Vigilant VS1 and VS2 Technical Reference Manual

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FCC compliance Class A: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Contact information For contact information, see vigilant-fire.com .

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Important information

Limitation of liability

This product has been designed to meet the requirements of NFPA 72 *National Fire Alarm and Signaling Code, NFPA 720 Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment*, UL 864 *Standard for Control Units and Accessories for Fire Alarm Systems,* and ULC-S527 *Standard for Control Units for Fire Alarm Systems,* UL 2017 *General Purpose Signaling Devices and systems.* Installation in accordance with this manual, applicable codes, and the instructions of the authority having jurisdiction (AHJ) is mandatory. UTCD Fire & Security shall not under any circumstances be liable for any incidental or consequential damages arising from loss of property or other damages or losses owing to the failure of UTC Fire & Security products beyond the cost of repair or replacement of any defective products. UTC Fire & Security reserves the right to make product improvements and change product specifications at any time.

While every precaution has been taken during the preparation of this manual to ensure the accuracy of its contents, UTC Fire & Security assumes no responsibility for errors or omissions.

FCC compliance statement

This equipment can generate and radiate radio frequency energy. If the equipment is not installed in accordance with this manual, it may cause interference to radio communications. This equipment has been tested and found to comply with the limits for Class A computing devices pursuant to Subpart B of Part 15 of the FCC Rules. These rules are designed to provide reasonable protection against such interference when this equipment is operated in a commercial environment. Operation of this equipment is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

SA-DACT FCC information

Cautions

- To ensure proper operation, this dialer must be installed according to the enclosed installation instructions. To verify that the dialer is operating properly and can successfully report an alarm, it must be tested immediately after installation, and periodically thereafter, according to the enclosed test instructions.
- In order for the dialer to be able to seize the phone line to report an alarm or other event when other customer equipment (telephone, answering system, computer modem, etc.) connected to the same line is in use, the dialer *must* be connected to a properly installed RJ-31X jack. The RJ-31X jack must be connected in series with, and ahead of, all other equipment attached to the same phone line. Series installation of an RJ-31X jack is depicted in the wiring diagram. If you have any questions concerning these instructions, you should consult your telephone company or a qualified installer.

Testing

When programming emergency numbers or making test calls to emergency numbers, remain on the line and briefly explain to the dispatcher the reason for the call. Perform programming and testing activities in the off-peak hours, such as early morning or late evenings.

Compliance

- This dialer complies with Part 68 of the FCC rules and the requirements adopted by the Administrative Council for Terminal Attachments (ACTA). A label attached to the dialer contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this information must be provided to the telephone company.
- The plug and jack used to connect the dialer to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by ACTA. The dialer must be connected to a compliant RJ-31X or RJ-38X jack using a compliant cord. If a modular telephone cord is supplied with the dialer, it is designed to meet these requirements. See installation instructions for details.
- A ringer equivalence number (REN) is used to determine how many devices you can connect to a telephone line. If the total REN value for all devices connected on a telephone line exceeds that allowed by the telephone company, the devices may not ring on an incoming call. In most (but not all) areas the total REN value should not exceed 5.0. To be certain of the total REN value allowed on a telephone line, contact the local telephone company.

- For products approved after July 23, 2001, the REN is part of the product identifier in the format US:AAAEQ##TXXXX. The digits ## represent the REN without a decimal point. Example: 03 is an REN of 0.3. For earlier products the REN is listed separately.
- If the dialer is harming the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice isn't practical, the telephone company will notify you as soon as possible. You will also be advised of your right to file a complaint with the FCC, if you believe it is necessary.
- The telephone company may make changes to its facilities, equipment, operations, or procedures that could affect the operation of the dialer. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.
- If you are experiencing problems with the dialer, contact the manufacturer for repair or warranty information. If the dialer is harming the telephone network, the telephone company may request that you disconnect the dialer until the problem is resolved.
- The dialer contains no user serviceable parts. In case of defects, return the dialer for repair.
- You may *not* connect the dialer to a public coin phone or a party line service provided by the telephone company.

Industry Canada information

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

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

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

Caution: Users should not attempt to make connections themselves, but should contact the appropriate electrical inspection authority, or electrician, as appropriate.

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

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

Minimum system requirements

The table below lists the minimum hardware requirements for each type of system for which the control panel is listed.

Table 1: Minimum hardware requirements for applications

System	Equipment needed
Protected Premises (Local) Fire Alarm System	Control panel Appropriately sized batteries
Auxiliary Fire Alarm System, Local Energy Type	Control panel Appropriately sized batteries CTM module
Remote Supervising Station Fire Alarm System	Control panel Appropriately sized batteries SA-DACT or RPM module
Central Station Fire Alarm System	Control panel Appropriately sized batteries SA-DACT or RPM module

To get started

If you are just starting out, follow the items in this checklist to prepare, install, wire, and program your fire alarm control panel.

1. Prepare the site. Make sure the installation location is free from construction dust and debris and extreme temperature ranges and humidity.
2. Unpack the equipment.
3. Install the panel backbox. See “Panel backbox installation” on page 2 for backbox dimensions.
4. Install the panel electronics in the panel backbox. See “Panel electronics installation” on page 3.
5. Remove the clear protective plastic from the front panel display.
6. Install the optional panel accessories. Refer to each component’s installation sheet instructions.
7. Review Chapter 1 “Installation and wiring” starting on page 1.

   WARNING: Make sure that the AC power circuit breaker is off before connecting wires to the terminal block.

8. Connect the field wiring. Meter for opens, grounds, and shorts before connecting.
9. Connect AC power and ground wiring. See “AC power wiring” on page 5. The panel cannot be started on batteries only.
10. Connect panel low voltage wiring. See “Panel low voltage wiring” on page 6.
11. Turn on AC power.
12. Connect the batteries. See “Battery wiring (TB8)” on page 7.
13. Program the panel. See Chapter 2 “Front panel programming” on page 29. If you are using the configuration utility, refer to the online help.
14. Test the system for proper operation.

Chapter 1
Installation and wiring

Summary

This chapter covers all control panel wiring, such as AC power, NACs, device loops, and battery wiring.

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Panel backbox installation

The panel backbox can be surfaced mounted or semiflush mounted.

To surface mount the panel backbox:

1. Position the panel backbox on the finished wall surface.
2. Fasten the panel backbox to the wall surface where indicated.

To semiflush mount the panel backbox:

1. Frame the interior wall (as required) to support the full weight of the backbox and standby batteries.
2. Install a semiflush trim ring (optional) to the backbox.
3. Fasten the panel backbox to the framing studs where indicated.

Figure 1: Surface and semiflush mounting details

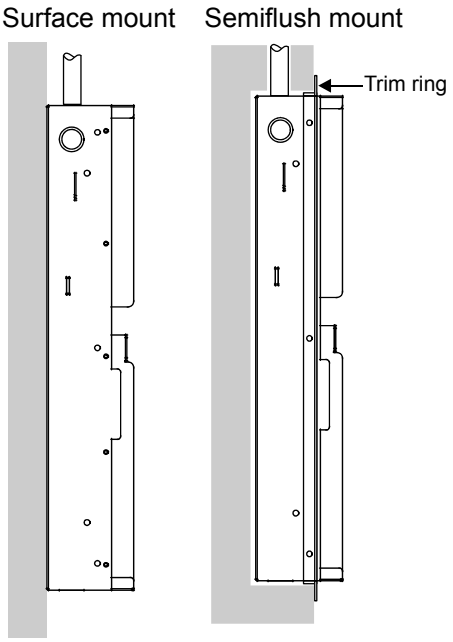


Figure 2: Panel backbox, backbox with door, and backbox with door and trim ring attached

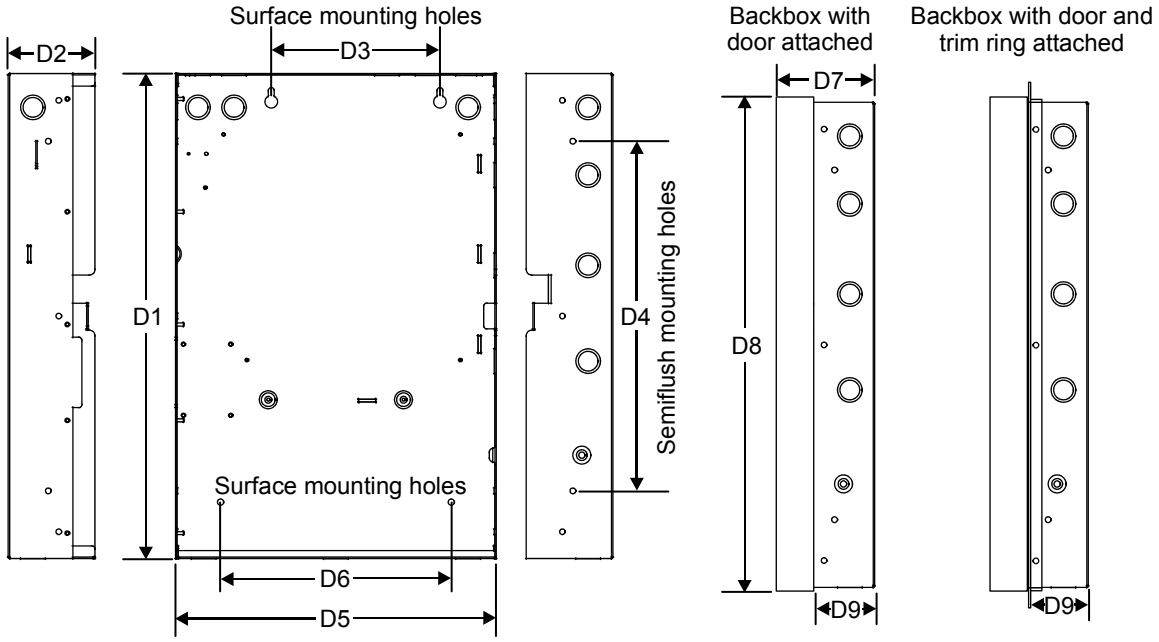


Table 2: Backbox and backbox with door dimensions (in. and cm)

Model	D1 [1]	D2	D3	D4	D5 [1]	D6	D7	D8	D9
VS1	21.50	3.85	7.5	15.50	14.25	10.25	4.9	23.6	2.7
	(54.6)	(9.8)	(19)	(39.4)	(36.2)	(26.0)	(12.4)	(59.9)	(6.8)
VS2	28.0	3.85	9.0	22.0	15.75	10.25	4.9	30.1	2.7
	(71.1)	(9.8)	(22.8)	(55.8)	(40.0)	(26.0)	(12.4)	(76.4)	(6.8)

[1] Add 1-1/2 in. (3.81 cm) to D1 and D5 dimensions for trim kit. The trim kit provides .75 inches (1.9 cm) of trim to the top, bottom, and sides of the panel backbox.

Panel electronics installation

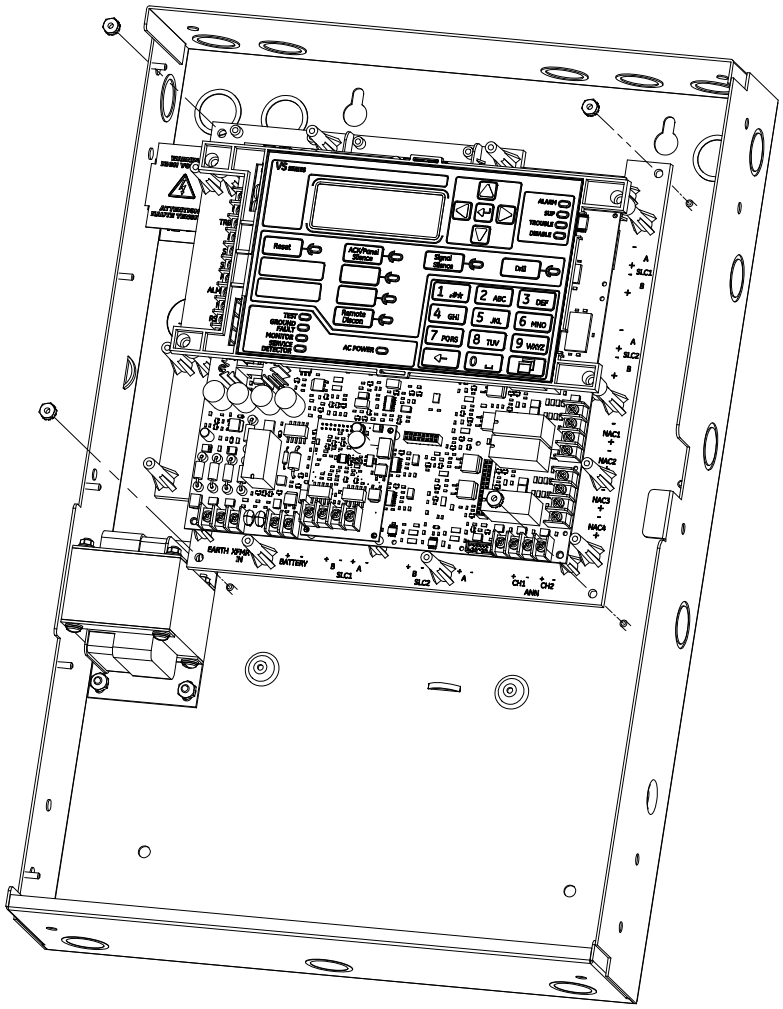
To reduce possible damage to the panel's electronics during backbox installation, the electronics are packaged separately and must be installed in the panel backbox. The electronics are shipped already mounted to a plastic backplane.

Note: Be sure that any possibility for construction damage and vandalism has passed before installing the panel electronics.

To install the panel electronics in the backbox:

1. Mount and connect the panel option modules (SA-DACT, SA-ETH, SA-232, SA-CLA, and V-SCL) to the main panel electronics or backplane.
2. Place the panel electronics in the panel backbox, so the four threaded studs in the backbox protrude through the holes in the corners of the backplane. Use the 10-24 nuts provided with the panel electronics to secure the backplane.
3. Confirm that the AC is off or disconnected so that no current is flowing from the AC terminal block. Connect the secondary wires from the transformer to proper terminals.

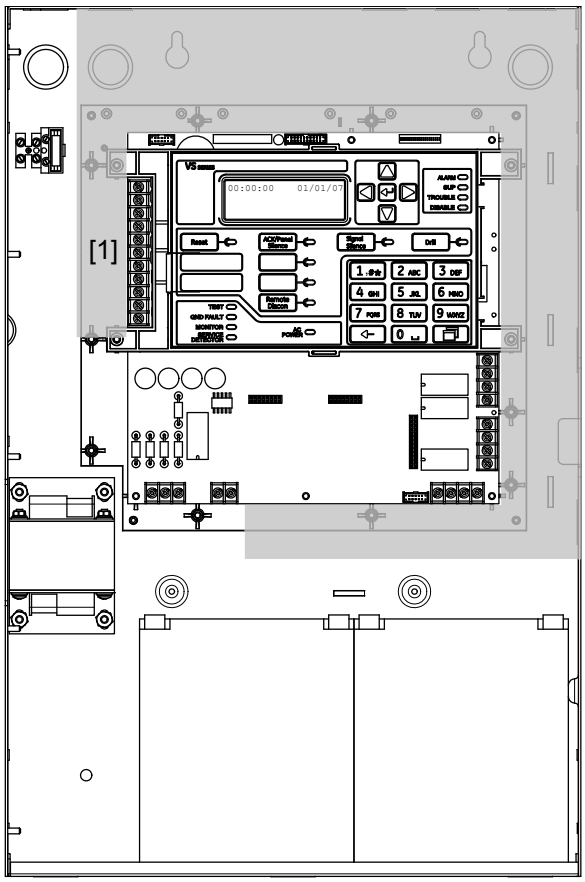
Figure 3: Panel electronics installation



Panel backbox wire routing

Using the diagram below, keep power-limited wiring in the shaded area and nonpower-limited wiring in the unshaded area at all times.

Figure 4: Panel backbox wire routing



[1] Power-limited only when connected to a power-limited source. If connected to a nonpower-limited source, all wiring on terminal block TB3 must be NPFPL, NPFPLR, or NPFPLP rated wire or equivalent, in accordance with the NFPA 70 *National Electric Code* and routed separately from all power-limited wiring.

AC power wiring

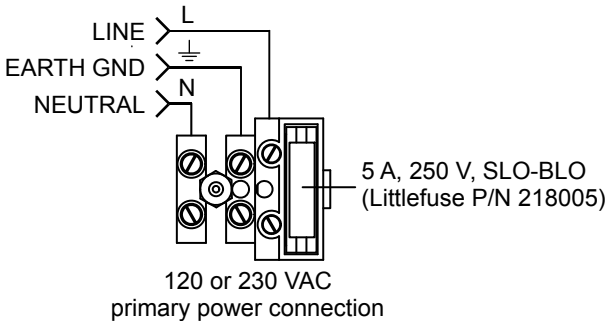
Circuit specifications

- VS1 panel: 120 V, 60 Hz, 1.3 A or 230 V, 50/60 Hz, 0.62 A from dedicated branch supply
- VS2 panel: 120 V, 60 Hz, 2.0 A or 230 V, 50/60 Hz, 0.97 A from dedicated branch supply

WARNING: Never replace the fuse while the circuit is energized. The replacement fuse must be of equivalent size and type.

Caution: The middle connection (EARTH GND) on the terminal block makes a mechanical connection to the chassis even with the ground wire removed.

Figure 5: AC power wiring



Note: See “Component descriptions” on page 150 for the location of the wiring block in the backbox.

Panel low voltage wiring

Circuit specifications

- Circuit voltage: 24 VAC
- All circuits are power-limited unless otherwise noted

Figure 6: Transformer secondary wiring location

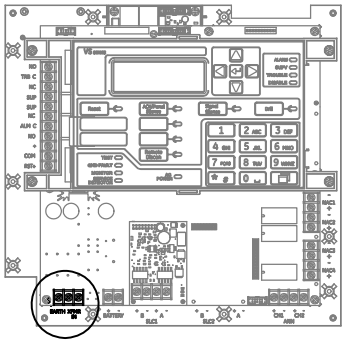
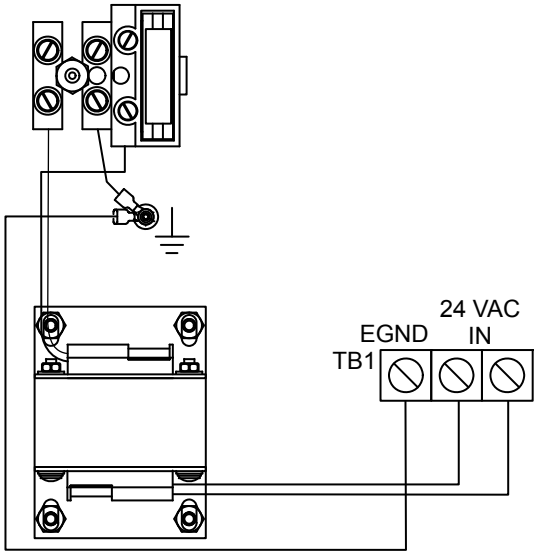


Figure 7: Transformer primary and secondary wiring



Battery wiring (TB8)

Caution: Connect and disconnect standby batteries only with the AC power applied.

The control panel has a 24 VDC rechargeable battery circuit that is capable of charging up to two 26 Ah sealed lead acid batteries.

The table below lists the batteries that can be installed in the control panel cabinets. Up to two 11 Ah batteries will fit in the VS1 control panel cabinet and two 18 Ah batteries will fit in the VS2 point control panel cabinet. If larger batteries are required, you must use an approved battery cabinet. To determine which battery the system requires, use the “Battery calculation worksheet” on page 210.

Table 3: Batteries for VS1 and VS2 panels

Model	Manufacturer	Rating
12V4A	GS Battery, Inc.	12 volts, 4.5 Ah
12V6A5	GS Battery, Inc.	12 volts, 7.2 Ah
12V10A	GS Battery, Inc.	12 volts, 11 Ah
12V17A	GS Battery, Inc.	12 volts, 18 Ah
12V24A	GS Battery, Inc.	12 volts, 26 Ah

Figure 8: Battery wiring location

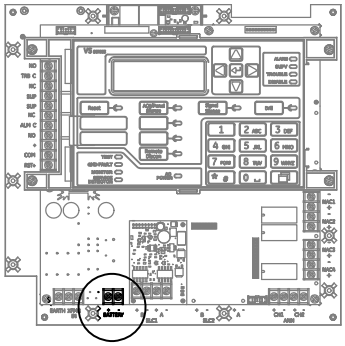
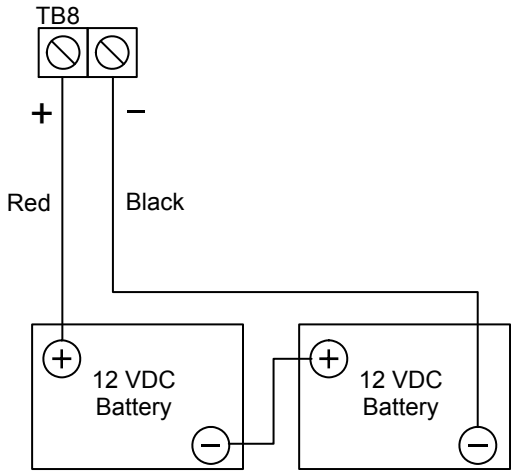


Figure 9: Battery wiring



Notification appliance circuit wiring (TB2)

The control panel provides either two or four notification appliance circuits depending on which model you have. Each circuit can be individually configured for continuous, temporal, synchronized, coded, or city tie output.

Circuit specifications

- Class B or Class A.
- Circuit voltage: 24 VFWR, regulated
- Circuit current

  Vigilant VS1 panel:
  3.75 A total, 2.5 A max. per circuit at 120/230 VAC 60 Hz input voltage
  3.0 A total, 2.5 A max. per circuit at 230 VAC 50 Hz input voltage

Vigilant VS2 panel:
6.0 A total, 2.5 A max. per circuit at 120/230 VAC 60 Hz input voltage
5.0 A total, 2.5 A max. per circuit at 230 VAC 50 Hz input voltage

- Max. resistance: 26 Ω total
- Max. capacitance: 0.35 µF
- EOLR: 15 kΩ, 1/2 W (P/N EOL-15)
- Synchronization: For NACs wired Class A or Class B, signal synchronization is supported system-wide (all NAC circuits).
- Ground fault impedance: 0 to 5 kΩ
- Power-limited and supervised

Notes

- On the Vigilant VS1 panel, Class A wiring is available only when the optional SA-CLA expansion card is installed. Refer to the *SA-CLA Class A Interface Card Installation Sheet* (P/N 3101094) and to the topic “SA-CLA wiring” on page 22.
- Listed EOLRs must be installed as shown for proper supervision.
- Marking indicates the output signal polarity when the circuit is active. Polarity reverses when the circuit is not active. Wire notification appliances accordingly. Notification appliance polarity is shown in the active state.
- Installation limits are subject to acceptance by the AHJ.

Figure 10: NAC wiring location

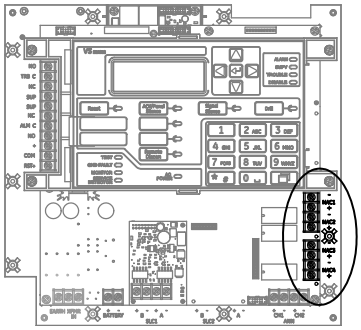


Figure 11: VS1 panel Class B NAC wiring

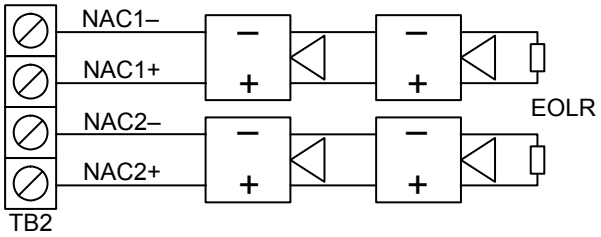


Figure 12: VS2 panel Class B NAC wiring

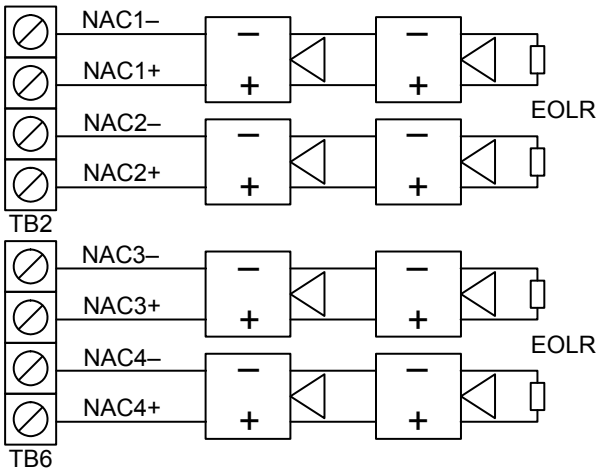
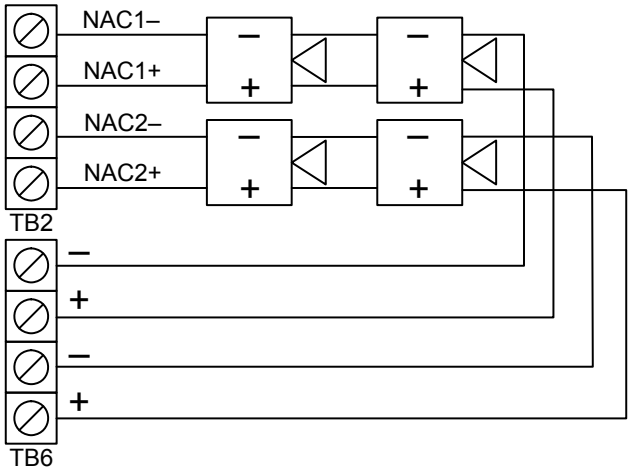


Figure 13: VS2 panel Class A NAC wiring



Note: For VS1 Class A NAC wiring, see “SA-CLA wiring” on page 22.

Addressable device loop wiring

The VS1 and VS2 control panels each have one addressable device circuit that you can use with addressable detectors and modules. The VS1 supports up to 64 devices. The VS2 supports up to 250 addressable devices on the initial loop and an additional 250 devices on the optional second loop. The loop circuit is supervised for opens, shorts, and grounds.

Note: For a complete list of devices that can be connected to this circuit, refer to the *VS1 and VS2 Series Compatibility List* (P/N 3101065).

Circuit specifications

- Class B or Class A
- Communication line voltage: Maximum 20.6 V peak-to-peak
- Circuit current: 0.5 A max.
- Total resistance: 66 Ω max.
- Total capacitance: 0.7 µF max.
- Resistance between isolators: Limited only by overall wire run lengths
- Isolators: 64 maximum (total both isolator bases and modules)
- Ground fault impedance: 0 to 5 kΩ
- Power-limited and supervised
- Synchronization: Signal synchronization is supported on a system-wide basis (all device loops) when using GSA-CC1S, GSA-MCC1S, or GSA-T3T4 addressable notification appliance circuit (NAC) modules and Genesis or Enhanced Integrity notification appliances

Installation limits are subject to acceptance by the AHJ.

Figure 14: Device loop wiring location

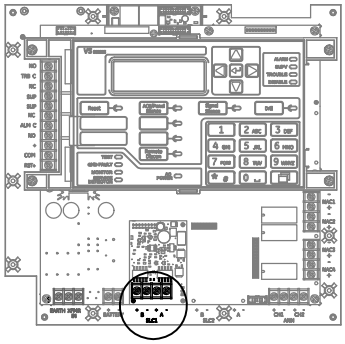


Figure 15: Class B wiring (Style 4)

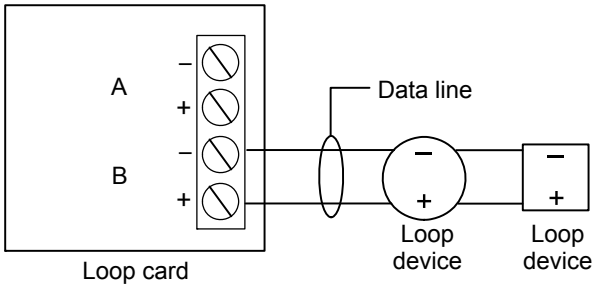


Figure 16: Class A wiring (Style 6)

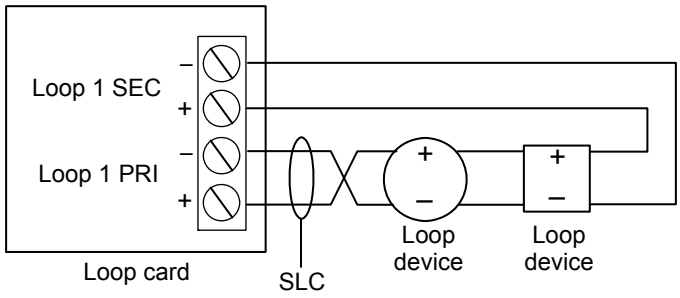
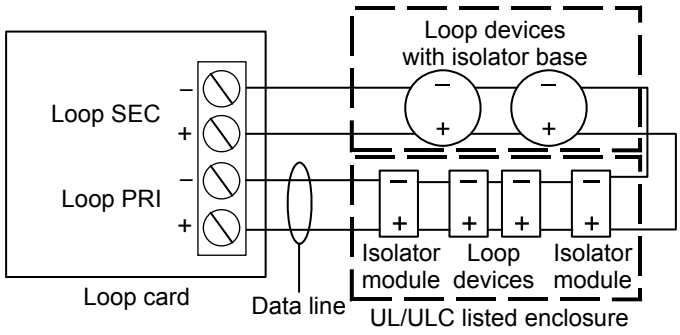


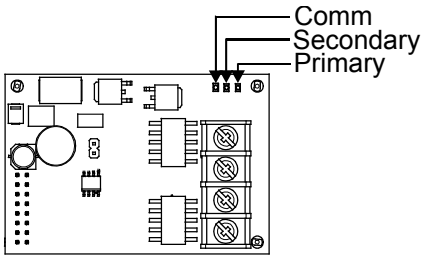
Figure 17: Class A wiring (Style 7)



Loop card LEDs

There are three LEDs on the card that indicate loop communication status. Primary is the primary communication circuit. Secondary is the Class A return communication when wiring is Class A.

Figure 18: Loop card LEDs



Note: “Comm” refers to overall communication

Alarm, trouble, and supervisory relay wiring (TB3)

The control panel provides alarm, trouble, and supervisory relays.

- The trouble relay changes over on any trouble event (common trouble)
- The supervisory relay changes over on any supervisory event (common supervisory)
- The alarm relay changes over on any alarm event (common alarm)

Note: Relay circuits can only be connected to power-limited sources. Relays are not supervised.

Relay specifications

- Alarm and trouble: Form C, 24 VDC at 1 A resistive
- Supervisory: Form A, 24 VDC at 1 A resistive

Figure 19: Terminal wiring location

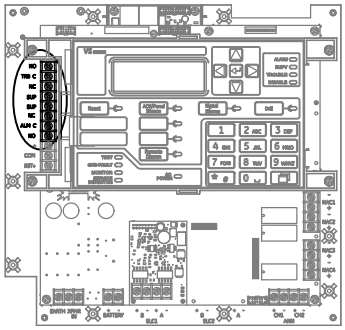
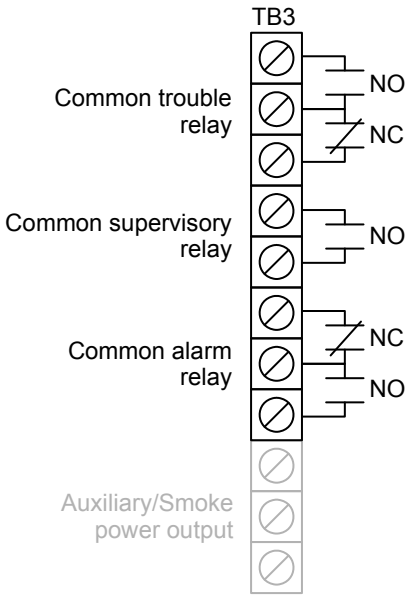


Figure 20: Relay wiring terminals



Note: The figure above shows the panel in a normal state.

Remote annunciator wiring (TB4)

The control panel provides a connection for up to eight remote annunciators.

Circuit specifications

- Class B or Class A

  Note: The Vigilant VS1 panel requires the SA-CLA card to support Class A and redundant Class B circuits. Refer to “SA-CLA wiring” on page 22, or to installation sheet P/N 3101094.

- Circuit voltage: 2.55 V peak-to-peak average
- Circuit current: 30 mA max.
- Circuit resistance: 90 Ω
- Circuit capacitance: 0.3 µF
- Ground fault impedance: 0 to 5 kΩ
- RS-485 communications speed: 9600 baud
- Wiring: 18 to 14 AWG (1.0 to 2.5 mm^2) twisted pair
- Wire run: 4,000 feet (1,219 m) max.
- Power-limited and supervised

Notes

- Refer to the *R-Series Remote Annunciators and Expander Installation and Operation Guide* (P/N 3100969) or the R-Series annunciator installation sheets for detailed wiring information
- Installation limits are determined by the AHJ

Figure 21: Remote annunciator wiring location

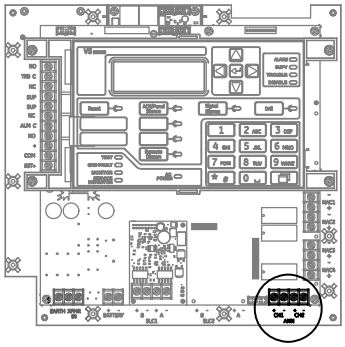
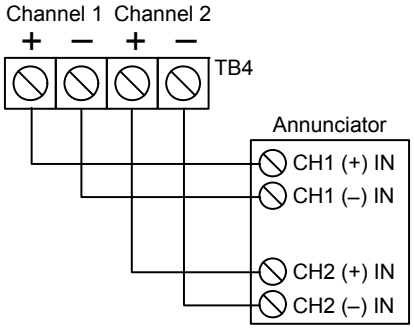
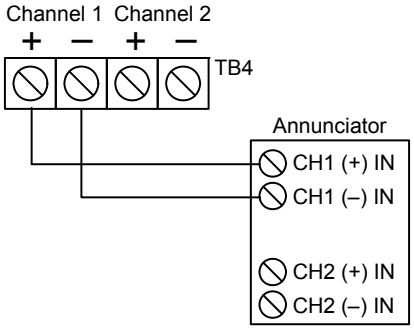


Figure 22: Annunciator channel wiring (Class A)



Note: To use the Class A option, you must install the SA-CLA module in the VS1.

Figure 23: Annunciator channel wiring (Class B)



Auxiliary/smoke power output wiring

The control panel provides resettable and continuous AUX power output circuits. Use the resettable AUX power output for devices such as four-wire detectors or beam detectors. Use the continuous AUX power output for devices such as remote annunciators or door holders.

Notes

- If you do not need resettable AUX power, you can configure the resettable AUX power output to supply continuous power.
- For a complete list of devices that can be connected to this circuit, refer to the *VS1 and VS2 Series Compatibility List* (P/N 3101065).

Circuit specifications

- Circuit voltage range: 21.9 to 28.3 V
- AUX 1 + AUX 2 can supply 1.5 A total. If more than 1.5 A is required, you must use a power-limited and regulated 24 VDC auxiliary/booster power supply that is UL/ULC and FM Listed (if the installation requires FM regulation) for fire protective signaling systems.
- For a complete list of auxiliary/booster power supplies, refer to the VS1 and VS2 Series Compatibility List (P/N 3101065). Also refer to the Technical Reference Manual (P/N 387515) for a list of compatible power supplies, if you need to power GSA-REL module.
- Continuous circuit (AUX power 1): 24 VDC nominal at 500 mA. Use this circuit to supply 24 VDC continuous power. A SMK module is required when using the GSA-UM module to support two-wire smoke detectors.
- Resettable circuit (AUX power 2): 24 VDC nominal at 500 mA (1 A possible if you reduce total available NAC power by 500 mA). Use this circuit to provide 24 VDC resettable power. You can configure AUX power 2 as a continuous circuit if you do not need a resettable circuit.
- Special application circuits
- Ground fault impedance: 0 to 5 kΩ
- Supervised and power-limited

Figure 24: Auxiliary/smoke power wiring location

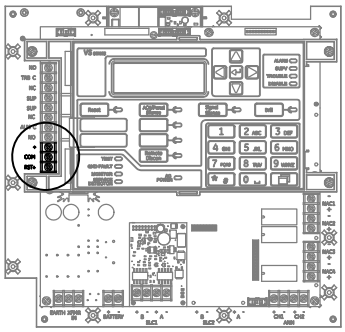
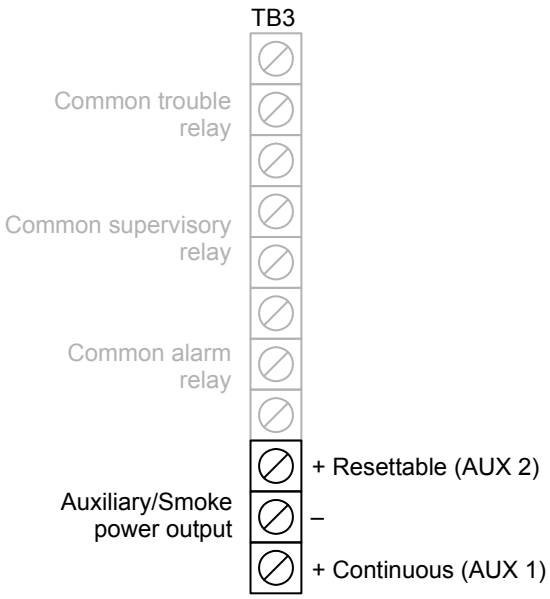


Figure 25: Auxiliary/smoke power output terminals



SA-DACT wiring

The optional SA-DACT provides communications between the control panel and the central station over a telephone line system. The SA-DACT is listed for use with the following DACRs.

Table 4: DACRs used with the SA-DACT

Receiver	Models	Formats
Ademco	685	Contact ID
FBII	CP220	Contact ID
Osborne-Hoffman	OH2000 and OH2000E with an OH2000E-LC line card installed (see note below)	Contact ID
Radionics	D6600	Contact ID
Silent Knight	9500, 9800	Contact ID
Sur-Gard	MLR1, MLR2, MCDI TLR, TLR+, SG-SLR, MLR2000	Contact ID

Note: If the line card firmware is V2.2 or later, use the default CMS network settings. If the line card firmware is V2.2 or earlier, the Timeout Seconds must be set to 60, the Hello Timer set to 75, and the Line Cut timer in the line card itself set to 175 seconds. If you are unsure of the firmware version in the receiver or there are communication faults between the panel and the receiver, then these settings are recommended.

Phone lines connect to the dialer using connectors on the dialer's main circuit board. Phone line 1 connects to connector J1 and phone line 2 connects to connector J4.

The SA-DACT comes with two, eight position, four conductor modular cords. Connect one end of each cord to connector J1 and J2. Connect the other end of each modular cord to either an RJ-31X or RJ-38X. Wire the RJ-31X block as shown below.

Note: Install a listed secondary telephone protector between the telco network and the SA-DACT card. The SA-DACT card must be the next piece of equipment that connects to the telephone company (TELCO) telephone lines.

Circuit specifications

- Operating current (standby or alarm): 41 mA nominal, 100 mA max.
- Phone line type: One or two loop-start lines on a public, switched network
- Phone line connector: RJ-31/38X (C31/38X)

Figure 26: SA-DACT wiring location

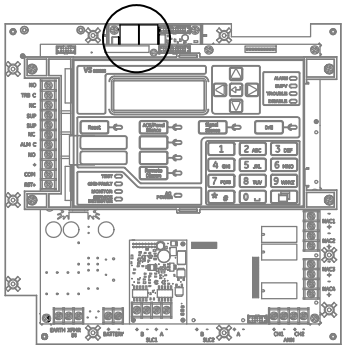
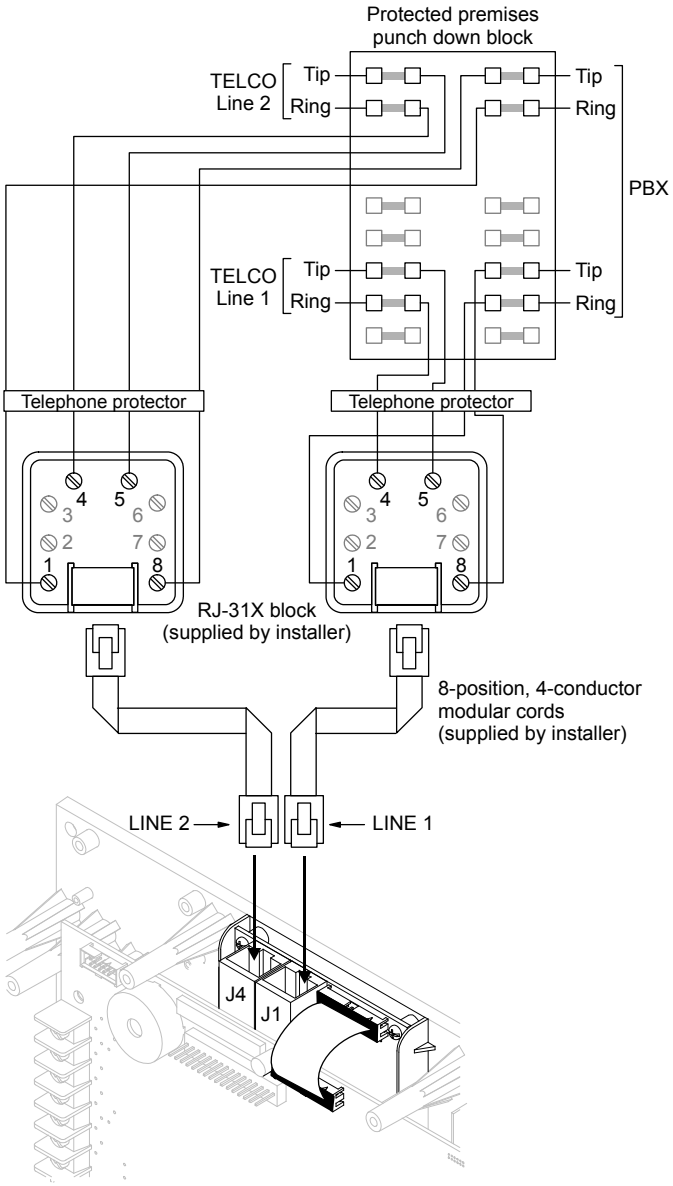


Figure 27: SA-DACT wiring



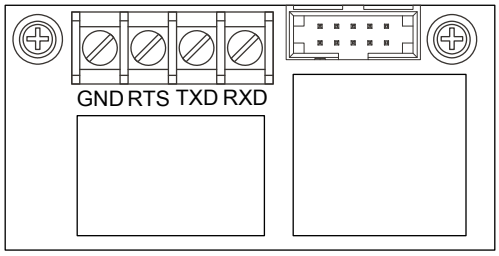
SA-232 wiring

The optional RS-232 card can be wired to a printer to print system events or wired to a computer to read from and write to the panel using the configuration utility.

Circuit specifications

- Serial communications
  Asynchronous communications maximum resistance: 13 Ω
  Maximum capacitance: 0.7 µF
- Wire length: 50 feet max.
- Signal voltage: ± 10 V
- Operating current (standby or alarm): 13 mA nominal, 20 mA max.
- Printer communication speed: 9600 baud
- Power-limited and unsupervised. Supervised when the Supervised Printer panel programming option is enabled.

Figure 28: SA-232 wiring terminals



Printer wiring

Note: The printer must be configured through programming for proper operation.

To install wiring to a printer:

1. Locate the serial port on the back of the printer.
2. Connect the DB-25 end of the RS-232 cable to the serial port on the back of the printer.
3. Connect the other end of the RS-232 cable to the RS-232 card.

Figure 29: Printer wiring

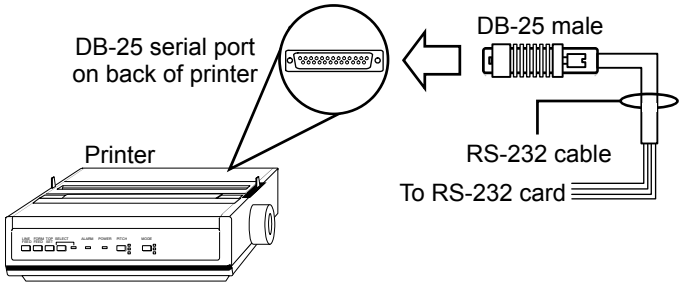


Figure 30: DB-25 pin connections

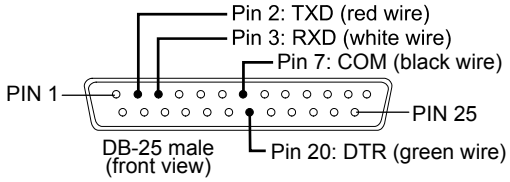


Table 5: SA-232 card to printer DB-25 connections

SA-232 card	DB-25	Description
GND	COM (pin 7)	Black wire (ground connection)
RTS	DTR (pin 20)	Green wire (printer supervision)
TXD	RXD (pin 3)	White wire (communication)
RXD	TXD (pin 2)	Red wire (communication)

Computer download wiring

To install wiring to a computer:

1. If you have a connected printer, disconnect it.
2. Locate a serial port (COM port) on the back of the computer.
3. Connect the DB-9 end of the RS-232 cable to the COM port on the back of the computer.
4. Connect the other end of the RS-232 cable to the RS-232 card.

Figure 31: Computer download wiring

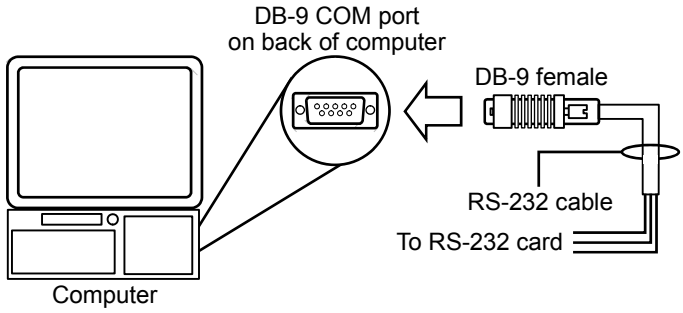


Figure 32: Pin designations on female DB-9 plug (back view)

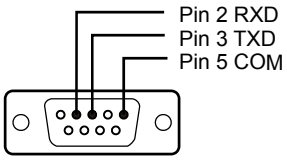


Table 6: SA-232 card to computer DB-9 connections

SA-232 card	DB-9	Description [1]
GND	COM (pin 5)	Black wire (ground connection)
RTS	-	Not used
TXD	RXD (pin 2)	White wire (communication)
RXD	TXD (pin 3)	Red wire (communication)

[1] Wire colors refer to Model 260097 RS-232 Cable

SA-CLA wiring

The SA-CLA card is used to supply wiring for Class A NACs and redundant Class B remote annunciator circuits on VS1 control panels.

Circuit specifications

- Operating current
  Standby: 3 mA
  Alarm: 60 mA max.
- Max. resistance: 26 Ω
- Max. capacitance: 0.35 µF
- Max. current: 2.5 A per circuit
- Ground fault impedance: 0 to 5 kΩ
- Power-limited and supervised

Figure 33: SA-CLA Class A NAC wiring

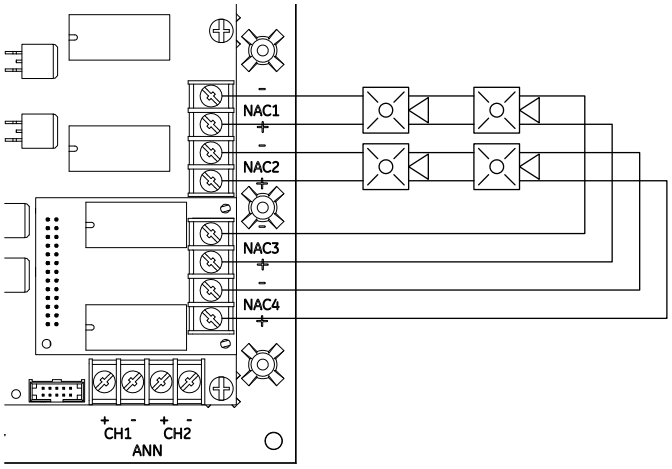
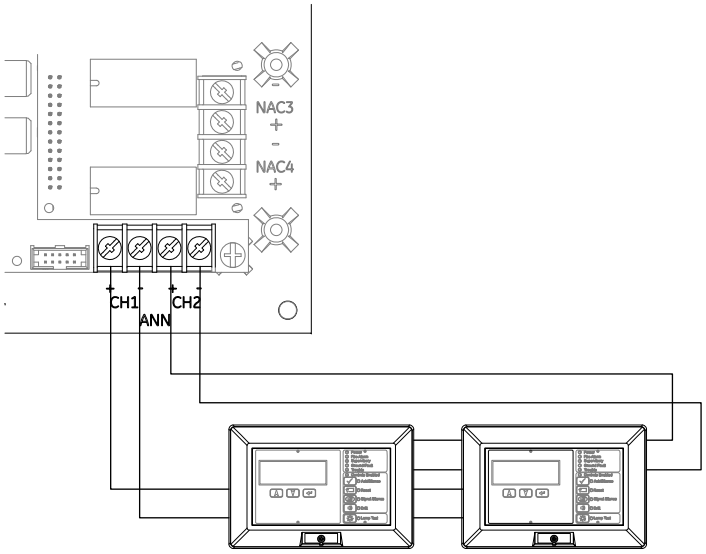


Figure 34: SA-CLA Redundant Class B remote annunciator circuit



SA-ETH wiring

The optional SA-ETH card provides a standard Ethernet network connection for connecting to a local network or connecting to a computer to read from or write to the panel using the configuration utility.

Circuit specifications

- Ethernet: 10/100BaseT
- Network cable: Cat 5/6 crossover cable or straight through cable
- Operating current (standby or alarm): 34 mA nominal, 41 mA max.
- Wire runs: 200 feet (60 m) max., Cat 5 cable (panel to communication equipment)

Figure 35: SA-ETH wiring

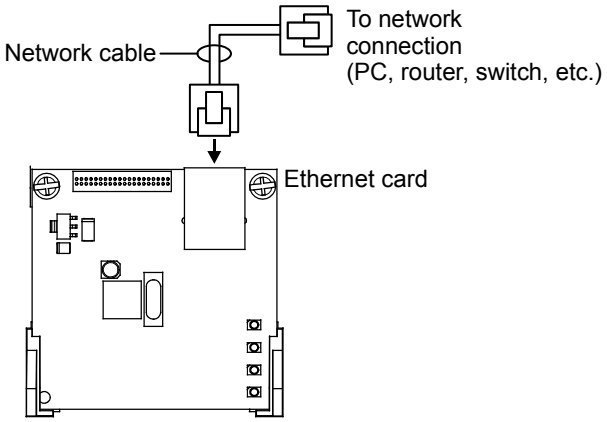
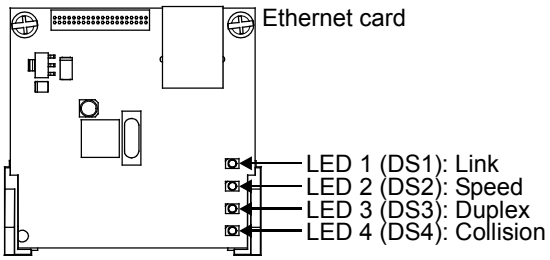


Figure 36: SA-ETH LEDs



CTM module wiring

The CTM (City Tie Module) is an interface between the control panel notification appliance circuit and a master box. It provides off-premises signal transmission for systems that must comply with NFPA requirements for Auxiliary Protective Systems. The CTM activates a local energy fire alarm box. For detailed information and wiring, refer to the *CTM Installation Sheet* (P/N 3101025).

Requirements

When connecting a CTM to the panel, the following hardware and programming requirements must be met:

- The CTM must be connected to either a panel NAC, or a NAC module
- The NAC used must be dedicated to CTM use only
- All alarm points or zones (if programmed as a zoned system) must be programmed to activate the dedicated NAC
- The NAC used must be programmed as City Tie

Wiring

The following wiring diagrams show how the polarity switches during an alarm condition.

Figure 37: CTM module wiring (panel in normal condition)

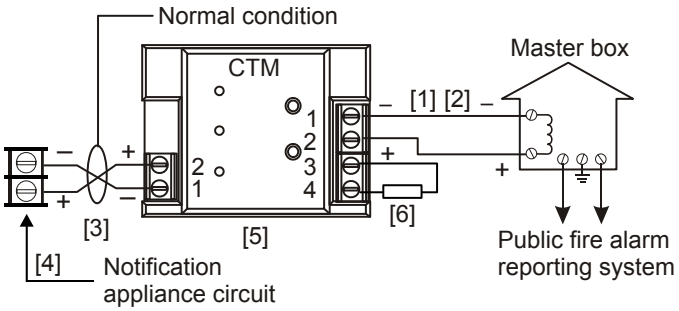
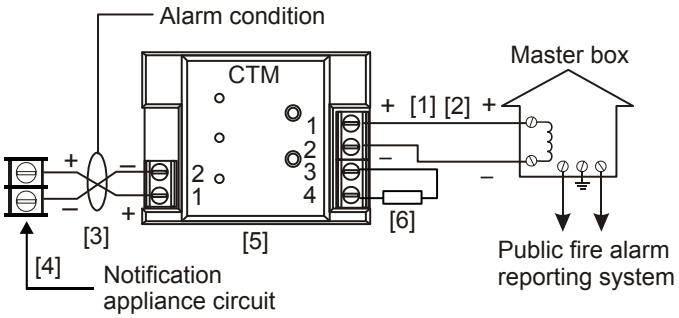


Figure 38: CTM module wiring (panel in alarm condition)



[1] 200 mA into a 14.5 Ω trip coil max. loop resistance = 25 Ω

[2] This circuit is nonpower-limited and is supervised for grounds and opens, but not shorts

[3] Supervised and power-limited

[4] NAC must be programmed for city tie

[5] CTM must be mounted in the same room as the panel

[6] 15 kΩ end-of-line resistor

RPM module wiring

The Reverse Polarity Module (RPM) is an interface between the control panel and a reverse polarity receiver. It provides off-premises signal transmission for systems that must comply with NFPA requirements. When used as a reverse polarity remote station transmitter, it can be connected to either a single circuit (alarm or alarm and trouble) or up to three circuits (alarm, supervisory, and trouble). Below are application diagrams for using the RPM module. For detailed information and wiring, refer to the *RPM Installation Sheet* (P/N 3100430).

Notes

- The RPM must be mounted in conduit, in an MFC-A enclosure, immediately adjacent to the panel.
- All relays are unsupervised and must be connected to a power-limited source.

Figure 39: Terminal wiring location

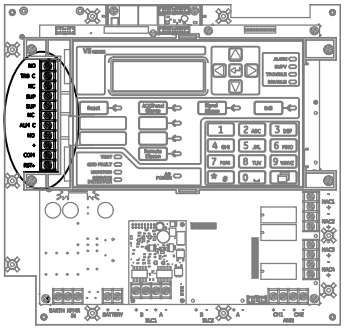


Figure 40: Alarm transmitted only

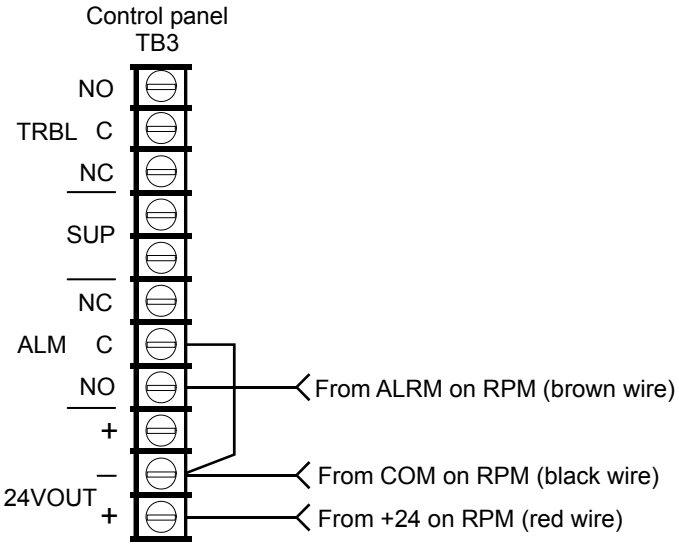
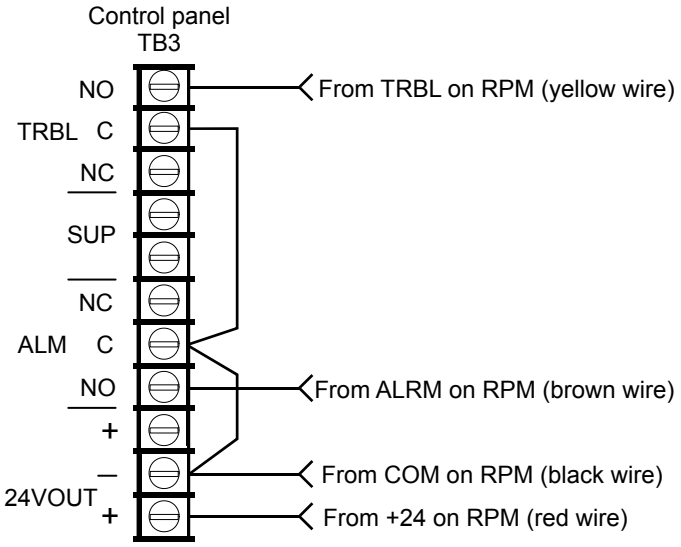
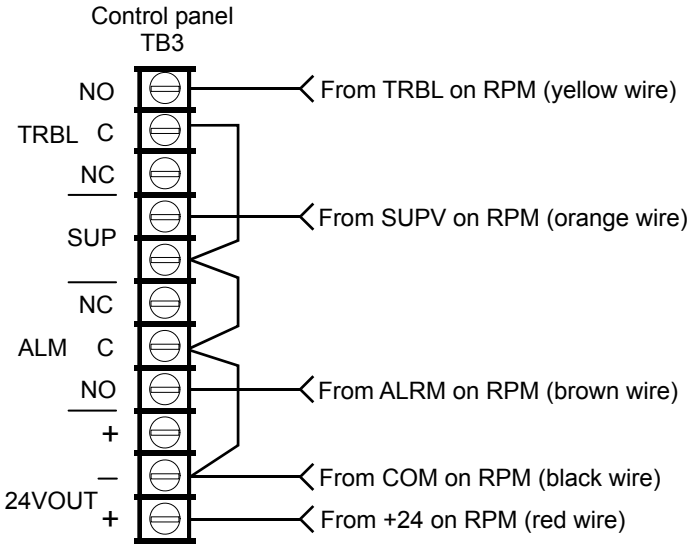


Figure 41: Alarm and trouble transmitted on a single circuit



Note: JP1 on the RPM must be OUT.

Figure 42: Alarm, supervisory, and trouble transmitted on separate circuits



Note: JP1 on the RPM must be IN.

Chapter 2
Front panel programming

Summary

This chapter shows how to configure the system using the control buttons on the front panel. For information on programming the system using the optional Configuration Utility (CU), refer to the Help available in the CU.

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UL 864 programming requirements

NOTICE TO USERS, INSTALLERS, AUTHORITIES HAVING JURISDICTION, AND OTHER INVOLVED PARTIES

This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, certain programming features or options must be limited to specific values or not used at all as indicated below.

Programmable feature or option	Permitted in UL 864 (Y/N)	Possible settings	Settings permitted in UL 864	Panel default
AC fail delay	Y	0 to 15 hours	1 to 3 hours	3 hours
Telephone line cut supervision duration	Y	1 to 120 seconds	10 to 120 seconds	120 seconds
Telephone line ground fault	Y	Disabled Enabled	Enabled	Enabled
Transmission test frequency	Y	0 to 45 days	1 (daily)	1 (daily)
Dialer mode	Y	Dual line Single line Modem only None	Dual line Single line [2] Modem only [3] None [3]	Dual line
Dialer retries	Y	5 to 10	5 minimum	5 retries
Dialer retry time	Y	1 to 45 seconds	Yes	5 seconds
Send event restore codes [1]	Y	No Yes	Yes	Yes
Swinger shutdown	N	Off 1 to 255	Off	Off
Zone resound	Y	On Off	On	On
Supervisory setting for Smoke detectors/ smoke element of combination detectors that trigger a supervisory event	N	Smoke Alarm, Smoke verified, Supervisory latching, Supervisory nonlatching	Smoke Alarm, Smoke verified. Exception: Supervisory permitted as per section 38.3.2 in UL 864 9th edition, Issue date 31 August 2012	Smoke Alarm

Programmable feature or option	Permitted in UL 864 (Y/N)	Possible settings	Settings permitted in UL 864	Panel default
Releasing service [4]				
Abort mode	Y	1 to 4 modes	1 or 2 modes	1 mode
Manual delay	Y	0, 10, 20, 30 seconds	0 to 30 seconds	10 seconds
Automatic delay	Y	0 to 300 seconds through release correlation; 10, 20, 30, 40, 50 seconds on REL module	0 to 60 seconds (combined)	0 seconds in release correlation; 50 seconds on REL module
Abort delay	Y	0 to 300 seconds through abort correlation: 0, 10 seconds on REL module	0 to 60 seconds (combined) for all abort modules	0 seconds in abort correlation; 10 seconds on REL module
Carbon monoxide (CO) signaling				
CO signaling correlation	Y	Input: (CO element of the detector): CO Alarm CO Supervisory CO Monitor Output: Channel 2 of T3T4 module	Input: (CO element of the detector) [5]: CO alarm Output: Channel 2 of T3T4 module	No default correlation

[1] Allowed only if the IDC is connected to the latching alarm device

[2] Allowed only when the supervising station supervises the telephone line and annunciates fault conditions within 200 seconds

[3] Prohibited when the control panel is connected to a supervising station

[4] The power supplies BPS6A, BPS6A/230, BPS10A, BPS10A/230 used for GSA-REL are not compatible with FM sprinkler applications that require 90 hours of standby.

[5] CO alarm signals are required to activate TC4 CO evacuation signals but CO Supervisory or CO Monitor signals are not allowed to activate CO evacuation signals. CO alarm/CO supervisory/CO monitor signals shall not activate TC3 fire evacuation signals.

Getting started

You can program the system using the command buttons on the front panel, or a PC with the optional configuration utility (CU), or both. If you plan to use the configuration utility, refer to the Help system for complete programming instructions.

What is a zone?

A zone is a collection of points that are grouped together in the project database in the same manner that the system designer divided the protected premises. Zones provide a single zonal response and are used to limit the number of event messages processed by the system. Firewall designations, planned evacuation criteria, architectural design, and other factors determine how points are grouped into zones.

