 7411-B replaces the 3274-41D in a local cluster environment; it operates in BSC mode. The 7411-C replaces the 3274-41C in a remote cluster environment; it is conditioned for BSC or SNA/SDLC operation by loading a different program into the controller via an integral disk drive. The 7411 controllers each accommodate up to 32 devices, in any mix of 1700, 2700, or 2790 displays and 87XX, 62XX, or 276X printers; one display station is required. Devices may be attached at up to 5000 cable feet from the controller. The 7412-A/-B/-C models are redundant controllers that correspond to the 7411-A/-B/-C models. The redundant controller is an added-cost option, designed to provide back up for the 7411 controllers. The redundant controllers include dual device adapters, support up to 32 devices, and reside in the same cabinet as the 7411.

7601 ATC TERMINAL CONTROLLER: The 7601 ATC Terminal Controllers are direct replacements for the IBM 3276 Control Unit Display Stations (the 7601 models do not include an integral display). Three models are available. The 7601-0 replaces the 3276-1/-2/-3/-4 in a remote cluster environment; it provides BSC protocol compatibility. The 7601-1 replaces the 3276-11/-12/-13/-14 in a remote cluster environment; it provides SNA/SDLC protocol compatibility. The 7601-16 replaces the 3276-1/-2/-3/-4/-11/

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C-270 Configurations



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➤ they would not. When asked to recommend the C-270 terminal controllers, 10 users said that they would, while 4 answered that they would not. □

➤ -12/-13/-14 in a remote cluster environment; it provides both BSC and SNA/SDLC protocol compatibility. The 7601-0 and 7601-1 each accommodate up to 8 devices; the 7601-16 supports up to 16 devices. Any combination of 1700, 2700, and 2790 displays, and 87XX, 62XX, and 276X printers can be attached to the 7601 controllers; one display station is required. Devices may be attached up to 5000 cable feet from the controller.

1700 DISPLAY TERMINAL: The 1700 Display Terminals are functionally equivalent to the IBM 3178 Display Station Models C1/C2/C3/C4. The 1700 is available in two models: 1700-21 (data entry keyboard) and 1700-22 (typewriter keyboard). Both models include a 12-inch (diagonally measured) display screen with a 1920-character (24 lines by 80 columns) capacity. The display can be tilted or swiveled, and features a small footprint. Green or amber phosphor characters are available. The 1700 displays are supported for attachment to ITT Courier controllers only.

2700 DISPLAY TERMINAL: The 2700 Display Terminals are functionally equivalent to the IBM 3278 Display Station Models 2/3/4/5. The 2700 is available in four models. The 2700-13 features a display capacity of 1920 characters (24 lines by 80 columns); the 2700-14 has a display capacity of 2560 characters (32 lines by 80 columns); the 2700-15 contains a display capacity of 3440 characters (43 lines by 80 columns); and the 2700-16 features a display capacity of 3564 characters (27 lines by 132 columns). All models contain a 14-inch (diagonal) display screen and display characters in green phosphor. The 2700 displays are supported for attachment to ITT Courier controllers only.

2790 COLOR DISPLAY TERMINAL: The 2790 Color Display Terminals are functionally equivalent to the IBM 3279 Color Display Station Model S2A. The 2790 is available in three models. The 2790-2A features a display capacity of 1920 characters (24 lines by 80 columns); the 2790-3A features a display capacity of 2560 characters (32 lines by 80 columns); the 2790-4A has a display capacity of 3440 characters (43 lines by 80 columns). All models are equipped with a 14-inch (diagonal) screen and can display data in any of seven colors: red, white, blue, green, yellow, pink, and turquoise. Colors are selected from dynamic color assignment menus, and may be customized at the controller level or selected by each display station operator. Two colors may be assigned to an unprotected field so that users can distinguish field updates. The 2790 displays are supported for attachment to ITT Courier controllers only.

2780 DISPLAY TERMINAL: The 2780 Display Terminals are plug-compatible replacements for the IBM 3278 Display Station Models 2/3/4. The 2780 is available in three models. The 2780-13 features a display capacity of 1920 characters (24 lines by 80 columns); the 2780-14 has a display capacity of 2560 characters (32 lines by 80 columns); the 2780-15 has a display capacity of 3440 characters (43 lines by 80 columns). All models contain a 14-inch (diagonal) screen and display characters in green phosphor. The 2780 displays attach directly to an IBM 3274 or 3276 Control Unit.

1700 KEYBOARDS: Both models (1700-21/-22) include a low-profile, detachable keyboard with height adjustments. The 1700-21 features a 92-key data entry layout keyboard, while the 1700-22 comes with a 92-key typewriter-style keyboard. Standard features on both keyboards include: 24 PF keys, color differentiation between control and alphanumeric keys, typamatic keys, tactile feedback, audible alarm,

and security keylock. Optional features include a separate numeric keypad and a separate PF keypad.

2700/2790 KEYBOARDS: A choice of three detachable keyboard styles is available for all models of the 2700 Display Terminal and 2790 Color Display Terminal. Model 1025 contains a typewriter-style layout with 24 PF keys and a numeric keypad; Model 1026 features a standard data entry keypunch layout; Model 1027 has a data entry layout with a numeric pad. All keyboard models feature height and angle adjustment, typamatic keys, and a single stroke clear key. Optional features include an audible alarm, security keylock, magnetic slot reader, and light pen.

2780 KEYBOARDS: A choice of four detachable keyboards can be configured with any 2780 Display Terminal model. Model 1031 contains a typewriter-style layout; Model 1032 features a data entry layout; Model 1033 has a typewriter-style layout and includes 12 PF keys and a numeric keypad; Model 1034 contains a typewriter-style layout with 24 PF keys. All keyboard models feature height and angle adjustment, typamatic keys, and single stroke clear key.

7570 PERSONAL COMPUTER CONTROLLER ATTACHMENT FEATURE: This feature provides the capability to connect an IBM Personal Computer (or another vendor's personal computer prequalified by ITT Courier) to a 741X or 7601 Terminal Controller. The feature consists of an interface board and a 5¼-inch diskette. The interface board, incorporating a coax receptacle, is installed in a standard IBM PC input/output expansion slot. A standard coax cable connects the expansion card to a 741X or 7601 controller. The diskette, which uses the IBM PC format and includes both the screen image transfer program and the 3270 emulation program, is loaded into the PC at the time of execution.

1199 PERSONAL COMPUTER DISPLAY ATTACHMENT: This feature provides the capability to connect the IBM Personal Computer logic element to a 2700-13 Display Terminal or to a 2790-2A Color Display Terminal. The feature expands the use of the available applications at the display terminal, or, when alternately connected, operates in an asynchronous serial communication mode. The 1199 can be used as a synchronous RS-232-C port in place of the personal computer port. When the display is used for synchronous communication, the 1199 is off-line from the controller.

87XX PRINTERS: The 87XX family of serial dot matrix printers consists of seven models. Each printer model requires a 1441 printer/controller which is customizable for 2K to 4K of buffering. The 8700 is a 60 cps unidirectional printer. The remaining models are bidirectional printers. Other members of the 87XX family are: the 8702 (120 cps); 8704 (180 cps); 8710 (150 cps); 8720 (240 cps); 8725 (240 cps/100 cps HLQ); and 8765 (55 cps letter quality). All models print 132 characters per line; horizontal spacing is 10 characters per inch, while vertical spacing is 6 lines per inch for the 8700 and selectable at 6 or 8 lines per inch for all other models. All models provide an adjustable tractor feed mechanism and accommodate continuous forms from 3 to 14 inches wide and 11 inches long.

62XX/276X LINE PRINTERS: Models 6230 and 6260 are freestanding line printers that emulate IBM 3262 Printer Models 13 and 3, respectively. Model 6230 prints at 300 lines per minute; Model 6260 prints at 600 lines per minute. Models 2762 and 2766 are pedestal-mounted belt printers with an average print speed of 340 lines per minute when fewer than 50 or 90 characters per line, respectively, are printed. All models feature horizontal spacing of 10 characters per inch, and vertical spacing of 6 lines per inch. An adjustable tractor feed mechanism is standard, and 6-part continuous forms from 3 to 15 inches wide are accommodat-

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► ed. Other standard features include front and rear paper load, paper-out sensing, and a 1920-character print buffer.

PRICING

The 1700 Display Terminal and personal computer attachment features #1199 and #7570 are available for purchase only; all other components of the C-270 system are available for purchase or on two-, three-, four-, or five-year lease plans (including maintenance). A separate maintenance contract is available for purchased units. A menu of maintenance plans is offered with the 1700, including on-site service (\$10 per month), deferred on-site service, and mail-in/carry-in service. On-site maintenance is priced at \$3 per month for features #1199 and #7570. There are no installation charges for any C-270 component the 1700 Display Terminal is classified as a customer setup (CSU) device.

ITT Courier provides a flexible pricing structure for the C-270 Information Display System, with quantity discounts available. Therefore, it is ITT Courier's policy not to provide detailed pricing information for publication. The company did supply single-quantity purchase prices for all C-270 display terminals and terminal controllers; these prices are presented below. For more detailed pricing information, including lease plan pricing and quantity discount sched-

ules, contact ITT Courier or your local ITT Courier sales office.

	Purchase Price
7601-0 ATC Terminal Controller	\$ 5,000
7601-1 ATC Terminal Controller	5,000
7601-16 ATC Terminal Controller	7,450
7411-A ATC Terminal Controller	16,350
7411-B ATC Terminal Controller	16,350
7411-C ATC Terminal Controller	12,350
7412-A Redundant Controller	24,500
7412-B Redundant Controller	24,500
7412-C Redundant Controller	18,300
1700-21 Display Terminal	1,550
1700-22 Display Terminal	1,550
2700-13 Display Terminal	2,400
2700-14 Display Terminal	2,700
2700-15 Display Terminal	2,800
2700-16 Display Terminal	3,200
2780-13 Display Terminal	2,400
2780-14 Display Terminal	2,700
2780-15 Display Terminal	2,800
2790-2A Color Display Terminal	3,100
2790-3A Color Display Terminal	3,200
2790-4A Color Display Terminal	3,350 ■

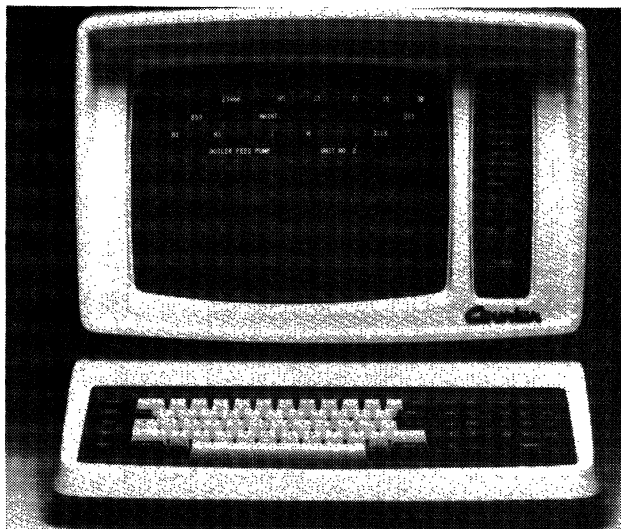
ITT Courier 270 Information Display Systems

MANAGEMENT SUMMARY

ITT Courier is a major competitor in the IBM 3270 replacement market. The company began shipping the first components of the 270 Information Display System in 1974; today, the 270 System consists of a full line of replacements for the IBM 3270 family, including a color display compatible with the IBM 3279. The ITT Courier components feature full plug-compatibility with their IBM counterparts. In addition, ITT Courier provides both BSC and SNA/SDLC protocol compatibility.

Courier provides replacements for the following IBM configurations and components:

- IBM 3272/3277 local subsystem.
- IBM 3271/3277 remote terminal in a BSC or SNA/SDLC environment.
- IBM 3274/3278 local subsystem operating in either 3272 or SNA mode.
- IBM 3274/3278 remote terminal in a BSC or SNA/SDLC environment.
- IBM 3276/3278 remote terminal in a BSC or SNA/SDLC environment.
- IBM 3275 remote stand-alone terminal in a BSC environment.
- IBM 3277 Display Station.
- IBM 3279 Color Display Station.



ITT Courier's 270 display units offer a variety of screen capacities, ranging from 480 to 3564 characters. All models provide a 14-inch diagonal display screen (except the 2780, which provides an 8.3-inch screen), and display characters in green. A variety of detachable keyboards is also provided.

A family of plug-compatible replacements for the IBM 3270 Information Display System, in a local or remote environment.

A variety of controllers, displays, and printers are available for use with the 270 System. All display stations feature a 14-inch (diagonal) display screen, green phosphor characters, and a range of screen capacities. Any of 13 detachable keyboards can be chosen for use with the display stations. ITT Courier provides compatibility with both BSC and SNA/SDLC communications protocols.

CHARACTERISTICS

VENDOR: ITT Courier Terminal Systems, Inc., 1515 West 14th Street, Tempe, Arizona 85281. Telephone (602) 894-7000.

DATE OF ANNOUNCEMENT: Model 2700—November 1973; ATC Models—January 1978.

DATE OF FIRST DELIVERY: Model 2700—January 1974; ATC Models—3rd quarter 1979.

NUMBER DELIVERED TO DATE: Over 200,000 (estimated).

SERVICED BY: ITT Courier.

CONFIGURATION

The ITT Courier 270 System consists of two generations of components with a limited degree of mixing permitted in the same subsystem; complete compatibility for communications and applications program support can be achieved with the new components. Courier's original 270 System components are designed as replacements for IBM's 3271 remote cluster controller, 3272 local cluster controller, 3277 display station, and 3275 stand-alone display terminal. New components were added to the existing 270 System to provide replacements for IBM's 3274 large cluster controller, 3276 small cluster controller, 3278 large-screen display stations, and 3279 color display station. The 270 System components also include Courier's Virtual Terminal Line Controller (VTLC), an IBM 370/360 processor-attached controller for local and remote large cluster support. The accompanying Table summarizes the configuration rules for assembling systems; see also the Configuration Diagrams.

TRANSMISSION SPECIFICATIONS

Transmission is half-duplex synchronous at 1200, 2000, 2400, 4800, 7200, 9600, or 19,200 bits/second, using 8-level EBCDIC or ASCII (with parity) transmission code. Transmission compatibility with IBM BSC or SDLC protocol is provided. Point-to-point or multipoint transmission is supported. All terminals are equipped with an RS-232-C interface and connect to a voice-grade communications facility via a modem.

