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FBM217 Discrete Input Interface Module



The FBM217 Discrete Input Interface Module provides 32 dc voltage input channels.

FEATURES

Key features of the FBM217 are:

- Thirty-Two (32) discrete inputs
- Supports discrete input signals at voltages of:
  - 15 to 60 V dc
  - 120 V ac/125 V dc
  - 240 V ac
- Single or redundant modules
- Compact, rugged design suitable for enclosure in Class G3 (harsh) environments
- Executes the programs for Discrete Input, Ladder Logic, Pulse Count, and Sequence of Events, with the configurable options: Input Filter Time and Fail-Safe Configuration
- Various Termination Assemblies (TAs) that contain:
  - High voltage attenuation and optical isolation for inputs
  - External power connection for device excitation.

OVERVIEW

The FBM217 Discrete Input Interface Module provides 32 input channels, each accepting a 2-wire input from a dc voltage source. Associated termination assemblies (TAs) provide for discrete inputs of under 60 V ac, 120 V ac/125 V dc or 240 V ac. The module performs signal conversion required to interface the electrical input signals from the field sensors to the Module Fieldbus.

Depending on the type of I/O signal required, the TAs contain current limiting devices, high voltage attenuation circuits, optical isolation and external power source connections.

The module with its associated TA supports the following discrete inputs:

FBM	Inputs
FBM217	30 V dc, 125 V dc, 120 V ac, or 240 V ac Voltage monitor or Contact sense

The module can be used as a single unit, or as a redundant pair (two FBM217s). 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 FBMs' baseplate. The field input current for redundant modules is doubled. A redundant digital input block in the 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 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.

When connected to the appropriate TAs, the FBM217 module provides functionality formerly provided by the 100 Series FBM I/O subsystem. TAs are available which support the functionality of the 100 Series main FBM07A/B, FBM08, FBM20, and FBM24A/B/C (16 input main FBMs). Expansion TAs are available for use with these main FBM TAs to support the functionality of expansion FBM12, FBM13, FBM21, or FBM25A/B/C (16 input expansion FBMs).

COMPACT DESIGN

FBM217 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 Fieldbus Module operational status, as well as the discrete states of the individual input points.

EASY REMOVAL/REPLACEMENT

The module can be removed/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 v8.x or later software) 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.

Refer to PSS 21S-2B9 B4, *Sequence of Events* to learn more about this package, and to PSS 21H-4C2 B3, *Time Synchronization Equipment*, 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 accurate to the nearest second and does not provide synchronization between different Control Processors.

FIELDBUS COMMUNICATION

A Fieldbus Communications Module or a Control Processor interfaces to the 2 Mbps module Fieldbus used by the FBMs. The FBM217 accepts communication from either path (A or B) of the 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 DIN rail mounted 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.

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 TA.

To system configurator applications and monitoring through SMON, System Manager, and SMDH, redundant modules appear to be separate, nonredundant modules. The functional redundancy for these modules is provided by their associated control blocks.

TERMINATION ASSEMBLIES

Field I/O signals connect to the FBM subsystem via DIN rail mounted TAs. The TAs used with the FBM217 are described in “TERMINATION ASSEMBLIES AND CABLES” on page 7.

FUNCTIONAL SPECIFICATIONS

Input
32 group isolated channels

On-State Voltage
15 to 30 V dc

Off-State Voltage
0 to 5 V dc

Current
2.2 mA (typical) at 30 V dc Input

Source Resistance Limits
ON-STATE
1 k Ω (maximum) at 15 V dc
OFF-STATE
100 k Ω (minimum) at 30 V dc

Filter/Debounce Time(1)
Configurable (No Filtering, 4, 8, 16, or 32 ms)

Maximum Pulse Count Rate
250 Hz

Isolation (Module/TA Combination)
For TAs which provide group isolation (P0916CA, P0916CB, P0916PW, P0916PX and P0916XZ), input channels are group isolated from earth (ground). For details, refer to the *I/A Series DIN Rail Mounted Subsystem User's Guide* (B0400FA). These module/TA combinations can withstand, without damage, a potential of 600 V ac applied for one minute between the group 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.

Isolation (Module/TA Combination) (Cont.)
For high-voltage TAs P0916PY, P0916PZ, P0916YB, P0916QA and P0916QB, the inputs are group-isolated. These TAs can withstand UL required dielectric potentials.
For high-voltage TAs P0916PS, PT, YA, PU and PV, the inputs are channel isolated. These TAs can withstand UL required dielectric potentials.

