



# Foxboro™ DCS

## G80 Trident Enclosure

### PSS 41H-2G80

#### Product Specifications

January 2020



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# Overview

The G80 enclosure is specifically designed for housing EcoStruxure™ Triconex™ Trident controllers and I/O system. It is available as a vented or sealed enclosure.

The G80 vented enclosure can be configured with up to twenty Trident I/O baseplates, one Main Processor (MP) baseplate, and one Communication Module (CM) baseplate. It is a free-standing, floor mounted unit with an IP 43/55 rating for location in mild (ordinary) environmental areas.

The G80 sealed enclosure can be configured with up to ten Trident I/O baseplates, one Main Processor (MP) baseplate, and one Communication Module (CM) baseplate. It is a free-standing, floor-mounted unit, with options for either an IP 55 or IP 66 rating for 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 Systems*. Request latest revision from Triconex. document title changes with each product revision.

**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

- Vented enclosure accommodates up to twenty Trident I/O baseplates, sealed enclosure accommodates up to ten Trident I/O baseplates; in addition, both enclosure types accommodate 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
- Enclosure front and rear access
- Standard redundant 24 V DC field and logic power — 480 W (two field I/O power supplies) or 960 W (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
- Compact design to minimize use of floor space with both front and rear access that allow maximum density of enclosures in a control 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 2,160 mm (85.0 in)
- Comfort handles with push button/keylocks
- Three ground points: two protective ground studs, one isolated protective ground rail, and one isolated instrument 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.

The enclosures support convenient bottom cable entry for termination assembly (TA) 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 each door on the enclosures. Each switch is prewired to a set of alarm status terminal blocks.

## 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 TA 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 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.

### Grounding

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

An isolated protective ground rail and an isolated instrument ground rail are available for additional 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.

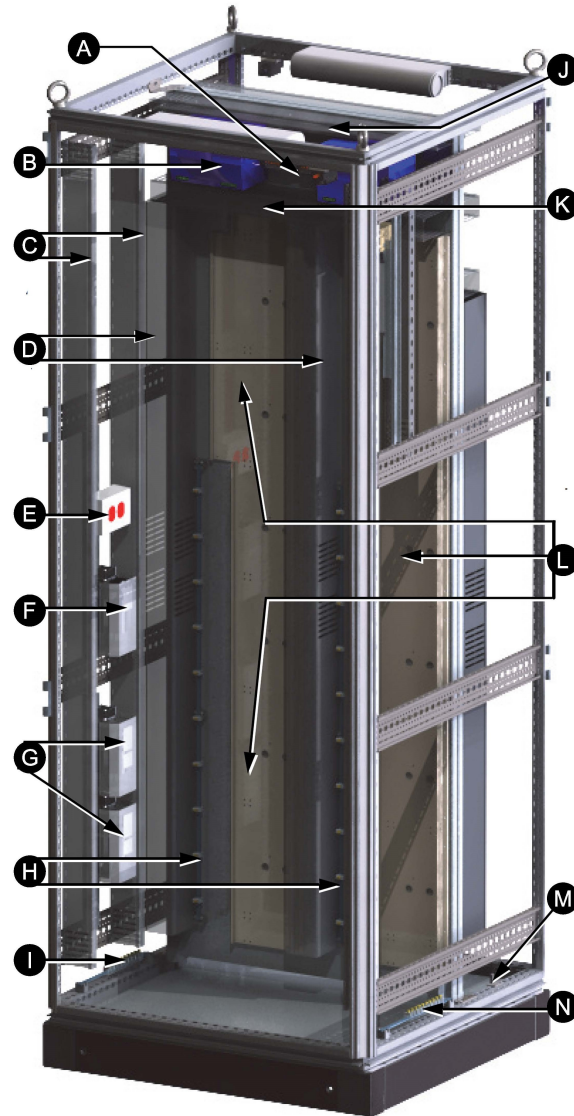
Utility power is supported through a dedicated terminal block or circuit breaker assembly that provides independent disconnects for light and fan circuits, as well as additional blocks for the customer to install utility outlets.

