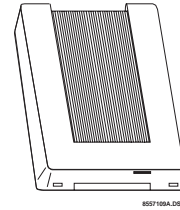


# SuperBus<sup>®</sup> 2000 4-Relay Output Module

Document Number: 466-1608 Rev. B  
November 2000



## Installation Instructions

### Product Summary

Each SuperBus 2000 4-Relay Output module adds four programmable relay outputs to a compatible panel.

Examples of module uses include:

- Turning on a CCTV camera during a burglary alarm.
- Turning on exit lights during a fire alarm.
- Activating backup cellular phones or long-range radios if primary communications are inoperable.

Each module comes complete with mounting hardware. Power for the module is provided by the panel.

Advent<sup>®</sup> panels can be expanded to a total of 124 (24 pre-programmed) output points.

UltraGard<sup>®</sup> and Concord<sup>™</sup> panels can be expanded to a total of 32 output points.

For additional security, the plastic case accommodates a magnetic reed switch to provide tamper protection. Simply connect a UL listed reed switch to the module built-in zone input or to one of the fire/security panel hardware input zones.

### SuperBus 2000 vs. SuperBus

SuperBus 2000 panels have the ability to auto-address module unit numbers. When the panel is initially powered up, the panel automatically reads the unique SuperBus 2000 device ID number and assigns a unit number to the module. This eliminates manually setting DIP switches and the chance of identical unit number conflicts.

#### SuperBus 2000 Panels

- Advent
- Concord (software versions 2.0 and later)

SuperBus panels communicate with SuperBus 2000 modules but require the module unit number to first be set manually with DIP switches.

#### SuperBus Panels

- UltraGard
- Concord (software versions 1.0–1.6)

### Module Components

Figure 1 shows the main module components and Table 1 describes them.

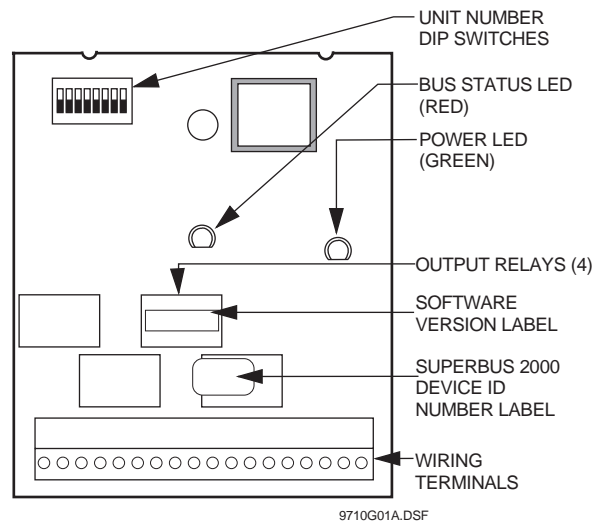


Figure 1. Module Circuit Board Components

Table 1: Module Component Descriptions

Component	Function
Unit Number DIP Switches	Used for manually setting module unit number (SuperBus panels).
BUS LED (Red)	Flashes to indicate normal communication with the panel.
POWER LED (Green)	Indicates module power status.
Output Relays	Form C (dry contact) output relays rated 4A @ 24VDC, 4A @ 24VAC, 1A @ 70VAC maximum.
SuperBus 2000 Device ID Number Label	Identifies the unique device ID (SuperBus 2000).
Software Version Label	Identifies the installed software version.
Wiring Terminals	Used for power, bus, and output wiring connections. All terminals are Class 2 power limited.

## Installation Guidelines

- ❑ For the maximum number of bus devices and touchpads per panel see Table 2.

**Table 2: Maximum Bus Devices Per Panel**

Panel	Maximum Bus Devices
Advent	62
UltraGard	8
Concord (software versions 2.0 and later)	16
Concord (software versions 1.0–1.6)	16 (up to eight 4-Relay Output modules)

- ❑ Do not exceed the panel total DC output power rating when using panel power for bus devices and hardwired detectors (see specific panel *Installation Instructions*).
- ❑ Do not exceed the maximum wire length from the panel to the module (see Table 3).