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Courier Controller	Replaces IBM Controller	Mode	Comm. Protocol	Basic	Expanded	Displays Supported, 2700 Models	Printers Supported
2710 RTC	3271-1/-2	Remote	BSC	8	Nonexpandable	1, 2, 3, 4, 5, & 2780	870X & 276X
2711 RTC	3271-1/-2	Remote	BSC	8	16, 24, or 32	1, 2, 3, 4, 5, & 2780	870X & 276X
2712 Dual RTC	3271-1/-2	Remote	BSC	16	24 or 32	1, 2, 3, 4, 5, & 2780	870X & 276X
2710-12 RTC	3271-11/-12	Remote	SDLC	8	Nonexpandable	1, 2, 3, 4, 5, & 2780	870X & 276X
2711-12 RTC	3271-11/-12	Remote	SDLC	8	16, 24, or 32	1, 2, 3, 4, 5, & 2780	870X & 276X
2712-12 Dual RTC	3271-11/-12	Remote	SDLC	16	24 or 32	1, 2, 3, 4, 5, & 2780	870X & 276X
2721 LTC	3272-1/-2	Local 3272	—	8	16, 24, or 32	1, 2, 3, 4, 5, & 2780	870X & 276X
2722 Dual LTC	3272-1/-2	Local 3272	—	16	24 or 32	1, 2, 3, 4, 5, & 2780	870X & 276X
2750 Stand Alone	3275 Stand-Alone	Remote	BSC	0	1	Integral	874X only
7601-0 ATC	3276-1/-2/-3/-4	Remote	BSC	4	8 or 16	1,2,3,4,5,13,14,15, & 16	870X & 276X
7601-1 ATC	3276-11/-12/-13/-14	Remote	SDLC	4	8 or 16	1,2,3,4,5,13,14,15, & 16	870X & 276X
7601-16	3276-11/-12/-13/-14	Remote	SDLC/BSC	16	16	1,2,3,4,5,13,14,15, & 16	870X & 276X
7411-A ATC	3274-1A	Local SNA	—	8	16, 24, or 32	1,2,3,4,5,13,14,15, & 16	870X & 276X
7411-B ATC	3274-1B	Local 3272	—	8	16, 24, or 32	1,2,3,4,5,13,14,15, & 16	870X & 276X
7411-C ATC	3274-1C	Remote	SDLC/BSC	8	16, 24, or 32	1,2,3,4,5,13,14,15, & 16	870X & 276X
7412-A	3274-1A	Local SNA	—	16	24 or 32	1,2,3,4,5,13,14,15, & 16	870X & 276X
7412-B	3274-1B	Local 3272	—	16	24 or 32	1,2,3,4,5,13,14,15, & 16	870X & 276X
7412-C	3274-1C	Remote	SDLC/BSC	16	24 or 32	1,2,3,4,5,13,14,15, & 16	870X & 276X
2761-01 VTLC	3272-1/-2	Local & Remote	—	8	32	1, 2, 3, 4, 5, & 2780	874X & 276X

➤ Courier introduced several new components to its existing 270 System in 1979 to provide continued compatibility with IBM's expanded 3270 System. The new units include 7411 models which are compatible with similarly configured IBM 3274 systems. The 7411 models feature local and remote operation. In addition, Courier has introduced the 7412 models which offer the user redundant controller versions of 7411 models. The Courier components include:

- 7411 controller, equivalent to the IBM 3274, for a local (SNA or 3272 mode) or remote (BSC or SDLC protocol) cluster of up to 32 displays and printers. The 7411 supports all display capacities from 480 to 3564 characters.
- 7601 controller, equivalent to the IBM 3276, for a small remote (BSC/SDLC protocol) cluster of 1 to 16 displays and printers. The 7601 also supports all display capacities.
- 2700-13, -14, -15, and -16 displays, equivalent to IBM 3278 displays, with a display capacity of 1920, 2560, 3440, or 3564 characters, respectively.
- 8700 Series serial printers that print uni-directionally or bi-directionally at speeds up to 60, 120, or 180 characters per second and include an integral controller with 1920 characters of buffering. These printers contain Centronics mechanisms and supersede the earlier 8740 Series printers that require a separate controller.

An additional capability is provided by the:

- 2761-01 Virtual Terminal Line Controller (VTLC), a substitute for a communications processor and local terminal controller. The 2761 VTLC combines both functions and appears to the host as an IBM 3272 local terminal controller. The VTLC supports a local cluster of up to 32 displays and printers and up to four point-to-point and/or multipoint communications lines ➤

➤ DEVICE CONTROL

The 270 operates under the control of the program stored at the host computer and provides complete compatibility with the addressing sequence, command code structure, and line discipline employed by the IBM 3270 Information Display System.

The 270 responds to and executes the full repertoire of IBM 3270 commands via a microprocessor with read-only memory. In addition, the 270 features some user enhancements based on IBM standard attribute bytes such as blinking field function.

Cursor control is functionally the same as in the IBM 3270, with the addition of a Home position. The cursor can be moved up, down, left, or right, step-by-step or repetitively (if the key remains depressed), backspaced one character position, moved to the beginning of the next line, tabbed to the beginning of the next unprotected data field, back-tabbed to the beginning of the previous unprotected data field, or returned to the first unprotected character position on the screen (Home). Like the IBM 3270, the 270 features cursor wraparound.

Program Function and Program Attention keys (designated PFn and PAN, respectively), a standard feature of the IBM 3270, are also a standard feature of the 270. Each of these keys generates a unique code recognized by the controlling software as a specific program request or data identifier. The two key functions differ in that the Program Function code accompanies the displayed data as it is transmitted to the computer, while the Program Attention code is transmitted separately.

A light pen is available as an option and functionally corresponds to IBM's Selector Pen, a 3270 option. Any one or several alphanumeric or numeric fields of fixed or variable format can be selected by the pen, which transmits the address of the selected entry to the computer to initiate the programmed function.

Features include all those provided by the IBM 3270 plus a few extra features including display functions. The display functions include blink and underscore features, which are implemented via the use of attribute codes. The blink and underscore features permit one or more characters to blink or to be underscored via manual or program control. ➤

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- operating under BSC protocol. Any mix of up to 32 local and remote devices can be on-line at one time. Remote support is limited to Courier 270 terminals. The Courier VTLC uses virtual device assignment to dynamically assign individual devices to application systems in response to an operator initiated Log-on/Log-off procedure.

The Courier 270 provides complete compatibility with the IBM 3270 System with respect to line discipline, commands and command-code structure, and addressing sequence. The Courier terminals also provide all the features and functions that are currently available with the IBM 3270. Courier controllers can accommodate any mix of displays with different screen capacities and different printer models. System redundancy is available for existing local and remote cluster arrangements and is implemented via redundant controller logic. The second or redundant controller, an added-cost option, is used as a backup unit to the first; both are contained in the same cabinet.

USER REACTION

Datapro's 1981 survey of alphanumeric display terminal users yielded a total of 22 responses from users of the ITT Courier 270 Information Display System. These 22 users reported on their experiences with a total of 1146 terminals. The ratings achieved by the ITT Courier terminals are shown in the following table:

	Excellent	Good	Fair	Poor	WA*
Overall performance	13	8	1	0	3.5
Ease of operation	12	8	2	0	3.5
Display clarity	7	14	1	0	3.3
Keyboard feel & usability	8	12	2	0	3.3
Hardware reliability	7	13	1	1	3.2
Maintenance service	4	13	4	1	2.9
Technical support	2	11	8	1	2.6

*Weighted Average based on a scale of 4.0 for Excellent.

Principal applications reported by the users were: program development (20 users); data entry (16 users); as a systems console (8 users); and for text editing (6 users). When asked which terminal features were considered in the purchase decision, the following were most often mentioned: detachable keyboard (8 users); green phosphor characters (6 users); local editing capabilities (4 users); and split screen capabilities (4 users). When asked whether they would recommend the ITT Courier 270 System to other users with similar applications, 20 users indicated that they would; only one user stated that he would not.

Two of the users included additional comments with their responses. One, representing a west coast transportation company, stated that "ITT Courier has a very attractive price structure that almost eliminates the edge IBM has. However, since we have many very remote stations, service is our criteria. There, IBM wins." This user reported on both IBM and ITT Courier displays.

- Line/Channel Capture and Reveal modes are provided as user diagnostic aids. The Line/Channel Capture mode displays all information, data and control codes, transmitted between the host computer and control unit to aid in problem diagnosis and debugging. The Reveal mode displays attribute characters in a hexadecimal format to aid in program development.

The Local Copy feature prints displayed data on shared or local printers without host computer intervention. Printers can be designated as system printers, shared, or local printers. System printers receive only host computer messages.

The 270 is supported under existing IBM software support for the IBM 3270, which includes the following IBM access methods: BTAM under DOS, DOS/VS, OS, or OS/VS2; TCAM under OS; and VTAM under DOS/VS, OS/VS1 or OS/VS2. The 270 is also supported for use with the following IBM Program Products: VIDEO/370, DATA/360, IMS, IQF, CICS, and TSO.

COMPONENTS

MODEL 741X LARGE CLUSTER CONTROLLERS: The three 741X ATC models are direct replacements for IBM's 3274 Control Units as defined below.

- Model 7411-A—replaces the IBM 3274-1A in a local cluster environment; operates in SNA mode under VTAM.
- Model 7411-B—replaces the IBM 3274-1B in a local cluster environment; operates in IBM 3270-compatible mode.
- Model 7411-C—replaces the IBM 3274-1C in a remote cluster environment; conditioned for BSC or SNA SDLC operation by loading a different program into the controller via an integral diskette drive.

The controllers each accommodate up to 32 devices via up to four device adapters. Each device adapter accommodates 8 devices. One device adapter is provided with the basic controller. Any combination of Model 2700 display stations, 8740 and 8700 series serial printers and 2760 series line printers can be attached at up to 5000 cable-feet from the controller; however, at least one display station is required. Different printer models and display screen capacities can be mixed on the same controller. Redundant controller models (7412) contain two complete sets of hardware including dual device adapters. Redundant controller units accommodate 16 devices standard.

MODEL 7601 ATC SMALL CLUSTER CONTROLLERS: Three 7601 ATC models are direct replacements for IBM's 3276 Control Unit Display Stations as defined below.

- Model 7601-0—replaces the IBM 3276 Models 1, 2, 3, and 4 in a remote cluster environment; provides BSC protocol compatibility.
- Model 7601-1—replaces the IBM 3276 Models 11, 12, 13, and 14 in a remote cluster environment; provides SNA SDLC protocol compatibility.
- Model 7601-16—same as 7601-1 except that it provides control for up to 16 devices (basic).

The controllers each accommodate up to 16 devices. Any combination of Model 2700 display stations, 8740 and 8700 series serial printers and 2760 series line printers can be attached at up to 5000 cable-feet from the controller; however, at least one display station is required. Different printer models and display screen capacities can be mixed on the same controller.

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➤ The second user, representing a large east coast communications firm, offered some suggestions for ergonomic improvements on the displays, including a tilt/swivel display and a more operator-friendly keyboard. Otherwise, he stated that the ITT Courier terminals have "...several operator features that increase productivity." □

➤ **MODELS 2700 SERIES CLUSTER CONTROLLERS:** Remote terminal controller replacements for the IBM 3271 Control Unit BSC Models 1 and 2 and SDLC Models 11 and 12 and IBM 3272 Models 1 and 2. The 2700 series controllers accommodate Model 2700 display stations, 8700 series serial printers, and 2760 series line printers; different printer models and display screen capacities can be mixed on the same controller. Each device can be located up to 2000 cable-feet from the controller. Each line printer requires one 2730 Printer Controller, which contains a 1920-character buffer. The basic controller contains one or two device adapters which accommodate up to 8 or 16 devices. Additional device adapters are required for expansion.

The Local Terminal Controllers each contain a channel interface for direct connection (via up to 200 cable-feet) to an IBM System/360 or 370 computer via a selector, byte multiplexer, or block multiplexer channel. The maximum data transfer rate for transfers from LTC to channel is 483,000 bytes/second; that for transfers from channel to LTC is 535,000 bytes/second. The LTC's are directly compatible with the IBM 3272 Control Unit.

The six models of local and remote cluster controllers are defined as follows:

- **Model 2710 RTC**—a nonexpandable remote terminal controller for up to 8 devices. BSC protocol is supported.
- **Model 2711 RTC**—an expandable remote terminal controller for up to 32 devices via up to four device adapters. The basic unit is equipped with one device adapter. BSC protocol is supported.
- **Model 2712 RTC**—an expandable dual remote terminal controller for up to 32 devices via up to four device adapters. Each controller in the basic unit is equipped with two device adapters. The two controllers (in the same cabinet) provide system redundancy; manual switch-over to the spare unit is provided in case of system failure. BSC protocol is supported.
- **Model 2710-12 RTC**—a nonexpandable remote terminal controller for up to 8 devices. SDLC (3271) protocol is supported.
- **Model 2711-12 RTC**—a nonexpandable remote terminal controller for up to 32 devices via up to 4 device adapters. The basic unit is equipped with one device adapter. SDLC (3271) protocol is supported.
- **Model 2712-12 RTC**—an expandable dual remote terminal controller for up to 32 devices via up to four device adapters. Each controller in the basic unit is equipped with two device adapters. The two controllers (in the same cabinet) provide system redundancy; manual switch-over to the spare unit is provided in case of system failure. SDLC (3271) protocol is supported.
- **Model 2721 LTC**—an expandable local terminal controller for up to 32 devices via up to four device adapters. The basic unit is equipped with one device adapter.

- **Model 2722 LTC**—an expandable dual local terminal controller for up to 32 devices via up to four device adapters. Each controller in the basic unit is equipped with two device adapters. The two controllers (in the same cabinet) provide system redundancy; manual switch-over to the spare unit is provided in case of system failure.

MODEL 2761-01 VIRTUAL TERMINAL LINE CONTROLLER: attaches to an IBM System/360 or 370 computer via a byte multiplexer channel and accommodates up to 32 local devices and up to four communications lines. The 2761-01 VTLC emulates an IBM 3272 Control Unit. Locally attached devices can include any combination of Model 2700 display stations, 8740 and 8700 series serial printers and 2760 series line printers. The basic controller supports 8 local devices; a local device adapter is required for each increment of 8 devices. One Line Adapter is required for each communications line up to a total of four. A Remote Channel Feature is required for each pair of Line Adapters. Courier 270 cluster or 275 stand-alone terminals in a point-to-point or multipoint arrangement are employed at the remote end. However, no more than 32 local and remote devices can be operational simultaneously.

MODEL 2700 DISPLAY UNIT: For attachment to a Courier control unit in a cluster configuration and available in the following screen submodels that differ in display capacity:

Model 2700-	Chars/ Display	Lines/ Display	Chars/ Line
01	480	12	40
02	960	12	80
03	1920	24	80
04 (APL)	480	12	40
05 (APL)	1920	24	80
13	1920	24	80
14	2560	32	80
15	3440	43	80
16	3564	27	132

Each model is equipped with a 14-inch (diagonal measurement) CRT with a viewing area 8 inches high by 11 inches wide. All submodels are equipped with a character set of 64 or 96 (optional) ASCII characters, including upper and lower (optional) case alphabets, numerics, and special symbols displayed in green. Each character is formed via a 7-by-10 dot matrix. Models 2700-04 and -05 are also equipped with a selectable, full 133-character APL character set.

Standard features in all models include dual intensity, a nonglare CRT faceplate, and a 1001 typewriter or 1002 data entry style keyboard for all models but 2700-04 and -05, which are equipped with the 1008 APL keyboard. An additional display line at the bottom of the screen provides operator status. Options include several keyboards, Audible Alarm, Keyboard Numeric Locks, Security Keylock, Badge Reader, Magnetic Slot Reader, Lower Case Character Set, and a Light Pen.

No-cost options include: Blinking Square Cursor, Variable Field Underline, and Field Blink.

