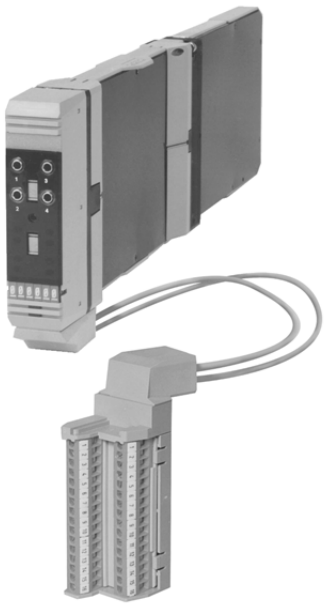
FOXBORO®

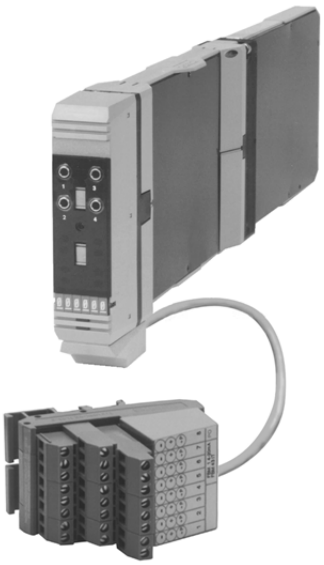
PSS 21H-2D4 B4

I/A Series® Hardware
Dual Baud Rate Intelligent Transmitter/ 0 to 20 mA Output Interface Module (FBM44)



MODULE WITH DIRECT CONNECTION BLOCK

MODULE WITH PLUG CONNECTOR BLOCK



MODULE WITH DISCRETE WIRE BLOCK

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

Intelligent Transmitter (IT) Interface Channels

Each IT interface channel provides internally isolated power and communication capabilities to an IT over a single twisted-pair wire. The module also allows the use of an external power supply to power the IT.

The use of an external power supply common to two or more loops requires the use of a Cable Balun Module to maintain digital communication line balance. The baud rate is software-selectable with all channels at the same baud rate. Each module provides bi-directional digital communications at 4800 baud rate between the IT and the system redundant Fieldbus or provides bi-directional digital communications at 600 baud rate while allowing simultaneous 4 to 20 mA analog signal for use in other applications (for example, to an emergency shutdown system).

The module is an IT host, enabling the system to receive digital messages from the transmitter in engineering units. Each message is received ten times per second at 4800 baud and two times per second at 600 baud 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.

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

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

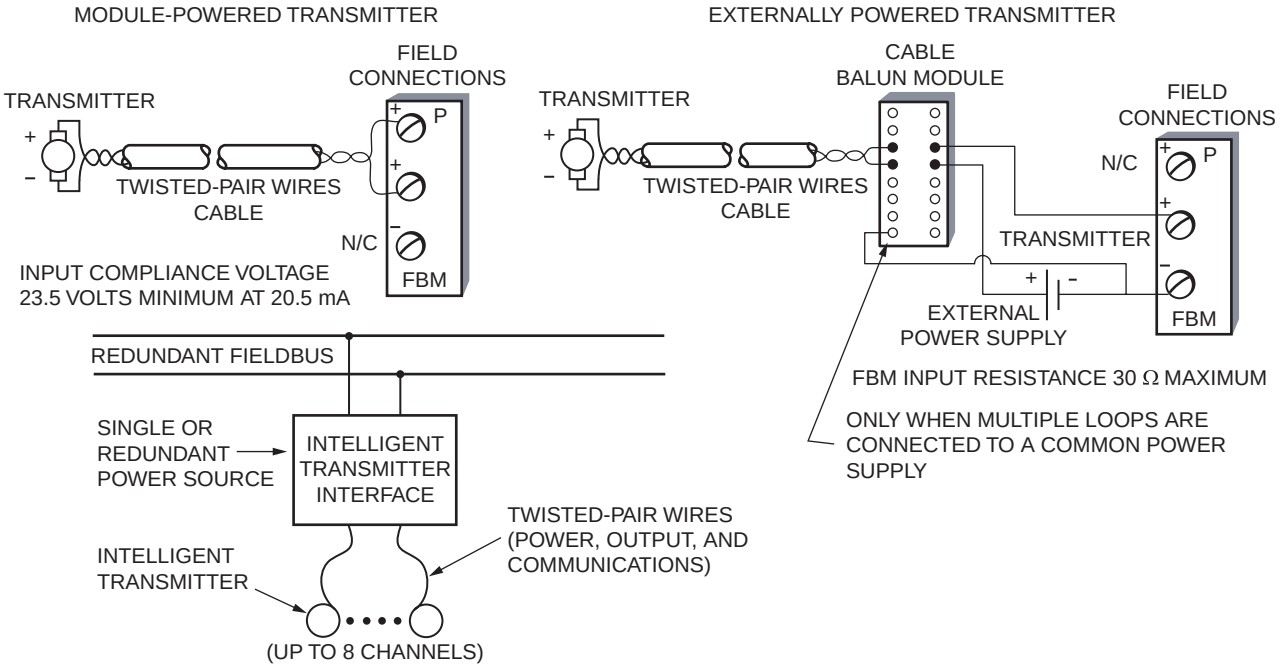
The IT interface portion of the module executes the Intelligent Transmitter application program. The configurable options for this program are Fieldbus Switching Enable and Fieldbus Switching Time.

