

# **FireShield**

## **Technical Reference Manual**

**P/N 3100353 • Rev 3.0 • 12MAY03**

DEVELOPED BY



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## IMPORTANT INFORMATION

### Limitation of liability

This product has been designed to meet the requirements of the standards listed in “Compliance statement” below. Installation in accordance with this manual, applicable codes, and the instructions of the Authority Having Jurisdiction is mandatory. The manufacturer 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 products beyond the cost of repair or replacement of any defective products. The manufacturer 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, the manufacturer assumes no responsibility for errors or omissions.

### FCC warning

This equipment can generate and radiate radio frequency energy. If this 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 within the limits for Class A digital 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.

### Compliance statement

FireShield, when properly installed, operates as a Local Protected Premises Fire Alarm System in accordance with the following standards:

- NFPA Standard 72, 1999 Edition
- NFPA 70 National Electrical Code
- Underwriters Laboratories Standard 864, 8th Edition
- Underwriters Laboratories of Canada Standard ULC S527-99
- Canadian Electrical Code Part I
- Standard for Installation of Fire Alarm Systems ULC S524
- Standard for the Inspection and Testing of Fire Alarm Systems ULC S536

FireShield also complies with Local Protective Signaling (type L) - manual (M), automatic (A), waterflow (WF), and sprinkler supervisory (SS) for:

- Coded (C) and non-coded signaling (NC)
- Remote Station (type RS) - with RPM or FSDACT
- Auxiliary (type A) - with CTM4.7 (this may include Local with Shunt type connection to Master Box - type LS)
- Central Station (Type CS) - with FSDACT

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# Chapter 1

## System overview and operation

### System overview

FireShield is available in three models: three-zone, five-zone, and ten-zone. Each model is similar except for the number of initiating device circuits (IDCs) and notification appliance circuits (NACs), as shown in the following table.

Model	IDCs	NACs
FS302 (three-zone)	3	2
FS502 (five-zone)	5	2
FS1004 (ten-zone)	10	4

Model numbers may have the following suffixes: G or R indicates gray or red enclosure, GD or RD indicates panel with FSDACT, GC indicates ULC panel with terminal shield, GF indicates a French ULC panel with terminal shield, and G-2 indicates 230 Vac input.

Each panel is configured for Class B operation. All models except for the three-zone can be easily converted to Class A by using two Class B circuits to make one Class A circuit.

FireShield has the following optional components:

- Remote System Indicator (FSRSI)
- Remote Zone Indicator (FSRZI-A)
- Remote Relay Module (FSRRM)
- Power Expander Transformer (XTR3A120, XTR3A230) (ten-zone only)
- DACT (Dialer)/Modem (FSDACT)
- City Tie Module (CTM4.7)
- Reverse Polarity Module (RPM)
- Battery Cabinet (BC-2)

Refer to Chapter 2 “Installation” for optional module details.

### Operations overview

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.

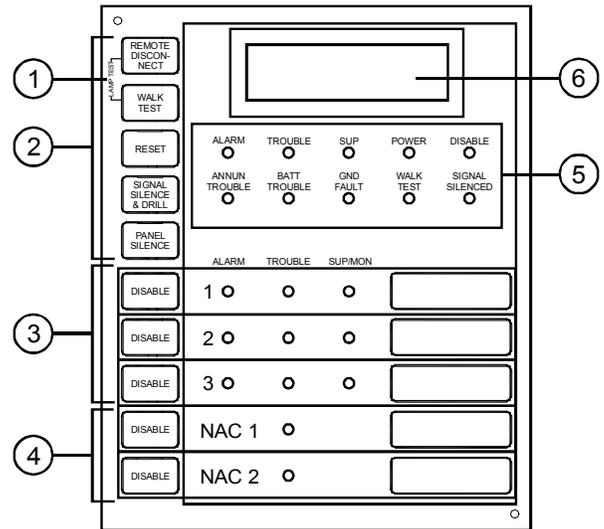
The panel operates in *off-normal mode* any time an event is introduced into the system. When this happens, the panel:

- 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 appropriate optional components (FSRSI, FSRZI-A, CTM4.7, or RPM)

If the optional FSDACT is installed, the panel:

- Sends a record of the event to the FSDACT LCD and to the history log
- Uses the FSDACT to transmit event messages to a monitoring station as programmed

### Controls and indicators



Front panel display

#### (1) Lamp test

Buttons	Description
	Press the Remote Disconnect and Walk Test buttons simultaneously to initiate a panel lamp test. This lets you verify proper operation of the LEDs on the panel and the remote annunciators.
	

#### (2) Control buttons

Button	Description
	<p><b>Operating mode with FSDACT:</b> Disables or enables FSDACT. Has no effect on alarm relay.</p> <p><b>Operating mode without FSDACT:</b> Disables or enables the common alarm relay.</p> <p><b>Programming mode:</b> Selects the next option.</p>
	<p><b>Operating mode:</b> Places the panel in walk test mode. The Walk Test LED is on when the panel is in walk test mode.</p> <p><b>Programming mode:</b> Selects the previous option.</p>

RESET	<p><b>Operating mode:</b> Initiates a panel reset.</p> <p><b>Programming mode:</b> Selects the next setting for the current option.</p>
SIGNAL SILENCE & DRILL	<p><b>Alarm mode:</b> Silences active notification appliances. Pressing Signal Silence a second time turns NACs back on. The Signal Silenced LED indicates when the panel is in alarm and operating with notification appliances turned off. Visual appliances may or may not turn off when Signal Silence is pressed depending on panel programming.</p> <p><b>Normal mode:</b> Activates the drill function. Turns notification appliances on according to the panel programming but does not place the panel in alarm or activate the alarm relay. Pressing Drill a second time turns off the drill function.</p> <p><b>Programming mode:</b> Selects the previous setting of the current program option.</p>
PANEL SILENCE	<p><b>Operating mode:</b> Silences the panel and FSRSI sounders during an active trouble, supervisory, or alarm event.</p> <p><b>Programming mode:</b> Saves the program setting.</p>

**(3) Indicating Device Circuits (IDCs) LEDs and controls**

LED/button	Description
Alarm LED	On steady when an alarm input device is activated.
Trouble LED	On steady when there is a wiring fault on the circuit. Double-flashes when the circuit is disabled. Fast-flashes, during walk test, when the IDC is resetting.
Supervisory / Monitor LED (SUP/MON)	On steady when a supervisory input device is activated. Stays on until panel is reset. Also flashes when active if programmed as a monitor zone. Monitor zone programming option is not approved for use in Canada.
DISABLE	<p><b>Operating mode:</b> Renders an IDC inoperative. A disabled circuit can not initiate a change in panel state. A disabled IDC's Trouble LED double-flashes. If pressed when an IDC is active, it has no effect on the panel's current state but no further activity on that IDC will be reported. Disabled IDCs remain disabled after a system reset.</p> <p><b>Walk test mode:</b> Selects an IDC to place it into or remove it from walk test mode.</p> <p><b>Programming mode:</b> Selects an IDC so that settings can be viewed or changed.</p>

**(4) Notification Appliance Circuits (NACs) LEDs and controls**

LED/button	Description
Trouble LED	On steady when there's a wiring fault on circuit. Double-flashes when circuit is disabled.
DISABLE	<p><b>Operating mode:</b> Used to render an NAC inoperative. A disabled NAC trouble LED double-flashes. If pressed when an NAC is active, notification appliances remain active. Once silenced, a disabled NAC does not resound unless enabled. Disabled NACs remain disabled after a system reset.</p> <p><b>Programming mode:</b> Selects an NAC so that settings can be viewed or changed.</p>

**(5) Common system LEDs**

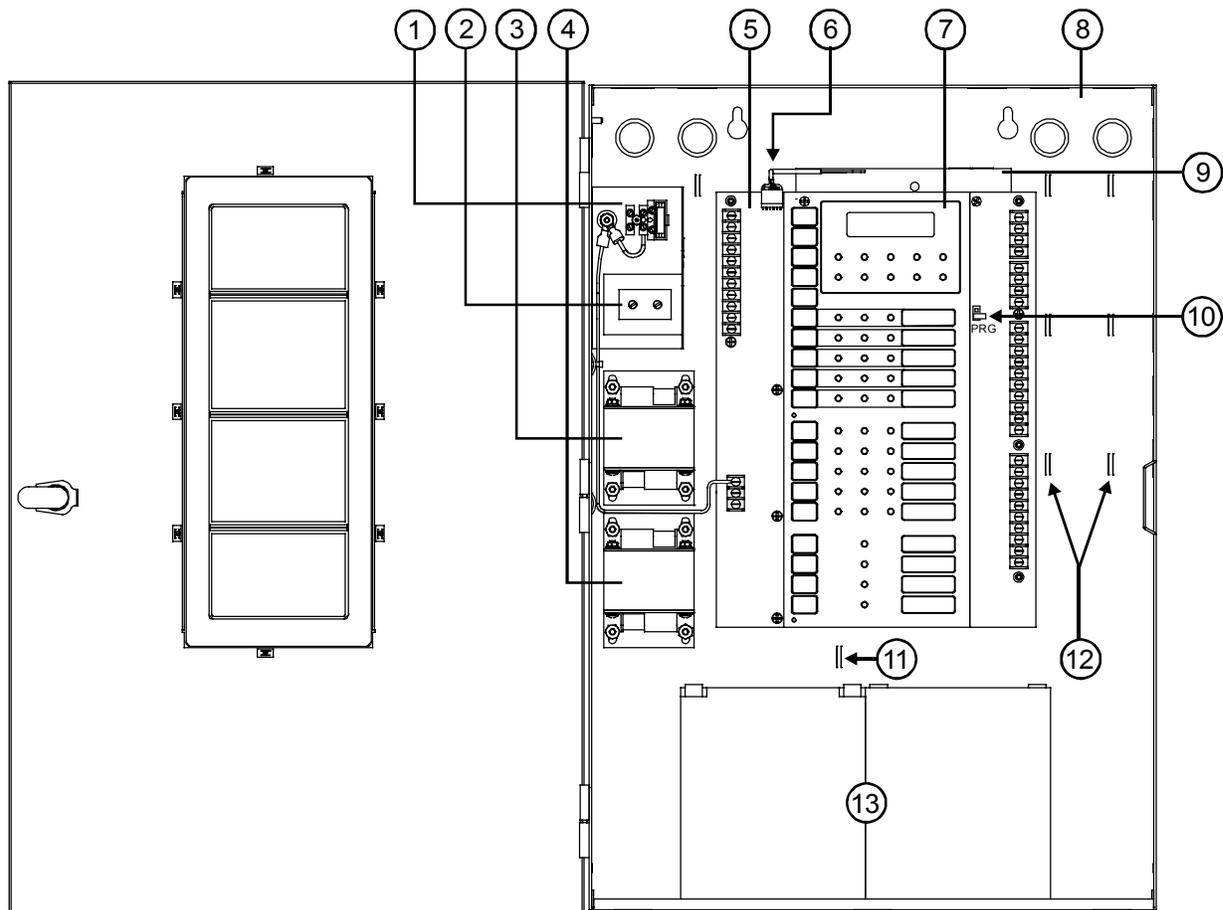
LED	Description
Alarm	On steady when there is an active alarm event on any IDC.
Trouble	Flashes when there's a fault with a monitored circuit or system component, when a circuit is disabled, or when panel is in walk test mode.
Supervisory	On steady when there is an active supervisory event on any IDC.
Power	On when the panel has AC power.
Disable	Double-flashes when there is a disabled circuit, FSRRM, alarm relay, or FSDACT. Pressing Disable also places the panel in the trouble state.
Annunciator Trouble	On steady when there is a communication failure between the panel and a remote annunciator. Also places the panel in the trouble state.
Battery Trouble	Flashes for voltage supervisory or charger trouble. Steady means placement trouble. Also places the panel in the trouble state.
Ground Fault	On steady during an active ground fault. Also places the panel in the trouble state.
Walk Test	Flashes when performing an audible walk test. Steady indicates a silent walk test. Also places the panel in the trouble state.
Signal Silenced	On steady indicates that NAC circuits are turned off but the panel is still in alarm.

**(6) LCD display when FSDACT is installed**

**Notes on LEDs:** During an alarm condition, all *flashing* LEDs, regardless of their function, go steady.

When NAC or IDC pairs are configured for Class A operation, trouble conditions may be indicated by the Trouble LED on either NAC or IDC in the pair.

## Component descriptions



**(1) 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).

**(2) Dual Transformer AC wiring block:** Ten-zone panel only. Provides connections between primary side of both main and expander transformer and 120 or 230 volt AC (fused primary power).

**(3) Transformer:** Changes 120 or 230 volt AC supply voltage to 24 volt AC.

**(4) Power expander transformer (XTR3A120, XTR3A230):** Optional. Available for the ten-zone panel only. Provides additional primary power to increase the available NAC current for the ten-zone panel.

**(5) Main circuit board:** Provides connections for all circuits. Also includes the operator interface.

**(6) FSDACT plug:** Used to connect the FSDACT to the circuit board.

**(7) Operator Interface:** Includes operator controls, LED indicators, and circuit identification labels.

**(8) Cabinet enclosure:** Houses the panel electronics and standby batteries. In some cases the batteries may be housed in an external battery cabinet (BC-2).

**(9) FSDACT:** Optional. Digital alarm communicator transmitter. Provides LCD display for status messages and programming menus. Provides two telephone line connections for sending system messages to a compatible digital alarm communicator receiver (DACR). Includes an event history log of panel and FSDACT events.

**(10) Program jumper PRG:** Used to place the panel in programming mode.

**(11) Tie wrap mounts:** Nonpower-limited. Used to secure wires and to help maintain proper separation between power-limited and nonpower-limited conductors.

**(12) Tie wrap mounts:** Power-limited. Used to secure wires and to help maintain proper separation between power-limited and nonpower-limited conductors.

**(13) Standby batteries:** Provide secondary/standby power to the panel electronics in the absence of primary power.

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## Operating the panel

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### Resetting the panel

Pressing Reset places the panel in the reset state. The panel should not be reset until the appropriate authority has determined that the hazard is no longer present.

When you reset the panel:

- All LEDs on the panel light for five seconds
- The trouble and power lights remain on for an additional 15 seconds
- When reset is complete, the buzzer sounds (then turns off) and the trouble LED turns off

In this state:

- All panel indicators are temporarily cleared
- All notification appliances are turned off
- All latched IDCs are cleared
- Alarm, trouble, and supervisory relays are returned to the inactive state
- Auxiliary power (if programmed as resettable) momentarily turns off

At the conclusion of the reset, if an IDC is in an off-normal state, the panel treats the event as a new event and activates the programmed responses. Pressing Disable for the active IDC within 30 seconds after the panel has reset turns off the NACs and disables the IDC.

If one or more IDCs are disabled prior to initiation of the reset, those IDCs remain disabled.

If signal silence inhibit or reset inhibit is enabled, system reset is inhibited during the silence or reset inhibit period.

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### To reset the panel:

1. Press the Reset button.

### Silencing panel and FSRSI buzzers

Both the panel and the optional FSRSI module have buzzer silence buttons. Pressing the Panel Silence button silences the buzzer on the panel and on remote FSRSIs.

Pressing the FSRSI Silence button silences the buzzer on the FSRSI only.

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### To silence the panel buzzer:

1. Press the Panel Silence button on the panel.
2. Determine the type of condition that caused the buzzer to sound: alarm, trouble, supervisory, or monitor.
3. Determine the cause of the condition.

---

### To silence an FSRSI buzzer:

1. Press the Silence button on the FSRSI.
2. Determine the type of condition that caused the buzzer to sound: alarm, trouble, supervisory, or monitor.
3. Determine the cause of the condition.

### Silencing notification appliances

Pressing the Signal Silence & Drill button turns off all audible devices. Visual devices or NAC circuits may or may not turn off, depending on panel programming.

When you silence the signals, the Signal Silenced LED lights, indicating that the notification appliances are off. The panel does not indicate a trouble condition. If GENESIS, horn/strobe, or horn-only devices are used on NACs programmed for GENESIS operation, Signal Silence & Drill silences only the horns.

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**WARNING:** The notification appliances should not be silenced until the building is fully evacuated and the cause of the alarm has been determined.

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### To silence notification appliances:

1. Press the Signal Silence & Drill button.

#### When the auto signal silence timer is programmed

When an event activates the notification appliances, the 20-minute auto signal silence timer is activated. The notification appliances are activated for the 20-minute period. When the timer expires, any NACs that are programmed as silenceable are deactivated, and the Signal Silenced LED is illuminated.

If another event takes place that activates the previously silenced notification appliances, the Signal Silenced LED turns off. At any time, you can deactivate silenceable NACs by pressing Signal Silence & Drill.

**Note:** NACs activated by IDCs programmed as waterflow cannot be silenced until the activated devices are restored to normal. After the devices restore, the Signal Silence & Drill button or the auto signal silence timer can silence the NACs.

### Resounding an alarm condition

Pressing the Signal Silence & Drill button again turns the audible devices back on if they were silenced.

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### To resound notification appliances:

1. Press the Signal Silence & Drill button.

**Note:** NACs resound automatically if a new alarm (from another IDC) is received.

## Disabling an IDC

Pressing an IDC Disable button prevents the panel from responding to any status change from that IDC. When you disable an IDC:

- The common Disable LED double-flashes
- The IDC Trouble LED double-flashes
- The common Trouble LED lights and the panel goes into a trouble state
- The common trouble relay changes state

Resetting the panel has no effect on a disabled IDC, but removing all power from the panel clears the disable and enables the IDC.

**Note:** During an alarm condition, all *flashing* LEDs go steady.

### To disable an IDC:

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1. Press the Disable button for the IDC that you want to disable.

## Disabling a NAC

When you disable an NAC:

- The common Disable LED double-flashes
- The NAC Trouble LED double-flashes
- The common Trouble LED lights and the panel goes into a trouble state
- The common trouble relay changes state

Resetting the panel has no effect on a disabled NAC, but removing all power from the panel clears the disable and enables the NAC.

### To disable a NAC:

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1. Press the Disable button for the NAC that you want to disable.

## Re-enabling an IDC or NAC

You can re-enable a disabled IDC or NAC. When you re-enable an IDC or NAC:

- The common Disable LED turns off
- The IDC or NAC trouble LED turns off
- The common Trouble LED turns off and the panel returns to normal
- The IDC or NAC LEDs are updated to show current status (e.g. if the IDC or NAC is in trouble, the Trouble LED lights). After enabling an IDC, alarms from that IDC are inhibited for 30 seconds. During this time the IDC can be disabled to avoid an unwanted alarm.

### To re-enable an IDC or NAC:

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1. Press the Disable button for the IDC or NAC you want to re-enable.

## Using the drill command

You can use the drill command to activate all of the notification appliance circuits. Pressing Drill activates all audibles and visuals according to the panel programming, but does not activate the Alarm relay. The FSDACT can be programmed to transmit a drill condition, but it will never report the drill as an alarm. Drill will not operate with an active alarm or supervisory event at the panel.

### To perform a fire drill:

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1. Press and hold the Signal Silence & Drill button for one second.
2. To stop the drill, press and hold the Signal Silence & Drill button for one second.

## Using the walk test command

A walk test lets you test IDC zones 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. Walk test will not operate with an active alarm or supervisory event at the panel.

Zones should be placed in walk test one at a time. This allows the balance of the system to remain in service.

In a walk test, the panel responds to the first signal it receives and ignores all others on that IDC until it clears that signal or the panel is reset. The input must be restored to the normal state before the next input is tested. When the input is restored, the panel automatically resets the circuit being tested. The automatic reset takes eight seconds. After the circuit is reset the next device can be tested.

The panel terminates the walk test if any of the following occur:

- The panel enters an alarm or supervisory state
- There are 30 minutes of inactivity on the zone being tested
- The panel is reset
- Walk Test is pressed

When you press Walk Test:

- The Walk Test LED flashes for an audible walk test and is steady for a silent walk test
- The panel enters a trouble state. There is no fire protection for the IDC in walk test. If an unselected IDC goes into alarm or trouble, all programmed outputs operate as programmed.

The IDC you are testing behaves as follows:

- For alarm events, the appropriate panel, FSRSI, and FSRZI-A LEDs and buzzers are turned on
- In the audible test mode the notification appliances sound for a number of times equal to the zone number (e.g. three rings for zone three)
- After activation, the panel resets the IDC. This will take eight seconds. During the reset period, the IDC trouble LED fast-flashes. If the device being tested is not restored, the IDC does not reset. If the device is restored (no alarm is present) the panel is ready to test another device or detector.
- If auxiliary power is programmed as resettable, the auxiliary power is deactivated while the zone is reset
- Input zones programmed as waterflow with retard require 10 to 15 seconds of activation to initiate the test signals
- For trouble events, the appropriate LEDs and the buzzers are turned on. In the audible (NAC) test mode a one-second pulse sounds on the audible devices. After sounding, the zone resets in preparation for continued testing.
- For ground fault events, the appropriate LEDs and the buzzers are turned on. In the audible (NAC) test mode a one-second pulse sounds on the audible devices. After sounding, the zone resets in preparation for continued testing.