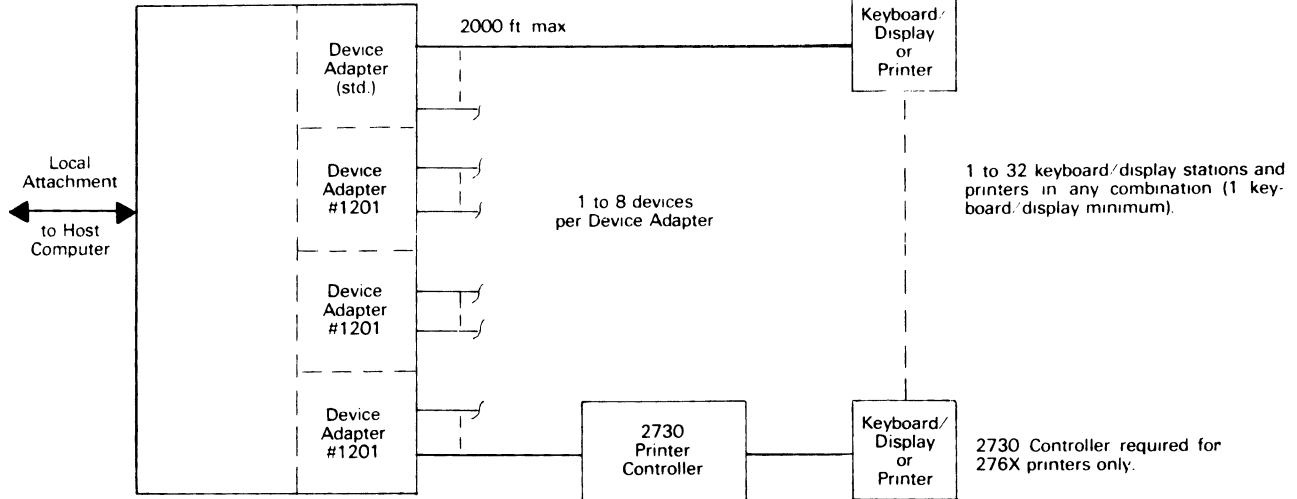
MODEL 2750 DISPLAY TERMINAL: Stand-alone terminal equipped with a 14" (diagonal measurement) CRT with a viewing area 8 inches high by 11 inches wide and available in the following three submodels that differ in display capacity:

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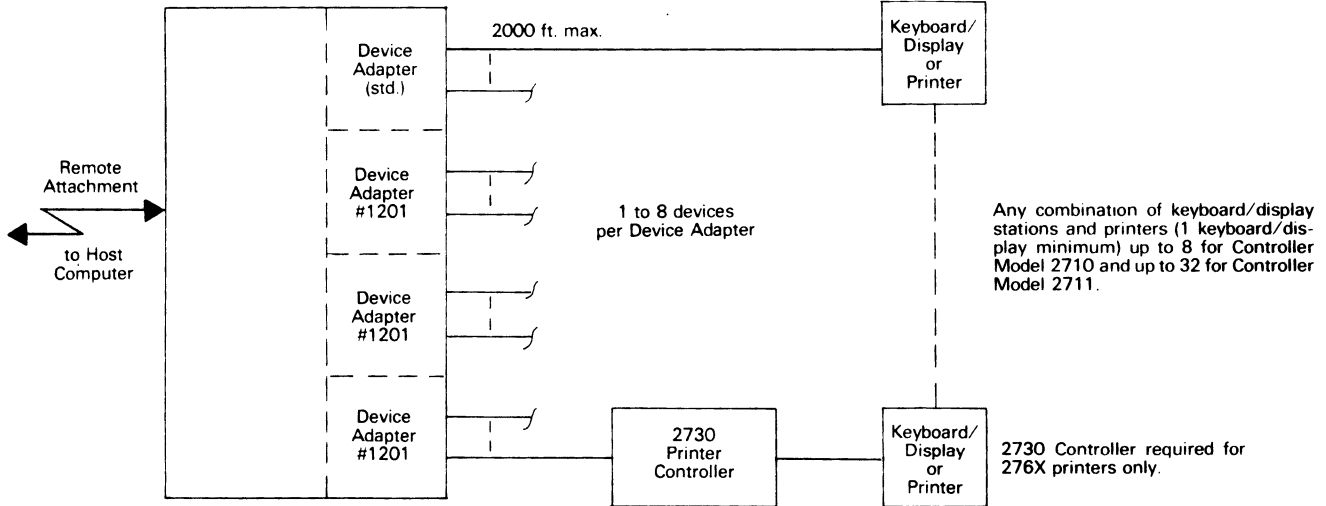
Configurations

2700 & 2750

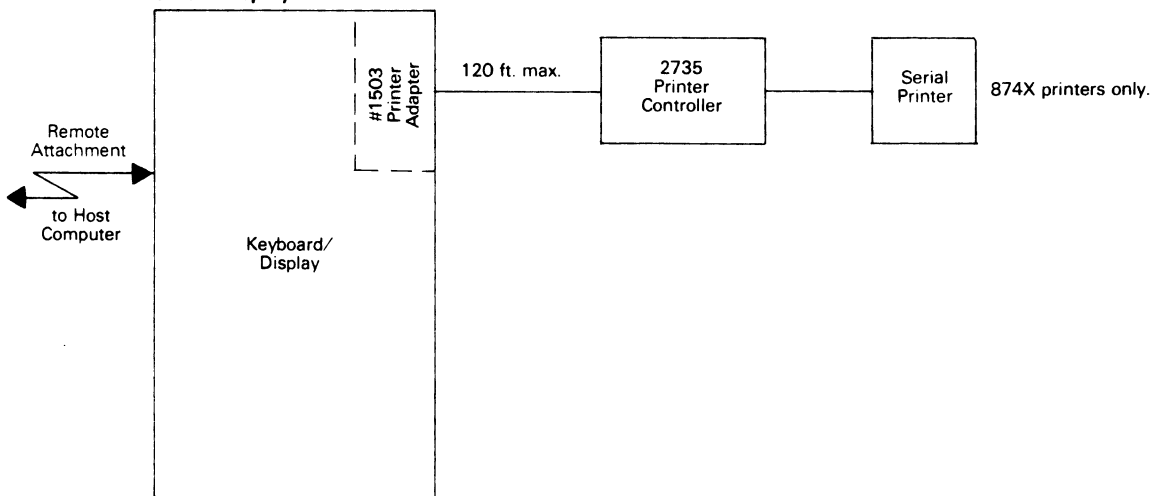
2721 LTC Controller



2710/2711 RTC Controller



2750 Display Station

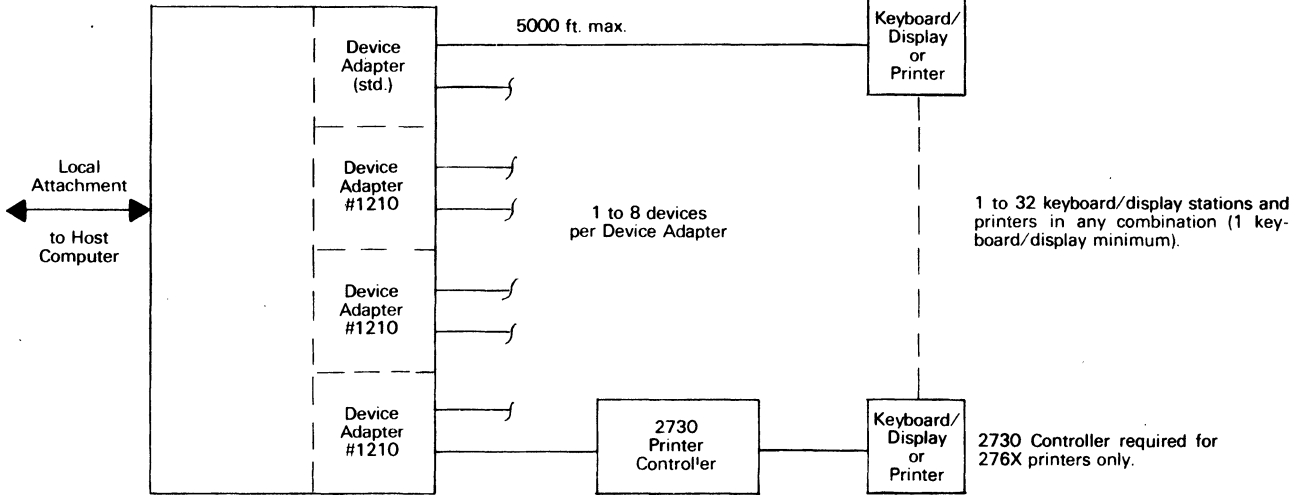


ITT Courier 270 Information Display Systems

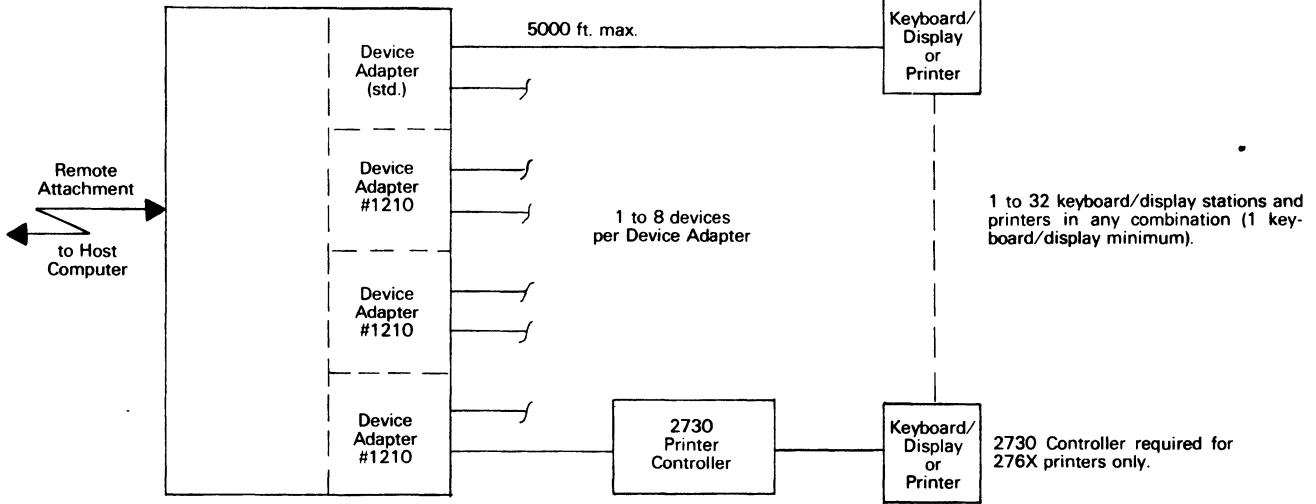
Configurations (cont'd.)

7411 & 7601 ATC

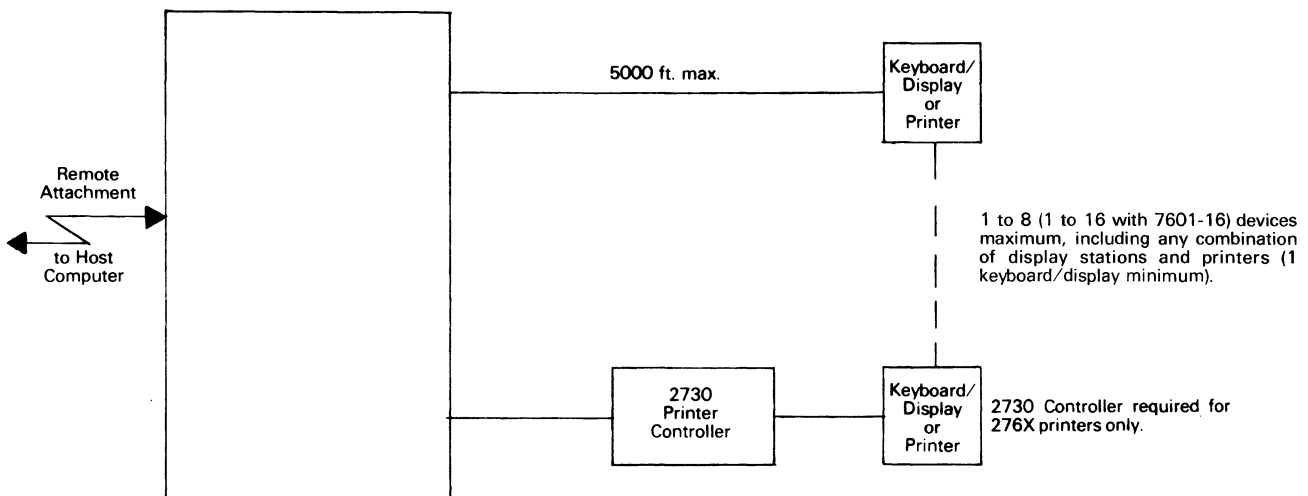
7411-A/-B ATC Controller



7411-C ATC Controller



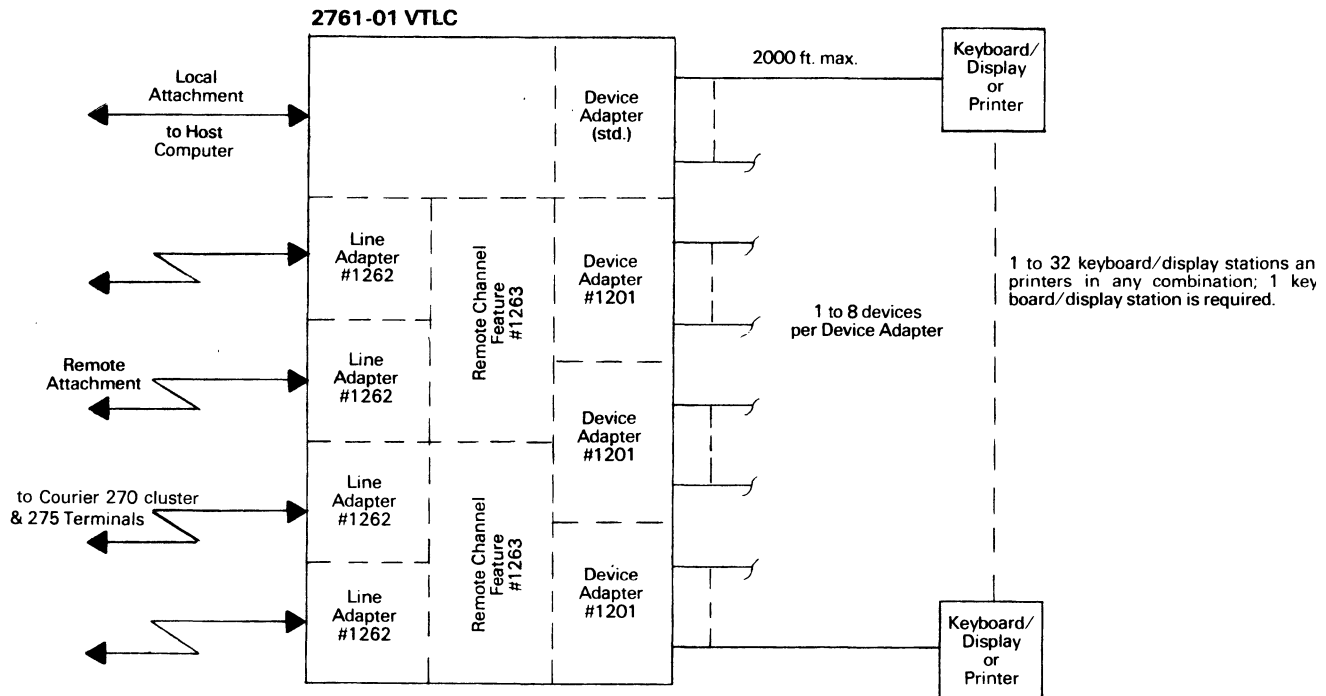
7601 ATC Controller



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Configurations (cont'd.)

