Foxboro Evo™ Process Automation System

Product Specifications

Foxboro® by Schneider Electric

PSS 31H-2K61

K61 Tricon Termination Enclosure

The K61 Tricon Termination Enclosure provides termination and marshalling options for Triconex™ Tricon equipment, including DIN rail mounted Triconex termination devices, such as External Termination Panels (ETPs), Field Terminations and External Termination Assemblies (ETAs).

OVERVIEW

The K61 Tricon termination enclosure is specifically designed for housing Triconex termination devices and additional customer-supplied terminal blocks for marshalling. This enclosure may accommodate the termination of Tricon modules which are housed in a K60 Tricon System Enclosure or K62/K72 Tricon System and Termination Enclosure.

The K61 enclosure is available as a vented or sealed enclosure. It can be configured with:

- Up to seven vertical DIN rails for mounting of Triconex termination devices and additional customer-supplied terminal blocks for marshalling.
- Redundant power supplies (480W or 960W 24 V dc power supplies) for field power.

The K61 vented enclosure is a free-standing, floor mounted unit with an IP 43/55 rating for location in mild (ordinary) environmental areas.

The K61 sealed enclosure is a free-standing, floor mounted unit, with an IP 55 rating for location in harsh environments.

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

The K61 enclosure can be installed bayed or adjoined to other Triconex enclosures to maximize the use of floor space and ease of cabling. The enclosures can be bayed together using baying kits as discussed in the *K-Series Enclosures Site Planning and Installation User's Guide* (B0700GN).

This enclosure and its configurations have been tested and qualified by Foxboro® for use with the Tricon equipment.

FEATURES

The K61 Tricon termination enclosure offers the following features:

- Up to seven 1800 mm vertical DIN rails for mounting of termination assemblies and terminal blocks for marshalling, to provide a total of 12.6 m of linear rail space
- Vented or sealed enclosure selection for use in ordinary (IP 43/55) or harsh (IP 55) rated environments
- Option for redundant 480W (P0923VD) or 960W 24 V dc field power supplies
- Main power entry includes disconnect terminal blocks, or 10 A, Type D, double pole circuit breakers.
- Optional EMC/RFI line filters for redundant main power (Triconex recommended).
- Alarm contact terminal block assembly for door intrusion monitoring switches, enclosure temperature switch and field power supply status
- Optional door intrusion monitoring
- Bottom cable entry for standard power wiring and cables for Triconex termination devices, such as External Termination Panels (ETPs), Field Terminations and External Termination Assemblies (ETAs)

NOTE
Due to the placement of field power supplies, top entry is not recommended for this enclosure.

- Available PVC or non-PVC wireways for field I/O cabling, with optional signal segregation barrier plate
- Generous 76 mm x 102 mm (3 in x 4 in) wire ducts with adequate capacity for most wire management
- Compact design to minimize use of floor space with both front and rear access that allow maximum packaging density of control environment
- Conveniently placed eyebolts for transporting and lifting the enclosures
- A 100 mm (4 in) plinth increases total enclosure height of 2156 mm (85.0 in)
- Handles with push-button or keylocks
- Two earth (ground) points; two protective earth (ground) studs, and one isolated protective 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, non-adjoined K61 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.

The enclosures support convenient top or bottom cable entry for termination assembly cabling and power wiring. Vented enclosures with roof-mounted fans are not recommended with top cable entry, due to the location of the power supplies.

DUAL TEMPERATURE THERMOSTAT

An optional dual (high/low) thermostat is available to monitor enclosure temperature extremes.

DOOR INTRUSION MONITORING

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

VENTED ENCLOSURE DESIGN OPTIONS

The K61 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 restricting top-entry cable access to the enclosure and 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 are desirable for top entry cable access configurations, and provide the highest level of ingress protection for vented enclosures.

TRICONEX TERMINATION DEVICE MOUNTING

The K61 termination enclosure has up to seven vertical DIN rails for mounting the appropriate Triconex termination devices, and one dedicated vertical DIN rail for power distribution. Four of the DIN rails are accessible from the rear of the enclosure and four of the DIN rails are accessible from the front of the enclosure. For each set of four DIN rails, two are mounted in the center of the enclosure, and two are mounted on the sides.

