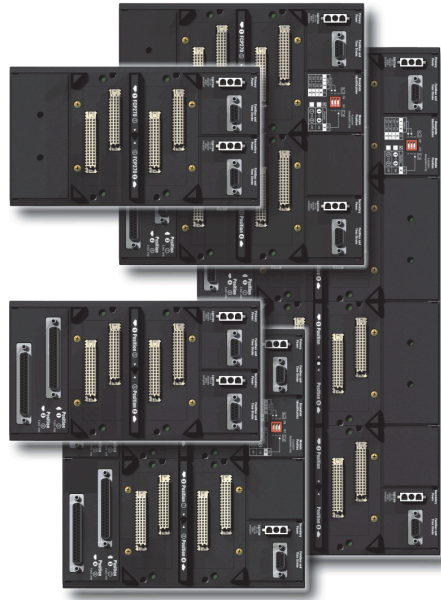


DIN Rail Mounted Modular Baseplates



The DIN rail mounted Modular Baseplates provide the mounting platform and communication backplane for DIN rail mounted modules.

FEATURES

Key features of the Modular Baseplates are:

- ▶ 2, 4, and 8 module positions in combination with vertical and horizontal mounting
- ▶ Connection for optional GPS time strobe for FCP280, FCP270, and FCM100Et
- ▶ Connection to the 2 Mbps Module Fieldbus for the DIN rail mounted Fieldbus Modules, or to a 268 Kbps Fieldbus for the 100 Series FBMs
- ▶ Primary and secondary 24 V dc power and communications connections
- ▶ Field connection for I/O termination assemblies, redundant adapters and module identifiers for each module
- ▶ Splitters/terminators for time strobe and A/B Fieldbus
- ▶ DIP switch for identification of certain Modular Baseplates
- ▶ Backwards compatibility with existing DIN I/O subsystems allowing for future expansion without additional interface hardware
- ▶ Adding additional Modular Baseplates without removing the system from service (requires redundant bus)

- ▶ Keyed positions dedicated to FCP270 or FCM/FBM only
- ▶ Passive backplane to increase system reliability.

OVERVIEW

The Modular Baseplates enable overall system installation functionality by providing unit increments of 2, 4, and 8 module positions in combination with vertical and horizontal mounting.

These Modular Baseplates support distributed control for both small and large systems and specifically support the following I/A Series® system DIN rail mounted modules:

- ▶ Field Control Processor 280 (FCP280) fault-tolerant or non-fault-tolerant

- ▶ Field Control Processor 270 (FCP270) fault-tolerant or non-fault-tolerant
- ▶ Field Communications Modules (FCM100Et and FCM100E) and other FCMs
- ▶ Fieldbus Expansion Modules (FEM100E)
- ▶ Fieldbus Isolator/Filter Modules (FBI100)
- ▶ DIN rail mounted Fieldbus Modules (FBMs) and 100 Series FBMs connection.

MODULAR BASEPLATE MOUNTING

Most Modular Baseplates are available in two basic mounting configurations — horizontal DIN rail mount (see Figure 1) or vertical DIN rail mount (see Figure 2). Either of these mounting configurations can be employed internal to an enclosure, external to an enclosure, or mounted on a secure DIN rail.