### **To conduct an audible walk test:**

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1. Press the Walk Test button once.
2. Press the Disable button for the IDC you want to test.
3. Conduct your walk test for the IDC.
4. When you are finished testing an IDC, press the Disable button to turn off the walk test for that IDC.
5. Select another IDC to walk test (steps 2 through 4) or exit from the walk test by pressing the Walk Test button.

### **To conduct a silent walk test:**

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1. Press the Walk Test button two times.
2. Press the Disable button for the IDC you want to test.
3. Conduct your walk test for the IDC.
4. When you are finished testing an IDC, press the Disable button to turn off the walk test for that IDC.
5. Select another IDC to walk test (steps 2 through 4) or exit from the walk test by pressing the Walk Test button.

## **Conducting lamp tests**

### **Panel lamp test**

A panel lamp test lights all the LEDs on the panel, FSRSIs, and FSRZI-As so you can verify proper operation.

### **To test panel lamps:**

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1. Press and hold the Remote Disconnect and Walk Test buttons simultaneously.
2. Verify proper operation of all LEDs on the panel.

During lamp tests the LCD displays:

DB# xx P: x.yy.zz  
D: x.yy.zz

Where: DB# is the database revision number  
P: x.yy.zz is the main panel version  
D: x.yy.zz is the FSDACT version

### **FSRSI and FSRZI-A lamp test**

FSRSI and FSRZI-A modules can be installed individually or in groups to create a complete remote annunciator. You can perform a local lamp test on the FSRSI and FSRZI-A. An FSRSI is required to initiate this function.

### **To do an FSRSI and FSRZI-A lamp test:**

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1. Press and hold the FSRSI Silence button for five seconds.
2. Verify proper operation of all LEDs on the FSRSI and FSRZI-As.

## FSDACT LCD messages

Message	Description
Peripheral trouble	The panel lost communications with the peripherals
Battery Bad	The battery is bad and needs to be replaced
Battery Missing	The battery is no longer connected
AC Failure	The panel lost AC power
Charger Trouble	The panel detected a battery charger trouble condition. The charger may not be able to charge the batteries.
Ground Fault	The panel detected a ground fault
Transformer 2 TR	The panel detected a trouble condition in the Power Expander Transformer
AUX Power Troub	The panel detected a trouble condition in the AUX power circuit.
Internal Comm TR	Panel-to-FSDACT communication fault
RRM(s) disabled	One or more FSRRMs are disabled
Dialing...	The FSDACT is dialing a DACR
DACT Configuration TRBL	FSDACT is not programmed or has unverified changes
DACT Delivery TR	FSDACT failed to deliver a message to the receiver or CMS
DACT Line 1 Trbl	A ground fault or line fault has been detected on Line 1 of the FSDACT
DACT Line 2 Trbl	A ground fault or line fault has been detected on Line 2 of the FSDACT



## Chapter 2 Installation

### Installation checklist

- Prepare the site:** Make sure the installation location is free from construction dust and debris and extreme temperature ranges and humidity.
- Unpack the equipment**
- Install the cabinet:** See “Installing the cabinet” for cabinet dimensions.
- Remove the clear protective plastic from the front panel display**
- Install optional components (FSRSI, FSDACT, etc.):** See module installation instructions in this chapter.
- Set the panel jumpers:** See Appendix C or the panel label.
- Review wire routing:** See Appendix C or the panel label.
- Connect the field wiring:** See Appendix C or the panel label. Meter for opens, grounds, and shorts before connecting.
- Connect AC power and ground:** See Appendix C or the panel label. Panel can not be started on batteries only.

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

- Connect batteries:** See Appendix C or the panel label.
- Program the panel:** Refer to Chapter 3.
- Test for proper operation**

### Installing the cabinet

Cabinets can be surfaced mounted or semi-flush mounted. See the “Panel dimensions” figure and table for framing and mounting dimensions.

#### To surface mount the cabinet:

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

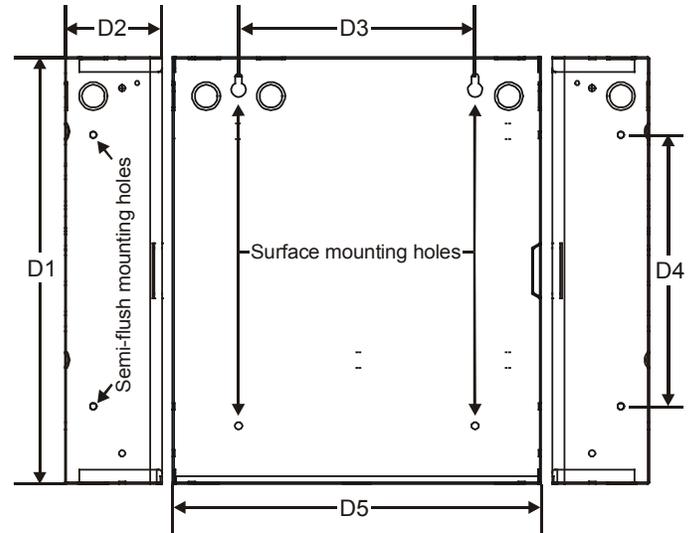
#### To semi-flush mount the cabinet:

1. Frame the interior wall as required to support the full weight of the cabinet and standby batteries.
2. Install (optional) semi-flush trim to cabinet.
3. Fasten the cabinet to the framing studs where indicated.

### Panel dimensions

Model	D1 [1]	D2	D3	D4	D5 [1]
Three- and five-zone	16.5 in (41.9 cm)	3.75 in (9.5 cm)	9.13 in (23.2 cm)	10.5 in (26.67 cm)	14.23 in (36.14 cm)
Ten-zone	23.65 in (60 cm)	3.75 in (9.5 cm)	7.75 in (19.7 cm)	21.27 in (54.0 cm)	16.25 in (41.27 cm)

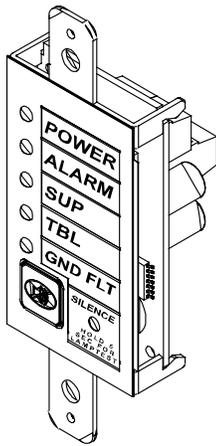
[1] Add 1-1/2 in (3.81 cm) to D1 and D5 dimensions for trim kit.



## Installing the Remote System Indicator

The Remote System Indicator (FSRSI) is a supervised remote annunciator that provides remote LED indication of power, alarm, supervisory, trouble, and ground fault conditions. A sounder gives audible indication during a trouble, alarm, or supervisory condition. The sounder can be silenced with the FSRSI Silence switch.

**Note:** You must run the Find Annunciators program option after adding or removing a remote annunciator. The remote annunciators will not operate properly until the panel detects them. For more information see Chapter 3 “Programming.”



### Specifications

Max. per system: 2

Voltage range

Minimum: 21 Vdc  
Maximum: 25 Vdc

Current requirements

Standby: 12 mA  
Alarm: 48 mA

Max. circuit capacitance: 0.03 µF

Max. circuit resistance: 13 ohms

Wire size

Minimum: 18 AWG (0.75 sq mm)  
Maximum: 12 AWG (2.5 sq mm)

Compatible electric box: ANSI/NEMA OS1-1996 1-3 gang electrical box

Operating environment

Temperature: 32 to 120 °F (0 to 49 °C)  
Humidity: 93% RH, noncondensing

### LEDs and buzzer

LED	State	Description
Power (green)	On	AC power present
Alarm (red)	On	Active alarm state

LED	State	Description
Supervisory (yellow)	On	Active supervisory device
Trouble (yellow)	On	System trouble
Ground fault (yellow)	On	System ground fault
Buzzer	On	System trouble
	On (temporal)	Alarm condition
	On (slow pulse)	Supervisory condition
	On (intermittent)	AC fail
	Off	Normal or silenced

### Jumper setup

Jumper	Name	Description
J2	Group jumper	Allows two FSRSIs to be connected to the same panel.  Install the jumper on only <i>one</i> of the two FSRSIs.

**Note:** For jumper location, refer to the FSRSI wiring diagram.

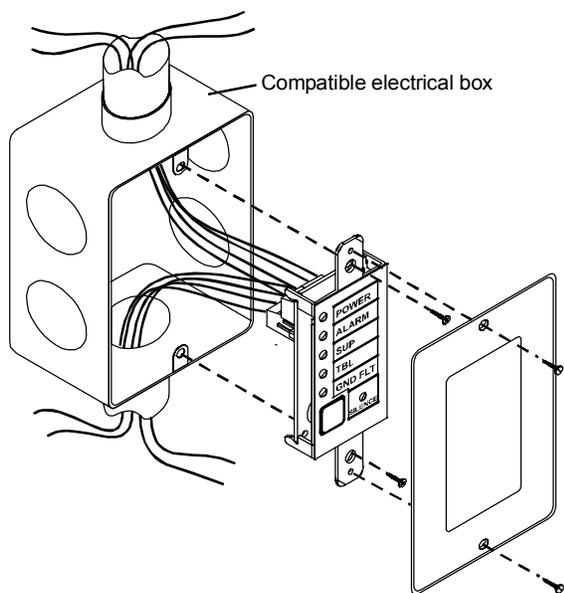
### Installation instructions

A single FSRSI can be mounted in a standard, single gang electrical box (ANSI/NEMA OS1-1996) using the single gang cover plate that is included. Up to three FSRSI-As with or without an FSRSI can be mounted in an approved multiple gang electrical box (ANSI/NEMA OS1-1996) with appropriate two, three, or four gang cover plates (model numbers FSAT-2, FSAT-3, or FSAT-4).

**Caution:** Make sure all power is disconnected from the panel before installing. Observe static-sensitive handling practices.

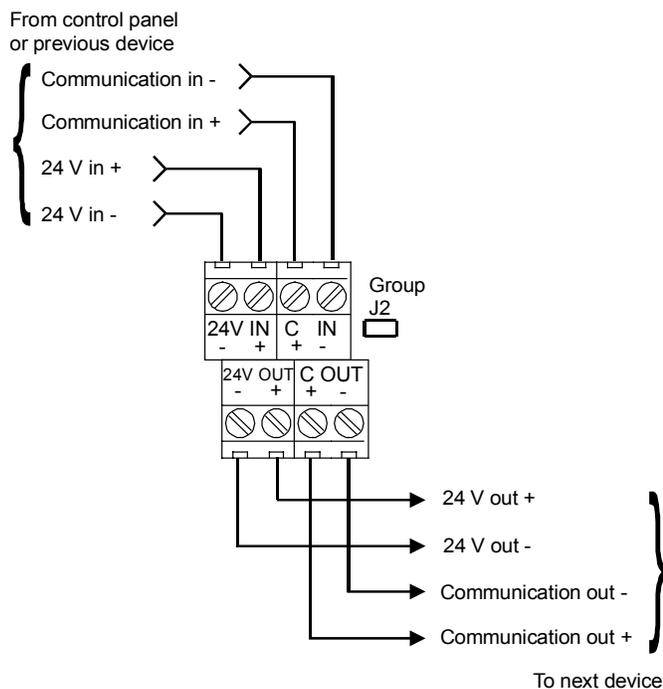
#### To install the FSRSI:

1. Verify that all field wiring is free of opens, shorts, and ground faults.
2. Connect wires to the FSRSI as shown (see wiring diagram).
3. Using the two plain machine screws provided, mount the module to the electrical box.  
  
**Note:** If you are using a surface mounting box, you must install washers (provided) between the FSRSI and the surface mounting box.
4. Using the white machine screws provided with the faceplate, mount the faceplate to the module.
5. Connect the wires to the terminals in the control panel.
6. Program the FSRSI using the Find Annunciators program option. Refer to Chapter 3 “Programming.”



Installing the FSRSI in an electrical box

### Wiring diagram



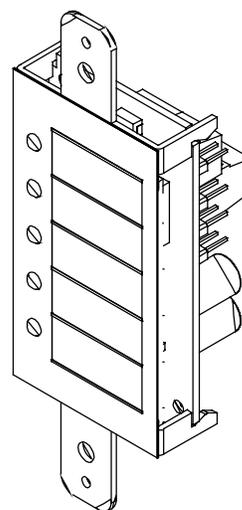
### Notes

1. All wiring is supervised and power limited.
2. 24 V out (aux power) must be programmed as non-resettable.

## Installing the Remote Zone Indicator

The Remote Zone Indicator (FSRZI-A) is a supervised remote annunciator that provides remote LED indication of IDCs in alarm state. The FSRZI-A indicates conditions for five IDCs. The IDC groups are set by jumpers to indicate zones 1–5 or zones 6–10. Paper inserts are provided for labeling the LEDs.

**Note:** You must run the Find Annunciators program option after adding or removing a remote annunciator. The remote annunciators will not operate properly until the panel detects them. For more information see Chapter 3 “Programming.”



### Specifications

- Max. per system
  - FS302 (three-zone): 2
  - FS502 (five-zone): 2
  - FS1004 (ten-zone): 4
- Voltage range
  - Minimum: 21 Vdc
  - Maximum: 25 Vdc
- Current requirements
  - Standby: 8 mA
  - Alarm: 35 mA
- Max. circuit capacitance: 0.03  $\mu$ F
- Max. circuit resistance: 13 ohms
- Wire size
  - Minimum: 18 AWG (0.75 sq mm)
  - Maximum: 12 AWG (2.5 sq mm)
- Compatible electric box: ANSI/NEMA OS1-1996 1-3 gang electrical box
- Operating environment
  - Temperature: 32 to 120 °F (0 to 49 °C)
  - Humidity: 93% RH, noncondensing

### Jumper setup

Jumper	Name	Description
J2	Reserved for future use	N/A
J3	Zone 6 - 10 jumper	Sets the five LEDs to report alarms in zones 6 - 10. [1]
J4	Zone 1- 5 jumper	Sets the five LEDs to report alarms in zones 1 - 5. [1]
J5	Group jumper	Allows two FSRZI-As to be connected to the same panel and set to the same zone output option.  Install the jumper on FSRZI-As in only <i>one</i> of the two groups.

[1] Install only one zone jumper on J3 or J4.

**Note:** For jumper location, refer to the FSRZI-A wiring diagram.

### Installation instructions

A single FSRZI-A can be mounted in a standard, single gang electrical box (ANSI/NEMA OS1-1996) using the single gang cover plate that is included. Up to three FSRZI-As with or without an FSRSI can be mounted in an approved multiple gang electrical box (ANSI/NEMA OS1-1996) with appropriate two, three, or four gang cover plates (model numbers FSAT-2, FSAT-3, or FSAT-4).

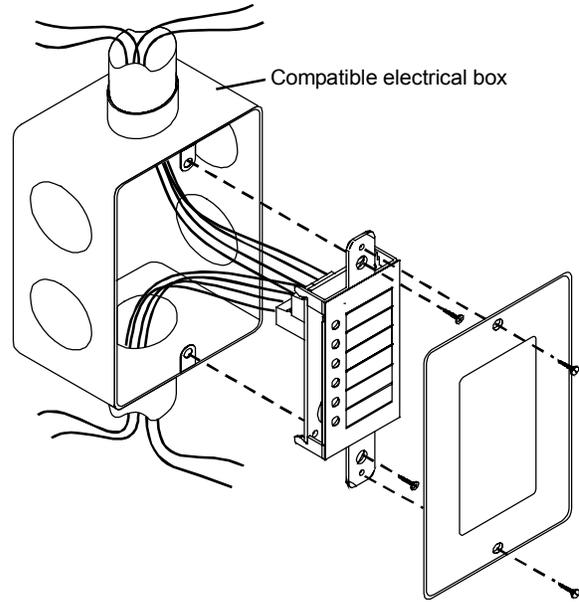
**Caution:** Make sure all power is disconnected from the panel before installing. Observe static-sensitive handling practices.

#### To install the FSRZI-A:

1. Verify that all field wiring is free of opens, shorts, and ground faults.
2. Connect wires to the FSRZI-A as shown (see wiring diagram).
3. Using the two plain machine screws provided, mount the module to the electrical box.

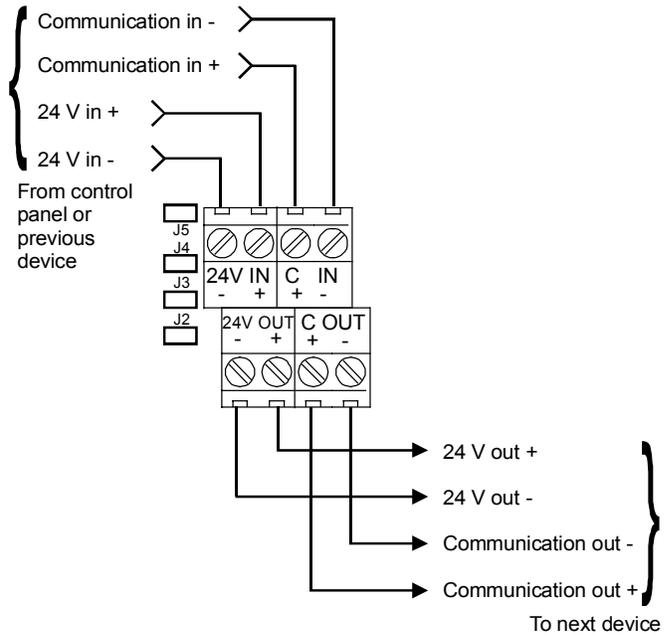
**Note:** If you are surface mounting the FSRZI-A, you must install washers (provided) between the FSRZI-A and the surface mount box.

4. Using the two white machine screws provided with the faceplate, mount the faceplate to the module.
5. Connect the wires to the terminals in the control panel.
6. Program the FSRZI-A using the Find Annunciators program option. Refer to Chapter 3 “Programming.”



Installing the FSRZI-A in an electrical box

### Wiring diagram



#### Notes

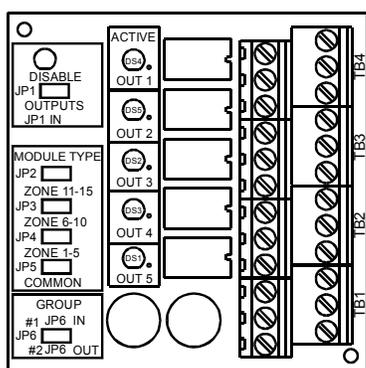
1. All wiring is supervised and power limited.
2. 24 V out (aux power) must be programmed as non-resettable.

## Installing the Remote Relay Module

The Remote Relay Module (FSRRM) provides five dry contact relay outputs. The outputs can be wired as both normally open and normally closed. The outputs can be set to common or zone notifications (see the “Command options” table below). Installing the appropriate jumper (JP3 - JP5) configures the dry contact relay output options.

Five diagnostic LEDs provide visual indication of the status of each relay. If the LED is lit, the relay is energized. If the LED is off, the relay is de-energized. If configured for common operation the trouble relay and the power relay will be energized when the system is normal.

**Note:** You must run the Find Annunciators program option after adding or removing a remote annunciator. The remote annunciators will not operate properly until the panel detects them. For more information see Chapter 3 “Programming.”



### Specifications

Max. per system  
 FS302 (three-zone): 4  
 FS502 (five-zone): 4  
 FS1004 (ten-zone): 6

Voltage range  
 Minimum: 21 Vdc  
 Maximum: 25 Vdc

Zoned operation current requirements  
 Standby: 8 mA  
 Alarm: 65 mA

Common operation current requirements

Standby: 30 mA

Alarm: 41 mA

Max. circuit capacitance: 0.03 µF

Max. circuit resistance: 13 ohms

Relay ratings: 30 Vdc @ 1 A (resistive load)

Wire size

Minimum: 18 AWG (0.75 sq mm)

Maximum: 12 AWG (2.5 sq mm)

Mounting: MFC-A cabinet or listed fire alarm enclosure

Operating environment

Temperature: 32 to 120 °F (0 to 49 °C)

Humidity: 93% RH, noncondensing

### Jumper setup

Jumper	Name	Description
JP1	Disable jumper	Disables all outputs. This allows the installer to test the system while the FSRRM is disabled. Removing the jumper reactivates the FSRRM.  The disable jumper is supervised. With the disable jumper in place, the panel displays Trouble, Annunciator Trouble, Disable, sounds the panel buzzer, and de-energizes any energized relay.
JP2	Reserved for future use.	
JP3	Zone 6 - 10 jumper	Sets the five dry contacts to report events on zones 6 through 10. See “Command options” table. [1]
JP4	Zone 1- 5 jumper	Sets the five dry contacts to report events on zones 1 through 5. See “Command options” table. [1]
JP5	Common jumper	Sets the five dry contacts to report common events. See “Command options” table. [1]
JP6	Group jumper	The group jumper (JP6) allows two FSRRMs to be connected to the same panel and set to the same output option. Install the jumper (JP6) to only one of the two grouped FSRRMs.

