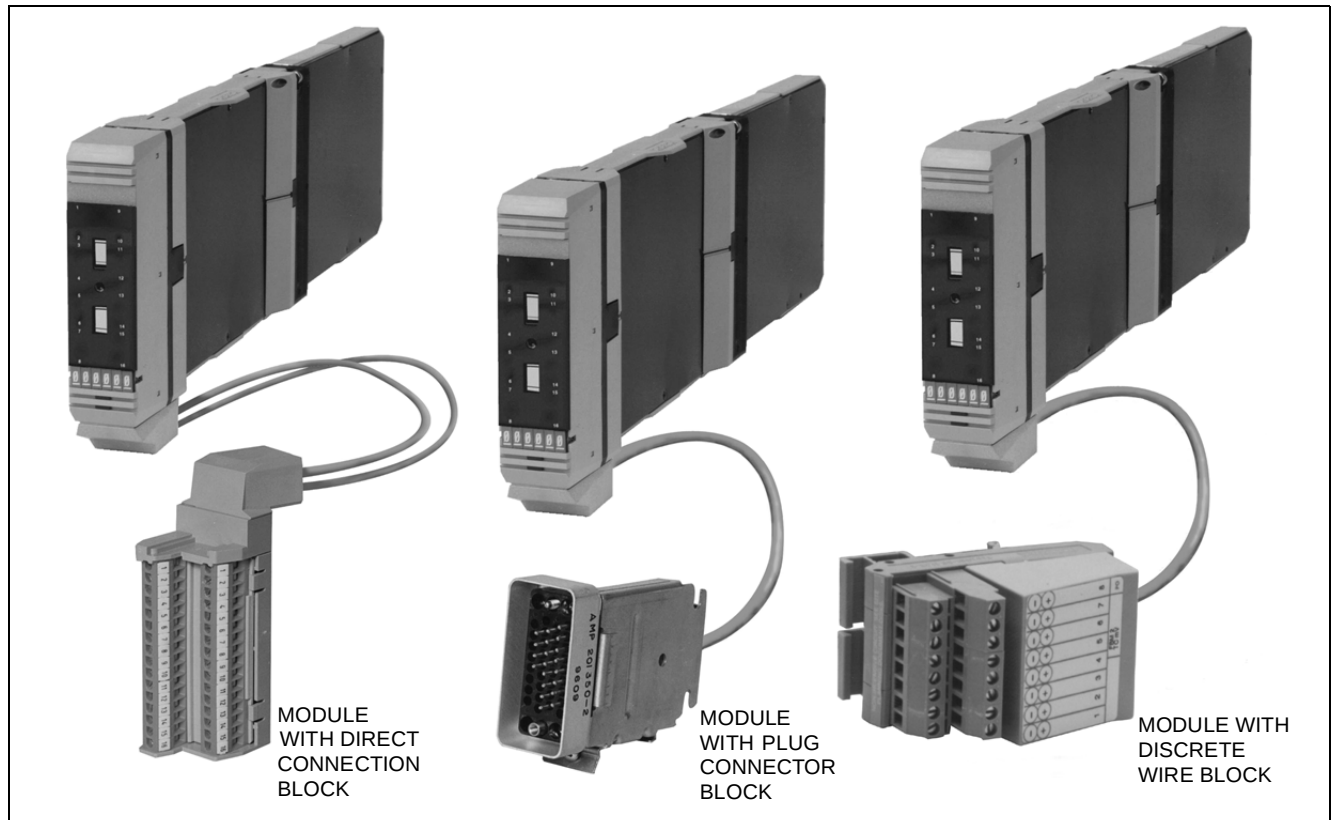


I/A Series[®] Hardware

Thermocouple/mV Input Interface Module (FBM02)



The Thermocouple/mV Input Interface Module (FBM02) contains eight isolated thermocouple input channels, and one isolated RTD reference junction compensation channel (for terminal temperature sensing). Each thermocouple/mV channel has a full scale indication on burnout feature and accepts standard thermocouples for various temperature ranges. The module performs the signal conversion required to interface the electrical input signals from the thermocouples to the redundant Fieldbus. The module is a main type, and independently connects to the redundant Fieldbus.

This module executes the analog input application program. The configurable options for this program are Analog Input Resolution (on a per module basis), Fieldbus Switching Enable, and Fieldbus Switching Time.

FUNCTIONAL SPECIFICATIONS

Input

Eight isolated and independent thermocouple/mV input channels. One isolated reference junction compensation channel.

Input Range

-10.5 to 71.41875 mV dc(a)

Reference Junction

FOR DISCRETE AND DIRECT TERMINAL CONNECTIONS

100 Ω platinum RTD is internally provided at the termination cable assembly.

