Foxboro™ DCS

G14 System and Termination Enclosure

PSS 41H-2G14

Product Specification

January 2020



VENTED ENCLOSURE
ROOF-MOUNTED FANS

https://www.se.com

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Overview

The EcoStruxure™ Foxboro™ DCS G14 enclosure is specifically designed for housing Compact 200 Series I/O subsystem modules and their associated termination assemblies (TAs) and customer-supplied terminal blocks for marshalling. The G14 vented enclosure is only available with roof-mounted fans.

The G14 vented enclosure can be configured with:

- Up to six Compact 200 Series 16-slot horizontal baseplates, for mounting up to 96 Foxboro DCS Compact 200 Series Fieldbus Modules (FBMs)
- Up to four 1,900 mm vertical DIN rails for mounting of TAs and terminal blocks for marshalling; a total of 7.6 m (24.9 ft) of linear rail length
- One 2-position vertically-mounted Foxboro DCS FCP280 baseplate
- Up to two redundant FPS480-24 power supplies (four total) to support the 200 Series baseplates
- One redundant FPS480-24 power supply (two total) for field I/O

The G14 vented enclosure is a free-standing, floor mounted unit with an IP 43 rating for location in mild (ordinary) environmental areas. It is available with two fans in a pagoda fan system and two fan trays to achieve the best cooling performance.

Multiple G-series enclosures, including this enclosure and the G11 termination enclosure, can be installed connected to one another to maximize the use of floor space and ease of cabling. This is achieved using Foxboro or third-party kits as discussed in the *Enclosures and Mounting Structures Site Planning and Installation User's Guide* (B0700AS).

The rear of the G14 enclosure can be set up in one of two configurations:

- Termination only – all DIN rails are allocated for the mounting of TAs only, where the customer terminates field signals directly to the TAs
- Marshalling – all DIN rails are set up in pairs of TAs and terminal blocks to provide additional functionality (such as fusing, disconnects, and lock-out validation) or where customers wish to terminate field cable bundles to dedicated terminal blocks and marshall signals to the appropriate TAs

This enclosure and its configurations have been tested and qualified for use with specified 200 Series I/O products.

Features

- Accommodates one 2-position vertically-mounted FCP280 baseplate
- Vented enclosure front accommodates up to 96 Compact 200 Series FBMs in up to six Compact 200 Series 16-slot horizontal baseplates
- Vented enclosure rear accommodates up to four 1900 mm vertical DIN rails for mounting of TAs and terminal blocks for marshalling, to provide a total of 7.6 m (24.9 ft) of linear rail length
- Vented enclosure for use in ordinary (IP 43) environments
- Compact design to minimize use of floor space with both front and rear access that allows for the maximum density of enclosures in a control room environment
- Generous 76 mm x 102 mm (3 in x 4 in) wire ducts with adequate capacity for most wire management
- Option for single or redundant main and field I/O FPS480-24 power supplies
- Bottom cable entry for field and power wiring
- Conveniently placed eyebolts for transporting and lifting the enclosures
- A 100 mm (4 in) plinth — total enclosure height of 2,160 mm (85.0 in)
- Comfort door handles with push-button/keylocks
- Standard protective ground studs and isolated instrument ground rail

Contamination Protection

The metal enclosures provide the outer layer of protection for the control electronics. Other layers are provided by the module covers and conformal coated electronics. This approach to protection means that a minimum of contaminants in the plant environment reaches the control components, thus greatly extending the life of the equipment.

The enclosures support bottom cable entry for field I/O cabling and power wiring.

Thermal Protection

This enclosure can be located in main equipment areas or in an environment with office air quality.

High speed roof mounted fans and two fan trays as well as vented doors increase air circulation for heat removal from the enclosure and can be used:

- At installations with only moderate levels of airborne contaminants, enclosure interiors can be exposed to allow plant air to circulate and remove module generated heat
- In areas where there are no requirements to filter the cooling air

Dual Thermostat

An optional dual (high/low) thermostat is available to monitor enclosure temperature extremes, with the exception of Zone 2/Class I, Division 2 applications.

200 Series Baseplate Mounting

The enclosure can contain Compact 200 Series 16-slot horizontal baseplates and FCP280 baseplate, to accommodate Compact 200 Series FBMs and FCP280s respectively.