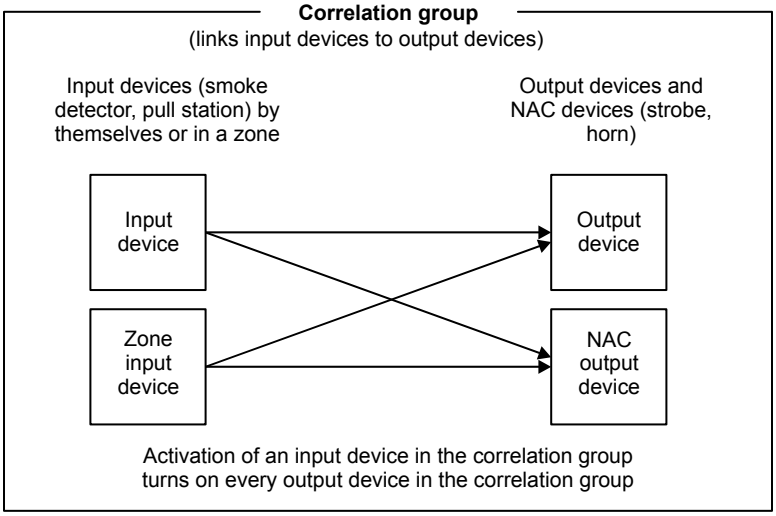
What is a correlation group?

A correlation group is a collection of inputs that activate a collection of outputs. During loop configuration, input devices, zones, and events are correlated with NACs and other output devices.

Output activations depend on the activation count and delay options. The activation count controls the number of input activations that are required to activate the group's outputs. The delay controls the number of seconds the system waits before activating the group's outputs. For example:

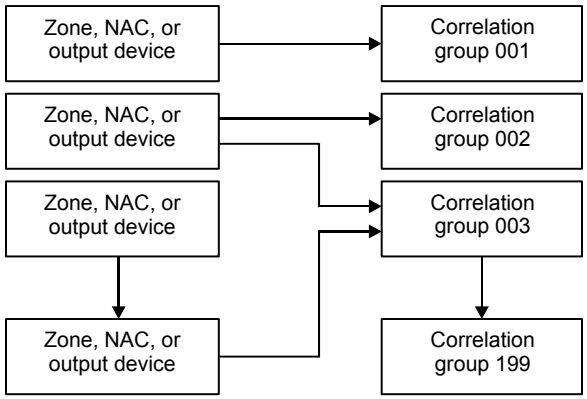
- When the correlation group's activation count is 1 (default), the activation of any input device in the group turns on every output device in the group.
- When the activation count is 3, every output device in the group is activated when at least three input devices activate.
- When the correlation group's activation count is 3 and three or more input devices turn on, the system waits the delay time before activating the group's outputs.

Figure 43: Correlation group operation



A correlation group can contain any combination of input devices, output devices, NACs, events, and zones. Input devices, output devices, NACs, events, and zones can be assigned to more than one correlation group. There are 199 available correlation groups. You can add a forty-character, alphanumeric description to each correlation group.

Figure 44: Inputs and outputs to correlation groups



During auto programming the following devices are assigned to correlation group 001:

- All addressable smoke detectors
- All addressable pull stations
- All panel NACs
- All zones configured as alarm

The following inputs are not included in correlation group 001 during auto programming:

- Relay and sounder bases with the Follow option set to Head. All sounder bases are programmed as Relay during auto programming.

Note the following:

- Any items included in correlation group 001 can be removed manually using front panel programming or the configuration utility.
- Any detectors, modules, or zones, where the type is changed to a type other than alarm, should be removed manually from correlation group 001 to avoid activating that correlation group.
- If zoning is used, the zones must be in the appropriate correlation group so devices assigned to that zone activate the correlation group.
- The CO element for the PCOS detector is not included in Correlation Group 1 during auto programming or auto zoning.

What is in-suite signal silence?

In-suite signal silence is a form of automatic alarm silencing that can be enabled for correlation groups. The function is used in residential complexes to minimize the annoyance of false alarms within living quarters. When an alarm input device activates, evacuation signals activate normally. After one minute, alarms in living quarters outside the alarm zone deactivate briefly. This interval is called the shutdown period and gives building personnel time to investigate the problem. Room evacuation signals in the alarm zone and hallway signals throughout the building remain active.

If the alarm has not been cleared within programmed allotted time (1 to 10 minutes), or if a subsequent alarm occurs, all signals resound. The shutdown period can be adjusted at the panel. In-suite signal silence can be turned off completely at the panel by setting the Suite Signal Silence option to Off (default). This setting is found at Program > Advanced Program > Panel Operation.

Notes

- Only alarm events can initiate in-suite signal silence.
- Only the first alarm is silenced by in-suite signal silence. Any additional alarms sound as programmed and are not automatically silenced.
- In-suite signal silence applies only to output devices and NACs that are configured as silenceable. It cannot be used in local alarm signaling applications.
- You cannot use a delay timer with in-suite correlation groups.
- No special hardware is required.

- In-suite signal silence is required by Ontario Building Code 3.2.4. For instructions on programming in-suite signal silence in a typical system, see “Adding and removing panel events” on page 92

Programming modes

You can choose from three levels of program automation: Auto programming, incremental programming, or advanced programming. These are discussed in the following sections.

Auto programming

The Auto Program command is used to automatically configure the control panel and remote annunciators from their respective front panels.

Auto programming replaces the existing project database with a default project database based on the hardware configuration that it detects. The default project database configures the system as a general fire alarm system that activates all notification appliance circuits when any fire alarm input is activated.

Auto programming can also be used as a first step, to be followed by some advanced programming to customize individual settings. The Auto Program command lets you choose:

- Automatic zone assignments
- The event notification level to use
- Manual or automatic device and zone labeling during auto programming
- The “base follow” option for relay and sounder bases
- CMS network and dialer options

Note: Auto programming does not overwrite the previous CMS programming. However, the restore panel defaults option in the program menu does change the CMS configuration.

To auto program a panel, see “Auto programming the panel” on page 67

Incremental programming

The Incremental Program command is used to make changes to a panel that has already been programmed. Incremental programming lets you add and label devices and zones in the existing database without affecting any other settings. Incremental programming is typically used to add or remove an additional loop of devices or a large number of devices to the system. See “Performing incremental programming” on page 76.

The Unconfigured Alarm command is used to add an additional device or several devices to a system without using the Incremental Program command. When a new device is added or a device is removed, the panel signals a “trouble active” event and indicates on the LCD that there is an unconfigured device. The device can then be programmed and added to the database. This method is typically used to add just a few devices. See “Adding and removing devices from programmed systems” on page 80.

Advanced programming

Advanced programming is used to apply custom programming to a new or previously programmed fire alarm system. Advanced programming lets you configure each option individually. See “Advanced programming” on page 85.

Using the programming control buttons

The following buttons are used with the LCD to program the panel.

Table 7: Programming control buttons

Button	Description
Arrow buttons	Right arrow: Displays a submenu, or toggles between multiple settings such as “Yes” and “No.”
	Left arrow: Scrolls through a programming option’s selections
	Up arrow: Moves the cursor up
	Down arrow: Moves the cursor down
Menu button	Opens and closes the main menu
Enter button	Executes a command, displays a submenu, displays the Save function, or scrolls through a programming option’s selections.
Alphanumeric keypad	Used to enter numbers and letters needed for the various settings. Pressing and holding a key scrolls through alternate values. For example, pressing and holding the “2” key scrolls between 2, A, B, and C.
Cancel button	Returns to the previous menu level. Exits menu mode if you are at the highest menu level. Deletes text when editing labels, etc.

Factory default settings

The panel is shipped from the factory with default settings. You can accept or change these settings as needed.

Note: Depending on panel equipment and programming, some of these settings may not be available.

Default passwords

The panel comes standard with a set of default passwords. These are:

- Level 1: 1111
- Level 2: 2222
- Remote annunciator: 3333

Note: We recommend that you change the default passwords after programming the system.

Default panel operation settings

- Language: English
- Marketplace: US
- AC fail delay: 3 hours
- Zone resound: On
- Reset inhibit: Off
- Auto signal silence: Off
- Suite signal silence: 10 minutes
- Day start: 06:00
- Night start: 18:00
- Date format U.S.: MM/DD/YYYY
- Aux power reset: On
- LCD banner: Blank
- Event notification: Device
- Key #1: NONE
- Key #2: NONE

Other default panel settings

- Daylight saving

  Enabled: No
  Month start: 03
  Month end: 11
  Week start: 1
  Week end: 0
  Weekday start: 0
  Weekday end: 0
  Hour start: 02
  Hour end: 02
  Offset minutes: 60

- RS232 CU Enable: Off
- Lock remote read: No

Default panel configuration settings

- IP: 192.168.001.003
- Subnet mask: 255.255.255.0
- Gateway: 000.000.000.000
- Panel NACs
  Class: Class B
  Type: Genesis - audible visible silence
  Correlation group: 1

- Event notification
  Trouble > Printer: Yes
  Trouble > Dialer: Acct 1
  Trouble > NET (1-8): No
  Trouble > CID: 321 (NAC1), 322 (NAC2), 326 (NAC3), 327 (NAC4)
  Disable > Printer: Yes
  Disable > Dialer: Acct 1
  Disable > NET: Yes
  Disable > CID: 521 (NAC1), 522 (NAC2), 526 (NAC3), 527 (NAC4)
  Test > Printer: Yes
  Test > Dialer: Acct 1
  Test > CID: 600
  Test > NET (1-8): No
- Annunciator class: Class B
- Annunciators (1-8)
  Type: Off
  Number expanders: None
  Event notification
    Trouble > Printer: Yes
    Trouble > Dialer: Acct 1
    Trouble > CID: 334
    Trouble > NET (1-8): No
- Swinger shutdown: Off
- CMS device
  Dialer
    Type: Dual line
    Acct 1 and 2
    Account ID: FFFF
    Primary receiver #: Blank
    Secondary receiver #: Blank
    Format: CID
    Send restorals: Yes
    Retry time: 5 seconds
    Retry count: 5
    Event notification: Device
  Line 1 and 2
    Dialing: Tone
    Cut Duration/supervision: 120 sec.
    Tone wait: 10 seconds
    Call disconnect seconds: Off
    Test frequency days: 1
    Test time: 03:11
    Rings to answer: 5
    Ring type: Any
    Callback: Disabled
    Callback #: Blank
- Printer
  Type: Unsupervised
  Event notification
    Trouble > Printer: Yes
    Trouble > Coder: 00-00-00-00
    Trouble > Dialer: Acct 1
    Trouble > CID: 336
    Trouble > NET (1-8): No
- Lock remote read: No
- AC voltage: 120
- Network (receiver)
  Enabled: No
  Account ID: FFFF
  IP: 192.168.1.254
  TCP/IP port: 9999
  Send restorals: Yes
  Event notification: Device
  Hello time: 25
  Timeout: 40
  Receiver #: 2
  Line #: 2

Default loop configuration settings

- Loop class: Class B
- Zone
  Type: Alarm
  Correlation group: 001
  Notes
  By default, NACs, zones, and most devices are assigned to correlation group 001.
  Relay and sounder bases with the Follow option set to Head are not automatically assigned to correlation groups.
  Event notification

Active > Printer: Yes	Pre alarm > NET (1-8): No
Active > Dialer: Acct 1	Pre alarm > CID: 118
Active > NET (1-8): No	Alarm verify > Printer: Yes
Active > CID: 110	Alarm verify > Dialer: None
Trouble > Printer: Yes	Alarm verify > NET (1-8): No
Trouble > Dialer: Acct 1	Alarm verify > CID: 118
Trouble > NET (1-8): No	Maintenance alert > Printer: Yes
Trouble > CID: 373	Maintenance alert > Dialer: Acct 1
Disable > Printer: Yes	Maintenance alert > NET (1-8): No
Disable > Dialer: Acct 1	Maintenance alert > CID: 393
Disable > CID: 570	Test > Printer: Yes
Disable > NET (1-8): No	Test > Dialer: Acct 1
Pre alarm > Printer: Yes	Test > CID: 614
Pre alarm > Dialer: None	Test > NET (1-8): No

- Correlation Groups
  Add/remove zone > Zone: 01
  Add/remove zone > Status: Included
  Add/remove NAC > Panel NAC: 1
  Add/remove NAC > Status: Included
  Add/remove device > Device: 001
  Suite signal silence: No
  Activation count > Number: 01
  Copy > From group: 001
  Delay > Time: 000

- Device
  Alt Operation: Yes
  Day sensitivity: Least
  Night sensitivity: Least
  Day prealarm %: Off
  Night prealarm %: Off
  Base follow: Alarm
  Zone: Off
  Event notification
    Active > Printer: Yes
    Active > Dialer: Acct 1
    Active > NET (1-8): No
    Active > CID: 110
    Alarm verify > Printer: Yes
    Alarm verify > Dialer: None
    Alarm verify > NET (1-8): None
    Alarm verify > CID: 118
    Disable > Printer: Yes
    Disable > Dialer: Acct 1
    Disable > NET (1-8): No
    Disable > CID: 570
    Maintenance Alert > Printer: Yes
    Maintenance Alert > Dialer: Acct 1
    Maintenance Alert > NET (1-8): No
    Maintenance Alert > CID: 393
    Pre alarm > Printer: Yes
    Pre alarm > Dialer: None
    Pre alarm > (1-8): No
    Test > Printer: Yes
    Test > Dialer: Acct 1
    Test > NET (1-8): No
    Test > CID: 614
    Trouble > Printer: Yes
    Trouble > Dialer: Acct 1
    Trouble > NET (1-8): No
    Trouble > CID: 373
    Active3 > Printer: Yes [1]
    Active3 > Dialer: Acct 1
    Active3 > NET (1-8): No
    Active3 > CID: 200

  Type (input device): Depends on type of device and marketplace
  Type (output device): Genesis with audible/visible silence
  Correlation group: 1

Correlation Groups Primary Sensor > Group: 001 Primary Sensor > Status: Excluded Secondary Sensor > Group: 001 Secondary Sensor > Status: Excluded Base > Group: 001 Base > Status: Excluded Base type: Standard Follow: Head Latched: No Type: Heat alarm	Primary and secondary text may vary based on device type.
• Zone Secondary: Off • Mapping: No • Loop 2 enable: No • Loop 2 Fst Grp: 1 to 25	

[1] Active3 is an activation from a COS device, or an activation from the secondary element of a dual element detector (single address. See “Device type descriptions” on page 45.)

Default contact ID event codes

Contact ID codes are used to report events that take place in the fire alarm system to a central monitoring station (CMS) via a dialer or over a network. The following table lists the default Contact ID (CID) codes for panel and loop events. Some events do not have CID codes. You can change the default code for an event or assign a code to an event that does not have one. See “Event programming” on page 128.

Table 8: Contact ID event codes

Event	CID	Event	CID
AC power (disable)	500	Battery missing (trouble)	311
AC power (trouble)	301	Clear history	621
Alarm active	110	CO detected (alarm)	162
Annunciator trouble	334	Common alarm	110
Aux. power 1 (disable)	500	Common disable	500
Aux. power 1 (trouble)	312	Common monitor	140
Aux. power 2 (disable)	500	Common supervisory	200
Aux. power 2 (trouble)	312	Common trouble	373
Battery charger (disable)	500	Common trouble for network dialer	373
Battery charger (trouble)	309	Common trouble for telco dialer	373
Battery low (disable)	500	Date	625
Battery low (trouble)	302	Device trouble	373
Battery missing (disable)	500	Device disable	570

Event	CID
Device pre alarm	118
Device alarm verify	118
Device maintenance alert	393
Device test	614
Dialer disable/remote disconnect	551
Dialer line 1 fault (disable)	500
Dialer line 1 fault (trouble)	351
Dialer line 2 fault (disable)	500
Dialer line 2 fault (trouble)	352
Dialer deliver fail	354
Dialer normal test	602
Dialer abnormal test	608
Dialer configuration	354
Drill	601
Duct active	116
Ground fault (disable)	500
Ground fault (trouble)	310
Heat active	114
Internal fault	307
IP Gateway Trouble	354
Loop 1 initialization	000
Loop 1 fault (disable)	500
Loop 1 fault (trouble)	331
Loop 1 map fault	331
Loop 1 card fault (disable)	500
Loop 1 card fault (trouble)	333
Loop 1 Uncfgrd alarm (disable)	500
Loop 1 Uncfgrd alarm (active)	110
Loop 1 Uncfgrd trbl (disable)	500
Loop 1 Uncfgrd trbl (trouble)	331
Loop 1 map mismatch	331

Event	CID
Loop 1 over limits	331
Loop 1 address zero	331
Loop 1 mapping	000
Loop 2 initialization	000
Loop 2 fault (disable)	500
Loop 2 fault (trouble)	331
Loop 2 map fault	331
Loop 2 card fault (disable)	500
Loop 2 card fault (trouble)	333
Loop 2 Uncfgrd alarm (disable)	500
Loop 2 Uncfgrd alarm (active)	110
Loop 2 Uncfgrd trbl (disable)	500
Loop 2 Uncfgrd trbl (trouble)	331
Loop 2 map mismatch	331
Loop 2 over limits	331
Loop 2 address zero	331
Loop 2 mapping	000
Monitor active	140
NAC test	600
NAC1 trouble	321
NAC2 trouble	322
NAC3 trouble	326
NAC4 trouble	327
NAC1 disable	521
NAC2 disable	522
NAC3 disable	526
NAC4 disable	527
Net rcvr1 comm fault	354
Net rcvr2 comm fault	354
Net rcvr3 comm fault	354
Net rcvr4 comm fault	354
Net rcvr5 comm fault	354
Net rcvr6 comm fault	354

Event	CID
Net rcvr7 comm fault	354
Net rcvr8 comm fault	354
Net rcvr1 conf fault (disable)	500
Net rcvr1 conf fault (trouble)	354
Net rcvr2 conf fault (disable)	500
Net rcvr2 conf fault (trouble)	354
Net rcvr3 conf fault (disable)	500
Net rcvr3 conf fault (trouble)	354
Net rcvr4 conf fault (disable)	500
Net rcvr4 conf fault (trouble)	354
Net rcvr5 conf fault (disable)	500
Net rcvr5 conf fault (trouble)	354
Net rcvr6 conf fault (disable)	500
Net rcvr6 conf fault (trouble	354
Net rcvr7 conf fault (disable)	500
Net rcvr7 conf fault (trouble)	354
Net rcvr8 conf fault (disable)	500
Net rcvr8 conf fault (trouble)	354
Outputs are latched	140
Panel silence	315
Printer trouble	336
Program mode	627
Pull active	115
Reset	305
Reset/Silence inhibit	000
Self test fault	307
Signal silence	328
Smoke active	111
Smoke/Heat active	111
Supervisory active	200
System startup	000
System AC power (disable)	500
System AC power (trouble)	301

Event	CID
Test fire	604
Time	625
Walk test	607
Waterflow active	113
Zone active	110
Zone trouble	373
Zone disable	570
Zone pre alarm	118
Zone alarm verify	118
Zone maintenance alert	393
Zone test	614

Device type descriptions

Device types determine the operation of the points to which they are assigned. The following tables contain all possible device types. Available device types depend on the device and on the marketplace selected for the panel. Some device types are unavailable in some marketplaces. For this reason, the LCD listing for the selected device may differ from this table.

Some single address detectors have primary and secondary elements.

Table 9: Detectors with primary and secondary elements

Detector	Primary element	Secondary element
PHS [1]	Heat	Smoke
PCOS [2]	Smoke	CO

[1] Device type as “Heat + Smoke Supv Latching,” or “Heat + Smoke Supv Nonlatching,” only.
[2] Refer to the compatibility list to determine if this is compatible with your panel.

Note: To correlate device types with personality codes when programming Signature Series devices, see Appendix E.

Table 10: Detector device types

Device type	Description
Duct detectors (SD)	
Duct alarm	For duct smoke detectors. All activations are immediately considered as alarms. The panel and detector cannot be reset to normal until the smoke condition has cleared.
Duct supervisory (latching and nonlatching)	Duct supervisory latching. Detectors with this device type when activated immediately places the panel in the supervisory state, turns on supervisory LEDs, and activates the supervisory relays. The detectors remain active until the smoke condition clears and the panel is reset. Duct supervisory nonlatching Detectors with this device type when activated immediately places the panel in the supervisory state, turns on supervisory LEDs, and activates the supervisory relays. The detectors remain active until the smoke condition clears. Resetting the panel is not required.
Heat detectors (HFS, HRS)	
Heat alarm	For heat detectors. All activations are immediately considered as alarms. Detectors cannot be restored until the condition causing the activation clears and the panel is reset.

Device type	Description
Heat alarm RoR	For heat detectors with rate-of-rise. All activations are immediately considered as alarms. Detectors cannot be restored until the condition causing the activation clears and the panel is reset.
Ion detectors (IS)	
Smoke	For smoke detectors and contact devices. All activations are immediately considered as alarms. Circuit cannot be restored until devices are restored to normal and the panel is reset.
Smoke verified	For smoke detectors and contact devices. Two-wire smoke detector activations are verified (delayed and confirmed) before activating an alarm. Four-wire smoke detectors and contact devices are not verified and immediately considered as alarms. Circuit cannot be restored until devices are restored to normal and the panel is reset.
Supervisory latching	For detectors that trigger an active (supervisory) event. Detectors with this device type remain active until the condition that activated them is restored and the control panel is reset.
Supervisory nonlatching	For detectors that trigger an active (supervisory) event. Detectors with this device type remain active until the condition that activated them is restored. Resetting the control panel is not required.
Photoelectric smoke detectors (PS)	
Smoke	For smoke detectors and contact devices. All activations are immediately considered as alarms. The panel and detector cannot be restored to normal until the smoke condition has cleared and the control panel is reset.
Smoke verified	For smoke detectors and contact devices. Two-wire smoke detector activations are verified (delayed and confirmed) before activating an alarm. Four-wire smoke detectors and contact devices are not verified and immediately considered as alarms. The panel and detector cannot be restored to normal until the smoke condition has cleared and the panel is reset.
Supervisory latching	For detectors that trigger an active (supervisory) event. Detectors with this device type remain active until the condition that activated them is restored and the control panel is reset.
Supervisory nonlatching	For detectors that trigger an active (supervisory) event. Detectors with this device type remain active until the smoke condition has cleared. Resetting the control panel is not required.
Photoelectric smoke heat detectors (PHS)	
Heat + smoke alarm	For heat + smoke detectors that trigger an active alarm event (heat or smoke). Detectors with this device type remain active until the condition that activated them is restored and the control panel is reset.

Device type	Description
Heat + supervisory smoke latching	For heat + smoke detectors that trigger an active alarm event (heat) or a latching supervisory event (smoke). Detectors with this device type remain active until the condition that activated them is restored and the control panel is reset.
Heat + supervisory smoke nonlatching	For heat + smoke detectors that trigger an active alarm event (heat) or a nonlatching supervisory event (smoke). Detectors with this device type remain active until the condition that activated them is restored. Resetting the control panel is required to restore the heat type event. Resetting the control panel is not required for smoke supervisory nonlatching. Note: When the heat alarm and supervisory nonlatching are in an active state, supervisory nonlatching will not automatically restore until the smoke particles clear the chamber and the panel is reset.
Smoke heat	For smoke detectors that trigger an active alarm event. Detectors with this device type remain active until the condition that activated them is restored and the control panel is reset.
Smoke verified	For smoke detectors that trigger an alarm verify event first then trigger an active alarm event only after confirming the alarm condition. This feature is known as alarm verification and is typically used to prevent false alarms in areas where transient smoke is anticipated.
Supervisory latching	For detectors that trigger an active supervisory event. Detectors with this device type remain active until the condition that activated them is restored and the control panel is reset.
Supervisory nonlatching	For detectors that trigger an active supervisory event. Detectors with this device type remain active until the condition that activated them is restored. Resetting the control panel is not required.
Photoelectric smoke and CO detectors (PCOS)	
Smoke alarm + CO alarm	For smoke + CO detectors that trigger an active alarm event (smoke or CO). Detectors with this device type remain active until the condition that activated them is restored and the control panel is reset.
Smoke alarm + CO monitor latching	For smoke + CO detectors that trigger an active alarm event (smoke) or a CO latching monitor event. Detectors with this device type remain active until the condition that activated them is restored and the control panel is reset.
Smoke alarm + CO monitor nonlatching	For smoke + CO detectors that trigger an active alarm event (smoke) or a CO nonlatching monitor event. Detectors with this device type remain active until the condition that activated them is restored. Resetting the control panel is required to restore the smoke type event. Resetting the control panel is not required for monitor nonlatching.

Device type	Description
Smoke alarm + CO supervisory latching	For smoke + CO detectors that trigger an active alarm event (smoke) or a CO latching supervisory event. Detectors with this device type remain active until the condition that activated them is restored and the control panel is reset.
Smoke alarm + CO supervisory nonlatching	For smoke + CO detectors that trigger an active alarm event (smoke) or a CO nonlatching supervisory event. Detectors with this device type remain active until the condition that activated them is restored. Resetting the control panel is required to restore the smoke type event. Resetting the control panel is not required for supervisory nonlatching.
Smoke supervisory latching + CO alarm	For smoke + CO detectors that trigger a supervisory latching event (smoke) or an active alarm event (CO). Detectors with this device type remain active until the condition that activated them is restored and the panel is reset.
Smoke supervisory latching + CO supervisory latching	For smoke + CO detectors that trigger a supervisory latching event (smoke or CO). Detectors with this device type remain active until the condition that activated them is restored and the panel is reset.
Smoke supervisory latching + CO supervisory nonlatching	For smoke + CO detectors that trigger a supervisory latching event (smoke) or a supervisory nonlatching event (CO). Detectors with this device type remain active until the condition that activated them is restored. Resetting the control panel is required to restore the smoke type event. Resetting the control panel is not required for supervisory nonlatching.
Smoke supervisory latching + CO monitor latching	For smoke + CO detectors that trigger a supervisory latching event (smoke) or monitor latching event (CO). Detectors with this device type remain active until the condition that activated them is restored and the panel is reset.
Smoke supervisory latching + CO monitor nonlatching	For smoke + CO detectors that trigger a supervisory latching event (smoke) or a monitor nonlatching event (CO). Detectors with this device type remain active until the condition that activated them is restored. Resetting the control panel is required to restore the smoke type event. Resetting the control panel is not required for monitor nonlatching.
Smoke supervisory nonlatching + CO alarm	For smoke + CO detectors that trigger a supervisory nonlatching event (smoke) or an active alarm event (CO). Detectors with this device type remain active until the condition that activated them is restored. Resetting the control panel is required to restore the CO type event. Resetting the control panel is not required for supervisory nonlatching.

Device type	Description
Smoke supervisory nonlatching + CO supervisory latching	For smoke + CO detectors that trigger a supervisory nonlatching event (smoke) or a supervisory latching event (CO). Detectors with this device type remain active until the condition that activated them is restored. Resetting the control panel is required to restore the CO type event. Resetting the control panel is not required for supervisory nonlatching.
Smoke supervisory nonlatching + CO supervisory nonlatching	For smoke + CO detectors that trigger a supervisory nonlatching event (smoke or CO). Detectors with this device type remain active until the condition that activated them is restored. Resetting the control panel is not required for supervisory nonlatching.
Smoke supervisory nonlatching + CO monitor latching	For smoke + CO detectors that trigger a supervisory nonlatching event (smoke) or a monitor latching event (CO). Detectors with this device type remain active until the condition that activated them is restored. Resetting the control panel is required to restore the CO type event. Resetting the control panel is not required for supervisory nonlatching.
Smoke supervisory nonlatching + CO monitor nonlatching	For smoke + CO detectors that trigger a supervisory nonlatching event (smoke) or a monitor nonlatching event (CO). Detectors with this device type remain active until the condition that activated them is restored. Resetting the control panel is not required for monitor nonlatching.
Smoke verified + CO alarm	For smoke + CO detectors that trigger an alarm verify event first, and then trigger an active alarm event only after confirming the alarm condition (smoke) or trigger an active alarm event (CO).
Smoke verified + CO supervisory latching	For smoke + CO detectors that trigger an alarm verify event first, and then trigger an active alarm event only after confirming the alarm condition (smoke) or trigger a supervisory latching event (CO).
Smoke verified + CO supervisory nonlatching	For smoke + CO detectors that trigger an alarm verify event first, and then trigger an active alarm event only after confirming the alarm condition (smoke) or trigger a supervisory nonlatching event (CO).
Smoke verified + CO monitor latching	For smoke + CO detectors that trigger an alarm verify event first, and then trigger an active alarm event only after confirming the alarm condition (smoke) or trigger a monitor latching event (CO).
Smoke verified + CO monitor nonlatching	For smoke + CO detectors that trigger an alarm verify event first, and then trigger an active alarm event only after confirming the alarm condition (smoke) or trigger a monitor nonlatching event (CO).

Table 11: Input module device types

Device type	Description
2Wire Class A	Allows for the monitoring of two-wire conventional smoke detectors in a Class A circuit (that do not require alarm verification) and normally open contact initiating devices on the same circuit.

Device type	Description
2Wire Class B	Allows for the monitoring of two-wire conventional smoke detectors in a Class B circuit (that do not require alarm verification) and normally open contact initiating devices on the same circuit.
2Wire verify Class A	Allows for the monitoring of two-wire conventional smoke detectors in a Class A circuit (that require alarm verification).
2Wire verify Class B	Allows for the monitoring of two-wire conventional smoke detectors in a Class B circuit (that require alarm verification).
Alarm	For smoke detectors and contact devices. All activations are immediately considered as alarms. Circuit cannot be restored until devices are restored to normal and the panel is reset.
Duct alarm	For duct smoke detectors. All activations are immediately considered as alarms. Circuit cannot be restored until devices are restored to normal and the panel is reset.
Heat	For heat detectors and contact devices. All activations are immediately considered as alarms. Circuit cannot be restored until devices are restored to normal and the panel is reset.
Pull station	For pull station devices. All activations are immediately considered as alarms.
Remote drill	For a remote switch that when activated, starts the panel's drill operation.
Remote reset	For a remote switch that when activated, resets the panel.
Remote signal silence	For a remote switch that when activated, silences the signaling devices. Two-wire smoke detector activations are verified (delayed and confirmed) before activating an alarm. Four-wire smoke detectors and contact devices are not verified and are considered alarm immediately.
Waterflow	For connecting vane type and pressure flow switches. Activations are considered as alarms. A 16-second alarm delay applies to waterflow activations. Circuit cannot be restored until devices are restored to normal and the panel is reset. Waterflow activations do not invoke in-suite signal silence.
Smoke	For smoke detectors that trigger an active alarm event.

Table 12: Supervisory device types

Device types	Description
Duct supervisory (latching and nonlatching)	For duct supervisory devices. Momentary activation of normally open devices immediately places the panel in a supervisory state and turns on supervisory LEDs and relays. Circuit cannot be restored until devices are restored to normal and the panel is reset. Resetting the panel is not required for nonlatching.

Device types	Description
Supervisory latching	For supervisory devices. Momentary activation of normally open devices immediately places the panel in a supervisory state and turns on supervisory LEDs and relays. Circuit cannot be restored until devices are restored to normal and the panel is reset.
Supervisory nonlatching	For supervisory devices. Momentary activation of normally open devices immediately places the panel in a supervisory state and turns on the supervisory LED and relay. Annunciation remains active until the input restores. The panel does not have to be reset.

Table 13: Trouble device types

Device type	Description
Remote AC fail	For use with auxiliary power supplies to provide AC Fail indication to the fire panel. The fire panel treats this activation as if the panel itself detected an AC fail condition. Delays off-premises signaling for the selected time duration.

Table 14: Monitor device types

Device type	Description
Monitor	Monitoring of normally open switches for other functions (fire door position, etc.). Not approved for use under ULC 527 in Canada.

Table 15: Output device types

Device type	Description
Continuous nonsilenceable	For nonsilenceable strobes and notification appliances that generate a temporal pattern
Continuous nonsilenceable (latched)	For latching strobes and notification appliances that generate a temporal pattern
Duct alarm	For duct smoke detectors. All activations are immediately considered as alarms. Circuit cannot be restored until devices are restored to normal and the panel is reset.
Duct supervisory (latching)	For duct supervisory devices. Momentary activation of normally open devices immediately places the panel in a supervisory state and turns on supervisory LEDs and relays. Circuit cannot be restored until devices are restored to normal and the panel is reset.
Duct supervisory (nonlatching)	For duct supervisory devices. Momentary activation of normally open devices immediately places the panel in a supervisory state and turns on supervisory LEDs and relays. Circuit cannot be restored until devices are restored to normal. Resetting the control panel is not required for nonlatching.
Continuous silenceable	For strobes and notification appliances that generate a noncoded tone

Device type	Description
Genesis audible visible silence	For Genesis and Enhanced Integrity horns and strobes. Genesis and Enhanced Integrity appliances maintain synchronization per UL 1971. For Genesis devices only, connected horns can be silenced and strobes turn off.
Genesis nonsilenceable	For Genesis and Enhanced Integrity horns and strobes. Genesis and Enhanced Integrity appliances maintain synchronization per UL 1971. For Genesis devices only, connected horns cannot be silenced and strobes on the same two-wire circuit flash until the panel is reset.
Monitor	Monitor: Monitoring of normally open switches for other functions (fire door position, etc.). Not approved for use under ULC 527 in Canada.
Relay nonsilence NC	For relay devices that open when activated and remain open when you press Signal Silence.
Relay nonsilence NC (latched)	For latching relay devices that open when activated and remain open when you press Signal Silence.
Relay nonsilence NO	For relay devices that close when activated and remain closed when you press Signal Silence.
Relay nonsilence NO (latched)	For latching relay devices that close when activated and remain closed when you press Signal Silence.
Relay nonsilenceable	For relay devices that do not follow signal silence
Relay nonsilenceable (latched)	For relay devices that do not follow signal silence and do not restore until manually unlatched
Relay silence	For relays that turn off when you press Signal Silence.
Relay silence NC	For relays that open when activated and close when you press Signal Silence.
Relay silence NO	For relays that close when activated and open when you press Signal Silence.
Supervised output	For modules that output an unsynchronized signal and that do not turn off when you press Signal Silence.
Supervised output (latched)	For latched output modules that output an unsynchronized signal and that do not turn off when you press Signal Silence.
Auto sync output Silenceable	For generating sound patterns on GSA-SBT sounder bases for carbon monoxide (CO) and fire signals. Signals turn off when you press Signal Silence. Only patterns from T3T4 are silenced.
Auto sync output nonsilenceable	For generating sound patterns on GSA-SBT sounder bases for carbon monoxide (CO) and fire signals.
Unlatch outputs	For output modules that are configured to manually unlatch latched outputs [1]

[1] The following output modules can be configured to unlatch latched outputs: GSA-CT1, GSA-CT2, GSA-MAB, GSA-MCT2, GSA-MM1, and GSA-UM.

Table 16: Latched output device types [1]

Device type	Description
Continuous nonsilenceable (latched)	For Class B latched output modules that output an unsynchronized signal. Does not follow signal silence.
Continuous nonsilenceable Class A (latched)	For Class A latched output modules that output an unsynchronized signal. Does not follow Signal Silence.
Relay nonsilence NC (latched)	For relay devices functioning as latched output devices that open when activated. Does not follow signal silence.
Relay nonsilence NO (latched) latch	For relay devices functioning as latched output devices that close when activated. Does not follow signal silence.
Relay nonsilenceable (latched)	For Class B relay devices functioning as latched output devices. Does not follow signal silence.
Supervised output (latched)	For Class B latched output modules that output an unsynchronized signal. Does not follow signal silence.
Supervised outputs Class A (latched)	For Class A latched output modules that output an unsynchronized signal. Does not follow Signal Silence.

[1] Table 26 on page 102 gives a full list of devices configurable as latched output devices.

Displaying the Program menu

Use the Program menu to access the options that let you program your panel.

To display the program menu:

1. Press the Menu button.
2. Choose Program.
3. Press Enter.

Setting the time and date

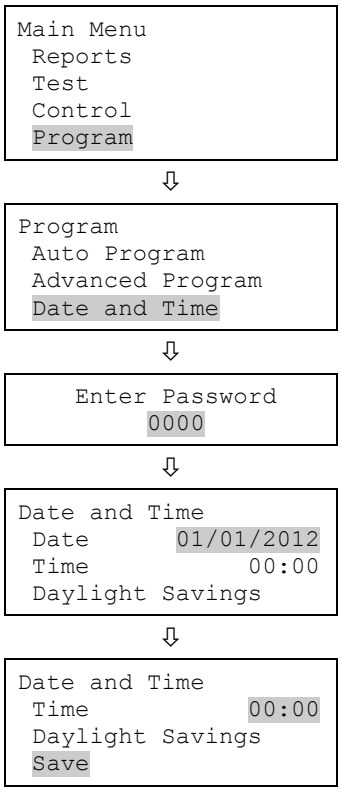
The first step in programming the panel is setting the time and date. You must do this before using either the Auto Program or Advanced Program command.

To set the time and date:

1. Press the Menu button and choose Program.
2. Choose Date and Time.
3. Enter a level one password.
4. Enter the current date.
5. Enter the current time.
6. Choose Save.
7. Press the Menu button to exit menu mode.

   — or —

   Continue programming



Setting daylight saving time

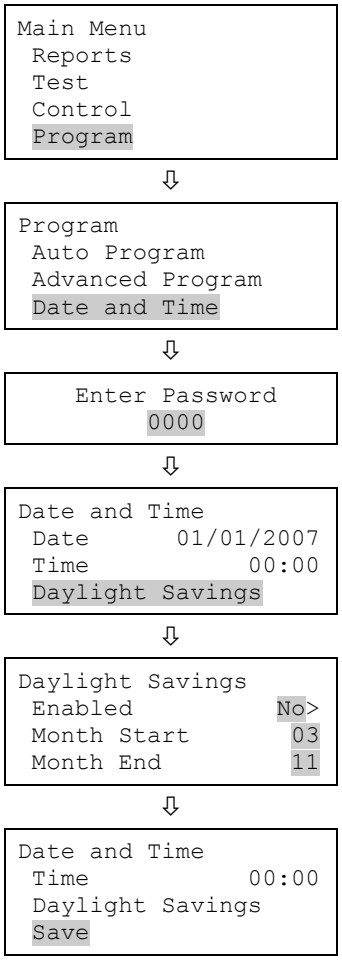
Daylight saving time options allow the panel to switch automatically from standard to daylight saving time and vice versa.

To program daylight saving time options:

1. Display the Program menu and choose Date and Time.
2. Enter a level one password.
3. Choose Daylight Savings.
4. Choose one of the following:

   Yes: The panel recognizes daylight saving time

   No: The panel does not recognize daylight saving time
5. Set the Month Start. (Values range from 01 to 12, where 01 corresponds to January.)
6. Set the Month End. (Values range from 01 to 12.)
7. Set the Week Start. (Values range from 1 to 5, where 5 corresponds to the last week of the month.)
8. Set the Week End. (Values range from 1 to 5, where 5 corresponds to the last week of the month.)
9. Set the Weekday Start. (Values range from 1 to 7, where 1 corresponds to Sunday.)
10. Set the Weekday End.
11. Set the Hour Start. (Values range from 00 to 23, where 00 corresponds to 12 midnight.)
12. Set the Hour End. (Values range from 00 to 23.)
13. Set the Minutes Offset. (Values range from 0 to 255.). This controls the number of minutes the clock will adjust when daylight saving time begins and ends. The default is 60 minutes.
14. Press Enter, and then choose Save.
15. Press the Menu button to exit menu mode, or continue programming.



Sample values for daylight saving time

The values in the following table:

- Start daylight saving time at 2:00 a.m. on Sunday, the second week of March
- Return to standard time at 2:00 a.m. on Sunday, the first week in November
- Adjust the time by 60 minutes (1 hour) each time

Table 17: Sample values for daylight saving time

Month start:	03
Week start:	2
Week day start:	1
Hour start:	02
Month end:	11
Week end:	1
Week day end:	1
Hour end:	02
Offset minutes:	60

Changing the passwords

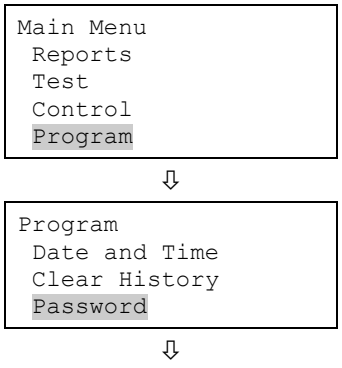
The second step in programming the panel is to change the level one, level two, and remote annunciator passwords.

Notes

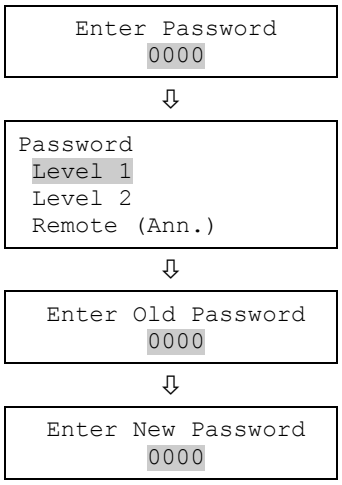
- We recommend that you change the default passwords before programming the system.
- The system automatically logs you off after four minutes of inactivity.

To change the passwords:

1. Press the Menu button and choose Program.
2. Choose Password.
3. Enter a level two password.
4. Select the password to be changed: Level 1, Level 2, or Remote (Ann.).
5. Enter the old password and press Enter.
6. Enter the new password and press Enter.



7. Repeat steps 4 through 6 for each password to be changed.
8. Press the Menu button to exit menu mode, or continue programming.



Restoring the factory default settings

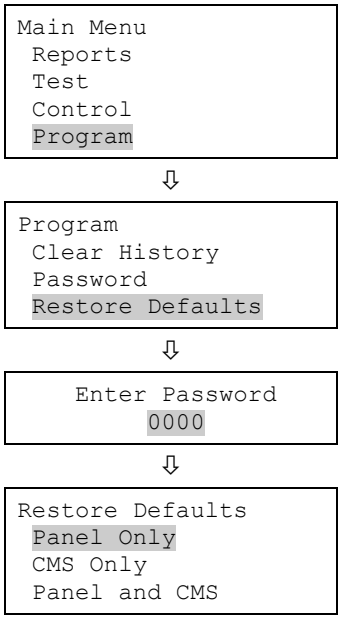
Use the Restore Defaults command to overwrite most custom settings in the panel, the dialer (CMS network), or both. This lets you commission the panel as a common alarm system, or remove custom settings in preparation for advanced programming.

Note: The current language, marketplace, and loop device configuration settings are *not* affected by the Restore Defaults command.

To restore the default settings:

1. Press the Menu button and choose Program.
2. Choose Restore Defaults.
3. Enter a level two password.
4. Select either Panel Only, CMS Only, or Panel and CMS.
   Panel only: Restores only the panel's defaults (panel operation and panel configuration options)
   CMS only: Restores only the dialer, network (1-8)
   Panel and CMS: Restores both the panel and CMS device defaults
5. Press Enter.
6. Return to the Program menu.
7. Choose Panel Restart.
8. Choose Yes.

   The panel restarts, and the factory default settings are reloaded into the database.



Setting up the programmable keys

There are two control panel buttons that can be assigned to correlation groups in order to:

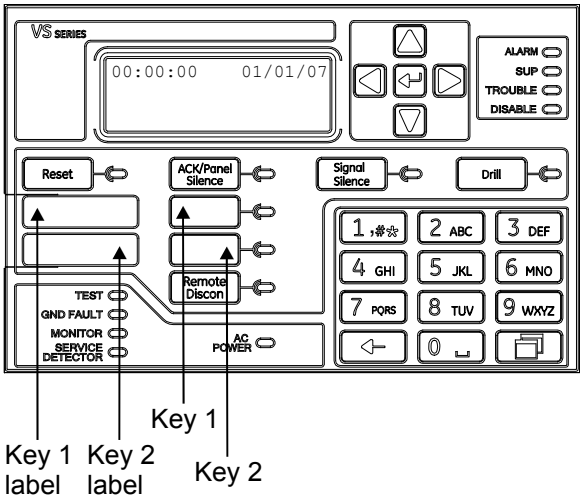
- Disable a correlation group or members of a correlation group
- Activate and restore the outputs in a correlation group
- Unlatch all latched output devices globally

Notes

- You should not disable the GSA-REL device when it is part of a correlation group.
- You cannot configure user keys for correlation groups.

By default, the buttons are not programmed. The buttons can be labeled to indicate their function with a slip-in label. To operate the buttons, you must be logged on with a level one password or greater.

Figure 45: Programmable keys



Note: You cannot program a key while it is active. When the “Key is active” message is displayed, wait until the key deactivates before continuing.

Table 18: Programmable key functions

Function	Option	Behavior when user key is pressed
None		User key does not respond.
Activate		Activates the outputs that belong to the correlation groups associated with the user key.
Disable	Members	Disables all of the devices, NACs, and zones that belong to the correlation groups associated with the user key with an option of “Members.”
Disable	Group	Disables the correlation groups associated with the user key with an option of “Group.” The devices, NACs, and zones that belong to the correlation group remain enabled. Disabled correlation groups do not activate even if the required number of inputs activate. This is typically used to prevent relay and sounder bases from sounding.
Disable	Members + Group	Disables all of the devices, NACs, and zones that belong to the correlation groups associated with the user key with an option of “Members + Group.” It also disables the correlation group.
Restore		Restores the outputs that belong to the correlation groups associated with the user key.
Unlatch		Unlatches all latched outputs in the system.

To set up a programmable key:

1. Press the Menu button and choose Program.
2. Choose Programmable Keys.
3. Enter a level two password.
4. Choose the key to be programmed.
5. Choose Edit List or New List. Both commands let you select a function and edit the list of correlation groups assigned to the key. The difference between the two is that:
   - Edit List lets you makes changes to a key that has already been programmed. Choose this command to change the key's function, or edit the list of correlation groups assigned to it.

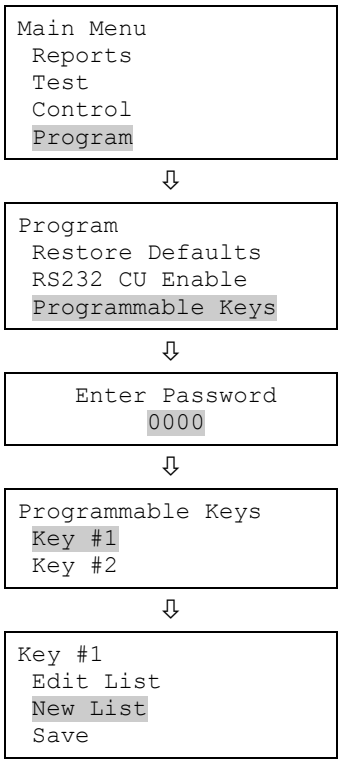
     Note: If you select Edit List for a key that has not yet been programmed, the message "Nothing to Edit" is displayed. Choose New List instead.
   - New List can be used to set up a new programmable key or to overwrite the current programming of a key that has already been set up.
6. Choose a function to assign to the key.
   - None
   - Activate
   - Disable
   - Unlatch
   - Restore

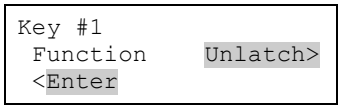
   Note: To disable a programmed key, choose None.
7. If you chose Unlatch in step 6:
   - Press Enter to reopen the previous menu, and then choose Save.

     — or —

     Press the Menu button to exit menu mode without saving.

   The button is now completely programmed to unlatch all latched outputs globally.



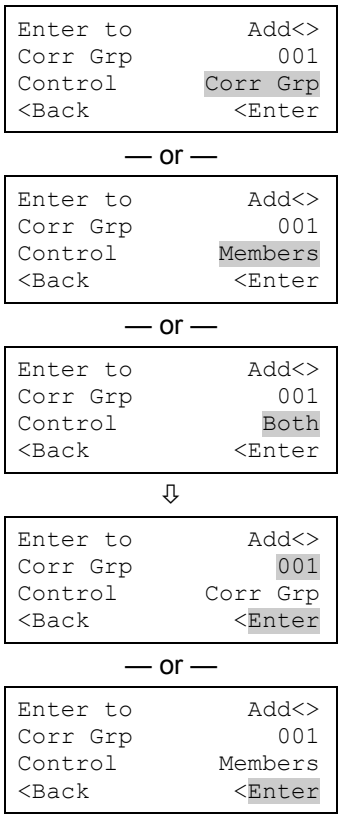


8. If you chose Disable, press the down arrow to edit the Control option, and indicate what the key should control. Choose:
   - Members
   - Corr Grp
   - Both

   Press Enter to reopen the previous menu, and then choose Save.

   Note: This option is not available for Unlatch, Activate, or Restore.

   You are now ready to choose the correlation groups to be activated, disabled, or restored.



9. Enter the number of the first correlation group to be assigned or unassigned, and then press Enter.
   - If you enter the number of a correlation group that is already assigned to the key, the command REM (remove) is displayed. Pressing Enter removes the group from the list.
   - If you enter the number of a correlation group that has not yet been assigned to the key, the command ADD is displayed. Pressing Enter adds the new group to the list.
10. Enter the number of the next correlation group to be added or removed, and then press Enter. Repeat to add or remove any remaining correlation groups.
11. When you have finished editing the list of correlation groups, press Enter to reopen the previous menu, and then choose Save.

    — or —

    Press the Menu button to cancel your changes and exit menu mode.
12. Press the Menu button to exit menu mode. The button is now programmed to activate, disable, or restore all correlation groups that you have added to the list.

    Note: Correlation groups with GSA-REL should not be configured for activate, restore, or disable.

Clearing the event history log

The panel maintains a log of 1,000 system or user events. The event record contains the event time, the event type, the event state, and the event ID. The event time is the time and date of the event activation or restoration. All of these records are stored in the panel's history database and can be cleared (deleted) if needed.

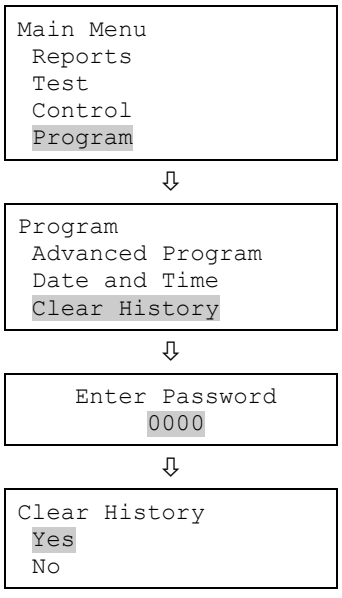
Once the history log is cleared, all new panel events are stored in history. You might want to clear the history log in the following situations:

- When installation is complete, you can clear the history log before turning the system over to the building owner.
- If the system history log is filled with event records resulting from a faulty device, problem, or situation, you can clear the history log after the problem is addressed.

Note: When the history log is full, the oldest event is deleted when a new event is added.

To clear the event history log:

1. Press the Menu button and choose Program.
2. Choose Clear History.
3. Enter a level two password.
4. Select Yes to clear history or No to leave history unchanged.
5. Press Enter.
6. Press the Menu button to exit menu mode, or continue programming.



Updating the firmware

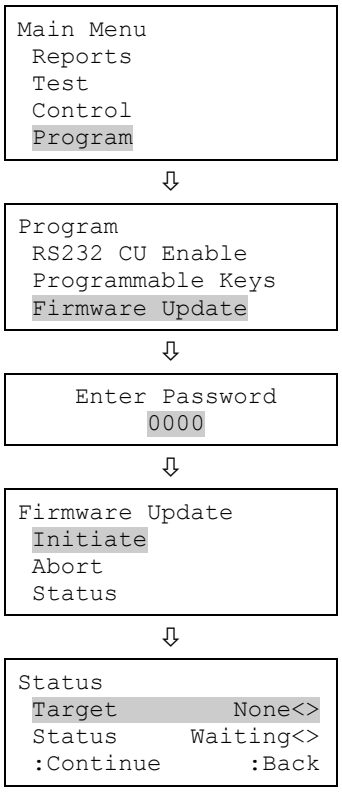
The Firmware Update Utility (FUU) lets you install new firmware in your main panel or expansion panels. It also lets you retrieve the current firmware version in your panel.

The utility runs on a laptop or PC connected to a panel using a TCP/IP or USB/Serial connection. The utility works with panels already installed with firmware version 2.2, or higher.

To update the firmware from the front panel:

1. Press the Main Menu button and choose Program.
2. Choose Firmware Updates.
3. Enter a level two password.
4. Select Initiate to start the firmware download.

The Download Status menu displays showing the target as “None” and status as “Waiting.”



To update the firmware from the firmware update utility:

1. After initiating the firmware update from the panel, enter the Level 2 password in the Properties window of the FUU in order to establish communication with panel.
2. Select a connection method (RS232 or TCIP), and then enter the corresponding fields required to connect to the panel in properties window.
3. Select the desired target panel (main or expansion) in the Panel Select field.
4. Browse to the desired image by clicking Browse button in the Image Path field.

5. Press the Write to Panel button.

Note: When using the serial communication, be sure to set the ‘RS232 CU Enable’ in panel need to ON before and after initiating the download. If the system should timeout before the download starts, you must re-enable it.

Download status

You can track the download status from the front panel, or from the FUU.

Front panel status

- Observe the status from the Status menu. The target field changes to main or expansion, based on the image selected from the tool.
- You can abort a download that is in progress.
- While a download is in progress, pressing initiate again displays the download’s current status.
- When the download completes, the panel status shows “storing.”
- When the flash write completes, the status changes to “completed” and a pseudo event is generated.
- After reinitiating, you must transfer from the tool within one minute. If you fail to do so, the download status changes to “Not Initiated” (pseudo event Program mode restores) and you must reinitiate from the panel.

FUU status

- The download status and percentage of completion displays on the FUU’s Communication Status window.
- You can abort the download from the FUU while it is in progress by clicking the Abort button
- If the panel does not respond by sending an ACK, the download aborts and the abort status displays in the Communication Status window.

Notes

- You cannot initiate a download under the following conditions.
  - The system is in an alarm condition.
  - There is an AC power failure.
  - The battery is missing, or the battery is low.

- The following can occur while a download is in progress.
  - If an alarm is received, the download aborts.
  - In case of an AC failure, the download continues until the battery runs out.
  - In case of a missing battery, or low battery, the download continues.
- The following error messages may appear on the panel during the download.
  - Battery voltage is insufficient!
  - Battery not present
  - AC fail
- In case of power failure, download proceeds in battery condition as well.
- Before initiating a download, the panel checks the battery threshold voltage level. If the battery is not connected, or the battery voltage is below the threshold, the download will not initiate. The panel displays “Battery not Present/Voltage insufficient.”
- You must backup your configuration and database before starting a download.
- In case of a CRC failure for the primary or active image, panel recovers with the backup image.

After a download completes

When a download completes successfully, the pseudo event “Fw Download Completd” displays on the panel.

To abort a firmware download from the panel:

1. From the panel's main menu, select Program > Firmware Update > Abort > Enter Password > Status.

   The FUU Communication Status window displays "The download progress is either Aborted at the panel or Failed."
2. Click OK.

Restarting the panel

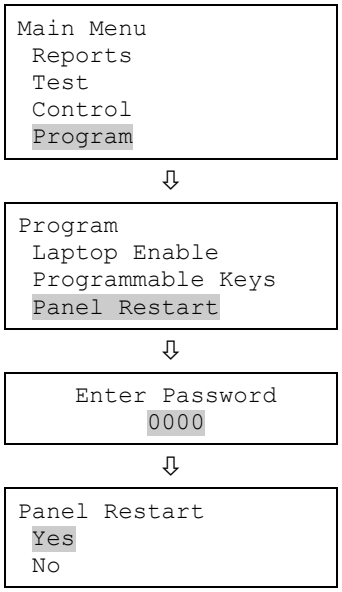
The Panel Restart command restarts (reboots) the panel without having to cycle AC power.

To restart the panel:

1. Press the menu button and choose Program.
2. Choose Panel Restart.
3. Enter your level two password (or greater).
4. Choose Yes to restart the panel.

   — or —

   Choose No to cancel.



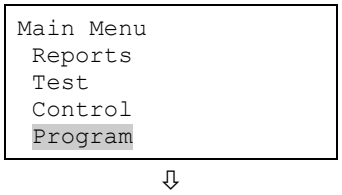
Enabling RS-232 communication

The RS232 CU Enable command lets you connect a PC to the control panel by means of the optional RS-232 card. This enables you to use the Configuration Utility (CU) to program the panel and upload or download panel data.

Note: The RS232 CU Enable command times out (turns off) after four minutes of inactivity, meaning that if communication is enabled but the panel does not connect to the CU PC within four minutes, communication is automatically disabled.

To enable RS-232 communication:

1. If you are using a printer, disconnect the printer cable from the RS-232 card.
2. Connect the configuration utility computer to the RS-232 card.
3. Press the Menu button and choose Program.



4. Choose RS232 CU Enable.

   The RS232 CU Enable screen is displayed.

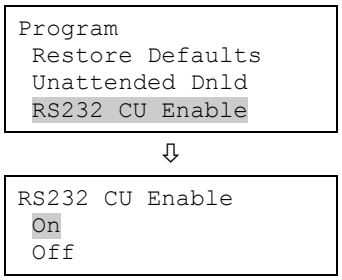
5. Choose On.

   The panel can now communicate with the CU.

6. When you have finished, disconnect the PC from the RS-232 card.

7. Turn off RS232 CU Enable.

8. Reconnect the printer cable to the RS-232 card if needed.



Auto programming the panel

Auto programming detects and applies default settings to installed devices, NACs, remote annunciators, and expansion cards. You can control many aspects of the process by programming the options listed in:

- “Auto programming options” on page 68
- “Dialer options” on page 71
- “NET options” on page 72

Auto programming sets up a common alarm system. After the auto programming process has finished, you can continue with advanced programming to apply any custom settings that may be required.

Caution: Auto programming replaces the current settings for devices, NACs, remote annunciators, and expansion cards with default settings.

Notes

- Before starting the auto programming sequence, set the time and date and change the default passwords. “Factory default settings” on page 37 for a list of all the settings that will be applied during auto programming.
- Auto programming places most input devices and NACs in correlation group 001. Relay and sounder bases are not automatically assigned to correlation groups. For more information on correlation groups, see “What is a correlation group?” on page 33 and “Correlation group programming” on page 87.
- Auto programming turns off the In Suite Signal Silence option for all correlation groups.

- If you choose to label devices during auto programming, devices are labeled by entering the address of the device and then labeling the device. It is important for you to have a printout of the Device Details > Serial Number report to correlate the device address with the default label and serial number. This will make device labeling much easier.
- Auto programming will not allow for GSA-REL configuration. You must configure a GSA-REL from the Configuration Utility.

Auto programming options

Table 19 below describes the options to be set when auto programming the panel.

Table 19: Auto programming options [1]

Option	Description
Auto zoning	This option controls whether devices are automatically assigned to zones. The number of devices assigned to a zone is based on the type of panel: • VS1 panel: Four devices per zone • VS2 panel: Sixteen devices per zone Yes: The system automatically finds all of the devices connected to the system and assigns them to a zone. Only the primary element of dual element detectors are assigned to a zone. No: The system automatically finds all of the devices connected to the system and does not assign them to a zone.
Enable NET	Configures the panel to communicate with a central monitoring station (CMS) via an Ethernet network. Yes: Enables Ethernet communication with the central monitoring station (CMS). No: Disables Ethernet communication with the CMS.
Dialer	Configures the panel to communicate with the CMS via a dialer. The dialer is configured as a dual line so that all messages are sent to two separate receivers with different phone numbers and account codes. **Note:** Not all dialer programming options are acceptable for UL/ULC installations. See “UL 864 programming requirements” on page 31 for details. Yes: Enables the dialer and configures it for dual-line communication with the CMS. All messages will be sent to two separate receivers that have different phone numbers and account codes. No: Dialer is not enabled.

Option	Description
Event notification	Configures event reporting for zones, individual devices, or both. Zone: When a device is a member of a zone, only the zone information is sent to the LCD, LEDs, printer, and dialer. Device level reporting configuration is not available. Zone/device: Zone information is sent to the LCD and LEDs. Device information is sent to the printer and dialer. Zone/device reporting locations can be configured through custom programming. Device: Only device information is reported, no zone information
Label devices	Configures the auto programming sequence to allow you to label devices using the alphanumeric keypad. Yes: Enables device labeling No: Disables device labeling
Label zones	Configures the auto programming sequence to allow you to label zones using the alphanumeric keypad. Yes: Enables zone labeling No: Disables zone labeling

Option	Description
Follow	This option controls the conditions that will activate relay or sounder detector bases. Select from the following values. Head: The base is controlled by the detector's settings. • The base activates when the detector goes into alarm, unless the detector is set for alarm verification. • If the detector is set for alarm verification, the base activates when the detector goes into alarm verification. It does not restore, however, until the alarm restores. • The base does not respond when the detector goes into prealarm no matter how the detector is configured. Also, the base only follows the primary element of a dual element detector. Any activation from a secondary element does not trigger the base. Example: When a PCOS on a sounder base has a follow set to Head, the base is only triggered when a smoke event is generated. The base does not trigger when a CO event is generated. • Devices with the base set to follow Head cannot be placed in correlation groups. When a device base is set to follow Head, the base is removed as an output from any correlation groups to which it belongs. Alarm: The base activates its relay when the detector goes into alarm. The base will not restore until the alarm event has been restored. Alarm and verify (ALM+VFY): The base activates its relay when the detector goes into alarm verify and continues when the detector goes into alarm. The base will not restore until both events have been restored. Alarm and prealarm (ALM+PALM): The base activates its relay when the detector goes into prealarm and continues when the detector goes into an alarm. The base will not restore until both events have been restored. Riser: The base is triggered individually by the loop controller (sounder bases only). None: A correlation group triggers the base. It can be applied to both relay and sounder bases and is used for relay bases configured as latched output devices. **Note:** All base follow settings except Head and Riser can be activated by correlation groups.

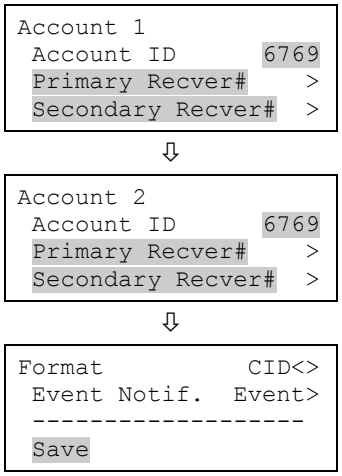
[1] Not all options listed here are displayed on all systems.

