

Model H92 Workstations
Windows® 7 Professional Operating System



The I/A Series® Model H92 workstations are workstation class processors running the Windows® 7 Professional operating system. The Model H92 workstations can co-exist and interoperate on the same Mesh control network.

FEATURES

The Model H92 workstations, available with an I/A Series® S10 software license can:

- ▶ Host I/A Series 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.
- ▶ Security enhancements provided by the following McAfee® software packages:
 - VirusScan with AntiSpyware Enterprise
 - ePolicy Orchestrator
 - Host Intrusion Prevention
 - Data Loss Prevention (Device Control).

OVERVIEW

The Model H92 workstations can be used with I/A Series or Foxboro Control Software (FCS) workstation software, and can also provide a platform for Invensys Foxboro, third-party, and user-written applications.

As multipurpose workstations running the Windows 7 64-bit operating system, these workstations support 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.

These workstations support a mouse or optional trackball, an alphanumeric keyboard, up to four USB or serial/GCIO annunciator or annunciator/numeric keyboards, and one to four monitors. The H92 workstations also support an optional USB touchscreen (purchased separately with the monitor) and an optional USB speaker set (purchased separately).

These workstations feature up to two internal serial ATA hard disk drives, which may be optionally configured as RAID1, and comes with 4 GB of ECC RAM memory (expandable to 12 GB). The processor supports an internal DVD+RW drive and an optional external USB floppy drive that may be purchased separately.

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 workstations conform to the applicable European Union directives.

Workstation Security

I/A Series or FCS workstations support optional product features to allow customers to meet plant compliance for enhanced workstation security, including NERC CIP. Plant requirements for enhanced I/A Series or FCS workstation security can be met through a combination of new product security enhancements as well as services provided by the Invensys Security Consulting team or other qualified service providers.

I/A Series or FCS workstation enhanced product security requirements are supported in two broad categories, namely, I/A Series or FCS workstation software including passwords and workstation platform hardening.

I/A Series or FCS Workstation software:

- ▶ Changeable log-on passwords
- ▶ Individual user passwords
- ▶ Password lock-out after a user-configurable number of unsuccessful log-ins 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 McAfee firewalls for Microsoft Windows 7-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 supported including patch status reporting
- ▶ Anti-virus software including malware protection supported as well as Anti-Spyware software support.

I/A Series or FCS Workstation platform hardening:

- ▶ Unnecessary services, software, and programs removed
- ▶ Unneeded software ports disabled
- ▶ The McAfee Host Intrusion Prevention (HIP, described below) to protect the use of software ports that may be used depending on the software configuration
- ▶ Documentation on how to re-enable services and ports where required by special circumstances
- ▶ Secure BIOS changes.

Installation Considerations

These new security enhancements are supported only on Microsoft Windows 7 and Windows Server 2008 R2 stations which support The Mesh network and require a software update to the latest I/A Series or FCS software release to obtain these security features. The security enhancements can be deployed on a sub-set of workstations to 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.

A Server class workstation in the system as the Primary Domain Controller runs standard Microsoft domain services. A Secondary Domain Controller is recommended as a back-up, but not strictly required. The standard install creates default Organizational Unit, Security Groups, and Group Policies and is documented in *Security Enhancements User's Guide for I/A Series Workstations with Windows 7 or Windows Server 2008 Operating Systems* (B0700ET).

However, customization of the Domain Server configuration requires Microsoft knowledgeable personnel.

The Primary and Secondary Domain Controller servers are installed as I/A Series workstations. However, they must be dedicated to their domain controller tasks, and must not be used to run I/A Series or FCS applications, or Remote Desktop Services. An exception to this rule is the McAfee ePolicy Orchestrator® which needs to execute on one of the Domain Controllers. Domain Controllers are key resources since they provide user authentication for all the workstations in the domain.

McAfee® Software Packages

Additional security enhancements are provided through the following McAfee® software packages.

VirusScan with AntiSpyware Enterprise

The VirusScan with AntiSpyware Enterprise packages check the Model H92 workstations for viruses and spyware continually. Virus and anti-spyware signature files are regularly updated by McAfee.

ePolicy Orchestrator®

The ePolicy Orchestrator (ePO) allows users to centrally monitor and manage the other McAfee security products using predefined and custom reports and dashboards. While some tools do not require ePO, such as VirusScan with AntiSpyware Enterprise, other tools do require it, such as Host Intrusion Prevention and Device Control. The ePolicy Orchestrator offers many features that are beneficial even for the tools that do not require ePO. For example, ePO can be used to keep virus signature (DAT) files up to date from a single location.

