SYSTEM
MANUAL

DSC
Digital Security Controls

PC4020

Book 1

INTRODUCTION

The PC4020 is a highly flexible and versatile control which will enable the installer to meet the most demanding security requirements. The heart of the system is the main control panel, designated the PC4020, which is connected to other system elements using common 4 conductor unshielded station wire. The main panel processes signal information and communicating with the monitoring station. The main panel is capable of supervising 16 zones, any of which may be defined for fire or burglary applications and also manages up to eight separate and fully independent partitions, assigning zones and their controlling keypads in accordance with installer programming.

The basic 16 zone capability of the PC4020 can be expanded using either PC4108 or PC4116 modules which provide 8 or 16 zones of additional inputs respectively up to a system maximum of 128 zones. The PC4108 and PC4116 are designed for use within any of the cabinets and are shipped as PC boards only.

Programming and system operation are carried out using the LCD4500 liquid crystal display keypad. The LCD4500 connects at any point in the system to the four wire communication bus or "COMBUS", its specific identification being determined automatically in the process of installing it. A maximum of 16 LCD4500 keypads may be used on any one system regardless of size.

The PC4204 relay output module is available for installations requiring additional power beyond the 500 mA supplied by the PC4020 main panel. This module comprises a 12 volt DC power supply of 1.5 Amp capacity and four 12 volt relays with form C contacts which will provide switched outputs under any of the 28 options available in the list of programmable outputs. The PC4204 connects to the COMBUS via four wires as with other system elements. It requires a 16-18 volt, 40 VA transformer and a 12 volt battery. Up to 16 PC4204 modules may be installed on any one system. The PC4204 is shipped as a PC board only.

The use of any power source other than a PC4204 to repower the COMBUS will result in a system malfunction.

The PC4216 low current module provides 16 separate outputs. Each output may be programmed to operate under the control of 1 of 28 options as listed in the programmable options section of the installation manual. Up to 8 other PC4216's may be used to provide outputs for graphic annunciator or similar devices for the maximum of 128 zones. The PC4216 connects to the COMBUS with four wires. A maximum of 9 PC4216's may be connected to a system. The PC4216 may be installed in the main cabinet or in other cabinet options and is shipped as a board only.

The PC4020 includes the capability of driving a serial printer using a PC4400 RS232 output module. The PC4400 connects to the COMBUS with four wires. The printer may be located up to 200 feet (60 meters) away from the module. The PC4400 is shipped as a board only.

SYSTEM OVERVIEW

Maximum System Capabilities
- Control Units - 1 PC4020 Main Board
- 128 Zones
  PC4020 Main Board: 16 zones
  PC4108 Expansion Module: 8 zones
  PC4116 Expansion Module: 16 zones
- 64 High Current Outputs - Up to 16 PC4204 Modules
- 144 Low Current Outputs
  - 9 PC4216 16 Output Modules
- 1 RS-232 Interface - PC4400
- 16 Remote LCD Keypads - LCD4500
- 1 Main Board Fully Programmable Output
- 1 12 Vdc Switched Fully Programmable Auxiliary
  Power Supply (Main Board)
- 1 Supervised Fully Programmable Bell/Siren Output
  (Main Board)
- 1 Telephone Interface (Main Board)

128 Programmable Zones
- 16 zones on main board expandable by using 8 and
  16 zone modules
- 18 zone types including: instant, 2 types of interior, 3
  delay, 3 fire, 4-24 hour, forced answer, momentary,
  maintained arming, Links supervisory and Links
  answer.
- Zone expansion is done by enrolling a zone expansion
  module
- Zones can be assigned independently to any
  partition(s)
- Programmable for NC loops, EOL resistor or Double
  EOL resistors

LCD Keypads (LCD4500)
- Total of 16 on the system
- Can be assigned to any partition
- Single keypad system control

209 Outputs
- 1 main board transistor switch to ground with 3A
  capabilities (programmable for 1 of 28 options)
- 64 relay outputs programmable for 1 of 28 options
  each (16-4204 modules with 4 outputs each)
- 144 switched transistor outputs programmable for 1 of
  28 options each (9-4216 modules with 16 outputs)

Switched Auxiliary Output
- Programmable for 1 of 28 options

4 Enclosures
- PC4001C - PC4020 plus 2 modules
- PC4002C - 3 modules
- PC4003C - 1 module
- PC4004C - Attack resistant for PC4020 plus 2 modules

Supervised Alarm Output
- Bell Output, 700 mA fused at 5 Amps,
  12 Vdc - commercial and 11.6 - 12.6 Vdc - residential
- Steady or Pulsed Output
- Programmable for 1 of 28 options

Event Buffer
- 600 events
- Date and time stamp
- Event Buffer Viewing - any System Master is able to
  view 512 events through the keypad including date
  and time stamp
- Event Buffer Printing - the entire event buffer (600
  events) can be printed at once through the Installer's
  mode

8 True Partitions
- Separate or shared zones from other partitions
- Individual keypads per partition
- Individual access codes for each partition
- Individual keypad zones (Fire, Auxiliary, Panic)
- Individual outputs programmable per partition

RS-232 Interface Module (PC4400)
- Used to output data to a local printer

Internal Memory
- Retains programmed data even when both AC and
  Battery have been removed.
- The clock will have to be reset after a power down
  condition which will be indicated by an audible trouble
  beep and the keypad trouble LED is on.

Keypad User Options
They are all menu driven, including:
- Programming of several types of 4 or 6 digit access
  codes, 128 in total
- Bypassing from the keypad by authorized personnel
- Utility functions such as remote control of lights, door
  strikes, etc.

Communicator
- Communicates in all 10 and 20 BPS single line and
  extended formats
- Radionics Rounds and Radionics Parity
- Sescoa Superfast format
- Ademco Contact ID format
- SIA 1986 format
- Sur-gard 4/3 DTMF format
- 3/1 and 4/2 formats
- Hexadecimal numbers
- DTMF and Pulse dialing
- DPDT line seizure
- True dial tone detect
- Anti-jam feature
- Three telephone numbers and nine account codes

LINKS Support
- 3 telephone numbers for LINKS
- Auto programming for LINKS zones

INSTALLATION AND WIRING

When designing a security system with the PC4020 that will be larger than 16 zones or have two or more Partitions it is best to first lay out the system on paper. This will help determine the total number of zones, additional expansion and power supply modules and other system elements that may be needed.

When the location of all points of protection is known the location of the zone expanders can be made. You will find that working from a plan, a layout will reveal the most economical use of system modules; two eight zone expansion modules instead of one sixteen zone, for example, can save long wire runs because of the location of zones.

The plan will also enable you to make the most efficient layout for the communications bus (COMBUS). This is the four conductor cable which can be standard station wire (four 22 AWG wires colour coded red, black, yellow and green) to which all system modules are connected in parallel. It is not necessary to run the COMBUS in shield unless it is being run through an area of high electrical noise.

The COMBUS may be up to 1,000 ft (300 m) from the main board to the farthest module, with any number of modules in between. More than one COMBUS of 1,000 ft (300 m) can run from the PC4020.

Suggested Wiring Procedure

The first step in designing a PC4020 installation is developing a system layout on paper. Doing this will allow you to work from a plan and help to avoid making mistakes and make programming easier.

Creating a System Layout

1 Draw a rough sketch of the building(s) layout in the installation including the interior walls. Indicate on the diagram the location of the PC4020 main panel. The panel should be in a dry, secure location close to a non switched AC source, a ground connection and a telephone line connection.

2 Indicate on the diagram the location of all zones as well as the device required such as smoke detectors, motion detectors, door contacts etc.

3 Zones may be grouped together into partitions. Knowing the zone number of each zone will allow the partition setup done without mistakes. Locate any zone expansion modules (PC4108 or PC4116) required close to groups of zones for easier wiring.

Decide on the order to enroll the expansion modules. The first 16 zones (1 through 16) are on the main panel. As each module is enrolled it will be assigned in sequence the next available group of zones. If an 8 zone module (PC4108) was enrolled first, it would be

assigned zones 17 through 24. If then a 16 zone expansion module (PC4116) is enrolled it would be assigned zones 25 through 40.

Once the order to enroll the expansion modules has been determined, number each zone accordingly.

4 Indicate each partition by boxing the area of the partition on the diagram. From this diagram it can be quickly determined which zones belong to that partition.

5 Determine the number of keypads (LCD4500) required for each partition and their location on the system. The maximum number of keypads on a system is 16. Each keypad on the system assigned to a partition can only be used to operate that partition. (EXCEPTION - A System Master or a multi-partition access code can access any partition that the code is assigned to from any keypad). Indicate on the diagram the location and the partition each keypad will be assigned to.

After the number of zones, keypads, and their locations, expansion modules and separately controlled systems (partitions) have been determined, decide other modules required to complete the installation.

6 Siren outputs can be programmed to activate if one or more partition goes into alarm. The main panel provides one output (The Main Bell Output).

Additional outputs can be obtained from the PC4204 power supply/relay output module(s). Each PC4204 module has 4 form "C" relays, the last 3 of which can be used as any one of the 28 output options (See PGM Output List). Indicate on the diagram the location of each of the sirens, and the location of the PC4204 module(s).

7 The PC4216 module provides up to 16 programmable outputs. Each output can be programmed for 28 different options (See PGM Output List). It is also used to display zones/status on a graphic annunciator. Each of the 9 PC4216 modules is capable of being programmed in any of the 25 available ways indicating the location of the PC4216 and the module number and also be programmed as custom groups with the 28 options available.

See "PC4216 OPTIONS" for a list of the programming options.

8 Indicate the location of RS-232 printer module (PC4400) on the diagram. The PC4400 provides serial output to an on-site printer that will record the identity of the system, description of the occurrence (alarm, trouble etc.) by user, with date and time stamp.

9 Mount the cabinet, panel (See "Mounting The Panel") and prepare the wires for connection to the panel.

COMBUS Power and Operation

The PC4020 main board can provide up to 500 mA to power modules, keypads and devices. A PC4204 power module is required when additional current is needed either for powering detection devices or operating bells and sirens. The PC4204 requires its own transformer and battery and can provide up to 1.5A at 12 Vdc. Four relays on the module provide form C switched outputs with contact ratings of 3 amps @ 12 Vdc (10 amps @ 120 VAC) for a variety of programmable options. When used to repower the COMBUS the PC4204 must be wired in accordance with the instructions supplied with the unit. Use of a power source other than the PC4204 power supply module to supply additional power to the PC4020 system is not recommended for the following reasons:

If the main panel loses communications with a module, within a maximum of 30 seconds the panel will perform a system reset in which power to the COMBUS is removed. Five seconds later power is reapplied and the panel will attempt to communicate with the module. If the panel is unsuccessful communicating with the module it will display and report a COMBUS communications fault.

When the main panel performs a reset, relay 1 when programmed for "COMBUS POWER" will open. This will disconnect the power supplied to the modules, resetting them so that communications to the main panel are reinitialized.

For example, if the microprocessor on the module has been scrambled due to a transient, the PC4020 will power down the COMBUS, the PC4204 will mimic the PC4020 and cut off its power supply to the module. The module will be powered down. When the PC4020 returns power to the COMBUS, the PC4204 will reconnect its power supply, and the power to the module will return. Because the module was powered down and powered up, the module is now reset, and can communicate with the PC4020.

If a power supply other than a PC4204 was used, the module would never power down, never reset, and the module will stay off line requiring the attention of service personnel.

