Appendix A – Cables, Connectors, and Accessories

This section provides information about cables, connectors, and accessories that an LG*Cell* application might require. LGC Wireless can provide these components, or the customer can. If the customer provides them, they must be on-site when LGC Wireless personnel arrive.

Information in this section includes the following topics:

- A description of the cables and connectors needed for the installation
- Relative system gain over varying cable lengths

Contents

Cables and Connectors

The following cables and connectors are required for connecting *LGCell.* They are not provided with the LGC*ell* equipment and must be on site or installed at the site prior to the LGC*ell* installation. LGC wireless can provide and install these cables and connectors.

Determine which cables (and their length) and connectors you need, then order them through a cable vendor or installer.

Coaxial Cable – RF Transmission

Standard Coaxial Cable for Duplex RF Connections

- Connects the Main Hub to a roof-mounted antenna, repeater, or duplex MBS.

- Provides bi-directional downlink and uplink transmission with one cable for duplex RF connections.

Standard Coaxial Cable for Simplex RF Connections

- Connects a Main Hub to a simplex MBS, a simplex roof-mounted antenna, or repeater.

- Provides unidirectional downlink and uplink signals on separate cables for simplex RF connections.

MMF Cable with ST-Connectors – RF Transmission (Vertical Run)
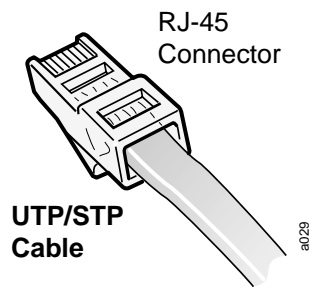

MMF Cable

a028
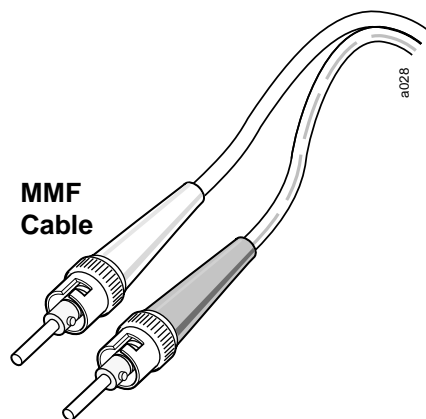
Standard Multi-Mode Fiber Optic Cable

- Connects Main Hub to Expansion Hubs

- Transmits (downlink) and receives (uplink) cellular and/or PCS signals.

- Accommodates distances up to 1 km.

UTP/STP Cable with RJ-45 connectors –
RF Transmission (Horizontal Run)

RJ-45
Connector

UTP/STP
Cable

a029

Standard Category 5 Unshielded or Shielded Twisted Pair

• Connects the Expansion Hub to the RAUs.

• Transmits (downlink) and receives (uplink) cellular and PCS signals.

• Delivers electrical power to RAUs.
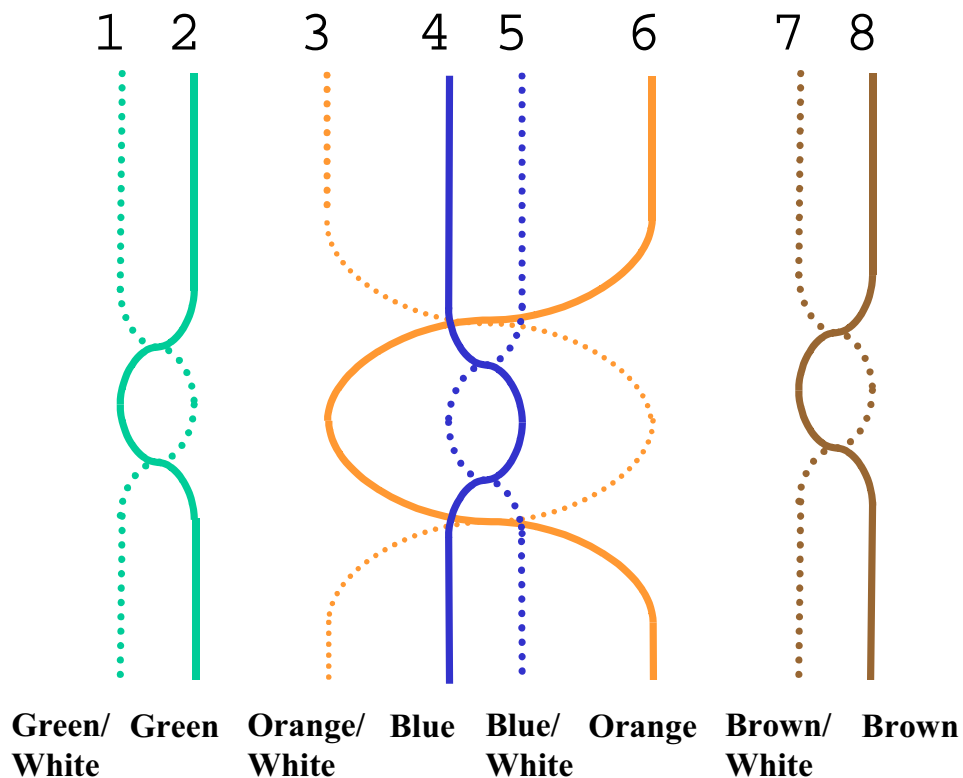
• Accommodates distances up to 60 meters.

LGC Wireless recommends plenum-rated CAT 5 UTP/STP cable and connectors.

Unshielded Twisted Pair Cable Termination

All UTP (Unshielded Twisted Pair) shall be terminated according to the TIA/EIA 568-A standard. The following diagram describes how the four pairs should be terminated.

Top View of the Wiring Map for Category 5 (CAT 5) UTP Cable
(TIA/EIA 568-A Standard)
Straight Connect

1	2	3	4	5	6	7	8

| Green/ White | Green | Orange/ White | Blue | Blue/ White | Orange | Brown/ White | Brown |

The UTP/STP cable can be any length from 10 meters up to 60 meters. (Per TIA/EIA specifications, UTP/STP cable must be at least 10 meters.) For cables longer than 60 meters, system specifications are slightly degraded. When using high quality UTP/STP cable, lengths up to 60 meters can be used without degrading system performance.

The next two tables show how system gain on the uplink and downlink vary as a function of cable length (horizontal run, measured with 1 km of Multi-Mode Fiber).

LG*Cell* System Gain vs. UTP/STP Cable Length (800 MHz, iDEN, 900 MHz)

UTP Cable Length (feet)	Relative System Uplink and Downlink Gain (dB)
0	No change in gain
10	No change in gain
20	No change in gain
30	No change in gain
40	No change in gain
50	No change in gain
60	No change in gain
70	No change in gain
80	No change in gain
90	No change in gain
100	No change in gain
110	No change in gain
120	No change in gain
130	No change in gain
140	No change in gain
150	No change in gain
160	No change in gain
170	No change in gain
180	-0.6
190	-1.3
200	-2.0
210	-2.7
220	-3.4
230	-4.1
240	-4.8
250	-5.5
260	-6.2
270	-6.9
280	-7.6
290	-8.3
300	-9.0
310	-9.7
320	-10.4
330	-11.1

**LG*Cell* System Gain vs. UTP/STP Cable Length
for 1800 MHz or 1900 MHz**
(Horizontal run, measured with 1 km of Multi-Mode Fiber)

UTP Cable Length (feet)	Relative System Uplink and Downlink Gain (dB)
0	No change in gain
10	No change in gain
20	No change in gain
30	No change in gain
40	No change in gain
50	No change in gain
60	No change in gain
70	No change in gain
80	No change in gain
90	No change in gain
100	No change in gain
110	No change in gain
120	No change in gain
130	No change in gain
140	No change in gain
150	No change in gain
160	No change in gain
170	No change in gain
180	-0.6
190	-1.3
200	-2.0
210	-2.7
220	-3.4
230	-4.1
240	-4.8
250	-5.5
260	-6.2

LG*ell* Accessories

LG*Cell* provides a full range of accessories that might be required for LG*Cell* applications. Please see your LG*Cell* Price Book or contact your account manager for the accessory list.

Appendix **B** – TIA/EIA 568-A Cabling Standard

This appendix is a summary of the TIA/EIA 568-A Commercial Building Telecommunications Cabling Standard.

The TIA/EIA 568-A commercial building cabling standard addresses the need for a common criterion covering cabling in commercial buildings. The standard was drafted to ensure support for a wide variety of applications, devices, and vendor products.

The TIA/EIA 568-A standard assures a flexible cabling scheme which permits the planning and installation of communications cable without prior knowledge of the user's needs. This is especially valuable for new building construction and renovation where it is less costly and less disruptive to install a universal cabling system prior to occupancy.

The need for a building cabling standard was recognized in the early 1980s. It resulted from the changes brought on by new technologies. The purpose of the original drafting committee was to provide a non-proprietary cabling system for both new and existing facilities.

In 1985, the Computer Communications Industry Association approached the Electronic Industry Association (EIA) in regard to the market's confusion over cabling systems. The EIA and later its offspring, the Telecommunications Industry Association (TIA), addressed this via technical working groups comprised of industry participants. The resulting standard 568 addressed performance and safety issues related to technology and utilized many recognized and proven standards.

The TIA/EIA 568-A standard defines the categories of UTP cabling, the categories of connecting hardware, patch cables, and provides guidelines on cabling practices.

The TIA/EIA 568-A standard describes six sub-systems within a facility telecommunications cabling system summarized below. (This is intended as a summary only and is meant to provide a better comprehension of the standard. The complete TIA/EIA 568-A standard is available for purchase. Call 1-800-854-7179.)

Horizontal Wiring

The horizontal cable is the portion of the cabling system which extends from the work area outlet to the telecommunications closet. The horizontal cabling is a star topology, with a maximum cabling run of 90 meters (295 feet), independent of media type.

Voice	Data
4-pair 100 ohm UTP cable	4-pair 100 ohm UTP/STP
	2-pair 150 ohm STA
	62.5/125 μm fiber optic cable

The horizontal cable amounts to the greatest quantity of individual cables in the building. Although the TIA/EIA 568-A standard helps limit cabling options, consideration should be given to media type in order to support possible future needs. The cable selected should accommodate more than one network planning period.

