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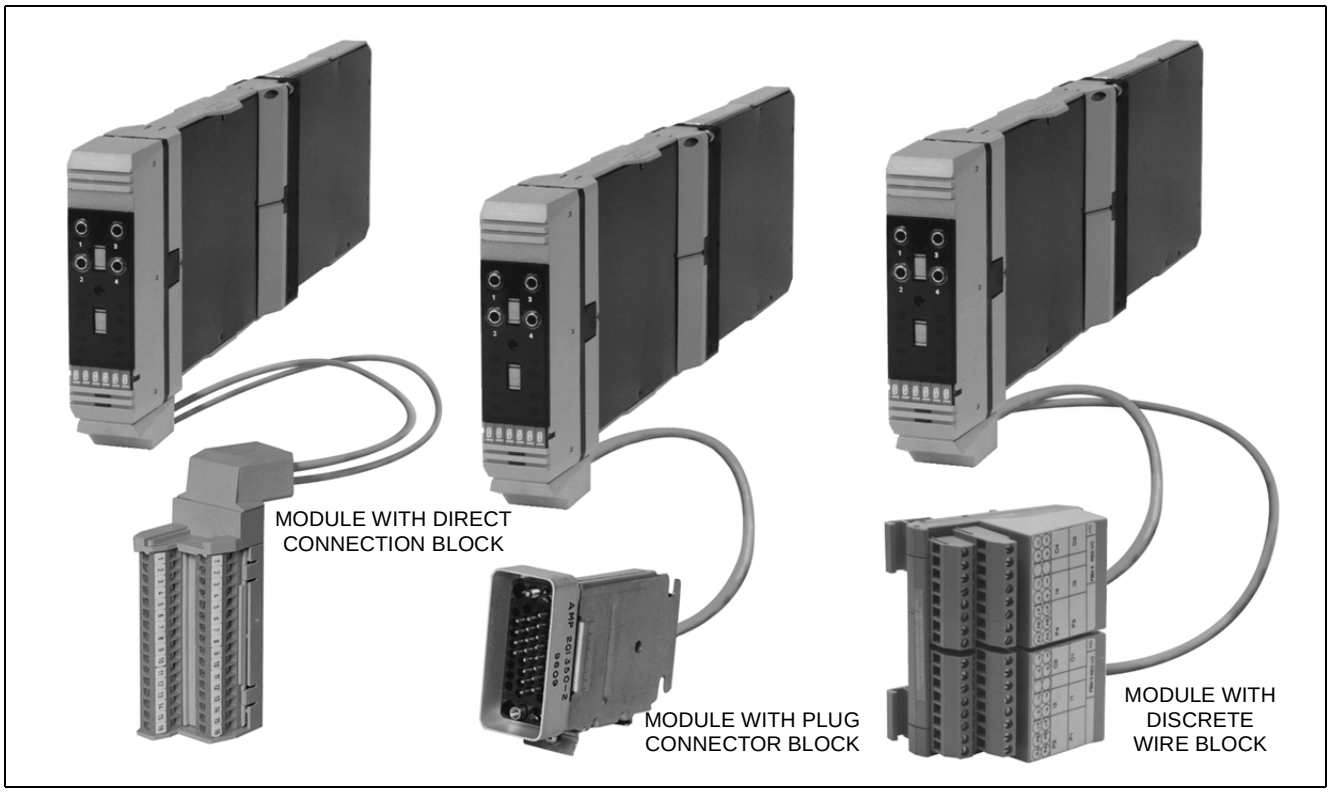
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FOXBORO®

PSS 21H-2C4 B4

I/A Series® Hardware
Intelligent Transmitter/
0 to 20 mA Output Interface Module (FBM39)



The Intelligent Transmitter/0 to 20 mA Output Interface Module contains four Intelligent Transmitter interface channels and four 20 mA dc analog output channels. The module is a main type and independently connects to the redundant Fieldbus.

Intelligent Transmitter Interface Channels

Each Intelligent Transmitter interface channel provides isolated power and communication capabilities to an Intelligent Transmitter over a single pair of wires. Each interface channel provides bi-directional digital communications between an Intelligent Transmitter and the redundant Fieldbus.

The Intelligent Transmitter interface portion of the module is a transmitter host, thus enabling the system to receive digital messages from the transmitter in engineering units. Each measurement message is received ten times per second and contains:

- Two measured variables (that is, primary pressure and transmitter temperature) in IEEE 32-bit floating-point
- Security information
- Diagnostics
- Message checking.

This information is available to all elements of the system.