CAUTION: When used to power a module, the "RLY 1 COM" terminal of the PC4204 must be connected to the "RED COMBUS" terminal of the module only. The positive (RED) conductor of the COMBUS must be left unconnected to the module that is powered by the PC4204. The "BLK COMBUS" of the module should be run common to the negative ("BLK") of the COMBUS. Use of a power source other than the PC4204 power supply module to supply additional power to the PC4020 system is not recommended.

The COMBUS is a four conductor cable to which all modules and keypads are connected in parallel. Connections to the COMBUS do not have to be home-run. For example if a storage building had an 8 zone expander (PC4108) and a keypad (LCD4500) located in it, the zone expander and keypad could be spliced together and run back on a single 4 wire cable to the nearest point on the COMBUS.
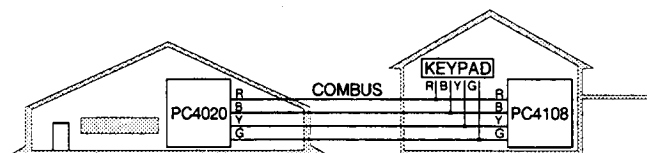
Connecting the Toroid

Place the free end of the COMBUS through the centre of the supplied toroid, wrap the end through the toroid 4 times. Make sure that toroid is no more than 4" (102mm) from the control panel. If there is more than one COMBUS lead to be connected to the control panel loop the line through the same toroid in the manner described above. (See diagram on page 10.)

Mounting the Panel

Select a dry location close to an unswitched AC source, a ground connection and a telephone connection for mounting the Main Control Cabinet.

Remove the PC4020 printed circuit board, mounting hardware, and keypad from the cardboard retainer inside the large cabinet. Before attaching the cabinet to the wall, press the five white nylon printed circuit board mounting studs into the cabinet from the back.

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.

There is room in the Main Control Cabinet (PC4001C) for any two modules (PC4108, PC4116, PC4216 or PC4400). Modules requiring power (AC and battery PC4204) must be installed in the large Expander Cabinet (PC4002C). This enclosure will accommodate one module (PC4108, PC4116, PC4216 or PC4400) and a powered output (PC4204) or any three modules. A small Expander Cabinet (PC4003C) is available for a single module that does not require external power.

Once the wiring is completed power the system up by first connecting the battery followed by the AC transformer. All LCD4500 keypads should display the message 'LCD4500 DSC Ltd.'. Press a key on any keypad that is to be assigned to Partition 1. The keypad will beep and display the message '4500 Mod. #1' and the keypad is automatically assigned to Partition 1.

Enroll every module to the system. Make sure you put down the number of each module enrolled. Refer to the Programming Manual for the required procedure.

When enrolling any PC4108 or PC4116 zone expander module make sure to note the zones which you assigned to the module.

This information is very important if it becomes necessary to Add or Delete zones to or from a Partition. Zones 1 through 16 are assigned to Partition 1 by default. This can be changed later in Installer Programming.

In Book 4 (Programming Work Sheets) you will find a System Overview section. Fill in the information as each module is enrolled. These sheets are designed to be left in the panel so if future service is required, the location and assigned number of each module will be readily available.

Once all modules are enrolled perform a diagnostics check on the panel to determine if any problems are present (see "Diagnostics").

Programming the System

The PC4020 has the capability to operate as 8 separate alarm systems called Partitions. Dividing the panel into Partitions will allow you to control access to specific areas.

When the PC4020 is first powered up all zones on the main board and User Codes are assigned to Partition 1. If no other Partitions are required the entire system will be considered Partition 1. This is important to keep in mind as often in programming the panel will require you to enter the Partition to program.

For example, when programming entry and exit times, you must select the menu option 'ADD/EDIT PAR'. The keypad will then prompt you for the Partition to add or edit. You must select Partition 1 for a system that has no additional Partitions.

The factory default setting for all options is provided in the Programming Work Sheets as well as programming 'HOTKEYS' for the option to allow quick programming.

Complete the Programming Work Sheets located in Book 4. Having this information prepared before programming the panel will speed up the process considerably.

All information for the panel may be entered in the Programming Work Sheets.
Any zone expanders on the system will include a similar sheet and the information should be completed for these as well.

There is no set order in which the panel must be programmed, however, if you use the following guideline it may simplify the programming of the panel for the first time.

Step 1 - Define all Partitions
When the panel is first powered up the 16 zones on the main panel are assigned to Partition 1. Additional zone expanders enrolled to the system are NOT assigned to any Partition.

Any zones from 1 through 16 that are required on a different Partition must be DELETED from Partition 1 before they are ADDED to another Partition. Any zones above Zone 16 must be ADDED to the proper Partition. See "Zone Assignment" in the Programming Manual (Book 3) for the procedure to add and delete zones.

When you ADD each zone to the proper Partition it will save time if you also program the Zone Label, Zone Type and Zone Options. All of this information may be entered in the Programming Work Sheets located in Book 4 and in the programming work sheet included with each Zone Expansion module.

Note: Do not program any of the system outputs until all partitions have been added to the system. All output types that are selectable by partition will only allow the choice of enabled parts.

Step 2 - Program the System
Now that the Partitions have been defined and zones programmed, you are ready to program the rest of the system. It is best to follow the Programming Work Sheets starting at the beginning and carefully programming each section. Having the required information entered ahead of time will speed up this process considerably.

Once the Installer Programming is complete you can program user functions ([✱][6][Master Code]). Next, features on each partition can be enabled. Go to a keypad assigned to the desired partition and enable the features through [✱][6][Master Code] commands.

Step 3 - Program user Codes
From default the PC4020 comes with one user code assigned as a Grand Master Code ('1234' for 4 digit option, or '123456' for 6 digit option). The other 127 user codes, 4 digit or 6 digit, may be programmed by entering User Programming Commands ([✱][5][Access Code]). See 'Programming Additional Access Codes Using a System Master Code or a Supervisory Code' section in this manual.

Step 4 - Testing the System

See "Bell/Comm Test" under [✱][6] User Functions or do the following. Contact the monitoring station to request a transmission test. Plug the telephone cord into the RJ31-X jack. If a DTS-1 is being used to monitor communicator transmissions, connect it to the telephone line and place the DTS-1 in the line mode by pressing the red "LINE/LOCAL" button. Arm the panel, wait for the exit delay to expire and trip a detector on an instant circuit. Wait for the communication to complete. Disarm the panel and check with the monitoring station to confirm acceptance of the transmission. Perform additional transmissions required by the monitoring station.

Check the "TROUBLE" light on the keypad. If it is on, press [✱] then [2] to determine the trouble. The "Trouble Display" section in "Keypad Functions" gives a description of the different trouble conditions.

Step 5 - Instructing the End User

Describe system operation to authorized users.

Provide user with the instruction manual and instruct them to read it to become familiar with the system operation.

Instruct the user to test the system on a regular basis as described in the Instruction Manual. The Master Code should be changed from the default setting and recorded.

There is a wide range of possible uses for the [✱][4] and [✱][7] commands which are not described in the instruction manual. Be sure to explain the functions of the [✱][4] Sensor Reset and the [✱][7] Utility Output to the user if they are incorporated into the system.

Hardware Reset of Memory to Factory Defaults

If the Installer's Code is lost through inadvertent programming, the only means of reprogramming the system is by a hardware reset. If the Installer's Lockout is enabled, there is no way to reprogram the system without entering the correct Ianstaller's Code.

The PC4020 can also be reset through software in the installer's programming. See "Factory Default" in the Programming Guide.

Note: Panels returned to DSC with the Installer's Lockout feature enabled and no other apparent problems will be subject to an additional service charge.

To reset the panel to factory default conditions:

1. Power the system down by removing both AC and battery power to the main panel.

2. Short the zone 1 terminal and the PGM terminal on the main panel.

3. Restore power to the main panel.

4. Wait for 20 seconds then remove the short between the PGM and zone 1.

5. The system will have reloaded the memory with factory defaults. All modules will have to be enrolled again. The event buffer is the only part of memory that is retained during a factory default.

PC4020 MAIN BOARD SPECIFICATIONS

Control Panel

16 zones
- 16 fully programmable supervised zones (EOL resistor)
- Programmable for Double EOL resistors

Audible alarm output
- Bell output
  700 mA, fused at 5 Amps, 12 Vdc - commercial
  11.6 - 12.6 Vdc - residential
- Steady or pulsed output

Non-volatile RAM (Internal Memory)
- Does not lose codes or system status on complete AC and battery failure

Programmable output
- Transistor switch sinks 3A to ground
- Programmable for 1 of 28 options

Powerful 1.5 amp regulated power supply
- 500 mA auxiliary supply, 11.6 - 12.6 Vdc
  (400 mA for UL Listed systems)
- Separately fused for battery, auxiliary supply and bell output
- Electronic shut down protection of the COMBUS
- 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

Switched Auxiliary Supply Output
- Programmable for 1 of 28 options
- 11.6 - 12.6 Vdc
- 300 mA maximum

Battery
- 12 volt 4 Ah minimum rechargeable gel-cell or sealed lead-acid battery

Transformer
- 16.5 VAC, 40VA

Output Voltage

Typically, with normal AC on and a fully charged battery, the output voltage will be 13.8 Vdc. 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 Vdc.

Remote Keypad

- Four wire (QUAD) hook-up
- 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 55 mA

MODULE SPECIFICATIONS

PC4108 Expansion Module

- Up to 128 zones total on system
- 8 zone expansion module
- Normally closed loops, EOL resistor, Double EOL resistor support
- Four wire (QUAD) hook-up to COMBUS
- Nominal current draw of 25 mA
- Provides Tamper Reporting Codes
- Low COMBUS supervision to PC4020 Main Board

PC4116 Expansion Module

- Up to 128 zones in total on system
- Normally closed loops, EOL resistor, Double EOL resistor support
- 16 zone expansion module
- Four wire (QUAD) hook-up to COMBUS
- Nominal current draw of 30 mA
- Provides Tamper Reporting Codes
- Low COMBUS supervision to PC4020 Main Board

PC4204 High Current Output Module

- 4 output high current module
- Up to 16 modules on system
- Minimum 40 VA 16-18 volt transformer required
- Minimum 4 Amp-Hour, 12 volt battery required
- Each output programmable for 1 of 28 options
- Four wire (QUAD) hook-up to COMBUS
- Nominal current draw of 25 mA
- Provides Tamper and Trouble Reporting Codes
- Low COMBUS supervision to PC4020 Main Board
- 1.5 Amp output

PC4216 Low Current Output Module

- 16 output low current module
- Up to 9 modules on system
- All module programmable for all 16 outputs, 1 of 28 options for each
- 8 modules programmable as alarm annunciators or zone followers
- Four wire (QUAD) hook-up to COMBUS
- Nominal current draw of 35 mA
- Provides Tamper Reporting Codes
- Low COMBUS supervision to PC4020 Main Board

PC4400 RS-232 Interface Adapter Module

- True RS-232 technology
- Handshake software switches
- Protocol XON/XOFF or DTR
- 4 possible baud rates 300, 600, 1200 and 2400
- Four wire (QUAD) hook-up to COMBUS
- Nominal current draw of 35 mA
- Provides Tamper Reporting Codes
- Low COMBUS supervision to PC4020 Main Board