Communication
Communicates with its associated FCM or FCP via the module Fieldbus

Power Requirements
INPUT VOLTAGE RANGE (REDUNDANT)
24 V dc +5%, -10%
CONSUMPTION
3 W (maximum) at 24 V dc
HEAT DISSIPATION
5 W (maximum) at 24 V dc

Calibration Requirements
Calibration of the module and termination assembly is not required.

(1) Digital filtering available for 200 Series FBM or competitive migration modules with version 1.25H or later firmware.

FUNCTIONAL SPECIFICATIONS (CONTINUED)

Regulatory Compliance

ELECTROMAGNETIC COMPATIBILITY (EMC)

European EMC Directive 2004/108/EC

Meets: EN 50081-2 Emission standard
EN 50082-2 Immunity standard
EN 61326 EMC Standard (Industrial Levels)

CISPR 11, Industrial Scientific and Medical (ISM) Radio-frequency Equipment - Electromagnetic Disturbance Characteristics - Limits and Methods of Measurement

Meets: Class A Limits

IEC 61000-4-2 ESD Immunity

Contact 4 kV, air 8 kV

IEC 61000-4-3 Radiated Field Immunity

10 V/m at 80 to 1000 MHz

IEC 61000-4-4 Electrical Fast Transient/Burst Immunity

2 kV on I/O, V dc power and communication lines

IEC 61000-4-5 Surge Immunity

2kV on ac and dc power lines; 1kV on I/O and communications lines

IEC 61000-4-6 Immunity to Conducted Disturbances induced by Radio-frequency Fields

3 V (rms) at 150 kHz to 80 MHz on I/O, V dc power and communication lines

IEC 61000-4-8 Power Frequency Magnetic Field Immunity

30 A/m at 50 and 60 Hz

PRODUCT SAFETY

Underwriters Laboratories (UL) for U.S. and Canada

UL/UL-C listed as suitable for use in Class I, Groups A-D; Division 2; temperature code T4 enclosure based systems. These modules are also UL and UL-C listed as associated apparatus for supplying non-incendive circuits for Class I, Groups A-D hazardous locations when connected to specified I/A Series® processor modules as described in the ***I/A Series DIN Rail Mounted Subsystem User's Guide*** (B0400FA). Communications circuits also meet the requirements for Class 2 as defined in Article 725 of the National Electrical Code (NFPA No.70) and Section 16 of the Canadian Electrical Code (CSA C22.1). Conditions for use are as specified in the ***I/A Series DIN Rail Mounted Subsystem User's Guide*** (B0400FA).

European Low Voltage Directive 2006/95/EC and Explosive Atmospheres (ATEX) directive 94/9/EC

CENELEC (DEMKO) certified for use in Zone 2 enclosures and certified as associated apparatus for supplying non-incendive field circuits for Zone 2, Group IIC, potentially explosive atmospheres when connected as described in the ***I/A Series DIN Rail Mounted Subsystem User's Guide*** (B0400FA).

ENVIRONMENTAL SPECIFICATIONS

Operating

TEMPERATURE

FBM217

-20 to + 70°C (-4 to +158°F)

Termination Assembly

PVC

-20 to + 50°C (-4 to +122°F)

PA

-20 to +70°C (-4 to +158°F)

RELATIVE HUMIDITY

5 to 95% (noncondensing)

ALTITUDE

-300 to +3,000 m (-1,000 to +10,000 ft)

Storage

TEMPERATURE

-40 to +70°C (-40 to +158°F)

RELATIVE HUMIDITY

5 to 95% (noncondensing)

ALTITUDE

-300 to +12,000 m (-1,000 to +40,000 ft)

Contamination

Suitable for use in Class G3 (Harsh) environments as defined in ISA Standard S71.04, based on exposure testing according to EIA Standard 364-65, Class III.

Vibration

0.75 m/S^2 (5 to 500 Hz)

PHYSICAL SPECIFICATIONS

Mounting

MODULE

The FBM217 mounts on a modular baseplate. The baseplate can be mounted on a DIN rail (horizontally or vertically), or horizontally on a 19-inch rack using a mounting kit. 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) along with the appropriate redundancy adapter. Refer to *DIN Rail Mounted Modular Baseplates* (PSS 21H-2W6 B4) for details. Alternatively, a non-redundant FBM217 mounts on a 100 Series conversion mounting structure. Refer to *100 Series Conversion Mounting Structures* (PSS 21H-2W8 B4) for details.