**Table 3: Maximum Wire Lengths**

Panel	Maximum Wire Length
Advent	22 ga. 200 ft./18 ga. 500 ft.
UltraGard	22 ga. 500 ft./18 ga. 1000 ft.
Concord	22 ga. 350 ft./18 ga. 900 ft.

- ❑ When using self or remotely powered devices with an Advent panel, do not exceed the maximum recommended wire length of 4000 feet using 22-gauge or larger wire.
- ❑ Maximum module current draw with all outputs energized is 180 mA. Each module draws 12 mA typical when outputs are not energized (idle).
- ❑ Do not exceed the module output relay contact ratings (4A @ 24VDC, 4A @ 24VAC, 1A @ 70VAC maximum).

## Tools and Supplies Needed

- ❑ Screwdrivers
- ❑ Drill with bits
- ❑ Wire cutters/strippers
- ❑ 3/8-inch #6-32 self-tapping screws (included)
- ❑ 22-gauge or larger stranded wire (18-gauge or larger for commercial applications)
- ❑ 1/4-inch press-fit reed switch and magnet (not included) for cover tamper
- ❑ 1/4-inch #6-32 self tapping screws (not included) for Advent cabinet mounting
- ❑ Support standoff (included with Concord cabinet)

## Installation

The relay output module can be mounted:

- ❑ On a wall.
- ❑ Inside an Advent cabinet.
- ❑ Inside a Concord cabinet.
- ❑ Inside a SuperBus Module cabinet (60-698). Refer to the cabinet *Installation Instructions* for installation procedures.



**CAUTION**

To prevent damaging the panel or card, disconnect the panel AC Power and backup battery(s) before installation.



**CAUTION**

You must be free of all static electricity when handling electronic components. Touch a bare metal surface before touching the circuit board.

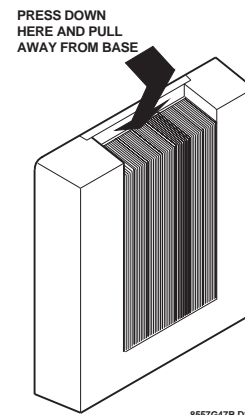
## Mounting the Module

**Note**

If connecting the module to an UltraGard panel it must be mounted on a wall. The module will not fit in the UltraGard cabinet.

## Mounting the Module on a Wall

1. Remove the module cover and set it aside (Figure 2).



**Figure 2. Removing the Cover**

2. Place the back-plate on the wall and mark the mounting holes (Figure 3).
3. Drill holes and insert appropriate anchors.
4. Secure the back-plate to the wall with included screws.

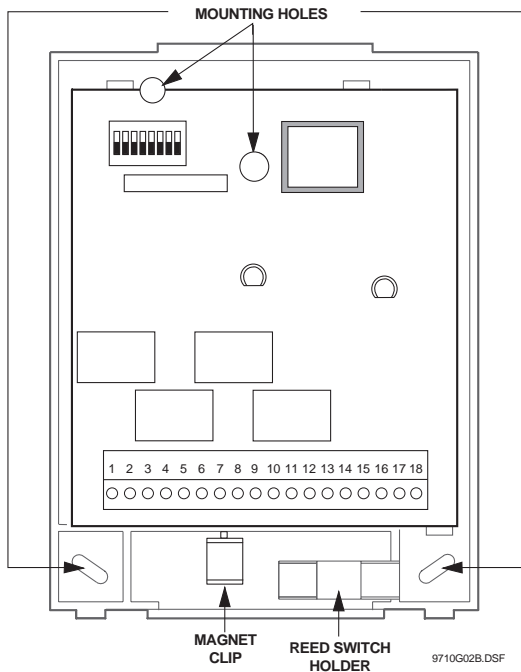


Figure 3. Mounting Holes

### Mounting the Module in an Advent Cabinet

1. Remove panel AC power and disconnect the backup battery(s).
2. Remove the module cover and set it aside (Figure 2).
3. Turn the module upside down and line up the holes on the back-plate at the desired location (Figure 4).
4. Secure the back-plate to the cabinet using three 1/4-inch #6-32 self-tapping screws (not included).

