

# Slow Pulse Input Source and Isolated Modules

The Slow Pulse Input Source and Slow Pulse Input Isolated Modules plug into a ROC 300-Series Remote Operations Controller, or a FloBoss™ 407 Flow Manager, and count the changes in the status of relays, solid-state switches, or other two-state devices. Each module accommodates one pulse input.

The modules provide an LED to show when the input is active and use a scaling resistor for scaling the input range. Functions supported (for example, raw pulse accumulation, rate in EUs, today's total in EUs) are controlled by the ROC or FloBoss firmware.

The source module provides a source voltage for dry relay contacts or for an open-collector solid-state switch. The isolated module accepts an external voltage from a powered two-state device, while maintaining electrical isolation from the ROC or FloBoss power supplies.

Connections between the modules and field wiring are made through separate terminal blocks, which plug into the ROC or FloBoss. This facilitates removal and replacement of modules without disconnecting field wiring.

## Source Module Specifications

### FIELD WIRING TERMINALS

- A: Not used
- B: Input/source voltage
- C: Common

### INPUT

- Type:** Contact sense.
- Range:** Inactive; 0 to 0.5 mA. Active; 2 to 9 mA.
- Source Voltage:** 11 to 30 Vdc.
- Source Current:** Determined by source voltage (Vs), loop resistance (RI), and scaling resistor (Rs):  

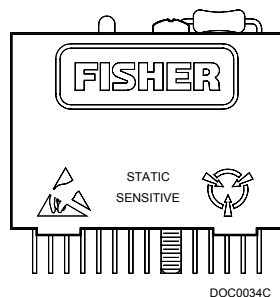
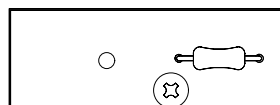
$$I = (Vs - 1)/(3.3K + RI + Rs)$$

### POWER REQUIREMENTS

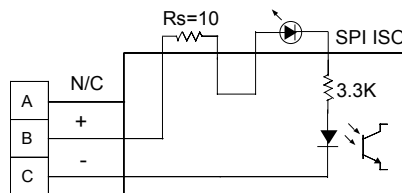
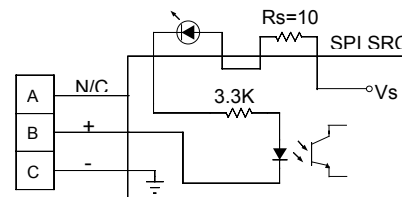
- Source Input:** 11 to 30 Vdc, 9 mA maximum from ROC power supply or I/O converter card.
- Module:** 4.9 to 5.1 Vdc, 1 mA maximum (supplied by ROC).

### INPUT ISOLATION

- Not isolated. Terminal C tied to power supply common.



Slow Pulse Input Module



Simplified Schematics



**Isolated Module Specifications**

<p><b>FIELD WIRING TERMINALS</b></p> <p><b>A:</b> Not used  <b>B:</b> Positive input  <b>C:</b> Negative input</p> <p><b>INPUT</b></p> <p><b>Type:</b> Two-state current sense.  <b>Range:</b> Inactive: 0 to 0.5 mA. Active: 2 to 9 mA.  <b>Current:</b> Determined by input voltage (Vi), loop resistance (RI), and scaling resistor (Rs):  <math>I = (V_i - 1)/(3.3K + R_I + R_s)</math>  <b>Maximum Voltage:</b> 30 Vdc forward, 5 Vdc reverse.</p>	<p><b>POWER REQUIREMENTS</b></p> <p>4.9 to 5.1 Vdc, 1 mA maximum (supplied by ROC).</p> <p><b>INPUT ISOLATION</b></p> <p><b>Insulation:</b> 100 megohm minimum, input to output, and input or output to case.  <b>Voltage:</b> 4,000 Vac (RMS) minimum, input to output.  <b>Capacitance:</b> 6 pF typical, input to output.</p>
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**Common Specifications**

<p><b>INPUT</b></p> <p><b>Loop Resistance (RI):</b> 4.5 kilohm maximum for best efficiency.  <b>Scaling Resistor (Rs):</b> 10 ohm supplied (see equation above to compute other value).  <b>Frequency Response:</b> 0 to 10 Hz maximum, 50% duty cycle.  <b>Input Filter (Debounce):</b> 50 milliseconds.</p> <p><b>VIBRATION</b></p> <p>20 Gs peak or 0.06 in. double amplitude, 10 to 2,000 Hz, per MIL-STD-202 method 204, condition F.</p> <p><b>MECHANICAL SHOCK</b></p> <p>1500 Gs 0.5 ms half sine, per MIL-STD-202 method 213, condition F.</p>	<p><b>WEIGHT</b></p> <p>1.3 ounces (37 grams).</p> <p><b>CASE</b></p> <p>Solvent-resistant thermoplastic polyester, meets UL94V-0. Dimensions: 15 mm D by 32 mm H by 43 mm W (0.6 in. D by 1.265 in. H by 1.690 in. W), not including pins.</p> <p><b>ENVIRONMENTAL</b></p> <p>Meets the Environmental specifications of the ROC or FloBoss in which the module is installed, including Temperature, Humidity, and Transient Protection.</p> <p><b>APPROVALS</b></p> <p>Approved by CSA for hazardous locations Class I, Division 2, Groups A, B, C, and D.</p>
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