TERMINATION ASSEMBLY

The TA mounts on a DIN rail and accommodates multiple DIN rail styles including 32 mm (1.26 in) and 35 mm 1.38 in)

Mass

MODULE

284 g (10 oz) approximate

TERMINATION ASSEMBLY - COMPRESSION

216 mm (8.51 in) – 420 g (0.93 lb, approximate)
233 mm (9.15 in) – 454 g (1.0 lb, approximate)

TERMINATION ASSEMBLY - RING LUG

356 mm (14.02 in) – 908 g (2.0 lb, approximate)
391 mm (15.38 in) – 950 g (2.1 lb, approximate)

Dimensions - Module

HEIGHT

102 mm (4 in),114 mm (4.5 in) including mounting lugs

WIDTH

45 mm (1.75 in)

DEPTH

104 mm (4.11 in)

Dimensions - Termination Assembly

Compression Screw - Refer to page 17
Ring Lug - Refer to page 20

Part Numbers

FBM217 MODULE

P0914TR

TERMINATION ASSEMBLIES

Refer to “FUNCTIONAL SPECIFICATIONS - TERMINATION ASSEMBLIES” on page 9

REDUNDANT ADAPTER

P0926ZY

PHYSICAL SPECIFICATIONS (CONTINUED)

Termination Cables

CABLE LENGTHS
Up to 30 m (98 ft)

CABLE MATERIALS
Polyurethane or Low Smoke Zero Halogen (LSZH)

TERMINATION CABLE TYPE

Baseplate to Main TA
Type 4 - Refer to Table 2

Main TA to Expansion TA
Type 6 - Refer to Table 3

CABLE CONNECTION

Type 4
FBM Baseplate End
37-pin D-subminiature plug
Termination Assembly End
37-pin D-subminiature receptacle

Type 6
Main TA End
25-pin D-subminiature receptacle
Expansion TA End
37-pin D-subminiature receptacle

Construction - Termination Assembly

MATERIAL
Polypropylene (PVC), compression and ring lug
Polyamide (PA), compression and ring lug

Field Termination Connections

COMPRESSION - ACCEPTED WIRING SIZES

Solid/Stranded/AWG
0.2 to 4 mm^2/0.2 to 2.5 mm^2/24 to 12 AWG

Stranded with Ferrules
0.2 to 2.5 mm^2 with or without plastic collar

RING-LUG - ACCEPTED WIRING SIZES
#6 size screw connectors (0.375 in (9.5 mm))
0.5 to 4 mm^2/22 AWG to 12 AWG

TERMINATION ASSEMBLIES AND CABLES

General Description

Field I/O signals connect to the FBM subsystem via DIN rail mounted termination assemblies (TAs). Multiple types of TAs are available with FBM217 to provide input signal connections, signal conditioning, optical isolation from signal surges and external power connections for field devices. Since these features are built into the termination assemblies (where required), in most applications there is no need for additional termination equipment for field circuit functions such as circuit protection or signal conditioning (including fusing and power distribution).

The termination assembly can be used with a single FBM217 or with a redundant pair (two FBM217s).

The DIN rail mounted termination assemblies connect to the FBM subsystem baseplate by means of removable termination cables. When used with a redundant module pair, the termination assembly is connected to the baseplate using a redundant adapter (P0926ZY).

The cables are available in a variety of lengths, up to 30 meters (98 feet), allowing the termination assemblies to be mounted in either the enclosure or in an adjacent enclosure. Refer to “FUNCTIONAL SPECIFICATIONS - TERMINATION ASSEMBLIES” on page 9 for termination cable part numbers and specifications.

Migration Use of Termination Assemblies

When an FBM217 is used to replace 100 Series FBMs, its associated termination assembly is determined based on which 100 Series FBM is being replaced. Typically, the 100 Series FBM being replaced was a main FBM and may have been used in conjunction with an expansion FBM.

A single FBM217 provides the I/O communications for both the 100 Series equivalent main and expansion TAs. To provide enough terminals for the field input wiring, two termination assemblies are used with the FBM217 - one for the field input wiring for the replaced main FBM, and one for the field input wiring for the replaced expansion FBM.

The “expansion” termination assembly is daisy-chained to the “main” termination assembly via the expansion cables listed in Table 3 on page 16.

The table “FUNCTIONAL SPECIFICATIONS - TERMINATION ASSEMBLIES” on page 9 lists the termination assemblies needed to replace both the 100 Series main FBMs and the expansion FBMs.

Alternatively, the FBM217 can accept field wiring through a Termination Assembly Adapter (TAA) instead of the termination assemblies when replacing 100 Series FBMs. This is discussed in *Termination Assembly Adapter Modules for 100 Series Upgrade* (PSS 21H-2W4 B4).

Discrete Inputs

Various termination assemblies are available to support the interfacing of field signals to the low level FBM input circuits. Active termination assemblies support input signal conditioning for the FBM as well as channel isolation.

Be aware that for configurations which use main and expansion TAs, the I/O signal conditioning circuits are designed to emulate the 100 Series FBM I/O subsystem. This provides for functional I/O equivalence during upgrades from 100 Series to 200 Series hardware.

