

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

FOXBORO

FBM207C

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

FBM207/b/c Voltage Monitor/Contact Sense Input Modules

PSS 41H-2S207

Product Specification

May 2025



Overview

Discrete inputs can be sensed across all the usual voltage levels found in industrial facilities. The FBM207/b/c uses one of the several termination assemblies (TAs) to match to the externally powered voltage level. In cases where the inputs are integral to the plant's control scheme, the FBM207/b/c may be installed as a redundant pair with standard control blocks used to manage the redundancy.

The FBM207/b/c Voltage Monitor/Contact Sense Input Module functions as a 16-channel DC voltage monitor or 16-channel contact sensor. Each channel accepts a 2-wire input from a DC voltage source (FBM207) or pair of contacts or solid state switches (FBM207b/ FBM207c).

Associated (TAs) support discrete input signals at voltages of 60 VDC, 120 VAC/125 VDC, or 240 VAC. For voltages higher than 60 VDC, the TAs have additional signal conditioning hardware that provides voltage attenuation and optical isolation.

The module is available in three distinct types, and each type with its associated TA supports discrete inputs as shown below:

FBM207	Provides voltage monitoring at: • 60 VDC • 120 VAC/125 VDC • 240 VAC Provides switch inputs with: • External 120 VAC/125 VDC • External 240 VAC
FBM207b	24 VDC Contact Sense
FBM207c	48 VDC Contact Sense

Each discrete input is galvanically isolated from other channels and ground. Group isolated when used with external excitation.

The module performs signal conversion required to interface electrical input signals from field sensors to the redundant module Fieldbus. In addition, it executes programs for Discrete Input, Ladder Logic, Pulse Count, and Sequence of Events, with configurable options of Input Filter Time.

The module can be used as a single unit, or as a redundant pair (two FBM207s). When used as a redundant pair, the modules combine to provide redundancy at the Fieldbus Module (FBM) level, with field input signals received from one common termination assembly though a redundant adapter affixed to the baseplate of the FBM. The input current for redundant modules is doubled. A redundant digital input block in the Foxboro DCS Control Software validates each input in conjunction with information to/from the module, and selects the input with the highest quality for processing in the control strategy.

In a redundant configuration, contact sense power from each module is diode OR'd together in the redundant adapter to help assure redundant power.

A redundant contact input function block, CINR, is used for each redundant pair of inputs. The CINR block handles input reads and initialization logic for the redundant channels. On each execution cycle of the CINR block, identical reads are sent to both modules, fully exercising the fieldbus and the logic circuitry of each module.

Functional Specifications

Communication	Communicates with its associated FCM or FCP via the redundant 2 Mbps module Fieldbus.
Input	16 isolated and independent channels
Accuracy	Pulse Count: No missing pulses for pulse rate 0 to 250 Hz
Filter/Debounce Time	Configurable (No Filtering, 4, 8, 16, or 32 ms) NOTE: Digital filtering available for 200 Series FBM or competitive migration modules with version 1.25H or later firmware.
Voltage Monitor Function - Input	- Input: Logic One, On-State Voltage: 15 to 60 VDC Logic Zero, Off-State Voltage: 0 to 5 VDC Current: 1.4 mA (typical) at 5 to 60 VDC - Source Resistance Limits: Logic One, On-State: 1 kΩ (maximum) at 15 VDC Logic Zero, Off-State: 100 kΩ (minimum) at 60 VDC
Contact Sensor Function - Input	- Range (Each Channel): Contact open (off) or closed (on) - Open-Circuit Voltage: - FBM207b: 24 VDC $\pm$15% - FBM207c: 48 VDC $\pm$15%
Short-Circuit Current	3.2 mA (typical)
Logic One, ON-State Resistance	1.0 k Ω (maximum)
Logic Zero, OFF-State Resistance	100 k Ω (minimum)
Isolation	Each channel is galvanically isolated from all other channels and ground. The module withstands, without damage, a potential of 600 VAC applied for one minute between any channel and ground, or between a given channel and any other channel. ⚠ ⚠ DANGER HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH Although the module can withstand a maximum of 600 VAC applied for one minute between any channel, DO NOT apply voltages beyond the published input ranges. The channels are NOT intended for permanent connection to hazardous voltage circuits. Understand that connection of these channels to voltages greater than 30 VAC or 60 VDC violates electrical safety code requirements and may expose users to electric shock. Failure to follow these instructions will result in death or serious injury.
Power Requirements	Input Voltage Range (Redundant): 24 VDC +5%, -10%

	- Consumption: - FBM207 3 W - FBM207b 4 W - FBM207c 5 W - Heat Dissipation: - FBM207 5.5 W (including contribution from field power supply) - FBM207b 4 W - FBM207c 5 W
Loop Power Supply Protection	Current limited at 3.2 mA (typical)
Field Terminations Functional Specifications	See Termination Assemblies and Cables, page 12.
Calibration Requirements	Calibration of the module and termination assembly is not required.
Regulatory Compliance: Electromagnetic Compatibility (EMC)	<i>European EMC Directive 2004/108/EC (Prior to April 20, 2016) and 2014/30/EU (Beginning April 20, 2016):</i> Meets: EN61326-1:2013 Class A Emissions and Industrial Immunity Levels
Product Safety — Low Voltage Inputs	<i>Underwriters Laboratories (UL) for U.S. and Canada:</i> UL/UL-C listed as suitable for use in UL/ULC listed Class I, Groups A-D; Division 2; temperature code T4 enclosure based systems when connected to specified Foxboro DCS processor modules. Communications circuits also meet the requirements for Class 2 as defined in Article 725 of the National Electrical Code (NFPA No.70) and Section 16 of the Canadian Electrical Code (CSA C22.1). For more information, see <i>Standard and Compact 200 Series Subsystem User's Guide</i> (B0400FA). <i>European Low Voltage Directive 2006/95/EC (Prior to April 20, 2016) and 2014/35/EU (Beginning April 20, 2016) and Explosive Atmospheres (ATEX) directive 94/9/EC (Prior to April 20, 2016) and 2014/34/EU (Beginning April 20, 2016):</i> DEMKO certified as Ex nA IIC T4 for use in certified Zone 2 enclosure when connected to specified processor modules as described in the <i>Standard and Compact 200 Series Subsystem User's Guide</i> (B0400FA).
RoHS Compliance	Complies with European RoHS Directive 2011/65/EU, including amending Directives 2015/863 and 2017/2102.
IECEx Certification	IECEx Certified

Physical Specifications

Mounting	- Module: FBM207/FBM207b/FBM207c mounts on a Modular baseplate. 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, or 7 and 8). See <i>Standard 200 Series Baseplates</i> (PSS 41H-2SBASPLT) for details. - Termination Assemblies (TAs): 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	- Module: 185 g (6.5 oz) approximate - Termination Assemblies: <i>Compression Type</i>: 127 mm (5.02 in) – 272 g (0.60 lb, approximate) 146 mm (5.75 in) – 317 g (0.7 lb, approximate) <i>Ring Lug Type</i>: 198 mm (7.78 in) – 400 g (0.90 lb, approximate) 216 mm (8.51 in) – 440 g (1.0 lb, approximate)
Dimensions - Module	- 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)
Dimensions - Termination Assemblies	- Compression Screw: See <i>Dimensions - Nominal</i>, page 16. - Ring Lug: See <i>Dimensions - Nominal</i>, page 16.
Part Numbers	- Module: - FBM207: RH914TD - FBM207b: RH914WH - FBM207c: RH917GY - Termination Assemblies: See <i>Termination Assemblies and Cables</i>, page 12. - Redundant Adapter: RH926ZY