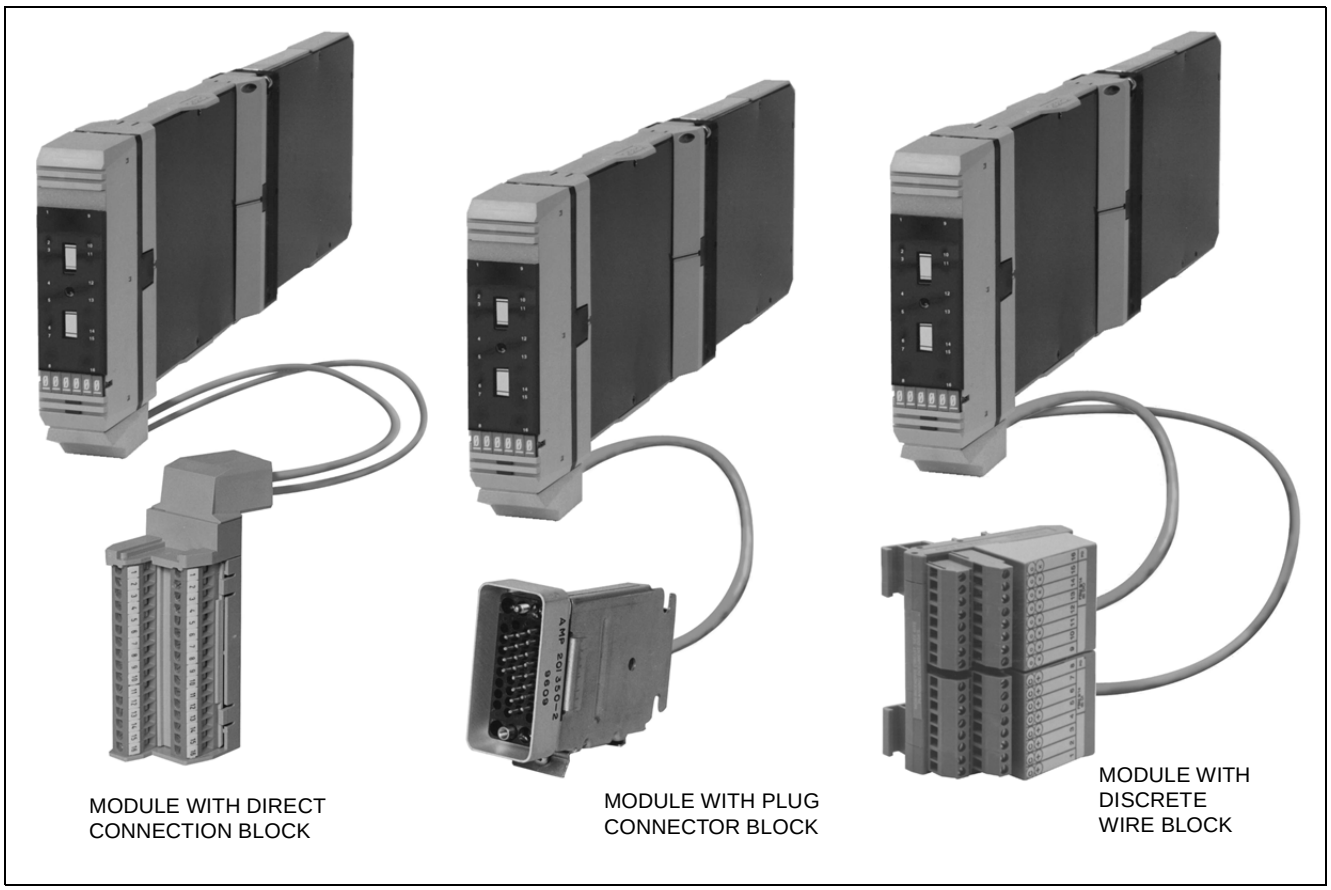
FOXBORO®

PSS 21H-2C6 B4

I/A Series® Hardware
High Power Contact/dc Input/Output Interface Module (FBM41) and High Power Contact/dc Expansion Input Output Interface Module (FBM42)



The High Power Contact/dc Input/Output Interface Module (an expandable main module) and its counterpart High Power Contact/dc Expansion Input/Output Interface Module individually provide high current capability on output channels and isolation on a per channel basis. Each module provides the following input and output functions for digital field signals.

INPUT FUNCTIONS - 8 channels used collectively for either:

- contact sensing only, or
- dc voltage monitoring only.

OUTPUT FUNCTIONS - 8 channels used for:

- dc output switching with an external source only at high current ratings (e.g., to control powering of various external loads).

Each module performs the signal conversion required to interface these digital (i.e., on/off state) electrical input/output signals from/to the field sensors/actuators to/from the redundant Fieldbus. The expandable main module independently connects to the Fieldbus and is capable of supporting a single expansion module. The expansion module connects to the Fieldbus via any expandable main module and is functionally dependent on the supporting main module.

Invensys
An Invensys company

Product Specifications

When used alone or in conjunction with any expansion module, the main module executes either the Digital I/O or Ladder Logic application program. The configurable options for each program are Input Filter Time, Fail Safe Configuration, Fail Safe Fallback, and Sustained or Momentary Outputs. If the Momentary Output

configuration is selected, then Pulse Output Interval is also configurable. Configurable options for inputs are exercised on a per module basis; those for outputs are exercised on a per channel basis.

The functional, environmental and physical specifications are applicable to both modules.

