Honeywell

Honeywell Process Solutions

R5500 Honeywell Workstation

Planning, Installation, and Service Guide

EP-DPCX25
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Notices and Trademarks

Honeywell International

Process Solutions

1860 W Rose Garden Lane

Phoenix, AZ 85027

1-800 822-7673

About This Document

This document defines a TPS and Experion Platforms based on the Honeywell-configured Dell Precision R5500 Workstation, which uses a Quad-Core Intel Xeon processor in a single processor configuration. The instructions and explanations provided in this document apply to the Experion -TPS R5500-based workstation mounted in a 1000mm deep Honeywell LCN cabinet.

Release Information

Document Name	Document ID	Release Number	Part no
R5500 Honeywell Workstation Planning, Installation, and Service Guide - PISG 5500	EP-DPCX25	Release Independent	51155148-908

Revision Notes

The following table lists the details of revisions of this document.

Revision	Revision Date	Revision Notes
A	11/2011	Initial release
B	02/2012	Updated for ExpPlus 311.7
C	05/2012	Inserted Windows 7 64 bit operating system support.
D	06/2012	Updated for ECN 2012-1425
E	08/2013	Updated for ECN 2013-3121
F	10/2013	Updated the LCNP4e section
G	12/2013	Updated for PCUS node and Wyse R10L

		support. In addition updated for 500GB HDD and "M27" BIOS version and settings

References

The following list identifies all documents that may be sources of reference for material discussed in this publication.

Document Title
TPS Users
TPS System Implementation Guide for Windows 2003/XP
TPS System Planning Guide for Windows 2003/XP
TPS System Administration Guide for Windows XP/2003
Experion PKS Users
Experion PKS Overview
Experion PKS Software Installation and Upgrade Guide
Server and Client Planning Guide
Server and Client Configuration Guide (for Experion PKS)
Experion PKS Operators Guide
FTE Users
Fault Tolerant Ethernet Installation and Service Guide
Console Documents
Honeywell Icon Series Console Planning, Installation, and Service Guide

Symbol Definitions

The following table lists those symbols used in this document to denote certain conditions.

Symbol	Definition
	**ATTENTION:** Identifies information that requires special consideration.

Symbol	Definition
	**TIP:** Identifies advice or hints for the user, often in terms of performing a task.
	**REFERENCE -EXTERNAL:** Identifies an additional source of information outside of the bookset.
	**REFERENCE - INTERNAL:** Identifies an additional source of information within the bookset.
CAUTION	Indicates a situation which, if not avoided, may result in equipment or work (data) on the system being damaged or lost, or may result in the inability to properly operate the process.
	**CAUTION**: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used for alerting against unsafe practices. **CAUTION** symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.
	**WARNING**: Indicates a potentially hazardous situation, which, if not avoided, could result in serious injury or death. **WARNING** symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.
	**WARNING, Risk of electrical shock**: Potential shock hazard where HAZARDOUS LIVE voltages greater than 30 Vrms, 42.4 Vpeak, or 60 VDC may be accessible.
	**ESD HAZARD:** Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices.
	**Protective Earth (PE) terminal**: Provided for connection of the protective earth (green or green/yellow) supply system conductor.

Symbol	Definition
	**Functional earth terminal**: Used for non-safety purposes such as noise immunity improvement. NOTE: This connection shall be bonded to Protective Earth at the source of supply in accordance with national local electrical code requirements.
	**Earth Ground**: **Functional earth connection.** NOTE: This connection shall be bonded to Protective Earth at the source of supply in accordance with national and local electrical code requirements.
	**Chassis Ground**: Identifies a connection to the chassis or frame of the equipment shall be bonded to Protective Earth at the source of supply in accordance with national and local electrical code requirements.

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1. Planning

1.1 Introduction

Platform overview

Platforms sold by Honeywell are engineered for the process control mission of Experion and TPS systems to provide consistent, robust performance. Through an extensive qualification process, Honeywell defines specific peripheral devices, slot locations, and BIOS settings for best performance and reliability, sometimes even adding cooling fans for longer service. Honeywell platforms are then built to Honeywell specifications by the computer manufacturer.

Honeywell engineering has tested the R5500 Honeywell workstation with other Honeywell hardware and software and has qualified its use for specific configurations as identified in the Software Change Notice (SCN). This workstation is not a standard Dell model and cannot be ordered independently from Dell. The Technical Assistance Center (TAC) is trained on and fully supports Honeywell platforms. Use of any other workstation, including a similar Dell model, is considered a project special and its TAC support is limited according to the services policy.

The workstation platform provides computer-based functionality for the Experion and TPS system, including Global User Stations (GUS) or Universal Station (PCUS). For TPS systems, the platforms have a LCNP4E card installed allowing connection to the TotalPlant Process Network (TPN) coax through the LCN Media Access Unit (MAU). Additionally, these platforms connect to the Ethernet through a standard Ethernet adapter card or the optional FTE Ethernet adapter card.

The Honeywell-configured Dell Precision R5500 workstations release for Experion and TPS is qualified on Microsoft Windows 7 Professional 32-bit, Microsoft Windows 7 Professional 64-bit, and Microsoft Windows XP 32-bit operating systems.

The following workstation platforms are defined by the TAB numbers.

- Lower capability processor a single hard drive with Dual video controller card with Tab – 100.
- Higher capability processor with two hard drives in a RAID 1 configuration with Dual video controller card with Tab – 200.

Refer to the *Software Change Notices (SCN)* for compatibility with other software products.

The peripheral electronics assemblies are based upon the Peripheral Component Interconnect (PCI) Express, or USB 1.1/2.0 protocols. All mass storage and removable

media devices are connected through the SATA, SATA II 3.0, or USB, depending on the Honeywell -configured Dell Precision R5500 Workstation configuration. There is one SATA interconnection for the DVDRW (±) drive.

The R5500 platform provides 2.0GB (2x1GB) ECC dual channel registered DDR3 SDRAM memory, which can be expandable to 4GB (4x1GB). However, systems shipped from May 2012 onwards provide 4GB (2x2GB) RDIMM as a standard memory configuration. There are no cache memory options.

The standard mass storage is one 250GB / 500GB advanced format drive (for TAB 100) and two 250GB/ 500GB advanced format drive (Tab 200) hard drives in a RAID-1 configuration.

The standard display option for TAB 100/200 is one NVIDIA Quadro NVS 300 Dual display card.

The model numbers for this platform are structured to include the Dell USB QWERTY keyboard and mouse with the platform.

ATTENTION

These workstations do not include floppy disk drives. During loads using the Experion Plus Initialization media, an external media such as a thumb drive or blank DVD disk is required.

Furniture options

The Honeywell-configured Dell Precision R5500 is 2U RACK mount workstation platform, which come with sliding RAILs from Dell. It can be mounted in a Honeywell 1000mm deep cabinets only.

Software requirements

The following are the EPKS/TPS platform and software models.

Model number	Description
MZ-PCWS71	Single CPU: Quad-Core Intel XEON, 2.40GHz, 1-250GB Hard Disk and 2.0 GB DDR3 RDIMM ECC memory (2x1GB), 120/240 VAC Non-Redundant PSU, Dual Display Controller
MZ-PCWS72	Single CPU: Quad-Core Intel XEON, 2.93 GHz, 2-250GB Hard Disks (RAID1) and 2.0 GB DDR3 RDIMM ECC memory (2x1GB), 120/240 VAC Redundant PSU, Dual Display Controller
EP-COAWN7	Microsoft Windows 7 Professional 32-bit, Microsoft Windows 7

Model number	Description
	Professional 64-bit, COA for MZ-PCWS71 / MZ-PCWS72 model numbers.
EP-COAWNX	Microsoft Windows XP 32-bit COA for MZ-PCWS71 / MZ-PCWS72 model numbers.
TP-ZUSNWR	Upgrade kit to upgrade a Universal Station (PCUS) on boardset to remote PCUS.
TP-ZUNWR2	Upgrade kit to upgrade a Universal Station (PCUS) to remote dual PCUS, rack mount.

BIOS configuration

All Honeywell-configured Dell Precision R5500 systems must have the latest (current) BIOS version. The following are the BIOS version for the workstations depending on the TAB numbers.

BIOS Version	TAB numbers
C57	100
C57	200

1.2 Workstation overview

Front and rear view

The following figure displays the front and rear view of the R5500 workstation.

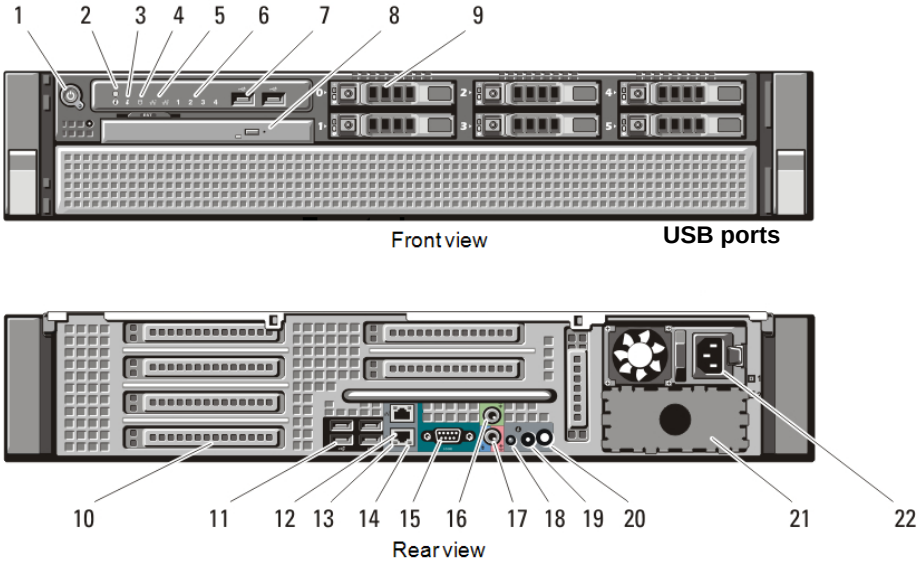


Figure 1-1 Front and rear view of the R5500 Honeywell workstation

The following table lists the parts of the R5500 Honeywell workstation.

SL number	Description	SL number	Description
1	power button, power light	12	network adapter connector (2)
2	system identification button	13	network link integrity light
3	system identification light	14	network activity light
4	drive activity light	15	serial connector
5	network link integrity lights (2)	16	line-out connector
6	diagnostic lights (4)	17	line-in/microphone connector
7	USB 2.0 connectors (2)	18	system identification light
8	CD/DVD drive	19	system identification button
9	hard drive bays (6)	20	remote system identification light connector
10	expansion card slots	21	second power supply bay (optional)
11	USB 2.0 connectors (4)	22	power connector

System board

The R5500 Honeywell workstation comes with the following Dell motherboards.

- Single Quad-Core Intel Xeon 2.40 GHz minimum E5620 processor, 5.8GT/s QPI, 12MB shared L3 Cache (MZ-PCWS71)
- Single Quad-Core Intel Xeon 2.93GHz minimum X5647 processor, 5.8GT/s QPI, 12MB shared L3 Cache (MZ-PCWS72)

The following picture illustrates the R5500 workstation system board.

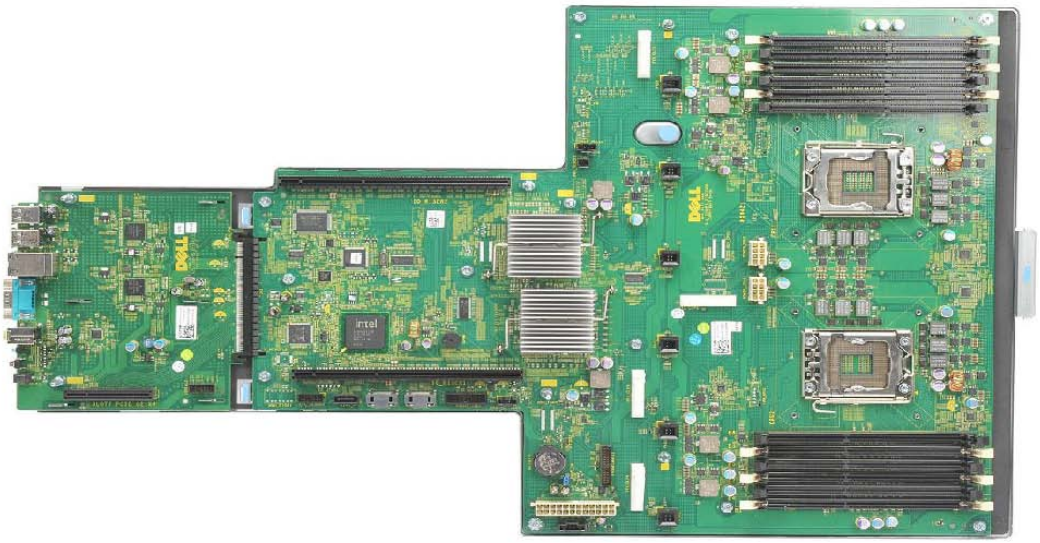


Figure 1-2 R5500 Workstation system board

1.3 Workstation configuration

Workstation furniture option

The workstation can be mounted only in Honeywell 1000mm deep cabinets.

The Workstation platform is used for TPS and Experion nodes and must be rack mounted in a 1-meter deep Honeywell equipment cabinet only, model number MP-C1MCB1. When mounted in a cabinet, the enclosure uses 2U of space plus 1U of space for a blank front panel and air duct baffle, which must be mounted directly above each R5500 Workstation.

