



Foxboro™ DCS

G40 19-Inch Rack Enclosure

PSS 41H-2G40

Product Specification

January 2020



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Overview

The EcoStruxure™ Foxboro™ DCS G40 enclosure is a general purpose unit designed for housing compatible equipment on its 483 mm (19 in) racks. The G40 enclosure is available as a vented enclosure or sealed enclosure.

Equipment may be installed directly on the 483 mm (19 in) racks, on shelves or in the 1x8 Mounting Structures. Separate equipment configurations are available for the upper and lower halves of the enclosure. Each half may be empty, or accommodate one of the following configurations:

- One or three fixed or sliding shelves, each with an optional ac Transfer Switch; shelves can support equipment such as the Windows® based workstations, depending on the size and ventilation requirements of the workstation.

The ac Transfer Switch provides the capability for two separate and independent sources of ac input power to feed enclosure equipment that supports single sources of power, such as switches and workstations.

The shelf option also includes additional power strips, which are connected to the ac Transfer Switch. All strips provide IEC plug connections to support universal ac sourcing.

NOTE: It is recommended that when using sliding shelves, only one shelf is pulled out at a time to prevent the enclosure from becoming unbalanced.

- Up to two 1x8 Mounting Structures or the Address Translation Station.
- Equipment secured directly to the rails, such as the Foxboro™ DCS Control Network switches - depending on the sizing, power, cabling, and ventilation requirements of the equipment.

⚠ CAUTION

RISK OF EQUIPMENT DAMAGE OR INJURY

We recommend that when using sliding shelves, pull out only one shelf at a time to prevent the enclosure from becoming unbalanced.

Failure to follow these instructions can result in injury or equipment damage.

Multiple G40 enclosures can be installed connected to one another to maximize the use of floor space and ease of cabling. As well, adjoined enclosures reduce the total number of watts per enclosure that can be dissipated relative to standalone enclosures. Enclosures can be bayed together using third-party kits.

Features

- 800 w x 800 d x 2000 mm high (31.5 w x 31.5 d x 78.7 in high) enclosure, available as vented or sealed
- Front and rear accessible 482 mm (19 in) system rails, with 42 U of available mounting space
(1 U = 44 mm (1.75 in))
- Front and rear access with left- or right-side mounted door
- Enclosure selection for use in ordinary (IP 43/55) or harsh (IP 55/66) rated environments
- Upper and lower halves of the enclosure each accommodate:
 - One or three fixed or sliding shelves with optional ac Transfer Switch
 - Equipment helped to secure directly to the 482 mm (19 in) rails, such as the control network switches, depending on sizing, power, cabling, and ventilation requirements
- Compact design to minimize use of floor space with both front and rear access that allow maximum density of enclosures in a control room environment
- Bottom or top cable entry for power wiring, but can be customer configured for simultaneous top and bottom cable entry
- Conveniently placed eyebolts for transporting and lifting the enclosures
- A 100 mm (4 in) plinth - total enclosure height of 2,160 mm (85.0 in)
- Optional handles with push button/keylocks
- Standard protective ground studs or optional isolated instrument ground rail

Ingress Protection

The metal enclosures provide the outer layer of protection for the equipment contained within. When the equipment includes covers or layers built into the equipment itself, a minimum of contaminants in the plant environment reaches the equipment, thus greatly extending its life.

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 top or bottom cable entry for power wiring. Vented enclosures with roof-mounted fans are not recommended with top cable entry.

Thermal Protection

Ventilation fans along with vented doors increase circulation for heat removal 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 the heat generated within the modules
- In areas where there are no requirements to filter the air to which the modules in the enclosure are exposed, such as office areas

Vented enclosures contain a dual fan assembly located at the top of the enclosure or single fan assemblies located on the enclosure front and rear door. Enclosures with vented doors can be located in main equipment areas or in an environment with office air quality.

Equipment Mounting

All equipment installed in this enclosure must be attached to the 483 mm (19 in) rails directly or indirectly via a platform or mounting structure. All equipment must be able to fit within the physical constraints of the enclosure with sufficient space for air flow and associated cabling, including cable routes, sufficient bend radius, and dressing.

Vented Enclosure Design Options

The G40 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. However, roof-mounted fans can restrict top-entry cable access to the enclosure and reduce the overall ingress protection rating. For customers who plan to modify the swing direction of their 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.

Input Power Cabling

The enclosures can be configured for bottom cable entry or top cable entry or modified by the customer for simultaneous top and bottom cable entry.