The ePO provides the ability, from a Domain Controller, to install the McAfee security products automatically on all the Windows-based workstations and servers on The Mesh control network that are in the I/A Series Active Directory domain.

As well, these products' policies and options can be managed and distributed from the ePO console.

Host Intrusion Prevention (HIP)

Host Intrusion Prevention proactively blocks zero-day and known attacks, and protects against unauthorized viewing, copying, modifying, and deleting of information and the compromising of system and network resources and applications that store and deliver information.

The Host Intrusion Prevention (HIP) package provides features such as:

- ▶ a configurable firewall, to control access to TCP and UDP software ports
- ▶ application blocking, to allow known applications to run (referred to as "whitelisting") or to block specific applications (such as "blacklisting")
- ▶ intrusion detection, to log messages when unknown devices are plugged into The Mesh network.

Device Control

The Data Loss Prevention package provides control over the access to hardware ports, such as the floppy drive, CD/DVD drive, or USB ports on Windows 7 workstations only (not servers).

MODEL H92 WORKSTATION

Model H92 Base Configuration



The Model H92 workstation contains the following elements:

- ▶ Intel Xeon® processor
- ▶ 4 GB DDR-3 ECC RAM (expandable to 12 GB)
- ▶ 500 GB SATA hard drive (expandable to up to 1.5 TB with a third hard drive)
- ▶ PCI Express™ x16 video slot
- ▶ Internal DVD+RW/CD drive
- ▶ Dual monitor graphics card - supports one or two monitors, digital only (optional DisplayPort to VGA adapter is available)
- ▶ Integrated 10/100/1000BaseT Ethernet port
- ▶ Universal Serial Bus (USB) interface ports for:
 - Mouse
 - Keyboard
 - Audio speakers (optional)
 - Touchscreens (optional)
 - Floppy disk drive (optional)
 - USB annunciator keyboard⁽¹⁾ (optional)

Model H92 Additional Options

The Model H92 workstation offers the following options:

- ▶ Add up to 12 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
- ▶ External, 3.5-inch 1.44 MB USB floppy disk drive
- ▶ Up to three Ethernet network interface cards
- ▶ GPS Time Synchronization card
- ▶ One SoftIO serial expansion card - adds one serial port. Supports:
 - Printers
 - GCIO (including optional serial/GCIO annunciator keyboards⁽¹⁾)
 - Other serial devices
- ▶ USB annunciator keyboards⁽¹⁾
- ▶ Trackball
- ▶ Analog monitor graphics card (supports one to four analog monitors).
- ▶ A Human Interface extension unit (RGU) up to 150 m (492 ft) servicing the following devices:
 - Up to four video monitors
 - Up to five USB devices.

(1) The workstation can only be used with USB or serial/GCIO annunciator keyboards - it cannot be connected to both types.

Mounting Options

With dual or 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 Invensys.

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 (refer to “REMOTE GRAPHICS UNIT FOR H92 WORKSTATIONS OVERVIEW” on page 9). 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 floppy drives.

A GCIO module may be extended to a maximum of 30 m (100 ft) through the use of the appropriate serial cable.

FUNCTIONAL SPECIFICATIONS (H92)

Processor Type

Intel Xeon

Memory

4 GB DDR-3 ECC RAM standard (expandable to 12 GB)

Devices Served

PERIPHERALS

One, two, or three 500 GB SATA hard drives, and DVD+RW (SATA)

VIDEO DISPLAYS (UP TO 4)

19-inch LCD Monitor
20.1-inch LCD Monitor
20.1-inch LCD USB Touchscreen Monitor
23-inch LCD USB Touchscreen Monitor
23-inch LCD Monitor
40-inch LCD Overview Monitor.

INTERFACES TO EXTERNAL DEVICES

USB

Floppy disk drive
Mouse or optional trackball
Alphanumeric keyboard
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, refer to the USB extension kits in *Annunciator Keyboard/ Panel* (PSS 21H-4E1 B4)
Up to four optional touchscreens (via RGU, hub, or direct)
External speakers
Serial
Alarm/text printer
Serial/GCIO annunciator and/or annunciator/numeric keyboards (up to four) attached through a GCIO Interface Module

Internal Diagnostics

Self-checking is performed at power-up.

Video

OUTPUT TYPE

Dual Digital DisplayPort with Digital Visual Interface (DVI) adapters (standard)
Quad Digital DisplayPort with Digital Visual Interface (DVI) adapters (optional)
DisplayPort to Analog VGA adapters (optional)

OUTPUT TYPE (CONT.)