LCD4500 Remote Keypad

- Up to 16 keypads on system
- Alphanumeric liquid crystal display
- Built-in piezoelectric buzzer
- Full annunciation of zones and system status
- Four wire (QUAD) hook-up to COMBUS
- Nominal current draw of 25 mA (maximum 55 mA)
- Provides Tamper Reporting Codes
- Low COMBUS supervision to PC4020 Main Board
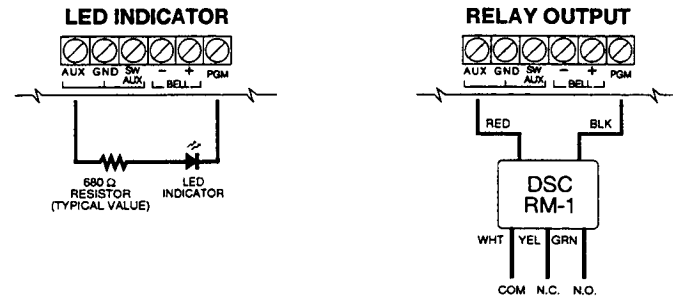- Dimensions 5.75" x 4.5" x 1" deep (144 x 114 x 25 mm)

PC4020 CONTROL PANEL WIRING DIAGRAMS

- Battery and AC Connections
- BELL and COMBUS Connections
- Telephone and Ground Connections
- Typical Zone Circuits

PC4020

R-1
T-1
RNG
TIP

⎿ AC ⏌ AUX GND SW − + PGM ⎾ COM BUS ⏋ Z1 COM Z2 Z3 COM Z4 Z5 COM Z6 Z7 COM Z8 Z9 COM Z10 Z11 COM Z12 Z13 COM Z14 Z15 COM Z16
⎿AUX⏌⎿BELL⏌ RED BLK YEL GRN

AUX 1 AMP BELL 5 AMP BATT 5 AMP

120 V
40 VA

TRANSFORMER
16-18 V @ 40 VA
DO NOT CONNECT TO
RECEPTACLE

COMBUS TO
ALL MODULES

BELL LOOP
700 mA MAX

BE SURE TO OBSERVE
POLARITY WHEN
CONECTING POLARIZED
SIRENS OR BELLS

GROUND CONNECTION

Nut
Washer
Cabinet
Bolt
Ground Rod

+RED −BLK

BATTERY
12 VDC
MINIMUM
4 Ah

TYPICAL ZONE CIRCUITS

ANY Z TERMINAL ANY COM TERMINAL

NORMALLY CLOSED
CONTACT;
NO END OF LINE
RESISTOR

ANY Z TERMINAL ANY COM TERMINAL

2 NORMALLY OPEN
CONTACTS WITH
5600Ω END OF LINE
RESISTOR

ANY Z TERMINAL ANY COM TERMINAL

2 NORMALLY CLOSED
CONTACTS WITH
END OF LINE
RESISTOR

ANY Z TERMINAL ANY COM TERMINAL

1 NORMALLY OPEN
CONTACT AND
1 NORMALLY CLOSED
CONTACT WITH
END OF LINE
RESISTOR

* ANY Z TERMINAL ANY COM TERMINAL

ALARM CONTACT   TAMPER CONTACT

DOUBLE EOL CIRCUIT
2 NORMALLY CLOSED
CONTACTS WITH
5600Ω END OF LINE
RESISTORS

* ANY Z TERMINAL ANY COM TERMINAL

ALARM CONTACT

DOUBLE EOL CIRCUIT
1 NORMALLY CLOSED
CONTACT WITH
5600Ω END OF LINE
RESISTORS

* Recommended use with Double EOL Resistors.
5600Ω End Of Line resistor colour bands: Blue/Green/Red/Gold

TELEPHONE CONNECTION

R-1
T-1
RNG
TIP

GRY
BRN
RED
GRN

OUT TO TELEPHONE
EQUIPMENT ON
PREMISES

INCOMING LINE
FROM TELEPHONE
COMPANY

TO GROUND
CONNECTION

- PGM Connections for LED Indicators and Relays
- SW AUX Connection for Smoke Detector Reset
- Multiple Smoke Detectors on a Single Zone
- COMBUS Connection
- Wiring Charts

PGM CONNECTIONS

LED INDICATOR

AUX GND SW AUX − + PGM / BELL

680 Ω RESISTOR (TYPICAL VALUE)
LED INDICATOR

RELAY OUTPUT

AUX GND SW AUX − + PGM / BELL

RED   BLK

DSC RM-1

WHT YEL GRN

COM   N.C.   N.O.

SW AUX CONNECTION
SENSOR RESET FOR SMOKE DETECTOR

AUX GND SW AUX

TO ANY "COM" TERMINAL

TO ANY ZONE "Z" TERMINAL

• ZONE INPUT MUST BE PROGRAMMED FOR FIRE ALARM INPUT: STANDARD FIRE DELAYED FIRE AUTO VERIFY FIRE
• SW AUX PROGRAMMED FOR SENSOR RESET

IN OUT RED
ALARM CONTACT
IN OUT BLK

WHT
POWER SUPERVISORY RELAY (DSC RM-1)
GRN

Notes: 5600 Ω applies only to the PC4020 main board. Use 2200 Ω (red, red, red, gold) for the expansion modules.
Do NOT connect Fire zones or Links Supervisory zone for Double EOL resistors.

5600 Ω END OF LINE RESISTOR (EOLR-2)

MULTIPLE SMOKE DETECTORS ON ONE ZONE

AUX GND SW AUX − + / BELL

BELL LOOP 700 mA MAX

TO ZONE "Z" TERMINAL PROGRAMMED FOR "FIRE"

TO ANY "COM" TERMINAL

• ZONE INPUT MUST BE PROGRAMMED FOR FIRE ALARM INPUT: STANDARD FIRE DELAYED FIRE AUTO VERIFY FIRE
• MINIMUM 18 AWG WIRING IS REQUIRED FOR RESIDENTIAL FIRE ALARM SYSTEMS

IN OUT RED
ALARM CONTACT
IN OUT

IN OUT
ALARM CONTACT
IN OUT BLK

WHT
POWER SUPERVISORY RELAY (DSC RM-1)
GRN

4-WIRE SMOKE DETECTOR POWER 11 VDC 400 mA MAX
Note: Do NOT connect Fire zones or Links Supervisory zone for Double EOL resistors.

5600 Ω END OF LINE RESISTOR (EOLR-2)

COMBUS CONNECTION

PC4020 CONTROL PANEL

COM BUS
RED BLK YEL GRN

Notes:
1. The toroid must be installed as shown to reduce the possibility of electromagnetic interference.
2. If the toroid cannot accomodate the number of cables to be run to the control, then they should be spliced colour to colour into a single cable before reaching the toroid.

SUPPLIED TOROID

COMBUS TO KEYPADS AND MODULES

4" (102 mm) MAXIMUM FROM CONTROL PANEL TO TOROID

WRAP 4 LOOPS THROUGH TOROID

SMOKE DETECTOR POWER LOOP WIRING CHART

Loop Current mA	Maximum wire run to EOL relay in feet/meters				
	AWG14	AWG16	AWG18	AWG19	AWG22
50	2750/838	1740/530	1090/332	869/264	433/131
100	1375/419	870/265	545/166	435/132	217/66
200	690/210	435/132	270/82	217/66	108/33
300	460/140	290/88	180/55	144/33	144/43
400	345/105	215/65	135/41	108/33	54/16

BELL LOOP WIRING CHART

| Bell Current mA	Maximum wire run to EOL resistor in feet/meters				
	AWG14	AWG16	AWG18	AWG19	AWG22
50	2750/838	1740/530	1090/332	869/264	433/131
100	1375/419	870/265	545/166	435/132	217/66
200	690/210	435/132	270/82	217/66	108/33
300	460/140	290/88	180/55	144/33	144/43
400	345/105	215/65	135/41	108/33	54/16
500	275/83	170/52	105/32	86/26	43/13
600	230/70	140/43	90/27	72/22	36/11
700	195/59	125/38	80/24	62/19	30/9
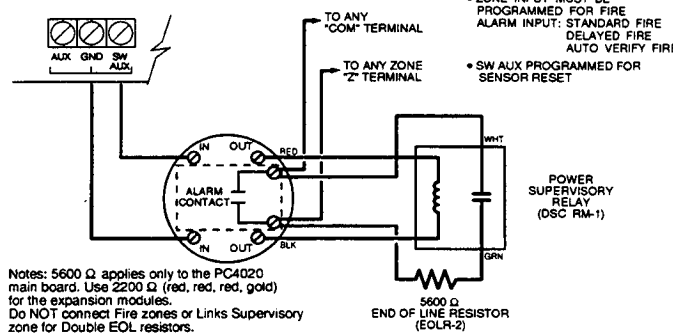
ALARM INITIATING LOOP WIRING CHART

Wire Gauge	Maximum Run to End of Line Resistor (feet / meters)
AWG14	15500 / 4724
AWG16	9740 / 2968
AWG18	6120 / 1865
AWG19	4860 / 1481
AWG20	3840 / 1170
AWG21	3060 / 932
AWG22	2420 / 737
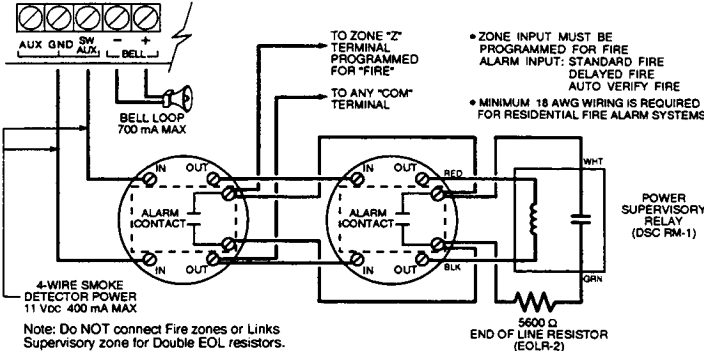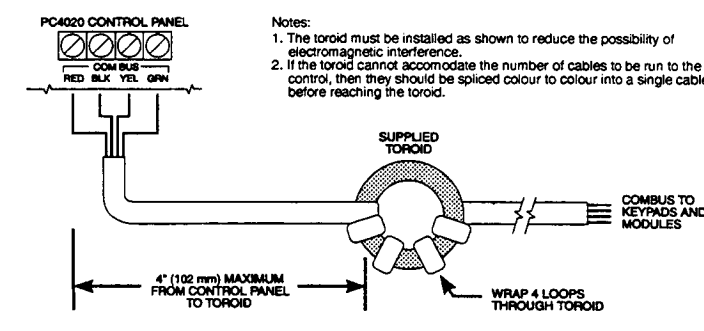
TERMINAL CONNECTIONS

This "Terminal Connections" section only refers to the main board of the PC4020 system. Other connections are shown in the module wiring diagrams.

"AC" Power Terminals

Use a 16.5 VAC transformer with a minimum 40 VA rating to supply AC power to the PC4020. The transformer should not be connected to an outlet that is controlled by a switch. If AC failure occurs, it will be displayed as a trouble on the keypad (see "Keypad Commands, [*][2] Trouble Conditions"). It can also be transmitted to the monitoring station as a trouble condition (see "Programming Manual").

Auxiliary Power Terminals "AUX" and "GND"

The auxiliary power supply can be used to power motion detectors and other 12 Vdc devices. The "AUX" (positive) and "GND" (negative) terminals provide 500 mA when the PC4020 is used with one keypad. For each additional keypad the auxiliary supply rating must be reduced by 25 mA (maximum current draw is 55 mA). The auxiliary supply is fused at 1 amp and a Main Aux Trouble Reporting Code can be transmitted if the fuse fails. (See "Programming Manual".)

Switched Auxiliary Power Terminals
"SW AUX" and "GND"

The "SW AUX" terminal is positive while the "GND" terminal is negative. The 500 mA auxiliary supply rating must be reduced by any current taken from the switched auxiliary supply which shares the same fuse as the auxiliary supply. This output is fully programmable, but is most commonly used with the "Sensor Reset" option, allowing the user to control the switch from the keypad. (See "Sensor Reset".)