For the top cable entry version, customer power feeds enter through customer-configured cable glands. Any customizations made must follow the enclosure manufacturer's guidelines to preserve the enclosure's ingress protection rating. Vented enclosures with roof-mounted fans are not recommended for top cable entry.

For the vented bottom entry version, the power cables enter through removable gland plates, located at the bottom (inside) of the enclosure. The plates can be removed, drilled, or punched for cable routing.

For the sealed bottom entry version, the power cables enter through a solid bottom panel located at the bottom (inside) of the enclosure. The panel can be 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.

Power and Grounding

Power wiring to the enclosure is routed through the bottom or top of the enclosure. Customer-supplied dual power input feeds terminate at dedicated primary and secondary power distribution terminal blocks.

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

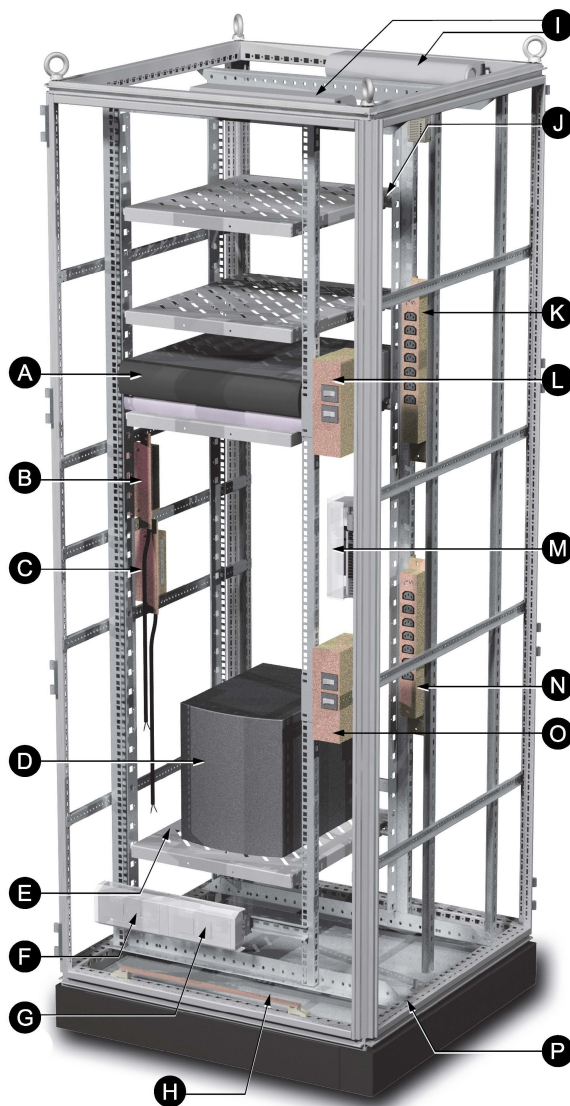
The enclosure shelves support the optional ac Transfer Switch. For more information, see *ac Transfer Switch* (PSS 21H-5F1 B3).

Grounding

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

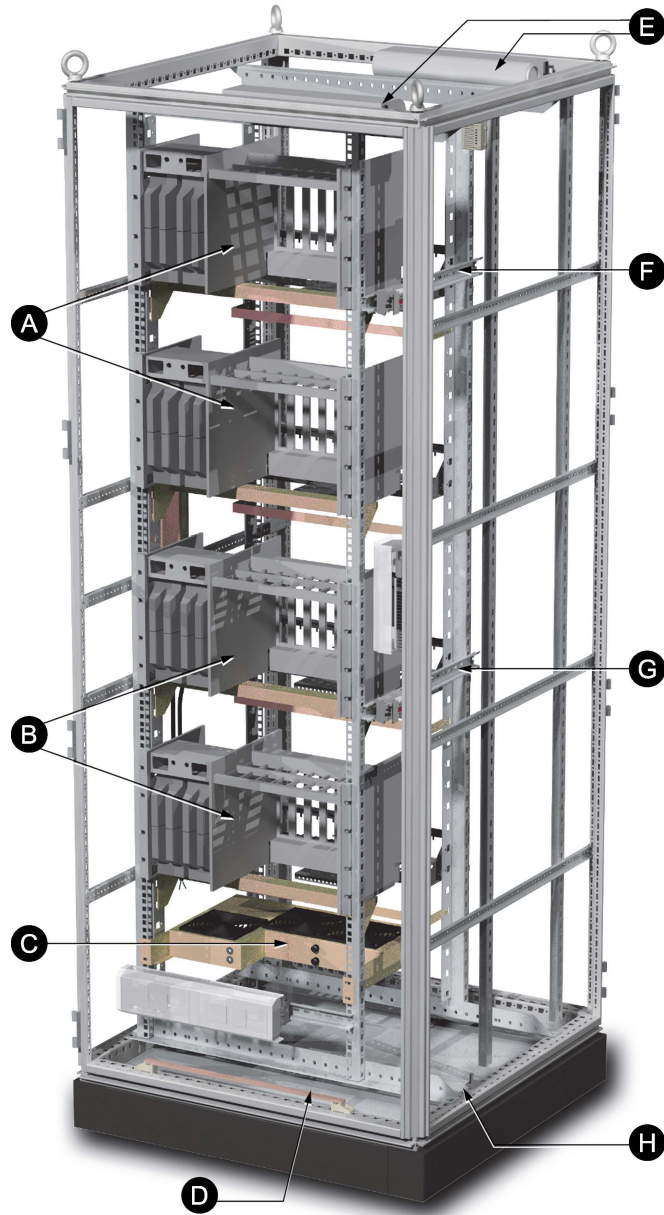
An optional isolated instrument ground bus bar is available for additional ground points.

