Foxboro Evo™ Process Automation System

Product Specifications

Foxboro by Schneider Electric

PSS 31H-2K13

K13 System Enclosure

VENTED ENCLOSURE
ROOF-MOUNTED FANS

The Compact 200 Series I/O subsystem has enclosures specifically designed to reduce the volume that the system requires in your plant. The K13 System Enclosure, is a highly space efficient design for mounting, powering, and providing communications to the system.

OVERVIEW

The K13 enclosure is specifically designed for housing Compact 200 Series I/O subsystem modules. The K13 vented enclosure is available with roof-mounted fans.

The K13 vented enclosure can be configured with:

- Up to twelve Compact 200 Series 16-slot horizontal baseplates, for mounting up to 192 Compact 200 Series Fieldbus modules (FBMs)
- Up to two 2-position vertically-mounted FCP280 baseplates
- Up to three redundant FPS480-24 power supplies (six total) to support the 200 Series baseplates.

The K13 vented enclosure is a free-standing, floor mounted unit with an IP 43 rating for location in mild (ordinary) environmental areas.

The K13 vented enclosure is available with two roof-mounted fans in a pagoda fan unit and four fan trays to provide the best cooling performance.

Multiple K13 and other supported K-Series enclosures can be installed connected to one another to minimize the required floor space. The enclosures can be bayed together using baying kits as discussed in the *K-Series Enclosures Site Planning and Installation User's Guide* (B0700GN).

As well, this enclosure and its configurations have been tested and qualified for use with specified Compact 200 Series I/O products.

FEATURES

The Foxboro Evo™ K13 system enclosure offers the following features:

- Accommodates up to two 2-position vertically-mounted Field Control Processor 280 baseplates
- Vented enclosure accommodates up to 192 Compact 200 Series Fieldbus modules (FBMs) in up to twelve Compact 200 Series 16-slot horizontal baseplates
- Vented enclosure for use in ordinary (IP 43) rated 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
- Option for single or redundant power supplies
- Bottom cable entry for termination assembly cables and power wiring
- Conveniently placed eyebolts for transporting and lifting the enclosures
- A 100 mm (4 in) plinth - total enclosure height of 2160 mm (85.0 in)
- Comfort door handles with push-button or keylocks
- Standard protective earth (ground) studs and isolated instrument earth (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 termination assembly cabling and power wiring.

THERMAL PROTECTION

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

Two high-speed roof-mounted fans in a pagoda fan unit and four 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 TEMPERATURE THERMOSTAT

An optional dual (high/low) thermostat is available to monitor enclosure temperature extremes. This is not suitable for installations in Zone 2, Class I, Division 2 installations in hazardous locations.

200 SERIES BASEPLATE MOUNTING

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

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, horizontal orientation increases airflow and improves overall thermal performance.

For more information on the Compact 200 Series 16-slot horizontal baseplate, refer to *Compact 200 Series 16-Slot Horizontal Baseplate* (PSS 31H-2C200 B4).

For more information on the vertically-mounted FCP280 baseplate (RH924YF), refer to *Standard 200 Series Baseplates* (PSS 31H-2SBASPLT).

FIELDBUS I/O GROUPS

The K13 system enclosure has four vertical punched rails and a one-inch support bar ladder structure for mounting up to twelve Compact 200 Series 16-slot horizontal baseplates. Six of these baseplates are accessible from the front of the enclosure and another set of six baseplates are accessible from the rear. Each baseplate is mounted on dedicated DIN rail fitted on bar ladders. The FCP280s and the FPS480-24 power supplies mount on designated locations shown in Figure 1 and Figure 2.

In the K13 enclosure, the equipment in the eight Fieldbus I/O groups is organized as described in Table 1.

