System Manual

• W A R N I N G •

This manual contains information on limitations regarding product use and function and information on the limitations as to liability of the manufacturer. The entire manual should be carefully read.

DSC®

PC6010 Software Version 2.1

Contents

Section 1: Introduction

1.1 Introduction to PC6010

The PC6010 is a high end intrusion security system. It supports up to 256 zones, 32 separate areas, and 1000 users.

The user interface is simple and easy to use. The PC6501 LCD keypad guides users through their available options with a series of questions, which the user can answer with YES or NO. If a user loses their place in the menu, they can press CANCEL to return to the start screen.

Users can be assigned to one of four user types: Basic, Advanced, Supervisor and Master users. Each of the user types can access different levels of features, as described in section 6 of this manual.

The status of the PC6010 system can be monitored over telephone lines, or over a dedicated "Backbone" network (see section 7 "System Operation and Programming").

You can add access control to the system with PC6820 modules and readers (see the *PC6820 Installation Manual*).

The PC6010 main board comes with 2 programmable outputs, and you can add up to 208 more using PC6204 and PC6216 modules. You can program the outputs to control things such as doorstrikes, annunciators, and lights, using 56 different output options (see section 7 "System Operation and Programming").

You can program the PC6010 using any system keypad, or using DLS-3 downloading software and a computer (see section 9 "Downloading").

1.2 Using PC6010 Manuals

Installer Manuals

This manual is for people who will be installing PC6010 systems. Read the entire manual carefully before beginning your installation.

This manual describes:

- An overview of the system, and the specifications of each module (see section 2)
- How to install and wire the system and its modules (see section 3)
- How to program the system (see section 4)
- How to enroll the keypads and modules (see section 5)
- An introduction to the user interface and keypad operation (see section 6)
- An overview of the main system programming sections (see section 7)
- How to set up a serial printer to print out system events (see section 8)
- How to set up the panel for downloading (see section 9)
- How to use the Diagnostics section, reset the system to factory default settings, and view faults (see section 10).

You should also review the **Programming Manual**, and **Programming Worksheets**:

- The **Programming Manual** gives detailed descriptions of each programming section.
- Be sure to record all your system programming in the **Programming Worksheets**.
- If you will be adding modules to your PC6010 system, please read the **Installation Instructions** that come with each module.

User Manuals

Two end-user manuals come with the PC6010 system:

- The **User's Guide** provides easy to follow instructions for Basic and Advanced users. Supervisor and Master users can also refer to this manual for instructions on turning areas on or off, delaying automatic arming, viewing faults, etc.
- The **Maintenance Manual** provides instructions on using more advanced features (e.g. changing access codes) for Supervisor and Master users.

Section 2: System Overview

2.1   Overview

Maximum System Capabilities
- Control Unit - 1 PC6010 Main Board
- Up to 256 zones
  PC6010 Main Board: 16 zones
  PC6108A Expansion Modules: 8 zones each
- 2 Main Board Programmable Outputs (PGM1 & PGM2)
- 1 12 V$_{DC}$ Switched Programmable Auxiliary Power Supply (Main Board)
- 1 Supervised Programmable Bell/Siren Output (Main Board)
- Up to 64 High Current Programmable Outputs with 16 PC6204 Modules
- Up to 144 Low Current Programmable Outputs with 9 PC6216 Modules
- 1 Serial (Printer) Interface - PC6400
- Up to 64 LCD Keypads - PC6501
- 1 Telephone Interface (Main Board)
- 1 Backbone Interface (using PC6442, PC6443 Modules)

User Interface
- Simple menu structure based on questions, displayed on PC6501 LCD keypad.
- Four user types available: Basic, Advanced, Supervisor, and Master
- The menu the user sees is limited to the functions allowed to their user type
- Utility functions are available to users, such as remote control doorstrikes and resetting smoke detectors.

256 Programmable Zones
- 16 zones on the main board
- Expand the system to 256 zones using PC6108A expansion modules
- 19 zone types, including:

• Standard Delay	• Auto Verify Fire
• Force Arm Delay	• Momentary Arm
• Auxiliary Delay	• Maintained Arm
• Instant	• 24 Hr Holdup
• Interior	• Auxiliary
• 24 Hr Bell	• 24 Hr Auxiliary
• 24 Hr Bell/Buzz	• 24 Hr Medical
• 24 Hr Buzzer	• Seismic
• Standard Fire	• LINKS Supervisory
	• LINKS Answer

- Zones can be assigned independently to any area, and to any alarm or seismic group.

32 Areas
- Separate or shared zones from other areas
- Individual keypads per area
- Individual access codes for each area
- Individual outputs programmable per area

LCD Keypads (PC6501/6501T)
- Total of 64 on the system
- Can be assigned to any area
- User-friendly interface allows fast and simple access to the system

Access Control (PC6820)
- 16 modules in total - 2 doors per module
- 32 doors total
- Can be used to arm/disarm areas

210 Programmable Outputs
- 2 programmable outputs on the main control panel
- Main board outputs switch to 12V$_{DC}$, up to 50mA maximum current draw
- 64 programmable relay outputs - using up to 16 PC6204 Modules
- 144 programmable switched transistor outputs - using up to 9 PC6216 Modules
- Each output can be programmed for 1 of 56 PGM output options

Switched Auxiliary Output
- Can be programmed for 1 of 56 PGM output options
- 11.6 - 12.6 V$_{DC}$, 300 mA maximum

Supervised Alarm Output
- Bell Output, 200 mA fused at 5 Amps, 13.8 V$_{DC}$
- Steady or Pulsed Output
- Can be programmed for 1 of 56 PGM output options

Event Buffer
- Up to 3000 events can be stored in the event buffer
- Each event is logged with a date and time stamp
- System and area events are logged in the event buffer. Area events are identified by the area label. System events are identified by the message "System Area".
- Event Buffer Viewing - Supervisor and Master users can view 2500 events through the keypad, including the date and time stamp
- Event Buffer Printing - the entire event buffer (3000 events) can be printed through the Installer's mode

Internal Memory
- Retains programmed data and system status, even when both AC and battery have been removed.
- If the panel loses power (indicated by an audible fault beep), the clock will need to be reset.

Communicator

- Communicates using the SIA 1986, or the Contact ID format
- Communicates to up to three telephone numbers
- Each telephone number can be backed up by a LINKS1000 cellular communicator
- With the PC6442 and PC6443 modules, uses the Backbone to communicate over a dedicated connection with alarm presentation software. Communications are encrypted.
- One system and 32 area (account) codes
- Hexadecimal numbers available
- DTMF and pulse dialing
- True dial tone detect

Printer

- Can print data on a serial local printer using an PC6400 serial interface module

Powerful 2.2 amp regulated power supply

- 776 mA auxiliary supply, 11.6 - 12.6 V_{DC}, when charging a 36Ah battery.
- Separately fused for battery, auxiliary supply and bell output
- Electronic shut down protection of the Ebus (Module Communication Bus)
- Supervision for loss of AC power, low battery, electronic shut down of modules
- Internal clock locked to AC power frequency or optional crystal time base

Battery

- 12 volt, 7 to 36Ah minimum rechargeable gel-cell or sealed lead-acid battery
- Normal battery charging current 360mA
- High battery charging current (1.4A) available (software selectable)

Transformer

- 16.5 V_{AC}, 80VA

NOTE: 80VA local state electrically approved transformer.

Output Voltage

Typically, with normal AC on and a fully charged battery, the output voltage will be 13.8 V_{DC}. With AC off and the battery discharging, the voltage will go below 10 volts and then battery cutoff will occur preventing further discharge. Devices that require power from the control panel should be capable of operation over the voltage range of 10 to 14 V_{DC}.

2 Enclosures

- PC4005C cabinet: PC6010 and two modules
- PC4003C cabinet: 2- PC6108A modules, 1 - PC6204 module, 1- PC6216 module, or 1 PC6400 module

2.2   Module Specifications

Refer to each module's *Installation Instruction* sheet for wiring and programming information.

PC6108A Expansion Module

- 8-zone expansion module
- Add up to 30 modules for a total of 256 zones on the system
- Supports double end-of-line zone loops (5600 ohm resistors)
- Connects to control panel via 4-wire Ebus
- Nominal current draw of 30 mA (from Ebus)
- AUX+ Output: 12 V_{DC}, 250mA max. (power drawn from Ebus)
- Provides Tamper reporting codes
- Low Ebus supervision

PC6204 High-Current Output Module

- 4 high-current outputs
- Output current 1A, 12V_{DC}
- Up to 16 modules on system (up to 64 high-current outputs)
- Each output programmable for 1 of 56 options
- Connects to control panel via 4-wire Ebus
- Low Ebus supervision
- Four programmable relay contacts rated 2A, 30V_{DC}
- Minimum 80 VA 16-18 volt transformer required
- Minimum 4 Ah battery required, up to 36Ah max.
- Current draw: 30 mA (from Ebus)
- Provides Tamper and Trouble reporting codes
- AUX current: 500mA max.
- Tamper contact input

PC6216 Low Current Output Module

- 16-output low-current module
- Nominal current draw of 15 mA, plus power required by outputs
- Output current 50mA, 12V_{DC}
- Up to 9 modules on system
- Can be programmed as alarm or zone annunciators.
- All 16 outputs can be programmed on each module, 1 of 56 options each
- Provides Tamper reporting codes
- Connects to control panel via 4-wire Ebus
- Low Ebus supervision
- Power drawn from Ebus

PC6400 Serial (Printer) Module

- True RS-232 technology
- Handshake software switches
- DTR Protocol
- Baud rate: 4800
- Connects to control panel via 4-wire Ebus
- Nominal current draw of 35 mA
- Low Ebus supervision
- Tamper and Trouble reporting codes
- Maximum cable length: 200 feet (61 meters)

PC6501 Remote Keypad

- Connects to control panel via 4-wire Ebus
- Alphanumeric liquid crystal display
- Built-in piezoelectric buzzer
- Full annunciation of zones and system status
- Dimensions 5.5" x 4.5" x 1" deep (150 x 114 x 25 mm)
- Maximum current draw of 55mA (from Ebus), 90mA with backlighting boost.
- Up to 64 keypads on system
- Provides Tamper reporting codes
- Low Ebus supervision to main board

PC6820 Access Control Module

Two Zone Inputs

- Two programmable supervised zones (5600Ω)
- Zones may be programmed as Standard, Force Arm Delay, or Auxiliary Delay zone types
- Up to 16 PC6820 can be added (up to 32 access points)

Non Volatile RAM (internal memory)

- Does not lose any system programming when the module is powered down.

Low Current Outputs

- Six low current outputs (open collector outputs switched to ground 25mA max.) :
  - Two LED terminals - To the LED input of the reader
  - Two BUZ terminals - To the buzzer input of the reader
  - Two OUT terminals - Reserved for future use

Regulated Power Supply (1.5 Amp max.)

- Electronic shutdown protection of the battery, auxiliary output, 5 and 12 V reader power supplies, and lock device power output
- Auxiliary output supply: 12V$_{DC}$, 125mA Max
- LK1 and LK2 Door Strike power: 12V$_{DC}$, 250mA Max
- Reader Power 5V$_{DC}$, 125mA Max
- Reader Power 12V$_{DC}$, 125mA Max

Reader Technology

- Polaris, Shadow Prox, HID Proximity and 26-bit Standard Weigand format

Access Card Compatibility

- Polaris POL-C1CN - Polaris Magnetic Cards
- Shadow Prox, Module Numbers:
  SH-C1 - Shadow Prox Card
  SH-K1 - Shadow Prox Keytag
- HID Proximity:
  HID-C1325KSF - Proximity Card
  HID-C134KSP - Proximity Keytag
- Weigand - Standard 26 bit formats

Battery

- 12V$_{DC}$ 7.0Ah recommended rechargeable gel-cell

Transformer

- 16.5 V$_{AC}$, 40VA

Operating Temperature

- 2°C to 40°C (35°F to 110°F) operational temperature range
- 90° non-condensing humidity

Output Voltage

- Output voltage = 13.8V$_{DC}$ (with normal AC and a fully charged battery). Devices that require power from the PC6820 should be capable of operation over the voltage range of 10 to 14V$_{DC}$.
- 5V Power Supply - Devices connected to the 5V supply should be capable of operation between 4 and 6V.