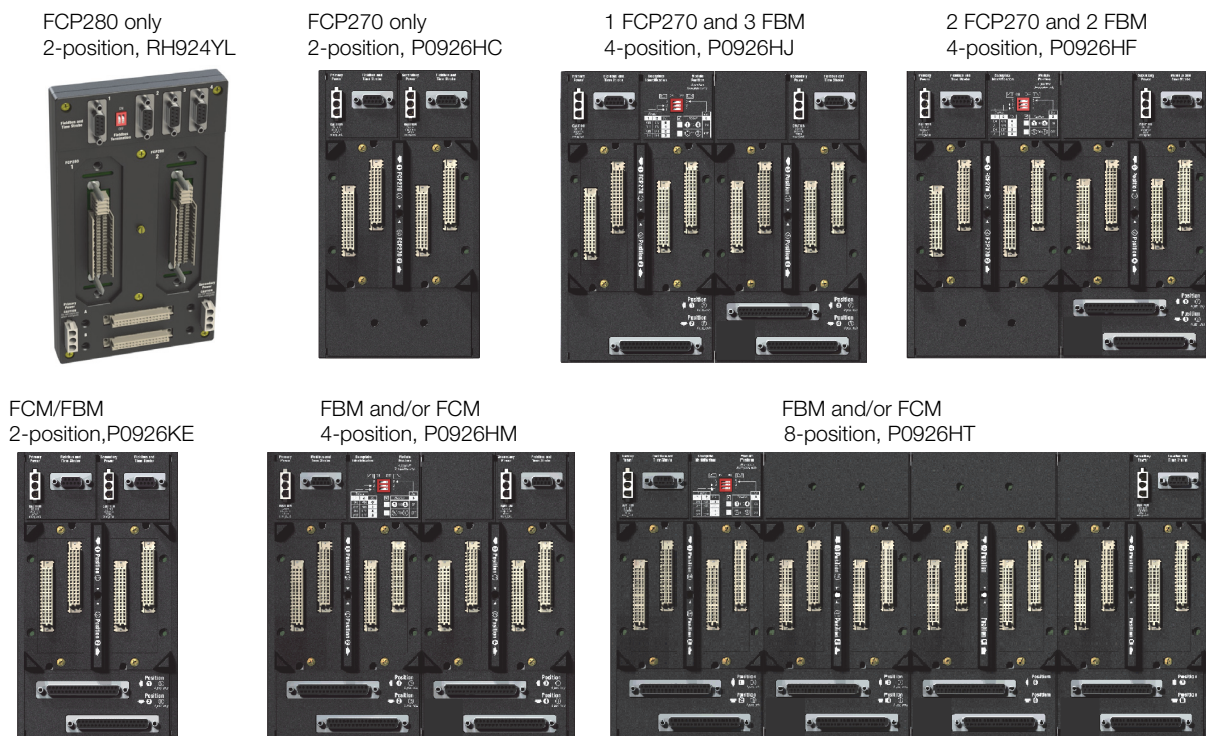


Figure 1. Horizontal DIN Rail Mount Modular Baseplates

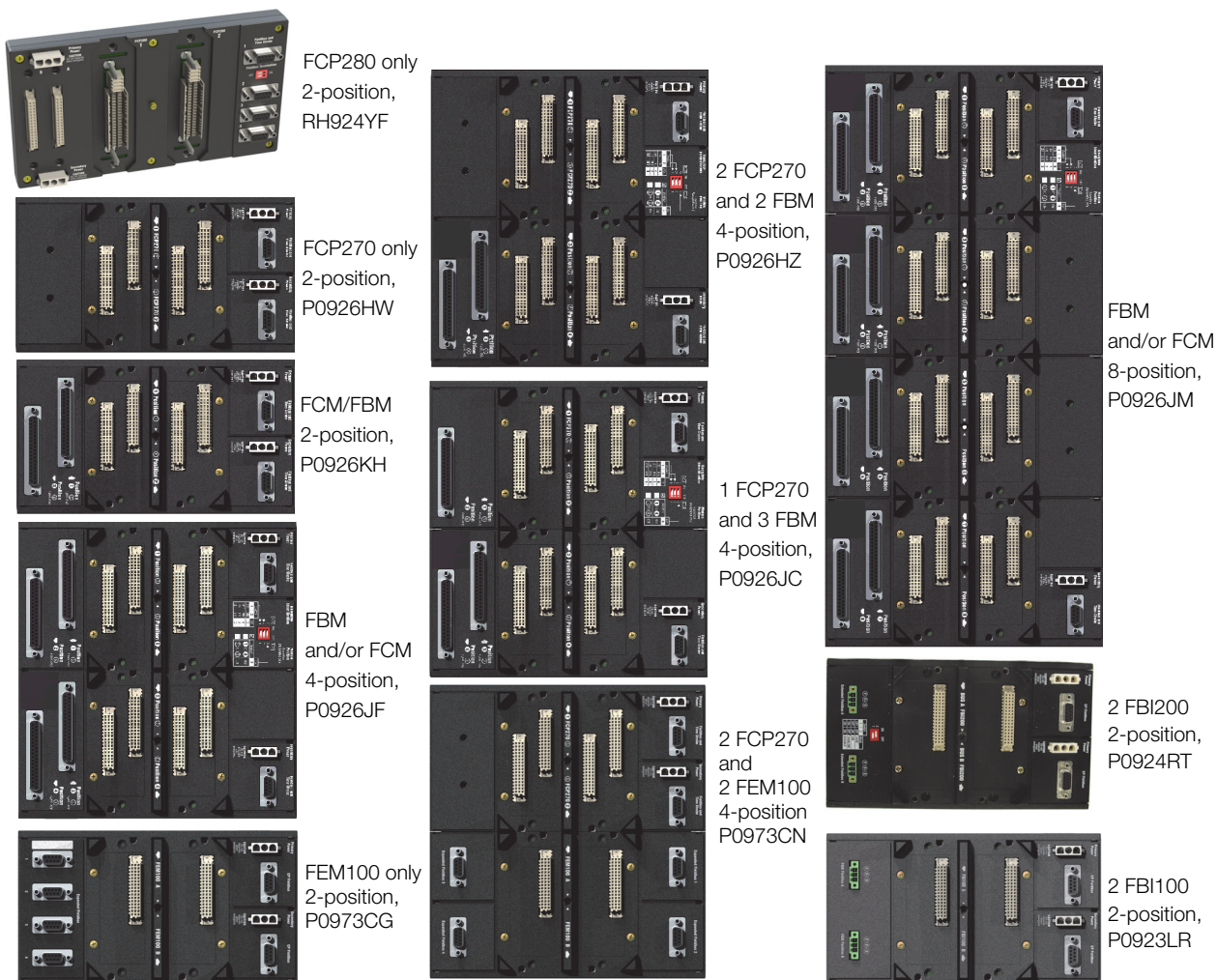


Figure 2. Vertical DIN Rail Mount Modular Baseplates

MODULE IDENTIFICATION

The baseplate-mounted FBMs, FCM10E, or FCM10Ef are identified to the system software by means of a unique, 6-character string called a “letterbug”. Most baseplates include a DIP switch to help set this letterbug for the FBMs.

The letterbug for the FCP280s is a soft letterbug entered via the buttons on the module’s faceplate. The letterbug for the FCP270s, FCM100Es and FCM100E is a soft letterbug entered using the I/A Series Letterbug Configurator.

The letterbug string for a particular FBM when used with FCMs is established from these three factors:

- ▶ The first four characters of the FCM10E, FCM10Ef, FCM100Et or FCM100E letterbug.
- ▶ The number of the baseplate in the group, as set by means of the baseplate Identification (I.D.) DIP switches on each baseplate (see Figure 3). Baseplates should be assumed to have this switch unless otherwise specified in the sections below.

- ▶ The physical position (1-8) of the module on the baseplate.

The letterbug string for a particular FBM when used with the FCP280 or FCP270 is established from these four factors:

- ▶ The first four characters of the letterbug, which may be any letter A-Z or digit 0-9 as long as they do not match the first four characters of the FCP280 or FCP270 letterbug.
- ▶ The number of the baseplate in the group, as set by means of the baseplate Identification (I.D.) DIP switches on each non-FCP280 baseplate (see Figure 3). Baseplates should be assumed to have this switch unless otherwise specified below. For the FCP270 used with the FEM100, this is a hexadecimal number as these configurations can support up to 16 baseplates for one control processor, via 1-4 expansion ports.
- ▶ The physical position (1-8) of the module on the baseplate.