[1] Install only one zone jumper on J3 or J4 or J5.

### Command options

Module type	Jumper	Output 1	Output 2	Output 3	Output 4	Output 5
Common	JP5	Alarm	Trouble [1]	Supervisory	Monitor	Power [1]
Zone 1 - 5	JP4	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5
Zone 6 - 10	JP3	Zone 6	Zone 7	Zone 8	Zone 9	Zone 10

[1] Under normal conditions the relay is energized (the internal LED is lit). Loss of power de-energizes the relay.

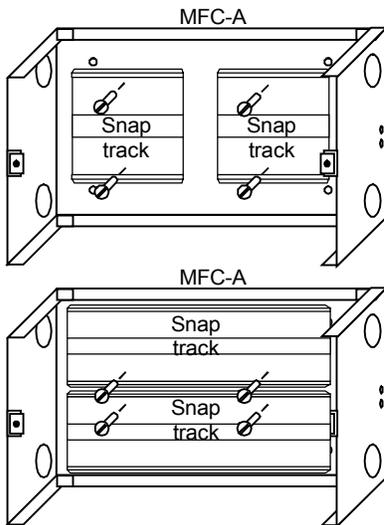
## Installation instructions

The FSRRM snaps into a snap track (shipped with the FSRRM), which mounts inside a listed fire alarm enclosure. The FSRRM can be positioned in the snap track with the terminal block facing vertically or horizontally.

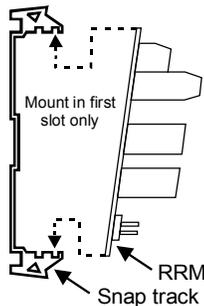
**Caution:** Make sure all power is disconnected from the panel before installing. Observe static-sensitive handling practices.

### To install the FSRRM:

1. Mount the MFC-A cabinet using the installation sheet provided (P/N 387453).
2. Drill mounting holes in the snap track using the template provided (P/N 3100463). These holes will align to the mounting holes on the MFC-A. An optional extended track (P/N FSRRM-S11) is available for mounting two to four FSRRM modules.
3. Mount the snap track to the MFC-A cabinet.

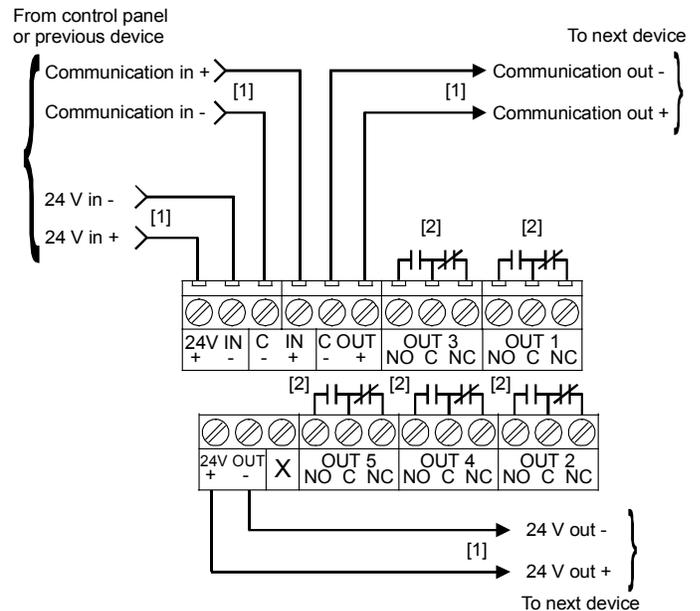


4. Insert one side of the FSRRM into the *first* snap track slot and snap in the opposite side.



5. Verify that all wiring is free of opens, shorts, and ground faults.
6. Connect the FSRRM to the panel or other peripheral devices.
7. Power up the panel and confirm that all relays are in the correct state before connecting the field wiring.
8. Connect field wires to the FSRRM as shown in the wiring diagram. Be sure connection will not adversely affect controlled devices (e.g. elevators, fans, etc.).
9. Connect wiring to the controlled devices.
10. Program the FSRRM using the Find Annunciators program option. Refer to Chapter 3 “Programming.”

## Wiring diagram



### Notes

- [1] Supervised and power limited.
- [2] Must be connected to a power limited source.
3. 24 V out (aux power) must be programmed as non-resettable.

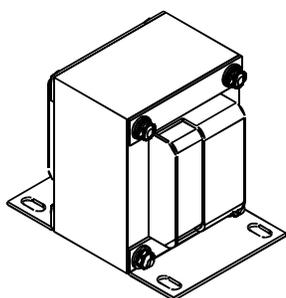
## Service and troubleshooting

If the Disabled and Annunc Trouble LED are lit but no IDC or NAC is disabled then the FSRRM output is disabled.

## Installing the Power Expander Transformer

The Power Expander Transformer (XTR3A120, XTR3A230) provides additional primary AC power to increase the NAC capacity for the ten-zone panel. It provides an additional 2.5 amps of NAC current. The Power Expander Transformer installs in the cabinet with four nuts (provided). The input side of the Power Expander Transformer connects to 120 Vac or 230 Vac through the Dual Transformer AC Wiring Block. Its output connects to the circuit board (J4) with the attached cable harness. One Power Expander Transformer can be installed in the 10-zone panel.

**Note:** The Power Expander Transformer does not work with the three-zone or five-zone panels.



### Specifications

#### Power input

120 Vac @ 60 Hz (P/N XTR3A120)

230 Vac @ 50/60 Hz (P/N XTR3A230)

#### Operating environment

Temperature: 32 to 120 °F (0 to 49 °C)

Humidity: 93% RH, noncondensing

Fuse: Primary winding has thermal current protection and is not field serviceable

**Note:** Input current rating is included with the overall ten-zone ratings.

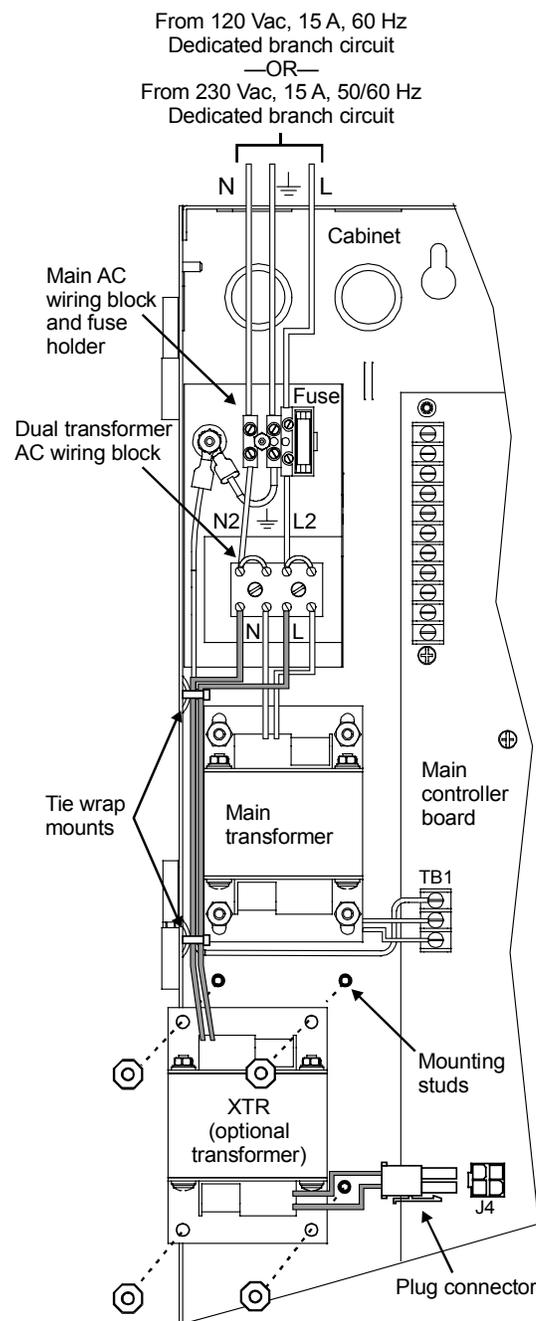
### Installation instructions

**Caution:** Make sure all power is disconnected from the panel before installing. Observe static-sensitive handling practices.

#### To install the Power Expander Transformer:

1. Position the Power Expander Transformer so that the mounting holes align with the four mounting studs on the control panel cabinet.
2. Secure the transformer to the panel using the four nuts provided.

3. Connect the cable harness to J4 on the circuit board. Push the cable harness until the connector clicks into place.
4. Connect the incoming power wires to the dual transformer AC wiring block above the existing transformer.
5. Secure the incoming power wires to the side of the control panel with the tie strap provided.



Power Expander Transformer installation and wiring

## Installing the FSDACT

The FSDACT is a digital alarm communicator transmitter (DACT) that transmits panel events to a compatible digital alarm communicator receiver (DACR). Messages are transmitted over standard loop-start telephone lines. The dialer is capable of split reporting to two different account and telephone numbers.

In addition to the DACT functions, this module includes:

- An alphanumeric LCD to display system messages and programming prompts
- An event history log of panel and DACT events, viewable through compatible software
- A modem for uploading and downloading panel configuration, history, and current status to a PC running compatible software

**Note:** The FSDACT modem is only rated for 2400 baud communication. Some PC modems may not be compatible with this baud rate.

The FSDACT can be programmed to operate as a single or dual line DACT/Modem/LCD display, a Modem/LCD display, or an LCD display only. For the FSDACT to be NFPA 72 CS compliant, the following is required:

1. The factory installed warning label must be removed from the FSDACT's line two phone jack.
2. A second phone line, independent of that used for line one must be connected to phone jack two.
3. The FSDACT must be programmed for dual line operation.
4. The FSDACT must be programmed for a daily transmission test frequency.

UL 864 compliance requires the dual line setting.

The FSDACT can be configured for attended or unattended downloading. JP1 is a wire loop (located near the top of the FSDACT) that controls which download method is used.

Leaving the JP1 wire loop intact configures the FSDACT for attended downloading. The panel will not allow changes to the panel or dialer configuration unless the program jumper is inserted. It will allow changes to receiver information (account code, telephone numbers, etc.). UL requires the red wire loop to be intact for all remote station systems.

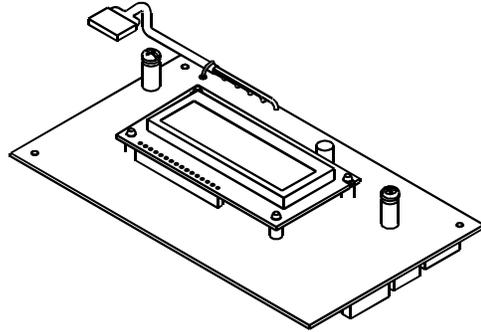
Cutting the JP1 wire loop configures the FSDACT for unattended downloading. This means that the program jumper need not be inserted to accept any panel or dialer configuration changes.

NFPA 72 1999 edition states in 7-1.6.2.1 that reacceptance testing shall be performed after any change to site-specific software.

"All components, circuits, systems operations, or site-specific software functions known to be affected by the change or identified by a means that indicates the system operational

changes shall be 100 percent tested. In addition, 10 percent of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, also shall be tested, and correct system operation shall be verified. A revised record of completion in accordance with 1-6.2.1 shall be prepared to reflect any changes."

For additional download security, the FSDACT can be programmed to perform a call back function. This call back option applies whether the FSDACT is configured for attended or unattended downloading.



### Specifications

#### Current requirements

Standby: 40 mA

Alarm: 60 mA

#### Operating environment

Temperature: 32 to 120 °F (0 to 49 °C)

Humidity: 93% RH, noncondensing

Phone line type: one or two loop-start lines on a public, switched network

Phone line connector: RJ31/38X (C31/38X). Two 7 ft plug cords are shipped with the FSDACT.

FCC registration number: US: EDWAL01BFSDACT

Ringer equivalence number: 0.1

Industry Canada Registration number: IC: 3944-FSDACT

Connection between panel and FSDACT: 6-pin connector

Communication formats: Contact ID (SIA DC-05) and EST 4/2 (SIA DC-02 P3 with hexadecimal event codes)

### Installation instructions

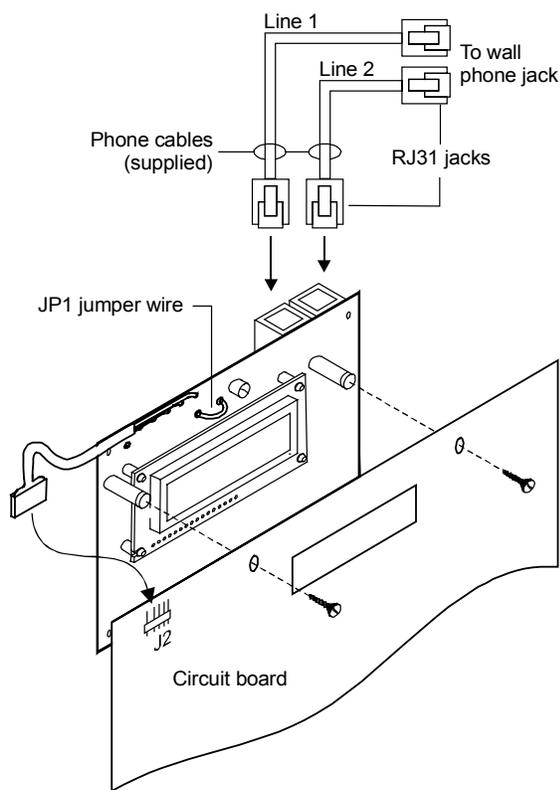
**Note:** It is not necessary to remove the main panel board from the cabinet to install the dialer.

**Caution:** Make sure all power is disconnected from the panel before removing or installing an FSDACT. Failure to disconnect power will damage the panel and the FSDACT. Observe static-sensitive handling practices.

#### To install the FSDACT:

1. Remove the blank insert from the display window.
2. Remove the clear protective plastic film from the FSDACT LCD display.

3. Use JP1 to configure the FSDACT for attended or unattended downloading:
  - Attended: leave the JP1 wire intact
  - Unattended: cut the JP1 wire
4. Install the dialer to the back of the circuit board. Align the LCD display with the opening in the circuit board.
5. Secure the dialer to the circuit board with the two machine screws provided.
6. Connect the power cable to J2 on the control panel.
7. Connect RJ31X/C31X jacks to the supplied cables.
8. Connect the telephone circuits as required.



FSDACT installation and telephone circuit connection

**The FSDACT is listed for use with the following DACRs**

Receiver	Models	Formats
Ademco	685	EST 4/2*, Contact ID
FBI	CP220	EST 4/2*, Contact ID
Osborne-Hoffman	OH 2000	EST 4/2*, Contact ID
Radionics	D6500	EST 4/2*
Silent Knight	9000	EST 4/2*
Sur-Gard	MLR1, MLR2, MCDI TLR, TLR+	EST 4/2*, Contact ID

\* EST 4/2 is SIA DCS-02 P3 with the ability to transmit hexadecimal event codes.

**FCC Information**

1. The dialer complies with Part 68 of the FCC rules. The dialer's FCC certification number and Ringer Equivalence Number (REN) is displayed on the panel's programming label and in this manual. This information must be provided to the telephone company if requested.
2. Two FCC compliant telephone cords with 8-pin modular plugs at both ends are supplied with the FSDACT. The dialer is designed to be connected to the telephone network using the supplied cord and an RJ31X or RJ38X jack, which must also comply with FCC Part 68 rules.
3. The REN is used to determine the maximum number of devices that may be connected to a single telephone circuit. All telephone devices are assigned a REN. The sum of the RENs for all connected devices may not exceed five. The maximum REN may vary in some areas. Contact the local telephone provider for more information.
4. If the dialer causes harm to the telephone network, the telephone company will notify you an advance that temporary discontinuance of service may be required. If advance notice is not 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.
5. The telephone company may make changes in 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.
6. If trouble is experienced with the dialer, for repair or warranty information, contact the manufacturer at: (941) 739-4200. If the dialer is causing harm to the telephone network, the telephone company may request you disconnect the dialer until the problem is resolved.
7. No repairs may be performed on the dialer by the user.
8. The dialer can not be used on public coin phones or party line service provided by the telephone company.

**Industry Canada Information**

NOTICE: This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

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 coordinated by a representative 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 to disconnect the equipment.

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.

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

NOTICE: The Ringer Equivalence Number (REN) for this terminal equipment is 0.1. The REN assigned to each terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

## Connecting an RPM module

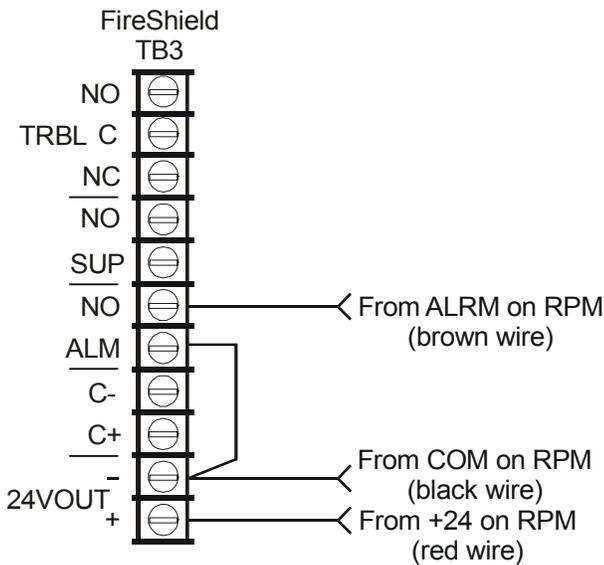
The Reverse Polarity Module (RPM) is an interface between FireShield and a reverse polarity receiver. It provides off-premises signal transmission for systems that must comply with NFPA requirements. When used as a reverse polarity remote station transmitter, it can be connected to either a single circuit (alarm or alarm and trouble) or up to three circuits (alarm, supervisory, and trouble).

**Note:** For detailed information and wiring, refer to the RPM installation sheet P/N 3100430.

Below are application diagrams for using the RPM.

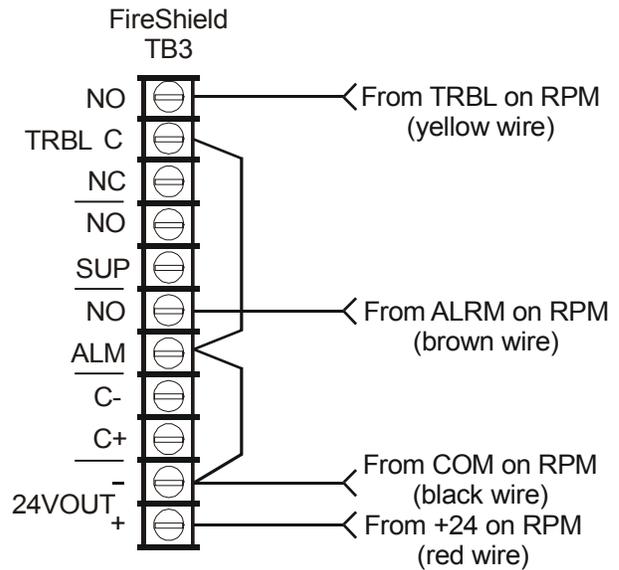
**Note:** The RPM must be mounted in an MFC-A enclosure immediately adjacent to the panel and in conduit.