Figure 1 - G40 19-Inch Rack Enclosure, Front View with Shelf Options



Legend			
A	(Representative) Desktop PC Form Factor (Not Supplied)	I	LED Lights
B	Primary Power Distribution Outlets (IEC)	J	Upper Three Fixed Shelf Option
C	Secondary Power Distribution Outlets (IEC)	K	Upper AC Power Strip Outlets (IEC)
D	(Representative) Tower PC/RAID Server Form Factor (Not Supplied)	L	Upper AC Transfer Switch
E	Lower Single Fixed Shelf Option	M	AC Utility Power Terminal Blocks
F	Power Distribution and Disconnects (Primary)	N	Lower AC Power Strip Outlets (IEC)
G	Power Distribution and Disconnects (Secondary)	O	Lower AC Transfer Switch
H	Optional Isolated Instrument Ground Rail	P	Protective Ground Stud

Figure 2 - G40 19-Inch Rack Enclosure, Front View With 1x8 Mounting Structure Option



Legend			
A	Upper 1x8 Mounting Structures	E	LED Lights
B	Lower 1x8 Mounting Structures	F	Upper Status Taps for Power Monitoring
C	Primary/Secondary Sourced Multifan Cooling Assembly for Z-Form Factor Modules	G	Lower Status Taps for Power Monitoring
D	Optional Isolated Instrument Ground Rail	H	Protective Ground Stud

Figure 3 - G40 19-Inch Rack Enclosure, Rear View with 1x8 Mounting Structure Option



Legend	
A	Rear Mounted Fiber Optic Mounting Chassis for Support of Fiber Optic Splitter/Combiners and Time Strobe Converters

Enclosure Features and Options

Feature	Availability
Base Enclosure	<ul style="list-style-type: none"> Vented IP 43/55 rated enclosure with single front and rear door-mounted fans (120 V AC or 240 V AC) 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 and rear access
Front Door	Solid front door with inlet vents
Cable Entry	Bottom cable entry or top cable entry (top entry not recommended for roof-mounted fans)
Sidewalls	Options configurable based on buying requirements
Door Handle	Optional comfort handle with push button/keylock
Door Mounting	Universal mounting for left and right-hand door swing (left-hand is default)
Equipment Supported (In Upper Half of Enclosure)	<ul style="list-style-type: none"> One or three fixed or sliding shelves, each with an optional ac Transfer Switch and additional power strips Up to two 1x8 Mounting Structures Equipment secured directly to the rails (no support provided)
Equipment Supported (In Lower Half of Enclosure)	<ul style="list-style-type: none"> One or three fixed or sliding shelves, each with an optional ac Transfer Switch and additional power strips Up to two 1x8 Mounting Structures Equipment secured directly to the rails (no support provided)
Enclosure Lighting ^(a)	Universal single and/or dual enclosure lights with motion activation
Thermostat ^(a)	Dual temperature thermostat
Fans ^(a)	Door-mounted or roof-mounted fans
Grounding ^(a)	<ul style="list-style-type: none"> Two protective ground studs Optional isolated instrument rail for additional connectors
Additional Enclosure Electrical Accessories	(With shelving option only) Optional ac Transfer Switches, power strips, and/or multi-outlet distribution plug
Power Options ^(a)	Customer configured power entry (no terminal blocks supplied)
Utility Power	120 V AC or 240 V AC utility power terminal block
<p>^(a) If you are installing a G-series enclosure as part of a Zone 2 (IEC)/Class I, Division 2 application, see <i>Standard and Compact 200 Series I/O - Agency Certifications</i> (PSS 41H-2CERTS) to determine 200 Series subsystem equipment hazardous location suitability. Also, be aware that optional enclosure electrical accessories, such as LED lights, roof or door-mounted fans, and thermostats, may not be used in hazardous (Zone 2 (IEC)/Class I, Division 2) environments.</p>	

Functional Specifications

Features	Availability
Enclosure	The enclosures are free-standing, floor mounted, steel industrial enclosures containing DIN rail mounted compatible equipment.

