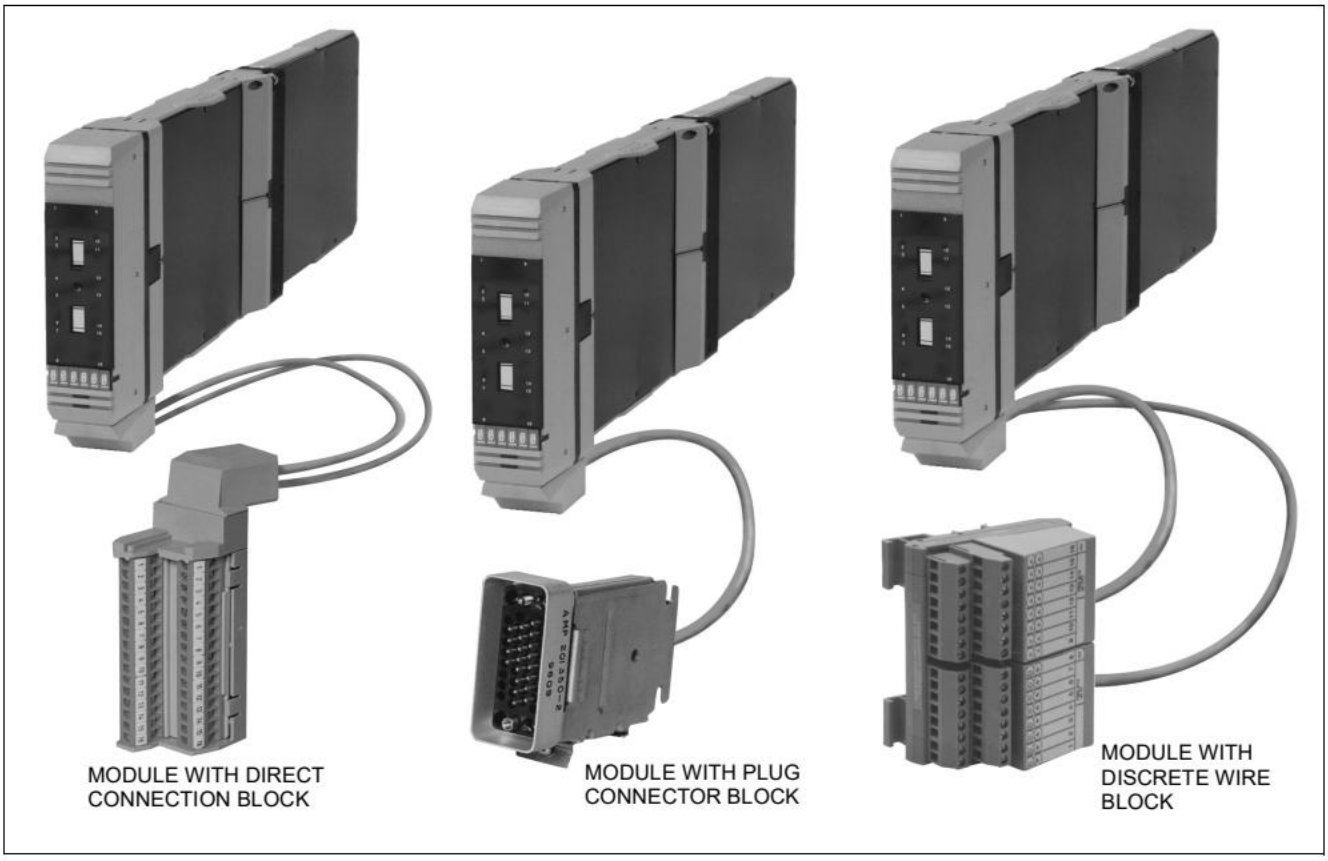
FOXBORO®

PSS 21H-2C9 B4

I/A Series® Hardware
120 V ac Input/Output Interface Module (FBM10) and 120 V ac Expansion Input/Output Interface Module (FBM15)



The 120 V ac Input/Output Interface Module (an expandable main module) and its counterpart 120 V ac Expansion Input/Output Interface Module individually provide the following functions: 8 input channels for 120 V ac voltage monitoring and 8 output channels for 120 V ac output switching with current overload protection.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 module.

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.

Invensys
An Invensys company

Product Specifications

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 1250 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 voltages of this level. Connection of these channels to voltages higher than those stated in the "Voltage Monitor" and "Output Switch" sections of this specification 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
7 W (maximum)
Main Module plus Expansion Module:
11 W (maximum)

HEAT DISSIPATION

Main Module only
15 W (maximum)

Main Module plus Expansion Module
25 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)

Voltage Monitor (Input Channels)

CAPACITY

8 independent channels

INPUT

ON-State Voltage(b)
79 to 132 V ac

OFF-State Voltage(b)
0 to 20 V ac

Current
2.2 mA (typical) at 20 to 132 V ac

SOURCE RESISTANCE LIMITS

ON-State
1 k Ω (maximum) at 79 V ac

OFF-State
100 k Ω (minimum) at 132 V ac

FILTER TIME

Configurable (4, 8, 16, or 32 ms)

(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.

(b) OFF-ON and ON-OFF transitions occur between 20 and 79 V ac.

FUNCTIONAL SPECIFICATIONS (CONT.)

Output Switch (Output Channels)

CAPACITY
8 independent channels
VOLTAGE RANGE
79 to 132 V ac
NOMINAL VOLTAGE
120 V ac, 50/60 Hz
CURRENT
2 A (maximum) per channel; 12 A (maximum) per module
OFF-STATE LEAKAGE
3 mA (maximum)

INRUSH CURRENT
Overload sensing provided
24 A peak 10 ms (1/2 cycle)
12 A rms 20 ms (1 cycle)
3.5 A rms for 1 s
Short circuits that result in greater than 50 A peak current will result in damage to the module. If a 50 A current is possible, external fusing is recommended.(b)
HOLDING CURRENT
No min required
ON STATE VOLTAGE DROP
0.4 V @ 1 A
AUTOMATIC RESTART FROM OVERLOAD
Approximately 1 s after overload sensed.

(b)Fuse rating must be appropriate for the inrush current characteristics of this FBM.

ENVIRONMENTAL SPECIFICATIONS(c)

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

(c) 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

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)