PC6442, PC6443 Interface Modules

- 1.5Amp power supply
- Outputs for future use
- AUX current: 500mA
- 115 baud RS-232 communications
- Connects to control panel via 3-wire Backbone
- 1 module per system

Section 3: Installation and Wiring

3.1 Planning the System

For a fast and efficient installation of the PC6010, you should create an installation plan.

As a minimum, use the following checklist to ensure that all of the details have been considered:

❏ Draw a diagram of the installation showing the location of the main panel, all keypads, all zone inputs, all bell outputs, all relay outputs and all annunciators.

❏ Indicate all areas on the diagram. Decide which zones, bell and relay outputs, keypads and remote annunciators belong to each area.

❏ Determine where each system module is going to be located and how far each module will be from the main panel.

❏ Determine the current draw on the main panel and each system component used to ensure the system requirements can be met (see section 3.4 "Current Ratings – Alarm Control Panel and Modules"). Calculate each wire run using the Ebus wiring guidelines. Determine which wire gauge should be used and where to place PC6204 modules to re-power the Ebus.

3.2 Out of the Box

Please verify that the following components are included in the PC6010 package.

❏ 1 PC4005C cabinet
❏ 1 PC6010 main control module
❏ 1 PC6501 LCD keypad
❏ 1 Hardware package which includes:
    ❏ 32 EOL resistors (5600Ω)
    ❏ 1 EOL resistors (1000Ω)
    ❏ 1 Black cabinet plug
    ❏ 1 Green ground strap
    ❏ PCB mounting standoffs
❏ 1 set of documents which includes:
    ❏ 1 PC6010 *System Manual*
    ❏ 1 PC6010 *Programming Manual*
    ❏ 1 PC6010 *Programming Worksheets*
    ❏ 1 PC6010 *User Guide*
    ❏ 1 PC6010 *Maintenance Manual*

3.3 Terminal Descriptions

The following terminals appear on the PC6010 Control Panel:

Terminals	Description
Red and Black Leads (See section 3.16)	Battery Connection. **WARNING: Do not connect the battery or transformer until all other wiring is complete.**
AC (See section 3.16)	Power Terminals. **WARNING: Connect the battery before connecting the AC. Do not connect the battery or transformer until all other wiring is complete.**
AUX+ and AUX- (See section 3.11)	Auxiliary Power, 376mA MAX
SAUX+ (See section 3.11)	Switched Auxiliary Power, 200mA MAX
BELL+ and BELL- (See section 3.13)	Bell/Siren Power. These terminals are used for powering bells, sirens or other devices requiring steady output voltage on alarm; 200mA MAX
PGM1 and PGM2 (See section 3.10)	Programmable Output Terminals. 50mA MAX (standard output)
Backbone YEL, GRN, any COM (See section 3.7)	Backbone Terminals. The Backbone is used by the panel to communicate with the PC6442 and PC6443 modules. YEL and GRN are used for data. Connect a third wire to any COM terminal.
Combus RED, BLK, YEL, GRN (See section 3.5)	Combus Terminals. The Combus is used by the panel and the modules to communicate with each other (except for the PC644X modules). RED and BLK are used for power, and YEL and GRN for data. NOTE: The four Combus terminals of the main panel must be connected to the four Combus terminals or wires of all modules.
Z1 to Z16 (See section 3.8)	Zone Input Terminals. Zone inputs Z1 to Z16 are provided for wiring zones on the alarm control panel
TIP, RING, T1, R1 (See section 3.12)	Telephone Line Terminals
EGND (See section 3.14)	Earth Ground Connection. A ground connection assembly is included with the control panel.

3.4 Current Ratings – Alarm Control Panel and Modules

In order for the system to operate properly, the power output of the alarm control panel and power supply modules cannot be exceeded. Use the data below to ensure that the available current is not exceeded.

PC6010 Control Panel Current Calculation

At least 100mA must be reserved for the Ebus. To calculate the amount of current required, complete the following chart:

	High Charging Current (36Ah battery)	Low Charging Current (Smaller battery)	Enter total current for each output here
AUX			
SAUX+			
Ebus**		Must not exceed 1.72A Max.	
PGM1 (limited to 50mA)	Must not exceed 683mA Max.		
PGM2 (limited to 50mA)			
Bell current draw for 15 minutes			
Total:			

** See "Ebus Current Calculation Chart" at right.

Module Ratings

The current draws of compatible modules are listed below:

Device	Current Draw (mA)
Keypad (PC65XX)	43 (105 with backlighting boost)
PC6108A Zone Expander	36
PC6204 Relay Output Module	30
PC6216 Low Current Output Module	30
PC6400 Serial Printer Interface Module	44
PC644X High Security Interface Module	146
PC6820 Access Control Module	2

PC6204 Current Calculation - *2.2Amp Power Supply*

** See "Ebus Current Calculation Chart" at right.

	High Charging Current (36Ah battery)	Low Charging Current (Smaller battery)	Enter total current for each output here
AUX			
Ebus**	Must not exceed 770mA Max.	Must not exceed 1.57A Max.	
Relays			
Total:			

NOTE: See the PC6204 Installation Sheet for more information.

PC6820 Current Calculation - *1.5Amp Power Supply*

	Enter total current for each output here
AUX	
Reader 1	
Reader 2	
LK1 Output	
LK2 Output	
Total: (must not exceed 710mA)	

NOTE: See the PC6820 Installation Manual for more information.

PC644X Current Calculation - *1.5Amp Power Supply*

	Enter total current for each output here
AUX	
Outputs	
Total: (must not exceed 634mA)	

NOTE: See the PC644X Installation Sheet for more information.

Calculating Total Current Requirement

Once you have determined which modules will draw power from the main panel, use the following chart to calculate the Ebus current.

Ebus Current Calculation Chart

Item	Current (mA)	×	Quantity	Total (mA)
PC6501	43 or 105	×		
PC6108A*	36	×		
*Current required for devices connected to PC6108A =				
PC6204	30	×		
PC6216*	30	×		
*Current required for devices connected to PC6216 =				
PC6400	44	×		
PC6820	2	×		
Total Ebus Current =				

* These units draw current from the Ebus to power devices external to the module. This current must be added to the total Ebus current. See manufacturer's specifications for the current draw of each device. Each LED assembly draws up to 20mA of current.

3.5 Ebus Operation and Wiring

The Ebus is used by the control panel and the modules to communicate with each other. The four Ebus terminals of the main panel must be connected to the four Ebus terminals or wires of all modules.

Modules can be home run, connected in a daisy chain or T-tapped anywhere on the Ebus.
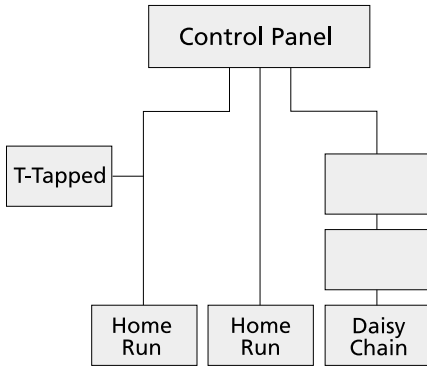
The following rules MUST be followed when wiring the Ebus:

1. The Ebus must be run in minimum 22-gauge wire.
2. No module can be more than **1000' (305m)** in cable length from the main control panel.
3. Shielded wire should only be used in areas that present excessive RF noise or electromagnetic interference. If shielded wire is used, the maximum distance a module can be located from the main panel is significantly reduced. Check the capacitance limit of the wire to calculate the maximum distance (see "Capacitance Limits" below).
4. The total capacitance of the Ebus wiring must not exceed 80nF (see "Capacitance Limits" below).

Line Loss

When current is drawn through a piece of wire, voltage will be lost due to the wire's resistance. This voltage loss must be considered for all installations.

To ensure proper operation, at least 12.5V$_{DC}$ must be applied to all modules on the system (when AC is applied and the battery is fully charged). If less than 12.5V$_{DC}$ is applied, system operation will be adversely affected.

To correct the problem, try any or all of the following:

1. Connect a PC6204 power supply near the module to provide power to the Ebus.
2. Reduce the length of the Ebus run to the module.
3. Increase the gauge of wire.

Capacitance Limits

An increase in capacitance on the Ebus will affect data transmission and will cause the system to slow down. Capacitance will increase for every foot of wire added to the Ebus. The capacitance rating of the wire used will determine the maximum length of the Ebus.

For example, 22-gauge, non-shielded, 4-conductor wire has a typical capacitance rating of 20 picofarads per foot (which is 20nF/1000'). For every 1000' of wire added – regardless of where it is run – the capacitance of the Ebus will increase by 20nF.

The following chart indicates the total Ebus wire allowed depending on the capacitance rating of the wire used:

Wire Capacitance per 1000'(300m)	TOTAL Ebus Wire Length
15nF	5300'/1616m
20nF	4000'/1220m
25nF	3200'/976m
30nF	2666'/810m
35nF	2280'/693m
40nF	2000'/608m

Wires run in parallel also increase Ebus capacitance. For example, when using 20nF wire, the following would be some of the combinations allowed:

• Four wire runs at 1000'/305m each
• Six wire runs at 666'/203m each
• Eight wire runs at 500'/152m each
• 10 wire runs at 400'/122m each etc…

NOTE: Contact the wire manufacturer for the capacitance ratings of the wire being used.

3.6 PC6204 Power Supply

PC6204 power supply modules are required to power additional modules and devices when the total current from the main panel is insufficient. A PC6204 should also be used if excessive line loss is encountered.

PC6204 Current Requirement

AUX - 1.5A available for devices connected to the AUX terminal, including devices connected to relay outputs and modules connected for Ebus repower (see section 3.5 "Ebus Operation and Wiring").

Ebus Repower

Only Relay 1 on the PC6204 can be used for Ebus repower. The Ebus must be wired to the PC6204 according to the following diagram for Ebus repower:
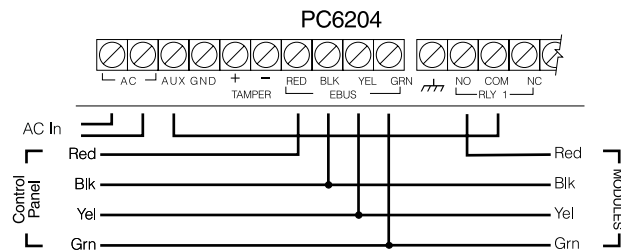
IMPORTANT NOTE: Do not use any power supply other than the PC6204 to repower the Ebus. In the event of a power surge or transient, a module may lock up and cease to communicate with the control panel. If the panel loses communication with the module, it will initiate a module reset and will power down the Ebus for five seconds in an attempt to reset the problem module. After five seconds, the panel will reapply power to the Ebus and the problem module should begin to operate as intended.

If a power supply other than the PC6204 is used, the Ebus repower function will not operate as intended.

NOTE: New versions of the PC6204 power supply module have a jumper marked 'J1'. Ensure that this jumper is configured for "Ebus Relay." Otherwise, the power reset function will not operate. For more information regarding the PC6204, please refer to the *PC6204 Installation Instructions*.

3.7   Backbone Operation and Wiring

The Backbone is used by the control panel to communicate with the PC6442 and PC6443 modules. Connect the BCBK YEL and GRN terminals, and any COM terminal to the backbone terminals on the PC6442 and PC6443 modules.

The PC644X modules have independent power supplies and do not draw power through the Backbone.

Follow the same wiring rules and capacitance limits for wiring the Backbone, as for wiring the Ebus. Modules can be home run, connected in a daisy chain or T-tapped anywhere on the Backbone.

The following rules MUST be followed when wiring the Backbone:

1. The Backbone must be run in minimum 22-gauge wire.
2. No module can be more than **1000' (305m)** in cable length from the main control panel.
3. Shielded wire should only be used in areas that present excessive RF noise or electromagnetic interference. If shielded wire is used, the maximum distance a module can be located from the main panel is significantly reduced. Check the capacitance limit of the wire to calculate the maximum distance (see "Capacitance Limits" below).
4. The total capacitance of the Backbone wiring must not exceed 80nF (see "Capacitance Limits" below).

Capacitance Limits

An increase in capacitance on the Backbone will affect data transmission and will cause the system to slow down. Capacitance will increase for every foot of wire added to the Backbone. The capacitance rating of the wire used will determine the maximum length of the Backbone.

For example, 22-gauge, non-shielded, 4-conductor wire has a typical capacitance rating of 20 picofarads per foot (which is 20nF/1000'). For every 1000' of wire added – regardless of where it is run – the capacitance of the Backbone will increase by 20nF.

