Foxboro™ DCS

G16 Termination Enclosure

PSS 41H-2G16

Product Specifications

January 2020

https://www.se.com

Legal Information

Overview

The EcoStruxure™ Foxboro™ DCS G16 enclosure is specifically designed for housing Standard 200 Series subsystem termination assemblies (TAs) and additional customer-supplied terminal blocks for marshalling in areas where front access only to the enclosure's equipment is desired, such as when an enclosure must be placed against a wall. It may accommodate the termination of I/O modules that are housed in a G15 system enclosure or G17 system and termination enclosure.

The G16 enclosure is available as a vented enclosure or sealed enclosure. Both types of enclosures can be configured with:

- Up to six vertical DIN rails for mounting of TAs and terminal blocks for marshalling
- Single or redundant power supplies for field power

The G16 vented enclosure is a free-standing, floor mounted unit with an IP 43/55 rating for location in mild (ordinary) environmental areas.

The G16 sealed enclosure is a free-standing, floor mounted unit with options for either an IP 55 or IP 66 rating for location in harsh environments. Sealed enclosures with an IP 66 rating provide a higher level of protection from airborne contamination.

Multiple IP 43/55 rated G-series front-access only enclosures can be installed connected to one another to maximize the use of floor space and ease of cabling. The enclosures can be bayed together using third-party kits.

To preserve the IP 55/66 protection classification for sealed enclosures, they cannot be adjoined.

The G16 enclosure can be set up in the following basic 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.
- A mix of the previous two options, such as the first in the sides and the second on the rear wall.

This enclosure and its configurations have been tested and qualified by Foxboro for use with Standard 200 Series subsystem TAs.

Features

- Up to six 1,800 mm (70.9 in) vertical DIN rails for mounting of termination assemblies and terminal blocks for marshalling, to provide a total of 10.8 m (35.4 ft) of linear rail space
- Vented or sealed 800 w x 800 d x 2,000 mm high (31.5 w x 31.5 d x 78.7 in high) enclosure selection for use in ordinary (IP 43/55) or harsh (IP 55/66) rated environments
- Available PVC or non-PVC wireways for field I/O cabling
- Generous 76 mm x 102 mm (3 in x 4 in) wireways with adequate capacity for most wire management
- Compact design to minimize use of floor space with front-only access that allows the maximum packaging density of control environment
- Options for single or redundant power supplies for field power and power distribution terminal block assemblies for customer-supplied power
- Bottom or top cable entry for TA cables and power wiring, but can be customer configured for simultaneous top and bottom cable entry
- Conveniently placed eyebolts for transporting and lifting the enclosures
- A 100 mm (4 in) plinth increases total enclosure height of 2,160 mm (85.0 in)
- Optional handles with push button/keylocks
- Standard safety grounding studs

Ingress Protection

The metal enclosures provide the outer layer of protection for the control electronics. Other layers are provided by the module covers and built into the modules. 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.

For sealed IP 55/66 certified enclosures, heat is transferred from the interior surfaces of the enclosure and then dissipated by the enclosure's exterior surfaces into the plant environment. Air is not exchanged between the enclosure's interior and the outside environment. Therefore, contaminants are minimized inside the enclosure. Sealed IP 55/66 versions can be used outdoors in sheltered locations.

The enclosures support convenient top or bottom cable entry for TA cabling and power wiring. Vented enclosures with roof-mounted fans are not recommended with top cable entry.

Thermal Protection

Ventilation fans along with a vented door increase circulation for heat removal 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 the heat generated within the modules
- In areas where there are no requirements to filter the air to which the modules in the enclosure are exposed (such as office areas)

Vented enclosures contain a dual fan assembly located at the top of the enclosure or single fan assemblies located on the enclosure front door. Enclosures with a vented door can be located in main equipment areas or in an environment with office air quality.

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.

Vented Enclosure Design Options

The G16 vented enclosure is available with either roof-mounted or door-mounted fans.