Dialer options

Table 20 describes the options used to set up the dialer.

Table 20: Auto programming — Dialer options [1]

Option	Description
Account 1	**Account ID:** Enter the four-digit ID code for account 1 Note, if you do not change the default of FFFF, no events will be sent.) Primary receiver number: Enter the primary receiver's phone number. Up to 20 digits (0-9, *, #, and ,). The comma causes a two-second delay in dialing. The number or hash symbol (#) and the asterisk symbol (*) are used with calling feature codes and services. Consult your telephone service provider. Secondary receiver number: Enter the secondary receiver's phone number. Up to 20 digits (0-9, *, #, and ,). The comma causes a two-second delay in dialing. Format: CID CID: Contact ID is the alarm format that the monitoring facility (DACR) will receive. See "Default contact ID event codes" on page 42. Event notification: Set event notification (event reporting) to: Device: Only device information is reported or transmitted, no zone information. This setting uses default device event notification settings for reporting events. See "Factory default settings" on page 37. Zone: When a device is a member of a zone, only the zone information is reported or transmitted, no device information. This setting uses default zone event notification settings for reporting events. See "Factory default settings" on page 37. Event: Only the event type (alarm, supervisory, trouble, etc.) is reported or transmitted, no device or zone information. This setting uses the default CMS event notification settings for reporting events. See "Factory default settings" on page 37.
Account 2	Account ID: Enter four-digit ID code for account 2 Primary receiver number: Enter the primary receiver's phone number (up to 20 digits). Secondary receiver number: Enter the secondary receiver's phone number (up to 20 digits).



Option	Description
	Format: CID CID: Contact ID is the alarm format that the monitoring facility (DACR) will receive. See “Default contact ID event codes” on page 42. Event notification: Set event notification (event reporting) to: Device: Only device information is reported or transmitted, no zone information. This setting uses default device event notification settings for reporting events. See “Factory default settings” on page 37. Zone: When a device is a member of a zone, only the zone information is reported or transmitted, no device information. This setting uses default zone event notification settings for reporting events. See “Factory default settings” on page 37. Event: Only the event type (alarm, supervisory, trouble, etc.) is reported or transmitted, no device or zone information. This setting uses the default CMS event notification settings for reporting events. See “Factory default settings” on page 37.

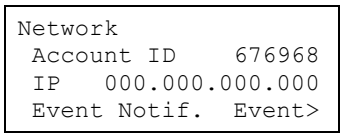
[1] Dialer options are displayed only if a dialer is installed on the panel.

NET options

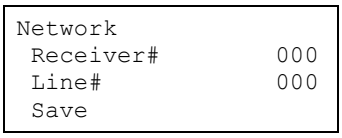
Table 21 describes the network options used to set up the Ethernet card.

Table 21: Auto programming — NET options

Option	Description
Account ID	Enter the six-digit code for the central monitoring station (CMS) account.
IP	Enter the IP address for the CMS.



Option	Description
Event notification	Set event notification (event reporting) to: Device: Only device information is reported or transmitted, no zone information. This setting uses default device event notification settings for reporting events. See “Factory default settings” on page 37. **Zone:** When a device is a member of a zone, only the zone information is reported or transmitted, no device information. This setting uses default zone event notification settings for reporting events. See “Factory default settings” on page 37. **Event:** Only the event type (alarm, supervisory, trouble, etc.) is reported or transmitted, no device or zone information. This setting uses the default CMS event notification settings for reporting events. See “Factory default settings” on page 37.
Receiver number	Enter the CMS receiver number. Specifies the CMS receiver number to be displayed in the message sent to the receiver. This number is user-defined.
Line number	Enter the CMS receiver line number. Specifies the receiver’s line number to be displayed in the message sent to the receiver. This number is user-defined.



Auto programming procedure

Use the following procedure to auto program the panel, referring to the options listed in Table 19 on page 68. Not all options shown are displayed on all systems.

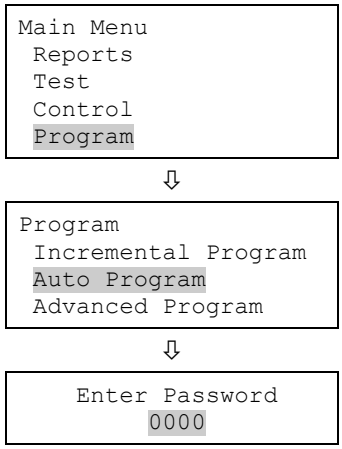
To auto program a panel:

1. Press the menu button and choose Program.
2. Choose Auto Program.
3. Enter a level two password.
4. When the “Current config. will be lost screen!,” message displays on the LCD:

   Select Continue to continue with auto programming

   — or —

   Select Cancel to return to the programming menu.



5. Set auto programming options.

   Note: Use the right or left arrow button rather than the Enter button to select values for each option. The Enter button begins the auto programming operation no matter which option the cursor is on. Also, the options you select are preserved and will be displayed the next time you auto program.

6. When you have finished, press Enter.

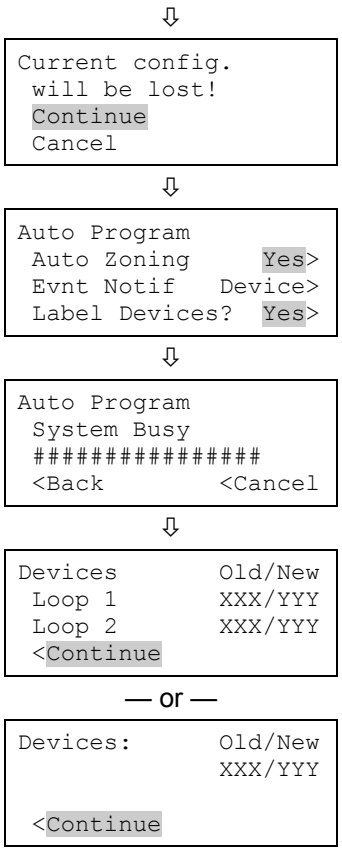
   The panel begins auto programming and displays the number of devices on the system. If you have more than one loop, the device counts are per loop. If you previously programmed the panel, The system displays the number of old and new devices.

7. Press Enter to continue.

   Auto programming continues based on the settings you made above.

8. When prompted, program the options you selected using the procedures that follow. For example, if you are using a dialer, auto programming requires you to program specific dialer options.

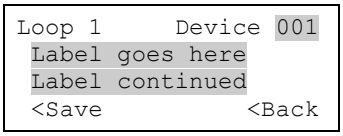
9. When auto programming is complete, the system displays the banner screen.



Labeling devices

If you set the Label Devices auto programming option to Yes, follow these steps to label the devices.

To label devices:



1. Next to “Device,” enter the device number to be labeled.
2. Enter a text label for the device (two lines of 20 characters). The default label is “Loop X Device XXX.”
3. Press Enter to save the label and go to the next number of the device.

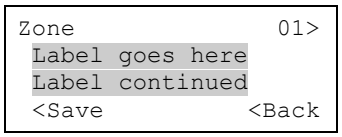
   Note: Pressing the Enter button saves the current label, and then goes to the next available device, so that you can quickly go to each device and label it.
4. Enter a text label for the device (two lines of 20 characters).
5. Repeat steps 3 and 4 until all devices are labeled.
6. When you have finished labeling, place the cursor in the device number field, and then press the Cancel button to reopen the previous menu. Continue with the next auto programming option.

See “Programming relay and sounder detector bases” on page 100.

Labeling zones

If you set the Label Zones auto programming option to Yes, follow these steps to label zones.

To label zones:



1. Next to “Zone,” enter the number of the zone to be labeled.
2. Enter a text label for the zone (two lines of 20 characters). The default label is “Zone XX.”
3. Press Enter to save the label and go to the next number of the zone.

Note: Pressing the Enter button saves the current label, and then goes to the next zone number so that you can quickly go to each zone and label it.

4. Enter a text label for the zone (two lines of 20 characters).
5. Repeat steps 3 and 4 until all zones are labeled.
6. When you have finished labeling, make sure the cursor is on the zone number, and then press the Cancel button to exit and go to the next auto programming option.

Performing incremental programming

Incremental programming lets you add and label devices and zones to an existing database without affecting current settings. It is typically used to add or remove a device loop or a large number of individual devices. Incremental programming should be used only after the panel has been program either by auto programming or advanced programming.

Incremental programming options

Table 22 below describes the options to be set when performing incremental programming.

Table 22: Incremental programming options

Device option	Description
Loop	Select the loop (number) that you want to program, or select All to program all loops.
Label devices	Yes: Enables device labeling No: Disables device labeling
Label zones	Yes: Enables zone labeling No: Disables zone labeling

Device option	Description
Follow	This option controls the conditions that will activate relay or sounder detector bases. Select from the following values: Head: The base is controlled by the detector's settings. • The base activates when the detector goes into alarm, unless the detector is set for alarm verification. • If the detector is set for alarm verification, the base activates when the detector goes into alarm verification. It does not restore, however, until the alarm restores. • The base does not respond when the detector goes into prealarm no matter how the detector is configured. Also, the base only follows the primary element of a dual element detector. Any activation from a secondary element does not trigger the base. Example: When a PCOS on a sounder base has a follow set to Head, the base is only triggered when a smoke event is generated. The base does not trigger when a CO event is generated. • Devices with the base set to follow Head cannot be placed in correlation groups. When a device base is set to follow Head, the base is removed as an output from any Correlation Groups to which it belongs. Alarm: The base activates its relay when the detector goes into alarm. The base will not restore until the alarm event has been restored. Alarm and verify (ALM+VFY): The base activates its relay when the detector goes into alarm verify and continues when the detector goes into alarm. The base will not restore until both events have been restored. Alarm and prealarm (ALM+PALM): The base activates its relay when the detector goes into prealarm and continues when the detector goes into an alarm. The base will not restore until both events have been restored. Riser: The base is triggered individually by the loop controller (sounder bases only). None: A correlation group triggers the base. It can be applied to both relay and sounder bases and is used for relay bases configured as latched output devices.

Incremental programming procedure

Referring to Table 22 on page 76, follow these steps to auto program the panel. Not all options shown in Table 22 are displayed on all systems.

Notes

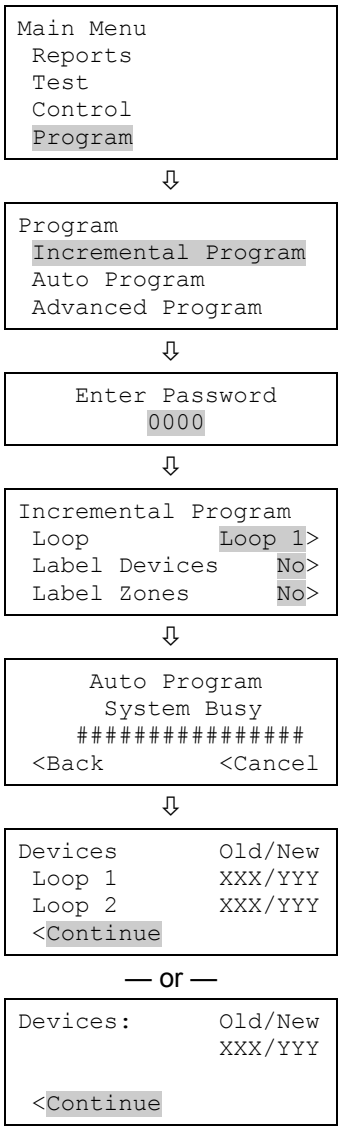
- Use the Right or Left Arrow button rather than the Enter button to select values for each option. The Enter button starts the incremental program sequence immediately no matter which option the cursor is on.
- The values you select are preserved and will be displayed as defaults the next time you incrementally program the panel.

To perform incremental programming:

1. Press the Menu button and choose Program.
2. Choose Incremental Program.
3. Enter a level two password.
4. Set the incremental programming options using Table 22 on page 76.
5. When you have finished, press Enter.

   The panel begins incremental programming and displays the number of devices in the system. If the panel has two loops, the device counts for each loop are given separately. The system displays the number of old and new devices.
6. Press Enter to continue.

   Incremental programming continues based on the settings you made above.
7. If you chose to label devices and/or zones, use the procedures that follow to enter labels.
8. When incremental programming is complete, the system returns you to the banner screen.

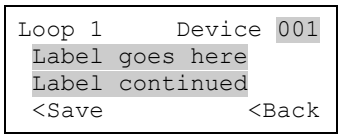


Labeling devices

If you set the Label Devices incremental programming option to yes, follow this procedure to label the devices.

To label devices:

1. Next to “Device,” enter the number of the device to be labeled.
2. Enter a text label for the device (two lines of 20 characters). The default label is “Loop X Device XXX.”



3. Press Enter to save the label and go to the next number of the device.

   Note: Pressing the Enter button saves the current label and displays the next device number. This lets you move quickly from one device to the next.

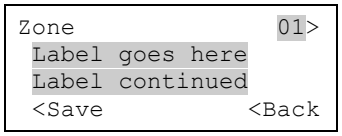
4. Repeat steps 2 and 3 until all devices are labeled.
5. When you have finished labeling, place the cursor on the device number, and press the Cancel button to continue with the next incremental programming option.

See “Programming relay and sounder detector bases” on page 100.

Labeling zones

If you set the Label Zones incremental programming option to Yes, follow these steps to label zones.

To label zones:



1. Enter the zone number to be labeled.
2. Enter a text label for the zone (two lines of 20 characters). The default label is “Zone XX.”
3. Press Enter to save the label and go to the next zone number.

   Note: Pressing the Enter button saves the current label and then goes to the next zone number so that you can quickly go to each zone and label it.

4. Enter a text label for the zone (two lines of 20 characters).
5. Repeat steps 3 and 4 until all zones are labeled.
6. When you have finished labeling, move the cursor to the zone number, and then press the Cancel button to continue with the next incremental programming option.

Adding and removing devices from programmed systems

You can add an additional device or several devices to a system that has already been programmed without reentering programming mode. Once the device is installed, the panel signals a trouble active event and indicates on the LCD screen that there is an unconfigured device. The device can then be programmed and added to the database.

Notes

- If you are adding more than a few devices, you may want to use the Incremental programming option that lets you quickly add and label the devices. See “Performing incremental programming” on page 76.
- You must log on with a level two password to add a device.

Device programming options

Table 23 below describes the options to be set when programming devices.

Table 23: Device options

Device option	Description
Zone	Select the zone you want to add this device to or select Off if you are not adding the device to a zone.
Zone secondary	Select the zone to which you want to add this device (secondary element), or select Off when you are not adding the device (secondary element) to a zone. See Table 9 on page 45.
Label	Enter a text label for the device (two lines of 20 characters). When you have finished, select Save.
Correlation groups	Assigns the device to one or more correlation groups. For more information, see “What is a correlation group?” on page 33. Enter the number of the correlation group to which the device is assigned. Choose Included or Excluded. • “Included” adds assigns the item to the group. • “Excluded” removes the item from the group When you have finished, choose Save.

Device option	Description
Event notification	Sets the options needed for messages for the active, alarm verify, disable, maintenance, prealarm, test, trouble, and active3 events. See “Factory default settings” on page 37 for device event notification default settings. Printer: Yes or No. This controls whether event information is sent to the printer. Coder: Four-digit coded output that is played in response to alarm conditions (00-00-00-00 to 99-99-99-99). Dialer: • Acct 1 2: Event information is sent to both dialer accounts • Acct 1: Event information is sent to dialer account one • Acct 2: Event information is sent to dialer account two • None: Event information is not sent to the dialer NET (1-8): Yes or No. Controls whether event information is sent to the connected Ethernet receiver. CID: Contact ID event code (000 to 999). When you have finished, choose Save.
Alt operation	The PHS operates in Operation mode (day) or Alternate (Alt) Operation mode (night). This allows you to change the detector’s photo/heat from supervisory/alarm to alarm/alarm. This is applicable only for “heat + supervisor smoke latching” and “heat + supervisory smoke nonlatching” device types of the PHS.
Day sensitivity	Sets the daytime smoke level sensitivity. Choose least, less, more, normal, or most.
Night sensitivity	Sets the nighttime smoke level sensitivity. Choose least, less, more, normal, or most.
Day prealarm%	Sets the daytime prealarm percentage. Choose Off or 50, 55, 60, 65, 70, 75, 80, or 90 percent. This sets the amount of smoke that indicates a prealarm event before an actual alarm event is indicated. The percentage is based on the sensitivity level selected above. For example, if you choose normal sensitivity and select 50 percent for your prealarm, when smoke levels reach 50% of the normal smoke level required to initiate an alarm, a prealarm event is indicated.
Night prealarm%	Sets the nighttime prealarm percentage. Choose Off or 50, 55, 60, 65, 70, 75, 80, or 90 percent. This sets the amount of smoke that indicates a prealarm event before an actual alarm event is indicated. The percentage is based on the sensitivity level selected above. For example, if you choose normal sensitivity and select 50 percent for your prealarm, when smoke levels reach 50% of the normal smoke level required to initiate an alarm, a prealarm event is indicated.
Base type	Sets the base type for detectors. Choose standard, relay, isolator, or sounder.

Device option	Description
Follow	This option controls the conditions that activate the relay or sounder detector base. **Note:** All base follow settings except Head and Riser can be activated by correlation groups. Select from the following values. Head: The base is controlled by the detector's settings: • The base activates when the detector goes into alarm, unless the detector is set for alarm verification. • If the detector is set for alarm verification, the base activates when the detector goes into alarm verification. It does not restore, however, until the alarm restores. • The base does not respond when the detector goes into prealarm no matter how the detector is configured. Also, the base only follows the primary element of a dual element detector. Any activation from a secondary element does not trigger the base. Example: When a PCOS on a sounder base has a follow set to Head, the base is only triggered when a smoke event is generated. The base does not trigger when a CO event is generated. • Devices with the base set to follow Head cannot be placed in correlation groups. When a device base is set to follow Head, the base is removed as an output from any correlation groups to which it belongs. Alarm: The base activates its relay when the detector goes into alarm. The base does not restore until the alarm event has been restored. Alarm and verify (ALM+VFY): The base activates its relay when the detector goes into alarm verify and continues when the detector goes into alarm. The base does not restore until both events have been restored. Alarm and prealarm (ALM+PALM): The base activates its relay when the detector goes into prealarm and continues when the detector goes into an alarm. The base does not restore until both events have been restored. Riser: The base is triggered individually by the loop controller (sounder bases only). None: A correlation group triggers the base. This can be applied to both relay and sounder bases and is used for relay bases configured as latched output devices.
Type	Select the device type based on the type of device you are programming. Refer to "Device type descriptions" on page 45 for a list of all possible device types.

Adding devices

To add a device to a programmed system:

1. Install the device on the system.

   The system recognizes the new device and displays a trouble event message that indicates that there is an unprogrammed device.

2. Press Enter.

   The device details screen is displayed.

3. Press Enter again, and enter a level two password (if you are not already logged on).

   The Add Device screen is displayed.

4. Verify the device that you are about to add, and press Enter.

   The Device programming menu displays. If the device is not a valid device, “invalid device” displays and you will be unable to program the device.

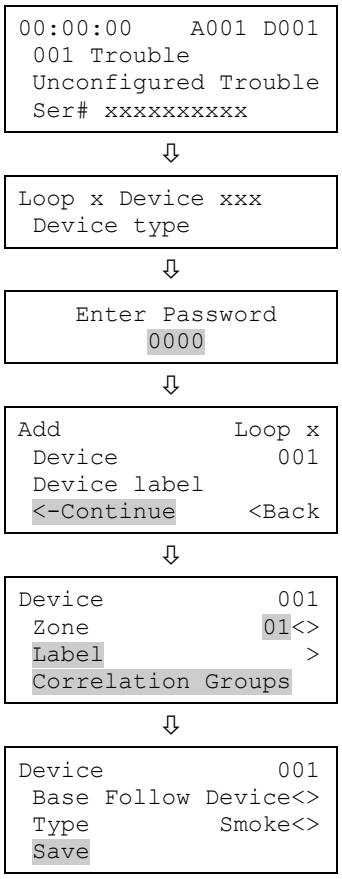
5. Program device options using Table 21 on page 72.

   Some device options have a factory default setting that you can accept or change. See “Factory default settings” on page 37.

   If you added a dual address device, both addresses for the device are displayed on the screen (e.g. 001/002). The first address listed is the device address you are programming. When you pick the second address to program, both addresses are still displayed but in reverse order (e.g. 002/001).

   Depending on the type of device you are programming, some of the options in the Table 21 on page 72 may not be available.

6. When you have finished programming each option, choose Save. The device is added to the database and the unprogrammed device event is cleared.



Note: You cannot configure a GSA-REL device from the panel UI. You must configure it from the Configuration Utility (CU).

7. Press the Menu button to exit menu mode.

You can remove a device from the system and delete it from the database without going into programming mode.

Removing devices

To remove a device from a programmed system:

1. Physically remove the device from the system.

   The system indicates a trouble event.

   Note: If the system is configured as a zoned system, the panel displays two events, one for the zone and one for the device.

2. Press Enter.

   The Device Details screen is displayed. If the device condition shows as "Communications Fault," you can delete the device from the system; otherwise, you cannot remove it.

3. Press Enter.

   The Enter Password screen is displayed if you are not logged on. If you are already logged on, the Delete Device screen is displayed; go to step 5.

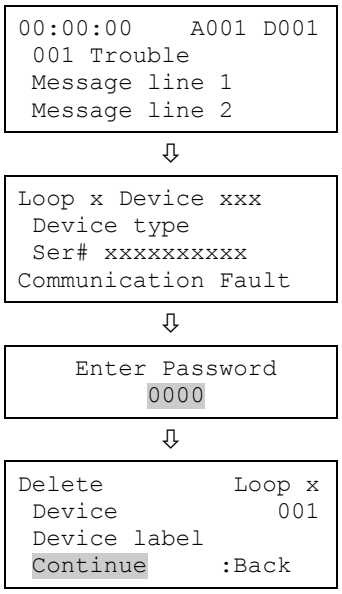
4. Enter a level two password.

   The Delete Device screen is displayed.

5. Verify the device you are about to delete by reviewing the information on the screen. Before continuing, be sure that this is the device you want to remove. Once removed, the process cannot be reversed.

6. Press Enter to delete the device and save the change in the database.

7. Repeat these steps for each device you are removing from the system.



Advanced programming

Overview

Advanced programming lets you program the panel manually and apply custom settings. Most options have a factory default setting that you can accept or change. See “Factory default settings” on page 37.

In advanced programming, you can custom program the loop configuration options (loops, devices, zones, etc.), panel configuration options (annunciators, dialer, network, printer, etc.), panel operation options (language, marketplace, AC fail delay, etc.), panel events, and loop events. All of these options can be programmed directly from the front panel.

To do advanced programming, you must have a level two password and it is recommended that you complete the programming worksheets and have them available before beginning to program the system. Go to Appendix B “Worksheets” on page 209 to get a copy of each worksheet.

Note: Before starting the advanced programming sequence, set the time and date, and then change the default passwords. See “Setting the time and date” on page 54 and “Changing the passwords” on page 56.

Panel and loop programming options

Advanced programming lets you customize panel operation, panel configuration, and loop configuration. Programming options include:

- Annunciator class programming
- Annunciator programming
- CMS device programming
- Dialer programming
- NAC programming
- Network programming
- Network card programming
- Printer programming

Loop configuration options include:

- Correlation groups programming
- Device programming
- Loop 2 enable
- Loop class programming
- Zone programming
- Panel operation options include:
- Language
- Marketplace
- AC fail delay
- Zone resound
- Reset inhibit
- Auto signal silence
- In-suite signal silence
- Day start
- Night start
- Daylight savings
- Date
- Aux power reset
- LCD banner
- Key #1
- Key #2

Advanced programming for panel and loop options is covered in the following topics in this chapter.

Programming events

Advanced programming lets you create custom responses to these types of events:

- Panel events
- Loop events
- Panel event corrs (correlations)

Advanced programming for panel and loop events is covered in the last two topics in this chapter.

Changing loop configuration options

Loop configuration options

Loop configuration includes the following programmable options:

Table 24: Loop configuration options

Option	Description
Loop class	Indicates whether the loop is wired Class A or Class B.
Zone	Select this option to add a zone.
Correlation Groups	Select this option to add correlation groups.
Device	Select this option to add devices.
Mapping	Select Yes to enable mapping. Select No to disable mapping.
Loop 2 Enable [1]	Select Yes to enable Loop 2. Select No to disable Loop 2. [1]
Loop 2 Fst Grp [1] [2]	Select: 001 to 025 to combine loop 1 and 2 devices in the same fast groups — or — 101 to 125 to use separate fast groups for Loop 2 devices.

[1] Displayed in dual loop systems only.

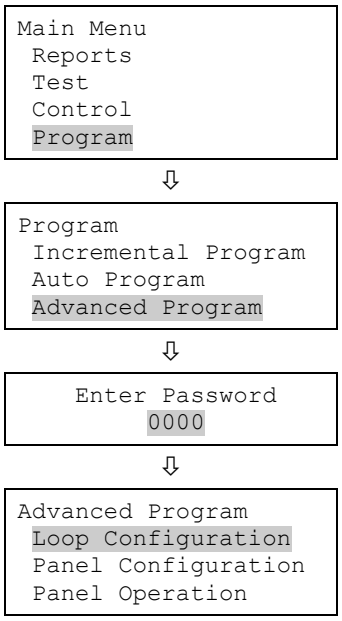
[2] See “Programming fast groups for sounder bases” on page 95.

Most options have a factory default setting that you can accept or change.

See “Factory default settings” on page 37.

To change loop configuration options:

1. Press the menu button and choose Program.
2. Choose Advanced Program.
3. Enter a level two password.
4. Choose Loop Configuration.
5. Program the options.



Correlation group programming

This section includes instructions for:

- Using fast groups
- Adding members to correlation groups
- Enabling in-suite signal silence
- Setting the activation count
- Copying members of a correlation group
- Removing all members from a correlation group

Note: To meet the UL\ULC requirement that evacuation signals activate within 10 seconds, assign sounder base detectors to “fast” correlation groups.

See “Programming fast groups for sounder bases” on page 95.

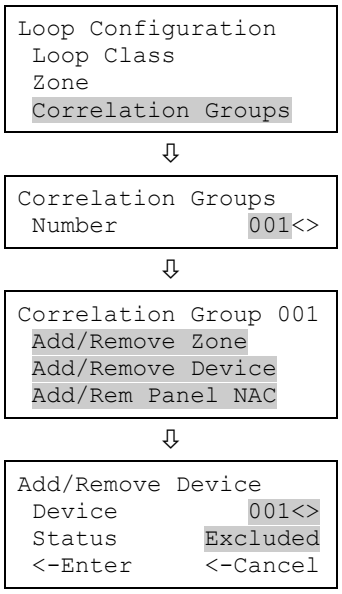
If you are new to correlation group programming, see “What is a zone?” on page 33.

Adding members to correlation groups

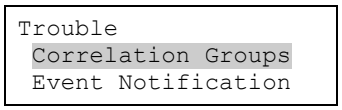
Correlation groups can include zones, NACs, devices, unconfigured alarm events, and the common trouble event. See the following procedure.

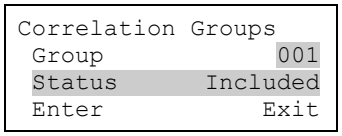
To add or remove members from a correlation group:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Correlation Groups and enter the correlation group number to be programmed. (Values range from 001 to 199.)
4. Choose:
   - Add/Remove Zone to add or remove a zone
   - Add/Rem Panel NAC to add or remove a NAC
   - Add/Rem Device to add or remove a device
     Note: The Add/Rem device includes primary sensor, secondary sensor, and base, if applicable.
   - Add/Rem Panel Event
   - Suite Sig Sil
   - Activation Count
   - Delay
   - Copy
   - Remove All
   - Save
5. Enter the loop number (if the panel has multiple loops).
6. Enter the zone, NAC, or device number.
7. On the Status line, press Enter to select Included or Excluded:
   - “Included” adds the item to the group
   - “Excluded” removes the item from the group
8. Repeat steps 4 to 7 to add or remove other devices, zones, or NACs.
9. Repeat steps 3 to 9 to program additional correlation groups.
10. Press the Menu button to exit menu mode, or continue programming.



To add the Common Trouble Event to a correlation group:





1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Common Trouble then choose Trouble.
4. Choose Correlation Groups and enter the number of the correlation group to be configured.
5. Press Enter to toggle between possible values:
   - “Included” adds the item to the group
   - “Excluded” removes the item from the group
6. Repeat steps 7 to 9 to add or remove the event from any remaining correlation groups to be configured.
7. Choose Save.
8. Press the Menu button to exit menu mode or continue programming.

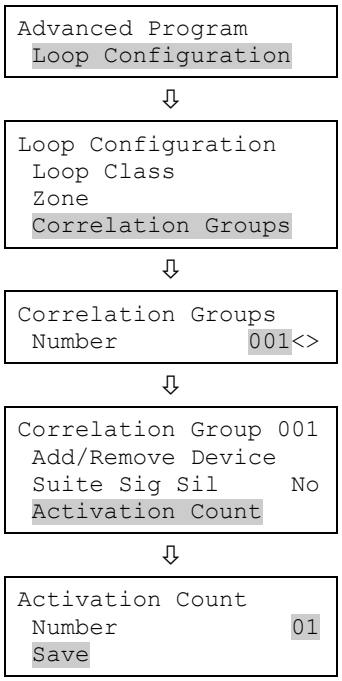
Setting a correlation group’s activation count

A correlation group’s activation count is the number of member activations that are required to activate the correlation group. The activation count is used to set up cross zoning. The following rules apply: disservice

- The count cannot exceed the number of input members in the correlation group
- The default value is 1
- Input members can be zones, NACs, devices, unconfigured alarm events, or the common trouble event
- The activation count must be 1 for correlation groups with in-suite signal silence enabled
- The activation count must not exceed 2 for cross zoning applications and the zones should not have alarm verification per ANSI/NFPA 72-2002 6.8.5.4.3.

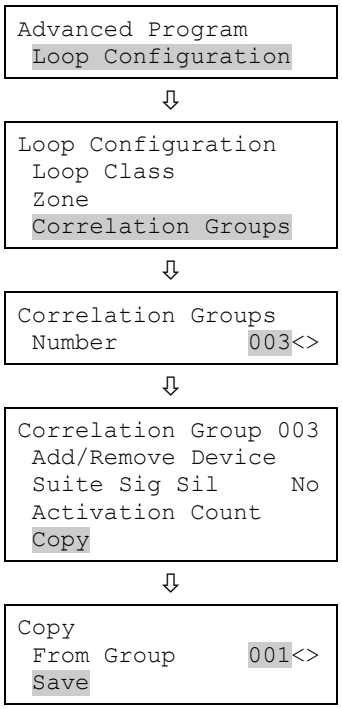
To set the activation count:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3 Choose Loop Configuration.
4. Choose Correlation Groups and enter the number of the correlation group to be programmed. (Values range from 001 to 199.)
5. Choose Activation Count and enter the activation count (values range from 01 to 99).
6. Choose Save.



To copy the members of a correlation group:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3 Choose Loop Configuration.
4. Choose Correlation Groups.
5. Enter the number of the correlation group to be programmed. (Values range from 001 to 199.)
6. Choose Copy and enter the number of the correlation group to be copied.
7. Choose Save.

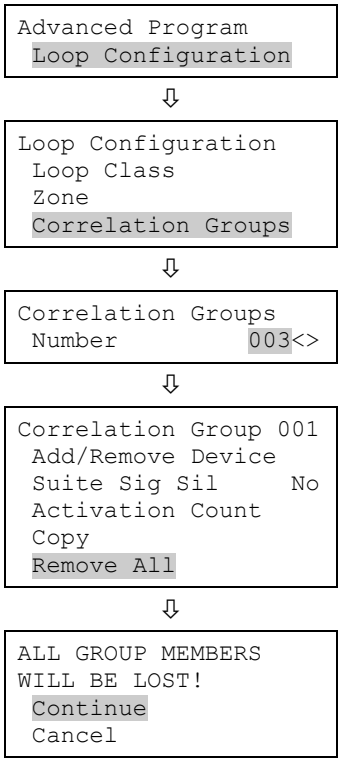


To remove all members from a correlation group:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3 Choose Loop Configuration.
4. Choose Correlation Groups.
5. Enter the number of the correlation group. (Values range from 001 to 199.)
6. Choose Remove All. A warning message is displayed.
7. Choose Continue to remove all members from the group.

   — or —

   Press the Cancel button to return to the previous level without removing all members.



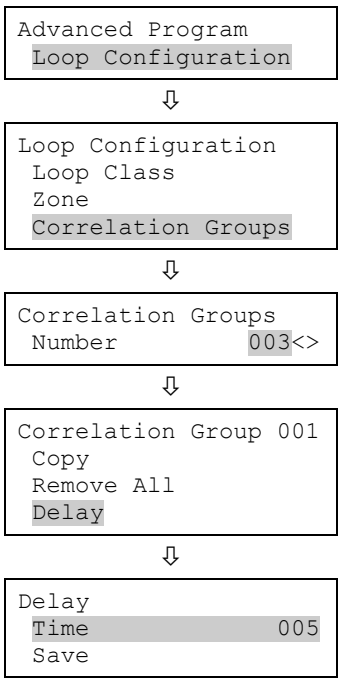
Note: Removing all members from a correlation group resets the activation count to 1 and disables in-suite signal silence.

Adding delay time to correlation groups

Using the Delay option, you can program your panel to delay the execution of a correlation group *n* seconds. A delay is required so that the prerelease and release responses occur in the correct order. Prerelease correlations must occur before release correlations.

To add a delay to a correlation group:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3 Choose Loop Configuration.
4. Choose Correlation Groups.
5. Enter the number of the correlation group. (Values range from 001 to 199.)
6. Choose Delay.
7. Enter the number of seconds the correlation group should wait. (Values range from 000 to 300.)
8. Choose Save.



Adding and removing panel events

The following panel events can be added to correlation groups in order to trigger outputs in that correlation. The outputs activate at the beginning of the event and restore when the events restore.

- Signal Silence
- Drill
- Common Alarm
- Common Supervisory
- Common Monitor
- Common Disable
- Common Trouble
- Local AC Power
- System AC Power
- Aux Power 1
- Aux Power 2

You can also configure Reset for a correlation group in two ways:

- Reset Activate: When an event is added to a correlation group without a configured time delay, the output activates when the reset starts and restores when the reset ends. When an event is added with a configured time delay, the output activates only after the delay time is reached.

  If the delay is greater than twenty seconds, the outputs will not activate, since the delay time exceeds the reset duration.

- Reset Restore: When an event is added to a correlation group without a configured time delay, active outputs in the correlation are restored when the reset starts and the end of the reset activates the outputs, provided the device triggering the output is still active; otherwise, the outputs will not activate. When programmed with a time delay, the outputs are activated after the reset duration and an additional delay time assigned to the correlation group, provided the device triggering the output device is still active.

When you configure a correlation group to activate, restore, or disable with the common outputs assigned to reset activate or restore, the priorities are defined from highest to lowest, as shown below.

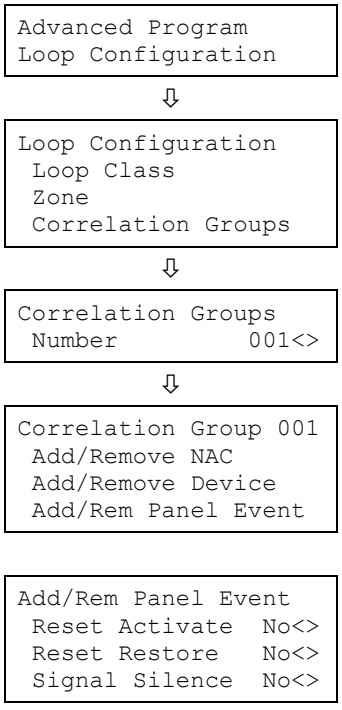
1. Device disable (command menu or user key)
2. A latched output
3. Activation or restore via command menu
4. Restore via user key
5. Activation via user key
6. Restore from correlation (reset restore)
7. Activation via correlation

To add or remove a panel event:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3 Choose Loop Configuration.
4. Choose Correlation Groups and enter the number of the correlation group. (Values range from 001 to 199.)
5. Choose Add/Rem Panel Event.
6. Select:

   Yes to add a panel event

   No to remove a panel event
7. Choose Save.



Programming in-suite signal silence

In-suite signal silence is programmed using two separate menus:

- Configure the elapse timer for in-suite signal silence by displaying the Program > Advanced Program > Panel Operation menu.
- The function is enabled for individual correlation groups through the Program > Advanced Program > Loop Configuration > Correlation Groups menu.

This section provides instructions for setting both in-suite signal silence options.

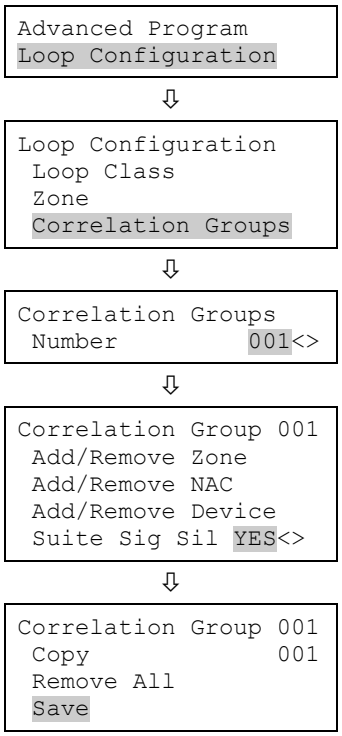
Note: When setting up correlation groups for in-suite signal silence, the group's activation count must be set to 1. See "Setting a correlation group's activation count" on page 89.

To enable in-suite signal silence for a correlation group:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3 Choose Loop Configuration.
4. Choose Correlation Groups and enter the number of the correlation group. (Values range from 001 to 199.)
5. Choose Suite Sig Sil.
6. Select:

   Yes to enable in-suite signal silence.

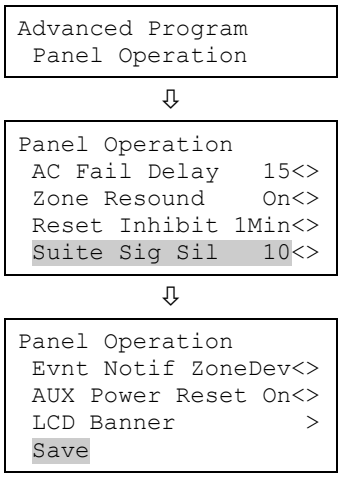
   No to disable it.
7. Choose Save.



To set the in-suite signal silence elapse timer:

1. Press the Menu button and choose Programming.
2. Choose Panel Operation and enter the level 2 password.
3. For the Suite Sig Sil option, enter a value from 1 to 10 minutes (The default is 10). To disable in-suite signal silence, set this option to Off.

   This is a global option that sets the shutdown period during which “in suite” evacuation signals outside the alarm zone remain silenced.



Programming fast groups for sounder bases

For UL/ULC Listing, alarms are required to sound within 10 seconds after a fire is detected. This can be difficult to achieve in large systems with hundreds of sounders, unless the sounders are properly grouped.

To address this requirement, Vigilant VS1 and VS2 systems provide 25 high priority correlation groups per loop that can activate all sounders simultaneously. These are:

- For panels with one loop only, the fast correlation groups are Groups 001 to 025
- For panels with two loops, the fast correlation groups are

  Loop 1: groups 001 to 025

  Loop 2: groups 001 to 025 or 101 to 125 (user configurable).

In dual loop systems, you can combine devices from loop 1 and 2 in correlation groups 001 to 025, or you can separate them and use groups 101 to 125 for loop 2. See “Changing loop configuration options” on page 86.

For best performance use the fast correlation groups for bulk activations, such as entire floors and save the slower correlation groups for small sets of activations such as individual suites or hotel rooms.

Note: Be sure the Follow option for devices to be added is None, Alarm, Alarm and Verify, or Alarm and Prealarm. Be sure the Follow option is *not* set to Head or Riser. If you need to run a report to check the Follow option, see “Device Details report” on page 187. If you need to change the Follow option, see “Adding and removing devices from programmed systems” on page 80.

To add sounder base detectors to a fast group:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Correlation Groups and enter the correlation group number to be programmed. Enter a value from:
   - For panels with one loop only, the fast correlation groups are Groups 001 to 025
   - For panels with two loops, the fast correlation groups are

     Loop 1: groups 001 to 025

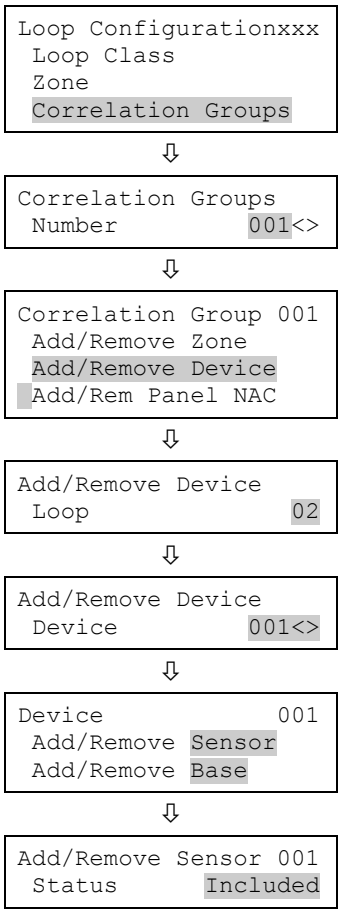
     Loop 2: groups 001 to 025 or 101 to 125 (user configurable).

   See “Programming fast groups for sounder bases” on page 95.
4. Choose Add/Remove Device.
5. Enter the loop number (if the panel has multiple loops).
6. Enter the device number.
7. Add the detector as an input and the sounder base as an output. Choose:

   Sensor to add the detector

   — or —

   Base to add the sounder base
8. On the Status line, press Enter to select Included. This adds the device to the group.
9. Repeat steps 4 to 8 to add or remove other devices, zones, or NACs.
10. Repeat steps 3 to 9 to program additional correlation groups.
11. Press the Menu button to exit menu mode, or continue programming.



Device programming

Each device that operates on a notification appliance circuit (NAC) or device loop has operating parameters that must be set. This includes assigning a device type and label, programming event notification, etc.

Note: Devices are programmed by entering the address of the device to be programmed, then setting the device options. It is important to have a printout of the Device Details > Serial Number report to correlate the device address with the default label and serial number. This will make device programming much easier. See “Device Details report” on page 187.

Table 25: Programming Devices — Device options

Option	Description
Zone	Identifies the zone to which the device will be added. To add the device to a zone, enter the zone number. — or — If the device will not be added to a zone, select Off. **Note:** Do not mix device and zone types. For example, do not place a nonlatching supervisory device in an alarm zone. When the supervisory device activates and an alarm event is initiated, the alarm event automatically clears when the device restores without having to reset the panel.
Zone secondary	Identifies the zone to which the device’s secondary element (if it exists) will be added. To add the device to a zone, enter the zone number. — or — If the device will not be added to a zone, select Off. **Note:** Do not mix device and zone types. For example, do not place a nonlatching supervisory device in an alarm zone. When the supervisory device activates and an alarm event is initiated, the alarm event automatically clears when the device restores without having to reset the panel. Be sure to name your zones appropriately in message line 1 for CO activations.
Label	Contains the two lines of text displayed beneath the device number on the LCD. 1. Enter text for the device label (two lines of 20 characters). 2. When you have finished, choose Save.
Event notification	Sets notification options (printer, coder, dialer, and contact ID) for the active, alarm verify, disable, maintenance, prealarm, test, trouble, and active3 for secondary events. See Table 9 on page 45. See “Factory default settings” on page 37 for device event notification default settings. 1. Select an event type and set its notification options.

Option	Description
	2. Repeat until all event types have been set. 3. When you have finished, choose Save. Printer: Yes or No. This controls whether event information is sent to the printer Coder: four-digit coded output that is played in response to alarm conditions (00-00-00-00 to 99-99-99-99) Dialer: Acct 1 2: Event information is sent to both dialer accounts Acct 1: Event information is sent to dialer account one Acct 2: Event information is sent to dialer account two None: Event information is not sent to the dialer NET (1-8): Yes or No. Controls whether event information is sent to the connected networks CID: Contact ID event code (000 to 999)
Correlation groups	Let's you add the device to (or remove it from) one or more correlation groups. 1. Enter the number of the first correlation group to be configured. 2. To add the device to the correlation group, select Included. — or — 3. To remove the device from the correlation group, select Excluded. 4. Repeat steps 1 to 3 for any other correlation groups to be configured. 5. When you have finished, choose Save. The device may include a primary element, secondary element, and base, depending on the device type and base type. For more information, see "What is a correlation group?" on page 33.
Alt operation	Set "Yes" or "No". Select "Yes" to enable the smoke/heat personality during night mode. This property is only for PHS devices enabled for "heat + supervisory smoke latching" and "heat + supervisory smoke nonlatching.
Day sensitivity	Set the daytime smoke level sensitivity to least, less, more, normal, or most.
Night sensitivity	Set the nighttime smoke level sensitivity to least, less, more, normal, or most.
Day prealarm%	Set the daytime prealarm percentage to Off or 50, 55, 60, 65, 70, 75, 80, or 90 percent. This is the amount of smoke that indicates a prealarm event before an actual alarm event is indicated. The percentage is based on the sensitivity level selected above. For example, if you select normal sensitivity and select 50 percent for prealarm, when smoke levels reach 50% of the normal smoke level required to initiate an alarm, a prealarm event will be indicated.

Option	Description
Night prealarm%	Set the nighttime prealarm percentage to Off or 50, 55, 60, 65, 70, 75, 80, or 90 percent. This is the amount of smoke that indicates a prealarm event before an actual alarm event is indicated. The percentage is based on the sensitivity level selected above. For example, if you select normal sensitivity and select 50 percent for prealarm, when smoke levels reach 50% of the normal smoke level required to initiate an alarm, a prealarm event will be indicated.
Base type	Set to the type of base (standard, relay, isolator, or sounder) being used with the detector.
Follow	This option controls the conditions that will activate the relay or sounder detector base. Select from the following values. Head: The base is controlled by the detector's settings: • The base activates when the detector goes into alarm, unless the detector is set for alarm verification. • If the detector is set for alarm verification, the base activates when the detector goes into alarm verification. It does not restore, however, until the alarm restores. • The base does not respond when the detector goes into prealarm no matter how the detector is configured. Also, the base only follows the primary element of a dual element detector. Any activation from a secondary element does not trigger the base. Example: When a PCOS on a sounder base has a follow set to Head, the base is only triggered when a smoke event is generated. The base does not trigger when a CO event is generated. Riser: The base is triggered individually by the panel (sounder bases only) None: A correlation group triggers the base. The option "None" can be applied to both relay and sounder bases, and is used for relay bases configured as latched output devices. **Note:** All base follow settings except Head and Riser can be activated by correlation groups. Alarm: The base activates its relay when the detector goes into alarm. The base will not restore until the alarm event has been restored. Alarm and verify (ALM+VFY): The base activates its relay when the detector goes into alarm verify and continues when the detector goes into alarm. The base will not restore until both events have been restored. Alarm and prealarm (ALM+PALM): The base activates its relay when the detector goes into prealarm and continues when the detector goes into an alarm. The base will not restore until both events have been restored.
Type	Select the device type based on the type of device you are programming. Refer to "Device type descriptions" on page 45 for a list of all possible device types.

To program an input or output device:

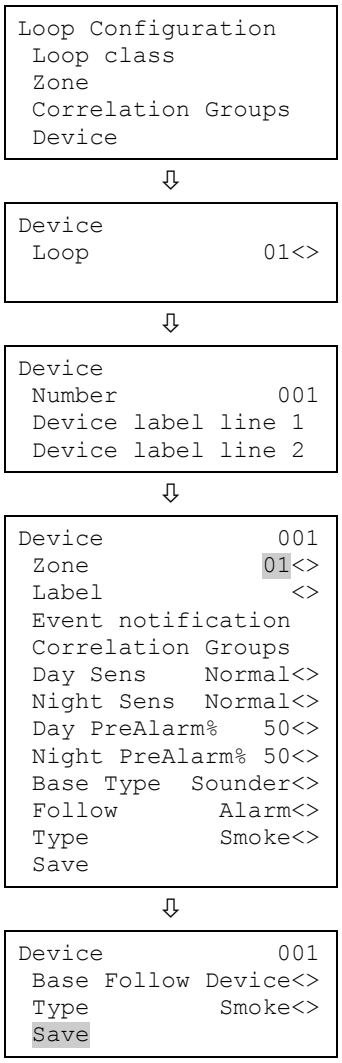
1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Device.
4. If the panel has multiple loops, choose the loop to be configured.
5. Enter the device address to be configured.

   For the Vigilant VS2 panel, addresses 1 to 125 are detectors and addresses 126 to 250 are modules.

   Note: The device label occupies two lines just below the device label.
6. Program each device in the system using Table 25 on page 97.

   Note: If you chose a dual address device, both addresses for the device are displayed on the screen (e.g. 001/002). The first address listed is the device address you are programming. When you pick the second address to program, both addresses are still displayed but the order is reversed (e.g. 002/001).

   Note: Depending on the type of device you are programming, some of the options in the table below may not be available.
7. When you finish programming an option, choose Save, then choose the next option.
8. Press the Menu button to exit menu mode, or continue programming.



Programming relay and sounder detector bases

Relay and sounder bases require some configuration not required by other devices. First, the panel does not automatically distinguish between relay and sounder bases — Both are set by default to base type “relay.” You must manually change this setting for sounder bases.

In addition, configuration is required to control how these devices are activated. Relay bases can be activated by:

- The detector to which they are attached
- One or more correlation groups

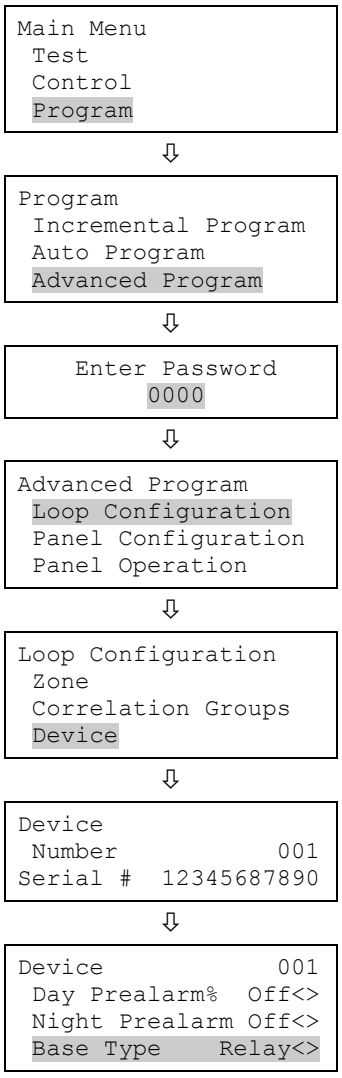
Sounder bases can be activated by:

- The detector to which they are attached
- One or more correlation groups
- The 24 volt riser

You can configure these options using the procedure given below. See Table 25 on page 97 for information on the Base and Follow options.

To change the relay/sounder base type and follow option:

1. Press the Menu button, and then choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Loop Configuration and select the loop number. (This option is displayed only if the panel has two loops.)
4. Choose Devices, and then enter the number of the device to be programmed. The serial number of the device is displayed.
5. Press the Enter button.
6. Choose Base Type and select either Relay or Sounder.
7. Choose Follow and select one of the types listed in Table 25 on page 97.
8. Choose Save.
9. Press the Menu button to exit menu mode, or continue programming.



Programming relay modules and bases as latched output devices

Latched outputs are relays that are configured to shut down air handlers and dampers during an alarm. The table below lists relay modules and relay bases that can be configured as latched outputs. The following table lists the device types used to configure a device as a latched output.

The latched outputs must be manually unlatched and then restored. The unlatch command affects all latched outputs system-wide. You can assign the Unlatch Outputs command to a programmable key on the front panel or to a Class A or B Signature input module circuit with one of the devices listed in Table 27 below. The following output modules can be configured to unlatch latched outputs: GSA -CT1, GSA -CT2, GSA -MAB, GSA -MCT2, GSA -MM1, and GSA -UM.

For information on assigning the unlatch command to a programmable key, see “Setting up the programmable keys” on page 58.

Table 26: Output modules configurable as latched outputs

Output modules		
GSA CC1	GSA CRR	GSA MCC2
GSA CC1S	GSA IO	GSA MCC1S
GSA CC2	GSA MAB	GSA MCRR
GSA CR	GSA MCC1	GSA MIO
GSA CR2	GSA MCR	GSA UM
Relay bases		
GSA -RB [1]		
GSA -RB4 [1]		

[1] Relay bases support any of the following detectors: HFS, HRS, IPHS, IS, PHS, or SD. To configure the base as a latched output, configure the attached detector’s base type to “Relay” and set the Latched option to “Yes.”

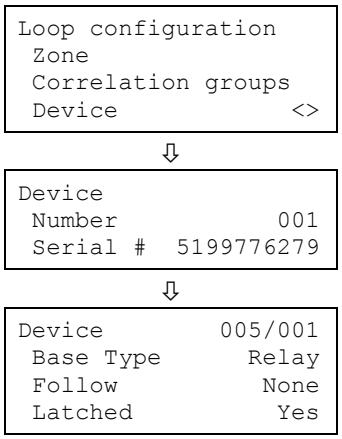
Table 27: Device types for latched outputs

Type	Description
Supervised outputs (latched)	SupOut Latch. For Class B latched output modules that output an unsynchronized signal. Does not follow signal silence.
Continuous nonsilenceable (latched)	Cont NS Latch. For Class B latched output modules that output an unsynchronized signal. Does not follow signal silence.

Type	Description
Continuous nonsilenceable ClsA (latched)	Cont NS ClA Latch. For Class A latched output modules that output an unsynchronized signal. Does not follow signal silence.
Supervised outputs ClsA (latched)	SupOut ClA Latch. For Class A latched output modules that output an unsynchronized signal. Does not follow signal silence.
Relay nonsilenceable (latched)	Relay Latch. For Class B relay devices functioning as latched outputs. Does not follow signal silence.
Relay nonsilence NO (latched)	Relay NO Latch. For relay devices functioning as latched outputs that close when activated. Does not follow signal silence.
Relay nonsilence NC (latched)	Relay NC Latch. For relay devices functioning as latched outputs that open when activated. Does not follow signal silence.

To configure a relay module or base as a latched output:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Loop Configuration.
4. Choose Device.
5. If the panel has multiple loops, choose the loop to be configured.
6. Enter the device address to be configured. Device details are displayed.
7. Set the Base Type option to Relay.
8. Set the Follow option to None.
9. Set the Latched option to Yes.
10. Choose Type and select one of the Latched Outputs types listed in Table 26 on page 102 on page 102.
11. Press the Menu button to exit menu mode, or continue programming.



Loop 2 enable

If your system is using two device loops (the optional loop expander card is installed), you must enable the second loop so that it can be programmed.

To enable loop 2:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Loop 2 Enable.
4. Select:

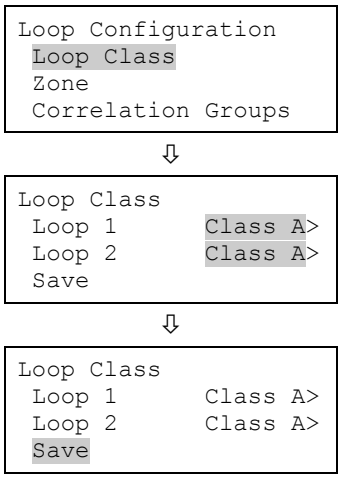
   Yes to enable the loop
   No to disable the loop
5. Choose Save.
6. Press the Menu button to exit menu mode, or continue programming.

Selecting loop classes

The loop class must be programmed Class A or Class B based on how the devices are wired on the loop). The default setting is Class B.

To select a loop class:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Loop Class.
4. Select the loop. If you only have one loop, the loop is automatically selected.
5. Select either Class A or Class B.
6. Choose Save.
7. Press the Menu button to exit menu mode, or continue programming.



Mapping loop device circuits

To use mapping, you must enable it for each loop in the system. Mapping a device data circuit provides useful information about the circuit that can be used for troubleshooting or documenting the electrical positions of devices in the

system. Mapping the system provides a way for you to get an overall picture of the devices in the system.

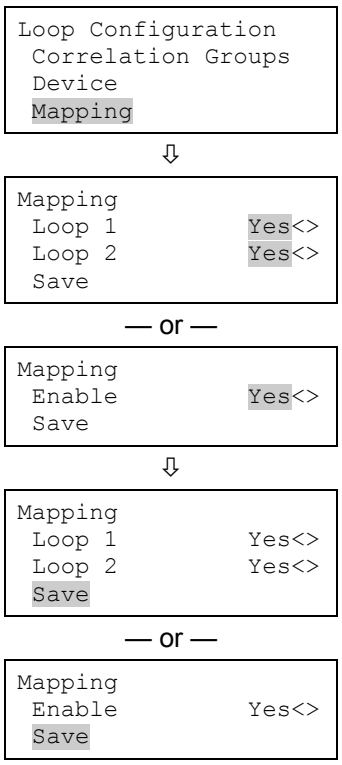
When the system begins mapping the devices on the panel, “mapping in progress” is displayed on the LCD, the monitor LED flashes, and the panel buzzer sounds. Depending on the number of devices on the panel, the amount of time it takes to map can vary.

Enabling and disabling mapping

When you enable mapping, you allow the panel to automatically identify all devices installed on the loop.

To enable or disable mapping:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Loop configuration
4. Choose Mapping.
5. If the panel has multiple loops, select the loop to be configured.
6. Select Yes to enable mapping or No to disable mapping.
7. Choose Save.
8. Press the Menu button to exit menu mode, or continue programming.



Correcting a map mismatch

You can work with maps using the front panel or by using the configuration utility. Accepting a map refers to saving the map in the control panel’s database either from the front panel or through the configuration utility.

When mapping is enabled, the control panel stores two maps in memory, a map in RAM and a map in the database. When these two maps do not match, a map mismatch is generated at the front panel.

There are several reasons why the maps may not match. For example, if you just enabled mapping, the panel maps the devices in the system and stores the map in panel RAM, but because there is no map in the panel database, you get a map mismatch.

Saving the map in the panel database synchronizes the two maps and removes the map fault from the system.

Another way to get a map mismatch is by adding a new device to the system. The panel sees the device and generates a new map in RAM. This map is not the same as the map in the panel database, so a map mismatch is generated. From the map mismatch screen, you can save the map in the panel database, which synchronizes the two maps and removes the map mismatch from the system.

To accept a map using front panel controls:

1. On the loop map mismatch event screen, press Enter.

   The details screen is displayed.

2. Press Enter.

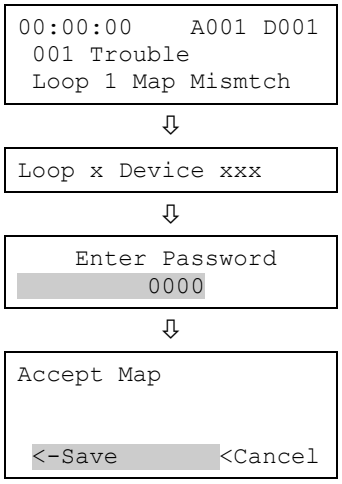
   The Enter Password screen is displayed if you are not logged on. If you are already logged on, the Accept Map screen is displayed.

3. Enter a level two password.

   The Accept Map screen is displayed.

4. Press Enter to save the map in the control panel database.

   Saving the map clears the mismatch.



If mapping is enabled, you may have a discrepancy between the map that was downloaded to the panel from the configuration utility and the map that resides in the control panel RAM. If the two maps do not match, the system generates a map mismatch event. If you get a map mismatch, you have to either accept the control panel map and save it in the control panel database or adjust the database (and download it again) so that it matches the control panel map.

For example, if you add a new device in the configuration utility, but the device has not been physically wired into the system, when you download to the panel from the configuration utility, the configuration utility map will not match the panel map, generating a map mismatch. You can then either leave the map mismatch in the system until you install the new device, at which time the panel detects the device and clears the map mismatch or, you can accept the panel map as it is, which will not include the new device. When you install the new device, the panel will map the device and generate a map mismatch. You can redownload to the panel when this occurs. The configuration utility map and panel map will then match and the map mismatch event will clear.

Note: For details about using the configuration utility, refer to the Help.

Using the configuration utility to map the system

If mapping is enabled, you may have a discrepancy between the map that was downloaded to the panel from the configuration utility and the map that resides in the control panel RAM. If the two maps do not match, the system generates a map mismatch event. If you get a map mismatch, you have to either accept the control panel map and save it in the control panel database or adjust the database (and download it again) so that it matches the control panel map.

For example, if you add a new device in the configuration utility, but the device has not been physically wired into the system, when you download to the panel from the configuration utility, the configuration utility map will not match the panel map, generating a map mismatch. You can then either leave the map mismatch in the system until you install the new device, at which time the panel detects the device and clears the map mismatch or, you can accept the panel map as it is, which will not include the new device. When you install the new device, the panel will map the device and generate a map mismatch. You can redownload to the panel when this occurs. The configuration utility map and panel map will then match and the map mismatch event will clear.

Note: For details about using the configuration utility, refer to the Help.

Zone programming

Notes

- For background information about zones, see “What is a zone?” on page 33.
- If the system does not have zones, no programming is required in this section. If the panel is not configured for zone or zone/device reporting, programming here has no effect on the system except for CMS reporting.

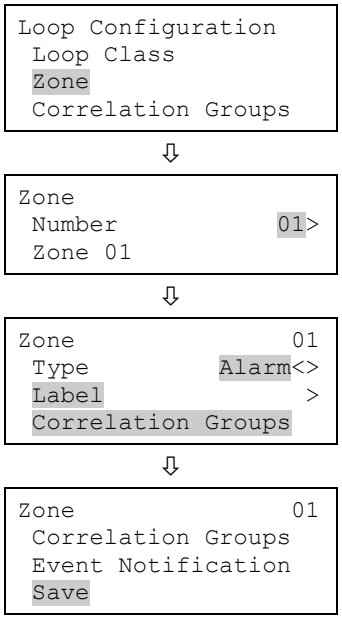
Table 28: Zone programming options

Type	Set the zone type to one of the following values. Alarm: For circuits with smoke detectors and contact devices. All activations are immediately considered as alarms. Circuit cannot be restored until devices are restored to normal and panel is reset. Monitor: Monitoring of normally open switches for other functions (fire door position, etc.). Not approved for use under ULC 527 in Canada. Supervisory: For supervisory devices. Momentary activation of normally open devices immediately places the panel in a supervisory state and turns on the supervisory LED and relay. The device types of the devices in a supervisory zone determine whether the zone is latching or nonlatching. If all devices in the zone are latching devices, or if you mix latching and nonlatching devices, the zone will operate as latching. Waterflow: Activates alarm events when a waterflow switch closes. Select this zone type when the devices in the zone are only connected to waterflow switches. **Note:** Do not mix device and zone types. For example, do not place a nonlatching supervisory device in an alarm zone. When the supervisory device activates and an alarm event is initiated, the alarm event automatically clears when the device restores without having to reset the panel.
Label	Enter a text label for the zone (two lines of 20 characters). When you have finished, choose Save.
Correlation groups	Enter the number of the correlation group. Choose Yes or No. • “Yes” adds the item to the group. • “No” removes the item from the group When you have finished, choose Save. For more information on correlation groups, see “What is a correlation group?” on page 33.