Table 1. Fieldbus I/O Groups in K13 Enclosure

Equipment in Enclosure Front		Equipment in Enclosure Rear		
Fieldbus I/O Group	**Managed by FCP280[a] 1**	**Fieldbus I/O Group**	**Managed by FCP280[a] 2**	**Power Supplies**
1	Compact 200 Series Baseplate 1	5 (1)	Compact 200 Series Baseplate 7	Redundant Power Supply #1 feeds these four Compact 200 Series baseplates and the first FCP280 baseplate
	Compact 200 Series Baseplate 2		Compact 200 Series Baseplate 8	
2	Compact 200 Series Baseplate 3	6 (2)	Compact 200 Series Baseplate 9	Redundant Power Supply #2 feeds these four Compact 200 Series baseplates and the second FCP280 baseplate
	Compact 200 Series Baseplate 4		Compact 200 Series Baseplate 10	
3	Compact 200 Series Baseplate 5	7 (3)	Compact 200 Series Baseplate 11	Redundant Power Supply #3 feeds these four Compact 200 Series baseplates
4	Compact 200 Series Baseplate 6	8 (4)	Compact 200 Series Baseplate 12	

(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. Table 1 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/INPUT POWER CABLING

The K13 enclosures support bottom cable entry only. The termination assembly 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 termination assembly cables. Field I/O signals must be connected to the TA mounted in an adjoining termination enclosure.

POWER AND EARTHING (GROUNDING)

The K13 enclosure supports an optional redundant power system, in which dual power distribution (two power supplies fed by independent sources) provides redundancy protection against 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 earthed by the enclosure design to meet the applicable industry regulations and standards.

The K13 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, refer to *Compact Power Supply - FPS480-24* (PSS 31H-2C480 B4).
Two studs (M8 size, one for each enclosure side) provide a central earth (ground) point and dedicated earthing points when baying enclosures together.

Power Distribution

Three power distribution terminal block assemblies (primary, secondary, and utility for powering fans and lights, see Figure 1) 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.