Roof-mounted fans provide the best performance for cooling and provide a lower noise-level than the door-mounted fans. However, roof-mounted fans can restrict top-entry cable access to the enclosure and reduce the overall ingress protection rating. For customers who plan to modify the swing direction of their enclosure door, fans mounted on the roof allow the process to proceed more smoothly.

Door-mounted fans are desirable for top entry cable access configurations, and provide the highest level of ingress protection for vented enclosures.

Termination Assembly Mounting

The G16 termination enclosure has up to six vertical DIN rails for mounting TAs and customer-supplied terminal blocks for marshalling. A pair of DIN rails are installed on the left, rear, and right walls.

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

An optionally redundant 100-250 V AC/125 V AC, 50-60 Hz field power supply is available for field power, and is mounted on a dedicated rail on the right wall of the enclosure (see *Figure 2, page 8* and *Figure 3, page 9*).

Both vented and sealed enclosures have a limited thermal load (see *Environmental Specifications, page 12*).

DIN-rail-mounted TAs support different levels of thermal loading. To determine thermal loading and for more information on the various types of TAs in a Foxboro DCS, see *Standard 200 Series Subsystem Overview* (PSS 31H-2S200).

Due to the thermal load and the reliance on conductive cooling, the sealed version of this enclosure has a limited loading capacity.

Termination Assembly/Input Power Cabling and Wireways

The enclosures can be ordered for bottom cable entry or top cable entry or modified by the customer for simultaneous top and bottom cable entry.

For the top cable entry version, the TA cables and/or customer power feeds enter through customer-configured cable glands. Any customizations made must follow the enclosure manufacturer’s guidelines to preserve the enclosure's ingress protection rating. Vented enclosures with roof-mounted fans are not recommended for top cable entry.

For the vented bottom entry version, the TA cables and power cable enter through removable gland plates, located at the bottom (inside) of the enclosure, which can be removed, drilled, or punched for cable routing.

For the sealed bottom entry version, the TA cables and power cable enter through a solid bottom panel located at the bottom (inside) of the enclosure, which can be drilled

or punched for cable routing. Users must provide their own cable glands (for top or bottom cable entry), in keeping with maintenance of the enclosure's ingress protection.

An optional signal segregation barrier plate provides isolation between the two interior adjacent wireways.

Wiring is restricted to preconfigured wireways and is available in PVC or non-PVC versions.

Cable straps are provided in the enclosure to dress and support the TA cables.

Power and Grounding

The G16 enclosure supports an optional single or redundant power system for field power to help protect against detected power failures.

Power wiring to the enclosure is routed through the bottom or top of the enclosure. Optional customer-supplied dual power input feeds terminate at dedicated single or redundant power distribution terminal block assembly.

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

Field power may be provided by a single or redundant 200 Series power supply that provides 100-250 V AC, 50-60 Hz, 125 V DC. The power supply uses a diode redundancy module and is agency certified for use in Zone 2/Class I, Division 2 applications.