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

One or two pairs of optional redundant 24 V dc field power supplies are available for field power. They are mounted horizontally in the enclosure (see Figure 2 through Figure 5).

Both vented and sealed enclosures have a limited thermal load (see “Operating Temperatures” on page 12).

TRICONEX TERMINATION DEVICE/INPUT POWER CABLING

The K61 enclosure can be ordered for bottom cable entry or modified by the customer for simultaneous top and bottom cable entry.

For the top cable entry version, the termination device cables and/or customer power feeds enter through customer-configured cable glands. Any

customizations made must follow the manufacturer's guidelines to preserve the enclosure's ingress protection rating. Vented enclosures with roof and door-mounted fans are not recommended for top cable entry.

For the vented bottom entry version, the termination device 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 termination device 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. Users must provide their own cable glands (for top or bottom cable entry), in keeping with maintenance of the enclosure's ingress protection. It is the user's responsibility to ensure that the enclosure's environmental ratings are retained.

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

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

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

POWER AND EARTHING (GROUNDING)

The K61 enclosure supports an optional redundant power system for field power to protect against power failures.

Field power wiring to the enclosure is routed through the bottom of the enclosure. Customer-supplied dual power input feeds terminate at dedicated redundant power distribution terminal block or circuit breaker assembly.

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

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 is available for additional earth (ground) points and may be used for cable shields.

Power Distribution

Each enclosure is available with a dedicated assembly for customer field power. Two types of power distribution are available with:

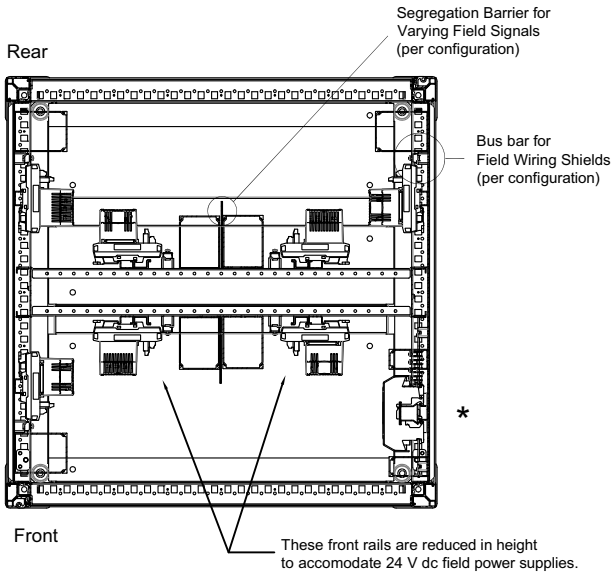
- Disconnect terminal blocks. This method of power entry also has fused, knife disconnect terminal blocks for isolating the field power, as well as independent knife disconnect terminal blocks for each device, for ease of service.
- 10 A, Type D, double pole circuit breakers.

The 24 V dc field power supply option also includes a distribution terminal block assembly for distribution of 24 V dc power to up to ten Triconex termination devices. Each point includes a serviceable knife disconnect.

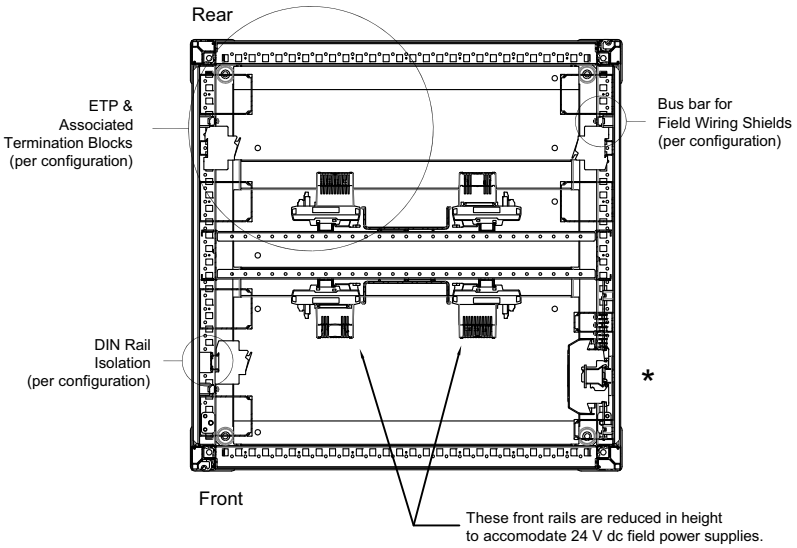
Utility power is supported through a dedicated terminal block or circuit breaker assembly which provides independent disconnects for light and fan circuits as well as additional blocks for the customer to install utility outlets.