Invensys
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Product Specifications

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Since the communications are bi-directional, the system can display the output, transmitter temperature (°C and °F), and continuous self-diagnostics. In addition, information that can be displayed or reconfigured from the console or a Hand-Held Terminal (PSS 2A-1Z3 A) is:

- Output in engineering units
- Fail-safe state
- Tag number, name and location
- Device name (letterbug)
- Last calibration date
- Two levels of upload/download capabilities.

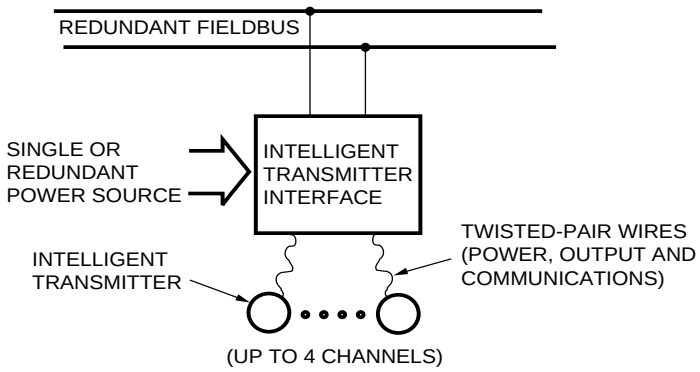
The Intelligent Transmitter interface portion of the module executes the Intelligent Transmitter application program. The configurable options for this program are Fieldbus Switching Enable and Fieldbus Switching Time.

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.

Output Channels

Each output channel drives an external load and produces a 0 to 20 mA output. Each output channel performs the signal conversion required to interface the electrical output signals to field actuators from the redundant Fieldbus.

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



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FUNCTIONAL SPECIFICATIONS

Common Characteristics

POWER REQUIREMENTS

Input Voltage (Redundant)
26 to 42 V dc (nominal)

Consumption
13 W (maximum)

Heat Dissipation
11 W (maximum)

COMMUNICATION
Via a redundant Fieldbus

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.

Transmitter Channels

INTERFACE
4 isolated and independent channels

COMMUNICATIONS
Non-redundant, point-to-point, master/slave, asynchronous, half-duplex

ERROR CHECKING
CCITT 2 byte CRC

Transmitter Channels (Cont.)

SPEED
10 messages per second

MAXIMUM DISTANCE (INTERFACE TO TRANSMITTER)
609.6 m (2000 ft) (shielded twisted-pair wires)

MAXIMUM LOOP RESISTANCE
420 Ω

TRANSMITTER POWER
24 V dc +4%, -2%, source resistance 30 Ω maximum

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

SETTLING TIME
10 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

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 (-1000 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 (-1000 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.]

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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 MDS 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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PRODUCT SPECIFICATION SHEETS (PSSs) FOR INTELLIGENT TRANSMITTERS

Category	Device Types	Models	PSS Numbers
Mass Flow	Flowtubes	CFS10; CFS20; CFS30	1-2B1 A; 1-2B4 A; 1-2B5 A
	Transmitters	CFT10; CFT15; CFT30	1-2B3 C; 1-2B3 D; 1-2B5 A
Magnetic Flow	Flowtubes	2800 Series	1-6B5 A, 1-6B5 C, 1-6B5 E
	Transmitters	IMT25/IMTL25L IMT96 (MagEXPERT)	1-6F5 A/1-6F6 A 1-6F8 A
Vortex Flow	Flowmeters	83 Series	1-8A1 E (83F and 83W); 1-8A2 D (83S)
Pressure	Transmitters	I/A Series (-D) I/A Series (-T) I/A Series (-A, -I) I/A Series (-V) I/A Series (-F)	2A-1C13 A; 2A-1C14 A; 2A-1C14 D; 2A-1C14 E; 2A-1Z9 E 2A-1C13 B; 2A-1C14 B; 2A-1C14 F; 2A-1C14 G; 2A-1Z9 E 2A-1C13 C; 2A-1C14 C; 2A-1C14 H; 2A-1C14 J; 2A-1Z9 E 2A-1C13 D; 2A-1Z9 E 2A-1C13 E; 2A-1Z9 E
Electrochemical	Transmitters	870IT Series	6-1B1 B; 6-3N2 A
Temperature	Transmitters	RTT20	2A-1F4 A; 2A-1Z9 F (Options)
Valves	Positioner	SRD991	EVE0105 A-(en)
Remote Communication	Configurators	HHT (FoxCom Only)	2A-1Z3 A
		PC 20 (FoxCom & HART)	2A-1Z3 E
		Model 275 (HART Only)	Not Applicable
	I/A Series I'faces (FoxCom Only)	FBM18 & FBM39	21H-2D5 B4; 21H-2C4 B4
		FBM43 & FBM44	21H-2D8 B4; 21H-2D4 B4

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