Virtual Terminal Line Controller



Model 2750-	Chars/Display	Lines/Display	Chars/Line
01	480	12	40
02	960	12	80
03	1920	24	80

All submodels are equipped with a character set of 64 or 96 (optional) ASCII characters, including upper and (optional) case alphabetic, numerics, and special symbols displayed in green. Each character is formed via a 7-by-10 dot matrix. Standard and optional features are the same as those for Model 2700, except that a serial printer can be attached for local copy.

MODEL 2770 DISPLAY UNIT: For attachment to an IBM 3271 or 3272 Control Unit, System/3 computers, or 3791 Controller as a direct replacement for an IBM 3277 display station. The 2770 is equipped with a 14-inch (diagonal measurement) CRT with a viewing area 8 inches high by 11 inches wide and is available in the following two submodels that differ in display capacity:

	Chars/Display	Lines/Display	Chars/Line
Model 2770-01	480	12	40
Model 2770-03	1920	24	80

The 2770 is equipped with a character set of 64 or 96 (optional) ASCII characters, including upper and lower (optional) case alphabetic, numerics, and special symbols displayed in green. Each character is formed via a 7-by-10 dot matrix. Standard and optional features are the same as those for Model 2700.

MODEL 2780 MINI-DISPLAY UNIT: A small display station for attachment to a Courier control unit in a cluster

configuration. The 2780 is equipped with an 8.3-inch (diagonal measurement) CRT with a viewing area 3.5 inches high by 7.5 inches wide. The character set contains 64 ASCII symbols including upper case alphabetic, numerics, and special symbols displayed in green. Each character is formed via a 7-by-10 dot matrix. Standard features include Dual Intensity, a non-glare CRT faceplate, and a typewriter- (#1005) or data entry- (#1016) style detachable keyboard. A cascade typewriter- (#1005) or data entry- (#1016) style detachable keyboard is optional. No-cost options include Blinking Square Cursor, Variable Field Underline, and Field Blink.

MODEL 2790-2A COLOR DISPLAY UNIT: A four-color display station for attachment to the 7411, 7412, and 7601 controllers. The 2790-2A is equipped with a 14-inch (diagonal) CRT, and features a 1,920-character screen capacity arranged in 24 lines of 80 characters each.

KEYBOARDS: The following 13 detachable keyboards are available for the different members of the Courier 270 System:

- 1001—standard for display Models 2700, 2750, and 2770; an 82-key typewriter-style keyboard with 2 program address keys and a 12-key program function keypad.
- 1002—standard for display Models 2700, 2750, and 2770; a 69-key data entry style keyboard with 6 program function keys and 3 program address keys.
- 1005—standard for display Model 2780; an 82-key typewriter-style keyboard with 5 program function keys.
- 1006—standard for display Model 2700; an 82-key data entry style keyboard with 6 program function keys.
- 1008—standard for display Model 2780-05 and 2700-06; a 78-key APL keyboard.

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- 1003—optional for display Models 2700, 2750, and 2770; a 96-key typewriter-style keyboard with 2 program address keys, a 14-key numeric pad, and a row of 12 program function keys.
- 1004—optional for display Models 2700, 2750, and 2770; an 82-key console-style keyboard with a 12-key program function keypad.
- 1011—optional for display Models 2700, 2750, and 2770; an 82-key cascade typewriter-style keyboard with two program address keys and a 12-key program function keypad.
- 1012—optional for display Models 2700, 2750, and 2770; a 69-key cascade data entry style keyboard with 6 program function keys and 3 program address keys.
- 1013—optional for display Models 2700, 2750, and 2770; a 96-key cascade typewriter-style keyboard with 2 program address keys, a 14-key numeric pad, and a row of 12 program function keys.
- 1014—optional for display Models 2700, 2750, and 2770; an 82-key with 12-key program function keypad.
- 1015—optional for display Model 2780; an 82-key cascade typewriter-style keyboard with 5 program function keys.
- 1016—optional for display Model 2780; a 69-key cascade data entry keyboard with 6 program function keys.

The cascade keyboards provide a tactile touch to the keys for operator assurance.

SERIAL PRINTERS: Six models of serial impact printers are currently available.

Models	Speed	Chars./Line
8700/8740	60 cps uni-directional	132
8702/8742	120 cps bi-directional	132
8704/8744	180 cps bi-directional	132

The newer 870X series printers contain an integral controller with 1920-character buffer; the earlier 874X series printers each require a 2730 Printer Controller, which contains a

1920-character buffer. The printer mechanisms are the same for corresponding printer models. All models are equipped with a 64- or 96-(optional) character set of ASCII symbols including upper and lower (optional) case alphabets, numerics, and special symbols. Each character is formed via a 5-by-7 dot matrix on Models 8700 and 8740 and 7-by-7 dot matrix on the other models. All models provide adjustable tractor feed and accommodate continuous forms from 3 to 14 inches wide and 11 inches in length. Horizontal spacing is 10 characters per inch; vertical spacing is 6 lines per inch on Models 8700 and 8740 and 6 or 8 lines per inch (selectable) on the other models. Models 8700 and 8740 employ a 2-channel VFU; the other models provide a 2 or 12 channel VFU. Formatting is implemented via a paper tape loop. All models contain Centronics printer mechanisms.

LINE PRINTERS: Models 2762 and 2766 are pedestal-mounted belt printers with an average print speed of 340 lines per minute when less than 50 or 90 characters per line, respectively, are printed. The rated speed drops to 116 lpm for the 2762 and 232 lpm for the 2766 when 132 columns are printed. The character set consists of 64 or 96 printable symbols. The printers are equipped with adjustable tractor feed and accommodate 6-part continuous forms from 3 to 15 inches wide. Horizontal and vertical spacing are 10 characters per inch and 6 lines per inch, respectively. The printers are equipped with front and rear paper load and paper-out sensing. Both printers also contain a 1920-character print buffer. The printers are produced by GE as the TermiNet 340.

PRICING

The Courier 270 and 275 Systems are available for purchase or on a two-, three-, four-, or five-year lease that includes maintenance. A separate maintenance contract is available for purchased units. There are no installation charges. Quantity discounts are available.

ITT Courier provides a flexible price structure for the 270 Information Display System; therefore, it is their policy not to provide pricing for publication. For pricing information, customers should contact ITT Courier or the local ITT Courier sales office.■

ITT Courier 270 Information Display Systems



MANAGEMENT SUMMARY

Courier Terminal Systems became ITT Courier Terminal Systems on May 31, 1978 with the acquisition of Courier, then a subsidiary of Boothe Courier Corporation, by International Telephone and Telegraph Corporation (ITT).

The Courier 270 is a replacement system for the IBM 3270 Information Display System. Courier provides replacements for the following IBM configurations and components:

- IBM 3272/3277 local subsystem.
- IBM 3271/3277 remote terminal in a BSC or SNA/SDLC environment.
- IBM 3274/3278 local subsystem operating in either 3272 or SNA mode.
- IBM 3274/3278 remote terminal in a BSC or SNA/SDLC environment.
- IBM 3276/3278 remote terminal in a BSC or SNA/SDLC environment.
- IBM 3275 remote stand-alone terminal in a BSC environment.
- IBM 3277 Display Station.

Courier announced price cuts on leased and purchased units and introduced several new components to its existing 270 System in January 1978 to provide compatibility with IBM's expanded 3270 System. The added Courier 270 components include Advanced Terminal Controllers, displays, and printers that offer compatibility with corresponding IBM components. The added Courier components include: ➤

Replacement for the IBM 3270 Information Display System in a local or remote environment; the system accommodates up to 32 display stations and printers in any combination.

Features are identical with those of the IBM 3270 including large capacity displays, plus additional keyboards are available, and printed output is enhanced with 120- and 180-cps matrix printers and 340-lpm line printers.

A typical remote 8-station small cluster system with 3440-character displays and no printers (equivalent to IBM's 3276/3278) leases for \$722 per month, including maintenance, on a two-year lease.

A typical 24-station local cluster consisting of 3440-character displays and no printers (equivalent to IBM's 3274/3278 configuration) leases for \$2,162 per month, including maintenance, on a two-year lease.

CHARACTERISTICS

VENDOR: ITT Courier Terminal Systems, Inc., 1515 West 14th Street, Tempe, Arizona 84281. Mailing Address: P.O. Box 29039, Phoenix, Arizona 85038. Telephone (602) 275-7555.

DATE OF ANNOUNCEMENT: Model 2700—November 1973; ATC Models—January 1978.

DATE OF FIRST DELIVERY: Model 2700—January 1974; ATC Models—4th quarter 1978 to 1st quarter 1979.

NUMBER DELIVERED TO DATE: Over 30,000 (estimated).

SERVICED BY: Courier.

CONFIGURATION

The ITT Courier 270 System consists of two generations of components with a limited degree of mixing permitted in the same subsystem; complete compatibility for communications and applications program support can be achieved with the new components. Courier's original 270 System components are designed as replacements for IBM's 3271 remote cluster controller, 3272 local cluster controller, 3277 display station, and 3275 stand-alone display terminal. New components were added to the existing 270 System to provide replacements for IBM's 3274 large cluster controller, its 3276 small cluster controller, and its 3278 large-screen display stations. The 270 System components also include Courier's Virtual Terminal Line Controller (VTLC), an IBM 370/360 processor-attached controller for local and remote large cluster support. The accompanying Table summarizes the configuration rules for assembling systems; see also the Configuration Diagrams.

TRANSMISSION SPECIFICATIONS

Transmission is half-duplex synchronous at 1200, 2000, 2400, 4800, 7200, or 9600 bits/second, using 8-level EBCDIC ➤

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ITT COURIER 270 FAMILY COMPONENTS AND SUBSYSTEMS

Courier Controller	Replaces IBM Controller	Mode	Comm. Protocol	Maximum Devices		Displays Supported, 2700 Models	Printers Supported
				Basic	Expanded		
2710 RTC	3271-1/-2	Remote	BSC	8	Nonexpandable	1, 2, 3, 4, 5, & 2780	874X & 276X
2711 RTC	3271-1/-2	Remote	BSC	8	16, 24, or 32	1, 2, 3, 4, 5, & 2780	874X & 276X
2712 Dual RTC	3271-1/-2	Remote	BSC	16	24 or 32	1, 2, 3, 4, 5, & 2780	874X & 276X
2710-12 RTC	3271-11/-12	Remote	SDLC	8	Nonexpandable	1, 2, 3, 4, 5, & 2780	874X & 276X
2711-12 RTC	3271-11/-12	Remote	SDLC	8	16, 24, or 32	1, 2, 3, 4, 5, & 2780	874X & 276X
2712-12 Dual RTC	3271-11/-12	Remote	SDLC	16	24 or 32	1, 2, 3, 4, 5, & 2780	874X & 276X
2721 LTC	3272-1/-2	Local	—	8	16, 24, or 32	1, 2, 3, 4, 5, & 2780	874X & 276X
2722 Dual LTC	3272-1/-2	Local	—	16	24 or 32	1, 2, 3, 4, 5, & 2780	874X & 276X
2750 Stand Alone	3275 Stand-Alone	Remote	BSC	0	1	Integral	874X only
7601-0 ATC	3276-1/-2/-3/-4	Remote	BSC	8	Nonexpandable	1, 2, 3, 14, 15, & 2780	870X, 874X & 276X
7601-1 ATC	3276-11/-12/-13/-14	Remote	SDLC	8	Nonexpandable	1, 2, 3, 14, 15, & 2780	870X, 874X, & 276X
7411-A ATC	3274-1A	Local SNA	—	8	16, 24, or 32	1, 2, 3, 14, 15, & 2780	870X, 874X, & 276X
7411-B ATC	3274-1B	Local 3272	—	8	16, 24, or 32	1, 2, 3, 14, 15, & 2780	870X, 874X, & 276X
7411-C ATC	3274-1C	Remote	SDLC	8	16, 24, or 32	1, 2, 3, 14, 15, & 2780	870X, 874X, & 276X
2761-01 VTLC	3272-1/-2	Local	—	8	32	1, 2, 3, 4, 5, & 2780	874X & 276X

➤ • 7411 controller, equivalent to the IBM 3274, for a local (SNA or 3272 mode) or remote (BSC or SDLC protocol) cluster of up to 32 displays and printers. The 7411 supports all display capacities from 480 to 3440 characters.

➤ or ASCII (with parity) transmission code. Transmission compatibility with IBM BSC or SDLC protocol is provided. Point-to-point or multipoint transmission is supported. All terminals are equipped with an RS-232C interface and connect to a voice-grade communications facility via a modem.

DEVICE CONTROL

The 270 operates under the control of the program stored at the host computer and provides complete compatibility with the addressing sequence, command code structure, and line discipline employed by the IBM 3270 Information Display System.

The 270 responds to and executes the full repertoire of IBM 3270 commands via a microprocessor with read-only memory. In addition, the 270 features some enhancements that are supported under the existing framework of IBM software and can be user-implemented through slight modification to individual application programs.

Cursor control is functionally the same as in the IBM 3270, with the addition of a Home position. The cursor can be moved up, down, left, or right, step-by-step or repetitively (if the key remains depressed), backspaced one character position, moved to the beginning of the next line, tabbed to the beginning of the next unprotected data field, back-tabbed to the beginning of the previous unprotected data field, or returned to the first unprotected character position on the screen (Home). Like the IBM 3270, the 270 features cursor wraparound.

Program Function and Program Attention keys (designated PF_n and PAn, respectively, a standard feature of the IBM 3270, are also a standard feature of the 270. Each of these keys generates a unique code recognized by the controlling software as a specific program request or data identifier. The two key functions differ in that the Program Function code accompanies the displayed data as it is transmitted to the computer, while the Program Attention code is transmitted separately.

A light pen is available as an option and functionally corresponds to IBM's Selector Pen, a 3270 option. Any one or several alphanumeric or numeric fields of fixed or variable format can be selected by the pen, which transmits the address of the selected entry to the computer to initiate the programmed function.

➤ Features include all those provided by the IBM 3270 plus a few extra features including display functions. The display ➤

• 7601 controller, equivalent to the IBM 3276, for a small remote (BSC/SDLC protocol) cluster of 1 to 8 displays and printers. The 7601 also supports all display capacities.

• 2700-14 and -15 displays, equivalent to IBM 3278 displays, with a display capacity of 2560 or 3440 characters, respectively.

• 8700 Series serial printers that print uni-directionally or bi-directionally at speeds up to 60, 120, or 180 characters per second and include an integral controller with 1920 characters of buffering. These printers contain Centronics mechanisms and supersede the earlier 8740 Series printers that require a separate controller.

An additional capability is provided by the:

• 2761-01 Virtual Terminal Line Controller (VTLC), a substitute for a communications processor and local terminal controller. The 2761 VTLC combines both functions and appears to the host as an IBM 3272 local terminal controller. The VTLC supports a local cluster of up to 32 displays and printers and up to four point-to-point and/or multipoint communications lines operating under BSC protocol. Any mix of up to 32 local and remote devices can be on-line at a time. Remote support is limited to Courier 270 terminals. The Courier VTLC uses virtual device assignment to dynamically assign individual devices

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- ▷ to application systems in response to an operator initiated Logon/Logoff procedure.

Courier's new pricing structure is well within IBM's price umbrella. The new 7400 and 7600 cluster terminals offer savings of 10 to 25 percent compared to IBM's two-year lease prices, based on Courier's two- to five-year lease prices. Courier also chopped pricing on its existing terminals. Savings of about 25 to 35 percent compared to IBM's two-year lease prices (based on Courier two- and five-year leases) are currently available on Courier cluster terminals.