Event notification	Set the active, trouble, disable, prealarm, alarm verify, maintenance alert, and test event information by choosing one and then setting the notification information. When you have finished, choose Save. See “Factory default settings” on page 37 for zone event notification default settings. **Note:** If your CMS is set to zone reporting, the event notification information sent to the receiver comes from the programming in this section. Printer: Yes or No. This controls whether event information is sent to the printer Dialer: • Acct 1 2: Event information is sent to both dialer accounts • Acct 1: Event information is sent to dialer account one • Acct 2: Event information is sent to dialer account two • None: Event information is not sent to the dialer NET: Yes or No. Controls whether event information is sent to the connected network CID: Contact ID event code (000 to 999)

To program a zone:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Loop Configuration.
4. Choose Zone and enter the zone number.
5. Program each zone in the system using Table 28 on page 108.
6. When you finish programming an option, choose Save, and then continue.
7. Press the Menu button to exit menu mode, or continue programming.



Panel programming

The panel options to be configured include:

- NAC circuits (“NACs”)
- Annunciator class
- Annunciator
- Dialer and network (“CMS device”)
- Printer
- IP address (“IP”)
- Subnet mask (“MSK”)
- Gateway (“GWY”)

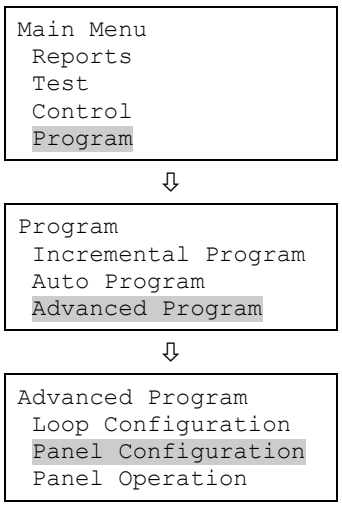
Most options have a factory default setting that you can accept or change. See “Factory default settings” on page 37.

Notes

- The option “CMS device” is only available if a dialer or network card is installed
- The option “Printer” is only available if a printer (RS-232) card is installed
- The options “IP”, “MSK”, and “GWY” are only available if a network card is installed

To program panel configuration options:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Panel Configuration.
4. Program the options.



NAC programming

The NAC circuits connected to the system must be programmed with the type of NAC, label, correlation groups, and event notification. Each NAC must be programmed separately.

Table 29: NAC programming options

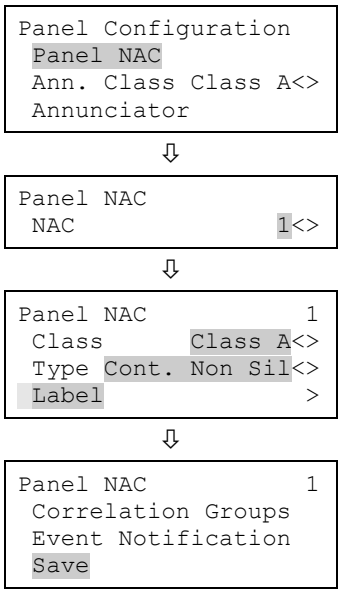
Option	Description
Class	Select either Class A or Class B. **Note:** NAC 3 and 4 cannot be set to Class A. If NAC 1 and 2 are set to Class A, NAC 3 and 4 automatically configure to accept the Class A return.
Type	Set the NAC type to one of the following values. Continuous (silenceable or nonsilenceable): For strobes and notification appliances that generate a temporal pattern Temporal (silenceable or nonsilenceable): Universal 3-3-3 pattern required for evacuation signals by NFPA 72. Used when notification appliances are not capable of generating a temporal pattern. Genesis (nonsilenceable or with audible silence or with audible/visible silence): For Genesis and Enhanced Integrity horns and strobes. Genesis and Enhanced Integrity appliances maintain synchronization per UL 1971. When using Genesis or Enhanced Integrity notification appliances, you must select one of the Genesis NAC types for proper system-wide strobe synchronization. • Nonsilenceable: Horns cannot be silenced and strobes flash • Audible silence: Horns can be silenced while strobes continue to flash • Audible/visible silence: For Genesis devices only, connected horns can be silenced and strobes turn off Coder (basic, continuous, 120 SPM, or temporal): Used to provide four-digit coded output in response to alarm conditions. When the device goes into alarm, the coded output is played a minimum of four times by the NAC circuit. The code comes from the active initiating device or zone. Note, the panel can only play one code at a time. For example, device 1 is coded as 1-2-3-4 and is associated with NAC1 and device 2 is coded as 5-6-7-8 and is associated with NAC2. If device 1 activates, NAC1 plays 1-2-3-4. If, while NAC1 is playing 1-2-3-4, device 2 activates, NAC2 will also play 1-2-3-4 until the rounds are complete and then both NACs will play 5-6-7-8 until those rounds are complete. If you are programming NACs as coded, remember that only one code can play at a time. • Basic: Four rounds of the four-digit coded output are played • Continuous: Four rounds of the four-digit coded output are played and then continuous is played • 120 SPM: Four rounds of the four-digit coded output are played and then 120 times per minute is played • Temporal: Four rounds of the four-digit coded output are played, and then a temporal pattern is played Continuous Non-Silenceable (Latched): For programming NAC as latched output

Option	Description
	City tie: Outputs an unsynchronized, 24-volt continuous (steady) signal that cannot be silenced. Select this NAC type when the NAC is connected to a city tie module.
Label	Enter a text label for the NAC (two lines of 20 characters). When you have finished, choose Save.
Correlation groups	Enter the number of the correlation group. Press Enter to toggle the group's status. • "Included" adds the item to the group. • "Excluded" removes the item from the group When you have finished, choose Exit. A correlation group is a collection of addressable input devices (detectors and input modules) and output devices (panel NACs, NAC modules, relay modules, sounder and relay bases). When one or more inputs become active and meet the required activation count, all outputs assigned to the group activate. As you configure the loop devices, you must correlate and assign the desired input device or zone to the correlation group that you want to activate. For an addressable device to activate an output, you must assign the output to a correlation group. Next, assign the device to a zone, and then assign the zone to the correlation group containing the output. You can assign inputs and outputs to multiple correlation groups. For more information on correlation groups, see "What is a correlation group?" on page 33.
Event notification	Set the NAC trouble, disable, and test event information when it is to be sent to a printer, dialer, or network card), by choosing one and then setting the notification information. When you have finished, choose Save. See "Factory default settings" on page 37 for NAC event notification default settings. Printer: Yes or No. This controls whether event information is sent to the printer Dialer: • Acct 1 2: Event information is sent to both dialer accounts • Acct 1: Event information is sent to dialer account one • Acct 2: Event information is sent to dialer account two • None: Event information is not sent to the dialer CID: Contact ID event code (000 to 999) NET (1-8): Yes or No. Controls whether event information is sent to the connected network

To program an NAC:

1. Display the panel configuration options menu. See “Panel programming” on page 110.
2. Choose Panel NAC.
3. Enter the NAC (number) you want to program, and then press Enter.

   Note: NAC 3 and 4 are not available if either NAC 1 or 2 or both are set to Class A.
4. Program each NAC in the system using Table 29 on page 111.
5. When you finish programming each option, choose Save.
6. Press the Menu button to exit menu mode, or continue programming.



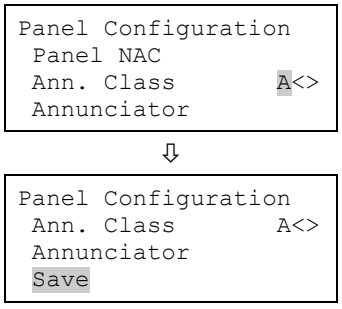
Setting annunciator classes

Program the annunciator’s wiring class (Class A or Class B). You must install the optional SA-CLA module if you have class annunciator wiring on the 64 point panel.

Default: Class B

To set the annunciator class:

1. Display the panel configuration options menu. See “Panel programming” on page 110.
2. Choose Ann. Class.
3. Select either Class A or Class B.
4. Program other panel configuration options or choose Save if you’re finished.
5. Press the Menu button to exit menu mode, or continue programming.



Annunciator programming

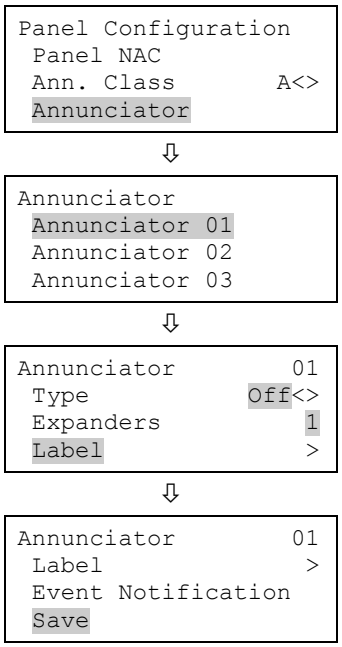
Each annunciator on the annunciator loop must be programmed for type, number of expanders, label, and event notification. Up to eight annunciators can be connected on the loop and each must be programmed separately. You must also set the address on each annunciator by using the DIP switch on the back of the annunciator.

Table 30: Annunciator options

Option	Description
Annunciator type	Set annunciator type to: Off: No annunciator is connected. If type is set to Off, Number expanders, Label, and Reporting configuration are not available. LCD-C: The annunciator has a display and common controls LCD: The annunciator has a display only (no common controls) LED: The annunciator has LEDs and common controls (no display) Graphic: Graphics controller interface for the Envoy graphics board
Expanders	Set expanders to None, 1, or 2. This is the number of LED expander modules you are using with the annunciator.
Label	Enter a text label for the annunciator (two lines of 20 characters). When you have finished, choose Save.
Event notification	Set the trouble event information by setting the notification information. When you have finished, choose Save. See “Factory default settings” on page 37 for annunciator event notification default settings. Printer: Yes or No. This controls whether event information is sent to the printer Dialer: • Acct 1 2: Event information is sent to both dialer accounts • Acct 1: Event information is sent to dialer account one • Acct 2: Event information is sent to dialer account two • None: Event information is not sent to the dialer CID: Contact ID event code (000 to 999) NET (1-8): Yes or No. Controls whether event information is sent to the connected network

To program an annunciator:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Panel Configuration.
4. Choose Annunciator.
5. Choose the annunciator you want to program.
6. Program each annunciator in the system using Table 30 on page 114.
7. When you finish programming each option, choose Save.
8. Press the Menu button to exit menu mode, or continue programming.



Central monitoring station device programming

CMS device programming

CMS devices are the devices that transmit system events to a central monitoring station's receiver. This includes the dialer and the network.

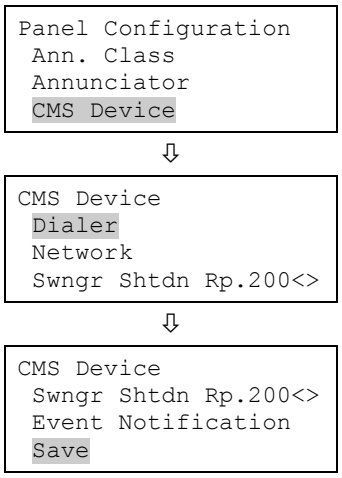
Table 31: CMS device options

Option	Description
Dialer	See "Dialer programming" on page 117.
Network	See "CMS network (transmitter) programming" on page 120.
Swinger shutdown	Set swinger shutdown to Off or 1 to 255 repetitions. When you have finished, press Enter to save. **Note:** Off is the only acceptable setting for UL/ULC installations. See "UL 864 programming requirements" on page 31 for details. This automatically inhibits the number of consecutive times a single trouble event is transmitted over a 24-hour period before it is no longer sent. Some trouble events are not affected when swinger shutdown is set. They are:

Option	Description
	- Loop 1 initializing - Loop 1 uncfgrd alarm - Loop 1 map mismatch - Loop 1 over limits - Loop 1 device 000 - Loop 1 mapping - Loop 1 map fault - Loop 2 initializing - Loop 2 map mismatch - Loop 2 over limits - Loop 2 device 000 - Loop 2 mapping - Loop 2 map fault - System startup - Reset - Reset/Sil inhibit - Panel silence - Program mode - Signal silence - Date - Drill - Walk test - Test fire - Time - Clear history - Common alarm - Common disable - Common monitor - Common supervisory - Common trouble - Battery charger - Battery low - Battery missing - Local AC power - System-wide AC power - Self test fault - Dialer dsbl/rem disc - Dialer normal test - Dialer abnormal test - Dialer configuration
Event notification	**Note:** Programming event notification here is only required if you selected “Event” as your dialer account or network event notification setting. See “Dialer programming” on page 117 or “CMS network (transmitter) programming” on page 120. Set the alarm, supervisory, monitor, trouble, disable, prealarm, alarm verify, maintenance alert, and test event information by choosing one and then setting the notification information. When you have finished, choose Save. See “Factory default settings” on page 37 for CMS device event notification default settings. Dialer: • Acct 1 2: Event information is sent to both dialer accounts • Acct 1: Event information is sent to dialer account one • Acct 2: Event information is sent to dialer account two • None: Event information is not sent to the dialer NET (1-8): Yes or No. Controls whether event information is sent to the connected network CID: Contact ID event code (000 to 999)

To program CMS devices:

1. Display the panel configuration options menu. See “Panel programming” on page 110.
2. Choose CMS Device.
3. Choose the device you want to program.
4. Program each device and option using Table 31 on page 115. For dialer options, see Table 32 below. For receiver options, see Table 33 on page 120.
5. After programming each device option, choose Save.
6. Press the Menu button to exit menu mode, or continue programming.



Dialer programming

The dialer has a number of options that you can program. Use the dialer to send event information to the central monitoring station. You can also use it as a modem for dial-in programming and status and report retrieval. To program the dialer (DACT), you must install and enable the SA-DACT.

Table 32: Dialer programming options

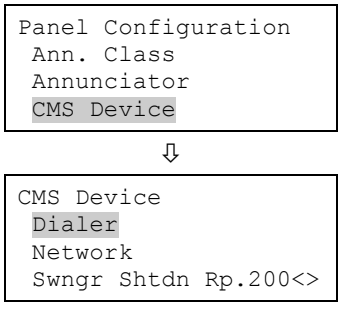
Option	Description
Type	Set the dialer type to one of the following values. Dual line: Uses LINE 1 and LINE 2 to transmit events to the central station receiver and performs modem functions. In this mode, the dialer supervises and reports faults on both lines. Single line: Uses LINE 1 only to transmit events to the central station receiver and performs modem functions. In this mode, the dialer supervises and reports faults only on LINE 1. Modem only: Dialer provides interface for outbound communications and the ability for dial-in programming and status and report retrieval. If Modem Only is selected, only Rings to Answer, Ring Type, and Callback Number can be programmed. No other dialer options are displayed in the menu. The modem function only works with LINE 1. In this mode, neither line is supervised. None: No dialer is installed or if a dialer is installed, disables the dialer.

Option	Description
Account 1 and 2	Program account 1 options, and then program account 2 options. When you have finished programming each account, choose Save.
Account ID	Enter account 1 and 2's four-digit ID code. FFFF is not valid.
Primary receiver number	Enter the primary receiver's phone number. This can contain up to 20 digits (0-9, *, #, and ,). The comma causes a two-second delay in dialing. The number or hash symbol (#) and the asterisk symbol (*) are used with calling feature codes and services. Consult your telephone service provider.
Secondary receiver number	Enter the secondary receiver's phone number. This can contain up to 20 digits (0-9, *, #, and ,). The comma causes a two-second delay in dialing. The number or hash symbol (#) and the asterisk symbol (*) are used with calling feature codes and services. Consult your telephone service provider.
Format	CID: Contact ID is the alarm format that the monitoring facility (DACR) will receive. See "Default contact ID event codes" on page 42.
Send restorals	Set send restorals to: Yes: Sends off-normal event restorals to the monitoring facility (DACR). Required setting for UL/ULC installations. See "UL 864 programming requirements" on page 31 for details. No: Does not send off-normal event restorals to the monitoring facility (DACR)
Retry time seconds	Set retry time to 1 to 45 seconds. Specifies the wait time between each time the dialer attempts a connection to the DACR. See "UL 864 programming requirements" on page 31 for details.
Retry count	Set the retry count to 5 to 10 attempts. Specifies how many times the dialer will attempt to call the DACR before timing out.
Event notification	Set event notification (event reporting) to: Device: Only device information is reported or transmitted, no zone information. This setting uses device event notification settings for reporting events. Make sure your device event notification settings are correct. See "Central monitoring station device programming" on page 115. Zone: When a device is a member of a zone, only the zone information is reported or transmitted. Device information is not reported or transmitted. This setting uses zone event notification settings for reporting events. Make sure the zone event notification settings are correct. See "Loop event programming" on page 130. Event: Only the event type (alarm, supervisory, trouble, etc.) is reported or transmitted, no device or zone information. This setting uses the CMS event notification settings for reporting events. Make sure the event notification settings are correct. See "Central monitoring station device programming" on page 115.

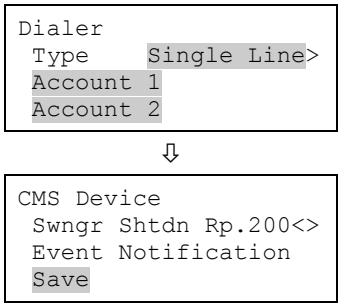
Option	Description
Line 1 and 2	Program line 1 options, and then program line 2 options. When you have finished programming each line, choose Save.
Dialing:	Select Tone or Pulse dialing.
Cut duration/supervision	Set the cut duration/supervision to Off or 10 to 120 seconds. Specifies the length of time a phone line trouble is detected before reporting the trouble.
Tone wait seconds	Set tone wait to Off or 1 to 30 seconds. Specifies how long the dialer waits to get a dial tone.
Call disconnect seconds	Set call disconnect to Off or 1 to 45 seconds. Specifies the length of time the dialer seizes the line (to disconnect parallel devices) before attempting to dial out.
Test frequency days	Set test frequency to Off or 1 to 45 days. Specifies how often the dialer performs a test call. The “off” setting is not acceptable for UL/ULC installations. See “UL 864 programming requirements” on page 31 for details.
Test time	Set the test time to the desired time of day for running the test.
Rings to answer	Set rings to answer to Off or 1 to 15 rings. Specifies how many rings before the dialer answers incoming calls.
Ring type	Set ring type to Any or Normal. Specifies the type of ring expected when an incoming call is received.
Callback	Select Enabled or Disabled to enable or disable callback security. With callback security enabled, the dialer will answer an incoming call, and then hang up and redial the callback number in an attempt to connect to the PC running the configuration utility. Use this feature to increase security and to limit your connect to only the PC at the preprogrammed number.
Callback number	Enter the callback phone number (up to 20 digits). This specifies the phone number that is used for call back.

To program the dialer:

1. Display the panel configuration options menu. See “Panel programming” on page 110.
2. Choose CMS Device.
3. Choose Dialer.
4. Program the dialer using Table 32 on page 117. For dialer default settings, see “Factory default settings” on page 37.
5. When you have finished programming each option, choose Save.



6. Press the Menu button to exit menu mode, or continue programming.



CMS network (transmitter) programming

The information programmed here pertains to the central monitoring station (CMS) network that the control panel uses to communicate with the CMS. This is a TCP/IP Ethernet network. Event information is sent to the CMS just as it is when using a dialer; however, the transmission is over an Ethernet network rather than the telephone lines.

To program the panel for network reporting, you must install and enable the optional SA-ETH Ethernet module. Once installed, program only the network card connected to a compatible network receiver, as listed in the appropriate compatibility guide.

Obtain the following information from the central monitoring station's network administrator:

- An IP address
- Port number
- Receiver number
- Line number

Notes

- CID is the only format that can be transmitted to the CMS over an Ethernet network.
- You must enter a different port number for each account. If you enter the same port number for multiple accounts, the panel will enable one account and disable all others.
- No two accounts can have the same IP address or port number.
- Outputs activation state will not be sent to CMS.

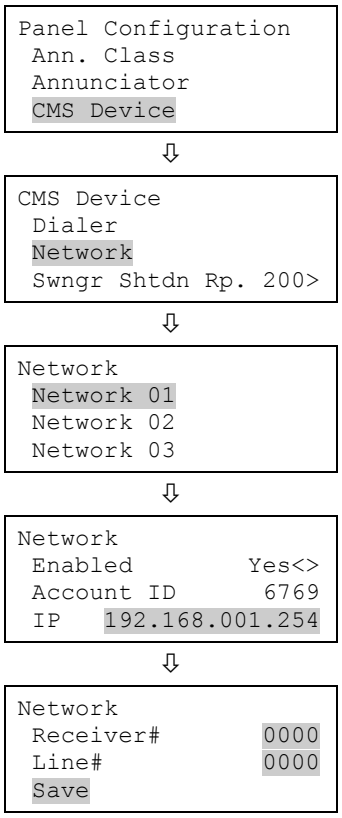
Table 33: CMS network (transmitter) programming options

Option	Description
Enabled	Yes: Enables the CMS network operation No: Disables the CMS network operation

Option	Description
Account ID	Enter the CMS account's four-digit ID code (0000 to FFFF). FFFF is not valid and must be changed.
IP	Enter the IP address for the CMS.
TCP/IP port	Enter the port address for the CMS (0 to 65535, 1024 is not allowed).
Send restorals	Set send restorals to: Yes: Sends off-normal event restorals to the monitoring facility (DACR) No: Does not send off-normal event restorals to the monitoring facility (DACR)
Event notification	Set event notification (event reporting) to: Device: Only device information is reported or transmitted, no zone information. This setting uses device event notification settings for reporting events. Make sure the device event notification settings are correct. See "Central monitoring station device programming" on page 115. Zone: When a device is a member of a zone, only the zone information is reported or transmitted, no device information. This setting uses zone event notification settings for reporting events. Make sure the zone event notification settings are correct. See "Central monitoring station device programming" on page 115. Event: Only the event type (alarm, supervisory, trouble, etc.) is reported or transmitted, no device or zone information. This setting uses the CMS event notification settings for reporting events. Make sure the event notification settings are correct. See "Central monitoring station device programming" on page 115.
Hello time	Specifies the amount of time in between "hello" messages sent by the panel to the CMS to maintain communications. The time must be less than the hello timeout set on the CMS, otherwise the CMS will lose communication with the panel. Set hello time to 10 to 255 seconds.
Timeout seconds	Specifies the amount of time after a message is sent that the system waits for an acknowledgement before declaring a communication trouble. Values range from 31 to 255 seconds.
Receiver number	Specifies the CMS receiver number that receives system event messages. This number is part of the receiver message. Enter the CMS receiver number (0 to 9999) assigned to this panel by the CMS administrator.
Line number	Specifies the receiver's line number where system event messages are sent. Enter the CMS receiver line number (0 to 9999) assigned to this panel by the CMS administrator.

To program the CMS network (transmitter):

1. Display the panel configuration options menu. See “Panel programming” on page 110.
2. Choose CMS Device.
3. Choose Network, and then select a network from the list (1 through 8).
4. Program the network using the Table 33 on page 120. For network default settings, see “Factory default settings” on page 37.
5. When you have finished programming each option, choose Save.
6. Press the Menu button to exit menu mode, or continue programming.

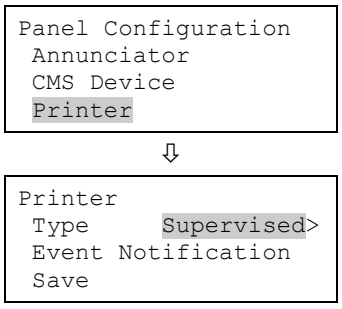


Printer programming

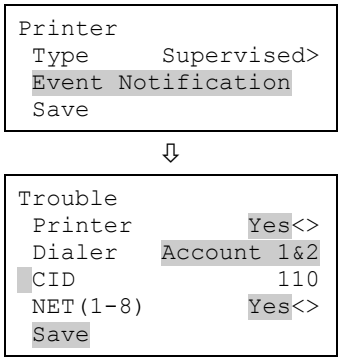
If a printer is connected to the system, you must set the printer type and configure printer event notification options. This controls where printer trouble events are sent and displayed. To communicate with a printer, you must install the optional SA-232 module in the panel and connect it to a compatible serial (RS-232) printer.

To program a printer:

1. Display the panel configuration options menu. See “Panel programming” on page 110.
2. Choose Printer.
3. Choose Type.
4. Select the printer type.
   - Supervised: The printer connection is supervised (refer to the printer’s switch settings)
   - Unsupervised: The printer connection is not supervised



- None/CU: There is no printer or you are connecting a computer running the configuration utility to the panel



5. Choose Event Notification.
6. Set printer trouble event notification. See “Factory default settings” on page 37 for printer event notification default settings.

   Printer: Yes or No. This controls whether event information is sent to the printer
7. Choose Save (on the Printer menu).
8. Press the Menu button to exit menu mode, or continue programming.

Ethernet card programming

If you are using the optional Ethernet network card (SA-ETH), you must configure the IP address, subnet mask, and gateway so that it can communicate with the network. Contact your network administrator to obtain this information or use the default settings. You can also use the network card to send event information to a central monitoring station, download to the panel from the configuration utility, or upload and view system reports using the configuration utility.

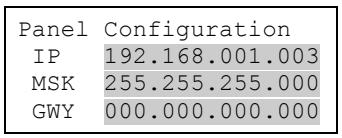
Network card default settings:

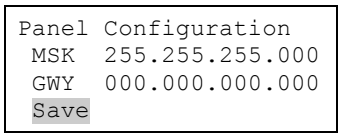
IP: 192.168.001.003

Mask: 255.255.255.000

Gateway: 000.000.000.000

To program network receivers:





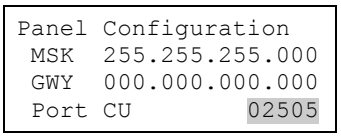
1. Display the panel configuration options menu. See “Panel programming” on page 110.
2. Choose IP.
3. Enter the network card’s IP address.
4. Choose MSK.
5. Enter the network card’s subnet mask number.
6. Choose GWY.
7. Enter the network card’s gateway number.
8. Choose Save.
9. Press the Menu button to exit menu mode, or continue programming.

Port CU programming

To communicate with the CU, you must enter the same TCP/IP port number that you defined in the CU's TCP IP Port field.

To set the port CU:

1. Display the panel configuration options menu. See "Panel programming" on page 110.
2. Choose Port CU.
3. Enter the TCP/IP port number (1025 to 65535) that you entered in the Configuration Utility. The default is 2505. (Ports 1 to 1024 are reserved.)



Setting the Lock Remote Read function

Lock remote read controls incoming TCP/IP communications when a network card is installed and it is connected to a LAN or WAN. It restricts telnet, ping, and CU read requests at the panel so that unwanted access to the panel is restricted, almost like a firewall.

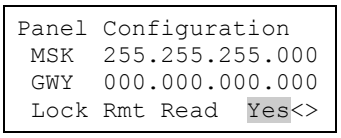
Note: Lock remote read is active when no one is logged onto the panel or when someone uses a level one password to log on. When you log with a level two password, all communication options are available and there are no restrictions.

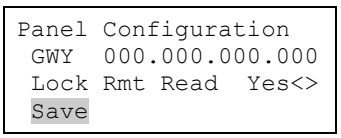
To set the Panel Configuration lock remote read option:

1. Display the panel configuration options menu. See "Panel programming" on page 110.
2. Choose Lock Rmt Read.
3. Select either:

   Yes: telnet, ping, and CU read access to the panel are restricted.

   No: telnet is restricted, but ping and CU read access to the panel are allowed.
4. Program other panel configuration options or choose Save if you're finished.
5. Press the Menu button to exit menu mode, or continue programming.





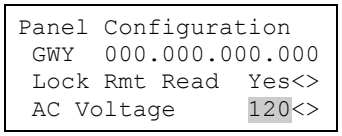
AC voltage programming

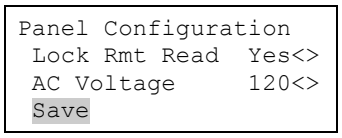
AC Voltage is used to select the rated voltage of the mains supply connected to the control panel. The possible values are 110, 115, 120, 220, 230, and 240 VAC.

Note: Use 110, 115, and 120 only on 120 VAC control panel models. Use 220, 230, and 240 only on 230 VAC control panel models.

To set the AC voltage:

1. Display the panel configuration options menu. See “Panel programming” on page 110.
2. Choose AC Voltage.
3. Select 110, 115, 120, 220, 230, or 240.
4. Program other panel configuration options or choose Save if you’re finished.
5. Press the Menu button to exit menu mode, or continue programming.





Panel operation programming

The panel operation options control how the panel operates. Most options have a factory default setting that you can accept or change. See “Factory default settings” on page 37.

Table 34: Panel operation options

Option	Description
Language	Select the desired display language: English or French.
Marketplace	Select the desired marketplace: U.S. or Canada.
AC fail delay	Set the AC fail delay time to: Off: Off-premises notification of an AC power failure is immediate. The “off” setting is not acceptable for UL/ULC installations. See “UL 864 programming requirements” on page 31 for details. 1 to 15 hours: Delays the off-premises notification of an AC power failure by the time period selected.

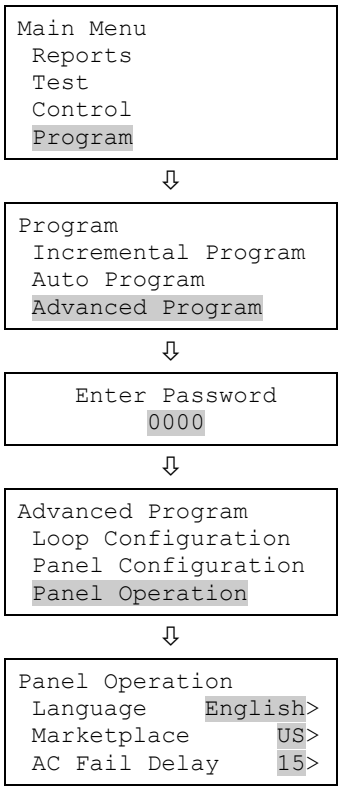
Option	Description
Zone resound	Set zone resound to: On: NACs resound each time a device in the zone goes into alarm even if they were silenced. Off: Inhibits the NACs from turning on again (after they were silenced) when a second device in the zone goes into alarm. The “off” setting is not acceptable for UL/ULC installations. See “UL 864 programming requirements” for details.
Reset inhibit	Set the time to: Off: Panel reset is operational immediately after NACs turn on. 1 minute: Panel reset is operational one minute after NACs turn on.
Auto signal silence	Set auto signal silence to: Off: Does not allow the panel to automatically silence the signals. 5 to 30 minutes: Allows the panel to automatically silence the signals after the selected time period expires.
Suite signal silence	Set the timer duration. The range of possible values is 1 to 10 minutes. The default value is 10 minutes.
Daytime start	Set the start time for daytime sensitivity.
Nightime start	Set the start time for nighttime sensitivity.
Date	Set the date format to: U.S.: MM/DD/YYYY Canada: DD/MM/YYYY
LCD banner	Enter the desired banner text for line one and line two using the keypad. Each line can have up to 20 characters. When you have finished, choose Save. The LCD banner does not display when the panel is in any off-normal state.
Aux power reset	On: “Reset” temporarily turns off the resettable aux power output. This is required when the output is used for powering four-wire smoke or four-wire duct smoke detectors. Off: “Reset” does not turn off the resettable aux power output. This is required when the output is used to power remote annunciators.
Event notification	Set event notification to: Zone: When a device is a member of a zone, only the zone information is sent to the LCD, LEDs, printer, and dialer. Note, device level reporting configuration is not available. Zone/device: Zone information is sent to the LCD and LEDs. Device information is sent to the printer and dialer. Zone/device reporting locations can be configured through custom programming.

Option	Description
	Device: Only device information is reported, no zone information. LED annunciator operation note: If you are using the optional LED expanders, the zone LEDs are assigned to device addresses 1 to 32 on loop 1. For example, zone 1 LEDs (red and yellow) are assigned to device 1 on loop 1. If the device is a dual element detector (single address), then only the primary element is assigned to zone LED. All activations from the secondary element are ignored by the zone LED. Remote annunciator operation note: If you are using the optional remote annunciators, when an event takes place on loop 1, the loop displays on the annunciator LCD as loop 17 (not loop 1). The device number of the device reporting the event is the correct device number. So, if an event takes place on loop 1, the remote annunciators will display it as loop 17. Loop 2 events will display on the annunciator LCD as loop 2 events.
Save	Save your option settings.

To program Panel Operation options:

1. Press the menu button and choose Program.
2. Choose Advanced Program.
3. Enter a level two password.
4. Choose Panel Operation.
5. Program the options using Table 34 on page 125.

   Not all options shown in the table will be displayed on all systems.
6. When you finish programming each option, choose Save.
7. Press the Menu button to exit menu mode, or continue programming.



Event programming

Panel event programming

Panel events, such as reset, system startup, and battery low have an event notification setting for contact ID, dialer, NET, and printer, which controls where the event is sent when it takes place. Each event has a factory default setting that can be used with no additional programming.

Table 35: Default panel event settings

Panel event	Printer	Dialer	NET (1-8)	CID
Aux. power 1 (disable)	Yes	None	No	n/a
Aux. power 1 (trouble)	Yes	Acct 1	No	312
Aux. power 2 (disable)	Yes	None	No	n/a
Aux. power 2 (trouble)	Yes	Acct 1	No	312
Battery charger (disable)	Yes	None	No	n/a
Battery charger (trouble)	Yes	Acct 1	No	309
Battery low (disable)	Yes	None	No	500
Battery low (trouble)	Yes	Acct 1	No	302
Battery missing (disable)	Yes	None	No	n/a
Battery missing (trouble)	Yes	Acct 1	No	311
Clear history	No	Acct 1	No	621
Common alarm	No	Acct 1	No	110
Common disable	No	Acct 1	No	500
Common monitor	No	None	No	n/a
Common supervisory	No	Acct 1	No	200
Common trouble	No	None	No	n/a
Common trouble for network dialer	Yes	None	No	n/a
Common trouble for telco dialer	No	Acct 1	No	373
Date	No	Acct 1	No	625
Dialer disable/remote disconnect	Yes	Acct 1	No	n/a
Dialer line 1 fault (disable)	Yes	None	No	n/a
Dialer line 1 fault (trouble)	Yes	Acct 1	No	351
Dialer line 2 fault (disable)	Yes	None	No	n/a
Dialer line 2 fault (trouble)	Yes	Acct 1	No	352

Panel event	Printer	Dialer	NET (1-8)	CID
Dialer deliver fail	Yes	Acct 1	No	354
Dialer normal test	No	Acct 1	No	602
Dialer abnormal test	No	Acct 1	No	608
Dialer configuration	Yes	None	No	n/a
Drill	Yes	None	No	n/a
Internal fault	Yes	Acct 1	No	307
IP gateway trouble	Yes	None	YES	n/a
Local AC power (disable)	Yes	None	No	n/a
Local AC power (trouble)	Yes	None	No	n/a
Net rcvr conf fault	Yes	Acct 1	No	354
Net comm fault (1-8) (disable)	Yes	None	No	500
Net comm fault (1-8) (trouble)	Yes	Acct 1	No	354
Outputs are latched	Yes	None	No	n/a
Panel silence	No	None	No	315
Program mode	Yes	Acct 1	No	627
Reset	Yes	Acct 1	No	305
Reset/Silence inhibit	No	None	No	n/a
Self test fault	Yes	None	No	n/a
Signal silence	Yes	None	No	n/a
System ground fault (disable)	Yes	None	No	n/a
System ground fault (trouble)	Yes	Acct 1	No	310
System startup	Yes	None	No	n/a
System wide AC power (disable)	Yes	None	No	n/a
System wide AC power (trouble)	No	Acct 1	No	301
Test fire	No	None	No	n/a
Time	No	Acct 1	No	625
Walk test	Yes	Acct 1	No	607

To program panel events:

1. Press the Menu button and choose Program.
2. Choose Advanced Program.
3. Enter a level two password.
4. Choose Panel Events.
5. Select the event to be programmed.
6. Choose Event Notification.
7. Configure the event notification options. See the default settings in the table above. Not all options shown here are displayed on all systems.

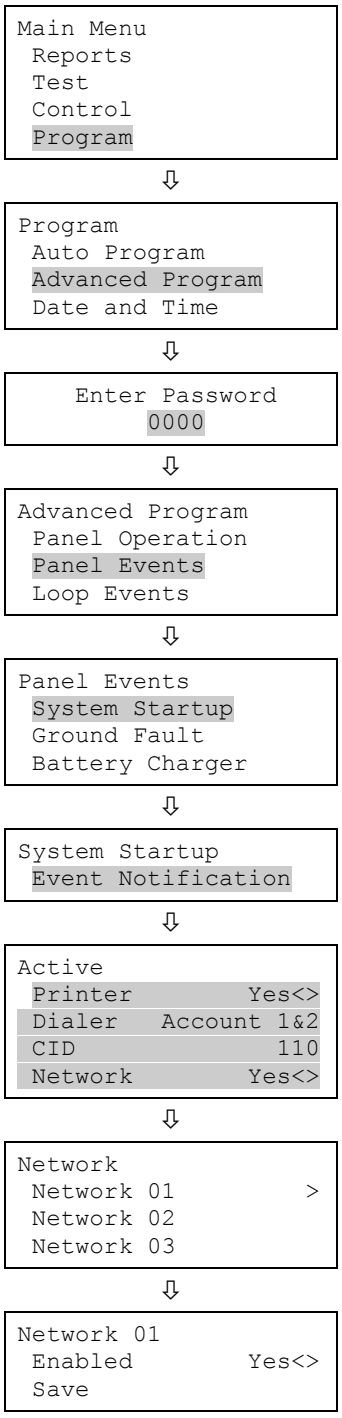
   Printer: Yes or No. This controls whether event information is sent to the printer

   Dialer:

   - Acct 1 2: Event information is sent to both dialer accounts
   - Acct 1: Event information is sent to dialer account one
   - Acct 2: Event information is sent to dialer account two
   - None: Event information is not sent to the dialer

   CID: Contact ID event code (000 to 999)

   Network: Controls whether event information is sent to the connected network
8. When you have finished configuring each page, choose Save.
9. Repeat steps 6 to 9 for each panel event.
10. Press the Menu button to exit menu mode, or continue programming.



Loop event programming

Loop events, such as loop fault, map fault, and loop initialization have an event notification setting for contact ID, dialer, NET (1-8), and printer, which controls where the event is sent when it takes place. Each event has a factory default setting that can be used with no additional programming.

Table 36: Default loop event settings

Loop event	Printer	Dialer	NET (1-8)	CID
Loop 1 initialization	Yes	None	No	n/a
Loop 1 fault (disable)	Yes	None	No	n/a
Loop 1 fault (trouble)	Yes	Acct 1	No	331
Loop 1 map fault	Yes	Acct 1	No	331
Loop 1 card fault (disable) (e.g. line fault)	Yes	None	No	n/a
Loop 1 card fault (trouble) (e.g. line fault)	Yes	Acct 1	No	333
Loop 1 Uncfgrd alarm (disable)	Yes	None	No	n/a
Loop 1 Uncfgrd alarm (trouble)	Yes	Acct 1	No	110
Loop 1 Uncfgrd trbl (disable)	Yes	None	No	n/a
Loop 1 Uncfgrd trbl (trouble)	No	None	No	n/a
Loop 1 map mismatch	Yes	None	No	n/a
Loop 1 over limits	Yes	None	No	n/a
Loop 1 address zero	Yes	None	No	n/a
Loop 1 mapping	Yes	None	No	n/a
Loop 2 initialization	Yes	None	No	000
Loop 2 fault (disable)	Yes	None	No	500
Loop 2 fault (trouble)	Yes	Acct 1	Yes	331
Loop 2 map fault	Yes	Acct 1	No	331
Loop 2 card fault (disable) (e.g. line fault)	Yes	None	No	500
Loop 2 card fault (trouble) (e.g. line fault)	Yes	Acct 1	No	333
Loop 2 Uncfgrd alarm (disable)	Yes	None	No	500
Loop 2 Uncfgrd alarm (trouble)	Yes	Acct 1	No	110
Loop 2 Uncfgrd trbl (disable)	Yes	None	No	500
Loop 2 Uncfgrd trbl (trouble)	No	None	No	331
Loop 2 map mismatch	Yes	None	No	331
Loop 2 over limits	Yes	None	No	331
Loop 2 address zero	Yes	None	No	331
Loop 2 mapping	Yes	None	No	000

To program loop events:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Loop Events.
4. Select the loop event.
5. Choose Event Notification.
6. Set the event notification. See the default settings in the table above.

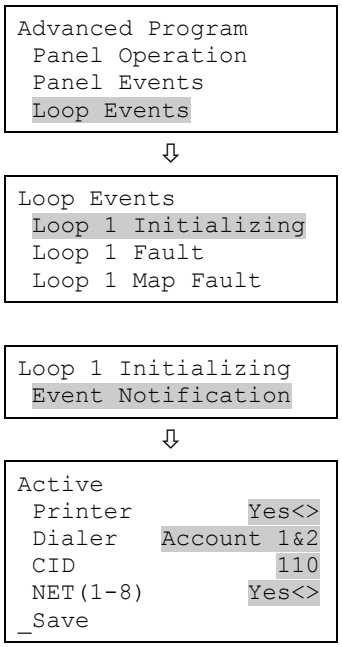
   Printer: Yes or No. Specifies if event information is printed.

   Dialer:

   - Acct 1 & 2: Event information is sent to both dialer accounts
   - Acct 1: Event information is sent to dialer account one
   - Acct 2: Event information is sent to dialer account two
   - None: Event information is not sent to the dialer

   NET (1-8): Yes or No. Specifies if event information is sent to the connected network

   CID: Contact ID event code (000 to 999)
7. When finished, choose Save.
8. Repeat steps 6 to 9 for each loop event.
9. Press the Menu button to exit menu mode, or continue programming.



Unconfigured alarm event programming

You can assign the unconfigured alarm event a correlation group and use it to turn on an output device. When assigned to a correlation group, every unconfigured alarm event turns on every output device in the correlation group. You can also program the event notification can for the unconfigured alarm. Auto programming will not assign an unconfigured alarm to a correlation group.

To program the unconfigured alarm event:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Unconfigured Alarm.
4. Choose Loop 1 Uncfgrd Alarm or Loop 2 Uncfgrd Alarm. (The second option is displayed only if you have more than one loop).
5. Choose Correlation Groups and enter the number of the correlation group.
6. Press Enter to toggle between possible values:

   To add the event to the group, choose Included.

   — or —

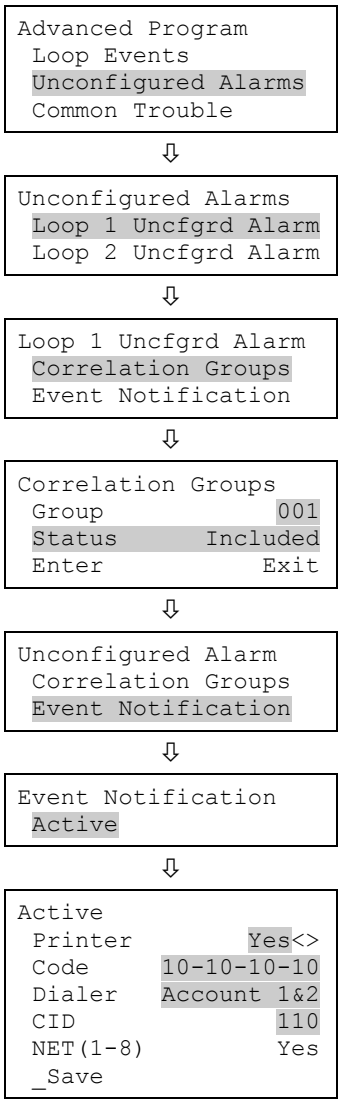
   To remove it from the group, choose Excluded.
7. Repeat steps 7 to 9 to add or remove the event from any remaining correlation groups to be configured.
8. Choose Save.
9. Choose Event Notification.
10. Choose Active.
11. Configure active event notification. (Not all the options shown here are displayed on all systems.)

    Printer: This controls whether event information is sent to the printer. Press Enter to toggle between Yes and No.

    Coder: Four-digit coded output that is played in response to alarm conditions (00-00-00-00 to 99-99-99-99).

    Dialer options are listed below.
    - Acct 1 & 2: Event information is sent to both dialer accounts
    - Acct 1: Event information is sent to dialer account one
    - Acct 2: Event information is sent to dialer account two
    - None: Event information is not sent to the dialer.

    CID: Contact ID event code (000 to 999).



NET (1-8): Yes or No. This controls whether event information is sent to the connected network.

12. When you have finished, choose Save.
13. Press the Menu button to exit menu mode, or continue programming.

Common trouble event programming

The common trouble event can be assigned to a correlation group and turn on an output device. When the common trouble is assigned to a correlation group, every output device in the correlation group turns on. Event notification can also be programmed for the common trouble.

Notes

- Every trouble event turns on the output devices in the correlation group it is assigned to, so make sure you are not assigning the common trouble to an output group that turns on devices that you do not want to turn on (e.g. NACs).
- If you assigned a NAC and the common trouble event to a correlation group and the NAC goes into trouble, when the NAC trouble clears the NAC outputs *do not* turn off even though the common trouble condition cleared because the NACs are not supervised. To turn off the NAC outputs, you must manually restore the NAC from the front panel's Control menu option.

To program the common trouble event:

1. Press the Menu button and choose Programming.
2. Choose Advanced Program and enter the level 2 password.
3. Choose Common Trouble.
4. Choose Trouble.
5. Choose Correlation Groups.
6. Enter the correlation group number to be programmed. (Values range from 001 to 199.).
7. Select Yes to add the common trouble to the correlation group or No to not add the common trouble to the correlation group.
8. Repeat steps 8 and 9 until the common trouble is added or removed from each correlation group needed.
9. Choose Save.
10. Choose Event Notification.
11. Choose Trouble.
12. Set trouble event notification.

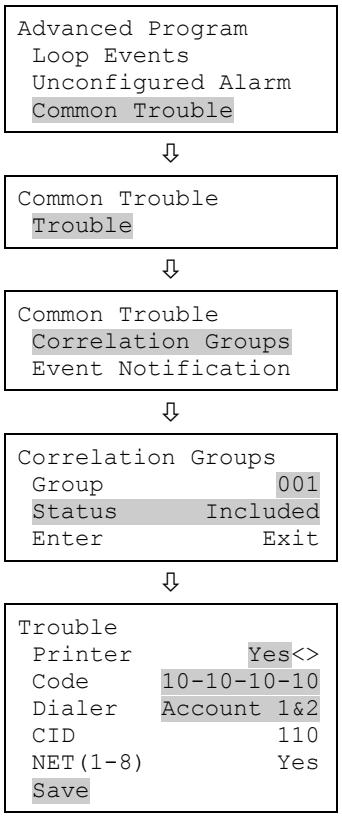
    Printer: Yes or No. This controls whether event information is sent to the printer

    Coder:

    - Enter the four-digit coded output that is played in response to alarm conditions if a bell coder is installed. Values range from 00-00-00-00 to 99-99-99-99

    Dialer

    - Acct 1 2: Event information is sent to both dialer accounts
    - Acct 1: Event information is sent to dialer account one
    - Acct 2: Event information is sent to dialer account two
    - None: Event information is not sent to the dialer



- NET (1-8): Yes or No. Controls whether event information is sent to the connected network
- CID: Contact ID event code (000 to 999)

13. When you have finished, choose Save.
14. Press the Menu button to exit menu mode, or continue programming.

Chapter 3
System operation

Summary

This chapter covers the front panel display, operating the panel, and controlling devices, NACs, and zones.

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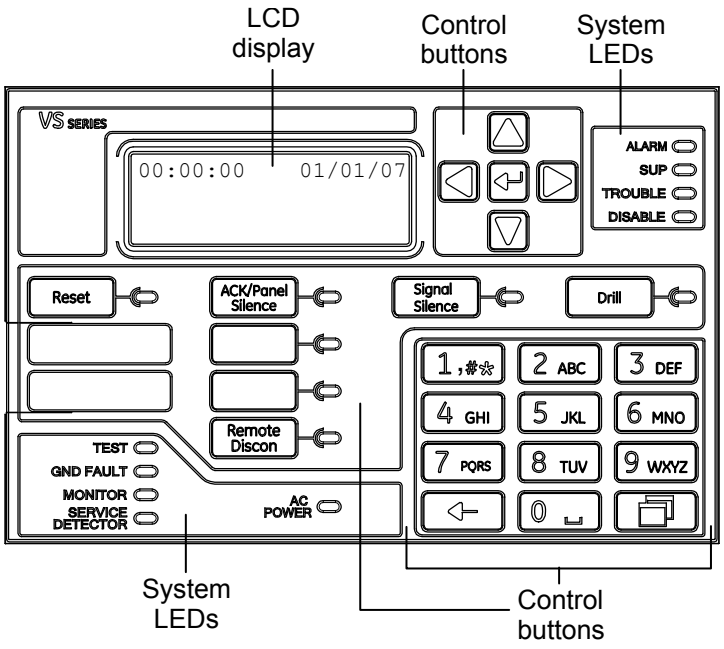
Operation overview

Front panel display

The front panel display is the user interface for the control panel. The display is comprised of the LCD, LED indicators, and control buttons that are used to operate and program the panel.

Figure 46: Front panel display layout



Control panel operations

The control panel operates in either normal mode or off-normal mode.

Normal mode

The panel operates in normal mode in the absence of any alarm, supervisory, trouble, or monitor events. In normal mode, the control panel monitors the system. The panel and LCD remote annunciators display the time, date, and banner text, if programmed.

Off-normal mode

The panel operates in off-normal mode any time an event is introduced into the system. When this happens, the panel:

- Changes contact positions on appropriate common relays
- Activates alarm outputs (for alarm events only)
- Turns on the appropriate LEDs and the panel buzzer
- Executes the appropriate programmed output response for the input that signaled the event
- Communicates event information to the LCD display and the remote annunciator
- Sends a record of the event to the remote annunciator and to the control panel's history log
- Transmits event messages to a central monitoring station as programmed
- Prints event information on the printer if one is connected to the panel

LCD display screen

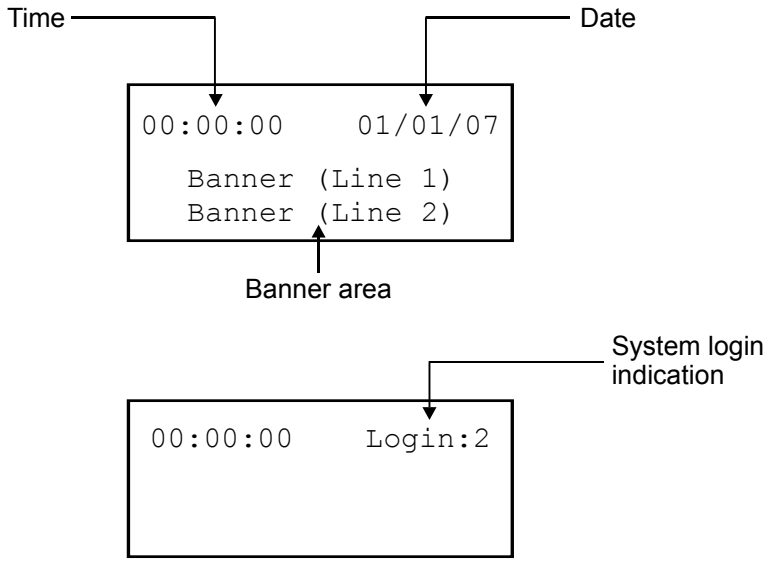
The liquid crystal display (LCD) is a 4-line by 20-character display that provides the user interface with the control panel for system programming, testing, report viewing, and off-normal event notification. The LCD has a backlight that turns on when a button is pushed or when an alarm event takes place in the system. When the panel is operating on battery power, the backlight automatically turns off after one minute of inactivity.

System normal display screen

The LCD shows the system normal display screen when the control panel is in the normal (quiescent) state. The screen displays the following:

- Time: Displays the current time.
- Date: Displays the current date in month/day/year format.
- Login: When you are logged on, the LCD shows "login:" and the password level in the top-right of the display, alternating with the date and other information being displayed in that area of the screen (e.g. reset).
- Banner area: Nothing is displayed in this area unless a custom banner has been added. See "Panel operation programming" on page 125.

Figure 47: LCD under normal conditions

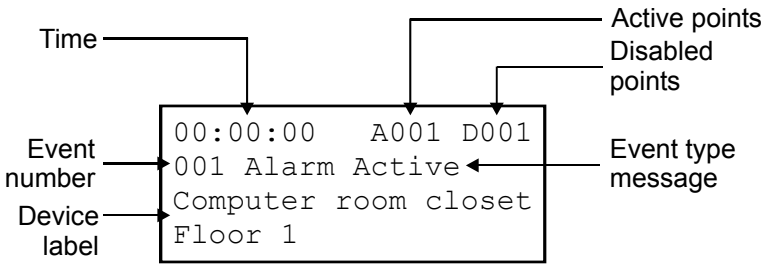


System off-normal display screen

During an off-normal event, such as an alarm, supervisory, monitor, trouble, prealarm, alarm verify, disablement, or test, the LCD screen changes to display important information about the event. The screen displays the following:

- Time: Displays the current time.
- Active points: Indicates the number of active points in the system. Increments or decrements as devices activate and restore. If you are logged on, this information toggles with “login.”
- Disabled points: Indicates the number of disabled points in the system. If you are logged on, this information toggles with “login.”
- Event number: The event number for the active event currently displayed in the queue.
- Event type message: The event message for the type of event taking place. Example: Alarm, Active, Waterflow, Trouble, Supervisory, or Monitor.
- Device label: The label for the device, either the default label (Loop ## Device ###) or a custom programmed label with up to forty characters.

Figure 48: LCD under off-normal conditions



Event details display screens

The off-normal events that take place in the system contain event information that is displayed on the LCD screen. Additional information is available on a secondary screen. The screen displays the following information based on the type of event that takes place:

- Loop number: The loop the device is on
- Device number: The device address (number)
- Device type: The device type that was assigned in programming
- Serial number: The serial number assigned to the device
- Internal event number: See “Event ID numbers and descriptions” on page 154
- Zone number and device label for devices in zones
- Annunciator number and label
- Other information when it is available

Figure 49: Device event details display screen

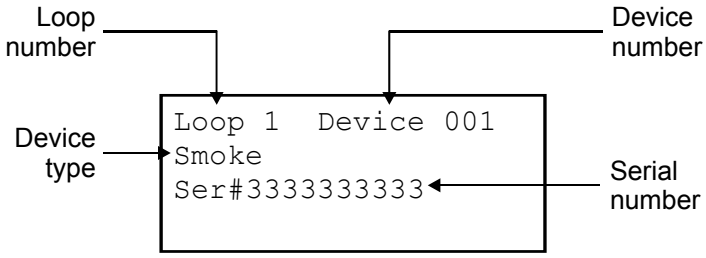
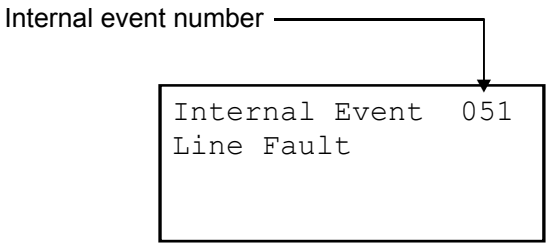
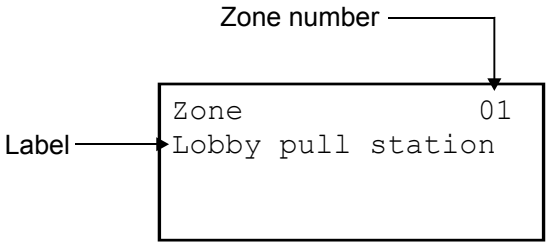


Figure 50: Internal event (panel and loop events) details display screen



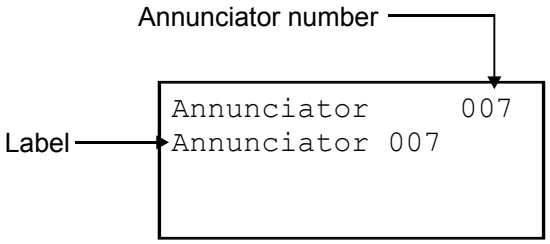
Note: See “Event ID numbers and descriptions” on page 154 for a list of event numbers.

Figure 51: Zone event details display screen



Note: You can scroll through the list of all devices in the zone reporting an event.

Figure 52: Annunciator event details display screen



To view event details:

1. When an event takes place, press Enter on the front panel.
2. View the event details.

   The event details screen is displayed for 15 seconds and then returns to the previous screen if there is no activity.

System LEDs

LEDs indicate system events and system operation.

Table 37: System LEDs

LED	Description
Alarm	Red LED. Flashes when there is an active alarm event on any loop. On steady once acknowledged.
Trouble	Yellow LED. Flashes when there's a fault with a monitored circuit or system component or when a circuit is disabled. On steady once acknowledged.
Sup (Supervisory)	Yellow LED. Flashes when there is an active supervisory event on any loop. On steady once acknowledged.
AC Power	Green LED. On when the panel has AC power.
Disable	Yellow LED. Double-flashes when there is a disabled circuit or alarm relay.
Ground Fault	Yellow LED. On steady during an active ground fault.
Test	Yellow LED. Flashes when performing an audible walk test. Steady indicates a silent test.
Monitor	Yellow LED. Flashes when there is an active monitor event on any loop. On steady once acknowledged.
Service Detector	Yellow LED. Indicates that detector needs servicing.
Signal Silence	Yellow LED. On steady indicates that NAC circuits are turned off but the panel is still in alarm.
Remote Disconnect	Yellow LED. On steady indicates that the CMS devices (dialer and network card) are disabled or that the alarm relay is enabled or disabled when the dialer is set to modem only.
Drill	Yellow LED. Indicates that the panel is in drill.
Reset	Yellow LED. Indicates that the panel is going through a reset.
Panel Silence	Yellow LED. Indicates that the panel has been silenced during an active trouble, supervisory, monitor, or alarm event and indicates that new event activations have been acknowledged.
User keys	Yellow LED. Indicates that the programmed key function is active.

LED display expander LEDs

The D16L-VS LED Display Expander provides LED annunciation for up to 16 zones. The expander provides two LEDs for each zone. You can install two display expanders in the panel.

LED operation zones 1 through 12

(Also applies to zones 17 through 28 if the second LED expander is installed.)

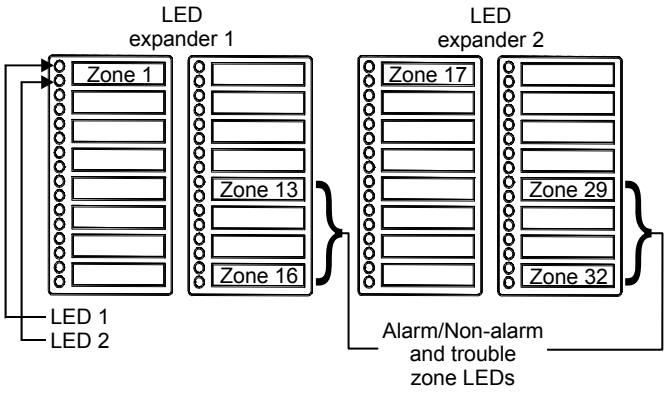
- LED 1 - Alarm: Red LED flashes
- LED 2 - Trouble: Yellow LED flashes

LED operation zones 13 through 16

(Also applies to zones 29 through 32, if the second LED expander is installed.)

- LED 1 - Bicolor
  Alarm: Red LED flashes
  Non-alarm active: Yellow LED flashes
- LED 2 - Trouble: Yellow LED flashes

Figure 53: LED zone designations



Control buttons

Common control buttons

Common control buttons on the front panel perform a variety of functions. Table 38 on page 146 identifies the common controls and describes their functions.

Table 38: Common controls

Button	Description
Reset	Initiates a system reset. The button LED indicates the function is active.
ACK/Panel Silence	Silences the panel and annunciator sounders during an active trouble, supervisory, or alarm event and acknowledges new event activations. The button LED indicates the function is active.
Remote Disconnect	CMS devices (dialer and network card): Disables or enables the dialer and network CMS connection and purges all pending event transmission to the CMS. Has no effect on the alarm relay. Dialer set to modem only (and no network card CMS configured): Disables or enables the common alarm relay. Systems with a panel or device NAC configured as city tie: Disables or enables the city tie NACs. The button LED indicates that the function is active. **Note:** A minimum of a level one password is required to operate.
Signal Silence	Silences notification appliances activated by an alarm condition. Pressing Signal Silence a second time turns NACs back on. The button LED indicates when the panel is in alarm and operating with notification appliances turned off. Visual and audible appliances may or may not turn off when Signal Silence is pressed depending on panel programming.
Drill	Initiates a drill when the button is pressed for two seconds. The button LED indicates the function is active. Pressing drill a second time turns off the drill function **Note:** Drill will not operate with an active alarm or supervisory event at the panel.

Buttons for working with menus and entering text

Table 39 below describes the menu command buttons and the buttons on the alphanumeric keyboard.

Use the alphanumeric keypad to enter passwords, create text labels, and enter device and group numbers. Values appear on the LCD screen as you press the button.

Note: You can use each number button to enter multiple values. For example, use the “2” button to enter either the number “2” or the letters “A,” “B,” “C,” or “a,” “b,” “c.”

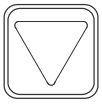
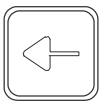
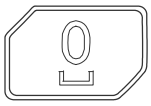
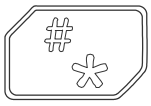
To enter text, numbers, or symbols:

1. Press the button once to enter the number, or press again to scroll through the alternate values. Wait for the cursor to move to the next position.
2. Enter the next number, character, or symbol.