Grounding

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

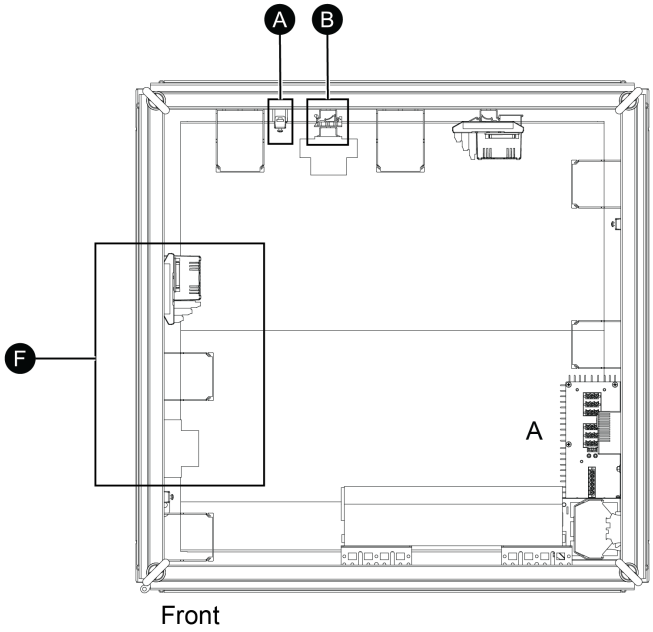
Power Distribution

Each power distribution terminal block assembly (primary, secondary, or utility for powering fans and lights, see *Figure 2, page 8*) has dedicated ring lug assembly terminal blocks for customer main power. Each assembly also has fusable knife disconnect terminal blocks for interrupting the main power, as well as independent knife disconnect terminal blocks for each device, for ease of service.

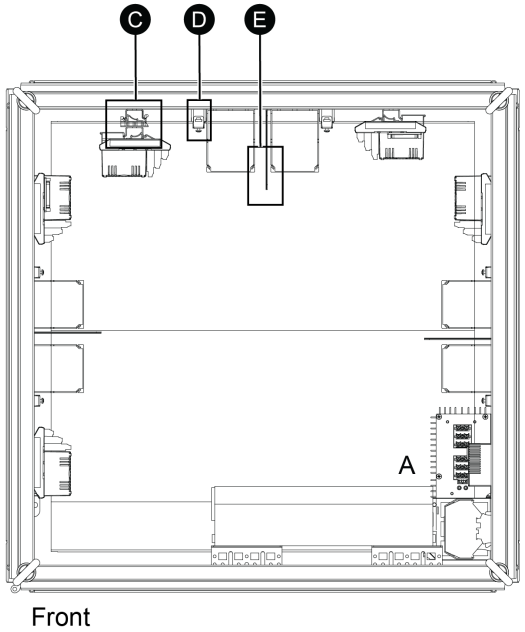
Additional blocks are provided for the customer to install utility outlets.

The enclosure is available without these power distribution terminal blocks when the customer has requirements for power distribution specific to regional electrical codes.

Figure 1 - G16 Enclosure Termination and Marshalling Layouts and DIN Rail Identification