Remote Graphics Unit (optional) supports dual or quad analog or DVI graphics

OPTIONAL PCI express VIDEO INTERFACE⁽²⁾

Quad card – supports up to four analog monitors

SCREEN PRESENTATION

Refresh Rate

Up to 85 Hz

Colors

Over 65,000⁽³⁾

Resolution

Standard (4:3) (Supported by All Monitors)

Up to 1600x1200 pixels (maximum)

Widescreen (16:9) (Supported by 23-Inch LCD Monitor)

Up to 1920x1080 pixels

Serial Interface Ports

No onboard serial ports. Optional SoftIO expansion card must be ordered with the H92 workstation to provide one serial port.

GPS Time Synchronization

Optional card provides GPS support. Refer to *Time Synchronization Overview* (PSS 21S-1C2 B3).

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)

(2) For information on available monitors, refer to PSS 21H-4D1 B3, *Workstation Components*.

(3) May be limited by specific software specifications.

FUNCTIONAL SPECIFICATIONS (H92) (CONTINUED)

Redundant Control Network Interface Communications

TYPE

IEEE 802.3 data bus and EIA RS-232 control bus⁽⁴⁾

Power Requirements

INPUT VOLTAGE

100 or 240 V ac (nominal) @ 8.0 A, auto select
47 to 66 Hz Operating Line Frequency Range

POWER CONSUMPTION

600 W maximum output power supply

ENVIRONMENTAL SPECIFICATIONS (H92)

Operating

TEMPERATURE

5 to 35°C (40 to 95°F)⁽⁵⁾

RELATIVE HUMIDITY

8% to 85%, noncondensing

ALTITUDE

-15.2 to +3,048 m (-50 to 10,000 ft)

DYNAMIC

Shock

Operating: ½-sine: 40g, 2-3ms

NOTE: Values represent individual shock events and do not indicate repetitive shock events.

Vibration

Operating random: 0.5g (rms), 5-300 Hz

NOTE: Values do not indicate continuous vibration.

RELATIVE HUMIDITY

8% to 90%, noncondensing

ALTITUDE

-15.2 to +9,144 m (-50 to +30,000 ft)

DYNAMIC

Non-Operating

½-sine: 160 cm/s, 2-3ms (~100g)

square: 422 cm/s, 20g

NOTE: Values represent individual shock events and do not indicate repetitive shock events.

Non-Operating Random

2.0g (rms), 10-500 Hz

NOTE: Values do not indicate continuous vibration.

Location

UL/UL-C listed as suitable for use in ordinary locations and meets ordinary safety standards for fire and shock hazards.

Contamination

Class G1 (Mild) as defined in ISA Standard S71.04

Storage

TEMPERATURE

-40 to +60 °C (-40 to +140°F)

REGULATORY COMPLIANCE (H92)

Safety Certifications

USA

UL® (UL Std 1950)

CANADA

CSA® (CSA C22.2 No. 950)

EUROPE

TUV (CENELEC EN60950)

EMC

USA

FCC Part 15 Class B

CANADA

IC Class B ICES-003

EUROPE

EN55024, EN61000-3-2, EN61000-3-3, and
EN55022

(4) Refer to PSS 21H-7B6 B4 *Redundant Control Network Interface*, for information on the interface to the Redundant Control Network.

(5) At 35°C (95°F), the maximum operating altitude is 914 m (3,000 ft).

PHYSICAL SPECIFICATIONS (H92)

Dimensions

PROCESSOR

Height

447.6 mm (17.63 in)

Width

17.78 mm (7.0 in)

Depth

445.2 mm (17.5 in)

Mounting

Tabletop, I/A Series Metal Enclosure (1000x1000 mm)
or Modular Industrial Enclosure (MIC)

Mass

Exact weights depend upon configuration.

MINIMUM

12.5kg (27.5 lbs)

STANDARD

13.2kg (29.2 lbs)

MAXIMUM

17.7kg (39 lbs)

Heat Dissipation

600 W POWER SUPPLY

Typical: 1365 btu/hr (344 kg-cal/hr)

Maximum: 2354 btu/hr (593 kg-cal/hr)

REMOTE GRAPHICS UNIT FOR H92 WORKSTATIONS OVERVIEW

The H92 workstation can be configured with a Remote Graphics Unit PCIe card that connects to a Remote Graphics Unit (RGU) by way of fiber-optic cabling. The USB keyboard, mouse, trackball, touchscreens, floppy drive, and audio can be connected through the RGU, which may 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.