### Alarm transmitted only



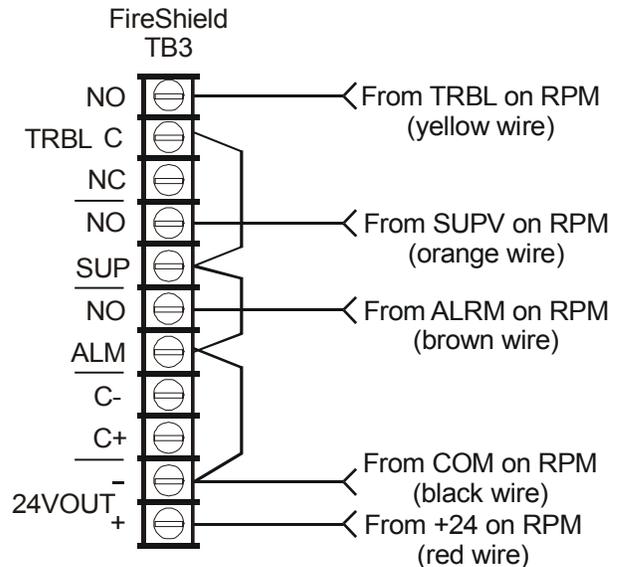
### Alarm and trouble transmitted on a single circuit

**Note:** JP1 on the RPM must be OUT.



### Alarm, supervisory, and trouble transmitted on separate circuits

**Note:** JP1 on the RPM must be IN.



## Connecting a CTM module

The CTM4.7 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 CTM4.7 activates a local energy fire alarm box, which provides a 24 Vdc alarm signal (current limited at 200 mA). The 4.7 K $\Omega$  end of line resistor required by the NAC is built in to the CTM4.7.

### Requirements

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

- The NAC used must be dedicated to CTM use only
- All alarm zones must be programmed to activate the dedicated NAC
- The NAC used must not be programmed for Signal Silence

### Specifications

Power: Nominal 24 Vdc @ 200 mA

Municipal box operation: Nominal 24 Vdc

Maximum wiring resistance: 25  $\Omega$

Trip current: 200 mA into 14.5  $\Omega$  coil

Maximum current: 300 mA

Standby current: 20 mA

Mounting: Single gang box

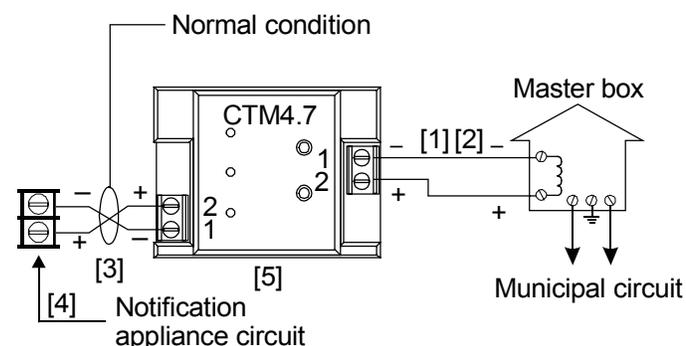
Operating environment

Temperature: 32 to 120 °F (0 to 49 °C)

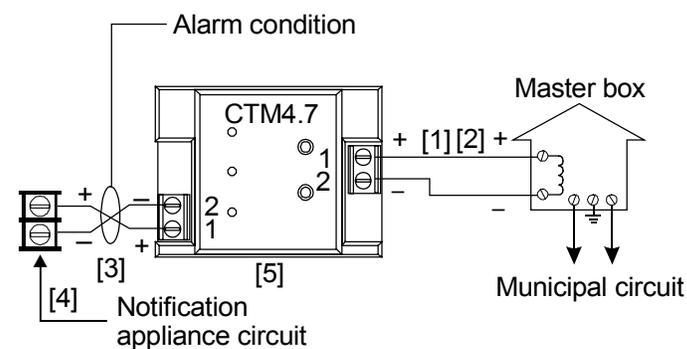
Humidity: 93% RH, noncondensing

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

#### Panel in normal condition



#### Panel in alarm condition



### Notes

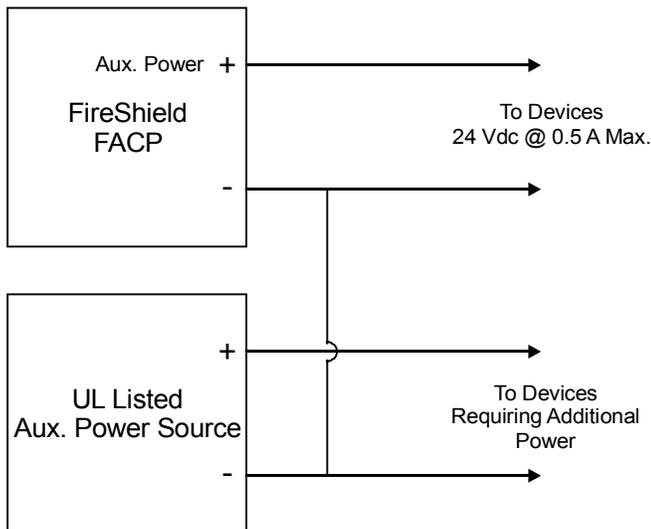
- [1] 200 mA into a 14.5  $\Omega$  trip coil max., loop resistance = 25  $\Omega$
- [2] This circuit is nonpower-limited and is supervised for grounds and opens, but not shorts
- [3] Supervised and power-limited
- [4] NAC must be programmed for continuous signal
- [5] CTM4.7 must be mounted in the same room as the panel

## Connecting an auxiliary power supply

Aux power supplied by the panel cannot exceed 0.5 A. If more than 0.5 A is required, you must use a compatible UL/ULC listed fire alarm power supply.

When using an auxiliary power supply, you must connect the -24 Vdc auxiliary terminal at the panel to the -24 Vdc output terminal of the listed auxiliary power supply used to power FireShield devices.

**Note:** For detailed wiring information, refer to the installation instructions that came with the auxiliary power supply.

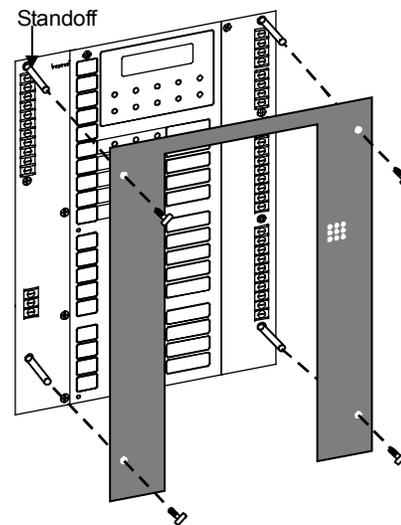


## Installing the terminal shield

The terminal shields for the three, five, and ten zone panels (model numbers ending in GC or GF) required for Canadian installation, cover and protect the wire connections at the terminal blocks.

### To install the terminal shield:

1. Remove the four corner mounting screws from the circuit board. Refer to the diagram below for location.
2. Mount the supplied standoffs to the four corner locations where you removed the screws.
3. Mount the terminal shield to the standoffs using the screws you removed in step 1. Refer to the diagram below.



# Chapter 3 Programming

## Overview

### Program options and settings

The features and functions of FireShield can be customized through programming. To customize the panel, you choose a program option, then choose a setting for that option. This chapter shows you how to program the panel.

### Programming methods

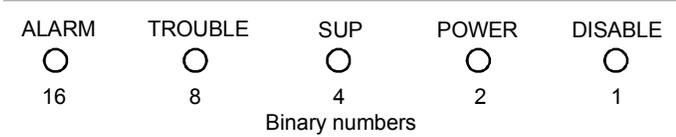
FireShield panels can be programmed using either of two methods.

First, you can use the panel's LEDs and switches, with or without an FSDACT installed.

Second, you can use a PC with an FSDACT installed. PC programming requires an optional software package, the FireShield Configuration Utility (model number FSCU). Refer to the FSCU online help system for complete programming instructions.

### Programming LEDs

In programming mode, the top row of panel LEDs indicates which program option is selected. Each LED is assigned a binary number, and the total value of the top row equals the option number. If you are not familiar with binary numbers, you can simply match the pattern of the LEDs with the programming instructions.



Top row of LEDs

Each option has a number of possible settings. The bottom row of panel LEDs indicates which setting is selected for the current option. The settings are detailed below in "Custom programming the panel." Again, each LED is assigned a binary number, and the total value of the bottom row equals the setting number.

The values of all LEDs lit on a single row are added to determine the option or setting number. For example, if the Gnd Fault, Walk Test, and Signal Silenced LEDs are lit, the value is 7 (4+2+1). This means that setting seven for the current option is selected.



Bottom row of LEDs

### FSDACT display

If you are using the *optional* FSDACT to program the panel, each option and setting is displayed on the LCD display.

The top row of the LCD displays the program option, and the bottom row displays the setting for that option. You can use the programming buttons to step through the options and select the settings you want.

### Programming buttons

The panel buttons take on a different function when the panel is in programming mode. The following table shows the buttons and describes what they do in programming mode.

Button	Description
	Selects the <b>next</b> program option. The <b>top</b> row of LEDs and the FSDACT LCD change to show the option selected.
	Selects the <b>previous</b> program option. The <b>top</b> row of LEDs and the FSDACT LCD change to show the option selected.
	Selects the <b>next</b> setting for the current option. The <b>bottom</b> row of LEDs and the FSDACT LCD change to show the setting selected.
	Selects the <b>previous</b> setting for the current option. The <b>bottom</b> row of LEDs and the FSDACT LCD change to show the setting selected.
	Saves the setting you selected for the current program option.

## Using the factory default settings

The panel comes from the factory programmed with a pre-defined set of defaults. The default settings are:

Option	Default setting
Find annunciators	None found
Auto signal silence timer	None
Aux power reset	No
Signal silence/reset inhibit timer	None
IDC zone types	Alarm (unverified) All IDCs activate all NACs
IDC class	Class B
NAC class	Class B
NAC output (NAC1 – NAC4)	GENESIS
NAC silenceable	Silenceable

For a more detailed list of defaults, see Appendix B, “Programming templates.”

If you want to use the factory programmed settings as they are, you do not need to perform any programming. If you do *not* want to use the panel’s default settings, refer to “Custom programming the panel.”

**Note:** You must run the Find Annunciators program option after adding or removing a remote annunciator. The remote annunciators will not operate properly until the panel detects them. These include the FSRSI, FSRZI-A, and FSRRM.

### Reloading the factory default settings

When you reload defaults, you return the panel to the factory-programmed settings. The primary purpose for loading the defaults is to return the panel to its original settings if the need arises. You can then start fresh by using these settings or custom program one or more options.

Program option Top LEDs/LCD	Setting Bottom LEDs/LCD	Description
○ ○ ○ ○ ● Load Defaults	○ ○ ○ ○ ● No	Do not load default settings
	○ ○ ○ ● ○ Yes	Load default settings

Key: ○ = OFF, ● = ON

#### To reload the default settings:

1. Install program jumper PRG.  
The panel common LEDs flash and the panel enters a trouble state. The trouble buzzer sounds.

2. Press Remote Disconnect to select the Load Defaults program option.
3. Press Reset to select Yes, the setting to reload the factory default settings.
4. Press Panel Silence to perform the reload.  
The trouble buzzer sounds a long beep as confirmation.
5. Exit program mode by removing the program jumper or continue to the next topic to custom program the panel. Refer to “Custom programming the panel” for more information.

## Using an FSDACT

If you have an FSDACT connected to your system, it must be recognized by the panel before programming. Also, if you remove an FSDACT from your system, it must be removed from the panel’s memory.

To do this, install the program jumper (PRG), then remove the program jumper. This allows the panel to recognize that an FSDACT was installed or removed from the system.

## Custom programming the panel

FireShield functionality can be custom programmed when the factory defaults do not meet your needs. The following options can be custom programmed:

1. Load defaults
2. Find annunciators
3. Auto signal silence timer
4. Aux power reset
5. Signal silence/reset inhibit timer
6. IDC zone types (and NACs that activate)
7. IDC class
8. NAC class
9. NAC output
10. NAC silenceable
11. Program FSDACT (if installed)

**Tip:** We recommend that you program the options in the order they are listed. This matches the order of the LEDs as you increment through each option. The lighting pattern of the LEDs corresponds to the program option you are programming and follows the binary number pattern associated with each row of LEDs.

## Getting started

You should complete the programming templates found in Appendix B before you program the panel. NFPA 72 requires that you keep a copy of these sheets on file.

The following table and procedures prepare the panel for custom programming.

### 1. Program load defaults

In this topic, you do not need to load the defaults. To load the default settings, see the topic “Reloading the factory default settings,” above.

Program option Top LEDs/LCD	Setting Bottom LEDs/LCD	Description
○ ○ ○ ○ ● Load Defaults	○ ○ ○ ○ ● No	Does not load default settings
	○ ○ ○ ● ○ Yes	Loads the default settings
Key: ○ = OFF, ● = ON		

#### To get started:

1. Install program jumper PRG.

The top rows of LEDs flash and the panel enters a trouble state. The trouble buzzer sounds.

2. Press Remote Disconnect to advance to the first programming option (Load Defaults).

The LEDs stop flashing, the Disable LED (binary value 1) lights, and “Load Defaults” is displayed on the FSDACT LCD display (if installed). The trouble buzzer turns off; however, the panel is still in a trouble state.

The Signal Silenced LED is on, showing that setting No is selected.

3. You can press Reset to step through the settings available for this option (No or Yes). Notice how the Signal Silenced and Walk Test LEDs switch to indicate the different options.

You are now ready to program your panel.

#### Notes

- You can exit program mode at any time by removing the program jumper. All saved program selections remain intact. When the jumper is removed, the panel resets.
- If no buttons are pressed for 90 seconds, the system returns to the initial program start state with the top row of LEDs flashing and the buzzer sounding.

### To program the panel

If no programming is required for a particular option, it can be skipped. You can use Remote Disconnect to advance to the

next option or Walk Test to return to the previous option. To save your changes, you must press Panel Silence before advancing to the next option.

### 2. Program find annunciators

Description: Verifies and logs each remote annunciator (FSRSI, FSRZI-A, and FSRRM) connected to your system.

#### Notes

- This process may take up to 40 seconds. During this time do not remove the program jumper. If the program jumper is removed, you must power down and power up the panel to get back into the programming mode.
- The Find Annunciators program option *must* be performed if you are using remote annunciators (FSRSI, FSRZI-A, or FSRRM) or if you add or remove a remote annunciator from your system.

Program option Top LEDs/LCD	Setting Bottom LEDs/LCD	Description
○ ○ ○ ● ○ Find Annunc	○ ○ ○ ○ ● xx now on bus	Does not look for devices.
	○ ○ ○ ● ○ Find devices	Logs all devices connected to the panel.

#### To find remote annunciators:

1. Press Remote Disconnect to select the program option.

If an FSDACT is installed, the lower line of the LCD displays “xx now on bus” where xx is the number of devices (between 0 and 12).

2. Press Reset to select Find devices.
3. Press Panel Silence to begin finding devices.

The bottom row of LEDs flashes and the second line of the LCD displays “Finding devices” while the panel searches for all remote annunciators.

When the search is complete, the bottom row of LEDs shows (in binary) the number of devices found. The second line of the LCD displays “was xx now yy.” The number of devices found (now) should equal the number of devices installed. If not, there is a wiring or device problem.

4. To end programming now, remove the program jumper. Otherwise, continue with “Program auto signal silence timer,” below.

### 3. Program auto signal silence timer

Description: A timer that, when programmed, automatically silences the NAC circuits 20 minutes after the last alarm event.

Program option Top LEDs/LCD	Setting Bottom LEDs/LCD	Description
○ ○ ○ ● ● Auto Sig Sil	○ ○ ○ ○ ● None	NACs stay on until Signal Silence is pressed
	○ ○ ○ ● ○ Sil aft 20 mins	NACs automatically turn off after twenty minutes

**To program the auto signal silence timer:**

1. Press Remote Disconnect to select the program option.
2. Press Reset to select your setting.
3. Press Panel Silence to save.

The trouble buzzer sounds a long beep as confirmation.

**4. Program aux power reset**

Description: Causes a temporary interruption of aux power when Reset is pressed. This is so that four-wire smoke detectors can be reset. If this is not programmed, pressing Reset has no effect on the aux power output.

**Caution:** This option must be set to No (continuous) if remote annunciators or relays are being used.

Program option Top LEDs/LCD	Setting Bottom LEDs/LCD	Description
○ ○ ● ○ ○ Aux Power Reset	○ ○ ○ ○ ● No	Continuous 24 Vdc on AUX PWR terminals
	○ ○ ○ ● ○ Yes	Resettable 24 Vdc on AUX PWR terminals

**To program aux power reset:**

1. Press Remote Disconnect to select the program option.
2. Press Reset to select your setting.
3. Press Panel Silence to save.

The trouble buzzer sounds a long beep as confirmation.

**5. Program signal silence/reset inhibit timer**

Description: Programs all NACs with a one-minute silence inhibit. This means that, the NACs cannot be silenced and the panel cannot be reset during their first minute of activation.

Program option Top LEDs/LCD	Setting Bottom LEDs/LCD	Description
○ ○ ● ○ ● Sig Sil Inhibit	○ ○ ○ ○ ● None	Signal Silence/Reset operational immediately after NACs turn on
	○ ○ ○ ● ○ Inhibit one min	Signal Silence/Reset operational one minute after NACs turn on

**To program the signal silence/reset inhibit timer:**

1. Press Remote Disconnect to select the program option.
2. Press Reset to select your setting.
3. Press Panel Silence to save.

The trouble buzzer sounds a long beep as confirmation.

**6. Program IDC zone types**

Description: Selects the type and functionality of each IDC.

**Note:** See the FireShield ULI and ULC compatibility lists P/N 3100468 for restrictions.

Default: Alarm - unverified, with all NACs active

Program option Top LEDs/LCD	Setting Bottom LEDs/LCD	Description
○ ○ ● ● ○ Program IDC	○ ○ ○ ○ ● Alarm-unverified	<b>Alarm-unverified:</b> For circuits with smoke detectors and contact devices. All activations are immediately considered as alarms. Circuit can not be restored until devices are restored to normal and panel is reset.
	○ ○ ○ ● ○ Alarm-verified	<b>Alarm-verified:</b> For circuits with smoke detectors and contact devices. 2-wire smoke detector activations are verified (delayed and confirmed) before activating an alarm. 4-wire smoke detectors and contact devices are not verified and immediately considered as alarms. Circuit can not be restored until devices are restored to normal and panel is reset.
	○ ○ ○ ● ● Retard-waterflow	<b>Waterflow (retard):</b> For connection of both vane type and pressure flow switches. Device activation must be maintained for at least 15 seconds before being considered an alarm. NACs activated by waterflow IDCs can not be silenced until activated devices restore to normal (panel reset not required). Circuit can not be restored until devices are restored to normal and panel is reset.

<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> Waterflow	<p><b>Waterflow (no retard):</b> For connection of both vane type and pressure flow switches. Activations are immediately considered as alarms. NACs activated by waterflow IDCs can not be silenced until activated devices restore to normal (panel reset not required). Circuit can not be restored until devices are restored to normal and panel is reset.</p>
<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> Ret-wf/superv	<p><b>Waterflow (retard) / supervisory (latching):</b> Special IDC that allows connection of both waterflow and supervisory devices on the same 2-wire circuit. Requires the use of two resistors (3.6 kΩ and 1.1 kΩ). The waterflow portion of the circuit functions the same as IDC Type 3 Waterflow (retard) and the supervisory portion functions the same as IDC Type 7 Supervisory (latching).</p>
<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input type="radio"/> Wf-supervisory	<p><b>Waterflow (no retard) / supervisory (latching):</b> Special IDC that allows the connection of both waterflow and supervisory devices on the same 2-wire circuit. Requires the use of two resistors (3.6 kΩ and 1.1 kΩ). See "Waterflow (no retard)" and "Supervisory (latching)" settings for additional information.</p>
<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> Supervisory	<p><b>Supervisory (latching):</b> For the connection of supervisory devices. Momentary activation of normally open devices immediately places the panel in a supervisory state and turns on supervisory LEDs and relays. Circuit can not be restored until devices are restored to normal and panel is reset.</p>
<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> Monitor	<p><b>Monitor:</b> Monitoring of normally open switches for other functions (fire door position, etc.). Not approved for use under ULC 527 in Canada.</p>

**To program IDC zone types:**

- Press Remote Disconnect to select the program option.  
For new panels, the Trouble LED of IDC 1 lights. Otherwise, the Trouble LED of the last IDC programmed lights. To select an IDC for programming, press the IDC Disable button.
- Press Reset to select the desired IDC zone type.  
**Note:** If you program an IDC as a waterflow/supervisory, a supervisory activation will not turn on the outputs (NACs and relays). Only a waterflow activation will turn on the outputs.
- Program which NAC activates for the IDC.  
The Trouble LED for the NAC lights to indicate which NAC is associated with the IDC. Press the NAC Disable button to deselect (or reselect) it for activation.  
The default is that each alarm or waterflow IDC activates all NACs. Only alarm, waterflow, and supervisory can operate NACs. Alarm and supervisory IDCs should not be assigned to the same NACs. Monitor zones can not be assigned to NACs.
- Press Panel Silence to save your selection for the IDC.  
The trouble buzzer sounds a long beep as confirmation.
- Select the next IDC for programming by pressing its Disable button.  
The corresponding Trouble LED lights to indicate your selection.
- Program the IDC by repeating steps 2 through 4, above.  
Complete this procedure for each IDC before moving on to the next program option.

