

PIM-430 Series Protectowire Dual Input Interface Module

Features

- Provides two independent detection zones for Protectowire Linear Heat Detectors or one dual input zone for Protectowire Type TRI (TRI-Wire™)
- Optional onboard Protectowire Alarm Point Location Meter
- Individual power, trouble, and alarm indicators
- Plug-in terminals for field wiring connections
- Simple relay interface to host panel
- NEMA-4X (IP66) enclosure available

General

The PIM-430 is a detection module that interfaces between a main control panel detection circuit(s) or addressable node(s) and Protectowire Linear Heat Detector. The module may be configured to provide two (2) Class B (Style B) alarm initiating circuits each capable of operating up to 2,000m (6,560 ft.) of Protectowire Linear Heat Detector or one (1) 3-wire Class B (Style B) dual input initiating circuit capable of operating up to 2,000m (6,560 ft.) of Protectowire Type TRI (TRI-Wire™). The PIM-430 initiating circuits are also compatible with other types of normally open non-resistive contact devices.

Description

The PIM-430 Dual Input Interface Module is designed for easy mounting and includes a convenient “snap-lock” mounting track that enables the module to be conveniently installed inside a host control panel or in any enclosure meeting the environmental requirements of the application. The module is also available from the factory mounted in a NEMA-4X (IP66) rated enclosure (Option E) that can be mounted outside of the host panel in a remote location.

In order to ensure proper operation, each PIM-430 Interface Module requires regulated 24 VDC external power which is normally provided by the host control panel. Each module contains a Green “Power On” LED indicator to provide visual confirmation that the module is powered. One (1) set of Form C alarm contacts, and one (1) set of Form C trouble contacts are provided for each detection zone, and are used to interface the unit to a corresponding detection zone(s) in the host fire alarm panel. The module’s alarm initiating circuits are non-latching and self restore upon clearing the cause of the alarm state. The host panel’s zone detection circuits are used to retain the alarm latch (memory) until manually reset.

The metered version of the Interface Module, Model PIM-430D, contains an on-board alarm point location meter that is manually activated by means of a toggle switch. The high intensity LCD meter will display the distance in meters from the start of the detector portion of the zone in alarm to the heat actuated point on the Protectowire Linear Heat Detector. When the module is used with standard 2-wire Protectowire, moving the switch to the left (⇐) position will activate the alarm reading for zone one (1), while moving the switch to the right (⇒), displays the alarm reading for zone two (2). When TRI-Wire™ is utilized, the module is configured as a single zone and the switch must be moved to the left position to obtain the location reading of the heat actuated pre-alarm point on the TRI-Wire™ Dual Temperature Linear Heat Detector. High temperature alarm (200° F/93° C) distances are not displayed.

When detection in hazardous areas is required, each PIM-430 Interface Module can be provided with two (2) shunt diode barriers (Option I). This option provides two (2) intrinsically safe Class B (Style B) detection circuits for use with standard 2-wire Protectowire. The maximum length of Protectowire that can be connected to each circuit is 1,829m (6,000 ft.). When Option I is utilized with TRI-Wire™, the module will accommodate one (1) TRI-Wire™ zone with a maximum length of 1,829m (6,000 ft.).

The shunt diode barriers limit the voltage and current in the detection circuits to values that are incapable of causing an explosion. In a standard 2-wire configuration, each intrinsically safe circuit is rated for use in areas that are classified as Class I, II, and III, Division 1, Groups A, B, C, D, E, F, and G. When TRI-Wire™ is connected to the module, the intrinsically safe circuit may only be used in areas classified as Class I, II, and III, Division 1, Groups C, D, E, F, and G. Refer to Protectowire Control Drawing IL-1613.

Only Protectowire Linear Heat Detectors and/or a non-energy storing contact initiating device may be used on PIM-430 intrinsically safe detection circuits. The intrinsic safety barrier compatible for use with the PIM-430 Series is Part Number 9001/01-280-100-101 as manufactured by R. Stahl Inc. Two (2) Stahl Intrinsic Safety Barriers per module are required. Consult the Factory for specific information on hazardous location installations as additional limitations may apply.

Specifications

Electrical

- Regulated 24 VDC (+10% / -15%) @ 45 mA standby, 150 mA alarm.
- Power limited, onboard surge and EMI protection devices.
- Two (2) "Trouble" LED's (yellow); two (2) "Alarm/Pre-alarm" LED's (red); one (1) "Power On" LED (green).
- Initiating device circuits (zones) w/o ISB's: Maximum 2,000m (6,560 ft.) of 2-wire Protectowire Linear Heat Detector per circuit (2 circuits per module) or one (1) circuit per module of 3-wire Protectowire Type TRI (TRI-Wire™) with a maximum length of 2,000m (6,560 ft.). The initiating device circuits are not compatible with 2-wire smoke detectors, but will accommodate any number of normally open non-resistive contact devices.

Environmental

- Ambient temperature: 0° - 49°C (32° - 120°F).
- Humidity: Max. 95% non-condensing.