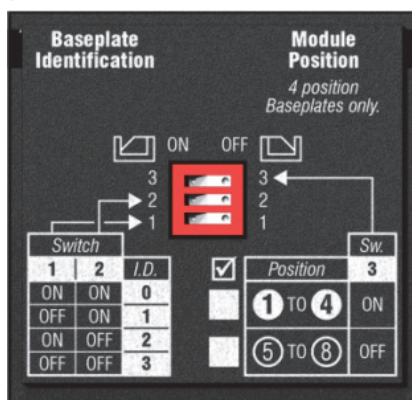


Figure 3. Modular Baseplate ID Switches (For FBM Baseplates)

MODULAR BASEPLATE COMBINATIONS AND IMPLEMENTATION

The Modular Baseplates support the:

- ▶ FCP280
- ▶ FCP270 with optional Fieldbus Expansion Modules (FEMs)
- ▶ Field Communications Modules (FCMs)
- ▶ Fieldbus Isolator/Filters (FBI200s and FBI100s)
- ▶ Fieldbus Modules (FBMs).

A combination of FCPs and FBMs, FCPs and FEMs, FCMs and FBMs, or all FBMs can be mounted on the Modular Baseplates.

Various sizes of Modular Baseplates allow you to incrementally upgrade existing systems or to create small systems. Implementation of these Modular Baseplates allow you to place the control processor (FCP280 or FCP270) within the same enclosure as other FBMs.

The FCP270 module position(s) on Modular Baseplates for mounting the FCPs are keyed positions preventing FBM/FCM/FEM modules from plugging into the FCP mounting position.

Each Modular Baseplate and its supported functionality is described below.

2-Position Modular Baseplates

The following 2-position Modular Baseplates support:

- ▶ a non-fault-tolerant (single module) or fault-tolerant pair of FCP280s (horizontal and vertical)
- ▶ a non-fault-tolerant (single module) or fault-tolerant pair of FCP270s (horizontal and vertical)
- ▶ a single module or redundant pair (two identical single modules) of FCMs, or up to two FBMs (horizontal and vertical)
- ▶ a single module or redundant pair of FEM100s
- ▶ a single module or redundant pair of FBI200s

- ▶ a single module or redundant pair of FBI100s.

FCP280 Only 2-Position Baseplate (see Figure 1 and Figure 2)

These 2-position baseplates support a non-fault-tolerant single or fault-tolerant pair of FCP280s, as well as two copper (RH924UQ) or fiber (RH924WA) adapters, required for connection to The Mesh control network.

The FCP280 baseplate provides support for four HDLC fieldbuses (PIO channels). Fieldbus port 1 can be terminated, if needed, by the DIP switches provided on the baseplate. Fieldbus ports 2-4 are internally terminated in the FCP280 baseplates and no external hardware or switches are required for their termination.

The FCP280 baseplates can be added in the field to existing or new configurations. They have similar dimensions as the FCP270 Only 2-position baseplates for ease of replacement.

When upgrading existing CP60 systems to use FCP280s, you can recover an additional two FBM positions after removal of the old FCM10E/FCM10Ef.

FCP270 Only 2-Position Modular Baseplate (see Figure 1 and Figure 2)

These 2-position Modular Baseplates support a non-fault-tolerant single or fault-tolerant pair of FCP270s. Mounting space is provided for the fiber optic splitter/combiners that support a fault-tolerant pair of FCP270's. These Modular Baseplates do not have a baseplate identification DIP switch. Therefore, these baseplates have a hardwired address as baseplate 0.

These Modular Baseplates can be added to existing or new groupings of Modular Baseplates. They can be used to upgrade existing systems with FCP270s or to support FCP270s in a new system.

FEM100 Only 2-Position Expansion Baseplate (see Figure 2)

This 2-position vertical Expansion Baseplate

supports a redundant pair of FEM100s. This baseplate does not have a baseplate identification DIP switch, as it does not require a hardwired address.

This Expansion Baseplate can be added to existing FCP 2-position Modular Baseplates. It is used to expand the number of 200 Series FBMs supported by a FCP270, by providing the capability to add up to four Expanded Fieldbuses which each can support up to thirty-two 200 Series FBMs.

FBI200 and FBI100 2-Position Baseplates (see Figure 2)

The FBI200 2-position vertical baseplate support a redundant pair of FBI200s, and the FBI100 2-position vertical baseplate supports a redundant pair of FBI100s. These Modular Baseplates do not have a baseplate identification DIP switch, as they do not require a hardwired address. The FBI200 2-position vertical baseplate does have DIP switches for baud rate mode selection.

FCM/FBM 2-Position Modular Baseplate (see Figure 1 and Figure 2)

These 2-position Modular Baseplates support FCMs/FBMs. These Modular Baseplates do not have a baseplate identification DIP switch. Therefore, these baseplates have a hardwired address as baseplate 0, with FBM addresses 1 and 2. They can be added to existing or new groupings of Modular Baseplates.

4-Position Modular Baseplates

Seven different 4-position Modular Baseplates support:

- ▶ a fault-tolerant pair of FCP270s in two positions and the remaining two positions mount FEM100s
- ▶ a fault-tolerant pair of FCP270s in two positions and the remaining two positions mount FBMs
- ▶ a single FCP270 in one position and the remaining three (non-fault tolerant) positions mount FBMs

- ▶ 4 FBMs or 2 FCMs and 2 FBMs.

The following applies to these baseplates, with the exception of the FCP270/FEM100 baseplate:

- ▶ These baseplates have horizontal and vertical versions.
- ▶ These baseplates have three active baseplate I.D. switches. The third baseplate I.D. switch selects operation as the first-half or second-half of an 8-position Modular Baseplate.

FCP270 and FEM100 4-Position Expansion Baseplate (see Figure 2)

This Expansion Baseplate is a 4-position Modular Baseplate that supports a fault-tolerant pair of FCP270s in two positions and the remaining two positions mount a redundant pair of FEM100s. Mounting positions are provided for the fiber optic splitter/combiners to support the pair of FCP270's. This Modular Baseplate does not have a baseplate identification DIP switch.

This Modular Baseplate can be used on system installations that require increased I/O capabilities and future upgrades.

FCP270 and FBM 4-Position Modular Baseplates (see Figure 1 and Figure 2)

These Modular Baseplates are 4-position Modular Baseplates that support a fault-tolerant pair of FCP270s in two positions and the remaining two positions mount FBMs. Mounting positions are provided for the fiber optic splitter/combiners to support the pair of FCP270's. These Modular Baseplates have a baseplate identification DIP switch.