When mounted in a cabinet, the enclosure is as displayed in the following image.

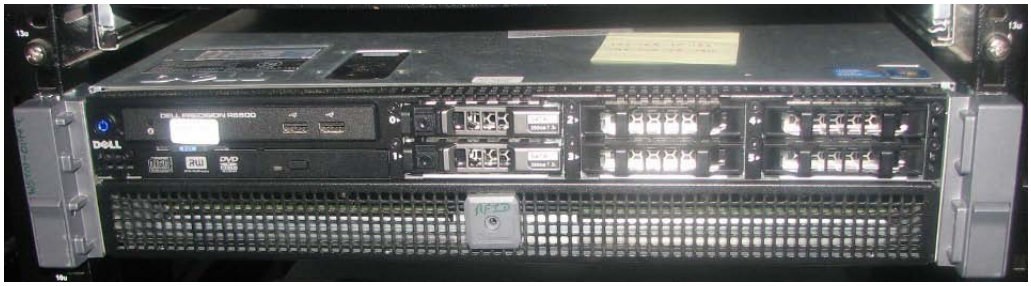


Figure 1-3 Cabinets and consoles

Electronics module

The electronics module consists of a Honeywell-configured Dell Precision R5500 workstation platform that can be positioned horizontally. This workstation is mountable in Honeywell 1000 mm rack mount furniture. The primary electronic module is always connected to the built-in keyboard (man-machine interface) and the lower tier video display.

Storage and media device

The Honeywell-configured Dell precision R5500 workstation has six internal drive bays. However, a SATA back pane installed system utilizes only five internal drive bays. The system configured with one (1) removable media drive is a SATA CD-RW/DVD±RW combo drive. The SATA CD-RW/DVD±RW drive is connected to a SATA port connector on the motherboard.

1.4 Features

The following is a list of the common features of this platform:

- 2.40GHz (E5620) Single Quad–Core Intel XEON Processor motherboard 5.8GT/s QPI (MZPCWS71)
- 2.93GHz (X5647) Single Quad-Core Intel XEON Processor motherboard 5.8GTs QPI (MZPCWS72)
- 12MB or greater Level 3 Cache (L3)
- 1-Serial (9-pin) Port
- 7-USB 2.0 – 2Fr / 1Int / 4Bk
- Outer riser: Two PCIe x16 (one double wide), one PCIe x16 (wired x8)
- Center riser: One PCIe x16, one PCIe x16 (wired x8) (default)
- One PCIe x8 (wired x4) half-height, half-length slot (On-Board)
- Integrated Analog Devices ADI1984A
- LAN - Integrated dual Broadcom BCM5761 10/100/1000 Gigabit Ethernet controllers.
- 1023 W on 100 VAC to 120 VAC, 1100 W on 200 VAC to 240 VAC
- 2-GB (2x1GB), 1333MHz, DDR3 RDIMM ECC (MZ-PCWS71/72)
- SATA CDRW/DVDRW(±) Dual Layer Drive.
- Serial ATA ,one 250GB/ 500GB advanced format drive or larger, 7.2K RPM, Hard Drive (MZ-PCWS71)
- Serial ATA ,two 250GB/ 500GB advanced format drive or larger, 7.2K RPM, Hard Drive in a RAID 1 Configuration (MZ-PCWS72)
- Nvidia Quadro NVS 300 Dual Display Controller, 512MB
- Lead Free – RoHS Compliant

Additional options

- LCNP4E
- 1GB Memory Modules (1x1GB)

Specific slot configuration

Dual Video Graphics is the default option offered with the Honeywell-configured Dell precision R5500 Workstation. In addition, an optional quad and triple screen video capability is supported using Matrox Extio2 (TP-RPSF02) Remote Peripheral Solution.

The slot configuration options for R5500 Honeywell workstations are as follows:

- Outer riser: Two PCIe x16 (one double wide), one PCIe x16 (wired x8)
- Center riser: One PCIe x16, one PCIe x16 (wired x8) (default)
- One PCIe x8 (wired x4) half-height, half-length slot (On-Board)

The following tables define the slot requirements for workstation configurations for TPS systems.

ATTENTION:

The devices identified as optional can be found with this package only if you order them.

Those devices identified as optional are only present if you specifically ordered them.

Onboard dual Broadcom NIC must be used for FTE or Ethernet configuration.

Basic Board Configuration for Single/Dual Screen Experion T-node / TPS Systems

Table 1-1 Slot configuration for Experion / TPS systems

Slot No	Slot type	Description
7	PCIe x 4	-
6	PCIe x 16	-
5	PCIe x 8	-
4	PCIe x 16	Nvidia NVS300
2	PCIe x 16	LCNP4E
1	PCIe x 8	-

Basic Board Configuration for Quad Screen ExperionT-node / Single LCN PCUS / TPS Systems (Single card option using Extio-2)

Slot No	Slot type	Description
7	PCIe x 4	-
6	PCIe x 16	-
5	PCIe x 8	-
4	PCIe x 16	Matrox Extio-2 F2408
2	PCIe x 16	LCNP4E
1	PCIe x 8	-

Basic board configuration for dual LCNP4e PCUS

Slot No	Slot type	Description
7	PCIe x 4	-
6	PCIe x 16	-
5	PCIe x 8	-
4	PCIe x 16	LCNP4E
2	PCIe x 16	LCNP4E
1	PCIe x 8	Matrox Extio-2 F2408

ATTENTION

When Dual LCNP4e PCUS is selected, TPC must prompt the user to add TP-RPSF02 (Extio-2).

Memory configurations

2GB (2x1GB) is the standard installed memory. System memory can be increased up to 4.0 GB. However, systems shipped from May 2012 onwards provide 4GB (2x2GB) RDIMM as a standard memory configuration. It is recommended that, the memory devices must be from same supplier and must be of same speed and technology.

Model no	Description
MZ-PCEM13	1x1GB, 1333MHZ, DDR3, 1R RDIMMs ECC memory expansion
MZ-PCEM15	2GB, 1333MHZ, DDR3, 1R low voltage RDIMMs ECC memory expansion (1x2GB)

ATTENTION

Due to E5620 / X5647 processor QPI limitation the 1333MHz un-buffered DDR3 DIMM automatically downgrades to 1066MHz.

Standard memory configuration 2GB

CPU-1

DIMM socket	Memory size	Total memory
A1	1 GB	
A4	---	
A2	1GB	**2GB**
A5	---	
A3	---	
A6	---	

CPU-2

DIMM socket	Memory size	Total memory
B1	---	
B4	---	
B2	---	
B5	---	
B3	---	
B6	---	

Optional memory configuration 3GB:

CPU-

DIMM socket	Memory size	Total memory
A1	1 GB	
A4	---	
A2	1GB	
A5	---	
A3	1GB	**3 GB**
A6	---	

CPU-2

DIMM socket	Memory size	Total memory
B1	---	
B4	---	
B2	---	
B5	---	
B3	---	
B6	---	

Optional Memory Configuration (4GB)

CPU-1

DIMM socket	Memory size	Total memory
1	1 GB	
4	1 GB	**4GB**
2	1GB	

DIMM socket	Memory size	Total memory
5	---	
3	1GB	
6	---	

CPU-2

DIMM socket	Memory size	Total memory
B1	---	
B4	---	
B2	---	
B5	---	
B3	---	
B6	---	

Standard memory configuration (4GB) using 2x2GB RDIMM

CPU-1

DIMM socket	Memory size	Total memory
A1	2 GB	
A4	---	
A2	2GB	**4GB**
A5	---	
A3	---	
A6	---	

CPU-2

DIMM socket	Memory size	Total memory

DIMM socket	Memory size	Total memory
B1	---	
B4	---	
B2	---	
B5	---	
B3	---	
B6	---	

1.5 Finding information for your Workstation

Honeywell documentation

The following table lists Honeywell publications that may be useful when installing or operating your system.

Table 1-2 Honeywell publications

Publication	Contains information on
ADP01: *Honeywell Peripheral Adapters*	Contains information for using the OEP/IKB adapter with workstation platforms that do not have the ISA card.
FE05: *Fault Tolerant Ethernet Installation and Service Guide*	Contains information for installing and using FTE on a TPS or Experion PKS node.

Dell documentation

Table 1-3 Dell publications

Publication	Contains information on	Available
Readme files	Last minute updates about technical changes to your workstation or advanced technical-reference material for experienced users or technicians.	Drivers and utilities CD

Publication	Contains information on	Available
System Information Label	System board connectors Location of system board components	Located on the inside cover of your workstation.
Dell System Information Guide	Warranty information Safety information	Packaged with the workstation www.dell.com

Publication	Contains information on	Available
Setup and Quick Reference Guide	How to set up my workstation How to care for my workstation Troubleshooting information How to run the Dell Diagnostics How to open my workstation cover How to locate other documentation	Packaged with the workstation www.dell.com
Dell Precision™ Workstation R5500 User's Guide	How to remove and replace parts Technical specifications How to configure system settings How to troubleshoot and solve problems	Product Documentation CD www.dell.com
The *Dell Precision™ R5500 Service Manual*.	Details on workstation configuration How to remove and replace parts	Product Documentation CD www.dell.com

1.6 Specifications

Environmental specifications for cabinets

The following table lists allowable operating environmental limitations for cabinets.

Temperature	
Operating	+10° to +30° C (50° to 86° F)
Storage	-40° to +65°C (-40° to 149° F)
Relative humidity (maximum):	20% to 80% (non-condensing)

System specifications

Table 1-4 System specifications

Microprocessor	
Microprocessor (Tab -100)	Single Quad-Core Intel® Xeon Processor E5620 2.40 GHz (or better) with 5.8GT/s QPI (or better).
Microprocessor (Tab -200)	Single Quad-Core Intel® Xeon Processor X5647 2.93 GHz (or better) with 5.8GT/s QPI (or better).
Level 3 Cache(L3)	Tab – 100/200: 12MB Shared Cached (or better)
Chipset	Intel® 5520

Memory	
DIMM slots	12
DIMM capacities	1 GB, 2 GB, 4 GB, 8 GB, and 16 GB
Standard SDRAM	For TAB -100 and 200, use 2GB (2x1GB), 1R 1333MHz, DDR3 RDIMM ECC
SDRAM Expandability	Up to 192 GB DDR3, Register DIMM 1066 MHz or 1333 MHz DDR3, ECC only

Optical Disk Drive	
DVD	8X DVD±RW

Video	
Video Type	NVIDIA Quadro NVS300 Dual Video – PCI Express™ Graphics
Video Memory	512MB Minimum
Maximum Display Resolution (4:3) supported in Standard Mode @ 60 Hz.	2048x1536
Maximum Display Resolution Digital @ 60Hz	2560x1600 (Display Port) 1920x1200 (DVI-I)
Maximum Display Resolution (Analog @ 85 Hz)	2048x1536 (VGA)
Maximum DVI-D (single link) Display Resolution (using DMS59 to DVI-I Cable Adaptor)	1920x1200

Network interface	
Network	Integrated dual Broadcom® BCM5761 10/100/1000 Gigabit Ethernet controllers

Power supply unit	
Wattage	1023 W on 100 VAC to 120 VAC, 1100 W on 200 VAC to 240 VAC
Voltage	100–240V AC, 50–60 Hz, 12.0- 6.00 A
Dissipation	4774 BTU/hr Heat dissipation is calculated by using the power supply wattage rating.
Backup battery	3-V CR2032 lithium coin cell

Environmental	
Temperature:	
Operating	+10° to +35° C ((50° to 95° F)

Storage	-40° to +65°C (-40° to 149° F)
Relative humidity (maximum):	20% to 80% (non-condensing)
Operation	15.2 m to 3048 m (–50 ft to 10,000 ft)
	15.2 m to 10,668 m (–50 ft to 35,000 ft)
	G1 or lower as defined by ISA-S71.04–1985

Form factor	
Form Factor/Configuration	2U Rack-Mountable
Width	440.60 mm (17.35 inches)
Height	86.30 mm (3.40 inches)
Depth	792.70 mm (31.21 inches) with front bezel
Weight	23.52 kg (51.85 lb) (without bezel) 23.91 kg (52.71 lb) (with bezel)

Drive bays	
Slimline SATA optical bays	One
2.5 inch drive bays	five SATA drives with onboard Intel controller, or six SAS drives with SAS/PERC 6iR cards

External peripherals	
Keyboard	USB Windows compliant (equivalent or better)
Mouse	USB Dell optical 2-button w/scroll (equivalent or better)

Drives	
Diskette Drives	None
Hard Drive	o For Tab – 100 - 1-250 GB SATA 7.2K RPM, with 16MB Data

Drives	
	Burst Cache hard drive (minimum). o For Tab -200 - 2-250 GB SATA 7.2K RPM, with 16MB Data Burst Cache hard drive (minimum) in a RAID 1 configuration.

Audio	
Audio Type	Integrated Analog Devices ADI1984A

Ports		
Rear	Front	Internal
4-USB 2.0	2-USB 2.0	1-USB 2.0
1-Serial	1-System ID Button	
1-Audio in	1-System ID LED	
1-Audio out	1-HDD LED	
2-RJ-45	1-LAN LED	
1-System ID Button	4-Diagnostic LED	
1-System ID LED		
1-CMA remote LED connector		

Removable media specifications

The Honeywell-configured Dell precision R5500 workstation has six internal drive bays. However, a SATA back pane installed system utilizes only five internal drive bays. The system is configured with one (1) removable media drive that is a SATA CD-RW/DVD±RW combo drive. The SATA CD-RW/DVD±RW drive is connected to a SATA port connector on the motherboard.

