Foxboro Evo™ Process Automation System

Product Specifications

Foxboro® by Schneider Electric

PSS 31H-2KOV

K-Series Enclosures Overview

K-SERIES ENCLOSURES FOR FOXBORO EVO SYSTEMS

K-SERIES ENCLOSURES FOR TRICON SYSTEMS (SYSTEM ENCLOSURES SHOWN)

Control system electronics and signal cabling require protection against physical intrusion and environmental effects. Standard enclosures providing this protection, the K-Series enclosures, are available for the majority of situations encountered in modern plants. These Schneider-Electric enclosures are factory designed and constructed to provide the reliability and quality that you have come to expect from Foxboro® and Triconex® products.

FEATURES

K-Series enclosures provide factory assembled packaging solutions for the Foxboro Evo™ system, the I/A Series® system, and Triconex® equipment. A broad set of standard enclosures allows selection of sealed or vented enclosures to meet plant installation location requirements. Depending upon the enclosure type, these enclosures may include the following:

- Top or bottom cable entry, depending on enclosure
- Front-only or front-and-rear enclosure access
- Support for system equipment, including:
  - Compact or standard 200 Series Fieldbus Modules (FBMs)
  - Field Control Processors (FCPs) and Fieldbus Communications Modules (FCMs)
  - Triconex equipment, such as the Triconex Tricon™ chassis or Trident™ I/O baseplates

- Support for termination equipment, such as Foxboro termination assemblies or Triconex termination devices and/or additional customer-supplied terminal blocks for marshalling
- Support for both system and termination equipment
- Doors supporting universal mounting for left- or right-hand door swing
- Door intrusion monitoring switch which provides alerts when the enclosure doors are opened or closed
- Universal front and rear enclosure LED lights which comply with the performance criteria of EN 61326 annex A
- Dual temperature thermostat which allows independent monitoring of high and low temperature alarms, or for controlling the heating and cooling of third-party supplied equipment.
- Door handle with push-button or keylock
- Earth (ground) studs and/or rails
- Lifting eyebolts on enclosure top.

K-SERIES ENCLOSURE SELECTION

The following tables can assist you in selecting a K-Series enclosure appropriate to your requirements.

Table 1. K-Series Enclosure Selection - Equipment and Dimensions

Equipment To Be Installed	K-Series Enclosures Available																					
	K06	K10	K11	K12	K13	K14	K15	K16	K17	K20	K21	K22	K40	K45	K50	K60	K61	K62	K66	K72	K80	K85
Standard 200 Series Fieldbus Modules	X	X		X			X		X	X		X										
Compact 200 Series Fieldbus Modules					X	X																
Termination and/or marshalling for 200 Series I/O System	X		X	X		X		X	X		X	X										
Tricon System																X		X		X		
Termination and/or marshalling for Tricon System																	X	X	X	X		
Trident Controllers																					X	X
Foxboro 19" Rack Mounted Equipment													X	X								
Foxboro 19" Rack Mounted Workstations/Servers and Switches															X							

Table 1. K-Series Enclosure Selection - Equipment and Dimensions (Continued)

Equipment To Be Installed	K-Series Enclosures Available																					
	K06	K10	K11	K12	K13	K14	K15	K16	K17	K20	K21	K22	K40	K45	K50	K60	K61	K62	K66	K72	K80	K85
Enclosure Dimensions																						
800mmW x 800mmD x 2000mmH		X	X	X	X	X	X	X	X				X	X		X	X	X	X		X	X
800mmW x 600mmD x 2000mmH										X	X	X										
800mmW x 800mmD x 2200mmH																				X		
600mmW x 1000mmD x 2000mmH															X							
800mmW x 300mmD x 1200mmH	X																					

Table 2. K-Series Enclosure Selection - Enclosure Door Configuration

Enclosure Door Configuration	K-Series Enclosures Available																					
	K06	K10	K11	K12	K13	K14	K15	K16	K17	K20	K21	K22	K40	K45	K50	K60	K61	K62	K66	K72	K80	K85
Front and Rear Access		X	X	X	X	X				X	X	X	X		X	X	X	X		X	X	
Front Access Only	X						X	X	X					X		X			X			X