Backbone Wiring

The backbone cabling provides the interconnection between the tele-communications closets and the equipment rooms and entrance facilities. The backbone cabling is also a star topology with the maximum cable length being media and applications dependent.

The backbone cable is typically second to horizontal cables in terms of amount of cable deployed. The cable selected should accommodate a minimum of one to several network planning periods.
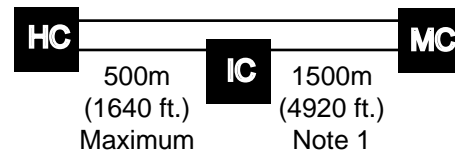
Multi-Mode Optical Fiber Cable
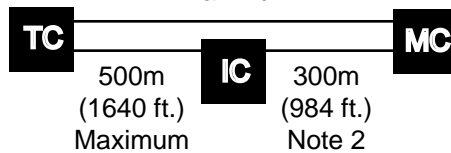
62.5/125 µm Optical Fiber Cable
3000m (9843 ft.)

HC —————— IC —————— MC
500m   2500m
(1640 ft.) (8202 ft.)
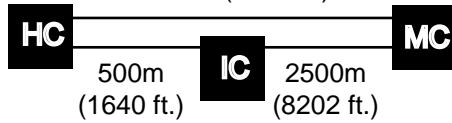
62.5/125 micron Optical Fiber Cable

2000m (6560 ft.)
Maximum

HC —————— IC —————— MC
500m   1500m
(1640 ft.) (4920 ft.)
Maximum   Note 1

100Ohm UTP Cable for Voice

800m (2624 ft)
Maximum

TC —————— IC —————— MC
500m   300m
(1640 ft.) (984 ft.)
Maximum   Note 2

100Ohm UTP Cable for Data

HC —————————————— IC/MC
90m (295 ft)
Maximum
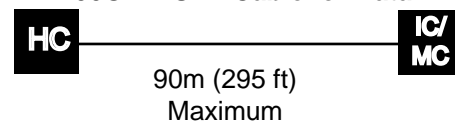
150Ohm STP-A Cable for Data

HC —————————————— IC/MC
90m (295 ft)
Maximum
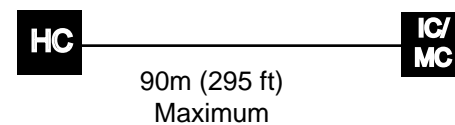
HC Horizontal Cross-Connect	**MC** Main Cross-Connect	**IC** Intermediate Cross-Connect

Note 1	**Note 2**
When the HC to IC distance is less than maximum, the IC to MC distance for optical fiber can be increased accordingly but the total distance from the HC to the MC shall not exceed the maximum of 2000m (6560 ft.).	When the HC to IC distance is less than maximum, the IC to MC distance for UTP cable can be increased accordingly but the total distance from the HC to the MC shall not exceed the maximum of 800 m (2624 ft). For voice applications only.

Work Area

The work area interconnects the horizontal cabling at the wall outlet to the desktop devices. The maximum allowable distance for patch cables is three meters (9.8 feet), based on the cable being of the same type as the horizontal cable.

Telecommunications Closet

The telecommunications closet is the area in a building dedicated to telecommunication equipment. The functions which take place in the closet include the interconnection point between horizontal and backbone cabling systems, the interconnection of two or more backbone cabling systems, and/or the interconnection of the entrance facility to the overall telecommunications cabling system.

LGC WIRELESS

Equipment Room

The equipment room is the area in a building where telecommunications equipment is located. Parts of or all of the telecommunications cabling system terminate here.

Entrance Facilities

The entrance facility is where outside telecommunications service enters the building, and interconnects with the building's internal telecommunications systems. In a campus or multi-building environment, the entrance facility may also contain the building's backbone interconnects.

Unshielded Twisted Pair Cable Termination

All UTP (Unshielded Twisted Pair) shall be terminated according to the TIA/EIA 568-A standard.

Appendix C – Compliance Information

All LG*Cell* systems comply with Optical Fiber Safety Standard IEC/EM60825-2. The LG*Cell* distributed antenna system is rated as a Class 1 laser hazard system. It has an absolute maximum output power of -11.5 dBm at 1300 nanometers (nm). There are no restriction on the location or use of an LG*Cell* system. No special precautions are required if standard work practices are followed. Additional information on the safe use of optical fiber communications systems is at the end of this appendix.

The following provides LGC Wireless' LG*Cell* system approval status for various countries around the world. Some European countries require National Type Approval to their national standards (such as Germany).

DAS9M-2-W:

Telecom: A200296L (BAPT 222 ZV 15/ETS 300 609-4) and ETS 300 609-4, October 1998

EMC: EN 300 339, June 1998, EN 61009-4-6, 1996, and EN55022/CISPR 22 Class B

Safety: Power Supplies, Astec International Ltd., Model LPS 43, Universal Micro Electronics Co. Ltd., Model UPO651S-02, and International Power Sources, Inc., Model UPO651S-02 all have CB scheme certifications.

Markings: The German Type Approval mark is required as well as the UK approval number. The CE mark is also required.

DAS18M-2-W:

Telecom: ETS 300 609-4, October 1998

EMC: EN 300 339, June 1998

Safety: Power Supplies, Astec International Ltd., Model LPS 43, Universal Micro Electronics Co. Ltd., Model UPO651S-02, and International Power Sources, Inc., Model UPO651S-02 all have CB scheme certifications.

Markings: The UK approval number and the CE mark are required.

DAS8M-2-W:

Telecom: FCC: NOO-DAS800-1 (FCC Part 22.901d) Non-Broadcast
Transmitter
Industry Canada: 3077281151A for the "Cellular 800" (RSS128,
Issue 1)

EMC: FCC: Class A, Part 15, Subpart B
Industry Canada: Same as FCC

Safety: UL 1950, 3rd Edition and the cUL mark for the Canadian equivalent.

NEBS: This is a customer driven conformance certification and typically
desired of equipment that is intended to be installed in a Central
Office environment. LGC products are intended as Customer
Premise Equipment and it is not anticipated that they will be
installed in a Central Office environment, therefore NEBS
conformance certification has not been pursued at this time.

Markings: The FCC approval number and the FCC logo are required. The word
Canada followed by the Canadian approval number is required. The
UL mark is required.

DAS19M-2-W:

Telecom: FCC: NOO-DAS800-1 (FCC Part 24E) Distributed Antenna System
(Repeater)
Canada: 3077331163A for the "PCS 1900" (RSS-133, Issue 1)

EMC: FCC: Class A, Part 15, Subpart B
Industry Canada: Same as FCC

Safety: UL 1950, 3rd Edition and the cUL mark for the Canadian equivalent.

NEBS: This is a customer driven conformance certification and typically
desired of equipment that is intended to be installed in a Central
Office environment. LGC products are intended as Customer
Premise Equipment and it is not anticipated that they will be
installed in a Central Office environment, therefore NEBS
conformance certification has not been pursued at this time.

Markings: The FCC approval number and the FCC logo are required. The word
Canada followed by the Canadian approval number is required. The
UL mark is required.

FCC Regulatory Notice:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Regulatory Notice:

This Class B (or Class A, if so indicated on the registration label) digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numerique de la Classe B (ou Classe A, si ainsi indique sur l'etiquette d'enregistration) respecte toutes les exigences du Reglement sur le Materiel Brouilleur du Canada.

Declaration of Conformity to Type

I hereby declare that the product:

LGCell GSM 900 Repeater, Type DAS9M-2-W

is in conformity with the type as described in EC Type-examination certificate:

Certificate of EC type Examination of Electromagnetic Compatibility No. 14082

and satisfies all the technical regulations applicable to the product within the scope of Council Directives 91/263/EEC and 93/97/EEC:

> EN 300 339 June 98 (Certificate of EC Type Examination No. 14082 issued by Radiocommunications Agency, UK)
> ETS 300 609-4 October 98 (Certificate of Type Approval No. 14028 issued by Radiocommunications Agency, UK)
> BAPT 222 ZV 15 (Issued German type approval mark No. TPS A2000296L)

MANUFACTURER:

> LGC Wireless Inc.
> 585 East Brokaw Road
> San Jose
> California, 95112-1017
> USA

Point of contact:

Mr. Paul Allan   Tel: +1 408 487 2486
                                      Fax: +1 408 487 2410

Paul Allan

PAUL ALLAN

California, USA 8/26/99

Declaration of Conformity to Type

I hereby declare that the product:

LGCell GSM 1800 Repeater, Type DAS18M-2

is in conformity with the type as described in EC/German type-examination certificate:

Certificate of EC Type Examination of Electromagnetic Compatibility No.14152

and satisfies all the technical regulations applicable to the product within the scope of Council Directives 91/263/EEC and 93/97/EEC:

> EN 300 339 June 98 (Certificate of EC Type Examination No. 14152 issued by Radiocommunications Agency, UK)
> ETS 300 609-4 October 98 (Certificate of Type Approval No. 14149 issued by Radiocommunications Agency, UK)
> BAPT 222 ZV 15

MANUFACTURER:

> LGC Wireless Inc.
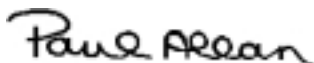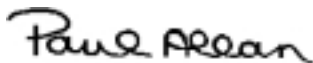> 585 East Brokaw Road
> San Jose
> California, 95112-1017
> USA

> **Point of contact:**

> Mr. Paul Allan   Tel: +1 408 487 2486
>   Fax: +1 408 487 2410

PAUL ALLAN

California, USA 8/26/99

LGC WIRELESS

IEC/EN 60825-2 - Safe Use of Optical Fiber Communication Systems

Part 2 of IEC 60825 provides requirements and specific guidance for the safe use of optical fiber communications where optical power may be accessible at some distance from the optical source. In this part of IEC 825, light emitting diodes (LED's) are included whenever the word "laser" is used.