The following chart indicates the total Backbone wire allowed depending on the capacitance rating of the wire used:

Wire Capacitance per 1000'(300m)	TOTAL Ebus Wire Length
15nF	5300'/1616m
20nF	4000'/1220m
25nF	3200'/976m
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40nF	2000'/608m

Wires run in parallel also increase Backbone capacitance. For example, when using 20nF wire, the following would be some of the combinations allowed:

- Four wire runs at 1000'/305m each
- Six wire runs at 666'/203m each
- Eight wire runs at 500'/152m each
- 10 wire runs at 400'/122m each etc…

NOTE: Contact the wire manufacturer for the capacitance ratings of the wire being used.

3.8   Zone Wiring

Zones on the system are wired according to the diagrams below. Once you have selected which type of zone supervision you require, you must program the "Zone Supervision" section. See Section 5.1 "Zone Supervision" for instructions.

NOTE: Fire, LINKS Supervisory, and LINKS Answer zones always use single EOL supervision, regardless of the programmed zone supervision (see section 3.9 "Specialized Zone Wiring").

If the zone is armed and then is violated, the zone will be in alarm. The system will transmit the alarm, and the bells will sound until the end of the Bell Time Out, or until silenced by a user. If the zone is violated again before the first alarm is cleared, the bells will not re-sound.

No End of Line (No EOL)

All No EOL zones are normally closed loops. The zone will be violated when it is open.

Any Z Terminal   Any COM Terminal

Normally Closed Contact; No End Of Line Resistor
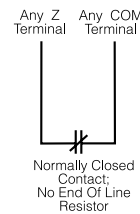
Single End of Line (EOL)

All Single EOL zones have a 5600Ω resistor across them. If the zone is shorted or open, it will be violated. Resistors should always be placed at the device end of the wire run.

If programmed as a fire zone, the open zone will generate a trouble condition and the short will generate an alarm.

2 Normally Open Contacts with 5600Ω End Of Line Resistor

2 Normally Closed Contacts With 5600Ω End Of Line Resistor

1 Normally Open Contact And 1 Normally Closed Contact With 5600Ω End Of Line Resistor
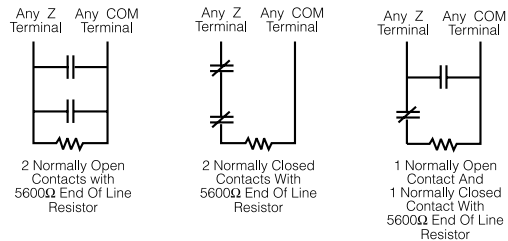
Double End of Line (DEOL)

All Double EOL zones have two 5600Ω resistors across them. DEOL loops will allow the panel to detect zone faults, zone tampers, violated zones and restored zones. Resistors should always be placed at the device end of the wire run. The zone loop response is 320mS.

NOTE: Only normally closed detection devices can be used with this type of zone supervision. Only one normally closed contact can be connected to each zone; multiple detection

devices or contacts on one loop are not allowed, as the tamper condition will not be monitored.

Any Z Terminal   Any COM Terminal   Any Z Terminal   Any COM Terminal

Alarm Contact

5600Ω

Alarm Contact   Tamper Contact

5600Ω

DEOL Circuit 1 Normally Closed Contact With 5600Ω End Of Line Resistors

DEOL circuits: 2 normally closed contacts with EOL resistor and tamper resistor
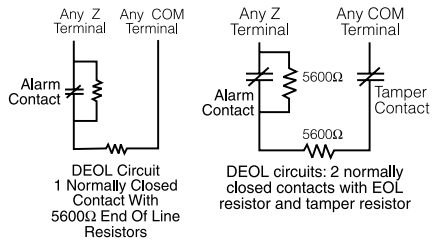
If a tamper or a fault occurs, a buzzer will sound from all keypads assigned to the area. The buzzer will sound for the length of the Bell Time Out, or until silenced by a user. The system will send a zone tamper reporting code to the central station, if programmed.

NOTE: *Zone tampers will not prevent the system from being armed.*

3.9   Specialized Zone Wiring

Some zones require wiring configurations unique to the selected zone type. These zones are listed below. For information regarding the various zone types, please see the PC6010 *Programming Manual*.

Fire Zone

This zone type uses normally open contacts. Standard Fire zones, and Auto Verify Fire zones must be wired for single end-of-line supervision. The zone will initiate a fire alarm when the loop is shorted (contacts close). A Fire Zone trouble will be generated when the loop is opened (wire break). Typically, fire alarm initiating contacts originate from 4-wire smoke detectors. These types of detectors must be wired as shown in the diagram below.
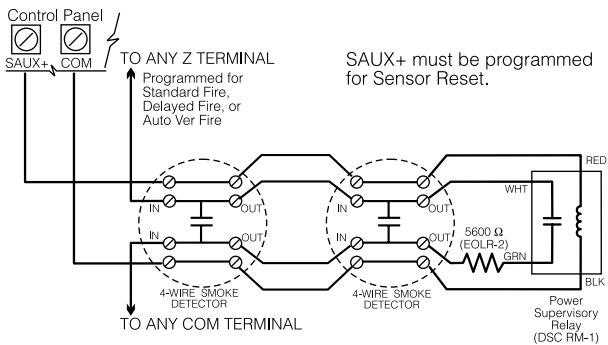
Control Panel

SAUX+   COM   TO ANY Z TERMINAL
Programmed for Standard Fire, Delayed Fire, or Auto Ver Fire

SAUX+ must be programmed for Sensor Reset.

RED
WHT
IN   OUT   IN   OUT
IN   OUT   IN   OUT   5600 Ω (EOLR-2)   GRN
BLK
4-WIRE SMOKE DETECTOR   4-WIRE SMOKE DETECTOR   Power Supervisory Relay (DSC RM-1)
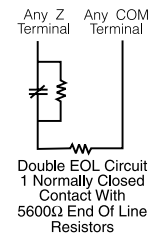TO ANY COM TERMINAL

The power for the 4-wire detectors must be supervised with an end-of-line relay (RM-1). The contacts of that relay are wired in series with the zone end-of-line resistor. With the relay energized, the relay contacts are closed and the zone is normal. If the power is lost, the relay de-energizes, the contacts open and a zone trouble is initiated.

Multiple fire initiating normally open contacts may be used in parallel on the loop. Do not include burglary or other types of devices on a fire zone.

Keyswitch Zone

Zones programmed as keyswitch arming zones must be wired according to the following diagram:

Any Z Terminal   Any COM Terminal

Double EOL Circuit 1 Normally Closed Contact With 5600Ω End Of Line Resistors

LINKS Supervisory Zone

This zone is for use with a LINKS1000/GSM1000 only. If the LINKS experiences a trouble condition, a LINKS output can be used to violate this zone type and the event will be reported to the central station. See the corresponding LINKS1000 or GSM1000 *Installation Manual* for wiring information.

LINKS Answer Zone

This zone is for use with a LINKS1000/GSM1000 only. In case of a telephone line failure, the panel can be uploaded/downloaded via the cellular network. If the LINKS detects an incoming call, it will activate an output that can be used to violate this zone type. This will force the panel to answer the cellular call and will begin communications with the downloading computer.

This zone must be programmed as LINKS Answer and is wired according to the following diagram:

Zx
Control Panel

LINKS1000   RING
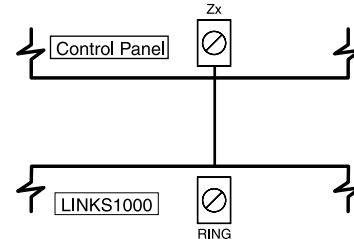
3.10 Programmable Output Wiring

The PGM output is a programmable terminal and will connect to +12V when activated. The terminal can sink a maximum current of 50mA. If the desired current is higher than 50mA, a relay will be required. To connect the relay, refer to the diagram below:

RELAY OUTPUT

PGM   Any COM Terminal

RED   BLK

DSC RM-1

WHT   YEL   GRN
COM   N.C.   N.O.
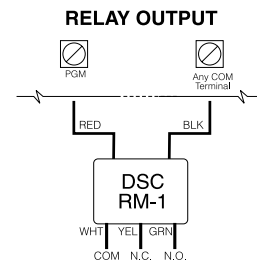
Each output can be programmed as one of numerous available output options. See the "Programmable Output Options" section in the *Programming Manual* for a complete list of PGM output options.

3.11 Wiring Powered Devices (AUX, SAUX+)

AUX (Auxiliary Power)

These terminals can be used to power motion detectors, glass break detectors and other devices requiring power. The AUX (positive) and GND (negative) terminals can provide up to 376mA of current.

SAUX+ (Switched Auxiliary Power)

This terminal provides positive power (12V$_{DC}$). Typically, this output is used for providing power to latching type devices that require a power interruption in order to reset. If the output is programmed for Sensor Reset (see SW AUX Output in the *Programming Manual*), the output will de-energize when a user answers YES to the "Do You Want to Reset Detectors?" prompt. The SAUX+ terminal can provide up to 200mA of current.

3.12 Telephone Line Wiring
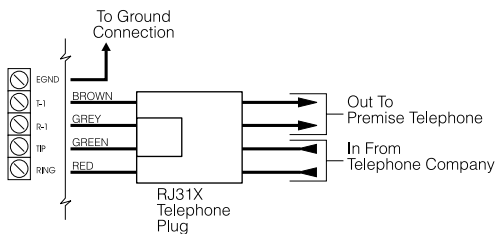
The telephone terminals provide connections to the incoming telephone lines for central station reporting. The wires from the RJ31-X jack must be connected in the following manner:

NOTE: *For proper operation, there must be no other telephone equipment connected between the control panel and the incoming telephone line (e.g. answering machines, fax machines, telephones, etc.).*

3.13 Bell Output Wiring (BELL⁺ and BELL⁻)

These terminals are used for powering bells, sirens or other devices requiring steady output voltage on alarm. The panel can provide up to 2A short-term or 200mA (for 15 minutes) current. The output is supervised. A trouble condition will be generated when the bell connection is lost. If no bell or siren is being used, connect a 1000Ω resistor across the BELL+ and BELL- terminals to eliminate a trouble condition.

Bell Loop
200 mA MAX

Be Sure To Observe
Polarity When
Conecting Polarized
Sirens Or Bells
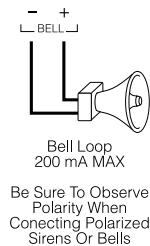
To ensure proper operation, the wire length of the bell loop must be considered.

Consult the following chart to determine the maximum wire length for the bell loop with respect to current. The values reflect the use of a 30 watt siren.

Bell Loop Load Current	Distance to last bell/siren (ft/m)				
	22 AWG Wire	20 AWG Wire	18 AWG Wire	16 AWG Wire	14 AWG Wire
2000mA	18/6	29/9	46/14	73/22	116/35
1800mA	20/6	32/10	51/16	81/25	129/39
1000mA	36/11	58/17	92/28	147/44	233/70
700mA	52/16	82/25	132/40	210/64	332/101
500mA	73/22	115/35	184/56	293/89	465/141
100mA	364/110	577/175	922/279	1467/445	2326/705

To increase the length, double up on wire. For example, when using 22-gauge quad, use two conductors for the Bell+ connection and two for the Bell-. This effectively doubles the maximum distance.

3.14 Earth Ground Wiring

The cabinet should be earth grounded using the grounding connector, as described in local rules and regulations. In the U.K., the connection shall meet the applicable requirements of BS6701, part 1, section 6.10.

The EGND terminal must be connected to earth ground.
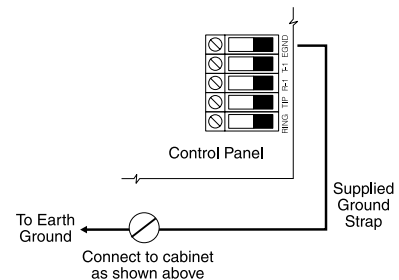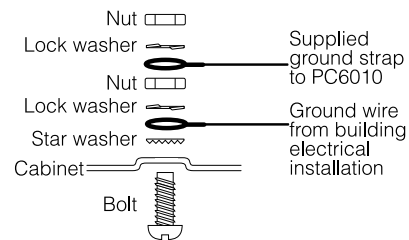
3.15 Mounting the Cabinet, Control Panel and Modules

There is room in the PC4005C cabinet for the main control panel and two modules. A small expander cabinet (PC4003C) is available for a single module that does not require external power.

