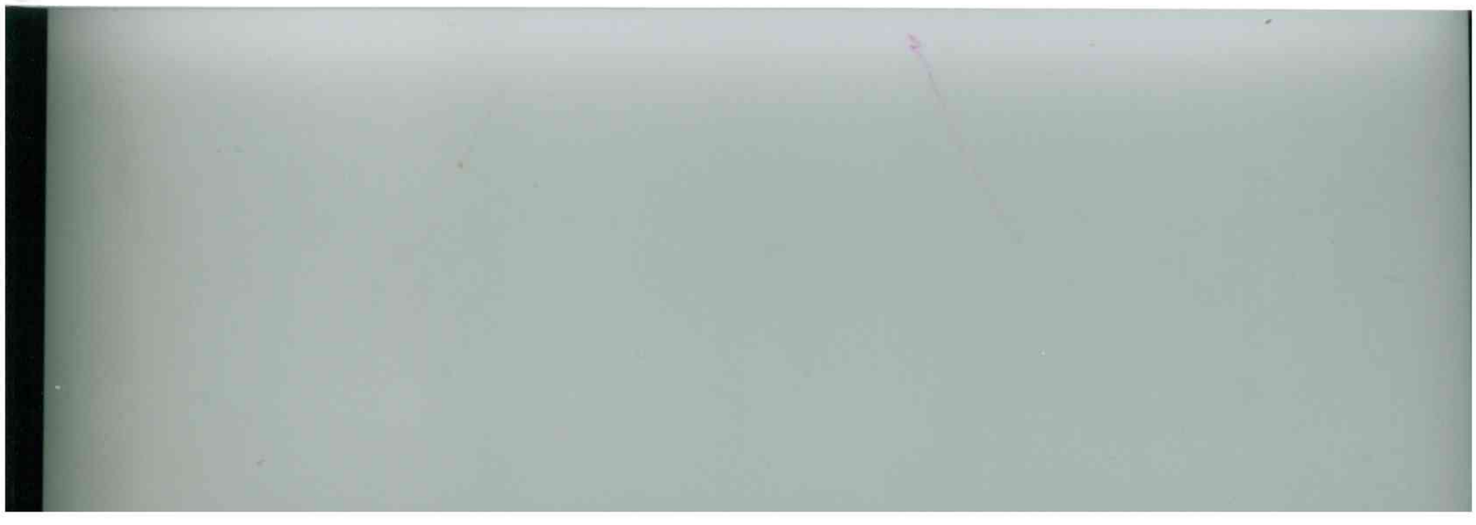
Kidde

VS1 and VS4 Technical Reference Manual

P/N 3102351-EN • REV 008 • ISS 25AUG21



Copyright © 2021 Carrier. All rights reserved.

This document may not be copied in whole or in part or otherwise reproduced without prior written consent from Carrier, except where specifically permitted under US and international copyright law.

Trademarks and patents The VS1 and VS4 name and Kidde logo are trademarks of Carrier. KESMobile is a trademark of Carrier.

Other trade names used in this document may be trademarks or registered trademarks of the manufacturers or vendors of the respective products.

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 their own expense.

Contact information For contact information, see www.kidde-esfire.com.

Content

Important information iv
Minimum system requirements vii
To get started vii

Chapter 1 **Installation and wiring 1**
Panel backbox installation 2
Panel electronics installation 4
Panel backbox wire routing 5
AC power wiring 6
Panel transformer wiring 7
Battery wiring (TB8) 8
Notification appliance circuit wiring (TB2) 10
Addressable device loop wiring 12
Alarm, trouble, and supervisory relay wiring (TB3) 16
Remote annunciator wiring (TB4) 17
Auxiliary/smoke power output wiring 19
SA-DACT wiring 21
SA-232 wiring 23
SA-USB wiring 26
SA-CLA wiring 28
SA-ETH wiring 29
CTM module wiring 30
RPM module wiring 32

Chapter 2 **Front panel programming 35**
UL/ULC programming requirements 37
Getting started 39
Device type descriptions 53
Displaying the Program menu 63
Setting the time and date 63
Setting daylight saving time 64
Changing the passwords 65
Restoring the factory default settings 65
Setting up the programmable keys 66
Clearing the event history log 69
Updating the firmware 70
Restarting the panel 71
Enabling RS-232 communication 71
Auto programming the panel 72
Performing incremental programming 78
Adding and removing devices from programmed systems 81

Advanced programming 85

Chapter 3 **System operation 139**
Operation overview 141
LCD display screen 142
System LEDs 146
LED display expander LEDs 147
Control buttons 148
Component descriptions 152
Events with event messages 153
Event ID numbers and descriptions 156
Viewing event details 162
Resetting the panel 162
Silencing panel and annunciator buzzers 163
Silencing notification appliances 163
Conducting a lamp test 165
Activating and restoring output devices 165
Unlatching latched output devices 166
Activating and restoring panel NACs 166
Activating and restoring sensor bypass 167
Activating and restoring gas accelerated response 168
Disabling and enabling devices 169
Disabling and enabling zones 170
Disabling and enabling panel events 171
Disabling and enabling loop events 172
Disabling and enabling panel NACs 174
Disabling and enabling the dialer and network 174
Initiating a fire drill 175
Conducting a walk test 175

Chapter 4 **Reports 179**
Basic steps for viewing and printing reports 180
History report 180
Walk Test report 181
Device Maintenance report 182
System Status report 183
Correlation Groups report 183
Correlation Group Configuration report 183
Zone report 184
System Configuration report 184
Internal Status report 185
Device Details report 185
Diagnostics reports 186
Internal Fault report 187
Releasing report 188

Canceling a report 188

Chapter 5 Diagnostics, maintenance, and testing 189
Preventive maintenance schedule 190
Fast Ground Check 190
Recalibrate device 190
Flash Device LED 191
Loop comm check 191
Control panel testing 192
Electronic testing of a device (test fire) 193
SA-DACT testing 194
Conducting a lamp test 195
Starting and stopping a walk test 195
Using HyperTerminal 197
Replacing a device in alarm 199

Appendix A Panel specifications 201
Control panel specifications 202

Appendix B Worksheets 205
Battery calculation worksheet 206
Notification appliance circuit calculations worksheet 210
Notification appliance voltage drop calculation worksheet 216
RZI16-2 24V IN riser maximum wire run calculation 218
Device loop maximum wire length worksheet 219
Correlation groups worksheet 225
Device settings worksheet 226
Loop worksheet 229
Panel configuration worksheet 230
Panel operation worksheet 233
Zone settings worksheet 234

Appendix C Applications 237
CAN/ULC-S559 applications 238
Local alarm signaling applications 241
Correlated zone and system alarm signaling applications 245
SA-FSB Building management system communication 250
KESMobile and Web Portal System 251
In-suite signal silence applications 251

Appendix D Device types to personality codes correlation 257

Appendix E Releasing Module 267

Index 271

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. Carrier 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 Carrier products beyond the cost of repair or replacement of any defective products. Carrier 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, Carrier 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 their 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. When system maintenance, testing or modifications could result in the transmission of signals from the fire alarm system to a supervising station, consult the supervising station to determine the best time to send these signals (i.e., "off-peak" hours).

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 a 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.

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

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 4.
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.
8. Check the field wiring for opens, grounds, and shorts before connecting.
9. Connect AC power and ground wiring. See “AC power wiring” on page 6. The panel cannot be started on batteries only.
10. Connect panel low voltage wiring. See “Panel transformer wiring” on page 7.
11. Turn on AC power.
12. Connect the batteries. See “Battery wiring (TB8)” on page 8.
13. Program the panel. See Chapter 2 “Front panel programming” on page 35. 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.

Content

Panel backbox installation 2
Panel electronics installation 4
Panel backbox wire routing 5
AC power wiring 6
Panel transformer wiring 7
Battery wiring (TB8) 8
Notification appliance circuit wiring (TB2) 10
Addressable device loop wiring 12
Alarm, trouble, and supervisory relay wiring (TB3) 16
Remote annunciator wiring (TB4) 17
Auxiliary/smoke power output wiring 19
SA-DACT wiring 21
SA-232 wiring 23
SA-USB wiring 26
SA-CLA wiring 28
SA-ETH wiring 29
    Circuit specifications 29
CTM module wiring 30
RPM module wiring 32

Panel backbox installation

Note: Observe all applicable codes and standards, as well as AHJ and owner guidance when selecting a location for the panel installation.

The panel backbox can be surface 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 in Figure 2 using fasteners that are suitable for the type of wall surface and weight of the backbox and panel, including standby batteries.
3. Route the field wiring through the designated knock-out locations to ensure separation of power-limited and non-power limited wiring.

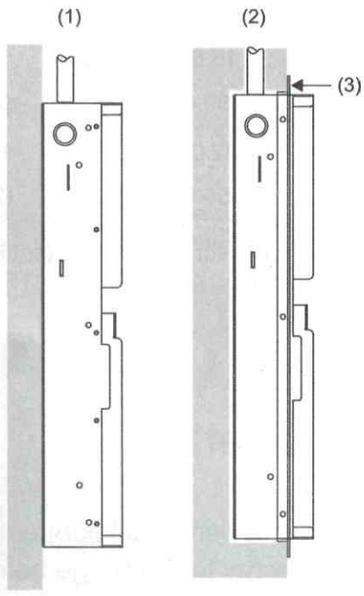
   Refer to "Panel backbox wire routing" on page 5.