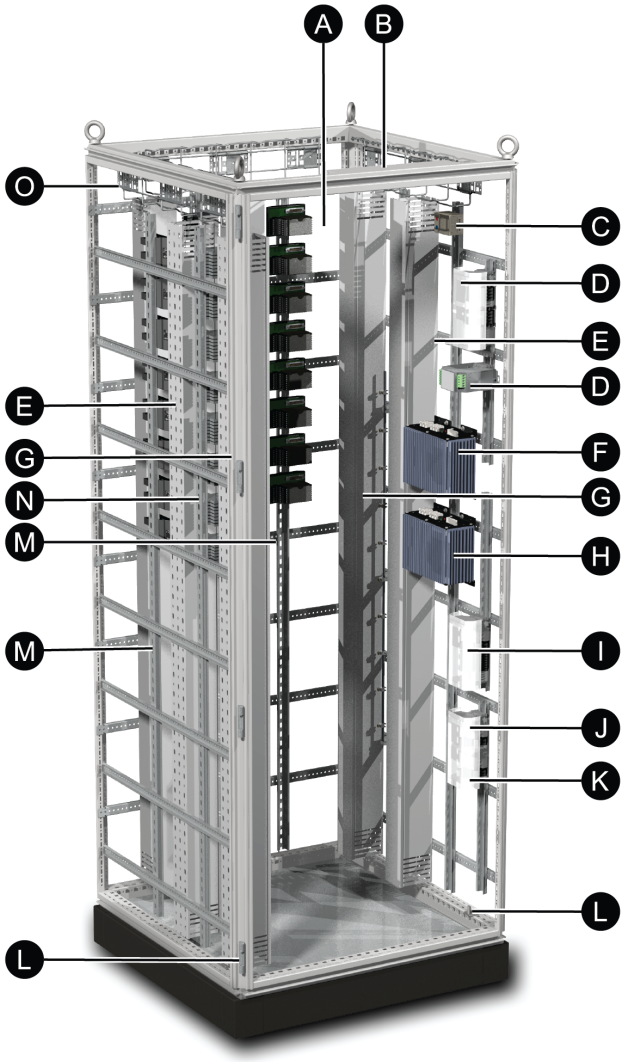
G16 Marshalling Options



G16 Termination Options

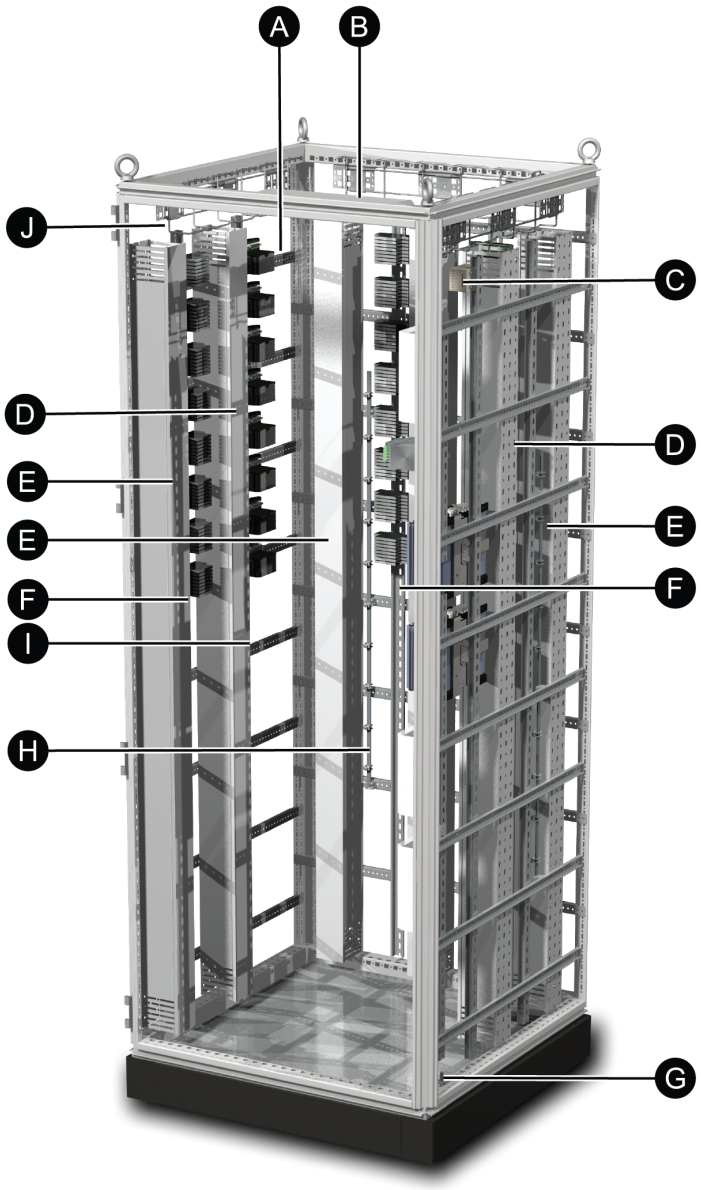
Legend			
A	Bus Bar for Field Wiring Shields (per configuration)	**D**	Bus Bar for Field Wiring Shields (per configuration)
B	DIN Rail Isolation (per configuration)	**E**	Segregation Barrier for Varying Field Signals (per configuration)
C	DIN Rail Isolation (per configuration)	**F**	Termination Assembly and Associated Terminal Blocks (per configuration)
NOTE: For both setups, the front right side DIN rails are reserved for terminal blocks and power supplies associated with single or redundant 24 V DC field power per configuration.			

