Foxboro™ DCS

Model D96 (Dell P5860) Workstation for Windows Operating Systems

PSS 41H-4D96

Product Specification

January 2025

Legal Information

The information provided in this document contains general descriptions, technical characteristics and/or recommendations related to products/solutions.

This document is not intended as a substitute for a detailed study or operational and site-specific development or schematic plan. It is not to be used for determining suitability or reliability of the products/solutions for specific user applications. It is the duty of any such user to perform or have any professional expert of its choice (integrator, specifier or the like) perform the appropriate and comprehensive risk analysis, evaluation and testing of the products/solutions with respect to the relevant specific application or use thereof.

Overview

Vital software processes are often placed onto stand-alone workstations, with redundancy provided through replicating that configuration. This permits continued plant operation during maintenance as well as in the unusual event of workstation unavailability. Workstations can be remotely mounted in secured enclosures or spaces with the operator interface equipment installed through the use of Remote Graphics Units.

The D96 EcoStruxure Foxboro DCS Standard Workstation can be used with EcoStruxure Foxboro DCS Control Core Services software and EcoStruxure Foxboro DCS Control Software, and can also provide a platform for Foxboro, third-party, and user-written applications.

As a multipurpose workstation running the Windows 10 64-bit operating system, the D96 workstation supports execution of system applications, data communications for a broad range of applications, file serving capabilities, and display of graphics and text. It also interfaces with corporate networks at a local or worldwide level.

The workstation supports a mouse or optional trackball, an alphanumeric keyboard, up to four annunciator or annunciator/numeric keyboards, and one to four monitors. The D96 workstation also supports an optional USB touchscreen (purchased separately with the monitor) and an optional USB speaker set (purchased separately).

The workstation features up to two internal SATA hard disk drives, which can be optionally configured as RAID1, and comes with 16 GB of ECC RAM memory. The processor supports an internal DVD+RW drive.

Client/server communication is accomplished using the TCP/IP networking protocol with the integrated Ethernet network port or optional Ethernet network interface cards (NICs).

As indicated by the CE logo, the Model D96 workstation conforms to the applicable European Union directives.

Workstation Security

The Foxboro DCS workstation supports optional product features to allow customers to meet plant requirements for enhanced workstation security. Plant requirements for enhanced Foxboro DCS workstation security can be met through a combination of new product security enhancements as well as implementing best security policies, practices, and procedures.

Foxboro DCS workstation enhanced product security requirements are supported in two broad categories, namely, workstation software including passwords, and workstation platform hardening.

Workstation software supports:

- Changeable login passwords
- Individual user passwords
- Password lock-out after a user-configurable number of unsuccessful login attempts and secured mechanisms to reset login
- Password aging that requires password change on a periodic basis
- Password support of alphanumeric and symbol characters as per Microsoft convention
- Password file protection
- User accounts and optional Trellix firewalls for Microsoft Windows 10-based workstations managed from a central location through Microsoft Domains and Active Directory

- User account creation, deletion, and modification tracking
- User logon/ logoff tracking
- Least privilege file and account access
- Necessary system services running in non-admin accounts where possible
- Security patches from software suppliers, including Microsoft, with patch status reporting
- Enhanced security by Secure Boot feature
- Anti-virus software, including malware protection supported as well as Anti-Spyware software support

Workstation platform hardening supports:

- Unnecessary services, software, and programs removed
- Unneeded software ports disabled
- Optional host intrusion prevention to help protect the use of software ports that might be used, depending on the software configuration
- Documentation on how to re-enable services and ports where required by special circumstances
- Security-related BIOS changes

NOTICE
POTENTIAL LOSS OF FUNCTIONALITY Verify the USB devices are free of malware or viruses before plugging into the workstation. Failure to scan the USB devices for potential threats could potentially cause the workstation to become unresponsive. **Failure to follow these instructions can result in loss of functionality.**

Installation Considerations

These new security enhancements are supported only on Microsoft Windows 10 stations which support the Control Network and require a software update to the latest Foxboro DCS software release to obtain these security features. The security enhancements can be deployed on a subset of workstations to help increase security, but in order to maximize security protection, all workstations need to be updated to the latest approved software release to obtain the full benefits.