For more information on the Compact 200 Series 16-slot horizontal baseplate, see *Compact 200 Series 16-Slot Horizontal Baseplate* (PSS 41H-2C200).

For more information on the vertically mounted FCP280 baseplate (RH924YF), see *Standard 200 Series Baseplates* (PSS 41H-2SBASPLT).

Fieldbus I/O Groups

The G14 system and termination enclosure has two vertical punched rails accessed from the front of the enclosure for mounting up to six Compact 200 Series baseplates and up to four vertical DIN rails accessed from the rear for TAs and customer-supplied terminal blocks for marshalling.

Each Compact 200 Series baseplate is mounted on dedicated DIN rail fitted on bar ladders. The vertically-mounted FCP280 baseplate and the FPS480-24 power supplies are mounted on designated locations as shown in *Figure 2, page 8* and *Figure 3, page 9* in the G14 enclosure, the baseplates are electrically connected so that they are divided into one of four separate Fieldbus I/O Groups. These I/O groups are organized as described in Table 1.

Table 1 - Fieldbus I/O Groups in G14 Enclosure

Field-bus I/O Group	Equipment in Enclosure Front Managed by FCP280 [a]	Power Supplies
1	Compact 200 Series Baseplate 1	Power Supply #1 (optionally redundant) feeds these three Compact 200 Series Baseplates and the FCP280 baseplate
	Compact 200 Series Baseplate 2	
2	Compact 200 Series Baseplate 3	
	Compact 200 Series Baseplate 4	Power Supply #2 (optionally redundant) feeds these three Compact 200 Series Baseplates
3	Compact 200 Series Baseplate 5	
4	Compact 200 Series Baseplate 6	
[a] FCP280 may be single or redundant.		

The FCP280 baseplate supports four HDLC module fieldbuses, and each HDLC module Fieldbus supports up to two Compact 200 Series baseplates. *Fieldbus I/O Groups in G14 Enclosure, page 5* above explains how the Compact 200 Series baseplates are arranged from their FCP280's perspective. In this table, the baseplates in each Fieldbus I/O Group are part of the same baseplate chain.

Termination Assembly Mounting

The G14 enclosure has up to four vertical DIN rails in the rear of the enclosure for mounting TAs and customer-supplied terminal blocks for marshalling. Two are mounted in the center of the enclosure, and two are mounted on the sides.

Be aware that it may not be possible to add marshalling to this enclosure, depending on the size of the termination assemblies required in this enclosure.

Bus bars for field wiring shields and DIN rail isolation are available. These are used when customer field wire shields are terminated on dedicated terminal blocks that ground to the DIN rail. Isolation allows rails to be isolated from the enclosure ground.

An optionally redundant FPS480-24 field power supply is available for field power, and is mounted on side rails of the enclosure (see *Figure 2, page 8*). The G14 enclosure has a limited thermal load (see *Environmental Specifications, page 12*).

Termination Assembly/Input Power Cabling and Wireways

The enclosures support bottom cable entry only. The field I/O cables and power cable enter through removable gland plates, located at the bottom (inside) of the enclosure.

Cable straps are provided in the enclosure to dress and support the TA cables. Field I/O signals must be connected to the TA mounted in the same enclosure or an adjoining termination enclosure.

Isolated ground bus bars for field wiring shields and DIN rail isolation are available. Isolation allows rails to be isolated from the enclosure ground.

Power and Grounding

The G14 enclosure supports an optional redundant power system, in which dual power distribution (two power supplies fed by independent entry sources) provides redundancy protection against detected power failures.

Power wiring to the enclosure is routed through the bottom of the enclosure. Optional dual power input feeds terminate at dedicated primary and secondary power distribution terminal blocks.

All enclosure structural elements are integrally grounded by the enclosure design to meet the appropriate industry regulations and standards.

The G14 enclosure uses FPS480-24 power supplies that provide 24 V DC to 200 Series baseplates. These power supplies are agency certified for use in Zone II, Class I, Division 2 applications. For more information, see *Compact Power Supply - FPS480-24* (PSS 41H-2C480).

Two studs (M8 size, one for each enclosure side) provide a central ground point and dedicated grounding points when baying enclosures together.