To semiflush mount the panel backbox:

1. Frame the interior wall (as required) to support the entire weight of the fully installed control unit, including standby batteries.
2. Install a semiflush trim ring (optional) to the backbox.
3. Route the field wiring through the designated knock-out locations to ensure separation of power-limited and non-power limited wiring.

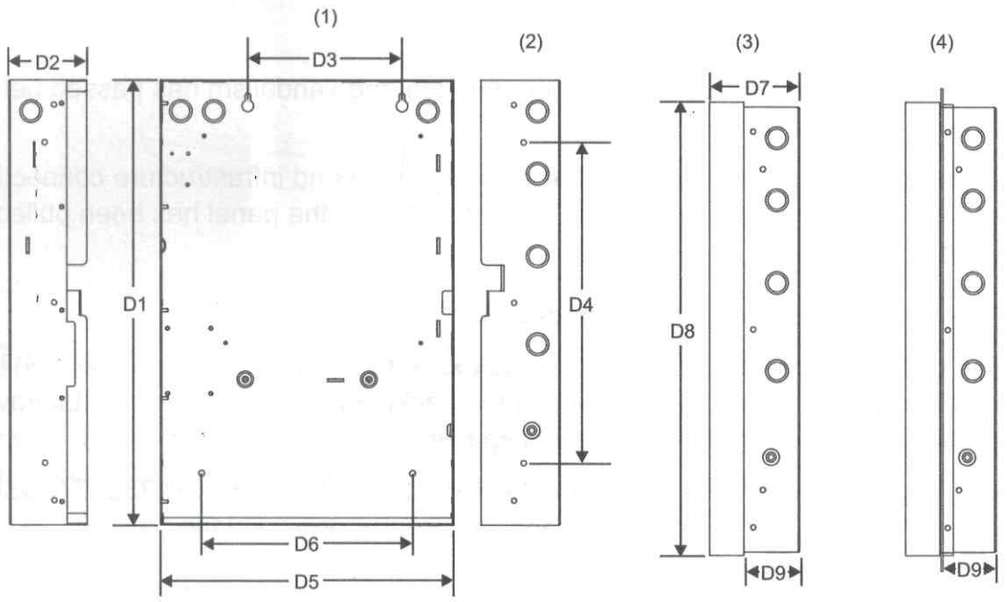
   Refer to "Panel backbox wire routing" on page 5.
4. Fasten the panel backbox to the framing studs where indicated.

Figure 1: Surface and semiflush mounting details



(1) Surface mount
(2) Semiflush mount
(3) Trim skirt

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



(1) Surface mounting holes
(2) Semiflush mounting holes
(3) Backbox with door attached
(4) 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)
VS4	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

WARNING: Electrocution hazard. To avoid personal injury or death from electrocution, remove all sources of power and allow stored energy to discharge before installing or removing equipment.

The panel electronics are packaged separately from the backbox to prevent damage during backbox installation. The control unit electronics are factory assembled to a plastic mounting chassis and must be installed in the panel backbox to maintain the system's NRTL listing.

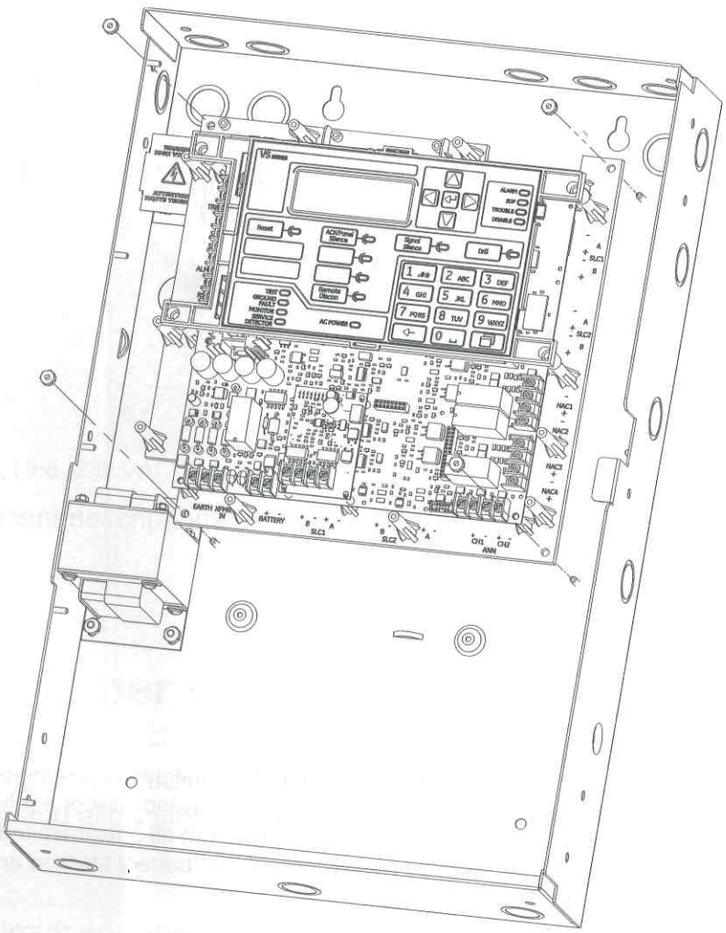
Notes

- Be sure that any possibility for construction damage and vandalism has passed before installing the panel electronics.
- Install the panel electronics only after backbox fastening and infrastructure connections are complete and all required system wiring for connection to the panel has been pulled into the backbox.

To install the panel electronics in the backbox:

1. 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.
2. Mount and connect the panel option modules (SA-DACT, SA-ETH, SA-232, SA-USB, V-SLC2-1, and V-SLC2-2) to the main panel electronics or backplane.

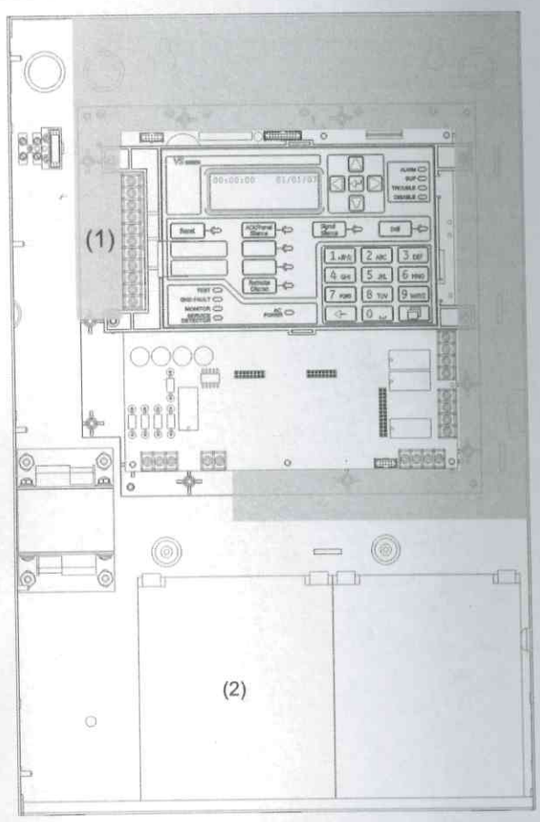
Figure 3: Panel electronics installation



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 nonpowerlimited source, all wiring on terminal block TB3 must be NPFPL, NPFPLR, or NPFPLP rated wire or equivalent, in accordance with the NFPA 70 National Electrical Code and routed separately from all power-limited wiring.
(2) Other than battery wiring, no other wiring shall be routed through the battery storage area when batteries are installed in this enclosure.

AC power wiring

Circuit specifications

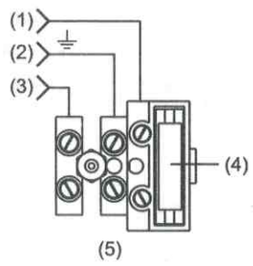
- VS1 panel: 120 V, 60 Hz, 1.3 A or 230 V, 50/60 Hz, 0.62 A from dedicated branch supply
- VS4 panel: 120 V, 60 Hz, 2.0 A or 230 V, 50/60 Hz, 0.97 A from dedicated branch supply

WARNING: Electrocution hazard. To avoid personal injury or death from electrocution, remove all sources of power and allow stored energy to discharge before installing or removing equipment. 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.

Terminate the incoming AC power wiring as shown in Figure 5.

Figure 5: AC power wiring



(1) Line
(2) Earth ground
(3) Neutral (120 VAC), Line (230 VAC)
(4) 5 A, 250 V, SLO-BLO (Littelfuse P/N 2450005)
(5) 120 or 230 VAC primary power connection

Note: See "Component descriptions" on page 152 for the location of the wiring block in the backbox.

Panel transformer wiring

WARNING: Electrocution hazard. To avoid personal injury or death from electrocution, remove all sources of power and allow stored energy to discharge before installing or removing equipment.

Incoming power circuit specifications

- VS1 panel: 120 V, 60 Hz, 1.3 A or 230 V, 50/60 Hz, 0.62 A from dedicated branch supply
- VS4 panel: 120 V, 60 Hz, 2.0 A or 230 V, 50/60 Hz, 0.97 A from dedicated branch supply

Low voltage circuit specifications

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

Terminate the primary and secondary transformer wiring as shown in Figure 6 and Figure 7.