   Note: To select an alternate case, continue to press the key until the letter shows in the desired case. The following letters appear in the same case.
3. When you have finished, press the Enter button.

Table 39: Buttons for working with menus and entering text

Button	Description
Menu 	Opens and exits menu mode
Left Arrow 	Moves the cursor to the left (when the panel is in display mode) Scrolls through the available values for a programming option (when the panel is in menu mode)
Right Arrow 	Moves the cursor to the right (when the panel is in display mode) Opens a submenu or scrolls through available values for a programming option (when the panel is in menu mode)

Button	Description
Up Arrow 	Scrolls back to the previous event (when the panel is in display mode) Moves the cursor up (when the panel is in menu mode)
Down Arrow 	Scrolls forward to the next event (when the panel is in display mode) Moves the cursor down (when the panel is in menu mode)
Enter 	Displays detailed information about the selected event (when the panel is in display mode) Opens a submenu or jumps to the Save function in the menu so you can quickly save your changes (when the panel is in menu mode) Enters the selected data into the system (when you are entering data)
Cancel 	Returns to the previous screen Erases the previous character (when you are entering data) Exits the detailed information display and returns to the event list (when the panel is in display mode) Returns to the previous menu level or (if you are at the highest menu level) exits menu mode Clears the current entry and moves the cursor to the left (when you are entering data) Exits entry mode and returns to menu mode (if the cursor is at the leftmost position)
Space 	Enters the number “0” (when pressed once) Enters a space (when pressed twice)
Symbol 	Enters the symbol “#” (when pressed once) Enter the “*” symbol (when pressed twice) Enters a comma (when pressed three times)

Note: When the line on the LCD displays “>”, “<”, or “<>” as its last character, use the arrow keys to make your selection; otherwise, use the Enter key.

Programmable buttons (Key #1 and Key #2)

You can program the two unlabeled control buttons on the front panel to operate the LCD and perform the functions listed in Table 40 below. Operating the buttons requires a level 2 password. Label the buttons for their function using the slip-in label.

Table 40: Functions available for programmable buttons (Key #1 and Key #2)

Function	Description
Activate	The first press turns on outputs in any number of correlation groups. The button LED turns on. The second press turns off these same outputs and the button LED.
Disable	The first press disables any number of correlation groups, correlation group members, or both. The button LED turns on. The second press enables the same set of correlation groups and correlation group members and turns off the button LED. The Disable function operates differently based on the whether you choose Correlation Groups, Members of Correlation Group, or Both. The default value is Members. • If you choose Disable Correlation Group: An LCD message indicates that Corr Grp xxx is disabled All outputs (including relay and sounder bases) are turned off and the disabled correlation group stops operating **Note:** Detector bases that have been activated by their attached sensors cannot be disabled through group disable operation. • If you choose Members of Correlation Group: An LCD message identifies the Disabled members. Disabling members of a correlation group does not disable relay or sounder bases. Active devices cannot be enabled through a programmable button. To enable these devices, press the Menu button and choose Control>Enable Device. • If you choose Both: The correlation group stops operating and all members are disabled. An LCD message identifies the Disabled members.
Unlatch	Unlatches all latched outputs system-wide.
Restore	Restores outputs in any number of correlation groups to their normal state. (Disabled or latched devices must be enabled or unlatched before they can be restored.)
None	Removes any function associated with the button.

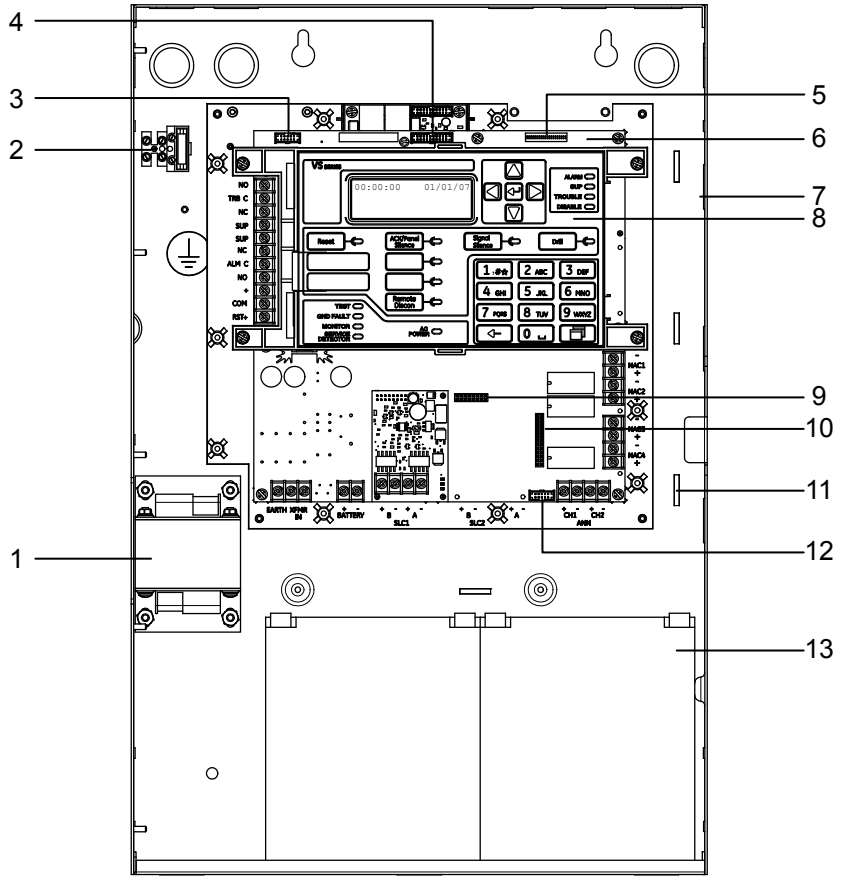
Programmable button function priority

- Operations such as Signal Silence, Auto Signal Silence, and Drill take priority over Activate, Restore, and Disable.
- Activate, Restore, and Disable take priority over in-suite signal silence.
- A single Restore or Disable takes priority over one or more Activates.
- Restore or Group Disable only affects devices from correlation groups that have been added to the list for that button.
- Although an Activate button can turn on both latched and unlatched devices, it can only turn off unlatched devices. Latched outputs remain active until you press a button programmed for Unlatch. Until the output has been unlatched, the panel displays an “Outputs are Latched” monitor event message.
- The Disable and Restore commands do not affect active latched outputs until after the Unlatch button has been pressed. Until the output has been unlatched, the panel displays an “Outputs are Latched” monitor event message.

Component descriptions

The control panel contains the following components.

Figure 54: Component layout



Item	Description
1	Transformer: Changes 120 or 230 volt AC supply voltage to 24 volt AC.
2	Main AC wiring block and fuse holder: Provides connections for 120 or 230 volt AC (primary power) from dedicated service. Includes a primary power fuse (5 A).
3	RS-232 card connector (J3): Provides a connection for the optional RS-232 card for connecting a printer or downloading from the configuration utility.
4	Dialer card connection (J8): Provides a connection for the optional dialer card.
5	Ethernet card connector (J1): Provides a connection for the optional Ethernet card.
6	Main circuit board: Provides connections for all circuits. Also includes the operator interface.
7	Panel backbox enclosure: Houses the panel electronics and standby batteries. In some cases, the batteries may be housed in an external battery cabinet (BC-1).
8	Operator interface: Includes operator controls, LED indicators, and control buttons

Item	Description
9	Loop expander card connector (J14): Provides a connection for the optional loop expander card (only on the VS2 panel).
10	Class A card connector (J2): Provides a connection for the optional Class A card (only on the VS1 panel)
11	Tie wrap mounts: Used to secure wires and to help maintain proper separation between power-limited and nonpower-limited conductors
12	LED expander connector (J6): Provides a connection for the optional LED expander
13	Standby batteries: Provide secondary/standby power to the panel electronics in the absence of primary power

Events with event messages

Table 41: Events with event messages

Event type		LCD	Printer [1]
Alarm	**Active type reporting**		
	Input smoke	Alarm active	SMK ACT
	Input smoke verified	Alarm active	SMK ACT
	Input heat	Heat alarm	HEAT ACT
	Input heat rate of rise	Heat alarm	HEAT ACT
	Input duct alarm	Alarm active	DUCT ACT
	Input pull station	Pull station alarm	PULL ACT
	Input waterflow	Waterflow	WFLW ACT
	Input waterflow retard	Waterflow	WFLW ACT
	CO alarm	Gas CO active	
	Zone alarm	Alarm active	ALRM ACT
	Zone waterflow	Alarm active	ALRM ACT
	Supervisory type reporting		
	Input duct alarm	Supervisory	DUCT ACT
	CO supervisory	Gas CO active	
	Zone supervisory	Supervisory	SUPV ACT
	Input supervisory latching	Supervisory	SUPV ACT

Event type		LCD	Printer [1]
	Input supervisory nonlatching	Supervisory	SUPV ACT
	Monitor type reporting		
	CO monitor	Gas CO active	COMO ACT
	Zone monitor	Monitor	MON ACT
	Input monitor	Monitor	MON ACT
	Outputs are latched	Outputs are latched	Outputs are latched
	Prealarm reporting	Prealarm	PALM ACT
	Alarm verify reporting	Alarm verify	ALMV ACT
	Maintenance alert reporting	Maint. alert	MANT ACT
Trouble	All devices	Trouble	TRBL ACT
Disable	All devices	Disable	DSBL ACT
Test	All devices	Test	TEST ACT

[1] See “Event printout examples” below for an example of how events appear when printed.

Event printout examples

Event information is printed each time an event takes place provided a printer is connected to the system. The following is an example of what the event information looks like on the printout and a description of each piece of information printed for an event.

Annunciator event

```
TRBL ACT | 18:00:07 01/01/2007     A:008
Annunciator 08
```

Where:

TRBL ACT = Trouble event
18:00:07 01/01/2007 = Time and date the event took place
A:008 = Annunciator 08
Annunciator 08 = Label (could be the default label or a custom label)

Internal event (panel or loop event)

```
MON ACT  | 18:00:18 01/01/2007     E:010
Loop 2 Initializing
```

Where:

MON ACT = Monitor event

18:00:18 01/01/2007 = Time and date the event took place
E:010 = Event 010 (see “Event ID numbers and descriptions” below)
Loop 2 initializing = Label (could be the default label or a custom label)

Zone event

```
ALRM ACT | 18:00:34 01/01/2007     Z:008
Zone 08
```

Where:

ALRM ACT = Alarm event
18:00:34 01/01/2007 = Time and date the event took place
Z:008 = Zone 08
Zone 08 = Label (could be the default label or a custom label)

Device event

```
ALRM ACT | 18:00:34 01/01/2007 L:1 D:128
Loop 1 Device 128
```

Where:

ALRM ACT = Alarm event
18:00:34 01/01/2007 = Time and date the event took place
L:1 = Loop 1
D:128 = Device 128
Loop 1 Device 128 = Label (could be the default label or a custom label)

Event ID numbers and descriptions

Table 42: Event ID numbers and descriptions

ID	Event description
000	Loop 1 initialization: Loop 1 is starting up
001	Loop 1 fault: A short or open was detected on loop 1 affecting the communications between the panel and the devices on the loop
002	Loop 1 map fault: A mapping fault was detected on loop 1 while the panel was mapping the devices
003	Loop 1 card fault: The loop 1 card is not present or it is not working properly
004	Loop 1 uncfgrd alarm: A device on loop 1 that is not programmed went into alarm
005	Loop 1 uncfgrd trouble: A device on loop 1 that is not programmed went into trouble
006	Loop 1 map mismatch: The loop 1 map in RAM and the loop 1 map in the database do not match

ID	Event description
007	Loop 1 over limits: There are too many devices on loop 1
008	Loop 1 device 000: A device on loop 1 has an address set to zero
009	Loop 1 mapping: Loop 1 is mapping devices
010	Loop 2 initialization: Loop 2 is starting up
011	Loop 2 fault: A short or open was detected on loop 2 affecting the communications between the panel and the devices on the loop
012	Loop 2 map fault: A mapping fault was detected on loop 2 while the panel was mapping the devices
013	Loop 2 card fault: The loop 2 card is not present or it is not working properly
014	Loop 2 uncfgrd alarm: A device on loop 2 that is not programmed went into alarm
015	Loop 2 uncfgrd trouble: A device on loop 2 that is not programmed went into trouble
016	Loop 2 map mismatch: The loop 2 map in RAM and the loop 2 map in the database do not match
017	Loop 2 over limits: There are too many devices on loop 2
018	Loop 2 device 000: A device on loop 2 has an address set to zero
019	Loop 2 mapping: Loop 2 is mapping devices
020	System startup: The control panel is starting up
021	Program mode: The control panel is in program mode
022	Reset: The control panel is resetting
023	Reset/Sil inhibit: Reset/silence inhibit is activated

ID	Event description
024	Panel silence: The control panel buzzer was silenced
025	Signal silence: The control panel NACs have been silenced
026	Drill: The control panel is in the drill state
027	Walk test: The control panel is in the walk test state
028	Test fire: A smoke or heat detector is being tested
029	Clear history: The control panel’s event history was cleared
030	Time: The control panel’s time was modified
031	Date: The control panel’s date was modified
032	Common disable: A disable event is taking place on the control panel
033	Common trouble: A trouble event is taking place on the control panel
034	Ground fault: The panel detected a ground fault
035	Battery charger: The panel detected a battery charger trouble condition. The charger may not be able to charge the batteries.
036	Battery low: The batteries are low on charge
037	Battery missing: The battery is no longer connected
038	AC power: There is a problem with the panel’s AC power
039	Aux. power 1: The control panel detected a trouble condition on the continuous AUX power circuit 1
040	Aux. power 2: The control panel detected a trouble condition on the resettable AUX power circuit 2

ID	Event description
041	System AC power: There is a problem with the panel's AC power and/or a remote auxiliary/booster's AC power
042	Common alarm: An alarm event is taking place on the control panel
043	Common supervisory: A supervisory event is taking place on the control panel
044	Common monitor: A monitor event is taking place on the control panel
045	Common trouble for telco dialer: A trouble event, other than a DACT delivery fault is taking place on the control panel
046	Common trouble for network dialer: A trouble event, including a DACT delivery fault is taking place on the control panel
047	Outputs Are Latched: Outputs in the system are in latched condition
048	Self test fault: A fault was detected while testing the panel's internal subsystems (memory, flash, code, etc.)
049	Internal fault: The control panel detected an internal hardware or software error
050	Dialer dsbl/rem disc: The dialer was disabled by the Remote Disconnect button
051	Dialer line 1 fault: A ground fault or line fault was detected on line 1 of the dialer
052	Dialer line 2 fault: A ground fault or line fault was detected on line 2 of the dialer
053	Dialer delivery fail: The dialer failed to deliver a message to the receiver or CMS
054	Dialer normal test: A dialer test was conducted when the panel was in a normal state
055	Dialer abnormal test: A dialer test was conducted when the panel was in an off-normal state
056	Dialer configuration: The dialer is not programmed or has unverified changes
057	Net Comm Fault 01: Communications between the panel and network receiver 01 failed
058	Net Comm Fault 02: Communications between the panel and network receiver 02 failed
059	Net Comm Fault 03: Communications between the panel and network receiver 03 failed
060	Net Comm Fault 04: Communications between the panel and network receiver 04 failed
061	Net Comm Fault 05: Communications between the panel and network receiver 05 failed
062	Net Comm Fault 06: Communications between the panel and network receiver 06 failed
063	Net Comm Fault 07: Communications between the panel and network receiver 07 failed
064	Net Comm Fault 08: Communications between the panel and network receiver 08 failed
065	Net Conf Fault 01: The panel failed to communicate with the network receiver 01 after a configuration change
066	Net Conf Fault 02: The panel failed to communicate with the network receiver 02 after a configuration change
067	Net Conf Fault 03: The panel failed to communicate with network receiver 03 after a configuration change

ID	Event description
068	Net Conf Fault 04: The panel failed to communicate with network receiver 04 after a configuration change
069	Net Conf Fault 05: The panel failed to communicate with network receiver 05 after a configuration change
070	Net Conf Fault 06: The panel failed to communicate with network receiver 06 after a configuration change
071	Net Conf Fault 07: The panel failed to communicate with network receiver 07 after a configuration change
072	Net Conf Fault 08: The panel failed to communicate with network receiver 08 after a configuration change
073	IPGateway Trouble: IP Gateway configuration is invalid
074	Fw Dwnld in Progress: Firmware update is successfully initiated from the panel and firmware update utility
075	Fw Download Aborted: Firmware update is aborted due to connectivity loss (or) user has aborted download from either panel or update utility
076	Fw Download Failed: Firmware update failed to store the Image.bin into panel flash memory
077	Fw Download Completd: Firmware update is successfully completed
078	NAC 1 trouble: An open or short was detected on NAC 1 or there is a problem with the EOL
079	NAC 2 trouble: An open or short was detected on NAC 2 or there is a problem with the EOL
080	NAC 3 trouble: An open or short was detected on NAC 3 or there is a problem with the EOL
081	NAC 4 trouble: An open or short was detected on NAC 4 or there is a problem with the EOL

ID	Event description
082	Printer trouble: The printer is either offline, out of paper, or disconnected
083	Annunciator 1 trouble: An open or short was detected on annunciator 1
084	Annunciator 2 trouble: An open or short was detected on annunciator 2
085	Annunciator 3 trouble: An open or short was detected on annunciator 3
086	Annunciator 4 trouble: An open or short was detected on annunciator 4
087	Annunciator 5 trouble: An open or short was detected on annunciator 5
088	Annunciator 6 trouble: An open or short was detected on annunciator 6
089	Annunciator 7 trouble: An open or short was detected on annunciator 7
090	Annunciator 8 trouble: An open or short was detected on annunciator 8
091	Zone 1 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 1)
092	Zone 2 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected on zone 2)
093	Zone 3 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 3)
094	Zone 4 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 4)
095	Zone 5 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 5)
096	Zone 6 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 6)
097	Zone 7 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 7)

ID	Event description
098	Zone 8 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 8)
099	Zone 9 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 9)
100	Zone 10 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 10)
101	Zone 11 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 11)
102	Zone 12 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 12)
103	Zone 13 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 13)
104	Zone 14 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 14)
105	Zone 15 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 15)
106	Zone 16 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 16)
107	Zone 17 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 17)
108	Zone 18 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 18)
109	Zone 19 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 19)
110	Zone 20 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 20)
111	Zone 21 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 21)
112	Zone 22 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 22)
113	Zone 23 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 23)
114	Zone 24 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 24)
115	Zone 25 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 25)
116	Zone 26 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 26)
117	Zone 27 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 27)
118	Zone 28 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 28)
119	Zone 29 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 29)
120	Zone 30 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 30)
121	Zone 31 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected in zone 31)
122	Zone 32 (active, trouble, disable, prealarm, alarm verify, maintenance alert, or test was detected on zone 32)
123 to 328	CorrGrp nnn: Correlation group nnn is disabled through User key which is configured as Disable (Group/Both) Note: nnn represents the correlation group number (001 to 199).

Viewing event details

The off-normal events that take place in the system contain event information that is displayed on the LCD screen. Additional information is available on a secondary screen called the Event Details screen.

To display the event details screen:

1. When an event takes place, press Enter on the front panel.
2. View the event details.

   For a description of the information displayed on the screen, see “LCD display screen” on page 140. The event details screen is displayed for 15 seconds if there is no activity and then returns to the previous screen.

   Note: Use the up and down arrow keys to scroll through multiple events.

Resetting the panel

Pressing Reset restores the fire alarm system to the normal state provided that there are no active devices or circuits. The Reset command does not restore disabled or latched devices. Disabled devices must be enabled and latched output devices must be unlatched before they can be restored.

Latched devices are restored when they are unlatched, provided the alarm that triggered the output no longer exists. However, when a user tries to restore the unlatched outputs via the user key or control menu, the output is restored regardless of the alarm condition. Also, when signal silence inhibit or reset inhibit is enabled, the system will not restore until the silence or reset inhibit period lapses.

WARNING: To avoid possible injury or loss of life, do not reset the fire alarm system until the appropriate authority determines that it is safe to do so.

To reset the panel:

1. Press the Reset button.

When you reset the panel:

- “Reset” displays on the top-right of the LCD, alternating with the active and disabled points display.
- The Reset LED lights.

- Devices in an off-normal state remain in their off-normal state until the element causing their off-normal state clears.
- When the reset process is complete, “Reset” clears from the LCD and the Reset LED turns off.
- If the condition causing an "Alarm Active" condition has not cleared (smoke is still present in detector chamber, pull station was not reset, etc.) the panel remains in an alarm state after resetting and the NACs and other outputs do not reactivate.
- Disabled devices and zones remain disabled after the panel is reset.
- Resetting the panel does not log off user level one or user level two access.

Silencing panel and annunciator buzzers

The panel buzzer sounds whenever an event message is received at the control panel. Pressing the Ack/Panel Silence button:

- Silences the buzzer on the control panel and all remote annunciators.
- Acknowledges all current event messages.
- Silences the panel buzzer on all remote annunciators. If more than one event is queued, the LCD displays event 001.

To silence the buzzer:

1. Determine what event caused the buzzer to sound by pressing Enter to view the event details. This displays the loop number, device address, and a detailed description of the event type.
2. Press the Ack/Panel Silence button on the panel, or the Ack/Silence button on any remote annunciator.

Silencing notification appliances

WARNING: Do not silence notification appliances until the building is fully evacuated and the cause of the alarm has been determined.

To silence or resound notification appliances:

1. Press the Signal Silence button.

Silencing NACs manually

Pressing the Signal Silence button turns off all silenceable NACs unless activated by a waterflow device or waterflow zone. Depending on system programming, some audible or visible notification appliances may not turn off when the Signal Silence button is pressed. If a signal silence inhibit was programmed, then pressing the Signal Silence button will not work until the reset inhibit timer expires. See “What is in-suite signal silence?” on page 35.

When you silence the signals:

- The Signal Silence LED lights to indicate that the notification appliances are off.
- If Genesis horn/strobe or horn-only devices are used on NACs programmed for Genesis operation, Signal Silence silences the horns and strobes based on system programming. Pressing Signal Silence a second time while the panel is in an alarm state causes the signals to turn on again.

Silencing NACs automatically

Two options let you silence NACs automatically: Auto Signal Silence and Suite Signal Silence (in-suite signal silence). Both work by starting a timer when an event activates the NACs. The NACs are allowed to sound until the timer expires, after which they are automatically silenced.

The Auto Signal Silence option

Auto Signal Silence can be enabled when programming the panel. It affects all silenceable NACs connected to the panel. The elapsed time can be set for 5 to 30 minutes. See “Activating and restoring sensor bypass” on page 167.

The Suite Signal Silence option

The Suite Signal Silence option enables or disables in-suite signal silence for the selected correlation group. This option affects only silenceable NACs associated with the correlation groups. For more information on this programming this option, see “Programming in-suite signal silence” on page 94.

NACs that cannot be silenced

NACs configured as latched outputs cannot be silenced. This includes any device configured as:

- Continuous Non-Silenceable Latched (Cont NS Latch)
- Supervised Outputs Latched (SupOut Latch)

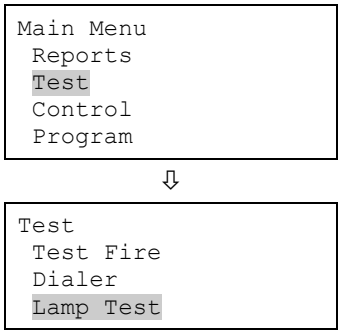
- Continuous Non-Silenceable Class A Latched (Cont NS CIA Latch)
- Supervised Outputs Class A Latched (SupOut CIA Latch)

In addition, NACs activated by devices programmed as waterflow cannot be silenced until the activated devices are restored to normal via a panel reset. After the waterflow device events restore, the Signal Silence button or the auto signal silence timer can silence the NACs if there are other events causing the NACs to activate. Waterflow activations do not invoke in-suite signal silence.

Conducting a lamp test

A lamp test lights all of the LEDs on the panel and the LED annunciator and tests the LCD so that you can verify proper operation. LEDs stay on for 15 seconds.
To conduct a lamp test:

1. Display the Test. menu
2. Choose Lamp Test.
3. Press Enter.
4. Verify that all LEDs on the panel, the LCD, and the LED annunciator (if used) work properly.



Activating and restoring output devices

Activating an output device on a signaling line circuit (SLC) turns on its output. This is typically done to test individual strobes, horns, and other notification appliances. Restoring the device turns it off again.

Notes

- Input devices cannot be activated. If you attempt to activate an input device, the message “Invalid device” is displayed.
- Disabled devices must be manually enabled and then restored. See “Activating and restoring sensor bypass” on page 167.
- Latched outputs must be manually unlatched and then restored. See “Unlatching latched output device” on page 163.

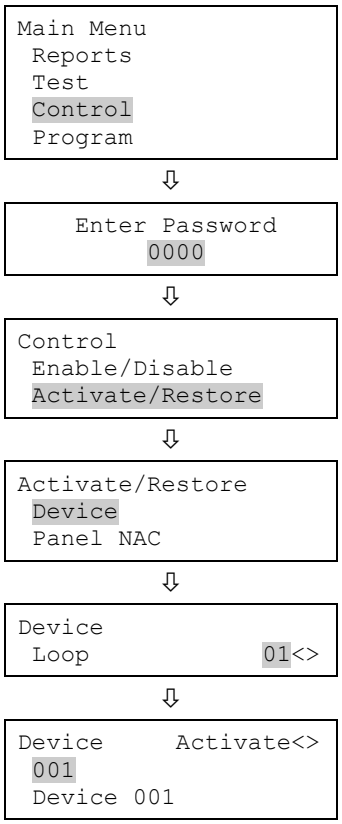
To activate or restore an output device:

1. Press the Menu button and choose Control.
2. Enter a level one password.
3. Choose Activate/Restore.
4. Choose Device.
5. Choose the loop the device is on.

   Note: If the panel only has one loop, the loop selection screen does not display.
6. Enter the device ID for the device that you want to activate or restore.
7. Press Enter.
8. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.



Unlatching latched output devices

Latched outputs are devices that are configured to shut down air handlers and dampers automatically when an alarm activates, and to keep them shut down until they are manually unlatched and restored. For this reason, devices configured as latched output devices must be manually unlatched and then restored.

When outputs have been latched, the panel generates an “Outputs are latched” event. The unlatch command affects all latched output devices system-wide. You can assign the Unlatch Outputs command to a programmable key on the front panel or to a Class A or B Signature input module circuit with one of the devices listed on page 102.

To unlatch latched output devices:

1. Press the Unlatch Outputs button on the control panel (if programmed).
   — or —
   Press the Unlatch Outputs module button (if programmed).

Activating and restoring panel NACs

Activating a notification appliance circuit (NAC) turns on its outputs. Restoring the NAC turns them off again. This is typically done for testing purposes.

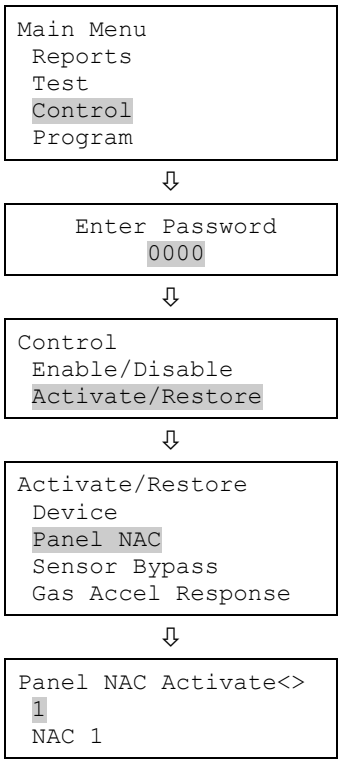
Note: Disabled NACs must be manually enabled and then restored. See “Activating and restoring sensor bypass” on page 167.

To activate a panel NAC:

1. Press the Menu button and choose Control.
2. Enter a level one password.
3. Choose Activate/Restore.
4. Choose Panel NAC.
5. Select the NAC that you want to activate.
6. Press Enter.
7. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.



Notes

- Disabled devices must be manually enabled and then restored. See “Activating and restoring sensor bypass” on page 167.
- Latched output devices must be manually unlatched and then restored. See “Unlatching latched output device” on page 163.

Activating and restoring sensor bypass

Use the Activate Sensor Bypass option to stop the photoelectric element on the PHS detector from generating supervisory messages on the LCD, while still using the heat element of the same PHS. Sensor Bypass is applicable to PHS

devices with device type as “Heat + Smoke Supv Latching,” or “Heat + Smoke Supv Nonlatching,” only.

Use the Restore Sensor Bypass option when both the heat and smoke (photoelectric) elements of the PHS return to normal operation. Activation messages for either condition appear on the LCD.

When Sensor Bypass is activated, the system displays an alarm message only when the heat element activates. For example, when a large event is planned that allows smoking or pyrotechnics in a ballroom that has a PHS detector installed; you may choose to bypass the smoke element to prevent false alarms while still using the heat element to detect a fire.

When a device is off-normal and you attempt to activate or restore sensor bypass, the system displays a warning message. When the activate sensor bypass option is applied to a device, the system responds as follows:

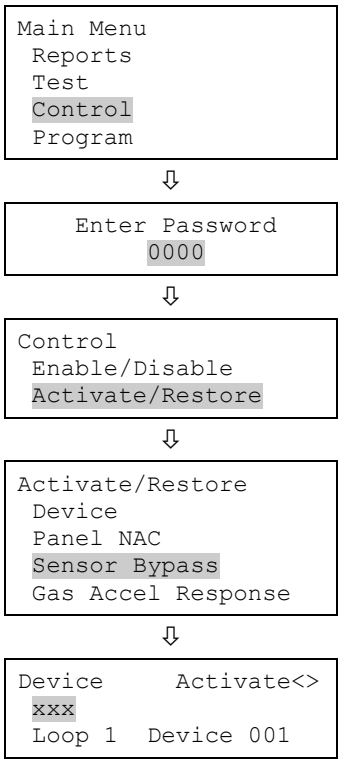
- The common trouble LED turns on.
- The LCD displays an event to indicate that the device is bypassed.
- The common Trouble LED flashes and the panel goes into a trouble state.
- The common Trouble relay changes state.
- The active point indicators on the LCD increment.
- Resetting the panel has no effect on sensor bypass activated devices, but removing all power from the panel clears the sensor bypass and restores the device.

To activate sensor bypass:

1. Press the Menu button and choose Control.
2. Enter a level one password.
3. Choose Activate/Restore.
4. Choose Sensor Bypass.
5. Select the device that you want to bypass.
6. Press Enter.
7. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.



Activating and restoring gas accelerated response

Use the Activate Gas Accelerated Response option to turn on the accelerated response mode. Use the Restore Gas Accelerated Response option to turn off the accelerated response mode.

Under normal conditions, it takes approximately four minutes at 400 PPM of CO before a CO detector activates. This mimics the normal absorption rate of CO in the bloodstream. When testing a CO device, you can put the CO detectors in the CO accelerated response mode, which shortens the time to activation to be between four to eight seconds at 400 PPM of CO.

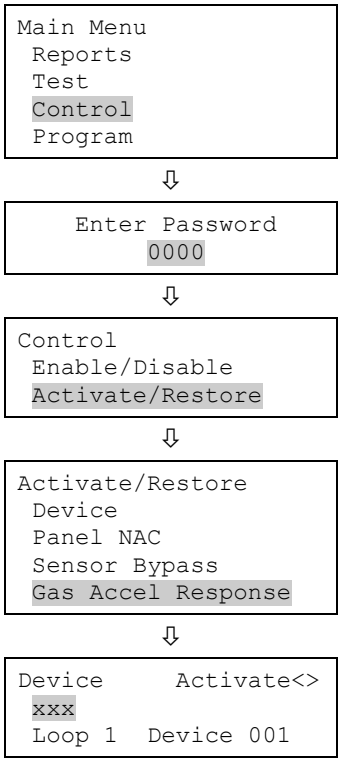
You can activate a gas accelerated response on devices that have a CO sensor. See Table 9 on page 45. Once activated, the gas accelerated response on that device remains active for four hours, unless you manually restore it, or the device returns from a communication fault.

To activate gas accelerated response:

1. Press the Menu button and choose Control.
2. Enter a level one password.
3. Choose Activate/Restore.
4. Choose Gas Accel Response.
5. Select the device that you want to accelerate.
6. Press Enter.
7. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.



Disabling and enabling devices

Disabling a device does not prevent it from activating, but it does prevent event messages originating at the device from being displayed, printed, or reported off-premises. Devices are typically disabled during maintenance. Remember to enable the device as soon as you have finished working with it.

Note: Disabling the devices will override the sensor bypass.

The Reset command does not restore disabled or latched devices. Disabled devices must be enabled and latched output devices must be unlatched before they can be restored. The Reset command also does not restore sensor bypass devices, which must be enabled.

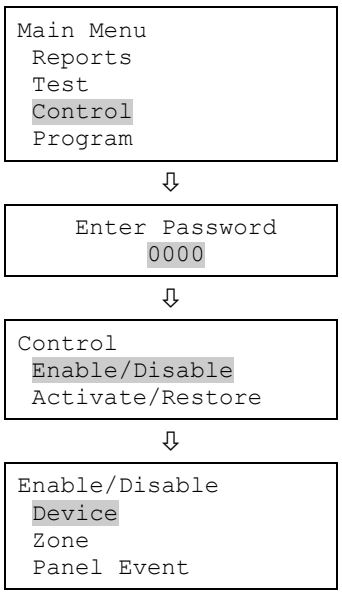
When a device is disabled:

- When the device you are disabling is active, a warning message displays.
- The common Disable LED turns on.
- The LCD displays an event to indicate that the device is disabled.
- The common Trouble LED flashes and the panel goes into a trouble state.
- The common Trouble relay changes state.
- The disabled and active points indicators on the LCD increment. The event is transmitted off-premises, if programmed to do so.
- Resetting the panel has no effect on disabled devices, but removing all power from the panel clears the disable and enables the device.

To disable or enable a device:

1. Press the Menu button and choose Control.
2. Enter a level one password.
3. Choose Enable/Disable.
4. Choose Device.
5. Choose the loop the device is on.

   Note: If the panel only has one loop, the loop selection screen does not display. Go to the next step.
6. Enter the device ID for the device that you want to disable or enable.
7. Press Enter.



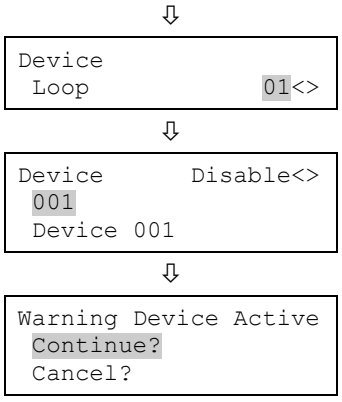
8. If the device is active, acknowledge the warning message by selecting Continue to disable the device or Cancel to exit.

   The device is disabled and a message indicating that the device is disabled is displayed on the LCD.

9. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.



Disabling and enabling zones

Zones are typically disabled while maintenance is performed to prevent event messages originating from the zone from being displayed, printed, or reported off-premises. Disabling a zone does not prevent activations in the zone. All devices in the zone continue to function normally.

Note: Remember to enable the zone as soon as you have finished working with it. Resetting the panel does not restore disabled zones. These must be manually enabled and then restored.

When you disable a zone:

- The common Disable LED turns on
- On a zone/device system, the LCD displays disabled messages for the zone and all of the devices in the zone
- On a zone only system, the LCD displays a disabled message for the zone
- The common trouble LED flashes and the panel goes into a trouble state
- The common trouble relay changes state
- The disabled and active points indicators on the LCD increment
- If you are using an LED display expander, the zone LEDs blink for the disabled zone
- Resetting the panel has no effect on a disabled zone, but removing all power from the panel enables the zone
- If the zone you are disabling contains devices that are active, a warning message is displayed

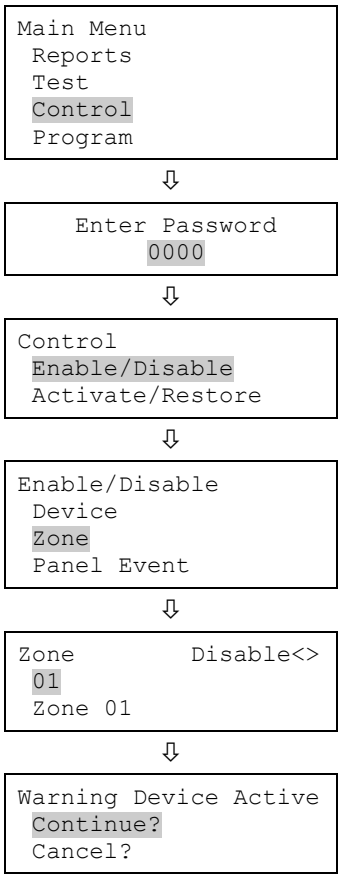
To disable or enable a zone:

1. Press the Menu button and choose Control.
2. Enter a level one password.
3. Choose Enable/Disable.
4. Choose Zone.
5. Select the zone that you want to disable or enable.
6. Press Enter.
7. If devices in the zone are active, acknowledge the warning message by selecting Continue to disable the zone or Cancel to exit.

   The zone is disabled.
8. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.



Disabling and enabling panel events

Disabling a panel event prevents the messages that are sent when the event occurs from being displayed, printed, or reported off-premises. Events are typically disabled while maintenance is performed. Remember to enable the event as soon as you have finished working.

Not all panel events can be disabled. Panel events that cannot be disabled are labeled as “forbidden.” The following table lists panel events that can be disabled

Table 43: Panel events that can be disabled

Event	ID
Ground fault	034
Battery charger	035
Battery low	036
Battery missing	037
AC power	038
System AC power	041
Aux. power 1	039
Aux. power 2	040
Dialer line 1 fault	045
Dialer line 2 fault	046
Net receiver communication fault	051

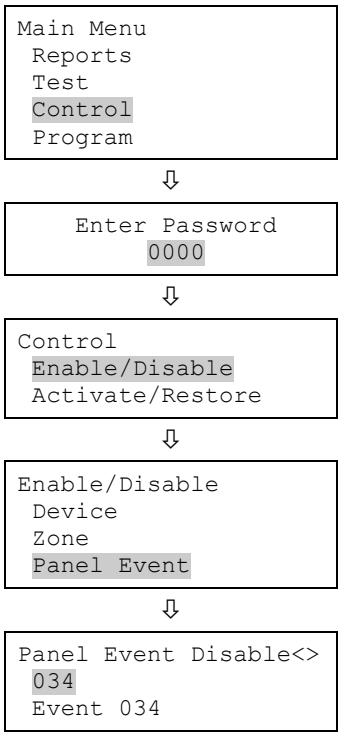
To disable or enable a panel event:

1. Press the Menu button and choose Control.
2. Enter a level one password.
3. Choose Enable/Disable.
4. Choose Panel Event.
5. Enter the ID number of the event type to disable or enable.

   See “Event ID numbers and descriptions” on page 154 for event descriptions and the list above for the events that can be disabled.
6. Press Enter.
7. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.



When you disable an event:

- The common Disable LED turns on
- The common Trouble LED flashes and the panel goes into a trouble state
- The common Trouble relay changes state
- The disabled and active points indicators on the LCD increment
- The LCD displays a message indicating that the event is disabled.

Disabling and enabling loop events

Disabling a loop event prevents it from being displayed, printed, or reported off premises. This is typically done during maintenance. For example, you might want to disable the Loop 1 unconfigured alarm event, if you are switching out a detector. Remember to enable the event as soon as you have finished working.

When you disable a loop event:

- The common Disable LED turns on
- The common Trouble LED flashes and the panel goes into a trouble state
- The common Trouble relay changes state
- The disabled and active points indicators on the LCD increment.
- The LCD displays a message indicating which loop event is disabled.

Not all events can be disabled. Those that cannot are labeled as “forbidden.” The following table lists events that can be disabled.

Table 44: Loop events that can be disabled

Event	ID
Loop 1 fault	001
Loop 2 fault	011
Loop 1 card fault	003
Loop 2 card fault	013
Loop 1 unconfigured alarm	004
Loop 2 unconfigured alarm	014
Loop 1 unconfigured trouble	005
Loop 2 unconfigured trouble	015

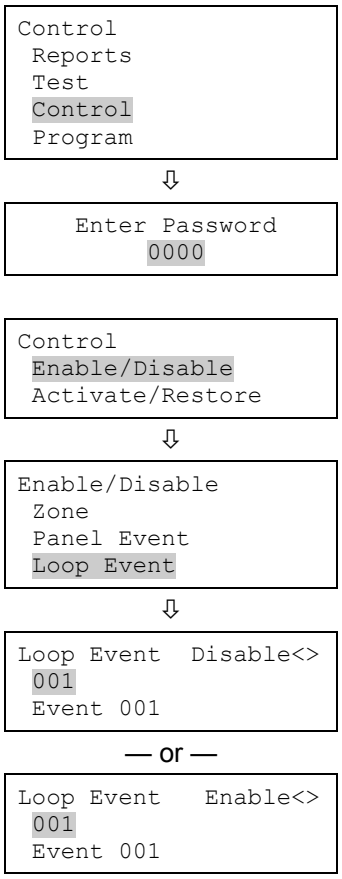
To disable or enable a loop event:

1. Press the Menu button and choose Control.
2. Enter a level one password.
3. Choose Enable/Disable.
4. Choose Loop Event.
5. Select the loop event type that you want to disable or enable.

   See “Event ID numbers and descriptions” on page 154 for event descriptions and the list above for the events that can be disabled.
6. Press Enter.
7. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.



Disabling and enabling panel NACs

Disabling a panel NAC prevents activations from being displayed, printed, or reported off premises. This is typically done during maintenance. Remember to enable the NAC as soon as you have finished working.

NACs that have been disabled are not restored when the panel is reset. They must be enabled and then restored.

NACs configured as latched output devices are not restored when the panel is reset. They must be manually unlatched and then restored.

When you disable a panel NAC:

- The common Disable LED turns on
- The LCD displays a message indicating that the NAC is disabled
- The disabled and active points indicators on the LCD increment
- The common Trouble LED flashes and the panel goes into a trouble state
- The common Trouble relay changes state.

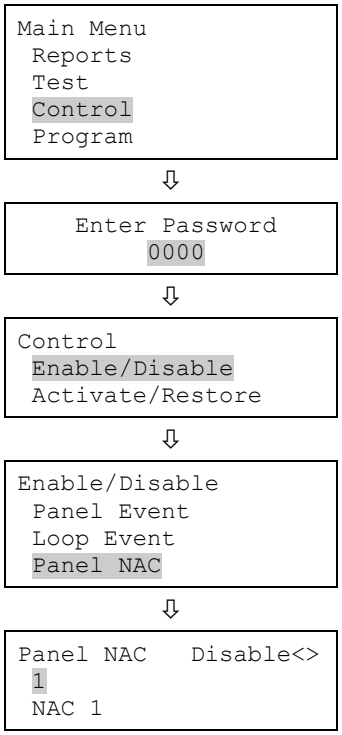
To disable or enable a panel NAC:

1. Press the Menu button and choose Control.
2. Enter a level one password.
3. Choose Enable/Disable.
4. Choose Panel NAC.
5. Select the NAC that you want to disable or enable.
6. Press Enter.

   The NAC is disabled and a message indicating that the NAC is disabled is displayed on the LCD.
7. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.



Disabling and enabling the dialer and network

Disabling the dialer, network CMS connection, or any panel or device NACs configured as City Tie prevents transmission of events to the central monitoring station (CMS).

When you enable the dialer and network CMS connection:

- The Remote Disconnect LED turns off
- The message “Dialer Dsbl/Rem Disc” on the LCD disappears
- The disabled points indicator on the LCD decrements
- The active points indicator on the LCD decrements

To disable or enable the dialer and network card:

1. Press Remote Disconnect.
2. Enter a level one password.

Initiating a fire drill

Pressing Drill activates all audible and visible notification appliances according to the panel programming, but does not activate the alarm relay. The Drill LED indicates that the function is active.

Note: Drill does not operate when the panel has an active alarm or supervisory event.

To start and stop a fire drill:

1. To start a drill, press and hold the Drill button for two seconds.

   The Drill button LED turns on indicating that the drill is active, and the control panel turns on all notification appliance circuits.

2. To stop the drill, press the Drill button again.

   The Drill button LED turns off, and the control panel turns off all notification appliance circuits.

Note: The drill command is also available from the menu, under Control.

Conducting a walk test

A walk test lets you test individual zones or devices without having to create an actual alarm condition. You can conduct a walk test in silent or audible mode. In silent mode, the audible devices (NACs) do not sound.

Zones should be placed in walk test one at a time. This allows the balance of the system to remain in service. When a device is activated for testing, it remains active throughout the test and does not restore until the walk test is ended. When the walk test is ended, all of the tested devices restore.

Note: Walk test does not operate when the panel has an active alarm or supervisory event.

When you enter walk test mode:

- The Test LED flashes for a silent walk test and is steady for an audible walk test.
- Walk Test is displayed on the LCD. Walk Test is replaced with the device activation message during the period the device is activated while in walk test mode.
- The panel enters a trouble state. There is no fire protection for the zone in walk test. If an unselected zone or device goes into alarm or trouble, all programmed outputs operate as programmed.

Zones and devices behave as follows during walk test:

- For alarm events, the appropriate panel and annunciator LEDs and buzzers turn on. In the audible (NAC) test mode a four-second pulse sounds for NAC types: continuous nonsilenceable, continuous silenceable, Genesis nonsilenceable, Genesis with audible silence only, and Genesis with audible and visible silenceable on the audible devices. A single 3-3-3 cycle sounds for NAC types: temporal nonsilenceable, temporal silenceable, coder basic, coder continuous, coder 120spm, and coder temporal on the audible devices.
- For trouble events, the appropriate LEDs and the buzzers turn on. In the audible (NAC) test mode a two-second pulse sounds on the audible devices.
- For ground fault events, the appropriate LEDs and the buzzers turn on. In the audible (NAC) test mode, a two-second pulse sounds on the audible devices.
- All device activations are latched until the walk test is ended or the panel is reset. When the walk test is ended, it takes approximately eight seconds for the devices to restore. If the device being tested is in a zone and does not restore, the zone does not reset.
- If auxiliary power is resettable, the auxiliary power is interrupted while the zone is reset.

- Input zones programmed as waterflow with retard require 10 to 15 seconds of activation to initiate the test signals.
- Devices programmed as alarm verify and *not in test mode* go directly into alarm if activated (the alarm verification process is bypassed).
- Once a device is tested, restore the device. For example, if you are testing a pull station, reset the pull station before testing the next device.

The panel terminates walk test if:

- The zone or device being tested remains inactive for 30 minutes
- The walk test is stopped by the user

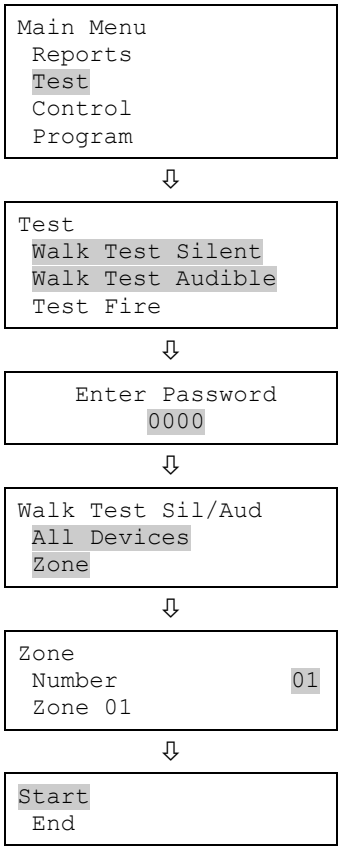
To start a walk test:

1. Press the Menu button and choose Test.
2. Choose Walk Test Silent or Walk Test Audible.
3. Enter a level one password.
4. Choose either All Devices or Zone.
5. If you chose Zone, enter the zone ID for the zone to be tested.
6. Choose Start.
7. Conduct the walk test.
8. Press Cancel to return to the previous menu.

   — or —

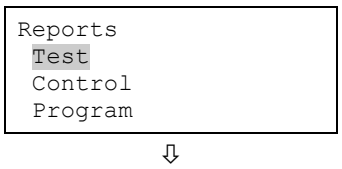
   Press the Menu button to exit menu mode.

Note: To see the activation and restoration of all walk test events, the panel must be reset *prior* to ending the walk test. Once the reset is complete, you can end the walk test and view a walk test report.



To end a walk test:

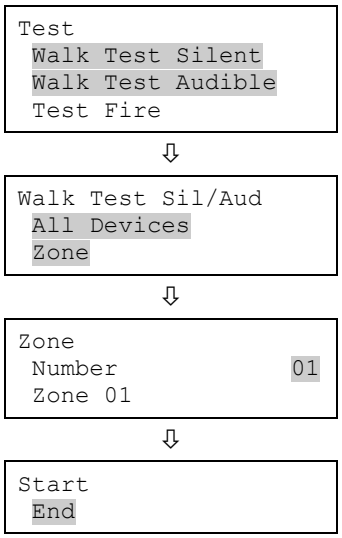
1. Press the Menu button and choose Test.
2. Choose Walk Test Silent or Walk Test Audible.
3. Choose either All Devices or Zone.
4. If you chose Zone, enter the zone ID of the zone where you are ending the walk test.



5. Choose End to turn off the walk test. All of the devices that were activated in the test are restored at this time.
6. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.



Chapter 4
Reports

Summary

This chapter describes how to create the panel's available reports.

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Basic steps for viewing and printing reports

To view or print a report:

1. Press the Menu button and choose Reports.
2. Select the report that you want to run.
3. Supply values for the options requested.
4. Choose either:

   LCD: The report is displayed on the LCD.

   — or —

   Printer: The report is printed on the connected printer. If you do not have a printer, this option is not available.
5. If you selected LCD, press Cancel twice to return to the reports menu, when you have finished viewing the report.
6. Choose another report to view.

   — or —

   Press the Menu button to exit menu mode.

Notes

- You must have a printer connected to the panel to print a report.
- Requesting a report while another report is being printed or displayed on the LCD stops the current report (even if it has not finished) and starts the new report that you requested.

History report

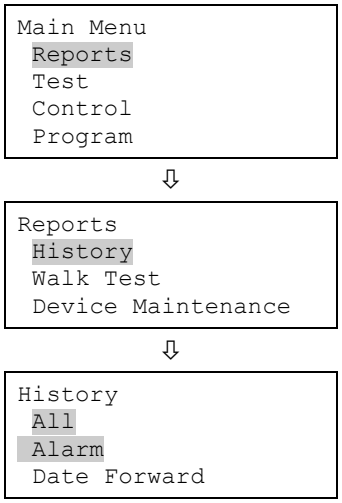
The panel maintains 1,000 system or user events. The event record contains the event time, the event type, the event state, and the device address (for device events). The event time is the time and date of the event activation or restoration. The event types are alarm, trouble, supervisory, monitor, and test activations or disable. The event state is either activation or restoration. The device address is the address for the device that caused the event. Some events do not have a device address listed, such as the type of events listed in the “Event ID numbers and descriptions” topic on page 154. These are “pseudo” type events. History reports can be viewed on the LCD or printed.

There are three types of history reports you can generate:

- All: Includes all events in the report
- Alarm: Includes only alarm events in the report
- Date forward: Lets you enter a starting date for the report. The report includes all events from that date forward.

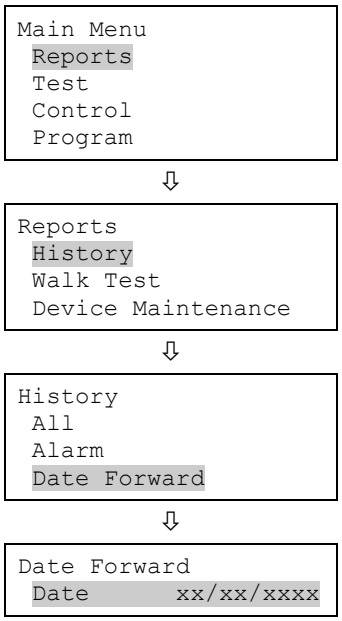
To view an All or Alarm History report:

1. Press the Menu button and choose Reports.
2. Choose History.
3. Choose either All or Alarm.



To view a Date Forward History report:

1. Press the Menu button and choose Reports.
2. Choose History.
3. Choose Date Forward.
4. Enter the starting date for the report (month/day/year).



Walk Test report

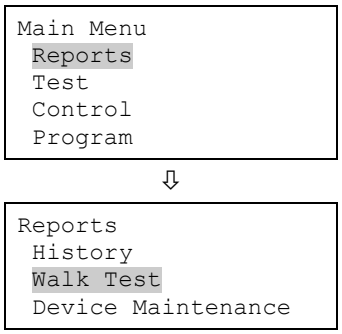
The Walk Test report extracts all test events for the last walk test stored in history. Walk test reports can be printed or viewed on the LCD.

Notes

- You cannot view a walk test report while conducting a walk test.
- The walk test report includes all events (walk test and all other events) to show whether other events occurred during the walk test.
- The walk test report cannot be viewed from history after restarting the panel.
- To include the activation and restoration of all walk test events in the walk test report, the panel must be reset *prior* to ending the walk test. Once the reset is complete, you can end the walk test and view a walk test report.

To view a Walk Test report:

1. Press the Menu button and choose Reports.
2. Choose Walk Test.



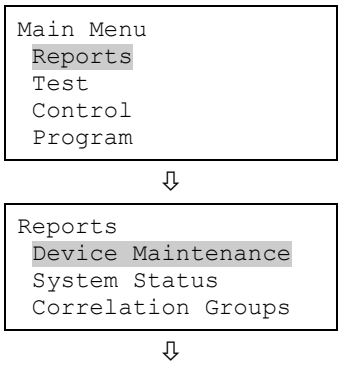
Device Maintenance report

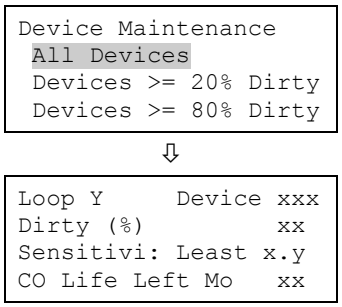
The panel provides a Device Maintenance report of all detectors in the system. The report can include: all detectors, all detectors over 20% dirty, or all detectors over 80% dirty. The report displays the device, along with its dirty percentage and sensitivity setting. Device Maintenance reports can be printed or viewed on the LCD.

To view a Device Maintenance report:

1. Press the menu button and choose Reports.
2. Choose Device Maintenance.
3. Choose one of the following:

   All Devices
   Devices >= 20% Dirty
   Devices >= 80% Dirty.





Note: CO detectors have a lifespan of six years. They report the number of months left until end of life (EOL) on the LCD and in maintenance reports. When a CO detector has less than six months until EOL, the LCD displays a maintenance alert. When the months until EOL reaches zero, the LCD restores the maintenance alert and issues an EOL trouble for the device. For combination detectors, the system detects and reports the level of dirty separate from the CO number of months until EOL.

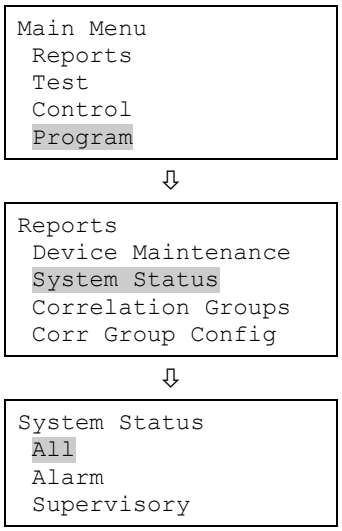
System Status report

The panel provides a System Status report for all active points in the system. The report can include: all active points, all alarm points, all supervisory points, all trouble points, all disabled points, or all other points. System status reports can be printed or viewed on the LCD.

To view a System Status report:

1. Press the Menu button and choose Reports.
2. Choose System Status.
3. Choose one of the following:

   All
   Alarm
   Supervisory
   Trouble
   Disable
   Other

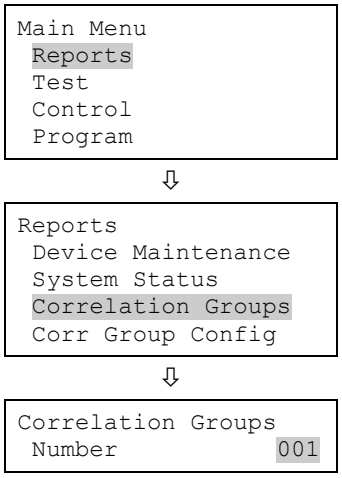


Correlation Groups report

The panel provides a report for each correlation group in the system. The Correlation Group report shows all of the devices, zones, and NACs that are assigned to a correlation group. Correlation group reports can be printed or viewed on the LCD.

To view a Correlation Groups report:

1. Press the Menu button and choose Reports.
2. Choose Correlation Groups.
3. Enter the number of the correlation group for which you want a report.



Correlation Group Configuration report

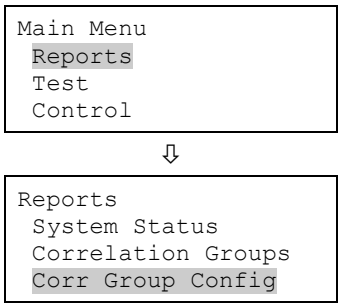
The Correlation Group Configuration report list:

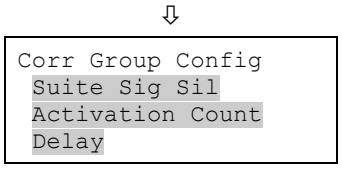
- All correlation groups with in-suite signal silence enabled.

  — or —
- All correlation groups with an activation count greater than 1. This provides information on correlation groups programmed for special applications.
- The Delay report displays a list of correlation groups from which the Reset is configured as Function Activate or Restore.

To view a Correlation Group Configuration report:

1. Press the menu button and choose Reports.
2. Choose Corr Group Config.
3. Choose one of the following:
   - Suite Sig Sil
   - Activation Count
   - Delay



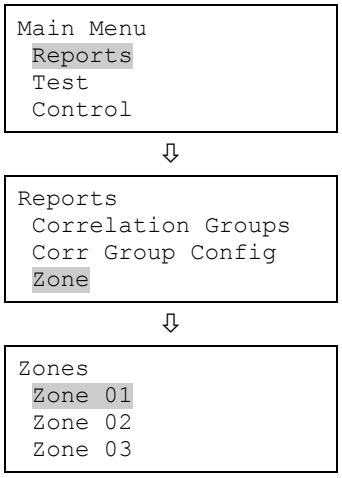


Zone report

The panel provides a Zone report that lists all of the devices that are in a selected zone. The report lists the devices by the device label.

To view a zone report:

1. Press the Menu button and choose Reports.
2. Choose Zone.
3. Choose the zone for which you want a report.



System Configuration report

The panel provides a System Configuration report that displays the current configuration of the system. There are seven system configuration reports displaying the information shown below. System configuration reports can be printed or viewed on the LCD.

All report: Displays all panel, device, loop, zone, event, and dialer configuration information.

Panel operation report: Displays firmware version, marketplace, language, AC fail delay, reset inhibit, zone re-sound, auto signal silence, in suite silence time, port CU, key #1, key #2, aux power reset, lock remote read, AC voltage, date format, daylight savings, minutes offset, day start, night start, mapping, LCD banner, IP (IP address), MSK (subnet mask), and GWY (gateway), and event notification type configuration information.

Panel configuration report: Displays dialer, network, printer, annunciator class, annunciator, and NAC configuration information.

Devices report: Displays function, type, zone, label, follow, day sensitivity, night sensitivity, day prealarm percent, night prealarm percent, correlation groups, and event notification configuration information.

Loop/zone configuration report: Displays loop class, zone, device, mapping, and correlation group configuration information.

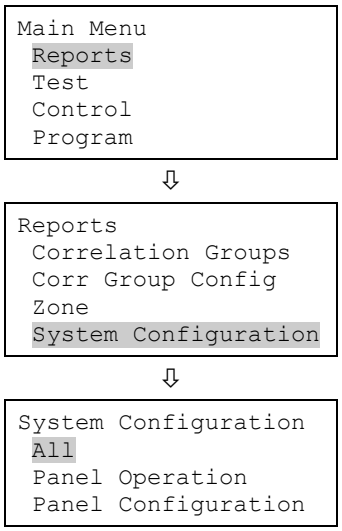
Event configuration report: Displays loop event and panel event configuration information.

Dialer configuration report: Displays central monitoring station event notification settings for the points in the system.

To view a System Configuration report:

1. Press the Menu button and choose Reports.
2. Choose System Configuration.
3. Choose:

   All
   Panel Operation
   Panel Configuration
   Loop/Zone Config
   Devices
   Event Config
   Dialer Config

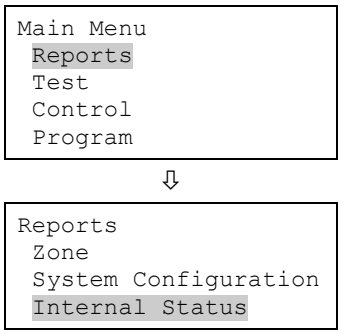


Internal Status report

The panel provides an Internal Status report that displays the current values for AC voltage, battery voltage, and battery charge current. Internal Status reports can be printed or viewed on the LCD.

To view an Internal System Status report:

1. Press the Menu button and choose Reports.
2. Choose Internal Status.

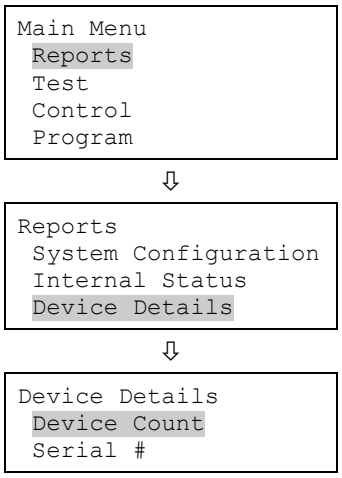


Device Details report

A Device Details report displays a device count that reports how many devices are connected to the system. The report can also display the serial number for each device connected to the system.

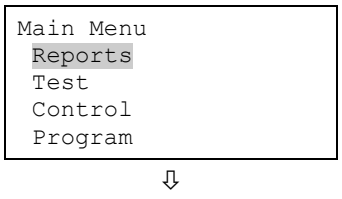
To view the device count on the system:

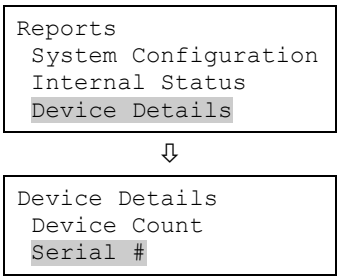
1. Press the Menu button and choose Reports.
2. Choose Device Details.
3. Choose Device Count.