The Courier 270 provides complete compatibility with the IBM 3270 System with respect to line discipline, commands and command-code structure, and addressing sequence. The Courier terminals also provide all the features and functions that are currently available with the IBM 3270. Courier controllers can accommodate any mix of displays with different screen capacities and different printer models. System redundancy is available for existing local and remote cluster arrangements and is implemented via redundant controller logic. The second or redundant controller, an added-cost option, is used as a backup unit to the first; both are contained in the same cabinet.

USER REACTION

In Datapro's 1978 survey of alphanumeric terminal users, 35 users reported on their experience with a total of 1276 Courier 270 and 275 terminals; five of these users reported on 29 Courier 275 terminals. The ratings of these 35 users are summarized below.

	Excellent	Good	Fair	Poor	WA*
Overall performance	10	23	2	0	3.2
Ease of operation	13	21	1	0	3.3
Display clarity	12	22	1	0	3.3
Keyboard feel & usability	7	21	6	1	3.0
Hardware reliability	9	19	7	0	3.1
Maintenance service	12	14	9	0	3.1
Software & technical support	3	17	11	0	2.7

*Weighted Average on a scale of 4.0 for Excellent.

These users overwhelmingly cited cost as the key advantage of the Courier 270 over its IBM counterpart. Reliability (13 users), flexibility (9 users), applicability (7 users), and strong vendor support (7 users) were also mentioned as significant advantages. Five users mentioned fast delivery time as an added advantage. Few users mentioned any disadvantages. Of these, 4 users cited maintainability and 5 users cited nonprogrammability as disadvantages. (However, IBM does not provide programmability with its 3270 system.) The main function of the Courier 270 is as an IBM replacement and, according to these user ratings, it does well just what it is intended for. □

- ▷ functions include blink and underscore features, which are implemented via the use of attribute codes. The blink and underscore features permit one or more characters to blink or to be underscored via manual or program control.

Line/Channel Capture and Reveal modes are provided as user diagnostic aids. The Line/Channel Capture mode displays all information, data and control codes, transmitted between the host computer and terminal to aid in problem diagnosis and debugging. The Reveal mode displays attribute characters in displayed formats as special symbols to aid in format development.

The Local Copy feature prints displayed data on shared or local printers without host computer intervention. Printers can be designated as system printers, shared, or local printers. System printers receive only host computer messages.

The 270 is supported under existing IBM software support for the IBM 3270, which includes the following IBM access methods: BTAM under DOS, DOS/VS, OS, or OS/VS2; TCAM under OS; and VTAM under DOS/VS, OS/VS1 or OS/VS2. The 270 is also supported for use with the following IBM Program Products: VIDEO/370, DATA/360, IMS, IQF, CICS, and TSO.

COMPONENTS

MODELS 2700 SERIES CLUSTER CONTROLLERS: Remote terminal controller replacements for the IBM 3271 Control Unit BSC Models 1 and 2 and SDLC Models 11 and 12 and IBM 3272 Models 1 and 2. The 2700 series controllers accommodate Model 2700 display stations, 8740 series serial printers, and 2760 series line printers; different printer models and display screen capacities can be mixed on the same controller. Each device can be located up to 200 cable-feet from the controller. Each attached printer requires one 2730 Printer Controller, which contains a 1920-character buffer. The basic controller contains one or two device adapters which accommodate up to 8 or 16 devices. Additional device adapters are required for expansion.

The Local Terminal Controllers each contain a channel interface for direct connection (via up to 200 cable-feet) to an IBM System/360 or 370 computer via a selector, byte multiplexer, or block multiplexer channel. The maximum data transfer rate for transfers from LTC to channel is 483,000 bytes/second; that for transfers from channel to LTC is 535,000 bytes/second. The LTC's are directly compatible with the IBM 3272 Control Unit.

The six models of local and remote cluster controllers are defined as follows:

- Model 2710 RTC—a nonexpandable remote terminal controller for up to 8 devices. BSC protocol is supported.
- Model 2711 RTC—an expandable remote terminal controller for up to 32 devices via up to four device adapters. The basic unit is equipped with one device adapter. BSC protocol is supported.
- Model 2712 RTC—an expandable dual remote terminal controller for up to 32 devices via up to four device adapters. Each controller in the basic unit is equipped with two device adapters. The two controllers (in the same cabinet) provide system redundancy; manual switch-over to the spare unit is provided in case of system failure. BSC protocol is supported.
- Model 2710-12 RTC—a nonexpandable remote terminal controller for up to 8 devices. SDLC protocol is supported.
- Model 2711-12 RTC—an expandable remote terminal controller for up to 32 devices via up to 4 device adapters. The basic unit is equipped with one device adapter. SDLC protocol is supported.
- Model 2712-12 RTC—an expandable dual remote terminal controller for up to 32 devices via up to four

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device adapters. Each controller in the basic unit is equipped with two device adapters. The two controllers (in the same cabinet) provide system redundancy; manual switch-over to the spare unit is provided in case of system failure. SDLC protocol is supported.

- **Model 2721 LTC**—an expandable local terminal controller for up to 32 devices via up to four device adapters. The basic unit is equipped with one device adapter.
- **Model 2722 LTC**—an expandable dual local terminal controller for up to 32 devices via up to four device adapters. Each controller in the basic unit is equipped with two device adapters. The two controllers (in the same cabinet) provide system redundancy; manual switch-over to the spare unit is provided in case of system failure.

MODEL 7400 ATC LARGE CLUSTER CONTROLLERS: The three 7400 ATC models are direct replacements for IBM's 3274 Control Units as defined below.

- **Model 7411-A**—replaces the IBM 3274-1A in a local cluster environment; operates in SNA mode under VTAM.
- **Model 7411-B**—replaces the IBM 3274-1B in a local cluster environment; operates in IBM 3270-compatible mode.
- **Model 7411-C**—replaces the IBM 3274-1C in a remote cluster environment; conditioned for BSC or SDLC operation by loading a different program into the controller via an integral diskette drive.

The controllers each accommodate up to 32 devices via up to four device adapters. Each device adapter accommodates 8 devices. One device adapter is provided with the basic controller. Any combination of Model 2700 display stations, 8740 and 8700 series serial printers and 2760 series line printers can be attached at up to 5000 cable-feet from the controller; however, at least one display station is required. Different printer models and display screen capacities can be mixed on the same controller.

MODEL 7600 ATC SMALL CLUSTER CONTROLLERS: Two 7600 ATC models are direct replacements for IBM's 3276 Control Unit Display Stations as defined below.

- **Model 7601-0**—replaces the IBM 3276 Models 1, 2, 3, and 4 in a remote cluster environment; provides BSC protocol compatibility.
- **Model 7601-1**—replaces the IBM 3276 Models 11, 12, 13, and 14 in a remote cluster environment; provides SDLC protocol compatibility.

The controllers each accommodate up to 8 devices and are nonexpandable. Any combination of Model 2700 display stations, 8740 and 8700 series serial printers and 2760 series line printers can be attached at up to 5000 cable-feet from the controller; however, at least one display station is required. Different printer models and display screen capacities can be mixed on the same controller.

MODEL 2761-01 VIRTUAL TERMINAL LINE CONTROLLER: attaches to an IBM System/360 or 370 computer via a byte multiplexer channel and accommodates up to 32 local devices and up to four communications lines. The 2761-01 VTLC emulates an IBM 3272 Control Unit. Locally attached devices can include any combination of Model 2700 display stations, 8740 and 8700 series serial printers and 2760 series line printers. The basic controller supports 8 devices; a device adapter is required for each increment of 8 devices.

One Line Adapter is required for each communications line up to a total of four. A Remote Channel Feature is required for each pair of Line Adapters. Courier 270 cluster or 275 stand-alone terminals in a point-to-point or multipoint arrangement are employed at the remote end. However, no more than 32 local and remote devices can be operational simultaneously.

MODEL 2700 DISPLAY UNIT: For attachment to a Courier control unit in a cluster configuration and available in the following screen submodels that differ in display capacity:

Model 2700-	Chars/ Display	Lines/ Display	Chars/ Line
01	480	12	40
02	960	12	80
03	1920	24	80
04 (APL)	480	12	40
05 (APL)	1920	24	80
14	2560	32	80
15	3440	43	80

Each model is equipped with a 14-inch (diagonal measurement) CRT with a viewing area 8 inches high by 11 inches wide. All submodels are equipped with a character set of 64 or 96 (optional) ASCII characters, including upper and lower (optional) case alphabets, numerics, and special symbols displayed in green. Each character is formed via a 7-by-10 dot matrix. Models 2700-04 and -05 are also equipped with a selectable, full 133-character APL character set.

Standard features in all models include dual intensity, a nonglare CRT faceplate, and a 1001 typewriter or 1002 data entry style keyboard for all models but 2700-04 and -05, which are equipped with the 1008 APL keyboard. An additional display line at the bottom of the screen provides operator status. Options include several keyboards, Audible Alarm, Keyboard Numeric Locks, Security Keylock, Badge Reader, Lower Case Character Set, and a Light Pen.

No-cost options include: Blinking Square Cursor, Variable Field Underline (requires Blinking Square cursor), and Field Blink; all are implemented via DIP switches on the circuit boards.

MODEL 2750 DISPLAY TERMINAL: Stand-alone terminal equipped with a 14-inch (diagonal measurement) CRT with a viewing area 8 inches high by 11 inches wide and available in the following three submodels that differ in display capacity:

Model 2750-	Chars/ Display	Lines/ Display	Chars/ Line
01	480	12	40
02	960	12	80
03	1920	24	80

All submodels are equipped with a character set of 64 or 96 (optional) ASCII characters, including upper and (optional) case alphabets, numerics, and special symbols displayed in green. Each character is formed via a 7-by-10 dot matrix. Standard and optional features are the same as those for Model 2700, except that a serial printer can be attached for local copy.

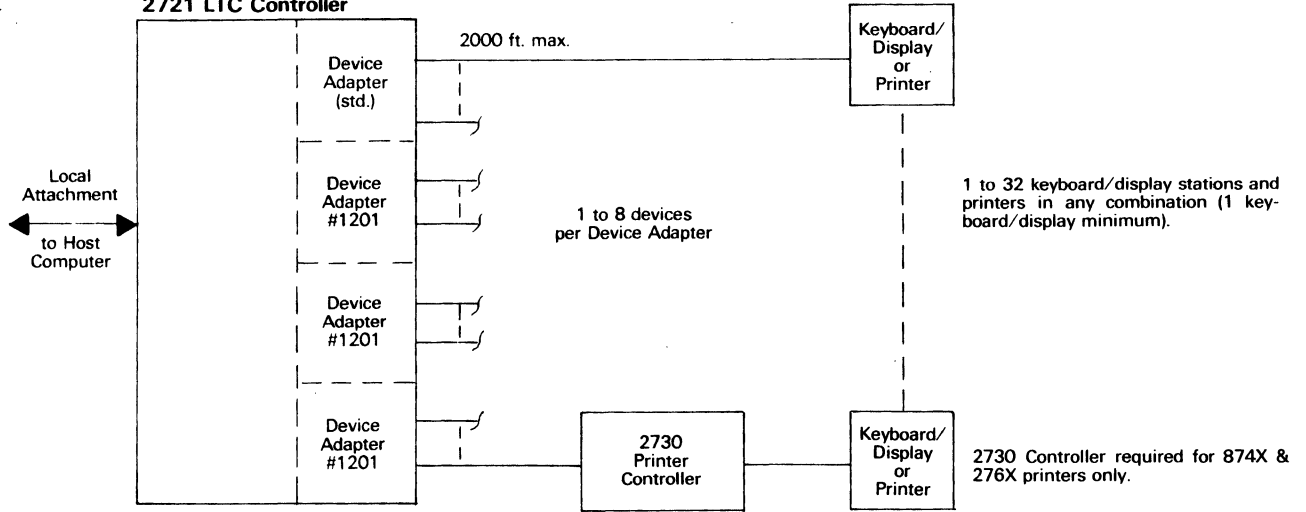
MODEL 2770 DISPLAY UNIT: For attachment to an IBM 3271 or 3272 Control Unit, System/3 computers, or 3791 Controller as a direct replacement for an IBM 3277 display station. The 2770 is equipped with a 14-inch (diagonal measurement) CRT with a viewing area 8 inches high by 11 inches wide and is available in the following two submodels that differ in display capacity:

ITT Courier 270 Information Display Systems

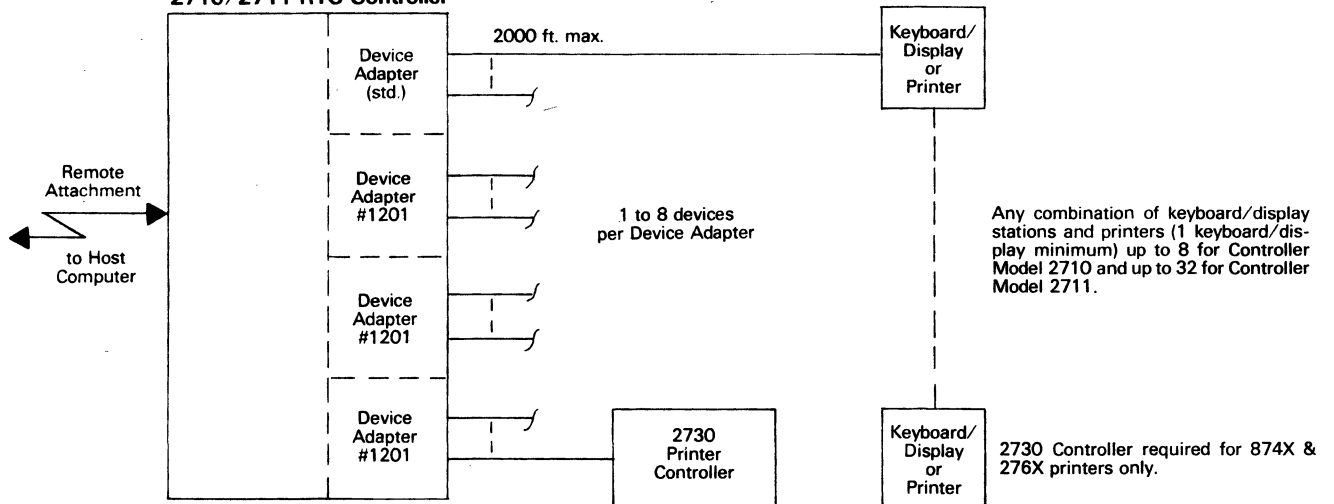
Configurations

2700 & 2750

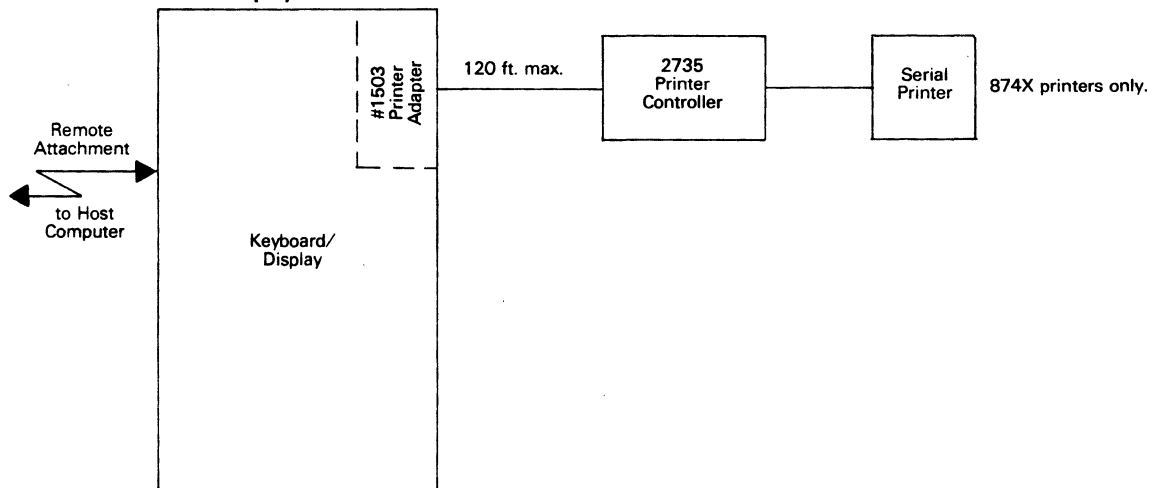
2721 LTC Controller



2710/2711 RTC Controller



2750 Display Station

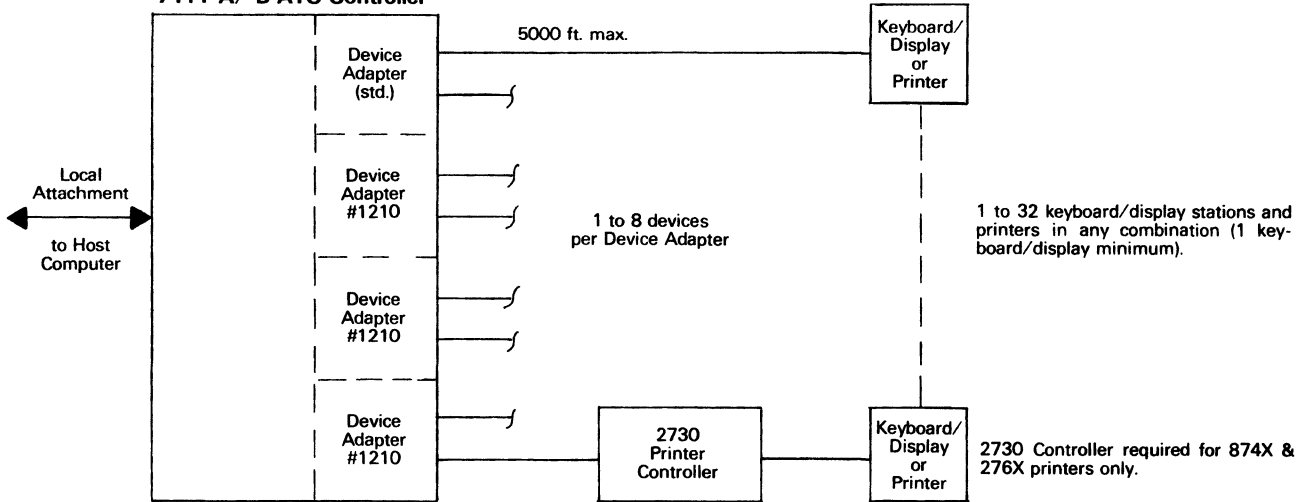


ITT Courier 270 Information Display Systems

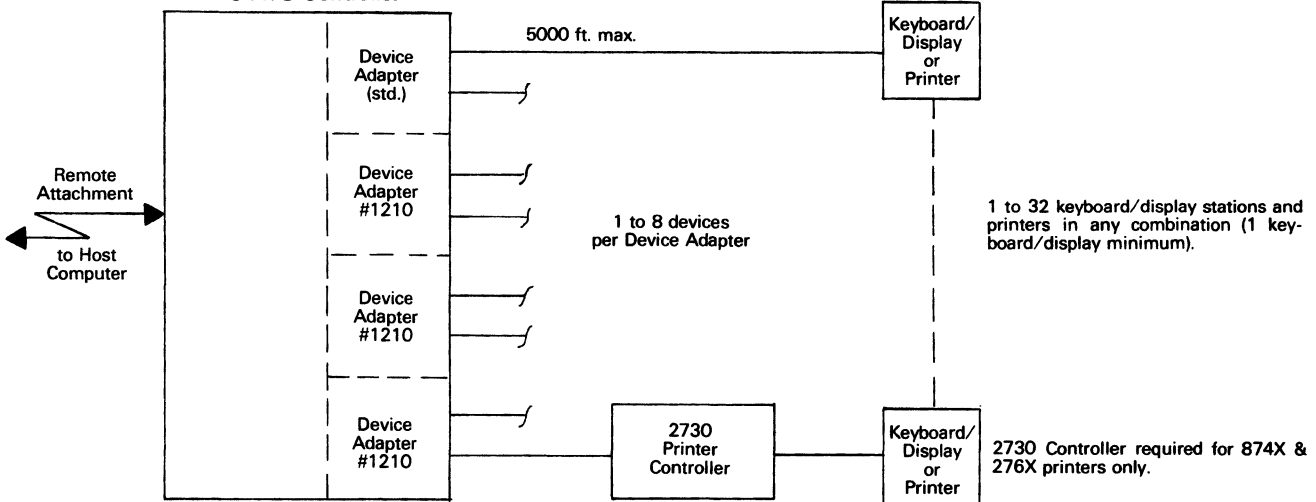
Configurations (cont'd.)

7411 & 7601 ATC

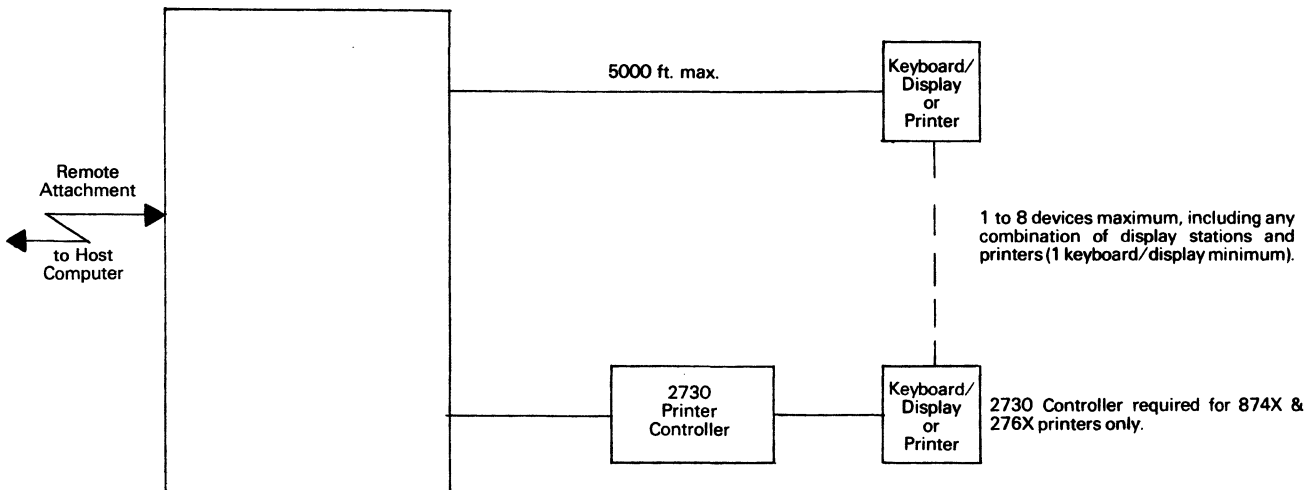
7411-A/-B ATC Controller



7411-C ATC Controller

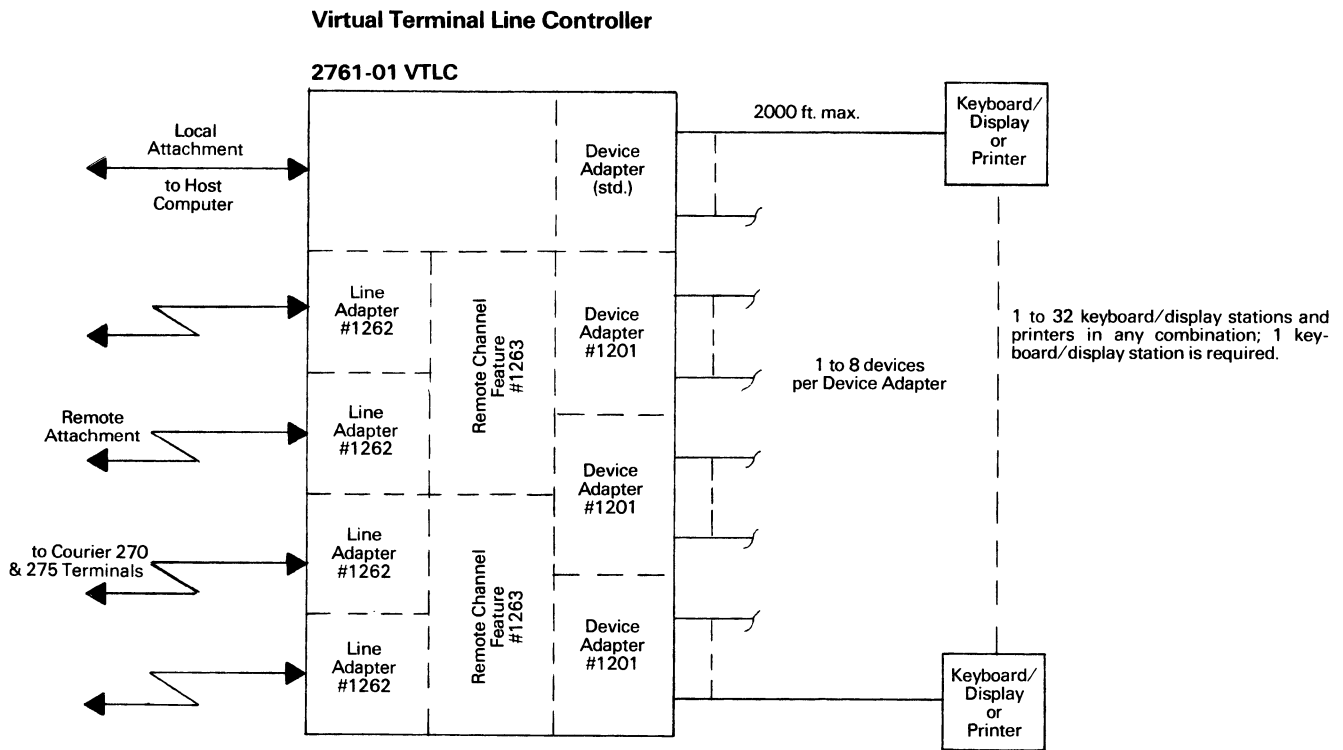


7601 ATC Controller



ITT Courier 270 Information Display Systems

Configurations (cont'd.)



	Chars/ Display	Lines/ Display	Chars/ Line
Model 2770-01	480	12	40
Model 2770-03	1920	24	80

The 2770 is equipped with a character set of 64 or 96 (optional) ASCII characters, including upper and lower (optional) case alphabets, numerics, and special symbols displayed in green. Each character is formed via a 7-by-10 dot matrix. Standard and optional features are the same as those for Model 2700.

MODEL 2780 MINI-DISPLAY UNIT: A small display station for attachment to a Courier control unit in a cluster configuration. The 2780 is equipped with an 8.3-inch (diagonal measurement) CRT with a viewing area 3.5 inches high by 7.5 inches wide. The character set contains 64 ASCII symbols including upper case alphabets, numerics, and special symbols displayed in green. Each character is formed via a 7-by-10 dot matrix. Standard features include Dual Intensity, a non-glare CRT faceplate, and a typewriter-(#1005) or data entry-(#1006) style detachable keyboard. A cascade typewriter-(#1015) or data entry-(#1016) style detachable keyboard is optional. No-cost options include Blinking Square Cursor, Variable Field Underline, and Field Blink.

KEYBOARDS: The following 13 detachable keyboards are available for the different members of the Courier 270 System:

- 1001—standard for display Models 2700, 2750, and 2770; an 82-key typewriter-style keyboard with 2 program address keys and a 12-key program function keypad.

- 1002—standard for display Models 2700, 2750, and 2770; a 69-key data entry style keyboard with 6 program function keys and 3 program address keys.
- 1005—standard for display Model 2780; an 82-key typewriter-style keyboard with 5 program function keys.
- 1006—standard for display Mode 2700; a 69-key data entry style keyboard with 6 program function keys.
- 1008—standard for display Models 2700-05 and 2700-06; a 78-key APL keyboard.
- 1003—optional for display Models 2700, 2750, and 2770; a 96-key typewriter-style keyboard with 2 program address keys, a 14-key numeric pad, and a row of 12 program function keys.
- 1004—optional for display Models 2700, 2750, and 2770; an 82-key console-style keyboard with a 12-key program function keypad.
- 1011—optional for display Models 2700, 2750, and 2770; an 82-key cascade typewriter-style keyboard with two program address keys and a 12-key program function keypad.
- 1012—optional for display Models 2700, 2750, and 2770; a 69-key cascade data entry style keyboard with 6 program function keys and 3 program address keys.
- 1013—optional for display Models 2700, 2750, and 2770; a 96-key cascade typewriter-style keyboard with 2 program address keys, a 14-key numeric pad, and a row of 12 program function keys.

ITT Courier 270 Information Display Systems

- ▶ ● 1014—optional for display Models 2700, 2750, and 2770; an 82-key with 12-key program function keypad.
- 1015—optional for display Model 2780; an 82-key cascade typewriter-style keyboard with 5 program function keys.
- 1016—optional for display Model 2780; a 69-key cascade data entry keyboard with 6 program function keys.

The cascade keyboards provide a tactile touch to the keys for operator assurance.

SERIAL PRINTERS: Six models of serial impact printers are currently available.

Models	Speed	Chars./Line
8700/8740	60 cps uni-directional	132
8702/8742	120 cps bi-directional	132
8704/8744	180 cps bi-directional	132

The newer 870X series printers contain an integral controller with 1920-character buffer; the earlier 874X series printers each require a 2730 Printer Controller, which contains a 1920-character buffer. The printer mechanisms are the same for corresponding printer models. All models are equipped with a 64-or 96-(optional) character set of ASCII symbols including upper and lower (optional) case alphabets, numerics, and special symbols. Each character is formed via a 5-by-7 dot matrix on Models 8700 and 8740 and 7-by-7 dot matrix on the other models. Models 8700 and 8740 are equipped with a 6.5 inch pin-feed platen and tear bar; all other models provide adjustable tractor

feed and accommodate continuous forms from 3 to 14 inches wide and 11 inches in length. Horizontal spacing is 10 characters per inch; vertical spacing is 6 lines per inch on Models 8700 and 8740 and 6 or 8 lines per inch (selectable) on the other models. Models 8700 and 8740 employ a 2-channel VFU; the other models provide a 2, 8, or 12 channel VFU. Formatting is implemented via a paper tape loop. All models contain Centronics printer mechanisms.

LINE PRINTERS: Models 2762 and 2766 are pedestal-mounted belt printers with an average print speed of 340 lines per minute when less than 50 or 90 characters per line, respectively, are printed. The rated speed drops to 116 lpm for the 2762 and 232 lpm for the 2766 when 132 columns are printed. The character set consists of 64 printable symbols. The printers are equipped with adjustable tractor feed and accommodate 6-part continuous forms from 3 to 15 inches wide. Horizontal and vertical spacing are 10 characters per inch and 6 lines per inch, respectively. The printers are equipped with front and rear paper load and paper-out sensing. Both printers also contain a 1920-character print buffer. The printers are produced by GE as the TermiNet 340.

