

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

FOXBORO

FBM241c

FIELDBUS I/O MODULE

Used with the applicable Foxboro I/A Series DCS configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Schneider Electric / Foxboro official product specification



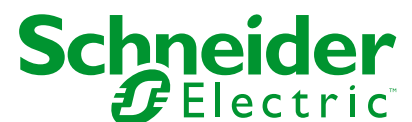
Foxboro™ DCS

FBM241/b/c/d, Redundant, Discrete I/O Modules

PSS 41H-2S241

Product Specification

May 2025



Overview

The standard FBM241, FBM241b, FBM241c, and FBM241d each have eight discrete inputs and eight discrete outputs available as a single or redundant module. A redundant pair of the modules combine to provide redundancy at the FBM level with field I/O wired to one common termination assembly.

The Channel Isolated, Discrete I/O Modules (FBM241/b/c/d) have eight discrete input channels and eight discrete output channels. Associated termination assemblies (TAs) support discrete input or output signals at voltages of under 60 VDC, 120 VAC/125 VDC, or 240 VAC.

Depending on the type of I/O signal required, the TAs contain current limiting devices, fuses, relays, or relay outputs with internal or external power source and fusing.

The module is available in four distinct types and each type with its associated TA supports the following discrete inputs and outputs:

Type	Inputs	Outputs
FBM241	15 to 60 VDC, 125 VDC, 120 VAC, or 240 VAC Switch (external or internal power source)	15 to 60 VDC at 2 A, or 30 VDC at 5 A, or 125 VDC at 0.5 A, or 120 VAC at 5 A, or 240 VAC at 5 A Switch (external power source)
FBM241b	15 to 60 VDC Switch	12 VDC at 12 mA Switch (internal power source)
FBM241c	15 to 60 VDC Contact (unprotected -no fuse, or protected - fused)	15 to 60 VDC at 2 A, or 240 VAC at 5 A Switch (external power source)
FBM241d	15 to 60 VDC Contact	12 VDC at 12 mA Switch (internal power source)

Each type of Fieldbus Module (FBM), without signal conditioning, uses a 15 to 60 VDC input or output signal. Each discrete input and output is galvanically isolated from other channels and ground. When used with external excitation, each discrete input and output is group isolated.

The module performs signal conversion required to interface electrical input signals from field sensors to the optionally redundant Fieldbus. It executes the Discrete I/O or Ladder Logic program, with the following configurable options: Input Filter Time, Fail Safe Configuration, Fail-Safe Fall-Back, and Sustained or Momentary Outputs. If the Momentary Output configuration is selected, then Pulse Output Interval is also configurable.

Functional Specifications

Input/Output Channels	8 input and 8 output isolated channels
Filter/Debounce Time ^(a)	Configurable (No Filtering, 4, 8, 16, or 32 ms)
Voltage Monitor Function (FBM241b)	Input - On-State Voltage: 15 to 60 VDC - Off-State Voltage: 0 to 5 VDC - Current: (Single Module) 1.4 mA typical at 5 to 60 VDC source (Redundant Module) 2.8 mA typical at 5 to 60 VDC source Resistance Limits - On-State: 1 kΩ (maximum) at 15 VDC - Off-State: 100 kΩ (minimum) at 60 VDC
Contact Sensor Function (FBM241d)	- Range (Each Channel): Contact open (off) or closed (on) - Open Circuit Voltage: 24 VDC $\pm$15% - Short Circuit Current: 2.5 mA (maximum) - On-State Resistance: 1.0 kΩ (maximum) - Off-State Resistance: 100 kΩ (minimum)
Output Switch with External Source (FBM241c)	- Applied Voltage: 60 VDC (maximum) - Load Current: 2.0 A (maximum) - Off-State Leakage Current: 0.1 mA (maximum)
Output Switch with Internal Source (FBM241b and FBM241d)	- Output Voltage (No Load): 12 VDC $\pm$20% - Source Resistance: 680 Ω (nominal) - Shorted Output (On-State) Duration: Indefinite - Off-State Leakage Current: 0.1 mA (maximum)
Inductive Loads	Output may require a protective diode or metal oxide varistor (MOV) connected across the inductive load.