Figure 6: Transformer secondary wiring location

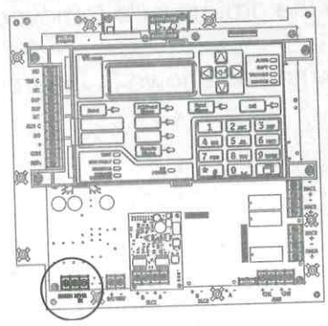
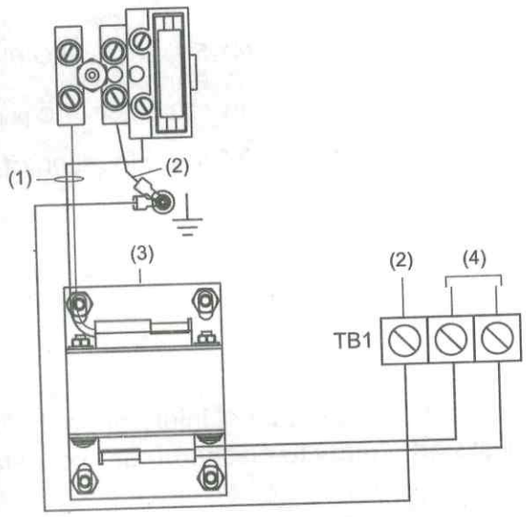


Figure 7: Transformer primary and secondary wiring



(1) 120 or 230 VAC IN
(2) Earth ground
(3) Transformer
(4) 24 VAC IN

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 12 VDC, 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 VS4 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 206.

Table 3: Batteries for VS1 and VS4 panels

Model	Rating
12V4A	12 volts, 4.5 Ah
12V6A5	12 volts, 7.2 Ah
12V10A	12 volts, 11 Ah
12V17A	12 volts, 18 Ah
12V24A	12 volts, 26 Ah

Figure 8: Battery wiring location

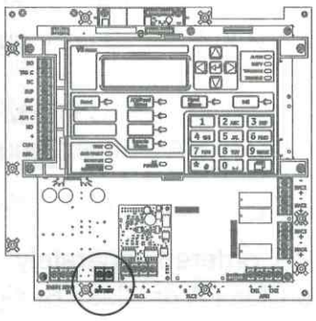
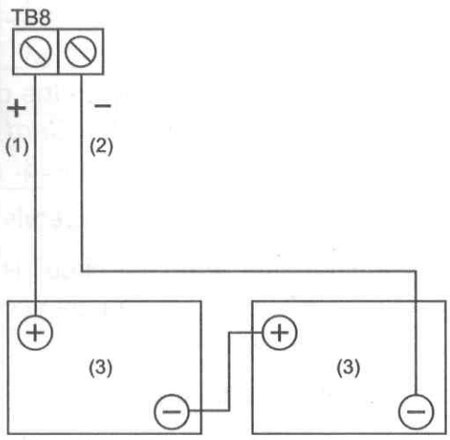


Figure 9: Battery wiring



(1) Red
(2) Black
(3) 12 VDC battery

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
- 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
- VS4 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), ordered separately
- 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 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 28.
- 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.
- If the riser is used for more than one notification zone, install in accordance with the survivability from attack by fire requirements in NFPA 72 National Fire Alarm and Signaling Code.

Figure 10: NAC wiring location

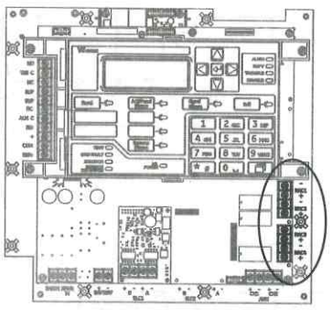


Figure 11: VS1 panel Class B NAC wiring

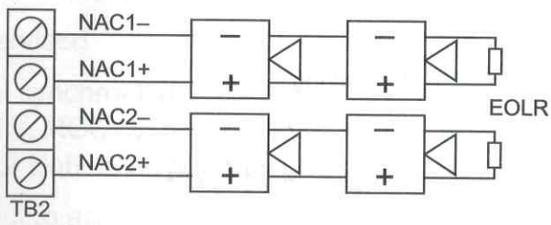


Figure 12: VS4 panel Class B NAC wiring

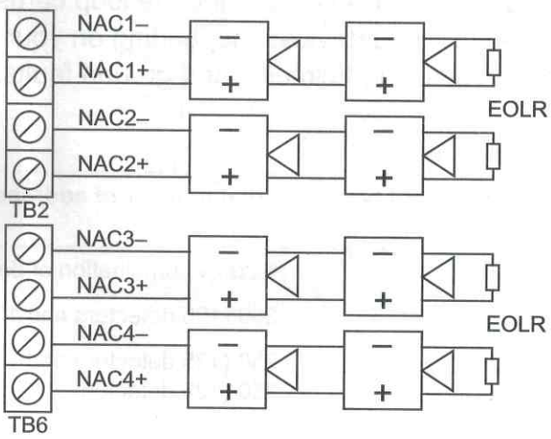
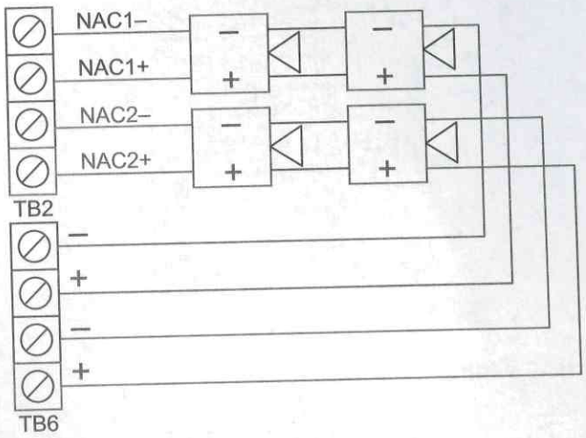


Figure 13: VS4 panel Class A NAC wiring



Note: For VS1 Class A NAC wiring, see "SA-CLA wiring".

Addressable device loop wiring

The VS1 and VS4 control panels have addressable device circuits that you can use with addressable detectors and modules (Table 4). The VS1 supports up to 64 detectors or modules. The VS4 accommodates two loop cards, and the loop cards can be a single loop or a dual loop. The VS4 supports up to 1,000 devices, depending on your configuration. The loop circuit is supervised for open circuits, short circuits, and ground faults.

Table 4: Total supported device addresses

Panel type	Number of loop cards installed	Loop card type	Total number of addresses supported
VS1	1	V-SLC2-1	64 (any combination of detectors or modules)
VS4	1	V-SLC2-1	250 (125 detectors and 125 modules)
VS4	2	V-SLC2-1 V-SLC2-1	250 (125 detectors and 125 modules) 250 (125 detectors and 125 modules)
VS4	1	V-SLC2-2	250 (125 detectors and 125 modules) 250 (125 detectors and 125 modules)
VS4	1 1	V-SLC2-1 V-SLC2-2	250 (125 detectors and 125 modules) 250 (125 detectors and 125 modules) 250 (125 detectors and 125 modules)
VS4	2	V-SLC2-2 V-SLC2-2	250 (125 detectors and 125 modules) 250 (125 detectors and 125 modules) 250 (125 detectors and 125 modules) 250 (125 detectors and 125 modules)

Note: For a complete list of devices that can be connected to this circuit, refer to *VS1 and VS4 Series Compatibility List* (P/N 3102354).

Circuit specifications

- Class B, Class A, or Class X
- Communication line voltage: Maximum 20.6 V peak-to-peak
- Circuit current: 0.5 A max.
- Allowable circuit resistance: 66 Ω max.
- Allowable circuit capacitance: 0.5 µF max.
- Resistance between isolators: Limited only by overall wire run lengths
- Isolators: 64 maximum per loop (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 CC1S, MCC1S, or 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

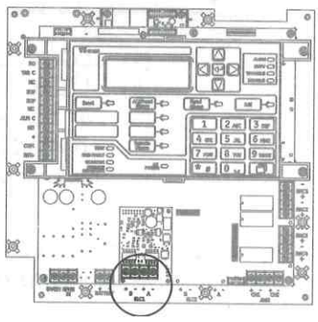
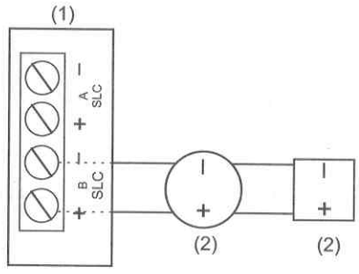


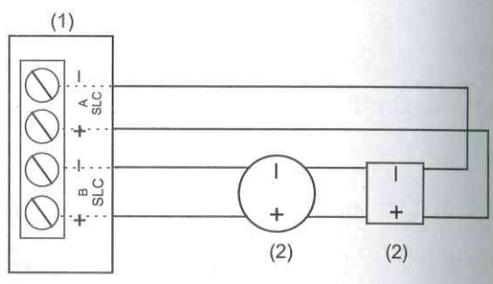
Figure 15: Class B wiring



(1) Loop card

(2) Loop device

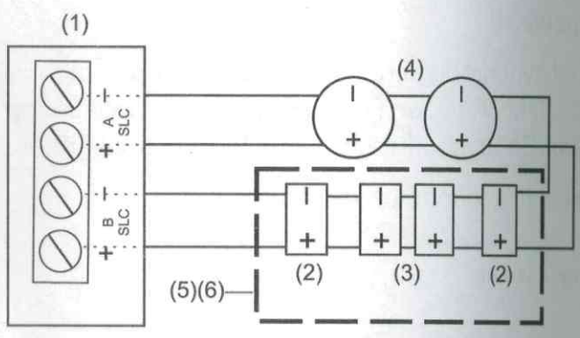
Figure 16: Class A wiring [1]



(1) Loop card

(2) Loop device

Figure 17: Class X wiring [2]



(1) Loop card
(2) Isolator module
(3) SLC devices
(4) SLC devices with an isolator base
(5) UL/ULC listed enclosure
(6) For Class X wiring, un-isolated devices must be mounted in a cabinet with isolators on the incoming and outgoing wiring.