PRICING

The Courier 270 and 275 Systems are available for purchase or on a two-, three-, four-, or five-year lease that includes maintenance. A separate maintenance contract is available for purchased units. There are no installation charges. Quantity discounts are available. Courier refused to provide detailed prices, but did supply the following representative package prices.

	3-Year Lease*	Purchase	Monthly Maint.
IBM 3274-compatible local cluster; includes a 7411-A/-B Controller with 10 2560-character display stations and 2 120-cps printers	\$1,280	\$48,900	\$346
IBM 3276-compatible remote cluster; includes a 7601-0/-1 controller, 7 1920-character display stations, and a 60-cps printer	644	24,880	174
IBM 3274-compatible remote cluster; includes a 7411-C Controller, 3 3440-character display stations, 11 2560-character display stations, 6 1920-character display stations, 2 60-cps printers, and a 240-lpm printer	2,177	81,635	604
IBM 3272-compatible local cluster; includes a 2721 Local Terminal Controller and 29 1920-character display stations	1,938	77,560	446
IBM 3271-compatible remote cluster; includes a 27XX Remote Terminal Controller, 5 480-/960-/1920-character display stations, and a 120-cps printer	513	18,835	149
IBM 3272-compatible local/remote network; includes a 2761-01 VTLC, 6 1920-character display stations, a 180-cps printer, attachment for 2 communications lines, 2 2750 Display Terminals, and 3 remote clusters each consisting of a 27XX controller, 5 1920-character display stations, and a 60-cps printer	2,868	100,075	761

*Monthly charge, including maintenance. ■

ITT Courier 9000 Series



The 9230 Display Terminal is an extended function monochrome display. The unit features a 15-inch tilt/swivel display, extended data stream support, and extended highlighting. Selectable display capacities include 1920, 2560, 3440, and 3564 characters. The 9230 contains a modular design which includes monitor, logic base, and keyboard. A choice of four keyboard styles and three separate keypads are available.

MANAGEMENT SUMMARY

ITT Courier's introduction of the 9000 Series of products, in April 1984, comes in direct response to IBM's previous wave of product announcements. With the addition of the 9000 Series, ITT Courier is now positioned to compete effectively against the IBM 3270 product line. A traditional leader in this market with its successful C-270 family of products, ITT Courier's new entries include IBM 3279- and 3180-compatible displays, as well as a new generation of controllers and printers. Another significant addition is the ITT Processing Terminal feature, which allows the new ITT XTRA personal computer (marketed by ITT Information Systems), as well as the IBM PC, PC XT, and other IBM PC-compatible microcomputers to be integrated into the 9000 Series.

New display terminals introduced by ITT Courier include the 1900 and 9236 color models and the 9230 monochrome unit. The 1900 is a compact display built along the same lines as the previously introduced 1700 monochrome terminal. (Both the 1700 and the 1900 are intended for use ➤

ITT Courier's 9000 Series is the company's newest generation of IBM 3270-compatible products. Components of the 9000 Series include monochrome and color displays, controllers, and printers. In addition, ITT Information Systems Division's new XTRA personal computer, as well as the IBM PC, may be integrated into a 9000 Series cluster.

MODELS: 941X and 942X Remote Controllers; 944X Local Controllers; 9230 Display Terminal; 1900 and 9236 Color Display Terminals; 9301, 9303, 9304, 9305, 9306, and 9308 Matrix Printers; 9302 Display Attached Printer; 9341 and 9342 Line Printers; ITT Processing Terminal feature.

DISPLAY: The 1900 and 9236 Color Display Terminals feature a 14-inch screen; the 9230 Display Terminal includes a 15-inch screen. The 1900 features a 1920-character screen capacity; the 9230 features selectable display capacities of 1920, 2560, 3440, and 3564 characters. The 9236 has selectable display capacities of 1920 and 2560 characters. Both the 1900 and 9236 have seven-color display capability. All display monitors feature tilt/swivel capability.

KEYBOARD: A variety of interchangeable keyboards and separate keypads are available for use with the 9000 Series displays. All keyboards feature a low-profile design and are detachable.

COMPETITION: IBM, Telex, Harris, Lee Data, Teletype, Memorex, and several others.

PRICE: Purchase prices for the displays range from \$2,295 to \$4,050.

CHARACTERISTICS

VENDOR: ITT Courier Terminal Systems, a division of ITT Systems, Inc., 1515 West 14th Street, Tempe, AZ 85281. Telephone (602) 894-7000. Or contact your local ITT Courier sales office.

DATE OF ANNOUNCEMENT: April 1984.

DATE OF FIRST DELIVERY: Summer and Fall of 1984.

NUMBER DELIVERED TO DATE: New products.

SERVICED BY: ITT Courier.

CONFIGURATION

The ITT Courier 9000 Series components are functional equivalents of various members of the IBM 3270 Information Display System, as well as members of the ITT Courier C-270 Information Display System. The 9000 Series con- ➤

ITT Courier 9000 Series

TABLE 1. 9000 SERIES CONFIGURATION RULES

ITT Courier Controller Model	Mode	No. of Devices Supported	Displays/PC Attach. Supported	Printers Supported
9410	Remote	8	1700-XX, 1900, 2700 XX, 2790-XX, 7570	276X, 62XX, 87XX, 9302, 9308
9416	Remote	16	1700-XX, 1900, 2700-XX, 2790-XX, 7570	276X, 62XX, 87XX, 9302, 9308
942X	Remote	11-32	1700-XX, 1900, 2700-XX, 2790-XX, 7570, 9230, 9236, 95436	276X, 62XX, 87XX, 930X, 934X
944X	Local	11-32	1700-XX, 1900, 2700-XX, 2790-XX, 7570, 9230, 9236, 95436	276X, 62XX, 87XX, 930X, 934X

Note: For more information on the 1700-XX, 2700-XX, & 2790-XX Displays, 7570 PC Controller Attachment Feature, and 276X, 62XX, & 87XX Printers, see Report C25-547-101 (ITT Courier C-270 Information Display System).

➤ with both the older C-270 family and the new 9000 series.) The 1900 is compatible with the IBM 3179; it includes a 12-inch tilt/swivel display with a 1920-character capacity and seven-color display capability. The 9236 is an extended function color display with a 14-inch tilt/swivel display and selectable screen capacities of 1920 or 2560 characters. The terminal is IBM 3279-compatible and can display seven colors. The 9230 is an extended function monochrome display; standard features include a 15-inch tilt/swivel monitor and selectable display capacities ranging from 1920 to 3564 characters. All of the ITT Courier displays feature modular construction and can be configured with any of four low-profile keyboard styles. Separate keypads are also available.

ITT Courier's new control units include the 941X and 942X remote controllers, and the 944X local controllers. The 9410 and 9416 remote controllers provide support for 8 and 16 devices, respectively. Attachable devices include the C-270 displays (including the 1900) and printers. The 9420 and 9422 (redundant) remote controllers, as well as the 9440 and 9442 (redundant) local controllers, provide for a standard configuration of 11 devices; device adapters may be added to expand the configuration to 32 devices. The 942X and 944X controllers support the 9000 Series displays and printers as well as the C-270 family.

The 9301, 9303, 9304, 9305, 9306, and 9308 Matrix Printers, 9341 and 9342 Line Printers, and 9302 Display Attached Printer were introduced as part of the 9000 Series. The printers operate in DSC (data stream compatible) or SCS (SNA character string), and provide a wide range of speeds and capabilities. The 9302 attaches directly to a 9000 Series display for applications requiring screen copies. The 9305 and 9306 are color printers.

The ITT Processing Terminal feature is a hardware/software combination that allows for the attachment of ITT's XTRA Personal Computer to an ITT Courier 3270-compatible network. The newly introduced XTRA is an IBM PC XT operationally compatible microcomputer with 128K bytes of RAM and a choice of monochrome or color

➤ consists of local and remote controllers, monochrome and color display terminals, and printers. The ITT Courier Processing Terminal feature provides for the addition of personal computing capabilities (via the ITT XTRA Personal Computer, IBM PC XT, or various IBM PC-compatible systems). The 9000 Series components are equivalent to IBM 3270 components for local and remote operation supported by the IBM System/360, System/370, 4300 Series, 30XX, Series/1, and 8100 computer systems, as well as IBM-compatible computer systems. Some interchangeability is permitted between the 9000 Series and C-270 components. Table 1 summarizes the configuration rules for assembling 9000 Series configurations; see also the Configuration Diagrams.

TRANSMISSION SPECIFICATIONS

The 941X and 942X Remote Controllers provide point-to-point, multipoint, or switched connection communications via modems or other data circuit terminating equipment. An RS-232-C interface is provided for connection to an external modem, DDS, or direct connection (942X only). Communications speeds of 2000 to 19,200 bps are accommodated by the 941X and 942X controllers. The 944X Local Controllers interface to the host system via channel attachment to a byte multiplexer, block multiplexer, or selector channel over standard BUS and TAG interface cables. SNA/SDLC and BSC protocols are supported by all controllers, as well as X.25 packet switching communications.

DEVICE CONTROL

The 9000 Series operates under the control of the program stored at the host computer and provides complete compatibility with the addressing sequence, command code structure, and line discipline employed by the IBM 3270 Information Display System. The 9000 Series responds to and executes the full repertoire of IBM 3270 commands via a microprocessor with read-only memory (ROM).

Cursor control is functionally the same as for the IBM 3270 terminals. The cursor can be moved up, down, left, or right, step-by-step or repetitively (if the key remains depressed), backspaced one character position, moved to the beginning of the next line, tabbed to the beginning of the next unprotected data field, backtabbed to the beginning of the previous unprotected data field, or returned to the first unprotected character position on the screen. Cursor wraparound is standard.

➤ The 9230 and 9236 extended function terminals provide Extended Data Stream Support, and Extended Highlight-

ITT Courier 9000 Series

▷ monitors. The XTRA is marketed through ITT's Information Systems division. (More information on the ITT XTRA can be found in DATAPRO REPORTS ON MICROCOMPUTERS.) The Processing Terminal feature provides a personal computer user with dual concurrent 3270 sessions and a note pad. In addition to the XTRA, the IBM PC, PC XT, and other IBM PC-compatible micros can be accessed through this feature.

COMPETITIVE POSITION

ITT Courier has traditionally been a leader in the IBM 3270-compatible market, coupling a broad product line with a flexible pricing structure. Within the past 18 months, IBM has shaken up what had been a relatively stable market with a host of new product additions and accompanying price reductions. These moves left the independent 3270-compatible vendors scrambling to react. Some were unable to; the past few months have seen the demise of Raytheon Data Systems (once the leader of the independents) and MDS Trivex. Of the remaining vendors in this still-sizable market, ITT Courier's response to IBM's wave of introductions has been among the strongest. Backed by parent ITT Corporation, ITT Courier is now in excellent position to assume a position of leadership among IBM's competitors and carve out an even larger share of this lucrative market.

ADVANTAGES AND RESTRICTIONS

As in the past, ITT Courier's strengths remain its broad product line and low prices. With the 9000 Series joining the C-270 Information Display System product line, ITT Courier now offers the 3270 user the largest number of product choices this side of IBM. (It should be noted here that Lee Data, another major competitor in this market, has greatly expanded their product line recently). ITT Courier has built in a certain degree of interchangeability between the C-270 and 9000 product lines, ensuring a smooth transition from the older products to the new generation. As of this writing, the C-270 line is still a very viable product line and there is no indication that it will be phased out in the near future. (For more information on the C-270 Information Display System, see Report C25-547-101, which immediately precedes this report.)

ITT Courier is a division of ITT Corporation, a communications giant. ITT is gaining a significant presence in the computer industry, particularly with the introduction of the XTRA Personal Computer by ITT Information Systems. The ability to add personal computing capabilities to the 9000 Series is a key feature; the XTRA, as well as the IBM PC XT and several other IBM PC compatibles, can be added to an ITT Courier 9000 Series cluster via the Processing Terminal feature. □

▶ ing, and Programmed Symbol. A Set-up mode (activated by pressing the Set-up key) provides for the selection of cursor styles (blinking or nonblinking block or underline), screen sizes, and auto key strokes. Dual Logical Unit Support is also provided for the 9230 and 9236. The DLU feature permits an operator, in session with one primary logical unit (PLU), to simultaneously establish a session with a second

PLU from the same terminal without destroying screen data. It appears to the host computer as if there are two displays in session, when there is only one physical device operating. APL/Text and Note Pad capability are also supported on the 9230 and 9236. All 9000 Series terminals, including the 1900 Color Display Terminal, support the following features: row/column indicator; high-speed cursor; and entry assist.

Diagnostic features available on all 9000 Series display terminals include Reveal Mode, Test Mode, and Line Capture. Reveal Mode displays attribute characters in a hexadecimal format to aid in program development. Line Capture Mode displays all information transmitted between the host computer and the control unit to aid in problem diagnosis and debugging. Run-time Diagnostics is featured on the 9230 and 9236 extended function terminals.

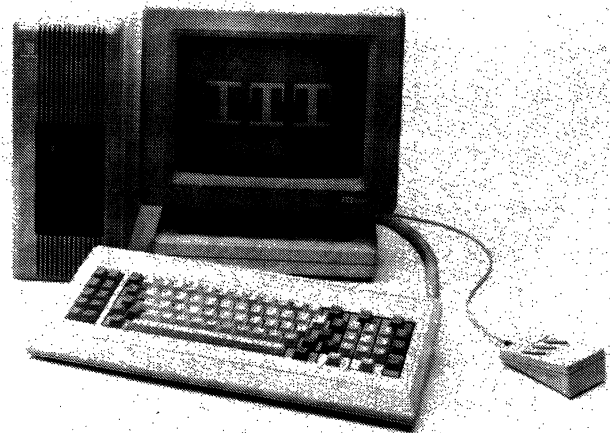
All visual attributes found on the IBM 3270 terminals are featured on the 9000 Series terminals. In addition, blink and underscore highlighting are featured on the 9230 and 9236.

The 9000 Series components are supported under existing IBM software support for the IBM 3270 Information Display System, which includes the following IBM access methods: BTAM under DOS, DOS/VS, OS, or OS/VS2; TCAM under OS; and VTAM under DOS/VS, OS/VS1, or OS/VS2. The 9000 Series is also supported for use with the following IBM program products: Video/370, Data/360, IMS, IQF, CICS, and TSO.

Personal computing capabilities can be added to an ITT Courier 9000 cluster using the Processing Terminal feature. This feature is a hardware/software combination for use with the ITT XTRA Personal Computer, the IBM PC XT, or IBM-compatible microcomputers. The Processing Terminal feature provides the personal computer with file transfer capability, dual concurrent 3270 sessions and a Note Pad.