Bell/Siren Terminals
"BELL +" and "BELL -"

These terminals are for powering bells or other devices requiring a steady output voltage on alarm. The bell output is fused for 5 amps. When connecting sirens (speakers with siren driver already built-in), be sure to observe the correct polarity. Connect the positive lead to the "BELL +" terminal and the negative lead to the "BELL -" terminal.

If no siren or bell is used, connect a 1000 ohm resistor (brown, black, red and gold) between "BELL +" and "BELL -".

Programmable Output Terminal "PGM"

The operation of the Programmable Output depends upon which option is selected in the programming table. See the Programming Manual for a list of options for the "PGM" output. The "PGM" is a 3A (maximum) switch to ground. A small relay, a buzzer or other DC operated device may be connected between the "AUX" (positive) terminal and the "PGM" (switched negative) terminal to interface with controlled devices.

COMBUS Terminals
"RED", "BLK", "YEL" and "GRN"

Connect the red wire of the COMBUS to the "RED" terminal, the black wire to the "BLK" terminal, the yellow wire to the "YEL" terminal and the green wire to the "GRN" terminal. The COMBUS is wired in the same manner on all modules. The COMBUS is used by the main panel to communicate with and supply power to the modules.

The COMBUS power supply terminals are fused electronically. COMBUS cabling must be connected to the control with a toroid as shown in the COMBUS Connection diagram.

Note: When connecting modules to the COMBUS the system must not be powered.

Zone Input Terminals "Z1" to "Z16"

Zone inputs "Z1" to "Z16" can be supervised End of Line (E.O.L.) resistor circuits, Double EOL circuits or normally closed loops. If E.O.L. are used, each input must be terminated with a 5600 ohm E.O.L. resistor (green, blue, red and gold). An alarm condition will be created if a normally open contact is used to short across the E.O.L. resistor. A trouble is created if normally closed contacts, wired in series with the E.O.L. resistor, are opened. See "Zones E.O.L." in the Programming Manual. See the wiring diagram for normally open and normally closed contact connections.

If Double EOL circuits are being used, all zones will use Double EOL resistors, except Standard Fire zones, Auto Verify Fire zones, Delay Fire Zones, Links Supervisory Zones, Links Answer, and Forced Answer zones. These zones must only be connected using the EOL resistor. Double EOL resistors allows the zone to be capable of detecting zone tampers. The tamper resistor (5600 Ohm) is placed across the alarm activating device, and the single EOL resistor (5600 Ohm) is placed between the alarm contact and the tamper contacts. This

configuration will allow the panel to detect Zone faults (zone shorted) , zone tampers (open zone), open zones (alarm condition of 11200 Ohms), and restored zones (5600 Ohms).

If the zone is disarmed and the tamper (open) or fault (short) condition is tripped a buzzer will sound from all partition keypads for the length of Bell Time Out or until an access code is entered. A zone tamper will be sent to the monitoring station if programmed. See Reporting Codes for details.

If the zone is armed and the tamper is activated, it will transmit and log both the tamper alarm and the zone alarm. There will be no buzzer sounded if the zone is armed (unless the zone is programmed as a 24 hour buzzer zone). See the "Control Panel Wiring Diagram" for detail on the hookup procedure.

Note: The zone expansion modules (PC4108 and PC4116) will use 2200 ohm EOL resistors and 5600 ohm tamper resistors.

The type of circuit or zone definition (delay, instant, 24 hour, silent, audible, etc.) is programmed from the keypad using the installers programming commands.

Telephone Terminals "TIP", "RNG", "T-1" and "R-1"

The wires from the RJ31-X telephone jack are connected to these terminals in the following way.

TIP	Green wire	▶	Incoming line from
RNG	Red wire		telephone company
T-1	Brown wire	▶	Outgoing line to
R-1	Grey wire		house telephone(s)

Note: For proper operation, there must be no other telephone equipment connected between the control panel and the telephone company's facilities.
Ensure that plugs and jacks meet the dimension, tolerance and metallic plating requirements of 47 C.F.R. Part 68 Subpart F.

Battery Connections

Do not connect the battery or the transformer until the wiring is complete. Connect the red battery lead to the positive battery terminal and the black lead to the negative battery terminal. If the connection is reversed the battery fuse will blow.

SYSTEM
KEYPAD FUNCTIONS

Many of the functions in the PC4020 have limited access so that only certain users may have control of special functions. The installer can program the 2nd Master Code to enable it and have access to the entire panel's operations the same as the Grand Master.
- System Master Code users can have access to all end-user options.
- Supervisory Code users can have access to options related to their partition.
- All other types of users have options available to them for their partitions.

All of the above mentioned keypad functions are listed in the following pages.

Introduction

The LCD4500 remote keypad provides complete information and control of the PC4020 control panel.
- The panel can be fully programmed from any keypad.
- The LCD display provides alarm and status indication for the alarm circuits as well as guiding the user in operating the system.
- The built-in buzzer lets the user hear correct key entries and other alert signals.
- The 12 digit keypad is used for code entry and other programming functions. All keypad entries are made by pressing one key at a time.

The keypad is normally in the arm-disarm mode. In this condition, the LCD message indicates the status of the system. The "Enter Code to Arm System" message comes on when all zones are closed. The system can be directed to perform other functions such as zone bypassing, displaying trouble conditions, displaying alarm memory and programming by entering one of the various [*] commands described below. Pressing the [#] key or not making any key entry for 2 minutes always returns the keypad to the arm-disarm mode.

Partitions

The PC4020 can have up to 128 zones. These zones can be divided by the installer into 8 separate partitions, that can be armed and disarmed separately. Zones can be assigned to more than one partition. Keypads can be individually assigned as a global keypad or to a specific partition. More than one keypad can be global, or can be assigned to each partition. User codes can be enabled to work on one or multiple partitions in the access code partition mask. System Master codes can arm and disarm any partition from any keypad. The default setting for the PC4020 has only partition 1 enabled with zones 1 to 16 assigned to it. To enable more partitions, enter the Partition Area menu of the Installer's Programming section, and select to add/edit the partition to be enabled.

Access Codes

An access code is a 4 or 6 digit (optional) number which will permit access to the system, i.e. Arm/Disarm control, Installer's Programming etc. User access codes are programmed in the User Programming section [*][5]. The default access code is '1234' for 4 digit option, and '123456' for 6 digit option. See 'User Programming Commands' for details on programming access codes.

Global Keypads

What is a Global Keypad?

A global keypad is a keypad which belongs to all partitions and may be accessed by all users on the system with valid access codes. The keypad will prompt the user to select the partition to edit, the keypad is then "loaned" to the partition selected by the user. The user can only access partitions which his/her code is assigned to.

Why should a Global Keypad be used?

Global keypads allow the entire system to be controlled by one keypad. This is beneficial if the keypad is to be located in a central area, for example, the lobby of an office building where the zones are common to all partitions and each office contains individual zones.

How to create a Global Keypad?

The global keypad may be any keypad on the system. The first keypad on the system is enrolled as a Partition 1 keypad. It may be made into a global keypad by selecting the option, "KYPD #1 Global" found in the system toggle options of Installers Mode. If multiple partitions are enabled on the system this will assign the keypad to all active partitions.

When the next keypad is enrolled onto the system the keypad will prompt with the message "Select (01) < >", options 01 - 08 are the usual partition assignments, the last option (09) is "Global Keypad".

How to use a Global Keypad?

The default message displayed on the keypad is "Enter Your Access Code", or the clock display if the option is enabled. From this state any user entering a valid access code may access the system.

The global keypad will display message

```
ENTER YOUR
ACCESS CODE
```

or will be the clock display if the option is enabled. From this state any user with a valid access code may access the system. The system can be directed to perform functions such as arming/disarming and all [*] mode functions. No function can be performed without first entering a valid access code.

• **Single Partition**

If a single partition access code is entered the user will be prompted with the message

```
SELECT (0)        < >
ARM PARTITION      R
```

if the partition is already disarmed. The lower right hand corner of the display will show the partition status using the letter R for Ready, and N for Not ready.

To arm the partition press [✱] or [0] the message

```
EXIT DELAY
IN PROGRESS...
```

will be displayed for 3 second. Then the display will return to

```
ENTER YOUR
ACCESS CODE
```
.

If the partition is armed the message on the LCD will be

```
SELECT (0)        < >
DISARM PARTITION
```
.

Pressing the right arrow key displays the message

```
SELECT (1)        < >
FOR OPTIONS
```
.

If option (0) is selected the panel will disarm the partition and display the message

```
KEYPAD LOANED TO
(Partition Label)
```

for 2 seconds on the LCD display. If the user chooses (1) "For Option" the LCD will display the message

```
KEYPAD LOANED TO
(Partition Label)
```
.

The user will be able to perform all [✱] functions (e.g. [✱] [7] Door Strike) and disarm the panel using conventional methods. Once the [#] key is pressed or 20 seconds of idle time (no key presses made or not active in a submenu) the keypad will return to its normal state displaying the message

```
EXITING FROM
(Partition Label)
```
.

• **Multi-partition**

If a multi-partition access code is entered the user will be prompted with the message

```
SELECT (1)        < >
(Partition Label)  R
```
.

The lower right hand corner of the display will show the partition status using the letter "R" for Ready, "A" for Armed and "N" for Not ready. The user can select the partition to access by using the [<] [>] keys. Only partitions which the access code belongs to will be displayed on the LCD.

If the selected partition is disarmed the message

```
SELECT (0)        < >
ARM PARTITION      R
```

will be prompted on the LCD. The lower right hand corner of the display will show the partition status. Using the letter "R" for Ready, and "N" for Not ready.

To arm the partition press [✱] or [0] the message

```
EXIT DELAY
IN PROGRESS...
```

will be displayed for 3 second. Then the display will return to

```
SELECT (1)        < >
(Partition Label)
```
.

Pressing the right arrow key displays the message

```
SELECT (1)        < >
FOR OPTIONS
```
.

If the selected partition is armed the LCD will prompt with the message

```
SELECT (0)
DISARM PARTITION
```
.

If option (0) is selected, the panel will disarm the partition and display the message

```
SYSTEM DISARMED
NO ALARM MEMORY
```

for 2 seconds. Then the display will return to

```
SELECT (1)        < >
(Partition Label)
```
.

If the user chooses (1) "For Option" the LCD will display the message

```
KEYPAD LOANED TO
(Partition Label)
```

for 2 seconds. The user will be able to perform all [✱] functions (e.g. [✱] [7] Door Strike) and arm the panel using conventional methods. Once the [#] key is pressed or 20 seconds of idling time (no key presses made or not active in a submenu) the keypad will return to its normal state displaying the message

```
EXITING FROM
(Partition Label)
```
.

At any time pressing pound will take the user back to the "Enter Your Access Code" message.
The Armed LED of the Global keypad will activate only when all activated partitions are armed. The last partition armed from a Global keypad will display

```
EXIT DELAY
IN PROGRESS
```

and countdown timer if it is enabled. At the end of the exit delay the Global keypad will return to the message

```
ENTER YOUR
ACCESS CODE
```

with the Armed LED on.

Audible entry delay will only be heard on the Global keypad when all activated partitions are armed. Disarming any one partition will stop the entry delay and turn the Armed LED off. If the disarmed partition contains the zone that initiated Entry Delay, all other partitions which contain the same zone will end as well.

The Trouble LED of the Global keypad will activate for all troubles, including fire zones that belong to just one partition. The user must enter a valid access code and then loan the keypad to their partition. From here the user can enter [✱] [2] to view the trouble, if it belongs to their partition.