Outputs

- One (1) set of Form C (SPDT) Contacts - Zone 1 Trouble/TRI-Wire™ Pre-Alarm Circuit Trouble
- One (1) set of Form C (SPDT) Contacts - Zone 2 Trouble/TRI-Wire™ High Temp. Circuit Trouble
- One (1) set of Form C (SPDT) Contacts - Zone 1 Alarm/TRI-Wire™ Pre-Alarm
- One (1) set of Form C (SPDT) Contacts - Zone 2 Alarm/TRI-Wire™ High Temp. Alarm
- All contacts are rated 1 amp @ 30 VDC

Enclosure Dimensions ("E" Models w/o ISB's)

- 21.6 cm (H) x 16.5 cm (W) x 12.7 cm (D)
(8.5 in. x 6.5 in. x 5 in.)
- Add 4 cm (1.6 in.) to height for external mounting feet.

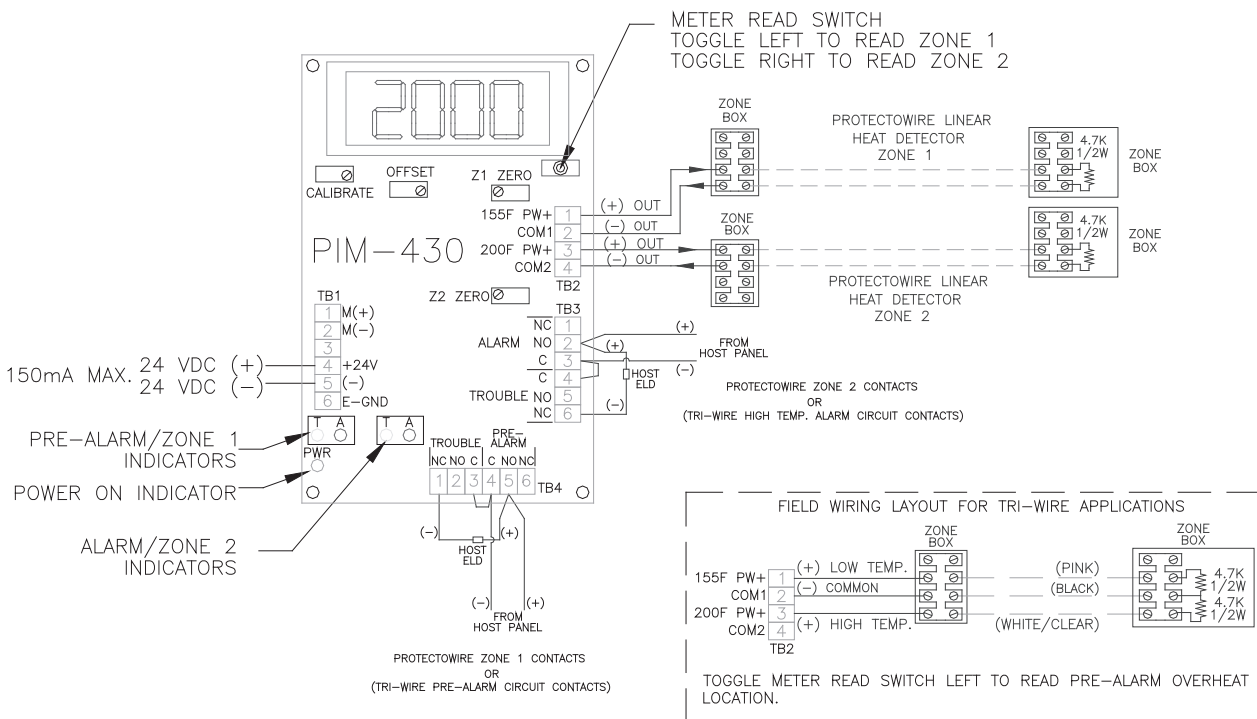
PIM-430 Commissioning Procedure



Caution: All auxiliary alarm devices and outputs controlled by the Host Fire Alarm Panel should be disconnected prior to connecting any PIM-430 Interface Modules to the system. To ensure compatibility, the host panel's initiating device circuits must accept normally open alarm shorting and normally closed trouble opening devices.

panel wiring specification, and observe polarity if necessary. The host panel's initiating device circuits must accept normally open alarm shorting and normally closed trouble opening devices.

