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# PRM-2W/4W Polarity Reversal Modules

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## Installation Instructions

### Introduction

The PRM series modules are Polarity-Reversal Modules for use with the FSA series of 2 and 4 wire smoke detectors and smoke alarms with integral sounders. These modules provide a 'Tandem' connection such that when one smoke detector goes into alarm, all smoke detector horns will sound. When the control panel is initiated into alarm, it signals the PRM module to reverse the polarity of the power to the connected smoke detectors. Upon Power Polarity Reversal, all connected smoke detectors will sound their integral horn.

### Specification (refer to Table 1)

Power Supply (Range) .....	12-15VDC
Current Draw (Standby) .....	PRM-2W: 30mA max. / PRM-4W: 10mA
Current Draw (In-Alarm) .....	PRM-2W: 50mA max. / PRM-4W: 25mA
Smoke Loop Alarm Current.....	1.0A (max.)
Operating Environment .....	0°C-49°C/32°F-120°F (5-93% RH, non-condensing)

### Models

PRM-2W .....	2-wire (board only)
PRM-2WC .....	2-wire (enclosed)
PRM-4W .....	4-wire (board only)
PRM-4WC .....	4-wire (enclosed)

### Interconnection of Smoke Detectors

**PRM-2W** is for use with FSA-210 series 2-wire smoke detectors with integral horns. This module includes a Class B/Style B 2-wire smoke detector zone which provides an interface for control panels that do not have a compatible 2-wire smoke detector zone. Connection of the module to the control panel is a typical 4-wire type where a resettable power output and a panel fire zone input is provided. The module provides a N.O. dry contact as the initiating device for the panel fire zone. The module monitors the Bell output of the panel to determine when a fire alarm has been initiated in the panel.

When the module detects a temporal pattern, or a pulsing output on the bell circuit, it will reverse the power to the connected smoke detectors signaling them to sound their horns. Alternately, the module can be triggered to reverse the polarity with a dry contact from the control panel or from an external relay contact that is activated by an output from the control panel (see Fig. 1 for wiring details).

**NOTE:** *This module can be used with FSA-210 series smoke detectors without an integral horn and thus provide a compatible interface to control panels that do not have a 'compatible' 2-wire smoke detector zone. For this application, the Polarity Reversal function would not be used.*

**PRM-4W** is for use with the FSA-410 series 4-wire smoke detectors with integral horns. This module requires resettable power from the control panel. The dry contact(s) in the smoke detectors are wired directly to the fire zone in the control panel. The module monitors the Bell output of the panel to determine when a fire alarm has been initiated in the panel. When the module detects a temporal pattern, or a pulsing output on the bell circuit, it will reverse the power to the connected smoke detectors signaling them to sound their horns. Alternately, the module can be triggered to reverse the polarity with a dry contact from the control panel or from an external relay contact that is activated by an output from the control panel. 4-wire smoke detectors require 'power' supervision.