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

K61 Termination Layout and DIN Rail Identification

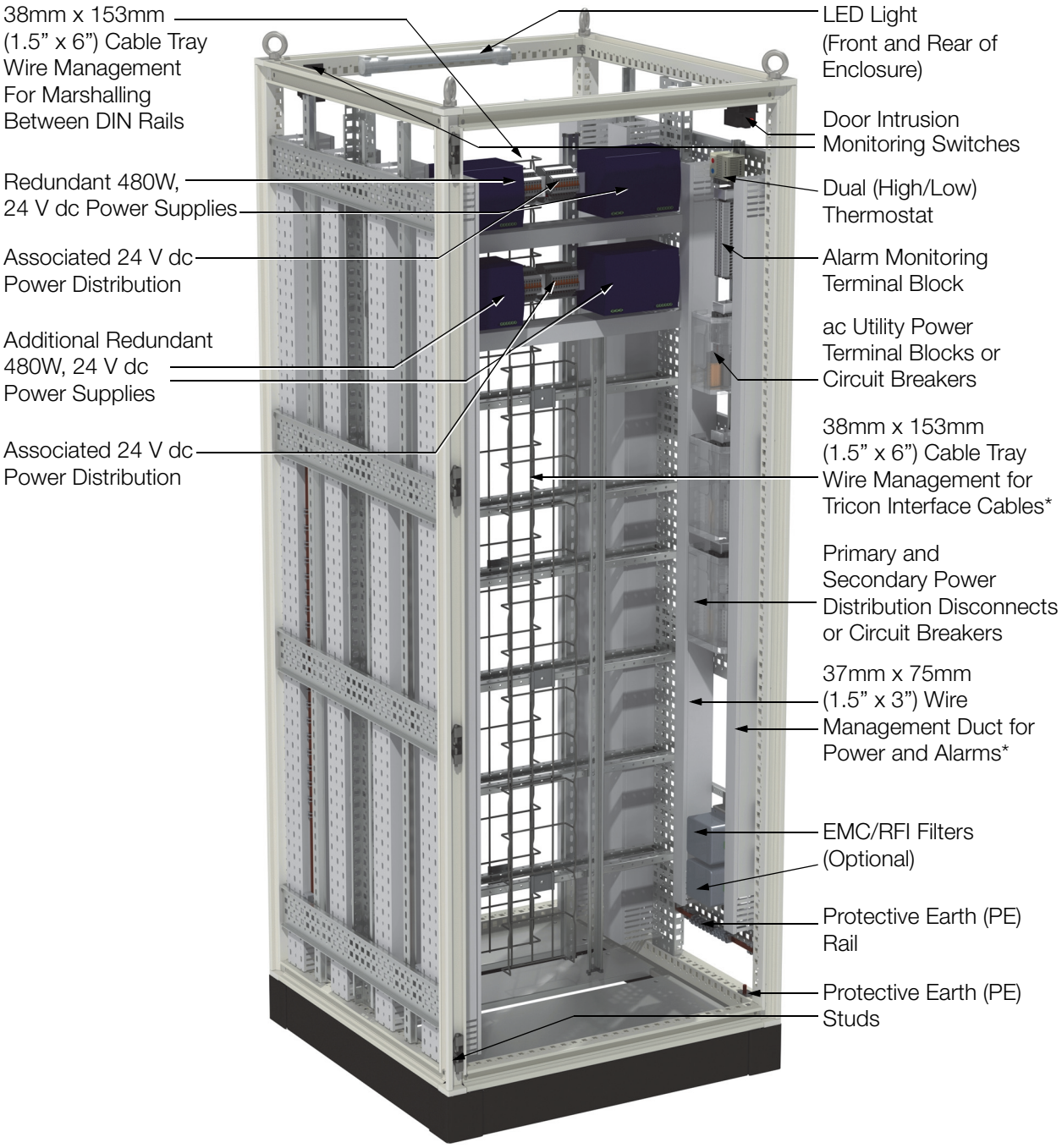


K61 Marshalling Layout and DIN Rail Identification