1. Select a dry location close to an unswitched AC source, a round connection and a telephone connection for mounting the Main Control Cabinet.
2. Remove the PC6010 printed circuit board, mounting hardware, and keypad from the cardboard retainer inside the large cabinet.
3. Before attaching the cabinet to the wall, press the five white nylon printed circuit board mounting studs into the cabinet from the back.
4. Pull all cables into the cabinet and prepare them for connection before mounting the circuit board to the back of the cabinet. Press the circuit board down onto the mounting studs.

5. Once you have made all the proper connections, you can apply power to the system. First connect the battery, then the AC transformer. See section 3.16 below, for more information.

3.16 Applying Power (AC and Battery)

WARNING: *Do not connect the battery or transformer until all other wiring is complete.*

NOTE: *80VA local state electrically approved transformer.*

Once all field wiring has been completed and checked for opens, shorts and grounds, power can be applied to the panel as follows:

1. Connect the battery leads.
2. Connect the AC transformer.

The panel will not power up correctly if AC power is applied before the battery is connected.

After you apply power to the system, for the first 2 minutes, the system will consider all zones as non-violated. This is to allow time for the detectors to "settle", preventing false alarms.

Battery Selection Charts

The charts below are to determine the battery required to support the main panel for either 24 hours or 60 hours in the standby mode. The battery size is measured in amp hours (Ah). To determine the appropriate battery size, perform the following:

1. Calculate the total current required when the panel is not in alarm. This is the standby current. See section 3.4 for further information on current calculation.
2. Determine the current that will be drawn when the panel is in alarm.
3. On the chart below, find the standby current on the horizontal axis and the alarm current on the vertical axis.
4. Find the region of the chart where the standby current and the alarm current values intersect. The region corresponds to the required battery Ah capacity.

You can select the battery charging current in the System Toggle Options section. To have the charging current set at 1.4A, turn on the Hi Batt Charg option. If the option is off, the battery charging current will be 360mA. See the *Programming Manual* for more information.
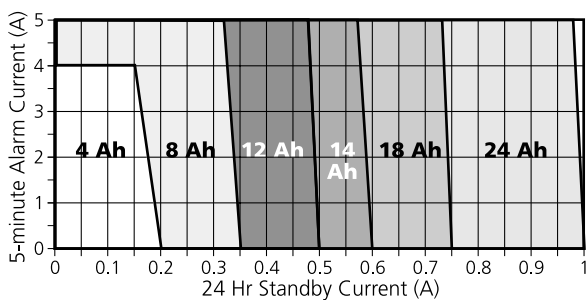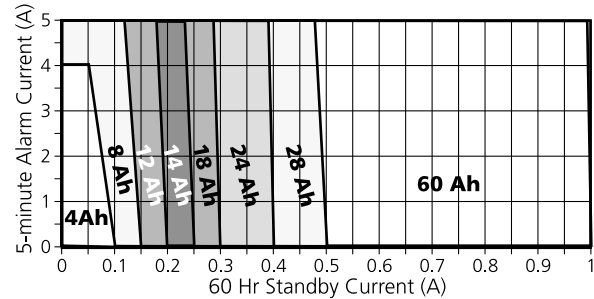
For example:

Standby current = 500 mA

Alarm current = 2 A

On the 24Hr chart, the battery capacity required is **14Ah**.

Battery Selection for 24 Hr Standby and 5-min. Alarm

Battery Selection for 60 Hr Standby and 5-min. Alarm

Battery Connection – Red and Black Battery Leads

Connect the red battery lead to the positive terminal of the battery and the black lead to the negative terminal.

WARNING: *Observe the correct polarity. If the battery is connected backwards, the panel will not operate.*

AC Power Terminals

WARNING: *Connect the battery before connecting the AC power.*

A 16.5V, 80VA transformer connected to an unswitched AC power source should be wired to these terminals.

To achieve the rated outputs as previously described, the AC input must be connected to the secondary of a transformer rated at 16 VAC, 80VA minimum.

Do not connect the transformer primary to an outlet that is controlled by a switch.

The PC6010 monitors the presence of AC power on all modules on the system. The Power light on the keypad will always be on while AC power is on. Upon the loss of AC power, the system generates a trouble condition. If an AC trouble occurs on any component of the system, the Power light will turn off. The AC Fail Delay does not affect the Power light - it will turn off as soon as there is an AC trouble on any module on the system. The Power light will turn back on only when AC is physically restored to all system components. AC and Battery troubles will not prevent arming of the system.

3.17 Lithium Batteries

The PC6010 circuit board includes a lithium battery. (Please see the wiring diagram on page 24.) This battery is not replaceable. There is a danger of explosion if the battery is incorrectly replaced.

If the lithium battery stops working, return the circuit board to DSC Ltd. Batteries may cause a fire when in contact with metal. If you need to dispose of the circuit board and/or the lithium battery, wrap the battery in non-conductive tape. Check with your local government for battery disposal regulations.

WARNING: *Do not store the batteries in such a way that they come into contact with each other or with any piece of metal. Explosion or fire may occur. Should fire occur, use only dry chemical fire extinguishers. Do not use water to put out the fire. Do not heat the batteries. Do not dispose of the batteries or circuit boards in a fire. Do not disassemble the batteries. Do not apply pressure to or deform the batteries. Ensure that the above precautions are strictly observed by related departments, including, but not limited to, production, sales and outside contractors.*

Section 4: Module Enrollment

4.1 Enrolling Keypads and Modules

Once you have completed the wiring of all keypads and modules, they must be enrolled on the system.

Apply power to the system by first connecting the battery, followed by the AC transformer (see section 3.16). All LCD keypads will display the message "PC6501 DSC Ltd."

NOTE: *Make sure all power to the system is OFF when connecting any modules.*

NOTE: *Record the location and the number of each module in the* Programming Worksheets *for future reference.*

4.2 Enrolling the First Keypad

To enroll the first keypad, go to the keypad that is to be assigned to area 1. Press any key on that keypad.

The keypad beeps and displays the message "65XX Mod. #1." This keypad is automatically enrolled and assigned to area 1.

Once you have enrolled the first keypad, you can enroll the rest of the system keypads and modules through the "Module Hardware" section of installer's programming.

4.3 Enrolling All Other Keypads

At the keypad you have just enrolled:

1. Enter installer's programming by pressing [*] [8] [Installer's Code].

NOTE: *The default installer's code is [5555].*

2. Use the arrow keys (<>) to scroll to "Module Hardware". Press the [*] key.

3. The keypad displays the message "Enroll Module". Press [*].

4. Scroll through the module types, until the PC6501 keypad is displayed. Press the [*] key.

5. The keypad will display the message "Press Any Key On Desired Unit." Go to the keypad to be enrolled and press any key.

6. Return to the original keypad. A message similar to the following will confirm enrollment of the keypad:

    "PC65XX Mod 02 Enrolled"

7. Next, you must select which area the keypad will control. Use the arrow keys (< >) to scroll to the desired area. Press the [*] key to select the area. If you press the [#] key, the keypad will be assigned to Area 1 by default.

NOTE: *To change the area to which a keypad is assigned, you must delete, and then re-enroll the keypad.*

8. Make sure you record the module number and assigned areas of all keypads on the *Programming Worksheets*.

4.4 Enrolling PC6108A, PC6204, PC6216, PC6400, and PC6820 Modules

At any enrolled keypad:

1. Enter installer's programming by pressing [*] [8] [Installer's Code].

2. Scroll to "Module Hardware" and press the [*] key.

3. The keypad displays the message "Enroll Module". Press the [*] key.

4. Scroll through the module types, until the module you wish to enroll is displayed. Press the [*] key.

5. The keypad displays the message "Create Tamper On Desired Unit". To enroll the module, you will need to create a tamper condition on it. To create the required tamper, secure the tamper zone on the module, and then open the tamper zone. It is the transition from secure to violated which enrolls the module.

6. After the module has been tampered, the keypad displays the module number and confirms enrollment (e.g. "PC6204 Mod 01 Enrolled"). Record the module number in the *Programming Worksheets*.

7. Once the module is enrolled, re-secure the tamper.

Enrolling Zone Expanders

NOTE: *Enroll all zone expanders before assigning zones to PC6820 modules.*

Zones 001 to 016 are located on the main control panel. Additional zones are added in sequence. For example, if you enroll two PC6108A zone expanders, the first one will be assigned zones 017 to 024, and the second will be assigned zones 025 to 032.

The system can have a maximum of 256 zones. To confirm which zones are assigned to which expander, press any key when the keypad displays the enrollment confirmation message.

NOTE: *Be sure to record the zones assigned to each zone expander module in the System Overview section of the* Programming Worksheets*.*

4.5 Enrolling PC6442 and PC6443 Modules

Before you can enroll any PC644X module, you must program the Originator ID to be [01]. After the Originator ID is changed to [01], you will be able to access all of the Backbone programming sections. See "Backbone Section" in the *Programming Manual*, for more information. At any enrolled keypad, do the following:

1. Enter installer's programming by pressing [*] [8] [Installer's Code].
2. Scroll to "Backbone Section" and press the [*] key.
3. Scroll to "Originator ID" and press the [*] key. Program [01] in this section.
4. Press [*], then scroll to "Module Hardware" and press the [*] key.
5. Scroll to "Backbone Modules". Press the [*] key.
6. The keypad displays the message "Enroll Module". Press the [*] key.
7. Scroll through the module types, until the module you wish to enroll is displayed. Press the [*] key.
8. The keypad will display the message "Create Tamper On Desired Unit". To enroll the module, you will need to create a tamper condition on it. To create the required tamper, secure the tamper zone on the module, and then open the tamper zone. It is the transition from secure to violated which enrolls the module.
9. After the module has been tampered, the keypad displays the module number and confirms enrollment (e.g. "PC6442 Mod 01 Enrolled").
10. Once the module is enrolled, re-secure the tamper.

4.6 Deleting Modules

Sometimes, a module must be deleted from the system. This could be when zone expanders are enrolled out of sequence, a keypad is assigned to the wrong area, or if a module is defective. If you need to disconnect a module from the control panel, be sure to first delete it from the system.

To delete a module, enter the following at any enrolled keypad:

1. Enter installer's programming by pressing [*] [8] [Installer's Code].
2. Scroll to and select the Module Hardware > Delete Module programming sections.

NOTE: *To delete a backbone module, you will need to select Module Hardware > Backbone Modules > Delete Module.*

3. Scroll through the module types until you see the module you wish to delete. Press [*] to select.
4. Scroll to the correct module number. For example, to delete PC6501 Module 04, scroll to "PC6501 (04)."
5. To delete the module, press the [*] key.

NOTE: *When you delete and/or replace zone expanders, you should re-enroll all remaining zone expanders. This will ensure proper zone assignment and operation.*

4.7 Confirming Modules

If the module numbers were not recorded in the *Worksheets*, you can check this information through the "Confirm Module" menu.

The procedure for confirming modules is similar to the procedure for enrolling them.

1. Enter installer's programming by pressing [*] [8] [Installer's Code].
2. Scroll to and select the Module Hardware > Confirm Module programming sections.

NOTE: *To confirm a backbone module, you will need to select Module Hardware > Backbone Modules > Confirm Module.*

3. Scroll through the module types, until the module you wish to enroll is displayed. Press the [*] key.
4. You will be prompted to "Press Any Key On Desired Unit" in the case of keypads, or to "Create Tamper on Desired Unit" in the case of modules.
5. Once you have pressed a key (on the keypad), or created a tamper (on the module), the keypad displays the module number (e.g. PC6501 Mod 02). Be sure that is it recorded correctly on the *Programming Worksheets*.

Section 5: Programming the PC6010

5.1   Introduction to Programming

You can use two methods to program the PC6010:

• using the menu system on any system keypad
• using a computer and DLS-3 downloading software.

This section describes how to program the system using a keypad and the menu system. For more information on programming using downloading software, see section 10 "Downloading", and the DLS-3 manual.

Programming From a Keypad

To program the PC6010 using the menu system, you must have installed and enrolled at least one keypad. See section 4 for more information.

1. To program the system, you will first need to enter the Installer's Programming mode: enter [*][8][Installer's Code] at any keypad that is enrolled on the system.

   By default, the Installer's Code is [5555]. When you are in Installer's Programming, all LEDs on the keypad will be off.

   To prevent unauthorized personnel from entering Installer's Programming, you should change the Installer's Code from the default setting. For more information, see "System Section - Installer Options" in the *Programming Manual*.