Description of LG*Cell* System

The LG*Cell* is a distributed antenna system. It consists of three main components. A Main Hub, which is connected by dual mode fiber optic cables to one or more Expansion Hubs. Each Expansion Hub is connected by UTP CAT 5 cable to a Remote Antenna Unit. Because LED's are used to send a signal over the fiber optic cable, the LG*Cell* is covered under the IEC 60825 specification.

Requirements under IEC 60825

Under IEC 60825, LGC Wireless is required to determine the Class of operation of the LG*Cell* system, the Hazard level of the LG*Cell* system and any special instructions that must be included in an operators manual as well as any warning labels that may be required on the LG*Cell* system.

The LG*Cell* is covered only under these definitions of section 3 of 60825.

3.2 enclosed system: A system in which, during normal operation, the optical radiation is totally enclosed, by light proof cabinets, components, total internal reflection or optical fiber cables and connectors.

3.3 end user: The person or organization using the optical fiber communication in the manner the system was designed to be used. The user cannot necessarily control the power generated and transmitted within the system.

3.4 hazard level 1: A hazard level 1 is allocated to any part within an optical fiber communication system at which, under reasonably foreseeable circumstances, human access to laser radiation in excess of the accessible emission limits (AEL) of class 1 for the applicable wavelengths and emission duration will not occur.

3.10 light emitting diode (LED): Any semiconductor device which can be made to produce electromagnetic optical radiation in the wavelength range from 180nm to 1mm. (The optical radiation is produced by the process of spontaneous emission, although some stimulated emission may be present.)

3.13 location with controlled access: A location where access to the protective housing (enclosure) is controlled and is accessible only to authorized persons who have received adequate training in laser safety and servicing of the system involved. Examples include optical cable ducts and switching centers.

3.14 location with restricted access: A location where access to the protective housing is restricted and not open to the public. Examples include industrial and commercial premises, PBX rooms, computer system rooms, and optical test sets. Distributed fiber networks may pass through unrestricted public areas, restricted areas within premises, as well as controlled areas or they may be deployed entirely within restricted business premises.

3.18 optical fiber communication system: An engineered assembly for the generation, transference, and reception of optical radiation arising from lasers in which the transference is by means of optical fiber for communication purposes.

3.19 reasonable foreseeable event: An event, the occurrence of which under given circumstances can be predicted fairly accurately, and the occurrence of which is a possibility. Examples of reasonably foreseeable events might include the following: fiber cable break, optical connector disconnection, operator error or inattention to safe working practices. Reckless use or use for completely inappropriate purposes is not to be considered as a reasonably foreseeable event.

Installation Notes

The LG*Cell* is covered under these parts of section 5 of 60825

5.2.1.3 Test Equipment: During installation or testing of an optical fiber cable or system, only test equipment of laser Class 1 should be used.

5.2.1.5 Installation Rules: Each person engaged in the installation or service of an optical fiber cable communication system should observe all rules, procedures and practices established for the safe operation of optical fiber communication systems.

Evaluation of LGC System

The LG*Cell* is covered under Annex A of 60825

The LG*Cell* system is a self contained product that contains an optical fiber communication system that would be safe under normal operating conditions because the optical radiation is totally enclosed and contained under intended operation. However, because of the extended nature of the system, the optical power may be accessible a kilometer from the optical source. The LG*Cell* system contains LED's, which are the source of radiation covered under IEC 825. Usually a whole fiber optical communication system would not be classified under IEC 825-2 in the same way required under IEC 825-1. This is because, under intended operation, the optical power is totally enclosed, and it could be argued that an interpretation of IEC 825-1 would give a class 1 to all systems, which may not accurately reflect the hazard potential of some systems. If the emitter can be operated separately, it should be classified according to IEC 825-1. However, the power output level of the LG*Cell* system is so low that it always falls into the class 1 hazard level even under 100% modulation conditions. The absolute maximum allowed at 1300nm is +9.5 dBm. The absolute maximum accessible output of the

LG*Cell* fiber optic system is -11.5 dBm. Therefore there is no restriction as to location of use of the LG*Cell* system and there is no labeling requirement.

Suggested Work Practices

The LG*Cell* is covered under these parts of section D7 of 60825

The following working practices are suggested for working on the LG*Cell* system:

- **Viewing Fiber:** Do not stare with unprotected eyes at the connector ends of the fibers or the ports of the hub.

- **Test Fibers Cables:** When using test fiber optical cables, the optical power source shall be the last to be connected and the first to be disconnected.

- **Fiber ends:** Any unconnected fiber ends should be covered with an approved cap. Do not use tape.

- **Broken Fiber Cables:** Do not stare with unprotected eyes at any broken ends of the fibers. Report and have any broken fiber cables replaced.

- **Cleaning:** Use only approved methods for cleaning optical fiber connectors.

- **Modification:** Do not make any unauthorized modifications to this fiber optical system of associated equipment.

- **Live work:** Live work is permitted on the LG*Cell* as it is a class 1 hazard.

- **Signs:** No warning signs are required.

- **Test Equipment:** Use class 1 test equipment.

Appendix **D** – Services

This appendix gives an overview of services that LGC Wireless provides.

LGC Wireless offers a full range of professional services to ensure cost-effective and timely deployment of wireless networks. The seasoned staff of dedicated service professionals at LGC Wireless combine wireless system design and implementation expertise with a commitment to customer satisfaction unequalled in the industry. LGC offers a "Coverage Guarantee" and full access to its experts any time, 7 days a week and 24 hours a day.

For both small and large installations, LGC can deliver specific services or a full, turnkey package that frees the customer from all the implementation details. LGC Wireless offers the following services:

- Application Development
- Preliminary System Design
- Site Surveys
- Installation and Commissioning
- Project Management
- Turnkey Implementation
- Maintenance

Appendix E – Alarm Report Monitor (ARM2000)

This appendix describes the Alarm Report Monitor (ARM2000) system, an option that you can order separately, for monitoring LG*Cell,* PCS Extender, and Fiber Extender alarms.

If your LG*Cell* is connected to a microcellular base station, see the *Integration Module Installation and Reference Manual* for installation and operation of alarm devices and connectivity for that system.

Contents

Description of the ARM2000 System

The Alarm Report Monitor (ARM2000) software is used to display, manage, and record the alarm monitoring activity of one or more remote-ARM (ARM2000-RU) alarm monitoring and remote control units. The software provides a graphical display of up to 255 of these units and enables the user to identify and acknowledge alarm events, reset alarms, maintain event history, and page field service personnel. The system supports multiple users and tracks responsibility through log-in and log-out procedures, using four security levels to protect critical system functions.

Alarm Report Monitor Features

The ARM2000 system has the following features:

- **Graphic Color Status Display** shows the entire system and individual device front panels with animation of all alarm reporting functions.

- **Remote System Reset Control** uses point-and-click mouse control. Reset status is color keyed for on/off and pulsing conditions.

- **Alarm History and Control Logs** keep track of all system events. You can view and print reports for the entire system, one specific device, or one channel of any unit.

- **Security Code Management** allows restrictions to sensitive areas of the system. Four levels of security are available, with log-in and log-out procedures to track responsibility.

- **Journal Printer** option keeps an active record of all alarm and control events. All activity is time and date stamped.

Hardware and Operating System Requirements

To run ARM2000, you need the following hardware and operating system:

- IBM Pentium or compatible PC

- Windows 95 or Windows 98 with MS-DOS prompts

- VGA card with a minimum of 1024 Kbytes video RAM

- 8 Mbytes of conventional memory

- Hard disk storage space: at least 10 Mbytes. Additional storage space allows larger history logs.

- One Com port

- US Robotics External 56Kbps modem (connects to COM1 port)

- Mouse

- Parallel printer (optional)

LGC WIRELESS

ARM2000 System Basics

The ARM2000 system is an alarm monitoring, reporting, and remote control system. Up to 8,160 individual alarm points can be monitored, displayed and logged by the system. The system consists of up to 255 remote-ARM monitoring units that can monitor up to 2,040 LGC systems (LG*Cell*, PCS Extender, Fiber Extender) and a Pentium PC running the ARM software.

These remote-ARM units communicate with the ARM software through dial-up modem connections. Each remote-ARM unit can use an external or internal modem. A database of these devices is set up in the PC, each device having a unique address. This address is set on the device and programmed into the PC using the Device Setup utilities of the software.

The next figure illustrates both the direct connection of a single ARM unit and multiple units connected via a dial network.

Multiple Remote-ARM Over Dial-up Network
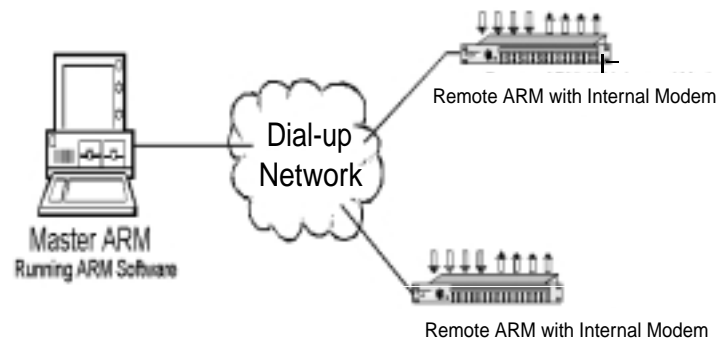
ARM2000-RU (Remote Unit) Installation

The ARM2000-RU is rack mounted in the same rack as the LG*Cell* Main Hub(s).

This remote-ARM unit has an "octopus" cable that enables it to monitor up to 8 LG*Cell* Main Hubs. The ARM unit needs to be within 4 feet of each Main Hub that it will monitor due to the cable length.

The ARM unit has an external power supply that requires a 110 VAC receptacle. Connect the power to the ARM unit after all cable and telephone connections are completed.

Modem Connections

Communications to or from the remote ARM can be configured in either of two ways:

- Internal modem (inside remote-ARM unit)

  The internal modem must be a North American qualified modem for use in telephone networks that use North American standard call progress tones. This modem is inside the remote-ARM unit and requires an analog phone line connection with an RJ-11 male connector. Connect the phone line to the port marked "Line" in COM1, at the back of the remote ARM.