To access the System Master Menu from a global keypad, select a partition, re-enter the System Master Code, then press [9] or use the [<][>] keys to scroll through the menu. Press [✱] to select the System Master options.

System Master Code Functions

System Master Codes may perform any function for any partition on the system except change or delete the System Grand Master Code. Enter [System Master Code] [9] to display the System Master Code Function Menu:

[0] View Event Buffer [1] Set System Time
[2] Set System Date [3] Enable DLS Window
[4] System Reset [5] Previous Menu

[0] **View Event Buffer** - This function allows any Master Code to review the Event Buffer on the keypad display. The first line of the display will show the event number and the partition on which the event occurred; the second line of the display will show the date and time of the event. Press the [✱] key to display a description of the event. Use the [<] [>] keys to scroll through the list of events in the Event Buffer. Event 001 is the most recent event and 512 is the oldest one.

[1] **Set System Time** programs the system's 24 hour clock. Enter 4 digits in 24 hour time to set the clock, the first 2 digits are the hour, the last 2 digits are the minutes. For example, to program 2:35 pm, type 1435.

[2] **Set System Date** programs the system's calendar. Enter 6 digits, the first two digits are the month, the middle 2 digits are the day, and the last two digits are the year. For example, to program Feb 14, 1994 type 021494.

[3] **Enable DLS Window** - The end user can enable ring detect for 60 minutes to allow a computer to call the panel. The installer can disable this function in the DLS section of the installer's programming.

[4] **System Reset** - A System Reset turns off the power to the COMBUS for 5 seconds. No programming will be lost and the time will not have to be reprogrammed. A system reset should be done if there is a COMBUS Communications fault or an Internal fault.

[5] **Previous Menu** - If the user decides to do nothing, either select this option, or press the [#] key to return to the arm/disarm menu.

Installer's Programming Code

A default installer's programming code "4020" is programmed into the PC4020. This code is used with the [✱][8] command by the installer to gain access to the system in order to enter panel or communicator program information. The installer's program code may be changed by the installer.

Arming

Close all protected doors and windows and stop movement in areas covered by motion detectors.

The "Enter Code To Arm System" message should be on the LCD display. The system cannot be armed unless the "Enter Code to Arm System" or "Secure System or Enter Code" message is displayed.

If Double EOL resistors are being used, 3 different messages can be displayed when viewing open zones, Zone Open, Zone Tamper and Zone Fault. Zone Open will be displayed if the zone is in the alarm state (total resistance between the zone terminal and common is 11200 ohms - 4400 ohms on a zone expansion module), Zone Fault will be displayed if the zone is shorted, and Zone Tamper will be displayed if the zone is open.

The "Secure System or Enter Code" message is used to indicate to the user that a force armable zone is open, and the partition can still be armed. After the partition is armed, if the force armable zone is secured it will become an active zone, and will cause an alarm if the zone opens again.
To program a zone as force armable, see "Zone Options" in the Programming Manual.

Enter a 4 digit or 6 digit access code. As each digit is entered the keypad will beep.
- If the access code was entered incorrectly, the keypad will beep steadily for 2 seconds.
- If the code was entered correctly but the message "Secure System Before Arming" is on the display, the keypad will beep quickly followed by a steady tone.
- When the correct code is entered, the "Exit delay in Progress" message will come on and the keypad will beep quickly.

If enabled, a timer will appear in the right side of the display indicating the remaining time in the exit delay. Exit the premises through the designated exit-entry door. At the end of the allowed exit time the message on the keypad will change to "Enter Code to Disarm System". See the "Installer's Programming [✱][8] Command" section on how to change the exit time. Also see "Quick-arm" and "At-home Arm".

If a multi partition access code is entered the keypad will display the message

```
(0) TO ARM      < >
(Partition Label)    R
```
.

The lower right hand corner of the display will show the partition status using the letter "R" for Ready, "A" for Armed and "N" for Not ready.

Use the [<] [>] keys to scroll though the assigned partitions. Only partitions to which the access code is assigned will be displayed. The message

```
(2) TO SELECT   < >
(Partition Label)    R
```

with the partition status at the lower right hand side of the LCD.

To arm the partition which you are at simply press [✱] or use the hotkey (0). The message

```
EXIT DELAY
IN PROGRESS
```

will appear on the keypad with the exit delay timer if it is enabled. Instead of arming their own partition, if the user decides to select another partition to arm the message

```
SELECT (0)      < >
ARM PARTITION   R
```
.

Use the arrow keys to scroll to the "For Options" menu. Selecting (0) "To Arm" will arm the selected partition and display the message

```
EXIT DELAY
IN PROGRESS
```

for 2 seconds and then return the user to the arming menu of their own partition.

If (1) "For Options" is selected the user will be prompted with the message

```
KEYPAD LOANED TO
(Partition Label)
```
.

From here the user is capable of performing all [✱] functions (e.g. [✱] [7] Door Strike) and arm the panel using conventional methods.

Once the [#] key is pressed or 20 seconds of idle time (no key presses made or not active in a submenu) the keypad will return to its normal state displaying the message

```
RETURNING TO
(Partition Label)
```
.

Disarming

Enter the premises through the designated exit-entry door. The keypad buzzer will be on. Go to the keypad and enter the 4 digit or 6 digit access code. If an error is made in entering the code, press the [#] key and enter the code again. The "Armed" light will go out and the keypad buzzer will stop. The correct access code must be entered before the allowed entry time expires. To change the entry time see "Installers Programming

Command", [✱][8]. If an alarm occurred while the panel was armed, the "View Memory" message will be on the display with the zone name for the zone that caused the alarm. The display will keep those messages on for two minutes or until the [#] key is pressed to return the panel to the normal arm-disarm mode.

To disarm by using a multi partition access code the keypad will display the message

```
(0) TO ARM      < >
(Partition Label)    R
```
.

The lower right hand corner of the display will show the partition status using the letter "R" for Ready, and "N" for Not ready.

Use the [<] [>] keys to scroll though the assigned partitions. Only partitions to which the access code is assigned will be displayed. The message

```
(2) TO SELECT   < >
(Partition Label)    A
```

will be displayed with the partition status at the right corner of the LCD.

To disarm the partition being viewed simply press [✱] or use the hot key (0). If (1)"For Options" is selected the user will be prompted with the message

```
KEYPAD LOANED TO
(Partition Label)
```

on the LCD display. From here the user is capable of performing all ✱ functions (e.g. [✱] [7] Door Strike) and arm the panel using the conventional methods.

Once the [#] key is pressed or 20 seconds of idling time (no key presses made or not active in a submenu) the keypad will return to its normal state displaying the message

```
RETURNING TO
(Partition Label)
```
.

Auto-bypass/Home-Away Arming

If a correct access code is entered and you do not exit the premises, the system will, at the end of the Exit delay time, arm with interior zones automatically bypassed if those interior zones have been programmed as "Home-Away" zones. These zones will remain bypassed until [✱][1] is entered to reactivate bypassed home-away zones.

This is a convenience feature for the user who wishes to remain on the premises with the system armed. The user does not have to manually bypass the Home-Away zones.

To reactivate the Home-away zones that have been automatically bypassed, press [✱][1]. This command is a quick method of fully arming the system in residential applications before going to bed.

Note: The auto-bypassed zones will only send a tamper alarm when the tamper condition is activated, using Double EOL resistors.

Zone Bypassing
[✱]+[1]
A bypassed zone will not cause an alarm. If a zone is bypassed the panel may be armed even if the zone is open. Use zone bypassing when access is needed to part of the protected area. Also, damaged wiring or contacts on a zone may be temporarily bypassed until repairs can be made so that the panel can be armed.

To bypass zones, enter [✱] [1]. An access code may be required if the installer has enabled that option. A menu will appear.

[0] **Bypass Zones** takes you immediately to bypassing zones. Use the [<] [>] to select the zones to be bypassed and press the [✱] key to select the zone. A "✱" will appear beside the zone label to indicate the zone will be bypassed when the partition is armed.

A zone search routine allows the user to find the desired zone to bypass by entering in the first letter of the zone to search for, and pressing one of the [<][>] keys. The [<] key will search for the first zone on the partition that begins with the letter selected. The [>] key will search for the next zone on the partition that begins with the letter selected.

The letters of the alphabet have been divided up among the 1 to 9 number keys on the keypad.

(1) ABC1	(2) DEF2	(3) GHI3
(4) JKL4	(5) MNO5	(6) PQR6
(7) STU7	(8) VWX8	(9) YZ90
	(0) Clear	

For example, to search for the first zone that begins with the letter "R", press the [6] key three times until the letter "R" is displayed on the keypad between the "< >". Press the [>] key, the first zone that begins with the letter "R" will then be displayed.

[1] **Clear Bypasses** removes all bypasses from all the zones in your partition and then takes you to bypassing zones. None of the zones will have a "✱" beside them.

[2] **Recall Bypasses** will bypass all the same zones that were selected the last time zones were bypassed. This is for users that are always bypassing the same zones.

[3] **Previous Menu** takes you back to the "Enter Code to Arm System".
When the PC4020 is programmed, the ability to bypass certain zones may be eliminated. In this case, the "✱" indicator for those zones will not come on in response to the bypass command. Zone bypasses are automatically cancelled when the panel is disarmed.

The installer can choose by partition if a code must be entered with [✱]+[1] to bypass zones. Only the zones assigned to the same partition of the system as the keypad can be bypassed. Only certain types of access codes can be used to bypass (See [✱][5]).
Note: At no time can any armed zone be bypassed.

Trouble Display
[✱]+[2]
The PC4020 continuously monitors a number of possible trouble conditions. If one of these conditions occurs, the keypad "TROUBLE" indicator will light and the audible indication will sound (two short beeps every 10 seconds). When the [#] key is pressed the audible indication will stop, but the trouble indicator light will remain ON until the trouble is cleared. Trouble conditions can also be transmitted to the monitoring station. Press the [✱] then [2] keys to display the types of trouble conditions.

- Battery Trouble
- AC Trouble
- Aux Supply Troub
- TLM Trouble
- FTC Trouble
- Bell CCT Trouble
- Fire Trouble
- Loss of Time
- Module Com Fault
- COMBUS Low Pwr
- Internal Fault
- 4204 Battery TBL
- 4204 AC Trouble
- 4204 Aux Trouble
- Cellular Trouble

To view partition troubles from a global keypad, enter a valid access code and select a partition. If (1) "For Options" is selected the user will be prompted with the message

> **KEYPAD LOANED TO**
> **(Partition Label)**

Once the message has cleared, press [✱][2] to view the trouble on that partition.
Press [#] to return to "READY".

Battery Trouble - A battery trouble will be displayed and can be reported if the battery is 11.3 volts or less, disconnected or the battery fuse fails. Battery voltage is checked once every 4 minutes, so the battery trouble may not restore instantly when the battery is restored. Initiating a bell/comm test will check the battery voltage.

AC Trouble - There is no audible annunciation on AC power failure. The system "Trouble" light will come ON but the audible indication will not sound until there is a low battery condition. Transmission delay can be programmed for 000 to 255 minutes.

Aux Supply Troub - An Aux trouble is generated if the aux fuse on the main panel opens, or if the Aux or SW Aux terminals are overloaded.

TLM Trouble - A telephone line trouble is generated when the line voltage drops below 3 volts for more than 30 seconds. A keypad trouble is generated when the system is disarmed and if selected, a local alarm sounds when the panel is armed.

FTC Trouble - If the digital communicator is unsuccessful in communicating with the monitoring station after 10 attempts, a Fail to Communicate trouble is generated. If a later attempt to communicate is successful the trouble is cleared.