Table 3. K-Series Enclosure Selection - Equipment Environmental Ratings

Environmental Rating	K-Series Enclosures Available																					
	K06	K10	K11	K12	K13	K14	K15	K16	K17	K20	K21	K22	K40	K45	K50	K60	K61	K62	K66	K72	K80	K85
Not IP Rated (NEMA 1)															X							
IP 43					X	X																
IP 43 to EN 60 529/10.9191 (NEMA 12)		X	X	X			X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
IP 55 to EN 60 529 (NEMA 12)	X	X	X	X			X	X	X	X	X	X	X	X			X		X		X	X
IP 66 to EN 60 529 (NEMA 4)	X																					

Table 4. K-Series Enclosure Selection - Features

Features (Included with Enclosure)	K-Series Enclosures Available																					
	K06	K10	K11	K12	K13	K14	K15	K16	K17	K20	K21	K22	K40	K45	K50	K60	K61	K62	K66	K72	K80	K85
RoHS Compliant	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X
UL, and UL-C Approved (Empty Enclosure)[a]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Cable Base on Enclosure Plinth		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lifting Eyebolts		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Earth (Ground) Studs		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Earth (Ground) Rail(s)	X	X		X		X	X		X	X		X	X	X		X	X	X	X	X	X	X
Enclosure Finish																						
Frame - Epoxy-polyester resin paint, textured RAL 7035 gray		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Roof/Sidewalls/Doors - Epoxy-polyester resin paint, textured RAL 7035 gray	X [b]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Base/Plinth - Epoxy-polyester resin paint, textured RAL 7022 gray		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
316 Stainless Steel	X [c]																					

(a) Enclosures meet all applicable European Union directives and are 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) IP 55 version only. Powder-coating finish on all external surfaces is applied to entire enclosure - frame, roof, sidewalls, and door.
(c) IP 66 (NEMA 4X) version only. Entire enclosure is stainless steel.

Table 5. K-Series Enclosure Selection - Options

Enclosure Options	K-Series Enclosures Available																					
	K06	K10	K11	K12	K13	K14	K15	K16	K17	K20	K21	K22	K40	K45	K50	K60	K61	K62	K66	K72	K80	K85
Vented Enclosure		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Sealed Enclosure[a]	X	X	X	X			X	X	X	X	X	X	X	X			X		X		X	X
Top Cable Entry[b]	X	X	X	X			X	X	X	X	X	X	X	X	X		(c)		(c)		X	X
Bottom Cable Entry[b]	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Door-Mounted Fans		X	X	X			X	X	X	X	X	X	X	X			X		X		X	X
Roof-Mounted Fans[d]		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X		X
Metal (Sheet Steel) Doors	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X (e)	X	X	X	X	X	X	X
Glass Front Door																X		X		X		
Universal Mounting for Left and Right-hand Door Swing		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Door Handle with Push-button/Keylock		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Door Intrusion Monitoring Switch																X	X	X	X	X	X	X
Sidewalls		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Universal Enclosure LED Light		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Dual Temperature Thermostat		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X

(a) No fans with sealed enclosures.
(b) With both top and bottom cable entry allowed, can be customer configured for simultaneous top and bottom cable entry.
(c) Due to the placement of field power supplies, top entry is not recommended for this enclosure.
(d) Top cable entry not recommended for roof-mounted fans.
(e) Front and rear doors are perforated to allow free air flow.

K-SERIES ENCLOSURES FOR FOXBORO EVO SYSTEM AND I/A SERIES SYSTEM EQUIPMENT

K06 Enclosure

The K06 enclosure is a wall-mounted unit with the features discussed in Table 6.

Table 6. K06 Enclosure Features

Feature	Availability
Enclosure Type	Field enclosure
Equipment Supported	Up to four vertically mounted baseplates for mounting up to sixteen 200 Series Fieldbus Modules (FBMs), Field Communication Modules (FCMs), or Field Control Processors (FCP280s) Optional baseplate for mounting up to two 200 Series Field Communication Modules (FCMs) or Field Control Processors (FCP280s) Up to eighteen modules total supported, as listed above - sixteen FBMs/FCMs + two FCMs/FCP280s
Enclosure Access	Front access only
Available Environmental Protection	IP 55 (NEMA 4) Version – a painted steel enclosure with NEMA ratings of 1, 3R, 4, 12, 13, and IP 55 (G3, harsh) - OR - IP 66 (NEMA 4X) Version – a stainless steel enclosure with NEMA ratings of 1, 4, 4X,12, and IP 66 (GX, severe).
Product Specification Sheet	*K06 Enclosure* (PSS 31H-2K06)

K-Series 800x800 Front and Rear Access Enclosures for Compact 200 Series I/O Subsystem

The K-series 800x800 front and rear access enclosures for Compact 200 Series I/O Subsystem are free-standing, floor mounted units. They include the K13 system enclosure (Table 7), and the K14 system and termination enclosure (Table 8).