FOR A PLUG TERMINATION CONNECTION

Reference junction connection is provided by the user with a 2-, 3-, or 4-wire 100 Ω platinum RTD (DIN 43760, Class B)

Accuracy

MILLIVOLT INPUT

$\pm 0.035\%$ of span (± 0.028 mV)

RTD CHANNEL

$\pm 0.025\%$ of span ($\pm 0.2^\circ\text{C}$)

THERMOCOUPLE CONFORMITY

$\pm 0.25^\circ\text{C}$

RTD CONFORMITY

$\pm 0.25^\circ\text{C}$

ACCURACY TEMPERATURE COEFFICIENT

± 25 ppm/ $^\circ\text{C}$

RTD REFERENCE JUNCTION MEASUREMENT

ACCURACY(B)

$\pm 0.50^\circ\text{C}$

Communication

Via a redundant Fieldbus

Conversion Time (software configurable)

See Table 1 (Input Specifications)

Input Open Circuit Voltage

0.25 V dc (mV channels)

Typical Thermocouple Types

B, E, J, K, S, T, N, and other millivolt signals

Power Requirements

INPUT VOLTAGE RANGE (REDUNDANT)

26 to 42 V dc

CONSUMPTION

9 W (maximum)

HEAT DISSIPATION

9 W (maximum)

Isolation

The module can withstand, without damage, a potential of 600 V ac applied for one minute between any channel and earth (ground), or between a given channel and any other channel.

NOTE

This does not imply that these channels are intended for permanent connection to hazardous voltage circuits. Connection of these channels to voltages greater than 30 V ac or 60 V dc violates electrical safety code requirements and may expose users to electric shock.

(a) -10.5 to 71.41875 mV dc equals 0 to 65535 raw counts (full range of card).

(b) When using the RTD supplied with direct and wire type termination assemblies.

Table 1. Input Specifications

Integration Period (Seconds)	Update Time (Milliseconds)	Settling Time(a) (Seconds)	Linearity Error(b,c) (% of Range)	Resolution (Bits)(c)
0.1	10	0.4	0.0125	12
0.2	10	0.6	0.0075	13
0.5	25	1.2	0.005	14
1.0	50	2.1	0.005	15

(a) Value settles within a 1% band of steady state for an input step change of 0 to 60 mV.

(b) Monotonic; assures that the signal for Fieldbus communications either increases or remains the same for increasing analog input signals.

(c) Represents the accuracy of the FBM only.

ENVIRONMENTAL SPECIFICATIONS(a)**Operating****TEMPERATURE**

0 to 60°C (32 to 140°F)

RELATIVE HUMIDITY

5 to 95% (Noncondensing)

ALTITUDE

-300 to +3,000 m (-1,000 to +10,000 ft)

Storage**TEMPERATURE**

-40 to +70°C (-40 to +158°F)

RELATIVE HUMIDITY

5 to 95% (Noncondensing)

ALTITUDE

-300 to +12,000 m (-1,000 to +40,000 ft)

Contamination

Class G3 (Harsh) as defined in ISA Standard, S71.04

(a) The environmental limits of this module may be enhanced by the type of enclosure containing the module. {Refer to the applicable Product Specification Sheet (PSS) which describes the specific type of enclosure that is to be used.}

PHYSICAL SPECIFICATIONS**Mounting****WITH Y-ADAPTER**

Installable in the 1x8 Mounting Structure,
I/A Series Industrial Enclosures and Field
Enclosure 8.

WITHOUT Y-ADAPTER

Installable in I/A Series Field Enclosure 4 and the
1x8 FBM Mounting Structure.

Mass

1 kg (2.2 lb)

Indicators (mounted on termination connector)**OPERATIONAL STATUS**

Red and green light-emitting diodes (LEDs)

Field Termination Connections(a)**DISCRETE WIRE BLOCK**

16 screw-clamp terminals

DIRECT CONNECTION BLOCK

16 screw-clamp terminals

PLUG CONNECTOR BLOCK

34-pin connector. Mates with:

- Burndy MSD 34 PM 118
(plug with bar-type cable clamp)
- Burndy MSD 34 PM 124
(plug with clamshell hood)
- Burndy MSD 34 PM 824
(plug with suitcase hood)
- or equivalent

(a) The discrete wire or plug connector block is available on termination cable assemblies for all enclosures excluding the local enclosures, Field Enclosure 4, and Multiple (Bridged) Industrial Enclosure 32. The direct connection block is available only on the termination cable assembly for the local enclosures and the Field Enclosure 4. Multiple (Bridged) Industrial Enclosure 32s use plug connector block only.

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