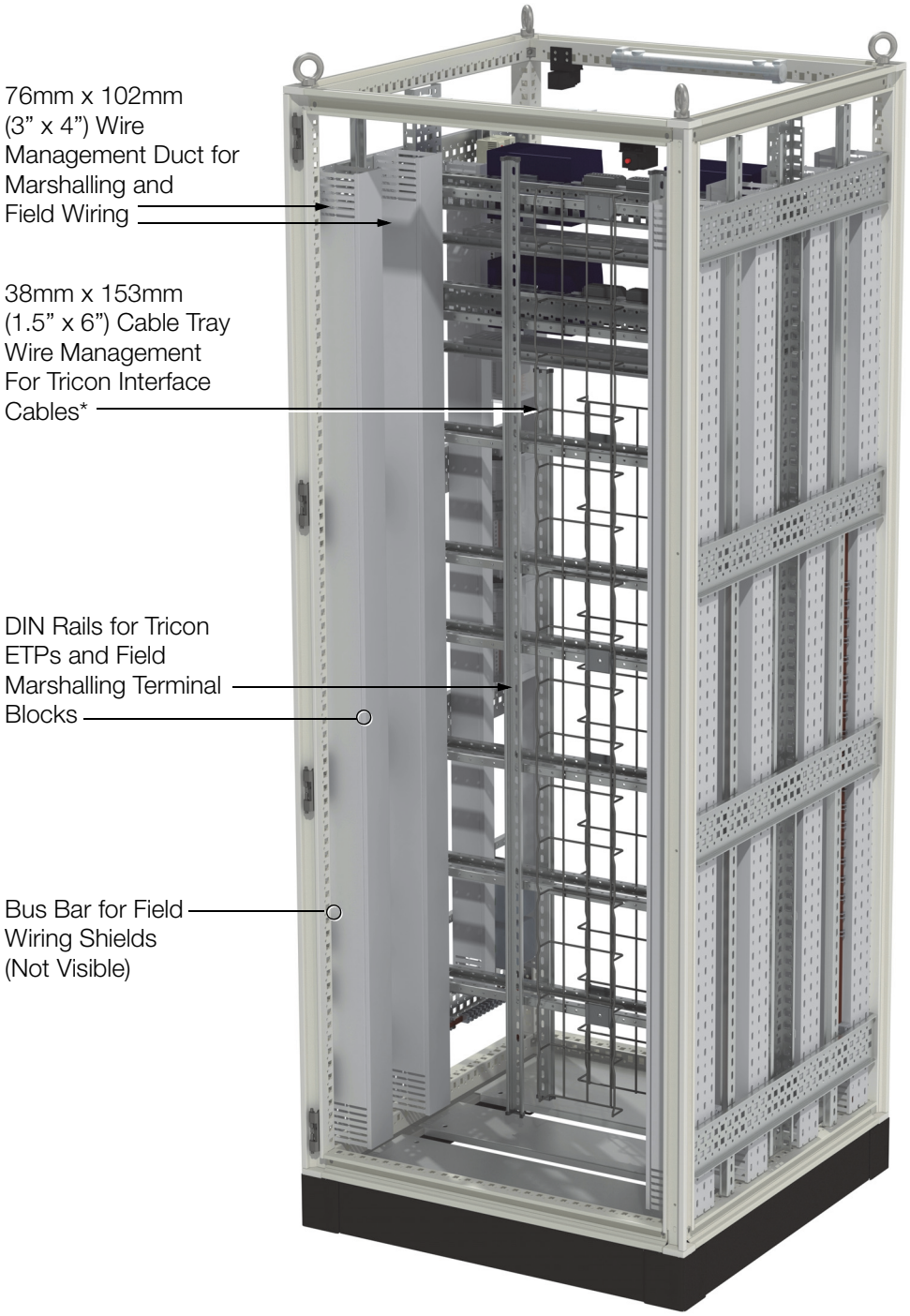
*For both setups, this front side rail is reserved for field and utility power entry terminal blocks/circuit breakers, alarm status terminal blocks and EMI line filters per configuration.