2. To navigate through the menus, use the arrow keys (<>). When you see the menu item you want, press the [*] key to select it. Getting to the right programming section may require scrolling and selecting items from several menus. To return to previous menus, press [#].

   Refer to the *Programming Manual* for an overview of the menu structure, and descriptions of each programming section.

***NOTE**: The YES, NO and CANCEL buttons do not work in Installer's Programming. If you press them in Installer's Programming, the keypad will sound an error tone.*

3. Once you have entered Installer's Programming, the first menu consists of the items listed below. Use the arrow keys (< >) to scroll to the area you wish to program, and press [*].

   System Area - Use this section to program options that affect the operation of the entire system. These options include communications, downloading, printer options, installer and master code programming, etc.

   Area Section - Use this section to program options for each area. These options include zone assignments, area times, area options, etc.

   Backbone Section - Use this section to program options for the Backbone**.**

   Module Hardware - Use this menu to enroll the system modules and keypads.

   Event Buffer - Use this menu to print the event buffer for the system.

   Diagnostics - Use this menu to find out more information on trouble conditions reported by the modules.

Example: to program the Area 2 ID code, scroll to each of the following messages, and press [*]:

Scroll to...	**AREA SECTION**	Press [*]
Display shows...	**ADD/EDIT AREA**	Press [*]
Display shows...	**"AREA 1"**	
Scroll to...	**"AREA 2"**	Press [*]
Display shows...	**AREA ID CODE**	Press [*].

Enter the 6-digit Area 2 ID code. The display returns to the message "Area ID Code".

Press [#] to return to the previous menus, and to exit the installer programming mode.

***NOTE**: The [#] key is not a cancel key. If you have entered data in a section, and then press [#], the data will be saved.*

5.2   Programming Using Hotkey Numbers

Another method of navigating through the menus uses one- or two-digit hotkey entries. Every menu and program item has a "hotkey" entry. You can find the hotkey entry for any section in the *Programming Worksheets*.

The hotkey entry for each programming section is displayed on the LCD screen. Enter that number, and the panel will select the item for you. ***Do not press [*] after entering the 'hotkey' number.***

For example, once you have entered Installer's Programming, you can reach the Area 2 ID code programming section by entering:

[1]-[0]-[02]-[0]

Once you become familiar with the menus, the hotkey method will allow you to move quickly through the menus.

To exit a section or move back a menu, you can press [#]. To exit Installer's Programming, you may have to press [#] several times, depending on where you were in the menu system.

***NOTE**: The [#] key is not a cancel key. If you have entered data in a section, and then press [#], the data will be saved.*

Once you become familiar with each programming option's hotkey number, programming will become quick and simple. If you lose your place, you can always use the [<][>] keys to scroll through the menu items, and refresh your memory.

5.3   Programming Decimal Data

Some programming sections require decimal (0-9) entries, such as zone definitions and system times. Make sure that you record all required decimal data in the *Programming Worksheets* before beginning to program each section.

Many sections require a specific number of digits. Once all digits have been entered, the control panel will automatically exit that section and will return to the previous menu.

If you press the [#] key, only the data that you entered will be changed. All remaining programming data will be left unchanged. For example, when programming telephone numbers you do not need to program all 32 digits. When you have finished entering the telephone number, press [#] - the telephone number will be saved and the system will exit from the programming section. .

5.4   Programming Hexadecimal Data

Hexadecimal or "Hex" digits are often required for programming items, such as telephone numbers and reporting codes. To insert a Hex digit into a programming section:

1. Press [*] to enter the Hex menu.
2. Use the arrow keys to scroll through the each Hex digits (A through F).

3. When the desired letter is displayed, press [*] again.

You can also enter Hex digits by pressing [*], followed by the number which corresponds to the Hex letter (A = 1, B = 2, C = 3, D = 5, E = 5, F = 6). Once the digit is entered, the control panel will automatically return to the decimal programming mode.

For example, to enter "ABCD", you would press: [*], [1], [*], [2], [*], [3], [*], [4]

5.5   Programming Toggle Options

Many programming items are toggle options that are either enabled or disabled. Use the arrow keys (< >) to scroll through the toggle options. Press [*] to switch back and forth between [Y]es (enabled) and [N]o (disabled). Once all the toggle options have been programmed, press [#] to save your changes, and return to the previous menu.

Section 6: Keypad Operation and User Types

6.1 Introduction

The PC6501 liquid crystal display (LCD) keypad guides users through each operation with easy-to-understand prompts. The keypad beeps once each time a key is pressed. With unique sound sequences, the keypad can also signal faults and other indications of system status.

For each feature, the system will display a question (e.g.. Do you want to turn areas on?). Users can press YES to answer yes, or NO to answer no. If users are unsure, or have lost their place in the system programming, they can press CANCEL to return to the start screen.

If no key is pressed on the keypad for 60 seconds, it will return to the start screen, for example:

```
12:00  2000/01/01
Enter Your Code
```

NOTE: *The YES, NO and CANCEL buttons do not work in Installer's Programming. If you press them in Installer's Programming, the keypad will sound an error tone.*

In the user menus and manuals, arming is referred to as "turning the system on", and disarming is referred to as "turning the system off".

In the "Turn Areas On/Off" and the "View System Status" user menus, when you scroll to an area the On and Off lights will display the current status of the area. For example, at the prompt "Turn ON Area? Area 1", if area 1 is currently off, the Off light will be lit. The On and Off lights will not be lit at other times.

The Power light will always be on, unless there is an AC power fault.

Refer to the PC6010 *User's Guide* and *Maintenance Manual* for detailed information about end-user functions. Users of the system should read the appropriate manual carefully to become familiar with the features that have been implemented on the system. Make sure that all users of the system are instructed in its use.
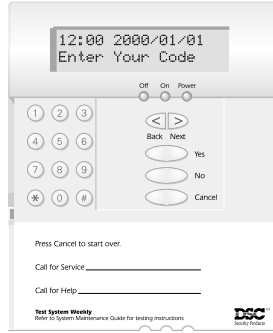
6.2 User Types

The PC6010 system can have up to 1000 users programmed. Users can be assigned to one of four user types: Basic, Advanced, Supervisor and Master users. Each of the 4 user types can access different levels of features, as described below. For instructions on programming user codes and cards, please refer to the PC6010 *Maintenance Manual*.

User Types:	Basic	Advanced	Supervisor	Master
Arm (Assigned Areas)	Y	Y	Y	Y
Disarm (Assigned Areas)	Y	Y	Y	Y
Silence Siren/Bell (Assigned Areas)	Y	Y	Y	Y
View Alarms (Assigned Areas)	Y	Y	Y	Y
Acknowledge/Clear Alarms (Assigned Areas)	Y	Y	Y	Y
View Open Zones (Assigned Areas)	Y	Y	Y	Y
Bypass/Disable Zones on Arming (Assigned Areas)	Y	Y	Y	Y
View and Clear Basic Faults	Y	N	N	N
View and Clear Advanced Faults	N	Y	Y	Y
Delay Automatic Arming	Y	Y	Y	Y
Activate Doorstrike	N	Y	Y	Y
Reset Detectors	N	Y	Y	Y
Cancel Automatic Arming	N	N	Y	Y
View Event Buffer/Log	N	N	Y	Y
Bypass and Disable Zones (All Areas, at Any Time)	N	N	N	Y
View System Status (All Areas)	N	N	N	Y
Change Access Codes (Only Codes in a Lower User Type)	N	N	Y	Y
Change Keypad Setup	N	N	Y	Y
Change Time & Date	N	N	N	Y
Perform System Test	N	N	N	Y
Allow System Service	N	N	N	Y

6.3 "Warning - Security Reduced" Messages

These messages are displayed on the keypad if a user tries to arm the system when there is a problem with one or more zones (i.e. a zone is open, in alarm, or has a fault, tamper, seismic fault or trouble condition).

The following message will be displayed on the keypad:

"Warning - Security Reduced"

If this message is displayed, users can continue arming their area(s) by pressing the YES button. The keypad then displays "Warning Confirmed", and the area(s) are armed.

6.4 Time and Date Display

When the keypad is idle, it will show the time and date. The clock will show in 24-hour time (00:00 - 23:59), and the date will show as year/month/day (YY/MM/DD). For example, 1:30 pm December 13, 1999 will be displayed as 13:30 1999/12/13

The system will automatically adjust for the switch to daylight savings time in March, and back to standard time in October.

The dates that these changes occur on are programmed in the Daylight Savings and Standard Time programming sections. See System Times in the PC6010 *Programming Manual* for more information.

If the system is connected to Alarm Presentation Software over the backbone, the system will get the new time from the software, and will not follow the Daylight Savings Time / Standard Time programming sections.

Master users also can reset the time and date through the user interface. See the *Maintenance Manual* for more information.

6.5 Keypad Lockout

After a programmed number of incorrect attempts to enter a user or installer's code, the keypad will lock out the user. The lockout prevents the user from performing any function at any keypad.

The keypad will display "Keypad Lockout is Active" for the lockout duration. See the "System Options" section in the *Programming Manual* for information on programming the number of incorrect code entries allowed (Total Bad Codes), and how long the keypad will remain locked out (Lockout Duration).

6.6 Keypad Tampers

If there are tamper plates attached to the PC6501 keypad, you should enable the Keypad Tampers toggle option. See the "System Options" section in the *Programming Manual*.

6.7 Keypad Backlighting

When a user presses a key on the keypad, the keypad backlighting will increase to the "boost" level. After 30 seconds of inactivity, the keypad will return to the preset backlight level.

Master and Supervisor users can select the level of (non-boosted) backlighting in the Keypad Setup section of the user menu.

Section 7: System Operation and Programming

Once you install all the modules and devices and enroll them on the system, you will need to program the system so that it works correctly. Review this section for an overview of how the system works, and for descriptions of the main programming areas.

7.1 System Programming

Programming options which affect the operation of the entire system are in the System Area:

Installer and System Options

You can change the Installer and Walk Test codes in the Installer Options section. The System Reset feature is also in this section. System toggle options, keypad lockout options, system times, and the arm/disarm mask for areas are in the System Options section. See the *Programming Manual* for a complete description of these sections.

Downloading

You can program the PC6010 remotely using a computer and DLS-3 downloading software. Refer to the DLS-3 manual for more information. See section 9 "Downloading" for information on setting up the PC6010 for downloading. See the DLS section of the *Programming Manual* for descriptions of the PC6010 programming sections related to downloading.

Communications

You can choose to use either the SIA FSK or Contact ID communications format for land line communications. You can either program each reporting code that you will use in the "Communicator" programming section, or use the automatic reporting code feature available for both formats.

Please refer to the "Communicator" section of the *Programming Manual*, for descriptions of the available reporting codes, and descriptions of communication programming options. Refer to Appendix B of the *Programming Manual* for a list of recommended Contact ID codes, and the SIA automatically generated reporting codes.

LINKS1000 Programming

The LINKS1000 Cellular Communicator can be used to back up all three telephone numbers. You can also use the LINKS1000 as a primary or backup communicator for downloading.

Please see the "LINKS Module" section of the *Programming Manual* for more information on LINKS1000 programming.

Programmable Outputs

Programmable outputs are terminals on the PC6010 board, or on PC6204, PC6216 modules which can control connected devices according to various programming options.

For example, you could connect PGM1 on the main board to a bell. If you program PGM1 as output option (12) Chime Follower, the system will turn on the bell whenever the door chime is activated on the selected areas.

You can program options for programmable outputs in the PGM Outputs section. See the *Programming Manual* for a detailed description of each output option.

User-controlled Outputs

When users answer YES to "Activate door strike?", outputs programmed for Utility Output will activate for the Utility/Sensor PGM pulse time.

When users answer YES to "Do you want to reset detectors?", outputs programmed for Sensor Reset will de-activate for the Utility/Sensor PGM pulse time, so that the connected sensors will be reset.

Event Schedules

You can program schedules for the communication of openings and closings, automatic arming and disarming, access control, and the activation of programmable outputs in the Event Scheduling section. See the *Programming Manual* for a detailed description.

Access Control

If you connect one or more PC6820 modules to the PC6010 system, you can program the system to control access to up to 32 separate doors. See "6820 Options" in the *Programming Manual*, and the *PC6820 Installation Manual* for detailed information.

7.2 Area Programming

An area is a group of zones which can be armed and disarmed together. Up to 32 separate areas can be programmed on the PC6010.

Most of the programming for individual areas is in the Area Section. To program an area, you must first enable it in the Add/Edit Areas section. Area 1 is enabled by default.