Figure 2 - G16 Termination Enclosure with Marshalling Option, Front Left View, Bottom Entry



Legend			
A	Location to Run TA Cables	**I**	ac Utility Power Terminal Blocks
B	LED Light	**J**	Power Distribution and Disconnects, Primary
C	High/Low Thermostat	**K**	Power Distribution and Disconnects, Secondary
D	Redundant Field Power Distribution Terminal Blocks with Diode Assembly	**L**	Safety Ground Stud
E	76 mm x 102 mm (3 in x 4 in) Marshalling Wire Management Ducts	**M**	Termination Assembly DIN Rails
F	Primary (A) Redundant Field Power Supply	**N**	Terminal Block (Marshalling) DIN Rail
G	76 mm x 102 mm (3 in x 4 in) Field Wire Management Duct	**O**	37 mm x 102 mm (1.5 in x 4 in) Cable Tray Wire Management for Marshalling between DIN Rails (Mounted at Bottom in Top-Entry Option)
H	Secondary (B) Redundant Field Power Supply		

Figure 3 - G16 Termination Enclosure with Marshalling Option, Front Right View, Bottom Entry



Legend			
A	Location to Run TA Cables	**F**	Safety Ground Stud
B	LED Light	**G**	Bus Bar for Field Wiring Shield
C	High/Low Thermostat	**H**	Termination Assembly DIN Rail
D	76 mm x 102 mm (3 in x 4 in) Marshalling Wire Management Ducts	**I**	Terminal Block (Marshalling) DIN Rails
E	76 mm x 102 mm (3 in x 4 in) Field Wire Management Duct	**J**	37 mm x 102 mm (1.5 in x 4 in) Cable Tray Wire Management for Marshalling between DIN Rails (Mounted at Bottom in Top-Entry Option)

Enclosure Options

Feature	Availability
Base Enclosure	• Vented IP 43/55 rated enclosure with dual front door-mounted fans (120 V AC or 240 V AC) or roof -mounted fans (120 V AC or 240 V AC – dual fans), or • Sealed IP 55 rated enclosure or Sealed IP 66 rated enclosure
Enclosure Access	Front-only access
Front Door	Solid front door with inlet vents
Cable Entry	Bottom cable entry or top cable entry (top entry not recommended for roof-mounted fans)
Sidewalls	Options configurable based on baying requirements
Door Handle	Optional comfort handle with push button/keylock
Door Mounting	Universal mounting for left and right-hand door swing (left-hand is default)
Field Wiring Options	PVC or non-PVC wireways for field I/O signal cabling Optional bus bars for field wiring shields and/or DIN rail isolation
Equipment Supported	Up to six DIN rails per enclosure available for mounting TAs and customer-supplied terminal blocks for marshalling Optional 120 V AC or 240 V AC field power
Enclosure Lighting [a]	Universal single and/or dual enclosure lights with motion activation
Thermostat [a]	Dual temperature thermostat
Fans [a]	Door-mounted or roof-mounted fans
Grounding [a]	Two protective ground studs
Field Power Options [a]	• Single or redundant field power supply, 100-250 V AC, 50-60 Hz, 125 V DC input • Single or redundant power distribution terminal block assemblies for customer configured power entry • No option is available for 24 V DC field power — however, it can be directly sourced by the customer following local electrical guidelines • Customer-configured field power entry is supported (no terminal blocks supplied)
Utility Power	120 V AC or 240 V AC utility power terminal block

[a] If you are installing a G-series enclosure as part of a Zone 2 (IEC)/Class I, Division 2 application, see *Standard and Compact 200 Series I/O - Agency Certification* (PSS 41H-2CERTS), to determine 200 Series subsystem equipment hazardous location suitability. Also, be aware that optional enclosure electrical accessories, such as LED lights, roof or door-mounted fans, and thermostats, may not be used in hazardous (Zone 2 (IEC)/Class I, Division 2) environments.