Optional Trellix Software Packages

See *EcoStruxure™ Foxboro™ DCS Trellix Security Products* (PSS 41S-4Trellix) for the product specifications for the optional Trellix products.

Features

The Model D96 workstation, available with a Foxboro DCS software license, can:

- Host Foxboro DCS control stations
- Support data communications to directly connected process I/O devices
- Serve as an application platform
- Serve as a human to machine interface (HMI) station
- Function on Ethernet control systems
- The latest version of Veritas System Recovery software is included with each new D96 workstation when purchased as part of the model code. This software is **not** available to be ordered as a standalone part and cannot be purchased separately from Schneider Electric.

NOTICE
POTENTIAL LACK OF RECOVERY SOFTWARE If you do not purchase a D96 workstation with Veritas System Recovery software included, you will be unable to purchase it later. **Failure to follow these instructions can result in lack of recovery software.**

Base Configuration

- Intel Xeon® processor

- 16GB, DDR5 ECC Registered RAM (expandable to32 GB)
- 2 TB SATA hard drive
- 1 PCI Express™ 5x16 video slot
- 1 PCI Express™ 4x16 slot
- 3 PCI Express™ 4x8 slot
- Internal DVD+RW Optical Disk Drive
- Integrated Ethernet ports (1GbE/10GbE)
- Quad mini-DP 1.4 port PCIe graphics card with adapters to standard display port, up to 4 x 1920x1080 (Full HD) pixel resolution
- Universal Serial Bus (USB) interface ports for:
  - Mouse
  - Keyboard
  - Audio speakers (optional)
  - Touchscreens (optional)
  - Annunciator keyboard (optional)

Additional Options

- Add up to 16 GB of system RAM, for a total of 32 GB
- A second SATA hard drive
- An internal SATA RAID1 system
- Up to three Ethernet network interface cards
- GPS Time Synchronization card
- Annunciator keyboards
- Trackball
- A Human Interface up to 550 m (1804 ft) on 50/125µ multi-mode cable, up to 5km (3.1 mi.) with 9/125µ single mode cable extension unit (RGU) servicing these devices:
  - Up to four video monitors
  - Up to six USB devices

Mounting Options

With PCIe video card, the Model D96 workstation can be located up to 30 m (100 ft from the monitor, using direct connect, analog video and other human interface cables available from Foxboro. This video connection will only operate when the Foxboro P/N RH924DF (100 ft VGA cable) is used or the RH103ER Mini DisplayPort to VGA adapter is used.

Four mini DisplayPort to DisplayPort cables are included with the video card. The DisplayPort cables (RH103EN, RH103EP, and RH103EQ are sold separately.

Two optional Remote Graphics Unit (RGU offerings are provided for each workstation to enable video and USB devices to be located at a distance from the workstation. For more information, see Remote Graphics Unit For D96 Workstations Overview, page 13.

Devices that can be remote mounted via the RGU include monitors, the keyboard and mouse (or trackball), audio via USB speakers, USB touchscreens, and external USB drives.