**7. Program IDC classes**

Description: Programs the IDCs as either Class B or Class A. This option only appears for panels that can be configured as Class A. All IDC types except the two combination waterflow/supervisory options can be configured as Class A

For Class A operation, you need to configure a pair of IDCs, one odd and one even. When you change the class of an IDC, you must change the class of both IDCs in the pair.

Program option Top LEDs/LCD	Setting Bottom LEDs/LCD	Description
<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/>	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/>	IDC wired as Class B
IDC Class	Class B	
	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	IDC wired as Class A
	Class A	

**To program IDC classes:**

1. Press Remote Disconnect to select the program option.  
The last programmed IDC Trouble LED stays lit.
2. Press Reset to select Class A or Class B.
3. Press Panel Silence to save your selection.  
The trouble buzzer sounds a long beep as confirmation.
4. Program each IDC class by pressing the IDC Disable button to light the IDC Trouble LED. When the Trouble LED is lit, you can program the IDC class by repeating steps 2 and 3 above.

**Note:** Make sure you set the IDC jumpers to match the class for which you program the IDC.

**8. Program NAC classes**

Description: Programs the NACs as either Class B or Class A.

For Class A operation, you need to configure a pair of NACs, one odd and one even. When you change the class of an NAC, you must change the class of both NACs in the pair.

Program option Top LEDs/LCD	Setting Bottom LEDs/LCD	Description
○ ● ○ ○ ○	○ ○ ○ ○ ●	NAC wired as Class B
NAC Class	Class B	
	○ ○ ○ ● ○	NAC wired as Class A
	Class A	

**To program NAC classes:**

1. Press Remote Disconnect to select the program option.  
For new panels, the Trouble LED of NAC 1 lights. Otherwise, the Trouble LED of the last NAC programmed lights. To select a NAC for programming, press the NAC Disable button.
2. Press Reset to select Class A or Class B.  
**Note:** Whenever NAC pairs are programmed for Class A, output pairs must be programmed for the same output types.
3. Press Panel Silence to save.  
The trouble buzzer sounds a long beep as confirmation.
4. Program each NAC class by pressing the NAC Disable button to light the NAC Trouble LED. When the Trouble LED is lit, you can program the NAC class by repeating steps 2 and 3 above.

**Note:** Make sure you set the NAC jumpers to match the class for which you program the NAC.

**9. Program NAC outputs**

Description: Programs the output of each NAC.

Program option Top LEDs/LCD	Setting Bottom LEDs/LCD	Description
○ ● ○ ○ ● NAC Output	○ ○ ○ ○ ● Continuous	<b>NAC outputs continuous signal:</b> For strobes and notification appliances that self-generate a temporal pattern.
	○ ○ ○ ● ○ Temporal	<b>NAC outputs temporal (3-3-3) signal:</b> Universal 3-3-3 pattern required for evacuation signals by NFPA 72. Used when notification appliances are not capable of self-generating a temporal pattern.
	○ ○ ○ ● ● GENESIS	<b>GENESIS sync/silence:</b> Used with Genesis and Enhanced Integrity horns and strobes. Genesis and Enhanced Integrity appliances maintain synchronization per UL 1971. For Genesis devices, it allows connected horns to be silenced while strobes on the same 2-wire circuit continue to flash until the panel is reset.

**To program NAC outputs:**

1. Press Remote Disconnect to select the program option.  
The last programmed NAC Trouble LED stays lit.
2. Press Reset to select your setting.
3. Press Panel Silence to save.  
The trouble buzzer sounds a long beep as confirmation.
4. Program the output for each NAC by pressing the NAC Disable button to light the Trouble LED for that NAC. When the Trouble LED is lit, you can program the NAC by repeating steps 2 and 3 above.  
**Note:** Whenever NAC pairs are programmed for Class A, output pairs must be programmed for the same output types.

**10. Program NAC as Silenceable**

Description: Programs the NAC as silenceable. If set to No, the NAC, when activated, cannot be silenced using the Signal Silence & Drill button or the auto signal silence feature. It can only be silenced with a panel reset.

Program option Top LEDs/LCD	Setting Bottom LEDs/LCD	Description
<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> NAC Silenceable	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> No	NAC does not turn off when Signal Silence is pressed
	<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> Yes	NAC turns off when Signal Silence is pressed

**Note:** It is not necessary to select this option for waterflow IDCs. NACs assigned to waterflow IDCs can not be silenced as long as the IDC has an active input. The IDC remains in the alarm state until the panel is reset.

If the auto signal silence feature is programmed, the panel silences the associated NAC when the waterflow switch is no longer active and the timer has expired.

If Signal Silence & Drill is pressed when a waterflow circuit is active, the associated NAC circuit does not silence until the waterflow condition is no longer active.

#### To program the NACs as silenceable:

- Press Remote Disconnect to select the program option.  
The last programmed NAC Trouble LED stays lit.
- Press Reset to select your setting.
- Press Panel Silence to save.  
The trouble buzzer sounds a long beep as confirmation.
- Program each NAC by pressing the NAC Disable button to light the Trouble LED for that NAC. When the Trouble LED is lit, you can program the zone by repeating steps 2 and 3 above.

### 11. Programming the FSDACT

Description: Initiates the FSDACT for programming. This option is not displayed if you do not have a FSDACT; you can proceed to “Finishing up,” below.

Program option Top LEDs/LCD	Setting Bottom LEDs/LCD	Description
<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input checked="" type="radio"/> Program DACT	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> No	Does <i>not</i> switch to FSDACT programming mode.
	<input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> Yes	Automatically switches the panel to FSDACT programming mode.

#### To program the FSDACT:

- Press Remote Disconnect to select the program option.
- Press Reset to select Yes or No.
- Press Panel Silence to save.  
The trouble buzzer sounds a long beep as confirmation.

If you selected Yes, the panel automatically switches to FSDACT programming mode and “DACT Programming” is displayed on the LCD. Refer the next topic “FSDACT programming” for complete programming instructions.

If you selected No, proceed to “Finishing up,” below. You can return to FSDACT programming at any time.

**Tip:** If no panel programming is needed, you can go directly to this program option by following these steps:

- Insert the program jumper.
- Press Remote Disconnect.
- Press Walk Test.

#### Finishing up

##### To finish up:

- Remove the program jumper PRG.  
You can store the suitcase jumper on one pin.
- Panel programming is complete.
- The panel will reset. At the conclusion of the reset, make sure the panel is free of troubles. If IDC or NAC trouble LEDs are on, check to see that the jumper settings match the program options selected.
- Test all circuits and panel functions to make sure that the panel was programmed correctly.

## FSDACT programming

Programming the FSDACT sets up the dialer for communication with the central monitoring station. It also sets a number of other options such as date, time, phone numbers, etc. Many of the options have default settings, which are detailed below. These settings can be changed if desired.

### Programming buttons

The panel buttons function in the following way when in FSDACT programming mode.

#### Button descriptions

Button	Description
	Selects the <b>next</b> program option
	Selects the <b>previous</b> program option
	Selects the <b>next</b> setting for the current option. Also increments through the digits of numeric entries such as telephone numbers
	Selects the <b>previous</b> setting for the current option Also decrements through the digits of numeric entries such as telephone numbers
	Saves the setting you selected for the current program option Advances cursor to the next digit of a field (e.g. entering a phone number) <b>Note:</b> When pressed in the last digit of a field, the information is saved and the next program option is displayed

**Tip:** In this chapter we tell you to press Reset to scroll through each list of settings. However, to enter a setting that’s near the end of the list, it may be faster to press Signal Silence & Drill to move *backwards* through the list of selections.

### Digit descriptions

The following table describes the function of each digit that can be entered in FSDACT programming fields.

Digit	Telephone number	4.2 event codes
0 to 9	Numeric digits	Numeric digits
A	DTMF A	Hexadecimal A (10)
B	DTMF B	Hexadecimal B (11)
C		Hexadecimal C (12)

Digit	Telephone number	4.2 event codes
D		Hexadecimal D (13)
E		Hexadecimal E (14)
F	Terminator (indicates last digit)	Hexadecimal F (15)
*	DTMF *	
#	DTMF #	
,	DTMF , (used for a pause between digits)	

### Getting started

You should complete the programming templates found in Appendix B before you program the panel. NFPA 72 requires that you keep a copy of these sheets on file.

Follow the steps below to prepare the panel for FSDACT programming. If you are already in programming mode, skip the first three steps and start at number four below.

#### To get started:

1. Install program jumper PRG.  
Panel common LEDs flash and the panel enters a trouble state. The trouble buzzer sounds.
2. Press Remote Disconnect to advance to the first programming option (Load Defaults).  
The LEDs stop flashing, the Disable LED (binary 1) lights, and Load Defaults is displayed on the LCD. The trouble buzzer turns off; however, the panel is still in a trouble state.
3. Do not load defaults. Press Walk Test until “DACT Programming” is displayed.
4. Press Reset until Yes is selected.
5. Press Panel Silence to begin FSDACT programming.  
The panel automatically switches to FSDACT programming mode and “DACT Programming” is displayed on the LCD.
6. Enter your password. Refer to “Programming the FSDACT” below.

**Note:** You can exit from programming mode at any time by removing the program jumper. All saved program selections will remain intact.

## Programming the FSDACT

When you program the FSDACT, you'll follow these general steps:

1. Enter your passcode
2. Load default settings
3. Edit your passcode
4. Enter the date
5. Enter the time
6. Select the FSDACT mode
7. Enter the (DACR1) primary phone number
8. Enter the (DACR1) secondary phone number
9. Enter the (DACR1) account code
10. Select the DACR1 alarm format
11. Select the restore option for CMS one
12. Enter retry count one
13. Enter retry time one
14. Enter the (DACR2) primary phone number
15. Enter the (DACR2) secondary phone number
16. Enter the (DACR2) account code
17. Select the DACR2 alarm format
18. Select the restore option for CMS two
19. Enter retry count two
20. Enter retry time two
21. Select tone or pulse dialing
22. Select AC fail delay time
23. Enter the transmission test time
24. Select the transmission test frequency
25. Enter the number of rings to answer
26. Select the ring type
27. Enable (disable) call back
28. Enter the call back phone number

**Tip:** If you save an incorrect digit, press Walk Test then Remote Disconnect. This returns the cursor to the first digit. Press Panel Silence until the cursor is at the incorrect digit. Enter the correct digit, then press Panel Silence to save and advance to the next digit.

### 1. Enter your passcode

Description: Access to dialer programming is passcode restricted. For security, the default passcode should be changed as part of the installation. (To change the passcode, refer to "Edit passcode," below.)

Format: 7 digits

Default: 1111111

#### To enter your passcode:

---

1. Press Reset (or Signal Silence & Drill) to scroll through the setting list until the first digit of your passcode is displayed.
2. Press Panel Silence to save and advance to the next digit.  
The trouble buzzer sounds a long beep as confirmation.

3. Press Reset (or Signal Silence & Drill) until the next digit of your passcode is displayed.
4. Press Panel Silence to save and advance to the next digit.
5. Repeat steps 3 and 4 until all digits are entered.
6. When you press Reset at the last digit, the system automatically advances you to the next program option.

### 2. Load default settings

Description: Loads the factory default settings for each program option.

Settings: Yes = Loads the default settings  
No = Does not load the default settings

Default: No

#### To load default settings:

---

1. Press Reset to select Yes or No.
2. Press Panel Silence to save and advance to the next program option.  
The trouble buzzer sounds a long beep as confirmation.

### 3. Edit your passcode

Description: You have the option to change your passcode or continue with programming.

Format: 7 digits

Default: No default

#### To skip changing your passcode:

---

1. Press Remote Disconnect to advance to the next program option.

#### To change your passcode:

---

1. Press Reset until the first digit of your *new* passcode is displayed.
2. Press Panel Silence to save and advance to the next digit.  
The trouble buzzer sounds a long beep as confirmation.
3. Press Reset until the next digit is displayed.
4. Press Panel Silence to save and advance to the next digit.
5. Repeat steps 3 and 4 until all digits are entered.
6. When you press Panel Silence at the last digit, the system automatically advances you to the next program option.

### 4. Enter the date

Description: Sets the current date.

Format: MMDDYYYY

Default: 01012002

**Tip:** Don't forget that you can press Reset *or* Signal Silence & Drill to scroll through the list of settings. It may be faster to press Signal Silence & Drill to scroll backwards through the settings.

**To enter the current date:**

---

1. Press Reset until the correct month is displayed.
2. Press Panel Silence to save the month setting and advance to the day setting.  
The trouble buzzer sounds a long beep as confirmation.
3. Press Reset until the correct day is displayed.
4. Press Panel Silence to save the day setting and advance to the year setting.  
The trouble buzzer sounds a long beep as confirmation.
5. Press Reset until the correct year is displayed.
6. Press Panel Silence to save the year setting and advance to the next option.  
The trouble buzzer sounds a long beep as confirmation.

**5. Enter the time**

Description: Sets the current time.

Format: HHMM

Default: 0000

**To enter the current time:**

---

1. Press Reset until the correct hour is displayed.
2. Press Panel Silence to save the hour setting and advance to the minute setting.  
The trouble buzzer sounds a long beep as confirmation.
3. Press Reset until the correct minute is displayed.
4. Press Panel Silence to save the minute setting and advance to the next program option.  
The trouble buzzer sounds a long beep as confirmation.

**6. Select the FSDACT mode**

Description: Determines how the FSDACT operates.

Settings: Single Line DACT  
Dual Line DACT (required by UL 864)  
Modem/LCD only  
LCD only

Default: Dual Line DACT

**To select the desired FSDACT mode:**

---

1. Press Reset to select the desired format.
2. Press Panel Silence to save and advance to the next step.

The trouble buzzer sounds a long beep as confirmation.

**Note:** If Single Line DACT is selected, dual line programming is skipped. If Modem/LCD only is selected, all account and receiver related programming is skipped. If LCD only is selected, all account, receiver, and telephone related programming is skipped.

**7. Enter the (DACR1) primary phone number**

**Note:** If a DACR1 primary phone number is not entered, skip "Enter the (DACR1) secondary phone number" through "Enter retry count one," inclusive.

Description: Specifies the primary phone number that is used to contact the central monitoring station.

Format: Up to 20 digits

Default: Blank

**Tip:** If you save an incorrect digit, press Walk Test then Remote Disconnect. This returns the cursor to the first digit. Press Panel Silence until the cursor is at the incorrect digit. Enter the correct digit, then press Panel Silence to save and advance to the next digit.

**To enter the primary phone number:**

---

1. Press Reset until the first digit of the phone number is displayed.
2. Press Panel Silence to save and advance to the next digit.  
The trouble buzzer sounds a long beep as confirmation.
3. Press Reset until the next digit is displayed.
4. Press Panel Silence to save and advance to the next digit.
5. Repeat steps 3 and 4 until all digits are entered.  
**Note:** If less than 20 digits are entered, press Panel Silence again or Remote Disconnect to advance to the next program option.
6. When you press Panel Silence at the last digit (20th digit), the system automatically advances you to the next program option.

**8. Enter the (DACR1) secondary phone number**

Description: Specifies the secondary phone number that is used to contact the central monitoring station.

Format: Up to 20 digits

Default: Blank

To enter the secondary phone number, follow the same steps you used to enter the primary phone number. (See "Enter the (DACR1) primary phone number" above.)

### 9. Enter the (DACR1) account code

Description: Sets the account code for DACR1. This is the code that is used by the monitoring facilities receiver to identify the panel location and response information. Use a leading zero to enter a three-digit account code as four digits.

Format: 4 digits

Default: FFFF

#### To enter the account code:

---

1. Press Reset until the first digit of the account code is displayed.
2. Press Panel Silence to save and advance to the next digit.  
The trouble buzzer sounds a long beep as confirmation.
3. Press Reset until the next digit is displayed.
4. Press Panel Silence to save and advance to the next digit.
5. Repeat steps 3 and 4 until all digits are entered.
6. When you press Panel Silence at the last digit, the system automatically advances you to the next program option.

### 10. Select the DACR1 alarm format

Description: Specifies the type of alarm format the monitoring facility (DACR) will accept. Selecting either Contact ID or 4/2 loads default event codes (see Appendix E for more information).

Settings: Contact ID  
EST 4/2 (SIA DC-02 P3 with hexadecimal event codes)

Default: Contact ID

#### To select the DACR1 alarm format:

---

1. Press Reset to select the desired format.
2. Press Panel Silence to save and advance to the next step.  
The trouble buzzer sounds a long beep as confirmation.

### 11. Select the restore option for CMS one

Description: Determines whether or not restoration events are sent to the first central monitoring station.

Settings: Send restores  
No restores

Default: Send restores

#### To select the restore option:

---

1. Press Reset to select the restore option for CMS one.
2. Press Panel Silence to save.  
The trouble buzzer sounds a long beep as confirmation.

### 12. Enter retry count one

Description: Sets the maximum number of failed attempts to deliver an alarm to a DACR.

Settings: 5 – 10 retries

Default: 5 (retries)

#### To enter retry count one:

---

1. Press Reset to change the retry count.
2. Press Panel Silence to save and advance to the next program option.  
The trouble buzzer sounds a long beep as confirmation.

### 13. Enter retry time one

Description: Sets the delay time before trying to resend an alarm to a DACR.

Format: 2 digits max (5 – 10 seconds)

Default: 5 (seconds)

#### To enter retry time one:

---

1. Press Reset to enter the retry time.
2. Press Panel Silence to save and advance to the next program option.  
The trouble buzzer sounds a long beep as confirmation.

### 14. Enter the (DACR2) primary phone number

**Note:** If a DACR2 primary phone number is not entered, skip “Enter the (DACR2) secondary phone number” through “Enter retry count two,” inclusive.

Description: Specifies the primary phone number that is used to contact the central monitoring station.

Format: Up to 20 digits

Default: Blank

#### To enter the primary phone number:

---

1. Press Reset until the first digit of the phone number is displayed.
2. Press Panel Silence to save and advance to the next digit.  
The trouble buzzer sounds a long beep as confirmation.
3. Press Reset until the next digit is displayed.
4. Press Panel Silence to save and advance to the next digit.
5. Repeat steps 3 and 4 until all digits are entered.  
**Note:** If less than 20 digits are entered, press Panel Silence again or Remote Disconnect to advance to the next program option.

- When you press Reset at the last digit (20th digit), the system automatically advances you to the next program option.

#### 15. Enter the (DACR2) secondary phone number

Description: Specifies the secondary phone number that is used to contact the central monitoring station.

Format: Up to 20 digits

Default: Blank

To enter the secondary phone number, follow the same steps you used to enter the primary phone number. (See “Enter the (DACR2) primary phone number” above.)

#### 16. Enter the (DACR2) account code

Description: Sets the account code for DACR2. This is the code that is used by the monitoring facilities receiver to identify the panel location and response information.

Format: 4 digits

Default: FFFF

##### To enter the account code:

---

- Press Reset until the first digit of the account code is displayed.
- Press Panel Silence to save and advance to the next digit.  
The trouble buzzer sounds a long beep as confirmation.
- Press Reset until the next digit is displayed.
- Press Panel Silence to save and advance to the next digit.
- Repeat steps 3 and 4 until all digits are entered.
- When you press Reset at the last digit, the system automatically advances you to the next program option.

#### 17. Select the DACR2 alarm format

Description: Specifies the type of alarm protocol the DACR will accept.

Settings: Contact ID  
EST 4/2 (SIA DC-02 P3 with hexadecimal event codes)

Default: Contact ID

##### To select the DACR2 alarm format:

---

- Press Reset to select the desired format.
- Press Panel Silence to save and advance to the next step.  
The trouble buzzer sounds a long beep as confirmation.

#### 18. Select the restore option

Description: Determines whether or not restoration events are sent to the second central monitoring station.

Settings: Send restores

No restores

Default: Send restores

##### To select the restore option:

---

- Press Reset to select the restore option for CMS two.
- Press Panel Silence to save.  
The trouble buzzer sounds a long beep as confirmation.

#### 19. Enter retry count two

Description: Sets the maximum number of failed attempts to deliver an alarm to a DACR.

Settings: 5 – 10 retries

Default: 5 (retries)

##### To enter retry count two:

---

- Press Reset to change the retry count.
- Press Panel Silence to save and advance to the next program option.  
The trouble buzzer sounds a long beep as confirmation.

#### 20. Enter retry time two

Description: Sets the delay time before trying to resend an alarm to a DACR.