To enable and program an area:

1. Enter Installer's Programming ([*][8][Installer's Code]).

2. Scroll to Area Section, then press [*].

3. Scroll to Add/Edit Area, then press [*].

4. Scroll to the area you want to enable and program, then press [*].

Assigning Zones to Areas

Each zone must be assigned to at least one area. To assign zones to an area, select an area to program in Area programming, and go to the Zone Assignment section.

Assigning Users to Areas

Each user must be assigned to each area they will have access to. Supervisor and Master users can assign users to areas in Access Code programming in the user menu. See the *Maintenance Manual* for more information.

Programming the Area Arm/Disarm Mask

The Arm/Disarm Mask for areas is in the System Options section. Areas toggled to NO in the mask cannot be armed or disarmed from a keypad. Areas toggled to NO in the mask, can only be armed by access control, automatic arming, keyswitch arming, via the APS/ODS, or via the DLS-3 software. This may be useful if an area contains only an entryway, with the keypad outside the area. If a user were to arm all their areas, including the entryway, they may cause a false alarm when they exit (or enter) through the area. By default, all areas are set to YES, and can all be armed from area keypads.

Programming Area ID Codes

Program an Area ID Code so that the central station will be able to identify the area. Select area-specific features (such as bell squawk , entry and exit delay, and autoarm settings) in the Area

Toggle section. You can also program a label for the area in the Area Label section. This label will help users to identify an area in the user menu, and will help to identify area events in the event buffer.

Programming Area Times

Program area-specific times in the Area Times section. Each area can have it's own entry and exit delay times (both standard and auxiliary times).

During the exit delay, the area keypad(s) will beep once every second. During the last 15 seconds of the exit delay, the keypad(s) will beep 3 times per second. The remaining exit time is displayed on the keypad(s).

During the last 15 seconds of the entry delay, the keypad(s) beep 3 times per second.

Copying Area Programming

If you want to program several areas in a similar way, you can use the Copy Area section. You must have one area already enabled and programed. Select the programmed area to be copied, then select an unenabled area to copy the programming to. All the area programming will be copied, except for the zone assignments.

Deleting an Area

If you want to delete an area that has been enabled, use the Delete Area section. You must have removed all the zones from the area in order to delete it. When you delete an area, the system will retain all the area programming, so that if you re-enable it, you will only need to re-assign the zones to the area.

Programming Automatic Arming of Areas

To enable automatic arming and disarming of an area, program the date schedule and the arm/disarm schedules that you want the area to follow in the Event Scheduling programming section. See the "Event Scheduling" section in the *Programming Manual*. If you want users to be able to delay or cancel automatic arming, turn on the "AutoArm Enab" toggle option for the area. See the *User Guide* and *Maintenance Manual* for information on user options.

7.3   Zone Operation

Once you assign a zone to an area, you will need to program the Zone Type and Zone Options. In the Zone Type section, you tell the system what kind of zone it is (e.g. standard delay, instant or fire). See the *Programming Manual* for a complete description of each of the 19 zone types. Each zone type has its own default settings for the zone options. If necessary, you can change these settings in the Zone Options section. See the *Programming Manual* for a table of the default settings for each zone type.

Arming with Zones Open

If there are zones open when an area is armed by keyswitch, or automatic arming, the open zones will be force armed. The force armed zones will be fully armed when restored (closed).

Interior and Force Arm Delay zones can be force armed (i.e. the area can be armed with these zones in an unrestored or open state). Force arming will not be shown to the user. When the zone restores (closes), it will become armed with the rest of the area. Once the zone is armed, an alarm will occur if it is violated again.

Bypassing and Disabling Zones

Zones can by bypassed or disabled by Master users in the user menu.

When a zone is bypassed, it will not be able to trigger an alarm when violated. The system will still monitor the zone for tampers and faults. Users will usually bypass a zone when they need access to a portion of the system when it is armed. Bypassed zones will return to normal when the system is next disarmed.

When a zone is disabled, it will not be able to trigger an alarm when violated, and the system will *not* monitor the zone for tampers and faults. Users will usually disable a zone if the detector is not working properly. Disabled zones will not be re-enabled until turned on again by a user.

Zone Tampers, Faults and Alarms

If a zone tamper or a fault occurs, a buzzer will sound from all keypads assigned to the area. The buzzer will sound for the length of the Bell Time Out, or until silenced by a user. The system will send a zone tamper reporting code to the central station, if programmed.

NOTE: *Zone tampers will not prevent the system from being armed.*

If the zone is armed and then is violated, the zone will be in alarm. The system will transmit the alarm, and the bells will sound until the end of the Bell Time Out, or until a user silences them. If the zone is violated again before the first alarm is cleared, the bells will not re-sound, and the system will not transmit the event. An exception to this is the Seismic zone type. The system will sound the bells and send a communication for a second alarm on a seismic zone, even if the first alarm was not cleared.

When one or more zones go into alarm, the bells will sound (until the Bell Time-out timer expired), and the alarms will be displayed on the keypad(s) for the area(s) in alarm. When a user enters an access code valid for the area(s) in alarm, they can silence the bells. They can also view the zones that were in alarm. After they view the zones that were in alarm, they can select the Clear Alarms function. If they answer YES to "Clear Alarms?", all of the alarms in all areas that are assigned to that user are cleared (if the zones can be restored). Any alarms on areas that are NOT assigned to that specific user are NOT cleared at that time. See the *User Guide* for more information.

Multi-Area Zone Events

When an event (Alarm/Restoral, Tamper/Restoral, Fault/Restoral) occurs on a zone which is assigned to multiple areas, the event will be transmitted for the area with the lowest assigned area number. The event will be logged to be event buffer for all assigned areas.

7.4   Backbone Programming

The status of the PC6010 system can be monitored over telephone lines, or over a dedicated "Backbone" network using the PC6442, or PC6443 modules.

Before you can enroll any PC644X module, you must program the Originator ID to be [01]. After the Originator ID is changed to [01], you will be able to enroll the PC644X modules, and access all of the Backbone programming sections. See "Backbone Section" in the *Programming Manual*, for more information.

Section 8: Printer Setup

8.1   Setting up the PC6400

The PC6400 module sends serial communications through an RS232 port to a local printer, for on site monitoring of the PC6010 system. See the PC6400 Installation Instruction sheet for wiring and programming information.

The printer can be located up to 200 ft (61 m) away from the PC6400. An 80 character printer is strongly recommended.

8.2   Configuring the Printer

Make sure that your printer is set to the following settings:

- Serial interface
- Baud rate = 4800
- Parity = None
- Character length = 8 bits
- Auto line feed = Off
- American/Canadian character set
- DTR Protocol

8.3 Connecting the Printer to the PC6400

The PC6400 comes complete with a DB-25 (male) modular jack adapter, and a 6 ft (2 m) six wire extension cord. A longer extension cord can be used if required, up to 200 ft (61 m) maximum.

To connect the printer to the PC6400:

1. Power down the PC6010, PC6400 and the printer.
2. Connect one end of the extension cord to the PC6400, and the other end to the DB-25 modular jack adapter.
3. Connect the DB-25 modular jack into the RS232 serial port of the printer. See the PC6400 Installation Instruction sheet.
4. Power up the printer, then the PC6010 and PC6400.

8.4 Real-time Printouts

The PC6400 sends events to the printer as they occur. If the PC6400 is already enrolled and the printer is on line, the PC6400 will begin transmitting to the printer as soon as you connect it. Below are three sample printouts from a serial printer.

Most actions on the PC6010 that require an access code are logged to the event buffer, and sent to the printer (see Sample 2).

You can change the default area labels, access code names and zone labels so that the printouts are more readable. See the *Programming Manual* for more information. Your printouts will then look similar to Sample 3.

If the printer is off line or disconnected, the PC6010 keeps new events in memory until the printer is ready to print.

When the printer is on line again, the PC6400 will send the new events to the printer. The event buffer can hold up to 3000 events. If 2250 new events occur before the printer is brought back on line, the PC6010 will send the "Buf Near Full" reporting code to the monitoring station. If over 3000 events occur before the printer is brought back on line, the oldest events will be overwritten.

8.5   Printing the Entire Event Buffer

To print out the entire event buffer, enter the "Prn Entire Buffer" section in Installers Programming. The printout will begin with the newest event in memory and end at the oldest one. The event number will be printed before each event.

To cancel printing after a Prn Entire Buffer command, enter the "Cancel Print" section in Installer's Programming.

	Label	Date	Time	Event
Sample 1	System Area	05/27/99	13:25	RS232 PRINTER ON LINE
	Area..2	05/27/99	15:00	ALARM ZONE 008
	System Area	06/01/99	08:10	4204 #005 BATTERY TBL ALARM
	System Area	06/02/99	08:13	TAMPER LCD #001
Sample 2	Area..1	05/27/99	13:40	OPENING ACCESS CODE 001
	System Label	05/27/99	13:51	INSTALLER LEAD IN
	System Label	05/27/99	13:53	INSTALLER LEAD OUT
	Area..4	05/29/99	15:30	UTIL OUTPUT CODE ACCESS CODE 054
	Area..1	06/01/99	08:05	SW AUX CODE ACCESS CODE 008
	Area..8	06/01/99	08:01	SYS MASTER MENU ACCESS CODE 002
	Area..1	06/02/99	23:59	BYPASS WITH CODE ACCESS CODE 004
Sample 3	West Plaza	06/04/99	02:05	CLOSING Head Custodian
	Assembly Plant	06/04/99	02:09	ALARM Front Office

Section 9: Downloading

9.1 Programming the System Using Downloading Software

One way to program the PC6010 system is by using a computer and DLS-3 downloading software. You can enter the programming data in the computer, and then use a modem, or a PC-LINK module to send the data to the control panel. You can do this over the telephone line with a remote computer, or at a computer located on site.

Please see the DLS-3 manual for complete instructions on how to install, set up and use the DLS-3 software. See the DLS Section of the PC6010 *Programming Manual* for information on DLS-3 programming options.

9.2 Downloading over Telephone Lines

Make sure the "TIP" and "RNG" terminals are connected to the telephone line. Program the downloading access code and the panel I.D. code in the PC6010. Make sure that these codes are also programmed correctly in the DLS-3 account file.

You can also set up downloading using the LINKS1000 module as either a primary or backup communicator. See the "LINKS Module" section in the *Programming Manual* for more information.

You can set up the downloading so that the PC6010 will call the computer, or have the computer call the control panel.

To have the control panel answer the telephone line when the computer calls, you must enable either the "Ring Detect" or the "Usr Allows Srv" downloading toggle options.

If you enable the Ring Detect option, the control panel will always answer incoming telephone calls.

If you turn on the "Usr Allows Srv" downloading toggle option, a Master user will have to answer YES to "Allow System Service?" for the control panel to answer the telephone line. The control panel will answer the telephone line for 60 minutes. Master users will also have to Allow System Service before Installer's Programming is available at a system keypad.

If you enable both Ring Detect and Usr Allows Srv, the panel will always answer telephone calls, but a Master user will still have to Allow System Service, before the DLS-3 user or an installer can access Installer's Programming.

You can program the number of times the telephone line will ring before the control panel answers it in the "# of Rings" section. The default setting is 8 rings.

See the PC6010 *Programming Manual* for a complete description of DLS Programming options.

9.3 PC-LINK

The PC-LINK module allows a direct connection between an on-site computer and the control panel. With the PC-LINK, the computer can communicate with the panel at 9600 baud. Use a serial cable to link the computer with the control panel.
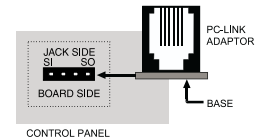
To download using PC-LINK:

1. Connect the PC-LINK connector to the header on the PC6010 board, as shown.
2. Enable PC-LINK in the Modem Configuration section of the DLS-3 software. The software will display "PC-LINK Active" in the Status Bar of the Communications window.
3. Open the appropriate account in the DLS-3, and select the function to be performed (upload, download, etc.)
4. Go to any system keypad and enter Installer's Programming and select "System", then "DLS Section", then "Enable PC-LINK". The keypad displays the message "PC-LINK Active (#) To Exit".
5. Once the DLS communication is in progress, the panel will automatically exit the Installer Programming mode.
6. When the desired DLS function(s) are complete, press the hang-up button on the Communications window. This will disconnect the DLS from the panel.
7. When you are finished, remove the PC-LINK connector from the PC6010.