- External modem (via RS-232 COM1)

  LGC Wireless recommends a US Robotics External modem qualified in the country of use. To install this modem, you need a DB-25 to RJ-45 converter cable and a cable with RJ-45 male connectors on both ends.

If you are in a country that does not use North American standard call progress tones, you need to use an external modem with the ARM2000-RU unit.

If you use the US Robotics External modem, you need to prepare the modem with initialization commands before you use it, as "Preparing the PC Modem" on page 7 describes. Take the following steps to install the modem:

1. Connect the phone line to the phone line marking at the rear of the modem.
2. If you choose to be notified by a phone ring of an incoming call, then connect the phone to the phone marking at the rear of the modem via RJ-11 male connectors on both ends.
3. Connect the DB-25 to RJ-45 converter at the rear of the modem.
4. Run the other end of the RJ-45 cable to the RS-232 COM1 port at the rear of the remote ARM.

Alarm Cable Connections

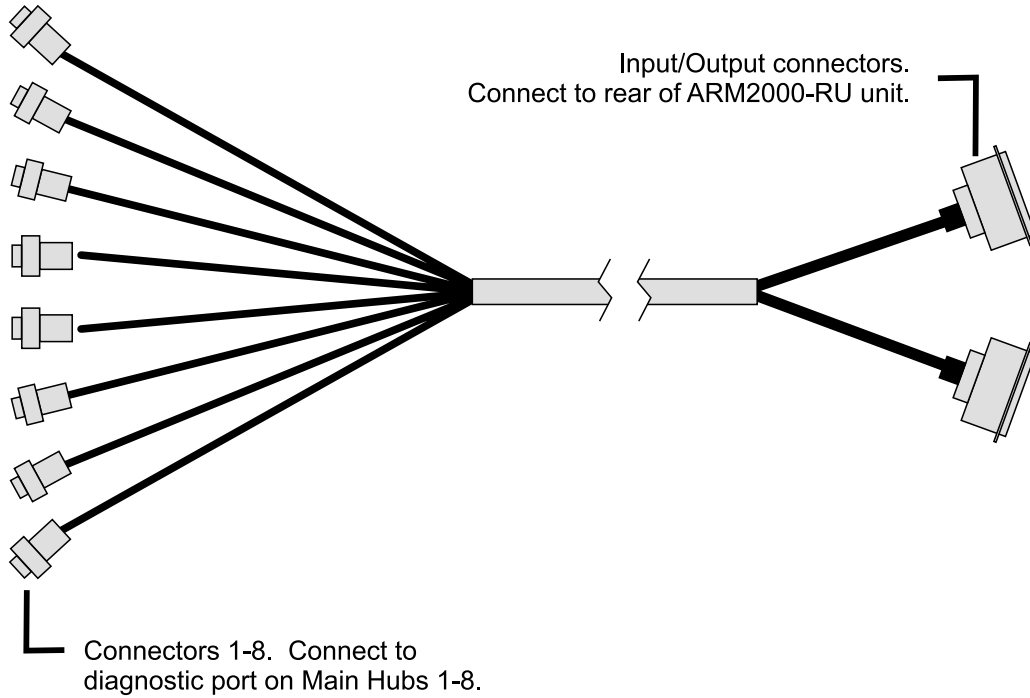To connect the LG*Cell* Main Hub(s) to the remote ARM, use the two-to-eight-port connector cable. Make the following connections to monitor the following alarms:

Connector	Alarm Monitored
J1	Alarms 1,2 - Main Hub 1
J2	Alarms 3,4 - Main Hub 2
J3	Alarms 5,6 - Main Hub 3
J4	Alarms 7,8 - Main Hub 4
J5	Alarms 9,10 – Main Hub 5

J6	Alarms 11,12 – Main Hub 6
J7	Alarms 13,14 – Main Hub 7
J8	Alarms 15,16 – Main Hub 8
Input	Alarm input to ARM unit
Output	Remote Reset from ARM unit

Alarm Cable and Connectors

Input/Output connectors.
Connect to rear of ARM2000-RU unit.

Connectors 1-8. Connect to
diagnostic port on Main Hubs 1-8.

Test Setup

After the ARM unit is powered up, the unit should be reset and ready for communicating to the PCARM system for final programing.

When the ARM is powered, wait 15 seconds and then press the TEST button on the left front of the unit. All 16 circuit alarm LEDs on the front panel should light and toggle to green momentarily. If this does not occur, power down the ARM unit for 15 seconds and start over.

The LED final state should be green to indicate a proper connection and a no-fault condition for each Main Hub that is also powered up. Each Main Hub has 2 LEDs assigned to it. Alarm circuits that do not have an "octopus" cable connected will be red.

PCARM Programming Information

If multiple ARM200-RU units are installed that will be controlled by one PCARM system, then each ARM200-RU unit must be configured with a unique device ID (1-255) for programming by the PCARM system. Each ARM unit must have a different device ID if it will be controlled by one PCARM system. There is a label on each ARM unit that indicates what device ID it has be configured for. The device number and which Main Hub(s) it has been connected to, is important information that must be provided to the person programming the PCARM.

PCARM Installation for ARM2000

The PCARM software runs the ARM2000 system. This section describes how to install the PCARM software and configure it for running the ARM2000, with a subsection on each of the following steps:

1 PC modem preparation

2 Remote programming of a remote-ARM unit

3 PCARM software installation

4 Modem connections

5 Testing of communications between PCARM and a remote-ARM unit

Preparing the PC Modem

To communicate with the internal modem of the remote-ARM unit (ARM2000-RU), prepare the US Robotics 56K external modem for the Intel Pentium PC that will be running the PCARM software via the following steps:

1 Install the US Robotics 56K external modem in the COM1 port of the Intel Pentium PC. (Follow the installation instructions that accompany the modem.)

2 Enter the AT commands to initialize the 56K modem to communicate with the internal modem of the remote ARM.

To enter the AT commands

1 Choose Accessories from Programs on the Start menu.

2 Click HyperTerminal.

3 Double click HyperTerminal.exe.

4 Enter a name of connection ("Test", for example).

5 When prompted to enter a phone number, select direct to COM1 from the "<u>CONNECT USING</u>" pull-down menu and click OK. Then click OK on COM 1 properties.

Once connected to COM1, enter AT and press Enter. (You will see OK displayed at this point and will not see any characters.) Then enter the following AT commands.

- "AT&F"
- "AT&A0"
- "AT&B1"
- "AT&K0"
- "AT&M0"
- "AT&N3"
- "AT&W"

After you enter these commands, your PCARM modem is ready for communication with the internal modem of the remote ARM. Exit HyperTerminal. (You do not need to save this session).

Remote Programming of a Remote-ARM Unit

To program the remote-ARM unit with the phone number to dial out to the PCARM modem when an alarm condition occurs, make sure that the remote-ARM unit is connected to an analog dial-up line and is powered up. Call from the PCARM, taking the following steps. (Make sure the US Robotics 56K modem is installed in the PCARM before programming.)

1 Click Start.

2 Click Programs.

3 Click Accessories.

4 Click HyperTerminal.

5 Double click HyperTerminal.exe.

6 Type connection name ("TEST", for example) and click Enter.

7 Type the phone number of the line to which the remote-ARM unit is connected.

8 Click OK.

9 Click Connect.

When a connection is established to the remote-ARM unit, the HyperTerminal status bar will indicate the connection time.

10 After a connection is established, type "P" and then press the Enter key.

A prompt appears on the screen asking you to enter the phone number:

(ENTER PHONE NUMBER)

11 Enter the dial-up number (the PCARM modem number) that the remote ARM will dial to establish communications with the PCARM. If you need to enter a digit to access an outside line (such as 9), separate this digit from the phone number with a comma for a pause. Enter 1 for long distance if required.

12 End the session by entering "ATH0".

13 Exit HyperTerminal. You do not have to save the session.

PCARM Software Installation

To install the PCARM files

1 Place the PCARM disk in the A (or appropriate) drive.

2 Open Windows Explorer from the Program menu under the START Button.

3 Make directory PCARM under the C drive.

4 Make two sub-directories in the PCARM folder, labeled ARCHIVE and BACKUP.

5 Exit Windows Explorer.

6 From the START Button RUN A:\PCARM.exe. Press OK.

The WinZip program will extract and unzip the PCARM files.

7 Save the unzipped PCARM files to the C:\PCARM directory.

8 Close the WinZip window.

9 Take out the PCARM disk and store in a safe place.

10 After you install these files, verify that the files are in the PCARM directory via Windows Explorer, then exit Explorer.

To create a shortcut for PCARM

1 Right click the mouse on the Windows 95 desktop.

2 Place the mouse pointer over NEW.

Another menu pops up.

3 Click Shortcut.

4 Click Browse.

5 Double click PCARM.exe.

6 Click Next.

7 Click Next (again).

8 Double click the desired icon.

A "PCARM.exe" icon appears on the desktop.

To set up PCARM software

1 Double click the PCARM.exe shortcut icon that you created.

The System View screen appears.

2 Click setup.

3 Click Configure ARM Manager (change the configurations to desired settings). Make sure "use modem" is YES. Once changes have been made, save the changes and exit.

4 Click Setup (again).

5 Click Device.

6 Click Remote Arm.

7 Enter the device address (0001, for example).

8 Enter the location (LGC Wireless, for example).

9 Enter the phone number for the remote-ARM unit (assigned to that hardware device number).

10 Enter appropriate alarm names, short names, alarm & clear states, and pager. Select no for pager for all alarms entered. (See Inputs sample screen.) If you are in Device 0001, alarm names are already set. This is the default database.

11 Save the data you entered. (You will not see any indicator of saved data.)

12 Click Program Outputs.

13 Enter the appropriate number of devices, and Energize and De-Energize states. (See Outputs sample screen). If you are in Device 0001, there is default data present.

14 Save data once entered.

15 Once data has been saved, exit out of setup. (This will take you to the Device View screen.)

To receive alarms from the remote-ARM unit or units, leave the PCARM running continuously on the PC. The System View screen indicates the status of each device (REMOTE ARM UNIT).