Table 1-5 Specifications for removable media

Operating power requirements

Description	DC 5 volt power	DC 12 volt power	Other DC power	AC power
250GB Hard Drive	5V ± 5%	NA	5.5 watts Max 0.8W (typ.) Idle	NA

Maximum weight and dimensions

Description	Height	Width	Depth	Weight
250GB Hard Drive	9.5mm	69.85mm	100.0mm	92g

Additional specifications

Refer to the workstation user guide for additional technical specifications and the vendor documentation for specifications on the peripheral devices.

Regulatory and safety compliance

WARNING

Honeywell does not claim Safety Compliance or Electromagnetic Compatibility (EMC) Compliance for system equipment configurations that have not been described in this manual as standard system configurations. Any equipment configuration other than that described in this publication de-certifies the Safety and EMC compliance of this product.

2. Installation

2.1 Introduction

Overview

This section contains procedures for installing and cabling the workstation in Honeywell consoles and cabinets.

Installation tasks

The specific tasks you need to perform vary depending upon the type of furniture in which you are installing the workstation. The following table lists the major platform installation tasks.

Table 2-1 Major platform installation tasks

Task	For more information refer to…
Be aware of all power and grounding requirements for your furniture.	Specific site requirements Section 2.2 Power and grounding requirements
Verify pinning for external media drives is correct	Section 2.3 Pinning media devices
Install the workstation in the furniture	Section 2.4, Install the Workstation in Cabinets
Connect device cables	Section 2.5, Connecting Cables
If you are remoting the workstation, connect the remote components.	Remote Peripheral Solution (TP-RPSF02)

2.2 Power and grounding requirements

Grounding for Workstation based nodes

The ground connection is made through the third wire in the AC power cord.

Grounding cabinets

The *TPN System Installation* manual, section 4, “System Grounding” contains information on grounding furniture, including the following:

- Ground Wiring Overview
- Grounding LCN Cabinets and Stations
- Cabinet Logic Ground
- Grounding LCN Cables

AC Power warning

	**WARNING** The power supply circuit is connected to AC power when the power cable is connected. The power control switch on the front panel only enables the power supply circuit outputs.
	**ATTENTION** It is strongly recommended that the power cord be connected to a clean power source with backup such as an Uninterruptible Power Source (UPS).

Selecting the correct power setting

The workstation platform automatically senses the power supply and therefore there is no positioning switch to be set.

2.3 Pinning media devices

Configure SCSI address for removable media drives

The workstation does not use a SCSI card option.

Connect system cables

Perform the following procedure to connect the cables to the workstation.

Step	Action
1	If USB mouse and keyboard are not being used, skip this step. Connect the USB mouse and USB keyboard extension cables to the USB connectors.
2	Connect the audio cable from the amplifier to the audio (green) port.
3	If you are not using Fault Tolerant Ethernet (FTE), connect the Ethernet cable to the RJ-45 connector on the onboard Network Interface port. This port can be located near the USB ports at the back of the R5500. If you are using FTE, you need to connect the FTE cables according to the instructions in the *FTE Installation and Service Guide.*
4	For Dual Video adapters, follow steps 5 and 6.
5	The dual display controller for R5500 (MZ-PCWS71 / 72) system is Nvidia Quadro NVS300. It supports two DVI/VGA displays using appropriate converter cable. o **For DVI monitor**: Use DMS59 to DVI converter. o **For VGA monitor**: Use DMS59 to DVI converter and the DVI to VGA converter come up with NVS300 cards.
6	Connect the monitor video cable to DVI-I/VGA connector of the Converter and insert the DMS59 to DVI/VGA converter in to the DMS59 port of the NVS300 card. Connect the primary display to the display connector mentioned port “1” and connect the secondary display to the display connector mentioned port “2”.
7	Check the other ends of all the video cables to make sure they are connected to the appropriate connector on the monitors.
8	If you have an OEP/IKB, connect the Serial cable from the OEP/IKB adapter to the COM1 port of the workstation.

Step	Action
9	The LCN MAU, if present, is pre-installed in the treadle area. Connect the LCN MAU cable to the MAU connector on the LCNP4E card if one is present. If other networks are being used, configure their MAU and cables appropriately.
10	Connect the workstation power cable to the workstation.

2.4 Install the Workstation in Cabinets

Overview

This section provides instructions for installing a newly purchased R5500 Honeywell workstation in a newly purchased Honeywell cabinet (1000mm deep equipment cabinet, Honeywell model number MP-C1MCB1). The workstation has arrived from the Honeywell factory packaged in the Dell OEM shipping carton. This procedure assumes that a new Honeywell cabinet was shipped from the Honeywell factory with vertical mounting rails, air baffles, and other infrastructure pre-installed.

The Honeywell R5500 workstation includes telescopic slides that allow it to mount horizontally in any available 3U high space in the first 15U of rack space. The 3U space is consumed by the 2U high workstation plus the 1U blank front panel and side air duct baffle. The human interface is accessed locally in the cabinet or remotely using Honeywell's remote access options.

Cabinet mounting requirements

The various devices mounted in the cabinet require RETMA standard cabinet openings as specified in the following table.

Option	Rack Space Needed	Mounting Requirements
Slide mounted R5500	3U 5.25 inches	Any unused space must have a blank front panel and air duct baffle installed in the unused space to ensure proper airflow in the cabinet. Due to thermal constraints, a maximum of nine (9) computing nodes can be installed in a 1000mm deep cabinet.
Human interface: 8 port KVM switch; 15-inch LCD; keyboard & cursor device	1U 1.75 inches	Mount in rack space 16U on telescopic slides

Unused cabinet spaces

ATTENTION

To ensure proper workstation cooling and airflow through the cabinet, all unused rack mount locations must have a blank front panel and air duct baffle installed.

All unused rack mount locations must have blank front panels and air duct baffles installed to ensure proper cooling. These are available in four height options. The following table shows the four height options and the corresponding part and tab numbers each.

Table 2-2 Air duct baffle and blank front panel height options

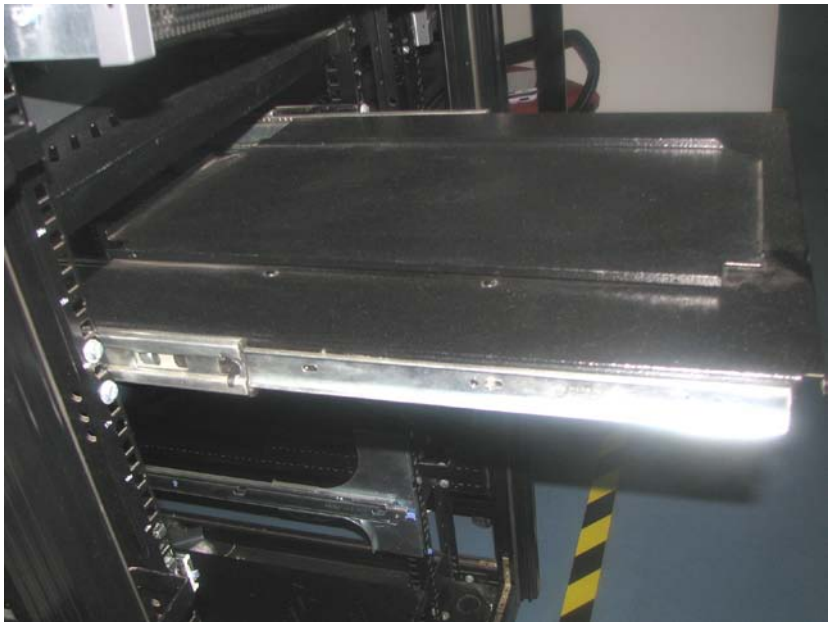
Height Option	Part	Part Number	Tab number
1U	Blank front panel	51201248	-100
	Air duct baffle	51303521	-100
2U	Blank front panel	51201248	-200
	Air duct baffle	51303521	-200
3U	Blank front panel	51201248	-300
	Air duct baffle	51303521	-300
4U	Blank front panel	51201248	-400

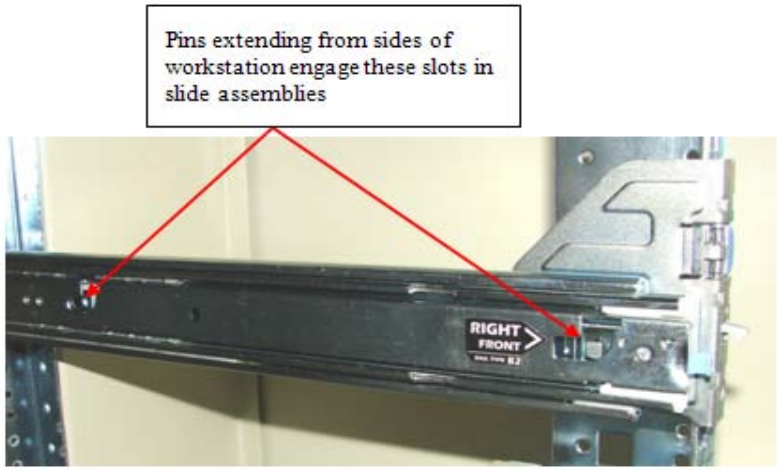
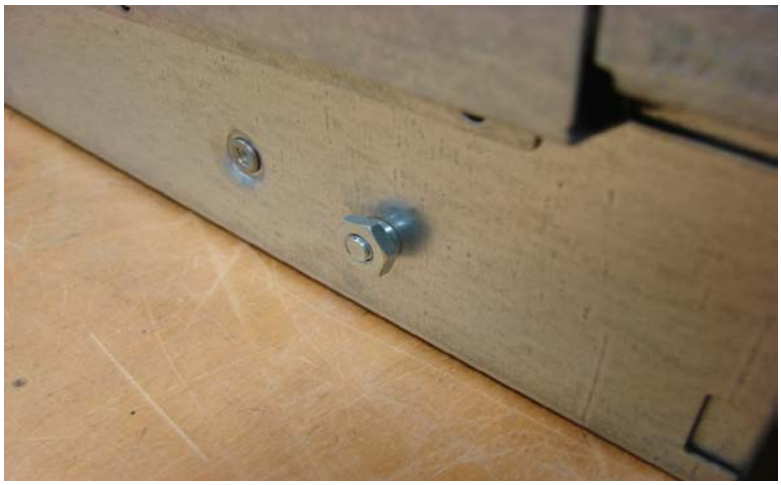
	Air duct baffle	51303521	-400

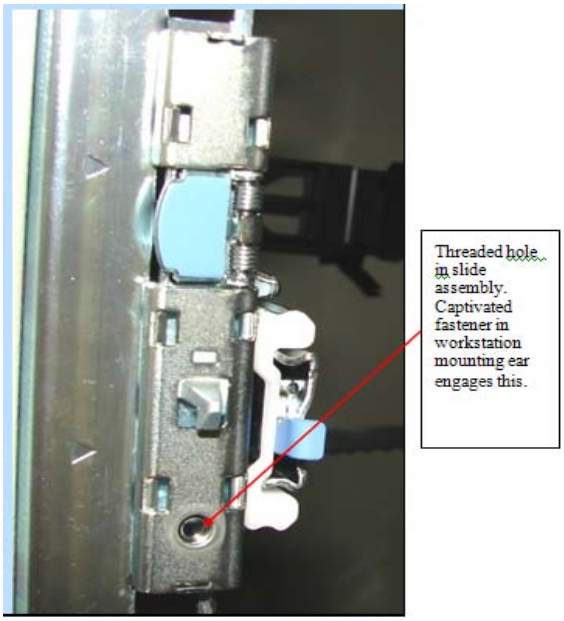
Install workstation in cabinet

Use this procedure to install the workstation in the cabinet using the telescopic slides included with the R5500 workstation.

Step	Action
1	Open the cabinet front and rear doors to access the inside of the cabinet.
2	Remove the telescopic slides from their packaging and identify the slide labeled “right front” and then perform the following: a) Orient the slide assembly inside the cabinet such that the label is near the right front vertical rail (viewed when facing the front door) and facing the interior of the cabinet. b) While lifting the blue colored, spring loaded latch assembly, insert the three pins in the front slide bracket into aligning square cutouts in the right front vertical rail. c) When fully inserted, the blue colored, spring loaded latch snaps into the place and secures the slide bracket to the mounting rail. d) Next, move to the rear of the cabinet, lift the blue colored, spring loaded latch assembly, and insert the three pins in the rear slide bracket into aligning square cutouts in the rear vertical rail.
	ATTENTION In the process of engaging the rear bracket in the rear vertical rail, line-to-line contact may exist between the slide frame and the cabinet mid-depth vertical rail. This contact MUST not prevent correct installation of the slide. However, move the “slide” portion of the slide assembly through its entire stroke to verify that any deflection of the slide assembly has not resulted in binding.
3	Perform the procedure described in step 2 for the telescopic slide labeled “left front”. When complete, move the slide portion through its entire stroke to verify that no binding occurs.