Bell CCT Trouble - If the bell fuse opens or the bell circuit is open, a keypad trouble and a Bell Circuit trouble transmission are generated.

Fire Trouble - If a FIRE loop is open circuit, a keypad trouble and a Fire Loop trouble transmission are generated. A trouble on the FIRE loop will unconditionally initiate an audible and visual (trouble light) indication on the keypad. This means that even if any other previous trouble has been silenced, a FIRE loop trouble will restart the keypad buzzer.

If the PC4020 loses communication with a zone expander (PC4108 or PC4116) which has a Fire Zone Enabled on it, all Fire/Burglary outputs will "squawk" once every 10 seconds until a key press is detected on a keypad, or module communication is restored.

Loss of Time - When the PC4020 is powered up, the internal time of day clock needs to be set to the correct time. This trouble is cleared when an attempt is made to reset the internal time of day clock. See "System Master Codes" for resetting the time of day clock.

Module Com Fault - The panel has lost communications with a module and cannot recover it. Check to see if the module is connected properly, then do a system reset. See "Diagnostics" in the Programming Manual to determine which module is not communicating.

COMBUS Low Pwr - Modules are not getting enough voltage from the COMBUS. Check for proper connection of COMBUS, or the COMBUS needs to be repowered. See 4204 modules and the 4204 PGM COMBUS power option for supplying voltage to the COMBUS. See "Diagnostics" in the Programming Manual to determine which module has low voltage.

Internal Fault - A problem has occurred with the COMBUS microprocessors. If this trouble occurs, check connections to the COMBUS and do a system reset.

4204 Battery TBL - If any PC4204 relay output module's battery drops below 11.3 volts, a battery trouble is generated.
To determine which of the PC4204's has the low battery, check the reporting code transmitted to the monitoring station or check the event buffer printout if there is a printer attached, or through downloading. The battery voltage is checked once every 4 minutes. So the battery trouble may not restore instantly when the battery voltage is restored.

4204 AC Trouble - If any PC4204 relay output module loses incoming AC power, the keypad trouble light will indicate a 4204 AC trouble. But there will be no audible annunciation until there is also a low battery condition. The PC4204 AC troubles will be transmitted to the monitoring station immediately.

4204 AUX Trouble - If the Aux fuse on any PC4204 relay module should open or if the Aux supply is overloaded, a 4204 Aux trouble is generated.

Cellular Trouble - This indicates that the LINKS unit has one or more of the following trouble conditions: AC, battery, loss of cellular or a tamper fault.

Alarm Memory Display

[✱]+[3]
Press [✱] then [3] to enter the alarm memory mode. Any alarm caused during the last armed period will be displayed. The "View Memory" message will only be displayed when an alarm occurred during the last armed period.
Press [#] to return to "READY".

Note: Tamper alarms will not be shown in alarm memory display.

Sensor Reset

[✱]+[4]
The Main Bell, Switched Auxiliary Supply and pgm outputs can be programmed by the installer to be a 'Sensor Reset'. (See 'Sensor Reset' in the programming guide). This option allows the user to activate these outputs from the keypad by pressing [✱][4]. The keypad will display 'Sensor Reset in Progress..' and a countdown timer will show how long the sensor reset will be active. The Sensor Reset can be from 0 to 255 seconds, which is programmed by the installer. (See PGM Pulse Times, Utility/Sensor section in the Programming Guide).

Note: To perform a sensor reset from a global keypad a partition must first be selected.

User Programming Commands

[✱]+[5]+[System Master Code] or [Supervisory Code]
The [✱] [5] [System Master Code] or [✱] [5] [Supervisory Code] command is used to program the Master Codes and regular access codes.
The first access code is the System Grand Master Code. Normally, only the installer can change the System Grand Master Code. The installer may also program the system to allow the user to change the System Grand Master Code.

Note: When using the global keypad the System Master should assign access codes to prevent duplicate access codes being used.

The System Grand Master Code has no limitations to its use. It may be used to create or delete other System Master Codes or to perform any user function on the system. Note that only to the first access code can be the System Grand Master Code.

Each access code may be programmed as one or a combination of the following options:

System Master Codes may perform any function for any partition on the system except change or delete the System Grand Master Code, and change or delete other System Master Codes.

Supervisory Codes allow the user to program and edit other access codes, except System Master and Duress codes, for any partitions the access code belongs to. It is also used for arming, disarming, bypassing and all other functions that a System Master Code is capable of.

Arm Only Code allows the user to arm only the partitions to which the code is assigned.

Disarm Only Code allows the user to disarm only the partitions to which the code is assigned.

Bypass Only Code allows the user to bypass zones on partitions to which the code is assigned.

Door Strike Code allows the user to operate door strikes only within the partition to which the code is assigned.

Duress Codes will send a duress code transmission to the monitoring station whenever it performs a function. A user would enter a Duress Code to indicate that they are forced by an intruder to perform the functions on the system. When a Duress Code is entered, the partition or partitions to which it is assigned will function normally, and a Duress Code transmission will be sent to the monitoring station. Also, any outputs programmed as "Duress Outputs" will be activated when the Duress Code is entered. A Duress Code may be programmed for any functions except being a System Master Supervisory or One-Time Use Code.

One-Time Use Codes are used to allow infrequent users of the system, such as service personnel, to disarm then arm the system. When the system is armed using a One-Time Use Code, the code will be erased once the Exit Delay expires; after this time, the code may not be used again. If the One-Time Use Code is entered before the Exit Delay expires, arming of the system will be cancelled; the One-Time Use Code may then be entered again later to arm the system.

Log Only Codes are used strictly for logging to the event buffer. The system master can log the time, date and location which they were at with the Log Only codes. To enable this code type, enable just door strike or disable all options.

Note: Do not program One-Time Use Codes without arming or disarming enabled.

Programming Additional Access Codes Using a System Master or a Supervisory Code

1 Press [✱] then [5] to enter the User Programming Commands; the keypad will display the message "Enter Your Access Code". Any System Master Code or Supervisory Code may be entered.

• If the Grand Master Code is entered, System Master Codes and regular access codes for any partition will be able to be programmed.

• If a System Master Code is entered, regular access codes for any partition will be able to be programmed. A System Master Code can also create Supervisory and Duress Codes.

• If a Supervisory Code is entered, only access codes belonging to the partition to which the Supervisory Code is assigned may be changed. Supervisory Codes cannot create System Master or Duress Codes.

When an access code is entered, the keypad will display the number of available access codes on the first line of the screen.

2 The keypad will display the message "Sel Code (xxx) < >". "(xxx)" represents the number of the access code that has been selected for programming. Use the [<] [>] keys to scroll through the list of access codes. When the desired access code number is displayed, press the [✱] key to program the code.

3 When an access code is selected for editing by pressing the [✱] key, a menu for editing access codes will be displayed. Select one of the menu items by entering a number on the keypad.

[0] Program Code - When [0] is pressed, the keypad will display the message "Enter Digits" and the presently-programmed access code. Enter the new 4 digit or 6 digit access code. If you do not wish to change the code, press [#] key.

[1] Erase Code - If an access code is no longer needed, this selection will erase the code, code options and partition mask, but not the user's name.

[2] Edit Access Code Name - When a PC4400 RS-232 module is enrolled on the system, the name of the code which is used to arm and disarm will be printed out. Also, the access code name helps keep track of the code when programming codes. Move the cursor to left or right by pressing the [<][>] keys. The letters of the alphabet have been divided up among the 1 to 9 number keys on the keypad as below:

[1] = A, B, C, 1	[2] = D, E, F, 2	[3] = G, H, I, 3
[4] = J, K, L, 4	[5] = M, N, O, 5	[6] = P, Q, R, 6
[7] = S, T, U, 7	[8] = V, W, X, 8	[9] = Y, Z, 9, 0
[0] = Space		

For example, if you press the [4] key once, the letter 'J' will appear above the cursor on the display. Press the [4] key again, the next letter 'K' will appear, and so on. If a different number key is pressed, e.g. the [6] key, the cursor will automatically move to the right one space, i.e. the letter 'P'. To erase a character, use the [<] [>] keys to move the cursor under the character, then press the [0] key.

While programming the access code label, press the [✱] key to call up an options menu. To select an option, press the corresponding number key or scroll through the options using the [<][>] keys, then press the [✱] key to select.

[0] Clear Display	[1] Clear to End
[2] Change Case	[3] ASCII Entry (See appendix A)

[0] Clear Display will clear the entire code label.

[1] Clear to End will clear the display from the character where the cursor was located to the end of the display.

[2] Change Case will toggle the letter entry between upper case letters (A, B, C...) and lower case letters (a, b, c...).

[3] ASCII Entry is for entering uncommon characters. There are 255 characters, but 000 to 031 are not used. Use the [<][>] keys to toggle through the characters or enter a 3 digit number from 032 to 255. Press the [*] key to enter the character into the code label.

[3] Edit Access Code Options - When [3] is pressed, the keypad will display the message "Select toggle < >". Use the [<] [>] keys to scroll through the list of options:
- System Master?
- Supervisory Codes?
- Arm?
- Disarm?
- Bypass?
- Door Strike?
- Duress Pulse?
- One Time Use?

[4] Edit Partition Mask - The Partition Mask is used to assign the access code to one or more partitions. In order for an access code to function, the Partition Mask must be assigned to the access code; *if no partition mask is assigned, the code will not operate on any partition.*

[5] To Exit the menu, press the [#] key.

4 To exit the Access Code Programming Mode, press [#].

User Functions Command
[*]+[6]+[Access Code]

Enter [*] [6] [Access Code] and then use the [<] [>] keys to display the items of the function menu. Press [*] to select an item.

[0] Quick Arm

[1] Quick Exit

[2] Auto Arm Control

[3] Keypad Setup

[4] Bell/Comm Test

[5] Door Chime

[6] Spec. Messages

[7] User Call Up

Item [0], [1], [5] and [6] turn on and off various functions. To enable or disable these functions, press the [*] key to toggle "Y "or "N" on the keypad.
Y - The function is enabled
N - The function is disabled

Quick Arm
[*]+[6]+[Access Code]+[0]
The "Quick Arm" feature is enabled by toggling to "Y" on the keypad. When enabled the panel can be armed by entering [*][0]. Users with a One Time Use access code should not use this feature because the OTU code is only erased when used to arm.

Quick Exit
[*]+[6]+[Access Code]+[1]
The "Quick Exit" function is enabled by toggling to "Y" on the keypad. When enabled the user can exit through any delay zone without altering the status of the system, by entering [*]+[0] on the keypad while the system is armed.
Note: Quick Exit must not be enabled on UL listed systems.

Auto Arm Control
[*]+[6]+[Access Code]+[2]
The Auto Arm Control options can only be accessed if Auto Arm is enabled for the partition. The PC4020 can be programmed to arm a partition at the same time each day, by enabling the Auto Arm function and programming the Auto Arm time.

At the selected Auto Arm time, the system will give a pre-alert. The keypad buzzer begins to sound and the Bell/Siren will pulse once every 10 seconds to alert anyone on the premises that the system is about to arm. The Bell/Siren pulse can be disabled in Installer's Mode.

The keypad buzzer will sound for one minute before Auto Arming unless the Auto Arm is aborted. To abort the Auto Arm and silence the keypad press any key during the pre-alert. The Auto Arm will be attempted at the same time the following day. The PC4020 can be programmed to require a code to be entered for a user to abort the Auto Arm.

Upon selecting the Auto Arm Control function, the Auto Arm Control menu will appear on the LCD keypad.

[0] Auto Arm   [1] Auto Arm Time

[0] Auto Arm toggles "Y" or "N" to enable or disable the Auto Arm function.

