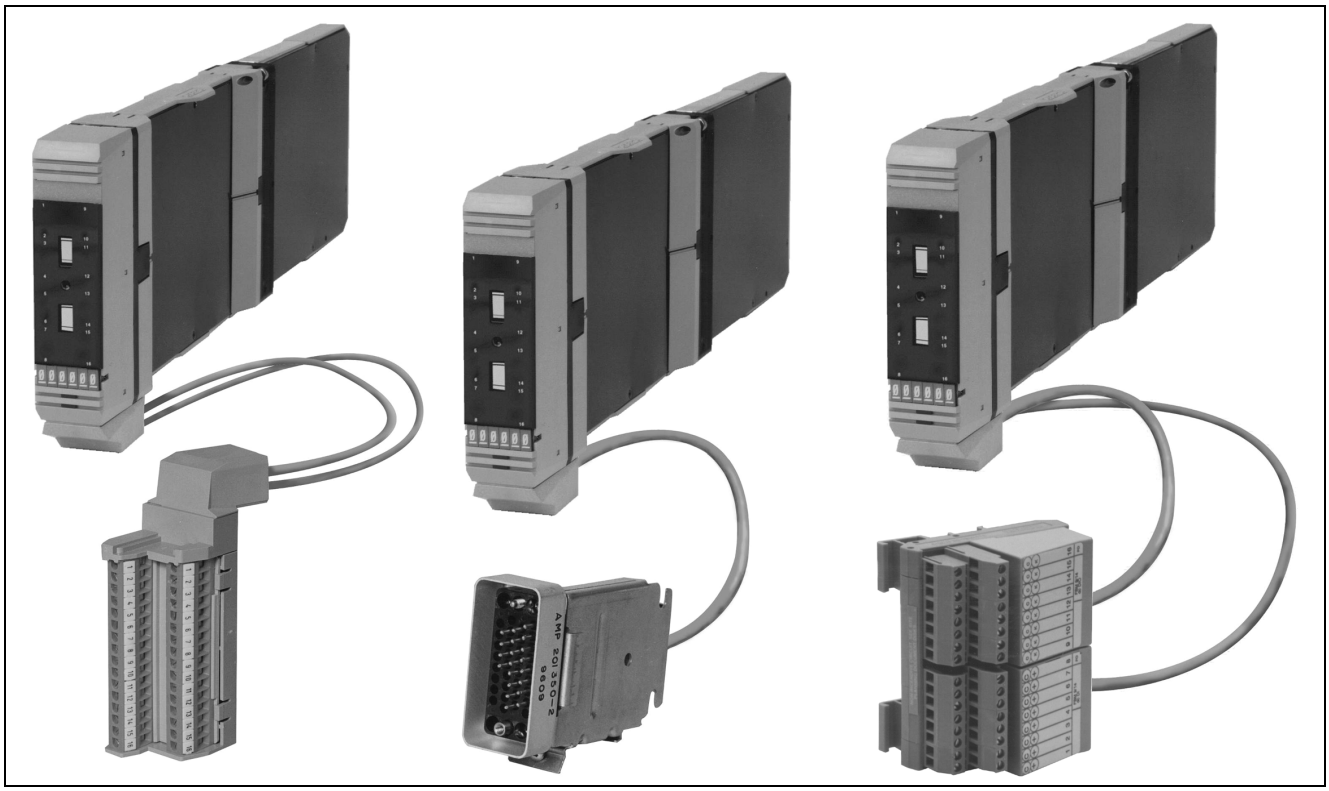
I/A Series® Hardware
Contact/dc Input/Output Interface Module (FBM09) and Contact/dc Expansion Input/Output Interface Module (FBM14)



The Contact/dc Input/Output Interface Module (an expandable main module) and its counterpart Contact/dc Expansion Input/Output Interface Module individually provide 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 collectively for either:

- dc output switching with an external source only (e.g., to control powering of various external loads), or
- dc output switching with an internal source only (e.g., to power external solid state relays or other similar devices).

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.

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.

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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.

FUNCTIONAL SPECIFICATIONS

Common Characteristics

ISOLATION

The module will withstand, without damage, a potential of 1250 V ac applied for one minute between the following points.

CAUTION

This does not imply that these channels are intended for permanent connection to voltages of these levels. Connection of channels to voltages in excess of those specified under the “Input Functions” and “Output Functions” sections of this specification violates electrical safety code requirements and may expose users to electric shock.

Input to Earth (Ground)
1250 V ac

Output to Earth (Ground)
1250 V ac

Input to Output
1250 ac

Input Pair to Input Pair
1250 V ac (between adjacent pairs of channels; each pair of channels shares a common return)

Output Pair to Output Pair
1250 V ac (between adjacent pairs of channels; each pair of channels shares a common return)

Channel Inputs
Inputs are isolated in pairs (e.g., channels 1 and 2 are isolated from channels 3 and 4). When inputs are used with hazardous voltages (greater than 60 V dc), both channels of a pair must be used with hazardous voltages. Hazardous and nonhazardous voltages must not be mixed within a channel pair.