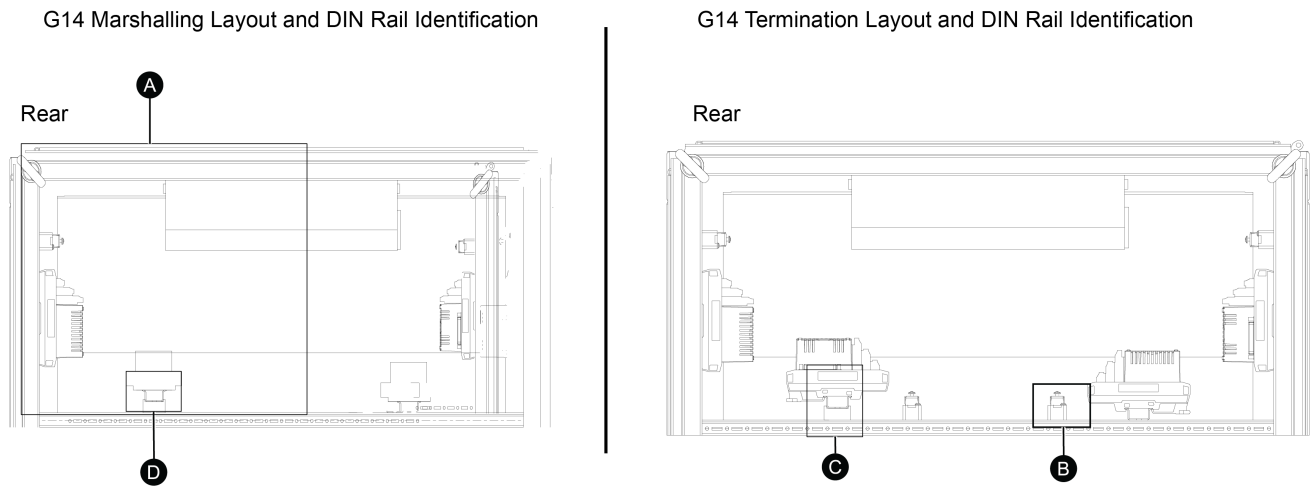
Power Distribution

Three power distribution terminal block assemblies (primary, secondary, or utility for powering fans and lights, see *Figure 3, page 9*) have dedicated ring lug terminal blocks for customer main power. Each also can have fused, knife disconnect terminal blocks for interrupting the main power, as well as independent knife disconnect terminal blocks for each device, for ease of service.

Additional blocks are provided for the customer to install utility outlets.

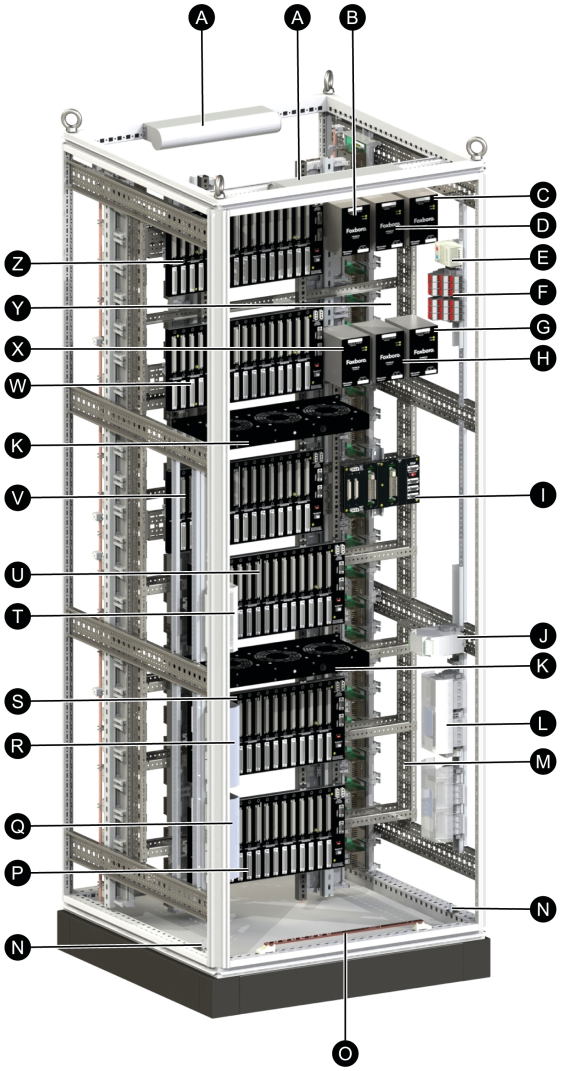
The enclosure is available without these power distribution terminal blocks if required by the customer.