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 portion 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.

An optional style of termination cable assembly which is available 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.



FUNCTIONAL SPECIFICATIONS

Common Characteristics

POWER REQUIREMENTS

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

Consumption
11 W (maximum)

Heat Dissipation
8 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.

COMMUNICATION
Via a redundant Fieldbus

Transmitter Channels

INTERFACE
4 isolated and independent channels

ERROR CHECKING
CCITT 2 byte CRC

COMMUNICATIONS
Non-redundant, point-to-point, master/slave, asynchronous, half-duplex at a software-selectable baud rate of 600 or 4800 baud. All 8 input channels must be configured at the same baud rate (600 baud for 4 to 20 mA transmitters or 4800 baud for digital transmitters).

SPEED
10 messages per second at 4800 baud, or
2 messages per second at 600 baud

Transmitter Channels (Cont.)

MAXIMUM DISTANCE (INTERFACE TO TRANSMITTER)* (SHIELDED TWISTED-PAIR WIRES, OR AT MINIMUM TWISTED-PAIR WITH OVERALL SHIELD)
610 m (2000 ft) (shielded twisted-pair wires) at 4800 baud, or 1800 m (6000 ft) at 600 baud

MAXIMUM LOOP RESISTANCE
500 Ω (not including the transmitter). The maximum resistance between the Hand-Held Terminal (HHT) and the transmitter is 350 Ω.

TRANSMITTER INTERNAL 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

*The maximum distance decreases when the loop is operated through an intrinsic safety barrier. See MI 020-350.

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

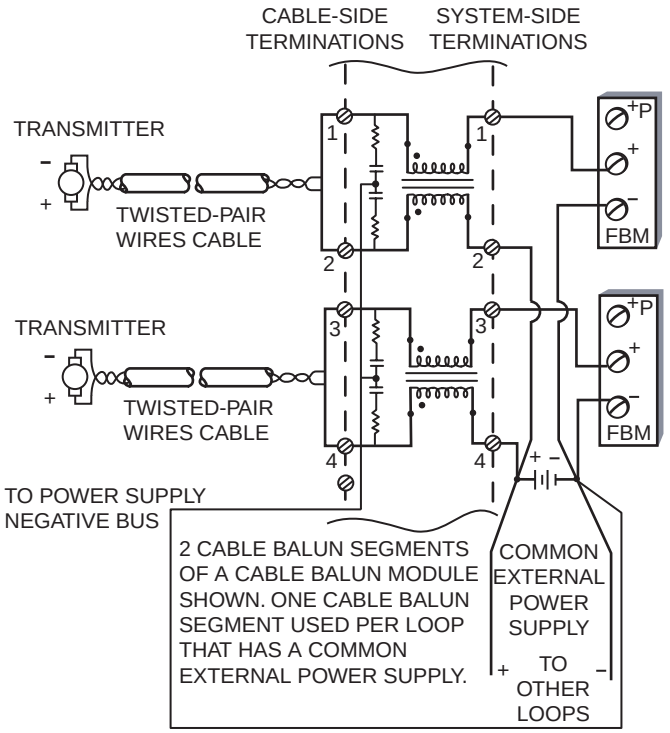
Mass
1 kg (2.2 lb)

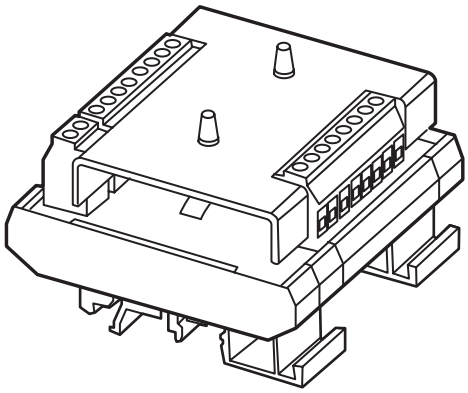
Indicators (Mounted on Termination Connector)
OPERATIONAL STATUS
Red and green light-emitting diodes (LEDs)

Bypass Jack
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 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.





CABLE BALUN MODULE

The Cable Balun Module is used to maintain digital communication line balance for Intelligent Transmitter to FBM loops that are powered from a common external power supply. This effectively connects one line of each loop together. Without the baluns, the common connection at the external power supply would cause near end crosstalk at the system end of the loop wiring cable. Loops using FBM internal power source do not require baluns.

The Cable Balun Module contains multiple baluns. One balun segment is interconnected in each loop powered from an external power supply per the diagram above. There is one Cable Balun Module.

Cable Balun Modules		
Module Model	**Module Part No.**	**No. of Baluns in the Module**
CBM-4	P0903SV	4

I/A SERIES INTELLIGENT TRANSMITTERS

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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