Notes for Figure 16 and Figure 17.

[1] For Class A wiring, isolator modules and isolator detector bases are required to prevent wire-to-wire shorts on the signaling line circuit wiring from adversely affecting other segments of the loop. Do not install more than 50 addressable devices between isolators, per NFPA 72.

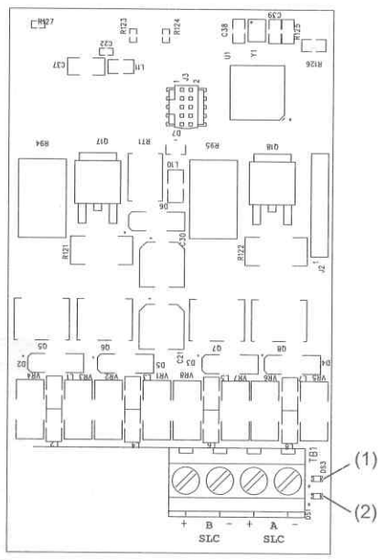
[2] For Class X wiring, isolator modules and isolator detector bases are required to prevent wire-to-wire shorts on the signaling line circuit wiring from adversely affecting any devices of the loop.

Loop card LEDs

There are two LEDs on the card for each SLC that indicate SLC communication status. See Figure 18 and Figure 19 for LED functions and location.

The installation location of the card on the panel determines what panel SLC the LEDs are associated with for VS4 that support dual SLC cards and provide two installation locations. See Figure 20.

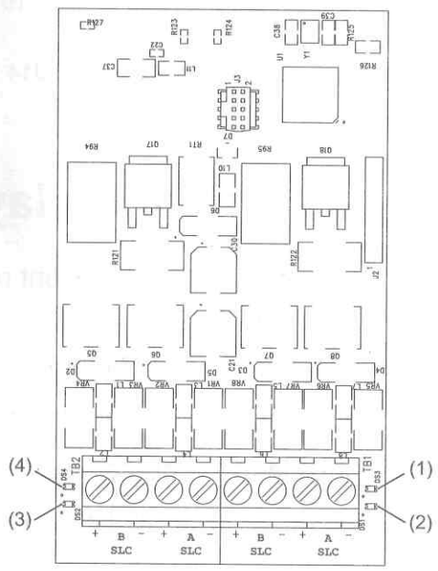
Figure 18: Single SLC interface card LEDs (VS1 and VS4 panels)



(1) LED DS3: SLC fault: Solid ON to indicate an open fault. Flashes to indicate a short fault.

(2) LED DS1: Device communication: Flashes to indicate normal device communications.

Figure 19: Dual SLC interface card LEDs (VS4 panels only)



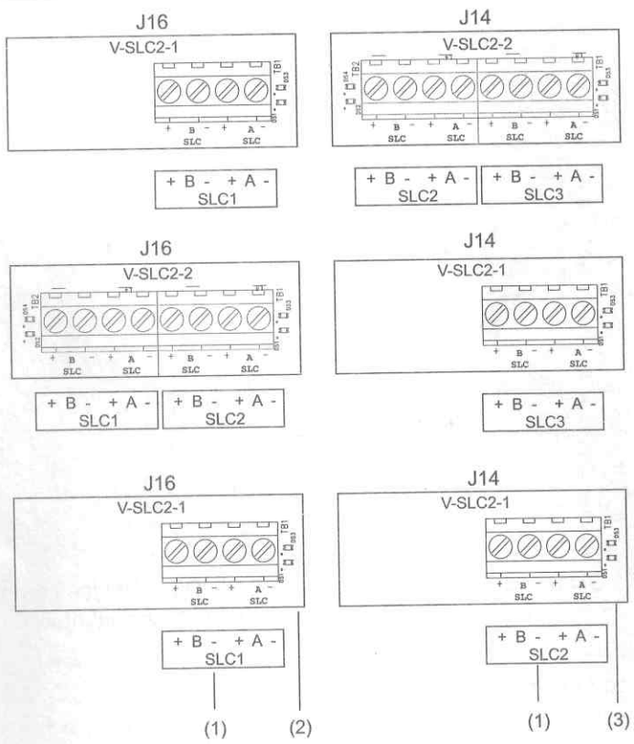
(1) LED DS3: SLC fault: Solid ON to indicate an open fault. Flashes to indicate a short fault.

(2) LED DS1: Device communication: Flashes to indicate normal device communications.

(3) LED DS2: Device communication: Flashes to indicate normal device communications.

(4) LED DS4: SLC fault: Solid ON to indicate an open fault. Flashes to indicate a short fault.

Figure 20: Panel SLC number configurations



(1) Panel label
(2) Connector J16 (primary position)
(3) Connector J14 (secondary position)

Alarm, trouble, and supervisory relay wiring (TB3)

The control unit provides three pre-programmed common event relays for alarm, supervisory, and trouble events. These relays are not field configurable.

- 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, Class E
- Supervisory: Form A, 24 VDC at 1 A resistive, Class E

Figure 21: Terminal wiring location

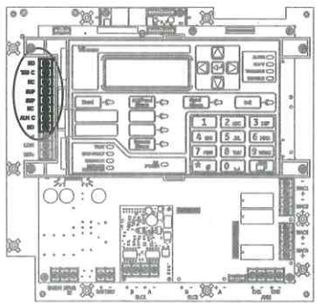
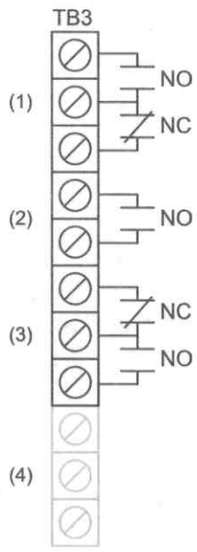


Figure 22: Relay wiring terminals



(1) Common trouble relay
(2) Common supervisory relay
(3) Common alarm relay
(4) Auxiliary/Smoke power output

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 VS1 panel requires the SA-CLA card to support Class A and redundant Class B circuits. Refer to "SA-CLA wiring" 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 *K-R Series Remote Annunciator Installation and Operation Guide* (P/N 3102382) for detailed wiring information.
- Installation limits are determined by the AHJ

Figure 23: Remote annunciator wiring location

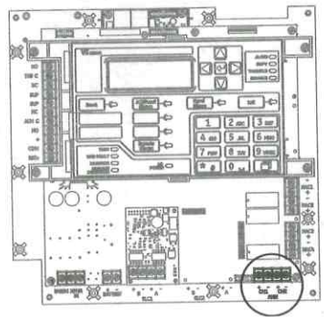
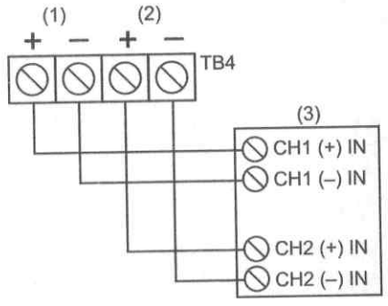


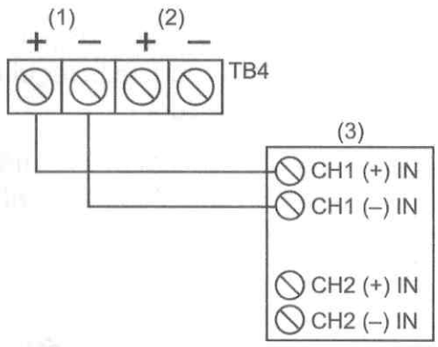
Figure 24: Annunciator channel wiring (Class A)



(1) Channel 1
(2) Channel 2
(3) Annunciator

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

Figure 25: Annunciator channel wiring (Class B)



(1) Channel 1
(2) Channel 2
(3) Annunciator

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 VS4 Series Compatibility List* (P/N 3102354).

Circuit specifications

- Circuit voltage range: 21.9 to 28.3 V
- AUX 1 + AUX 2 can supply 0.5 A of standby current. If more than 0.5 A of standby current 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 VS4 Series Compatibility List (P/N 3102354). Also refer to the REL Technical Reference Manual (P/N 387515) for a list of REL compatible power supplies, if you need to power REL module.