These Modular Baseplates can be used on system installations that require increased I/O distribution and future upgrades.

Single FCP270 and FBM 4-Position Modular Baseplates (see Figure 1 and Figure 2)

These Modular Baseplates support a single FCP270 in one position and the remaining three positions

mount FBMs. These Modular Baseplates have a baseplate identification DIP switch.

These Modular Baseplates can be used on system installations that require increased I/O distribution and future upgrades. They are intended to support small system requirements where fault tolerant control is not a requirement.

FBM and/or FCM 4-Position Modular Baseplates (see Figure 1 and Figure 2)

These 4-position Modular Baseplates supports FBM/FCMs. These Modular Baseplates have a baseplate identification DIP switch.

These Modular Baseplates can be used on system installations that require increased I/O distribution and future upgrades.

8-Position Modular Baseplates (see Figure 1 and Figure 2)

These 8-position Modular Baseplates support FBMs/FCMs. These Modular Baseplates have a baseplate identification DIP switch.

These Modular Baseplates mount up to 32 FBMs (four 8-position baseplates) in a standard enclosure. They supersede the P0914XA/XB baseplates and maximize module/baseplate density.

For Intrinsically Safe applications, the use of Pepperl and Fuchs Intrinsic Safe baseplates is recommended. Refer to *Intrinsically-Safe Combination Termination Assemblies and Baseplates (ISTA*BP*)* (PSS 21H-2Y12 B4).

MODULAR BASEPLATE INTERCONNECTIONS

Modular Baseplates are interconnected over a 2 Mbps HDLC, redundant, serial bus (Module Fieldbus). All Modular Baseplate inter-connections for A/B Module Fieldbus connections are shielded twisted-pair cables to reduce the effects of noise.

All connectors are labeled to indicate their position and/or function on the Modular Baseplates (see Figure 4). All module connectors have module guides to ensure the correct insertion of the module

into the Modular Baseplate. Primary and Secondary power connectors are direct connections from the FPS400-24, FPS240-24, or FPS120-24 power supply. Field I/O connectors provide connections to various termination assemblies for actual connection to the I/O points in the plant.

FCM2F2/4/10 modules provide for fiber optic extension (baseplate-to-baseplate) of the Module Fieldbus.

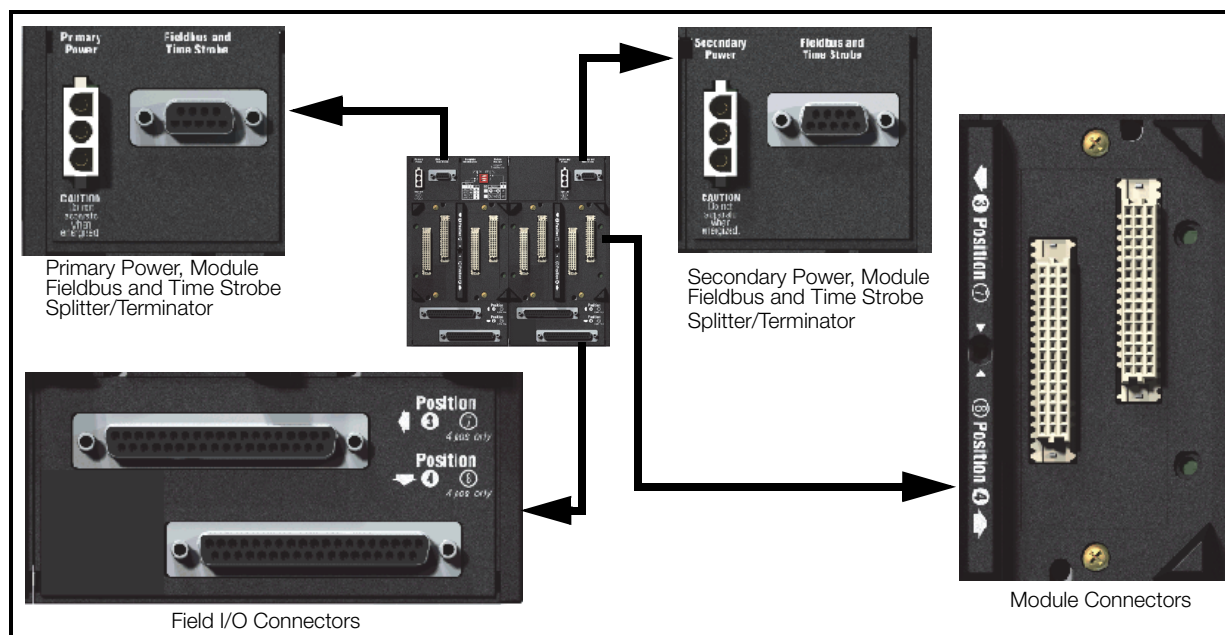


Figure 4. Modular Baseplate Connections (Example FBM Baseplate Shown)

In addition, another type of termination assembly called the baseplate-mounted termination assembly can mount directly onto the field I/O connectors of a Modular Baseplate. These TAs provide field I/O wiring

support for two of their associated FBMs in paired slots (that is, in positions 1 and 2, 3 and 4, 5 and 6, or 7 and 8), as shown in Figure 5.