COMPONENTS

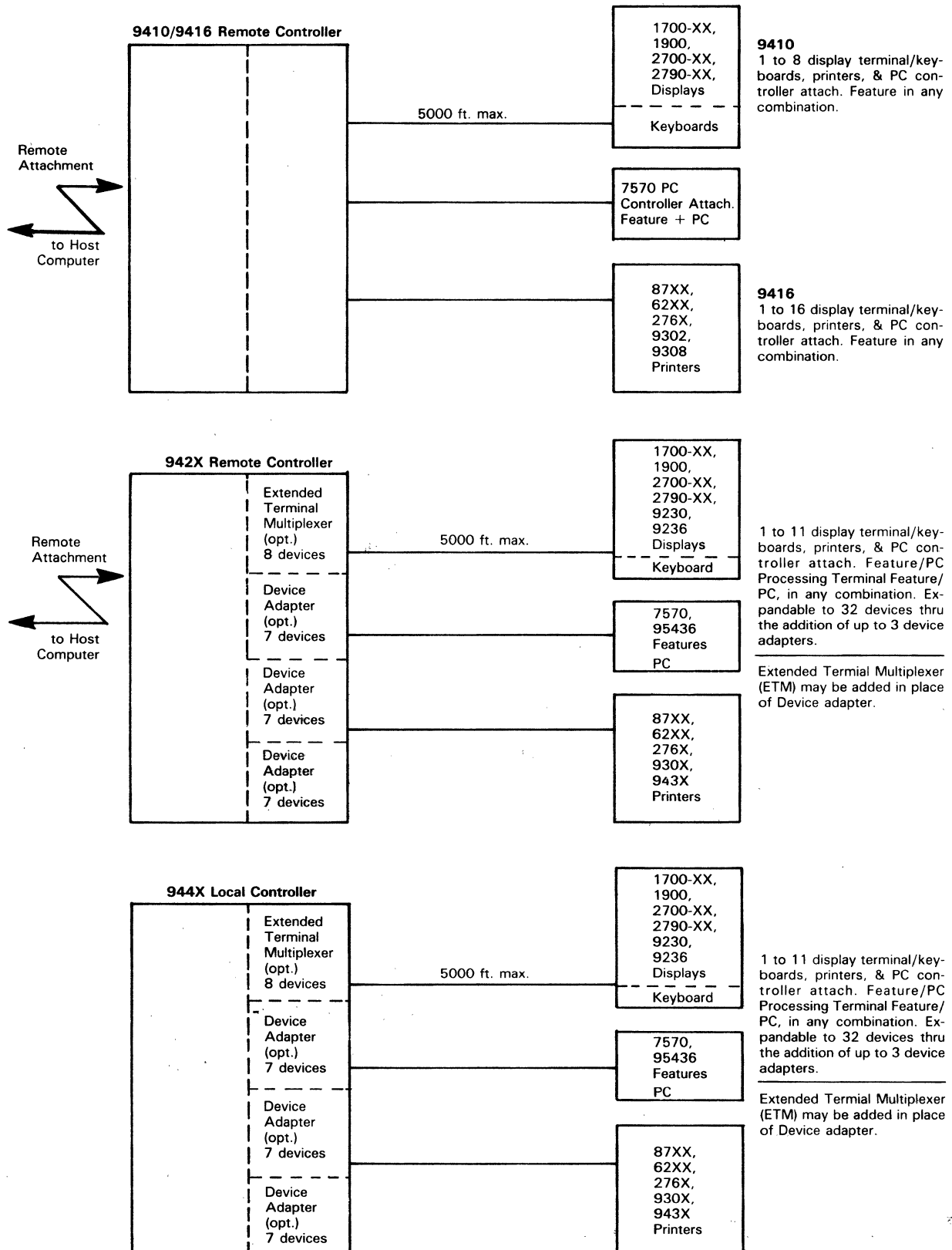
941X REMOTE CONTROLLERS: The 9410 and 9416 are entry-level remote controllers which provide support for 8 and 16 devices, respectively. The 941X controllers provide for the attachment of the C-270 Information Display System displays, terminals, printers, and the Personal Comput-



The ITT XTRA Personal Computer can be integrated into an ITT Courier 9000 Series cluster through the use of the ITT Courier Processing Terminal feature. This feature provides the XTRA with 3270 emulation and file transfer capabilities, while adding local processing power to the 9000 Series cluster.

ITT Courier 9000 Series

9000 Series Configurations



Note: for more information on the 1700-XX, 2700-XX and 2790-XX Displays, 7570 PC Controller Attachment Feature, and 87XX, 62XX, and 276X printers, see Report C25-547-101 (ITT Courier C-270 Information Display System).

ITT Courier 9000 Series

er Controller Attachment Feature; they also support the 1900 Color Display Terminal. The 941X controllers do *not* support attachment of the 9000 Series extended function displays, printers, or the Processing Terminal Feature. Dual Logical Unit support for up to 16 logical units is featured. Diagnostic capabilities resident in the controllers include self-test, error log, status panel, attribute reveal, and line/channel capture.

For more information on the C-270 Information Display System, see Report C25-547-101, immediately preceding this report.

942X REMOTE CONTROLLERS: The 9420 is a remote controller that provides support for up to 11 devices in a minimum configuration. The configuration is expandable to 32 devices through the addition of three device adapters. An alternative to device adapters is ITT Courier's Extended Terminal Multiplexer (ETM). The ETM may be connected up to 5000 feet away from the controller via a single coaxial cable, and provides support for up to eight devices, which may be located an additional 5000 feet away. The 9422 is a redundant version of the 9420, providing an extra-cost back-up for the 9420. The 942X controllers provide for the attachment of the C-270 Information Display System displays, printers, and the Personal Computer Controller Attachment Feature, as well as for the attachment of the 9000 Series displays, printers, and the Processing Terminal Feature. Dual Logical Unit support for up to 64 logical units is featured. Graphics capability may be added using Programmed Symbol Sets. Diagnostic capabilities resident in the controller include self-test, error log, status panel, attribute reveal, and line/channel capture.

944X LOCAL CONTROLLERS: The 9440 is a local controller that provides support for up to 11 devices in a minimum configuration. The configuration is expandable to 32 devices through the addition of three device adapters. An alternative to device adapters is ITT Courier's Extended Terminal Multiplexer (ETM). The ETM may be connected up to 5000 feet away from the controller via a single coaxial cable, and provides support for up to eight devices, which may be located an additional 5000 feet away. The 9442 is a redundant version of the 9440, providing an extra-cost back-up for the 9440. The 944X controllers provide for the attachment of the C-270 Information Display System displays, printers, and the Personal Computer Controller Attachment Feature, as well as for the attachment of the 9000 Series displays, printers, and the Processing Terminal Feature. Dual Logical Unit support for up to 64 logical units is featured. Graphics capability may be added using Programmed Symbol Sets. Diagnostic capabilities resident in the controller include self-test, error log, status panel, attribute reveal, and line/channel capture.

1900 COLOR DISPLAY TERMINAL: The 1900 Color Display Terminal is functionally equivalent to the IBM 3179 Color Display Station. The 1900 is equipped with a 14-inch (diagonally measured) display screen with a 1920-character capacity, arranged in 24 lines of 80 columns each. Seven colors are displayable: red, green, blue, white, yellow, turquoise, and pink. The display can be tilted or swiveled, and features a small footprint. A security keylock is standard. The 1900 is supported for attachment on all C-270 and 9000 Series controllers.

9230 DISPLAY TERMINAL: The 9230 Extended Function Display Terminal is functionally equivalent to the IBM 3180 Model 1 and 3278 Models 2 through 5 Display Stations. The 9230 is equipped with a 15-inch (diagonally measured) display screen with user-selectable display capacities of 1920 (24 lines by 80 columns), 2560 (32 lines by 80 columns), 3440 (43 lines by 80 columns), and 3564 (27 lines by 132 columns) characters. Characters are displayed in green phosphor and displayed within a 7-by-10 (1920- or

2560-character format) or 7-by-8 (3440- or 3564-character format) dot matrix. The 9230 features a three-piece modular design consisting of a tilt/swivel monitor, logic base, and keyboard. A security keylock and adjustable audible alarm are standard. The 9230 is supported for attachment to the 942X and 944X controllers only.

9236 COLOR DISPLAY TERMINAL: The 9236 Extended Function Color Display Terminal is functionally equivalent to the IBM 3279 Color Display Station. The 9236 is equipped with a 14-inch (diagonally measured) display screen with user-selectable display capacities of 1920 (24 lines by 80 columns) or 2560 (32 lines by 80 columns) characters. Seven colors are displayable: red, green, blue, white, yellow, turquoise, and pink. Characters are formed within a 7-by-10 dot matrix. The 9236 features a three-piece modular design consisting of a tilt/swivel monitor, logic base, and keyboard. A security keylock and adjustable audible alarm are standard. The 9236 is supported for attachment to the 942X and 944X controllers only.

1900 KEYBOARDS: A low-profile, detachable keyboard is standard on the 1900 Color Display Terminal. Two layout choices are available: Typewriter with an integrated 18-key numeric pad, or Typewriter with 24 program function keys. Standard features with both models include a height adjustment (5 or 11.5 degrees), integrated function keypads, tactile feedback, home row indicators, and control key color differentiation.

9230 & 9236 KEYBOARDS: A choice of four keyboard styles is available for use with the 9230 Extended Function Display Terminal and 9236 Extended Function Color Display Terminal. All models feature a low-profile "slim-line" design with a height adjustment capability (5 or 11.5 degrees). The keyboards are detachable, attached to the terminal's logic base via an extendable coiled cable. The available layout styles are: Typewriter; Data Entry; Typewriter/Text; and Typewriter/APL. All models contain 24 program function keys, a Reveal Mode key, Note Pad key, Set-up Mode key, Help Mode key, Dual Logical Unit keys, color differentiation between data and control keys, and tactile feedback. In addition to the keyboards, three separate keypad module styles are available. These include a Numeric Keypad, a 24 Program Function Keypad, and an Attribute Select Keypad (for the selection of extended character highlighting, color attributes, or Programmed Symbol Sets). Keyboard layout styles that feature integrated keypad modules are also available from ITT Courier.

9536 PROCESSING TERMINAL FEATURE: This feature provides the capability to connect an ITT XTRA Personal Computer, IBM PC XT, or IBM PC-compatible microcomputer to a 942X or 944X controller. The feature consists of an interface board and a 5¼-inch diskette. The interface board, incorporating a coax receptacle, is installed in a standard ITT XTRA or IBM PC XT input/output expansion slot. A standard coax cable connects the expansion card to a 942X or 944X controller. The diskette uses the standard IBM PC format and is loaded into the microcomputer at the time of execution. IBM 3270 terminal emulation with file transfer, as well as Note Pad capability are added to the microcomputer.

ITT XTRA PERSONAL COMPUTER: The ITT XTRA, marketed by ITT Information Systems, is a 16-bit, IBM PC XT-compatible personal computer. The XTRA features 128K bytes of RAM, and is available with a 14-inch monochrome or 12-inch color display. ITT provides a variety of applications software for use with the XTRA; in addition, the XTRA can run IBM PC XT software. For more information on the ITT XTRA Personal Computer, see DATAPRO REPORTS ON MICROCOMPUTERS, an information service dedicated to the microcomputer industry.

ITT Courier 9000 Series

► **930X MATRIX PRINTERS:** ITT Courier provides a wide variety of matrix printers for use with the 9000 Series. All 93XX printers provide the following standard features: DSC (data stream compatible) or SCS (SNA character string) print compatibility; 132-column printing at horizontal spacing of 10, 12, 13.3, 15, and 16.67 characters per inch; vertical spacing at 3, 4, 6, and 8 lines per inch; bidirectional logic seeking; 7-by-8 dot matrix draft mode or 15-by-16 dot matrix near letter quality (NLQ) mode; control panel with 8-character LED display for diagnostics; and cut sheet and continuous fanfold forms handling with printing of an original plus five copies. All models (except the 9302) connect to the 942X and 944X controllers. The following models make up the 93XX printer series:

- **9301**—provides print speeds of 120 cps (draft) or 55 cps (NLQ);
- **9302**—a display attached printer with print speeds of 150 cps (draft); can be attached directly to a C-270 or 9000 Series display terminal;
- **9303**—provides print speeds of 200 cps (draft) or 55 cps (NLQ); functionally compatible with the IBM 3287 Models 1 and 2;
- **9304**—provides print speeds of 400 cps (draft) or 100 cps (NLQ); functionally compatible with the IBM 3268;
- **9305**—a four- and seven-color printer that provides monochrome and color printing at speeds of 200 cps (draft) or 100 cps (NLQ); functionally compatible with the IBM 3268;
- **9306**—a four- and seven-color printer that provides monochrome and color printing at speeds of 400 cps (draft) or 100 cps (NLQ), as well as single- and triple-plane PSS support; functionally compatible with the IBM 3268.

9308 MATRIX PRINTER: A SCS and DSC data stream compatible printer for use with the ITT Courier 9410 and 9416 controllers. A maximum print speed of 120 cps (draft quality) is supported. The 9308 features 132-column printing at a horizontal spacing of 10 or 16.5 (compressed print) characters per inch, and vertical spacing of six or eight lines per inch. Characters are printed via a 9-by-9 dot matrix. Other standard features include: bidirectional logic seeking print; self diagnostics and self test; and expanded print. Forms are advanced via an adjustable tractor feed mechanism; an original plus three copies can be printed.

9341/9342 LINE PRINTERS: The 9341 and 9342 are DSC and SCS data stream compatible line printers that can connect to the 942X and 944X controllers. The 9341 prints at 300 lpm and the 9342 at 600 lpm. The 9341 and 9342 Line Printers are functionally equivalent to the IBM 3262 Model 13 and 3262 Model 3, respectively. Both printers print 132 columns at a horizontal spacing of 10 characters per inch and vertical spacing of 3, 4, 6, or 8 lines per inch. A variety of

print bands are available. Other standard features include: index scale; page length control of up to 127 lines per page; upper-/lowercase or uppercase only; and an eight-digit alphanumeric display for diagnostics. Forms are advanced via an adjustable tractor feed; an original plus five copies can be printed.

PRICING

The ITT Courier 9000 Series products are available for purchase and/or lease. ITT provides maintenance service from 150 locations in North America. Three service plans are available:

- **Platinum Plan**—complete maintenance service at the customer site is provided. Applicable preventive maintenance is scheduled at a time mutually agreed upon. A customer problem is reported via a call to ITT's COMSAC center; service is provided immediately.
- **Gold Plan**—provides all of the features of the Platinum Plan except that ITT does not respond immediately to calls to the COMSAC center; instead, response is deferred in one of two ways: a field engineer visits the customer site according to a prearranged schedule; a field engineer visits the customer site after a certain number of elements require service.
- **Silver Plan**—provides mail-in/carry-in service to 30 Mail-In/Carry-In centers in North America.

ITT Courier provides quantity discounts for all members of the 9000 Series. It is ITT Courier's policy not to provide detailed pricing information for publication. The company did supply single-quantity purchase prices for the following selected products. In addition, ITT Courier states that its 941X and 942X remote controllers range in price from \$5,000 to \$13,000 (quantity-one), and its 944X local controllers range in price from \$11,000 to \$18,000 (quantity-one). Controller purchase prices depend on the features and configuration selected. Typical purchase prices for the 93XX matrix printers range from \$5,100 to \$13,000 in single quantities. For more detailed pricing information, contact ITT Courier or your local ITT Courier sales office.

Models	Purchase Price \$
9420 Local Controller (11-port)	5,700
1900 Color Display Terminal w/keyboard	2,295
9230 Display Terminal w/keyboard	2,180
9236 Color Display Terminal w/keyboard	4,050
9302 Display Attached Printer	725
9303 Matrix Printer	5,100
9308 Matrix Printer	2,500
9341 Line Printer	11,350
9342 Line Printer	13,000