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 - G80 Trident Enclosure, Front Left View



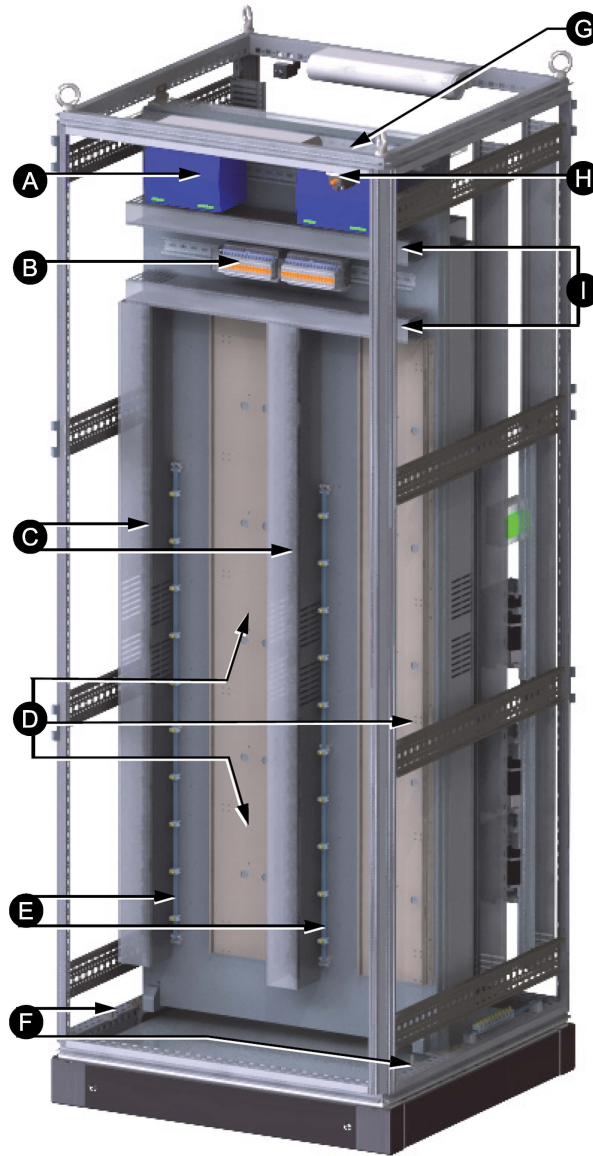
Legend			
<b>A</b>	24 V DC Logic Power Distribution Disconnects	<b>H</b>	Bus Bars for Field Wiring Shields
<b>B</b>	480 W (20A) Redundant 24 V DC Power Supplies for Logic Power	<b>I</b>	Protective Ground Rail
<b>C</b>	25 mm x 75 mm (1 in x 3 in) Wire Duct for ac Power Distribution	<b>J</b>	25 mm x 75 mm (1 in x 3 in) Wire Duct for ac Wiring to Power Supplies
<b>D</b>	75 mm x 100 mm (3.0 in x 3.9 in) Wire Duct for Field Wiring	<b>K</b>	50 mm x 100 mm (2.0 in x 3.9 in) Wire Duct for 24 V DC Wiring to Baseplates
<b>E</b>	2C Duplex Utility Outlet (Not Supplied)	<b>L</b>	Trident I/O, MP and CM Baseplates will be mounted per configuration (Not Supplied)
<b>F</b>	ac Utility Power Terminal Blocks or Circuit Breakers	<b>M</b>	Protective Ground Studs
<b>G</b>	Primary and Secondary Power Distribution Disconnects or Circuit Breakers	<b>N</b>	Isolated/Instrument Ground Rail

Figure 2 - G80 Trident Enclosure, Front Right View



Legend			
<b>A</b>	LED Lights	<b>E</b>	Alarm Monitoring Terminal Block
<b>B</b>	Protective Ground Studs	<b>F</b>	25 mm x 37 mm (1.0 in x 1.5 in) Wire Duct for Alarm Wiring
<b>C</b>	Door Intrusion Monitoring Switch	<b>G</b>	Isolated Instrument Ground Rail
<b>D</b>	Dual (High/Low) Thermostat		