Modem Connections

Communications to or from the remote-ARM unit can be configured in either of two ways:

- The internal modem (inside the remote-ARM unit) uses North American call progress tones.

- External Modem (via RS-232 COM1) used for International locations when North American call progress tones are not used.

Internal Modem: (Required parts: cable with RJ-11 male connectors on both ends)

The internal modem is situated inside the remote-ARM unit. The phone line connection is connected to the port marked, "Line" in COM1, at the back of remote-ARM unit.

External Modem: (Required parts: US Robotics External modem, DB-25 to RJ-45 converter, cable with RJ-45 male connectors on both ends)

If you choose to use an external modem, use a US Robotics 56K external modem. If this modem is used, please prepare the modem with the initialization commands given in the modem preparation section prior to usage. Connect the phone line to the phone line marking at the rear of the modem. Connect the DB-25 to RJ-45 converter at the rear of the modem, and run the other end of the RJ-45 cable to the RS-232 COM1 port at the rear of the remote-ARM unit. Verify that you are using a remote-ARM unit that <u>does not</u> have an internal modem (part number ARM2000-RU-EXT).

Testing Communications Between PCARM and Remote-ARM Unit

To test communications between the two modems, the PCARM software needs to be running. (Install the software and configure it, if not done.)

1 Turn on the PC and wait for Windows 95 to load.

2 Click the PCARM.exe shortcut icon to run the PCARM program.

   This puts you at the System View screen.

3 On the System View screen, click the device with which you want to communicate.

   This puts you at the Device View screen. To find the device, place the mouse pointer over the cell for the device.

4 On the Device View screen, click Test to test communications between the PCARM and the remote-ARM unit.

An alarm condition prompts the remote-ARM unit to dial the PCARM (alternate method of test).

Security Setup

To access the security utility, click Setup on the Device View or System View screen. Choose the desired security system by placing the cursor in the appropriate box and clicking. For a secure system you will need to enter a name, password (security code), and clearance level for each individual who will use the system. In a secure system at least one operator must have a Level 3 security clearance. If the system is set up to be Tracked, or Secured, an operator can log on and log off from the Setup menu on the Device View or System View screen.

Last Name	Initial	Security Code	Level
Trivedi	B	Biren	3
Allan	P	Paul	3
Salutric	R	Robert	1

Enter Level; <↑↓><Tab>Next Field <F3>Ditto <ALT+E>Exit <Alt+A>Save

```
PCANN31 - security                                    [_][□][X]
[ Auto      ▼ ]  [□][▣][▣]  [✛]  [▣][▣]  [A]
                         SECURITY SET UP
Exit   Security Code     Save

Open System      ( )

Tracked System   ( )

Secured System   (•)







Security Required
```

Security Setup Utility Overview

The Security Setup Utility enables the user to setup the various security features of the ARM. It is made up of two different screens. One to select the system wide security options and the other to enter the system operators.

Access to the Security Setup Utility

You can access the Security Setup Utility from the System View or Device View screen or the Control Panel. From any of these, select Setup / Security. If the system is in tracked or secured mode, you must have Level 3 security clearance. If the operator who is currently logged on does not have Level 3 clearance, an error message is displayed. In a secured system, you need to enter a second security code to access this utility.

Security Options Screen

```
                        SECURITY SET UP
  Exit   Security Code      Save

 Open System      (•)

 Tracked System ( )

 Secured System ( )
```

No Security Required

Security Options Fields

To select a Security Setup field, use the SPACEBAR key or position the cursor over the field you want and click the left mouse button. You can set up the security of the system in one of three ways:

- Open system

  In an open system, all functions are available at all times. No log-on or log-off procedure is required. This is the least secure system.

- Tracked system

  In a tracked system, each user is assigned a security level and an access code. There are four levels of security, each with progressively more access to the system. After a user logs on at a given level, all functions for that level are available to the user.

- Secure system

  A secure system functions in the same way as a tracked system, except that level 3 functions (archive and system management) require reentry of the security code.

Security Codes Screen

```
                         SECURITY SET UP
Exit  Save

Last Name                    Initial      Security Code      Level
_____                    _____      _____      _____
Lastname 00                     A           TEST 00            0
Lastname 01                     A           TEST 01            1
Lastname 02                     A           TEST 02            2
Lastname 03                     A           TEST 03            3
Lastname 04                     A           TEST 04            0
Lastname 05                     A           TEST 05            1
Lastname 06                     A           TEST 06            2
Lastname 07                     A           TEST 07            3
Lastname 08                     A           TEST 08            0
Lastname 09                     A           TEST 09            1
Lastname 10                     A           TEST 10            2
Lastname 11                     A           TEST 11            3
Lastname 12                     A           TEST 12            0
Lastname 13                     A           TEST 13            1
Lastname 14                     A           TEST 14            2
Lastname 15                     A           TEST 15            3



Enter Last Name; <↑↓><Tab>Next Field <F3>Ditto <ALT+E>Exit <Alt+A>Save
```

The Security Codes screen enables the system supervisor (highest security, Level 3) to change or add operator names and security codes and assign individual security levels.

Security Code Levels

- Level 0

   Allows a user to view status and history screens and to print reports. At this level, the user will not be able to acknowledge alarms. Any attempt to perform a function will result in a prompt for a higher security code or log on.

- Level 1

   All of Level 0 plus the ability to acknowledge alarms.

- Level 2

   All of Level 1 plus the ability to control the remote-ARM relays.

- Level 3

   Manager Level. Unrestricted access to all system functions. This level is required for all setup functions.

LGC WIRELESS

Alarm and Device Setup

During the initial test after you complete the setup, PCARM displays the appropriate clear and alarm conditions. To acknowledge these conditions, click the ACK button on the Device View screen. During initial setup, all 16 devices are assumed to be enabled.

Disabling Alarms and Devices

To disable an alarm, place the mouse pointer over the alarm and right click. PCARM displays a dialog box that asks if you want to be reminded to enable after an elapsed time. Make your selection of time and press Enter. The alarm is disabled at this point, both in PCARM and on the REMOTE UNIT display panel.

You can also enable a device in this manner from the System View screen.

Enabling Alarms and Devices

To enable an alarm, place the mouse pointer over the desired alarm and right click. PCARM displays a dialog box that gives you options to enable or cancel. Click the enable options, or press **E** on the keyboard to enable them. (If you attempt to enable an alarm when appropriate conditions have not been met, the alarm indicator (red LED) flashes and the PC buzzer sounds.)

You can also enable a device in this manner from the System View screen.
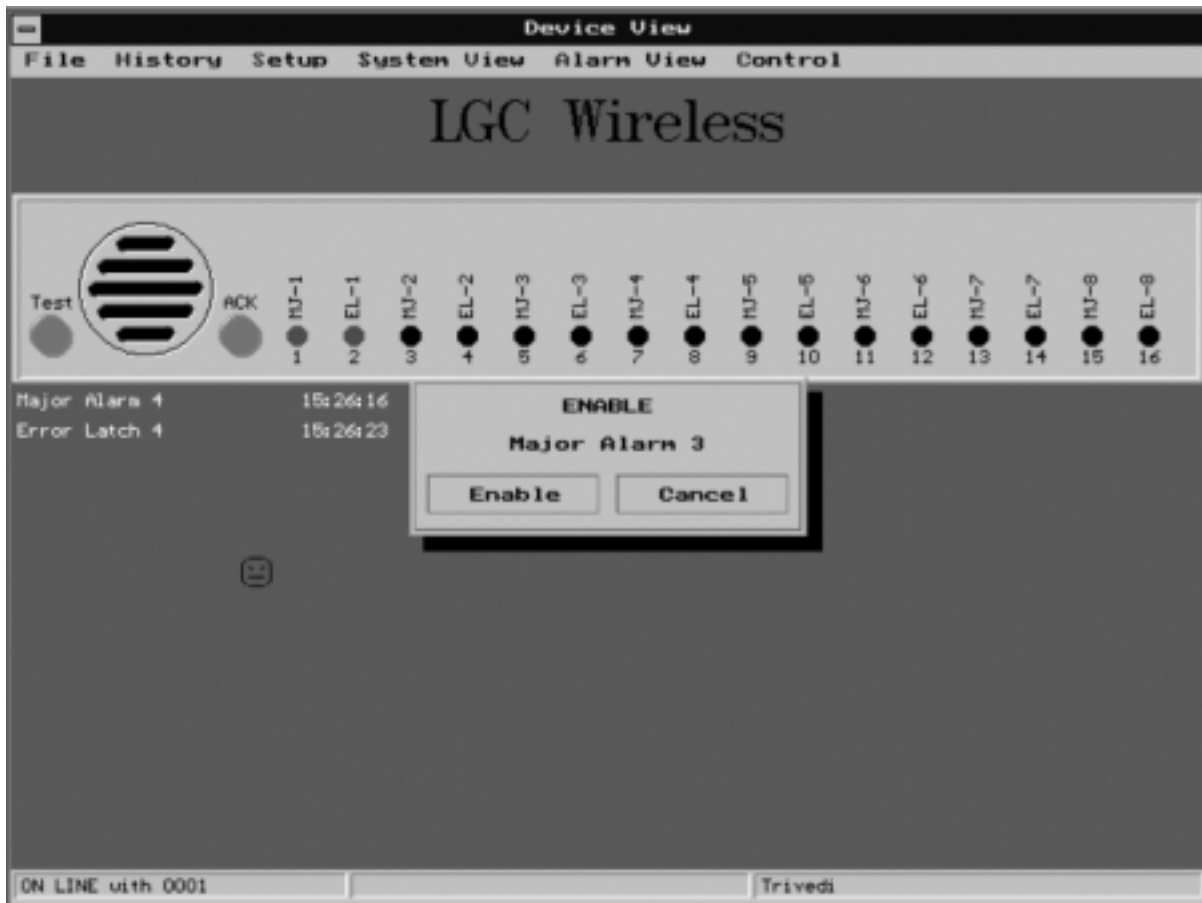
Resetting the Main Hub Remotely

The remote-ARM unit is designed not only to monitor the alarm conditions, but also to reset the Main Hub from a remote site. When an alarm condition occurs, you can clear the alarm from the PCARM via the control menu and then reset the Main Hub.