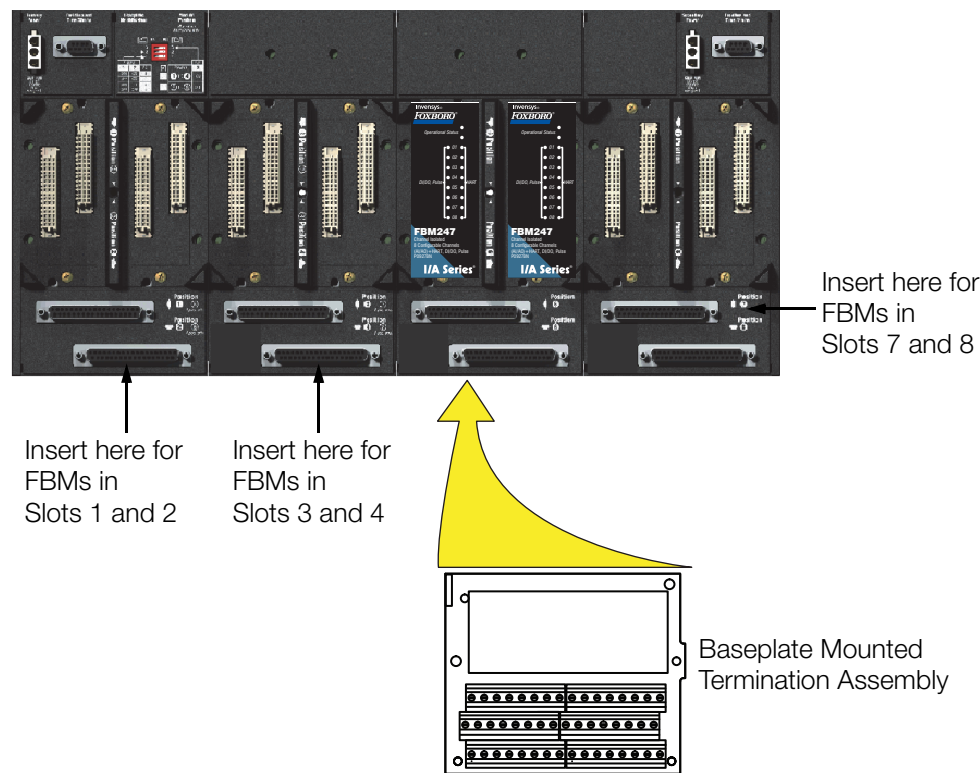


Figure 5. Baseplate-Mounted Termination Assembly

MODULE PLACEMENT AND REMOVAL

The following rules must be observed with regard to placement of modules (FCMs or FBMs) on the Modular Baseplate. (Refer to PSS 21H-2W1 B3 for the various communication topologies used with the Modular Baseplates.)

- ▶ Non-redundant FBMs – Can be placed in any available position
- ▶ Redundant FBMs – Must be placed in adjacent odd/even paired positions
- ▶ FCM100E, FCM100Ef, FCM100Et, FCM100E – Modules operating redundantly must be placed in adjacent odd/even paired positions (one pair per baseplate grouping). When operating as a single (non-redundant) module, both positions in an odd/even pair must be dedicated to the single module (The slot next to it must remain empty).
- ▶ FCP280 and FCP270 – These module(s) are positioned only on the baseplates that are dedicated to the FCP280 or FCP270. Some FCP270 baseplates may contain other modules as well.
- ▶ FEM100 – The FEM100 module(s) are positioned only on the Modular Baseplates that are dedicated to the FEM100.
- ▶ FBI200 – The FBI200 module(s) are positioned on the Modular Baseplate dedicated to the FBI200.
- ▶ FBI100 – The FBI100 module(s) are positioned only on the Modular Baseplate dedicated to the FBI100.

FCPs, FEMs, FCMs, FBI100s and FBMs can be removed/replaced from the Modular Baseplates without removing field device termination cabling, power, or communications cabling.

SPLITTERS AND TERMINATORS

The following Splitters and Terminators can be used with Modular Baseplates:

- ▶ The Fieldbus Baseplate Terminator (P0916RB) is used to terminate either the CP end of the HDLC fieldbus or the last Modular Baseplate in the daisy chain when Time Strobe or split A/B fieldbus cables are not required. (See Figure 6.)
- ▶ Fieldbus Baseplate Terminator/Splitter (P0926KW for non-FCP280 baseplates, RH924ZJ for Fieldbus port 1 on an FCP280 baseplate, or RH928CY for any Fieldbus port on an FCP280 baseplate) allows splitting of the A and B Module Fieldbus signals into different cables. This splitter can be used to interconnect optional redundant cables between Modular Baseplates. It can also be used to terminate both the fieldbus and time strobe signals. (See Figure 7 and Figure 8.)
- ▶ Time Strobe Fieldbus Baseplate Terminator (P0926KZ or RH924ZQ) connects the optional “A” and/or “B” time strobe signals to the Modular Baseplates. The Time strobe splitter/terminator RH924ZQ is used on only the first baseplate containing an FCP280. The Time strobe splitter/terminator P0926KZ is used on only the first baseplate containing an FCM100Et or FCP270. This terminator also terminates the fieldbus signals. (See Figure 9.)
- ▶ Fieldbus Splitter (RH928CV) (see Figure 10) allows any of the Fieldbus ports on the FCP280 baseplates to connect to the twinaxial 268 Kbps fieldbus cables. RH928CV includes both a connector to any of the Fieldbus ports on the FCP280 baseplate, and a termination cable assembly (TCA) termination block similar to two of the P0903VY termination blocks joined together. Refer to PSS 31H-1B11 B3 for the usage of this splitter.
- ▶ Fieldbus Splitter/Terminator (P0926LC) (see Figure 11) allows the FCP270 module(s) or FCM100E module(s) to connect to the remote Fieldbus used by the 100 Series Fieldbus Modules (Y-module FBMs) or Migration products.

P0926LC connects to the following baseplates:

- The FCP270 two-position, vertical DIN rail mounted Modular Baseplate (P0926HW), four-position, vertical DIN rail mounted Expansion Baseplate (P0973CN), or the FCP270 two-position, horizontal DIN rail mounted Modular Baseplate (P0926HC).
- The FCM100E two-position, vertical DIN rail mounted Modular Baseplate (P0926KH) or the two-position, horizontal DIN rail mounted Modular Baseplate (P0926KE).

