Foxboro Evo™ Process Automation System

Product Specifications

Foxboro by Schneider Electric

PSS 31H-2G85

G85 Trident Enclosure

The G85 Trident Enclosure with front-only access provides environmental protection and housing for Triconex™ Trident controllers and I/O system.

OVERVIEW

The G85 enclosure is specifically designed for housing Triconex Trident controllers and I/O system 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 is available as a vented or sealed enclosure. It can be configured with up to ten Trident I/O baseplates, one Main Processor (MP) baseplate, and one Communication Module (CM) baseplate.

The G85 vented enclosure is a free-standing, floor mounted unit with an IP 43/55 rating for location in mild (ordinary) environmental areas.

The G85 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 G80/G85 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 kits P0931UR/US/UT, discussed in the *Enclosures and Mounting Structures Site Planning and Installation User's Guide* (B0700AS).

These enclosures and their configurations have been tested and qualified by Foxboro® for use with the Trident controllers and I/O baseplates specified in the *Technical Product Guide for Trident vX*(1) *Systems*.

NOTE

The end-user is responsible for locating adequate inlet ventilation to maintain proper operation of the enclosure's equipment, through ventilation on the rear door or a side wall, or from an adjoined cabinet.

FEATURES

The G85 Trident enclosure with front-only access offers the following features:

- Vented or sealed enclosure accommodates up to ten Trident I/O baseplates, one Main Processor (MP) baseplate, and one Communication Module (CM) baseplate
- Main power entry includes disconnect terminal blocks for 120/240 V ac or 125 V dc systems, or 10 A, Type D, double pole circuit breakers for 120/240 V ac systems
- All equipment accessible from the front of the enclosure only
- Standard redundant 24 V dc field and logic power - 480W (two field I/O power supplies) or 960W (four field I/O power supplies)
- Enclosure selection for use in ordinary (IP 43/55) or harsh (IP 55/66) rated environments
- Optional door intrusion monitoring switches
- Alarm contact terminal block assembly for Trident MP baseplate alarming, door intrusion monitoring switches, enclosure temperature switch and field and logic power supply status
- Optional fan failure monitoring
- Compact design to minimize use of floor space with front-only access that allows the maximum density of enclosures in a control room environment
- Available PVC or non-PVC wireways for controller Ethernet and serial cabling
- Generous 76 mm x 102 mm (3 in x 4 in) wire ducts with adequate capacity for most wire management
- Conveniently placed eyebolts for transporting and lifting the enclosures
- A 100 mm (3.9 in) plinth - total enclosure height of 2160 mm (85.0 in)
- Comfort handles with push-button/keylocks
- Three earth (ground) points; two protective earth (ground) studs, one isolated protective earth (ground) rail and one isolated instrument earth (ground) rail.

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.

(1) Request latest revision from Triconex. Document title changes with each product revision.

The enclosures support convenient bottom cable entry for termination assembly cabling and power wiring.

DUAL THERMOSTAT

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

DOOR INTRUSION MONITORING

An optional door intrusion monitoring switch is available for the front door on the enclosure. Each switch is prewired to a set of alarm status terminal blocks.

FAN FAILURE MONITORING

For enclosures with roof-mounted fans, an optional fan failure monitoring system is available which triggers an alert in the case of failure of the roof-mounted fans.

VENTED ENCLOSURE DESIGN OPTIONS

The G85 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, at the cost of reducing the overall ingress protection rating.
For customers who plan to modify the swing direction of their enclosure doors, fans mounted on the roof allow the process to proceed more smoothly.

Door-mounted fans provide the highest level of ingress protection for vented enclosures.

TRIDENT BASEPLATE MOUNTING

The enclosure can contain various types of vertically mounted Trident I/O baseplates, which accommodate different quantities and types of Triconex I/O and communication modules listed in the *Technical Product Guide for Trident vX Systems* manual.

For the enclosure to accommodate a higher density of modules and maximize accessibility and space for termination assembly cables, the baseplates are mounted in a vertical position. Vertical cable runs minimize the need to dress and route cables at ninety-degree angles while providing a direct path for cable access to the bottom of the enclosure. While improving layout, vertical orientation also reduces any horizontal obstructions, thus increasing airflow and improving overall thermal performance.

POWER AND EARTHING (GROUNDING)

Power wiring to the enclosure is routed through the bottom (through removable gland plates) of the enclosure. Dual power input feeds terminate at dedicated primary and secondary power distribution terminal blocks or circuit breaker assemblies.