To view device serial numbers:

1. Press the menu button and choose Reports.
2. Choose Device Details.
3. Choose Serial #.





Diagnostics reports

There are two Diagnostics reports designed to show the communication performance of the devices on a loop.

Comm Retries report

This report lets you display a list of devices that have required two, three, or four consecutive communication poll retries. It lists the devices that could potentially generate a communication fault by showing the maximum number of retries for the current hour and a summary of the past 24 hours.

The report can be used to identify devices with intermittent communication faults. A device appearing in this report is an indication that the wiring to the device is suspect. To investigate problem devices, inspect the wiring between the problem device and another device not in the report. Inspect this section of wiring for problems such as loose connections and intermittent wiring breaks.

Note: The current hour retries can be cleared and updated by running the Loop Comm Check diagnostic. (See “Loop comm check” on page 197 for more information.)

Response Quality report

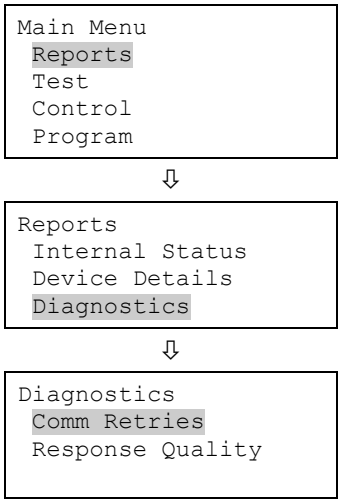
This report lists the devices that are communicating at or below a quality percentage that you specify. By entering different percentages, you can troubleshoot device communications on a loop.

The panel periodically stores the measurement of the response for individual devices during communication polling. The report displays the result of the latest poll as a percentage, where 100% is the best response (maximum possible pulse strength) and anything less than 44% means that the device failed a communication poll and could potentially generate a communication fault.

Devices appearing in this report are an indication that the wiring to the devices is questionable or that the devices themselves are questionable. To investigate problem devices, inspect the wiring between the problem device and another device not in the report. Inspect the wiring for problems such as exceeding wiring specifications (see “Addressable device loop wiring” on page 11 for more information), loose connections, and intermittent wiring breaks and shorts.

To view a Comm Retries diagnostic report:

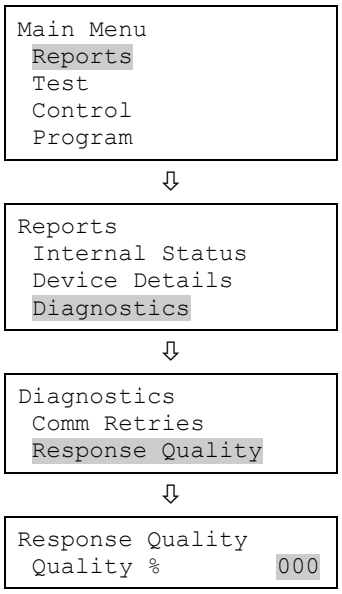
1. Press the menu button and choose Reports.
2. Choose Diagnostics.
3. Choose Comm Retries.



To view a Response Quality diagnostic report:

1. Press the Menu button and choose Reports.
2. Choose Diagnostics.
3. Choose Response Quality.
4. Enter the quality percentage (0 to 100).

   This is a communication percentage value that is used to display the device’s minimum recorded pulse strength percentage. Enter “80” to list devices that are communicating up to 80 percent of their maximum pulse strength. Enter “50” to list devices that are communicating up to 50 percent of their maximum pulse strength (devices communicating better than 50% are not included in the report).

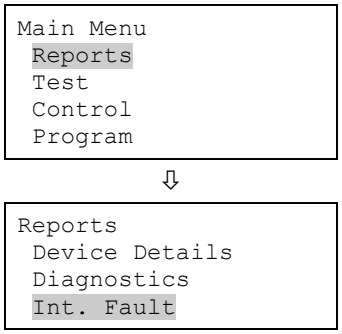


Internal Fault report

The Internal Fault report displays information about an internal fault event (event ID 48) that has occurred in the system. The report contains information that is important for technical support when troubleshooting the internal fault event and should typically only be run when you are asked to do so by a technical support representative.

To view an Internal Fault report:

1. Press the menu button and choose Reports.
2. Choose Int. Fault.

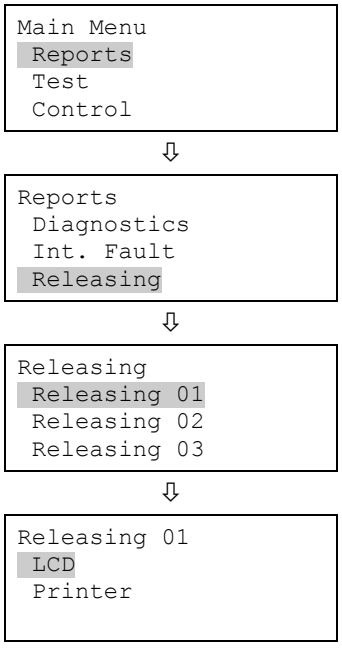


Releasing report

The Releasing report displays the correlation group, activation count and delay time

To view a Releasing report:

1. Press the menu button and choose Reports.
2. Choose Releasing.
3. Choose the releasing device for which you want a report.
4. Choose the releasing device for which you want a report.



Sample Releasing report



```
------------------------
RELEASING 02 Report
23:53:30  10/21/2010
------------------------
Abort          Monitor
Loop 1 Device 180
CorrGrp ActCnt Delay
  1        1      10
Manual         PULL
Loop 1 Device 181
CorrGrp ActCnt Delay
 101       3      30
Release1       SupOp
Loop 1 Device 182
CorrGrp ActCnt Delay
  12       2      30
Release2       None
Loop 1 Device 183
CorrGrp ActCnt Delay
PrRelease1     SupOp
Loop 1 Device 184
CorrGrp ActCnt Delay
  14       1      10
PrRelease1     None
Loop 1 Device 185
CorrGrp ActCnt Delay
-------------------------
Reset Activate
CorrGrp ActCnt Delay
Reset Restore
CorrGrp ActCnt Delay
  121      10     100
------------------------
SIGA REL Report
Loop 1 180-185
End
------------------------
```

Canceling a report

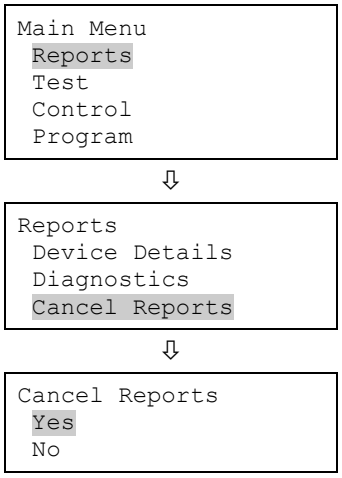
Once a report is sent to the LCD or printer, you can cancel the report so that it stops printing on the printer or displaying on the LCD.

To cancel a report:

1. Press the Menu button and choose Reports.
2. Choose Cancel Reports.
3. Choose Yes to cancel the report. Choose No to continue with the report.
4. Continue working with reports,

   — or —

   Press the Menu button to exit menu mode.



Chapter 5
Diagnostics, maintenance, and testing

Summary

This chapter provides diagnostics, preventive maintenance, and testing information.

Content

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Fast ground check 194
Recalibrate device 195
Loop comm check 195
Control panel testing 197
    Canadian tests for grounds, opens, and shorts 197
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Conducting a lamp test 199
Starting and stopping a walk test 200
Using HyperTerminal 202
Replacing a device in alarm 204

Preventive maintenance schedule

Refer to the NFPA 72 section on Inspection, Testing, and Maintenance, the Canadian Electrical Code Part I, CAN/ULC-S524, or CAN/ULC-S536 for more information on required inspection and testing methods and frequencies for fire alarm systems and devices. For detector sensitivity and functionality testing, refer to the detector manufacturer's installation instructions.

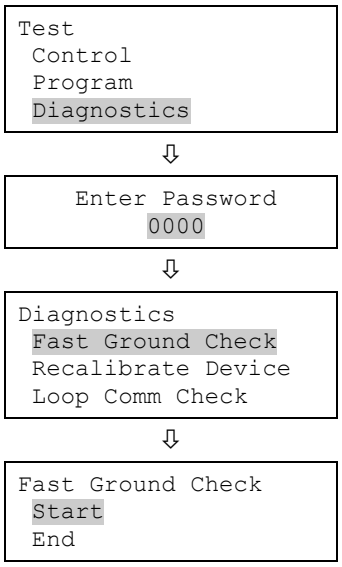
Fast ground check

Use Fast Ground Check to quickly check the system for ground faults. During normal operation the system checks for ground faults every thirty seconds and reports them by flashing the Ground Fault LED. When you are troubleshooting ground faults on the system, you may not want to wait thirty seconds for the ground fault to clear. If the ground fault was not fixed, you may not want the LED to stay active. Use the Fast Ground Check to decrease the system ground fault check time to every four seconds. This allows you to troubleshoot your ground faults much quicker and determine if they were actually corrected.

Note: Once you solve the ground faults in the system, turn off the Fast Ground Check.

To turn on and off Fast Ground Check:

1. Press the menu button and choose Diagnostics.
2. Enter a level two password.
3. Choose Fast Ground Check.
4. Choose Start to turn on Fast Ground Check or choose End to turn off Fast Ground Check.



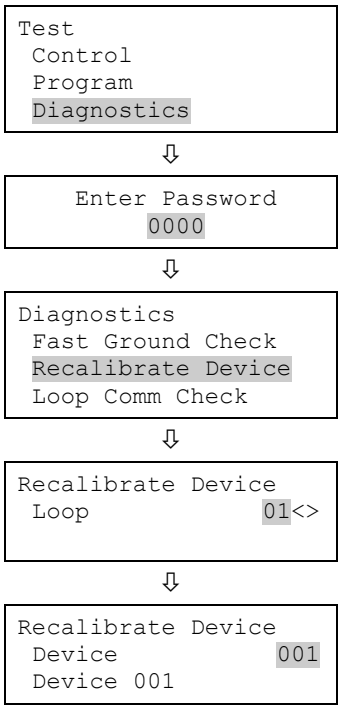
Recalibrate device

The Recalibrate command resets a detector's environmental compensation and dirtiness level. You can use this command after cleaning to see immediately whether the device was cleaned properly. Allowing the panel to recognize that the device has been cleaned and recalibrate it automatically takes considerably more time. A device trouble will return, indicating that more cleaning is required. If the device is cleaned, the corresponding device trouble will clear.

To recalibrate a device:

1. Press the menu button and choose Diagnostics.
2. Enter a level two password.
3. Choose Recalibrate Device.
4. Choose the loop the device is on.

   Note: If the panel only has one loop, the loop selection screen does not display. Go to the next step.
5. Choose the number of the device that you want to recalibrate.
6. Press Enter.



Loop comm check

Loop Comm Check is used to determine which loop devices are not communicating. When you run this command, the system checks the device communications on the system's device loops. The devices that are not communicating are listed in a report that you can then use to troubleshoot the problem. Once a report is generated, it remains in memory until another report is generated. This lets you access the latest report in Reports menu > Diagnostics > Loop Comm Check.

To do a loop comm check:

1. Press the Menu button and choose Diagnostics.

2. Enter a level two password.
3. Choose Loop Comm Check.

   You can monitor the progress of the check on the Diagnostics screen.
4. Once the check is complete, choose “Continue” to go to the report Diagnostics screen, and then continue with the next step.

   — or —

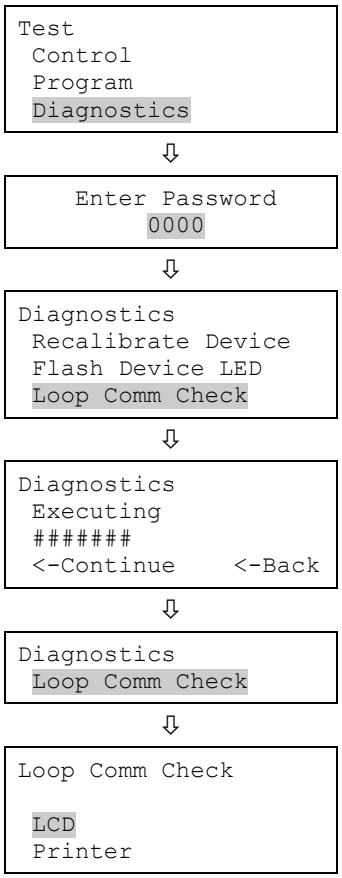
   Choose “Back” to return to the Diagnostics menu. If you choose Back, you have to go to the Reports menu > Diagnostics > Loop Comm Check to see the report once the report is created.

   Note: This process may take considerable time depending on how large the system is. If it takes longer than four minutes (logon time expiration), the system automatically logs you off if there is no activity. Should this occur, you must log on again and go to the Reports section to view the diagnostic report, once it is generated.
5. Choose Loop Comm Check.
6. Choose either:

   LCD: This displays the report on the LCD.

   — or —

   Printer: The sends the report the printer (if one is connected to the panel). If you do not have a printer, this option is not available.
7. If you selected LCD, press Cancel twice to return to the reports menu, when you have finished viewing the report.
8. Press the Menu button to exit menu mode.



Control panel testing

Before starting, notify all areas where the alarm sounds and off-premises locations that receive alarm and trouble transmissions that testing is in progress.

Records of all testing and maintenance shall be kept as required by the AHJ.

- Required tools:

  Slotted screwdriver, insulated
  Digital multimeter
  12 in. (30.5 cm) jumper lead with alligator clips
  Panel door key
  Sound level meter

- A complete check of installed field wiring and devices should be made at regular intervals in accordance with NFPA 72, Canadian Electrical Code Part I, ULC S524, and ULC S536 requirements. This includes testing all alarm and supervisory initiating devices and circuits and any off-premises connections.
- Panel operation should be verified in the alarm, supervisory, and trouble modes.
- To ensure that the panel can operate correctly when primary power is lost, the batteries should be inspected and tested periodically. Batteries should be replaced (at a minimum) every four years.

Canadian tests for grounds, opens, and shorts

ULC requires that you test ground fault, open circuit, and short circuit indications.

For ground fault tests, short one leg of the circuit to chassis ground and verify that the system Ground Fault LED and Trouble LEDs turn on.

For NAC open circuit tests, remove the end-of-line resistor from the last device on the circuit and verify that the system Trouble LED turns on.

For NAC short circuit testing, place a short across the NAC output terminals and verify that the system Trouble LED turns on.

For AUX power short circuit testing, place a short across the AUX power output's plus (+) and minus (−) terminals and verify that the system Trouble LED turns on.

For annunciator communications testing, place a short across channel 1 (+ and −) and verify that the system Trouble LED turns on. Repeat for channel 2.

Testing a device (test fire)

A test fire is a test activation of a smoke or heat detector or input module. A test fire can be conducted to test for proper operation of a detector or input module and its programming. When a detector is test fired, the panel sends a command to the detector at which time the detector simulates a smoke or heat buildup, causing an actual activation of the detector. When an input module is test fired, the panel sends a command to the module causing the module to simulate an activation (alarm, supervisory, or monitor).

Note: NAC responses activate as programmed.

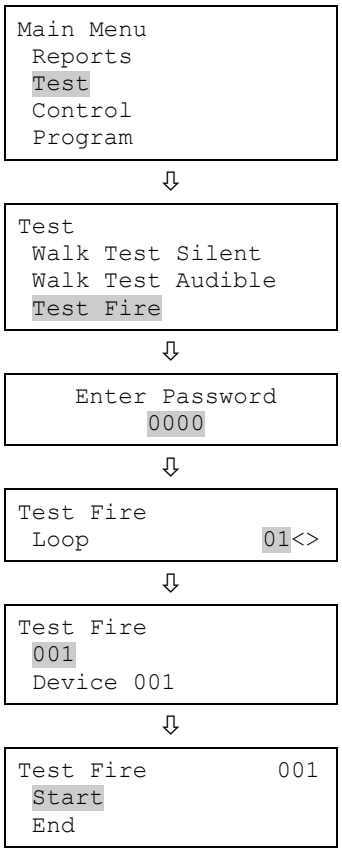
To test fire a device:

1. Press the Menu button and choose Test.
2. Choose Test Fire.
3. Enter a level one password.
4. Choose the loop the device is on.

   Note: If the panel only has one loop, the loop selection screen does not display. Go to the next step.
5. Enter the device number of the device you want to test fire.
6. Press Enter.
7. Choose Start to start the test.
8. When you have finished, press Reset (or repeat steps 1 to 7 and choose End) to clear the test alarms and return the system to normal.
9. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.



SA-DACT testing

A dialer test is a test of the telephone line for each dialer account. When a dialer is tested, a normal or abnormal test message (depending on the state of the system) is sent to the selected account. If the dialer is set up for dual line operation, a test message is sent to both lines regardless of the success of the transmission for either account.

Note: Before conducting a test, configure the dialer's accounts for proper operation.

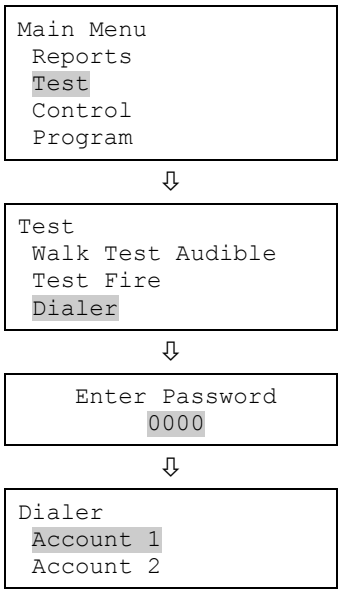
To conduct a dialer test:

1. Press the control panel's Menu button.
2. Choose Test.
3. Choose Dialer.
4. Enter a level one password.
5. Select the account that you want to test.
6. Press Enter.

   The test message is sent to the CMS account that you selected. For verification of the CMS account receiving the test message, you must be in contact with the CMS account during the test. Nothing is displayed on the LCD.
7. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.

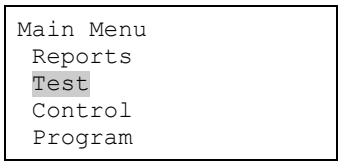


Conducting a lamp test

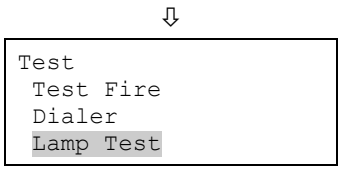
A lamp test lights all of the LEDs on the panel and the LED annunciator and tests the LCD so that you can verify proper operation. LEDs stay on for 15 seconds.

To conduct a lamp test:

1. Press the menu button and choose Test.
2. Choose Lamp Test.
3. Press Enter.



4. Verify that all LEDs on the panel, the LCD, and the LED annunciator (if used) work properly.



Starting and stopping a walk test

A walk test lets you test individual zones or devices without having to create an actual alarm condition. You can conduct a walk test in silent or audible mode. In silent mode, the audible devices (NACs) do not sound.

Zones should be placed in walk test one at a time. This allows the balance of the system to remain in service. When a device is activated for test, it remains active throughout the test and does not restore until walk test is ended. When walk test is ended, all of the tested devices restore.

Note: Walk test does not operate when the panel has an active alarm or supervisory event.

When you enter walk test mode:

- The Test LED is steady for an audible walk test and flashes for a silent walk test.
- Walk Test is displayed on the LCD. Walk Test is replaced with the device activation message during the period the device is activated while in walk test mode.
- The panel enters a trouble state. There is no fire protection for the zone in walk test. If an unselected zone or device goes into alarm or trouble, all programmed outputs operate as programmed.

Zones and devices behave as follows during walk test.

- For alarm events, the appropriate panel and annunciator LEDs and buzzers turn on. In the audible (NAC) test mode a four-second pulse sounds for NAC types: continuous nonsilenceable, continuous silenceable, Genesis nonsilenceable, Genesis with audible silence only, and Genesis with audible and visible silenceable on the audible devices. A single 3-3-3 cycle sounds for NAC types: temporal nonsilenceable, temporal silenceable, coder basic, coder continuous, coder 120spm, and coder temporal on the audible devices.
- For trouble events, the appropriate LEDs and the buzzers turn on. In the audible (NAC) test mode a two-second pulse sounds on the audible devices.
- For ground fault events, the appropriate LEDs and the buzzers turn on. In the audible (NAC) test mode, a two-second pulse sounds on the audible devices.

- All device activations are latched until walk test is ended or the panel is reset. When walk test is ended, it takes approximately eight seconds for the devices to restore. If the device being tested is in a zone and does not restore, the zone does not reset.
- If auxiliary power is resettable, the auxiliary power is interrupted while the zone is reset.
- Input zones programmed as waterflow with retard require 10 to 15 seconds of activation to initiate the test signals.
- Devices programmed as alarm verify and *not in test mode* go directly into alarm if activated (the alarm verification process is bypassed).
- Restore each device after testing. For example, if you are testing a pull station, reset the pull station before testing the next device.

The panel terminates walk test if:

- The zone or device being tested remains inactive for 30 minutes.
- The walk test is stopped by the user.

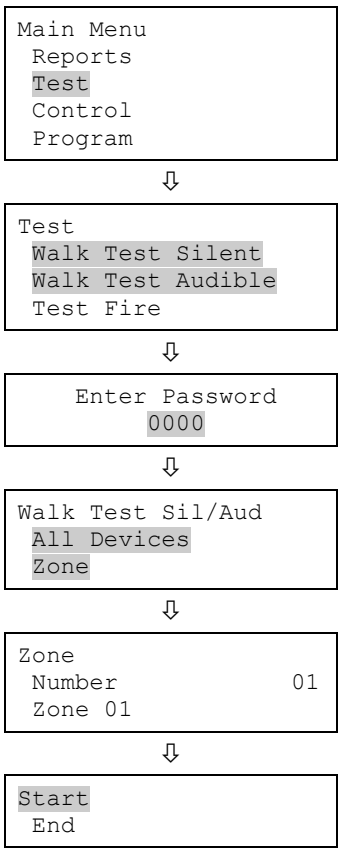
To start a walk test:

1. Press the Menu button and choose Test.
2. Choose Walk Test Silent or Walk Test Audible.
3. Enter a level one password.
4. Choose either All Devices or Zone.
5. If you chose Zone, enter the zone ID for the zone you are going to conduct the walk test.
6. Choose Start.
7. Conduct your walk test.
8. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.

Note: To see the activation and restoration of all walk test events, the panel must be reset *prior* to ending the walk test. Once the reset is complete, you can end the walk test and view a walk test report.

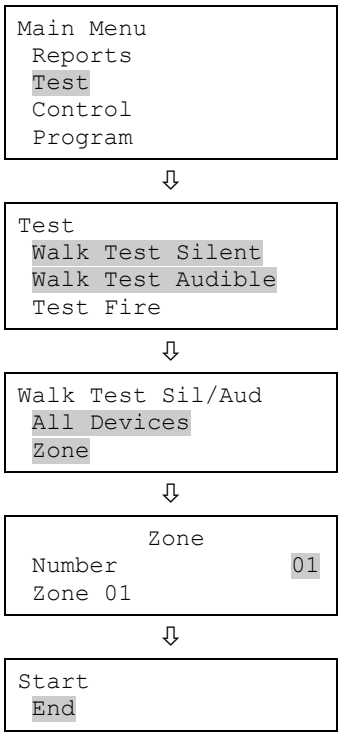


To end a walk test:

1. Press the Menu button and choose Test.
2. Choose Walk Test Silent or Walk Test Audible.
3. Choose either All Devices or Zone.
4. If you chose Zone, enter the zone ID of the zone for which you are going to end the walk test.
5. Choose End to turn off the walk test. All of the devices that were activated in the test are restored at this time.
6. Press Cancel to return to the previous menu.

   — or —

   Press the Menu button to exit menu mode.



Using HyperTerminal

HyperTerminal is a program that comes with your Windows operating system as an installable option. You can use it to connect to other computers, Telnet sites, bulletin board systems (BBSs), online services, and host computers. HyperTerminal connections are made using a modem, a null modem cable (used to emulate modem communication), or an Ethernet connection. When installed, HyperTerminal is typically found on the Accessories menu (Start > All Programs > Accessories > Communications).

HyperTerminal is a useful tool for gathering information from the control panel through an RS-232 port connection in order to troubleshoot system faults. The information gathered can be saved as a plain text file (TXT extension) and submitted electronically to technical support for evaluation.

Note: To use HyperTerminal, you must have the optional SA-232 RS-232 Interface Card installed in the control panel. To avoid getting a printer trouble, set the panel's printer option to Unsupervised before connecting your computer to the SA-232 card.

Setting up a HyperTerminal connection

Before you can gather information from the control panel you must set up a HyperTerminal connection.

To set up a HyperTerminal connection:

1. Start HyperTerminal.
2. In the Connection Description dialog box, type a name for the connection in the Name box then click OK.
3. In the Connect To dialog box, select the COM port you are using to connect your laptop computer to the control panel, and then click OK.
4. In the COM port's Properties dialog box, set the port settings as described below, and then click OK.

   Bits per second: 9600
   Data bits: 8
   Parity: None
   Stop bits: 1
   Flow control: None
5. On the File menu, click Save to save your connection settings.

Capturing a report

The history report provides useful information for troubleshooting system faults. You should always have this information available before calling technical support.

To capture a report:

1. On the Transfer menu, click Capture Text.
2. In the File box in the Capture Text dialog box, type a name for the captured text file. Example: History Report. The TXT file extension is added automatically.

   If you want to save the file somewhere other than the default location, click the Browse button, navigate to the desired location, and then name the file.
3. Click Start.
4. On the front panel, go to the main menu, choose Reports, and then choose the report you want captured.
5. On the Print Output menu, choose Printer to send the report to HyperTerminal.
6. Wait until the report transfer is complete.

7. On the Transfer menu, click Capture Text, and then Stop.

Replacing a device in alarm

You can replace a device with a new device of the same type while it is in alarm. You may need to do this when the device is faulty or for troubleshooting purposes. If you replace a device while it is in alarm, the device and control panel operate as follows:

- When the device in alarm is removed, the control panel remains in alarm and a trouble event displays.
- When installed, the new device does not go into alarm, but the LCD displays a second trouble event when the panel detects the new.
- When the control panel resolves the new device, the alarm condition restores and the two trouble events clear from the control panel.

Note: If the device causing the alarm is reinstalled, the device goes into alarm and the alarm condition does not restore.

Appendix A
Panel specifications

Summary

This appendix lists all of the specifications for the control panel.

Content

Control panel specifications 206

Control panel specifications

	VS1 panel	VS2 panel
Device loops	1 loop Class B or Class A (Styles 4, 6, 7) supporting up to 64 device addresses (any combination of detectors and modules) Maximum T-taps: 63 (each device can be on its own branch)	1 loop, expandable to 2, Class A or B (Styles 4, 6, 7), each loop supporting up to 250 device addresses (125 detectors and 125 modules max.). Addresses 1 to 125 are for detectors and addresses 126 to 250 are for modules. Maximum T-taps: 124
Notification appliance circuits	2 Class B (Style Y), Class A (Style Z) optional 3.75 A FWR total at 120/230 VAC 60 Hz 3.0 A FWR total at 230 VAC 50 Hz 2.5 A FWR each max. per circuit	4 Class B (Style Y) or 2 Class A (Style Z) 6.0 A FWR total at 120/230 VAC 60 Hz 5.0 A FWR total at 230 VAC 50 Hz 2.5 A FWR each max. per circuit
Primary power	120 VAC, 60 Hz, 1.3 A max. 230 VAC, 50-60 Hz, 0.62 A max.	120 VAC, 60 Hz, 2.0 A max. 230 VAC, 50-60 Hz, 0.97 A max.
Base panel current standby	155 mA	172 mA
Base panel current alarm	204 mA	267 mA
Input zones	16 max.	32 max.
Remote annunciator	8 drops max., RS-485 Class B, Class A is optional Data line length: 4,000 ft. (1,219 m)	8 drops max., RS-485 Class A or B Data line length: 4,000 ft. (1,219 m)
Operating voltage	24 VDC	
Auxiliary power output circuit	Aux power 1: 500 mA, 24 VDC Aux power 2: 500 mA, 24 VDC (1 A possible if you reduce total available NAC power by 500 mA) Output: 28.3 to 21.9 VDC, special application **Note:** For a complete list of devices that can be connected to this circuit, see the *Vigilant VS1 and VS2 Series Compatibility List* (P/N 3101065).	

	VS1 panel VS2 panel
Loop circuit	Maximum loop resistance: 66 Ω Maximum loop capacitance: 0.7 µF Communication line voltage: Maximum 20.6 V peak-to-peak Operating current (fully loaded loop) Stand by: 60 mA Alarm: 125 mA (this does not include two-wire smoke modules) Circuit current: 0.5 A max. Style 4, 6, and 7 wiring Max. resistance between isolators: Limited only by overall wire run lengths 64 isolators maximum (total both isolator bases and modules)
Batteries	Type: Sealed lead acid Voltage: 24 VDC Charging current: 2.47 A max. Amp hour capacity: 26 Ah Standby operation: 24 hour or 60 hour Placement: Up to two 10 Ah batteries will fit in the Vigilant VS1 control panel cabinet and two 18 Ah batteries will fit in the VS2 control panel cabinet. If larger batteries are required, you must use an Edwards battery cabinet.
SA-DACT dialer	Phone line type: One or two loop-start lines on a public, switched network Phone line connector: RJ-31/38X (C31/38X) Communication formats: Contact ID (SIA DC-05) Operating current Standby/Alarm: 41 mA Max.: 100 mA FCC registration number: GESAL01BSADACT Industry Canada Registration number: 3944A-SADACT Ringer equivalence number: 0.1B
Ground fault impedance	0 to 5 kΩ
Alarm contact	Form C N.O. 24 VDC at 1 A (resistive load)
Trouble contact	Form C 24 VDC at 1 A (resistive load)
Supervisory contact	Form A N.O. 24 VDC at 1 A (resistive load)
Environmental	Temperature: 0 to 49°C (32 to 120°F) Relative humidity: 0 to 93% noncondensing
Terminal rating	All terminals rated for 12 to 18 AWG (0.75 to 2.5 mm²)

Appendix B
Worksheets

Summary

This appendix contains all of the worksheets needed to program the panel, calculate NAC requirements and battery requirements.

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Battery calculation worksheet 210
Notification appliance circuit calculations worksheet 213
- Introduction 213
- What you'll need 213
- Worksheet method 215
- Equation method 216

Notification appliance voltage drop calculation worksheet 219
Device loop maximum wire length worksheet 221
Correlation groups worksheet 227
Device settings worksheet 228
Loop worksheet 230
Panel configuration worksheet 231
Panel operation worksheet 234
Zone settings worksheet 235

Battery calculation worksheet

Use this worksheet to determine the minimum amp hour capacity required for the panel's standby battery. You can obtain operating current requirements for notification appliances from their respective installation sheets.

Battery calculation worksheet

	Standby current (mA)	Alarm current (mA)	
Control panel (use Worksheet A and place totals here)			
Auxiliary/smoke power (use Worksheet B and place totals here)			
NAC 1			
NAC 2			
NAC 3			
NAC 4			
Total current			
Operating time required	× hr	× min	
		÷ 60	
	+	=	mAh
			× 1.2
			mAh
			÷ 1,000
Battery size [1]			Ah

[1] Battery size may not exceed 26 Ah for UL/ULC systems. See Appendix A "Panel specifications" on page 205 and "Battery wiring (TB8)" on page 7 for battery details.

Worksheet A: Control panel current load

Devices	Qty	Standby current (mA)	Alarm current (mA)	Qty x Standby current (mA)	Qty x Alarm current (mA)
Base panel	1	See note [1] below	See note [2] below		
Primary loop circuit (fully loaded loop)		55	125		
V-SLC loop expander card (fully loaded loop)		60	125		
SA-CLA Class A card		3	60		
SA-232 RS-232 card		13	13		
SA-DACT dialer		41	41		
SA-ETH network card		34	34		
LED expander		4	1 expander: 48 2 expanders: 96		
Totals (mA) (transfer totals to Battery Calculation Worksheet)					

[1] VS1: 155
VS2: 172

[2] VS1: 204
VS2: 267

Worksheet B: Auxiliary/smoke power current load

Devices	Qty	Standby current (mA)	Alarm current (mA)	Qty x Standby current (mA)	Qty x Alarm current (mA)
RPM		20	270		
GSA-UM or -MAB [1]		17	58		
RLCD(F)		98	113		
RLCD-C(F)		99	115		
RLED-C(F)		28	62		
LED24		6	34		
Totals (mA) (transfer totals to Battery Calculation Worksheet)					

[1] Enter 1 regardless of how many are installed. Only the first GSA-UM or -MAB in the alarm state draws current. The other ones do not because the system load sheds additional modules in alarm.

Notification appliance circuit calculations worksheet

Introduction

This topic shows you how to determine the maximum cable length of a notification appliance circuit (NAC) for a given number of appliances.

Two methods are presented: worksheet and equation. The worksheet method is simpler, but your installation must meet the criteria listed on the worksheet. If your installation does not meet these criteria, you need to use the equation method.

The methods given here determine cable lengths that work under all operating conditions. The calculations ensure that the required operating voltage and current are supplied to all notification appliances. To do this, we assume these two worst-case conditions:

- The voltage at the NAC terminals is the minimum provided by the power supply
- The notification appliances are clustered at the end of the NAC cable

Other, more detailed methods that distribute the appliance load along the NAC cable may indicate that longer cable runs are possible.

What you'll need

Appliance and cable values

Whether you use the worksheet method or the equation method, you'll need to know:

- The minimum operating voltage required for the appliances
- The maximum operating current drawn by each appliance
- The resistance per unit length of the wire used (Ω/ft.)

This information can be found on the appliance installation sheets and on the cable specification sheet.

Power supply values

For either method, you'll need some fixed or calculated operating values for your specific power supply. The fixed values are:

- Source voltage = 20.4 V
- Load factor for VS1 panel = 0.20 V/A

- Load factor for VS2 panel = 0.24 V/A
- Power type = FWR

The *source voltage* is the theoretical operating minimum for the power supply, and is calculated as 85% of 24 volts.

The *load factor* is a measure of how the power supply voltage reacts when a load is applied. The load factor measures the voltage drop per ampere of current drawn by the load.

The *power type* reflects the type of power supplied to the NAC terminals at minimum voltage. The current draw of notification appliances can vary substantially with the type of power supplied: full-wave rectified (VFWR) or regulated and filtered DC (R&F). It is important to know the power type at minimum terminal voltage.

You'll need to calculate the following values relating to your power supply and to the NAC circuit current. These are:

- Minimum voltage
- Voltage drop

The *minimum voltage* is the lowest voltage measured at the NAC terminals when the power supply is under the maximum load for that circuit (i.e. for the appliances that constitute the NAC.)

The *voltage drop* is the difference between the minimum voltage and 16 V. This value is for use with the worksheet only.

Worksheet method

Use this worksheet to determine the maximum cable length of a notification appliance circuit for a given number of appliances.

Use this worksheet only if all the appliances are regulated. That is, they must have a minimum operating voltage of 16 V. For other appliances, use the "Equation method."

NAC cable length

		NAC1	NAC2	NAC3	NAC4	
Total operating current [1]						A
Load factor (VS1 panel)	×	0.20	0.20	0.20	0.20	V/A
Load factor (VS2 panel)		0.24	0.24	0.24	0.24	
Load voltage drop	=					V
Source voltage		20.4	20.4	20.4	20.4	V
Load voltage drop	−					V
Minimum voltage	=					V
Regulated appliance voltage	−	16.0	16.0	16.0	16.0	V
Voltage drop [2]	=					V
Total operating current	÷					A
Maximum resistance	=					Ω
Wire resistance (Ω/ft) [3]	÷					
Maximum wire length	=					ft.
	÷	2	2	2	2	
Maximum cable length	=					ft.

[1] Total of the maximum operating currents for all appliances as specified for FWR power. See the appliance installation sheets for operating currents.

[2] This voltage drop is valid for regulated notification appliances only. For unregulated appliances, see "Equation method" on page 216.

[3] Use the manufacturer's published wire resistance expressed in ohms per foot. For typical values, see Table 45 on page 216.

Equation method

Appliance operating voltage and current

Regulated notification appliances have an operating range from 16 V to 33 V. Use 16 V as the minimum appliance voltage when using regulated notification appliances.

When using special application notification appliances, refer to the installation sheets to determine the minimum appliance voltage required.

What if there are different types of appliances in the NAC, and each type has a different minimum operating voltage? In this case, use the *highest* minimum voltage required by any appliance.

The total current requirement for the appliances is the sum of the individual maximum currents drawn by each appliance when using FWR power. Use the maximum current for the appliance over the 16 V to 33 V range.

If all appliances draw the same maximum current, the total current is the maximum current multiplied by the number of appliances. If different appliance types have different maximum currents, the total current is the sum of the maximum current for each appliance type multiplied by the number of appliances of that type.

Wire resistance

Typical wire resistances are shown in the following table.

Table 45: Typical wire resistances

Wire gauge	Resistance 1-strand uncoated copper		Resistance 7-strand uncoated copper	
	Ω per foot	Ω per meter	Ω per foot	Ω per meter
12 AWG	0.00193	0.00633	0.00198	0.00649
14 AWG	0.00307	0.01007	0.00314	0.01030
16 AWG	0.00489	0.01604	0.00499	0.01637
18 AWG	0.00777	0.02549	0.00795	0.02608

When performing these calculations, always refer to the actual cable supplier documentation and use the actual Ω/ft. (or Ω/m) for the cable being used.

Calculating cable length

1. Calculate the total current (Itot) as the sum of the maximum operating currents for all the appliances.

   Itot = ΣIa

Where:
Σ = sum of all
Ia = appliance maximum current

Refer to the appliance installation sheets for Ia. Remember to use the maximum operating current specified for FWR power.

2. Calculate the minimum voltage (Vm).

   Vm = Vs − (Itot × K)

   Where:
   Vs = source voltage
   Itot = total current (from above)
   K = load factor

   VS1 panel: For the power supply, Vs is 20.4 V and K is 0.20 V/A.

   VS2 panel: For the power supply, Vs is 20.4 V and K is 0.24 V/A

3. Calculate the allowable voltage drop (Vd) between the power supply and the appliances.

   Vd = Vm − Va

   Where:
   Vm = minimum voltage (from above)
   Va = appliance minimum voltage

   For regulated notification appliances, Va is 16 V. For special application notification appliances, Va is the lowest operating voltage specified on the appliance installation sheet.

4. Calculate the maximum resistance (Rmax) for the wire.

   Rmax = Vd / Itot

   Where:
   Vd = voltage drop
   Itot = total current

5. Calculate the maximum length of the cable (Lc), based on the maximum resistance allowed, the resistance of the wire, and the number of wires in the cable (two).

   Lc = (Rmax / Rw) / 2

   Where:
   Rmax = maximum resistance
   Rw = wire resistance factor

Example: You're using regulated notification appliances. Assume that the maximum operating current for each appliance is 100 mA for FWR power, and that 20 appliances will be placed on the NAC. The cable is 12 AWG wire, and the manufacturer specifies a wire resistance factor of 0.002 Ω/ft.

Itot = Σ Ia
= 20 × 0.1 A
= 2 A

Vm = Vr − (Itot × K)
= 20.4 V − (2 A × 0.20 V/A)
= 20.4 V − 0.40 V
= 20.0 V

Vd = Vm − Va
= 20.0 V − 16.0 V
= 4.0 V

Rmax = Vd / Itot
= 4.0 V / 2.0 A
= 2.0 Ω

Lc = (Rmax / Rw) / 2
= (2.0 Ω / 0.002 Ω/ft.) / 2
= (1,000.0 ft.) / 2
= 500.0 ft.

So the maximum wire run for this NAC would be 500 ft. (rounding down for safety).

NAC maximum wire run quick reference tables

Table 46: VS1 panel

Current	12 AWG	14 AWG	16 AWG	18 AWG
0.5 A	2,228 ft.	1,400 ft.	879 ft.	553 ft.
1.0 A	1,088 ft.	684 ft.	429 ft.	270 ft.
1.5 A	708 ft.	445 ft.	279 ft.	175 ft.
2.0 A	518 ft.	326 ft.	204 ft.	128 ft.
2.5 A	404 ft.	254 ft.	160 ft.	100 ft.

Table 47: VS2 panel

Current	12 AWG	14 AWG	16 AWG	18 AWG
0.5 A	2217 ft.	1394 ft.	875 ft.	550 ft.
1.0 A	1,077 ft.	677 ft.	425 ft.	267 ft.
1.5 A	697 ft.	438 ft.	275 ft.	173 ft.
2.0 A	507 ft.	319 ft.	200 ft.	126 ft.
2.5 A	393 ft.	247 ft.	155 ft.	97 ft.

Notification appliance voltage drop calculation worksheet

Use the notification appliance voltage drop calculation worksheet to calculate the voltage drop of your NAC circuits over the distance of your wire.

NAC 1 voltage drop calculations						
Circuit length		Total circuit current [2]		Wire resistance per 1000 ft [1]		Voltage drop
feet	x	amps	x	Ω	÷ 1000 =	

Panel voltage		Voltage drop		End of line voltage [3]
19.8 V	–		=	

Voltage drop		Panel voltage		Voltage drop %
	÷	19.8 V	=	

NAC 2 voltage drop calculations						
Circuit length		Total circuit current [2]		Wire resistance per 1000 ft [1]		Voltage drop
feet	x	amps	x	Ω	÷ 1000 =	

Panel voltage		Voltage drop		End of line voltage [3]
19.8 V	–		=	

Voltage drop		Panel voltage		Voltage drop %
	÷	19.8 V	=	

NAC 3 voltage drop calculations						
Circuit length		Total circuit current [2]		Wire resistance per 1000 ft [1]		Voltage drop
feet	x	amps	x	Ω	÷ 1000 =	

Panel voltage		Voltage drop		End of line voltage [3]
19.8 V	–		=	

Voltage drop		Panel voltage		Voltage drop %
	÷	19.8 V	=	

NAC 4 voltage drop calculations						
Circuit length		Total circuit current [2]		Wire resistance per 1000 ft [1]		Voltage drop
feet	x	amps	x	Ω	÷ 1000 =	

Panel voltage		Voltage drop		End of line voltage [3]
19.8 V	–		=	

Voltage drop		Panel voltage		Voltage drop %
	÷	19.8 V	=	

Notes

[1] Use the manufacturer's published wire resistance expressed in ohms per foot. For typical values, see Table 45 on page 216.

[2] Use the Maximum operating current at worst-case VFWR from the installation or catalog sheet of each device.

[3] For UL regulated notification appliances, this voltage must not drop below 16 VFWR. For other devices, get the minimum operating VFWR from the installation or catalog sheet.

Device loop maximum wire length worksheet

Use the instructions provided below to calculate the maximum wire length for a device loop. The maximum wire length is made up of two components: the total amount of wire and the longest circuit path.

Step 1: Total wire

Use the worksheet below to calculate the total amount of wire that you can use to construct a device loop. The total amount of wire is based on the cable manufacturer's capacitance per foot rating. In no case shall the total amount of wire exceed the values listed in Table 48.

		700,000	pF
Cable capacitance	÷		pF/ft.
Total wire			ft.

Table 48: Maximum wire length for the loop

Wire type	18 AWG or 0.75 mm²	16 AWG or 1.0 mm²	14 AWG or 1.5 mm²
Twisted pair, nonshielded 25, 36, 38 pF	20,000 ft. (6096 m)	13,888 ft. (4233 m)	13,157 ft. (4010 m)
Twisted pair, shielded 58, 82, 84 pF	8,621 ft. (2628 m)	6,098 ft. (1859 m)	5,952 ft. (1814 m)
Untwisted pair, unshielded 20, 20, 20 pF	20,000 ft. (6096 m)	20,000 ft. (6096 m)	20,000 ft. (6096 m)

Step 2: Longest path

Use the tables that follow to determine the device loop's longest circuit path. The longest circuit path is based on wire size and type, and the number of detectors, modules, GSA-UM or -MABs installed on the loop. The distances listed are for devices that are evenly distributed on the loop. Please contact your distributor for loop wire distances for devices on an end-loaded loop.

Note: When using the tables to calculate a wire length for the VS1 panel, do not exceed a total of 64 device addresses (any combination of detectors and modules).

In the illustration below, the longest circuit path (shown in bold lines) is 1,240 ft. (378 m). The total amount of wire comprising the loop is 1,640 ft. (500 m).

Figure 55: Device circuit path diagram

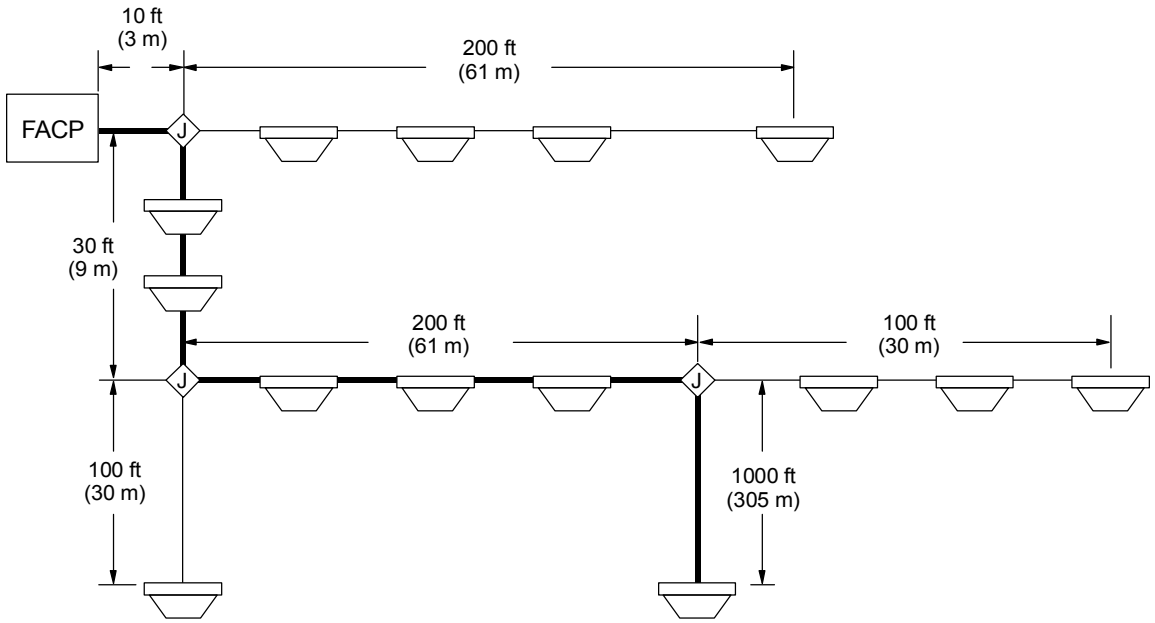

Table 49: Longest allowable circuit path with zero GSA-UM or -MABs configured for two-wire smoke detectors

Number of detectors	Number of modules (1 or 2 channel)	Maximum allowable wire distance using nontwisted, nonshielded and twisted, nonshielded wire pairs (evenly distributed)					
		18 AWG		16 AWG		14 AWG	
		ft.	m	ft.	m	ft.	m
1 to 25	0	5172	1577	8217	2505	13069	3984
26 to 50	0	5172	1577	8217	2505	13069	3984
51 to 75	0	5172	1577	8217	2505	13069	3984
76 to 100	0	5172	1577	8217	2505	13069	3984
101 to 125	0	5172	1577	8217	2505	13069	3984
0	1 to 25	5172	1577	8217	2505	13069	3984
1 to 25	1 to 25	5172	1577	8217	2505	13069	3984
26 to 50	1 to 25	5172	1577	8217	2505	13069	3984
51 to 75	1 to 25	5172	1577	8217	2505	13069	3984
76 to 100	1 to 25	5172	1577	8217	2505	13069	3984
101 to 125	1 to 25	5172	1577	8217	2505	13069	3984
0	26 to 50	5172	1577	8217	2505	13069	3984
1 to 25	26 to 50	5172	1577	8217	2505	13069	3984
26 to 50	26 to 50	5172	1577	8217	2505	13069	3984
51 to 75	26 to 50	5172	1577	8217	2505	13069	3984
76 to 100	26 to 50	5172	1577	8217	2505	13069	3984
101 to 125	26 to 50	4936	1504	7841	2390	12471	3801
0	51 to 75	4968	1514	7892	2406	12553	3826
1 to 25	51 to 75	4525	1379	7188	2191	11433	3485
26 to 50	51 to 75	4095	1248	6506	1983	10348	3154
51 to 75	51 to 75	3682	1122	5849	1783	9303	2836
76 to 100	51 to 75	3283	1001	5216	1590	8296	2529
101 to 125	51 to 75	2899	884	4605	1404	7324	2232
0	76 to 100	3241	988	5150	1570	8190	2496
1 to 25	76 to 100	2901	884	4608	1405	7329	2234
26 to 50	76 to 100	2566	782	4077	1243	6485	1977
51 to 75	76 to 100	2239	683	3557	1084	5658	1725
76 to 100	76 to 100	1919	585	3049	929	4849	1478
101 to 125	76 to 100	1606	489	2551	777	4057	1237
0	101 to 125	2087	636	3316	1011	5273	1607
1 to 25	101 to 125	1795	547	2852	869	4536	1383
26 to 50	101 to 125	1507	459	2394	730	3808	1161
51 to 75	101 to 125	1223	373	1943	592	3090	942
76 to 100	101 to 125	942	287	1497	456	2381	726
101 to 125	101 to 125	666	203	1057	322	1682	513

Table 50: Longest allowable circuit path with 1 to 5 GSA-UM or -MABs configured for two-wire smoke detectors

Number of detectors	Number of modules (1 or 2 channel)	Maximum allowable wire distance using nontwisted, nonshielded and twisted, nonshielded wire pairs (evenly distributed)					
		18 AWG		16 AWG		14 AWG	
		ft.	m	ft.	m	ft.	m
1 to 25	0	5172	1577	8217	2505	13069	3984
26 to 50	0	5172	1577	8217	2505	13069	3984
51 to 75	0	5172	1577	8217	2505	13069	3984
76 to 100	0	5172	1577	8217	2505	13069	3984
101 to 125	0	4980	1518	7912	2411	12583	3835
0	1 to 25	5172	1577	8217	2505	13069	3984
1 to 25	1 to 25	4861	1482	7722	2354	12281	3743
26 to 50	1 to 25	4345	1324	6903	2104	10979	3346
51 to 75	1 to 25	3843	1171	6105	1861	9710	2959
76 to 100	1 to 25	3359	1024	5337	1627	8488	2587
101 to 125	1 to 25	2895	882	4599	1402	7315	2230
0	26 to 50	3550	1082	5640	1719	8971	2734
1 to 25	26 to 50	3145	958	4996	1523	7945	2422
26 to 50	26 to 50	2742	836	4356	1328	6928	2112
51 to 75	26 to 50	2348	716	3730	1137	5932	1808
76 to 100	26 to 50	1963	598	3119	951	4961	1512
101 to 125	26 to 50	1589	484	2525	770	4016	1224
0	51 to 75	2334	712	3709	1130	5898	1798
1 to 25	51 to 75	1986	605	3156	962	5019	1530
26 to 50	51 to 75	1643	501	2610	795	4151	1265
51 to 75	51 to 75	1305	398	2073	632	3297	1005
76 to 100	51 to 75	973	296	1545	471	2458	749
101 to 125	51 to 75	647	197	1027	313	1634	498
0	76 to 100	1426	435	2265	691	3603	1098
1 to 25	76 to 100	1114	339	1769	539	2814	858
26 to 50	76 to 100	805	245	1279	390	2034	620
51 to 75	76 to 100	500	152	795	242	1264	385
76 to 100	76 to 100	199	61	317	97	504	154
101 to 125	76 to 100	0	0	0	0	0	0
0	101 to 115	971	296	1543	470	2454	748
1 to 25	101 to 115	674	206	1071	327	1704	519
26 to 50	101 to 115	380	116	604	184	961	293
51 to 75	101 to 115	89	27	142	43	226	69
76 to 100	101 to 115	0	0	0	0	0	0
101 to 125	101 to 115	0	0	0	0	0	0

Table 51: Longest allowable circuit path with 6 to 10 GSA-UM or -MABs configured for two-wire smoke detectors

Number of detectors	Number of modules (1 or 2 channel)	Maximum allowable wire distance using nontwisted, nonshielded and twisted, nonshielded wire pairs (evenly distributed)					
		18 AWG		16 AWG		14 AWG	
		ft.	m	ft.	m	ft.	m
1 to 25	0	3543	1080	5629	1716	8952	2729
26 to 50	0	2818	859	4476	1364	7120	2170
51 to 75	0	2092	638	3323	1013	5285	1611
76 to 100	0	1365	416	2169	661	3450	1051
101 to 125	0	639	195	1015	309	1614	492
0	1 to 25	2895	882	4599	1402	7314	2229
1 to 25	1 to 25	2503	763	3976	1212	6324	1927
26 to 50	1 to 25	1778	542	2825	861	4493	1369
51 to 75	1 to 25	1053	321	1672	510	2660	811
76 to 100	1 to 25	327	100	519	158	825	252
101 to 125	1 to 25	0	0	0	0	0	0
0	26 to 50	1910	582	3035	925	4827	1471
1 to 25	26 to 50	1465	446	2327	709	3700	1128
26 to 50	26 to 50	740	225	1175	358	1869	570
51 to 75	26 to 50	14	4	23	7	36	11
76 to 100	26 to 50	0	0	0	0	0	0
101 to 125	26 to 50	0	0	0	0	0	0
0	51 to 75	1114	340	1770	539	2814	858
1 to 25	51 to 75	427	130	678	207	1079	329
26 to 50	51 to 75	0	0	0	0	0	0
51 to 75	51 to 75	0	0	0	0	0	0
76 to 100	51 to 75	0	0	0	0	0	0
101 to 125	51 to 75	0	0	0	0	0	0
0	76 to 100	114	35	182	55	289	88
1 to 25	76 to 100	0	0	0	0	0	0
26 to 50	76 to 100	0	0	0	0	0	0
51 to 75	76 to 100	0	0	0	0	0	0
76 to 100	76 to 100	0	0	0	0	0	0
101 to 125	76 to 100	0	0	0	0	0	0
0	101 to 125	0	0	0	0	0	0
1 to 25	101 to 125	0	0	0	0	0	0
26 to 50	101 to 125	0	0	0	0	0	0
51 to 75	101 to 125	0	0	0	0	0	0
76 to 100	101 to 125	0	0	0	0	0	0
101 to 125	101 to 125	0	0	0	0	0	0

Table 52: Longest allowable circuit path with 11 to 15 GSA-UM or -MABs configured for two-wire smoke detectors

Number of detectors	Number of modules (1 or 2 channel)	Maximum allowable wire distance using nontwisted, nonshielded and twisted, nonshielded wire pairs (evenly distributed)					
		18 AWG		16 AWG		14 AWG	
		ft.	m	ft.	m	ft.	m
1 to 25	0	1817	554	2887	880	4592	1400
26 to 50	0	1070	326	1699	518	2703	824
51 to 75	0	321	98	510	156	811	247
76 to 100	0	0	0	0	0	0	0
101 to 125	0	0	0	0	0	0	0
0	1 to 25	1490	454	2367	721	3764	1147
1 to 25	1 to 25	745	227	1184	361	1883	574
26 to 50	1 to 25	0	0	0	0	0	0
51 to 75	1 to 25	0	0	0	0	0	0
76 to 100	1 to 25	0	0	0	0	0	0
101 to 125	1 to 25	0	0	0	0	0	0
0	26 to 50	421	128	668	204	1063	324
1 to 25	26 to 50	0	0	0	0	0	0
26 to 50	26 to 50	0	0	0	0	0	0
51 to 75	26 to 50	0	0	0	0	0	0
76 to 100	26 to 50	0	0	0	0	0	0
101 to 125	26 to 50	0	0	0	0	0	0
0	51 to 75	0	0	0	0	0	0
1 to 25	51 to 75	0	0	0	0	0	0
26 to 50	51 to 75	0	0	0	0	0	0
51 to 75	51 to 75	0	0	0	0	0	0
76 to 100	51 to 75	0	0	0	0	0	0
101 to 125	51 to 75	0	0	0	0	0	0
0	76 to 95	0	0	0	0	0	0
1 to 25	76 to 95	0	0	0	0	0	0
26 to 50	76 to 95	0	0	0	0	0	0
51 to 75	76 to 95	0	0	0	0	0	0
76 to 100	76 to 95	0	0	0	0	0	0
101 to 125	76 to 95	0	0	0	0	0	0

Correlation groups worksheet

The correlation groups worksheet is used to document the devices, zones, and NACs that are assigned to each group.

Group number	Device numbers	Zone numbers	NAC numbers

Device settings worksheet

The device settings worksheet is used to document the configuration and settings for each of the devices on the system.

Note: For default settings, “Factory default settings” on page 37.

Type of device
☐ Photo detector ☐ Photo/heat detector ☐ Heat detector
☐ Duct detector ☐ Ion detector ☐ Relay module
☐ NAC module ☐ Input module

Device address
Serial number
Label Line 1
Label Line 2
Zone

Correlation groups

Day sensitivity ☐ Normal ☐ Least ☐ Less ☐ More ☐ Most
Night sensitivity ☐ Normal ☐ Least ☐ Less ☐ More ☐ Most

Day prealarm % (Off, 50, 55, 60, 65, 70, 75, 80, 90)
Night prealarm % (Off, 50, 55, 60, 65, 70, 75, 80, 90)

Base type ☐ Standard ☐ Relay ☐ Isolator ☐ Sounder
Base follow ☐ Alarm ☐ Alarm + verify ☐ Alarm + prealarm
☐ Head ☐ None ☐ Riser (sounder bases only)

Type
☐ Smoke
☐ Smoke verified
☐ Heat alarm
☐ Heat alarm RoR
☐ Pull station
☐ Waterflow
☐ Waterflow (retard)
☐ Monitor
☐ Duct alarm
☐ Duct supervisory
☐ Supervisory (latching)
☐ Supervisory (nonlatching)
☐ Relay (nonsilenceable)
☐ Relay (silenceable)
☐ Genesis (silenceable)
☐ Genesis (nonsilenceable)
☐ Remote reset
☐ Remote drill
☐ Remote signal silence
☐ Remote AC fail
☐ Remote test station
☐ Continuous (nonsilenceable.)
☐ Continuous (silenceable)

Event notification

Active

Print ☐ Yes ☐ No

NET ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Trouble

Print ☐ Yes ☐ No

NET ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Disable

Print ☐ Yes ☐ No

NET ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Prealarm

Print ☐ Yes ☐ No

NET ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Alarm verify

Print ☐ Yes ☐ No

NET ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Maintenance alert

Print ☐ Yes ☐ No

NET ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Test

Print ☐ Yes ☐ No

NET ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Loop worksheet

The loop worksheet is used to document your loop settings.

Note: For default settings, see “Factory default settings” on page 37.

Loop class

Loop 1 class ☐ Class B ☐ Class A

Loop 2 class ☐ Class B ☐ Class A

Mapping ☐ Disabled ☐ Enabled

Loop 2 enable ☐ Yes ☐ No

Panel configuration worksheet

The panel configuration worksheet is used to document the configuration and settings of the system programming options.

Note: For default settings, see “Factory default settings” on page 37.

NAC

Class ☐ Class B ☐ Class A

Type

☐ Genesis + audible silence	☐ Continuous (silenceable)	☐ Temporal (nonsilence.)
☐ Genesis + audible/visible siln.	☐ Continuous (nonsilence.)	☐ Temporal (silenceable)
☐ Genesis (nonsilenceable)	☐ Coder - continuous	☐ Coder - temporal
	☐ Coder - 120 SPM	☐ Coder - basic

Label Line 1

Label Line 2

Correlation grps. _____

Event notification

Trouble

Print ☐ Yes ☐ No

NET (1-8) ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code (four-digit coded output)

CID

Disable

Print ☐ Yes ☐ No

NET (1-8) ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code (four-digit coded output)

CID

Test

Print ☐ Yes ☐ No

NET (1-8) ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code (four-digit coded output)

CID

Annunciator

Class ☐ Class B ☐ Class A

Type ☐ Off ☐ LCD-C ☐ LCD ☐ LED ☐ Graphic

Expanders ☐ None ☐ 1 or 2

Label Line 1

Label Line 2

Event notification

Trouble

Print ☐ Yes ☐ No

NET (1-8) ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code (four-digit coded output)

CID

Remote devices

Dialer

Type ☐ Dual line ☐ Single line ☐ Modem only ☐ None

Account 1

ID (four-digit account ID code)

Primary receiver

Secondary receiver

Format ☐ CID

Send restorals ☐ Yes ☐ No

Retry time (01 – 45 seconds)

Retry count (01 – 10 attempts)

Event notification ☐ Device reporting ☐ Zone reporting ☐ Event reporting

Account 2

ID (four-digit account ID code)

Primary receiver

Secondary receiver

Format ☐ CID

Send restorals ☐ Yes ☐ No

Retry time [ ][ ] (01 – 45 seconds)

Retry count [ ][ ] (01 – 10 attempts)

Event notification ☐ Device reporting ☐ Zone reporting ☐ Event reporting

---

Line 1 dialing ☐ Tone ☐ Pulse

Line 1 cut [ ][ ][ ] Line 1 cut duration / supervision (10 – 120)

Line 2 dialing ☐ Tone ☐ Pulse

Line 2 cut [ ][ ][ ] Line 2 cut duration / supervision (10 – 120)

Tone wait ☐ Off [ ][ ] (01 – 30 seconds)

Call disconnect ☐ Off [ ][ ] (01 – 45 seconds)

Test frequency ☐ Off [ ][ ] (01 – 45 days)

Test time [ ][ ][ ][ ]

Rings to answer ☐ Off [ ][ ] (01 – 15 rings)

Ring type ☐ Any ☐ Normal ring ☐ Distinctive ring

Call back ☐ Enabled ☐ Disabled

Call back number [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]

Network

Account 1 ID [ ][ ][ ][ ] (four-digit account ID code)

IP address _____

TCP/IP port _____

Send restorals ☐ Yes ☐ No

Event notification ☐ Device reporting ☐ Zone only reporting ☐ Event only reporting

Hello time [ ][ ][ ] (10 – 255 seconds)

Timeout [ ][ ][ ] (31 – 255 seconds)

Receiver number [ ][ ][ ][ ] (0 – 9999)

Line number [ ][ ][ ][ ] (0 – 9999)

Swinger shtdwn. ☐ Off [ ][ ][ ] (001 – 255 repetitions)

Printer

Type ☐ None/CU ☐ Supervised ☐ Unsupervised

Event notification

Trouble

Print ☐ Yes ☐ No

NET (1-8) ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code [ ][ ][ ][ ] (four-digit coded output)

CID [ ][ ][ ]

Panel operation worksheet

The panel operation worksheet is used to document the configuration and settings of your control panel programming options.