[1] Auto Arm Time is the time the partition will automatically arm itself every day.

Note: The Auto Arm time is a 24 hour clock and times must be entered as two digit numbers.

E.g. HH - 01, 02,.....10,11,.....23,24
     MM - 00, 01,.....35,36.....58,59

Enter 4 digits representing the time in hours and minutes (HH:MM) based on 24 hour or military time. Always enter a leading zero where only one digit is required, 8:05 am would be entered as 0805, 1:30 pm would be entered as 1330.

Keypad Setup
[✶]+[6]+[Access Code]+[3]
This function allows the user to adjust the backlighting and contrast of the LCD4500 keypad. When this function is selected, the Keypad Setup menu will appear on the keypad.

- **Bright Control** adjusts the level of backlighting on the LCD display and the backlighting on the keys.

- **Contrast Control** adjusts the contrast of the lettering on the LCD display.

Use the [<][>] keys to toggle through the eight different settings, and press [✶] to select the level of preference.

Bell/Comm Test
[✶]+[6]+[Access Code]+[4]
This option allows the end user to test the system. This option activates all outputs programmed for 'Fire and Burg', 'Inv Fire/Burg', 'Burg Only' and 'Inv Burg Only' for two seconds, sounds the keypad's for 2 seconds, tests the main board and PC4204 battery voltage, and sends a test code transmission to the monitoring station.

Door Chime
[✶]+[6]+[Access Code]+[5]
The Door Chime feature is enabled or disabled on a partition by pressing the [✶] key to toggle from "N" to "Y" or "Y" to "N". When the door chime feature is enabled, any zone that has been selected as chimeable will cause the keypad to beep 5 times each time the zone opens or restores while the partition is disarmed (Note that Fire zones and 24 hour zones are never disarmed, therefore they can never chime).
See "Chime Function" in the Programming Manual to enable a zone to use the chime function. While disarmed zone bypass may be used to eliminate the beeping.

Spec. Messages
[✶]+[6]+[Access Code]+[6]
This function enables 4 special event messages to be displayed when one of the special events occurs.

The first message is "System Has Failed To Arm". It will be displayed if the user is unable to arm the partition after entering a valid code (E.g. Because of activity on the zones.).

The second message is "Alarm Occurred While Armed". It will be displayed if an alarm occurred during the previous armed period.

The third message is "Zone Fault will occur". It will be displayed if the zone loop is shorted while using Double EOL resistors.

The fourth message is "Zone Tamper". It will be displayed if the zone is opened while using Double EOL resistors.

See "Event Messages" in the Programming Guide.

Note: The Zone Fault and Zone Tamper event messages will only be displayed when Double EOL resistors are being used.

User Call up
[✶]+[6]+[Access Code]+[7]
This function must be enabled by the installer. When selected, the panel will call the downloading computer. The downloading computer must be waiting for the panel to call before downloading can be performed.

Walk Test
[✶]+[6]+[Walk Test Code]
There are 2 different types of walk test modes, Local Walk Test and Local + Comm Test.

[0] Local Walk Test sounds when there is All Fire/Burg, Invert Fire Burg or Burg + Inv Burg for 2 seconds regardless of the zone type tripped.

[1] Local + Comm Test will function the same as Local Walk Test, but the programmed reporting code will be sent with each zone tripped.

[2] Disable Walk Test Mode, either arm the partition or enter [✶][6][Walk Test Code] and select 'Disab Walk Test'.

Note: When Double EOL resistors are being used during walk test, a zone tamper and alarm will always be logged/transmitted.

Utility Output
[✳]+[7] or [✳]+[7]+[Access Code]
The Bell output terminals, switched auxiliary terminals or any pgm terminals can be programmed for Utility Output (see Utility Output in the installer's programming guide). Any output that is programmed for utility output will be activated when the user enters [✳][7]. See 'Pgm pulse times' for programming how long the outputs are activated and see 'Util Req Code' for programming whether a utility output requires an access code to be activated.

Notes: Regardless of the time remaining for the Door Strike, it will be deactivated at the end of the standard exit delay.

To perform a utility output from a global keypad a partition must first be selected.

Installer's Programming Commands
[✳]+[8]+[Installer's Code]
The PC4020 is completely programmed from the keypad by using commands in the [✳][8] section. The commands are described in detail in the Programming Manual.

Note:

```
DLS IN PROGRESS
LOCKOUT
```

will be displayed on the keypad when the downloading computer is On Line with the panel. Installer's Mode programming will be inhibited.

"At-Home" Arming
[✳]+[9]+[Access Code]
Entering [✳], [9] before the arming code, arms the panel without any entry delay on the delay zones and bypasses zones that are defined as "Home-Away". This command is used for arming the system while at home. Once the panel is Armed in this mode, using [✳], [1] will remove the bypass from those zones defined as "Home-Away" if they have NOT been manually bypassed. The [✳][1] command, as used here, only removes the bypass from zones that were automatically bypassed with the [✳][9] command.

The "Armed" light will flash to indicate the partition is "At-Home" armed.

Quick Arm
[✳]+[0]
Entering [✳][0] is accepted as a valid arming code when the "Quick Arm" feature is activated. This command is often used when individuals are required to arm the system but not disarm it. This could be used with home visitors in the case of a residential alarm or junior employees and maintenance staff in the case of a commercial alarm. See instructions in the "[✳][6] User Functions Command" section for activating the "Quick Arm" feature.

Quick Exit
[✳]+[0] When Armed
Entering [✳], [0] when the system is fully armed will allow the user 2 minutes to exit the premises through any delay zone without altering the status of the system if the "Quick Exit" feature is enabled. After [✳], [0] is entered into an armed system, one and only one delay loop may be tripped. Any additional activity on any other active loop will cause that loop to begin its alarm sequence. Quick exit activation will be logged onto the event buffer.

Keypad Zones
There are three zones which can be activated from the keypad. The alarm and restoral codes for keypad zones are programmed using the [✳][8] command.
Pressing the [F] key for 2 seconds activates a fire alarm. The fire alarm sounds the siren/bell in a pulsed fashion.
Pressing the [A] key for 2 seconds activates a silent auxiliary keypad zone.
Pressing the [P] key for 2 seconds activates a silent panic keypad zone.

Programming for the [F], [A], and [P] keys for the global keypad can be found under the System Toggle Options. The global keypad will always send (if programmed) the system area account code. The [F], [A], and [P] keys will activate for all active partitions, any valid access code from any partition may silence the alarm.

Note: See 'KEYPAD TOG OPT' in the Programming Guide for changing keypad zones options.

PRINTER SETUP

Note: Do not connect a printer on UL Listed residential fire alarm systems.

The PC4400 module is used for sending serial communications through an RS232 port to a local printer for on site monitoring of the PC4020.

All programming of the PC4400 is done through the PC4020.
The printer can be located up to 200 ft (61 m) away from the PC4400.
An 80 character printer is strongly recommended.

Configuring the Printer

1. Serial interface
2. Baud rate = 300, 600, 1200 or 2400 (PC4020 default setting = 1200 baud)
3. Parity = None
4. Character length = 8 bits
5. Auto line feed = Off
6. American/Canadian character set
7. DTR Protocol or XON/XOFF (by default the PC4020 sends DTR protocol)

The PC4400 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.

Power down the PC4020, PC4400 and the printer. Connect one end of the extension cord into the PC4400, and the other end into the DB-25 modular jack adapter. Connect the DB-25 modular jack into the RS232 serial port of the printer.
See the PC4400 wiring diagram.

Power up the printer, then the PC4020 and PC4400. If the PC4400 is already enrolled and the printer is on line, the PC4400 will begin transmitting to the printer.
Sample 1 is a printout from the serial printer.

Most actions on the PC4020 that require an access code are logged to the event buffer, and are sent to the printer (see Sample 2).

The partition labels, access code names and zone labels can be changed in the PC4020. See "PAR NAME LABEL" in the Programming Manual for programming partition labels. See "EDIT CODE NAME" in the System Manual under [✱][5] commands to program the access code names. See "ZONE LABEL" in the Programming Manual for programming zone labels. The printout will then be as Sample 3.

The PC4400 sends events to the printer as they occur.

If the printer is off line or disconnected, the PC4020 keeps new events in memory until they are ready to be printed.

When the printer is brought back on line, the PC4400 will send the new events to the printer. If 450 new events occur before the printer is brought back on line (450 events = 75% of the buffer), the PC4020 will send the "Buf Near Full" reporting code to the monitoring station. (See 'Maint Rep Codes" in the Programming Flow Charts for programming the "Buf Near Full" reporting code). If over 600 events occur before the printer is brought back on line, the oldest events will be overwritten.

The PC4020 contains an event buffer which stores the last 600 events.
To print out the entire event buffer, enter the "Prn Entire Buff" section in installers programming [✱][8][Installer's Code][3][0].
The printout will begin with the oldest event in memory and end at the most recent one.

	PartitionLabel	Date	Time	Event
Sample 1	System Area	05/27/94	13:25	RS232 PRINTER ON LINE
	Partition...2	05/27/94	15:00	ALARM ZONE 008
	System Area	06/01/94	08:10	4204 #005 BATTERY TBL ALARM
	System Area	06/02/94	08:13	TAMPER LCD #001
Sample 2	Partition...1	05/27/94	13:40	OPENING ACCESS CODE 001
	System Label	05/27/94	13:51	INSTALLER LEAD IN
	System Label	05/27/94	13:53	INSTALLER LEAD OUT
	Partition...4	05/29/94	15:30	UTIL OUTPUT CODE ACCESS CODE 054
	Partition...1	06/01/94	08:05	SW AUX CODE ACCESS CODE 008
	Partition...8	06/01/94	08:01	SYS MASTER MENU ACCESS CODE 002
	Partition...1	06/02/94	23:59	BYPASS WITH CODE ACCESS CODE 004
Sample 3	West Plaza	06/04/94	02:05	CLOSING Head Custodian
	Assembly Plant	06/04/94	02:09	ALARM Front Office

DOWNLOADING

Note: Downloading is not to be enabled on UL listed systems.

Downloading is the use of an IBM compatible computer to program the PC4020 system. The computer can be located either on site, or communicate over the phone.

The DSC downloading package version 5.3 or later supports downloading to the PC4020.

See the downloading manual for details on specific capabilities and the "DLS" section in the PC4020 Programming Guide for programming DLS options.

Downloading over Phone Lines

Make sure the "TIP" and "RNG" terminals are connected to the phone line. Program the access code and the panel I.D. code in the PC4020.

The PC4020 panel can call the computer, or vice versa. "Ring Detect" or "User enabs DLS" must be enabled for the PC4020 to detect when the phone line is ringing, the time the computer is calling the panel.

The number of times the panel allows the phone line to ring before answering is programmable, and the default setting is 8 rings.

If the panel calls the computer, enable "User call up" and program the phone number of the computer. Initiate the call by entering [✱][6][Master Code][7].

Downloading with an On-site Computer

Phone lines are not necessary to download to the panel if the computer is at the same location as the PC4020. The tip and ring lines of the modem can be directly connected to the tip and ring terminals on the panel.