Earthing (Grounding)

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

An isolated protective earth (ground) rail and an isolated instrument earth (ground) rail are available for additional earth (ground) points and may be used for cable shields.

Power Distribution

These enclosures are available with a dedicated assembly for customer main power. Two types of power distribution are available with:

- Disconnect terminal blocks for 120/240 V ac or 125 V dc systems. This method of power entry also has fused, knife disconnect terminal blocks for isolating the main power, as well as independent knife disconnect terminal blocks for each device, for ease of service.
- 10 A, Type D, double pole circuit breakers for 120/240 V ac systems.

The standard 24 V dc field power supplies include a distribution terminal block assembly for distribution of 24 V dc power. Each point includes a serviceable knife disconnect.

Utility power is supported through a dedicated terminal block or circuit breaker assembly which provides independent disconnects for light and fan circuits as well as additional blocks for the customer to install utility outlets.

The enclosures may be ordered without these power distribution terminal blocks when the customer has requirements for power distribution specific to regional electrical codes.

Optional bus bars for field wiring shields are available.

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

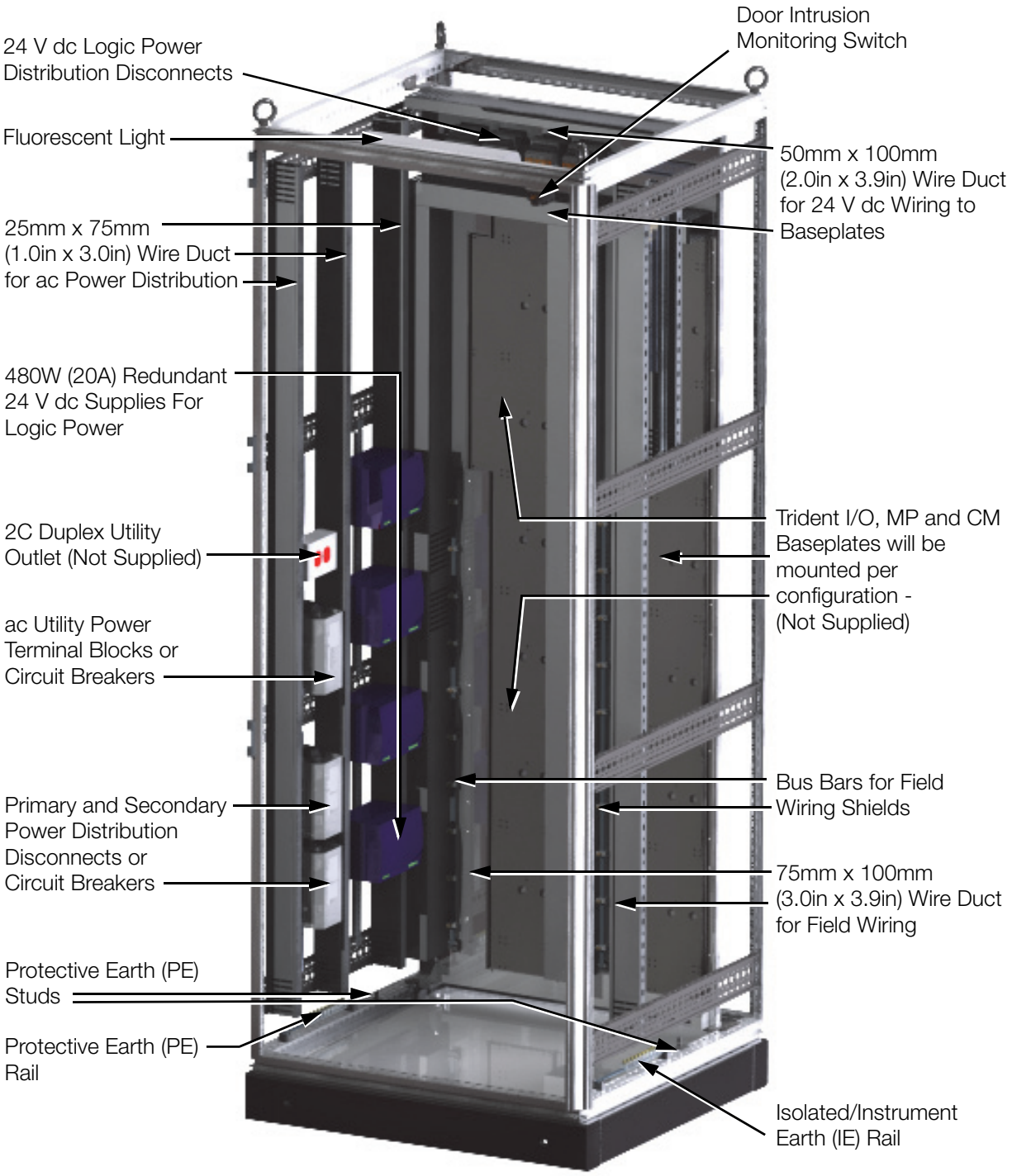


Figure 1. G85 Trident Enclosure, Front Left View

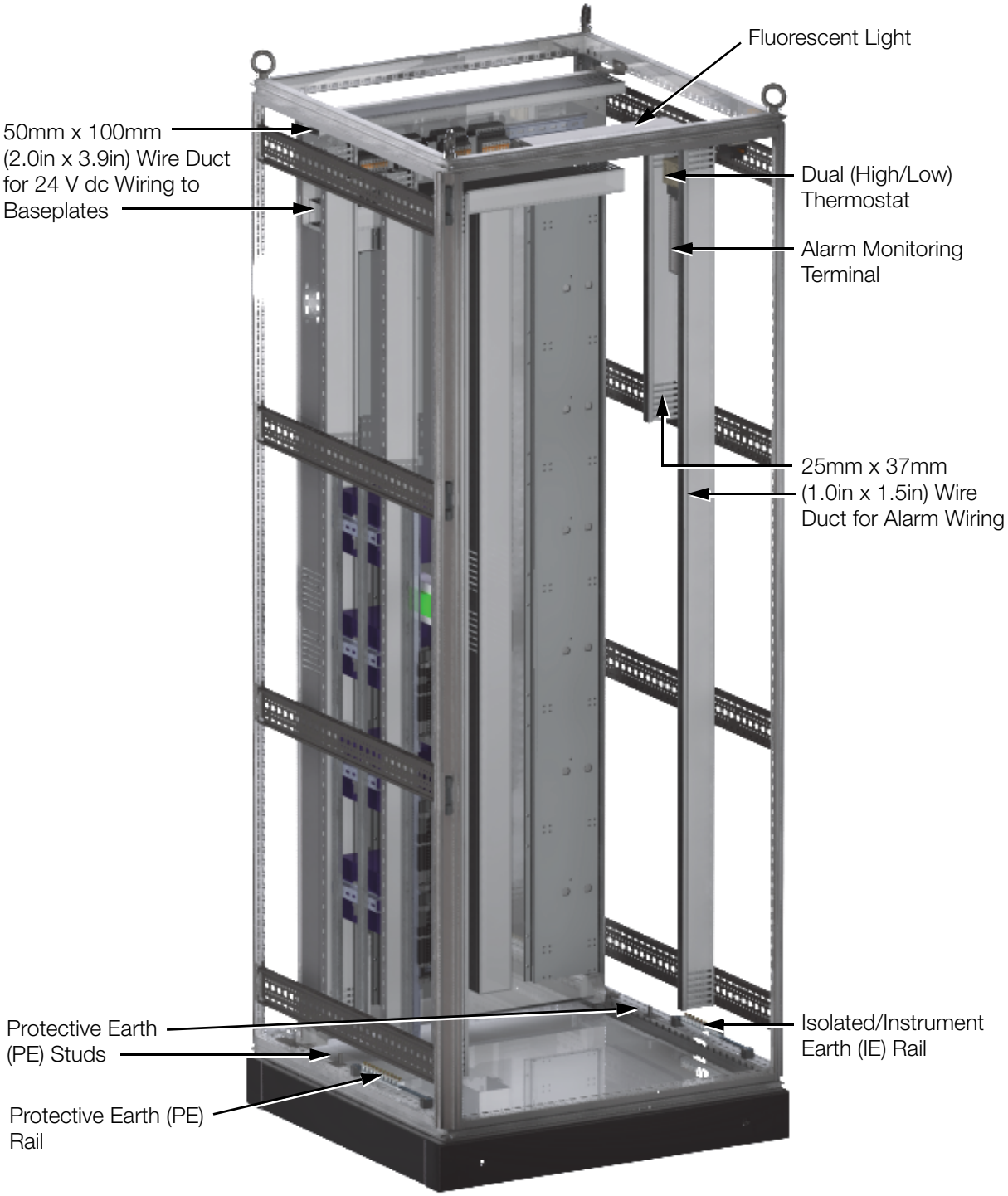


Figure 2. G85 Trident Enclosure, Front Right View

ENCLOSURE FEATURES AND OPTIONS

The G85 enclosure is provided with the following features, some of which are optional.