Figure 1. K61 Tricon Termination Enclosure Termination and Marshalling Layouts and DIN Rail Identification



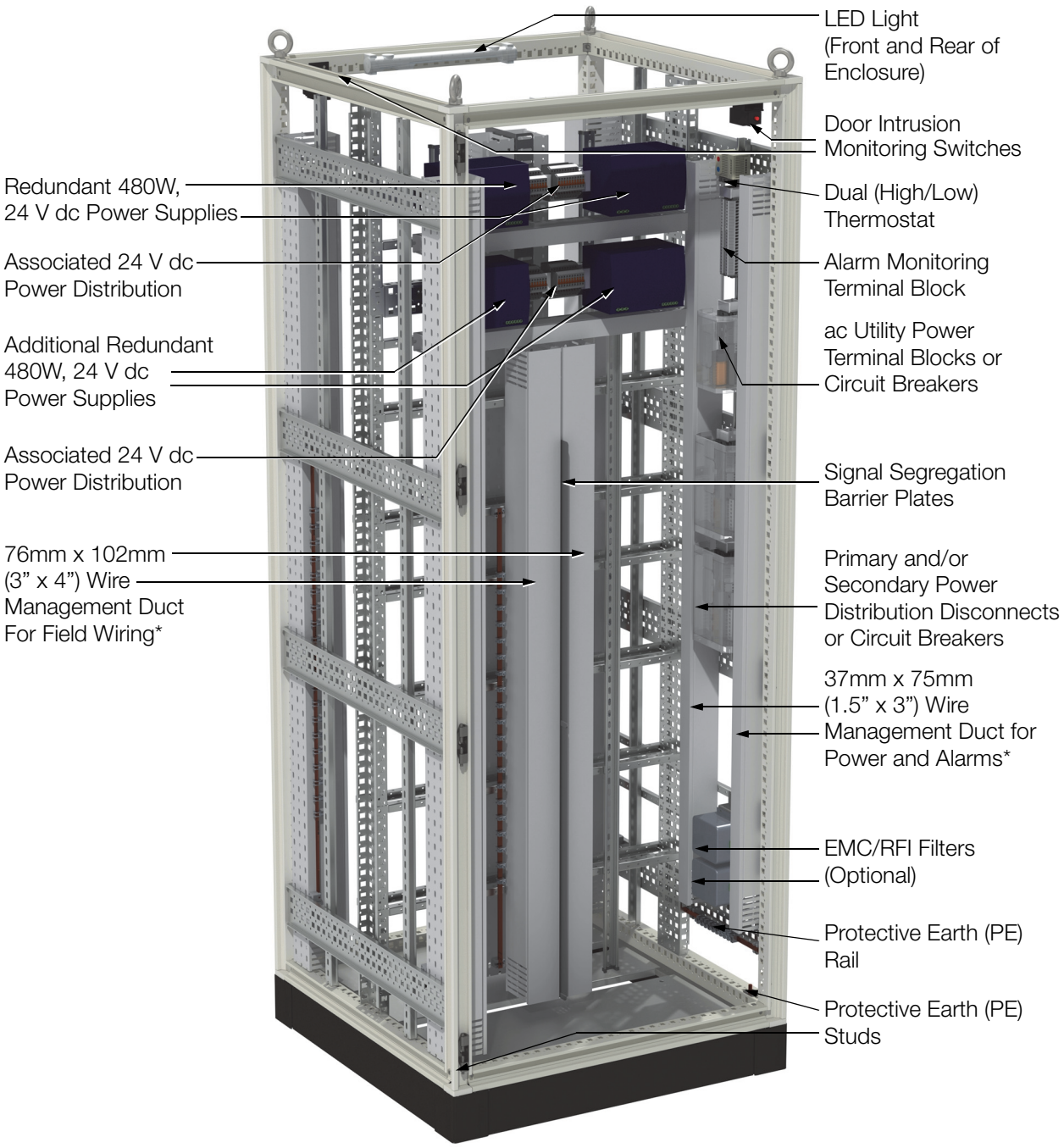
* Some cable trays and wire management ducts may not be supplied with the standard configuration.

