

# 2019

## Foxboro FCP270 P0917YZ Datasheet

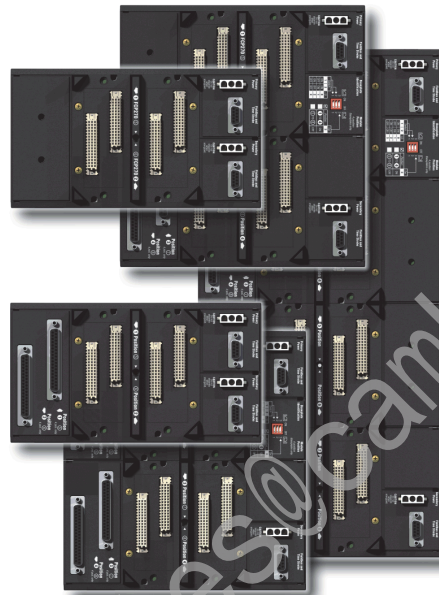


Cambia Automation Limited

Email: [sales@cambia.cn](mailto:sales@cambia.cn)

2019/3/25

## Standard 200 Series Baseplates



*The Standard 200 Series baseplates provide the mounting platform and communication backplane for DIN rail mounted modules.*

### OVERVIEW

These standard 200 Series baseplates support distributed control for both small and large systems and specifically support the following Foxboro Evo™ system modules:

- ▶ 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)

- ▶ Standard Fieldbus Modules (FBMs) and 100 Series FBMs connection.

The standard FBM-supporting 200 Series baseplates enable overall system installation functionality by providing unit increments of 2, 4, and 8 FBM positions in combination with vertical and horizontal mounting.

## FEATURES

Key features of the 200 Series baseplates are:

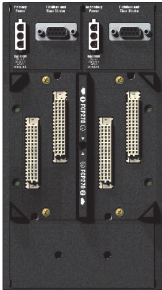
- ▶ For FBM-supporting baseplates:
  - 2, 4, and 8 module positions in combination with vertical and horizontal mounting
  - Field connection for I/O termination assemblies, redundant adapters and module identifiers for each module
  - DIP switch for identification of certain Modular Baseplates
  - Adding additional 200 Series baseplates without removing the system from service (requires redundant bus)
- ▶ Connection to the 2 Mbps Module Fieldbus for the Standard Fieldbus Modules, or to a 268 Kbps Fieldbus for the 100 Series FBMs
- ▶ Splitters/terminators for time strobe and A/B Fieldbus
- ▶ Connection for optional GPS time strobe for FCP270, and FCM100Et-supporting baseplates
- ▶ Primary and secondary 24 V dc power and communications connections
- ▶ Backwards compatibility with existing I/O subsystems allowing for future expansion without additional interface hardware
- ▶ Keyed positions dedicated to CP or FCM/FBM only, depending on the baseplate type
- ▶ Passive backplane to increase system reliability.

**200 SERIES BASEPLATE MOUNTING**

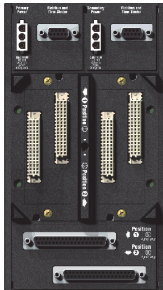
Most 200 Series baseplates are available in two basic mounting configurations — horizontal DIN rail mount (see Figure 1) or vertical DIN rail mount (see

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.

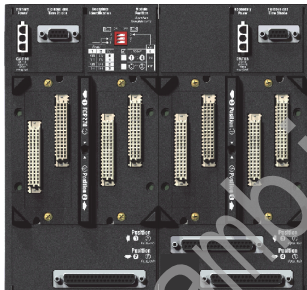
FCP270 only  
2-position, P0926HC



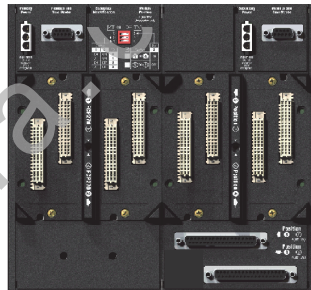
FCM/FCM  
2-position, P0926KE



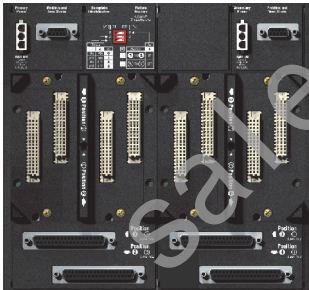
1 FCP270 and 3 FBM  
4-position, P0926HJ



2 FCP270 and 2 FBM  
4-position, P0926HF



FBM and/or FCM  
4-position, P0926HM



FBM and/or FCM  
8-position, P0926HT



Figure 1. Horizontal DIN Rail Mounted 200 Series Baseplates



Figure 2. Vertical DIN Rail Mounted 200 Series 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 FBM-supporting baseplates include a DIP switch to help set this letterbug for the FBMs.