Figure 1 - G14 Enclosure Termination and Marshalling Layouts and DIN Rail Identification



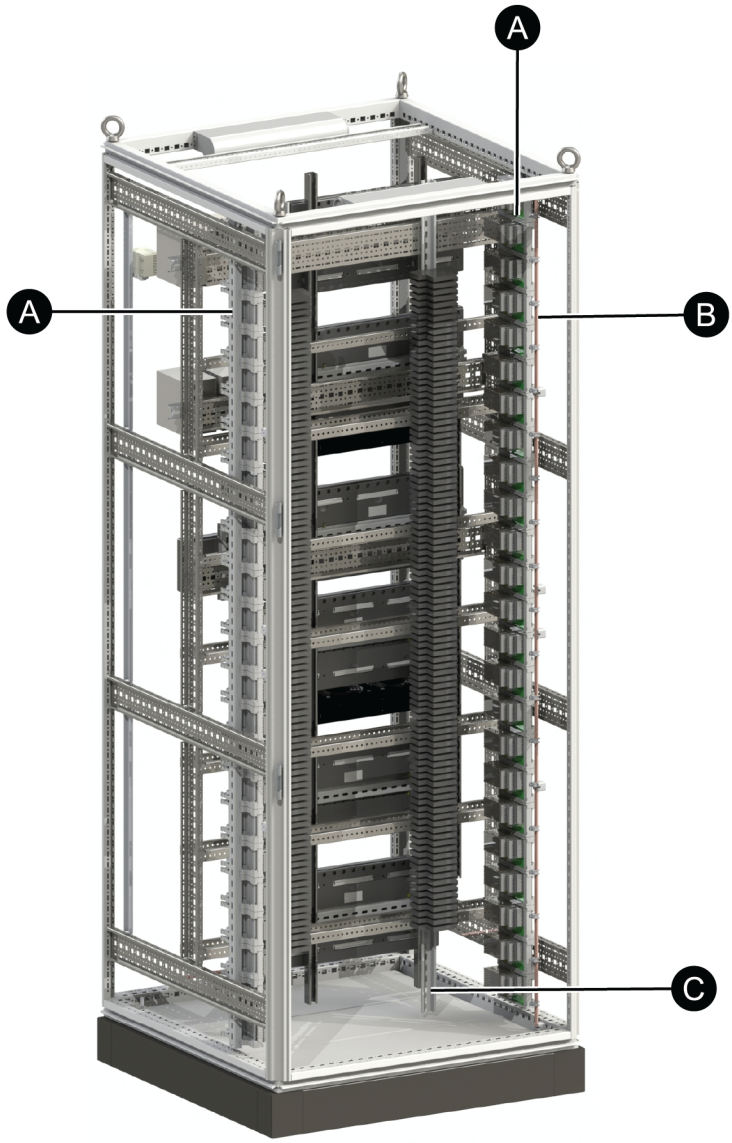
Legend			
A	Termination Assembly and Associated Terminal Blocks (per configuration)	**C**	DIN Rail Isolation (per configuration)
B	Bus Bar for Field Wiring Shields (per configuration)	**D**	DIN Rail Isolation (per configuration)