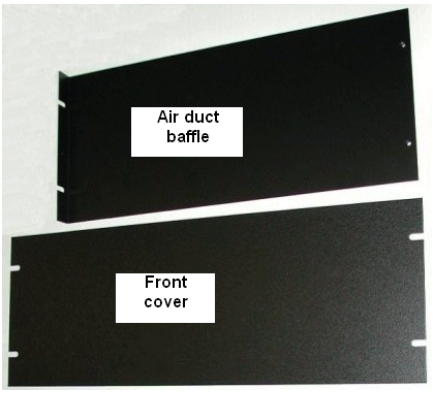
Step	Action
4	The following figure illustrates the fully extended and locked position of the tray. 

Step	Action
5	Fully extend both slide assemblies. An audible “click” sound indicates that the slide assemblies are fully extended. With both telescopic slides fully extended, install the workstation chassis into the slides by engaging the pins extending from the sides of the chassis into the slots in the slide portions of the telescopic slide assemblies.  
6	Once the workstation chassis is installed in the telescopic slides, gently push the workstation in until it reaches the fully closed position.

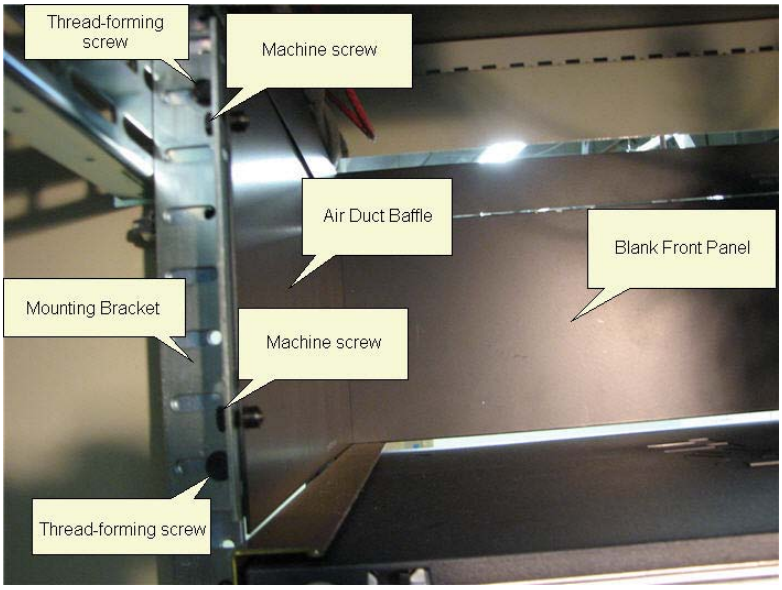
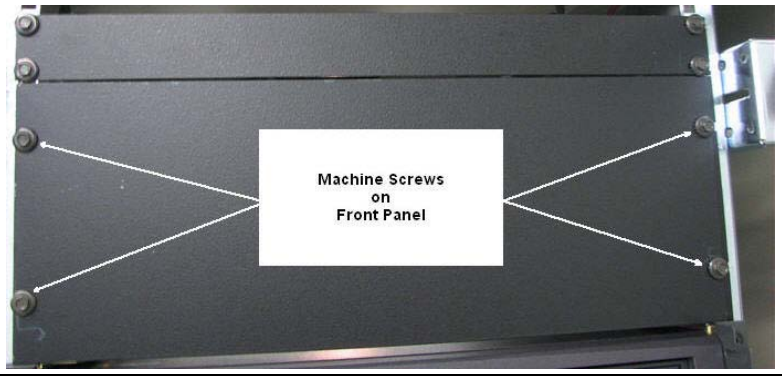
Step	Action
7	Cycle the workstation through one complete stroke of the telescopic slides. This allows the slide sections to correctly sequence. Once fully closed, engage the captivated fasteners in the workstation mounting ears into the threaded holes of the slide assembly and tighten it completely as displayed in the following image. This prevents the workstation from moving inadvertently. 
8	Go to the next section Install air duct baffles and blank panel front covers in cabinet.

Install air duct baffles and blank panel front covers in cabinet

Perform the following procedure to install an air duct baffle and blank panel front cover in the open rack position(s) immediately above the workstation that was just installed in the cabinet. Installing these parts ensures that the airflow within the cabinet allows proper cooling of the workstations.



Step	Action
1	Place an air duct baffle, sized to fill the open rack space above the workstation inside the cabinet with the bent tab resting along the front of the right cabinet rail.

Step	Action
	
2	Place the blank front panel across the front of the cabinet rails and attach it to the air duct baffle and right cabinet rail using two machine screws and two external tooth washers threaded into the two clip nuts. 
3	Attach the other side of the blank front panel to the left cabinet rail using two machine screws and two external tooth washers threaded into the two clip nuts and tighten all the four screws.
4	Attach the rear mounting bracket to the rear cabinet rail using two thread forming screws and two external tooth washers and tighten the screws.

Step	Action
5	Attach the air duct baffle to the rear mounting bracket using two machine screws and two external tooth washers threaded into the two self clinching nuts. Tighten the screws.
6	Go to Section 2.5, Connecting Cables.

2.5 Connecting Cables

Connect cables to the workstation

This section contains information for connecting the power cord and cables to the workstation platform. Your configuration may not have all the card connections.

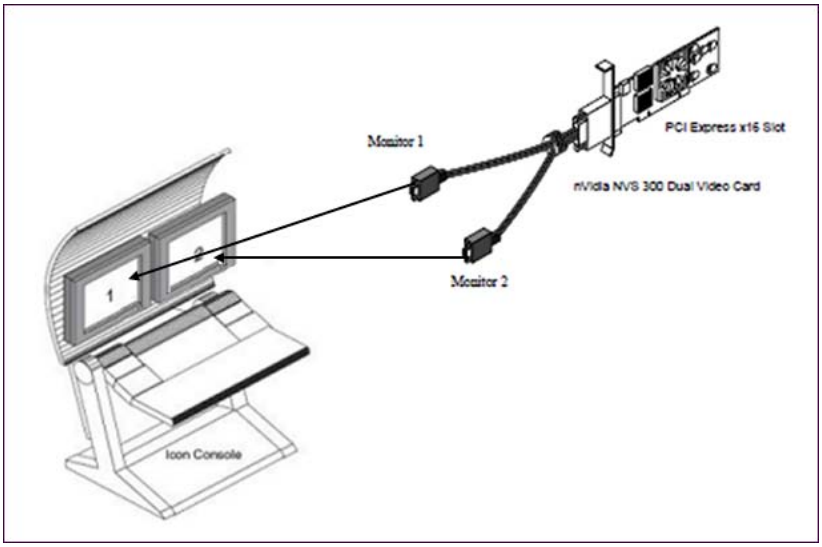
Step	Action
1	If you have a USB printer, plug it into a USB port.
2	Connect a serial device, such as a handheld device, to the serial port. If necessary, the address for this port can be modified through System Setup.
3	If you have a standard USB keyboard, plug it into a USB port.
4	If you have a standard USB mouse, plug it into a USB port.
5	Use the back USB ports for devices that typically remain connected, such as a printer, mouse, keyboard, and touchscreen connections.
6	Use the green line-out port to attach headphones and most speakers with integrated amplifiers. On workstations with a sound card, use the connector on the card.
7	Use the blue line-in port to attach a record/playback device such as a cassette player, CD player, or VCR. On workstations with a sound card, use the connector on the card.

Step	Action
8	To attach your workstation to a network or broadband device, connect one end of a network cable to either a network jack or your network or broadband device. Connect the other end of the network cable to the network adapter port on your workstation. A click indicates that the network cable has been securely attached. **Note**: Do not plug a telephone cable into the network port. It is recommended that you use Category 5 wiring and connectors for your network. If you must use Category 3 wiring, force the network speed to 10 Mbps to ensure reliable operation.
9	Connect the AC power cord.

Connect remaining cables and power

Use this procedure to connect the remaining cables to the workstation.

Step	Action
1	If you have an IKB that uses the OEP/IKB adapter: Connect the PS/2 keyboard cable from the OEP/IKB adapter to the USB port using PS/2 to USB converter.
2	If you are not using Fault Tolerant Ethernet (FTE), connect the Ethernet cable to the RJ-45 connector on the Network Interface Card. If you are using FTE, you must connect the FTE cables according to the instructions in the *Fault Tolerant Ethernet Installation and Service Guide.*
3	Connect the LCN MAU cable to the MAU connector on the LCNP4E card.
4	Connect any USB devices or Hubs to the USB ports.
Connecting monitors (single/dual video card)	

Step	Action
5	Connect the primary display to the display 1 connector of the DMS59 to the DVI/VGA converter. If you are connecting a dual display, then connect the primary display in display 1 and secondary display in display 2 of the NVS300 card. **Note**: the following image just illustrates the dual video connection. R5500 is not qualified to be used with Honeywell Icon Console. 
6	Secure any loose cables, and verify that all cables have proper strain relief.

2.6 Connecting Adapters

Workstation serial ports

The workstation has standard 9-pin serial port COM 1.You must connect Honeywell devices to the correct serial port as defined in the following table.

OEP/IKB Adapter Configurations

Purpose

Use the information and procedures in this section to connect the OEP/IKB adapter. The following block diagrams show the basic connections for the OEP/IKB adapter assembly used in different configurations.