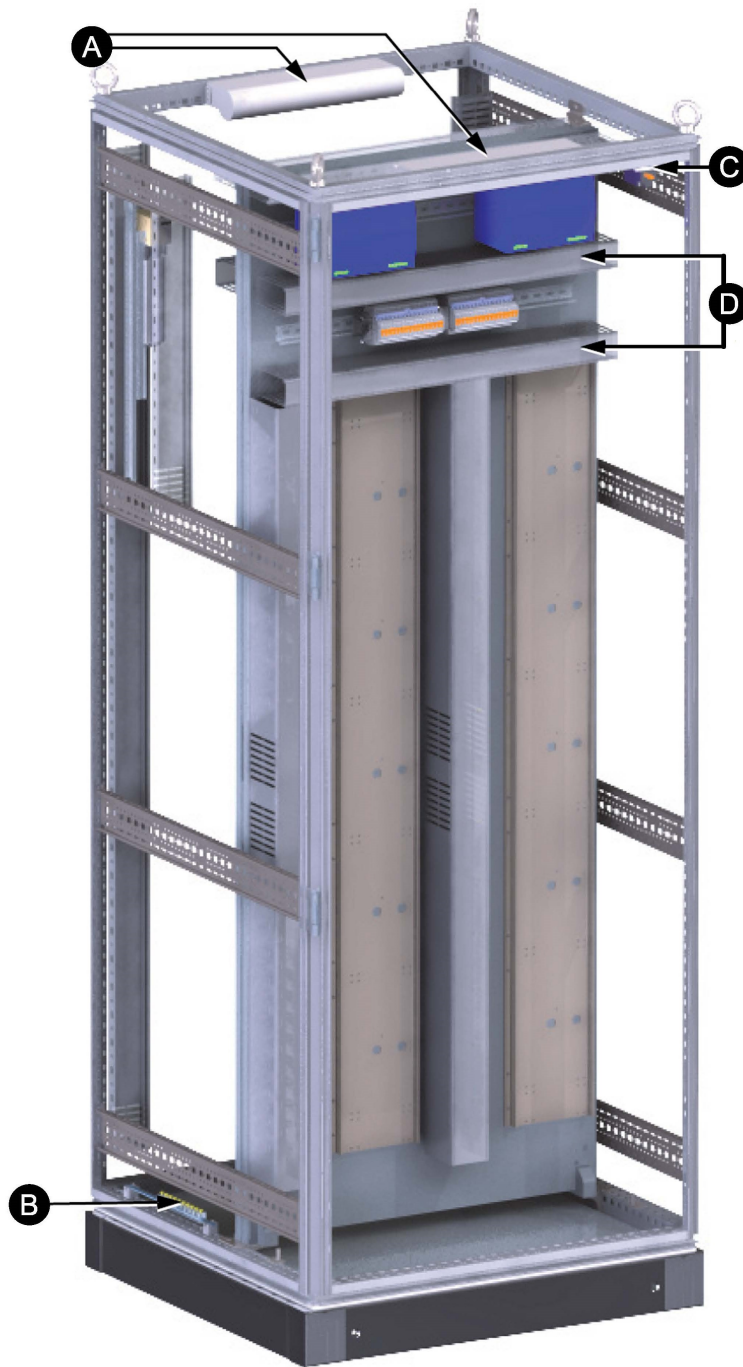
Figure 3 - G80 Trident Enclosure, Rear Right View



Legend			
<b>A</b>	480 W (20A) Redundant 24 V DC Supplies for Field Power	<b>F</b>	Protective Ground Studs
<b>B</b>	24 V DC Field Power	<b>G</b>	25 mm x 75 mm (1 in x 3 in) Wire Duct for ac Wiring to Power Supplies
<b>C</b>	75 mm x 100 mm (3.0 in x 3.9 in) Wire Duct for Field Wiring	<b>H</b>	Door Intrusion Monitoring Switch
<b>D</b>	Trident I/O Baseplates will be mounted per configuration (Not Supplied)	<b>I</b>	50 mm x 100 mm (2 in x 3 in) Wire Duct for 24 V DC Wiring to Baseplates
<b>E</b>	Bus Bars for Field Wiring Shields		



Figure 4 - G80 Trident Enclosure, Rear Left View



Legend			
<b>A</b>	LED Lights	<b>C</b>	Door Intrusion Monitoring Switch
<b>B</b>	Isolated/Instrument Ground Rail	<b>D</b>	50 mm x 100 mm (2 in x 3 in) Wire Duct for 24 V DC Wiring to Baseplates