Table 7. K13 System Enclosure Features

Feature	Availability
Enclosure Type	System Only
Equipment Supported	Vented (IP 43) - 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 Field Control Processor 280 (FCP280) baseplates
Enclosure Access	Front and rear access
Documentation	*K13 System Enclosure* (PSS 31H-2K13)

Table 8. K14 System and Termination Enclosure Features

Feature	Availability
Enclosure Type	System and Termination
Equipment Supported	Vented (IP 43) - Up to six Compact 200 Series 16-slot horizontal baseplates, for mounting up to 96 Compact 200 Series Fieldbus Modules (FBMs) One 2-position vertically-mounted Field Control Processor 280 (FCP280) baseplate Up to four 1900 mm vertical DIN rails for mounting of termination assemblies and terminal blocks for marshalling
Enclosure Access	Front and rear access
Documentation	*K14 System and Termination Enclosure* (PSS 31H-2K14)

K-Series 800x800 Front and Rear Access Enclosures

The K-series 800x800 front and rear access enclosures are free-standing, floor mounted units. They include the K10 system enclosure (Table 9), the K11 termination enclosure (Table 10), and the K12 system and termination enclosure (Table 11).

Table 9. K10 System Enclosure Features

Feature	Availability
Enclosure Type	System Only
Equipment Supported	Vented (IP 43/55) - Up to 96 200 Series FBMs, up to six FCMs/FCP280s Sealed (IP 55) - Up to 32 200 Series FBMs and up to two FCMs/FCP280s
Enclosure Access	Front and rear access
Documentation	*K10 System Enclosure* (PSS 31H-2K10)

Table 10. K11 Termination Enclosure Features

Feature	Availability
Enclosure Type	Termination Only
Equipment Supported	Vented (IP 43/55) or Sealed (IP 55) - Up to eight vertical DIN rails for mounting of termination assemblies and terminal blocks for marshalling
Enclosure Access	Front and rear access
Documentation	*K11 Termination Enclosure* (PSS 31H-2K11)

Table 11. K12 System and Termination Enclosure Features

Feature	Availability
Enclosure Type	System and Termination
Equipment Supported	Vented (IP 43/55) or Sealed (IP 55) - Up to 32 200 Series FBMs and up to two FCMs/FCP280s Up to four vertical DIN rails for mounting of termination assemblies and terminal blocks for marshalling
Enclosure Access	Front and rear access
Documentation	*K12 System and Termination Enclosure* (PSS 31H-2K12)

K-Series 800x600 Front and Rear Access Enclosures

The K-series 800x600 front and rear access enclosures are free-standing, floor mounted units. They include the K20 system enclosure (Table 12), the K21 termination enclosure (Table 13), and the K22 system and termination enclosure (Table 14).

Table 12. K20 System Enclosure Features

Feature	Availability
Enclosure Type	System Only
Equipment Supported	Vented (IP 43/55) - Up to 96 200 Series FBMs and up to six FCMs/FCP280s Sealed (IP 55) - Up to 32 200 Series FBMs and up to two FCMs/FCP280s
Enclosure Access	Front and rear access
Documentation	*K20 System Enclosure* (PSS 31H-2K20)

Table 13. K21 Termination Enclosure Features

Feature	Availability
Enclosure Type	Termination Only
Equipment Supported	Vented (IP 43/55) or Sealed (IP 55) - Up to four vertical DIN rails for mounting of termination assemblies and terminal blocks for marshalling
Enclosure Access	Front and rear access
Documentation	*K21 Termination Enclosure* (PSS 31H-2K21)

Table 14. K22 System and Termination Enclosure Features

Feature	Availability
Enclosure Type	System and Termination
Equipment Supported	Vented (IP 43/55) or Sealed (IP 55) - Up to 32 200 Series FBMs and up to two FCMs/FCP280s Up to two vertical DIN rails for mounting of termination assemblies and terminal blocks for marshalling
Enclosure Access	Front and rear access
Documentation	*K22 System and Termination Enclosure* (PSS 31H-2K22)

K-Series 800x800 Front-Only Access Enclosures

The K-Series 800x800 front-only access enclosures are free-standing, floor mounted units. They include the K15 system enclosure (Table 15), the K16 termination enclosure (Table 16), and the K17 system and termination enclosure (Table 17).