The signal conditioning circuits are located on daughter boards that are mounted under the component covers of the termination assemblies. To condition signals, these termination assemblies provide optical isolation, current limiting, voltage attenuation and optional terminal blocks to connect externally supplied excitation voltage.

Low Voltage Discrete Inputs

The low voltage inputs (less than 60 V dc) use passive termination assemblies. Inputs are voltage monitor or contact sense types. Voltage monitor inputs require an external field voltage source. Contact sense inputs use the FBM auxiliary +24 V dc power supply to wet field contacts.

A load may be required for proper operation of the input channels.

High Voltage Discrete Inputs

The high voltage input circuits support 125 V dc, 120 V ac, or 240 V ac. Voltage monitor inputs require a field voltage source.

Some versions of the termination assembly have a pair of external excitation voltage terminals, which distribute customer-supplied wetting voltage to all input channels on the assembly. These terminals allow the field power to be daisy chained between terminal assemblies.

FUNCTIONAL SPECIFICATIONS - TERMINATION ASSEMBLIES

FBM Type	Input Signal	TA Part Number		Termination	BP to TA Cable	TA Certification
		PVC[a]	PA[a]	Type[b]	Type[c]	Type[d]
FBM217	32 channel, voltage monitor 30 V dc Logic Zero – 0 to 5 V dc Logic One – 15 to 30 V dc Passive feedthrough with FBM217 group isolation	P0916CA P0916CB		C RL	4	1, 2, 4
FBM217	32 channel, contact sense 24 V dc contact wetting from FBM Passive feedthrough with FBM217 group isolation	P0916PW P0916PX	P0916XZ	C RL	4	1, 2, 4
FBM217	32 channel, voltage monitor 132 V ac or 150 V dc maximum Logic Zero - 0 to 20 V ac; 0 to 20 V dc Logic One - 80 to 132 V ac; 75 to 150 V dc Input Current for Logic One; 1.6 mA maximum Channel isolation provided by termination assembly	P0916PS P0916PT	P0916YA	C RL	4	1, 4
FBM217	32 channel, contact sense inputs 132 V ac or 150 V dc maximum with external excitation Logic Zero - 0 to 20 V ac; 0 to 20 V dc Logic One - 80 to 132 V ac; 75 to 150 V dc Input Current for Logic One; 1.6 mA maximum Group isolation provided by termination assembly	P0916PY P0916PZ	P0916YB	C RL	4	1, 4

FUNCTIONAL SPECIFICATIONS - TERMINATION ASSEMBLIES (CONTINUED)

FBM Type	Input Signal	TA Part Number		Termination	BP to TA Cable	TA Certification
		PVC[a]	PA[a]	Type[b]	Type[c]	Type[d]
FBM217	32 channel, voltage monitor 240 V ac Logic Zero: 0 to 40 V ac Logic One: 164 to 264 V ac Input Current for Logic One; 1.6 mA maximum Channel isolation provided by termination assembly	P0916PU P0916PV		C RL	4	1
FBM217	32 channel, contact sense inputs 240 V ac with external excitation Logic Zero: 0 to 40 V ac Logic One: 164 to 264 V ac Input Current for Logic One; 1.6 mA maximum Group isolation provided by termination assembly	P0916QA P0916QB		C RL	4	1
FBM217	When replacing a main FBM07A: Voltage Monitor, external source 130 V dc Maximum voltage Logic Zero: 0 to 5 V dc Logic One: 15 to 130 V dc 2.2 mA typical 5 to 130 V dc 1 KΩ Maximum On-state resistance 100 KΩ Minimum Off-state resistance When replacing a main FBM07B: Contact Sense, internal source 24 V dc ±10% Open circuit voltage 2.5 mA maximum short circuit current 1 KΩ Maximum On-state resistance 100 KΩ Minimum Off-state resistance		P0924HA	C	4	1, 2, 4

FUNCTIONAL SPECIFICATIONS - TERMINATION ASSEMBLIES (CONTINUED)