Format: 2 digits max (5 – 10 seconds)

Default: 5 (seconds)

##### To enter retry time two:

---

- Press Reset to change the retry time.
- Press Panel Silence to save and advance to the next program option.  
The trouble buzzer sounds a long beep as confirmation.

#### 21. Select tone or pulse dialing

Description: Specifies whether the phone line is set up for tone dialing or pulse dialing.

Settings: Tone  
Pulse

Default: Pulse

**Note:** Touch tone is recommended where available.

##### To select tone or pulse dialing:

---

- Press Reset to select tone or pulse dialing for line 1.
- Press Panel Silence to save.  
The trouble buzzer sounds a long beep as confirmation.

3. Press Reset to select tone or pulse dialing for line 2.
4. Press Panel Silence to save and advance to the next program option.

The trouble buzzer sounds a long beep as confirmation.

## 22. Select AC fail delay time

Description: The AC fail delay lets you set the amount of time before the panel signals that it is operating with insufficient or no AC power.

Settings: 6 hours (central station)  
15 hours (remote station)

Default: 6 hours

### To select the AC fail delay time:

---

1. Press Reset to select the desired AC fail delay time.
2. Press Panel Silence to save and advance to the next step.  
The trouble buzzer sounds a long beep as confirmation.

## 23. Enter the transmission test time

Description: Specifies the time of day the transmission test message is sent to the CMS. Values are in 24-hour time.

Format: 0000 – 2359

Default: 0217

### To enter the transmission test time:

---

1. Press Reset to enter the hour.
2. Press Panel Silence to save.  
The trouble buzzer sounds a long beep as confirmation.
3. Press Reset to enter the minutes.
4. Press Panel Silence to save and advance to the next program option.  
The trouble buzzer sounds a long beep as confirmation.

## 24. Select the transmission test frequency

Description: Specifies the number of days between sending a transmission test message to the CMS.

**Note:** NFPA 72 and UL 864 require daily tests for commercial systems.

Settings: 0 = None  
1 = Daily  
2 = 30 days

Default: 1 (daily)

### To select the transmission test frequency:

---

1. Press Reset to select the transmission test frequency.

2. Press Panel Silence to save and advance to the next step.  
The trouble buzzer sounds a long beep as confirmation.

## 25. Enter the number of rings to answer

Description: Sets the number of rings that are ignored before answering an incoming modem call.

Settings: 0 – 15 rings

Default: 5 (rings)

### To enter the number of rings:

---

1. Press Reset to change the number of rings to answer.
2. Press Panel Silence to save and advance to the next program option.  
The trouble buzzer sounds a long beep as confirmation.

## 26. Select the ring type

Description: Specifies the type of ring expected when an incoming call is received.

Default: Ring type (additional options to be added in future release). DACT answers any ring type after programmed ring count.

### To select the ring type:

---

1. Press Reset to select ring type.
2. Press Panel Silence to save and advance to the next step.  
The trouble buzzer sounds a long beep as confirmation.

## 27. Enable (disable) call back

Description: Call back adds increased security when uploading or downloading. When an incoming call is received on line one, the panel establishes a connection and waits for a valid password. If call back is not enabled, uploading or downloading begins. If call back is enabled, the panel disconnects the incoming call and dials the programmed call back number. Once the connection is reestablished, uploading or downloading can begin.

Settings: No  
Yes

Default: No

### To enable (disable) call back:

---

1. Press Reset to select enable (disable) call back.
2. Press Panel Silence to save and advance to the next program option.  
The trouble buzzer sounds a long beep as confirmation.

### 28. Enter the call back phone number

Description: Specifies the phone number that is used for call back.

Format: Up to 20 digits

Default: Blank

#### To enter the call back phone number:

1. Press Reset until the first digit of the phone number is displayed.
2. Press Panel Silence to save and advance to the next digit. The trouble buzzer sounds a long beep as confirmation.
3. Press Reset until the next digit is displayed.
4. Press Panel Silence to save and advance to the next digit.
5. Repeat steps 3 and 4 until all digits are entered.  
**Note:** If less than 20 digits are entered, press Panel Silence again or Remote Disconnect to advance to the next program option.
6. When you press Reset at the last digit (20th digit), the system automatically advances you to the next program option.

### Event notification programming

Event notification programming determines where events are sent. Events can be sent to the primary, secondary, or both central monitoring stations (CMS), or you can choose not to send the event at all.

To program event notification, follow these general steps:

1. Select CMS locations for event reporting
2. Enter the system trouble restore code

**Note:** If you are only using one central monitoring station and are using the default settings, no further programming is required. You can exit from programming by removing the program jumper.

The first event notification programming option after completing “Select the restore option” is “Panel Tst Rcvr.” Twenty-one event receiver locations must be programmed using steps described below, under “Select CMS locations for event reporting.”

CS Tst Rcvr  
 CS AB Tst Rcvr  
 Walk Tst Rcvr  
 Drill Rcvr  
 Reset Rcvr  
 Program Mode Rcvr  
 DACT Disab Rcvr  
 Panel Sil Rcvr  
 Signal Sil Rcvr  
 Grd Fault Rcvr

Low Batt Rcvr  
 Mis Batt Rcvr  
 Int Comm Tr Rcvr  
 AC Fail Rcvr  
 Charger Tr Rcvr  
 Xfrmr 2 Tr Rcvr  
 Aux Pwr Tr Rcvr  
 Periph Trb Rcvr  
 Line 1 Trb Rcvr  
 Line 2 Trb Rcvr  
 Delivery Tr Rcvr

After programming the receiver locations, continue with the steps described under “Enter the system trouble restore code.”

#### 1. Select CMS locations for event reporting

Description: Specifies which CMS receives each event.

Settings: None  
 CS 1  
 CS 2  
 CS 1 and 2

Default: CS 1

#### To select the CMS locations for event reporting:

1. Press Reset to select the desired CMS location.
2. Press Panel Silence to save and advance to the next program option. The trouble buzzer sounds a long beep as confirmation.
3. Repeat steps 1 and 2 to set the CMS location for each option.
4. When you reach the last option, proceed to "Enter the system trouble restore code" below.

#### 2. Enter the system trouble restore code

Description: Sets the code that is transmitted to the CMS with trouble restoral events.

Format: 1 digit (0 – 9 and A – F)

Default: See Appendix E “Default event codes.” This can be changed if needed.

#### To enter the system trouble restore code:

1. Press Reset to increment the restore code if it needs to be changed.
2. Press Panel Silence to save and advance to the next program option. The trouble buzzer sounds a long beep as confirmation.

## Circuit programming

Circuit programming defines the routes and codes used to report IDC and NAC events. Unless the options described below are changed, the factory default event codes are sent to CS 1 only. If the default selections are acceptable, you can skip to “End programming” below.

**Note:** IDC disabled and NAC disabled events are automatically routed to the receiver you select for the IDC trouble activation and NAC trouble activation events.

To program the circuits, you’ll follow these general steps:

1. Select the receiver for each IDC event
2. Select the receiver for each NAC trouble event
3. Set up or change system event codes
4. Set up or change IDC event codes
5. Set up or change the IDC zone restoration code
6. Set up or change the NAC trouble code
7. Set up or change the NAC trouble restoration code
8. End programming

### 1. Select the receiver for each IDC event

Description: Determines where alarm, waterflow, trouble, supervisory, and monitor IDC events are reported.

An IDC has five possible events. You only need to program those events that apply to the *zone type* of the selected IDC.

For example, if the IDC is configured as alarm-verified (or alarm-unverified) you only need to configure the alarm and trouble events. You don’t need to select a receiver for the waterflow, supervisory, or monitor events for that IDC.

The following table lists the events that apply to each zone type.

Zone type	Event types				
	Alarm	Waterflow	Trouble	Supervisory	Monitor
Alarm	X		X		
Waterflow		X	X		
Waterflow / Supervisory		X	X	X	
Supervisory			X	X	
Monitor			X		X

Settings: None  
 CS 1  
 CS 2  
 CS 1 and 2

Default: CS 1

### To select the receiver for each IDC event:

1. Select an IDC for programming by pressing the Disable button for that IDC.
2. Determine the zone type assigned to the selected IDC. Refer to the “Panel programming worksheet” you completed.
3. Use the table shown above to determine which event types need to be configured.
4. Press Remote Disconnect or Walk Test to select the desired event type.
5. Press Reset to select the desired receiver.
6. Press Panel Silence to save the setting.  
 The trouble buzzer sounds a long beep as confirmation.
7. Repeat steps 4 and 5 for each event type you need to configure.
8. Repeat steps 1 through 7 for each IDC you want to program.
9. When the required IDCs have been programmed, press Remote Disconnect to advance to the next program option.

### 2. Select the receiver for each NAC trouble event

Description: Determines where an NAC trouble event is reported.

**Note:** You must program each NAC during this step.

Settings: None  
 CS 1  
 CS 2  
 CS 1 and 2

Default: CS 1

### To select the receiver for each NAC trouble event:

1. Select an NAC for programming by pressing the Disable button for that NAC.
2. Press Reset to select the desired receivers.
3. Press Panel Silence to save the setting.  
 The trouble buzzer sounds a long beep as confirmation.
4. Repeat steps 1 through 3 for each NAC you want to program.
5. When all NACs have been programmed, press Remote Disconnect to advance to the next program option.

### 3. Set up or change system event codes

Description: Defines the 4/2 event codes (reset, drill, trouble silence, etc.) that are sent to the CMS for system level events.

## Programming

Format: 2 digits (0 – 9 and A – F)

Default: See Appendix E “Default event codes.” These can be changed if needed.

**Note:** If you are using Contact ID or the default 4/2 codes, you can skip ahead to “End programming” now.

### To change system event codes:

---

1. Press Reset or Signal Silence & Drill to scroll to the event code that you want to change.
2. Press Reset to change the first digit of the code.
3. Press Panel Silence to save and advance to the next digit.  
The trouble buzzer sounds a long beep as confirmation.
4. Press Reset to change the second digit.
5. Press Panel Silence to save.
6. Press Reset to advance to the next event code.

#### 4. Set up or change IDC event codes

Description: Defines the 4/2 event codes (alarm, sup, trouble, etc.) that are sent to the CMS for IDC events.

Format: 2 digits (0 – 9 and A – F)

Default: See Appendix E “Default event codes.” These can be changed if needed.

### To change IDC event codes:

---

1. Select an IDC for programming by pressing the Disable button for that IDC.
2. Press Reset or Signal Silence & Drill to scroll to the event code that you want to change.
3. Press Reset to change the first digit of the code.
4. Press Panel Silence to save and advance to the next digit.  
The trouble buzzer sounds a long beep as confirmation.
5. Press Reset to change the second digit.
6. Press Panel Silence to save.
7. Repeat steps 1 through 6 for each IDC you want to program.
8. Press Reset to advance to the next event code.

#### 5. Set up or change the IDC zone restoration code

Description: Sets the 4/2 event code that is transmitted to the CMS for an IDC restoral event.

Format: 1 digit (0 – 9 and A – F)

Default: See Appendix E “Default event codes.” This can be changed if needed.

### To change the IDC zone restoration code:

---

1. Press Reset to change the IDC zone restoration code.
2. Press Panel Silence to save and advance to the next program option.  
The trouble buzzer sounds a long beep as confirmation.

#### 6. Set up or change the NAC trouble code

Description: Sets the 4/2 event code that is transmitted to the CMS for a NAC trouble event.

Format: 2 digits (0 – 9 and A – F)

Default: See Appendix E “Default event codes.” This can be changed if needed.

### To change the NAC trouble code:

---

1. Select an NAC for programming by pressing the Disable button for that NAC.
2. Press Reset to change the first digit of the code.
3. Press Panel Silence to save and advance to the next digit.  
The trouble buzzer sounds a long beep as confirmation.
4. Press Reset to change the second digit.
5. Press Panel Silence to save.
6. Repeat steps 1 through 5 for each NAC you want to program.
7. Press Reset to advance to the next program option.

#### 7. Set up or change the NAC trouble restoration code

Description: Sets the 4/2 event code that is transmitted to the CMS for a NAC restoral event.

Format: 1 digit (0 – 9 and A – F)

Default: See Appendix E “Default event codes.” This can be changed if needed.

### To change the NAC trouble restoration code:

---

1. Press Reset to change the NAC trouble restoration code.
2. Press Panel Silence to save and advance to the next program option.  
The trouble buzzer sounds a long beep as confirmation.

#### 8. End programming

Programming is complete.

### To end programming:

---

1. Press Panel Silence.

The system takes you back to the beginning of FSDACT programming (Program DACT).

2. Remove the program jumper PRG.

You can store the jumper on one pin of the jumper.

### Editing previously programmed information

You may find it necessary to change information that you previously programmed (e.g. if a phone number changes).

#### To edit previously programmed information:

---

1. Install program jumper PRG.
2. Press Remote Disconnect until “DACT Programming” is displayed.
3. Press Reset until Yes selected.
4. Press Panel Silence to save.
5. Enter your passcode.
6. Press Remote Disconnect to advance to the programming option you want to change.

The currently stored data is displayed.

7. Edit the program option with the desired setting.  
Use the program buttons to enter the information.
8. Press Panel Silence to save.
9. Edit other program options as needed.
10. Exit from program mode by removing jumper PRG.

### Other FSDACT options

The following options can only be changed using the FireShield Configuration Utility. Refer to the FireShield Configuration Utility online help system for details on programming these options.

#### Swinger shutdown

Description: Automatically inhibits transmission of a single event more consecutive times than the value entered.

Format: 0 – 255

Default: 0 (none)

#### Contact ID

Contact ID codes can only be changed when using the configuration utility.



## Chapter 4 Maintenance

### Preventive maintenance

Before commencing testing, 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 authority having jurisdiction.
- Required tools:
  - Slotted screwdriver, insulated
  - Digital multimeter
  - 1.1 k $\Omega$ , 1 W resistor
  - 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 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 be powered when primary power is lost, the batteries should be periodically inspected, tested, and replaced (at a minimum) every four years.

### Preventive maintenance schedule

Refer to NFPA 72, Chapter 7 Inspection, Testing, and Maintenance, Canadian Electrical Code Part I, ULCS524, or ULCS536 for more information on required inspection and testing methods and frequency of fire alarm systems and devices. For detector sensitivity and functionality testing, refer to the detector manufacturer's installation instructions.

### Canadian tests for grounds, opens, and shorts

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

For ground fault tests, directly short one leg of the circuit to chassis ground. The Ground Fault and Trouble LEDs must light.

For NAC and IDC open circuit tests, remove the EOL resistor from the last device on the circuit. The Trouble LED must light.

For NAC short circuit testing, place a short across each NAC output individually. The individual NAC LED must light as well as the common LED.

For AUX power short circuit testing, place a short across the +24 V and -24 V at the panel. The common trouble LED must light.

For communications testing, place a short across C+ and C-. The annunciator trouble LED must light.



# Appendix A Calculations

## Battery calculation worksheet

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

### Notes

[1] Base panel includes the main controller board with no load, only EOL resistors.

Standby current: three-zone - 110 mA, five-zone - 120 mA, ten-zone - 145 mA

Alarm current: three-zone - 145 mA, five-zone - 170 mA, ten-zone - 250 mA)

- [2] The maximum battery size the panel can charge is 18 Ah (Power-Sonic P/N PS-12180-NB or equivalent). Refer to "Panel specifications" in Chapter 2 for more information. If batteries over 7 Ah are required for the three- and five-zone panels, you must use the BC-2 battery cabinet. Refer to installation sheet P/N 3100027.
- [3] Use maximum value or actual calculated value from Form B. The IDC alarm current is included in the panel alarm current.

	Standby Current (mA)		Alarm Current (mA)		
Base panel [1]	<input type="text"/>		<input type="text"/>		
FSDACT (optional)	<input type="text"/>	(40)	<input type="text"/>	(60)	
Aux current (see Form A)	<input type="text"/>		<input type="text"/>		
IDC detector current [see Form B]	<input type="text"/>	[3]			
NAC 1 load [see page A.3]	<input type="text" value="0"/>		<input type="text"/>		
NAC 2 load [see page A.3]	<input type="text" value="0"/>		<input type="text"/>		
NAC 3 load [see page A.3]	<input type="text" value="0"/>		<input type="text"/>		
NAC 4 load [see page A.3]	<input type="text" value="0"/>		<input type="text"/>		
<b>Total current</b>	<input style="border: 2px solid black;" type="text"/>		<input style="border: 2px solid black;" type="text"/>		
Required standby and alarm time	×	<input type="text"/>	Standby time 24 or 60 hour	×	<input type="text"/>
				Alarm time	5 min = 0.083 hr 10 min = 0.167 hr 15 min = 0.250 hr 30 min = 0.500 hr
		<input type="text"/>	mAh	+	<input type="text"/>
				=	<input type="text"/>
					÷ 1000
				Battery amp hour total =	<input type="text"/>
					× 1.2
				Minimum battery size [2] =	<input style="border: 2px solid black;" type="text"/>

<b>Form A</b>					
Module	Quantity	Standby current (mA)	Qty × Standby current (mA)	Alarm current (mA)	Qty × Alarm current (mA)
FSRSI [1]		12		48	
FSRZI-A [1]		8		35	
FSRRM common [1]		30		41	
FSRRM zone [1]		8		65	
Other AUX					
<b>Total AUX [5] [6]</b>					

<b>Form B</b> (Note: Calculate IDC detector load or use maximum load.)			
IDC	Quantity of detectors [2]	Detector current (mA) [3]	Total standby current [4] (quantity x current in mA)
IDC1			
IDC2			
IDC3			
IDC4			
IDC5			
IDC6			
IDC7			
IDC8			
IDC9			
IDC10			
Total current for all IDCs =			

Max IDC standby current: FS302 = 4.5 mA, FS502 = 7.5 mA, and FS1004 = 15.0 mA

**Notes**

- [1] Use of FSRSI, FSRZI-A, and FSRRM is limited as follows: Three- and five-zone panels support 2 FSRSIs, 2 FSRZI-As, and 4 FSRRMs, ten-zone panels support 2 FSRSIs, 4 FSRZI-As, and 6 FSRRMs.
- [2] See the FireShield UL and ULC Compatibility List (P/N 3100468) for the maximum number of detectors per IDC.
- [3] See FireShield UL and ULC Compatibility List (P/N 3100468) for detector current ratings.
- [4] Maximum current per IDC may not exceed 1.5 mA.
- [5] Aux power supplied by panel cannot exceed 0.5 A. If more than 0.5 A is required, you must use a compatible UL/ULC listed fire alarm power supply.
- [6] When using an auxiliary power supply, you must connect the -24 OUT connection on the panel to the negative connection on the auxiliary power supply. Refer to the installation section for more information.

## Notification appliance voltage drop calculation

NAC 1 voltage drop calculations						
Circuit length		Total circuit current [2]		Wire resistance per 1000 ft [1]		Voltage drop
feet	x	amps	x	$\Omega$	$\div 1000 =$	

Panel voltage		Voltage drop		End of line voltage [3]
[4]	-		=	

Voltage drop		Panel voltage		Voltage drop %
	$\div$	[4]	=	

NAC 2 voltage drop calculations						
Circuit length		Total circuit current [2]		Wire resistance per 1000 ft [1]		Voltage drop
feet	x	amps	x	$\Omega$	$\div 1000 =$	

Panel voltage		Voltage drop		End of line voltage [3]
[4]	-		=	

Voltage drop		Panel voltage		Voltage drop %
	$\div$	[4]	=	

NAC 3 voltage drop calculations						
Circuit length		Total circuit current [2]		Wire resistance per 1000 ft [1]		Voltage drop
feet	x	amps	x	$\Omega$	$\div 1000 =$	

Panel voltage		Voltage drop		End of line voltage [3]
[4]	-		=	

Voltage drop		Panel voltage		Voltage drop %
	$\div$	[4]	=	

NAC 4 voltage drop calculations						
Circuit length		Total circuit current [2]		Wire resistance per 1000 ft [1]		Voltage drop
feet	x	amps	x	$\Omega$	$\div 1000 =$	

Panel voltage		Voltage drop		End of line voltage [3]
[4]	-		=	

Voltage drop		Panel voltage		Voltage drop %
	$\div$	[4]	=	

### Notes

- [1] Use 3.5  $\Omega$  for 12 AWG and 2.5 sq mm wire, 5.2  $\Omega$  for 14 AWG and 1.5 sq mm wire, 8.0  $\Omega$  for 16 AWG and 1.0 sq mm wire, and 13.0  $\Omega$  for 18 AWG and 0.75 sq mm wire.
- [2] Use the filtered 20 Vdc Average Operating Current ratings found on the installation or catalog sheet of each device.
- [3] Cannot drop below 17 Vdc.
- [4] 18.6 V for 230 V at 50 Hz, 18.8 V for 230 V 60 at Hz, 18.9 V for 120 V at 60 Hz

## Notification appliance circuit maximum wire length calculation

Use this worksheet to determine the maximum wire length of a notification appliance circuit. Fill in one worksheet for each NAC connected to the panel.