Figure 2 - G14 System and Termination Enclosure, Front View



Legend					
A	LED Lights	**J**	FCP280 Baseplate	**S**	Power Distribution and Disconnects, Primary
B	Fieldbus I/O Group 1 and 2 Power Supply (Secondary)	**K**	Terminal Block with Diode Assembly	**T**	Fieldbus I/O Group 3 Compact Baseplate
C	Fieldbus I/O Group 1 and 2 Power Supply (Primary)	**L**	Fan Tray	**U**	ac Utility Terminal Block
D	Fieldbus I/O Group 1 Power Supply (Primary)	**M**	Redundant Field Power Distribution	**V**	Fieldbus I/O Group 2 Compact Baseplate 2
E	High/Low Thermostat	**N**	Location to Run TA Cables for Fieldbus I/O Groups 2, 3, and 4	**W**	Fieldbus I/O Group 2 Compact Baseplate 1
F	dc Distribution terminal Blocks	**O**	Protective Ground Stud	**X**	Fieldbus I/O Group 1 Compact Baseplate 2
G	Fieldbus I/O Group 2, 3, and 4 Power Supply (Secondary)	**P**	Isolated Instrument Ground Rail	**Y**	Location to Run TA Cables for Fieldbus I/O Group 1
H	Primary (A) Redundant Field Power Supply	**Q**	Fieldbus I/O Group 4 Compact Baseplate	**Z**	Fieldbus I/O Group 1 Compact Baseplate 1
I	Secondary (B) Redundant Field Power Supply	**R**	Power Distribution and Disconnects, Secondary		

Figure 3 - G14 System and Termination Enclosure, Rear View



Legend			
A	Termination Assembly DIN Rail	**C**	Terminal Block DIN Rail
B	Bus Bar for Field Wiring Shield		

Enclosure Features and Options

Feature	Availability
Base Enclosure	Vented IP 43 rated enclosure with roof-mounted fan (120 V AC or 240 V AC)
Enclosure Access	Front and rear access
Front Door	Solid front door with inlet vents
Cable Entry	Bottom cable entry
Sidewalls	Options configurable based on baying requirements
Door Handle	Comfort handle with push button/keylock
Door Mounting	Universal mounting for left and right-hand door swing (left-hand is default)
Equipment Supported	• Up to 96 Compact 200 Series FBMs in up to six horizontally mounted Compact 200 Series 16-Slot Horizontal Baseplates • One 2-position vertically-mounted FCP280 baseplate • Up to four vertical DIN rails for mounting of termination assemblies (TAs) and terminal blocks for marshalling • Single or redundant FPS480-24 power supplies to support the baseplates
Field Wiring	Bus bars for field wiring shields and/or DIN rail isolation
Enclosure Lighting [a]	Universal single and/or dual enclosure lights with motion activation
Thermostat [a]	Dual temperature thermostat
Fans [a]	Two physical fans in a pagoda fan unit (roof-mounted) and two fan trays (installed on punched rails)
Grounding[a]	• Two protective ground studs • Isolated instrument rail for additional connectors
Main Power [a]	• 85 to 264 V AC or 120 to 240 V DC nominal, 108 to 119 V DC (output derates to 90%) primary only or primary and secondary power (via up to two optionally redundant FPS480-24 power supplies) • Terminal blocks supplied as per configuration
Field Power	• Single or redundant FPS480-24 field power supply, 85 to 264 V AC or 120 to 240 V DC nominal, 108 to 119 V DC (output derates to 90%) input, or • Single or redundant power distribution terminal block assemblies for customer configured power entry • Customer-configured field power entry is supported; terminal blocks supplied as per configuration
Utility Power	120 V AC or 240 V AC utility power terminal block

[a] To determine if this G-series enclosure is acceptable to install in your application, see *DIN Rail Mounted High Density I/O Equipment, Agency Certifications* (PSS 41H-2W12) and *Standard and Compact 200 Series I/O - Agency Certifications* (PSS 41H-2CERTS) to determine equipment location suitability.

Functional Specifications

Enclosure	The enclosures are free-standing, floor mounted, steel industrial enclosures containing: • Up to six Compact 200 Series 16-slot horizontal baseplates • One 2-position vertically-mounted FCP280 baseplate • Up to four vertical DIN rails for mounting of TAs and terminal blocks for marshalling • Two redundant FPS480-24 power supplies (total four)
Input Power (Optionally Redundant)	See *Compact Power Supply - FPS480-24* (PSS 41H-2C480)