POWER REQUIREMENTS

Input Voltage Range (Redundant)
26 to 42 V dc

Consumption
Main Module Only
8 W (maximum)
Main Module Plus Expansion Module
11 W (maximum)

HEAT DISSIPATION

Main Module Only
11 W (maximum)

Main Module Plus Expansion Module
18 W (maximum)

INDICATORS (MOUNTED ON TERMINATION ASSEMBLY)

Operational Status
2 light-emitting diodes (LEDs) (1 red and 1 green)

Input Channel Status
8 LEDs (1 per channel)

Output Channel Status
8 LEDs (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 clamshell 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 the Field Enclosure 4 and Multiple (Bridged) Industrial Enclosure 32. The direct connection block is available only on the termination cable assembly for the Field Enclosure 4. Multiple (Bridged) Industrial Enclosure 32 uses the plug connector block only.

FUNCTIONAL SPECIFICATIONS (Cont.)

Input Functions

CAPACITY
8 independent 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 ±10%
Short-Circuit Current
2.5 mA (maximum)
ON-State Resistance
1 k Ω (maximum)
OFF-State Resistance
100 k Ω (minimum)
Voltage Monitor(b)
See Figure 1 (Input Configurations)
On-State Voltage
15 to 130 V dc
Off-State Voltage
0 to 5 V dc
Current
2.2 mA (typical) at 5 to 130 V dc
Source Resistance Limits
On-State
1 k Ω (maximum) at 15 V dc
Off-State
100 k Ω (minimum) at 130 V dc

Output Functions

CAPACITY
8 independent channels
Output Switch (with external source)
See Figure 2 (Output Configurations)
Applied Voltage
60 V dc (maximum)
Load Current
0.5 A (maximum)
Shorted-Load Duration
Indefinite (duty cycle current limit on overload)
On-State Voltage Drop
0.5 V (typical) at 0.5 A
On-State Current Limit
0.75 A (typical)
Off-State Leakage Current
< 100 µA (typical)
1.0 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.
Output Switch (with internal source)
See Figure 2 (Output Configurations)
Output Voltage (no load)
11 V dc ±2 V dc
Source Resistance
660 Ω (nominal)
Shorted-Output (On-State) Duration
Indefinite
Off-State Leakage Current
< 100 µA (typical)
0.5 mA (maximum)

(b) For CSA and FM rated versions with CM series part numbers, input voltage must be less than 60 V dc.

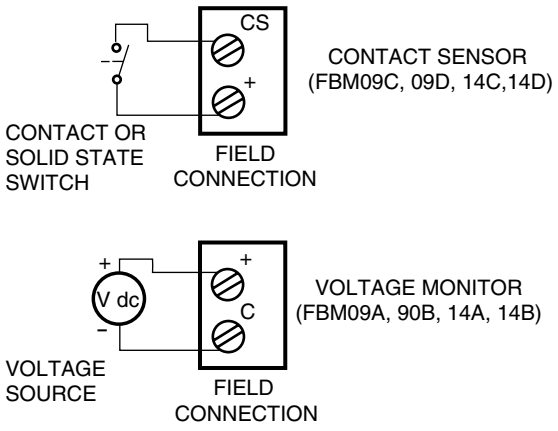

Figure 1. Input Configurations

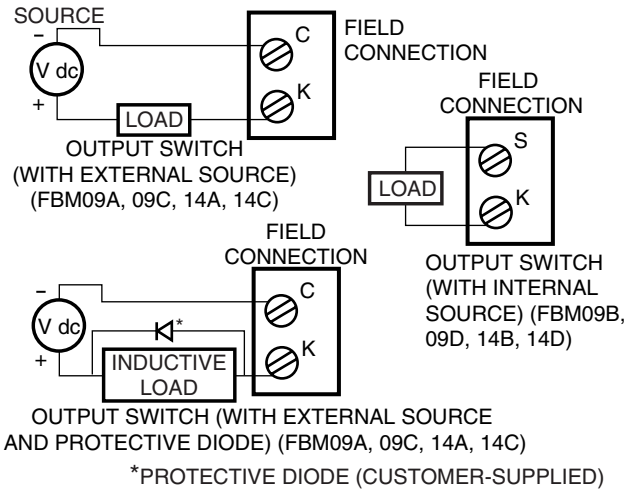

Figure 2. Output Configurations

ENVIRONMENTAL SPECIFICATIONS (Cont.)

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 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)

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Outside U.S.: 1-508-549-2424 or contact your local Foxboro representative.
Facsimile: 1-508-549-4999