## Enclosure Features and Options

Feature	Availability
Base Enclosure	<ul style="list-style-type: none"> <li>Vented IP 43/55 rated enclosure with single front and rear door-mounted fans (120 V AC or 240 V AC), or</li> <li>Sealed IP 55 rated enclosure, or</li> <li>Sealed IP 66 rated enclosure</li> </ul>
Enclosure Access	Front and rear access
Front Door	Solid front door with inlet vents
Cable Entry	Bottom cable entry
Sidewalls	Options configurable based on buying 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	<ul style="list-style-type: none"> <li>Up to twenty Trident I/O baseplates (vented enclosure), or</li> <li>Up to ten I/O baseplates (sealed enclosure)</li> <li>Both enclosure types support one MP baseplate and one CM baseplate</li> </ul>
Enclosure Lighting	Universal enclosure light with motion activation
Thermostat	Dual temperature thermostat
Security	Optional door intrusion monitoring switch (one per door)
Fans	Door-mounted fans
Grounding	<ul style="list-style-type: none"> <li>Two protective ground studs</li> <li>One isolated protective ground rail</li> <li>One isolated instrument ground rail</li> </ul>
Main Power	<ul style="list-style-type: none"> <li>100-250 V AC, 50-60 Hz, 125 V DC input primary only or primary and secondary power, or</li> <li>100-250 V AC, 50-60 Hz, 125 V DC input primary and 24 V DC secondary power, or</li> <li>Customer configured power entry (no terminal blocks supplied)</li> </ul>
Field Power	<ul style="list-style-type: none"> <li>Standard redundant 24 V DC field power — 480 W (two field I/O power supplies) with dedicated terminal block or circuit breaker assemblies</li> <li>Redundant power distribution terminal block assemblies for customer configured power entry</li> </ul>
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	<p>The enclosures are free-standing, floor-mounted, steel industrial enclosures containing:</p> <ul style="list-style-type: none"><li>• Up to twenty Triconex Trident I/O baseplates (vented enclosure) or up to ten I/O baseplates (sealed enclosure); in addition, both enclosure types support one MP baseplate and one CM baseplate</li><li>• 24 V DC field and logic power supplies (redundant power)</li></ul>
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# Environmental Specifications

	Operating (Ambient)	Storage
<b>Temperature</b>	<p>Thermal performance of the G80 enclosure meets the convection cooling requirements described in the <i>Planning and Installation Guide for Trident vX Systems</i><sup>(a)</sup>.</p> <ul style="list-style-type: none"> <li>Vented (Thermal Loading Limit):               <ul style="list-style-type: none"> <li>-20 to +60°C (-4 to +140°F): Up to 750 Watts (Average)</li> <li>-20 to +55°C (-4 to +131°F): 750 to 1,000 Watts (Maximum)</li> </ul> </li> <li>Sealed (Thermal Loading Limit):               <ul style="list-style-type: none"> <li>-20 to +50°C (-4 to +122°F): Up to 400 Watts (Average)</li> <li>-20 to +45°C (-4 to +113°F): 400 to 500 Watts (Maximum)</li> </ul> </li> </ul>	-40 to 70°C (40 to 158°F)
<b>Relative Humidity</b>	5 to 95% (noncondensing)	
<b>Ingress Protection Ratings</b>	<ul style="list-style-type: none"> <li>Vented:           <ul style="list-style-type: none"> <li>Door-Mounted Fans:               <ul style="list-style-type: none"> <li>IP 43 to EN 60 529/10.9191/NEMA 12</li> </ul> </li> </ul> </li> <li>Sealed:           <ul style="list-style-type: none"> <li>IP 55 to EN 60 529/NEMA 12</li> <li>IP 66 to EN 60 529/NEMA 4</li> </ul> </li> </ul>	
<b>Acoustic Noise Level<sup>(b)</sup></b>	<ul style="list-style-type: none"> <li>Door-Mounted Fans:           <ul style="list-style-type: none"> <li>64 dB (A) at 1 m/62 dB (A) at 3 m</li> </ul> </li> <li>Sealed Enclosure (No Fans):           <ul style="list-style-type: none"> <li>Ambient/Ambient</li> </ul> </li> </ul>	
<b>Dual Thermostat (User Settable)</b>	<ul style="list-style-type: none"> <li>High Alarm Setting:           <ul style="list-style-type: none"> <li>Opens on alarm, Range: 0 to 60°C (32 to 140°F)</li> </ul> </li> <li>Low Alarm Setting:           <ul style="list-style-type: none"> <li>Opens on alarm, Range: 0 to 60°C (32 to 140°F)</li> </ul> </li> </ul>	
<b>Agency Certification</b>	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.	
<b>Area Designation</b>	Per customer order, vented for general purpose or sealed for hazardous area (Zone II (IEC)/ Class I, Division 2, (North America))	
<p><sup>(a)</sup> Document title changes with each product revision. To obtain the latest version of the <i>Planning and Installation Guide for Trident vX Systems</i> document, contact IPS Global Client Support.</p> <p><sup>(b)</sup> Under normal operating conditions, with both fans running, at enclosure's mid-height at 46 dB (A) ambient noise level.</p>		