Functional Specifications

Processor Type	Intel Xeon
Memory	16 GB, DDR5 ECC Registered RAM (expandable to 32 GB)
Devices Served	Peripherals • One or two 2 TB SATA hard drives, and DVD+RW (SATA) Video Displays (Up to 4) • 23-inch LCD USB Touchscreen Monitor • 24-inch LCD Monitor Interfaces to External Devices • USB ◦ Mouse or optional trackball ◦ QWERTY keyboard ◦ Up to four annunciator keyboards via an optional USB hub, local (up to 1.8 m (6 ft)) or remote (up to 30.5 m (100 ft)). For these extended connections, see the USB extension kits in *EcoStruxure™ Foxboro™ DCS Annunciator Keyboard* (PSS 41H-4USBKBD). ◦ Up to four optional monitors (via RGU, hub, or direct) ◦ External speakers
Internal Diagnostics	Self-checking is performed at power-up.
Video	Output Type • Quad mini-DP 1.4 port PCIe graphics card with adapters to standard display port, up to 4 x 1920x1080 (Full HD) pixel resolution. Remote Graphics Unit (optional) supports dual or quad analog or DVI graphics. Screen Presentation • Refresh Rate ◦ Up to 85 Hz • Colors ◦ 32 bit • Resolution ◦ Widescreen (16:9) (Supported by 24 inch LCD Monitor) ◦ Up to 1920x1080 pixels
Serial Interface Ports	No onboard serial ports
GPS Time Synchronization	Optional card provides GPS support. For more information, see *EcoStruxure™ Foxboro™ DCS Time Synchronization Overview* (PSS 41S-1TIME).
Ethernet Interface Communications	Up to three PCIe Ethernet network interface cards provide connection to Ethernet data bus (10/100Base-TX or 100Base-FX). As well, the D96 has two Integrated Ethernet ports (1GbE/10GbE).
Power Requirements	Input Voltage • 90 VAC - 264 VAC • 47 to 63 Hz Operating Line Frequency Range

	Power Consumption • 750 W maximum output power supply[(a)]
Ecodesign	Complies with Ecodesign Directive 2009/125/EC and the following Harmonized Standards: • Regulation (European Union) No. 801/2013 • Regulation (European Union) No. 1275/2008 / EN 50564:2011
Regulatory Compliance, Electromagnetic Compatibility (EMC)	*USA and Canada* • FCC CFR 47 Part 15 • ICES-003, Issue 7 *European Union* • Complies with the EU EMC Directive 2014/30/EU and the following Harmonized Standards: ◦ EN 55032:2015 +A11:2020 ◦ EN 55035:2017 +A11:2020 ◦ EN 61000-3-2:2014 (Class D) ◦ EN 61000-3-3:2013 ◦ EN 301 489-1 V2.2.3 ◦ EN 301 489-17 V3.2.4 ◦ EN 301 489-3 V2.1.1 *International* • AS/NZS CISPR 32:2015 + A1:2020 Class B
Regulatory Compliance, Product Safety	*USA and Canada* • UL Listed to UL 62368-1, 3rd Ed., and CSA Certified to CSA C22.2 No. 62368-1:19, 3rd Ed. *European Union* • Complies with the EU Low Voltage Directive 2014/53/EU and the following Harmonized Standards: ◦ EN IEC 62368-1:2020 + A11:2020 ◦ EN 62479:2010 ◦ EN IEC 62311:2020 ◦ EN 50566:2017 *International* • Complies with the following International Standards: ◦ IEC 62368-1:2018 ◦ IEC 62368-3:2017 ◦ GB 4943.1-2011 ◦ GB 17625.1-2012 ◦ GB/T 9254.1-2021 ◦ NOM-019-SCFI-1998 ◦ AS/NSZ 62368-1:2022 (Ed 3) ◦ AS/NZS 62368.1:2018 (Ed 2) ◦ IS 13252(Part 1):2010/IEC 60950-1:2005

RoHS Compliance[(b)]	• Complies with EU RoHS Directive 2011/65/EU under the following Harmonized Standard: EN IEC 63000:2018

(a) While the maximum power consumption of the D96 is as stated, actual power consumption is a factor of components installed within the computer and attached peripherals. A nominal power consumption value is approximately 150 to 250 watts. Actual power consumption can be measured for each configuration.