Section 10: Diagnostics, Restoring Defaults, Viewing Faults

10.1 General Diagnostics

The diagnostics function is designed to help you track down any problems with the installed modules.

To enter the diagnostics section:

1. Enter Installer's Programming ([*][8][Installer's Code]).
2. Select "Diagnostics".
3. To view diagnostics for Ebus modules (PC6501, PC6108A, PC6216, PC6204, PC6400, PC6820), select "Ebus Modules". To view diagnostics for Backbone modules (PC6442, PC6443), select "Backbone Modules".
4. If there are no problems, the keypad will display "PC6010 System No Faults Found."
    If there is a problem, the keypad will display "Error... Module." This message will be accompanied by either "E" "T" or "LV" followed by a number. The number represents the module (see list below). The letters represent the following:

   E = communications error. The main panel has lost communications with the module.

   T = tamper. The tamper zone on the module has been activated.

   LV = low voltage. The module is not receiving enough voltage from the Ebus.

   Below is a list of the indicated numbers and which modules they represent.

Indicated #	Ebus Module
1-64	PC6501 - #1-64
65	PC6400
66-95	PC6108A - #1-30
146-154	PC6216 - #1-9
178-193	PC6204 - #1-16
210-225	PC6820 - #1-16

Indicated #	Backbone Module
33	Not used
34	PC6442
35	PC6443

For example, if the display shows 'E- T-65 LV- ', this means that the tamper on the PC6400 RS-232 module has been activated.

If there is more than one problem, use the arrow keys (<>) through the list.

10.2 Restoring Factory Default Programming

Software Default

This option is only available during the first minute after power up. To perform a software default:

1. Disconnect, and then reconnect the AC and battery power.
2. Go to a system keypad, enter a Master code and select "Allow System Service".
3. Exit user programming and then enter Installer's Programming ([*][8][Installer's Code]).
4. Select "Diagnostics", and then "Factory Default".
5. The keypad displays the message "Power System Down and Restart". Remove all power to the main panel. This erases all programming, and resets the system to factory default settings. You will have to re-enroll all the modules.

Hardware Default

If the installer's code is lost inadvertently, the only way to reprogram the system is to perform a hardware default.

To reset the panel to its factory default settings, perform the following:

1. Power the system down by removing both the AC connections and the battery power from the control panel.
2. Short the Z1 and PGM1 terminals on the control panel. Nothing else should be connected to Z1 or to the PGM terminals.
3. Restore power to the control panel. Connect the battery first, then the AC. Wait for 20 seconds.
4. Power down the panel by removing both the AC and battery connections.
5. Remove the short between the Z1 and PGM1 terminals.
6. Power up the panel. Connect the battery first, then the AC. The system has reloaded all factory default settings. You will need to re-enroll all the modules. The only part of the system's memory that will not be changed is the event buffer.

10.3 Viewing Fault Conditions

The control panel continuously monitors a number of possible fault conditions. If one of these faults occur, after a user enters their access code,

*   the keypad beeps twice every 10 seconds
*   when a user enters their code on the keypad, the system displays a menu choice which gives an opportunity to view the fault condition(s).

NOTE: *A fault condition reduces the security the system is designed to provide.*

Users with Basic codes will only be able to view the following faults:

*   Telephone line
*   Battery
*   AC power
*   Seismic detector test
*   Fire Trouble

If there is a fault not included in the above list, the system will show a General System Fault.

Users with Advanced, Supervisor and Master codes will be given additional information in the fault messages.

To view faults:

1. Enter your access code. If there is a fault, the keypad displays "System Fault, View Fault List?".

   To exit fault viewing, press NO. To view faults, press YES.

2. The keypad displays the list of faults. For example, "Telephone Line Fault". Use the <> keys to scroll through the list of faults.

3. When you come to the end of the list, the keypad displays "End of List, Reset Faults?".

   To return to the main menu, press NO. To reset the faults, press YES.

4. The system attempts to reset the faults. If all the faults are reset, the keypad displays "Fault(s) Now Cleared".

5. If the system cannot reset all the faults, the keypad displays "Unable to Clear All Faults", then "Call for Service Exit from Menu?".

   If you press NO, the keypad returns to the view fault list menu. If you press YES, the keypad returns to the main menu.

Fault conditions can be transmitted to the central station using reporting codes, if programmed (see the *Programming Manual*).
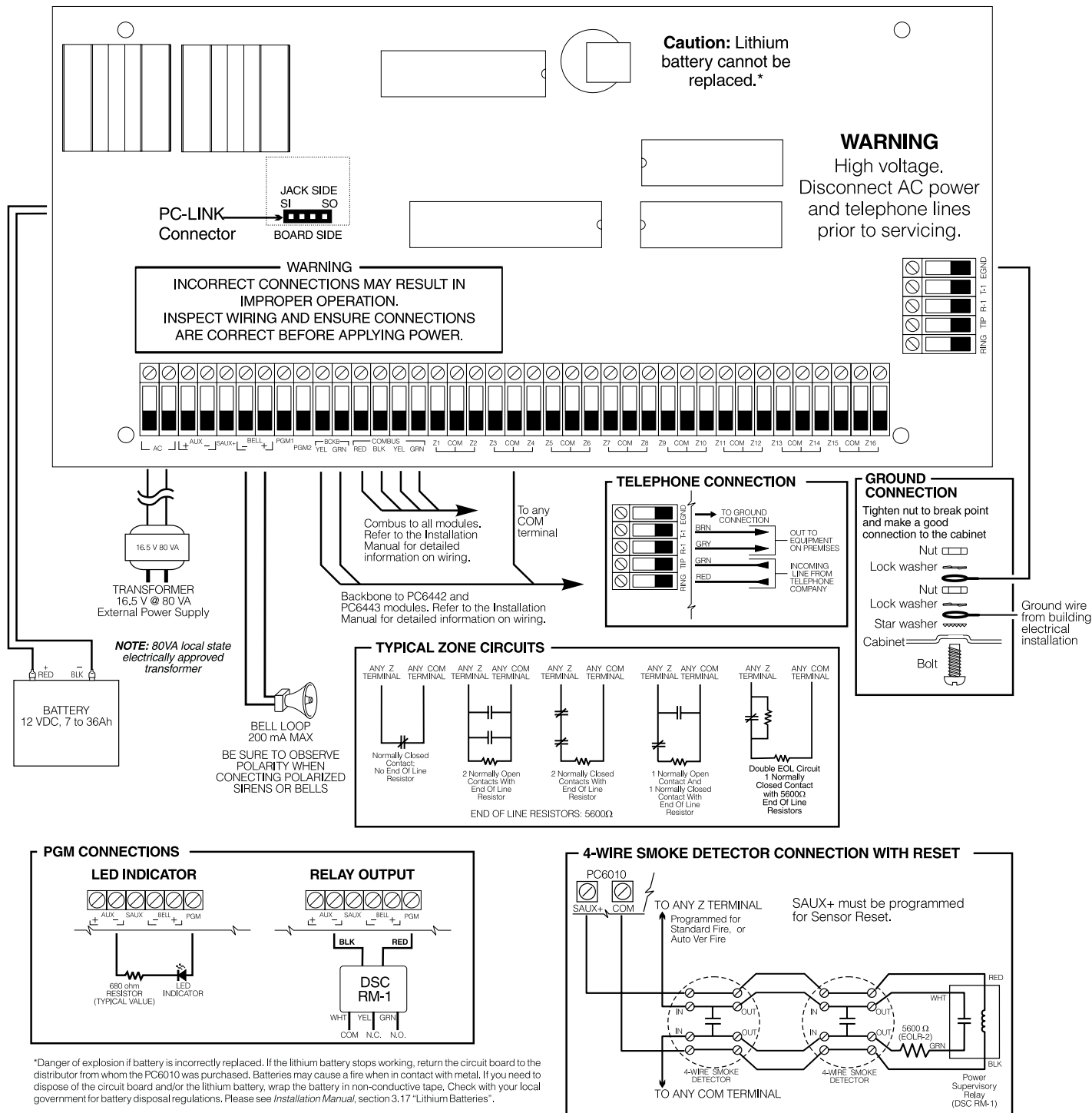
***NOTE**: AC Power and Battery faults will not prevent the system from being armed.*

All possible fault displays and a description of each is listed below.

Display	Fault Condition
Battery Trouble	The battery connected to the control panel is low.
AC Trouble	There is a power failure (keypad will be silent).
Aux Supply Trouble	The AUX, SAUX+ or PGM terminals on the alarm control panel are overloaded
TLM Trouble	There is a trouble with the telephone line.
FTC Trouble	The alarm control panel can no longer communicate with the central monitoring station. The trouble is generated after the programmed failed communication attempts. If a later attempt to communicate is successful, the trouble is cleared.
Bell CCT Trouble	The bell circuit is open.
Fire Trouble	A fire loop is open circuit (indicated by the trouble sound; cannot be silenced).
Loss of Time	This trouble is cleared when the system's time and date are reset.
Module Com Fault	The panel has lost communications with a module. Check to see if the module is connected properly, then do a system reset. Only qualified service personnel can perform this function.
Combus Low Pwr	Modules are not getting enough voltage from the Combus. Check for proper connection of Combus, or repower the Combus, if required. Only qualified service personnel can perform this function.
6204 Battery TBL	The battery connected to any PC6204 relay output module is low (module number indicated in reporting code transmission and event buffer).
6204 AC Trouble	A PC6204 relay output module loses incoming AC power (keypad will be silent).
6204 AUX Trouble	The Auxiliary supply on any PC6204 relay module is overloaded.

Display	Fault Condition
6820 Battery Trouble	The battery connected to a PC6820 module is low.
6820 AC Trouble	A PC6820 module has lost AC power.
6820 Lock Trouble	A PC6820 module has a trouble with one of its locking devices. A lock trouble occurs when the lock power output is overloaded or the lock power fuse has failed.
6820 Aux Trouble	The PC6820's Auxiliary (AUX) supply is overloaded.
6820 Rdr Pw TBL	A PC6820 module's card reader power output is overloaded or the reader power fuse has failed.
6442 Battery TBL	The battery connected to the PC6442 is low.
6442 AC Trouble	The PC6442 module has lost AC power.
6442 Aux TBL	The PC6442's Auxiliary (AUX) supply is overloaded.
6443 Battery TBL	The battery connected to the PC6443 is low.
6443 AC Trouble	The PC6443 module has lost AC power.
6443 Aux TBL	The PC6443's Auxiliary (AUX) supply is overloaded.
6442 RS-232 Fault	The PC6442 has lost communications with the APS.
6443 RS-232 Fault	The PC6443 has lost communications with the ODS.
Backbone Comm Fault	The PC6010 has lost communications with the PC6442 and/or PC6443.

PC6010 Control Panel Wiring Diagram

Caution: Lithium battery cannot be replaced.*

WARNING
High voltage. Disconnect AC power and telephone lines prior to servicing.

JACK SIDE
SI   SO

PC-LINK Connector
BOARD SIDE

WARNING
INCORRECT CONNECTIONS MAY RESULT IN IMPROPER OPERATION.
INSPECT WIRING AND ENSURE CONNECTIONS ARE CORRECT BEFORE APPLYING POWER.

RING TIP R-1 T-1 EGND

AC ± AUX - SAUX+ - BELL + PGM1 PGM2 BCKB YEL GRN COMBUS RED BLK YEL GRN Z1 COM Z2 Z3 COM Z4 Z5 COM Z6 Z7 COM Z8 Z9 COM Z10 Z11 COM Z12 Z13 COM Z14 Z15 COM Z16

16.5 V 80 VA

TRANSFORMER
16.5 V @ 80 VA
External Power Supply

NOTE: 80VA local state electrically approved transformer

+ RED   BLK –

BATTERY
12 VDC, 7 to 36Ah

Combus to all modules. Refer to the Installation Manual for detailed information on wiring.

To any COM terminal

Backbone to PC6442 and PC6443 modules. Refer to the Installation Manual for detailed information on wiring.