Functional Specifications

Enclosure	The enclosures are free-standing, floor mounted, steel industrial enclosures containing: • Vertically mounted DIN-rail-mounted TAs and terminal blocks • 100-250 V AC, 50-60 Hz, 125 V DC field power supplies (single or redundant power)
Input Power (Optionally Redundant)	See *Standard 200 Series Power Supply - FPS400-24* (PSS 41H-2FPS400)

Environmental Specifications

	Operating[a]	Storage
Temperature	• Vented (Thermal Loading): -20 to +60°C (-4 to +140°F): Up to 750 Watts (Average) -20 to +55°C (-4 to +131°F): 750 to 1,000 Watts (Maximum) • Sealed (Thermal Loading): -20 to +50°C (-4 to +122°F): Up to 400 Watts (Average) -20 to +45°C (-4 to +113°F): 400 to 500 Watts (Maximum)	-40 to 70°C (-40 to 158°F)
Relative Humidity	5 to 95% (noncondensing)	
Ingress Protection Ratings	• Vented: ◦ Door-Mounted Fans: IP 55 to EN 60 529/NEMA 12 ◦ Roof-Mounted Fans: IP 43 to EN 60 529/10.9191/NEMA 12 • Sealed: IP 55 to EN 60 529/NEMA 12 IP 66 to EN 60 529/NEMA 4	
Acoustic Noise Level[b]	• Roof-Mounted Fans: 61 dB (A) at 1 m/58 dB (A) at 3 m • Door-Mounted Fans: 64 dB (A) at 1 m/62 dB (A) at 3 m • Sealed Enclosure (No Fans): Ambient/Ambient	
Dual Thermostat	• High Alarm Setting: NO 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 DCS equipment, see *Standard and Compact 200 Series I/O - Agency Certifications* (PSS 41H-2CERTS).	
Area Designation	Per customer order, vented and sealed are available for general purpose area; hazardous area (Zone 2 (IEC)/Class I, Division 2, (North America)) must use sealed enclosure only.	

[a] Some TAs have operating temperatures lower than the rated enclosure specification.

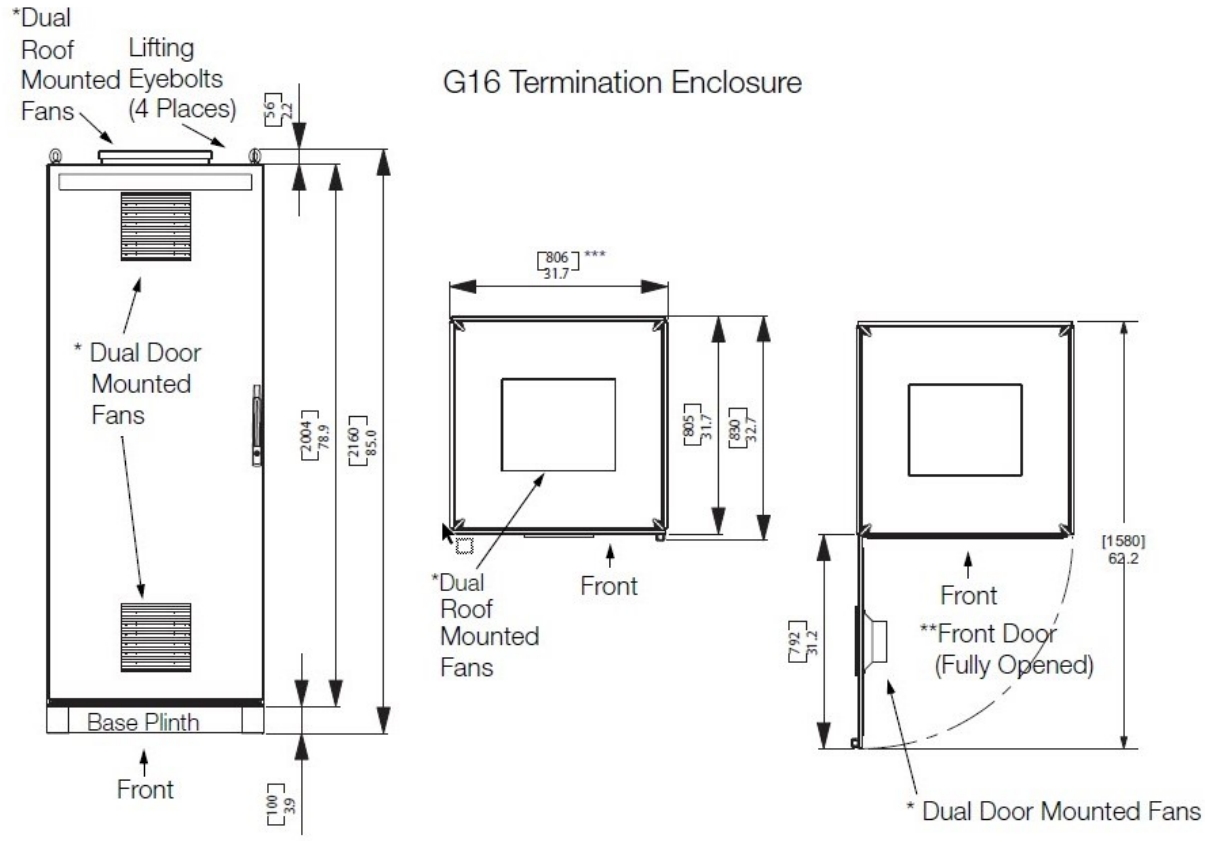
[b] Under normal operating conditions, with both fans running, at enclosure's mid-height at 46 dB (A) ambient noise level.