Environmental Specifications

	Operating	Storage
Temperature	Vented (Thermal Loading) with Fans: • -20 to +55°C (-4 to +131°F) • Up to 1,000 Watts (Maximum)	-40 to 70°C (40 to 158°F)
Relative Humidity	5 to 95% (noncondensing)	
Ingress Protection	IP 43 to EN 60 529 / 10.9191 / NEMA 12	
Acoustic Noise Level[(a)]	Roof-mounted fans with fan trays	
Dual Thermostat (User Settable)	• High Alarm Setting: NC contact, Range - 0 to 60°C (32 to 140°F) • Low Alarm Setting: NO contact, Range - 0 to 60°C (32 to 140°F)	
Agency Certification	Empty enclosure is UL and UL-C approved. Enclosure meets all applicable European Union directives and is CE compliant. Final installed enclosures populated with your equipment should be inspected by your local UL/CSA committee, or other local safety governing organization if required. A complete listing of certifications is available from enclosure vendor. For installed Foxboro equipment, see *DIN Rail Mounted High density I/O Equipment, Agency Certifications* (PSS 41H-2W12).	
Area Designation	Vented for general purpose environments	

[(a)] Under normal operating conditions, with both fans and fan trays running, at enclosure's mid-height at 46 dB (A) ambient noise level.

Table 2 - Fan Tray Specifications

Specification	115 V AC	230 V AC
Number of fans	3	3
Nominal Voltage(60 Hz)	115 V AC	230 V AC
Input Power	45 W	45 W
Rated Speed (RPM)	3000	3000
Airflow (CFM)	310	310

