PSS 21H-2Z42 B4

FBM242, Externally Sourced, Discrete Output Interface Module



The FBM242 Discrete Output Interface Module contains 16 discrete output channels which are sourced externally.

FEATURES

Key features of the FBM242 modules are:

- Sixteen discrete outputs
- Supports discrete output signals at voltages of:
  - 15 to 60 V dc
  - 120 V ac/125 V dc
  - 240 V ac
- Each input and output is galvanically isolated; group isolated when used with external excitation
- Compact, rugged design suitable for enclosure in Class G3 (harsh) environments
- Executes the Discrete I/O or Ladder Logic program, with the following configurable options: Input Filter Time, Fail Safe Configuration, Fail-Safe Fall-Back, and Sustained or Momentary Outputs
- Various Termination Assemblies (TAs) that contain:
  - Current limiting devices
  - Fuses
  - Relay outputs with external power source, fusing, and power distribution
  - Solid state outputs
  - Redundant power distribution

OVERVIEW

The FBM242 Discrete Output Interface Module contains 16 discrete output channels, which are sourced externally, rated up to 2 A at 60 V dc. Associated termination assemblies (TAs) provide for discrete outputs to loads of 2 A at 60 V dc, relay outputs (120 V ac/125 V dc, or 240 V ac), or relay outputs with power distribution and fusing. Each output is fully isolated from other channels and ground.

The module interfaces electrical output signals from a control processor to the field devices. It executes a digital I/O application program, with ladder logic support, and provides a Fail-Safe Configuration option for the outputs.

COMPACT DESIGN

The module 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 (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 module operational status, as well as the discrete states of the individual output points.

EASY REMOVAL/REPLACEMENT

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

FIELDBUS COMMUNICATION

A Fieldbus Communications Module or a Control Processor interfaces to the redundant 2 Mbps module Fieldbus used by the FBMs. The FBM242 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.

SECURITY

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

MODULAR BASEPLATE MOUNTING

The module mounts on a DIN rail mounted Modular baseplate, which accommodates up to four or eight Fieldbus Modules. 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 (TAs)

Field I/O signals connect to the FBM subsystem via DIN rail mounted TAs. The TAs used with the FBM242 are described in “TERMINATION ASSEMBLIES” on page 6.

FUNCTIONAL SPECIFICATIONS

Output Channels
Sixteen isolated channels.

Applied Voltage
15 to 60 V dc (maximum)

Load Current
2.25 A (maximum) per channel

Load Current-In-Rush
8 A (maximum) for 20 ms per channel at 30°C.
6.4 A (maximum) for 20 ms per channel at 70°C.

On-State Voltage Drop
0.2 V (maximum) at 2.25 A

Off-State Leakage Current
0.1 mA (maximum)

Inductive Loads
Module output may require a protective diode or metal oxide varistor (MOV) connected across the inductive load.

Output Channel Isolation
Each channel is galvanically isolated from all other channels and earth (ground). The module withstands, without damage, a potential of 600 V ac applied for one minute between any channel and ground, or between a given channel and any other channel.

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.

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%, -10%

CONSUMPTION (MAXIMUM)
3 W (maximum) at 24 V dc

HEAT DISSIPATION (MAXIMUM)
6.5 W (maximum) at 24 V dc (with all outputs at 1.5 A each)

Calibration Requirements
The module and termination assemblies require no calibration.

Table 2. Cable Types and Part Numbers

Length m (ft)	Type 4, 26 AWG[a] P/PVC	Type 4H, 22 AWG[a][b] P/PVC	Type 4 LSZH[c]	Type 4, 26 AWG[d] HP/XLPE	Type 4H, 22 AWG[b][d] HP/XLPE
0.5 (1.6)	P0916FG	-	P0928BA	P0916WD	-
1.0 (3.2)	P0916FH	-	P0928BB	P0916WE	-
2.0 (6.6)	P0931RQ	-	P0928BC	P0931RU	-
3.0 (9.8)	P0916FJ	-	P0928BD	P0916WF	-
5.0 (16.4)	P0916FK	-	P0928BE	P0916WG	-
10.0 (32.8)	P0916FL	P0916GE	P0928BF	P0916WH	P0916WN
15.0 (49.2)	P0916FM	P0916GF	P0928BG	P0916WJ	P0916WP
20.0 (65.6)	P0916FN	P0916GG	P0928BH	P0916WK	P0916WQ
25.0 (82.0)	P0916FP	P0916GH	P0928BJ	P0916WL	P0916WR
30.0 (98.4)	P0916FQ	P0916GJ	P0928BK	P0916WM	P0916WS

(a) P/PVC cable assembles polyurethane outer jacket and semi-rigid PVC primary conductor insulation temperature range: -20 to + 70°C (-4 to 158°F)

(b) Type 4H cables are used to reduce voltage drop in long (greater than 5 m (15 ft)) cable run applications.

(c) Low smoke zero halogen or low smoke free of halogen (LSZH) is a material classification used for cable jacketing. LSZH is composed of thermoplastic or thermoset compounds that emit limited smoke and no halogen when exposed to high sources of heat. Temperature range: -40 to +105°C (-40 to +221°F)

(d) H/XLPE is Hypalon outer jacket and XLPE (cross-linked polyethylene) primary conductor insulation. H/XLPE is rated from -40 to +90°C (-40 to 194°F). Hypalon cables are no longer available for purchase.