Table 1. G85 Enclosure Features and Options

Feature	Availability
Base Enclosure	Vented IP 43/55 rated enclosure with single front and rear door-mounted fans (120 V ac or 240 V ac- dual fans) 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 access only
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)
Ethernet/Serial Wiring	PVC -OR- non-PVC wireways for Ethernet/Serial I/O signal cabling
Equipment Supported	Up to ten Trident I/O baseplates, one Main Processor (MP) baseplate, and one Communication Module (CM) baseplate
Enclosure Lighting	Universal enclosure light with motion activation
Thermostat	Dual temperature thermostat
Security	Optional door intrusion monitoring switch - one per door
Fans	Door-mounted or roof-mounted fans - optional fan failure monitoring feature
Earthing (Grounding)	Two protective earth (ground) studs One isolated protective earth (ground) rail One isolated instrument earth (ground) rail
Main Power	100-250 V ac, 50-60Hz, 125 V dc input primary only or primary and secondary power, or 100-250 V ac, 50-60Hz, 125 V dc input primary and 24 V dc secondary power, or Additionally, customer configured power entry (no terminal blocks supplied)

Table 1. G85 Enclosure Features and Options (Continued)

Feature	Availability
Field Power	Standard redundant 24 V dc field power - 480W (two field I/O power supplies) with dedicated terminal block or circuit breaker assemblies Redundant power distribution terminal block assemblies for customer configured power entry
Alarm Contact	Alarm contact terminal block assembly for Trident MP baseplate alarming, door intrusion monitoring switches, enclosure temperature switch and field and logic power supply status
Utility Power	120 V ac or 240 V ac utility power with disconnect terminal blocks or 10 A, Type D, double pole circuit breakers

FUNCTIONAL SPECIFICATIONS

Enclosure

The enclosures are free-standing, floor mounted, steel industrial enclosures containing:

- Up to ten Triconex™ Trident I/O baseplates, one Main Processor (MP) baseplate, and one Communication Module (CM) baseplate (vented or sealed enclosure)
- 24 V dc field and logic power supplies (redundant power).

ENVIRONMENTAL SPECIFICATIONS

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

Operating Temperatures (Ambient)

Thermal performance of the G85 enclosure meets the convection cooling requirements described in the *Planning and Installation Guide for Trident vX Systems*(2).

VENTED (THERMAL LOADING LIMIT)
-20 to +60°C (-4 to +140°F)
Up to 750 Watts (Average)
-20 to +55°C (-4 to +131°F)
750 to 1000 Watts (Maximum)

SEALED (THERMAL LOADING LIMIT)
-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)

Storage Temperature

-40 to 70°C (40 to 158°F)

Relative Humidity

5 to 95% (noncondensing)

Acoustic Noise Level(3)

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
Opens on alarm, Range - 0 to 60°C (32 to 140°F)

LOW ALARM SETTING
Opens on alarm, 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.

Area Designation

Per customer order, vented for general purpose or sealed for hazardous area (Zone II (IEC) / Class I, Division 2, (North America).

(2) Document title changes with each product revision. To obtain the latest version of the *Planning and Installation Guide for Trident vX Systems* document, contact IPS Global Client Support.
(3) 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 and Triconex equipment selected. Consult with a Foxboro representative if precise weight figures are required.

VENTED ENCLOSURE (MAX. CONFIGURATION)
800 mm x 800 mm - 261 kg (575 lb)

SIDE PANEL
800 mm x 800 mm - 8 kg (18 lb)

Mounting
Floor

CAUTION

To prevent injury, this enclosure must be bolted down. Refer to the installation guide.

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
Roof, Side Panels, Doors
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)

SEALED ENCLOSURE
Bottom through steel panel and customer cutouts in panel

Earthing (Grounding)
ROOF, SIDEWALLS, GLAND PLATES
Automatic potential equalization built in

FRONT DOOR
Dedicated 4 mm^2 (11 ga) ground strap to enclosure frame

ENCLOSURE
Two protective earth (ground) M8 studs (one for each enclosure side)
An isolated protective earth (ground) rail and an isolated instrument earth (ground) rail are provided for additional earth (ground) points.

Power Input Terminals
DISCONNECT TERMINAL BLOCKS

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.

