Foxboro FBM215 P0917TQ

Official Technical Reference Excerpt

Foxboro FBM215 P0917TQ provides eight channel-isolated 4 to 20 mA outputs with superimposed HART FSK communication for intelligent actuators.

VERIFIED PRODUCT ROLE

Characteristic 1

Provides eight isolated output channels for its hart communication output module function.

Characteristic 2

Handles analog control output with bidirectional HART communication through the documented Foxboro system path.

Characteristic 3

Works with the assigned HART output termination assembly and field actuator loops.

Characteristic 4

Every output is galvanically isolated from the other channels, ground and module logic.

MANUFACTURER DOCUMENT

Manufacturer source	Invensys, I/A Series FBM215 HART Communication Output Interface Module, PSS 21H-2Z15 B4; P0917TQ is identified as the legacy FBM215 part number in B0400FA.
Evidence boundary	Technical statements are limited to the identified product or applicable manufacturer family.
Selection control	Use the complete ordering string and verify the installed system before purchase or installation.

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PSS 21H-2Z15 B4

FBM215 HART® Communication Output Interface Module



The FBM215 HART® Communication Output Interface Module offers eight output channels, each providing a 4 to 20mA output signal or a digital HART signal superimposed on a 4 to 20 mA analog output signal.

FEATURES

Key features of the FBM215 module are:

- Eight channel-isolated output channels, each providing one of the following outputs:
  - Standard 4 to 20 mA analog output signal
  - Digital HART Frequency Shift Keying (FSK) signal superimposed on a 4 to 20 mA analog output signal.
- FSK modem dedicated to each output channel for bi-directional digital communications with a HART field device
- Galvanic isolation of all output channels from each other, and from ground and module logic
- Support for HART universal commands necessary to interface the field device with the I/A Series® system database
- Compact, rugged design suitable for enclosure in Class G3 (harsh) environments
- Termination Assemblies (TAs) for locally or remotely connecting field wiring to the FBM215.

OVERVIEW

The HART Communication Output Interface Module (FBM215) contains eight channel-isolated output channels. The FBM215 supports any mix of standard 4 to 20 mA devices and HART devices.

The FBM215 serves as a HART communications field device host, enabling the I/A Series system to request and receive two digital messages per second from each field device. The message pass-through capability can be used to support HART universal, common practice, and device-specific commands, but not the burst communication mode. These commands are implemented using the Intelligent Field Device Configurator (IFDC — refer to PSS 21S-8A3 B3 for details).

The FBM215 provides an isolated power supply for each channel.

When connected to the appropriate TAs, the FBM215 module provides functionality formerly provided by the 100 Series FBM I/O subsystem. TAs are available which support the functionality of the 100 Series FBM37 when the FBM37 is used with HART devices.

COMPACT DESIGN

The FBM215 has a compact design, with 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 per ISA Standard S71.04.

VISUAL INDICATORS

Light-emitting diodes (LEDs) incorporated into the front of the module provide visual indication of the module's operational status, and communication activity of the channels.

EASY REMOVAL/REPLACEMENT

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

FIELDBUS COMMUNICATION

A Fieldbus Communication Module or a Control Processor interfaces the redundant 2 Mbps module Fieldbus used by the FBMs. The FBM215 module accepts communication from either path (A or B) of the redundant 2 Mbps fieldbus – should one path fail or be switched at the system level, the module continues communication over the active path.

MODULAR BASEPLATE MOUNTING

The module mounts on a modular 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 fieldbus, redundant independent dc power, and termination cables.

TERMINATION ASSEMBLIES

Field output signals connect to the FBM subsystem via DIN rail mounted TAs. The TAs used with the FBM215 are described in "TERMINATION ASSEMBLIES AND CABLES" on page 7.

FUNCTIONAL SPECIFICATIONS

Field Device Channels

SUPPORTED HART INSTRUMENT TYPES
HART instruments compliant to Version 5, 6, or 7 of the HART specifications may be used

INTERFACE
8 isolated output channels

COMMUNICATIONS TO THE DEVICE
Point-to-point, master/slave, asynchronous, half-duplex, at 1200 baud

ERROR CHECKING
Parity on each byte, and one CRC check byte on each message

SPEED
2 messages per second

FASTEST ALLOWED ECB BLOCK PERIOD
100 msec - However, it is recommended that you refer to the *Sizing Guidelines and Excel Workbook* appropriate for your Control Processor to determine the optimal loading for a 100 msec Block Processing Cycle (BPC).

MAXIMUM DISTANCE (FBM215 TO FIELD DEVICE)
Meets HART FSK physical layer specification HCF_SPEC-54, Revision 8.1 [up to 3030 m (10000 ft)][(1)]

CURRENT OUTPUTS

Analog Accuracy (Includes Linearity)
±0.05% of span (between 4 mA and 20 mA)

Output Load
750 Ω maximum

Maximum Rate of Change
20 mA in 60 milliseconds

Resolution
13 bits

LOOP POWER SUPPLY PROTECTION
Each channel is channel-to-channel galvanically isolated, current limited, and voltage regulated. All analog outputs are limited by their design to about 25 mA. If the output FET shorts, the output current could increase up to 100 mA.

In normal operation the FBM outputs a constant current into a 0 to 750 ohm load.

ISOLATION
The channels are galvanically isolated (both optical and transformer isolation) from each other, and from ground and module logic. The module withstands, without damage, a potential of 600 V ac applied for one minute between the isolated channels and earth (ground).

CAUTION

This does not imply that these channels are intended for permanent connection to voltages of these levels. Exceeding the limits for input voltages, as stated elsewhere in this specification, violates electrical safety codes and may expose users to electric shock.

Fieldbus Communication

Communicates with its associated FCM or FCP via the redundant 2 Mbps module Fieldbus

Power Requirements

INPUT VOLTAGE RANGE (REDUNDANT)
24 V dc ±5%

CONSUMPTION
7 W (maximum)

HEAT DISSIPATION
5 W (maximum)

Calibration Requirements

Calibration of the module and termination assembly is not required.

(1) The maximum allowable distance decreases when the loop is operated through an intrinsic safety barrier. The maximum distance of the field device from the FBM is a function of compliance voltage (19 V dc at 20.4 mA), wire and load resistance, and voltage drop at the field device.

Related models and source control

Use these live ApterPower pages for comparison. Verify each complete ordering string independently.

RELATED PRODUCT REFERENCES

Siemens 6DS1731-8RR	Technical-reference companion. Review the complete ordering string before selection.
Siemens 6EC1001-0A	Technical-reference companion. Compare the required interface and system position.
Siemens 6DS1719-8RR	Technical-reference companion. Confirm the execution independently for the intended task.

EXACT-SELECTION CONTROLS

Product identity	Confirm the complete FBM215 P0917TQ marking.
System interface	the assigned HART output termination assembly and field actuator loops
Technical boundary	Use FBM215 P0917TQ only with the assigned HART output termination assembly and field actuator loops; verify every interface and the controlled project configuration before energizing or pressurizing the subsystem.
Source	Invensys, I/A Series FBM215 HART Communication Output Interface Module, PSS 21H-2Z15 B4; P0917TQ is identified as the legacy FBM215 part number in B0400FA.

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