### Wire length matrix

Wire lengths in the following table are based on a voltage drop of 1.9 volts or 10% and total load at the end of the line.

Maximum wire length				
Current required	18 AWG	16 AWG	14 AWG	12 AWG
0.25	584	950	1460	2170
0.50	292	474	730	1084
0.75	194	316	486	722
1.00	146	236	364	542
1.25	116	190	292	434
1.50	92	158	242	362

Maximum signal loss allowed [1]			V
	×	1000	
Wire resistance per 1000 ft/pair [2]	÷		Ω
Total operating current required [3]	÷		A
Maximum circuit length			ft

### Notes

- [1] 1.6 V for 230 V at 50 Hz  
1.8 V for 230 V at 60 Hz  
1.9 V for 120 V at 60 Hz
- [2] Use 3.5 Ω for 12 AWG and 2.5 sq mm wire, 5.2 Ω for 14 AWG and 1.5 sq mm wire, 8.0 Ω for 16 AWG and 1.0 sq mm wire, and 13.0 Ω for 18 AWG and 0.75 sq mm wire.
- [3] Use the filtered 20 Vdc Average Operating Current ratings found on the installation or catalog sheet of each device.

# Appendix B Programming templates

## Panel programming worksheet

Project name \_\_\_\_\_ Project address \_\_\_\_\_  
 Programmed by \_\_\_\_\_ Date \_\_\_\_\_ Tested by \_\_\_\_\_ Date \_\_\_\_\_

[1] Load defaults  No (1)  Yes (2)

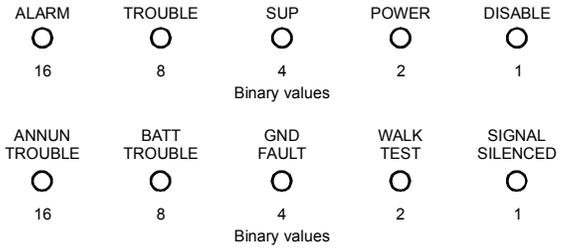
[2] Find annunciators  
 Peripherals installed \_\_\_\_\_  
 Peripherals found \_\_\_\_\_

[3] Auto NAC silence timer  None (1)  20 minutes (2)

[4] Aux power reset  No (1)  Yes (2)

[5] Signal silence inhibit timer  None (1)  1 minute (2)

### Panel LEDs and binary number values



[6] IDC zone types	IDC1	IDC2	IDC3	IDC4	IDC5	IDC6	IDC7	IDC8	IDC9	IDC10
Alarm-unverified (1)										
Alarm-verified (2)										
Waterflow (retard) (3)										
Waterflow (no retard) (4)										
Waterflow (retard) / supervisory(latching) (5)										
Waterflow (no retard) / supervisory(latching) (6)										
Supervisory (latching) (7)										
Monitor (8)										
NAC Assignment	IDC1	IDC2	IDC3	IDC4	IDC5	IDC6	IDC7	IDC8	IDC9	IDC10
NAC1										
NAC2										
NAC3										
NAC4										
[7] IDC class										
Class B (1)										
Class A (2)										

[8] NAC classes	NAC1	NAC2	NAC3	NAC4
Class B (1)				
Class A (2)				
[9] NAC outputs				
Continuous (1)				
Temporal (3-3-3) (2)				
GENESIS synch/silence (3)				
[10] NAC silenceable	<input type="checkbox"/> No (1)			
	<input type="checkbox"/> Yes (2)			

[ ] = Top row of LEDs binary number value  
 ( ) = Bottom row of LEDs binary number value  
 [shaded] = Factory default settings

### Button definitions (programming mode)

- Remote disconnect - Selects next option
- Walk test - Selects previous option
- Reset - Selects next setting
- Signal Silence & Drill - Selects previous setting
- Panel Silence - Saves program setting



**System event reporting setup**

Event	Where to report the event					4/2 event code
Panel test	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>DF</b> _____
Panel abnormal test	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>6F</b> _____
Walk test	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>AF</b> _____
Drill	<input type="checkbox"/> <b>None</b>	<input type="checkbox"/> CS 1	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>AD</b> _____
Reset	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>AB</b> _____
Program mode	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>C1</b> _____
DACT Disabled	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>AE</b> _____
Panel silence	<input type="checkbox"/> <b>None</b>	<input type="checkbox"/> CS 1	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>CA</b> _____
Signal silence	<input type="checkbox"/> <b>None</b>	<input type="checkbox"/> CS 1	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>AC</b> _____
Ground fault	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>66</b> _____
Low battery	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>6C</b> _____
Missing battery	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>6C</b> _____
Internal comm trouble	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>AA</b> _____
AC fail	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>69</b> _____
Charger trouble	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>6B</b> _____
Transformer 2 trouble	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>6A</b> _____
Aux power trouble	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>65</b> _____
Peripheral trouble	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>6D</b> _____
DACT line 1 trouble	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>68</b> _____
DACT line 2 trouble	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>6E</b> _____
DACT delivery trouble	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>67</b> _____

System trouble restoration (4/2 code)  (0 – F) D

**Zone settings - IDC 1**

**Note:** For IDCs, program only those events that apply to the IDC zone type you specified on the "Panel programming worksheet."

Event	Where to report the event					4/2 event code
Alarm activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>11</b> _____
Waterflow activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>21</b> _____
Trouble activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>71</b> _____
Supervisory activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>31</b> _____
Monitor activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>51</b> _____

**Zone settings - IDC 2**

Event	Where to report the event					4/2 event code
Alarm activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>12</b> _____
Waterflow activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>22</b> _____
Trouble activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>72</b> _____
Supervisory activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>32</b> _____
Monitor activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>52</b> _____

**Zone settings - IDC 3**

Event	Where to report the event					4/2 event code
Alarm activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>13</b> _____
Waterflow activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>23</b> _____
Trouble activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>73</b> _____
Supervisory activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>33</b> _____
Monitor activation	<input type="checkbox"/> None	<input type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2		<b>53</b> _____

**Note:** Default settings are shown in boldface type.

Programming templates

**Zone settings - IDC 4**

Event	Where to report the event				4/2 event code
Alarm activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>14</b> _____
Waterflow activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>24</b> _____
Trouble activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>74</b> _____
Supervisory activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>34</b> _____
Monitor activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>54</b> _____

**Zone settings - IDC 5**

Event	Where to report the event				4/2 event code
Alarm activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>15</b> _____
Waterflow activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>25</b> _____
Trouble activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>75</b> _____
Supervisory activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>35</b> _____
Monitor activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>55</b> _____

**Zone settings - IDC 6**

Event	Where to report the event				4/2 event code
Alarm activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>16</b> _____
Waterflow activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>26</b> _____
Trouble activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>76</b> _____
Supervisory activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>36</b> _____
Monitor activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>56</b> _____

**Zone settings - IDC 7**

Event	Where to report the event				4/2 event code
Alarm activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>17</b> _____
Waterflow activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>27</b> _____
Trouble activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>77</b> _____
Supervisory activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>37</b> _____
Monitor activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>57</b> _____

**Zone settings - IDC 8**

Event	Where to report the event				4/2 event code
Alarm activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>18</b> _____
Waterflow activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>28</b> _____
Trouble activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>78</b> _____
Supervisory activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>38</b> _____
Monitor activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>58</b> _____

**Zone settings - IDC 9**

Event	Where to report the event				4/2 event code
Alarm activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>19</b> _____
Waterflow activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>29</b> _____
Trouble activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>79</b> _____
Supervisory activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>39</b> _____
Monitor activation	<input type="checkbox"/> None	<input checked="" type="checkbox"/> <b>CS 1</b>	<input type="checkbox"/> CS 2	<input type="checkbox"/> CS 1 & 2	<b>59</b> _____

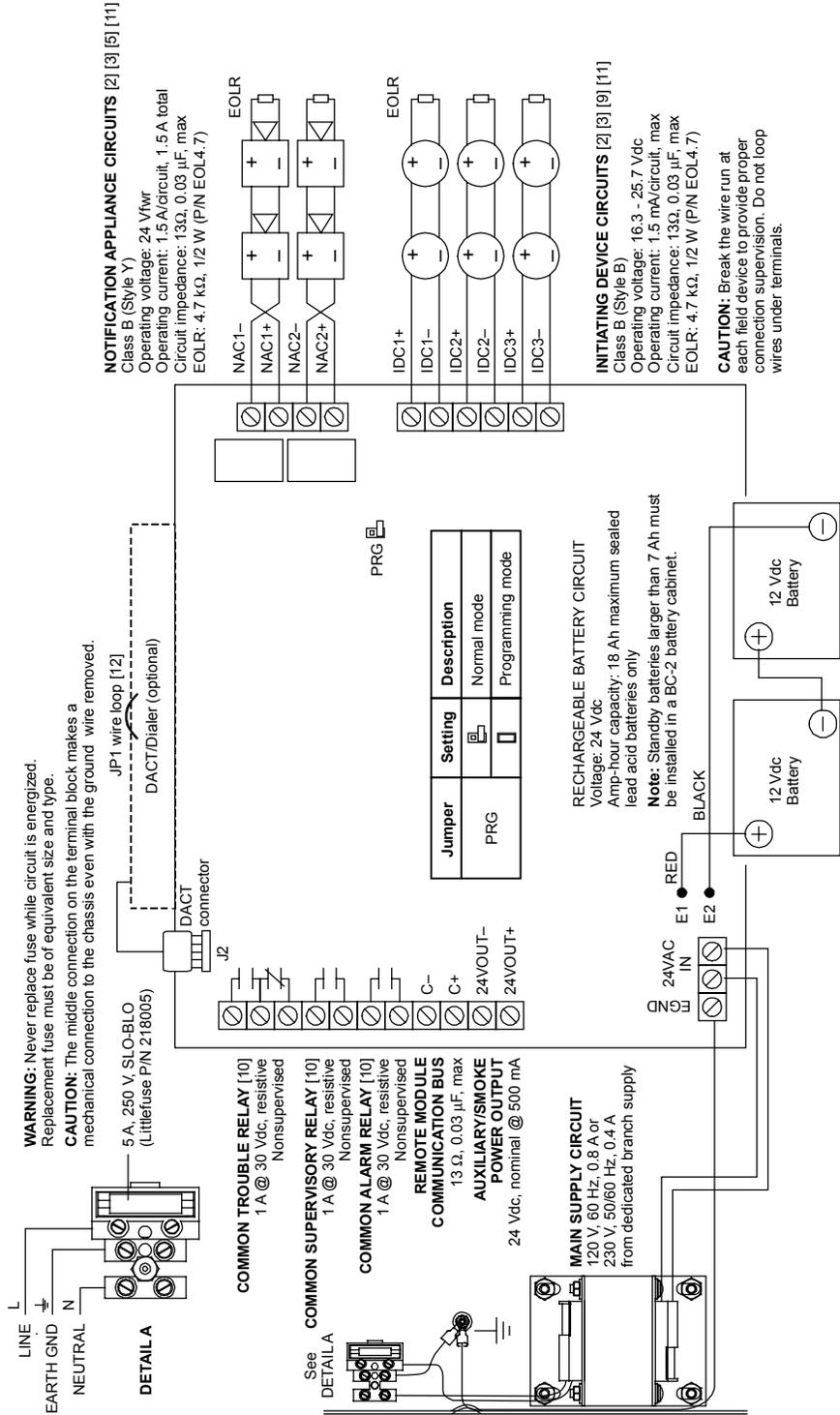
**Note:** Default settings are shown in boldface type.



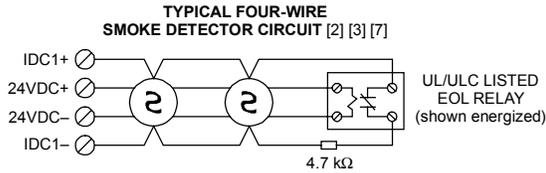
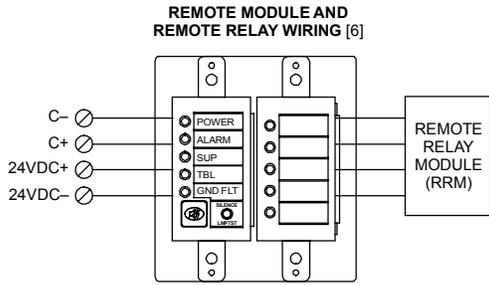


# Appendix C Jumper settings and wiring diagrams

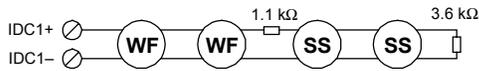
## Three-zone panel



Jumper settings and wiring diagrams

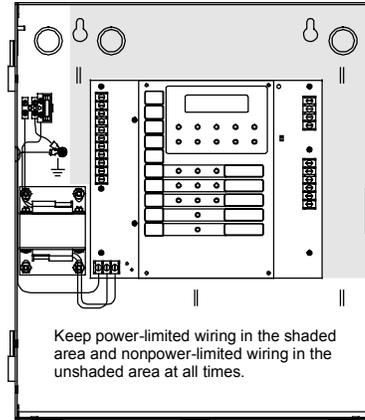


**WATERFLOW / SUPERVISORY COMBINATION CIRCUIT [4] [8]**



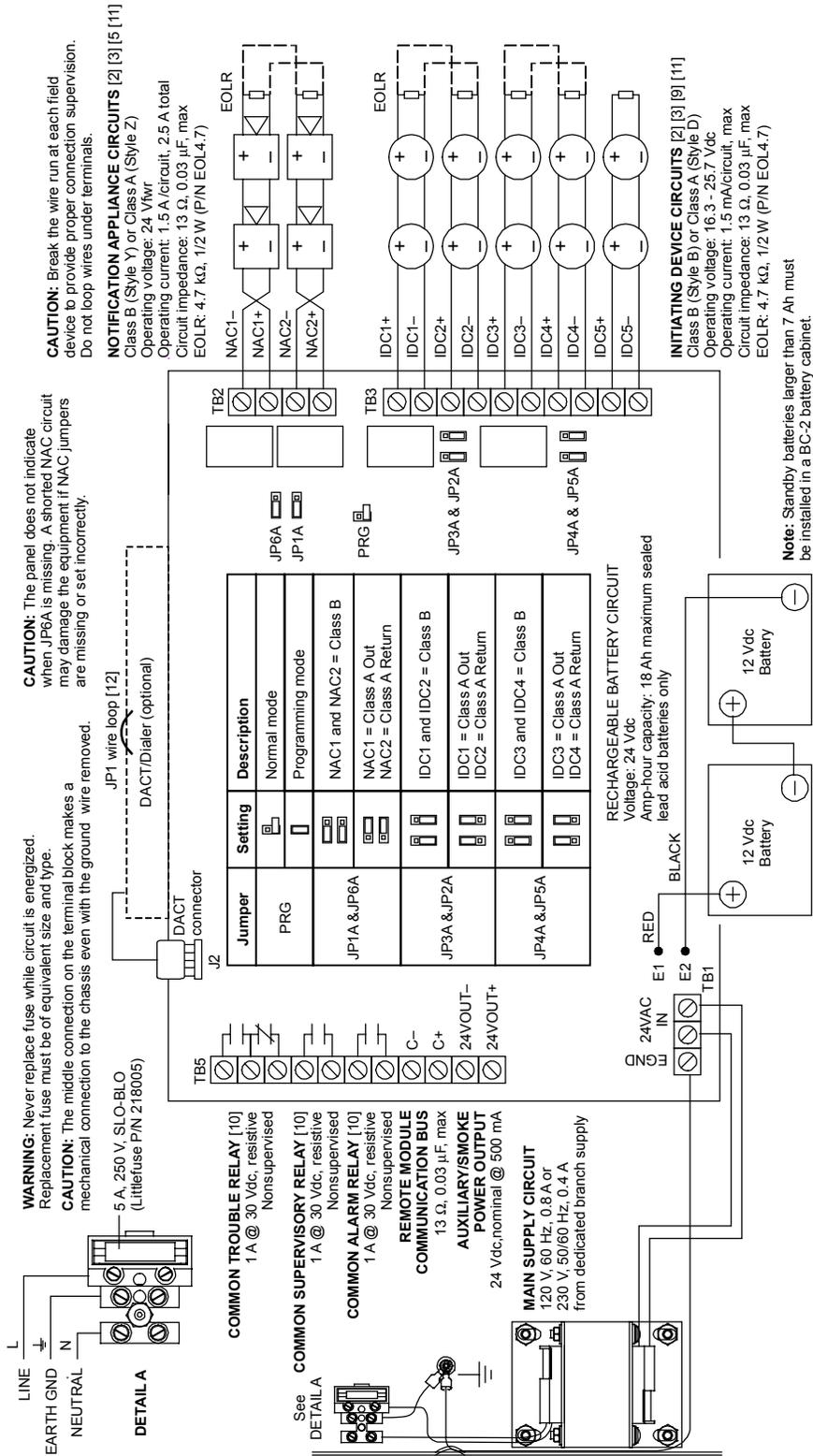
**NOTES**

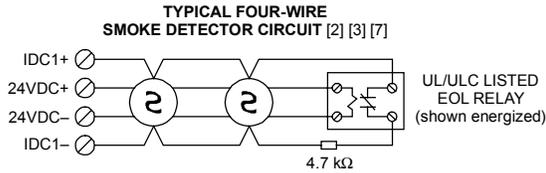
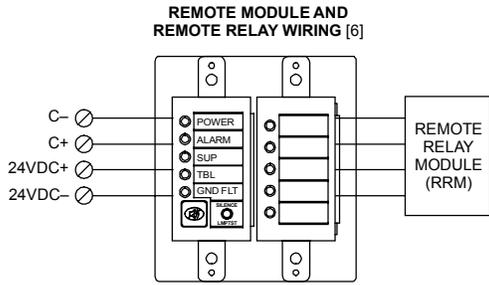
- 1 All wiring is power-limited except for AC power and battery wiring. All wiring is supervised unless noted otherwise.
- [2] Class A wiring not supported
- [3] Listed EOLRs must be installed as shown for proper supervision
- [4] For UL installations use EOLR P/N EOL3.6-1.1 which includes one 1.1 kΩ (P/N EOL1.1) and one 3.6 kΩ (P/N EOL3.6) resistor. For ULC installations use EOL-P1 and select the 1.1 kΩ and 3.6 kΩ resistors.
- [5] Marking indicates output signal polarity when the circuit is active. Polarity reverses when the circuit is not active. Wire notification appliances accordingly. Notification appliance polarity shown in active state.



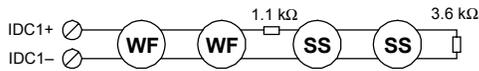
- [6] Requires continuous 24 Vdc from the AUX Power terminals or a power-limited UL/ULC listed compatible fire signaling power supply
- [7] IDC circuits do not support alarm verification using four-wire smokes. Requires resettable 24 Vdc from AUX Power terminals.
- [8] Combination circuits consist of waterflow switches (WF) and their associated valve tampers (SS).
- [9] Automatic and manually activated alarm initiating devices can be installed on the same IDC circuit regardless of circuit type except for combination circuits (option 6, setting 5 and 6)
- [10] Relay circuits can only be connected to power-limited sources
- [11] Installation limits under jurisdiction of local authority
- [12] Refer to the *FireShield Technical Reference Manual* (P/N 3100353) for the topic "Installing the FSDACT."

