



## FOUNDATION Fieldbus Input/Relay Output Modules

- 461087 - (Interlocked Outputs, Flat mount)**
- 461088 - (Independent Outputs, Flat mount)**
- 465022 - (Interlocked Outputs, DIN rail mount);**
- 465023 - (Independent Outputs, DIN rail mount)**

These I/O Modules are designed to function as FOUNDATION Fieldbus nodes with termination points for connecting switches/sensors (discrete and analog), as well as relay outputs to operate devices such as motors and other high power devices. Relay Outputs can be either Interlocked to operate AC motors or, Independent to operate separate AC loads. Outputs can be configured to "Fail On" or "Fail Off".

### Inputs and Outputs

- Two (2) Discrete Inputs
- Two (2) Discrete (Relay) Outputs
- One (1) Analog Input (4-20mA)
- One (1) Analog Output (4-20mA)

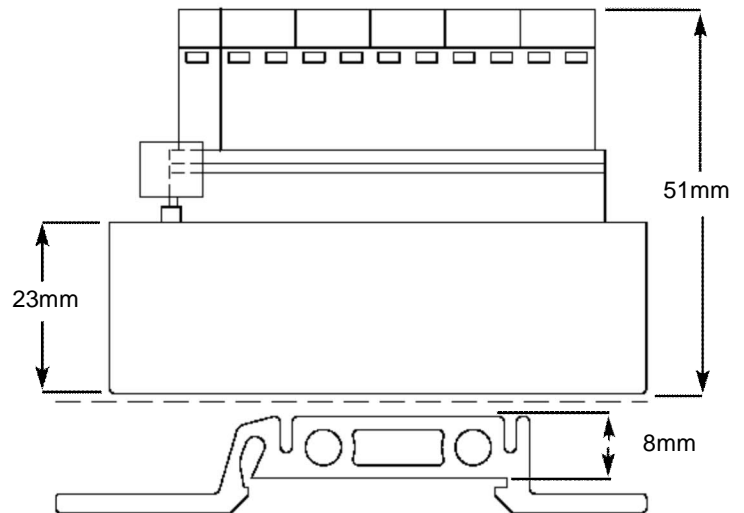
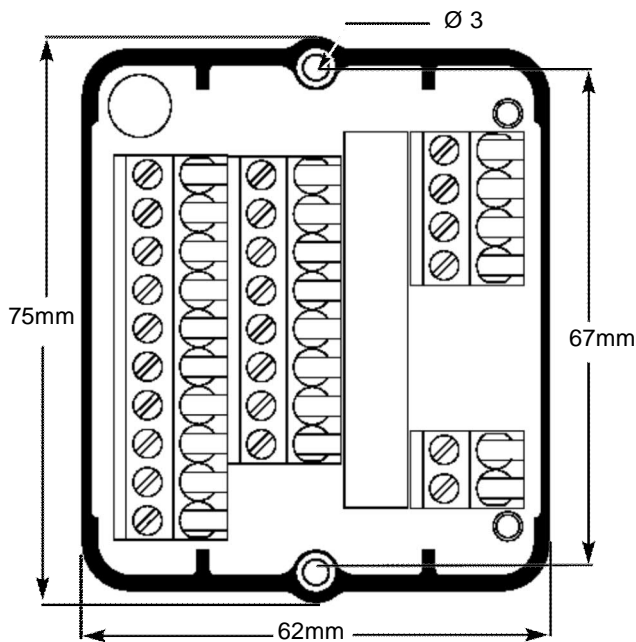
### Features

- Date of Last Service
- Pre-determined output Fail State



(See Pages 2&3 for specifications and detailed wiring instructions)

### Input/Relay Output Module Dimensions (in mm)



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## Specifications

Operating Voltage	9-32 VDC via Foundation Fieldbus voltage
Bus Current Draw	16mA
External Control Voltage	24 VDC (For Analog I/O and Relay Output control)
External Control Max Current	Analog Input - 25mA Analog Output - 25mA Relay Output coils - 21mA each (2)
Discrete Inputs	(2) For low power dry contact switches capable of operating at <.045mA @ 6.5VDC or solid state PNP capable of operating at <1mA @ 6.5 VDC
Discrete Controlled Relay Outputs	(2) Discrete Controlled Relay Outputs with contacts rated for 120/250VAC/30VDC fused @ 2 amps
Analog Input	(1) Analog input (4-20 mA). 10 bit resolution (0.1%)
Analog Output	(1) Analog output (4-20 mA). 10 bit resolution (0.1%)
Function Blocks	2 DI; 2 DO; 1 AI; 1AO
Indication	Input 1 = Red LED Input 2 = Green LED

## Standard Channel Assignments

Channel 1 (DI1) - Discrete Input 1 (Red LED);	1 = True; 0 = False
Channel 2 (DI2) - Discrete Input 2 (Green LED);	1 = True; 0 = False
Channel 3 (DO1) - Discrete Output 1 (OUT 1);	1 = True; 0 = False
Channel 4 (DO2) - Discrete Output 2 (OUT 2);	1 = True; 0 = False
Channel 5 (AI1) - Analog Input (AIN);	% of 4-20mA Input Range (0 = 4mA; 100 = 20mA)
Channel 6 (AO1) - Analog Output (AOUT);	% of 4-20mA Input Range (0 = 4mA; 100 = 20mA)