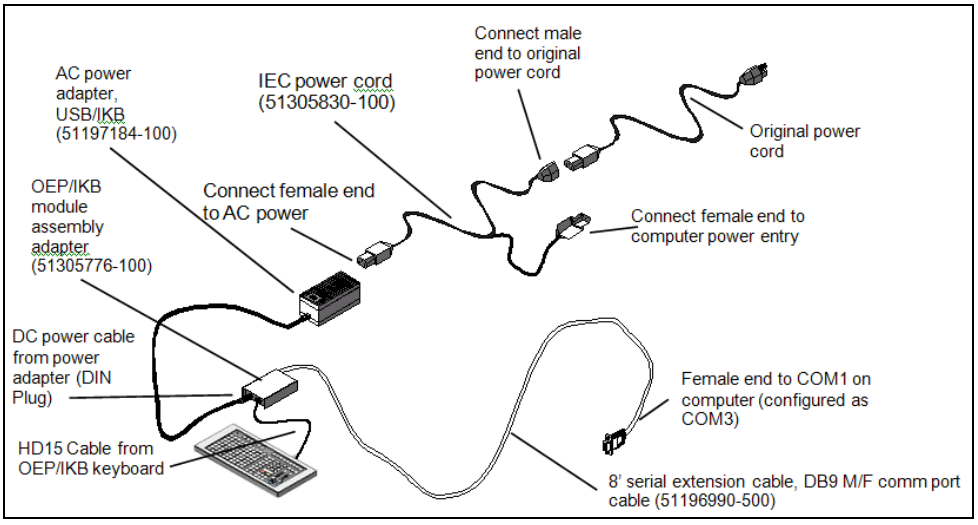


Figure 2-1 OEP/IKB adapter connections for OEP

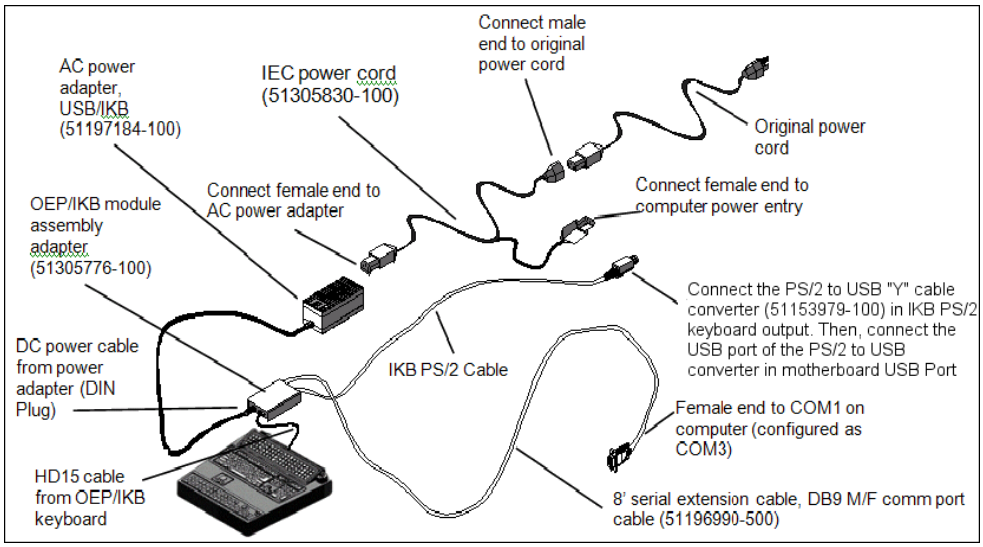


Figure 2-2 OEP/IKB adapter connections for IKB

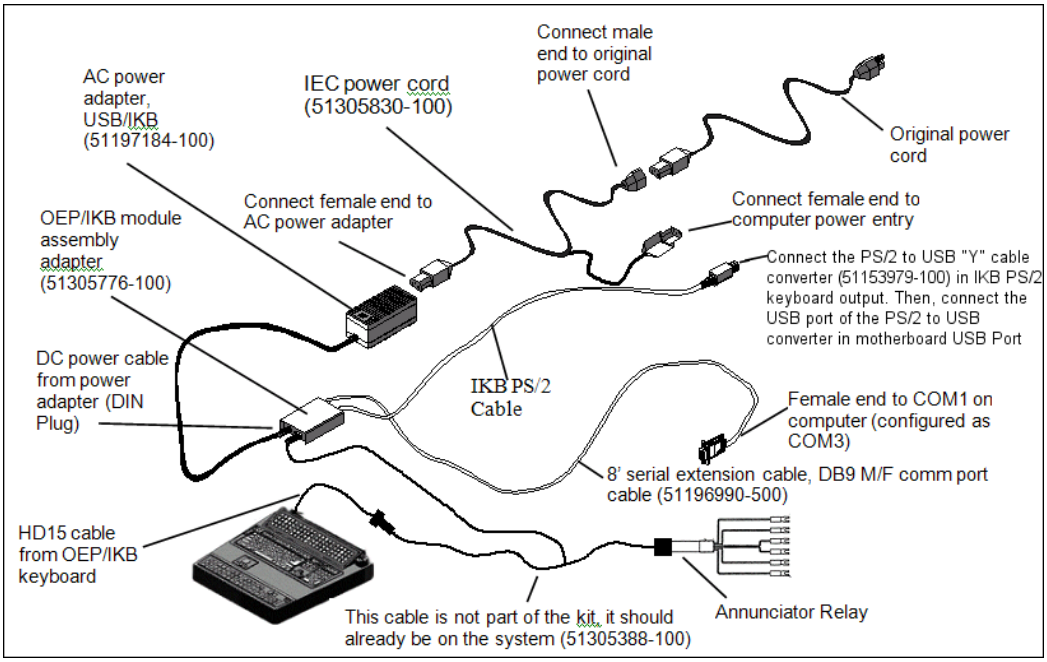
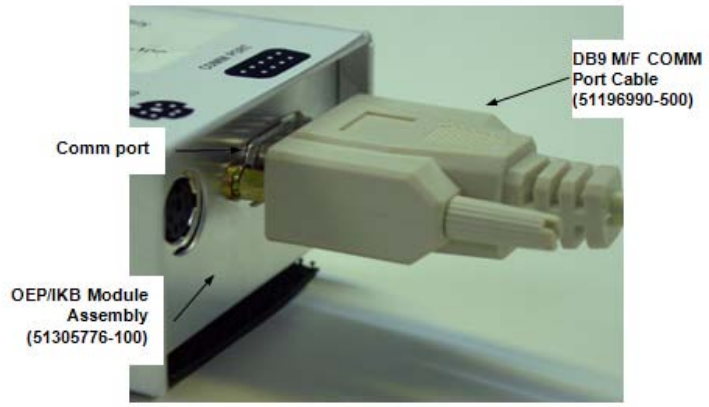


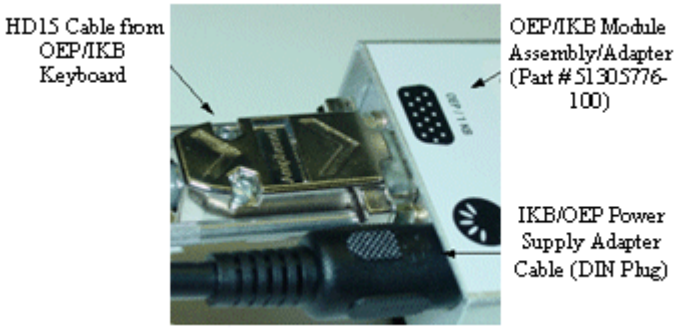
Figure 2-3 OEP/IKB adapter Connections for IKB with annunciator relay

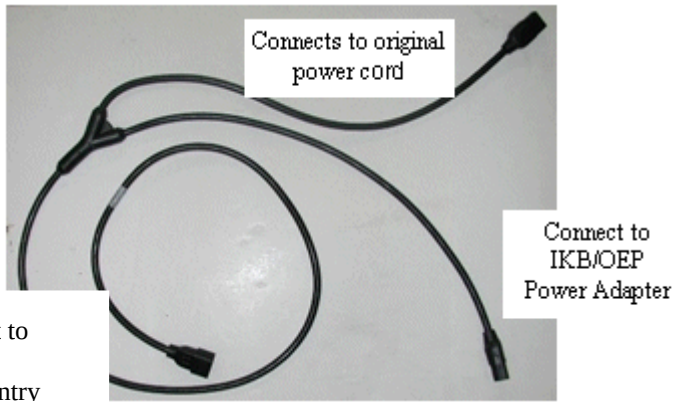
Install OEP/IKB adapter

Perform the following procedure to connect the OEP/IKB adapter.

Step	Action
1	Locate a safe location for the OEP/IKB adapter box and secure it using the supplied Velcro.
2	Locate a safe location to place the OEP/IKB power adapter box and secure it using the supplied Velcro.
3	If the IKB has a trackball, connect the PS/2 to USB "Y" cable converter(51153979-100) on the trackball output. Then, connect the USB port of the PS/2 to USB "Y" cable converter to motherboard USB port.

Step	Action
4	Locate and connect the male end of the DB9 M/F COM Port Cable (51196990-500) to the COM PORT on the OEP/IKB Module Assembly/Adapter (51305776-100). 
5	Secure the connection by tightening the thumbscrews located on the cable end.
6	Connect the female end of the DB9 M/F COM Port Cable (51196990-500) to COM 1 port located on the workstation's back panel and tighten the thumbscrews.
7	Insert the round DIN plug of the supplied IKB PS/2 cable (51305381-500) into the PS/2 Connector on the OEP/IKB Module Assembly (51305776-100). 

Step	Action
8	Connect the free end of the IKB PS/2 cable (51305381-500) to the Keyboard PS/2 Port on the workstation.
9	Take the DC power cable from the IKB/OEP Power Supply Adapter (51197184-100) and insert the round DIN plug into the Power Connector receptacle on the IKB/OEP Module Assembly/Adapter (51305776-100). 
10	Connect the existing OEP/IKB Keyboard HD15 Cable to the HD15 OEP/IKB receptacle located on the IKB/OEP Assembly/Adaptor (51305776-100). Secure cable to the assembly/adapter by tightening the thumbscrews located on the cable's end. 

Step	Action
11	Connect the IEC power cord (51305830-100): o Connect one female end to the OEP/IKB power adapter (51197184-100). o Connect the other female end to the R5500 power entry. o Connect the male end to the original workstation power cord. 

2.7 Connect touchscreen power adapter cable

Purpose

Use the information and procedures in this section to connect the touchscreen power cable for the following touchscreen configurations:

- Touchscreen is connected with the OEP Serial port.
- Touchscreen is connected with the IKB Serial port.

Connecting the Touchscreen and OEP

Connect the touchscreen cables as illustrated in the following figure.

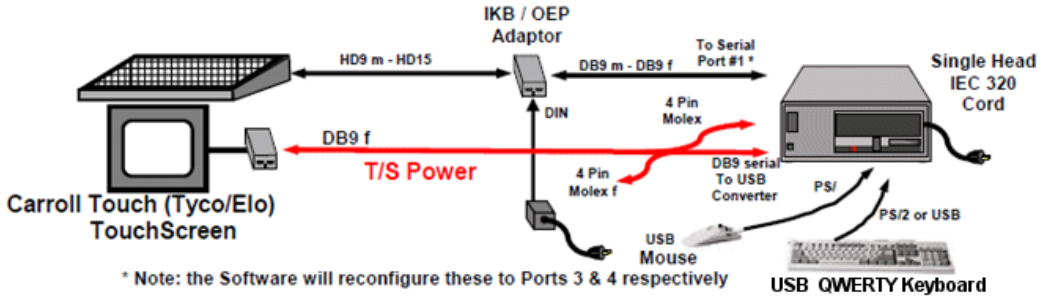


Figure 2-4 Touchscreen with OEP(Serial)

Connecting the Touchscreen and IKB

Connect the touchscreen cables as illustrated in the following figure.

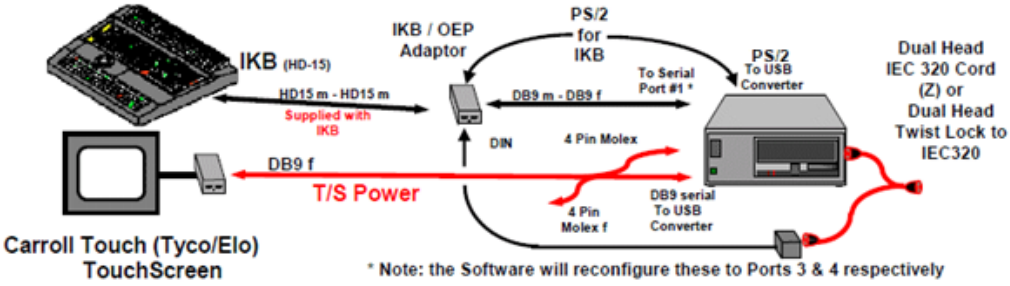


Figure 2-5 Touchscreen with IKB(Serial)

The Honeywell-configured workstation can be remotely accessible by using the Remote Peripheral Solution (RPS). The RPS can be used for monitors, keyboard, cursor movement devices, audio and drives. The RPS was initially implemented for Icon Series console and desktop configuration. For further information, refer to the *EXTIO 2 Remote Peripheral Solutions Installation InstructionsEP-DPCX24* and *Wyse R10L Remote Peripheral Solutions Installation Instructions EP-DPCX26*documents. The following table displays the model number for the RPS.

Model number	RPS
TP-RPSF02	Matrox Extio2 Remote Peripheral Solution (RPS)– up to 400 meters
TP-THNCL1	Wyse R10L Remote Peripheral Solution (RPS)

The following figure illustrates the deskside connections using Extio2.

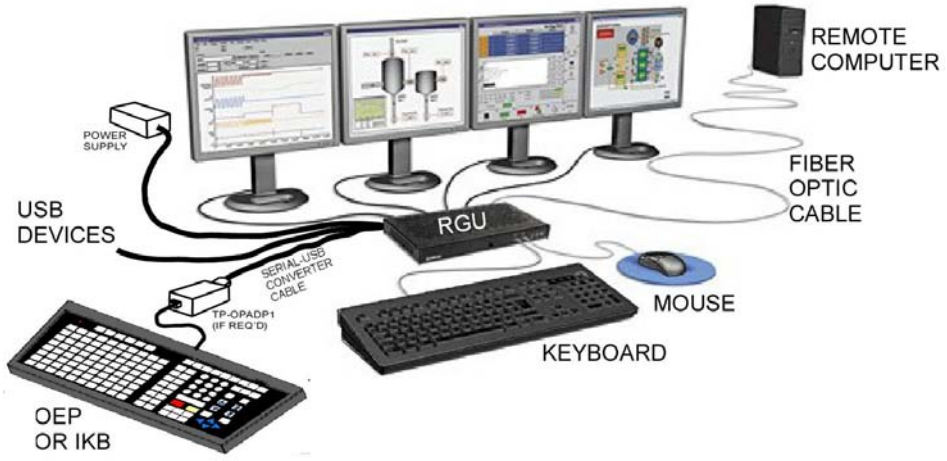


Figure 2-6 Deskside connections using Extio2

The following figure illustrates the deskside connections using Wyse R10L.

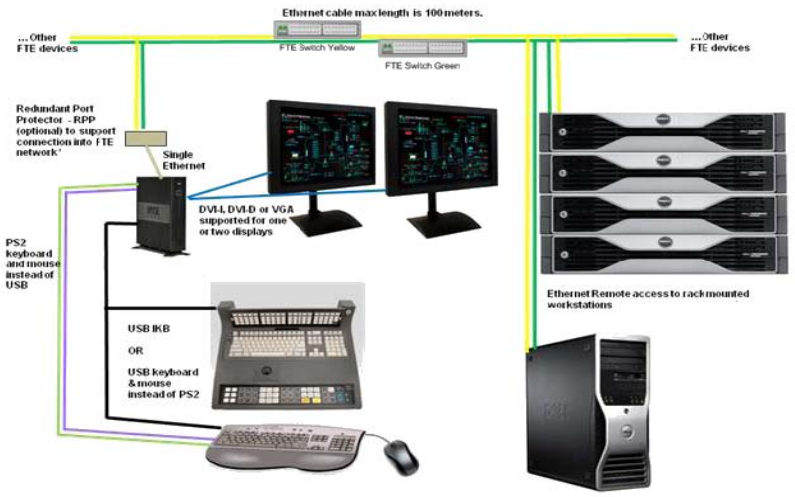


Figure 2-7 Deskside connections using Wyse R10L

Connect touchscreen adapter cable

Perform the following steps to connect the supplied touchscreen adapter cable to the touchscreen device and the workstation.

Step	Action
1	If your touchscreen uses the touchscreen adapter box, connect the end of the new touchscreen cable that does not have the 4-pin connector to theDB9 socket on the box as illustrated.
2	If your touchscreen uses the DB9 socket on the back of the monitor, connect the end of the new touchscreen cable that does not have the 4-pin connector to the DB9 socket on the back of the monitor.
3	If your touchscreen uses the DB9 socket on the touchscreen frame, connect the end of the new touchscreen cable that does not have the 4-pin connector to the DB9 socket on the touchscreen frame.
	ATTENTION • If steps 3 or 4 do not apply to your configuration you must upgrade to a flat panel display for touchscreen functionality.

Step	Action
4	Connect the other end of the touchscreen cable (end with the 4-pin connector) to the USB to Serial Converter cable Serial port and connect the USB end of the converter cable to USB port of the workstation. Driver for this USB to Serial Converter cable is loaded automatically during the Experion installation.
5	Connect the 4-pin connector to the remote power circuit assembly card on the Workstation.