The RGU (see Figure 1) features five 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.

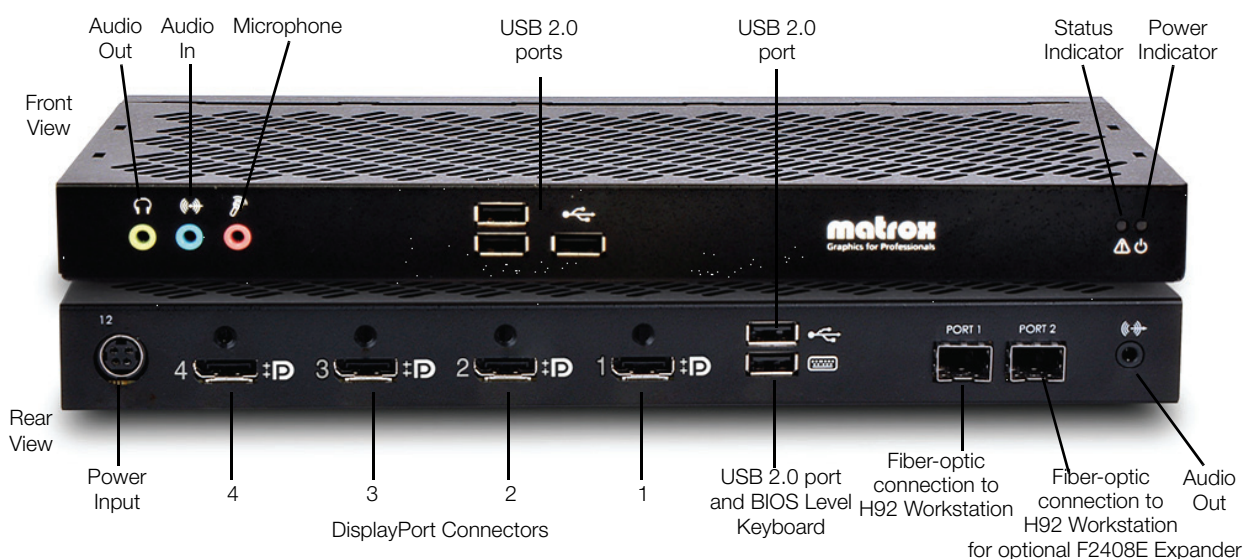


Figure 1. Remote Graphics Unit for H92 Workstation (Front and Rear Views)

RGU (H92) FUNCTIONAL SPECIFICATIONS

Interfaces to External Devices

- ▶ Five USB 2.0 ports for mouse, optional trackball, keyboard, USB speakers, floppy drive, or up to four optional touchscreens
- ▶ Audio connections, including microphone, audio input, and audio output connections

NOTE

If four USB touchscreens are to be utilized, a USB hub must be selected for use with this server. (Refer to part numbers P0928EH, P0928EJ, P0923FS, P0923FT for the touchscreens.)

- ▶ RGU includes four DisplayPort ports, and can directly support connections to up to four DisplayPort monitors.

Distance Specifications

The RGU allows distances between the H92 workstation and attached devices 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 is user-supplied.

Kit Contents

REMOTE GRAPHICS UNIT KIT, DUAL (P0928DU)

Remote Graphics Unit (P0928DS)
PCIe card for RGU (P0928DT)
15 m (50 ft) starter LC/LC fiber cable (P0972TP)

REMOTE GRAPHICS UNIT KIT, QUAD (P0928DV)

Remote Graphics Unit (P0928DS)
PCIe card for RGU (P0928DT)
15 m (50 ft) starter LC/LC fiber cable (P0972TP)

RGU (H92) ENVIRONMENTAL SPECIFICATIONS

Operational

TEMPERATURE (INDOORS, IN CABINET)

0 to 55°C (32 to 131°F)

RELATIVE HUMIDITY (INDOORS)

20% to 80%, noncondensing

VIBRATION

NEBS level 3 Seismic Zone 4⁽⁶⁾

MAXIMUM ATMOSPHERIC PRESSURE

650hPa (3,580 m / 11,745 ft) to
1013hPa (0 m / 0 ft)

Non-Operational, Storage, and Transportation

TEMPERATURE

-40 to +75°C (-40 to +167°F)

RELATIVE HUMIDITY (IN PACKAGED CONFIGURATION)

5% to 95%

VIBRATION

NEBS level 3 Seismic Zone 4⁽⁶⁾

MAXIMUM ATMOSPHERIC PRESSURE

192hPa (12,000 m / 39,370 ft) to
1020hPa (-50 m / -164 ft)