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 FBM 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 an 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 CP letterbug.
- ▶ The number of the FBM baseplate in the group, as set by means of the baseplate Identification (I.D.) DIP switches on each baseplate (see Figure 3). FBM-supporting 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 FBM-supporting baseplate.

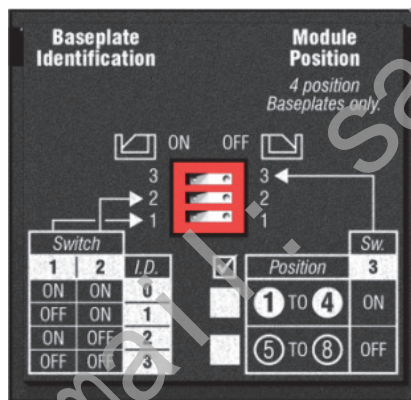


Figure 3. Modular Baseplate ID Switches (For FBM Baseplates)

## 200 SERIES BASEPLATE COMBINATIONS AND IMPLEMENTATION

There are 200 Series baseplates which support the:

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

### ▶ Fieldbus Modules (FBMs)

A combination of FCP270s and FBMs, FCP270s and FEMs, FCMs, and FBMs, or all FBMs can be mounted on some of the Modular Baseplates.

Various sizes of 200 Series baseplates allow you to incrementally upgrade existing systems or to create small systems. Implementation of these 200 Series baseplates allow you to place the 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 200 Series baseplate and its supported functionality is described below.

### 2-Position 200 Series Baseplates

The following 2-position 200 Series baseplates support:

- ▶ 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.

### FCP270 Only 2-Position Modular Baseplates (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 Baseplates (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 Termination Assembly - Base Plate (ISTA-\*BP\*)* (PSS 31H-2Y12).

**200 SERIES BASEPLATE-TO-BASEPLATE INTERCONNECTIONS**

200 Series baseplates are interconnected over a 2 Mbps HDLC, redundant, serial bus (Module Fieldbus). 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 200 Series baseplates (see Figure 4). All module connectors have module guides to ensure the correct insertion of each module into the 200 Series baseplate. Primary and Secondary power connectors are direct connections from the FPS480-24, 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.



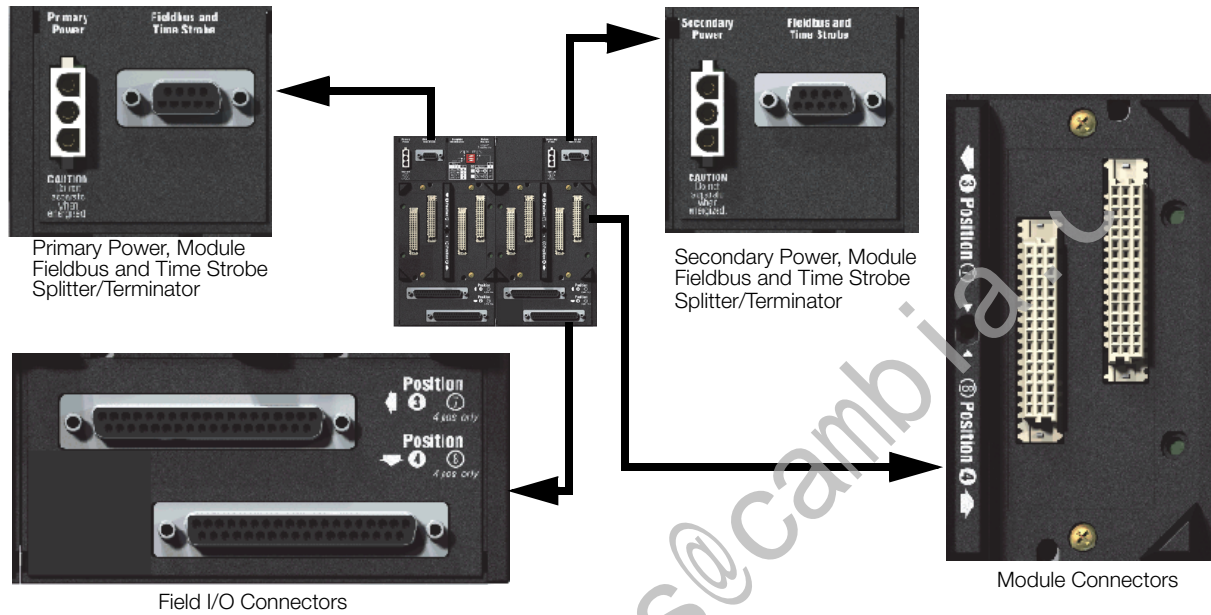


Figure 4. 200 Series Baseplate Connections (Example FBM Baseplate Shown)