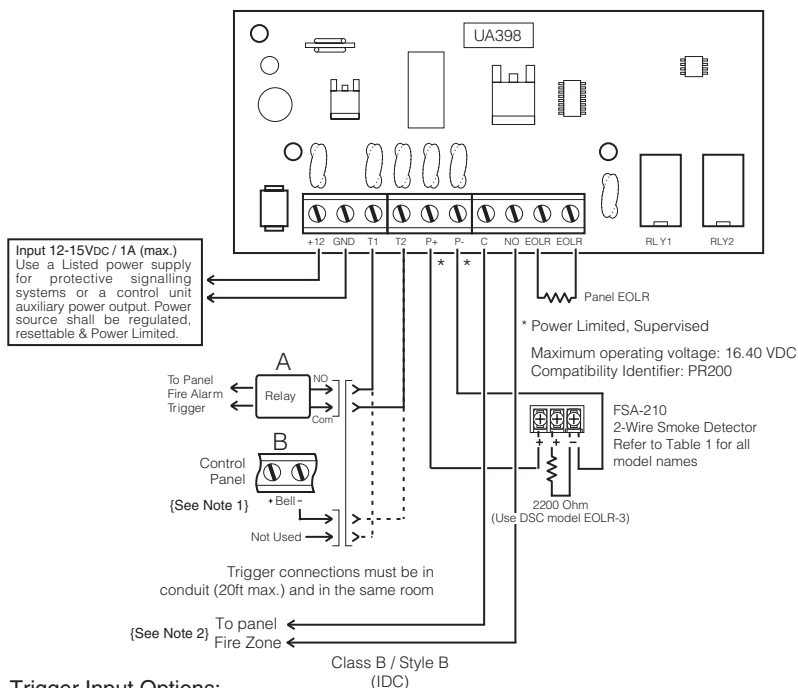
The **RM-2** module must be installed beyond the last detector to monitor power to the detectors. If power fails, the RM-2 will open the detection loop and initiate a trouble condition in the control panel for that zone (see Fig. 2 for wiring details).

**NOTE: The PRM-4W module is also used with the FSA-410(D) series of smoke alarms. These smoke alarms are only ULC Listed for use in Canada (see Fig. 3 for wiring details).**

## Installation

Wire module to control panel and smoke detectors (Table 1 and Figure 1, 2 or 3). PRM modules can be mounted directly in the control panel using the three mounting nylon standoffs provided. PRM xC modules are equipped with a plastic enclosure for external mounting. The plastic enclosure can also be mounted on top of a 2" electrical box for metal conduit connections. To test the system, activate trigger to verify operation.

**Figure 1 - PRM-2W (2-Wire Smoke Detectors)**



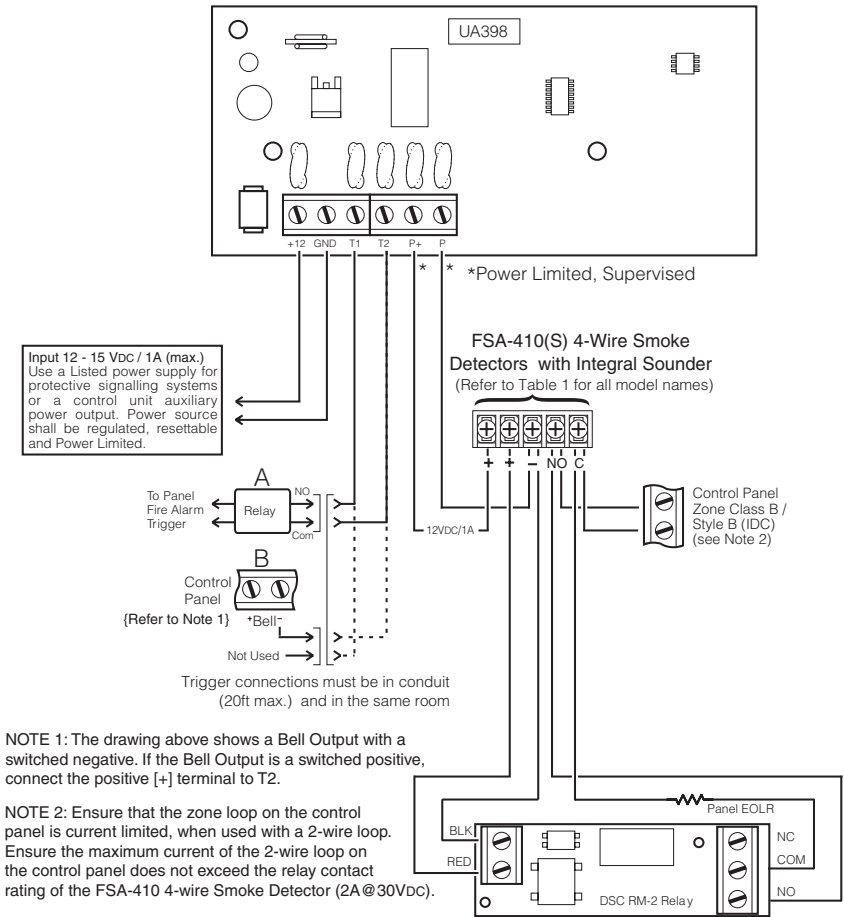
### Trigger Input Options:

- N/O Contact Closure** - If a short circuit is detected at the trigger inputs, the module will reverse the polarity on the smoke detector loop.
- Bell Circuit Follower** - If a pulsating voltage or temporal pattern is detected at the trigger input T2, the module will reverse the polarity on the smoke detector loop.

**NOTE 1:** The drawing above shows a Bell Output with a switched negative. If the Bell Output is a switched positive, connect the positive [+] terminal to T2.

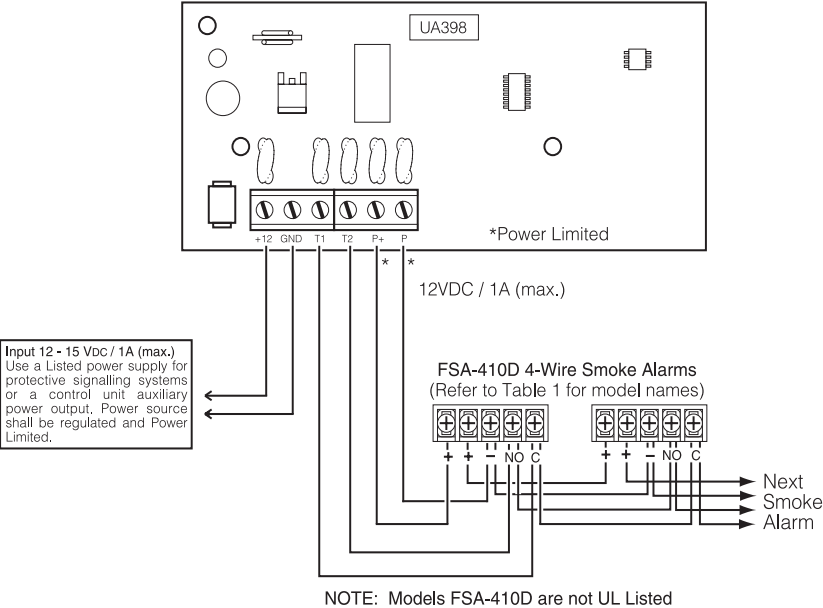
**NOTE 2:** It is important that the zone loop on the control panel is current limited, when used with a 2-wire loop. Ensure the maximum current of the 2-wire loop on the control panel does not exceed the rating of the PRM-2W (1A@24Vdc).