- Continuous circuit (AUX power 1): 24 VDC nominal at 500 mA (up to 1 Amp of a current is available on AUX 1 if you reduce the total available control panel NAC alarm current by the total amount of AUX 1 + AUX 2 alarm current over 500 mA). Use this circuit to supply 24 VDC continuous power. A SMK module is required when using the MAB module to support two-wire smoke detectors.
- Resettable circuit (AUX power 2): 24 VDC nominal at 500 mA (standby and alarm). 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 26: Auxiliary/smoke power wiring location

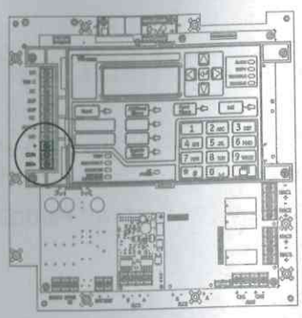


Figure 27: Auxiliary/smoke power output terminals



(1) Auxiliary/Smoke power output
(2) Resettable (AUX 2)
(3) Continuous (AUX 1)

SA-DAC

The optional S
station over a t

Table 5: DACRs

Receiver
Ademco
FBII
Osborne-Hoffm
Bosch
Silent Knight
Sur-Gard

Note: Instal
SA-DACT c
telephone c

Phone line
line 1 conn

The SA-D
of each cc
RJ-31X o

Circuit s
- Opera
- Phon
- Phon
- Comi

Figure 28

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 5: 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
Bosch	D6600	Contact ID
Silent Knight	9500, 9800	Contact ID
Sur-Gard	MLR1, MLR2, MCDI TLR, TLR+, SG-SLR, MLR2000	Contact ID

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.

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 in Figure 28.

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)
- Communication format: Contact ID (SIA DC-05)

Figure 28: SA-DACT wiring location

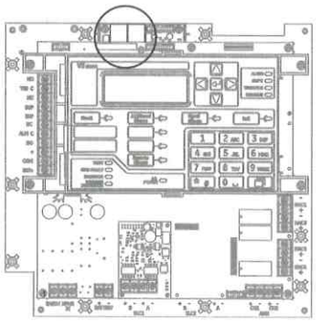
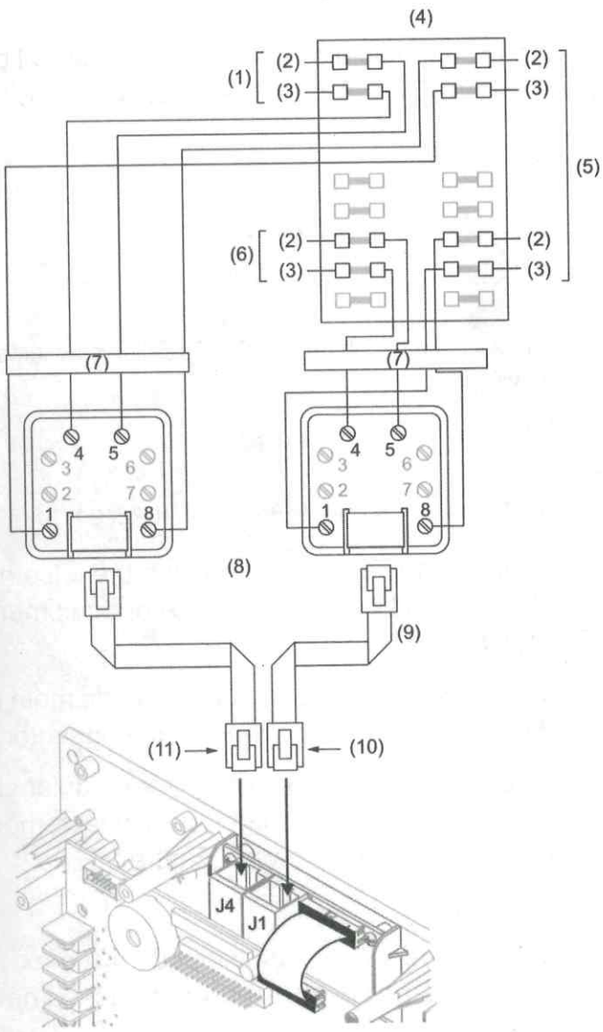


Figure 29: SA-DACT wiring



(1) TELCO Line 2
(2) Tip
(3) Ring
(4) Protected premises punch down block
(5) PBX
(6) TELCO Line 1
(7) Telephone protector
(8) RJ-31X block (supplied by installer)
(9) 8-position, 4-conductor modular cords (supplied by the customer)
(10) LINE 1
(11) LINE 2

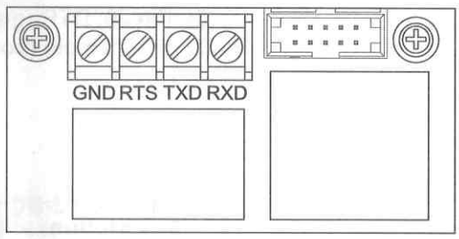
SA-232 wiring

The optional SA-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 30: SA-232 wiring terminals



Printer wiring

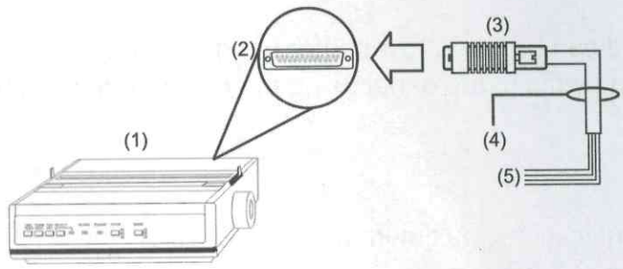
Notes

- The printer must be configured through programming for proper operation.
- A USB to serial converter may be required for the following procedure.

To install wiring to a printer:

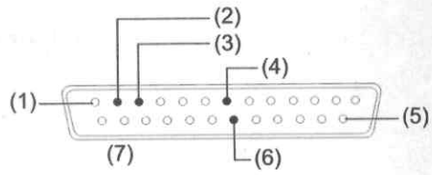
1. Locate the serial port on the back of the printer.
2. Connect the DB-25 end of the RS-232 cable to the serial port on the back of the printer.
3. Connect the other end of the RS-232 cable to the RS-232 card.

Figure 31: Printer wiring



(1) Printer
(2) DB-25 serial port on back of printer
(3) DB-25 male
(4) RS-232 cable
(5) To RS-232 card

Figure 32: DB-25 pin connections



(1) Pin 1
(2) Pin 2: TXD (red wire)
(3) Pin 3: RXD (white wire)
(4) Pin 7: COM (black wire)
(5) Pin 25
(6) Pin 20: DTR (green wire)
(7) DB-25 male (front view)

Table 6: 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)

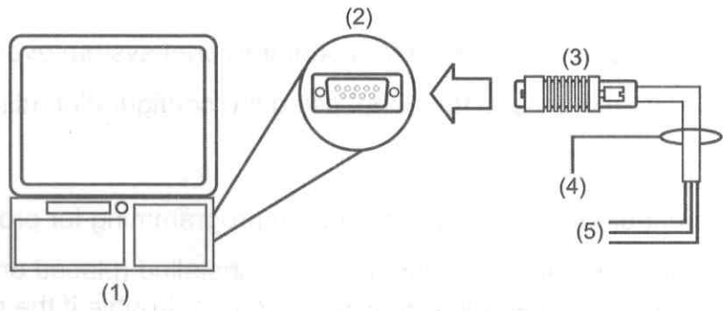
Computer download wiring

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.

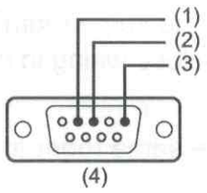
   Note: A USB to DB-9 converter may be required, as most computers no longer include serial ports.
3. Connect the DB-9 end of the RS-232 cable to the COM port on the back of the computer.
4. Connect the other end of the RS-232 cable to the SA-232 card.

Figure 33: Computer download wiring



(1) Computer
(2) DB-9 COM port on back of computer
(3) DB-9 female
(4) RS-232 cable
(5) To RS-232 card

Figure 34: Pin designations on female DB-9 plug (back view)



(1) Pin 2 RXD
(2) Pin 3 TXD
(3) Pin 5 COM
(4) DB-9 plug

Table 7: 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-USB wiring

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

Specifications

- The printer must be enabled and configured through programming for proper operation.
- Do not install JP1 (item 2, Figure 35). If jumper JP1 is installed (placed on both pins), the printer will not function. The panel will only display a printer trouble if the mode is set to supervised.
- Operating current (standby or alarm): 14 mA nominal, 20 mA max.
- Printer communication speed: 9600 baud
- Power-limited and unsupervised. Supervised for a single open and positive ground when the Supervised Printer panel programming option is enabled.
- Locate unsupervised USB printers in the same room and within 20 ft. (6.1 m) of the equipment to which they connect. Enclose wiring in conduit or equivalent protection against mechanical injury.
- Locate supervised USB printers in the same room as the equipment to which they connect.

Printer wiring

To wire to a printer:

1. If you have a computer connected to the SA-USB card, disconnect it.
2. Locate the USB port on the back of the printer. Refer to *PT-1S Fire Alarm Printer Installation Sheet* (P/N 3100989) for details.
3. Connect a USB 2.0 A-to-B cable, purchased separately, to the printer USB port.
4. Connect the other end of the USB 2.0 cable to the SA-USB card, connector J3 (item 3, Figure 35).
5. If installed on both pins, remove jumper JP1 (item 2, Figure 35) from one pin on the SA-USB card as shown in Figure 35.