Figure 2. K61 Tricon Termination Enclosure with Marshalling Option, Front View, Bottom Entry



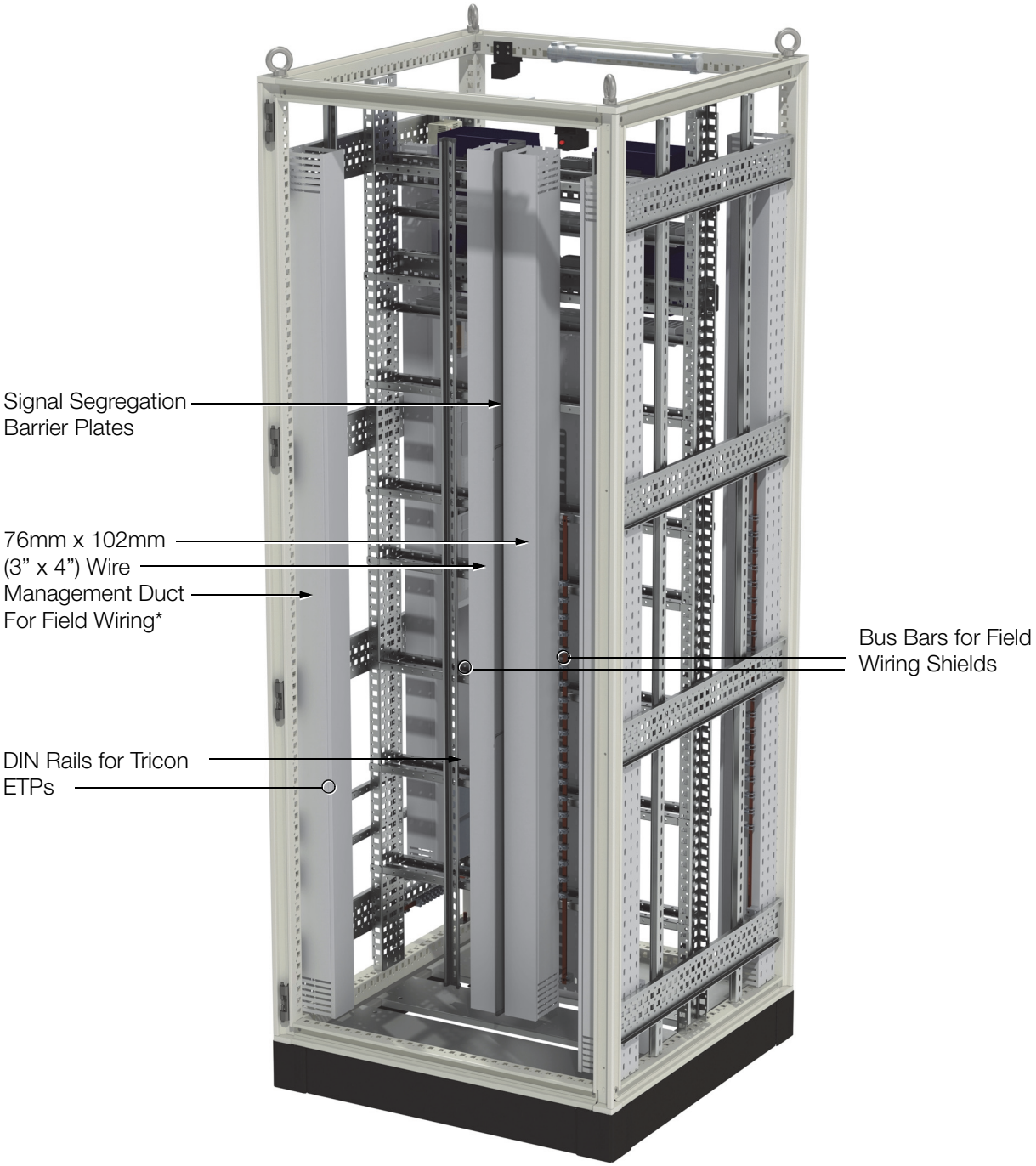
* Some cable trays and wire management ducts may not be supplied with the standard configuration.

Figure 3. K61 Tricon Termination Enclosure with Marshalling Option, Rear View, Bottom Entry



* Some cable trays and wire management ducts may not be supplied with the standard configuration.