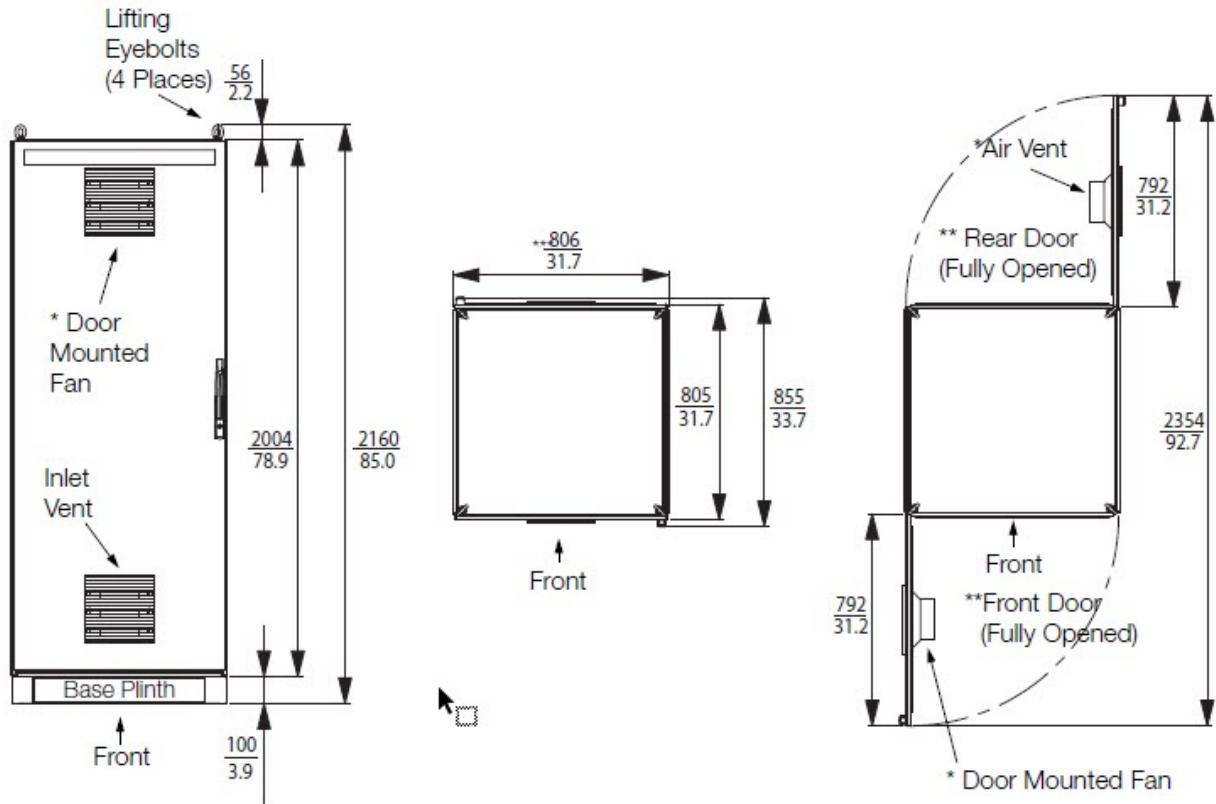
## Physical Specifications

Weight	<p>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.</p> <ul style="list-style-type: none"> <li>Vented Enclosure (Max. Configuration): 800 mm x 800 mm - 261 kg (575 lb)</li> <li>Side Panel: 800 mm x 800 mm - 8 kg (18 lb)</li> </ul>
Mounting	<p>Floor</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p><b>▲ CAUTION</b></p> </div> <p>To prevent injury, this enclosure must be bolted down. See <i>Enclosures and Mounting Structures - Site Planning and Installation User's Guide</i> (B0700AS).</p> <p><b>Failure to follow these instructions can result in injury or equipment damage.</b></p>
Construction	<p>Material:</p> <ul style="list-style-type: none"> <li>Doors: Sheet steel, 2.0 mm (14 ga)</li> <li>Frame, Roof, Side Panels, Gland Plates: Sheet steel, 1.5 mm (16 ga)</li> <li>Base/Plinth: Sheet steel and plastic</li> </ul> <p>Finish:</p> <ul style="list-style-type: none"> <li>Frame: Dipcoat-primed, RAL 7044 smooth</li> <li>Roof, Side Panels, Doors: Dipcoat-primed, powder-coated, RAL 7035 (light gray) textured</li> <li>Base/Plinth: Dipcoat-primed, RAL 7022 (umbra gray) smooth, plastic cover caps RAL 9005 (jet black)</li> <li>Gland Plates and Internal Hardware: Zinc-plated, passivated</li> </ul>
Cable Entry	<ul style="list-style-type: none"> <li>Vented Enclosure: Bottom through gland plate(s)</li> <li>Sealed Enclosure: Bottom through steel panel and customer cutouts in panel</li> </ul>

Grounding	<ul style="list-style-type: none"> <li>• Roof, Side Walls, Gland Plates: Automatic potential equalization built in</li> <li>• Front and Rear Doors: Dedicated 4 mm<sup>2</sup> (11 ga) ground strap to enclosure frame</li> <li>• Enclosure: Two protective ground M8 studs (one for each enclosure side) An isolated protective ground rail and an isolated instrument ground rail are provided for additional ground points</li> </ul>