Environmental Specifications

	Operating	Storage
Temperature	<p>Dependent on equipment loaded in the enclosure. See the specifications listed in the equipment's Product Specification Sheet or other documentation.</p> <ul style="list-style-type: none"> • Thermal Wattage Limits (For Non-Adjoined Enclosures)^(a): <ul style="list-style-type: none"> ◦ Sealed: <p>Dissipation of 314 W generates a +10°C (18°F) heat rise</p> <p>Dissipation of 628 W generates a +20°C (36°F) heat rise</p> ◦ Vented: <p>Dissipation of 1000 W generates a +5°C (9°F) heat rise</p> 	-40 to 70°C (-40 to 158°F)
Relative Humidity	5 to 95% (noncondensing)	
Ingress Protection Ratings	<ul style="list-style-type: none"> • Vented: <ul style="list-style-type: none"> ◦ Door-Mounted Fans: <p>IP 55 to EN 60 529 / NEMA 12</p> ◦ Roof-Mounted Fans: <p>IP 43 to EN 60 529/10.9191 / NEMA 12</p> • Sealed: <p>IP 55 to EN 60 529 / NEMA 12</p> <p>IP 66 to EN 60 529 / NEMA 4</p> 	
Acoustic Noise Level^(b)	<ul style="list-style-type: none"> • Roof-Mounted Fans: <p>61 dB (A) at 1 m / 58 dB (A) at 3 m</p> • Door-Mounted Fans: <p>64 dB (A) at 1 m / 62 dB (A) at 3 m</p> • Sealed Enclosure (No Fans): <p>Ambient/Ambient</p> 	
Dual Thermostat	<ul style="list-style-type: none"> • High Alarm Setting: <p>NC contact, Range - 0 to 60°C (32 to 140°F)</p> • Low Alarm Setting: <p>NO contact, Range - 0 to 60°C (32 to 140°F)</p> 	
Agency Certification	<p>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 DCS equipment, see <i>Standard and Compact 200 Series I/O - Agency Certifications</i> (PSS 41H-2CERTS).</p>	
Area Designation	Per customer order, vented and sealed are available for general purpose areas only.	
<p>^(a) The effective heat rise should be added to the planned ambient temperature and the result should be lower than the rated maximum ambient temperature of the equipment to be installed.</p> <p>^(b) Under normal operating conditions, with both fans running, at enclosure's mid-height at 46 dB (A) ambient noise level.</p>		