(b) Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

Environmental Specifications

	Operating	Storage
Temperature	5° to 45°C (41° to 113°F)	-40° to 65°C (-40° to 149°F)
Relative Humidity	20% to 80% noncondensing	5% to 95% noncondensing
Shock	Half sine shock, 40g, 2.5ms **NOTE:** Values represent individual shock events and do not indicate repetitive shock events.	Half sine shock, 105g, 2.5ms **NOTE:** Values represent individual shock events and do not indicate repetitive shock events.
Maximum Vibration	0.5g (rms), 5-350 Hz **NOTE:** Values do not indicate continuous vibration.	2.0g (rms), 5-350 Hz **NOTE:** Values do not indicate continuous vibration.
Altitude (non-pressurized)	-15.2 m to 3048 m (-49 ft to 10,000 ft)	-15.2 m to 10,668 m (-49 ft to 35,000 ft)
Contamination	Class G1 (Mild) as defined in ISA Standard S71.04	
Location	UL/UL-C listed as suitable for use in ordinary locations and meets ordinary safety standards for fire and shock hazards.	

Physical Specifications

Dimensions (Processor)	Height • 414 mm (16 in.) Width • 172.60 mm (7 in.) Depth • 429.60 mm (17 in.)
Weight	Exact weights depend upon configuration. Minimum • 14.40 kg (32 lbs.) Maximum • 21.70 kg (48 lbs.)
Mounting	4U rack dimensions For more information, see *EcoStruxure™ Foxboro™ DCS G50 Server Enclosure* (PSS 41H-2G50).
Heat Dissipation	750 Watts Wide-Ranging, Active Power Factor Correction, 90% Efficient Power Supply Typical 2560 btu/hr

Remote Graphics Unit For D96 Workstations Overview

The D96 workstation can be configured with a Remote Graphics Unit that connects either dual or quad video by way of fiber-optic cabling. The USB keyboard, mouse, trackball, touchscreens, and audio can be connected through the RGU, which can be located at distances from the D96 of up to 70 m (230 ft) with 62.5/125 µm fiber or 150 m (492 ft) with 50/125 µm fiber cable. Fiber cable with LC/LC connections greater than 50 m (164 ft) is user-supplied.

The RGU features up to six USB 2.0 ports (one which supports a BIOS level keyboard), and passive (fanless) cooling. The RGU also includes a universal input power supply.

For video connections, the RGU includes four DisplayPort ports, which can directly connect to up to four DisplayPort monitors.

Figure 1 - Remote Graphics Unit for D96 Workstations

RGU (D96) Functional Specifications

Interfaces to External Devices	• Up to six USB 2.0 ports for mouse, optional trackball, keyboard, speakers, or up to four optional touchscreens • Audio connections, including microphone, audio input, and audio output connections **NOTE:** If a speaker option and four USB touchscreens are to be utilized, a USB hub must be selected for use with this workstation. (See part numbers RH103FU, RH103FV for the touchscreens.) • RGU solution includes up to four DisplayPort ports, and can directly support connections to up to four DisplayPort monitors	
Distance Specifications	The RGU allows distances between the D96 workstation and attached devices of up to 70 m (230 ft) with 62.5/125 µm fiber or 150 m (492 ft) with 50/125 µm fiber cable. Fiber cable with LC/LC connections greater than 50 m is user-supplied.	
Kit Contents	Remote Graphics Units Kit, Dual (RH103DX) • Remote Graphics Unit Transmitter (RH103DY) • Remote Graphics Unit Receiver (RH103DZ) • 15 m (50 ft) starter LC/LC fiber cable (P0972TP)	Remote Graphics Units Kit, Quad (RH103EA) • Remote Graphics Unit Transmitter (RH103EB) • Remote Graphics Unit Receiver (RH103EC) • 15 m (50 ft) starter LC/LC fiber cable (P0972TP)