**Figure 2 - PRM-4W (4-Wire Smoke Detectors)**

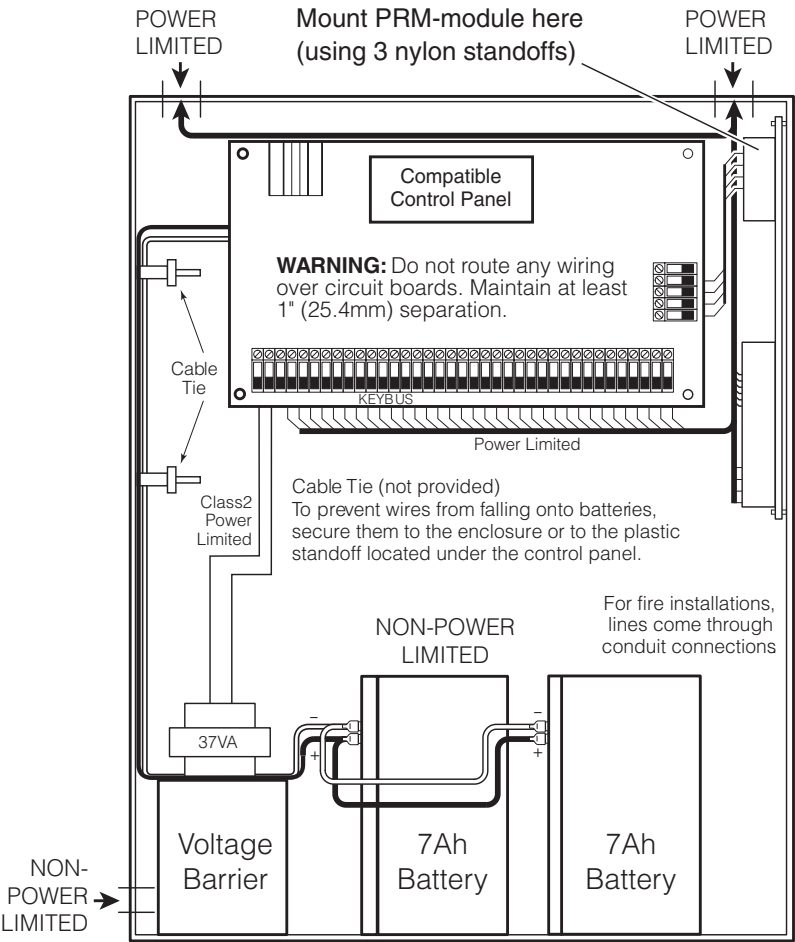


Refer to the RM-2 Module Installation Instructions for more details

**Figure 3 - PRM-4W (4-Wire Smoke Alarms)**



**Figure 4- Mounting the PRM-2W/4W Module in the Control Unit Enclosure**



**Table 1 - Current Draw**

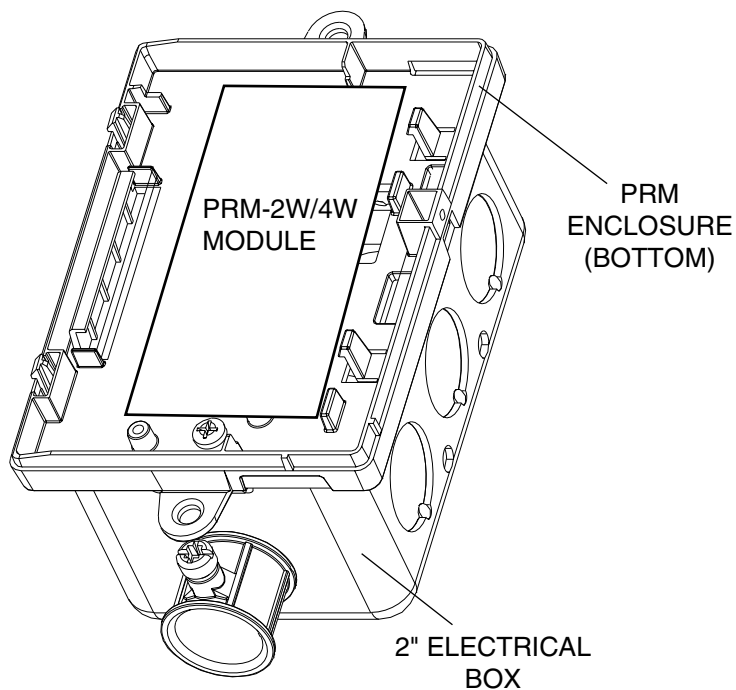
Device	Alarm Current (mA)	Available Panel Current (mA)																		
		100	150	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
PRM-2W 2-Wire Smoke Detectors		Number of Smoke Detectors on the Loop in Alarm*																		
FSA-210A, FSA-210B, FSA-210C, FSA-210AT, FSA-210BT, FSA-210CT	35	0	2	3	5	6	8	9	10	12	13	15	16	18	19	20	22	23	25	26
FSA-210AR, FSA-210BR, FSA-210CR, FSA-210ART, FSA-210BRT, FSA-210CRT	50	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
FSA-210AS, FSA-210BS, FSA-210CS, FSA-210AST, FSA-210BST, FSA-210CST	60	0	1	2	3	3	4	5	6	7	8	8	9	10	11	12	13	13	14	15
FSA-210ALST, FSA-210BLST, FSA-210CLST	60	0	1	2	3	3	4	5	6	7	8	8	9	10	11	12	13	13	14	15
FSA-210ARS, FSA-210BRS, FSA-210CRS, FSA-210ARST, FSA-210BRST, FSA-210CRST, FSA-210ALRST, FSA-210BLRST, FSA-210CLRST	75	0	1	1	2	3	3	4	5	5	6	7	7	8	9	9	10	11	11	12
PRM-4W 4-Wire Smoke Detectors		Number of Smoke Detectors on the Loop in Alarm*																		
FSA-410BS, FSA-410CS, FSA-410BST, FSA-410CST, FSA-410BLST, FSA-410CLST	75	0	1	2	2	3	4	4	5	6	6	7	8	8	9	10	10	11	12	12
FSA-410BRS, FSA-410CRS, FSA-410BRST, FSA-410CRST	90	0	1	1	2	2	3	3	4	5	5	6	6	7	8	8	8	9	10	10
FSA-410BLRST, FSA-410CLRST	90	0	1	1	2	2	3	3	4	5	5	6	6	7	8	8	8	9	10	10
FSA-410DS, FSA-410DST**	75	1	1	2	3	3	4	5	5	6	7	7	8	9	9	10	11	11	12	13
FSA-410DRS, FSA-410DRST, FSA-410DLRST, FSA-410DFIS**	90	0	1	1	2	3	3	4	4	5	5	6	6	7	8	8	8	9	10	10