Table 15. K15 System Enclosure Features

Feature	Availability
Enclosure Type	System Only
Equipment Supported	Vented (IP 43/55) - Up to 96 200 Series FBMs and up to six FCMs/FCP280s Sealed (IP 55) - Up to 32 200 Series FBMs and up to two FCMs/FCP280s
Enclosure Access	Front access only
Documentation	*K15 System Enclosure* (PSS 31H-2K15)

Table 16. K16 Termination Enclosure Features

Feature	Availability
Enclosure Type	Termination Only
Equipment Supported	Vented (IP 43/55) or Sealed (IP 55) - Up to six vertical DIN rails for mounting of termination assemblies and terminal blocks for marshalling
Enclosure Access	Front access only
Documentation	*K16 Termination Enclosure* (PSS 31H-2K16)

Table 17. K17 System and Termination Enclosure Features

Feature	Availability
Enclosure Type	System and Termination
Equipment Supported	Vented (IP 43/55) or Sealed (IP 55) - Up to 32 200 Series FBMs and up to two FCMs/FCP280s Up to four vertical DIN rails for mounting of termination assemblies and terminal blocks for marshalling
Enclosure Access	Front access only
Documentation	*K17 System and Termination Enclosure* (PSS 31H-2K17)

K-Series 800x800 19-Inch Rack Enclosures

The K-Series 800x800 19-inch rack enclosures are free-standing, floor mounted units with four vertical system rails. They include the K40 19-inch rack enclosure (Table 18), and the K45 19-inch rack enclosure (Table 19).

Table 18. K40 19-Inch Rack Enclosure Features

Feature	Availability
Enclosure Type	System
Equipment Supported	Vented (IP 43/55) or Sealed (IP 55) - Upper and lower enclosure halves accommodate each one of the following: (1) Up to three shelves to support equipment such as the Windows® based workstations - OR - (2) Equipment secured directly to the EIA 19-inch rails, such as the Foxboro Evo Control Network (the control network) switches
Enclosure Access	Front and rear access
Documentation	*K40 19-Inch Rack Enclosure* (PSS 31H-2K40)

Table 19. K45 19-Inch Rack Enclosure Features

Feature	Availability
Enclosure Type	System
Equipment Supported	Vented (IP 43/55) or Sealed (IP 55) - Upper and lower enclosure halves accommodate each one of the following: (1) Up to three shelves to support equipment such as the Windows® based workstations - OR - (2) Equipment secured directly to the EIA 19-inch rails, such as the control network switches
Enclosure Access	Front access only
Documentation	*K45 19-Inch Rack Enclosure* (PSS 31H-2K45)

K-Series 600x1000 19-Inch Server Enclosure

The K-Series 600x1000 19-inch server enclosure is a free-standing, vented, floor mounted general purpose unit designed for housing compatible servers, workstation, switches and related equipment on shelves or on its 19-inch racks (Table 20).

Table 20. K50 Server Enclosure Features

Feature	Availability
Enclosure Type	System
Equipment Supported	Vented, indoor (Not IP rated/NEMA 1) - Enclosure can accommodate: ▸ Up to two sliding shelves; shelves can support the Windows® or Solaris™-based tower workstations and servers, such as the Model H90 servers, Model H91 servers, or the Model H92 workstations, depending on the size and ventilation requirements of the equipment. ▸ Rack-mounted equipment secured directly to the 19-inch rails (42 U of available vertical mounting space), such as the control network switches, depending on sizing, power, cabling and ventilation requirements of the equipment
Enclosure Access	Front and rear access
Documentation	*K50 Server Enclosure* (PSS 31H-2K50)

K-SERIES ENCLOSURES FOR TRICONEX® SYSTEM EQUIPMENT

K-Series 800x800 Tricon™ System Enclosures

The K-Series 800x800 Tricon system enclosures are free-standing, floor mounted units designed to house Triconex Tricon system chassis, modules and appropriate support equipment. They include the K60 Tricon system enclosure (Table 21), and the K62 and K72 system and termination enclosures (Table 22).