Figure 35: SA-USB jumper, LEDs, and connectors

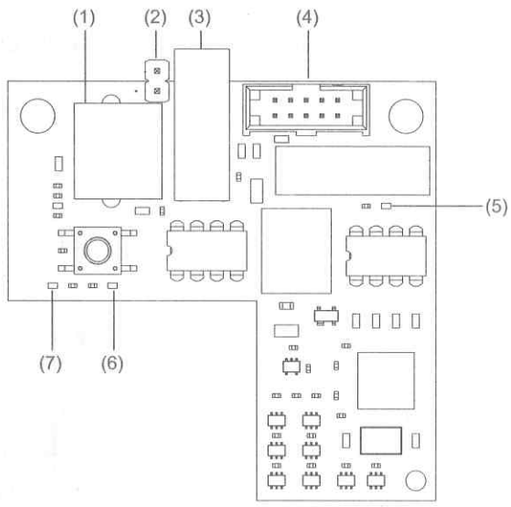


Table 8: SA-USB jumper, LEDs, and connectors

Item	Label	Description
(1)	J4	USB 2.0, Type B device port: Used as a temporary connection to a PC.
(2)	JP1	Programming jumper: Shown in the not installed position. When installed over both pins, the jumper is used during programming the SA-USB to update firmware. This can *only* be accomplished with assistance from Edwards Technical Support.
(3)	J3	USB 2.0, Type A host port: Used to connect supported printers.
(4)	J1	Used to connect the SA-USB to the panel electronics board.
(5)	DS2	TXD LED: Used to indicate all communications to the panel for both the printer and all PC applications.
(6)	DS1	RXD LED: Used to indicate all communications from the panel for both the printer and all PC applications.
(7)	DS4	TRBL LED: Used to indicate when it detects any printer trouble, such as off-line, out of paper, or the printer disconnected. **Note:** The panel will only display a printer trouble if the mode is set to supervised.

Computer wiring

To wire to a computer:

1. If you have a printer connected to the SA-USB card, disconnect it.
2. Locate a USB port on the computer.
3. Connect a USB 2.0 A-to-B cable, purchased separately, to the computer USB port.
4. Connect the other end of the USB 2.0 cable to the to the SA-USB card, connector J4 (item 1, Figure 35).

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 36: SA-CLA Class A NAC wiring

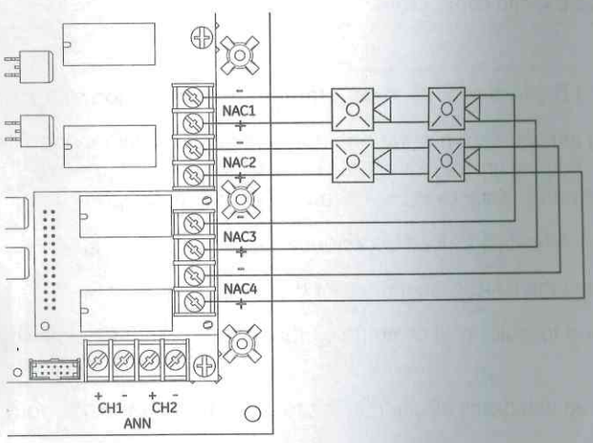
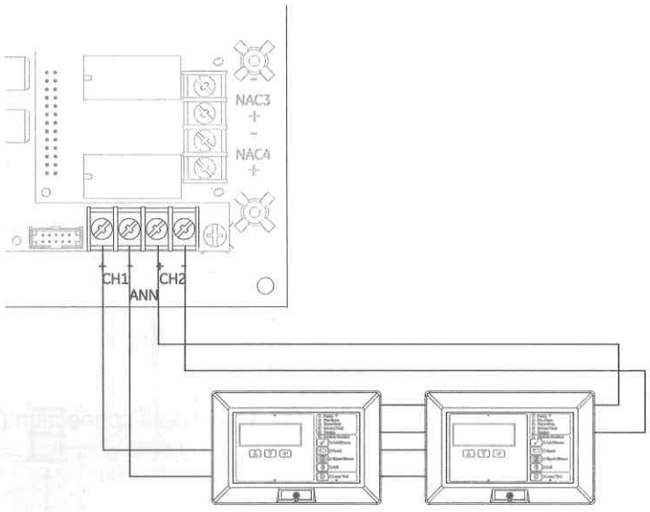


Figure 37: SA-CLA Redundant Class B remote annunciator circuit



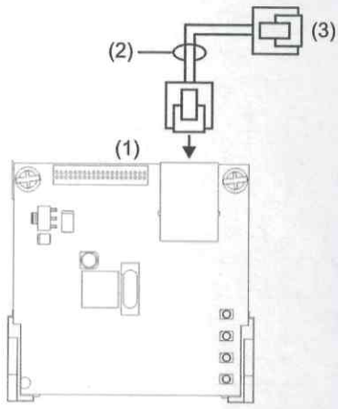
SA-ETH wiring

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. The optional SA-ETH is required for TCP/IP communications between the panel and a computer operating the Vigilant Site Monitor (VSM) software.

Circuit specifications

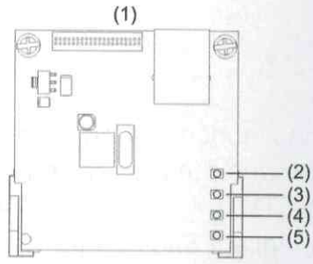
- Ethernet: 10/100BaseT
- Network cable: Cat 5/6 crossover cable or straight through cable
- Operating current (standby or alarm): 34 mA nominal, 41 mA max.
- Wire runs: 200 feet (60 m) max., Cat 5 cable (panel to communication equipment)

Figure 38: SA-ETH wiring



(1) Ethernet card
(2) Network cable
(3) To network connection (PC, router, switch, etc.)

Figure 39: SA-ETH LEDs



(1) Ethernet card
(2) LED 4 (DS4): Collision
(3) LED 3 (DS3): Duplex
(4) LED 2 (DS2): Speed
(5) LED 1 (DS1): Link

CTM module wiring

The City Tie Module (CTM) 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 *CTM City Tie Module Installation Sheet* (P/N 3101025).

Requirements

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

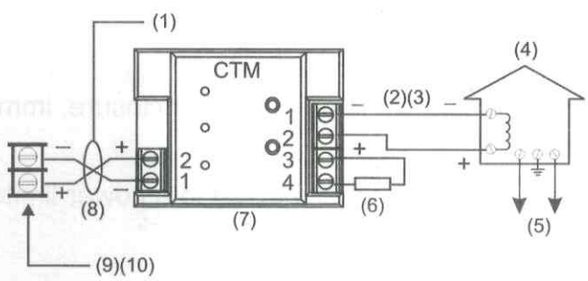
- The CTM must be connected to either a panel NAC, or a NAC module
- The NAC used must be dedicated to CTM use only

- 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

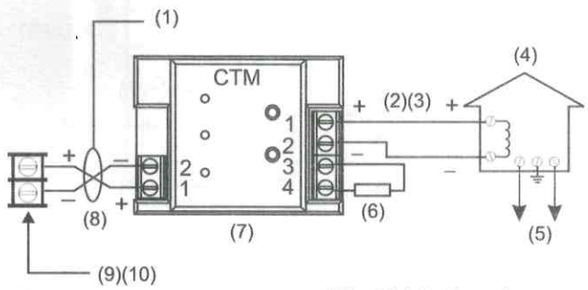
The following wiring diagrams show how the polarity switches during an alarm condition.

Figure 40: CTM module wiring (panel in normal condition)



(1) Normal condition
(2) 200 mA into a 14.5 Ω trip coil max. loop resistance = 25 Ω
(3) This circuit is nonpower-limited and is supervised for grounds and opens, but not shorts
(4) Master box
(5) Public fire alarm reporting system
(6) 15 kΩ end-of-line resistor
(7) CTM must be mounted in the same room as the panel
(8) Supervised and power-limited
(9) Notification appliance circuit (NAC)
(10) NAC must be programmed for city tie

Figure 41: CTM module wiring (panel in alarm condition)



(1) Alarm condition
(2) 200 mA into a 14.5 Ω trip coil max. loop resistance = 25 Ω
(3) This circuit is nonpower-limited and is supervised for grounds and opens, but not shorts
(4) Master box
(5) Public fire alarm reporting system
(6) 15 kΩ end-of-line resistor
(7) CTM must be mounted in the same room as the panel
(8) Supervised and power-limited
(9) Notification appliance circuit (NAC)
(10) NAC must be programmed for city tie

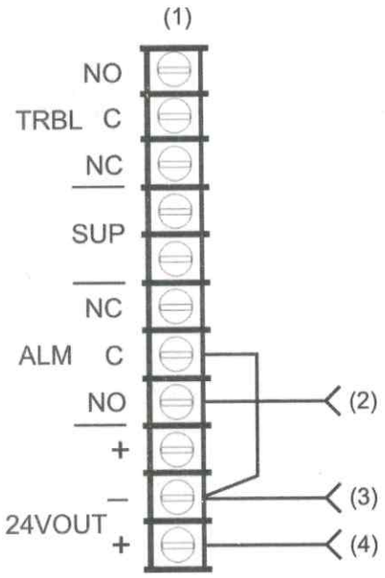
RPM module wiring

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 *RPM Reverse Polarity Module Installation Sheet* (P/N 3100430).