email: sales@cambiar

In addition, another type of termination assembly called the baseplate-mounted termination assembly can mount directly onto the field I/O connectors of an FBM-supporting 200 Series 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.

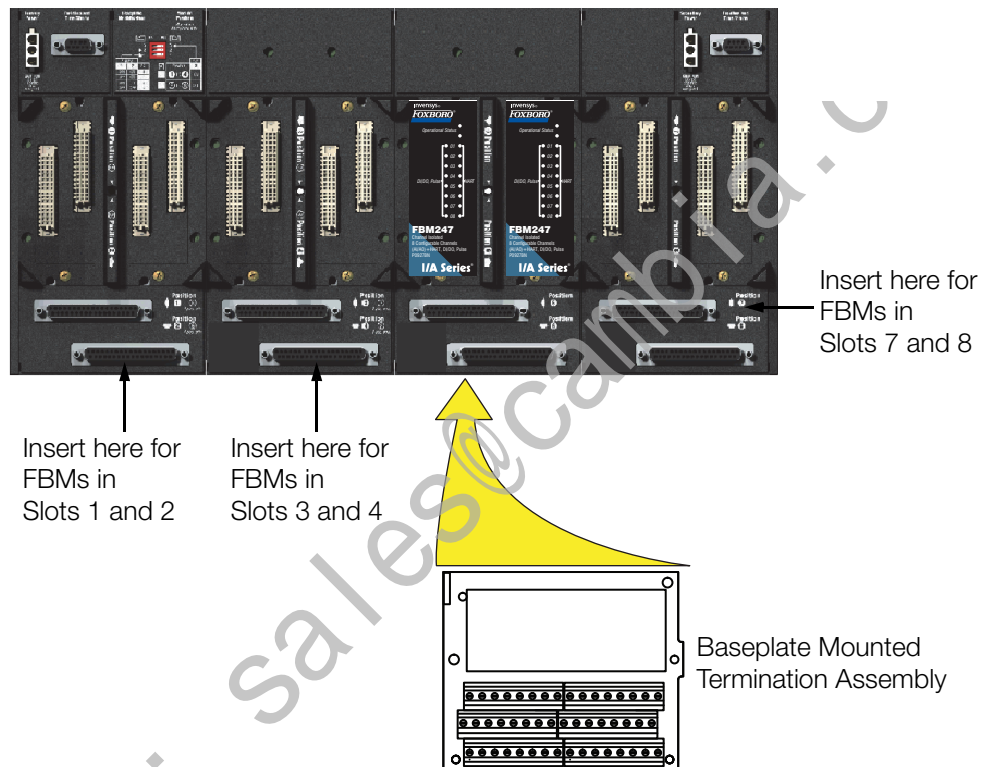


Figure 5. Baseplate-Mounted Termination Assembly

### MODULE PLACEMENT AND REMOVAL

The following rules must be observed with regard to placement of modules (CPs, FCMs, or FBMs) on their corresponding 200 Series baseplates. (Refer to PSS 31H-2S200 and PSS 31H-2COV for the various communication topologies used with the 200 Series baseplates.)

- ▶ Non-redundant FBMs – Can be placed in any available position
- ▶ Redundant FBMs – Must be placed in adjacent odd/even paired positions
- ▶ FCM10E, FCM10Ef, 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).

- ▶ FCP270 – These CPs are positioned only on the baseplates that are dedicated to the 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 their corresponding 200 Series baseplates without removing field device termination cabling, power, or communications cabling.