\*Any combination of the models is permitted within the specified max. rating (1A max.)

\*\* These models are ULC Listed, not UL Listed.

### Figure 5 - Mounting the PRM-2W/4W Module on a Single Can Electrical Box

After all electrical connections are made, screw the PCB back into the enclosure. Next, snap the the top of the enclosure to the bottom.



## LIMITED WARRANTY

Digital Security Controls Ltd. warrants that for a period of twelve months from the date of purchase, the product shall be free of defect in materials and workmanship under normal use and that in fulfillment of any breach of such warranty, Digital Security Controls Ltd. shall, at its option, repair or replace the defective equipment upon return of the equipment to its repair depot. This warranty applies only to defects in parts and workmanship and not to damage incurred in shipping or handling, or damage due to causes beyond the control of Digital Security Controls Ltd. such as lightning, excessive voltage, mechanical shock, water damage, or damage arising out of abuse, alteration or improper application of the equipment.

The foregoing warranty shall apply only to the original buyer, and is and shall be in lieu of any and all other warranties, whether expressed or implied and of all other obligations or liabilities on the part of Digital Security Controls Ltd. This warranty contains the entire warranty. Digital Security Controls Ltd. neither assumes responsibility, nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

In no event shall Digital Security Controls Ltd. be liable for any direct, indirect or consequential damages, loss of anticipated profits, loss of time or any other losses incurred by the buyer in connection with the purchase, installation or operation or failure of this product.

WARNING: Digital Security Controls Ltd. recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected

## FCC COMPLIANCE STATEMENT

**CAUTION:** *Changes or modifications not expressly approved by Digital Security Products Ltd. could void your authority to use this equipment.*

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 harmful 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:

- Re-orient the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

The user may find the following booklet prepared by the FCC useful: "How to Identify and Resolve Radio/Television Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402, Stock # 004-000-00345-4.

## Industry Canada Compliance Statement

This Class B digital apparatus meets all requirements of the Canadian interference-causing equipment regulations.

Cet appareil numérique de la Classe B respecte toutes les exigences de règlement sur le matériel brouilleur du Canada.



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