CIRCUIT BREAKERS

Type
Compression
Wire Size
Solid: Up to 6 mm^2 (3 AWG)
Stranded: Up to 4 mm^2 (8 AWG)

Termination Assembly Cabling
Universal mounting straps are supplied for securing, routing and strain relieving of Triconex termination cables. Each strap supports up to a 75 mm (3 in) diameter cable bundle.

FOR MORE INFORMATION

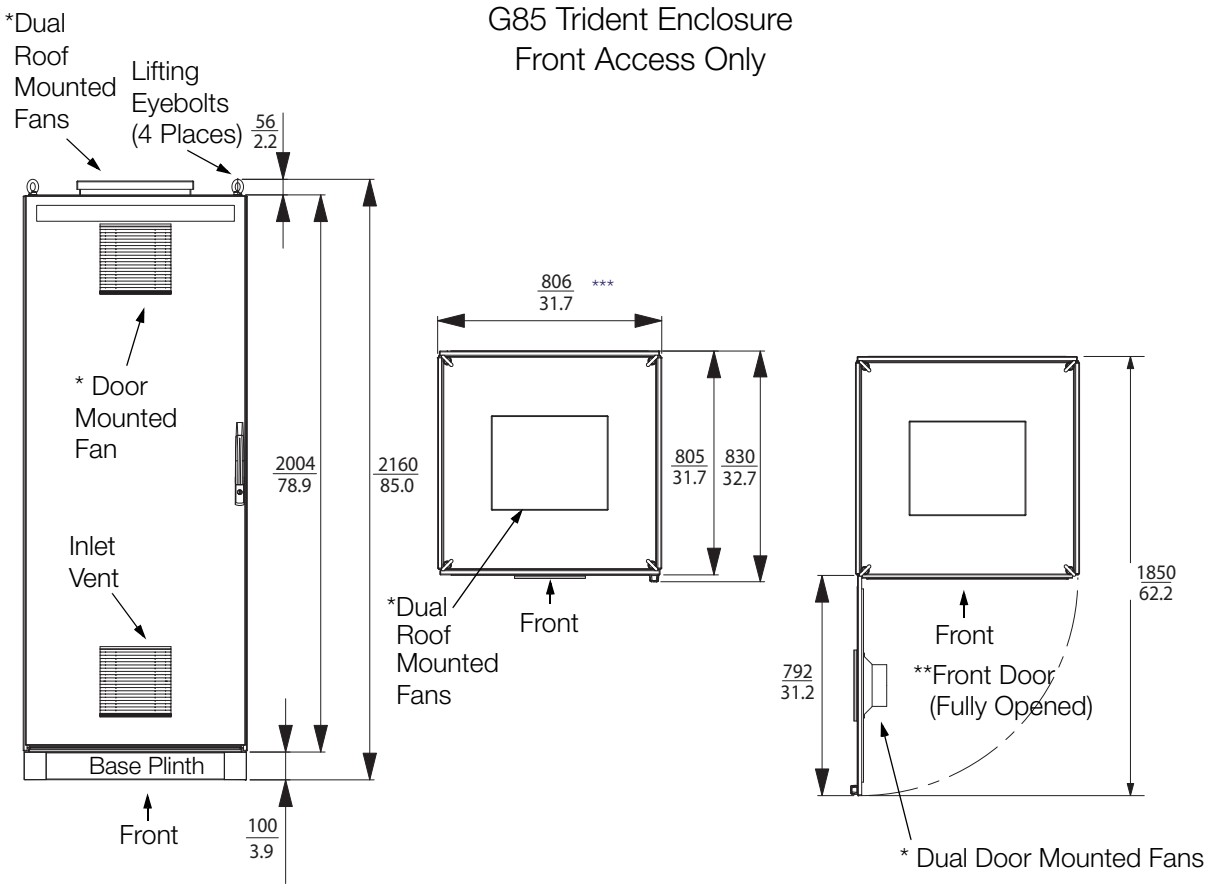
For additional information describing these enclosures, refer to the following documentation.

Document Number	Description
PSS 31H-2G80	G80 Trident Enclosure
ISA-S71.04-1985 (not Foxboro-supplied)	Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants
9791034-XXX[a]	Technical Product Guide for Trident vX Systems
9720110-XXX[a]	Planning and Installation Guide for Trident vX Systems
9720111-XXX[a]	Communication Guide for Trident vX Systems
9720112-XXX[a]	Safety Considerations Guide for Trident vX Systems

(a) Document title and document part number changes with each product revision. Request latest revision from Triconex.

DIMENSIONS - NOMINAL

G85 Trident Enclosure
Front Access Only



* 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

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