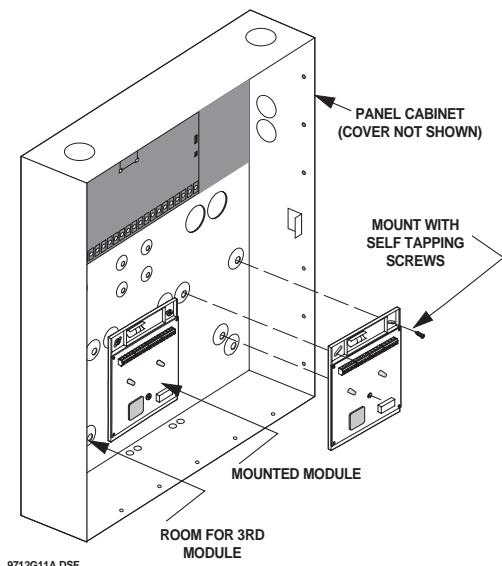


Figure 4. Mounting Module in Advent Cabinet

### Mounting the Module in a Concord Cabinet

1. Remove AC panel power and disconnect the backup battery.
2. Remove and discard the module cover (Figure 2).
3. Insert a support standoff as shown in Figure 5 (supplied with panel) into the panel circuit board.

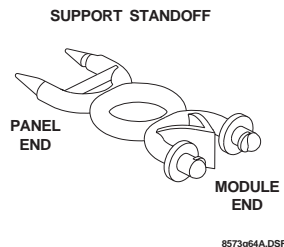


Figure 5. Support Standoff

4. Slide the module back-plate onto the two clips located on the top-left corner or center of the cabinet (Figure 6).

#### Note

The two mounting clips in the top-right corner of the cabinet are designated for a receiver module, but if a receiver module is not being used, the mounting clips may be used for the 4-Relay Output Module.

5. Push the lower-right corner of the module onto the support standoff (see detail in Figure 6).
6. Gently press the module up and onto the cabinet side tab.

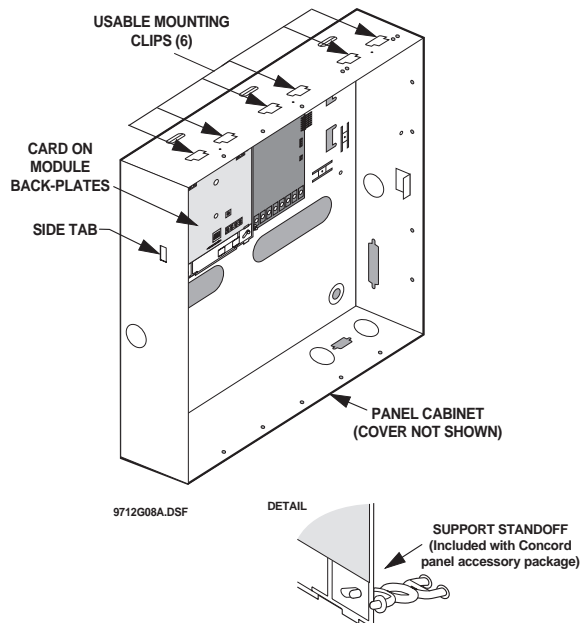


Figure 6. Mounting Module in Concord Cabinet

## Wiring

**Note**

A) Class 2, Class 3, and power-limited fire alarm circuits must be installed using FPL, FPLR, FPLP, or substitute cable permitted by the National Electrical Code ANSI/NFPA 70. Wire that extends beyond the cable jacket must be separated from all other conductors by a minimum of 1/4-inch or by a nonconductive barrier.

OR

(B) Class 2, Class 3, and power-limited fire alarm circuit conductors must be installed as Class 1 or higher circuits.