Physical Specifications

	FBM241/241B/241C/241D	Termination Assembly
Mounting	FBM241/241b/241c/241d mounts on a Modular Baseplate. The baseplate can be mounted on a DIN rail (horizontally or vertically), or horizontally on a 19-inch rack using a mounting kit. Redundant modules must be located in odd and even adjacent positions on the baseplate (positions 1 and 2, 3 and 4, 5 and 6, 7 and 8, 9 and 10 (the second 1 and 2), 11 and 12 (the second 3 and 4), 13 and 14 (the second 5 and 6), or 15 and 16 (the second 7 and 8)). See <i>Standard 200 Series Baseplates</i> (PSS 41H-2SBASPLT) and <i>Compact 200 Series 16-Slot Horizontal Baseplate</i> (PSS 41H-2C200).	The TA mounts on a DIN rail and accommodates multiple DIN rail styles including 32 mm (1.26 in) and 35 mm (1.38 in)
Weight	284 g (10 oz) approximate	Compression: 127 mm (5.02 in) – 272 g (0.60 lb, approximate) 181 mm (7.13 in) – 300 g (0.70 lb, approximate) Ring Lug or Knife Switch: 181 mm (7.13 in) – 363 g (0.80 lb, approximate) 198 mm (7.78 in) – 400 g (0.90 lb, approximate) 251 mm (9.88 in) – 454 g (1.0 lb, approximate) 286 mm (11.25 in) – 908 g (2.0 lb, approximate)
Dimensions	- Height: 102 mm (4 in), 114 mm (4.5 in) including mounting lugs - Width: 45 mm (1.75 in) - Depth: 104 mm (4.11 in)	- Compression Screw: See Figure 1 and Figure 2 - Knife Switch: See Figure 3
Part Numbers	- FBM241: RH914TG - FBM241b: RH914WK - FBM241c: RH914WM - FBM241d: RH914WP	See Functional Specifications - Termination Assemblies, page 15

Functional Specifications - Termination Assemblies

FBM Type	Input Signal	Output Signal ^(a)	TA Part Number ^(b)	Term. Type ^(c)	TA Cable Type ^(d)	TA Cert. Type ^(e)
			PA			
FBM241	8 channel, voltage monitor 15 to 60 VDC FBM241 channel isolation	8 channel, switch (externally sourced) <60 VDC at 2 A maximum, unprotected -no fuse FBM241 channel isolation	RH916UY	C	4, 4H	1, 2
FBM241	8 channel, voltage monitor 15 to 60 VDC FBM241 channel isolation	8 channel, switch (externally sourced) 15 to 60 VDC at 2 A maximum (protected - fused) FBM241 channel isolation	RH916AQ RH916AR	C	4, 4H	1, 2
FBM241	8 channel, voltage monitor 15 to 60 VDC FBM241 channel isolation	8 channel, switch (externally sourced) SPDT (Form C) Relays <30 VDC at 5 A maximum Up to 250 VAC at 5 A maximum Total current for all 8 channels simultaneously is 12 A maximum Channel Isolation provided by termination assembly	RH916QE	C	4	3
FBM241	8 channel, contact sense 125 VAC or 125 VDC with external excitation Logic Zero 0 to 20 VAC; 0 to 20 VDC Logic One 80 to 132 VAC; 75 to 150 VDC <i>Input Current for Logic One; 2 mA (typical)</i> Group isolation provided by termination assembly	8 channel, switch (externally sourced) SPDT (Form C) Relays <30 VDC at 5 A maximum Up to 250 VAC at 5 A maximum Total current for all 8 channels simultaneously is 12 A maximum Group isolation provided by termination assembly	RH916QV	C	4	5