To reset an alarm condition remotely

1 From the Device View screen, click Control Menu to go to the Control Panel screen.

2 Choose a hub to reset by clicking that hub.

PCARM displays the Control Relay dialog box, which gives you the option to pulse or change the state of the relay.

3 Click Pulse to reset the hub.

PCARM displays the Pulse Duration dialog box, which asks you for a pulse time and displays the following message:

ONLY ONE (1) SECOND PULSE IS REQUIRED TO RESET THE HUB.

4 Choose your time and press Enter

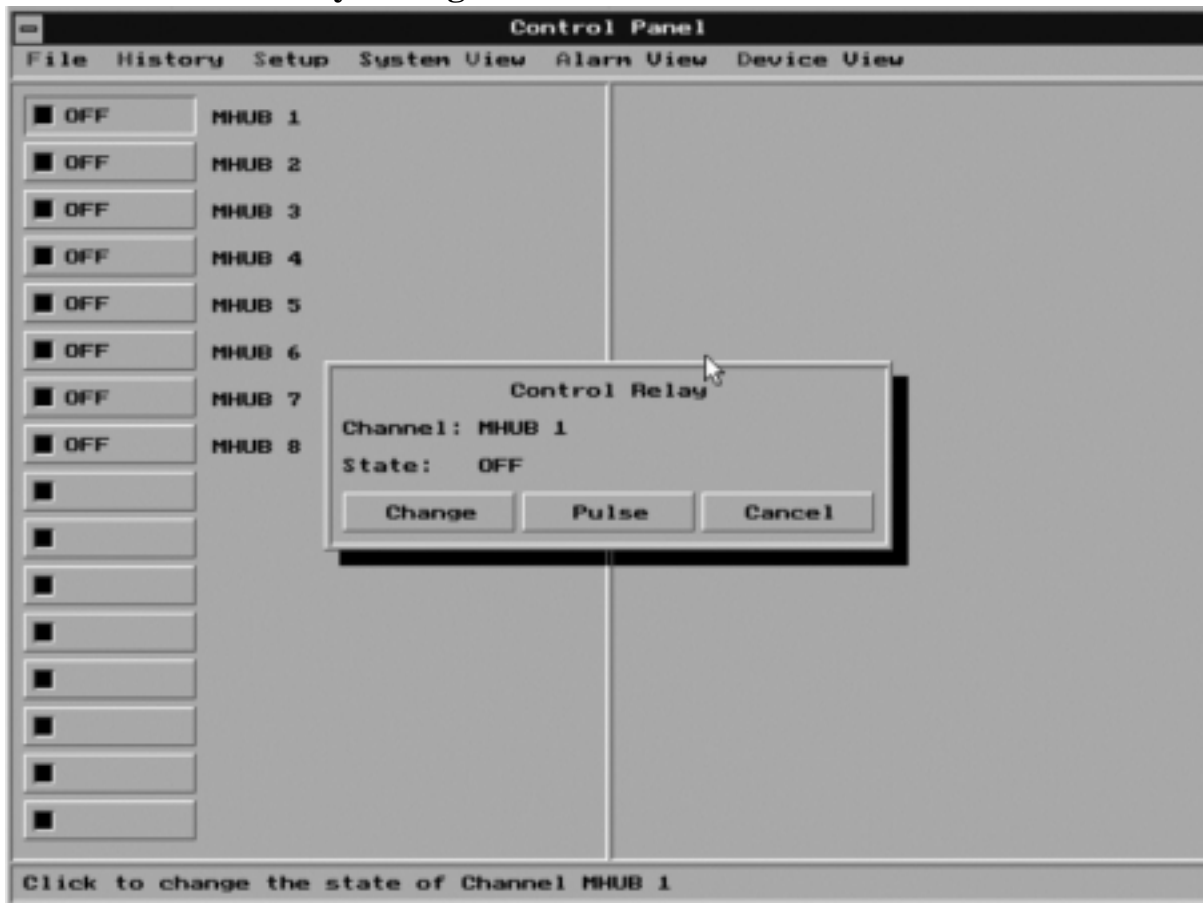If the alarm condition has cleared, the PC buzzer sounds and a status box appears on your screen.

5 Click Go To.

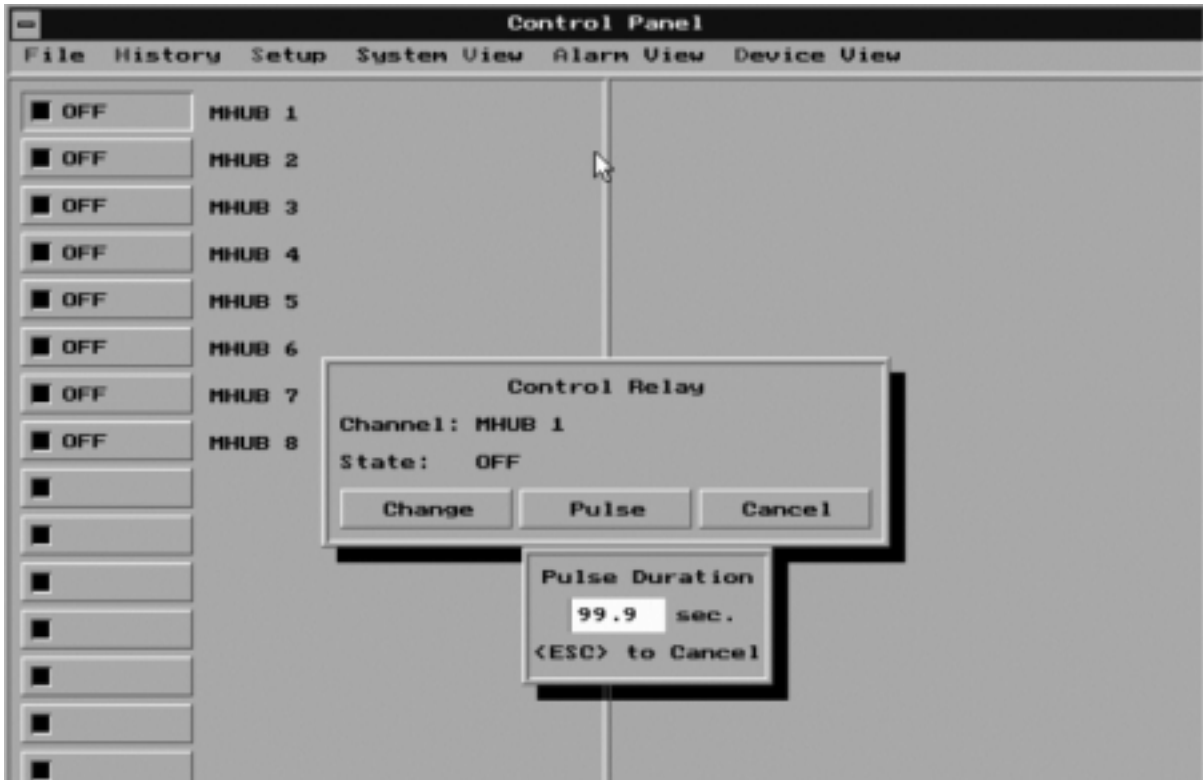PCARM displays the Device View screen, on which the cleared alarm(s) flash green.

6 To acknowledge the clear condition, click ACK.

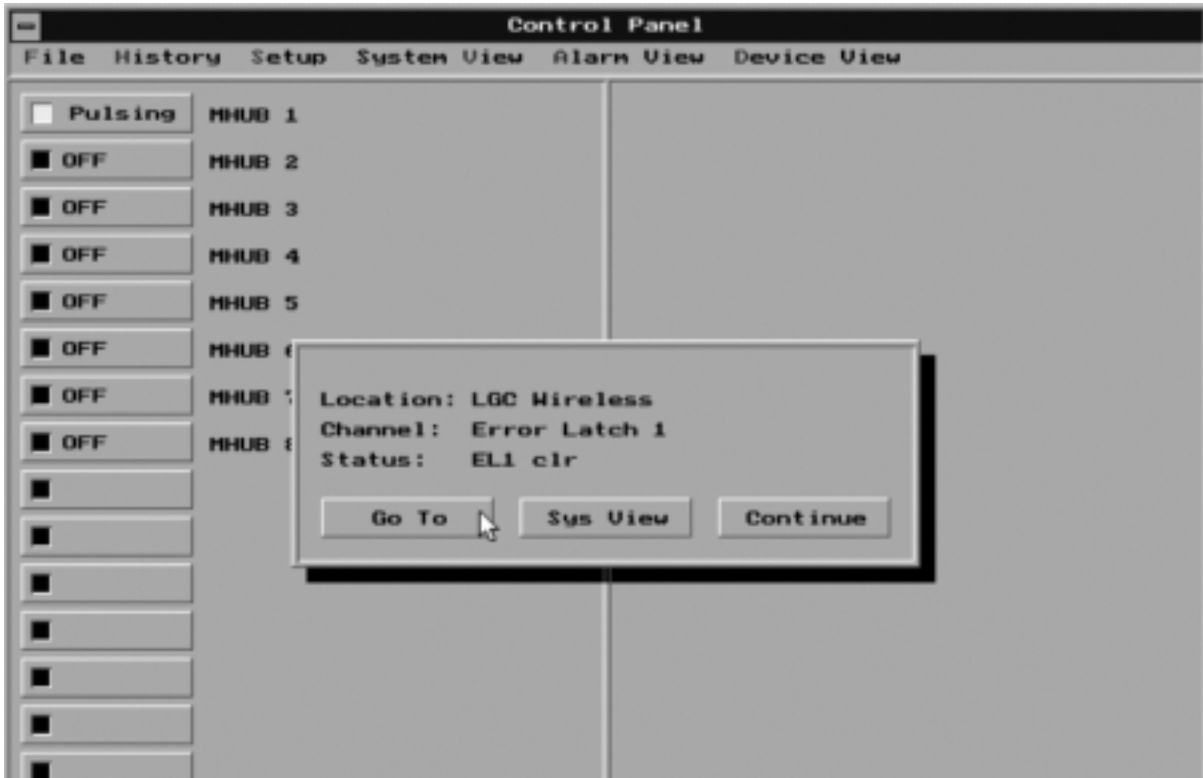The flashing green indicator or indicators become solid green.