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): 800 mm wide x 800 mm deep (31.5 in wide x 31.5 in deep) – 234 kg (516 lb) • Side Panel: 2,000 mm high x 800 mm deep (78.7 in high x 31.5 in deep) – 6 kg (14 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, Rear Wall, Roof, and Door: RAL 7035 - light gray - textured • Plinth: RAL 7022 - umbra gray smooth
Panel Thickness	• Door: 2 mm (14 ga) • Side Panels, Roof: 1.5 mm (16 ga)
Construction	Material: • Door: Sheet steel, 2.0 mm (14 ga) • Frame, Roof, Side Panels, Rear Wall, Gland Plates: Sheet steel, 1.5 mm (16 ga) • Base/Plinth: Sheet steel and plastic Finish: • Frame: Dipcoat-primed, RAL 7044 smooth • Door, Roof, Side Panels, Rear Wall: Dipcoat-primed, powder-coated, RAL 7035 (light gray) textured • Base/Plinth: Dipcoat-primed, RAL 7022 (umbra gray) smooth, plastic cover caps RAL 9005 (jet black) • Gland Plates and Internal Hardware: Zinc-plated, passivated

Cable Entry	• Vented Enclosure: Bottom through gland plate(s) Top through customer cutouts in enclosure top (For enclosure with roof-mounted fans, suggested entry is bottom). • Sealed Enclosure: Bottom through steel panel and customer cutouts in panel Top through customer cutouts in enclosure top
Grounding	• Roof, Side Walls, Rear Wall, Gland Plates: Automatic potential equalization built in • Door: Dedicated 4 mm^2 (11 ga) ground strap to enclosure frame • Enclosure: Two M8 studs (one for each enclosure side) An optional 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



* Vented enclosures only — either roof- or door-mounted configurations can be ordered.

** 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
PSS 31H-2S200	*Standard 200 Series Subsystem Overview*
PSS 41H-2CERTS	*Standard and Compact 200 Series I/O - Agency Certifications*
PSS 41H-2FPS400	*Standard 200 Series Power Supply - FPS400-24*
PSS 41H-2SBASPLT	*Standard 200 Series Baseplates*
PSS 41H-2GOV	*G-Series Enclosures Overview*
B0700AS	*Enclosures and Mounting Structures Site Planning and Installation User's Guide*
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/.

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As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

PSS 41H-2G16, Rev A