If you are using Matrox Extio2 (TP-RPSF02), refer to the *EXTIO2 Remote Peripheral Solution Installation Kit Instruction EP-DPCX24* for detailed hardware connection.

3. Operation

3.1 Starting up your workstation

Overview

The following table lists those tasks that must be performed before operating your workstation. This section contains step-by-step procedures for each of these tasks.

√	Task
	Turn on power and check status
	Configuring RAID in R5500 Honeywell workstation
	Check LCNP status
	Set monitor resolution

Turn on power and check status

Perform the following steps to turn on the power and check the status.

Step	Action
1	Press the power button on the front panel of the workstation.
2	Wait for the power light to become solid green.

Configuring RAID in R5500 Honeywell workstation

Perform the following steps to create virtual disks.

	**ATTENTION** You must perform the following steps only when the RAID level is not configured on the host machine, and when the workstation contains only two hard drives. While performing the following steps, you cannot access the information present in the hard drives.

Step	Action
1	Turn on the workstation.
2	After starting the workstation, Press **F2** on the keyboard to enter the System Setup.
3	In the left pane, select **Drives→ SATA Operation** using the ARROW keys.
4	Press the **TAB** key to select options in **SATA Operation**.
5	Select **RAID On** using the ARROW keys, and then press **ENTER**.
6	You are prompted with the confirmation message ***SATA operation is being changed***. Select **Yes** to accept.
7	Using the **TAB** key select **APPLY**, and then press **ENTER** to save the changes.
8	Using the **TAB** key select **EXIT**, and then press **ENTER** to exit from the System setup. The computer restarts automatically.
9	After restarting the computer, while the computer is performing POST (Power On Self Test), at the time of storage controller initialization, you are prompted with the message ***Press <CTRL- I> to enter configuration utility***. Press **CTRL+I** to enter the Intel® Matrix Storage Manager.
10	Highlight the option **Create RAID Volume** using the ARROW keys, and then Press **ENTER** to display the **Create Volume Menu**.
11	Press the **TAB** key to select the **RAID level** option, and then set the RAID level to **RAID1 (Mirror)** using ARROW key.
12	Press **ENTER** and set the default for other options (Leave the Default Values for other options).
13	Press the **TAB** key and select **Create Volume**.

Step	Action
14	Press **ENTER**. A warning message appears prompting you to confirm the volume creation. Press **Y** to accept.
15	Select **Exit** using the arrow key and press **ENTER** to exit. A confirmation message appears asking you to restart the computer. Press **Y**.

Check LCNP status

If this is a TPS node with the LCNP4E board installed, verify that the LCNP passed self-test.

Step	Action
1	From the **Start** menu, select **LCNP Status**.
2	Verify that the LCNP status indicates **Passed Self Test** and the circle is green.
3	Verify that **LCN Address** appears in the **LEDs** field of the LCNP Status display.
	**REFERENCE - EXTERNAL** Refer to the LCNP Status section in the *LCNP Status User's Guide* for more information.

Set monitor resolution

When the workstation is initialized, the monitor configuration is established based on the following user input:

- FPD type monitors: 60 Hz

If, after initialization, you install a monitor type different than what was originally defined, you need to adjust the monitor settings for optimal performance. Refer the specific monitor user guide for other recommended settings.

Step	Action
1	Select **Start > Settings > Control Panel.**
2	Double-click the Display Icon and select the **Settings** tab.
3	Under **Screen** area, drag the slider to the appropriate resolution.
4	Click **Apply**.

3.2 Network connections

Overview

Each Honeywell-configured Dell Precision R5500 workstation platform must be connected to an LCN network and/or an ETHERNET network.

Ethernet network

ETHERNET 10/100/1000 Base T connection is standard on the Honeywell-configured Dell Precision R5500 platform. You must use the onboard dual Broadcom NIC for configuring FTE or Ethernet connection.

LCN network

The connection to the LCN Network is made via the LCNP4E mid-size Local Control Network Processor card model numberTP-LCNP04. This card provides the communication path for the Honeywell-configured Dell Precision R5500 to other LCN modules. The LCNP4E consists of a PCI Express 3.3 Volt LCNP4E Medium Size card, a MAU cable and the LCN MAU (Media Access Unit).

The LCN node address should be set to the address the customer requires. If the LCN address is not known, then the node address should be set to zero (0). Setting the address to zero (0) allows the node to be connected to the LCN without the risk of an address conflict with some other live node in a customer network segment. This is consistent with the current LCN standard procedure.

TP-LCNP04	LCNP4E

Refer to LCN connections for the rules and techniques of installing an LCN cable system.

LCN connections

The LCN Cable A and Cable B connections are made through a single cable from the LCNP4e board to the LCN Media Access Unit (MAU) contained in a metal housing.

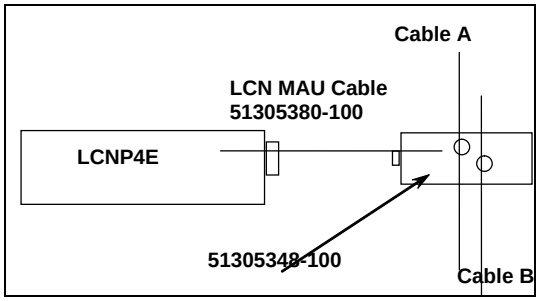


Figure 3-1 LCN MAU to LCN cabling

MAU connection

Connect the MAU to both Cable A and Cable B coax T-connector as illustrated in the following figure.

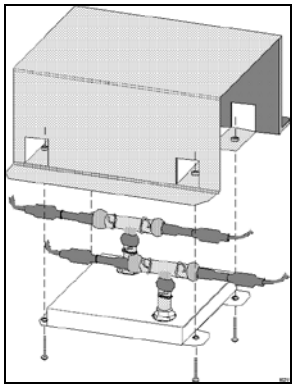


Figure 3-2 LCN MAU to LCN cable T-connections

4. Servicing

4.1 Accessing the Enclosure of the Workstation

Overview

This section contains procedures for removing the workstation cabinet. The procedures apply to the workstation.

Perform workstation shutdown

The following workstation shutdown procedure is applicable to workstations mounted in a cabinet.

Step	Action
1	Perform a double SHUTDOWN of the native window and a SHUTDOWN of the Windows operating system. Refer to the *Global User Station User's Guide* for instructions.
2	When the RESTART message appears on the monitor, place the Power Entry breaker in the OFF position (applicable to consoles only).
3	Turn off power to the computer if it has a separate power switch, and disconnect the AC power cord.
4	Turn off power to the monitor(s) and the printer, if applicable.

Remove the workstation from a Cabinet

Perform the following steps if you want to remove workstation from the 1000mm deep Honeywell cabinet. If the workstation is mounted using the fixed or slide mount option, you need to remove it from the furniture before servicing. The following picture shows a fixed mount option.

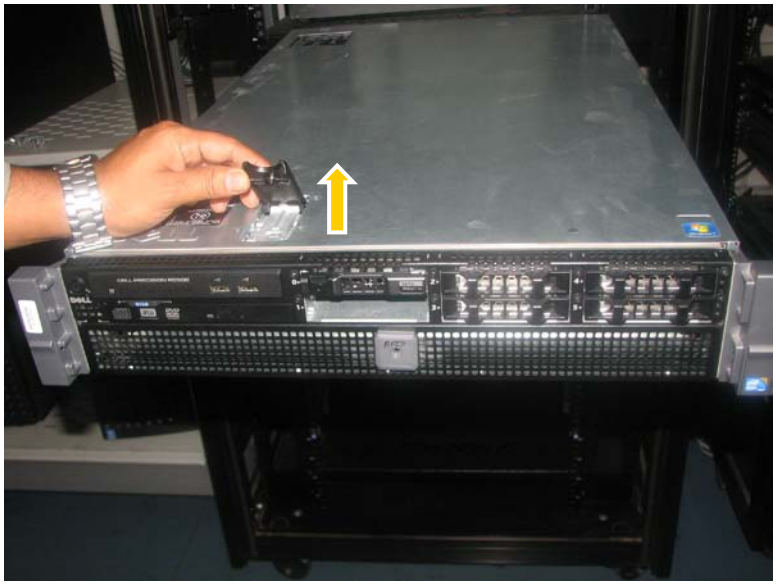
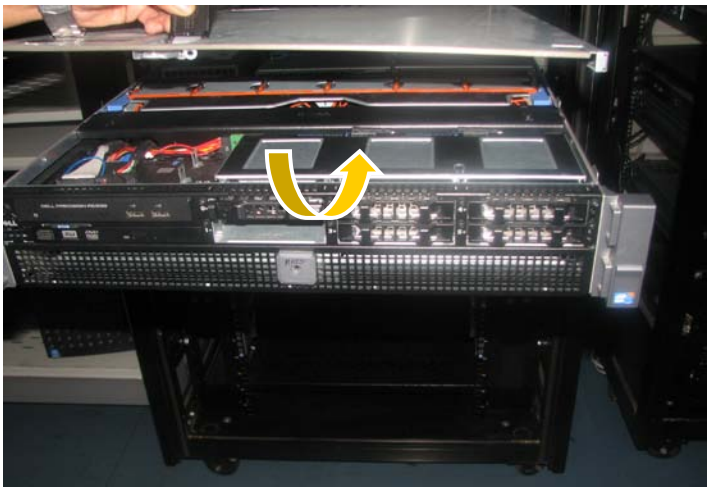
Step	Action
1	Open the rear cabinet door.
2	Disconnect the cables that are connected to the workstation's back panel connectors. Do not disconnect the peripheral ends of the cables unless specifically told to do so. Tag the cables so that they can be properly reconnected to the workstation.
3	Open the front cabinet door.

Step	Action
4	If the retaining brackets are attached, loosen the two captivated fasteners on each retaining bracket and remove them. The procedure to re-install them is explained later in this document. 
5	If you are using a fixed mount option, slide the workstation from the cabinet mounting railings and place it on a suitable work surface. If you are using a slide mount option, pull the slide try out and place the workstation on a suitable work surface or you may service the workstation while still on the slide tray.

Open the enclosure

To simplify servicing when using the slide mount option, internal hardware components can be serviced without having to remove the enclosure from the cabinet.

Step	Action
1	If this is a slide mount workstation, slide the tray from the furniture.

Step	Action
2	Unlock the top cover and gently lift the latch up as illustrated in the following figure.  Using the latch lift the top cover of the workstation as illustrated in the following figure. 

Step	Action
3	Service the hardware components as required: o For servicing the LCNP4Eboard, refer to section *Servicing the LCNP4e* in this document. o For servicing other Honeywell installed options, refer to section *Replacing/Adding optional components* in this document. o For other components, refer to the Dell service manual.

4.2 Servicing the LCNP4E

LCNP4E board description

The LCNP4E has an on-board memory of 16 MB. The LCNP4E board is utilized as the TPS co-processor for the GUS and other PC platforms that require LCN connectivity. It plugs into a PCIExpress bus connector of these PC platforms.

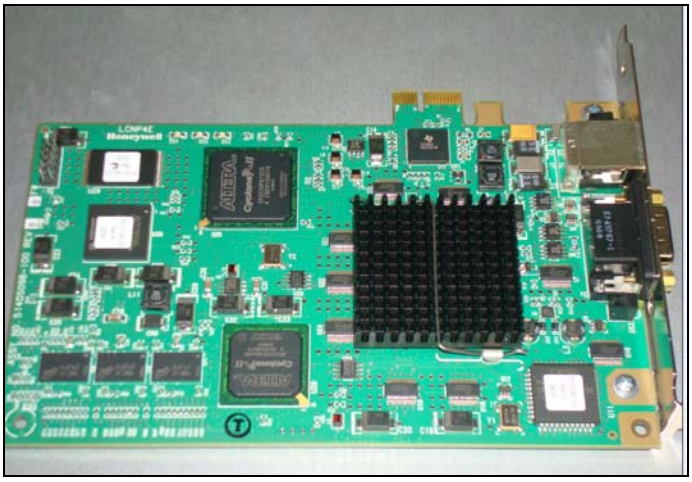


Figure 4-1 LCNP4E board

Replace the LCNP4E board

ATTENTION

Honeywell-qualified Dell R5500 workstation (model numbers MZ-PCWS71 and MZ-PCWS72) are shipped with single CPU configuration.

The PCIe slots 5 and 6 of the Dell R5500 workstation are used for communicating with the CPU-2 through QPI (Intel Quick Path Interconnect). If LCNP4e is installed in slot 6, which communicates to CPU-2, (physically not available) then the PCI communication is redirected through a second QPI to communicate with CPU-1. The data transfer through the QPI to CPU-1 is irregular and results in large amount of data being transferred causing the HM (History Module) to crash. Hence, to avoid such scenarios, Honeywell recommends you to place the LCNP4e card in PCIe slot 2.

If the LCNP4E board is located in the PCIe slot 6 of the workstation, use this procedure to replace the LCNP4E assembly in PCIe slot 2.