EMC Certifications

Class A (commercial, industrial, or business)

Laser Emissions

850 nm laser compliant to 21CFR, Subpart J, Class 1

RGU Environmental

LOCATION

Is suitable for use in ordinary locations and is designed to meet ordinary safety standards for fire and shock hazards

CONTAMINATION

Class G1 (Mild) as defined in ISA Standard S71.04

⁽⁶⁾ Zone 4 = 7.0 to 8.3 on the Richter scale

RGU (H92) PHYSICAL SPECIFICATIONS

Interface Card

F2208 F2408 F2408E EXPANDER

Provided with an OM2 multi-mode 50/125 μ m optical cable – 5 m (16 ft).

MONITORS SUPPORTED

2, 4, 4

DIGITAL MONITOR SUPPORT

DVI, DisplayPort

MEMORY

1 GB

MAXIMUM ANALOG RESOLUTION

1920 $\times$ 1200 - DisplayPort to HD-15 adapter sold separately.

MAXIMUM DIGITAL (DVI) RESOLUTION

Up to 2048 $\times$ 1152

MAXIMUM DISPLAYPORT RESOLUTION

Up to 2048 $\times$ 1152, and 2560 $\times$ 1600

OPERATING SYSTEMS SUPPORTED

(64-bit) Windows 7, Windows Server 2008 R2, Windows Server 2008, (32-bit) Windows Vista, Windows XP, and Windows Server 2003

DIMENSIONS

Height

29 mm (1.15 in)

Width

300 mm (11.8 in)

Depth

147 mm (5.8 in)

LASER EMISSIONS

850 μ m laser compliant to 21CFR, Subpart J, Class 1

EMC CERTIFICATIONS

Class A: ACMA, CE, FCC, VCCI

INTERFACE CARD

Optical

CARD TYPE

PCIe $\times$ 1

FORM FACTOR

Low-profile

CABLE TYPE SUPPORTED

LC-LC optical, Duplex

MAXIMUM DISTANCES

OM1 multimode 62.5/125 μ m (max. 70 m / 230 ft)

OM2 multi-mode 50/125 μ m cable (max. 150 m / 492 ft)

OM3 multi-mode 50/125 μ m cable (max. 380 m / 1247 ft)

OM4 multi-mode 50/125 μ m cable (max. 400 m / 1312 ft)

Single-mode 9/125 μ m cable (max. 1000 m / 3280 ft)*

EMC CERTIFICATIONS

Class A: ACMA, CE, FCC, VCCI

Power Consumption and Supply Voltage

TEMPERATURE, OPERATIONAL

0 to 55 $^{\circ}$ C (32 to 131 $^{\circ}$ F)

TEMPERATURE, NON-OPERATIONAL, STORAGE AND TRANSPORTATION

-40 to 70 $^{\circ}$ C (-40 to 158 $^{\circ}$ F)

HUMIDITY, OPERATIONAL (INDOOR)

20 to 80% (non-condensing)

HUMIDITY, NON-OPERATIONAL STORAGE AND TRANSPORTATION

5% to 95% (non-condensing)

ATMOSPHERIC PRESSURE, OPERATIONAL

650hPa (3,580 m / 11,745 ft)
to 1013hPa (0 m / 0 ft)

ATMOSPHERIC PRESSURE, NON-OPERATIONAL AND TRANSPORTATION

192hPa (12,000 m / 39,370 ft)
to 1020hPa (-50 m / -164 ft)

RGU (H92) PHYSICAL SPECIFICATIONS (CONTINUED)

Power Consumption and Supply Voltage
(Continued)

ESTIMATED MTBF (MEAN TIME BEFORE
FAILURE)

Interface Card

70.81 years @ 40 °C

Extio F2208 Unit

26.87 years @ 40 °C (excluding power
supply)

Extio F2408 Unit

23.20 years @ 40 °C (excluding power
supply)

Extio F2408E Expander Unit

22.68 years @ 40 °C (excluding power
supply)

INTERFACE CARD

Maximum Power Consumption

6.5 W

EXTIO UNIT

Power Requirements

12 V dc, maximum 5 A

(5 A fuse for overcurrent protection)

Power Connector

Mini-DIN 4 female (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

90 to 264 V ac

Input Frequency

47/63 Hz

Input Connector

IEC 60320-C14

Output Voltage

12 V dc

Output Connector

Mini-DIN 4 male (4-pin) with lock

Maximum Power Output

60 W