100 Series (Y-module) FBMs or 100 Series-based Migration products are connected to an FCP280, FCP270, or FCM100E Modular Baseplate through an extended remote Fieldbus. When the FCP280, or an FCP270 is connected directly to the 100 Series FBMs (communicating at 268 Kbps), the maximum twinaxial cable Fieldbus length is 915 m (3200 ft). For a FCP280 or FCP270 with an FBI200, the maximum Fieldbus length is 60 m (198 ft) between the FCP280/FCP270 and FBI200, and 1850 m (6000 ft) from the FBI200s to 100 Series FBMs. For a FCM100E, the maximum Fieldbus length is 1830 m (6000 ft) for 100 Series FBMs. For an FBI200, the maximum Fieldbus length is up to 305 m (1000 ft) for 2 Mbps data for 200 Series FBMs, and up to 1830 m (6000 ft) for 268 Kbps data for 100 Series FBMs.

Refer to PSS 31H-1B11 B3 for the configurations through which the 100 Series FBMs can connect to the FCP280.

(P0916RB)

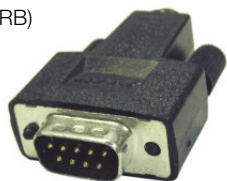
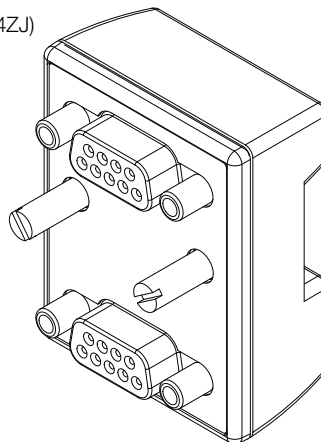


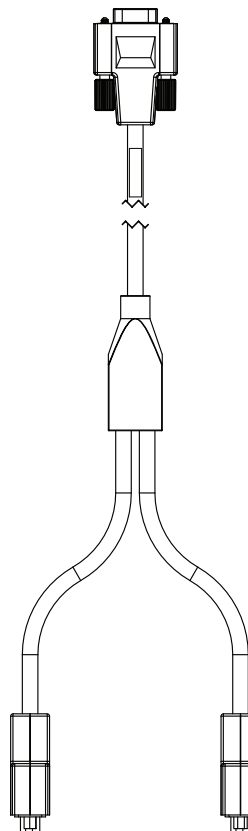
Figure 6. Fieldbus Baseplate Terminator

(RH924ZJ)



To Fieldbus port on FCP280 baseplate

(RH924CY)



To Module Fieldbus Cable A To Module Fieldbus Cable B

Figure 7. Fieldbus Baseplate Terminator/Splitters - for FCP280 Baseplates

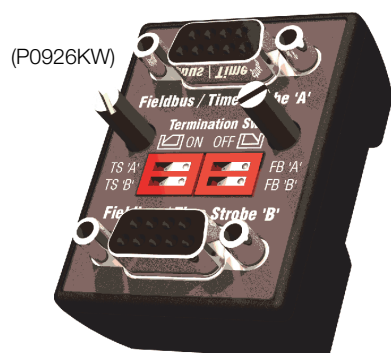


Figure 8. Fieldbus Baseplate Terminator/Splitter - for Non-FCP280 Baseplates

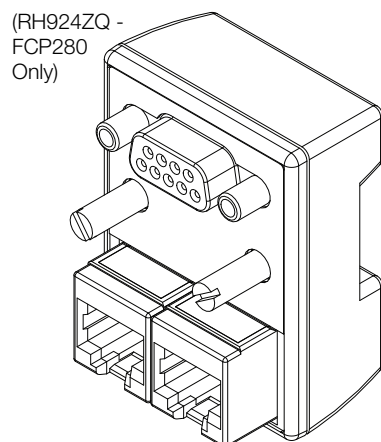


Figure 9. Time Strobe Fieldbus Baseplate Terminators

(RH928CV - FCP280 Only)

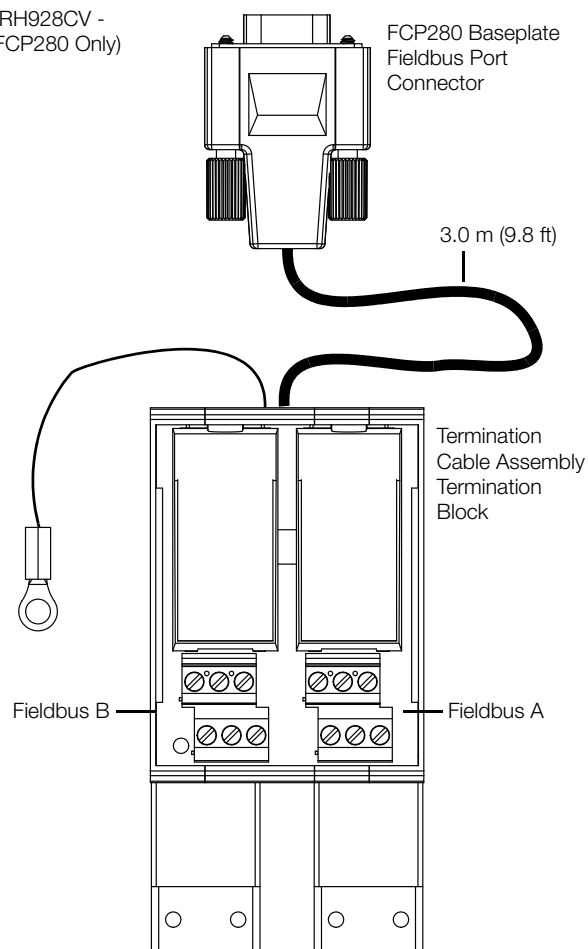


Figure 10. Extended Fieldbus Splitter for FCP280 Baseplate (Fieldbus Ports 1-4)

(P0926LC - For CPs other than FCP280)

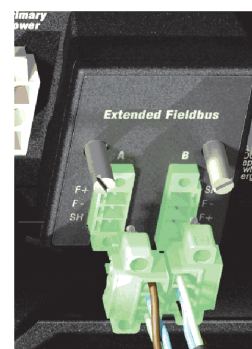


Figure 11. Extended Fieldbus Splitter/Terminator

ADDING ADDITIONAL MODULAR BASEPLATES

You can add additional Modular Baseplates to existing Modular Baseplates without removing the system from service. To add Modular Baseplates while the system is operational requires that the

system have redundant (A and B) buses. A/B Module Fieldbus and Time Strobe splitter/terminators are used to split the A/B Module Fieldbus (2 Mbps) allowing redundant baseplate-to-baseplate cabling as well as the addition of Modular Baseplates without interrupting bus communication.