Automatic Restart from Overload

If an overload is sensed (either inrush or steady state current exceeded), the module will open for 64.5 line cycles and then retry again. This operation will continue indefinitely for outputs only. Overloads exceeding 50 A will cause damage to the module.

FUNCTIONAL SPECIFICATIONS

Common Characteristics

ISOLATION

The module will 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.

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 will violate electrical safety code requirements and may expose users to electric shock.

POWER REQUIREMENTS

Input Voltage Range (Redundant)
26 to 42 V dc

Consumption
Main Module Only
9 W (maximum)
Main Module Plus Expansion Module
15 W (maximum)

HEAT DISSIPATION

Main Module Only
13 W (maximum)

Main Module Plus Expansion Module
23 W (maximum)

INDICATORS (MOUNTED ON TERMINATION ASSEMBLY)

Operational Status
2 light-emitting diodes (LED's) 1 red and 1 green)

Input Channel Status
8 LED's (1 per channel)

Output Channel Status
8 LED's (1 per channel)

FIELD TERMINATION CONNECTIONS(A)

Discrete Wire Blocks
32 screw-clamp terminals (2 blocks using 16 terminals per block)

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 clam shell hood)
- Burndy MSD 34 PM 824 (plug with suitcase hood)
- or equivalent

Direct Connection Block
32 screw-clamp terminals

COMMUNICATION

Via the redundant Fieldbus (main module only)

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

FUNCTIONAL SPECIFICATIONS (Cont.)

Input Functions

CAPACITY
8 independent and isolated channels
FILTER TIME
Configurable (4, 8, 16, or 32 ms)
Contact Sensor
See Figure 1 (Input Configurations)

Range (each channel)
Contact open (off) or closed (on)
Open-Circuit Voltage
24 V dc ±20%
Short-Circuit Current
5 mA (maximum)
ON-State Resistance
1 k Ω (maximum)
OFF-State Resistance
100 k Ω (minimum)

Voltage Monitor
See Figure 1 (Input Configurations)

ON-State Voltage
15 to 60 V dc
OFF-State Voltage
0 to 5 V dc
ON-State Current
2 to 6 mA
Source Resistance Limits
ON-STATE
1 k Ω (maximum) at 20 V dc
OFF-STATE
100 k Ω (minimum) at 60 V dc

Output Functions

CAPACITY
8 independent and isolated channels
Output Switch
See Figure 2 (Output Configuration)

Applied Voltage
60 V dc (maximum)
Load Current
Steady State
2.25 A dc (maximum) per channel, 12 A dc (maximum) total for all channels
In-rush
10 A dc (maximum) for 20 ms (maximum) per channel
Shorted-Load Duration
Indefinite (switch shuts off for 1 sec. nominal on overload)
ON-State Voltage Drop
0.4 V at 1A
OFF-State Leakage Current
0.5 mA (maximum)
Inductive Loads
Require a protective diode connected across the load (see Figure 2 diagram with protective diode). Diode must be capable of conducting the maximum expected load current and have a voltage rating greater than 1.3 times the supply voltage

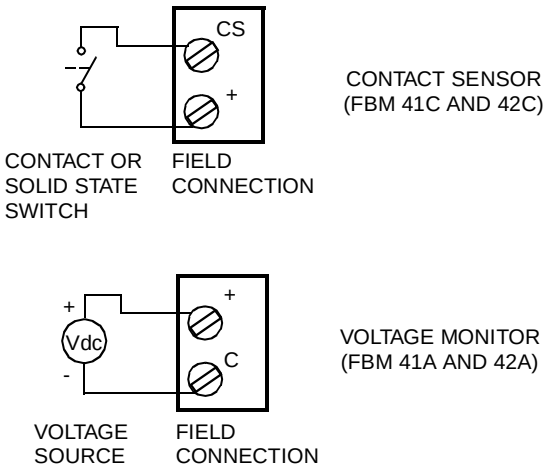


Figure 1. Input Configurations

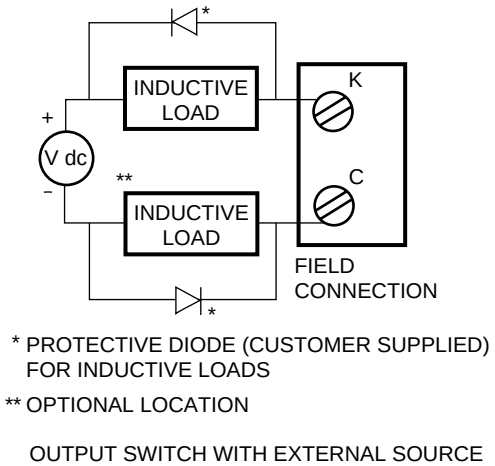


Figure 2. Output Configurations

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 ranges can be extended by the type of enclosure containing the module. {Refer to the Product Specification Sheet (PSS) applicable to the enclosure that is to be used.}

PHYSICAL SPECIFICATIONS

Mounting

WITH Y-ADAPTER
Installable in the 1 x 8 Mounting Structure, I/A Series Industrial Enclosures, and Field Enclosure 8.
WITHOUT Y-ADAPTER
Installable in I/A Series Field Enclosure 4 and the 1 x 8 FBM Mounting Structure.

Mass

1 kg (2.2 lb)

The Foxboro Company
33 Commercial Street
Foxboro, Massachusetts 02035-2099
United States of America
http://www.foxboro.com
Inside U.S.: 1-508-543-8750 or 1-888-FOXBORO (1-888-369-2676)
Outside U.S.: Contact your local Foxboro Representative.