Power Input Terminals	<p>Disconnect Terminal Blocks:</p> <ul style="list-style-type: none"> <li>• Type: Ring Lug</li> <li>• Wire Size: Up to 6 mm<sup>2</sup> (10 AWG)</li> <li>• Ring Lug Size: M4 Maximum (DIN 46 234/46 237), 9.6 mm maximum O.D.</li> </ul> <p>Circuit Breakers:</p> <ul style="list-style-type: none"> <li>• Type: Compression</li> <li>• Wire Size: <ul style="list-style-type: none"> <li>◦ Solid: Up to 6 mm<sup>2</sup> (3 AWG)</li> <li>◦ Stranded: Up to 4 mm<sup>2</sup> (8 AWG)</li> </ul> </li> </ul>
Termination Assembly Cabling	<p>Universal mounting straps are supplied for attaching, routing, and strain relieving of Triconex termination cables. Each strap supports up to a 75 mm (3 in) diameter cable bundle.</p>

# Dimensions - Nominal

G80 Trident Enclosure



\* Vented enclosures only — either 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

<b>Document Number</b>	<b>Description</b>
PSS 41H-2G85	<i>G85 Trident Enclosure</i>
B0700AS	<i>Enclosures and Mounting Structures - Site Planning and Installation User's Guide</i>
ISA-S71.04-1985 (not Foxboro-supplied)	<i>Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants</i>
9791034-XXX <sup>(a)</sup>	Technical Product Guide for Trident vX Systems
9720110-XXX <sup>(a)</sup>	<i>Planning and Installation Guide for Trident vX Systems</i>
9720111-XXX <sup>(a)</sup>	<i>Communication Guide for Trident vX Systems</i>
9720112-XXX <sup>(a)</sup>	<i>Safety Considerations Guide for Trident vX Systems</i>
<sup>(a)</sup> Document title and document part number changes with each product revision. Request latest revision from Triconex.	



 **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/](http://www.p65warnings.ca.gov/).

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