RGU (D96) Environmental Specifications

	Operating	Storage/Transportation
Temperature	0° to 40°C (32 to 104°F) (indoors, in cabinet)	-40° to + 70°C (-40 to +158°F)
Relative Humidity	20% to 80%, noncondensing (indoors)	5% to 95% (in packaged configuration)
Vibration	NEBS level 3 Seismic Zone 4[a]	NEBS level 3 Seismic Zone 4[a]
Maximum Atmospheric Pressure	650hPa (3,580 m / 11,745 ft) to 1013hPa (0 m / 0 ft)	192hPa (12,000 m / 39,370 ft) to 1020hPa (-50 m / -164 ft)
EMC Certifications	Class A (commercial, industrial, or business) • ACMA, CE, FCC, VCCI	
Laser Emissions	850 nm laser compliant to 21CFR, Subpart J, Class 1	
Contamination	Class G1 (Mild) as defined in ISA Standard S71.04	
Location	UL/UL-C listed as suitable for use in ordinary locations and meets ordinary safety standards for fire and shock hazards.	
(a) Zone 4 = 7.0 to 8.3 on the Richter scale		

RGU (D96) Physical Specifications

Resolution	Maximum Analog Resolution • 1920x1200 ◦ (DisplayPort to HD-15 adapter sold separately) Maximum Digital (DVI) Resolution • Up to 2048x1152 Maximum DisplayPort Resolution • Up to 2048x1152 • 2560x1600
Operating Systems Supported	• Windows 10 (v21H2)
Dimensions Transmitter and Receiver Units)	Height • 4.26 cm (1.67 in) Width • 18.9 cm (7.45 in) Depth • 21.66 cm (8.53 in)
Cable Type Supported	LC-LC optical, Duplex
Maximum Distances	**NOTE:** Fiber cable with LC/LC connections greater than 50 m is user-supplied. • OM1[a] multimode 62.5/125 µm (max. 275 m / 902 ft) • OM2[a] multi-mode 50/125 µm cable (max. 550 m / 1804 ft) • OM3[a] multi-mode 50/125 µm cable (max. 550 m / 1804 ft)

	• OM4[a] multi-mode 50/125 µm cable (max. 550 m / 1804 ft) • OS1,OS2[b] Single-mode 9/125 µm cable (max. 5 km / 3.10 mi)
Power Consumption and Supply Voltage	Extio Unit • Power Requirements ◦ 12 VDC, maximum 5 A ◦ (5 A fuse for overcurrent protection) • Power Connector ◦ Mini-DIN 4 socket (4-pin) Maximum Power Consumption Calculated for the following configuration: a USB keyboard and mouse, two other USB devices, and four DisplayPort monitors. External Power Supply • Input AC Voltage Range ◦ 100 to 240 VAC • Input Frequency ◦ 50 to 60 Hz • Input Connector ◦ IEC 60320-C13 • Output Voltage ◦ 12 VDC • Output Connector ◦ Mini-DIN 4 plug (4-pin) with lock • Maximum Power Output ◦ 60 W

(a) OM1, OM2, OM3, and OM4 are Matrox cable kits. You must either order them from Matrox or build equivalent cables to specification.

(b) OS1 and OS2 are Matrox single-mode fiber kits for distances greater than 400 m (1312 ft) that must be user-supplied.

Related Documents

Topic	Document
Model D96 (Dell P5860)	*EcoStruxure™ Foxboro™ DCS Model D96 (Dell P5860) Standard Workstation for Windows 10 21H2 LTSC Operating System User's Guide* (B0700JE)
Domain Services	*EcoStruxure™ Foxboro™ DCS Security for Windows 10 21H2 LTSC and Windows Server 2022 Implementation Guide* (B0700WX)
Mounting	*EcoStruxure™ Foxboro™ DCS G50 Server Enclosure* (PSS 41H-2G50)
Security Products	*EcoStruxure™ Foxboro™ DCS Trellix Security Products* (PSS 41S-4Trellix)
	EcoStruxure™ Foxboro™ DCS Trellix ENS 10.7 and ePO 5.10 SP1 for Windows Server 2022 Installation and User's Guide (B0700XD)
System Recovery	*EcoStruxure™ Foxboro™ DCS Veritas System Recovery 23 User's Guide* (B0700WY)
USB extension kits	*EcoStruxure™ Foxboro™ DCS Annunciator Keyboard* (PSS 41H-4USBKBD)

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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PSS 41H-4D96, Rev B