MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

FOXBORO

FBM244

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

FBM244, 0 to 20 mA I/O Module with HART® Support

PSS 41H-2S244

Product Specification

May 2025

https://www.se.com

Overview

The FBM244 module contains four 0 to 20 mA galvanically isolated analog input and output channels (eight total). The FBM244 supports any mix of standard 4 to 20 mA devices and HART devices.

Each input channel accepts an analog sensor input such as a 4 to 20 mA transmitter or a self-powered 20 mA source. Each output channel drives an external load and produces a 0 to 20 mA output.

The module performs the signal conversion required to interface the electrical input/output signals from the field sensors and actuators to the redundant Fieldbus.

This module executes the analog I/O application program. The configurable options for this program are Fail-Safe Configuration (Hold/Fallback) Analog Output Fail-Safe Fallback Data, (on a per channel basis), Fieldbus Switching Enable, and Fieldbus Switching Time. The module does not provide DPIDA support.

Features

- Four 0 to 20 mA analog input channels, used for a HART analog sensor input such as a 4 to 20 mA transmitter or a self-powered 20 mA source
- Four analog output channels, used to drive an external load and produce a 0 to 20 mA output
- Support for the HART universal commands necessary to interface the field device with the EcoStruxure™ Foxboro DCS™ database
- Both inputs and outputs are galvanically isolated
- Rugged design suitable for enclosure in Class G3 (harsh) environments
- Termination Assemblies (TAs) for locally or remotely connecting field wiring to the FBM244
- TAs for per channel internally and/or externally loop powered transmitters

Standard Design

The FBM244 module has a rugged extruded aluminum exterior for physical protection of the circuits. Enclosures specially designed for mounting the Foxboro DCS Fieldbus Modules (FBMs) provide various levels of environmental protection, up to harsh environments (Class G3) per ISA Standard S71.04.

Easy Removal/Replacement

The modules can be removed/replaced without removing field device termination cabling, power or communications cabling.

Visual Indicators

Light-emitting diodes (LEDs) incorporated into the front of the modules provide visual status indications of FBM functions.

Modular Baseplate Mounting

The modules mount on a modular baseplate or conversion mounting structure 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 fieldbus, redundant independent DC power, and termination cables.

Fieldbus Communication

A Fieldbus Communication Module or a Control Processor interfaces the redundant 2 Mbps module Fieldbus used by the FBMs. The FBM244 module accepts communication from either path (A or B) of the redundant 2 Mbps fieldbus. If one path is unsuccessful or is switched at the system level, the module continues communication over the active path.

Termination Assembly

Field I/O signals connect to the FBM subsystem via a DIN rail mounted termination assembly (TA). The TA used with the FBM244 modules is described in Termination Assemblies and Cables, page 11.

Functional Specifications

Supported Hart Instrument Types	HART instruments compliant to Version 5, 6, or 7 of the HART specifications may be used.
Input Channels	• Input: 4 isolated and independent channels • Input Range (Each Channel): 0 to 20.4 mA DC • Accuracy: ±0.03% of span • Communication: Via a redundant Fieldbus • Input Connections: Two configurations (see Figure 1)
Output Channels	• Output: 4 isolated and independent channels • Output Range (Each Channel): 0 to 20.4 mA DC • Output Load (Maximum): 735 Ω • Compliance Voltage: 18.6 V nominal at 20 mA DC at I/O field terminals • Accuracy: ±0.05% of span (25°C) between 4 - 20 mA • Output Temperature Coefficient: 100 ppm/°C • Communication: Via a redundant Fieldbus • Settling Time: 100 ms to settle within a 1% band of steady state for a 10 to 90% input step change • Linearity Error: ±0.025% of span (monotonic) • Resolution: 12 bits
Input Channel Isolation	Each channel is galvanically isolated from all other channels and earth (ground). The module/Termination Assembly (TA) 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.**
Fastest Allowed ECB Block Period	100 ms; however, it is recommended that you see the *Sizing Guidelines and Excel Workbook* appropriate for your Control Processor to determine the optimal loading for a 100 ms Block Processing Cycle (BPC).
Calibration Requirements	Calibration of the module and TA is not required.
Regulatory Compliance: Electromagnetic Compatibility (EMC)	• *European EMC Directive 2004/108/EC (Prior to April 20, 2016) and 2014/30/EU (Beginning April 20, 2016)*: Meets: EN61326-1:2013 Class A Emissions and Industrial Immunity Levels