### Wiring the Module to a Panel

**Important!**

On Advent panels, the BUS 1 and BUS 2 headers must be used only for fire or burglary applications. Do not mix fire and burglary bus devices on either header.

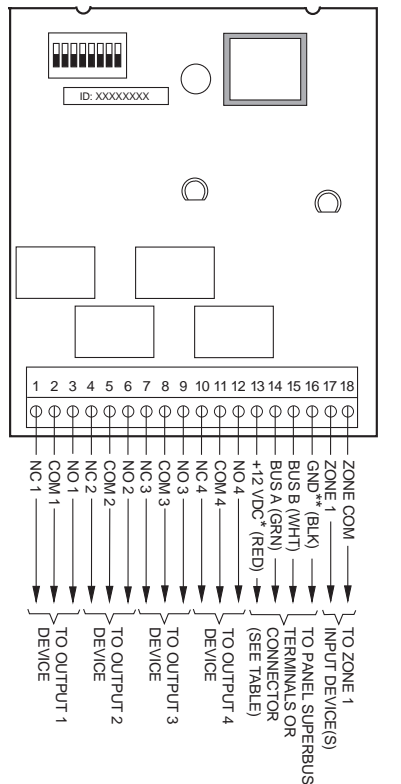
Auxiliary power supplies must be power limited.

1. Turn off (or disconnect) the panel power and disconnect the panel backup battery(s).
2. Wire the module to the panel as shown in Figure 7 and Table 4.

**Note**

For specific wiring details, see the panel *Installation Instructions*.

3. Wire multiple modules in “daisy-chain” fashion (in parallel) to the panel terminals or connector.



\*ALSO OUTPUT AND AUX. SUPPLY  
 \*\*ALSO OUTPUT AND AUX. SUPPLY GND (COMMON)

9710G03A.DSF

**Figure 7. General Module Wiring**

**Table 4: Module SuperBus/Panel Wiring**

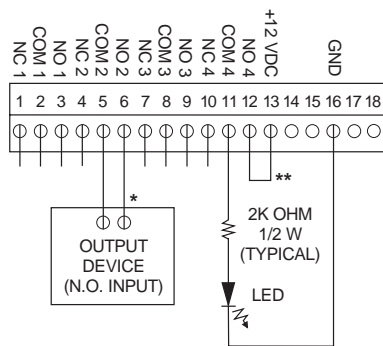
Module Terminals	Advent*	Ultra-Gard	Concord
13 (+12VDC)	Red	12	4
14 (BUS A)	Green	13	5
15 (BUS B)	White	14	6
16 (GND)	Black	15	3

\* Panel SuperBus device connector wiring harness. (Connect to either panel connector.)

4. Wire the module outputs as shown in Figures 7 and 8. For specific wiring details, see the device *Installation Instructions*.

## Connecting Devices to Outputs

Note  
All terminals are Class 2 power limited.



\* DO NOT EXCEED RELAY CONTACT VOLTAGE AND CURRENT RATINGS

\*\* DO NOT EXCEED PANEL +12V POWER CONSUMPTION LIMITS (SEE PANEL INSTALLATION INSTRUCTIONS)

Figure 8. Module Typical Output Wiring

## Connecting Devices to the Zone Input

Follow the maximum zone input wire length (run) guidelines in Table 5 based on the type of wire used.

Important!  
For Advent UL-864 Listed Installations, all inputs must be dedicated to either fire or burglary applications. Do not mix fire and burglary on any module in any partition for these installations.

Table 5. Zone Input Wire Runs

Gauge	Max. Wire Run*
18	750 Feet
22	300 Feet
*Wire run based on 10 ohms maximum wire and device resistance including 2.0K ohm EOL resistor.	

Figure 9 shows an example of how to connect normally closed (N/C) or normally open (N/O) intrusion circuits to the module zone input.

