

Foxboro™ DCS

Model H92 (HP Z4 G4) Workstation for Windows Operating Systems

PSS 41H-4H92

Product Specification

January 2024





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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 H92 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 H92 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 USB annunciator or annunciator/numeric keyboards, and one to four monitors. The H92 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 three internal serial ATA hard disk drives, which can be optionally configured as RAID1, and comes with 8 GB of ECC RAM memory (expandable to 16 GB). 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 H92 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 or Symantec 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 software release to obtain the full benefits.

Optional Trellix® Software Packages

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

Features

The Model H92 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

Model H92 Base Configuration



- Intel Xeon® processor
- 8 GB DDR-4 ECC Registered RAM (expandable to 16 GB)
- 1 TB SATA hard drive (expandable to up to 3 TB with a third hard drive)
- PCI Express[™] x16 video slot
- Internal DVD+RW/CD drive
- Quad mini-DP 1.4 port PCIe graphics card with adapters to standard display port, up to 4 x 1920x1080 (Full HD) pixel resolution
- Integrated 10/100/1000BaseT Ethernet port
- Universal Serial Bus (USB) interface ports for:
 - Mouse
 - Keyboard
 - Audio speakers (optional)
 - Touchscreens (optional)
 - USB annunciator keyboard (optional)

Model H92 Additional Options

- · Add up to 16 GB of system RAM
- · A second or third SATA hard drive
- An internal SATA RAID1 system with an optional configuration of a hot spare with a third hard drive
- · Up to three Ethernet network interface cards
- GPS Time Synchronization card
- USB annunciator keyboards
- Trackball
- Analog monitor graphics card (supports one to four analog monitors)
- A Human Interface up to 550 m (1804 ft) on 50/125my multi-mode cable, up to 5km (3.1 mi.) with 9/125my single mode cable extension unit (RGU) servicing these devices:
 - Up to four video monitors
 - Up to six USB devices

Mounting Options

With quad PCIe video cards, the Model H92 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, USB, and FireWire devices to be located at a distance from the workstation. For more information, see Remote Graphics Unit For H92 Workstations Overview, page 12.

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	8 GB DDR4 ECC Registered Memory standard (expandable to 16 GB)
Devices Served	Peripherals One, two, or three 1 TB SATA hard drives, and DVD+RW (SATA) Video Displays (Up to 4) 23-inch LCD USB Touchscreen Monitor 23-inch LCD Monitor 10-24-inch LCD Monitor Interfaces to External Devices USB Mouse or optional trackball QWERTY Up to four USB annunciator keyboards via an optional USB hub, local (up to 1.8 m (6 ft)) or up to 30.5 m (100 ft) away. For these extended connections, see the USB extension kits in Annunciator Keyboard (PSS 41H-4USBKBD). Up to four optional touchscreens (via RGU, hub, or direct)
Internal Diamentina	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 <i>Time Synchronization Overview</i> (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 H92 has one Integrated Ethernet port (10/100/1000Base-T).
Power Requirements	Input Voltage • 100 or 240 VAC (nominal) @ 10 A, auto select • 47 to 66 Hz Operating Line Frequency Range Power Consumption • 750 W maximum output power supply ^(a)

Condonian	Compiles with Foodering Directive 2000/405/EO and the fall and
Ecodesign	Complies with Ecodesign Directive 2009/125/EC and the following Harmonized Standards:
	 Regulation (European Union) No. 617/2013 / EPRI 306 Generalized Internal Power Supply Efficiency Test Protocol, Rev. 6.6 / EN 62623:2013
	Regulation (European Union) No. 1275/2008 / EN 50564:2011 / IEC 62301:2011
Regulatory Compliance,	USA and Canada
Electromagnetic Compatibility (EMC)	FCC CFR 47 Part 15
(Line)	ICES-003, Issue 7
	European Union
	Complies with the EU EMC Directive 2014/30/EU and the following Harmonized Standards:
	∘ EN 55032:2015 Class B
	∘ EN 55032:2015+A11:2020 Class B
	∘ EN 55035:2017+A11:2020
	∘ EN IEC 61000-3-2:2019
	∘ EN 61000-3-3:2013 +A1:2019
Regulatory Compliance, Product	USA and Canada
Safety	 UL Listed to UL 62368-1, 3rd Ed., and CSA Certified to CSA C22.2 NO. 62368-1, 3rd Ed.
	European Union
	Complies with the EU Low Voltage Directive 2014/35/EU and the following Harmonized Standards:
	∘ EN 62368-1:2014 +A11:2017
	 EN IEC 62368-1:2020 +A11:2020
	 EN 60950-1:2006 + A11: 2009 +A1:2010 +A12:2011+A2:2013 /+AC:2011
	∘ EN 62479:2010
	∘ EN 62471:2008
	∘ EN 62311:2008
	∘ EN 60825-1:2014
	International
	Complies with the following International Standards:
	∘ IEC 62368-1:2014
	∘ IEC 62368-1:2018
	∘ IEC 60950-1:2005 +A1:2009 +A2:2013
	∘ GB 4943.1-2022
	∘ GB17625.1-2012
	∘ GB/T 9254.1-2021
	∘ CISPR 32:2015 Class B
	∘ CISPR 32:2015 +A1:2019 Class B
	AS/NZS CISPR 32:2015