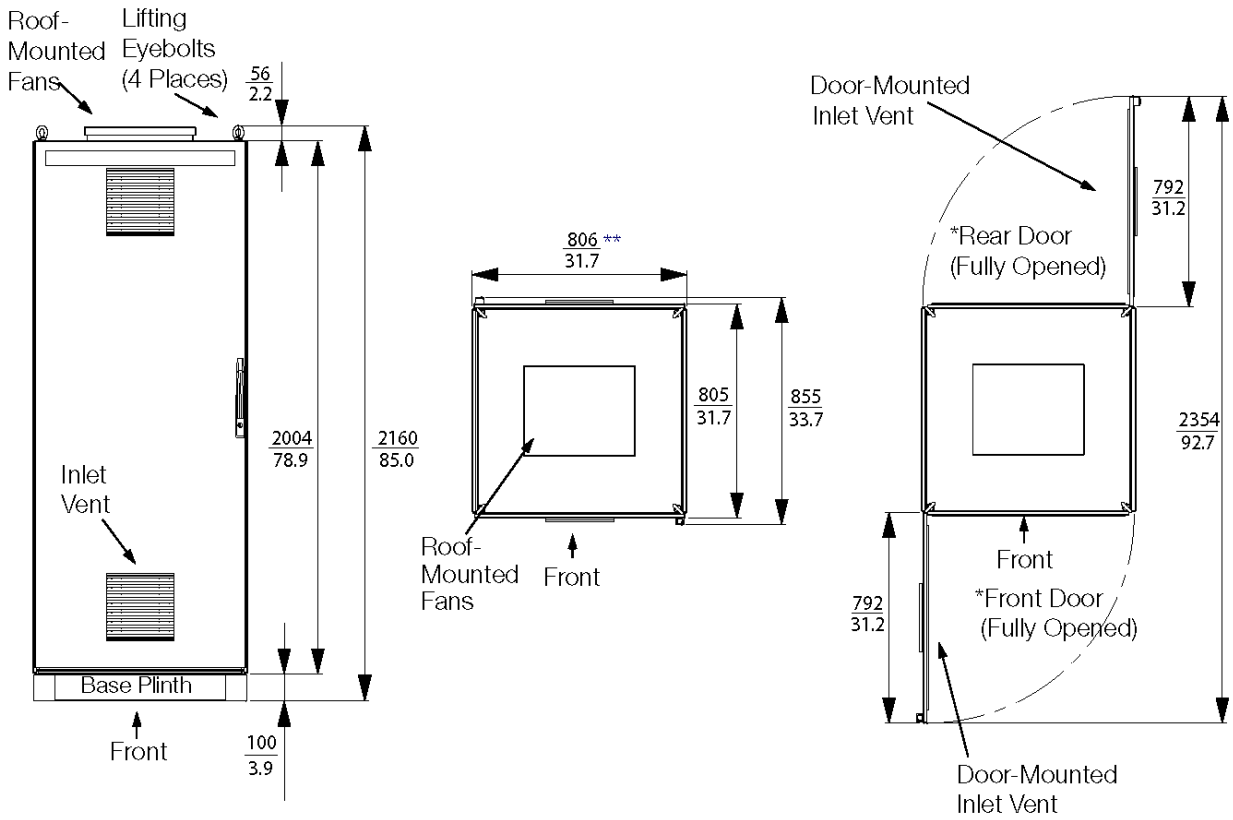
Physical Specifications

Weight	The weight of the enclosure is dependent upon the particular configuration. Consult with a Foxboro representative if precise weight figures are required. • Vented Enclosure (Max. Configuration): (Allowable Max. Weight When Loaded) 800 x 800 mm (31.5 x 31.5 in) – 277 kg (611 lb)
Mounting	Floor **⚠CAUTION** **RISK OF INJURY** To prevent injury, this enclosure must be bolted down. See *Enclosures and Mounting Structures Site Planning and Installation User's Guide* (B0700AS). **Failure to follow these instructions can result in injury or equipment damage.**
Construction	Sheet steel with textured, powder-coated finish
Color	• Side Panels, Roof, and Door: RAL 7035 - light gray - textured • Plinth: RAL 7022 - umbra gray smooth
Panel Thickness	• Doors: 2 mm (14 ga) • Side Panels, Roof: 1.5 mm (16 ga)
Construction	Material: • Doors: Sheet steel, 2.0 mm (14 ga) • Frame, Roof, Side Panels, Gland Plates: Sheet steel 1.5 mm (16 ga) • Base Plinth: Sheet steel and plastic Finish: • Frame: Dipcoat-primed, RAL 7044 smooth • Doors, Roof, Side Panels: Dipcoat-primed, powder-coated • Base/Plinth: Dipcoat-primed, plastic cover caps RAL 9005 (jet black) • Doors, Roof, Side Panels: Dipcoat-primed, powder-coated • Gland Plates and Internal Hardware: Zinc-plated, passivated

Cable Entry	Bottom through gland plate(s)
Grounding	• Roof, Side Walls, Gland Plates: Automatic potential equalization built in • Doors: Dedicated 4 mm^2 (11 ga) ground strap to enclosure frame • Enclosure: Two M8 studs (one for each enclosure side) An isolated bus bar for additional ground points
Power Input Terminals	• Type: Ring Lug • Wire Size: Up to 6 mm^2 (10 AWG) • Ring Lug Size: M4 Maximum (DIN 46 234/46 237), 9.6 mm maximum O.D
Termination Assembly Cabling	Universal mounting straps are supplied for attaching, routing, and strain relieving of TA cables. Each strap supports up to a 75 mm (3 in) diameter cable bundle.

Dimensions - Nominal

G14 System and Termination Enclosure



* Doors are factory configured for left-hand swing, but can be reconfigured at site for right-hand swing.

** With side panels, without side panels 800/31.5.

Related Product Documents

Document Number	Description
B0700AS	*Enclosures and Mounting Structures Site Planning and Installation User's Guide*
PSS 41H-2C200	*Compact 200 Series 16-Slot Horizontal Baseplate*
PSS 41H-2SBASPLT	*Standard 200 Series Baseplates*
PSS 41H-2C480	*Compact Power Supply - FPS480-24*
PSS 41H-2W12	*DIN Rail Mounted High Density I/O Equipment, Agency Certifications*
PSS 41H-2CERTS	*Standard and Compact 200 Series I/O - Agency Certifications*
PSS 41H-2COV	*Compact 200 Series I/O Subsystem Overview*
PSS 41H-2GOV	*G-Series Enclosures Overview*
PSS 41H-2G13	*G13 System Enclosure*
PSS 41H-2CERTS	*Standard and Compact 200 Series I/O - Agency Certifications*
ISA-S71.04-1985 (not Foxboro-supplied)	*Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants*

WARNING: This product can expose you to chemicals including lead and lead compounds, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to www.p65warnings.ca.gov/.

Schneider Electric Systems USA, Inc.
38 Neponset Avenue
Foxboro, Massachusetts 02035–2037
United States of America

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PSS 41H-2G14, Rev A