### SPLITTERS AND TERMINATORS

The following Splitters and Terminators can be used with 200 Series baseplates:

- ▶ The Fieldbus Baseplate Terminator (P0916RB) is used to terminate either the CP end of the HDLC fieldbus or the last 200 Series 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) allows splitting of the A and B Module Fieldbus signals into different cables. This splitter can be used to interconnect optional redundant cables between 200 Series baseplates. It can also be used to terminate both the fieldbus and time strobe signals. (See Figure 7.)
- ▶ Time Strobe Fieldbus Baseplate Terminator (P0926KZ) connects the optional “A” and/or “B” time strobe signals to the 200 Series baseplates. It is used on only the first baseplate containing an FCM100Et or FCP270. This terminator also terminates the fieldbus signals. (See Figure 8.)
- ▶ Fieldbus Splitter/Terminator (P0926LC) (see Figure 9) 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, vertically mounted Modular Baseplate (P0926HW), four-position, vertically mounted Expansion Baseplate (P0973CN), or the FCP270 two-position, horizontally mounted Modular Baseplate (P0926HC).
- The FCM100E two-position, vertically mounted Modular Baseplate (P0926KH) or the two-position, horizontally mounted Modular Baseplate (P0926KE).

100 Series (Y-module) FBMs or 100 Series-based Migration products are connected to an FCP270 or FCM100E Modular Baseplate through an extended remote Fieldbus. When the 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 FCP270 with an FBI200, the maximum Fieldbus length is 60 m (198 ft) between the 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.

(P0916RB)

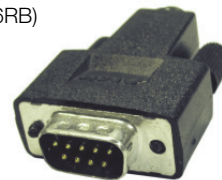


Figure 6. Fieldbus Baseplate Terminator

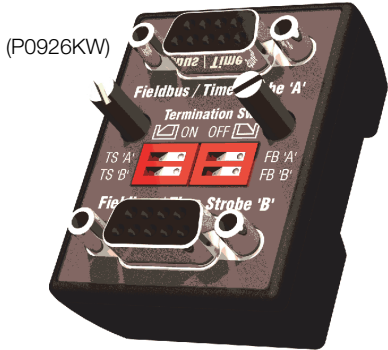


Figure 7. Fieldbus Baseplate Terminator/Splitter



Figure 8. Time Strobe Fieldbus Baseplate Terminators

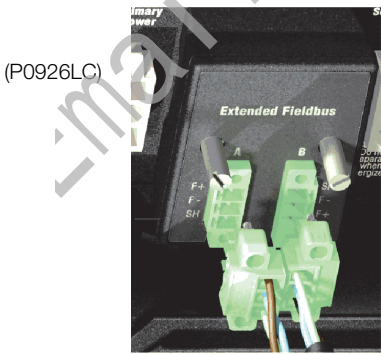


Figure 9. Extended Fieldbus Splitter/Terminator

### ADDING ADDITIONAL FBM-SUPPORTING 200 SERIES BASEPLATES

You can add additional FBM-supporting 200 Series baseplates to existing FBM-supporting 200 Series baseplates without removing the system from service. To add these 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 200 Series 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  $\pm 4$  kV, air  $\pm 8$  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*

$\pm 2$  kV on I/O, dc power and communication lines

*IEC 61000-4-5 Surge Immunity*

$\pm 2$  kV on ac and dc power lines;  $\pm 1$  kV 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 Class I, Groups A-D; Division 2; temperature code T4 enclosure based systems. 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 *Standard and Compact 200 Series Subsystem User's Guide* (B0400FA).

ATEX (DEMKO) Ex nA IIC T4 Gc certified

when connected as described in the

*Standard and Compact 200 Series*

*Subsystem User's Guide* (B0400FA). For use

in an enclosure suited for an ATEX Zone 2

classified area.

*Marine Certification*

Bureau Veritas Marine Certification for

Environmental Category EC11.

## ENVIRONMENTAL SPECIFICATIONS<sup>(1)</sup>

### 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

200 Series baseplates mount on a non-isolated, mechanically supported horizontal or vertical DIN rail, which can be internal to, or external to an enclosure. The 200 Series baseplate attaches to the DIN rail by means of fasteners.

#### RACK MOUNT

A mounting kit (P0930AS) is available for horizontal mounting of the 200 Series baseplate in a standard, 483 mm (19-inch) rack. This kit provides a 25.4 mm (1 inch) mounting depth.