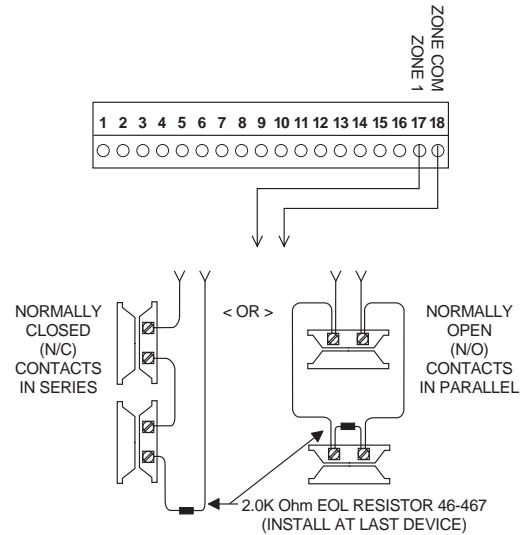


Figure 9. Module Zone Input Wiring

## Installing a Cover Tamper Switch

If you are mounting the module in its own plastic or mounting it inside a metal cabinet, you must add module tamper detection for UL Listed systems.

To do this, install a UL listed ¼-inch press-fit reed switch on the module back-plate and wire the switch to the module zone input terminals or unused panel hardware input terminals. Once programmed, if someone opens the module cover, the tamper switch opens and causes an alarm.

The tamper switch holder is located at the lower-right side of the back-plate as shown in Figure 10. The plastic cover holds the magnet.

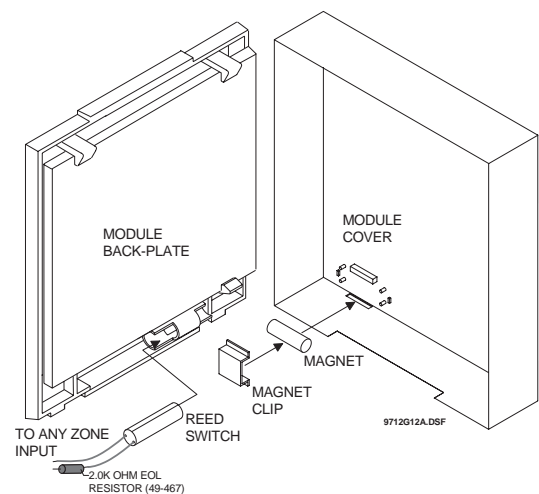


Figure 10. Installing the Reed Switch

**To install the tamper reed switch:**

1. Slide the reed switch into the holder located on the module back-plate.
2. Insert the reed switch magnet into the nibs on the module cover (not shown). Press the magnet clip (supplied) down over the magnet until it clicks into place.
3. **On Advent and Concord (software versions 2.0 and later) Systems:**  
Connect the normally closed reed switch (in series with a 2.0K ohm [ITI part number 46-467] EOL resistor) to the module ZONE 1 (17) and ZONE COMMON (18) terminals (Figure 9).

**On UltraGard Systems:**

Connect the reed switch in series with 4.7K ohm (ITI part number 49-365) EOL resistor and to the *panel* GND and unused *panel* hardwire zone input terminals.

**On Concord (software versions 1.0–1.6) Systems:**

Connect the reed switch in series with a 2.0K ohm (ITI part number 46-467) EOL resistor to the *panel* ZONE COMMON/GND and unused *panel* hardwire zone input terminals.

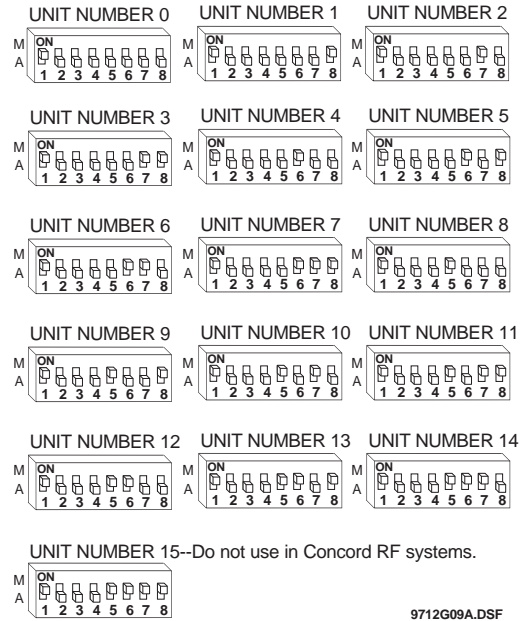


Figure 11. Module Unit Number DIP Switch Settings (Non-SuperBus 2000 systems)

## Setting the Module Unit Numbers

**On Concord (software version 2.0 or later) and Advent Panels**

Locate the DIP switches on the module circuit board and set all switches to “A” (for automatic). The unit number will be automatically set when powering up the system.

