

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

FOXBORO

FBM231 P0926GV

REDUNDANT FIELD DEVICE SYSTEM INTEGRATOR

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

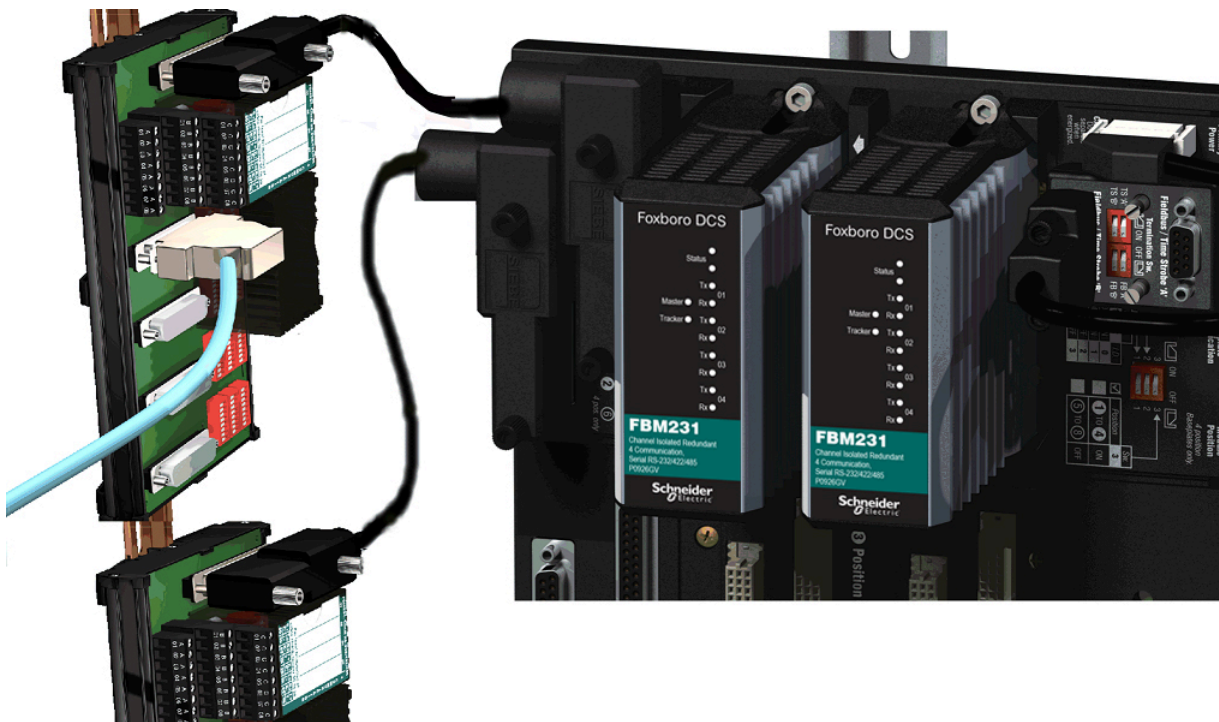
Foxboro™ DCS

FBM231 Field Device System Integrator Module, Four Serial Ports, Redundant

PSS 41H-2S231

Product Specification

May 2025



Overview

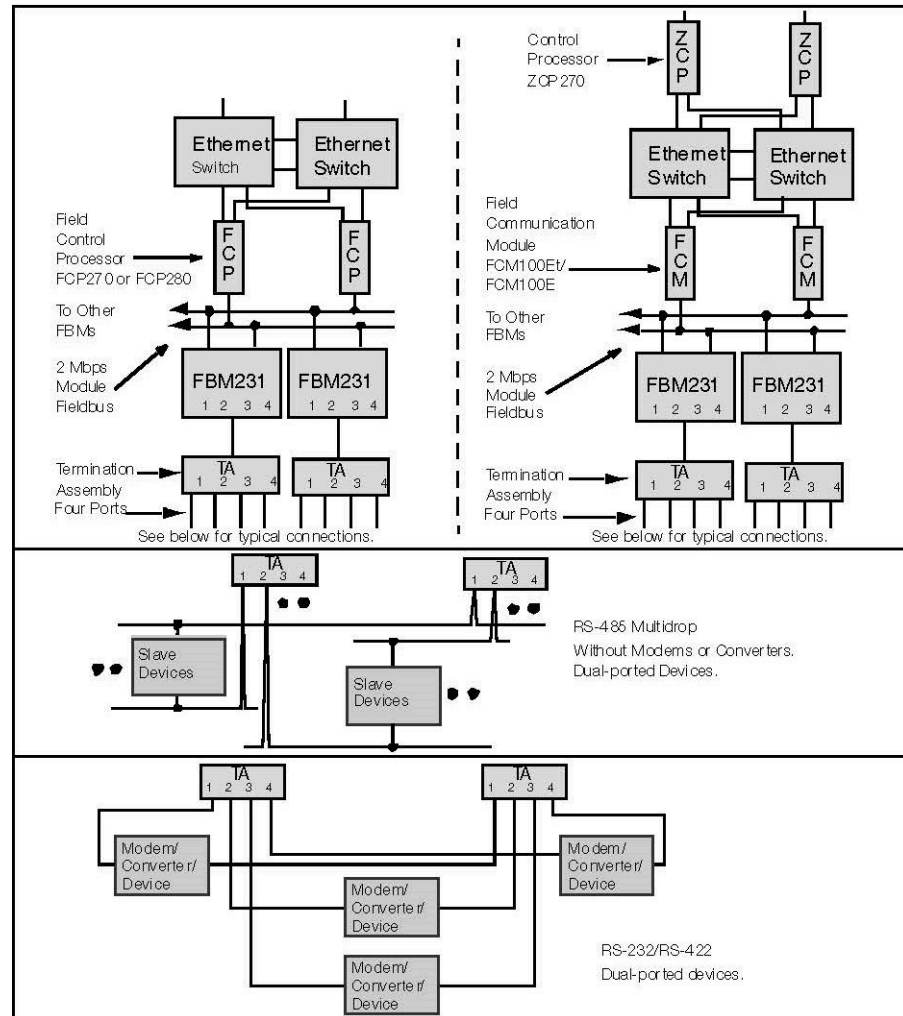
The FBM231 Redundant Field Device System Integrator (FDSI) modules provide a serial interface between dual-ported field I/O devices and the EcoStruxure™ Foxboro™ DCS system.