FBM Type	Input Signal	TA Part Number		Termination	BP to TA Cable	TA Certification
		PVC[a]	PA[a]	Type[b]	Type[c]	Type[d]
FBM217	When replacing a main FBM08: Voltage Monitor, external source 132 V ac or 150 V dc Maximum voltage Logic Zero: 0 to 20 V ac; 0 to 20 V dc Logic One: 79 to 132 V ac; 75 to 150 V dc 2.2 mA typical 20 to 132 V ac 1 KΩ Maximum On-state resistance 100 KΩ Minimum Off-state resistance		P0924HC	C	4	1, 4
FBM217	When replacing a main FBM20: Voltage Monitor, external source 264 V ac Maximum voltage Logic Zero: 0 to 40 V ac Logic One: 164 to 264 V ac 2.2 mA typical 40 to 264 V ac 1 KΩ Maximum On-state resistance 100 KΩ Minimum Off-state resistance		P0924HL	C	4	1
FBM217	When replacing a main FBM24A: Voltage Monitor, external source 150 V dc Maximum voltage Logic Zero: 0 to 10 V dc Logic One: 33 to 150 V dc 2.5 mA typical 10 to 150 V dc 1 KΩ Maximum On-state resistance 100 KΩ Minimum Off-state resistance		P0924HN	C	4	1, 2, 4

FUNCTIONAL SPECIFICATIONS - TERMINATION ASSEMBLIES (CONTINUED)

FBM Type	Input Signal	TA Part Number		Termination	BP to TA Cable	TA Certification
		PVC[a]	PA[a]	Type[b]	Type[c]	Type[d]
FBM217	When replacing a main FBM24B: Contact Sense, internal source 48 V dc nominal open circuit voltage 2.5 mA ±20% short circuit current 1 KΩ Maximum On-state resistance 100 KΩ Minimum Off-state resistance		P0924HP	C	4	1, 2, 4
FBM217	When replacing a main FBM24C: Contact sense with external source on Channel 1 150 V dc Maximum voltage Logic Zero: 0 to 10 V dc Logic One: 33 to 150 V dc 2.5 mA typical 10 to 150 V dc 1 KΩ Maximum On-state resistance 100 KΩ Minimum Off-state resistance		P0924HQ	C	4	1, 2, 4

(a) PVC is polyvinyl chloride rated from -20 to +50°C (-4 to +122°F). PA is Polyamide rated from -20 to +70°C (-4 to +158°F).
(b) C = TA with compression terminals; RL = TA with ring lug terminals. Knife has compression terminals.
(c) See Table 2 and Table 3 for cable part numbers and specifications.
(d) See Table 1 for Termination Assembly certification definitions.

FUNCTIONAL SPECIFICATIONS - EXPANSION TERMINATION ASSEMBLIES

FBM Type	Input Signal	TA Part Number		Termination	Main TA to Exp. TA Cable	TA Certification
		PVC[a]	PA[a]	Type[b]	Type[c]	Type[d]
FBM217	When replacing an expansion FBM12A/B (16 input voltage monitor/contact sense): Input/output specifications are the same as for TA P0924HA above, on page 10. Connect this TA to the main TA.		P0924HB	C	6	1, 2, 4
FBM217	When replacing an expansion FBM13 (16 input voltage monitor): Input/output specifications are the same as for TA P0924HC above, on page 11. Connect this TA to the main TA.		P0924HD	C	6	1, 4
FBM217	When replacing an expansion FBM21 (16 input voltage monitor): Input/output specifications are the same as for TA P0924HL above, on page 11. Connect this TA to the main TA.		P0924HM	C	6	1
FBM217	When replacing an expansion FBM25A (16 input voltage monitor): Input/output specifications are the same as for TA P0924HN above, on page 11. Connect this TA to the main TA.		P0924HR	C	6	1, 2, 4

FUNCTIONAL SPECIFICATIONS - EXPANSION TERMINATION ASSEMBLIES

FBM Type	Input Signal	TA Part Number		Termination	Main TA to Exp. TA Cable	TA Certification
		PVC[a]	PA[a]	Type[b]	Type[c]	Type[d]
FBM217	When replacing an expansion FBM25B (16 input contact sense): Input/output specifications are the same as for TA P0924HP above, on page 12. Connect this TA to the main TA.		P0924HS	C	6	1, 2, 4
FBM217	When replacing an expansion FBM25C (15 input contact sense with external power supply): Input/output specifications are the same as for TA P0924HQ above, on page 12. Connect this TA to the main TA.		P0924HT	C	6	1, 2, 4

(a) PVC is polyvinyl chloride rated from -20 to +50°C (-4 to +122°F). PA is Polyamide rated from -20 to +70°C (-4 to +158°F).
(b) C = TA with compression terminals; RL = TA with ring lug terminals.
(c) See Table 2 and Table 3 for cable part numbers and specifications.
(d) See Table 1 for Termination Assembly certification definitions.