Note: For default settings, see “Factory default settings” on page 37.

Language	☐ English	☐ French	
Marketplace	☐ U.S.	☐ Canada	
AC fail delay	☐ Off		(01 – 15 hours)
Zone resound	☐ Off	☐ On	
Reset inhibit	☐ Off	☐ 1 minute	
Auto signal silence	☐ Off		(05 – 30 minutes)
In suite signal sil.			(1 – 10 minutes)

Day start	Start time					End time				
Night start	Start time					End time				

Date format	☐ U.S. (MM/DD/YYYY)	☐ Canada (DD/MM/YYYY)	
Event notification	☐ Zone/device reporting	☐ Zone only reporting	☐ Device only reporting

LCD banner

Line 1																			
Line 2																			

Aux power reset	☐ On	☐ Off
User key #1	☐ Enabled	☐ Disabled
User key #2	☐ Enabled	☐ Disabled

Zone settings worksheet

The zone settings worksheet is used to document the configuration and settings for each of the zones on the system.

Note: Print a copy of this worksheet for each zone in the system.

Note: For default settings, see “Factory default settings” on page 37.

Type ☐ Alarm ☐ Waterflow ☐ Monitor ☐ Supervisory (latching) ☐ Supervisory (nonlatching)

Label Line 1 | | | | | | | | | | | | | | | | | | | |

Label Line 12 | | | | | | | | | | | | | | | | | | | |

Correlation groups _____

Device allocation

First address | | | | | (no less than the last address of the previous zone + 1)

Last address | | | | | (first address + the number of devices – 1)

Event notification

Active

Print ☐ Yes ☐ No

NET (1-8) ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Trouble

Print ☐ Yes ☐ No

NET (1-8) ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Disable

Print ☐ Yes ☐ No

NET (1-8) ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Prealarm

Print ☐ Yes ☐ No

NET (1-8) ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Alarm verify

Print ☐ Yes ☐ No

NET (1-8) ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Maintenance alert

Print ☐ Yes ☐ No

NET (1-8) ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Test

Print ☐ Yes ☐ No

NET (1-8) ☐ Yes ☐ No

Dialer ☐ Acct 1 ☐ Acct 1 & 2 ☐ Acct 2 ☐ None

Code | | | | | (four-digit coded output)

CID | | | |

Appendix C
Front panel menu flowcharts

Summary

This appendix shows menu flowcharts for all front panel operations and programming.

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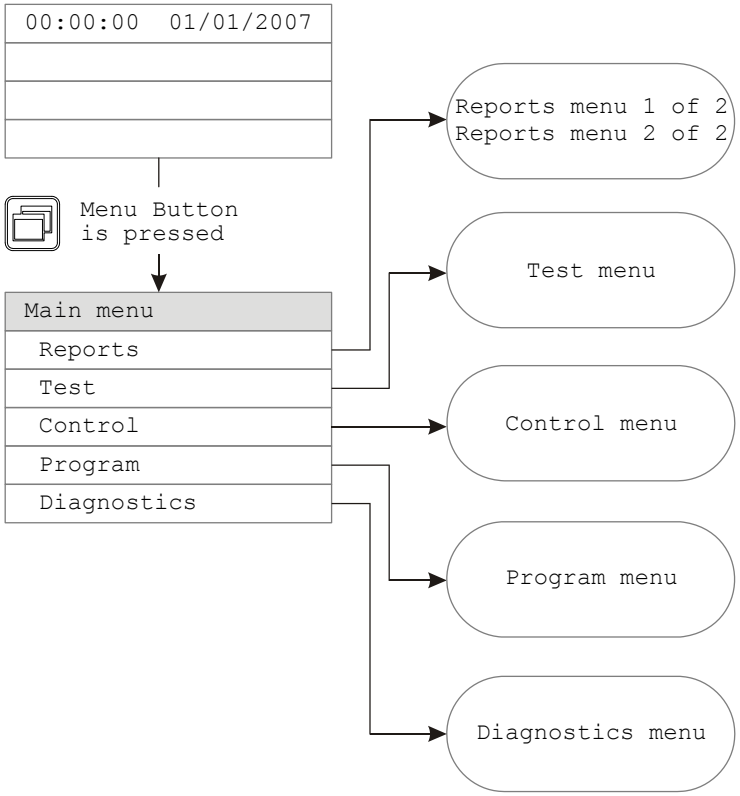
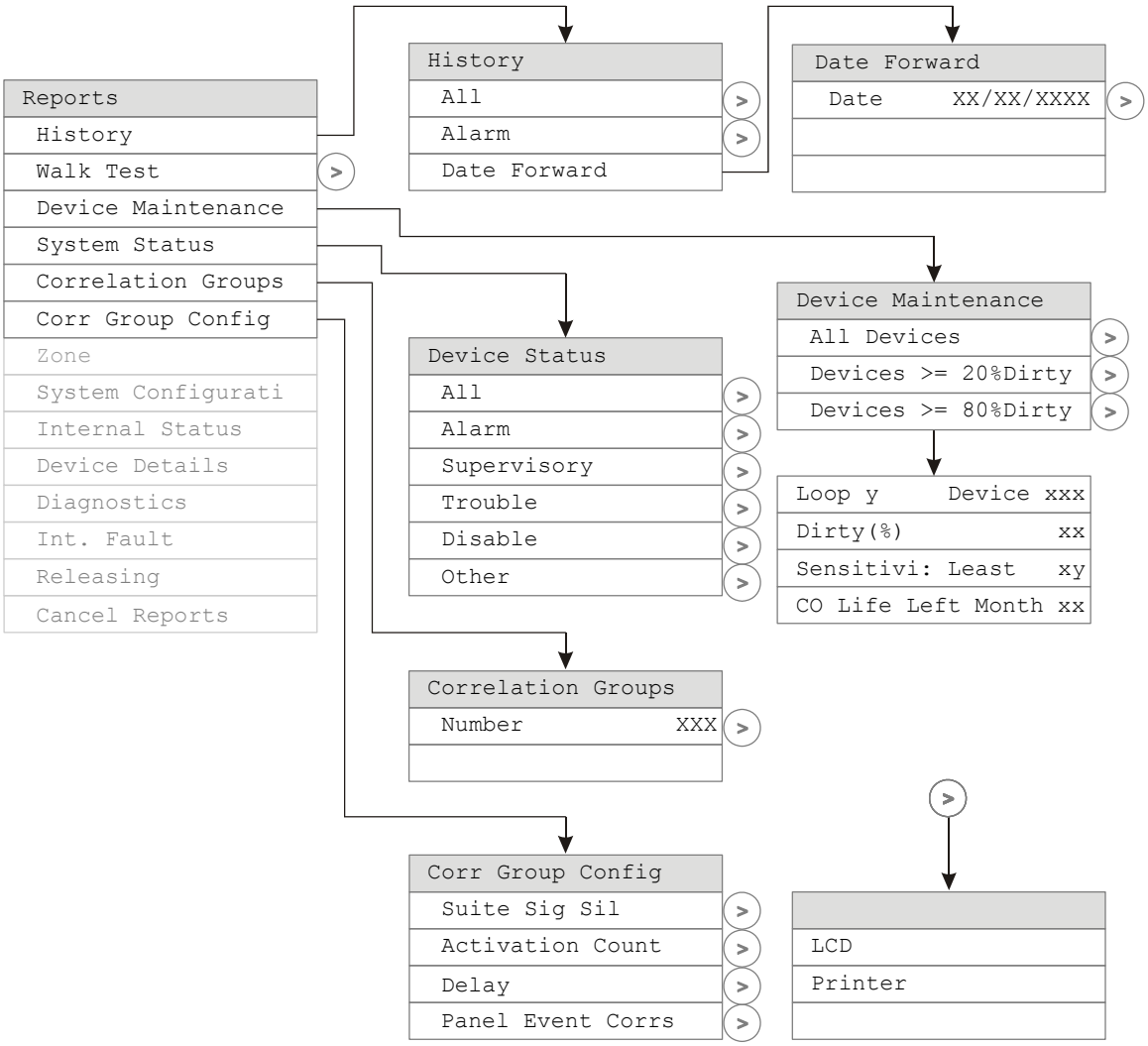
Diagnostics menu 258

Main menu

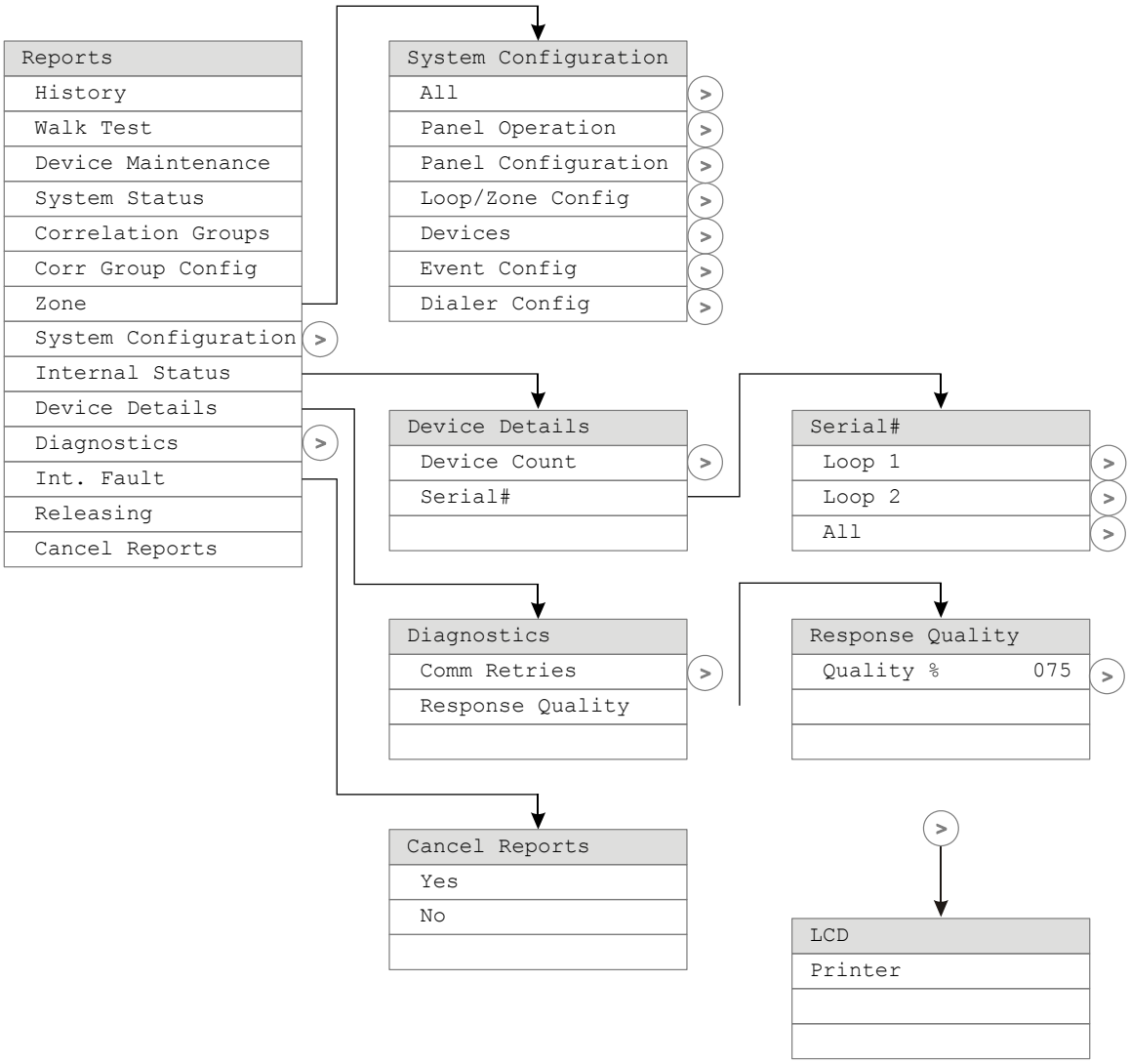

00:00:00 01/01/2007
Menu Button
is pressed
Main menu
Reports
Test
Control
Program
Diagnostics
Reports menu 1 of 2
Reports menu 2 of 2
Test menu
Control menu
Program menu
Diagnostics menu

Reports menu (1 of 2)

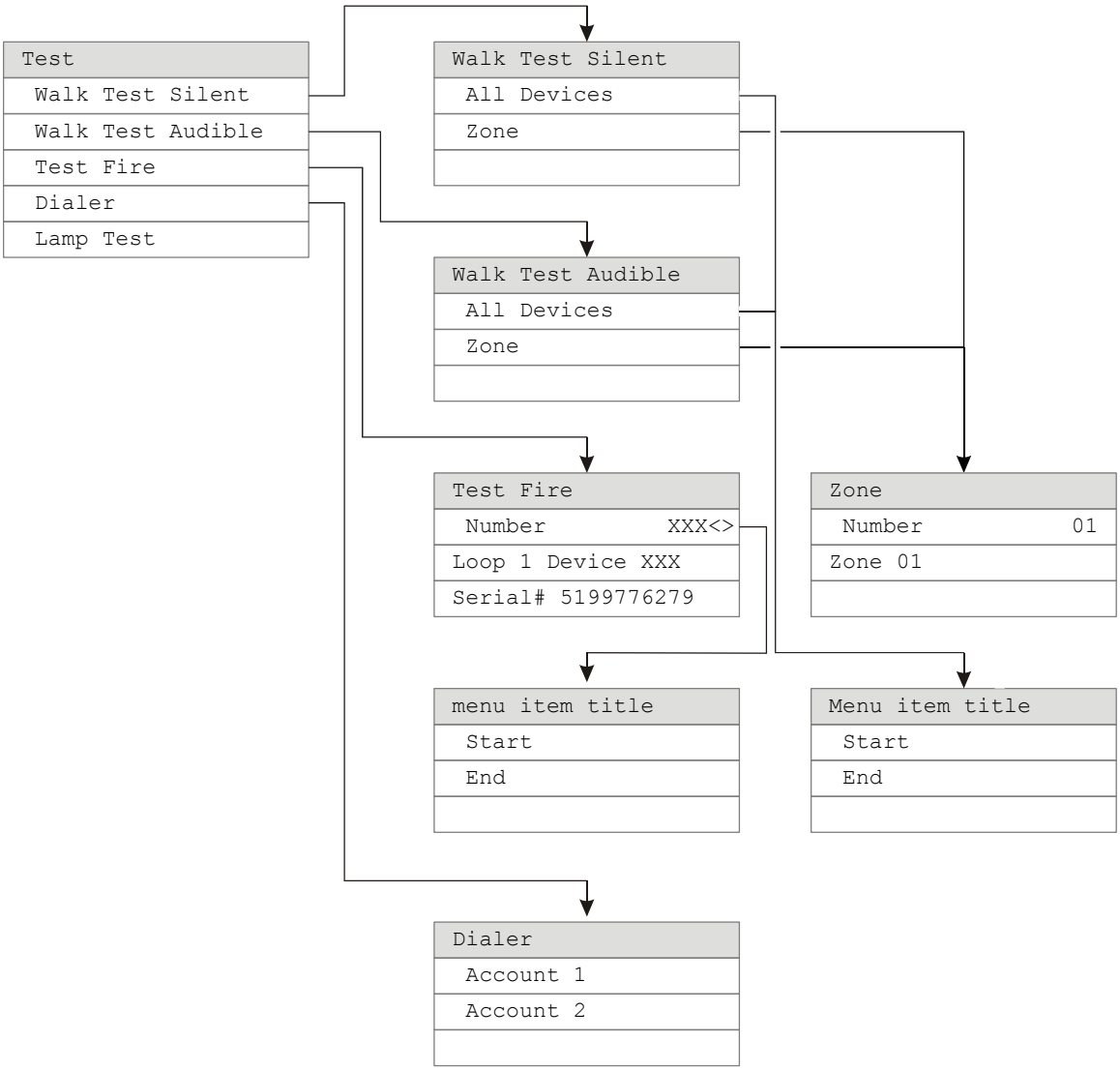


Note: CO Life Left Month report is visible only when CO detectors are compatible with your system. See Table 9 on page 45.

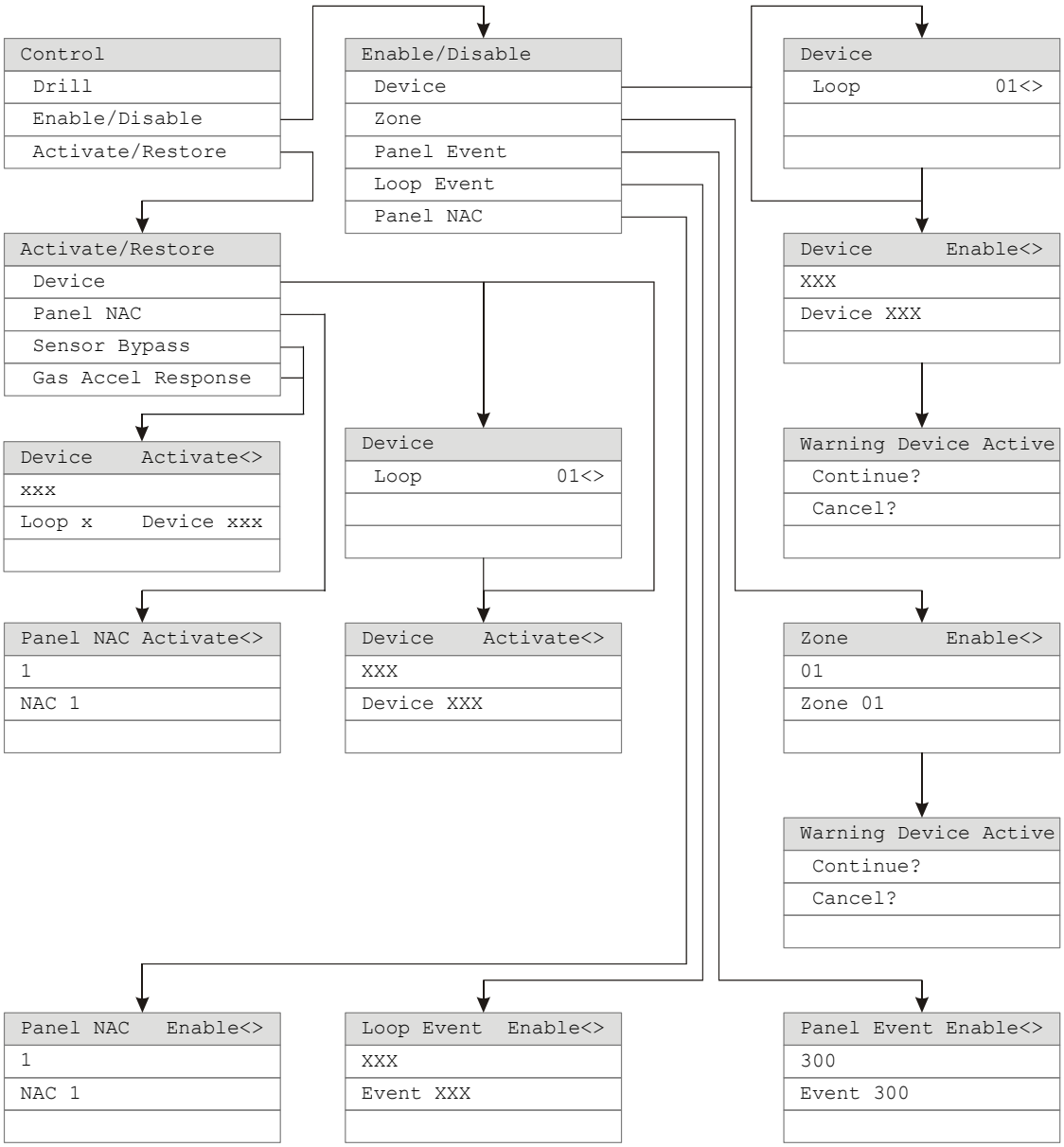
Reports menu (2 of 2)



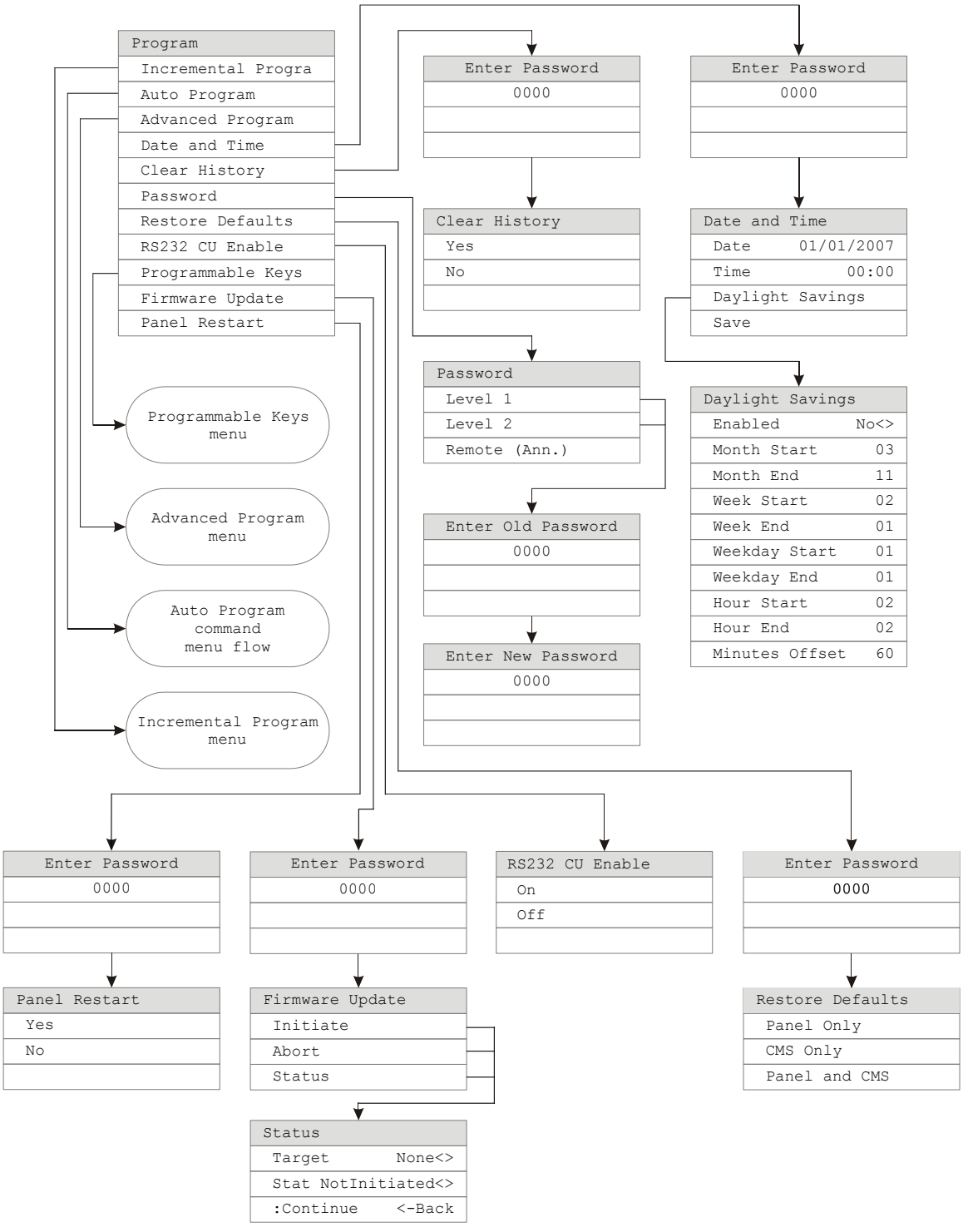
Test menu


Test
Walk Test Silent
Walk Test Audible
Test Fire
Dialer
Lamp Test
Walk Test Silent
All Devices
Zone
Walk Test Audible
All Devices
Zone
Test Fire
Number XXX<>
Loop 1 Device XXX
Serial# 5199776279
Zone
Number 01
Zone 01
menu item title
Start
End
Menu item title
Start
End
Dialer
Account 1
Account 2

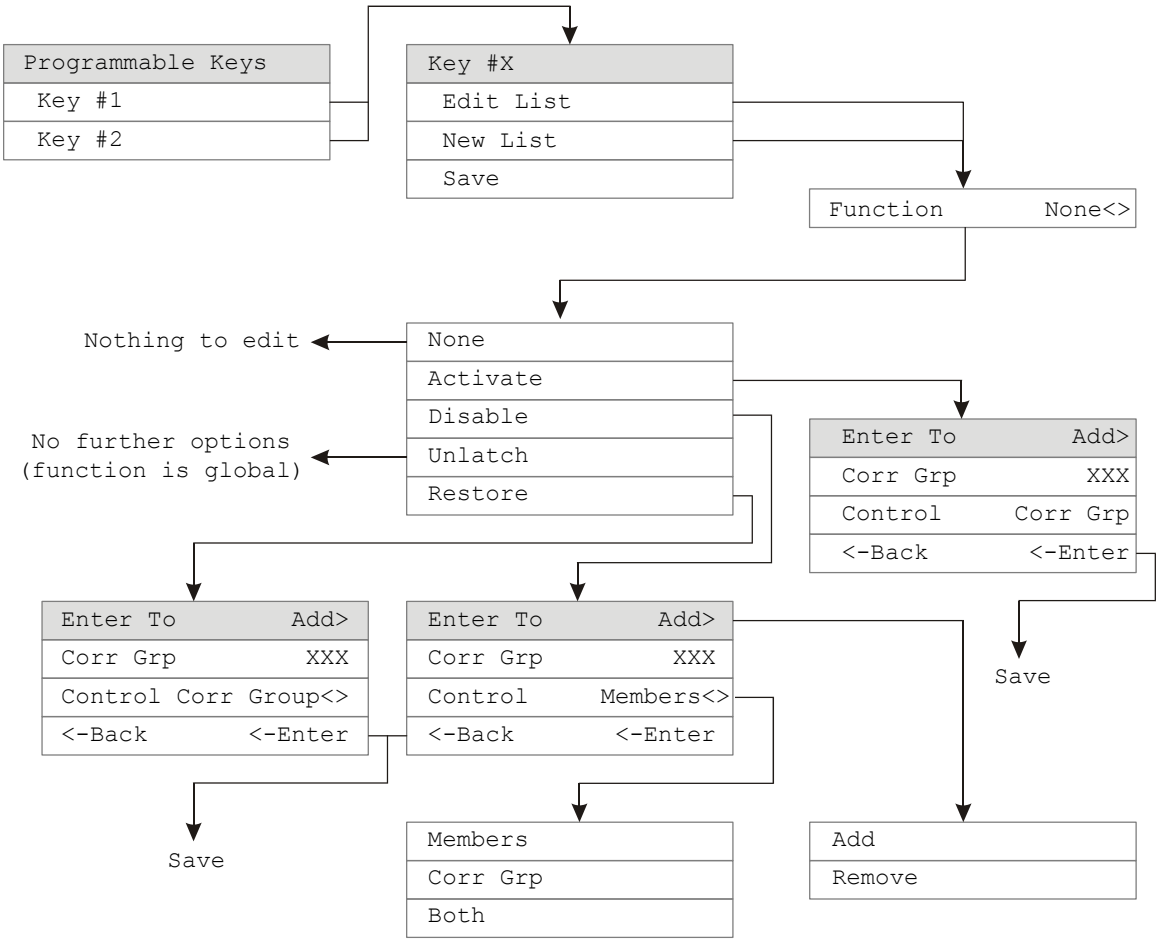
Control menu



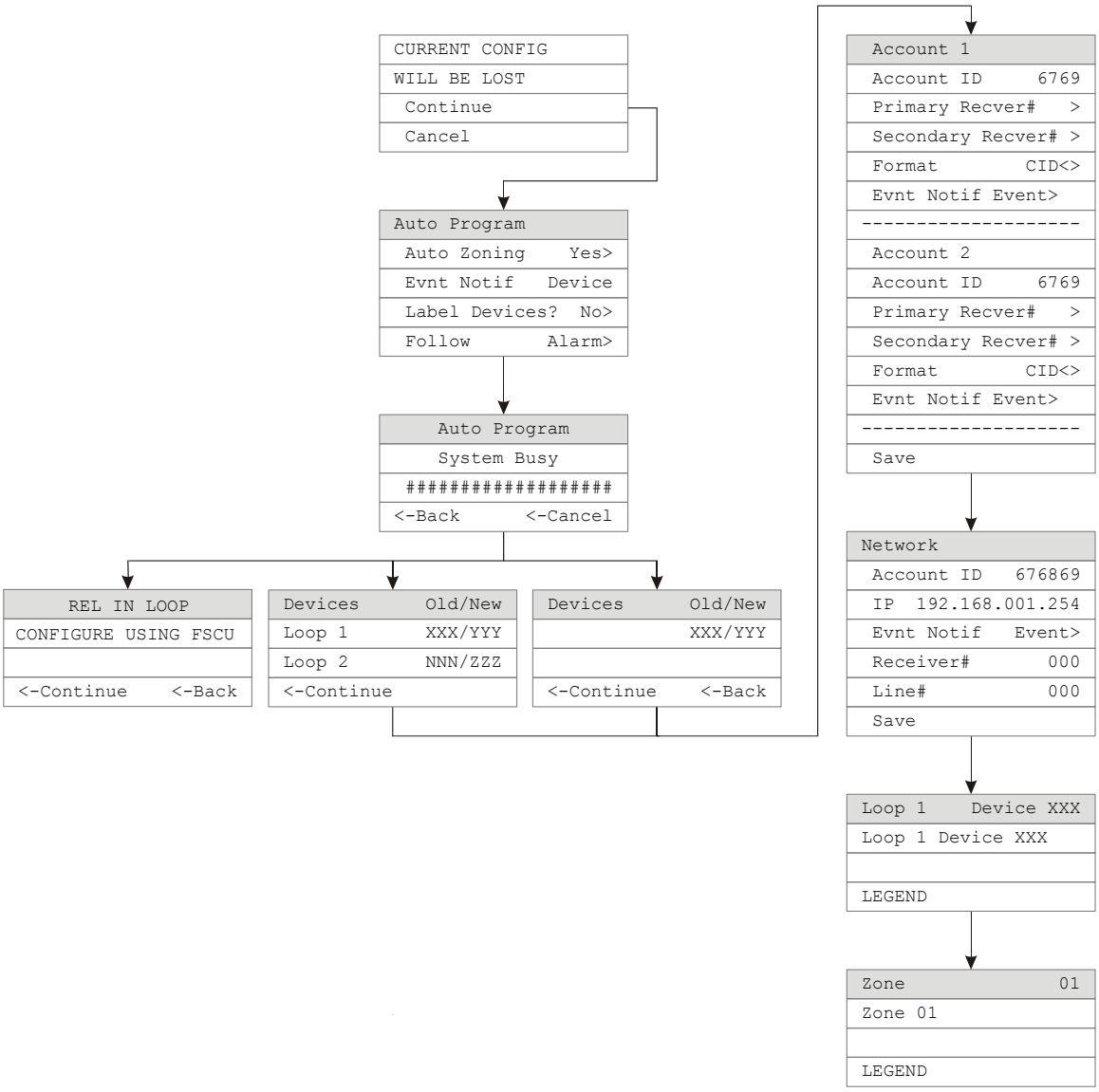
Program menu



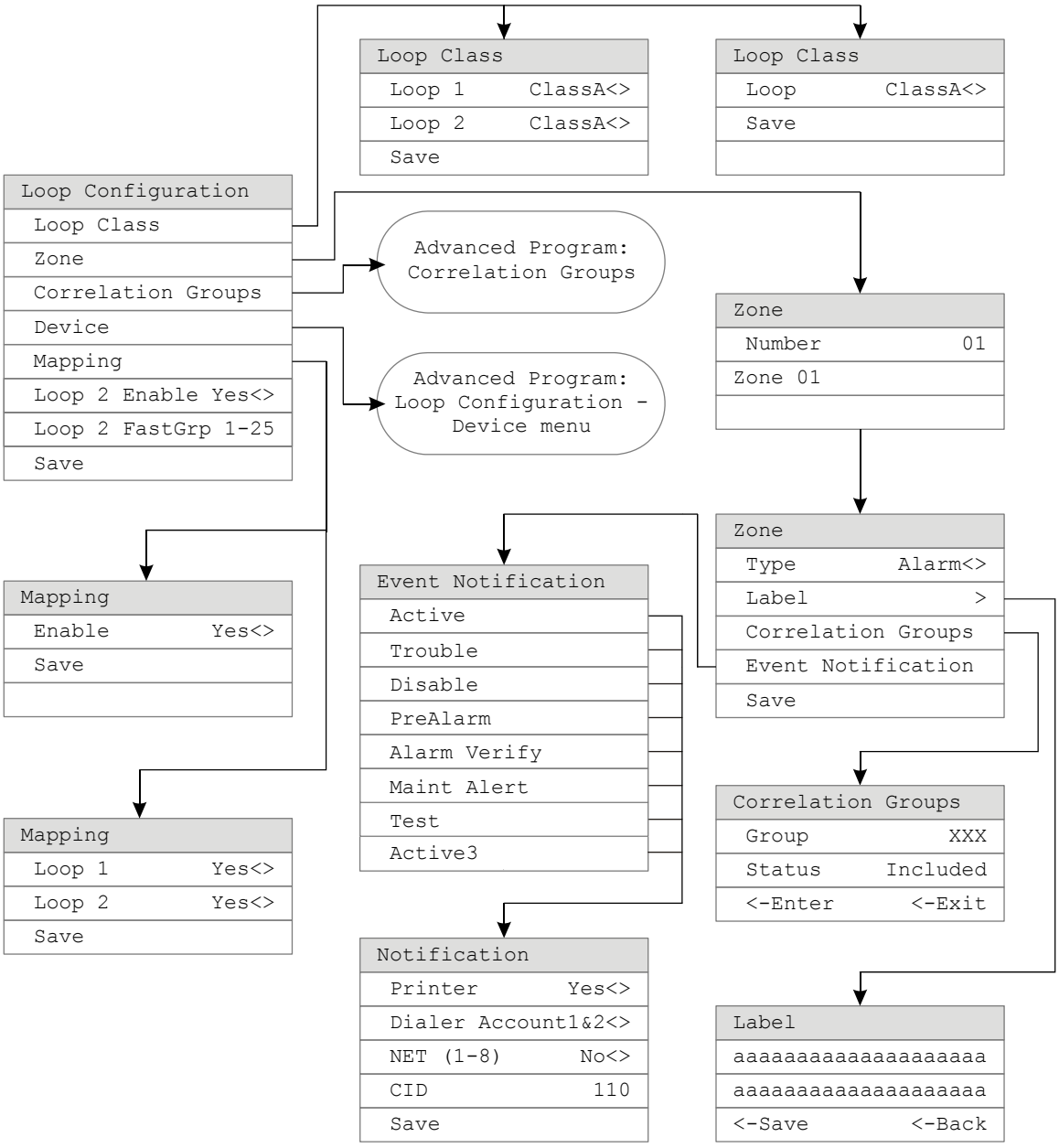
Program: Programmable Keys menu



Auto Program menu

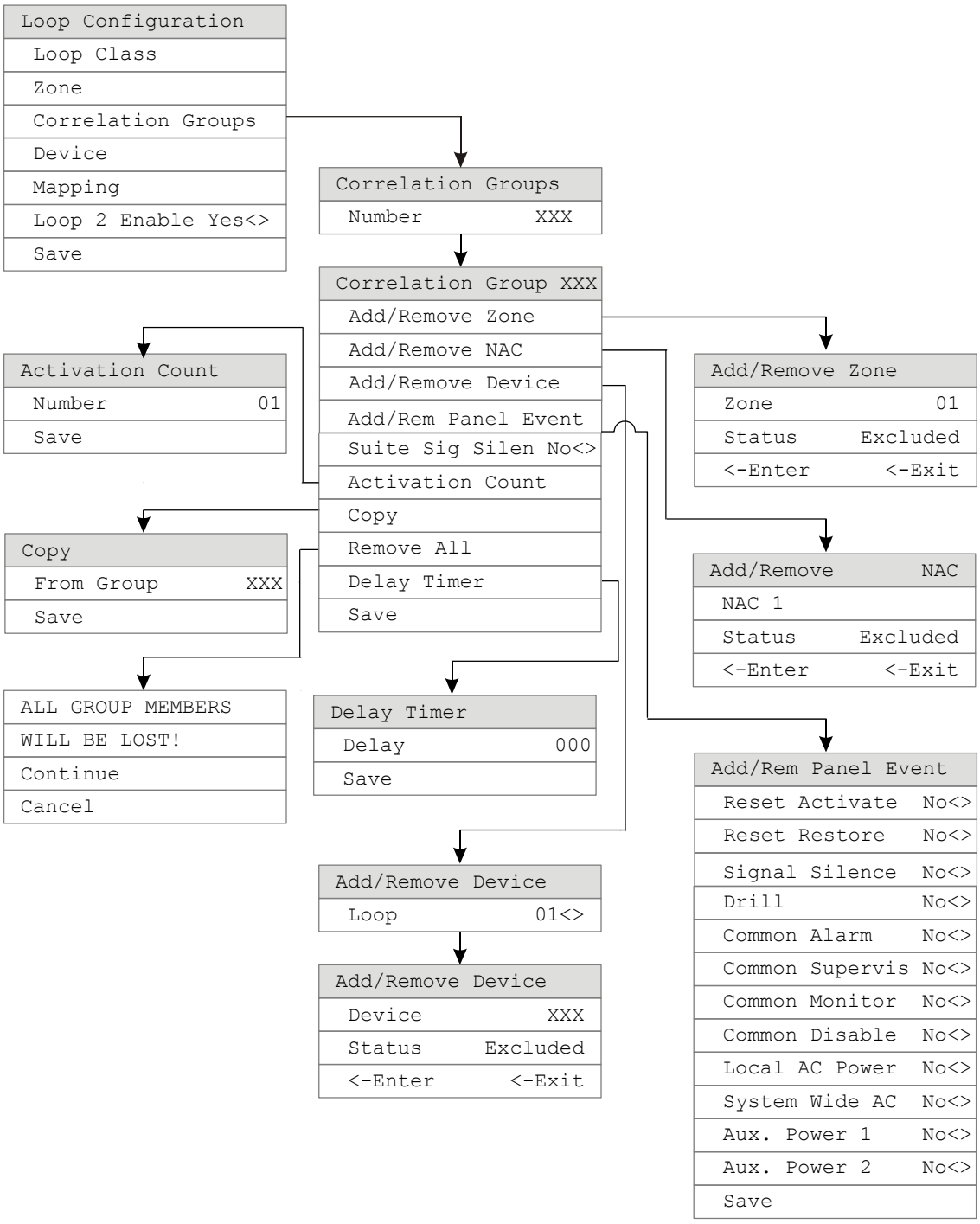


Advanced Program: Loop Configuration menu

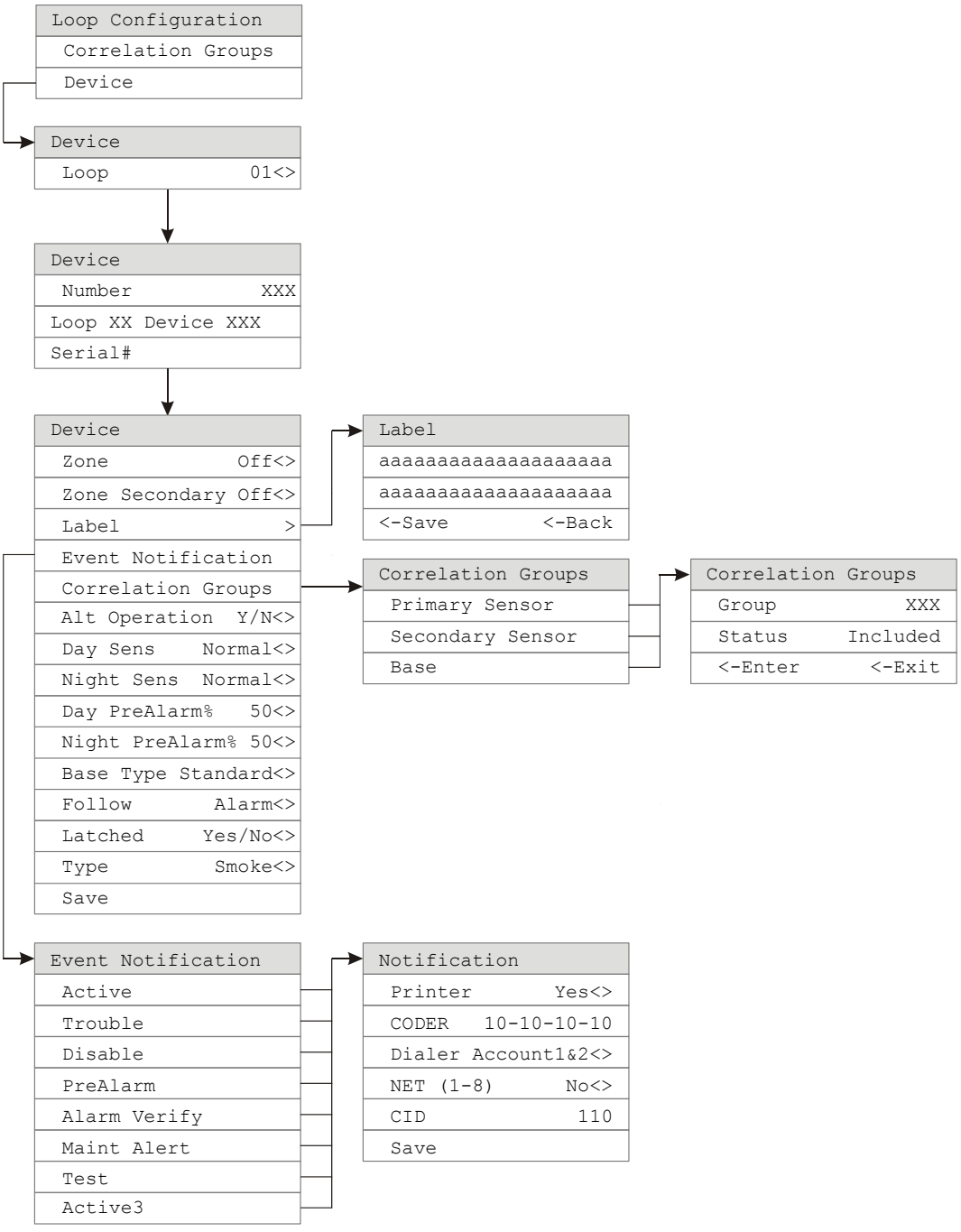


Note: Active3 is visible when the zone is a secondary zone.

Advanced Program: Correlation Groups menu

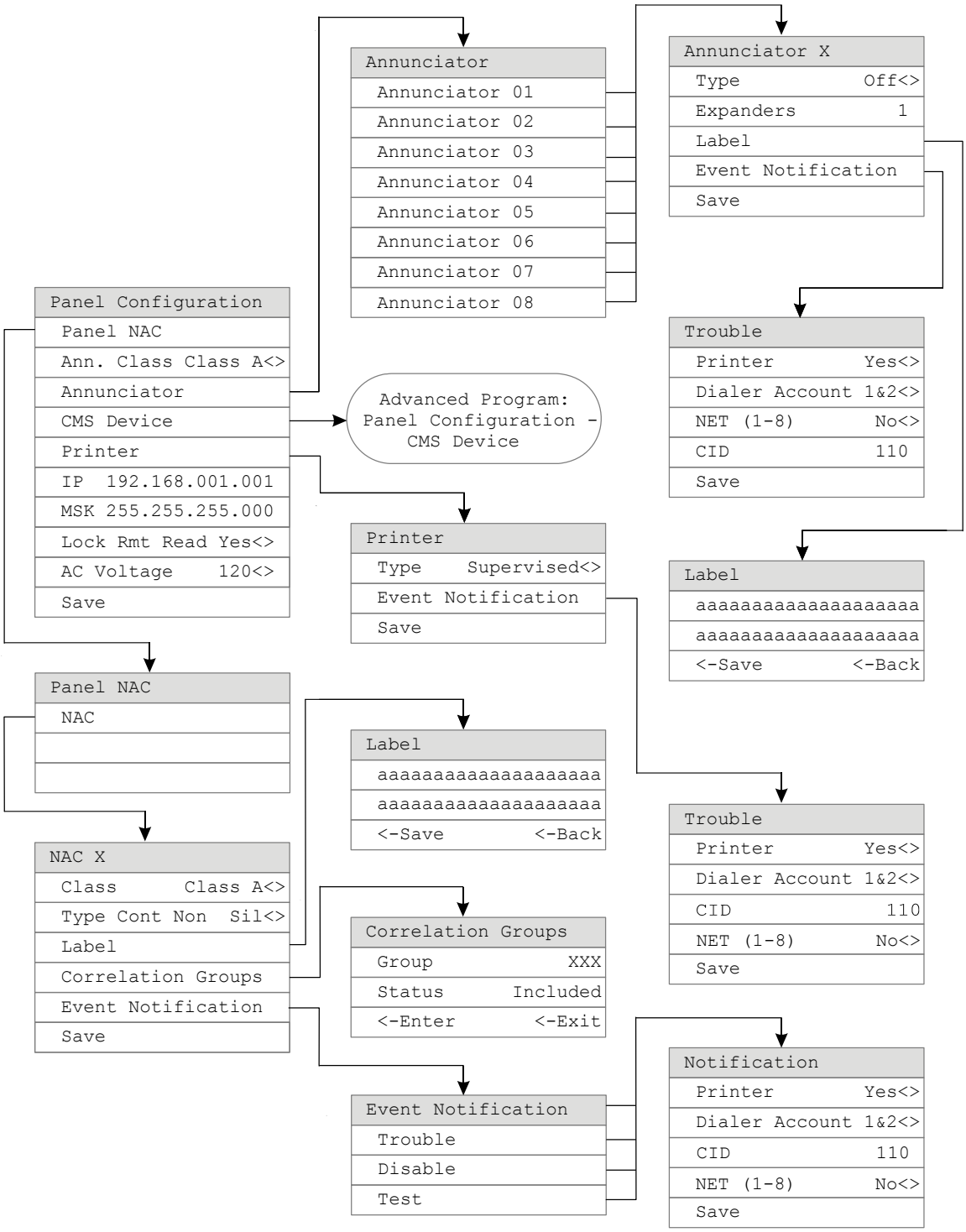


Advanced Program: Loop Configuration — Device menu

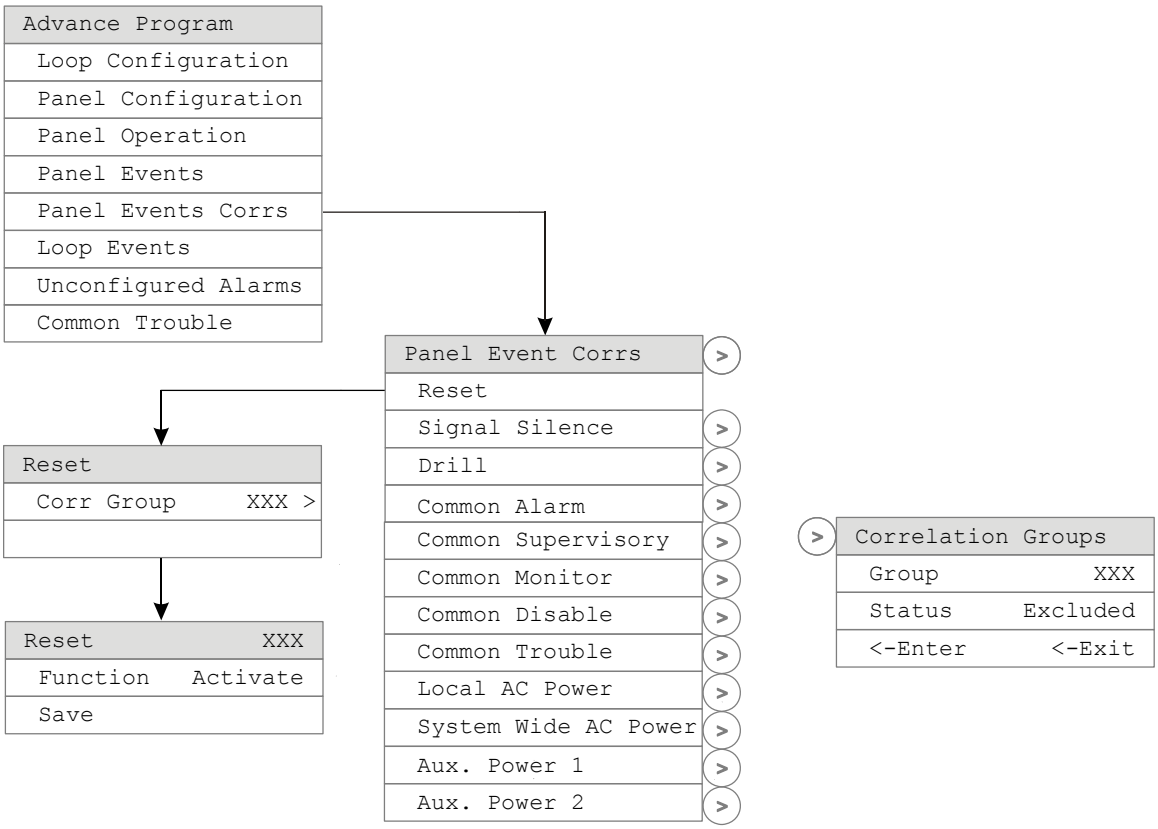


Note: The Zone Secondary, Alt Operation, and Secondary Sensor (under Correlation Groups) functions are not available for all devices. See Table 9 on page 45 and Table 23 on page 80.

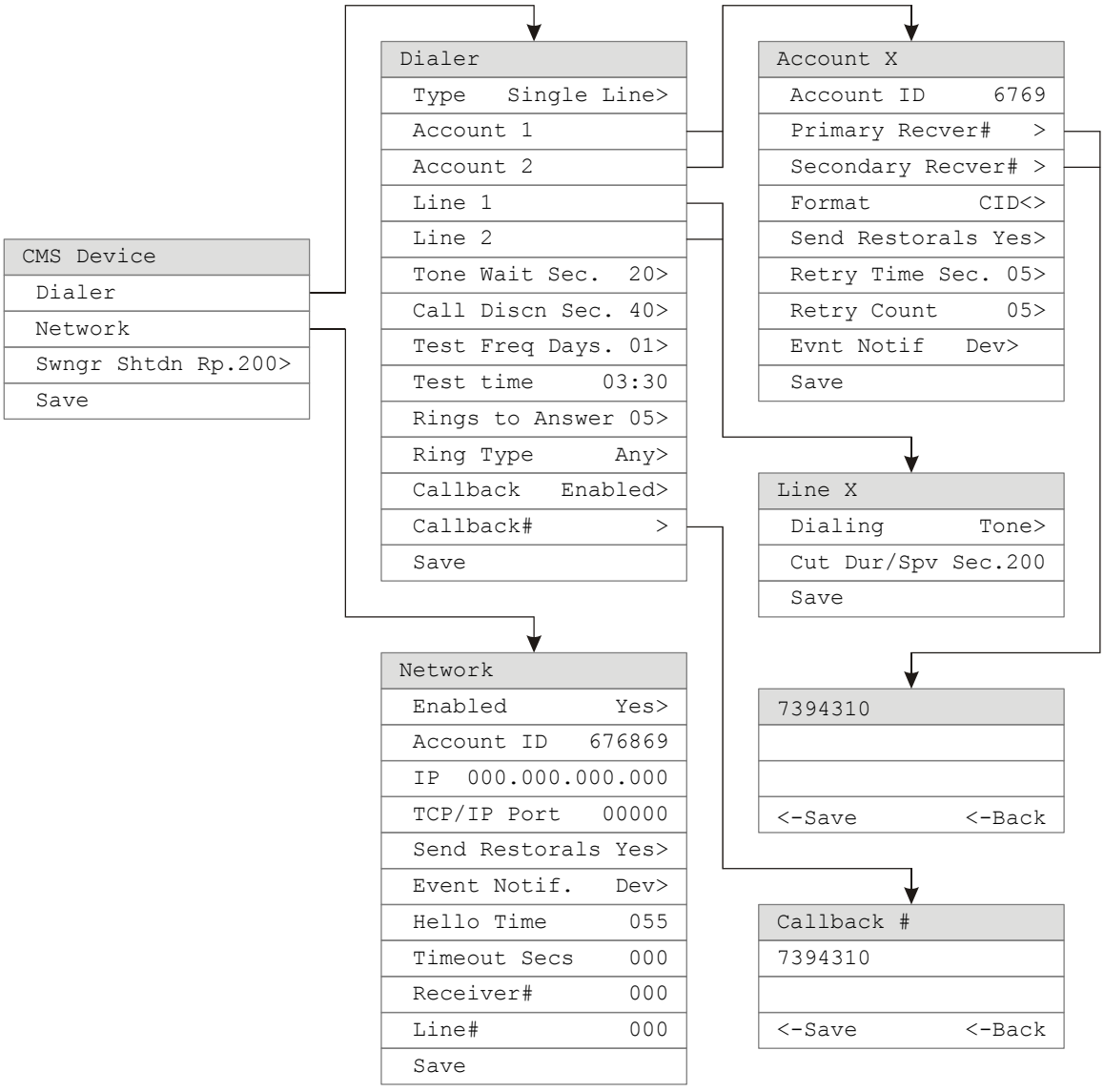
Advanced Program: Panel Configuration menu



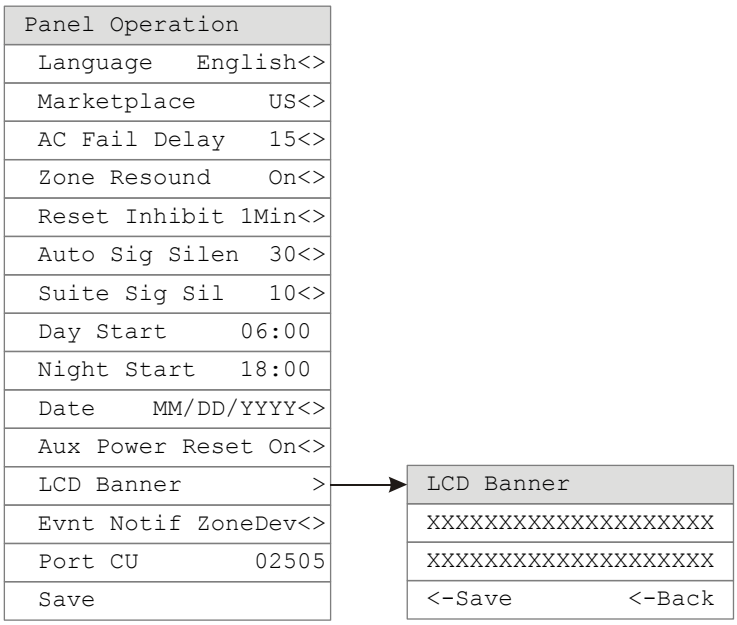
Advanced Program: Panel Event Correlations menu



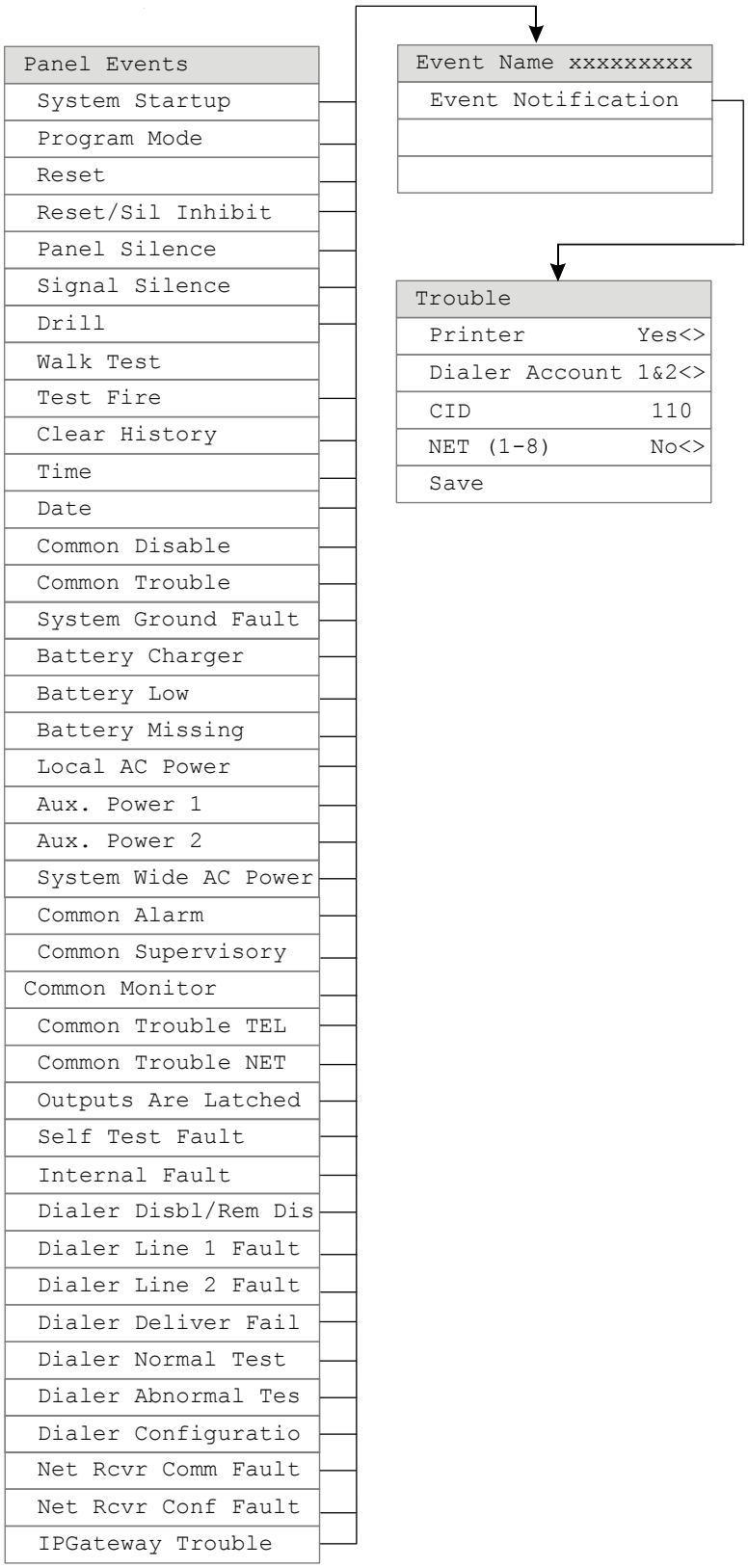
Advanced Program: Panel Configuration — CMS Device menu