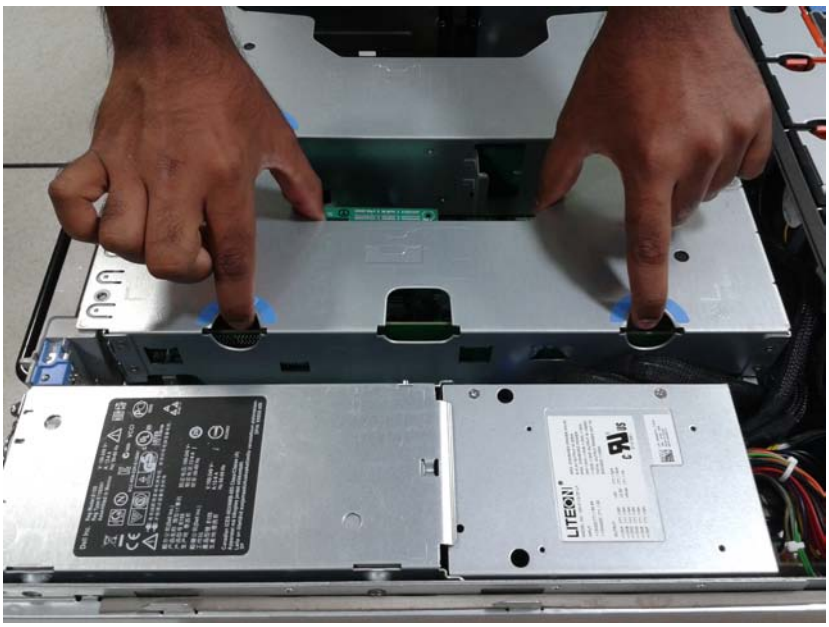
Before you begin

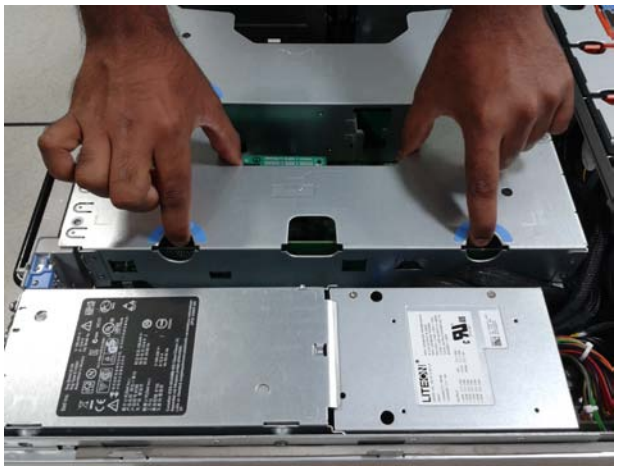
Perform all necessary procedures to access the LCNP4E card in the PCIe slot 2, including:

- For Experion R3xx and TPS R4xx, ensure that the LCNP4e driver is installed as per the *Experion PKS Initialization Media Software Change Notice (SCN)* document. Refer to the section “LCNP4 driver installation using EXPPlus media” and “Manual installation of new LCNP4 driver” of the SCN.
- Shut down system.
- For NVS300, remove the DMS59 to DVI dongle.
- For Extio, remove the fiber optic cable connected to the PCIe card.
- Disconnect power, mouse, keyboard, MAU cable, and other video cables from the workstation.
- Remove/slide the workstation from furniture.
- Accessing the inside of the electronics enclosure.

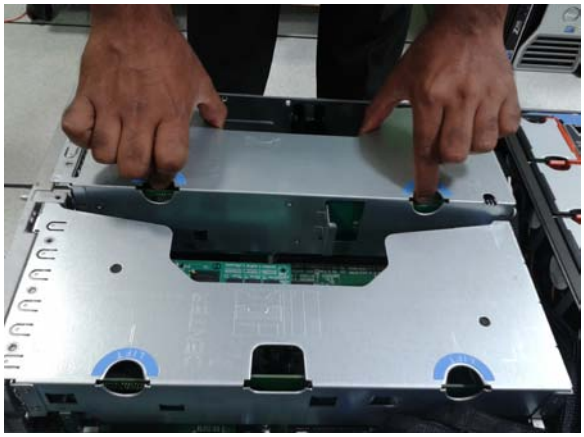
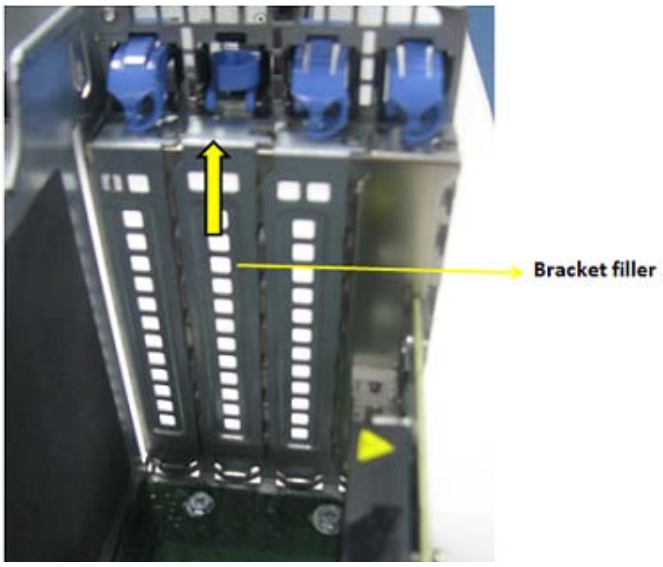
	**CAUTION** Be careful not to damage the EMI gasket fingers when removing/installing boards.
	**ESD HAZARD** Use a grounding strap and grounded work surfaces and equipment when handling any electrostatically sensitive components such as the video cards, NIC adapter cards, and SCSI controller cards. Store and transport parts only in electrostatically safe containers.

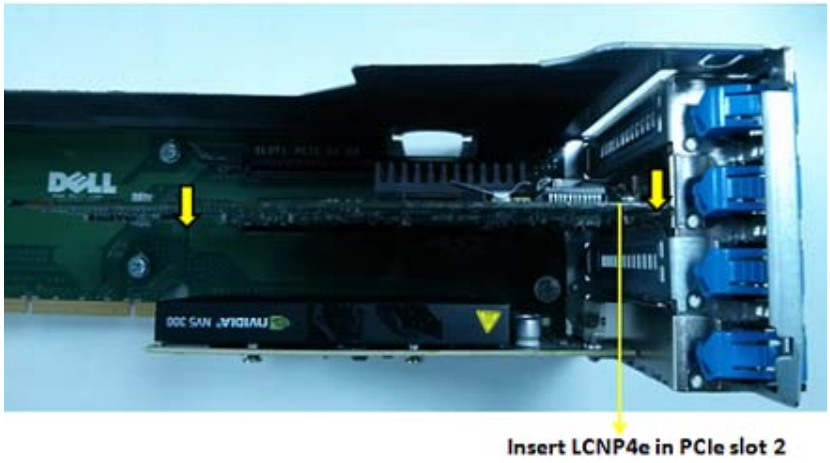
Removing the LCNP4e from PCIe slot 6

Step	Action
1	Remove the top cover of the workstation, perform the steps mentioned in section Open the enclosure.
2	Lift the center riser board to access the LCNP4E board as illustrated in the following image and remove the riser board from the motherboard. 

Step	Action
3	While wearing a grounded ESD wrist strap, unlock the LCNP4E PCI bracket notch, grasp the LCNP4E card in PCIe Slot 6 at the corners and gently remove the existing card. 
4	Place the PCIe bracket filler that was previously removed while installing the LCNP4e card in the empty PCIe slot 6. Lock the bracket notch such that the filler does not move.
5	Insert the center riser board back on the motherboard. 

Installing the LCNP4e in PCIe slot 2

Step	Action
1	Lift the outer riser board to access the PCIe slot 2 as illustrated in the following image and remove the riser board from the motherboard. 
2	In PCIe slot 2, unlock the bracket notch and remove the bracket filler. 
3	Insert the LCNP4E board assembly in the PCIe slot 2 and lock the bracket

Step	Action
	notch, such that the card does not move as illustrated in the following image. 
4	Insert the outer riser board back on the motherboard.
5	Replace the workstation cover and place the workstation in the furniture using the appropriate installation procedures in section 2 Installation.
6	Reconnect the LCN MAU cable and the other cable that were removed.
7	Power on the system.
8	***For Experion R3xx and TPS R4xx*** perform the following: a) Log in to the system with Administrator privileges. A dialog box appears, close the dialog box. The **Found New Hardware Wizard** is displayed. b) Select **No, not this time** option and click **Next**. The **Honeywell LCNP4e** page is displayed. c) Select **Install from a list for specific location [Advanced]** option and click **Next**. The **Please choose your search and installation options** page is displayed. d) Select **Don't search, I will choose the driver to install** option and click **Next**.

Step	Action
	The **Select the device driver you want to install for this hardware** page is displayed. e) From **Show compatible hardware** list, select **Honeywell LCNP4e** and then click **Next**. The **Please wait while this wizard installs the software** page appears. The selected driver is installed. f) On the **Completing the Found New Hardware Wizard**, click **Finish**. g) From the desktop, right-click the **My Computer** icon and choose **Manage**. The **Computer Management** window is displayed. h) Go to step 10.
9	***For Experion R4xx with Microsoft Windows 7 Professional*** perform the following: a) Log in to the system with Administrator privileges. Note: The system may take a few minutes to initialize the network and the LCNP4e card inserted in PCIe slot 2. b) Choose **Start** > **Computer**, right-click the Computer icon and choose **Manage**. The **Computer Management** window is displayed. c) Go to step 10.
10	In the right pane, ensure that **Honeywell LCNP4** appears. This ensures that the LCNP4 card inserted in PCIe slot 2 is detected.
11	Shutdown the workstation and disconnect the power cable for 30 seconds.
12	Power on the workstation and log in with Administrator privileges for the LCN status and Native window to function properly.

4.3 Replacing/adding optional components

Overview

This section contains procedures for adding or replacing optional components in the workstation.

Replace/add video card

The video card is located in the PCIe slot 4 in the workstation.

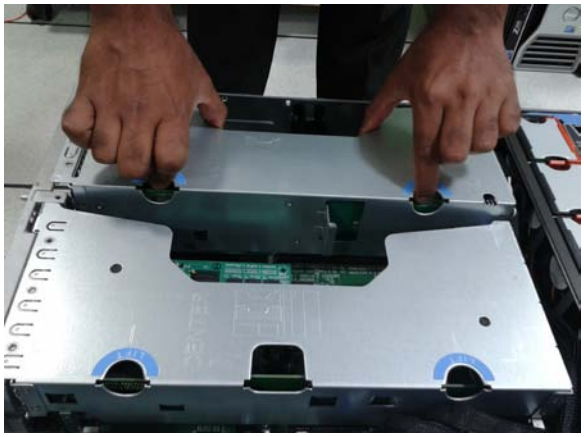
Before you begin

	**CAUTION** Be careful not to damage the EMI gasket fingers when removing/installing boards.
	**ESD HAZARD** Use a grounding strap and grounded work surfaces and equipment when handling any electrostatically sensitive components such as the video cards, NIC adapter cards, and SCSI controller cards. Store and transport parts only in electrostatically safe containers.

Perform all necessary procedures in section 4.1 Accessing the Enclosure of the Workstation to access the video card in the PCIe slot 2, including:

- Shut down system
- Disconnect power from the workstation
- Remove/slide the workstation from furniture
- Accessing the inside of the electronics enclosure
- Disconnect cables from the card being replaced.

Step	Action
1	Remove the cables from the video card.
2	To remove the top cover of the workstation, perform the steps mentioned in section Open the enclosure.

Step	Action
3	Lift the outer riser board to access the Video board as illustrated in the following image and remove the riser board from the motherboard. 
4	While wearing a grounded ESD wrist strap, unlock the Video board PCI bracket notch, grasp the video card in PCIe Slot 4 at the corners and gently remove the existing card. 

Step	Action
5	Insert the replacement LCNP4E board assembly in the PCIe slot 4 as illustrated in the following image. 
6	Lock the PCI bracket notch and insert the outer riser board on motherboard.
7	Replace the workstation cover and place the workstation in the furniture using the appropriate installation procedures in section 2 Installation.
8	Reconnect the Video cable.
	ATTENTION Ensure that you do not mix the displays like the CRT and FPD.
9	Restart the operating system.

Add additional memory to the workstation

Perform the following procedure to add additional gigabyte of memory to the workstation, refer to memory configuration for memory module configuration.

Before you begin

Perform all necessary procedures in Section 4.1 Accessing the Enclosure of the Workstation to access the memory slots, including:

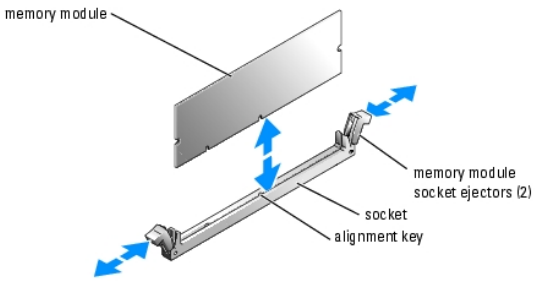
- Shut down system
- Disconnect power from the workstation
- Remove/slide the workstation from furniture
- Accessing the inside of the electronics enclosure.