Table 21. K60 Tricon System Enclosure Features

Feature	Availability
Enclosure Type	System Only
Equipment Supported	Vented (IP 43/55) - Up to three Triconex Tricon chassis
Enclosure Access	Front and rear access - OR - Front access only (Optional front glass door)
Documentation	*K60 Tricon System Enclosure* (PSS 31H-2K60)

Table 22. K62 and K72 System and Termination Enclosures Features

Feature	Availability
Enclosure Type	System and Termination
Enclosure Size	K62 Enclosure - 800mm x 800mm x 2000mm K72 Enclosure - 800mm x 800mm x 2200mm
Equipment Supported	Vented (IP 43/55) - Up to two Triconex Tricon chassis Three vertical DIN rails for mounting of Triconex termination devices
Enclosure Access	Front and rear access (Optional front glass door)
Documentation	*K62 and K72 Tricon System and Termination Enclosures* (PSS 31H-2K62)

K-Series 800x800 Tricon™ Termination Enclosures

The K-Series 800x800 Tricon termination enclosures are free-standing, floor mounted units designed for housing Triconex termination devices and additional customer-supplied terminal blocks for marshalling. They may accommodate the termination of Tricon modules which are housed in a K60 Tricon system enclosure or K62/K72 Tricon system and termination enclosure.

They include the K61 Tricon termination enclosure (Table 23), and the K66 Tricon termination enclosure (Table 24).

Table 23. K61 Tricon Termination Enclosure Features

Feature	Availability
Enclosure Type	Termination Only
Equipment Supported	Vented (IP 43/55) or Sealed (IP 55) - Up to eight vertical DIN rails for mounting of Triconex termination devices and additional customer-supplied terminal blocks for marshalling
Enclosure Access	Front and rear access
Documentation	*K61 Tricon Termination Enclosure* (PSS 31H-2K61)

Table 24. K66 Tricon Termination Enclosure Features

Feature	Availability
Enclosure Type	Termination Only
Equipment Supported	Vented (IP 43/55) or Sealed (IP 55) - Up to six vertical DIN rails for mounting of Triconex termination devices and additional customer-supplied terminal blocks for marshalling.
Enclosure Access	Front access only
Documentation	*K66 Tricon Termination Enclosure* (PSS 31H-2K66)

K-Series 800x800 Trident™ System Enclosures

The K-Series 800x800 Trident system enclosures are free-standing, floor mounted units designed to house Triconex Trident controllers on I/O baseplates, as well as one Main Processor (MP) baseplate, one Communication Module (CM) baseplate and appropriate support equipment. They include the K80 Trident system enclosure (Table 25), and the K85 Trident system enclosure (Table 26).

Table 25. K80 Trident System Enclosure Features

Feature	Availability
Enclosure Type	System Only (No terminations required for Trident controllers)
Equipment Supported	Vented (IP 43/55) - Up to twenty Triconex Trident I/O baseplates Sealed (IP 55) - Up to ten Triconex Trident I/O baseplates Both enclosure types accommodate one Main Processor (MP) baseplate, and one Communication Module (CM) baseplate
Enclosure Access	Front and rear access
Documentation	*K80 Trident Enclosure* (PSS 31H-2K80)

Table 26. K85 Trident System Enclosures Features

Feature	Availability
Enclosure Type	System Only (No terminations required for Trident controllers)
Equipment Supported	Vented (IP 43/55) or Sealed (IP 55) - Up to ten Triconex Trident I/O baseplates, plus one Main Processor (MP) baseplate, and one Communication Module (CM) baseplate
Enclosure Access	Front access only
Documentation	*K85 Trident Enclosure* (PSS 31H-2K85)

RELATED PRODUCT DOCUMENTS

Table 27. Other Reference Documents

PSS Number	Title
PSS 31H-2COV	Compact 200 Series I/O Subsystem Overview
PSS 31H-2SOV	Standard 200 Series Subsystem Overview
PSS 31H-2W100	100 Series Fieldbus Module Migration Subsystem Overview

Foxboro®
by Schneider Electric

Invensys Systems, Inc.
38 Neponset Avenue
Foxborough, MA 02035-2037
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

MB 031 0916