BELL LOOP
200 mA MAX

BE SURE TO OBSERVE POLARITY WHEN CONECTING POLARIZED SIRENS OR BELLS

TELEPHONE CONNECTION

RING TIP R-1 T-1 EGND
TO GROUND CONNECTION
BRN
GRY   OUT TO EQUIPMENT ON PREMISES
GRN
RED   INCOMING LINE FROM TELEPHONE COMPANY

GROUND CONNECTION
Tighten nut to break point and make a good connection to the cabinet
Nut
Lock washer
Nut
Lock washer
Star washer
Cabinet
Bolt
Ground wire from building electrical installation

TYPICAL ZONE CIRCUITS

ANY Z TERMINAL / ANY COM TERMINAL

Normally Closed Contact; No End Of Line Resistor

2 Normally Open Contacts With End Of Line Resistor

2 Normally Closed Contacts With End Of Line Resistor

1 Normally Open Contact And 1 Normally Closed Contact With End Of Line Resistor

Double EOL Circuit 1 Normally Closed Contact with 5600Ω End Of Line Resistors

END OF LINE RESISTORS: 5600Ω

PGM CONNECTIONS

LED INDICATOR
± AUX SAUX BELL PGM

680 ohm RESISTOR (TYPICAL VALUE)
LED INDICATOR

RELAY OUTPUT
± AUX SAUX BELL PGM
BLK   RED
DSC RM-1
WHT YEL GRN
COM N.C. N.O.

*Danger of explosion if battery is incorrectly replaced. If the lithium battery stops working, return the circuit board to the distributor from whom the PC6010 was purchased. Batteries may cause a fire when in contact with metal. If you need to dispose of the circuit board and/or the lithium battery, wrap the battery in non-conductive tape. Check with your local government for battery disposal regulations. Please see *Installation Manual*, section 3.17 "Lithium Batteries".

4-WIRE SMOKE DETECTOR CONNECTION WITH RESET

PC6010
SAUX+ COM

TO ANY Z TERMINAL
Programmed for Standard Fire, or Auto Ver Fire

SAUX+ must be programmed for Sensor Reset.

IN OUT IN OUT
IN OUT IN OUT
4-WIRE SMOKE DETECTOR   4-WIRE SMOKE DETECTOR
RED
WHT
5600 Ω (EOLR-2)
GRN
BLK
Power Supervisory Relay (DSC RM-1)

TO ANY COM TERMINAL

MADE IN CANADA

WARNING- Not to be removed by anyone except occupant.

NOTES:

1. The connection to the mains supply must be made as per the local authorities' rules and regulations. In the UK, as per BS6701.

2. If during the installation a knockout is removed, it is the installer's responsibility to ensure that the same degree of protection for the cabinet is provided by the use of bushings, fittings, etc.

3. The cabinet must be secured to the building structure before operation.

4. The equipment is intended to be installed by SERVICE PERSONNEL ONLY or equivalent (i.e., persons having appropriate technical training and experience necessary to be aware of hazards to which they are exposed in performing that task).

5. Internal wiring shall be routed in a manner that prevents:
   - excessive strain on wire and on terminal connections
   - loosening of terminal connections
   - damage of conductor insulation

6. Regarding the power supply
   - it shall be PERMANENTLY CONNECTED
   - in EU countries, it shall meet the applicable requirements of the Low Voltage Directive and must be PERMANENTLY CONNECTED and protected, as per EN60950 requirements
   - in all other countries, it shall be of an approved type acceptable to the local authorities.

7. The ground connection shall be as shown above, or equivalent.

LIMITED WARRANTY

Digital Security Controls Ltd. warrants the original purchaser that for a period of twelve months from the date of purchase, the product shall be free of defects in materials and workmanship under normal use. During the warranty period, Digital Security Controls Ltd. shall, at its option, repair or replace any defective product upon return of the product to its factory, at no charge for labour and materials. Any replacement and/or repaired parts are warranted for the remainder of the original warranty or ninety (90) days, whichever is longer. The original owner must promptly notify Digital Security Controls Ltd. in writing that there is defect in material or workmanship, such written notice to be received in all events prior to expiration of the warranty period.

International Warranty

The warranty for international customers is the same as for any customer within Canada and the United States, with the exception that Digital Security Controls Ltd. shall not be responsible for any customs fees, taxes, or VAT that may be due.

Warranty Procedure

To obtain service under this warranty, please return the item(s) in question to the point of purchase. All authorized distributors and dealers have a warranty program. Anyone returning goods to Digital Security Controls Ltd. must first obtain an authorization number. Digital Security Controls Ltd. will not accept any shipment whatsoever for which prior authorization has not been obtained.

Conditions to Void Warranty

This warranty applies only to defects in parts and workmanship relating to normal use. It does not cover:

- damage incurred in shipping or handling;
- damage caused by disaster such as fire, flood, wind, earthquake or lightning;
- damage due to causes beyond the control of Digital Security Controls Ltd. such as excessive voltage, mechanical shock or water damage;
- damage caused by unauthorized attachment, alterations, modifications or foreign objects;
- damage caused by peripherals (unless such peripherals were supplied by Digital Security Controls Ltd.);
- defects caused by failure to provide a suitable installation environment for the products;
- damage caused by use of the products for purposes other than those for which it was designed;
- damage from improper maintenance;
- damage arising out of any other abuse, mishandling or improper application of the products.

Digital Security Controls Ltd.'s liability for failure to repair the product under this warranty after a reasonable number of attempts will be limited to a replacement of the product, as the exclusive remedy for breach of warranty. Under no circumstances shall Digital Security Controls Ltd. be liable for any special, incidental, or consequential damages based upon breach of warranty, breach of contract, negligence, strict liability, or any other legal theory. Such damages include, but are not limited to, loss of profits, loss of the product or any associated equipment, cost of capital, cost of substitute or replacement equipment, facilities or services, down time, purchaser's time, the claims of third parties, including customers, and injury to property.

Disclaimer of Warranties

This warranty contains the entire warranty and shall be in lieu of any and all other warranties, whether expressed or implied (including all implied warranties of merchantability or fitness for a particular purpose) And of all other obligations or liabilities on the part of Digital Security Controls Ltd. Digital Security Controls Ltd. neither assumes nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

This disclaimer of warranties and limited warranty are governed by the laws of the province of Ontario, Canada.

WARNING: Digital Security Controls Ltd. recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.

Out of Warranty Repairs

Digital Security Controls Ltd. will at its option repair or replace out-of-warranty products which are returned to its factory according to the following conditions. Anyone returning goods to Digital Security Controls Ltd. must first obtain an authorization number. Digital Security Controls Ltd. will not accept any shipment whatsoever for which prior authorization has not been obtained.

Products which Digital Security Controls Ltd. determines to be repairable will be repaired and returned. A set fee which Digital Security Controls Ltd. has predetermined and which may be revised from time to time, will be charged for each unit repaired.

Products which Digital Security Controls Ltd. determines not to be repairable will be replaced by the nearest equivalent product available at that time. The current market price of the replacement product will be charged for each replacement unit.

WARNING Please Read Carefully

Note to Installers

This warning contains vital information. As the only individual in contact with system users, it is your responsibility to bring each item in this warning to the attention of the users of this system.

System Failures

This system has been carefully designed to be as effective as possible. There are circumstances, however, involving fire, burglary, or other types of emergencies where it may not provide protection. Any alarm system of any type may be compromised deliberately or may fail to operate as expected for a variety of reasons. Some but not all of these reasons may be:

■ Inadequate Installation

A security system must be installed properly in order to provide adequate protection. Every installation should be evaluated by a security professional to ensure that all access points and areas are covered. Locks and latches on windows and doors must be secure and operate as intended. Windows, doors, walls, ceilings and other building materials must be of sufficient strength and construction to provide the level of protection expected. A reevaluation must be done during and after any construction activity. An evaluation by the fire and/or police department is highly recommended if this service is available.

■ Criminal Knowledge

This system contains security features which were known to be effective at the time of manufacture. It is possible for persons with criminal intent to develop techniques which reduce the effectiveness of these features. It is important that a security system be reviewed periodically to ensure that its features remain effective and that it be updated or replaced if it is found that it does not provide the protection expected.

■ Access by Intruders

Intruders may enter through an unprotected access point, circumvent a sensing device, evade detection by moving through an area of insufficient coverage, disconnect a warning device, or interfere with or prevent the proper operation of the system.

■ Power Failure

Control units, intrusion detectors, smoke detectors and many other security devices require an adequate power supply for proper operation. If a device operates from batteries, it is possible for the batteries to fail. Even if the batteries have not failed, they must be charged, in good condition and installed correctly. If a device operates only by AC power, any interruption, however brief, will render that device inoperative while it does not have power. Power interruptions of any length are often accompanied by voltage fluctuations which may damage electronic equipment such as a security system. After a power interruption has occurred, immediately conduct a complete system test to ensure that the system operates as intended.

■ Failure of Replaceable Batteries

This system's wireless transmitters have been designed to provide several years of battery life under normal conditions. The expected battery life is a function of the device environment, usage and type. Ambient conditions such as high humidity, high or low temperatures, or large temperature fluctuations may reduce the expected battery life. While each transmitting device has a low battery monitor which identifies when the batteries need to be replaced, this monitor may fail to operate as expected. Regular testing and maintenance will keep the system in good operating condition.

■ Compromise of Radio Frequency (Wireless) Devices

Signals may not reach the receiver under all circumstances which could include metal objects placed on or near the radio path or deliberate jamming or other inadvertent radio signal interference.

■ System Users

A user may not be able to operate a panic or emergency switch possibly due to permanent or temporary physical disability, inability to reach the device in time, or unfamiliarity with the correct operation. It is important that all system users be trained in the correct operation of the alarm system and that they know how to respond when the system indicates an alarm.

■ Smoke Detectors

Smoke detectors that are a part of this system may not properly alert occupants of a fire for a number of reasons, some of which follow. The smoke detectors may have been improperly installed or positioned. Smoke may not be able to reach the smoke detectors, such as when the fire is in a chimney, walls or roofs, or on the other side of closed doors. Smoke detectors may not detect smoke from fires on another level of the residence or building.

Every fire is different in the amount of smoke produced and the rate of burning. Smoke detectors cannot sense all types of fires equally well. Smoke detectors may not provide timely warning of fires caused by carelessness or safety hazards such as smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches or arson.

Even if the smoke detector operates as intended, there may be circumstances when there is insufficient warning to allow all occupants to escape in time to avoid injury or death.

■ Motion Detectors

Motion detectors can only detect motion within the designated areas as shown in their respective installation instructions. They cannot discriminate between intruders and intended occupants. Motion detectors do not provide volumetric area protection. They have multiple beams of detection and motion can only be detected in unobstructed areas covered by these beams. They cannot detect motion which occurs behind walls, ceilings, floor, closed doors, glass partitions, glass doors or windows. Any type of tampering whether intentional or unintentional such as masking, painting, or spraying of any material on the lenses, mirrors, windows or any other part of the detection system will impair its proper operation.

Passive infrared motion detectors operate by sensing changes in temperature. However their effectiveness can be reduced when the ambient temperature rises near or above body temperature or if there are intentional or unintentional sources of heat in or near the detection area. Some of these heat sources could be heaters, radiators, stoves, barbeques, fireplaces, sunlight, steam vents, lighting and so on.

■ Warning Devices

Warning devices such as sirens, bells, horns, or strobes may not warn people or waken someone sleeping if there is an intervening wall or door. If warning devices are located on a different level of the residence or premise, then it is less likely that the occupants will be alerted or awakened. Audible warning devices may be interfered with by other noise sources such as stereos, radios, televisions, air conditioners or other appliances, or passing traffic. Audible warning devices, however loud, may not be heard by a hearing-impaired person.

■ Telephone Lines

If telephone lines are used to transmit alarms, they may be out of service or busy for certain periods of time. Also an intruder may cut the telephone line or defeat its operation by more sophisticated means which may be difficult to detect.

■ Insufficient Time

There may be circumstances when the system will operate as intended, yet the occupants will not be protected from the emergency due to their inability to respond to the warnings in a timely manner. If the system is monitored, the response may not occur in time to protect the occupants or their belongings.

■ Component Failure

Although every effort has been made to make this system as reliable as possible, the system may fail to function as intended due to the failure of a component.

■ Inadequate Testing

Most problems that would prevent an alarm system from operating as intended can be found by regular testing and maintenance. The complete system should be tested weekly and immediately after a break-in, an attempted break-in, a fire, a storm, an earthquake, an accident, or any kind of construction activity inside or outside the premises. The testing should include all sensing devices, keypads, consoles, alarm indicating devices and any other operational devices that are part of the system.

■ Security and Insurance

Regardless of its capabilities, an alarm system is not a substitute for property or life insurance. An alarm system also is not a substitute for property owners, renters, or other occupants to act prudently to prevent or minimize the harmful effects of an emergency situation.

DSC®