## Special Channel Assignments

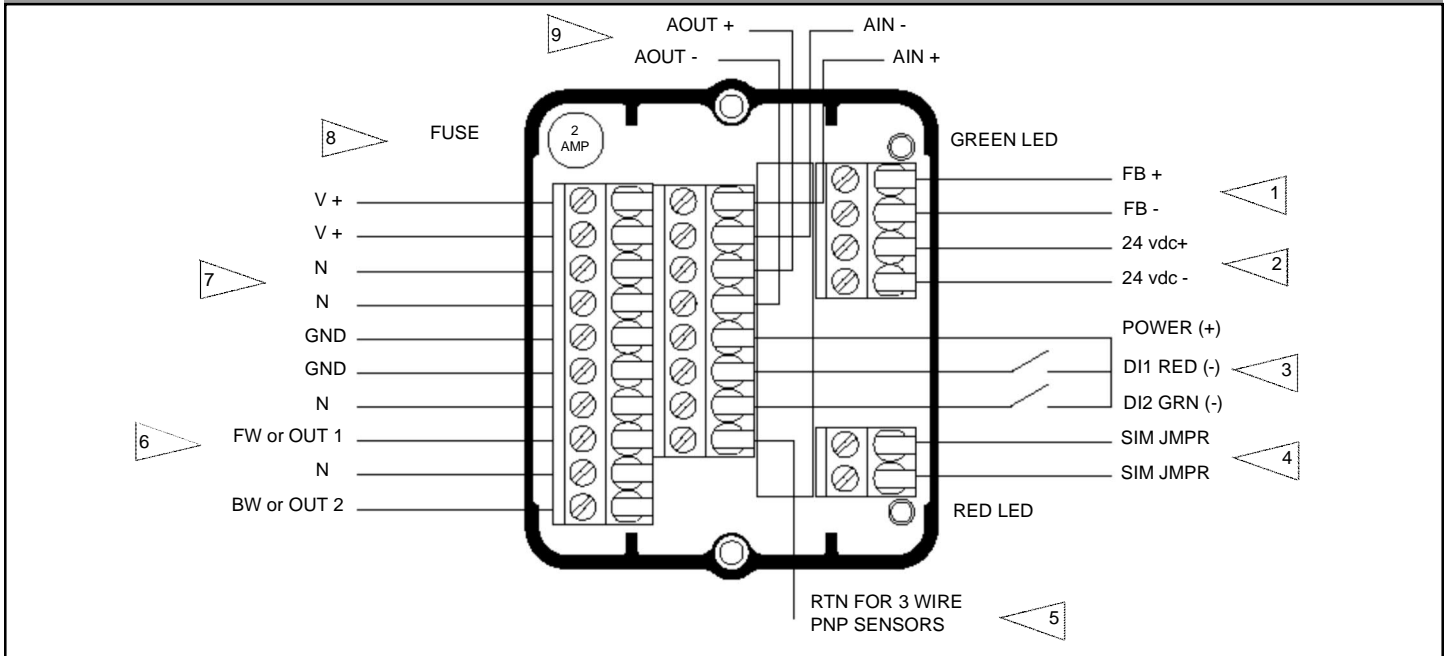
- Channel 7 (AO1) - Analog Output (AOUT) with state report from Analog Input (READBACK\_D)
- Channel 8 (DO1) - Discrete Output 1 (OUT 1) with state report from Discrete Input 1 (READBACK\_D)
- Channel 9 (DO2) - Discrete Output 2 (OUT 2) with state report from Discrete Input 2 (READBACK\_D)

## Valve Control Single Block Mode

Channel 10 (DO1) - Discrete Output 1 (OUT 1) with state report Discrete Inputs 1&2 (READBACK\_D):

READBACK\_D Values:

- 0 = None
- 1 = Discrete Input 1 is True
- 2 = Discrete Input 2 is True
- 3 = Both Discrete Inputs 1&2 are True



## INSTALLATION NOTES:

1. FOUNDATION Fieldbus bus communications connection points.
2. Connection points for external 24VDC power for Analog I/O and internal relay coils for Relay Output.
3. Bus powered Discrete Input connection points for low power dry contacts capable of operating at <math>.<math>045\text{mA}</math> @ 6.5VDC or solid state PNP sensors capable of operating at <math><math>1\text{mA}</math> and 6.5VDC. Red LED is local indication of discrete input DI1 RED on/off status and the Green LED for DI2 GRN on/off status.

**NOTE: The Discrete Inputs (DI) are not galvanically isolated from the FOUNDATION signal wires. Therefore, the DI connections should not be attached to ground. If the cable runs to the DI's are long or can be exposed to electrical noise, external Opto-isolators on the DI wires may be needed to provide isolation.**

4. These connection points not used by the consumer.
5. Connection point for the "return" of 3 wire PNP sensors. (See Note 3)
6. Connection points for devices to be controlled by the Relay Outputs. OUT1 and OUT2 are markings found on modules with independent outputs (461088, 465023). BW And FW markings are used on modules with interlocked outputs (461087, 465022). Modules with interlocked outputs are typically used with AC motors. BW and FW represent forward and reverse operation of the motor. 24VDC must be applied (See Note 2)
7. Connection points for external 120/250VAC or 30VDC power for devices connected to the Relay Outputs. V+, V+, N, N, GND, GND are redundant termination points. The external power source feeds both Relay Outputs.

**NOTE: Power applied to the V+ and N terminals must be a different and isolated power source than the power applied to the module 24VDC and 24VDC- terminals.**

8. 2 amp replaceable fuse (Part# 434162) for Relay Output protection. (See Note 6)
9. Connection points for 2 wire, 24VDC, 4-20mA analog devices. (See Note 2)