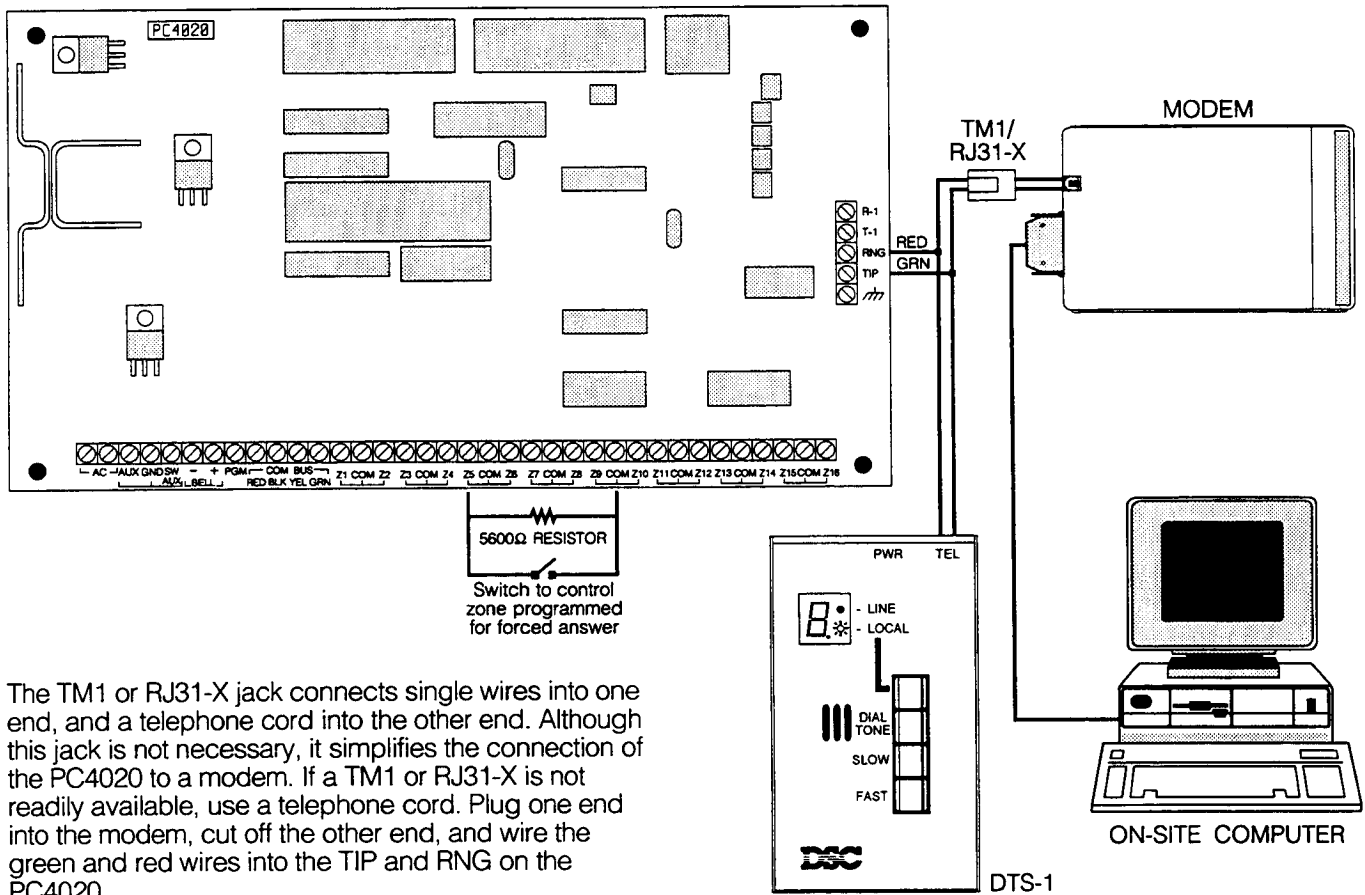A DTS-1 must be connected to the lines and in the local mode.
Program the downloading access code and panel I.D. code.
Program a zone for "Forced Answer". See "Zone Type" in the Programming Guide. This zone is only meant to be temporary, to initiate downloading. It can later be changed back to the required zone type.
Make sure the access code and panel I.D. code are the same in the panel and computer. A telephone number must be programmed into the computer to initiate communications, and any number entries are accepted.

Activate the computer to call the panel. When the computer indicates "Dialing...No dial tone", press the dial tone button on the DTS-1 until the modem dialing the phone number is heard. Trip the zone programmed for "Forced Answer". The panel will seize the phone line and initiate communications with the computer. The computer will then display the message "Connected to panel..." and continue with communications.

The DTS-1 must remain connected to the phone line in local mode during the downloading.

5600Ω RESISTOR

Switch to control zone programmed for forced answer

MODEM

TM1/ RJ31-X

RED
GRN

ON-SITE COMPUTER

PWR   TEL

- LINE
- LOCAL

DIAL TONE

SLOW

FAST

DSC   DTS-1

The TM1 or RJ31-X jack connects single wires into one end, and a telephone cord into the other end. Although this jack is not necessary, it simplifies the connection of the PC4020 to a modem. If a TM1 or RJ31-X is not readily available, use a telephone cord. Plug one end into the modem, cut off the other end, and wire the green and red wires into the TIP and RNG on the PC4020.

APPENDIX A

List of Available ASCII Characters

	032	048 0	064 @	080 P	096 `	112 F	160 —	176 ᗡ	192 ‡	208 ᴇ	224 α	240 p
	033 !	049 1	065 A	081 Q	097 a	113 ◥	161 ▫	177 ア	193 ﾁ	209 ﾑ	225 ä	241 q
	034 "	050 2	066 B	082 R	098 b	114 ┍	162 ┌	178 ｲ	194 ﾂ	210 ✗	226 β	242 θ
	035 #	051 3	067 C	083 S	099 c	115 ≡	163 ┘	179 ｳ	195 ﾃ	211 モ	227 ε	243 ∞
	036 ‡	052 4	068 D	084 T	100 d	116 t	164 ＼	180 エ	196 ├	212 ﾔ	228 μ	244 Ω
	037 %	053 5	069 E	085 U	101 e	117 u	165 ▪	181 ｵ	197 ﾅ	213 ﾕ	229 σ	245 ü
	038 &	054 6	070 F	086 V	102 f	118 v	166 ヲ	182 ｶ	198 ﾆ	214 ﾖ	230 ρ	246 Σ
	039 '	055 7	071 G	087 W	103 g	119 w	167 ｱ	183 ‡	199 ﾇ	215 ﾗ	231 g	247 π
	040 (	056 8	072 H	088 X	104 h	120 ×	168 ｨ	184 ｸ	200 ﾈ	216 ﾘ	232 ∫	248 ✗
	041)	057 9	073 I	089 Y	105 i	121 ﾕ	169 ゥ	185 ｹ	201 ﾉ	217 ﾙ	233 ⌐	249 y
	042 ∗	058 :	074 J	090 Z	106 j	122 z	170 ｴ	186 ｺ	202 ﾊ	218 ﾚ	234 j	250 ‡
	043 +	059 ;	075 K	091 [	107 k	123 {	171 ｵ	187 ｻ	203 ﾋ	219 ﾛ	235 ፨	251 万
	044 ,	060 <	076 L	092 ¥	108 l	124		172 ﾔ	188 ｼ	204 ﾌ	220 ﾜ	236 ₵	252 円
	045 −	061 =	077 M	093]	109 m	125 }	173 ユ	189 ｽ	205 ﾍ	221 ﾝ	237 £	253 ÷
	046 .	062 >	078 N	094 ^	110 n	126 ÷	174 ﾖ	190 ｾ	206 ﾎ	222 ゛	238 ñ	254
	047 /	063 ?	079 O	095 _	111 o	127 ←	175 ﾂ	191 ｿ	207 ﾏ	223 ゜	239 Ö	255 ▮

APPENDIX B

List of Diagnostics

E = Communication error
T = Tamper open
LV = Low voltage to module

Indicated # Number	For Future Use
1	
2	
3	
4	
5	
6	
7	
8	

Indicated Number	LCD4500 Module Number
9	1
10	2
11	3
12	4
13	5
14	6
15	7
16	8
17	9
18	10
19	11
20	12
21	13
22	14
23	15
24	16

Indicated Number	PC4400 RS-232 Module Number
25	1

Indicated Number	PC41XX Zone Module Number
26	1
27	2
28	3
29	4
30	5
31	6
32	7
33	8
34	9
35	10
36	11
37	12
38	13
39	14
40 For future use	15
41 For future use	16

Indicated Number	PC4216 O/P Module Number
42	1
43	2
44	3
45	4
46	5
47	6
48	7
49	8
50	9

Indicated Number	PC4204 O/P Module Number
51	1
52	2
53	3
54	4
55	5
56	6
57	7
58	8
59	9
60	10
61	11
62	12
63	13
64	14
65	15
66	16

UL LISTED COMMERCIAL AND RESIDENTIAL INSTALLATIONS

The installation requirements listed below must be met for the following grades of service.

Grade A
Local

The installation must have a bell UL Listed for mecantile local alarms (AMSECO MBL10B).

The digital communicator must be enabled.

The control panel must be in the PC4004C Attack Resistant Enclosure.

Grade B Central Station and
Grade A Police Connect

The installation must have a bell UL Listed for mecantile local alarms (AMSECO MBL10B).

The digital communicator must be enabled.

The control panel must be in the PC4004C Attack Resistant Enclosure.

Grade C
Central Station

The digital communicator must be enabled.

The control panel must be in the PC4004C Attack Resistant Enclosure.

All Commercial Installations

• The entry delay must not exceed 60 seconds
• The exit delay must not exceed 60 seconds.
• The minimum bell cutoff time is 15 minutes.

Residential Installations

• The entry delay must not exceed 45 seconds
• The exit delay must not exceed 60 seconds.
• The minimum bell cutoff time is 4 minutes.

Programming

The notes in the programming sections describing the system configurations for UL Listed installations must be implemented.

Control of the Protected Premises

In order to have a UL Certificated system the protected area is to be under the responsibility of one ownership and management (i.e. one business under one name). This may be a group of buildings attached or unattached with different addresses but under the responsibility of someone having mutual interest. The person of mutual interest is not the alarm installing company.

Bell Location

The alarm sounding device (bell) must be located where it can be heard by the person or persons responsible for maintaining the security system during the daily arming cycle.

Protection of the Control Unit

The local control and the local power supply must be protected by one of the following ways:

• The control unit and audible alarm device must be in a protected area which is armed 24 hours a day.

• Each partition shall arm the area protecting the control unit and the audible alarm device power supply. This may require duplicate protection armed by each partition. Access to this protected area, without causing an alarm, will require that all partitions be disarmed.

In all cases described above, the protected area for the control unit must be programmed as not bypassable.

Casual Users

The installer should caution the user(s) to not give system information to casual users (e.g. codes, bypass methods, etc. to baby-sitters or service people). Only the One-Time Use codes should be given to casual users.

User Information

The installer should advise the users and note in the user instruction manual:

• Service organization name and telephone number
• The programmed exit time
• The programmed entry time

Limited Warranty

Digital Security Controls Ltd. warrants 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 and that in fulfilment of any breach of such warranty, Digital Security Controls Ltd. shall, at its option, repair or replace the defective equipment upon return of the equipment to its factory. This warranty applies only to defects in parts and workmanship and not to damage incurred in shipping or handling, or damage due to causes beyond the control of Digital Security Controls Ltd. such as lightning, excessive voltage, mechanical shock, water damage, or damage arising out of abuse, alteration or improper application of the equipment.

The foregoing warranty shall apply only to the original buyer, and is and shall be in lieu of any and all other warranties, whether expressed or implied and of all other obligations or liabilities on the part of Digital Security Controls Ltd. This warranty contains the entire warranty. 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.

In no event shall Digital Security Controls Ltd. be liable for any direct or indirect or consequential damages, loss of anticipated profits, loss of time or any other losses incurred by the buyer in connection with the purchase, installation or operation or failure of this product.

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.