

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

FOXBORO

FBM207b

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.

Features

- FBM207 supports 16 discrete input signals at voltages of:
 - 15 to 60 VDC - voltage monitoring
 - 120 VAC/125 VDC - voltage monitoring or switch inputs
 - 240 VAC - voltage monitoring or switch inputs
- Each input is galvanically isolated, and group isolated with external excitation
- Single or redundant modules
- Rugged design suitable for enclosures in Class G3 (harsh) environments
- Executes programs for Discrete Input, Ladder Logic, Pulse Count, and Sequence of Events with configurable Input Filter Time option
- Termination Assemblies (TAs) for locally or remotely connecting field wiring to FBM207/b/c
- TAs for per channel internally loop powered devices
- Various TAs have additional signal conditioning hardware that provides voltage attenuation and optical isolation

Standard Design

FBM207/b/c has a rugged extruded aluminum exterior for physical protection of the circuits.

Enclosures specially designed for mounting the FBMs provide various levels of environmental protection, up to harsh environments (Class G3), per ISA Standard S71.04.

Visual Indicators

Light-emitting diodes (LEDs) incorporated into the front of the module provide visual indication of the operational status of the FBM, as well as the discrete states of the individual input points.

Easy Removal/Replacement

The module can be removed or replaced without removing field device termination cabling, power, or communication cabling.

When redundant, either module may be replaced without upsetting field input signals to the good module. The module can be removed/replaced without removing field device termination cabling, power, or communications cabling.

Sequence of Events

The Sequence of Events (SOE) software package (for use with I/A Series® software V8.x and Control Core Services software v9.0 or later) is used for acquisition, storage, display, and reporting of events associated with digital input points in a control system. SOE, using the optional GPS based time synchronization capability, supports data

acquisition across control processors at intervals of up to one millisecond, depending on the signal source.

See *Sequence of Events* (PSS 31S-2SOE) to learn more about this package, and to *Time Synchronization Equipment* (PSS 41H-4TIMESNC) for a description of the optional time synchronization capability.

I/A Series systems with software earlier than V8.x can support SOE through ECB6 and EVENT blocks. However, these systems do not support GPS time synchronization and use a timestamp sent by the Control Processor which is only accurate to the nearest second and is not synchronized between different Control Processors.

Redundant Modules in Foxboro DCS HMI

The redundant pair of modules appear as two independent modules to system management software applications, such as Foxboro DCS System Manager, and System Manager/Display Handler (SMDH). The functional redundancy for these modules is provided by their associated control blocks.

Fieldbus Communication

A Fieldbus Communications Module or a Control Processor interfaces to the redundant 2 Mbps module Fieldbus used by the FBMs. The FBM accepts communication from either path (A or B) of the 2 Mbps Fieldbus. If one path is unsuccessful or is switched at the system level, the module continues communication over the active path.

Modular Baseplate Mounting

The module mounts on a DIN rail mounted baseplate, which accommodates up to four or eight FBMs. The Modular Baseplate is either DIN rail mounted or rack mounted, and includes signal connectors for redundant module Fieldbus, redundant independent DC power, and termination cables.

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). To achieve the redundancy, a redundant adapter module is placed on the two adjacent baseplate termination cable connectors to provide a single termination cable connection. A single termination cable connects from the redundant adapter to the associated Termination Assembly (TA).

Overcurrent Protection

Field power, for contacts or solid-state switches, is current limited.

Termination Assemblies

Field I/O signals connect to the FBM subsystem via DIN rail mounted Termination Assemblies (TAs). The TAs used with the FBM207/b/c are described in [Termination Assemblies and Cables](#), page 12.