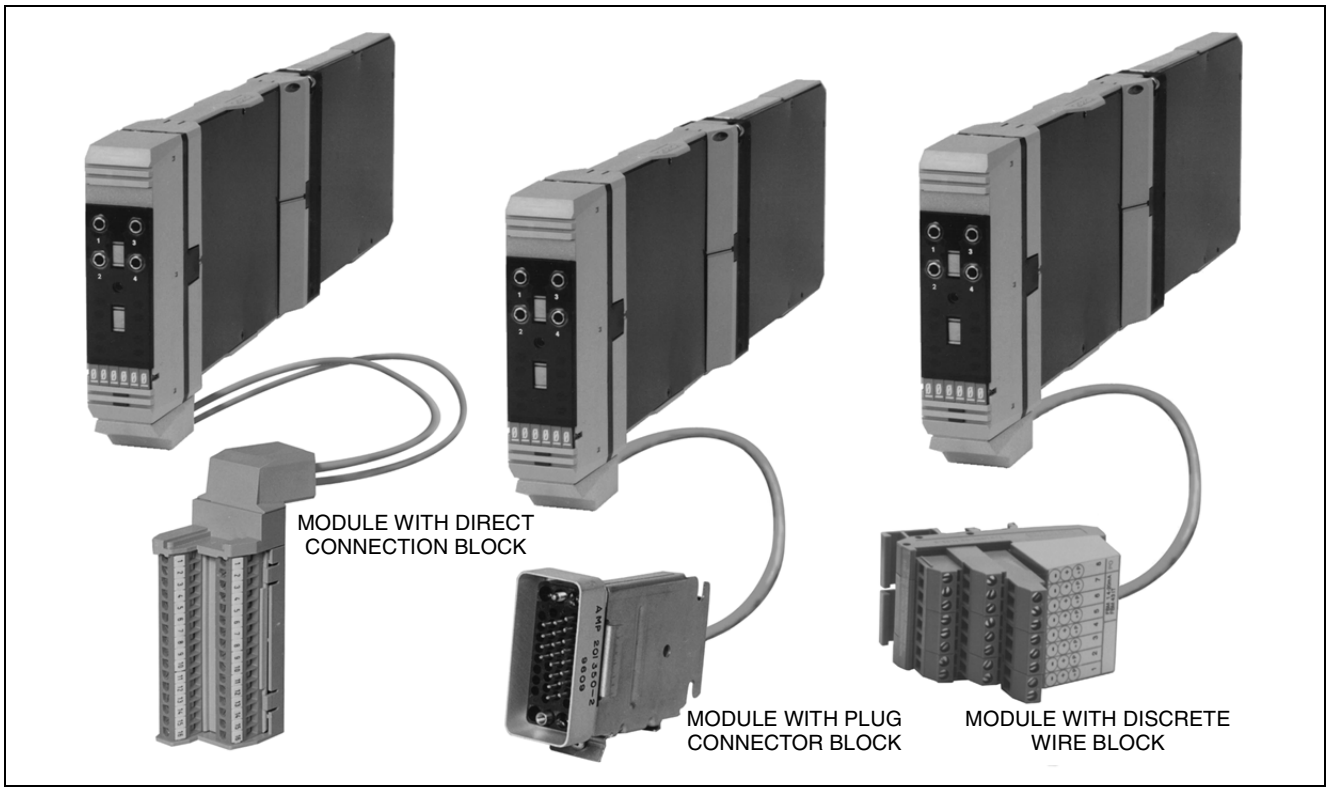
I/A Series® Hardware
Pulse Input, 0 to 20 mA Output Interface Module (FBM06)



The Pulse Input, 0 to 20 mA Output Interface Module contains four configurable pulse input channels and four 20 mA dc analog output channels. Each input channel accepts a pulse input, with a maximum rate of 12.5 kHz. The input devices include vortex and turbine meters, solid state or electro-mechanical contacts and other sensors with similar pulse outputs. 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 pulse input/analog output application program. The configurable options for this program are Pulse Rate Input Resolution (on a per module basis), Meter Scaling Factor, 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™
FOXBORO®

FUNCTIONAL SPECIFICATIONS

Common Characteristics

POWER REQUIREMENTS

Input Voltage Range (redundant)
26 to 42 V dc

Consumption
15 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.

CAUTION

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

POWER SUPPLY
24 V dc ±10% at 30 mA dc (maximum)

INPUT PULSE CHARACTERISTICS
See Figure 1

Duty Cycle
Minimum pulse width on/off

INPUT FREQUENCY

Minimum
3 Hz for 0.5 and 1.0 second conversion time
5 Hz for 0.2 second conversion time
10 Hz for 0.1 second conversion time

Maximum
12,500 Hz

Input Channels (Cont.)

COMMUNICATION
Via a redundant Fieldbus

INPUT RESISTANCE
10 K Ω

INPUT CONNECTIONS
See Figure 2

CONVERSION TIME (SOFTWARE CONFIGURABLE)
See Table 1, “Input Specifications,” on page 3

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

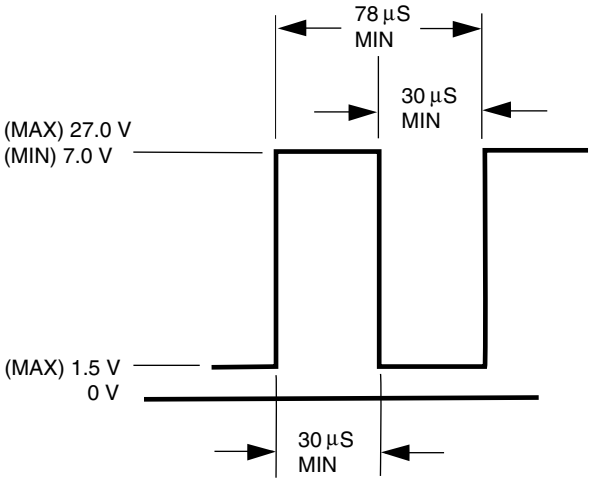


Figure 1. Input Pulse Characteristics

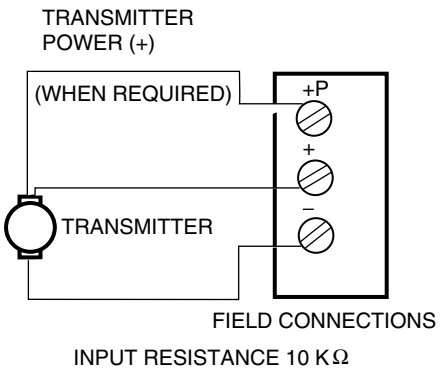


Figure 2. Input Connections

Table 1. Input Specifications

Conversion Time (Seconds)	Update Time (Milliseconds)	Settling Time(a) (Seconds)	Resolution (Bits)
0.1	10	0.25	12
0.2	10	0.50	13
0.5	25	1.00	14
1.0	50	2.00	15

(a) Value settles within a 1% band of steady state for a 10 to 90% input step change.

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.

33 Commercial Street
Foxboro, Massachusetts 02035-2099
United States of America
www.foxboro.com
Inside U.S.: 1-866-746-6477
Outside U.S.: 1-508-549-2424 or contact your local Foxboro representative.
Facsimile: 1-508-549-4999