RR1 Polarity Reversal Relay Module

Specifications
- Operating Voltage Range: 9.5 to 32 VDC
- Maximum Operating Current: 29mA
- Relay Contacts: 2A at 30 VDC, 0.5A at 120 VAC
- Operating Temperature Range: 0˚ to 55˚ C (32˚ to 131˚ F)
- Operating Humidity Range: 5% to 95%
- Dimensions: 1 1/2” x 1 3/4”
- Wire connections: 18 AWG stranded, tinned, 16” long

General Description
The RR1 polarity reversing relay module is intended for use with 2-wire and 4-wire detectors with built-in sounder, such as System Sensor 2100AT, 2112/24ATR and 2112/24AITR, and other compatible models. It is designed to allow all the detectors in the same loop to sound when one of the detectors goes into alarm.

NOTICE: This manual shall be left with the owner/user of this equipment.

NOTE: If your panel configuration does not match any of the provided wiring diagrams, please contact System Sensor technical services at 1-800-SENSOR2 for assistance.

Installation
Choose a mounting location in the control panel within reach of the provided wire leads. Use a water/isopropyl alcohol mixture (50/50) to clean the mounting surface. Allow surface to dry and remove paper backing from the Velcro and catch. Stick the Velcro in the panel and the catch on the back of the module, then mount the module inside the control panel. Route terminals to the appropriate terminals as noted below.

Wiring
1. Connect the relay module trigger wires to the fire alarm output terminals.

   IMPORTANT: Polarity must be observed!
   A. Continuous alarm/bell output: (Figures 1 and 2)
      Connect red wire to positive and black wire to negative.
   B. Alarm relay, normally open contact output: (Figures 3 and 4)
      1) Connect one end of the alarm relay contact output and the black wire to positive and negative of power, respectively. Auxiliary power supply is used as a power source for 2-wire detectors and power to the detectors is used as a power source for 4-wire detectors.
      2) Connect the red wire to other end of alarm relay contact output.

2. Connect the outgoing wires of the relay module to the smoke detector power-in terminals (brown to positive, white to negative).

3. Connect the blue and purple wires of the RR1 to any of the power sources as specified in the applicable wiring diagram (see Figures 1-4).

4. 2-wire models:
   Connect the yellow and orange wires to the positive and negative of the initiating loop, respectively.

4-wire models:
   Connect the yellow and orange wires to the positive and negative of power to detectors, respectively.

5. Connect the smoke detector initiating circuit to the alarm loop.

WARNING
When calculating total current draw of the control panel, remember to add current consumption (29mA) for the power reversal relay module (RR1).

Testing
Before testing, notify the proper authorities that the system is undergoing maintenance and will temporarily be out of service.

Test in accordance with NFPA 72 Chapter 7 test methods, inspections, and testing frequency.

1. To test the RR1 module, confirm that the smoke detectors do not sound without an alarm.
2. Initiate an alarm with smoke or approved test method on any detector connected to the control panel via the RR1 module. In alarm, all the detectors that are installed in the corresponding loop shall sound.
3. Reset the detectors by removing power to the loop.
NOTE: If your panel configuration does not match any of the following wiring diagrams, please contact System Sensor technical services at 1-800-SENSOR2 for assistance.

**Figure 1. RR1 module with 2-wire smoke detectors:**

The power reversal relay module does not provide supervision. All supervision is provided by the interconnected control unit.

Optional Class A Wiring

**Figure 2. RR1 module with 4-wire smoke detectors:**

The power reversal relay module does not provide supervision. All supervision is provided by the interconnected control unit.

Optional Class A Wiring

NOTE: If optional Class A wiring is used, second power reversal relay module (RR1) must be added to enable concurrent loop polarity reversal.
Figure 3. RR1 module with alarm relay and 2-wire smoke detectors:

The power reversal relay module does not provide supervision. All supervision is provided by the interconnected control unit.

NOTE: If optional Class A wiring is used, second power reversal relay module (RR1) must be added to enable concurrent loop polarity reversal.

Figure 4. RR1 module with alarm relay and 4-wire smoke detectors:

The power reversal relay module does not provide supervision. All supervision is provided by the interconnected control unit.

To auxiliary power/detector power/IAC/Bell output or any UL listed regulated power supply listed for fire protective signaling use. (polarity shown with panel in alarm).
Minimum Conditions Required for Proper Operation of the RR1 Upon Fire Alarm

For 2-Wire Model Smoke Detectors (Model 2100AT)
Auxiliary power supply for smoke detector sounders upon alarm and one of the following:
1. Bell, alarm, or programmable output exclusive to fire alarm. Output of minimum 30mA @ 9.5 Vdc required
   - or -
2. Auxiliary power supply for RR1 and auxiliary relay with normally open contact activated by fire alarm only

For 4-Wire Model Smoke Detectors (Models 2112/24AT, 2112/24ATR, 2112/24AITR)
1. Bell, alarm, or programmable output exclusive to fire alarm. Output of minimum 30mA @ 9.5 Vdc required
   - or -
2. Auxiliary relay with normally open contact activated by fire alarm only

NOTE: Outputs must be continuous (non-coded, non-pulsed.) The RR1 will not function properly in panels that provide only single combined burglary and fire alarm output unless the minimum conditions noted above are present.