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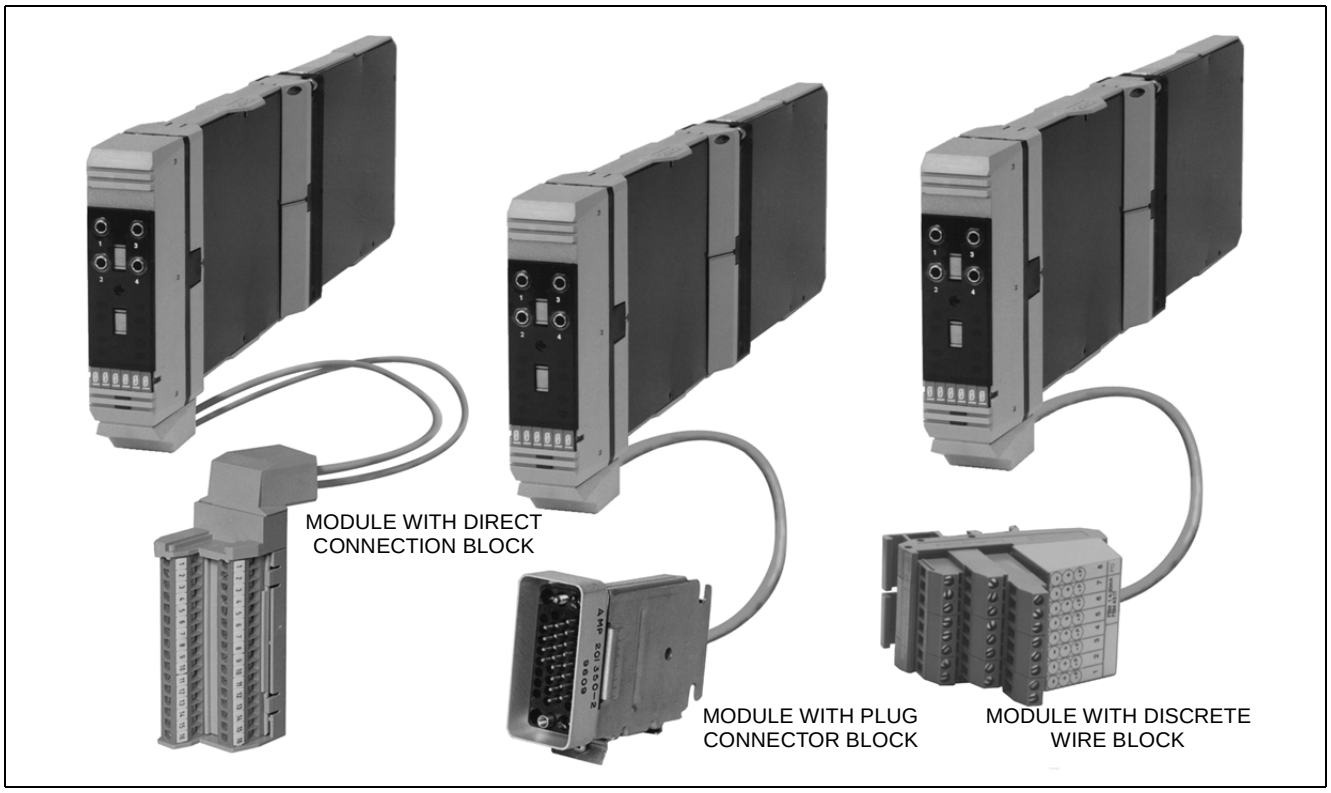
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FOXBORO®

PSS 21H-2B7 B4

I/A Series® Hardware
0 to 20 mA I/O Interface Module (FBM04)



The 0 to 20 mA Input/Output Interface Module contains four 20 mA dc analog input channels and four 20 mA dc analog output channels. Each input channel accepts an analog sensor input such as a 4 to 20 mA transmitter or a self-powered 20 mA source. Each output channel drives an external load and produces a 0 to 20 mA output. The module performs the signal conversion required to interface the electrical input/output signals from/to the field sensors and actuators to/from the redundant Fieldbus. The module is a main type, and independently connects to the redundant Fieldbus.