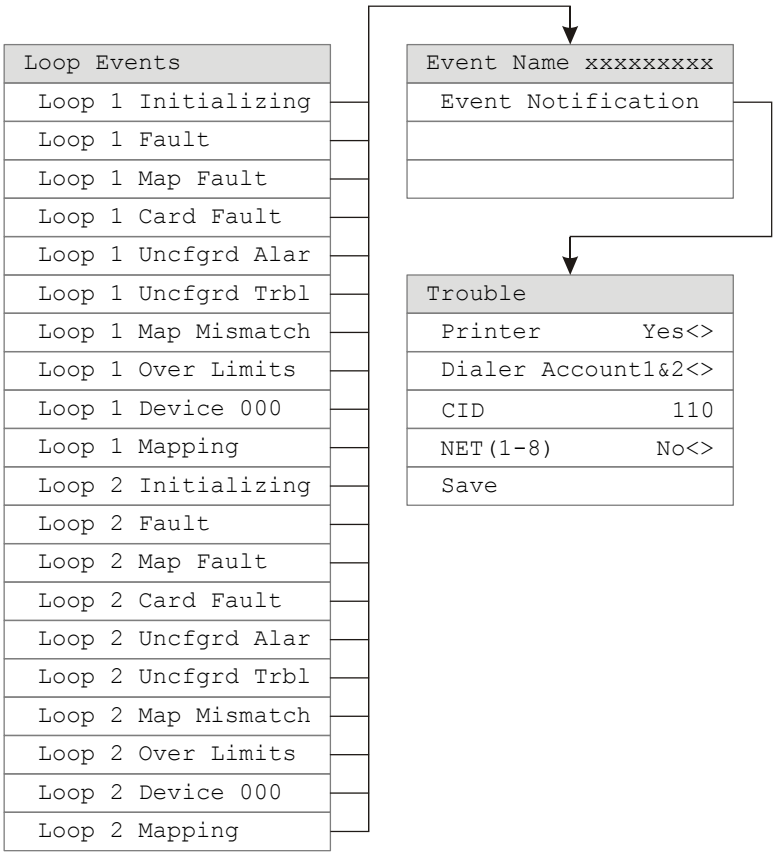
Advanced Program: Panel Operation menu



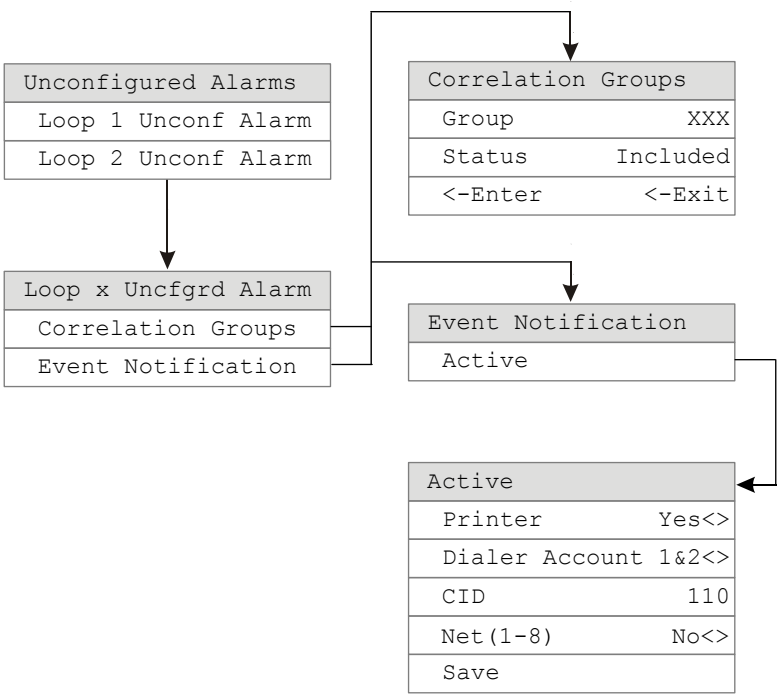
Advanced Program: Panel Events menu



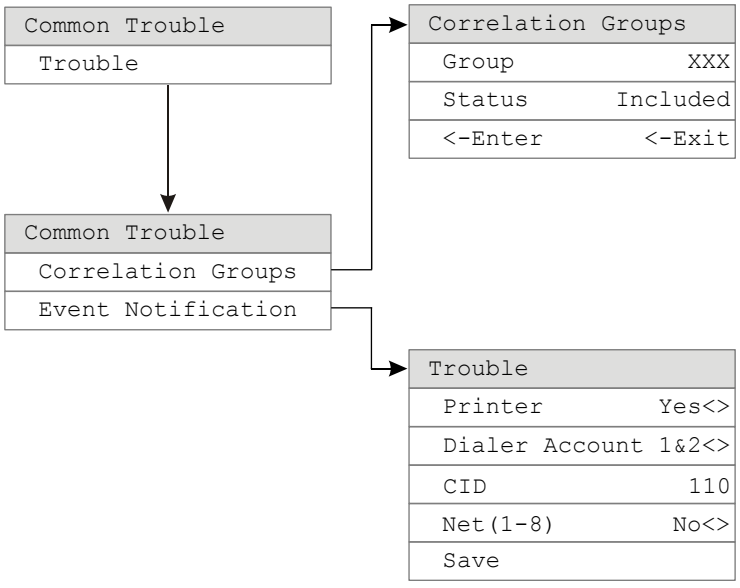
Advanced Program: Loop Events menu



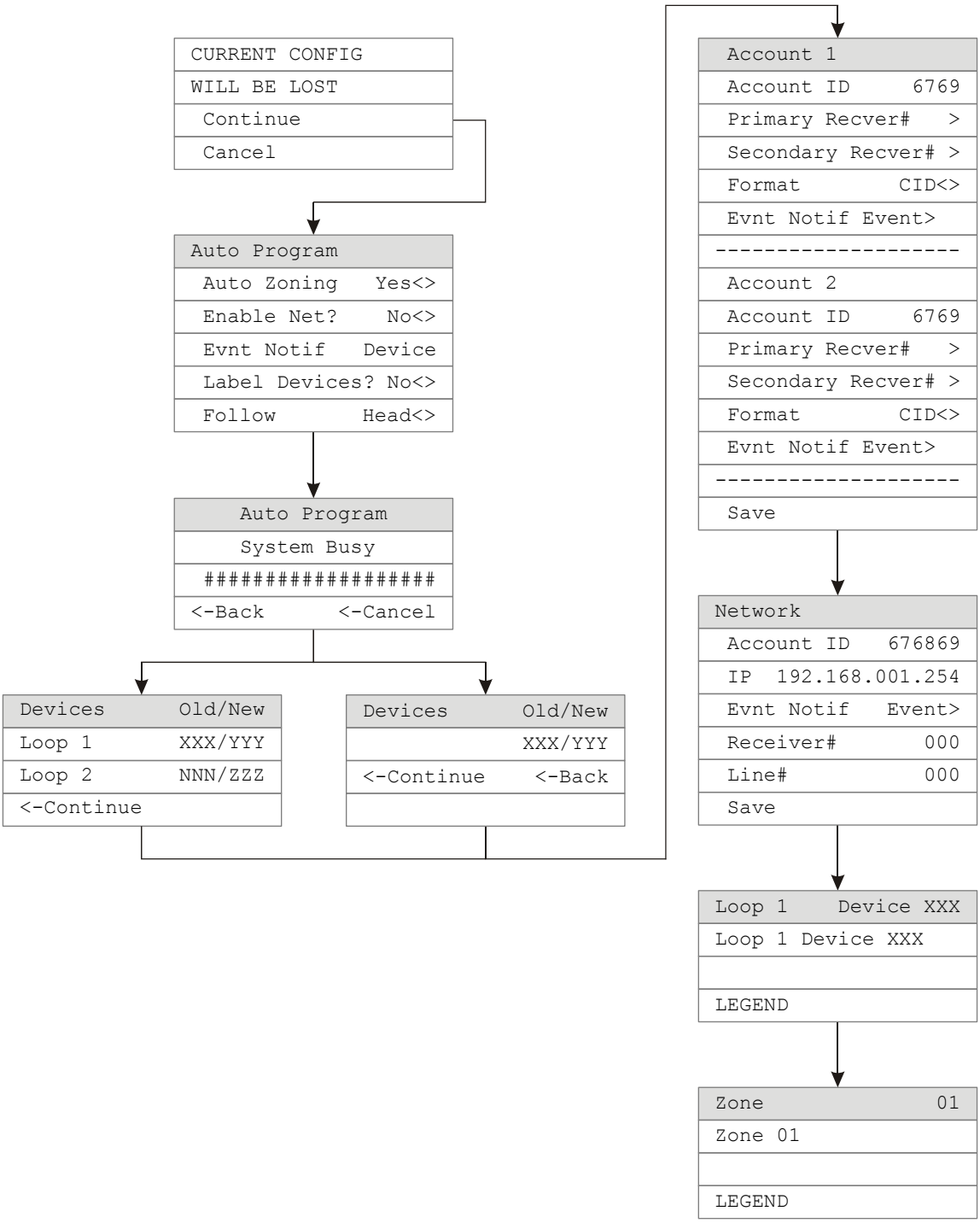
Advanced Program: Unconfigured Alarm menu



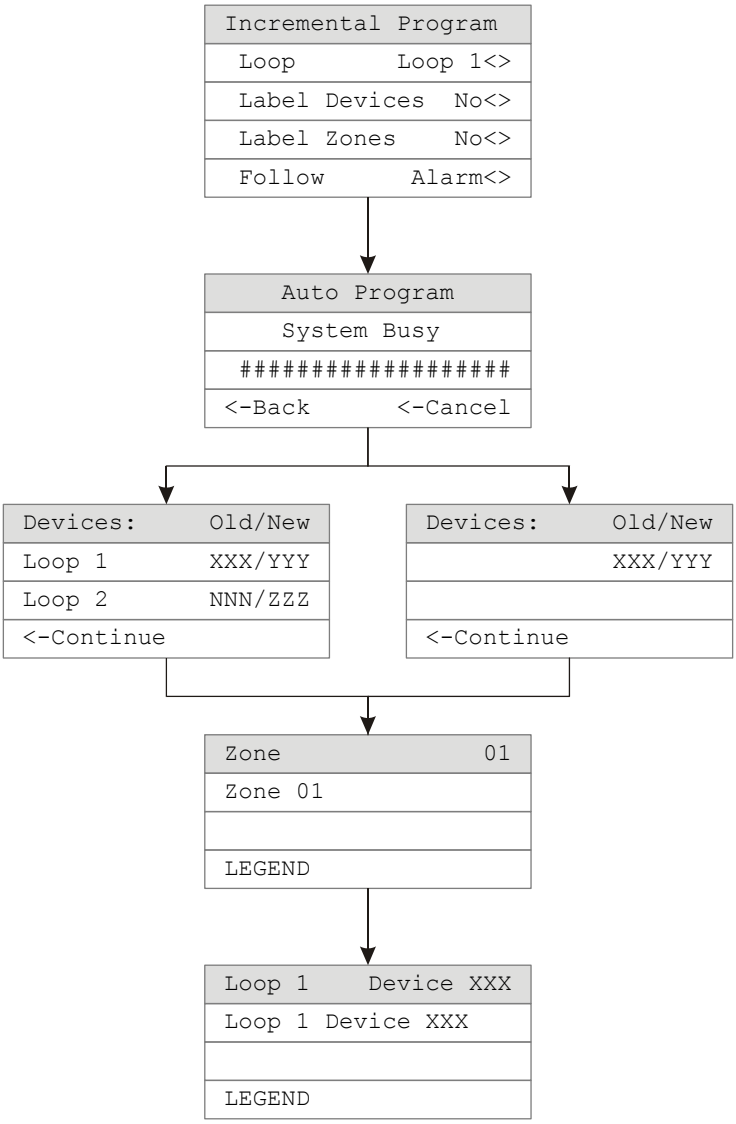
Advanced Program: Common Trouble menu



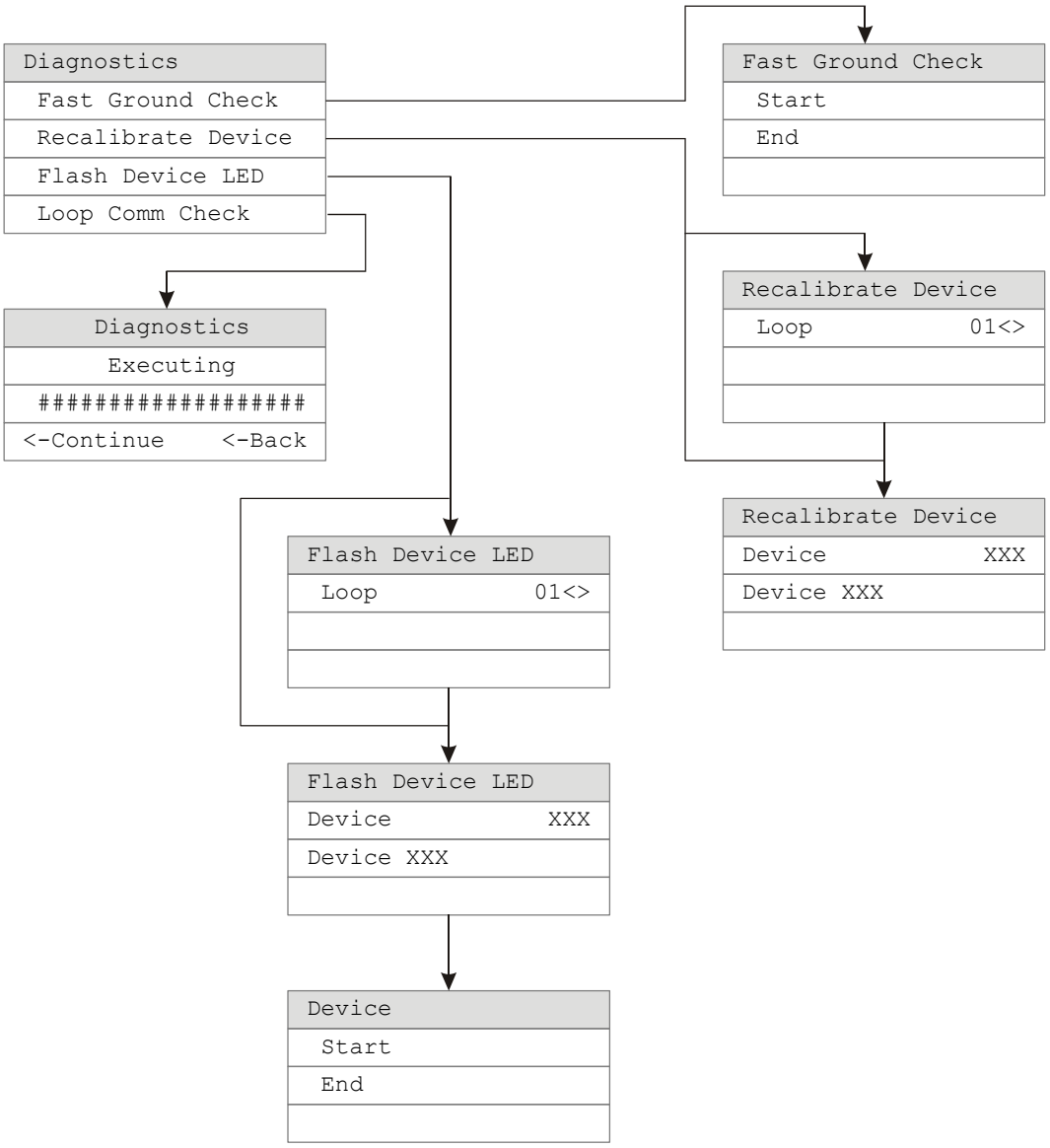
Auto Program command menu flow



Incremental Program menu



Diagnostics menu



Appendix D
Applications

Summary

This appendix has sounder base applications that can be used with the SB4U sounder base.

Content

Local alarm signaling applications 259
- What is local alarm signaling? 259
- Typical wiring for a local alarm signaling application 260
- Programming sounder bases for a local alarm signaling application 260
- Programming sounder bases for a T3T4 Fire Alarm/CO emergency signaling application per NFPA 720, UL 2017 261

Correlated zone and system alarm signaling applications 263
- Zone alarm signaling applications 263
- System alarm signaling applications 265
- Programming sounder bases for a local alarm signaling application 267

In-suite signal silence applications 267

Local alarm signaling applications

What is local alarm signaling?

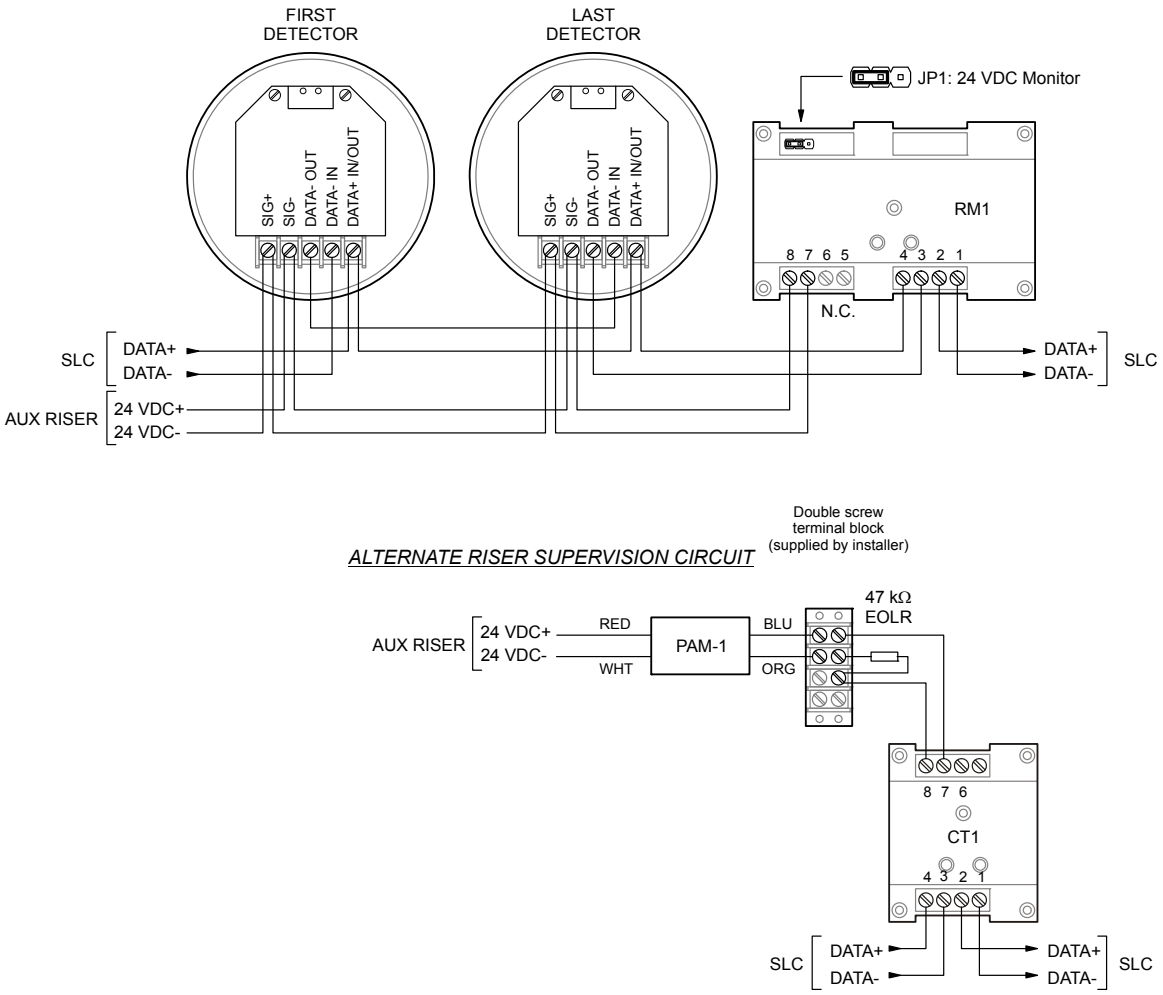
In local alarm signaling applications, an audible detector base (sounder base) automatically sounds an alarm signal when its detector is activated. All other sounder bases on the same riser remain silent until their detectors are activated.

The sounder base continues to sound an alarm signal until smoke is cleared from its detector and the control panel is reset.

Typical wiring for a local alarm signaling application

Typically, the riser that supplies power to the sounder bases is supervised using an RM1 module. You can also use a CT1 module and a PAM-1 relay.

Figure 56: Typical wiring for a local alarm signaling application



Programming sounder bases for a local alarm signaling application

1. Set the panel's Event Notification option to Device.
2. Configure the smoke detectors as follows:

Device Type: Smoke or Smoke Heat depending on the detector model

Message Line 1: SMOKE_<N>, where <N> can be the device address or other number

Base Type: Sounder

Follow: Head

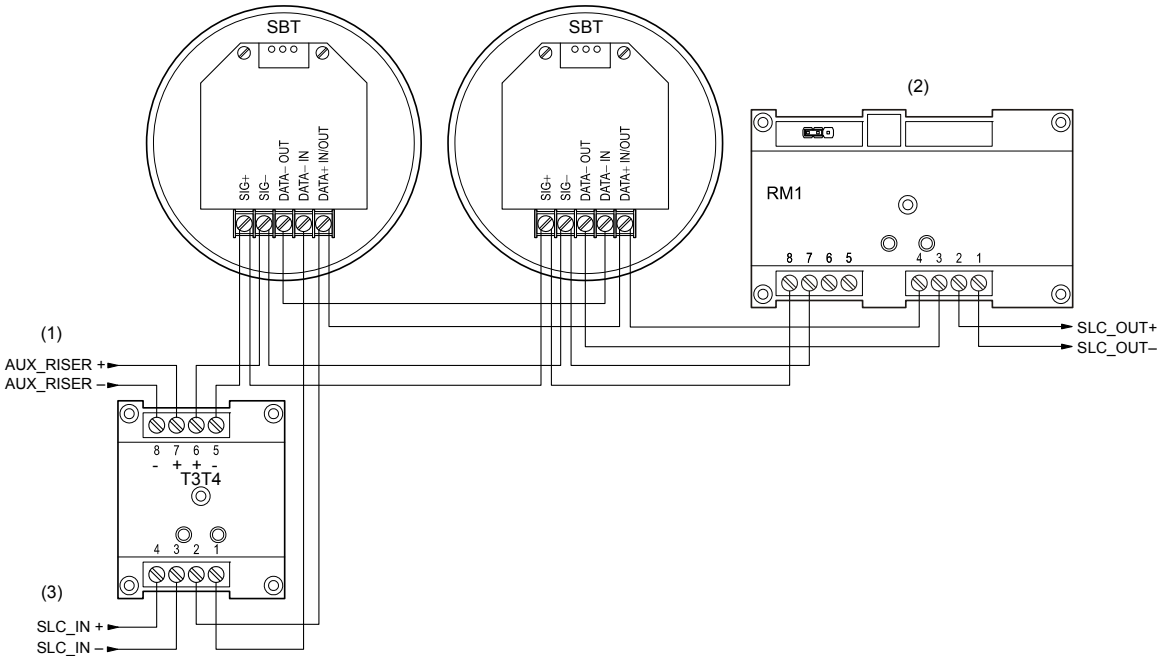
3. Configure the RM1 or CT1 module as follows:

   Device type: Monitor

   Message Line 1: 24VDC_RISER

Programming sounder bases for a T3T4 Fire Alarm/CO emergency signaling application per NFPA 720, UL 2017

Figure 57: Wiring the sounder base for a T3T4 Fire/CO alarm



(1) Use a power-limited and regulated 24 VDC power supply that is UL/ULC Listed for fire protective signaling system.

(2) RM1 module or equivalent

(3) Data from signature controller

Note: The following procedure must be done using the Configuration Utility (CU).

To program the sounder base for T3T4 Fire/CO:

1. Set the panel's Event Notification option to Device/Zone.
2. Configure the detectors as follows:

   Message Line 1: DETECTOR_<N>

   Device Type: Primary sensor type + CO alarm

   Base Type: SBT Sounder

   Follow: None, Head, Alarm, Alm + Vrfy, or Alm + PreAlm
3. Configure the RM1 or CT1 module as follows:

   Device type: Monitor

   Message Line 1: 24VDC_RISER

   Message Line 2: SOUNDER_RLY_1
4. Configure Correlation Group 001 as follows:

   Add/Remove Zone: As required

   Add/Remove NAC: As required

   Add/Remove Device: Add all alarm signal initiating devices corresponding T3T4 device Channels as described below

To create correlations for T3T4:

1. Channel 1 must be correlated with proper SBT sounder base as output to any primary alarming type inputs.
2. Channel 2 can be correlated with proper SBT sounder base as output to secondary element (CO) of GSA detectors.
3. If both Channel 1 and Channel 2 are correlated as outputs to a sounder base, then Channel 1 pattern overwrites the Channel 2 pattern.

Notes

- Channel 1: T3T4-TC3 (fire): The device at serial number visible on T3T4 device.
- Channel 2: T3T4-TC4 (CO): The device at serial number + seventh location.
- CO alarm signals are required to activate TC4 CO evacuation signals. CO supervisory or CO monitor signals are not allowed to activate CO evacuation signals.
- CO alarm, CO supervisory, and CO monitor signals do not activate TC3 fire evacuation signals.

Correlated zone and system alarm signaling applications

Correlated signaling applications are those in which sounder bases are triggered by associated correlation groups. This includes zone alarm and system alarm signaling applications. Detectors are added to the input side, and polarity reversal modules s are added to the output side of one or more correlation groups.

Zone alarm signaling applications

What is zone alarm signaling?

In zone alarm signaling applications, detectors and sounder bases are grouped by zone. All sounder bases within a zone automatically sound alarm signals when any detector in the zone initiates an alarm event.

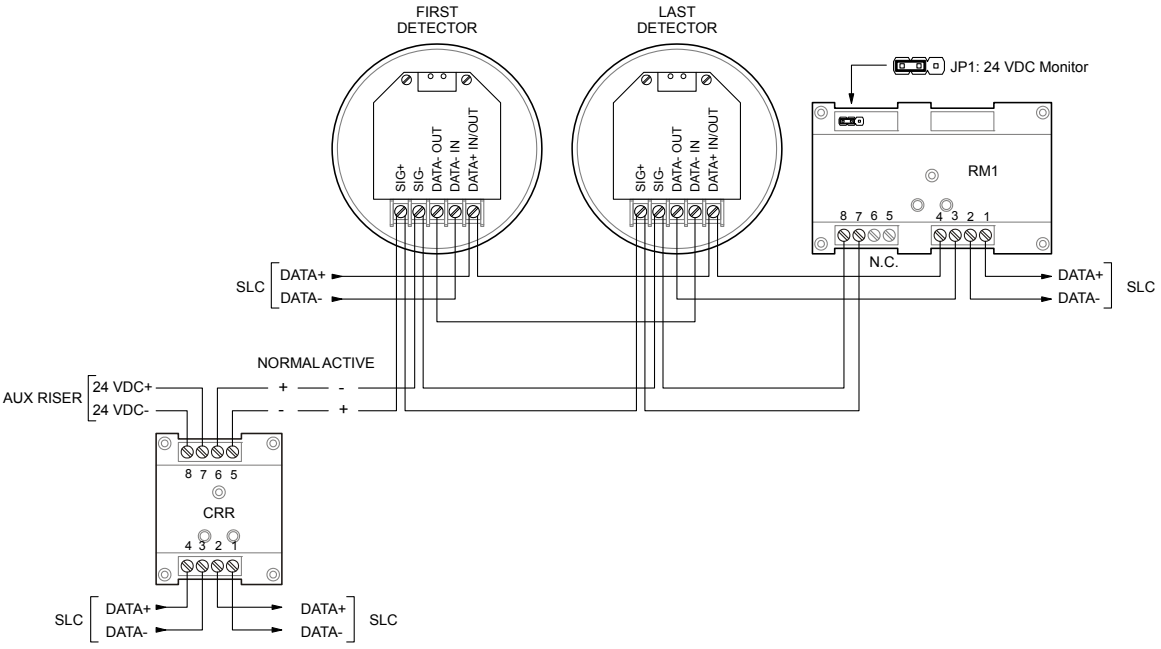
Since alarm signals are limited to the same notification zone, signal synchronization is not required. The sounder bases, once activated, continue to sound an alarm signal until:

- Smoke is cleared from the active detectors and the control panel is reset.
- Signal Silence is pressed.
- The control panel's Auto Signal Silence timer expires, if programmed. This can be from 5 to 30 minutes.
- The in-suite signal silence timer expires, if programmed. (See "What is in-suite signal silence?" on page 35 and on page 94.

Typical wiring for zone alarm signaling

The following figure shows sounder base wiring for zone alarm signaling.

Figure 58: Typical wiring for a zone alarm signaling application



- A polarity reversal module can be used to provide power to the sounder bases. You can omit the polarity reversal module if correlation groups are used to activate the sounder bases.
- The RM1 module is used to monitor riser polarity. You can also use a CT1 module and a PAM-1 control relay for this purpose.

Programming for zone alarm signaling

This application requires that you group detectors into zones and correlate inputs and outputs for each zone. Zone alarm signaling is a type of correlated signaling: You can set up a zone alarm signaling application by creating correlation groups for specific zones. When using correlation groups, detectors are added to the input side, and polarity reversal modules are added to the output side of one or more correlation groups.

The following instructions are written for “Zone 1” but can be applied to any zone.

To program a zone alarm signaling application:

1. Set the panel’s Event Notification option to Zone.
2. Configure the smoke detectors in Zone 1 as follows:

   Device Type: Smoke or Smoke Heat depending on the detector model

   Message Line 1: SMOKE_<N>

   Message Line 2: ZONE_01

   Base Type: Sounder

Follow: None, Head, Alarm, Alm + Vrfy, or Alm + PreAlm

Note: If alarm verification is required, set Device Type for Smoke Verified, set Verification and Alt Verification as required, set Follow Verification for No, and set Follow Pre Alarm for Yes.

3. Configure the polarity reversal or CT1 module as follows:

   Device Type: Relay Silence

   Message Line 1: ZONE_1

   Message Line 2: SOUNDERS

   Note: The polarity reversal module can be omitted if correlation groups are used to activate the sounder bases.

4. Configure the RM1 or CT1 module as follows:

   Device type: Monitor

   Message Line 1: ZONE_1

   Message Line 2: 24VDC_RISER

5. Configure Zone 01 as follows:

   Inputs: All detectors in Zone 1

   Outputs: The or polarity reversal or CT1 module labeled ZONE_1_SOUNDERS

   Correlation Groups: 001

   Status: Included

   Note: For best performance, use the fast correlation groups for bulk activations, such as entire floors and save the slower correlation groups for small sets of activations like a suite or hotel room. See “Programming fast groups for sounder bases” on page 95.

6. Configure Correlation 001 as follows:

   Inputs: Zone 1

   Outputs: The polarity reversal or CT1 module labeled ZONE_1 SOUNDERS

System alarm signaling applications

What is system alarm signaling?

In system alarm signaling applications, all sounder bases sound when any alarm signal-initiating device is activated. Signal synchronization is required because alarm signals are not limited to the same notification zone.

The sounder bases, once activated, continue to sound an alarm signal until:

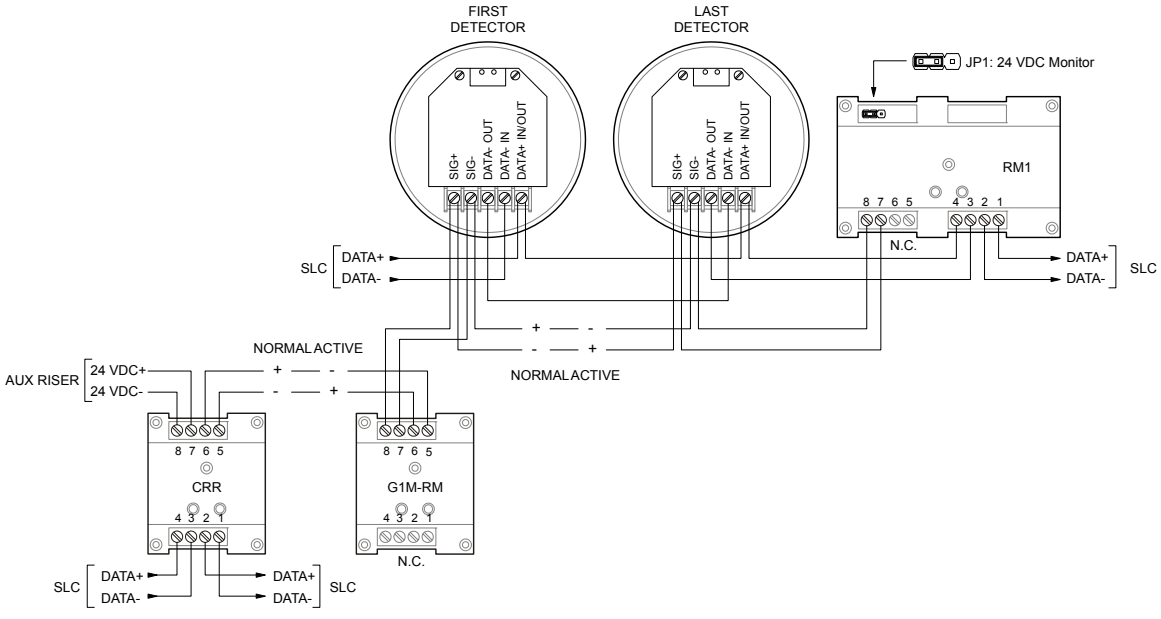
- Smoke is cleared from the active detectors and the control panel is reset.
- Signal Silence is pressed.
- The control panel's Auto Signal Silence timer expires, if programmed. This can be from 5 to 30 minutes.
- The in-suite signal silence timer expires, if programmed. (See "What is in-suite signal silence?" on page 35 and "Programming in-suite signal silence" on page 94.)

Typical wiring for system alarm signaling applications

The figure below shows the typical wiring for synchronized system alarm signaling.

A 24 VDC riser is required to supply power to the sounder bases regardless of riser polarity. Typically, the 24 VDC riser that supplies power to the sounder bases is supervised using an RM1 Riser Monitor module. You can also use a CT1 module and a PAM-1 control relay for this purpose. In addition a G1M-RM is required for synchronization.

Figure 59: Typical wiring for a system alarm signaling application



- A polarity reversal module can be used to provide power to the sounder bases. You can omit the polarity reversal module if correlation groups are used to activate the sounder bases.
- The RM1 module is used to monitor riser polarity. You can also use a CT1 module and a PAM-1 control relay for this purpose.
- The G1M-RM module is required to provide sounder synchronization.

Programming sounder bases for a local alarm signaling application

To program sounder bases for local alarm signaling:

1. Set the panel's Event Notification option to Device.
2. Configure the smoke detectors as follows:

   Message Line 1: SMOKE_<N>

   Base Type: Sounder

   Follow: None, Head, Alarm, Alm + Vrfy, or Alm + PreAlm
3. Configure the polarity reversal module as follows:

   Device Type: Relay Silence

   Message Line 1: SOUNDER_RLY_1

   Message Line 2: As required
4. Configure the RM1 or CT1 module as follows:

   Device type: Monitor

   Message Line 1: 24VDC_RISER

   Message Line 2: SOUNDER_RLY_1
5. Configure Correlation Group 001 as follows:

   Add/Remove Zone: As required

   Add/Remove NAC: Add all polarity reversal modules used to activate sounder bases

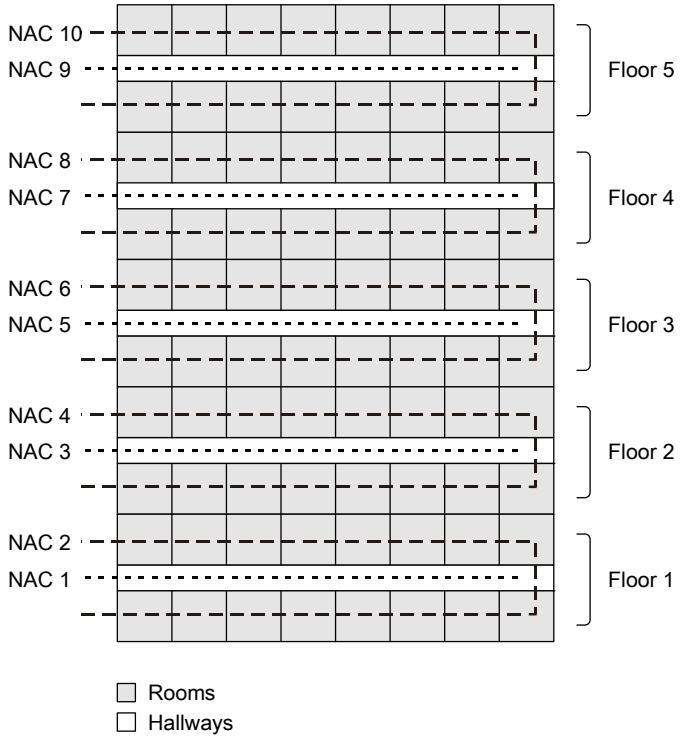
   Add/Remove Device: Add all alarm signal initiating devices

In-suite signal silence applications

This section provides high level instructions for creating an in-suite signal silence application based on the use of correlation groups. Additional background material and detailed instructions are also available. See:

- "What is in-suite signal silence?" on page 35
- "Programming in-suite signal silence" on page 94
- "What is a correlation group?" on page 33
- "Correlation group programming" on page 87

Figure 60: Building with a separate audible circuit for each floor and separate circuits for audibles within and not within dwelling units



Wiring

In-suite signal silence applications in residential occupancy buildings require separate signal circuits for each floor area. In addition, each floor area requires separate circuits for:

- Audible devices located within-suites or dwelling units
- Audible devices *not* located within-suites or dwelling units

Figure 60 above illustrates these requirements in a sample residential occupancy building with five floors. The illustration shows that:

- Separate audible signal circuits are provided for each floor
- Audible signal circuits 2, 4, 6, 8, and 10 are located inside dwelling units
- Audible signal circuits 1, 3, 5, 7, and 9 are located in hallways *not* within dwelling units.

Correlations

To enable in-suite auto signal silence, you need at least ‘N+2’ correlation groups, where N = the number of floor areas. You need: A correlation group for each floor, a hallway correlation group, and an “in-suite” correlation group. The following tables show the inputs and outputs for these groups.

To create correlations for in suite signal silence:

1. Create a set of correlations for each floor.
2. Create a single hallway correlation to control hallway sounders on all floors.
3. Create a single in-suite correlation for all floors to turn off sounders inside dwelling units on all floors except the floor of alarm.

Details of each step are described below.

Creating a set of correlations for each floor

Referring to the tables below, create a set of correlations — one for each floor. While the example given here is for a five-story building, you can adapt it to fit the number of separate floors (or other areas) in your application. Create one correlation for each floor (or area). These correlations ensure that if an alarm is detected on the floor, sounders located in dwelling units on the same floor will sound.

On each floor, link all input devices on the floor (both inside dwelling units and in hallways) to the sounders inside dwelling units on the same floor.

Notes

- Set the alarm activation count for each floor correlation to 1.
- Do not enable in-suite signal silence.

Floor 1 Correlation

Input	Output	No in-suite signal silence
Floor 1 dwelling and hallway inputs	Floor 1 dwelling and hallway audibles	

Floor 2 Correlation

Input	Output	No in-suite signal silence
Floor 2 dwelling and hallway inputs	Floor 2 dwelling and hallway audibles	

Floor 3 Correlation

Input	Output	No in-suite signal silence
Floor 3 dwelling and hallway inputs	Floor 3 dwelling and hallway audibles	

Floor 4 correlation

Input	Output	No in-suite signal silence
Floor 4 dwelling and hallway inputs	Floor 4 dwelling and hallway audibles	

Floor 5 correlation

Input	Output	
Floor 5 dwelling and hallway inputs	Floor 5 dwelling and hallway audibles	No in-suite signal silence

Creating a hallway correlation

The hallway correlation ensures that an alarm detected anywhere in the building will turn on all audibles located in hallways throughout the building.

On the input side of this correlation, add all input devices on all floors. Include all those inside dwelling units and all those in hallways.

On the output side, add all hallway sounders throughout the building.

Notes

- Set the alarm activation count for this correlation to 1.
- Do not enable in-suite signal silence.

Hallway Correlation

Input	Output
Occupant and hallway inputs on all floors	Hallway sounders on all floors

Creating an in-suite correlation group

The in-suite correlation is used to silence sounders inside dwelling units, except on the floor of alarm.

Create one in-suite correlation group. On the input side, add all input devices on all floors. Include those located inside dwelling units and those located in hallways.

On the output side, add all sounders located inside dwelling units on all floors.

Notes

- Set the alarm activation count for this correlation to 1.
- For this correlation only, enable in-suite signal silence.

In-Suite Signal Silence Correlation

Input	Output
Occupant and hallway inputs on all floors	Occupant sounders on all floors

How this application works

This application silences the audible alarm signals inside dwelling units, except on the floor of the alarm.

For example, if an alarm occurs on the third floor:

- The Floor 3 Correlation turns on the sounders on the floor of the alarm (including those inside dwelling units).
- The Hallway Correlation turns on hallway sounders throughout the building.
- The In-Suite Signal Silence Correlation turns on sounders in residences on all other floors.
- After 60 seconds, the In-Suite Signal Silence Correlation, which has in-suite signal silence enabled, silences sounders inside dwelling units on all other floors. These signals remain off until the in-suite signal silence timer expires or a subsequent alarm comes in.

Appendix E
Device types to personality codes correlation

Summary

Device types must be used when programming devices, but personality codes are described on the Signature Series installation sheets. This table correlates the different device types with their respective personality codes.

Table 53: Device types vs. personality codes

Model	Device type	Personality code
270	Pull Station	(1) Alarm - NO latching (Class B)
270B	Pull Station	(1) Alarm - NO latching (Class B)
270F	Pull Station	(1) Alarm - NO latching (Class B)
270P	Alarm (Ch2 only)	(1) Alarm - NO latching (Class B)
270P	Pull Station (Ch1 only)	(1) Alarm - NO latching (Class B)
270PB	Alarm (Ch2 only)	(1) Alarm - NO latching (Class B)
270PB	Pull Station (Ch1 only)	(1) Alarm - NO latching (Class B)
271	Pull Station	(1) Alarm - NO latching (Class B)
278	Pull Station	(1) Alarm - NO latching (Class B)
CC1	Continuous Non-Silenceable	(5) Signal - supervised output (Class B)
CC1	Continuous Non-Silenceable (Latched)	(5) Signal - supervised output (Class B)
CC1	Continuous Silenceable	(5) Signal - supervised output (Class B)
CC1	Supervised Output	(5) Signal - supervised output (Class B)

Model	Device type	Personality code
CC1	Supervised Output (Latched)	(5) Signal - supervised output (Class B)
CC1S	Continuous Non-Silenceable	(5) Signal - supervised output (Class B)
CC1S	Continuous Non-Silenceable (Latched)	(5) Signal - supervised output (Class B)
CC1S	Continuous Silenceable	(5) Signal - supervised output (Class B)
CC1S	Genesis Audible Visible Silence	(25) Signal - supervised auto sync output (Class B)
CC1S	Genesis Non-Silenceable	(25) Signal - supervised auto sync output (Class B)
CC1S	Supervised Output	(5) Signal - supervised output (Class B)
CC1S	Supervised Output (Latched)	(5) Signal - supervised output (Class B)
CC2	Continuous Non-Silenceable	(7) Riser Selector - supervised output (Class B)
CC2	Continuous Non-Silenceable (Latched)	(7) Riser Selector - supervised output (Class B)
CC2	Continuous Silenceable	(7) Riser Selector - supervised output (Class B)
CC2	Supervised Output	(7) Riser Selector - supervised output (Class B)
CC2	Supervised Output (Latched)	(7) Riser Selector - supervised output (Class B)
CR	Relay Non-Silenceable	(8) Signal - dry contact output
CR	Relay Non-Silenceable (Latched)	(8) Signal - dry contact output
CR	Relay Silence	(8) Signal - dry contact output
CR2	Relay Non-Silenceable	(8) Signal - dry contact output
CR2	Relay Non-Silenceable (Latched)	(8) Signal - dry contact output
CR2	Relay Silence	(8) Signal - dry contact output
CRR	Relay Non-Silenceable	(8) Signal - dry contact output
CRR	Relay Non-Silenceable (Latched)	(8) Signal - dry contact output
CRR	Relay Silence	(8) Signal - dry contact output
CT1	Alarm	(1) Alarm - NO latching (Class B)
CT1	Heat	(1) Alarm - NO latching (Class B)
CT1	Monitor	(3) Active - NO nonlatching (Class B)
CT1	Pull Station	(1) Alarm - NO latching (Class B)
CT1	Remote AC Fail	(3) Active - NO nonlatching (Class B)
CT1	Remote Drill	(3) Active - NO nonlatching (Class B)

Model	Device type	Personality code
CT1	Remote Reset	(3) Active - NO nonlatching (Class B)
CT1	Remote Signal Silence	(3) Active - NO nonlatching (Class B)
CT1	Smoke	(1) Alarm - NO latching (Class B)
CT1	Supervisory Latching	(4) Active - NO latching (Class B)
CT1	Supervisory Nonlatching	(3) Active - NO nonlatching (Class B)
CT1	Unlatch outputs	(3) Active - NO nonlatching (Class B)
CT1	Waterflow	(2) Alarm - NO delayed latching (Class B)
CT2	Alarm	(1) Alarm - NO latching (Class B)
CT2	Heat	(1) Alarm - NO latching (Class B)
CT2	Monitor	(3) Active - NO nonlatching (Class B)
CT2	Pull Station	(1) Alarm - NO latching (Class B)
CT2	Remote AC Fail	(3) Active - NO nonlatching (Class B)
CT2	Remote Drill	(3) Active - NO nonlatching (Class B)
CT2	Remote Reset	(3) Active - NO nonlatching (Class B)
CT2	Remote Signal Silence	(3) Active - NO nonlatching (Class B)
CT2	Smoke	(1) Alarm - NO latching (Class B)
CT2	Supervisory Latching	(4) Active - NO latching (Class B)
CT2	Supervisory Nonlatching	(3) Active - NO nonlatching (Class B)
CT2	Unlatch outputs	(3) Active - NO nonlatching (Class B)
CT2	Waterflow	(2) Alarm - NO delayed latching (Class B)
DTS	Duct Alarm	(1) Alarm - NO latching (Class B)
DTS	Duct Supervisory Latching	(4) Active - NO latching (Class B)
DTS	Duct Supervisory Nonlatching	(3) Active - NO nonlatching (Class B)
HFS	Heat	(1) Alarm - NO latching (Class B)
HRS	Heat ROR	(1) Alarm - NO latching (Class B)
IM	Monitor	(1) Alarm - NO latching (Class B)
IO	Relay Non-Silence NC	(32) Monitor - NO input/output NC
IO	Relay Non-Silence NC (Latched)	(32) Monitor - NO input/output NC
IO	Relay Non-Silence NO	(31) Monitor - NO input/output NO
IO	Relay Non-Silence NO (Latched)	(31) Monitor - NO input/output NO
IO	Relay Silence NC	(32) Monitor - NO input/output NC
IO	Relay Silence NO	(31) Monitor - NO input/output NO
IPHS	Smoke	(1) Alarm - NO latching (Class B)
IPHS	Smoke Verified	(1) Alarm - NO latching (Class B)

Model	Device type	Personality code
IPHS	Supervisory Latching	(1) Alarm - NO latching (Class B)
IPHS	Supervisory Nonlatching	(3) Active - NO nonlatching (Class B)
IS	Smoke	(1) Alarm - NO latching (Class B)
IS	Smoke Verified	(1) Alarm - NO latching (Class B)
MAB	2Wire Alarm	(13) Alarm - two-wire smoke unverified (Class B)
MAB	2Wire Alarm Class A	(20) Alarm - two-wire smoke unverified (Class A)
MAB	2Wire Alarm Verify	(14) Alarm - two-wire smoke verified (Class B)
MAB	2Wire Alarm Verify Class A	(21) Alarm - two-wire smoke verified (Class A)
MAB	Alarm	(1) Alarm - NO latching (Class B)
MAB	Alarm Class A	(9) Alarm - NO latching (Class A)
MAB	Continuous Non-Silenceable	(16) Signal - supervised output (Class B)
MAB	Continuous Non-Silenceable (Latched)	(16) Signal - supervised output (Class B)
MAB	Continuous Non-Silenceable Class A	(15) Signal - supervised output (Class A)
MAB	Continuous Non-Silenceable Class A (Latched)	(15) Signal - supervised output (Class A)
MAB	Continuous Silenceable	(16) Signal - supervised output (Class B)
MAB	Continuous Silenceable Class A	(15) Signal - supervised output (Class A)
MAB	Heat	(1) Alarm - NO latching (Class B)
MAB	Heat Class A	(9) Alarm - NO latching (Class A)
MAB	Monitor	(3) Active - NO nonlatching (Class B)
MAB	Monitor Class A	(11) Active - NO nonlatching (Class A)
MAB	None	(0) No Personality
MAB	Pull Station	(1) Alarm - NO latching (Class B)
MAB	Pull Station Class A	(9) Alarm - NO latching (Class A)
MAB	Remote AC Fail	(3) Active - NO nonlatching (Class B)
MAB	Remote AC Fail Class A	(11) Active - NO nonlatching (Class A)
MAB	Remote Drill	(3) Active - NO nonlatching (Class B)
MAB	Remote Reset	(3) Active - NO nonlatching (Class B)
MAB	Remote Signal Silence	(3) Active - NO nonlatching (Class B)
MAB	Smoke	(1) Alarm - NO latching (Class B)
MAB	Smoke Class A	(9) Alarm - NO latching (Class A)

Model	Device type	Personality code
MAB	Supervised Output	(16) Signal - supervised output (Class B)
MAB	Supervised Output (Latched)	(16) Signal - supervised output (Class B)
MAB	Supervised Output Class A	(15) Signal - supervised output (Class A)
MAB	Supervised Output Class A (Latched)	(15) Signal - supervised output (Class A)
MAB	Supervisory Latching	(4) Active - NO latching (Class B)
MAB	Supervisory Latching Class A	(12) Active - NO latching (Class A)
MAB	Supervisory Nonlatching	(3) Active - NO nonlatching (Class B)
MAB	Supervisory Nonlatching Class A	(11) Active - NO nonlatching (Class A)
MAB	Waterflow	(2) Alarm - NO delayed latching (Class B)
MAB	Waterflow Class A	(10) Alarm - NO delayed latching (Class A)
MCC1	Continuous Non-Silenceable	(5) Signal - supervised output (Class B)
MCC1	Continuous Non-Silenceable (Latched)	(5) Signal - supervised output (Class B)
MCC1	Continuous Silenceable	(5) Signal - supervised output (Class B)
MCC1	Supervised Output	(5) Signal - supervised output (Class B)
MCC1	Supervised Output (Latched)	(5) Signal - supervised output (Class B)
MCC1S	Continuous Non-Silenceable	(5) Signal - supervised output (Class B)
MCC1S	Continuous Non-Silenceable (Latched)	(5) Signal - supervised output (Class B)
MCC1S	Continuous Silenceable	(5) Signal - supervised output (Class B)
MCC1S	Genesis Audible Visible Silence	(25) Signal - supervised auto sync output (Class B)
MCC1S	Genesis Non-Silenceable	(25) Signal - supervised auto sync output (Class B)
MCC1S	Supervised Output	(5) Signal - supervised output (Class B)
MCC1S	Supervised Output (Latched)	(5) Signal - supervised output (Class B)
MCC2	Continuous Non-Silenceable	(7) Riser Selector - supervised output (Class B)
MCC2	Continuous Non-Silenceable (Latched)	(7) Riser Selector - supervised output (Class B)
MCC2	Continuous Silenceable	(7) Riser Selector - supervised output (Class B)
MCC2	Supervised Output	(7) Riser Selector - supervised output (Class B)
MCC2	Supervised Output (Latched)	(7) Riser Selector - supervised output (Class B)
MCR	Relay Non-Silenceable	(8) Signal - dry contact output

Model	Device type	Personality code
MCR	Relay Non-Silenceable (Latched)	(8) Signal - dry contact output
MCR	Relay Silence	(8) Signal - dry contact output
MCRR	Relay Non-Silenceable	(8) Signal - dry contact output
MCRR	Relay Non-Silenceable (Latched)	(8) Signal - dry contact output
MCRR	Relay Silence	(8) Signal - dry contact output
MCT2	Alarm	(1) Alarm - NO latching (Class B)
MCT2	Heat	(1) Alarm - NO latching (Class B)
MCT2	Monitor	(3) Active - NO nonlatching (Class B)
MCT2	Pull Station	(1) Alarm - NO latching (Class B)
MCT2	Remote AC Fail	(3) Active - NO nonlatching (Class B)
MCT2	Remote Drill	(3) Active - NO nonlatching (Class B)
MCT2	Remote Reset	(3) Active - NO nonlatching (Class B)
MCT2	Remote Signal Silence	(3) Active - NO nonlatching (Class B)
MCT2	Smoke	(1) Alarm - NO latching (Class B)
MCT2	Supervisory Latching	(4) Active - NO latching (Class B)
MCT2	Supervisory Nonlatching	(3) Active - NO nonlatching (Class B)
MCT2	Unlatch Outputs	(3) Active - NO nonlatching (Class B)
MCT2	Waterflow	(2) Alarm - NO delayed latching (Class B)
MIO	Relay Non-Silence NC	(32) Monitor - NO input/output NC
MIO	Relay Non-Silence NC (Latched)	(32) Monitor - NO input/output NC
MIO	Relay Non-Silence NO	(31) Monitor - NO input/output NO
MIO	Relay Non-Silence NO (Latched)	(31) Monitor - NO input/output NO
MIO	Relay Silence NC	(32) Monitor - NO input/output NC
MIO	Relay Silence NO	(32) Monitor - NO input/output NC
MM1	Monitor	(3) Active - NO nonlatching (Class B)
MM1	Unlatch Outputs	(3) Active - NO nonlatching (Class B)
MRM1	Monitor	(23) Riser monitor - 24 VDC
PCOS	Smoke alarm + CO Alarm	(64) CO Active3 - latching
PCOS	Smoke alarm + CO Monitor Latching	(64) CO Active3 - latching
PCOS	Smoke alarm + CO Monitor Nonlatching	(67) CO Active3 - nonlatching
PCOS	Smoke alarm + CO Supv Latching	(64) CO Active3 - latching
PCOS	Smoke alarm + CO Supv Nonlatching	(67) CO Active3 - nonlatching

Model	Device type	Personality code
PCOS	Smoke supervisory latching + CO alarm	(64) CO Active3 - latching
PCOS	Smoke supervisory latching + CO supervisory latching	(64) CO Active3 - latching
PCOS	Smoke supervisory latching + CO supervisory nonlatching	(67) CO Active3 - nonlatching
PCOS	Smoke supervisory latching + CO monitor latching	(64) CO Active3 - latching
PCOS	Smoke supervisory latching + CO monitor nonlatching	(67) CO Active3 - nonlatching
PCOS	Smoke supervisory nonlatching + CO alarm	(55) Photo nonlatching - CO latching
PCOS	Smoke supervisory nonlatching + CO supervisory latching	(55) Photo nonlatching - CO latching
PCOS	Smoke supervisory nonlatching + CO supervisory nonlatching	(56) Photo nonlatching - CO nonlatching
PCOS	Smoke supervisory nonlatching + CO monitor latching	(55) Photo nonlatching - CO latching
PCOS	Smoke supervisory nonlatching + CO monitor nonlatching	(56) Photo nonlatching - CO nonlatching
PCOS	Smoke verified + CO alarm	(64) CO Active3 - latching
PCOS	Smoke verified + CO supervisory latching	(64) CO Active3 - latching
PCOS	Smoke verified + CO supervisory nonlatching	(67) CO Active3 - nonlatching
PCOS	Smoke verified + CO monitor latching	(64) CO Active3 - latching
PCOS	Smoke verified + CO monitor nonlatching	(67) CO Active3 - nonlatching
PHS	Heat + Smoke Alarm	(50) Photo Active3 Latching
PHS	Heat + Supv Smoke Latching	(50) Photo Active3 Latching
PHS	Heat + Supv Smoke Nonlatching	(51) Photo Active3 Nonlatching
PHS	Smoke Heat	(1) Alarm - NO latching (Class B)
PHS	Smoke Verified	(1) Alarm - NO latching (Class B)
PHS	Supervisory Latching	(1) Alarm - NO latching (Class B)
PHS	Supervisory Nonlatching	(3) Active - NO nonlatching (Class B)
PS	Smoke	(1) Alarm - NO latching (Class B)
PS	Smoke Verified	(1) Alarm - NO latching (Class B)
PS	Supervisory Latching	(1) Alarm - NO latching (Class B)

Model	Device type	Personality code
PS	Supervisory Nonlatching	(3) Active - NO nonlatching (Class B)
REL	Monitor	(3) Active - NO nonlatching (Class B)
REL	Pull Station	(1) Alarm - NO latching (Class B)
REL	Supervised Output	(16) Signal - supervised output (Class B)
REL	None	n/a
RM1	Monitor	(23) Riser monitor - 24 VDC
SD	Duct Alarm	(1) Alarm - NO latching (Class B)
SD	Duct Supervisory Latching	(4) Active - NO latching (Class B)
SD	Duct Supervisory Nonlatching	(3) Active - NO nonlatching (Class B)
T3T4	Auto Sync Output NonSilenceable	(70) Unsupervised Relay Output
T3T4	Auto Sync Silenceable	(70) Unsupervised Relay Output
UM	2Wire Alarm	(13) Alarm - two-wire smoke unverified (Class B)
UM	2Wire Alarm Class A	(20) Alarm - two-wire smoke unverified (Class A)
UM	2Wire Alarm Verify	(14) Alarm - two-wire smoke verified (Class B)
UM	2Wire Alarm Verify Class A	(21) Alarm - two-wire smoke verified (Class A)
UM	Alarm	(1) Alarm - NO latching (Class B)
UM	Alarm Class A	(9) Alarm - NO latching (Class A)
UM	Continuous Non-Silenceable	(16) Signal - supervised output (Class B)
UM	Continuous Non-Silenceable (Latched)	(16) Signal - supervised output (Class B)
UM	Continuous Non-Silenceable Class A	(15) Signal - supervised output (Class A)
UM	Continuous Non-Silenceable Class A (Latched)	(15) Signal - supervised output (Class A)
UM	Continuous Silenceable	(16) Signal - supervised output (Class B)
UM	Continuous Silenceable Class A	(15) Signal - supervised output (Class A)
UM	Heat	(1) Alarm - NO latching (Class B)
UM	Heat Class A	(9) Alarm - NO latching (Class A)
UM	Monitor	(3) Active - NO nonlatching (Class B)
UM	Monitor Class A	(11) Active - NO nonlatching (Class A)
UM	None	(0) No Personality
UM	Pull Station	(1) Alarm - NO latching (Class B)
UM	Pull Station Class A	(9) Alarm - NO latching (Class A)

Model	Device type	Personality code
UM	Relay Non-Silenceable	(8) Signal - dry contact output
UM	Relay Non-Silenceable (Latched)	(8) Signal - dry contact output
UM	Relay Silence	(8) Signal - dry contact output
UM	Remote AC Fail	(3) Active - NO nonlatching (Class B)
UM	Remote AC Fail Class A	(11) Active - NO nonlatching (Class A)
UM	Remote Drill	(3) Active - NO nonlatching (Class B)
UM	Remote Reset	(3) Active - NO nonlatching (Class B)
UM	Remote Signal Silence	(3) Active - NO nonlatching (Class B)
UM	Smoke	(1) Alarm - NO latching (Class B)
UM	Smoke Class A	(9) Alarm - NO latching (Class A)
UM	Supervised Output	(16) Signal - supervised output (Class B)
UM	Supervised Output (Latched)	(16) Signal - supervised output (Class B)
UM	Supervised Output Class A	(15) Signal - supervised output (Class A)
UM	Supervised Output Class A (Latched)	(15) Signal - supervised output (Class A)
UM	Supervisory Latching	(4) Active - NO latching (Class B)
UM	Supervisory Latching Class A	(12) Active - NO latching (Class A)
UM	Supervisory Nonlatching	(3) Active - NO nonlatching (Class B)
UM	Supervisory Nonlatching Class A	(11) Active - NO nonlatching (Class A)
UM	Unlatch Outputs	(3) Active - NO nonlatching (Class B)
UM	Waterflow	(2) Alarm - NO delayed latching (Class B)
UM	Waterflow Class A	(10) Alarm - NO delayed latching (Class A)
WTM	Waterflow (Ch1 only)	(2) Alarm - NO delayed latching (Class B)
WTM	Supervisory Latching (Ch2 only)	(4) Active - NO latching (Class B)
WTM	Supervisory Nonlatching (Ch2 only)	(3) Active - NO nonlatching (Class B)

Appendix F
Releasing Module

Summary

The GSA-REL is an analog addressable device that communicates directly with the fire alarm panel's Signature loop controller. The GSA-REL controls sprinkler, per-action, and deluge systems, and may also be used to release extinguishing agents, such as CO2, Halon, or foam. The GSA-REL offers a wide range of options that ensures dependable service while preventing the unnecessary release of extinguishing agents.

For information about installing your GSA-REL module, see the *GSA-REL Technical Reference Manual* (P/N 387515) that came with your GSA-REL module. For information about adding a GSA-REL to your project and correlating your GSA-REL, see the CU Help.

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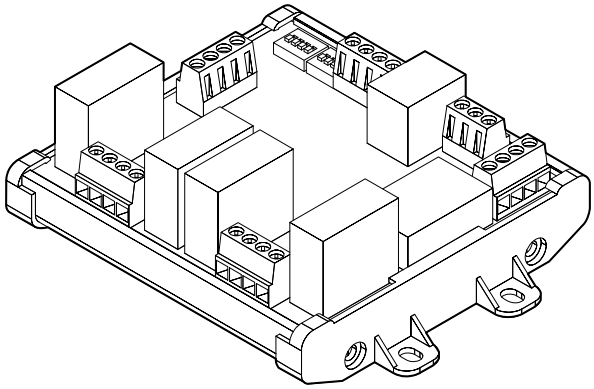
Figure 61: GSA-REL releasing module



Do’s and don’ts

Use the following do’s and don’ts when configuring and using a GSA-REL module and panel events.

- Configure the GSA-REL through the CU. Do not use the front panel to program the GSA-REL to perform auto programming, incremental programming, adding GSA-REL devices to a correlation group, and correlation group copy.
- City tie NAC has no effect on the delay timer configuration or reset/activate/restore operations.
- Don’t configure the delay timer or reset events for in-suite correlation groups. This will deviate the timed operations function.
- Don’t configure In-suite for groups containing GSA-REL outputs.
- When configuring common outputs in correlation groups that contain different delay times, the common output activations follow the correlation group with the least delay time.
- Don’t configure the User key (activate/restore/disable) or the Control menu (activate/restore) for correlation groups containing REL modules.
- Don’t configure the GSA-REL abort (monitor) for correlation groups that activate pre- release or release circuits.
- Don’t configure GSA-REL Pull or Monitor inputs for correlations containing its own prerelease and release circuits.
- Don’t configure latchable outputs to reset activate. Restore groups the intended operation and may not be seen for latched outputs. Since the output is latched, the output does not restore at the end of the reset.
- You cannot restore latched outputs by pressing Reset. Users are notified when outputs are latched.

- Don’t perform drill operations on GSA-REL devices.
- Don’t configure GSA-REL Monitor & Abort for zones.
- Group copy allows a user to copy only input and output devices, events, and zones. It does not copy correlation properties, such as in-suite, Delay, and Activation count. Don’t perform a Group copy for correlation groups with GSA-REL devices.
- Don’t configure Disable members using the User key for correlation groups with panel events.
- Install a relay confirmation circuit to indicate when the release and prerelease circuits are active.
- Don’t power the GSA-REL from the panel. You must power the GSA-REL using a compatible power supply. See the GSA-REL Technical Reference Manual (P/N 387515) for a list of compatible power supplies.

GSA-REL fault messages

Table 54 below lists the messages you may see for the GSA-REL on the panel’s LCD.

Table 54: GSA-REL fault messages

Device	Condition	LED	LCD message
Monitor (Abort)	Short	Monitor	Monitor
	Open	Trouble	Trouble Abort [1] Expanded message: Monitor Open
Pull (Manual)	Short	Alarm	Pull station Manual [1] Expanded message: Pull station
	Open	Trouble	Trouble Manual [1] Expanded message: Pull station open
Supervised Output (Prerelease_1)	Short	Trouble	Trouble Prerelease_1 [1] Expanded message: Supervised output short
	Open	Trouble	Trouble Prerelease_1 [1] Expanded message: Supervised output open
None (Prerelease_2)	Short	Trouble	Trouble Prerelease_2 [1] Expanded message: Supervised output short

Table 54: GSA-REL fault messages

Device	Condition	LED	LCD message
	Open	Trouble	Trouble Prerelease_2 [1] Expanded message: Supervised output open
None Pull (Manual) Supervised Output (Prerelease_1) None (Prerelease_2) Supervised Output (Release_1) None (Release_2)	No riser	Trouble	Trouble Expanded message: Internal fault [2}
Supervised Output (Release_1)	Short	Trouble	Trouble Release_1 [1] Expanded message: Supervised output short
	Open	Trouble	Trouble Release_1 [1] Expanded message: Supervised output open
None (Release_2)	Short	Trouble	Trouble Release_2 [1] Expanded message: Supervised output short
	Open	Trouble	Trouble Release_2 [1] Expanded message: Supervised output open

[1] Message requires user programming

Specifications

Table 55 list the power riser and signaling line circuit specification for the GSA-REL.

Table 55: Specifications

Power riser	
Input voltage	18.4 to 27.4 VDC
Standby current	17 mA, max.
Alarm current	190 mA, min. to 4.0 A, max. depending on circuit load
Line resistance	See GSA-REL Technical Reference Manual (P/N 387515)
Signaling line circuit	
Voltage	15.2 to 19.95 VDC
Standby current	1.0 mA
Alarm current	1.0 mA
Line resistance	See loop controller installation sheet

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