Control Relay Dialog Box

Pulse Duration Dialog Box
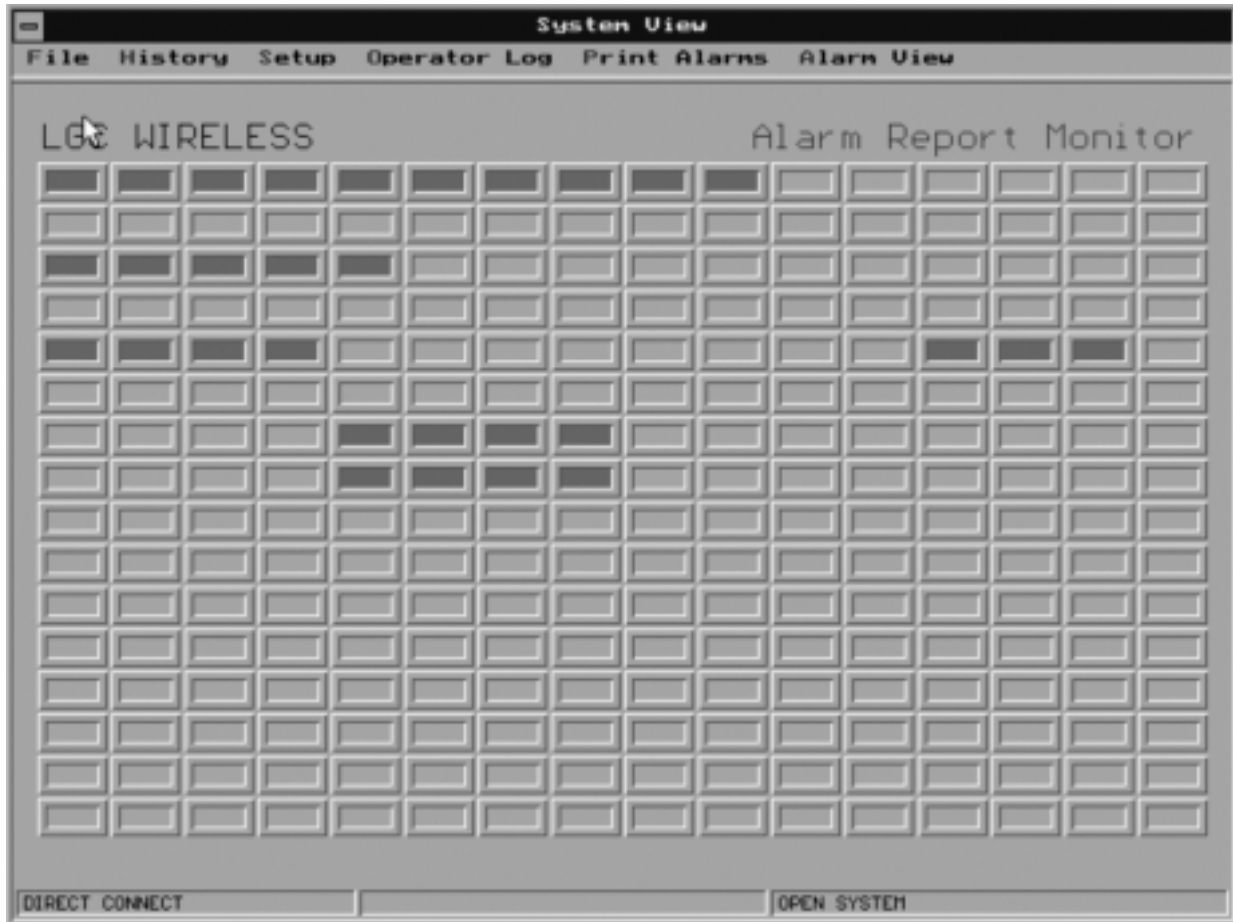

Control Panel Status Box

PCARM Operations

To display, manage, and record alarm monitoring activity in PCARM, you can perform operations from the System View, Device View, and Alarm View screens. You can also enable and disable alarms and devices from the System View and Device View screens.

System View Screen

Overview of the System View Screen

The System View screen displays the current status for all of devices in the entire system. On the screen, 255 windows display the status for each device in the system. When no alarms are present, the windows for all of the active devices are green. If an alarm occurs, the window of the particular device flashes red and the PC's buzzer sounds. A status bar at the bottom of the screen displays the current status of the communications port and operator. At the top of the screen is a menu bar for program navigation.

Window Status Indicators

Window State	Condition
Green	All circuits clear and acknowledged.
Red	Alarm condition on one or more channels. All alarms are acknowledged.
Green Flashing	Unacknowledged clear event on one or more channels.
Red Flashing	Unacknowledged alarm on one or more channels.
Red/Green Flashing	Both alarms and clears that are unacknowledged.
Blue Flashing	Unit is not responding to polls.
Yellow	The device is output only.
Gray	Unit is not programmed.
Black	Device has been disabled.

Device Selection

To view a particular device, position the cursor over the window of the device and click the right button. This transfers the program into the device view mode. See "Device View Screen" on page 25.

Disabling Devices

You can disable devices to allow maintenance of the monitored equipment without receiving false alarms. To disable a device, position the cursor over the device and click the right mouse button. PCARM displays a dialog box that prompts you to enter a reminder time. Enter a desired amount for timer (in minutes) to be reminded that the device has been disabled, or 0 for no reminder.

Enabling Devices

To enable a device, position the mouse over the desired disabled device and click the right mouse button. This will cause a confirmation dialog box to be displayed. To enable the device, click the Enable button on the dialog box or press the 'E' on the keyboard. To cancel, click the Cancel button, press the 'ESC' or 'C' key on the keyboard.

Status Bar

The status bar is located on the bottom of the System View screen. It displays the current status of the system. It has three status windows. The function of each of these windows is described in the following sections:

Communications Port Status

This window is used to display the current status of the communications port. If the system is configured to be directly connected to a device it will display "Direct Connect". If the system is configured to use a modem it displays the current status of the modem.

Operator Status:

This window is used to display the operator status. In an open system, it displays "Open System". In tracked and secured systems, it displays the name of the operator that is currently logged on or "Please Log On" if no operator is logged on.

System View Menus

The System View menus are located on top of the screen. Descriptions of the menu choices follow:

• **File**

This selection displays a pull down menu with the following choices:

Archive

This selection displays a sub-menu that allows clearing the active Alarm and/or Control Log and saving the current contents to an Archive file. The data from the Alarm and/or Control Log are stored in the sub directory archive. These files are Dbase III compatible. In a tracked or secured system, the user must have a Level 3 security code.

Exit

This selection terminates the ARM program and returns to DOS.

• **History**

This selection displays an Alarm History Screen that lists a full chronological history of all events (alarms\clears) for the entire system.

- **Setup**

  This selection displays a pull down menu with the following five choices:

  Config ARM:

  This selection accesses the ARM configuration utility.

  Device:

  This selection displays a sub-menu that allows access to the device setup utilities as described below.

  REMOTE-ARM:

  This selection accesses the remote-ARM setup utility.

  Security:

  This selection accesses the Security Setup utility.

  Log On:

  This selection displays the Log On Dialog Box.

  Log Off:

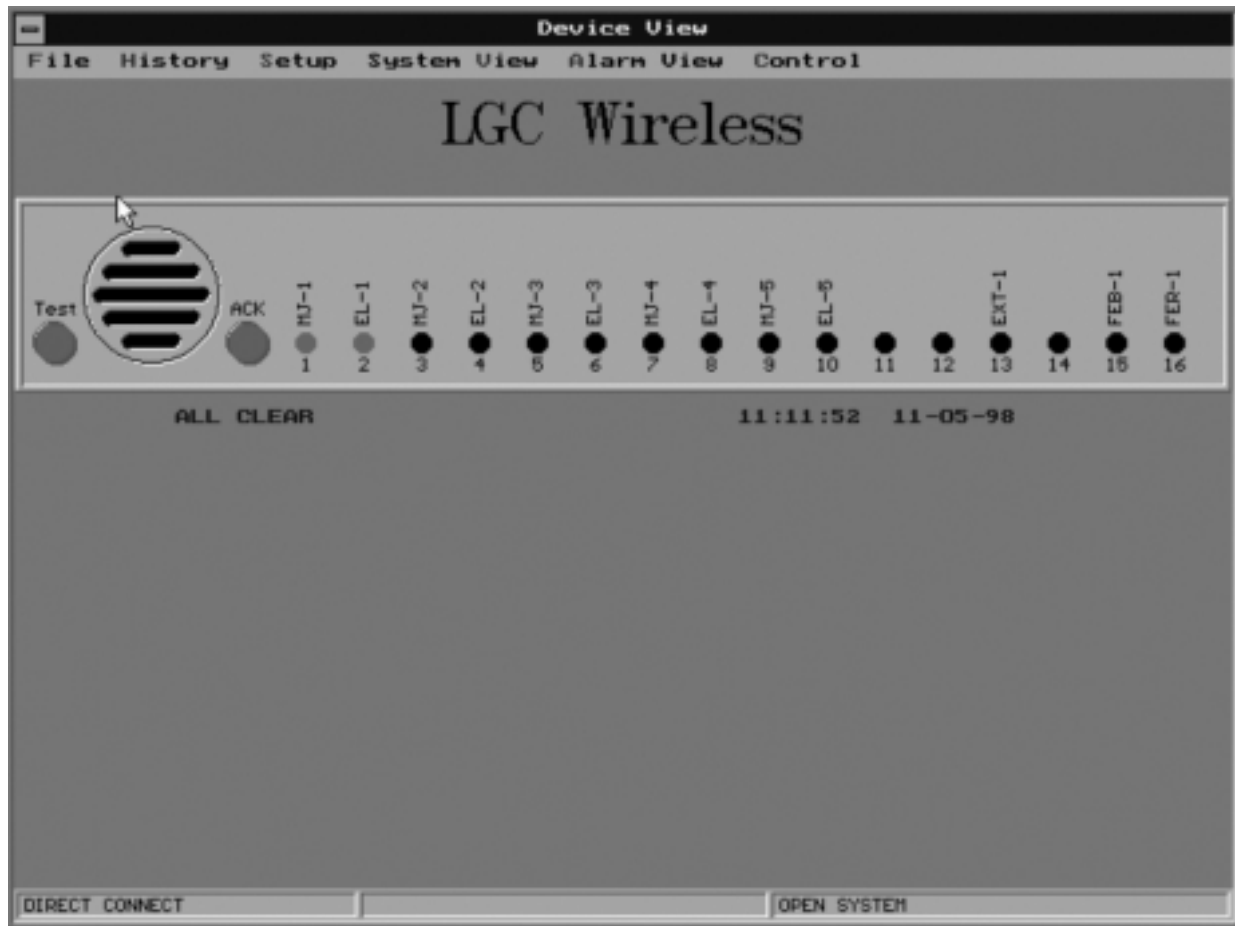 This selection displays the Log Off Dialog Box.