### Size<sup>(2)</sup>

See Figure 10 and Figure 11

### 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 200 Series baseplate size

#### COLOR

Black

### Module Fieldbus Cabling

#### CABLE LENGTHS

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

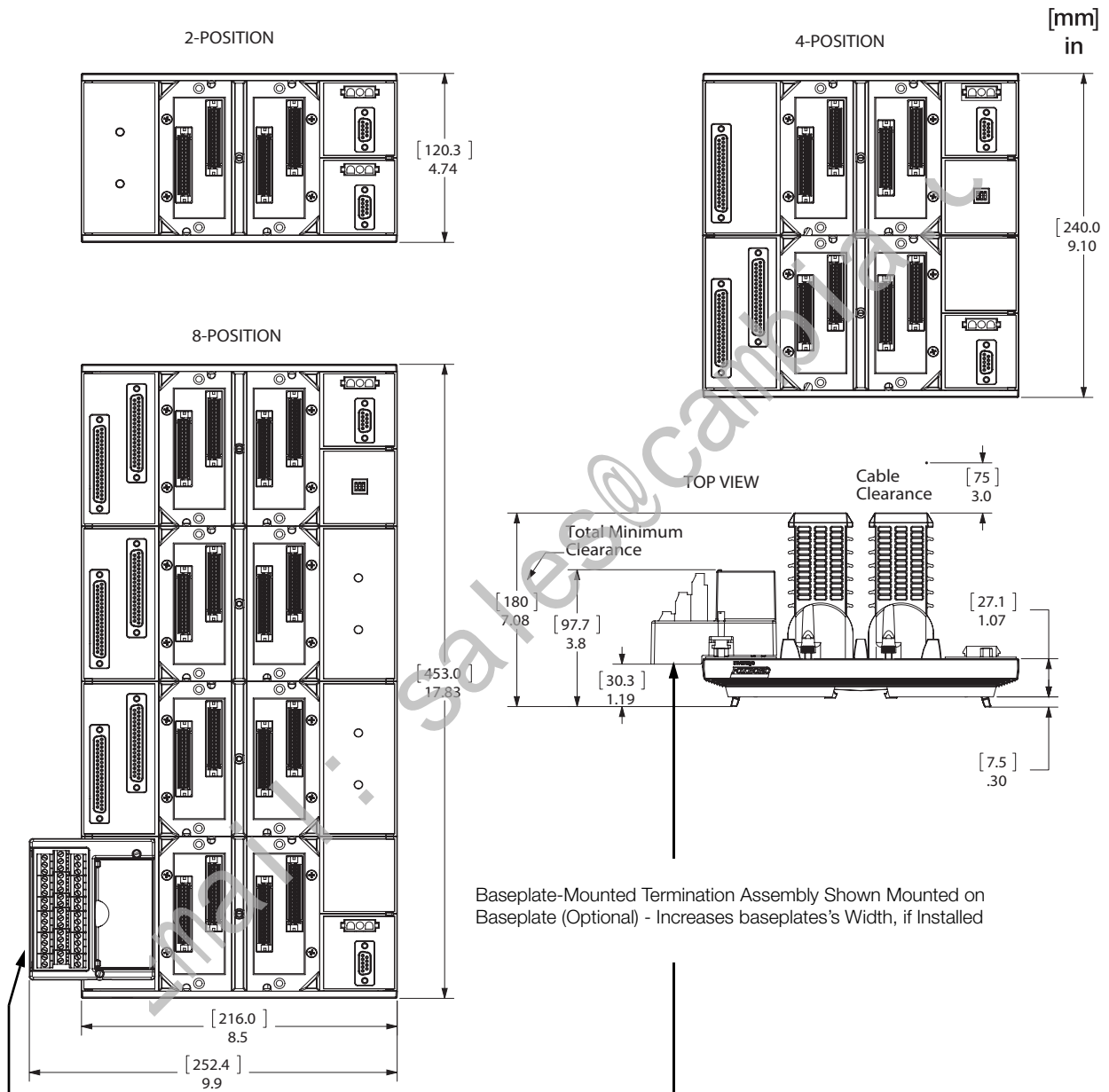
#### OVERALL CABLE LENGTH

60 m (198 ft) total allowable cable length

(1) The environmental limits of the 200 Series baseplates may be enhanced by the type of enclosure containing the 200 Series 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 FCP270, refer to PSS 21H-1B9.