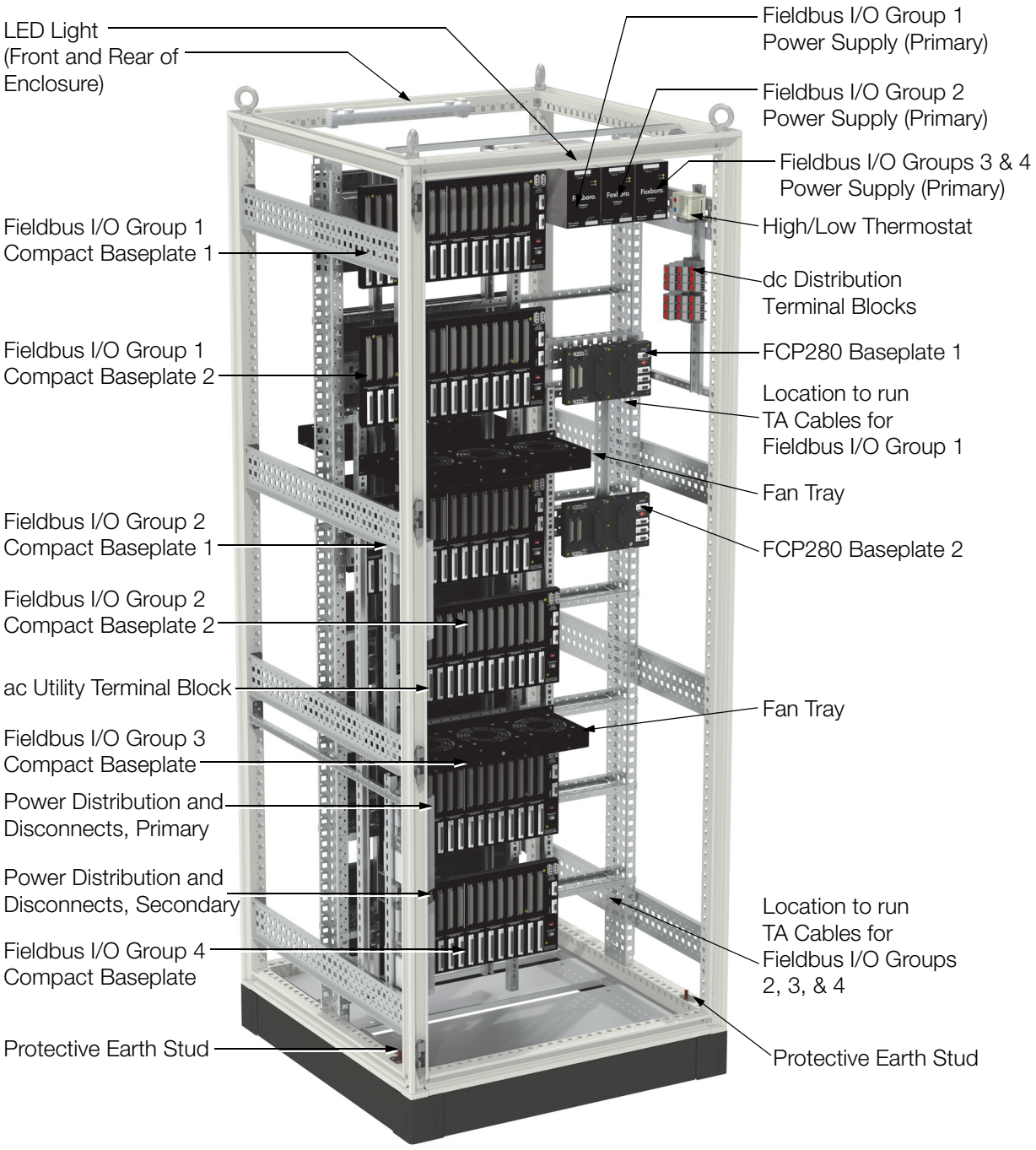


Figure 1. K13 System Enclosure, Front View

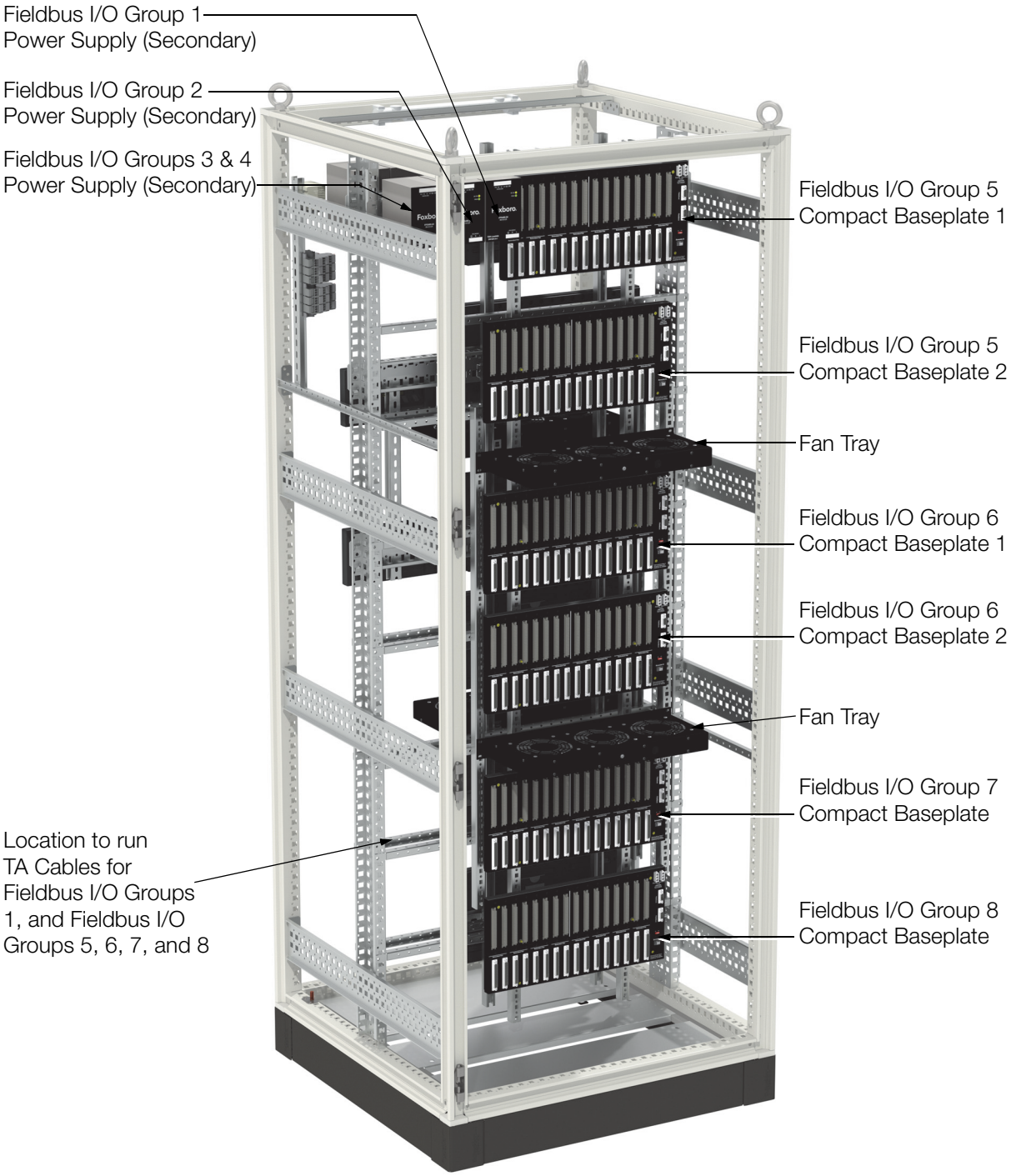


Figure 2. K13 System Enclosure, Rear View

ENCLOSURE FEATURES AND OPTIONS

The K13 enclosure is provided with the following features; some of these are optional.

Table 2. K13 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	Handle with push-button or keylocks
Door Mounting	Universal mounting for left and right-hand door swing (left-hand is default)
Equipment Supported	Up to eight Fieldbus I/O Groups Up to twelve Compact 200 Series 16-Slot Horizontal Baseplates, for mounting up to 192 Compact 200 Series FBMs Up to two 2-position vertically-mounted FCP280 baseplates Up to three redundant FPS480-24 power supplies for Fieldbus I/O Groups to support the Compact 200 Series Baseplates (up to six power supplies total)
Enclosure Lighting[(a)]	Single and/or dual enclosure LED lights with motion activation
Thermostat[(a)]	Dual temperature thermostat
Fans[(a)]	Two physical fans in a pagoda fan unit (roof-mounted) and four fan trays (installed on punched rails)
Earthing (Grounding)[(a)]	Two protective earth (ground) studs
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
Utility Power	120 V ac or 240 V ac utility power terminal block

(a) To determine if this K-Series enclosure is acceptable to install in your application, refer to *Standard and Compact 200 Series I/O - Agency Certifications* (PSS 31H-2CERTS) to determine 200 Series I/O equipment location suitability.

FUNCTIONAL SPECIFICATIONS

Enclosure

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

- Up to twelve Compact 200 Series 16-slot horizontal baseplates for mounting up to 192 Compact 200 Series FBMs
- Two 2-position vertically-mounted FCP280 baseplates
- Up to three redundant FPS480-24 power supplies (six total).

Input Power (Optionally Redundant)

Refer to *Compact Power Supply - FPS480-24* (PSS 31H-2C480 B4).

ENVIRONMENTAL SPECIFICATIONS