Table 1. Certifications for Termination Assemblies

Type	Certification
Type 1	TAs are UL/UL-C listed as suitable for use in Class I; Groups A-D; Division 2 temperature code T4 hazardous locations. They are CENELEC (DEMKO) certified EEx nA IIC T4 for use in Zone 2 potentially explosive atmospheres.
Type 2	TAs are UL/UL-C listed as associated apparatus for supplying non-incendive field circuits Class I; Groups A-D; Division 2 hazardous locations when connected to specified DIN rail mounted FBMs and field circuits meeting entity parameter constraints specified in *DIN Rail Mounted Subsystem User's Guide* (B0400FA). They are also CENELEC (DEMKO) certified as associated apparatus for supplying field circuits for Group IIC, Zone 2 potentially explosive atmospheres. Field circuits are also Class 2 limited energy (60 V dc, 30 V ac, 100 VA or less) if customer-supplied equipment meets Class 2
Type 3	Same as Type 2 above except that only input circuits are non-incendive/Class 2.
Type 4	All field circuits are Class 2 limited energy (60 V dc, 30 V ac, 100 VA or less) if customer-supplied equipment meets Class 2 limits.

Table 2. Cable Types (Baseplate to Main TA Cables) and Part Numbers

Cable Length m (ft)	Type 4 P/PVC[a]	Type 4 LSZH[b]	Type 4 H/XLPE[c]
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	P0928BF	P0916WH
15.0 (49.2)	P0916FM	P0928BG	P0916WJ
20.0 (65.6)	P0916FN	P0928BH	P0916WK
25.0 (82.0)	P0916FP	P0928BJ	P0916WL
30.0 (98.4)	P0916FQ	P0928BK	P0916WM

(a) P/PVC is polyurethane outer jacket and semi-rigid PVC primary conductor insulation. P/PVC cable is rated at -20 to +80°C (-4 to 176°F).
(b) 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).
(c) 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.

Table 3. Cable Types (Main TA to Expansion TA Cables) and Part Numbers

Cable Length m (ft)	Type 6 P/PVC[a]	Type 6 LSZH[b]	Type 6 H/XLPE[c]
0.75 (2.5)	P0924CK	P0928CQ	P0924CL

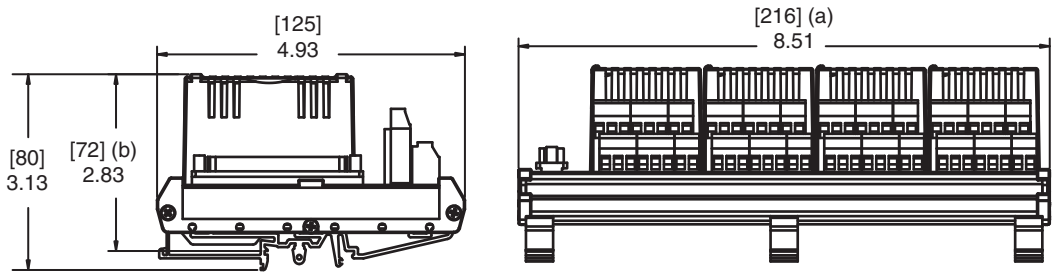
(a) P/PVC is polyurethane outer jacket and semi-rigid PVC primary conductor insulation. P/PVC cable is rated at -20 to +80°C (-4 to 176°F). These cables are no longer available for purchase.
(b) Low smoke zero halogen or low smoke free of halogen (LSZH) is a material classification used for cable jacketing. 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.)
(c) 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.

DIMENSIONS – NOMINAL

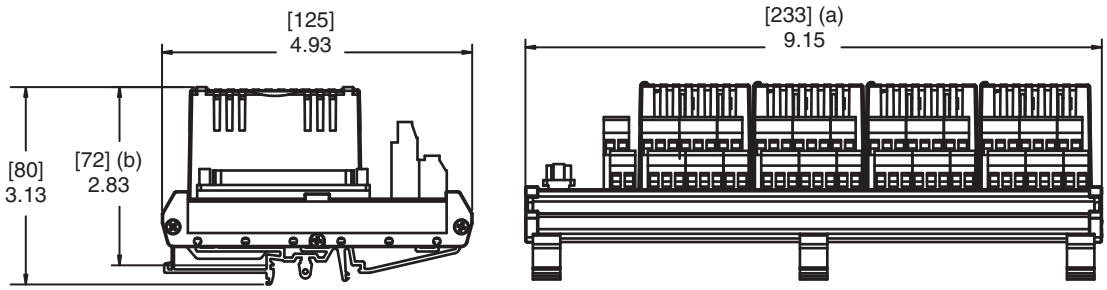
[mm]
in

Compression Termination Assemblies

P0916CA, P0916PS, P0916YA1, P0916PU, P0916PW, P0916XZ1



P0916QA, P0916PY, P0916YB1



(a) Overall width – for determining DIN rail loading.
(b) Height above DIN rail (add to DIN rail height for total).