Notes

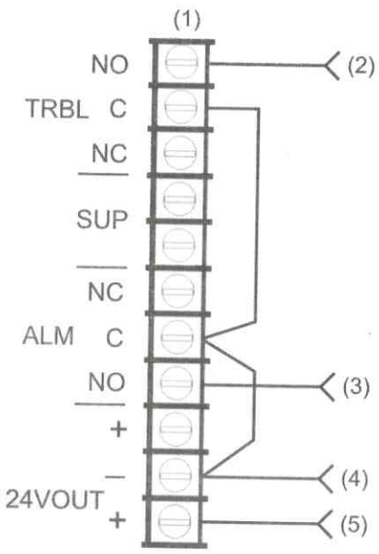
- The RPM must be mounted in conduit, in an MFC-A enclosure, immediately adjacent to the panel.
- All relays are unsupervised and must be connected to a power-limited source.

Figure 42: Alarm transmitted only



(1) Control panel TB3
(2) From ALRM on RPM (brown wire)
(3) From COM on RPM (black wire)
(4) From +24 on RPM (red wire)

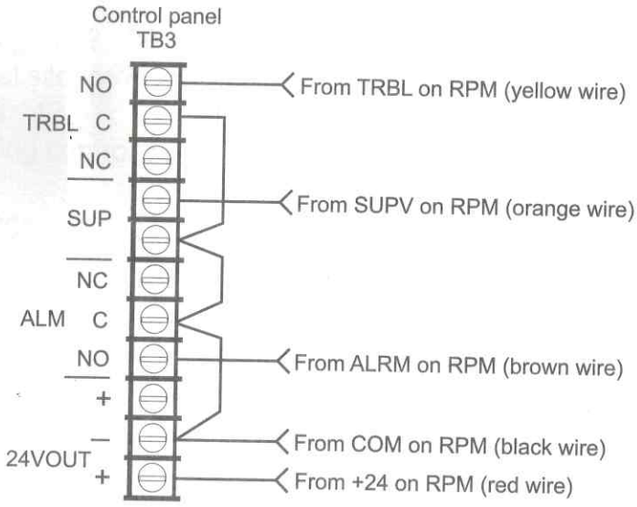
Figure 43: Alarm and trouble transmitted on a single circuit



(1) Control panel TB3
(2) From TRBL on RPM (yellow wire)
(3) From ALRM on RPM (brown wire)
(4) From COM on RPM (black wire)
(5) From +24 on RPM (red wire)

Note: JP1 on the RPM must be OUT.

Figure 44: Alarm, supervisory, and trouble transmitted on separate circuits



(1) Control panel TB3
(2) From TRBL on RPM (yellow wire)
(3) From SUPV on RPM (orange wire)
(4) From ALRM on RPM (brown wire)
(5) From COM on RPM (black wire)
(6) From +24 on RPM (red wire)

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.

The panel user interface is the primary interface of the fire alarm system.

Content

UL/ULC programming requirements 37
Getting started 39
- What is a zone? 39
- What is a correlation group? 39
- What is in-suite signal silence? 41
- Programming modes 42
- Using the programming control buttons 43
- Passwords 43
- Factory default settings 44

Device type descriptions 53
Displaying the Program menu 63
Setting the time and date 63
Setting daylight saving time 64
- Sample values for daylight saving time 64

Changing the passwords 65
Restoring the factory default settings 65
Setting up the programmable keys 66
Clearing the event history log 69
Updating the firmware 70
Restarting the panel 71
Enabling RS-232 communication 71
Auto programming the panel 72
- Auto programming options 73

Dialer options 75
Auto programming procedure 76
Labeling devices 77
Labeling zones 77
Performing incremental programming 78
Incremental programming options 78
Incremental programming procedure 79
Labeling devices 80
Labeling zones 80
Adding and removing devices from programmed systems 81
Device programming options 81
Adding devices 83
Removing devices 84
Advanced programming 85
Overview 85
Changing loop configuration options 86
Correlation group programming 87
Adding and removing panel events 91
Programming in-suite signal silence 92
Programming fast groups for sounder bases 93
Device programming 95
Programming relay and sounder detector bases 98
Programming relay modules and bases as latched output devices 99
Loops 1, 2, 3, and 4 mapping enable 101
Mapping loop device circuits 102
Zone programming 104
Panel programming 106
Central monitoring station device programming 110
Panel operation programming 126
Event programming 129

UL/ULC 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 of the listing agency, certain programming features or options must be limited to specific values or not used at all as indicated below.

Programmable feature or option	Possible settings	Listing Agency	Permitted (Y/N)	Permitted settings	Panel default
AC fail delay [1]	0 to 15 hours	UL, ULC	Y	1 to 3 hours	3 hours
Telephone line cut supervision duration	1 to 120 seconds	UL, ULC	Y	10 to 120 seconds	120 seconds
Transmission test frequency	0 to 240 hours	UL ULC	Y Y	6 hours 24 hours	6 hours 6 hours
Auto signal silence	Off or 5 to 30 minutes	UL ULC	Y N	5 to 30 minutes Off	Off
Dialer mode	Dual line Single line Modem only None	UL, ULC	Y	Dual line Single line [3] Modem only [4] None [4]	Dual line
Dialer retries	5 to 10	UL, ULC	Y	5 minimum	5 retries
Dialer retry time	1 to 45 seconds	UL, ULC	Y	Yes	5 seconds
Send event restore codes [2]	No or Yes	UL, ULC	Y	Yes	Yes
Swinger shutdown	Off or 1 to 255	UL, ULC	N	Off	Off
Zone resound	On or Off	UL, ULC	Y	On	On
Supervisory setting for Smoke detectors/ smoke element of combination detectors that trigger a supervisory event	Smoke Alarm, Smoke verified, Supervisory latching, Supervisory nonlatching	UL, ULC	N	Smoke Alarm, Smoke verified. Exception: Supervisory permitted as per UL 864	Smoke Alarm
Releasing service [5][8]					
Abort mode	1 to 4 modes	UL, ULC	Y	1 or 2 modes	1 mode
Manual delay	0, 10, 20, 30 seconds	UL, ULC	Y	0 to 30 seconds	10 seconds

Programmable feature or option	Possible settings	Listing Agency	Permitted (Y/N)	Permitted settings	Panel default
Automatic delay	0 to 300 seconds through release correlation; 10, 20, 30, 40, 50 seconds on REL module	UL, ULC	Y	0 to 60 seconds (combined)	0 seconds in release correlation; 50 seconds on REL module
Abort delay	0 to 300 seconds through abort correlation: 0, 10 seconds on REL module	UL, ULC	Y	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	Input: (CO element of the detector): CO Alarm CO Supervisory CO Monitor Output: Channel 2 of T3T4 module	UL, ULC	Y	Input: (CO element of the detector) [6]: CO alarm Output: Channel 2 of T3T4 module	No default correlation
CO detector with a CO alarm device type					
Zone event notification Type	Alarm, Monitor, Supervisory, Waterflow	UL	Y	Alarm, Monitor, Supervisory, Waterflow	Alarm
	Alarm, Monitor, Supervisory, Waterflow	ULC	Y	Supervisory [7]	Alarm

[1] The programmed delay in reporting an AC fail condition is applicable only when system is normal (no events on the panel). If the system is in off-normal state (one or more events on panel), then the AC fail condition shall be reported immediately.
[2] Allowed only if the IDC is connected to the latching alarm device
[3] Allowed only when the supervising station supervises the telephone line and annunciates fault conditions within 200 seconds
[4] Prohibited when the control panel is connected to a supervising station
[5] The power supplies BPS6A, BPS6A/230, BPS10A, BPS10A/230 used for SIGA-REL are not compatible with FM sprinkler applications that require 90 hours of standby.
[6] 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.
[7] CO detectors with a "CO alarm" device type must be programed using zones with bicolor LEDs (zones 13 through 16 and 29 through 32) and the zone type must be set to Supervisory. The panel Event Notification must be set to Zone. Using this configuration ensures that when the "CO alarm" device type goes active, the panel displays a yellow LED indication instead of a red. This configuration complies with CAN/ULC-S527.
[8] UL 864 does not allow the use of alarm verified smoke detectors for activating releasing service applications.

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 defined area within a protected premises which contains individually addressed detector and/or module inputs physically located within that respective area. Zones provide a single initiation response to represent the group of contained devices in the same manner as a conventional initiating device circuit. Zones can be utilized to limit the number of event messages processed by the system. Zones are required to be defined when the system utilizes LED annunciation. Firewall designations, planned evacuation criteria, architectural design, and other factors determine how points are grouped into zones.

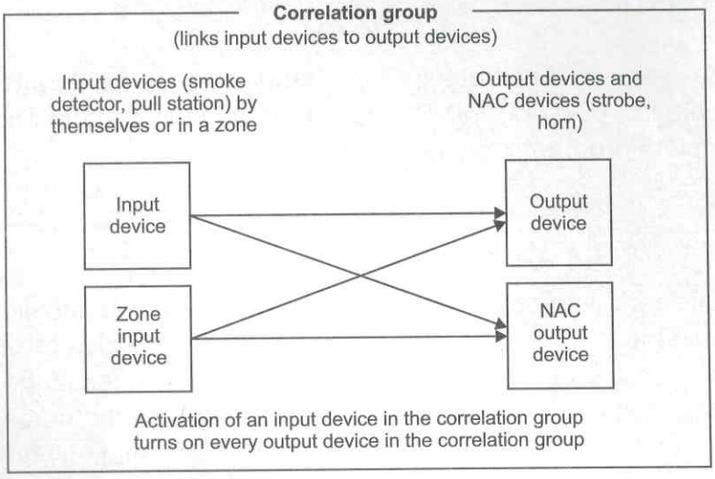
What is a correlation group?