# Five-zone panel



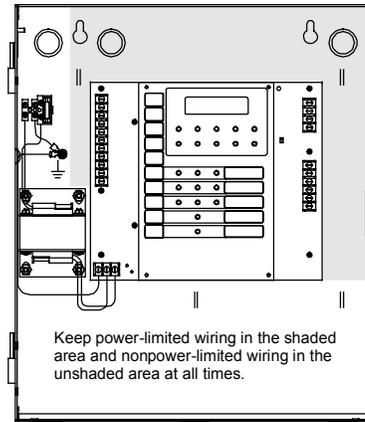


**WATERFLOW / SUPERVISORY COMBINATION CIRCUIT [4] [8]**



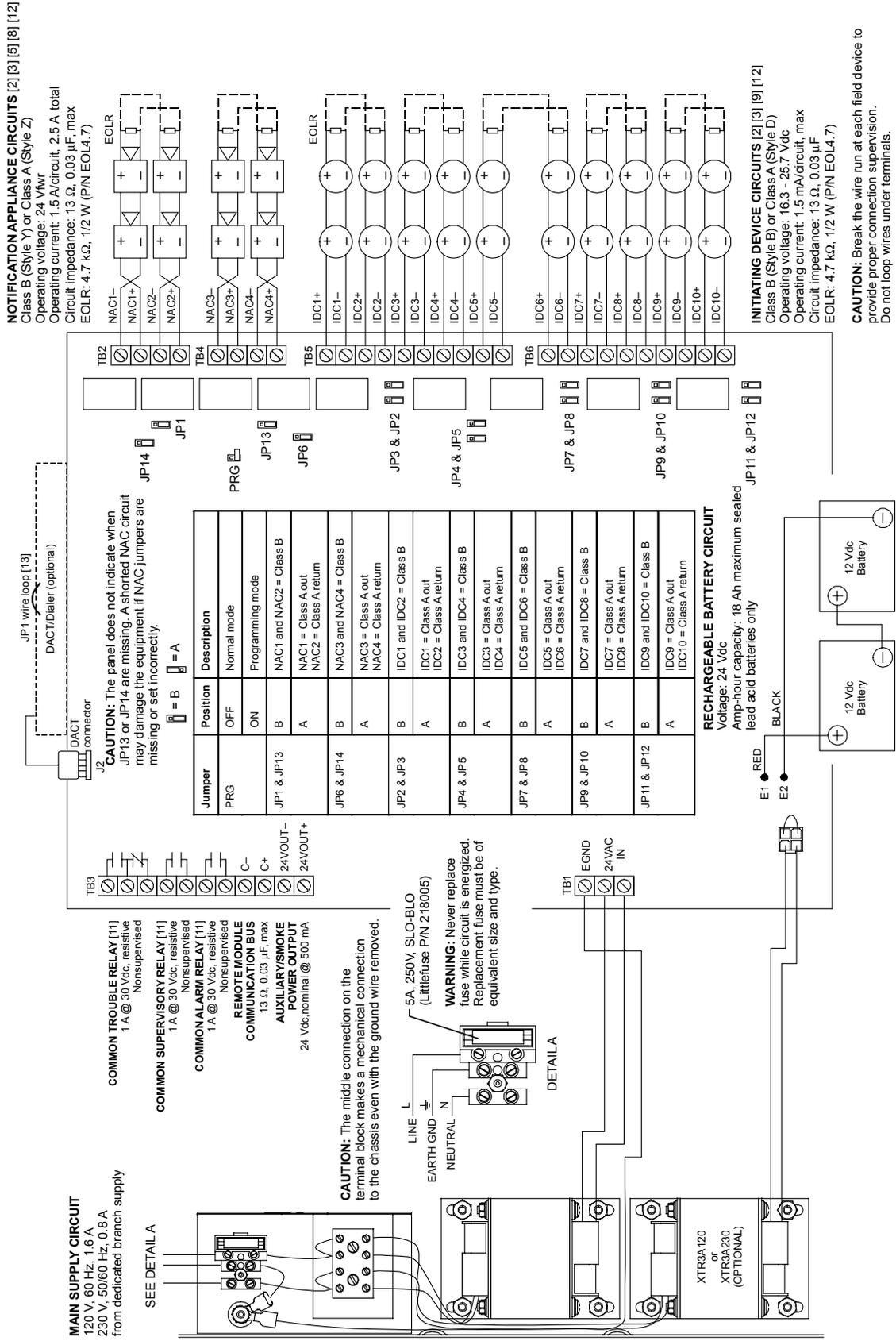
**NOTES**

- 1 All wiring is power-limited except for AC power and battery wiring. All wiring is supervised unless noted otherwise.
- [2] Class A wiring not supported
- [3] Listed EOLRs must be installed as shown for proper supervision
- [4] For UL installations use EOLR P/N EOL3.6-1.1 which includes one 1.1 kΩ (P/N EOL1.1) and one 3.6 kΩ (P/N EOL3.6) resistor. For ULC installations use EOL-P1 and select the 1.1 kΩ and 3.6 kΩ resistors.
- [5] Marking indicates output signal polarity when the circuit is active. Polarity reverses when the circuit is not active. Wire notification appliances accordingly. Notification appliance polarity shown in active state.

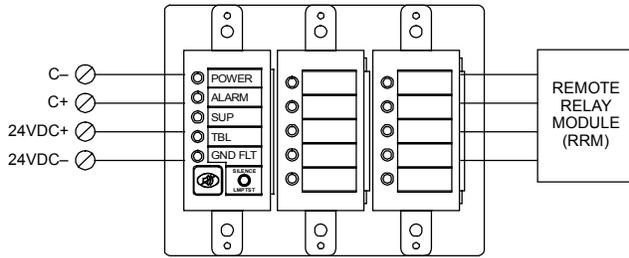


- [6] Requires continuous 24 Vdc from the AUX Power terminals or a power-limited UL/ULC listed compatible fire signaling power supply
- [7] IDC circuits do not support alarm verification using four-wire smokes. Requires resettable 24 Vdc from AUX Power terminals.
- [8] Combination circuits consist of waterflow switches (WF) and their associated valve tampers (SS).
- [9] Automatic and manually activated alarm initiating devices can be installed on the same IDC circuit regardless of circuit type except for combination circuits (option 6, setting 5 and 6)
- [10] Relay circuits can only be connected to power-limited sources
- [11] Installation limits under jurisdiction of local authority
- [12] Refer to the *FireShield Technical Reference Manual* (P/N 3100353) for the topic "Installing the FSDACT."

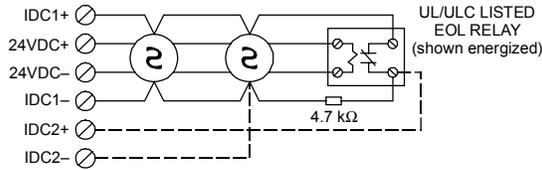
# Ten-zone panel



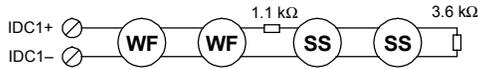
**REMOTE MODULE AND REMOTE RELAY WIRING [6]**



**TYPICAL FOUR-WIRE SMOKE DETECTOR CIRCUIT [2] [3] [7]**

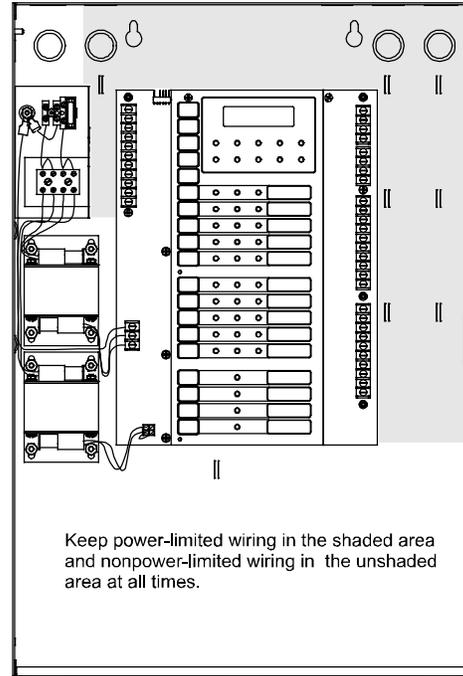


**WATERFLOW / SUPERVISORY COMBINATION CIRCUIT [4] [10]**  
(Only Class B allowed)



**NOTES**

1. All wiring is power-limited except for AC power and battery wiring. All wiring is supervised unless otherwise noted.
- [2] Dashed lines show Class A wiring
- [3] Listed EOLRs must be installed as shown for proper supervision. EOLRs are not required for Class A operation.
- [4] For UL installations use EOLR P/N EOL3.6-1.1 which includes one 1.1 kΩ (P/N EOL1.1) and one 3.6 kΩ (P/N EOL3.6) resistor. For ULC installations use EOL-P1 and select the 1.1 kΩ and 3.6 kΩ resistors.
- [5] Marking indicates output signal polarity when the circuit is active. Polarity reverses when the circuit is not active. Wire notification appliances accordingly. Notification appliance polarity shown in active state.



Keep power-limited wiring in the shaded area and nonpower-limited wiring in the unshaded area at all times.

- [6] Requires continuous 24 Vdc from the AUX Power terminals or a power-limited UL/ULC listed compatible fire signaling power supply
- [7] IDC circuits do not support alarm verification using four-wire smokes. Requires resettable 24 Vdc from AUX Power terminals.
- [8] 5.0 A total with optional transformer (P/N XTR3A120 or XTR3A230)
- [9] Automatic and manually activated alarm initiating devices can be installed on the same IDC circuit regardless of circuit type except for combination circuits (option 6, setting 5 and 6)
- [10] Combination circuits consist of waterflow switches (WF) and their associated valve tampers (SS)
- [11] Relay circuits can only be connected to power-limited sources
- [12] Installation limits under jurisdiction of local authority
- [13] Refer to the *FireShield Technical Reference Manual* (P/N 3100353) for the topic "Installing the FSDACT."

## Appendix D

### Panel specifications

		FS302 three-zone panel	FS502 five-zone panel			FS1004 ten-zone panel					
Initiating device circuits (IDCs)	Class B	3	5	3	1	10	8	6	4	2	0
	Class A	0	0	1	2	0	1	2	3	4	5
Notification appliance circuits (NACs)	Class B	2	2	0		4	2		0		
	Class A	0	0	1		0	1		2		
Power supply		2.0 amps total	3.0 amps total			3.0 amps (expandable to 5.5 amps)					
NAC voltage rating		24 V <sub>fwr</sub>									
Maximum NAC current		1.5 amps each 1.5 amps total	1.5 amps each 2.5 amps total			1.5 amps each - 2.5 amps total for NAC1 + NAC2 or NAC3 + NAC4 5.0 amps with optional expander transformer					
AC input	120 Vac 60 Hz	0.8 amps	0.8 amps			1.6 amps - incl. optional exp. transformer					
	230 Vac 50/60 Hz	0.4 amps	0.4 amps			0.8 - incl. optional exp. transformer					
Base panel current draw (standby)		110 mA	120 mA			145 mA					
Base panel current draw (alarm)		145 mA	170 mA			250 mA					
Battery placement		Up to two 7 Ah batteries will fit in the panel. <b>Note:</b> If batteries greater than 7 Ah are required, you must use the BC-2 battery cabinet. Refer to installation sheet P/N 310027.				Up to two 18 Ah batteries will fit in the panel.					
Maximum auxiliary current		0.5 amps (may be programmed as resettable)									
Auxiliary output		19 to 25.7 V <sub>dc</sub>									
IDC max. detector standby current		1.5 mA (See FireShield UL and ULC Compatibility List (P/N 3100468) for maximum quantity of detectors per circuit.)									
IDC circuit		Maximum loop resistance: 13 Ω Maximum loop capacitance: 0.03 μF									
IDC operating voltage		16.3 to 25.7 V <sub>dc</sub>									
Compatibility ID		100									
Alarm contact		Form A N.O. 30 V <sub>dc</sub> @ 1 A (resistive load)									
Trouble contact		Form C 30 V <sub>dc</sub> @ 1 A (resistive load)									
Supervisory contact		Form A N.O. 30 V <sub>dc</sub> @ 1 A (resistive load)									
Environmental		Temperature: 0 to 49 °C (32 to 120 °F) Humidity: 5 to 93% RH, noncondensing									
Terminal rating		All terminals rated for 12 to 18 AWG (0.75 to 2.5 sq mm)									
Serial communications		Asynchronous communications maximum resistance: 13 Ω Maximum capacitance: 0.03 μF									
Batteries		Batteries must be sealed lead acid type only. Maximum charging capacity = 18 Ah.									



## Appendix E

# Default event codes

### Default Contact ID event codes

Code	Description
<b>Fire alarm – general</b>	
11000001	Fire IDC 1
11000002	Fire IDC 2
11000003	Fire IDC 3
11000004	Fire IDC 4
11000005	Fire IDC 5
11000006	Fire IDC 6
11000007	Fire IDC 7
11000008	Fire IDC 8
11000009	Fire IDC 9
11000010	Fire IDC10
<b>Fire alarm – waterflow (sprinkler)</b>	
11300001	Waterflow IDC 1
11300002	Waterflow IDC 2
11300003	Waterflow IDC 3
11300004	Waterflow IDC 4
11300005	Waterflow IDC 5
11300006	Waterflow IDC 6
11300007	Waterflow IDC 7
11300008	Waterflow IDC 8
11300009	Waterflow IDC 9
11300010	Waterflow IDC 10
<b>Fire alarm – bypass</b>	
57000001	Fire bypass IDC 1
57000002	Fire bypass IDC 2
57000003	Fire bypass IDC 3
57000004	Fire bypass IDC 4
57000005	Fire bypass IDC 5
57000006	Fire bypass IDC 6
57000007	Fire bypass IDC 7
57000008	Fire bypass IDC 8
57000009	Fire bypass IDC 9
57000010	Fire bypass IDC 10
<b>Supervisory – general</b>	
20000001	Fire supervisory IDC 1
20000002	Fire supervisory IDC 2
20000003	Fire supervisory IDC 3
20000004	Fire supervisory IDC 4
20000005	Fire supervisory IDC 5
20000006	Fire supervisory IDC 6
20000007	Fire supervisory IDC 7
20000008	Fire supervisory IDC 8
20000009	Fire supervisory IDC 9
20000010	Fire supervisory IDC 10

<b>Trouble – zone</b>	
37300001	Fire trouble (380 Sensor trouble) IDC 1
37300002	Fire trouble (380 Sensor trouble) IDC 2
37300003	Fire trouble (380 Sensor trouble) IDC 3
37300004	Fire trouble (380 Sensor trouble) IDC 4
37300005	Fire trouble (380 Sensor trouble) IDC 5
37300006	Fire trouble (380 Sensor trouble) IDC 6
37300007	Fire trouble (380 Sensor trouble) IDC 7
37300008	Fire trouble (380 Sensor trouble) IDC 8
37300009	Fire trouble (380 Sensor trouble) IDC 9
37300010	Fire trouble (380 Sensor trouble) IDC 10
<b>Monitor point/zone – active</b>	
14000001	General alarm IDC 1
14000002	General alarm IDC 2
14000003	General alarm IDC 3
14000004	General alarm IDC 4
14000005	General alarm IDC 5
14000006	General alarm IDC 6
14000007	General alarm IDC 7
14000008	General alarm IDC 8
14000009	General alarm IDC 9
14000010	General alarm IDC 10
<b>NAC – trouble</b>	
32000001	Trouble NAC 1
32000002	Trouble NAC 2
32000003	Trouble NAC 3
32000004	Trouble NAC 4
<b>NAC – bypass</b>	
52000001	Bypass NAC 1
52000002	Bypass NAC 2
52000003	Bypass NAC 3
52000004	Bypass NAC 4
<b>System events</b>	
30100000	AC failure
30100000	Transformer 2 trouble
30200000	Battery bad
30500000	Reset
30800000	Internal communications fault
30900000	Charger trouble
31000000	Ground fault
31100000	Battery missing
31200000	Auxiliary power trouble
31500000	Panel silence
32800000	Signal silence
33000000	Peripheral trouble
35100000	DACT line 1 trouble
35200000	DACT line 2 trouble
35400000	DACT delivery trouble
53000000	RRM bypass
55100000	DACT disabled
60100000	Drill
60200000	Panel test
60700000	Walk test
60800000	Panel abnormal test
62700000	Program mode entry
62800000	Program mode exit

## Default (4/2) event codes

Code	Description
1<N>	Fire alarm activation events
2<N>	Waterflow alarm activation events
3<N>	Supervisory signal activation events
4	Not used
5<N>	Monitor signal activation events
6<N:1-4>	NAC trouble activation events
65	Aux power trouble activation
66	Ground fault activation
67	DACT delivery trouble
68	DACT line 1 fail
69	AC loss
6A	Transformer 2 trouble
6B	Charger trouble
6C	Battery missing/Battery bad
6D	FSRSI, FSRZI, FSRRM trouble
6E	DACT line 2 fail
6F	DACT abnormal test
7<N>	IDC trouble activation
8<N>	IDC disabled (not configurable)
9<N>	IDC enabled (not configurable)
A<N:1-4>	NAC disabled (not configurable)
A5	FSRRM outputs disabled (not configurable)
AA	Internal communication trouble
AB	Panel reset
AC	Signal silence activated
AD	Drill activated
AE	DACT disabled
AF	Walk test activated
B<N:1-4>	NAC enabled (not configurable)
B5	FSRRM outputs enabled (not configurable)
BB	Panel reset restore (not configurable)
BC	Signal silence ended (not configurable)
BD	Drill ended (not configurable)
BE	DACT enabled (not configurable)
BF	Walk test ended (not configurable)
C1	Program mode entry
C2	Program mode exit (not configurable)
CA	Panel silence activated
D<N:1-4>	NAC trouble restoration
D5	Aux power trouble restoration
D6	Ground fault restoration
D7	DACT delivery trouble restore
D8	DACT line 1 restoration
D9	AC loss restoration
DA	Transformer 2 restoration
DB	Charger trouble restoration
DC	Battery missing/Battery bad restore
DD	FSRSI, FSRZI, FSRRM restoration
DE	DACT line 2 restoration
DF	DACT normal test
E<N>	Fire alarm restoration
E<N>	Waterflow alarm restoration

Code	Description
E<N>	Supervisory restoration
E<N>	Monitor restoration
F<N>	IDC trouble restoration

**Note:** N is the circuit number.

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## FireShield Fire Alarm Control Panel Operating Instructions

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For additional information, refer to the *FireShield Technical Reference Manual* P/N 3100353.

### RESPONDING TO ALARM SIGNALS

1. Evacuate the area.
2. Notify the proper authorities immediately and state the nature and location of the emergency.
3. Be prepared to provide directions to firefighters when they arrive.

### TO SILENCE ALARM NOTIFICATION SIGNALS

**WARNING!** Alarm notification signals should not be silenced until after all occupants have been evacuated.

1. Press Signal Silence & Drill.

The Signal Silenced LED turns on and all audible notification circuits turn off. New alarm events turn the notification circuits back on.

**Note:** Panel programming may delay alarm silence for up to one minute, may prevent alarm silencing when water flows through the sprinkler system, and may not turn off visible notification circuits.

### TO RETURN THE SYSTEM TO NORMAL AFTER AN ALARM OR SUPERVISORY EVENT

1. Make sure all smoke detectors are free from smoke and all manual pull stations are reset.
2. Press Reset.

**Note:** Panel programming may delay panel reset for up to one minute after alarm notification circuits turn on.

### TO INITIATE A FIRE DRILL

1. Press Signal Silence & Drill.

All audible notification circuits turn on. This function will not automatically notify the fire department.

### TO PERFORM A LAMP TEST (panel and remote annunciators)

1. Press and hold the Remote Disconnect and Walk Test buttons simultaneously.

### TO PERFORM A REMOTE ANNUNCIATOR LAMP TEST

1. Press and hold the Silence button on the RSI for five seconds.
2. LEDs on remote annunciators will remain on until silence button is released.

### RESPONDING TO TROUBLE SIGNALS

1. Silence the panel buzzer.
2. Investigate the cause of the trouble and notify the authorized service personnel immediately.

### TO SILENCE THE PANEL BUZZER

1. Press Panel Silence.

The buzzer turns off. Any new events turn the buzzer back on. Trouble conditions not cleared resound the buzzer after a predetermined time.

**WARNING!** Trouble conditions may affect the panel's ability to provide early detection and indication of a fire. Clear trouble conditions immediately.

### RESPONDING TO SUPERVISORY SIGNALS

1. Silence the panel buzzer.
2. Investigate the cause of the supervisory signal and notify the authorized service personnel immediately.

### RESPONDING TO MONITOR SIGNALS

1. Silence the panel buzzer.
2. Investigate the cause of the monitor signal and notify the authorized service personnel immediately.

### PERIODIC TEST RECOMMENDATIONS

See "Maintenance," in the *FireShield Technical Reference Manual* for test instructions and references.

#### Installed by

Name: \_\_\_\_\_  
Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_

#### Per NFPA 72

- Protected Premises Fire Alarm System, Local
- Auxiliary Fire Alarm System
- Remote Supervising Station Fire Alarm System
- Central Station

Date: \_\_\_\_\_

#### For service contact

Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: \_\_\_\_\_

#### Acceptance Inspection by

\_\_\_\_\_  
\_\_\_\_\_  
Date: \_\_\_\_\_