FUNCTIONAL SPECIFICATIONS

Power Requirements

INPUT VOLTAGE RANGE (REDUNDANT)

24 V dc +5%, -10%

POWER CABLING

Cable Lengths

0.4 m (16 in) up to 2.1 m (7 ft)

Regulatory Compliance

ELECTROMAGNETIC COMPATIBILITY (EMC)

European EMC Directive 89/336/EEC

Meets: EN 50081-2 Emission standard

EN 50082-2 Immunity standard

EN 61326 Annex A

(Industrial environment)

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, 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, dc power and communication lines

IEC 61000-4-8 Power Frequency Magnetic Field Immunity

30 A/m at 50 and 60 Hz

Regulatory Compliance (Cont.)

PRODUCT SAFETY

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

UL/UL-C listed as suitable for use in

UL/UL-C listed Class 1, Groups A-D;

Division 2; temperature code T4 enclosure

based systems. 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

Module can be used in CENELEC certified

Zone 2 enclosure based systems. The

modules (Without Safety Barriers) are

CENELEC (KEMA) certified as associated

apparatus, "EEx n IIC", for supplying non-

incendive field circuits for Zone 2, Group IIC,

potentially explosive atmospheres when

connected to field devices and wiring

meeting entity parameter constraints

described in the *DIN Rail Mounted*

Subsystem User's Guide (B0400FA).

ENVIRONMENTAL SPECIFICATIONS⁽¹⁾

Operating

TEMPERATURE

-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 (Non-Enclosure Mounted)

Class G3 (Harsh) as defined in ISA Standard S71.04

Contamination (Enclosure Mounted)

Class G3 (Harsh) as defined in ISA Standard S71.04.
Pollution degree 2 as defined in IEC 664-1.

PHYSICAL SPECIFICATIONS

Mounting

DIN RAIL

Modular Baseplates mount on a non-isolated, mechanically supported horizontal or vertical DIN rail, which can be internal to, or external to an enclosure. The Modular Baseplate attaches to the DIN rail by means of fasteners.

RACK MOUNT

A mounting kit (P0930AS) is available for horizontal mounting of the Modular Baseplate in a standard, 483 mm (19-inch) rack. This kit provides a 25.4 mm (1 inch) mounting depth.

Size⁽²⁾

See Figure 12 and Figure 13

Mass (Without Modules)

Maximum 0.91 kg (2.0 lb) for 8-position Modular Baseplate.

Rack Mounting Bracket

Material: Steel, Cold-Rolled, 0.0598 mm (16 Gauge)

Construction

MATERIAL

PC and ABS, inflammability UL94 V0

DIN RAIL FASTENER

Number fasteners depends on Modular Baseplate size

COLOR

Black

Module Fieldbus Cabling

CABLE LENGTHS

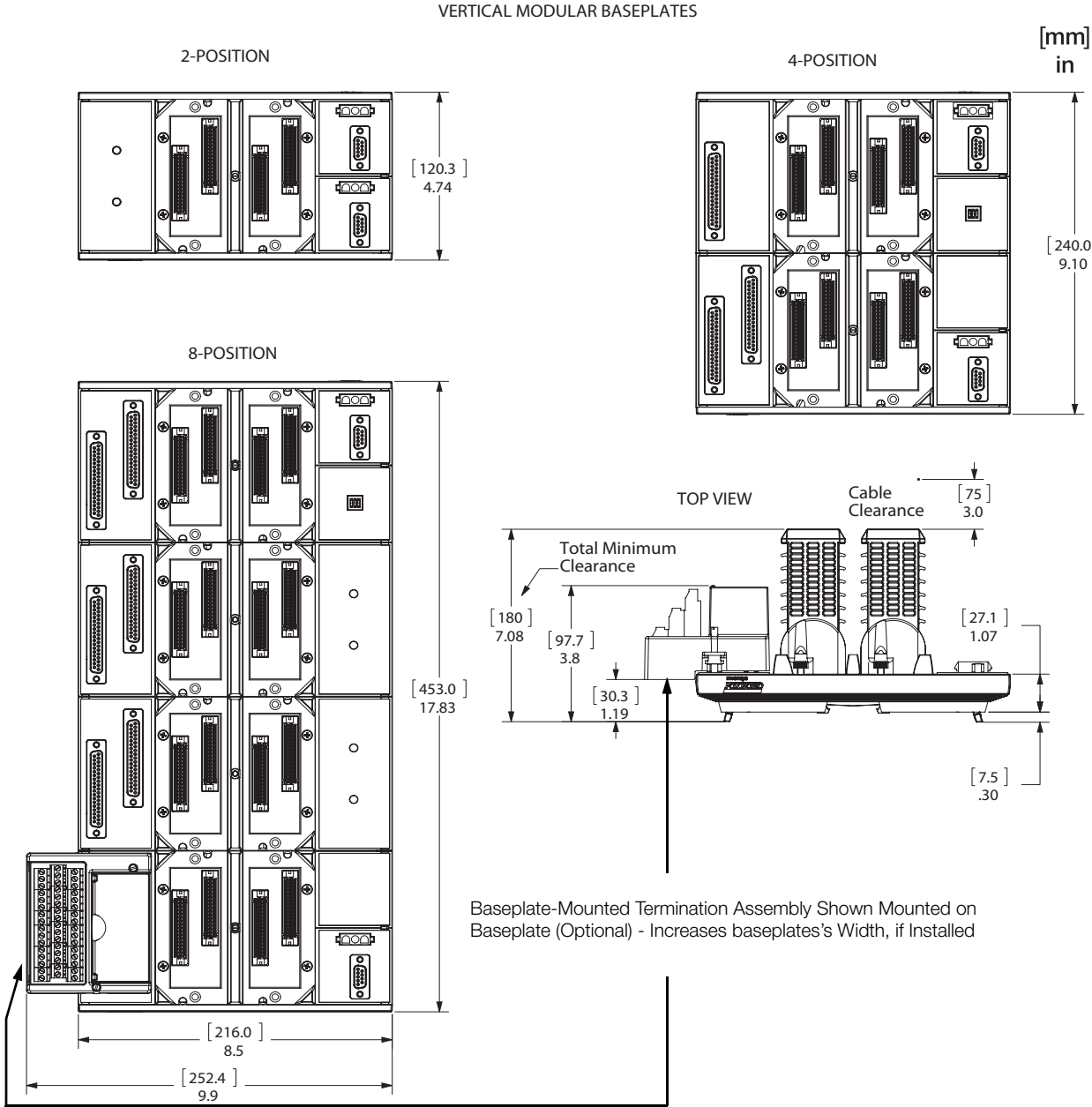
0.125 m (5 in) up to 60 m (198 ft)