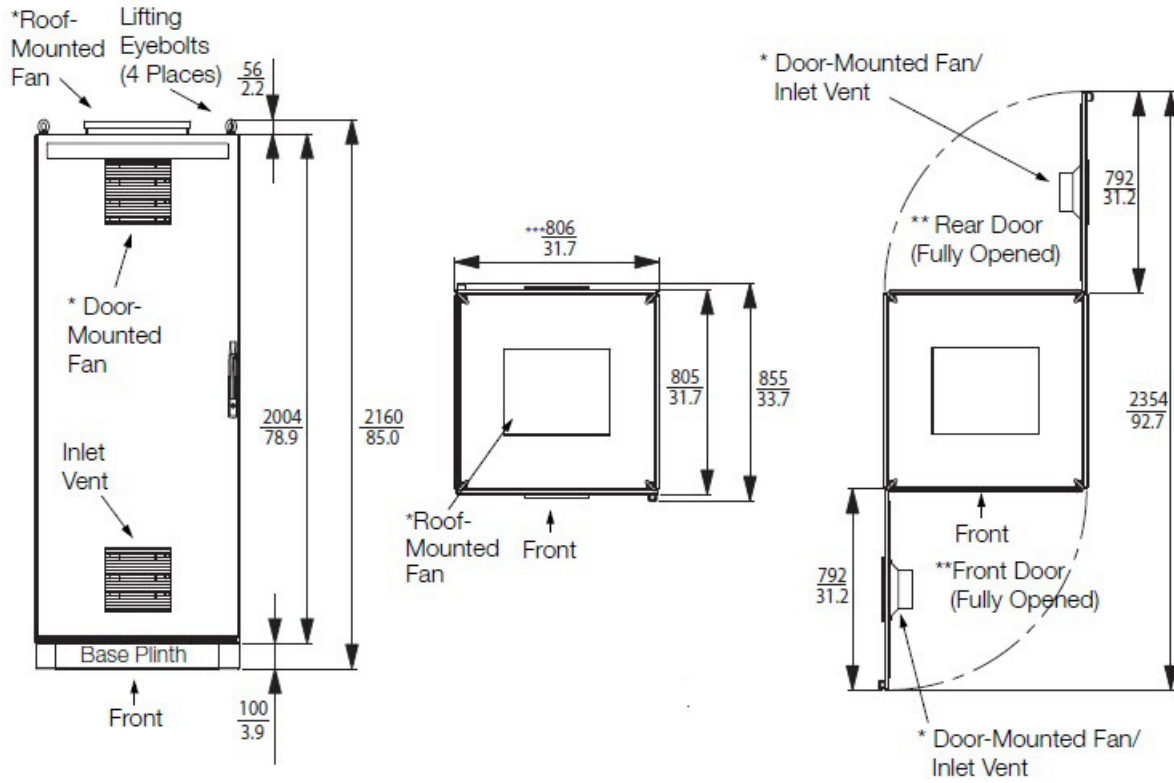
Physical Specifications

Weight	<p>The weight of the enclosure is dependent upon the particular configuration. Consult with a Foxboro representative if precise weight figures are required.</p> <ul style="list-style-type: none"> • Vented Enclosure (Max. Configuration): 800 mm (31.4 in) wide x 800 mm (31.4 in) deep - 234 kg (516 lb) • Side Panel: 2,000 mm (78.7 in) high x 800 mm (31.4 in) deep - 6 kg (14 lb)
Mounting	<p>Floor</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>⚠ CAUTION</p> <p>RISK OF EQUIPMENT DAMAGE OR INJURY</p> <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>Failure to follow these instructions can result in injury or equipment damage.</p> </div>
Construction	<p>Sheet steel with textured, powder-coated finish</p> <ul style="list-style-type: none"> • Material: <ul style="list-style-type: none"> ◦ Door: 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: <ul style="list-style-type: none"> ◦ Frame: Dipcoat-primed, RAL 7044 smooth ◦ Door, Roof, Side Panels: 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
Panel Thickness	<ul style="list-style-type: none"> • Door: 2 mm (14 ga) • Side Panels, Roof: 1.5 mm (16 ga)
Color	<ul style="list-style-type: none"> • Side Panels, Rear Wall, ROOF, and Door: RAL 7035 - light gray - textured • Plinth: RAL 7022 - umbra gray smooth

Weight Load Supported Per Optional Shelf	50 kg (110 lb) (maximum)
Cable Entry	<ul style="list-style-type: none"> • Vented Enclosure: Bottom through gland plate(s) Top through customer cutouts in enclosure top (for enclosure with roof-mounted fans, suggested entry is bottom) • Sealed Enclosure: Bottom through steel panel and customer cutouts in panel Top through customer cutouts in enclosure top
Grounding	<ul style="list-style-type: none"> • Roof, Side Walls, Gland Plates: Automatic potential equalization built in • Door: Dedicated 4 mm² (11 ga) ground strap to enclosure frame • Enclosure: Two M8 studs (one for each enclosure side) An optional isolated bus bar for additional ground points
Power Input Terminals	<ul style="list-style-type: none"> • Type: Ring Lug • Wire Size: Up to 6 mm² (10 AWG) • Ring lug Size: M4 Maximum (DIN 46 234/46 237), 9.6 mm maximum O.D.
Enclosure Equipment Cabling	Universal mounting straps are supplied for attaching, routing, and strain relieving of TA cables. Each strap supports up to a 75 mm (3 in) diameter cable bundle.

Dimensions Nominal


G40 19-Inch 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 side panels, without side panels 800/31.5.

Related Product Documents

Document Number	Description
PSS 41H-1ATS	<i>Address Translation Station Communications</i>
PSS 31H-2S200	<i>Standard 200 Series Subsystem Overview</i>
PSS 41H-2CERTS	<i>Standard and Compact 200 Series I/O - Agency Certifications</i>
PSS 41H-FPS400	<i>Standard 200 Series Power Supply - FPS400-24</i>
PSS 41H-2GOV	<i>G-Series Enclosures Overview</i>
PSS 21H-5B9 B4	<i>1 x 8 Mounting Structure and 1 x 8 FBM Mounting Structure</i>
PSS 21H-5F1 B3	<i>ac Transfer Switch</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>

 **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/.

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