A pair of FBM231 modules combine to provide redundancy at the Fieldbus Module (FBM) level, with field wiring to two termination assemblies (see Figure 1). In this configuration, one FBM231 is the Master, and the other is the Tracker module. Input points on the control station are updated from the device inputs received on the network connected to the Master. Device output points, depending on the I/O driver, are written by both the Master and Tracker module. Role switching is automatic if actual problems are detected (for example, heartbeat) by the I/O driver, or the user can switch the roles at any time via SMDH.

The FBM231 has four ports - each can be individually configured in software for RS-232, RS422 or RS-485. This allows a single FBM231 the flexibility to connect to multiple similar but not identical devices. Ports 1, 2, 3, and/or 4 can be configured as a single logical port with redundant cables allowing you to interface with dual-ported I/O devices within your plant. The general network configurations are shown in Figure 1.

The FBM231 and its associated termination assemblies (TA) accommodate several types of connections to dual-ported devices; direct connection to devices; connection to modems when used with the RS-232 communication interface, and multidrop connections to RS-485 devices. Intrinsic safety devices can be connected between the TA and the field device. For single ported devices, you should use the FBM230.

Figure 1. FBM231 in Typical Network Configurations



NOTE: Each FBM231 port (1 through 4) can be individually configured for RS-232, RS-422, or RS-485 communications standards.

Features

The key features of the FBM231 are:

- Redundant FBM231 modules communicate with dual-ported devices
- Four ports - each can be individually configured in software for RS-232, RS-422 or RS-485
- Supports RS-232, RS-422 or RS-485 communication interface standards
- I/O software driver is downloadable from a library of available protocols.
- Up to 2000 DCI block connections
- Communicates with up to 64 RS-485 or up to 4 direct connect RS-232 or RS-422 devices
- Integrates field device data into a Foxboro DCS control database
- Field mounted
- Class G3 (harsh) environments.

Serial Link Setup

Data communication between two FBM231 modules and dual-ported field devices are through two 4-ported termination assemblies (TA) connected to each of the redundant FBM231. Each TA has compression screw or ring lug terminals for each port for RS-422 and RS485 wiring, with DIP-switch-selectable bus termination resistors per port. For RS-232 wiring, the TA has four standard DB-25 male connectors and a break-out bank of 24 DIP switches for each port that can be used for any RS-232 wiring configuration (for example, to connect Clear-to-Send to Request-to-Send).

Physical wiring is in accordance with Electronic Industrial Association (EIA) standard RS-232, RS422, or RS-485.

I/O Drivers

This FBM is a generic hardware module in which different software drivers can be loaded. These drivers configure the FBM to recognize a particular protocol used by the field device. Several of the software drivers are standard product offerings. Other custom drivers can be developed to meet specific needs. These drivers are dynamically downloaded to the pair of FBM231s with software code specifically designed to interface with the third party device's protocol.

The configuration procedures and the software requirements for each driver are unique to the device(s) being integrated into the system.

Configurator

The FDSI configurator sets up the FBM231 port via XML based device configuration files. The port configurator allows for easy setup of the communication parameters for each port (such as, communication interface standard, baud rate, parity). The device configurator is not needed for all devices, but when needed it configures device specific and point specific considerations (such as, scan rate, address of the data to be transferred and the amount of data to be transferred in one transaction).

Operations

Each FBM231 can access up to 64 devices in RS485 mode to read or write data.

From the Foxboro DCS control station to which the FBM231 is connected (refer to Figure 1, page 3), up to 2000 Distributed Control Interface (DCI) data connections can be made to read or write data. Supported data types are determined by the particular driver loaded on the FBM231, which converts the data to the DCI data types listed below:

- An analog input or output value (integer or IEEE single-precision floating point)
- A single digital input or output value
- Multiple (packed) digital input or output values (packed in groups of up to 32 digital points per connection).

Thus a FBM231 can access up to 2000 analog I/O values, or up to 64000 digital I/O values, or a combination of digital and analog values spread over the four ports of the FBM231 up to the maximum capacity a user allows within the sizing guidelines of the control processor. The frequency of access to the FBM231 data by a control station can be as fast as 500 ms. The performance depends on each device type and the layout of data in the device.

The FBM231 collects the required data from the devices, performs the necessary conversions, and then stores the converted data in its database for incorporation into the Foxboro DCS plant management functions and operator displays. Data may also be written out to the individual devices from the Foxboro DCS system.

Control Block Support

The FBM232 offers control block support for the following standard Foxboro DCS system Distributed Control Interface (DCI) block types:

BIN	Binary Input
BINR	Binary Input Redundant
BOUT	Binary Output
IIN	Integer Input
IOUT	Integer Output
PAKIN	Packed Input
PAKOUT	Packed Output
PLSOUT	Pulse Output
RIN	Real Input
RINR	Real Input Redundant
ROUT	Real Output
STRIN	String Input
STROUT	String Output

The DCI blocks are configured just like other Foxboro DCS control blocks. The DCI blocks address and read/write data from/to the addressed field device.