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:

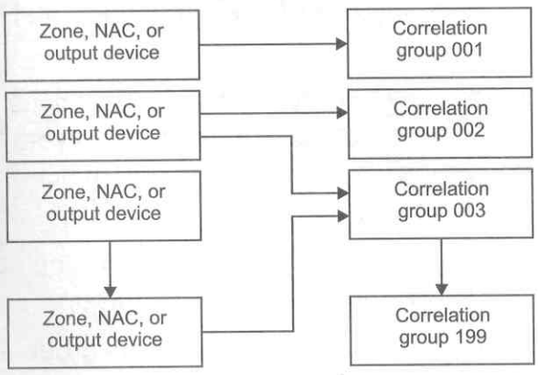
- When the correlation group's activation count is 1 (default), the activation of any input device in the group turns on every output device in the group.
- When the activation count is 3, every output device in the group is activated when at least three input devices activate.
- When the correlation 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 45: 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.

Figure 46: Inputs and outputs to correlation groups



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

- All addressable smoke detectors configured with the P1 or P2 switch in position 1 (alarm)
- All addressable pull stations
- All panel NACs
- All zones configured as alarm
- All addressable heat detectors
- All addressable primary elements of dual devices only. Example: PCOS/PCD is a dual element device in which the smoke element is included and the CO element is not.
- All fully programmable input modules

- All riser type supervised output modules

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.
- Addressable relays
- Supervisory input of the WTM modules
- Monitor modules (MM1)

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 elements for COD, PCOS/PCD, HCD, and PHCD detectors are 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.

In-suite signal silence is a feature commonly utilized in the Canadian marketplace. This feature is not permitted when the system must meet UL 864 requirements for the US marketplace.

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 91.

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 71.

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. See "Performing incremental programming" on page 78.

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 81.

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 9: 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.

Passwords

There are two types of passwords available, Level 1 and Level 2.

Level 1: The level 1 password lets you access the front panel programmable buttons, change the system clock, activate and restore devices and NACs, disable and enable devices, NACs, events, and zones.

Level 2: The level 2 password lets you access the control panel's programming functions. To prevent unauthorized access to the panel's programming, always change the password from the default value and save it in a separate, secure location.

Note: If you are using the Configuration Utility (CU), the Level 2 password must match the panel Level 2 password.

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: Yes
- 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 reset: Yes
- LCD banner: Blank
- Event notification: Device
- Key #1: NONE
- Key #2: NONE
- Standalone: No

Other default panel settings

- Daylight saving

  Enabled: No
  Month start: March
  Month end: November
  Week start: Second
  Week end: First
  Weekday start: Sunday
  Weekday end: Sunday
  Hour start: 2
  Hour end: 2
  Adjustment minutes: 60

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

Default panel configuration settings

IP Settings

- DHCP Mode: Yes
- DHCP Supervisory: No
- IP: 192.168.001.003
- Subnet mask: 255.255.255.0
- Gateway: 000.000.000.000
- DNS IP Settings
  Pre: 192.168.001.001
  Alt: 000.000.000.000
- DNS Dynamic: Yes
- DNS Supervisory: No
- PORT CU: 02505
- Cloud Conn: No
- 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
  CMS Path
    Type: Telco only

  Dialer
    Type: Dual line
    Acct 1 and 2
    Account ID: FFFF
    Primary receiver #: Blank
    Secondary receiver #: Blank
    Format: CID
    Send Restorals: Yes
    Retry Time: 05
    Retry Count: 05
    Evnt Notif: Device
  Line 1 and 2
    Dialing: Tone
    Cut Duration/supervision: 120 sec.
    Dial Tone wait: 10 seconds
    Call disconnect seconds: Off
    Test frequency hours: 6

  Network
      Network 1 to 8
        Type: Sur-Gard
        Enabled: No
        Account ID: 0000
        Hello Time: 0060
        Timeout Secs: 00120
        Max Attempts: 05
        Send Restorals: Yes
        Evnt Notif: Device
        DNIS Enable: No
        DNIS Number: 0000000000
        Primary Receiver
          IP: 192.168.001.254
          IP Port: 03061
        Response Time: 005
        Account Code: 0000000000
        Secure Comm: Yes
        Encryption Key: 0000000000000000
                        0000000000000000

Send restorals: Yes
Retry time: 5 seconds
Retry count: 5
Event notification: Device

Test time: 03:11
Rings to answer: 5
Ring type: Any
Callback: Disabled
Callback #: Blank

Secondary Receiver:
  Enabled: No
  IP: 192.168.001.255
  IP Port: 03061
  Response Time: 005
  Account Code: 0000000000
  Secure Comm: Yes
  Encryption Key: 0000000000000000
                  0000000000000000
Test Message:
  Enabled: No
  Normal: 160200000
  Abnormal: 160800000
  Test Freq: 01
  Test Time: 12:00
  Mask Mon Evnts:No

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

  Follow CO: No
  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
  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

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

  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
- Loop 3 enable: No
- Loop 3 Fst Grp: 1 to 25
- Loop 4 enable: No
- Loop 4 Fst Grp: 1 to 25

[1] Active3 is an activation from a COD device, or an activation from the secondary element of a dual element detector (single address), such as PCOS/PCD, HCD, or PHCD. See "Device type descriptions" on page 53.

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 129.

Table 10: Contact ID event codes

Event	CID
AC power (disable)	500
AC power (trouble)	301
Alarm active	110
Alarm ON	115
Annunciator trouble	334
Aux. power 1 (disable)	500
Aux. power 1 (trouble)	312
Aux. power 2 (disable)	500
Aux. power 2 (trouble)	312
Battery charger (disable)	500
Battery charger (trouble)	309
Battery low (disable)	500
Battery low (trouble)	302
Battery missing (disable)	500
Battery missing (trouble)	311
Clear history	621
Cloud Provision Fault	354
Cloud Communication Fault	354
Panel Certificate Fault	354
CO detected (alarm)	162
Common alarm	110
Common disable	500
Common monitor	140
Common supervisory	200
Common trouble	373
Common trouble for network dialer	373
Common trouble for telco dialer	373
Date	625
Device trouble	373
DHCP Communication Fault	354
Device disable	570
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

Event	CID
Dialer line 2 fault (trouble)	352
Dialer deliver fail	354
Dialer normal test	602
DNS Communication Fault	354
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 Dialer Account 1 Abnormal Test	608
IP Dialer Account 1 Normal Test	602
IP Dialer Account 2 Abnormal Test	608
IP Dialer Account 2 Normal Test	602
IP Dialer Account 3 Abnormal Test	608
IP Dialer Account 3 Normal Test	602
IP Dialer Account 4 Abnormal Test	608
IP Dialer Account 4 Normal Test	602
IP Dialer Account 5 Abnormal Test	608
IP Dialer Account 5 Normal Test	602
IP Dialer Account 6 Abnormal Test	608
IP Dialer Account 6 Normal Test	602
IP Dialer Account 7 Abnormal Test	608
IP Dialer Account 7 Normal Test	602
IP Dialer Account 8 Abnormal Test	608
IP Dialer Account 8 Normal Test	602
Loop 2 device 000	018
Loop 2 initialization	000
Loop 2 fault (disable)	500
Loop 2 fault (trouble)	331

Event	CID
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 mapping	000
Loop 3 device 000	028
Loop 3 initialization	000
Loop 3 fault (disable)	500
Loop 3 fault (trouble)	331
Loop 3 map fault	331
Loop 3 card fault (disable)	500
Loop 3 card fault (trouble)	333
Loop 3 Uncfgrd alarm (disable)	500
Loop 3 Uncfgrd alarm (active)	110
Loop 3 Uncfgrd trbl (disable)	500
Loop 3 Uncfgrd trbl (trouble)	331
Loop 3 map mismatch	331
Loop 3 over limits	331
Loop 3 mapping	000
Loop 4 device 000	038
Loop 4 initialization	000
Loop 4 fault (disable)	500
Loop 4 fault (trouble)	331
Loop 4 map fault	331
Loop 4 card fault (disable)	500
Loop 4 card fault (trouble)	333
Loop 4 Uncfgrd alarm (disable)	500
Loop 4 Uncfgrd alarm (active)	110
Loop 4 Uncfgrd trbl (disable)	500
Loop 4 Uncfgrd trbl (trouble)	331

Event
Loop 4 m
Loop 4 o
Loop 4 m
Monitor a
NAC test
NAC1 tro
NAC2 tro
NAC3 tro
NAC4 tro
NAC1 di
NAC2 di
NAC3 di
NAC4 di
Net rcvr
Net rcvr
Net rcvr
Net rcvr
Net rcvr
Net rcvr
Net rcvr
Net rcvr
Net rcvr
Net rcvr
Net rcv
Net rcv
Net rcv
Net rcv
Net rcv
Net rcv
Net rcv
Net rcv
Net rcv
Net rcv