Ingress Protection Ratings

ROOF-MOUNTED FANS
IP 43 to EN 60 529/10.9191 / NEMA 12

Operating Temperatures

VENTED (THERMAL LOADING) WITH FANS
-20 to +55°C (-4 to +131°F)
Up to 1600 Watts (Maximum)

Storage Temperature

-40 to 70°C (40 to 158°F)

Relative Humidity

5 to 95% (noncondensing)

Acoustic Noise Level(1)

ROOF-MOUNTED FANS WITH FAN TRAYS
64 dB (A) at 1 m / 62 dB (A) at 3 m

Table 3. 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

Dual Temperature 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 Evo equipment, refer to *Standard and Compact 200 Series I/O - Agency Certifications* (PSS 31H-2CERTS).

Area Designation

Vented for general purpose environments.

(1) Under normal operating conditions, with both fans and fan trays running, at enclosure's mid-height – 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 WITH SIDE PANELS
(ALLOWABLE MAX. WEIGHT WHEN LOADED)
800 x 800 mm (31.5 x 31.5 in) - 291 kg (642 lb)

Mounting
Floor

CAUTION

To prevent injury, this enclosure must be bolted down. Refer to the *K-Series Enclosures Site Planning and Installation User's Guide* (B0700GN).

Construction
Sheet steel with textured, powder-coated finish

Color
SIDE PANELS, ROOF, AND DOORS
RAL 7035 - light gray - textured

PLINTH
RAL 7022 - umbra gray smooth

Panel Thickness
DOORS
1.8 mm (15 ga)

SIDE PANELS, ROOF
1.5 mm (16 ga)

Construction
MATERIAL

Doors
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

Construction (Cont.)
FINISH

Frame
Epoxy-polyester resin paint, textured RAL 7035 gray
Doors, Roof, Side Panels
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)

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

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

ENCLOSURE
Two M8 size studs (one for each enclosure side)

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 securing, routing and strain relieving of termination assembly cables. Each strap supports up to a 75 mm (3 in) diameter cable bundle.