Figure 4. K61 Tricon Termination Enclosure with Termination Option, Front View, Bottom Entry



* Some cable trays and wire management ducts may not be supplied with the standard configuration.

Figure 5. K61 Tricon Termination Enclosure with Termination Option, Rear View, Bottom Entry

ENCLOSURE OPTIONS

The K61 enclosure can be configured with the following options:

Table 1. K61 Enclosure Features and Options

Feature	Availability
Base Enclosure	Vented IP 43 rated enclosure with 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 (no fans)
Enclosure Access	Front and rear access
Front Door	Solid front door - vented enclosure has inlet vents
Cable Entry	Bottom (Due to the placement of field power supplies, top entry is not recommended for this enclosure.)
Sidewalls	Options configurable based on baying requirements
Door Handle	Handle with push-button or keylock
Door Mounting	Universal mounting for left and right-hand door swing (left-hand is default)
Field Wiring	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	Seven DIN rails per enclosure available for mounting Triconex termination devices only, or with customer-supplied terminal blocks for marshalling. One DIN rail dedicated for power distribution equipment
Enclosure Lighting	Universal enclosure LED lights (front and rear) with motion activation
Thermostat	Dual temperature thermostat
Security	Optional door intrusion monitoring switch - one per door
Fans	Door-mounted or roof-mounted fans - designed for secondary cooling only.
Earthing (Grounding)	Two protective earth (ground) studs One isolated protective earth (ground) rail

Table 1. K61 Enclosure Features and Options (Continued)

Feature	Availability
Field Power	Optional redundant 24 V dc field power - 480W or 960W (two or four field I/O power supplies) with dedicated distribution terminal block or circuit breaker assemblies Redundant power distribution terminal block assemblies for customer configured power entry. Optional EMC compliant line filters available for above options. Additionally, customer-configured field power entry is supported (no terminal blocks supplied).
Alarm Contact	Alarm contact terminal block assembly for main chassis alarming, door intrusion monitoring switches, enclosure temperature switch and field 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:

- Vertically mounted DIN rail mounted termination equipment (Triconex Tricon and/or customer-supplied terminal blocks for marshalling)
- 24 V dc field power supplies (single or 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

Operating Temperatures

Thermal performance of the K61 enclosure meets the convection cooling requirements described in the *Planning and Installation Guide for Tricon Systems*(1).

VENTED (THERMAL LOADING)(2)
-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)(2)
-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
56 dB (A) at 1 m

SEALED ENCLOSURE (NO FANS)
Ambient / Ambient

Dual Thermostat

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 RoHS, UL, and UL-C approved. Enclosure meets all applicable European Union directives and is CE and RoHS 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

General purpose areas.

(1) To obtain the latest version of the *Planning and Installation Guide for Tricon Systems* document, contact Invensys Global Client Support.
(2) Some termination assemblies have operating temperatures lower than the rated enclosure specification.
(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. Consult with a Foxboro representative if precise weight figures are required.

VENTED ENCLOSURE (MAX. CONFIGURATION)

800 mm x 800 mm - 253 kg (558 lb)

SIDE PANEL

800 mm x 800 mm - 19 kg (42 lb)

Mounting

Floor

CAUTION

To prevent injury, this enclosure must be bolted down. Refer to the installation guide (B0700GN).

Construction

MATERIAL

Doors (Metal)
Sheet steel, 1.8 mm (15 ga)
Frame, Roof, Side Panels, Gland Plates
Sheet steel, 1.5 mm (16 ga)
Base/Plinth
Sheet steel and plastic

FINISH

Frame
Epoxy-polyester resin paint, textured RAL 7035 gray
Roof, Side Panels, Doors
Epoxy-polyester resin paint, textured RAL 7035 gray
Base/Plinth
Epoxy-polyester resin paint, textured RAL 7035 gray
Gland Plates and Internal Hardware
Zinc-plated, passivated

Cable Entry

Bottom through gland plate(s)
Top through customer cutouts in enclosure top (For enclosure with roof-mounted fans, suggested entry is bottom)

Earthing (Grounding)

FRONT AND REAR DOORS

Dedicated 6 mm^2 (10 ga) ground strap to enclosure frame

ENCLOSURE

Two protective earth (ground) M8 studs (one for each enclosure side)
An isolated protective earth (ground) rail is provided for an additional earth (ground) point.