OVERALL CABLE LENGTH

60 m (198 ft) total allowable cable length

(1) The environmental limits of the Modular Baseplates may be enhanced by the type of enclosure containing the Modular Baseplate. [Refer to the applicable Product Specification Sheet (PSS) which describes the specific type of enclosure that is to be used.

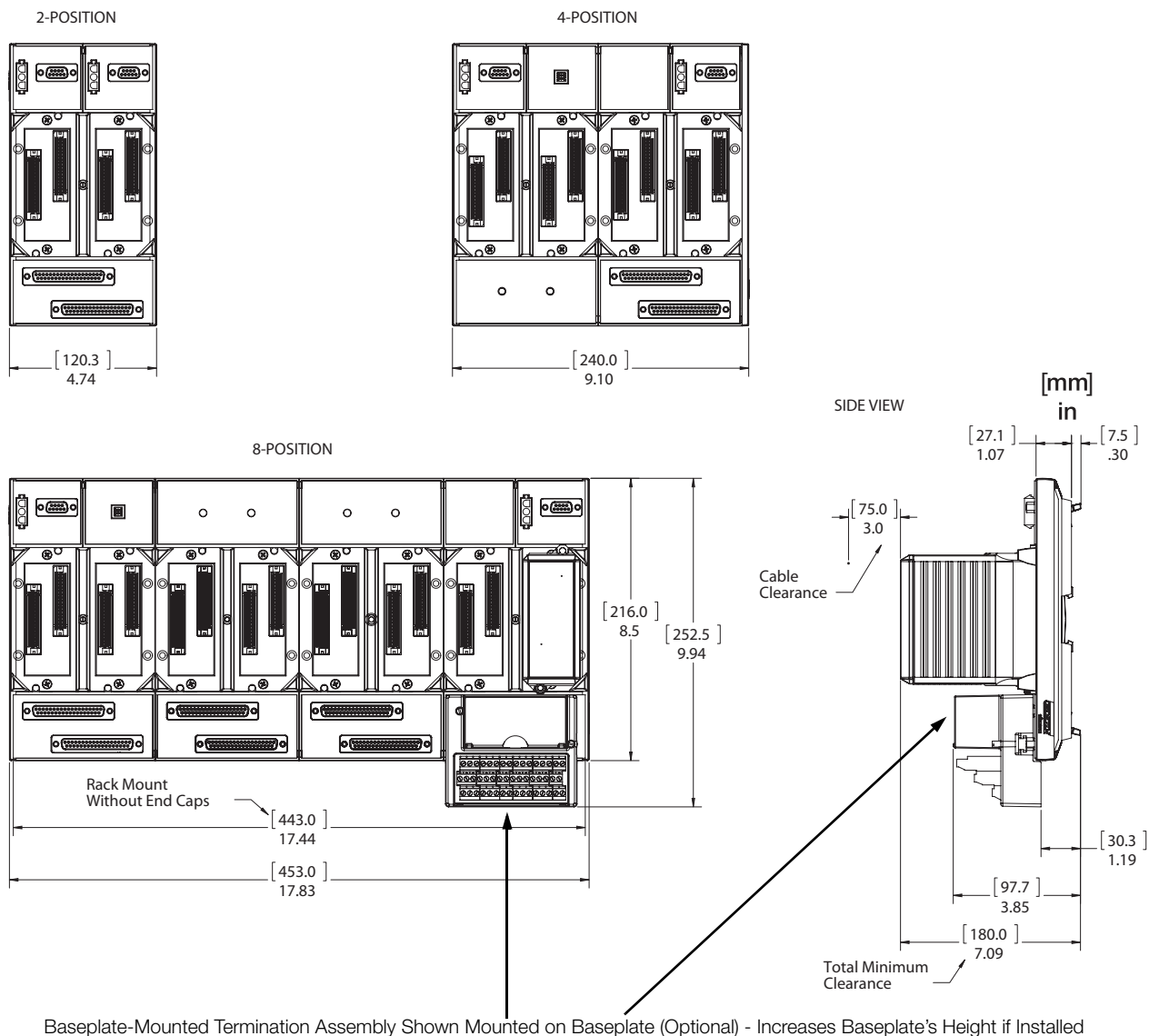
(2) For dimensions of the FCP280, refer to PSS 31H-1B11 B3. For dimensions of the FCP270, refer to PSS 21H-1B9 B3.



NOTE: Clearance dimensions shown for 200 Series Fieldbus Modules installed in baseplates. For the clearance dimensions required for larger modules such as the FCP280 and FCP270, refer to the Product Specification Sheet associated with these larger modules. Cable clearance is the same for both 200 Series FBMs and other modules, such as the FCP280 and FCP270.

Figure 12. Dimensions - Vertical Mounted Modular Baseplates

HORIZONTAL MODULAR BASEPLATES



NOTE: Clearance dimensions shown for 200 Series Fieldbus Modules installed in baseplates. For the clearance dimensions required for larger modules such as the FCP280 and FCP270, refer to the Product Specification Sheet associated with these larger modules. Cable clearance is the same for both 200 Series FBMs and other modules, such as the FCP280 and FCP270.

Figure 13. Dimensions - Horizontal Mounted Modular Baseplates