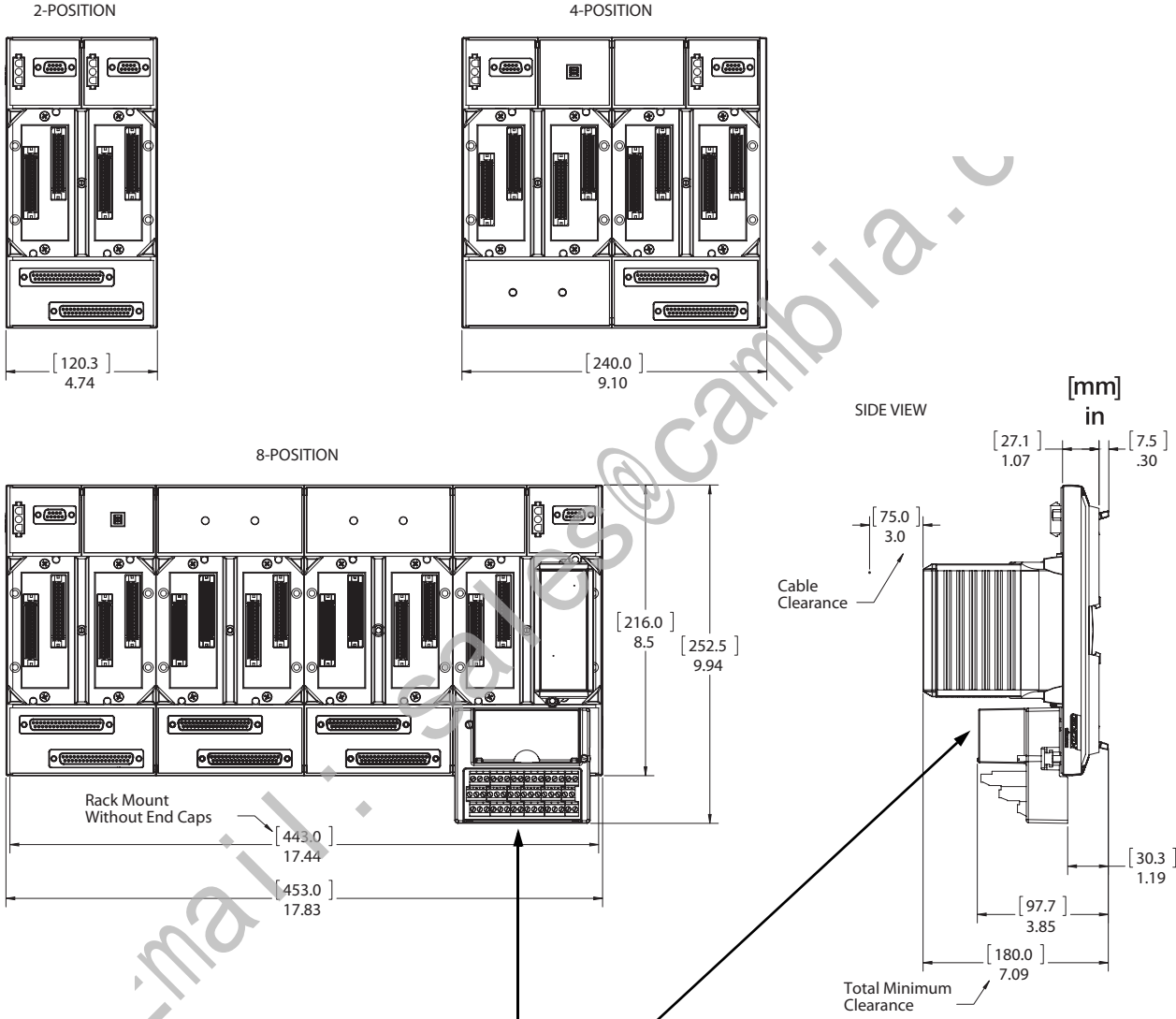
VERTICAL MODULAR BASEPLATES



NOTE: Clearance dimensions shown for 200 Series Fieldbus Modules installed in baseplates. For the clearance dimensions required for larger modules such as the 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 FCP270.

Figure 10. Dimensions - Vertical Mounted 200 Series Baseplates

HORIZONTAL MODULAR BASEPLATES



Baseplate-Mounted Termination Assembly Shown Mounted on Baseplate (Optional) - Increases Baseplate's Height if Installed

NOTE: Clearance dimensions shown for 200 Series Fieldbus Modules installed in baseplates. For the clearance dimensions required for larger modules such as the 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 FCP270.

Figure 11. Dimensions - Horizontal Mounted 200 Series Baseplates



email: sales@cambia.c

**Foxboro**<sup>®</sup>  
by **Schneider Electric**

Invensys Systems, Inc  
10900 Equity Drive  
Houston, TX 77041  
United States of America  
<http://www.invensys.com>

Global Customer Support  
Inside U.S.: 1-866-746-6477  
Outside U.S.: 1-508-549-2424  
Website: <http://support.ips.invensys.com>

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