5. Connect a regulated 24 VDC switched power source across input terminals 4 (+) & 5 (-) on terminal block TB1. Turn on power. Only the green "Power" LED should be on, and the host panel initiating device circuit(s) trouble indication should clear. When



1. Remove factory supplied 4.7K 1/2w end-of-line resistors (ELR) from terminal TB2 and install across the conductors at the end of each Protectowire run as shown on the wiring diagram. In Protectowire 2-wire applications, if one of the detection zones is unused, a 4.7K end-of-line resistor must be installed across the unused zone terminals on terminal block TB2.
2. Connect Protectowire Linear Heat Detector to the module using terminal block TB2. Refer to wiring diagram for specific zone or TRI-Wire™ pre-alarm and high temperature circuit terminal designations. *Important: To ensure proper TRI-Wire™ operation, the polarity of the circuit must be maintained as illustrated.*
3. Connect host panel's initiating circuit end-of-line device across terminals 2 & 6 on terminal block TB3 and 1 & 5 on TB4 as required by the application. See host panel wiring specifications. If polarity is required, connect (+) to terminal 2, (-) to terminal 6 on TB3 and (+) to terminal 5, and (-) to terminal 1 on TB4.
4. Connect host panel's initiating device circuit(s) across terminals 2 (+) & 3 (-) on terminal block TB3 and/or terminals 4 (-) & 5 (+) on TB4 as functionally required by the application. Install jumpers between terminals 3 & 4 on TB3 and TB4. See host

code or local authority requires grounding, connect terminal 6 marked E-GND on TB1 to earth ground.

6. At the end of the Protectowire Linear Heat Detection run, open the circuit at the 4.7K end-of-line resistor. The yellow "Trouble" LED on the PIM-430 will light, and the host panel should report a trouble condition. Reconnect the end-of-line resistor and the "Trouble" LED will extinguish and the host panel should reset to normal. Perform this test for each active Protectowire zone or the pre-alarm and high temperature alarm legs of the TRI-Wire™ detection circuit. Note: Manual trouble reset of the host panel may also be required depending upon the make and model installed.
7. At the end of the Protectowire Linear Heat Detection run, short the circuit across the 4.7K end-of-line resistor. The red "Alarm" LED on the PIM-430 will light and the host panel should report an alarm condition. To restore the system to normal, reset the host control panel. The PIM-430 Protectowire alarm initiating circuit(s) are non-latching and self-restore upon clearing the short from the circuit(s). Perform this test for each active Protectowire zone or the pre-alarm and high temperature alarm legs of the TRI-Wire™ detection circuit.

Alarm Point Location Meter Calibration ("D" Models)

After installation, the meter must be calibrated to compensate for the resistance of the copper feed wire between the PIM-430D Interface Module and the start of the Protectowire portion of the circuit. Adjust the meter per the following procedure:

1. Disconnect all alarm and/or releasing devices from the host system before applying power to the module.
2. Connect a jumper across the Zone 1 detection circuit in the first zone box at the beginning of the Protectowire run. For TRI-Wire™ installations, jumper across the low temperature pre-alarm portion of the detection circuit (pink and black conductors). *Caution: This action will cause an alarm condition on the detection circuit.*
3. On the Interface Module, move and hold the meter read toggle switch to the left (⇐) position. The meter will display the copper feed cable error for Zone 1.
4. To cancel out (zero) this value, adjust the "Z1 Zero" potentiometer on the Interface Module using a small screwdriver to turn the adjustment screw until the meter reads zero. Remove the jumper from the detection circuit, and reset the host control panel. For TRI-Wire™ applications go to Step 6.
5. This step pertains only to 2-wire Protectowire installations where Zone 2 is utilized. Connect a jumper across the Zone 2 detection circuit. This action will cause an alarm condition. Move and hold the meter read toggle switch to the right (⇒) position. The meter will display the copper feed cable error. Repeat Step 4 to cancel out (zero) this value using the "Z2 Zero" potentiometer. Remove the jumper from the detection circuit and reset the host panel.
6. Although preset at the Factory, a calibration adjustment may be needed to compensate for installation temperature variations. To calibrate the meter, after the offset adjustment (Item 4), place a short across the end of the Protectowire run at the end-of-line resistor zone box on the Zone 1/TRI-Wire™ Pre-alarm circuit. In TRI-Wire™ applications, the pre-alarm function is identified by the pink and black conductors. *Caution: This action will cause an alarm condition on the detection circuit.* Move and hold the meter read switch to the left (⇐) position and adjust the "Calibrate" potentiometer until the display shows the actual length of the linear detection cable installed on the circuit. Remove the short from the circuit and reset the host panel. No further calibration adjustments are required for this module.
7. Repeat this procedure for all other metered PIM-430 Interface Modules in the system. Reconnect all auxiliary devices disconnected from the Host Fire Alarm Panel in Step 1. Return system to normal operation.

Ordering Information

Model Number	Description
PIM-430	Dual Input Interface Module without Meter, track mounted.
PIM-430D	Dual Input Interface Module with Meter, track mounted.
PIM-430E	Dual Input Interface Module without Meter, mounted in a NEMA-4X (IP66) Enclosure.
PIM-430DE	Dual Input Interface Module with Meter, mounted in a NEMA-4X (IP66) Enclosure.
PIM-430E-I	Dual Input Interface Module without Meter, mounted in a NEMA-4X (IP66) Enclosure w/(2) ISB's.
PIM-430DE-I	Dual Input Interface Module with Meter, mounted in a NEMA-4X (IP66) Enclosure w/(2) ISB's.