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

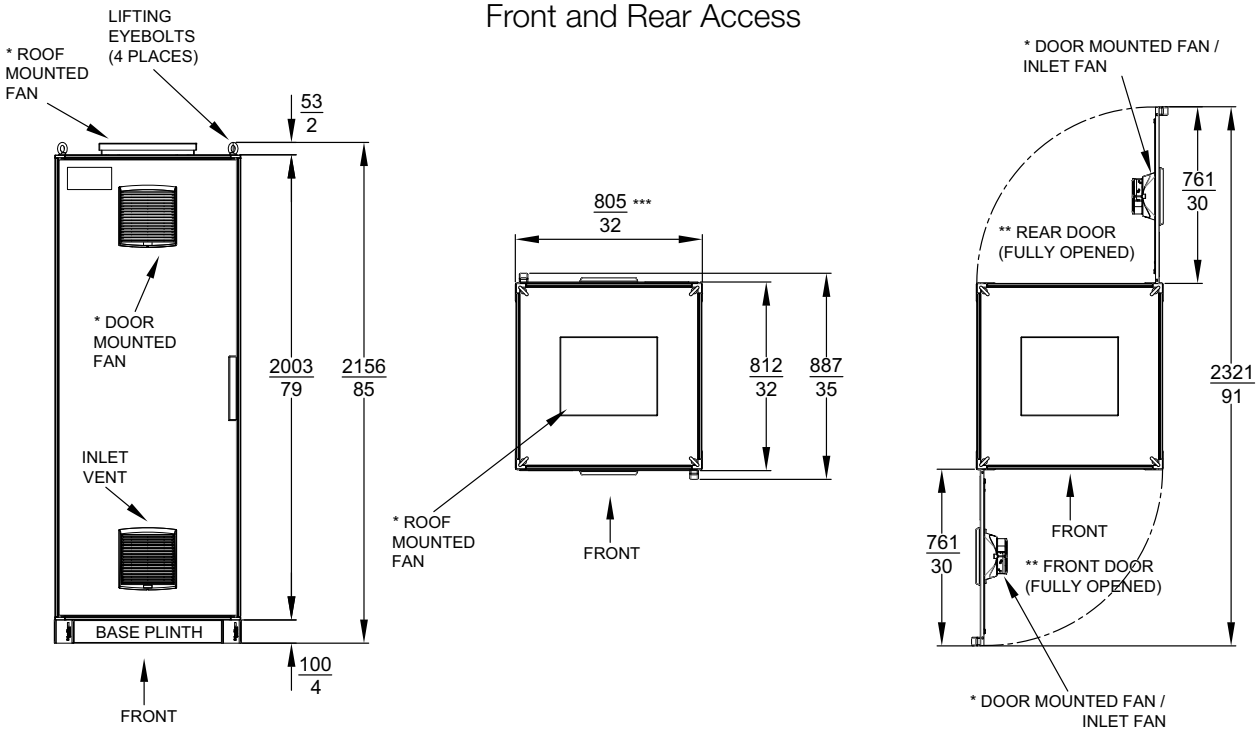
Type
Compression
Wire Size
Solid: Up to 6 mm^2 (3 AWG)
Stranded: Up to 4 mm^2 (8 AWG)

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.

DIMENSIONS - NOMINAL

K61 Tricon Termination Enclosure
Front and Rear Access



* 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 / WITHOUT SIDE PANELS.

FOR MORE INFORMATION

For additional information describing Tricon enclosures for Triconex termination devices, such as External Termination Panels (ETPs), Field Terminations and External Termination Assemblies (ETAs), refer to the following documentation:

Document Number	Document Title
PSS 31H-2K60	K60 Tricon System Enclosure
PSS 31H-2K62	K62 and K72 Tricon System and Termination Enclosures
PSS 31H-2K66	K66 Tricon Termination Enclosure
ISA-S71.04-1985 (not Foxboro-supplied)	Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants
9791007-XXX[a]	Technical Product Guide for Tricon Systems
9720052-XXX[a]	Field Termination Guide for Tricon Systems

(a) Request latest revision from Triconex.

Foxboro®

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: https://support.ips.invensys.com

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