- **Operator Log**

  This selection displays an Operator History Log that lists a full chronological history of all operators that have logged into and logged out of the system.

- **Print Current Alarms**

  This selection generates a report showing all current alarm conditions in the system.

Device View Screen

Overview of the Device View Screen

The Device View screen displays a Graphic Color Status Display of any individual front panel with animation of all alarm reporting functions. Each Device View has the location name of the device printed at the top of the screen (LGC Wireless in the example above). When no alarms are present all channel LED's are green, there is a message 'ALL CLEAR', and the time. Each LED has an associated name (Short Name) printed above it. There is a status bar at the bottom of the screen that displays the system status. There is a menu bar at the top of the screen for program navigation.

When an alarm occurs, its associated LED begins to flash red and the PC's buzzer sounds until the alarm is acknowledged. Below the front panel, the alarm name, status, and time/date the alarm occurred is displayed.

When the alarm clears, its associated LED flashes green and the PC's buzzer sounds three beeps. When the clear is acknowledged, the channel LED is steady green.

When you are at the Device View screen, if an event occurs on another device, a New Event dialog box will pop up over the Device View screen. The New Event dialog box offers the following choices:

- **Go To**

  Select to display the device that is alarming.

- **System View**

  Select to display System View screen.

- **Continue**

  Select to continue with the device that is presently displayed.

Acknowledging Alarms

Alarms and Clears are both acknowledged in the same manner. Simply position the cursor over the ACK button and click the left mouse button. If the system has been configured as an open system and the Require Initials on Acknowledgment option has been enabled, the Enter Initials dialog box will be displayed. Simply enter your initials followed by the enter key and the alarm is acknowledged. In tracked and secured systems, an operator with a security level of one or greater must be logged on in order to acknowledge and alarm or clear. If no one has logged on prior to clicking the acknowledge button, the Log on dialog box will be displayed. The ESC key will cancel the log on procedure without acknowledging the alarm.

Disabling Channels

Individual alarm channels can be disabled to allow equipment maintenance without causing false alarms. To disable an alarm channel, position the cursor over the desired disabled channel's LED and click the right mouse button. A dialog box will then pop prompting to enter a reminder time. Enter the desired timer (in minutes) for the disabled reminder to pop up. Enter 0 if no reminder is required.

Enabling Channels

To enable the channel, position the cursor over the desired channel's LED and click the right mouse button. This will cause a confirmation dialog box to be displayed. To enable the channel, click the Enable button or press the E key. To cancel, click the Cancel button or press the ESC or C key.

Alarm View Dialog Box

The Alarm View dialog box has been provided as a quick way of viewing the last two events that occurred on a given channel. To display the Alarm View dialog box, position the cursor over the desired channel's LED and click the left mouse button. This is a non modal dialog box, clicking another channel or anything else on the screen will close the dialog box and perform the selected function. If the selected channel has no alarms an error box will be displayed.

Communications Test Function

A communications test function has been provided to test communications between ARM and the remote-ARM unit and update the status. This should be done after a new device is installed. To test a device, position the cursor over the test button and click the left mouse button and ARM will call the remote-ARM unit. When the test is complete a dialog box stating the result of the test will be displayed.

Status Bar

There is a status bar located at the bottom of the screen. This status bar displays the current status of the system.

```
PCANN31 - setann                                              _ □ ✕

 Auto        ▼   [] 📋 📋 ⊞    📁 🖨  A
                          ADD/MODIFY ANN-1
   Exit   Save   Program Outputs

   Address: 0001    Location: LGC Wireless        Phone #: 2411

   ════════════════════════ INPUTS ════════════════════════
   CH  Alarm Name            Short Name   Alm State   Clr State   Pager
   ──  ──────────            ──────────   ─────────   ─────────   ─────
   01  Major Alarm 1         MJ-1         MJ1 alrm    MJ1 clr     NO
   02  Error Latch 1         EL-1         EL1 alrm    EL1 clr     NO
   03  Major Alarm 2         MJ-2         MJ2 alrm    MJ2 clr     NO
   04  Error Latch 2         EL-2         EL2 alrm    EL2 clr     NO
   05  Major Alarm 3         MJ-3         MJ3 alrm    MJ3 clr     NO
   06  Error Latch 3         EL-3         EL3 alrm    EL3 clr     NO
   07  Major Alarm 4         MJ-4         MJ4 alrm    MJ4 clr     NO
   08  Error Latch 4         EL-4         EL4 alrm    EL4 clr     NO
   09  Major Alarm 5         MJ-5         MJ5 alrm    MJ5 clr     NO
   10  Error Latch 5         EL-5         EL5 alrm    EL5 clr     NO
   11  Major Alarm 6         MJ-6         MJ6 alrm    MJ6 clr     NO
   12  Error Latch 6         EL-6         EL6 alrm    EL6 clr     NO
   13  Major Alarm 7         MJ-7         MJ7 alrm    MJ7 clr     NO
   14  Error Latch 7         EL-7         EL7 alrm    EL7 clr     NO
   15  Major Alarm 8         MJ-8         MJ8 alrm    MJ8 clr     NO
   16  Error Latch 8         EL-8         EL8 alrm    EL8 clr     NO
   Enter Location; <** DELETE **>Delete <Tab>Next Field <Alt+S>Save <Alt+E>Exit
```

Alarm View Screen Overview

The Alarm View Screen provides a quick view of all the alarms (acknowledged and unacknowledged) in the entire system. The alarms are displayed in chronological order from the newest to the oldest. The unacknowledged alarms are displayed in red, and the acknowledged alarms are displayed in blue. Clicking any of the alarms in this view causes the program to switch to the device view of the selected alarm. A scroll bar on the right hand side of the screen is provided to scroll through the alarm list. A menu bar, at the top of the screens, is provided to navigate to other screens. The contents of this screen can be printed to a printer or file.

LGC WIRELESS

Reports

You can display the following reports in PCARM:

- Alarm History Log
- Alarm History by Device
- Alarm Detail

Alarm History Log

The Chronological Alarm History screen displays the entire contents of the Alarm History Log in chronological order (newest to oldest). A scroll bar on the right hand side of the screen is provided to scroll through the alarm log. The scroll bar thumb shows the current position in the file. A menu bar located on the top of the screen is provided to navigate through the program.

This screen shows the location of the alarm, channel name, and status. For a more detailed view of an individual alarm, position the cursor over the desired alarm and click the left mouse button. This causes the Alarm Detail dialog box to be displayed. In addition to the alarm information, this screen also displays any loss of communications and restoration of communications.

Alarm History by Device

The Device History screen displays the chronological alarm history (newest to oldest) of one specific remote-ARM device. A scroll bar on the right hand side of the screen is provided to scroll through the alarms. The thumb of the scroll bar shows the position in the file. A menu bar located at the top of the screen is provided to navigate through the ARM.

This screen shows the channel name, status, and time the event occurred. For a more detailed view of the event, position the cursor over the desired event and click the left mouse button and the Alarm Detail Dialog Box will be displayed.

Alarm Detail Dialog Box

The Alarm Detail dialog box is displayed when you click any event in the Alarm History logs. This dialog box displays the following information for the selected event:

- Location name
- Channel name
- Status of the channel
- Time the event occurred

- Time the event was acknowledged
- Initials of who acknowledged the event

Operator Log

```
[■]                          Operator Log
File  Print  System View

Last Name                     Initial Logged On          Logged Off
Weiss                         D       09:01:51  04-26-96
Schaefer                      J       09:01:35  04-26-96  09:01:51  04-26-96
REED                          J       08:59:20  04-19-96  09:01:35  04-26-96
REED                          J       08:58:19  04-19-96  08:58:52  04-19-96
REED                          J       08:49:58  04-19-96  08:53:35  04-19-96
```

The Operator Log is a chronological history (newest to oldest) of the operators who have logged on to the system. This screen contains columns to display the operator name, time logged on, and the time logged off.

You can access the Operator Log only from the System View screen. Select Operator Log from the main menu.

Report Printing

PCARM provides the ability to print any of the Alarm, Control, and Operator logs to either a printer (connected to LPT1) or a file. To print a log, select Print from the menu of the displayed log. This pops up the following dialog box.

```
         SELECT  PRINTER

   [■] LPT 1
   [ ] FILE

        OK              Cancel
```

In this dialog box, click the square button next to either LPT1 or FILE. To start printing, click the OK button. If you select FILE, PCARM displays a second dialog box in which you can enter the name of the file (up to 13 characters).

When printing begins (to file or printer), PCARM displays the Print Progress dialog box. You can abort the print job at any time by clicking the Cancel button.

LGC WIRELESS

Alarm Logs

To print an alarm log, select the log you want and then select Print from the log screen's menu.

Control Logs

To print a control log, display the log and then select Print from the log screen's menu.

Current Alarms

ARM provides the ability to print a list of all current alarms (acknowledged and unacknowledged) to a printer. To print all current alarms, select Print Current Alarms from the menu on the System View screen.

Operator Log

To print the Operator Log, select Print from the Operator Log menu.