**On Concord (software versions 1.0–1.6) and UltraGard Panels**

**Note**  
Concord panels with software versions 1.0–1.6 will only recognize 4-Relay Output modules with unit numbers set from 0 to 7.

Locate the DIP switches on the module circuit board. Set switch 1 to “M” (on for manual). Set the remaining switches for the desired unit number (Figure 11).

- Unit Number 0-7 for UltraGard
- Unit Number 0-7 for Concord (software versions 1.0–1.6)

## Power Up and Bus Communication

This section describes how to power up the panel and the module for both new and existing installations.

### Advent and Concord Panels

**New Installations**

1. Verify that all wiring between the panel, touchpad and module is correct.
2. Connect the panel battery(s) and restore panel AC power. Alphanumeric touchpad displays should come on.
3. Both the green and red LEDs will turn on for one second. The green POWER LED will remain on and the red BUS status LED should flash to indicate successful communication with the panel.

**Note**  
If the green POWER LED is not on or the red BUS status LED does not flash, remove AC panel power, disconnect the battery(s), and see Table 6 “Troubleshooting.”

**Existing Installations**

*Concord Panels-* Same as new installation.

*Advent Panels-*

1. Verify that all wiring between the panel and module is correct.

2. Connect the panel battery(s) and restore panel AC power. Alphanumeric touchpad displays should come on. Both the green and red LEDs turn on for one second, then the green POWER LED will remain on.
3. Press **8** for *System Menu*.
4. Press **0** for *Program Menu*.
5. Enter your *Install Code* (default **0123**).
6. Enter **Item Number 48001** to add SuperBus 2000 devices. All installed devices are automatically added (learned) into panel memory when *Devices Added* is indicated.
7. Press \* twice to return to the Main Menu.
8. The red BUS status LED should flash to indicate successful communication with the panel.

**Note**  
If the green POWER LED is not on or the red BUS status LED does not flash, remove AC panel power, disconnect the battery(s), and see Table 6 "Troubleshooting."

### UltraGard Panels

1. Verify that all wiring at the panel and the module is correct.
2. Verify nonconflicting bus unit number settings.
3. Connect the panel battery and restore panel AC power.
4. Turn on the panel AC power.
5. Set the UltraGard panel RUN/PROGRAM switch to PROGRAM.

If the alphanumeric touchpad displays *I-OFF* and the *I* is flashing, you must enter the 4-digit installer access code to get the panel into program mode.

Alphanumeric touchpads should display *PROGRAM MODE* and the red BUS status LED on the module should be flashing continuously, indicating successful communication to the panel.

**Note**  
If the green POWER LED is not on or the red BUS status LED does not flash, set the RUN/PROGRAM switch (UltraGard) to RUN, remove AC panel power, disconnect the backup battery, and see Table 6 "Troubleshooting."

### Programming and Testing

Refer to the specific panel *Installation Instructions* for configuring module outputs, adding (learning) hardware sensors, and testing.

## Troubleshooting

Use the following table to determine possible solutions to module problems.