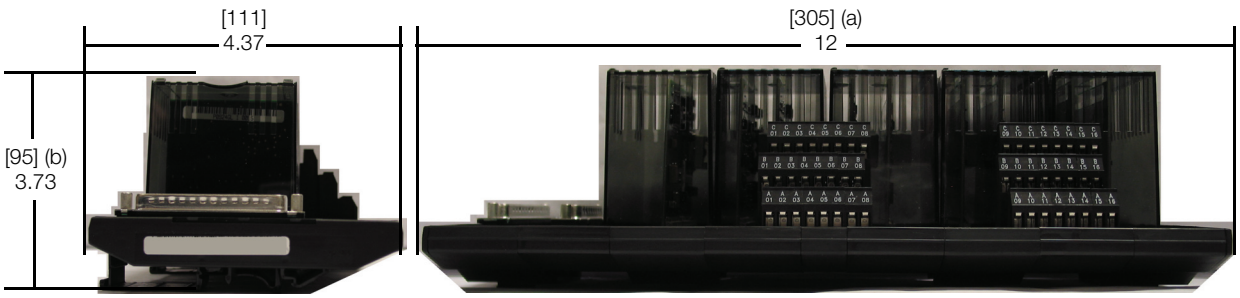
1Dimensions shown are for the PVC versions. All dimensions for this polyamide termination assembly are smaller.

DIMENSIONS – NOMINAL

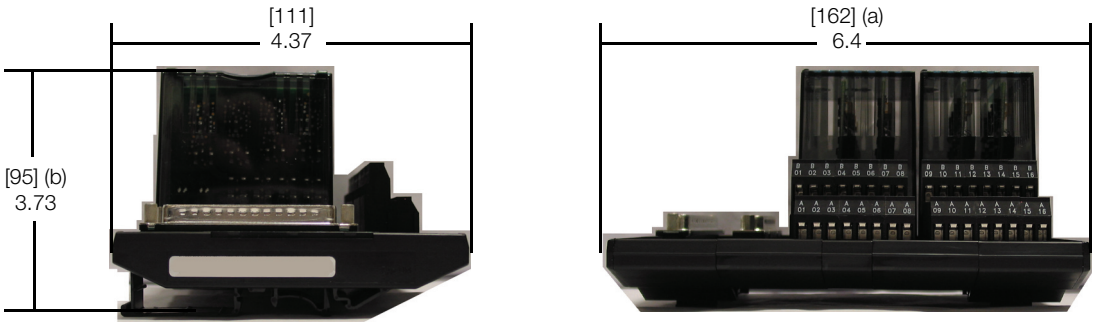
[mm]
in

Compression Termination Assemblies

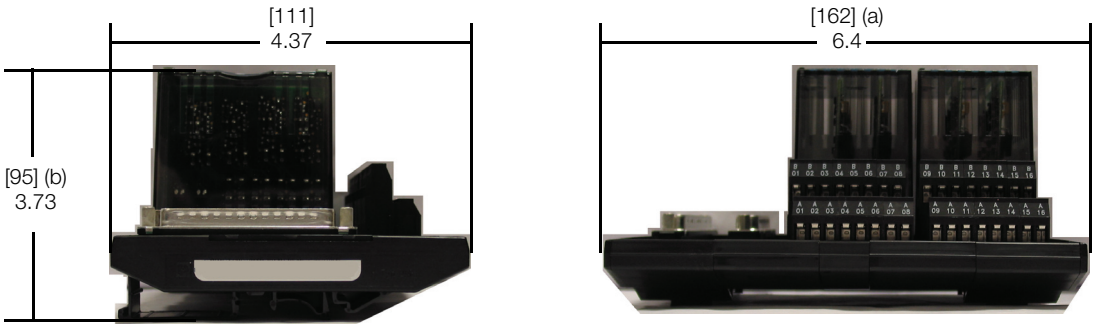
P0924HA/P0924HB



P0924HC/P0924HD



P0924HL/P0924HM



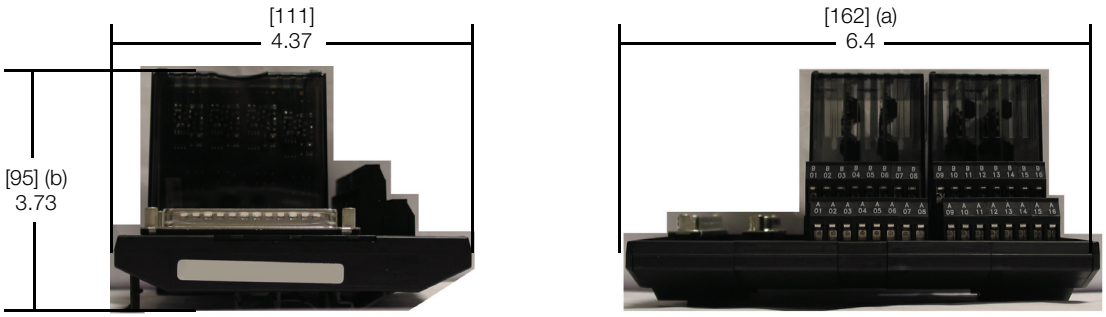
(a) Overall width – for determining DIN rail loading.
(b) Height above DIN rail (add to DIN rail height for total).

