

# Analog Input Loop and Differential Modules

The Analog Input Loop and Analog Input Differential modules plug into a ROC300-Series Remote Operations Controller or FloBoss™ 407 Flow Manager to monitor current loop and voltage output devices. Each module can accommodate one Analog Input, and each uses a scaling resistor for converting loop current to input voltage.

The loop module provides a current source for powering current loop devices. The differential module monitors loop current or voltage input from externally-powered devices and is semi-isolated from the ROC power supplies.

Field wiring connections are made through a separate terminal block that plugs in next to the module. This design facilitates replacement of the module without disconnecting field wiring.

## Analog Input Loop Module Specifications

### FIELD WIRING TERMINALS

**A:** Loop Power (+T).

**B:** Analog Input (+).

**C:** Common (-).

### INPUT

**Type:** Single-ended, voltage sense. Current loop with scaling resistor (R1).

**Loop Current:** 0 to 25 mA maximum range. Actual range depends on scaling resistor used.

**Voltage Sensing:** 0 to 5 Volts dc, software configured.

**Accuracy:** 0.1% of full scale (20 to 30°C). 0.5% of full scale (-40 to 70°C)

### INPUT (CONTINUED)

**Impedance:** Greater than 400 KΩ (without scaling resistor).

**Normal Mode Rejection:** 50 dB @ 60 Hz.

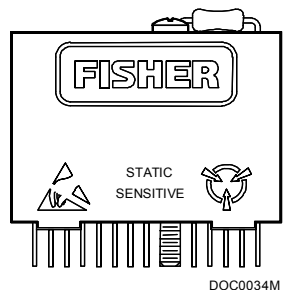
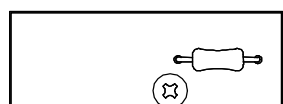
### POWER REQUIREMENTS

**Loop Source:** 25 mA maximum, from ROC or FloBoss power circuits or I/O converter card ( $V_s = 11$  to 30 V dc).

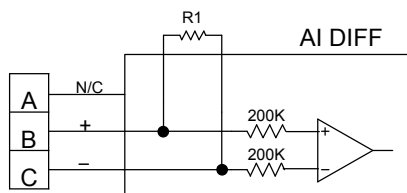
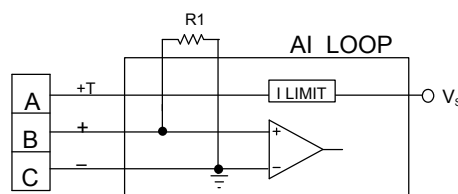
**Module:** 4.9 to 5.1 Volts dc, 6 mA maximum; -4.5 to -5.5 Volts dc, 2 mA maximum (supplied by ROC).

### ISOLATION

Not isolated. Terminal C tied to power supply common.



Typical Analog Input Module



Simplified Input Schematics

## Analog Input Differential Module Specifications

<p><b>FIELD WIRING TERMINALS</b></p> <p><b>A:</b> Not used.</p> <p><b>B:</b> Positive Analog Input (+).</p> <p><b>C:</b> Negative Analog Input (-).</p> <p><b>INPUT</b></p> <p><b>Type:</b> Voltage sense. Externally-powered current loop sensing with scaling resistor (R1).</p> <p><b>Voltage:</b> 0 to 5 Volts dc, software configured.</p> <p><b>Accuracy:</b> 0.1% of full scale (20 to 30°C). 0.5% of full scale (-40 to 70°C).</p>	<p><b>INPUT (CONTINUED)</b></p> <p><b>Normal Mode Rejection:</b> 50 dB @ 60 Hz.</p> <p><b>Impedance:</b> Greater than 400 KΩ (without scaling resistor).</p> <p><b>POWER REQUIREMENTS</b></p> <p>4.9 to 5.1 Volts dc, 6 mA maximum; -4.5 to -5.5 Volts dc, 2 mA maximum (supplied by ROC).</p> <p><b>INPUT ISOLATION</b></p> <p>Greater than 400 KΩ input to power supply common.</p>
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## Analog Input Common Specifications

<p><b>SCALING RESISTOR</b></p> <p>250 ohm (supplied) for 0 to 20 mA full scale. 100 ohm for 0 to 50 mA (externally-powered only).</p> <p><b>RESOLUTION</b></p> <p>12 bits.</p> <p><b>FILTER</b></p> <p>Single pole, low-pass, 40 millisecond time constant.</p> <p><b>CONVERSION TIME</b></p> <p>30 microseconds typical.</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>CASE</b></p> <p>Solvent-resistant thermoplastic polyester, meets UL94V-0. Dimensions are 15 mm D by 32 mm H by 43 mm W (0.60 in D by 1.265 in H by 1.69 in W), not including pins.</p> <p><b>ENVIRONMENTAL</b></p> <p>Meets the Environmental specifications of the ROC or FloBoss unit in which the module is installed, including Temperature, Humidity, and Transient Protection.</p> <p><b>WEIGHT</b></p> <p>37 grams (1.3 ounces).</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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