**Table 6: Troubleshooting**

Problem	Solution
The green POWER LED stays off.	<ol style="list-style-type: none"> <li>1. Check for incorrect wiring connections.</li> <li>2. Make sure panel AC power is applied and the backup battery(s) are connected.</li> <li>3. If the LED still remains off, replace the module.</li> </ol>
The red BUS LED doesn't flash to indicate communication with the panel.	<ol style="list-style-type: none"> <li>1. Verify that the panel recognizes the module by entering program mode (see specific panel <i>Installation Instructions</i>).</li> <li>2. Check for incorrect wiring connections.</li> <li>3. For Concord (software versions 1.0–1.6) and UltraGard panels make sure that module DIP switch 1 is set to "M." For Concord (software versions 2.0 or later) and Advent panels make sure that module DIP switch 1 is set to "A."</li> <li>4. If the LED still doesn't flash, replace the module.</li> </ol>
Output(s) activate only momentarily, activate randomly, or module and/or touchpads lock up.	<ol style="list-style-type: none"> <li>1. For Concord (software versions 1.0–1.6) and UltraGard systems, check for bus devices with the same unit number setting.</li> <li>2. Re-initialize the panel by disconnecting and reconnecting panel power.</li> <li>3. Verify that the output/point is configured correctly (see specific panel <i>Installation Instructions</i>).</li> <li>4. Make sure the zone has been "learned" into panel memory.</li> <li>5. Verify that the panel recognizes the module by entering program mode (see specific panel <i>Installation Instructions</i>).</li> <li>6. Check module/panel wire routing and length.</li> <li>7. Replace the module.</li> </ol>
Module Zone input is inoperable. (UltraGard & Concord)	<ol style="list-style-type: none"> <li>1. Some panels and panel versions do not read the module built-in zone input status. Use a panel zone input instead.</li> </ol>
One output stays activated.	<ol style="list-style-type: none"> <li>1. Check if the point is programmed for a 3 minute "on" time and if the triggering event for the point is repeatedly "resetting" the 3 minute timer (see specific panel <i>Installation Instructions</i>).</li> <li>2. Output may have failed or been overloaded. Reprogram using a different (unused) module output or replace the module.</li> </ol>

## Specifications

Compatibility:	Advent, Concord, and UltraGard
Power Requirements:	12V nominal, 12 mA typical (idle), 180 mA maximum (all relays energized)
Inputs:	One supervised, fire-rated, hardwire zone
Outputs:	Four, panel programmable outputs with "Form-C" relay contacts (COMMON, N/C, N/O). Relay contacts rated 4A @ 24VDC, 4A @ 24VAC, 1A @ 70VAC maximum.
Storage Temperature:	-30° to 140° F (-34° to 60° C)
Operating Temperature:	32° to 140° F (0° to 60° C), up to 140° F (60° C) under temporary conditions
Maximum Humidity:	90% relative humidity, non-condensing
Dimensions:	5.25" x 4.125" x 1.0" (L x W x D)
Color:	Belgian grey
Case Material:	High-impact ABS plastic
Installation:	On wall or in panel cabinet mounting

### Listings (for ancillary use only):

UL 365 Police Station Connected Burglar Alarm Units and Systems

UL 609 Local Burglar Alarm Units and Systems

UL 864 Control Units for Fire Protective Signaling Devices

UL 985 Household Fire Warning System Units

UL 1023 Household Burglar Alarm System Units

UL 1610 Central Station Burglar Alarm Units (Commercial Burglary)

UL 1637 Home Health Care Signaling Equipment

CSFM California State Fire Marshall (applied for)

FM Factory Mutual (applied for)

MEA New York City Material Equipment Acceptance (applied for)

DOD Sensitive Compartment Information Fac. (applied for)

ULC Canada Commercial Fire/Burglary Warning (applied for)

### Note

See specific panel *Installation Instructions* for complete UL installation requirements for the system you are installing.

## Notices

### FCC Part 15 Information to the User

Changes or modifications not expressly approved by Interactive Technologies, Inc. can void the user's authority to operate the equipment.

### FCC Part 15 Class A

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

### FCC Part 15 Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the affected equipment and the panel receiver to separate outlets, on different branch circuits.
- Consult the dealer or an experienced radio/TV technician for help.



2266 Second Street North  
North Saint Paul, MN 55109-2900  
T: 651/777-2690  
F: 651/779-4890  
1-800-777-1415  
www.itii.com



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