DIMENSIONS – NOMINAL (CONTINUED

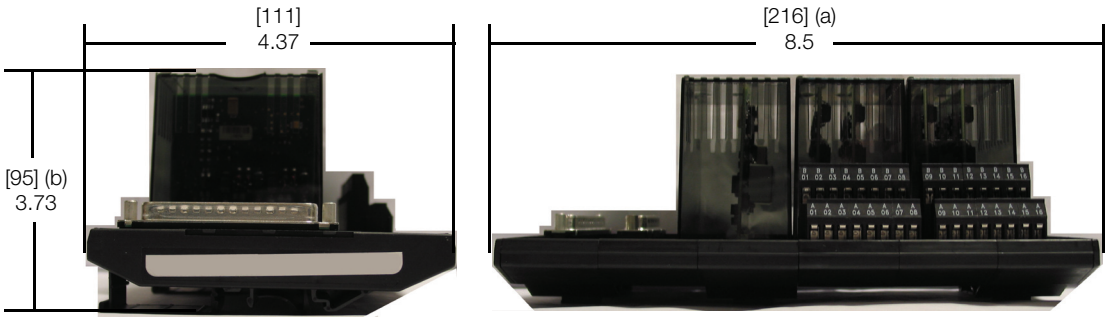
[mm]
in

Compression Termination Assemblies

P0924HN/P0924HR/P0924HQ/P0924HT



P0924HP/P0924HS



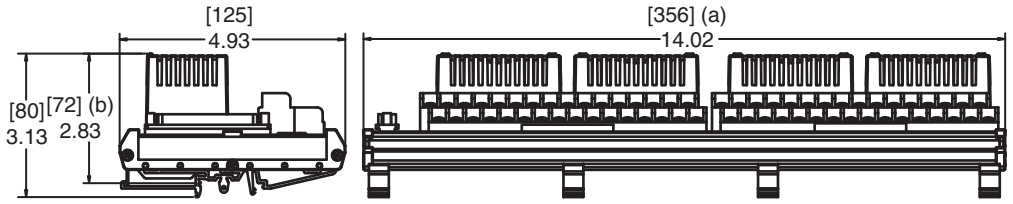
(a) Overall width – for determining DIN rail loading.
(b) Height above DIN rail (add to DIN rail height for total).

DIMENSIONS – NOMINAL (CONTINUED)

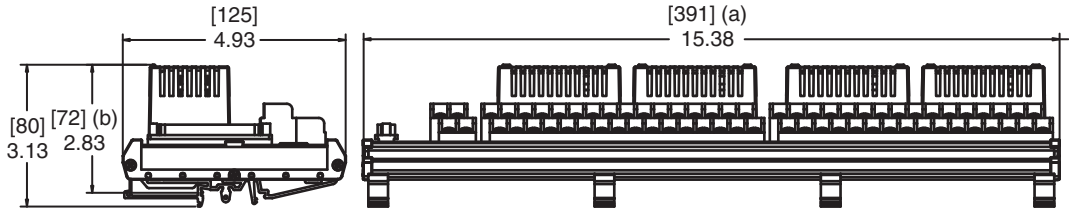
[mm]
in

Ring Lug Termination Assemblies

P0916CB P0916PX, P0916PT, P0916PV



P0916QB, P0916PZ



(a) Overall width – for determining DIN rail loading.
(b) Height above DIN rail (add to DIN rail height for total).

RELATED PRODUCT SPECIFICATION SHEETS (PSS)

PSS Number	Description
PSS 21H-2W1 B3	DIN Rail Mounted FBM Subsystem Overview
PSS 21H-2W1 B4	100 Series Fieldbus Module Upgrade Subsystem Overview
PSS 21H-2W2 B3	DIN Rail Mounted FBM Equipment, Agency Certification
PSS 21H-2W4 B4	Termination Assembly Adapter Modules for 100 Series Upgrade
PSS 21H-2W6 B4	DIN Rail Mounted Modular Baseplates
PSS 21H-2W8 B4	100 Series Conversion Mounting Structures
PSS 21S-3B2 B3	Control Processor 270 (CP270) Integrated Control Software

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