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 H92 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 40°C (40° to 104°F)	-40° to 60°C (-40° to 140°F)
	Above 1524 m (5,000 feet) altitude, the maximum operating temperature is reduced by 1° C (1.8° F) for every 305 m (1,000 feet) increase in elevation.	
Relative Humidity	8% to 85% noncondensing	8% to 90% noncondensing
Cooling	Above 1524 m (5,000 ft.) altitude, maximum opera per 305 m (1,000 ft.) elevation increase.	ating temperature is reduced by 1°C (1.8°F)
Shock	Half sine shock, 40g, 2-3ms (~62 cm/sec) NOTE: Values represent individual shock events and do not indicate repetitive shock events.	Half sine shock, 160 cm/s, 2-3ms (~100g) square: 422 cm/s, 20g
		NOTE: Values represent individual shock events and do not indicate repetitive shock events.
Maximum	0.5g (rms), 5-300 Hz up to 0.0025g2/Hz	2.0g (rms), 5-500 Hz, up to 0.0150g2/Hz
Vibration	NOTE: Values do not indicate continuous vibration.	NOTE: Values do not indicate continuous vibration.
Altitude (non-	With Rotational Hard Drives	-12,192 m (40,000 feet)
pressurized)	• 3,048 m (10,000 feet)	
	With only Solid-State Drives	
	• 5,000 m (16,404 feet)	
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
,	• 386 mm (15.2 in)
	Width
	• 169 mm (6.65 in)
	Depth
	445 mm (17.5 in) measured to the rear of the service panel
Weight	Exact weights depend upon configuration.
	Minimum
	• 10.2 kg (22.4 lbs.)
	Standard
	• 11.3 kg (24.9 lbs)
	Maximum
	• 17.3 kg (38.2 lbs)
Mounting	Tabletop, Metal Enclosure (1000x1000 mm) or Modular Industrial Enclosure (MIC)
	4U rack dimensions
Heat Dissipation	750 Watts Wide-Ranging, Active Power Factor Correction, 90% Efficient Power Supply
	Typical
	• 1850 btu/hr (466 kg-cal/hr)
	Maximum
	• 3084 btu/hr (777 kg-cal/hr)

Remote Graphics Unit For H92 Workstations Overview

The H92 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 H92 of up to 70 m (230 ft) with 62.5/125 μ m fiber or 150 m (492 ft) with 50/125 μ m 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.

Remote Graphics Unit for H92 Workstations



RGU (H92) Functional Specifications

	T	
Interfaces to External Devices	 Up to six USB 2.0 ports for mouse, optional trackball, keyboard, USB speakers, or up to four optional touchscreens 	
	Audio connections, including microphon	e, audio input, and audio output connections
		USB touchscreens are to be utilized, a USB is workstation. (Refer to part numbers creens.)
	RGU solution includes up to four Display connections to up to four DisplayPort more	
Distance Specifications	The RGU allows distances between the H92 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 Units Kit, Quad (RH103EA)
	Remote Graphics Unit Transmitter (RH103DY)	Remote Graphics Unit Transmitter (RH103EB)
	Remote Graphics Unit Receiver (RH103DZ)	Remote Graphics Unit Receiver (RH103EC)
	15 m (50 ft) starter LC/LC fiber cable (P0972TP)	15 m (50 ft) starter LC/LC fiber cable (P0972TP)

RGU (H92) 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 (H92) 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	Windows 10 (v1607)
Supported	Windows 10 (v21H2)
Dimensions	Height
Transmitter and	• 4.26 cm (1.67 in)
Receiver Units)	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)

	Nemote Graphics Office of 152 vvolkstations overview
	• 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

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

60 W

(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 H92 (HP Z4 G4)	Model H92 (HP Z4 G4) Standard Workstation User's Guide (B0700HV)
	Model H92 (HP Z4 G4) Standard Workstation for Windows 10 21H2 LTSC Operating System User's Guide (B0700WU)
Domain Continue	Foxboro DCS Security Implementation Guide (B0700HM)
Domain Services	Foxboro DCS Security for Windows 10 21H2 LTSC and Windows Server 2022 Implementation Guide (B0700WX)
Security Products	Trellix Security Products (PSS 41S-4Trellix)
	Trellix ENS 10.7 and ePO 5.10 for Windows Server 2016 Installation and User's Guide (B0700WR)
	Trellix ENS 10.7 and ePO 5.10 SP1 for Windows Server 2022 Installation and User's Guide (B0700XD)
System Recovery	Veritas System Recovery 18 User's Guide (B0700HS)
	Veritas System Recovery 23 User's Guide (B0700WY)
USB extension kits	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/.

Schneider Electric Systems USA, Inc. 70 Mechanic Street Foxboro, Massachusetts 02035–2040 United States of America

Global Customer Support: https://pasupport.se.com

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