This module executes the analog I/O application program. The configurable options for this program are Analog Input Resolution (on a per module basis), Fail-Safe Configuration (Hold/Fallback), Analog Output Fail-Safe Fallback Data, (on a per channel basis), Fieldbus Switching Enable and Fieldbus Switching Time.

An optional style of termination cable assembly is available which includes built-in bypass jacks for each output channel on the front connector of the Fieldbus Module. Jacks accept a bypass plug from the I/A Series Output Bypass Station or other external 20 mA source. This option should be considered for applications where maintaining output is desired during maintenance operations, for example, when replacing a failed module.

Invensys
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Product Specifications

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FUNCTIONAL SPECIFICATIONS

Common Characteristics

POWER REQUIREMENTS

Input Voltage Range (Redundant)
26 to 42 V dc

Consumption
14 W (maximum)

Heat Dissipation
12 W (maximum)

Isolation

The module withstands, 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.

Input Channels

INPUT
4 isolated and independent channels
INPUT RANGE (EACH CHANNEL)
0 to 20.4 mA dc
ACCURACY
±0.05% of span
COMMUNICATION
Via a redundant Fieldbus
INPUT CONNECTIONS
Two configurations (see Figure 1)
CONVERSION TIME (SOFTWARE CONFIGURABLE)
See Table 1 (Input Specifications)

Output Channels

OUTPUT
4 isolated and independent channels
OUTPUT RANGE (EACH CHANNEL)
0 to 20.4 mA dc
OUTPUT LOAD (MAXIMUM)
735 Ω
COMPLIANCE VOLTAGE
18.6 V nominal at 20 mA dc at I/O field terminals
ACCURACY
±0.05% of span (25°C)
OUTPUT TEMPERATURE COEFFICIENT
100 ppm/°C
COMMUNICATION
Via a redundant Fieldbus
SETTLING TIME
100 ms to settle within a 1% band of steady state for a 10 to 90% input step change.
LINEARITY ERROR
±0.025% of span (monotonic)
RESOLUTION
12 bits

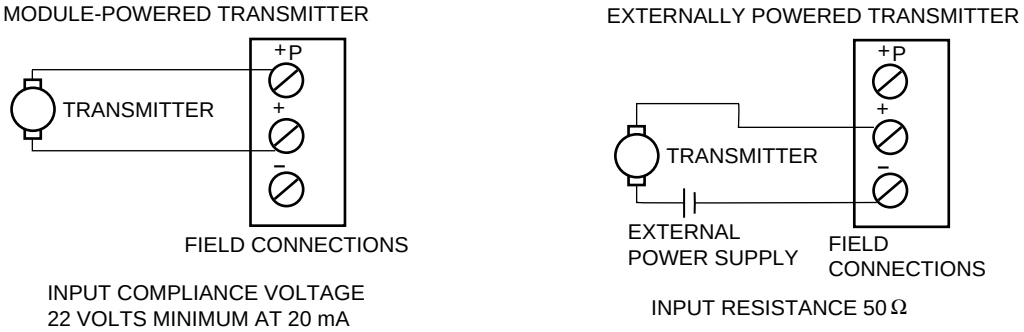


Figure 1. Input Connections

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Table 1. Input Specifications

Conversion Time (Seconds)	Update Time (Milliseconds)	Settling Time(a) (Seconds)	Linearity Error(b) (% of Range)	Resolution (Bits)
0.1	10	0.25	0.0125	12
0.2	10	0.50	0.0075	13
0.5	25	1.00	0.005	14
1.0	50	2.00	0.005	15

(a) Value settles within a 1% band of steady state for a 10 to 90% input step change.
(b) Monotonic; assures that the signal for Fieldbus communications either increases or remains the same for increasing analog input signals.

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)

Bypass Jacks
Available on optional termination cable assembly.

Field Termination Connections(a)
DISCRETE WIRE BLOCK
Input Channels
12 screw-clamp terminals
Output Channels
8 screw-clamp terminals
DIRECT CONNECTION BLOCK
Input Channels
12 screw-clamp terminals
Output Channels
8 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 Field Enclosure 4. Multiple (Bridged) Industrial Enclosure 32s use the plug connector block only.

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