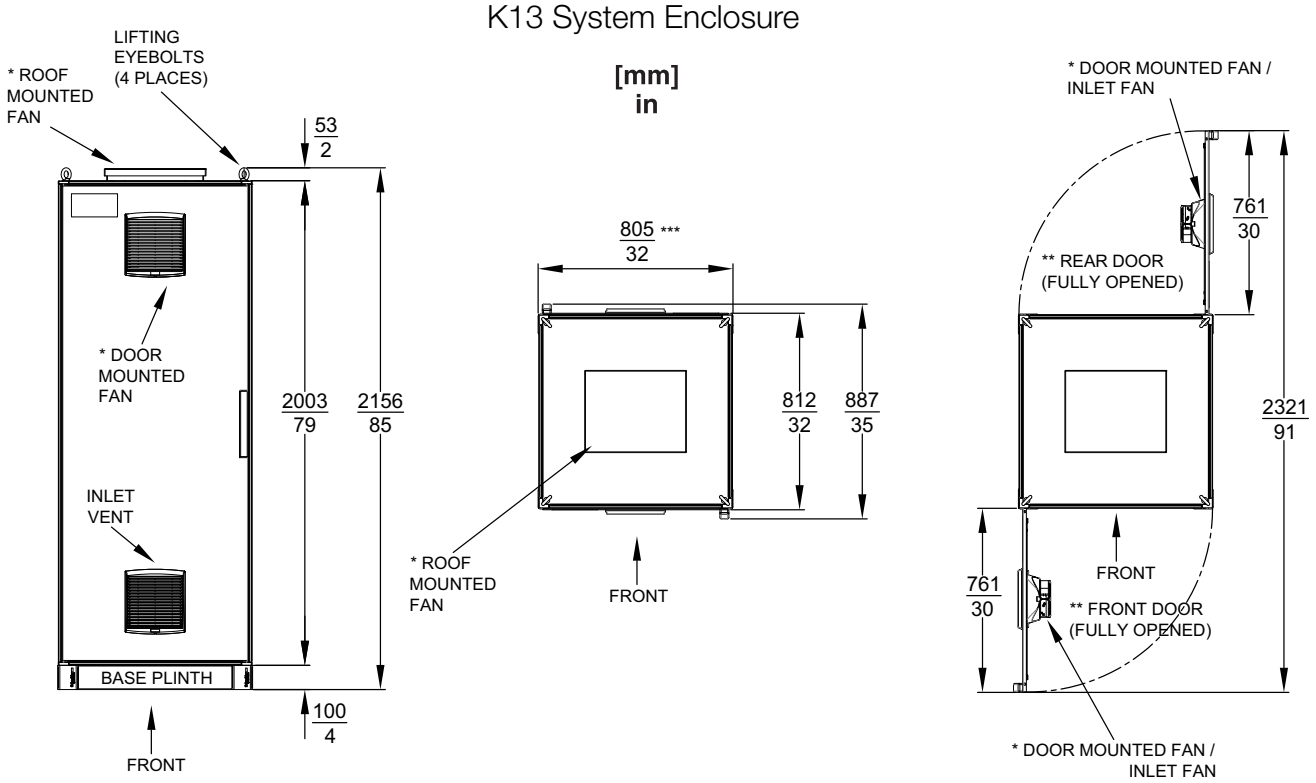
RELATED PRODUCT DOCUMENTS

Table 4. Reference Documents

Document Number	Description
PSS 31H-2C200 B4	Compact 200 Series 16-Slot Horizontal Baseplate
PSS 31H-2SBASPLT	Standard 200 Series Baseplates
PSS 31H-2C480 B4	Compact Power Supply - FPS480-24
PSS 31H-2CERTS	Standard and Compact 200 Series I/O - Agency Certifications
PSS 31H-2COV B3	Compact 200 Series I/O Subsystem Overview
PSS 31H-2KOV	K-Series Enclosures Overview
PSS 31H-2K14	K14 System and Termination Enclosure
B0700GN	K-Series Enclosures Site Planning and Installation User's Guide
ISA-S71.04-1985 (not Foxboro-supplied)	Environmental Conditions for Process Measurement and Control Systems: Airborne Contaminants

DIMENSIONS - NOMINAL

K13 System Enclosure



* 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.

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