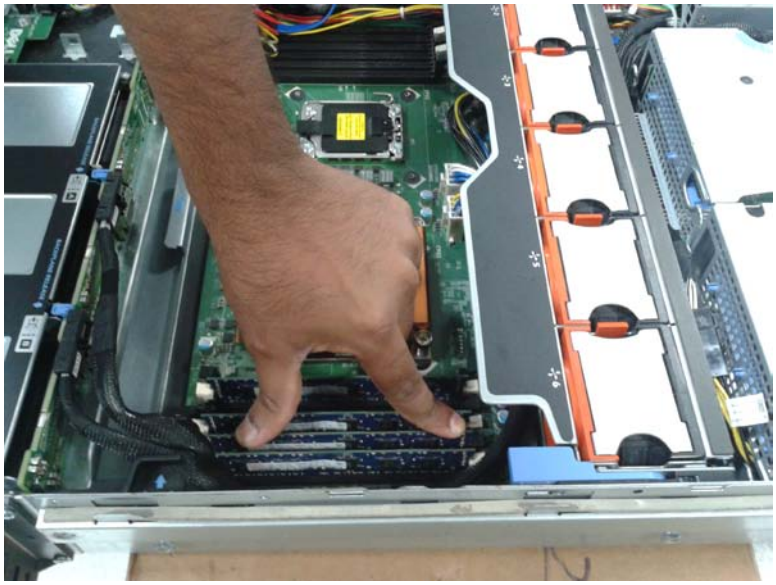
ESD HAZARD

Memory is electrostatically sensitive. Use a grounding strap and grounded work surfaces and equipment when handling these components. Store and transport parts only in electrostatically safe containers.

Step	Action
1	Remove the cables from the video card.
2	To remove the top cover of the workstation, perform the steps mentioned in section Open the enclosure.
3	Lift the CPU shroud as illustrated in the following image.

Step	Action
	
4	To access the memory slots, unlock the HDD tray notch and slide the HDD tray towards front as illustrated in the following image. 

Step	Action
	**CAUTION** The DIMMs are hot to the touch for some time after the system has been powered down. Allow time for the DIMMs to cool before handling them. Handle the DIMMs by the edges and avoid touching DIMM components.
5	The DIMM sockets are now exposed. Refer to the Memory configuration for DIMM socket configuration.
6	While wearing a grounded ESD wrist strap, press the ejectors on the memory module socket down and out to allow the memory module to be inserted into the socket. 
7	Align the memory module's connector with the alignment key on the memory module socket, and insert the memory module in the socket. **Note**: The memory module socket has an alignment key that allows you to install the memory module in the socket in only one way.
8	Press down on the memory module with your thumbs as illustrated in the following image.

Step	Action
	 Pull up the ejectors with your index fingers to lock the memory module into the socket. When the memory module is properly seated in the socket, the ejectors on the memory module socket align with the ejectors on the other sockets that have memory modules installed.
9	Reconnect the white connector on the drive power cable. Replace the card holder and card retention arm making sure the tab locks into place.
10	Replace the workstation cover and place the workstation in the furniture using the appropriate installation procedures in Section 2, Installation.

4.4 Verifying the BIOS Settings

Purpose

Honeywell configures specific BIOS settings in the factory for each workstation platform configuration, and this setting should not be altered. BIOS settings for the workstations are listed in Table 4-1 for workstations with a Non-Raid platform and for workstations with a RAID1 platform, the settings are listed in Table 4-2, you may verify the correct settings.

Entering the BIOS

The following procedure describes how to access the BIOS and view the settings.

ATTENTION

Do not perform this procedure unless you are familiar with BIOS settings.

Step	Action
1	Restart the workstation.
2	When the power on self-test screens appears, press **F2** to enter the BIOS Setup.

BIOS Settings for workstations with Tab 100

This table lists the BIOS settings configured in the factory for the workstation with a non-raid platform.

Table 4-1 BIOS settings for Workstations with Tab 100 Non-Raid platforms

System Info	
BIOS Version	C57
Service tag	XXXXXX
Express Service Code	XXXXXXXXXXX
Asset tag	
Manufacture date	MM/DD/YYYY
Owner date	MM/DD/YYYY
Processor Information	
Type	Intel ® Xeon ® CPU E5620 at 2.40 GHz
Processor Speed	2.400 GHz
QPI Speed	5.860GT/s
L2 Cache	1MB
L3 Cache	12MB
Processor ID	206C2
Microcode Version	10
Multi Core Capability	Yes (Quad)

Hyper-threading Capable	Yes
64 Bit technology	Yes (Intel EM64T)
PCI information	
Slot 1	Empty
Slot 2	Empty
Slot 4	VGA compatibility
Slot 5	Empty
Slot 6	Empty
Slot 7	Empty
Memory Information	
Installed Memory	2.0 GB
Memory Speed	1066MHz
Number of active channels	2
Memory Technology	DDR3
DIMM 1 Size	1 GB
DIMM 2 Size	1 GB
DIMM 3 Size	DIMM slot empty
DIMM 4 Size	DIMM slot empty
DIMM 5 Size	DIMM slot empty
DIMM 6 Size	DIMM slot empty
DIMM 7 Size	DIMM slot empty
DIMM 8 Size	DIMM slot empty
DIMM 9 Size	DIMM slot empty
DIMM 10 Size	DIMM slot empty
DIMM 11 Size	DIMM slot empty
DIMM 12 Size	DIMM slot empty
Boot Sequence	
o Onboard or USB CD- ROM drive o USB floppy drive o Onboard SATA Hard Disk Drive	

Drives	
Diskette Drive	Enable (USB)
SATA Operations	RAID Autodetect/AHCI
Smart Reporting	Enable smart reporting
SATA - 0	Enable
SATA - 5	Enable
Onboard Devices	
Integrated NIC	Enable
USB Controller	Enable
Serial Port 1	Auto
Spread Spectrum Clocking	Enable
Miscellaneous devices	Front USB, Rear USB, and Audio
Video	
Primary Video	Option 1
Performance	
Intel SpeedStep	Off
Multi core support	Enable
C states control	Off
Hardware prefetcher	Enable
Adjacent cache line prefetcher	Off
Limit CPUID Value	Off
Intel turbo boost technology	Enable
Hyper threading technology (HTT)	Off
Virtualization support	
Virtualization	Off
VT for direct I\O	Off
Security	
Admin Password	Not set
System Password	Not set
SATA-0 Password	Not set
Password Changes	Enable password changes
Chassis Intrusion	Disable
TPM Security	Deactivate
CPU XD Support	Enable

Computrace®	Deactivate
OROM Protection	Enable OROM Protection
Power Management	
AC Recovery	Off
Auto On Time	Disable
Low Power Mode	Off
Remote Wakeup	Disable
Maintenance	
Service Tag	XXXXXXX
Asset Tag	
System Management	Disable
SERR Message	Off
Post Behavior	
Fast Boot	Enable
Numlock Key	Enable
Post Hotkeys	Enable F12 = Boot menu
Keyboard Errors	Enable keyboard error detection
System Logs	
BIOS events	
Clear log	Make all entries

BIOS Settings for workstations with Tab 200

This table lists the BIOS settings configured in the factory for the workstation with Tab 200 platforms.

Table 4-2 BIOS settings for Workstation with a Tab 200 platforms

System Info	
BIOS Version	C57
Service tag	XXXXXX
Express Service Code	XXXXXXXXXXX
Asset tag	
Manufacture date	MM/DD/YYYY
Owner date	MM/DD/YYYY
Memory Information	
Memory Installed	2GB
Memory Speed	1066 MHz
Number of active channels	2
Memory Technology	DDR3
DIMM 1 Size	1GB
DIMM 2 Size	1GB
DIMM 3 Size	DIMM slot empty
DIMM 4 Size	DIMM slot empty
DIMM 5 Size	DIMM slot empty
DIMM 6 Size	DIMM slot empty
DIMM 7 Size	DIMM slot empty
DIMM 8 Size	DIMM slot empty
DIMM 9 Size	DIMM slot empty
DIMM 10 Size	DIMM slot empty
DIMM 11 Size	DIMM slot empty
DIMM 12 Size	DIMM slot empty
Processor Information	
Type	Intel ® Xeon ® CPU X5647 at 2.93GHz
Speed	2.933 GHz
QPI Speed	5.860GT/s
L2 Cache	1 MB

L3 Cache	12 MB
ID	206C2
Micro code version	10
Multi core capable	Yes (Quad)
Hyper-threading Capable	Yes
64 Bit technology	Yes (Intel® EM64T)
PCI information	
Slot 1	empty
Slot 2	empty
Slot 4	VGA compatibility
Slot 5	empty
Slot 6	empty
Slot 7	empty
Date\Time	
XX/XX/XX	XX: HH:SS AM/PM
MM/DD/YY	HH:MM:SS A/P
Boot Sequence	
o Onboard or USB CD-ROM drive o Onboard or USB floppy drive o Intel array	
Drives	
Diskette Drive	Enable (USB)
SATA-0	On
SATA-1	On
SATA-2	Off
SATA-3	Off
SATA-4	Off
SATA-5	On
SATA Operations	RAID On
Smart Reporting	Enable Smart reporting
System Configuration	
Integrated NIC	Enable

USB Controller	Enable
Spread Spectrum Clocking	Enable
Serial Port 1	Auto
Miscellaneous devices	Front USB, Rear USB, and Audio
Video	
Primary Video	Option 1
Performance	
Intel Speed Step	Off
Multi core support	Enable
Hyper threading technology	Off
Intel turbo boost technology	Enable
C states control	Off
Hardware prefetch	Enable
Adjacent cache line prefetcher	Off
Limit CPUID Value	Off
Virtualization	
Virtualization	Disable
VT for direct I\O	Disable
Security	
Admin Password	Not set
System Password	Not set
SATA-0 Password	Not set
SATA-1 Password	Not set
Password Changes	Enable password changes
Chassis Intrusion	Disable
TPM Security	Deactivate
CPU XD support	Enable
Comptrace®	Deactivate
OROM Protection	Enable OROM Protection
Power Management	
AC Recovery	Off
Auto On Time	Disable
Low Power Mode	Off

Remote Wakeup	Disable
Maintenance	
Service Tag	XXXXXXX
Asset tag	
System Management	Disable
SERR Message	Off
Post Behavior	
Fast Boot	Enable
Numlock LED	Enable
Post Hotkeys	F12 = Boot Menu
Keyboard Errors	Enable keyboard error detection
System Logs – BIOS events	
Clear Log	Mark all entries

Exiting the BIOS

Perform the following steps to exit the BIOS settings.

Step	Action
1	Press the **ESC** key on the keyboard. A message appears asking you to save the settings.
2	Select **Save Changes and Exit**.
3	Press the **ENTER** key to restart the server.

4.5 Spare Parts List

Ordering workstation spare parts

This section contains lists of spare parts available from Honeywell.

Table 4-3 Spare parts for Honeywell

Item	TAB 900	DELL Part number	Honeywell Part number
Description	**Spare/Add-in Part**		
Mouse	USB Optical Mouse	330-9456	51155148-901
Keyboard	USB Keyboard	331-2249	51155148-902
Expansion RAM	1GB, 1R, 1333MHZ, ECC DDR, RDIMM	A5184177	51155148-903
DVD±RW	ASSY,DVD+/-RW,8x,TSST,SATA,BLK	313-9101	51155148-904
Processor	Tab – 100: 2.40 GHz Intel® XEON™ Processor E5620, 12MB shared L3 cache	317-8788	51154292-911
	Tab –200: 2.93GHz Intel® XEON™ Processor X5647, 12MB shared L3 cache	317-8890	51154290-914
Video	Tab - 100/200 NVIDIA NVS300 Dual Video Card - PEG	A4619922	51155148-905
Manuals	Electronic Documentation	NA	51155148-906
Rack mount Rails	Sliding ready Rails for R5500 with Cable Management Arm	331-3361 and 331-3360	51155148-907

5. Notices

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5.1 Documentation feedback

You can find the most up-to-date documents on the Honeywell Process Solutions support website at:

http://www.honeywellprocess.com/support

If you have comments about Honeywell Process Solutions documentation, send your feedback to:

hpsdocs@honeywell.com

Use this email address to provide feedback, or to report errors and omissions in the documentation. For immediate help with a technical problem, contact your local Honeywell Process Solutions Customer Contact Center (CCC) or Honeywell Technical Assistance Center (TAC) listed in the “Support and other contacts” section of this document.

5.2 How to report a security vulnerability

For the purpose of submission, a security vulnerability is defined as a software defect or weakness that can be exploited to reduce the operational or security capabilities of the software.

Honeywell investigates all reports of security vulnerabilities affecting Honeywell products and services.

To report a potential security vulnerability against any Honeywell product, please follow the instructions at:

https://honeywell.com/pages/vulnerabilityreporting.aspx

Submit the requested information to Honeywell using one of the following methods:

- Send an email to security@honeywell.com.

or

- Contact your local Honeywell Process Solutions Customer Contact Center (CCC) or Honeywell Technical Assistance Center (TAC) listed in the "Support and other contacts" section of this document.

5.3 Support and other contacts

For support, contact your local Honeywell Process Solutions Customer Contact Center (CCC).

North America

Country	Phone	Facsimile	Email
Canada and United States	800-822-7673	973-455-5000	asksc@honeywell.com

Northern Europe

Country	Local Time Business	Phone	Facsimile	Email

	Hours			
Denmark	07:00 – 18:00	80–252165	+45 6980 2349	hpscustomersupport@honeywell.com
Finland	08:00 – 19:00	0800–9–15938	+358 (0)9 2319 4396	hpscustomersupport@honeywell.com
Ireland	06:00 – 17:00	1800939488	+353 (0)1 686 4905	hpscustomersupport@honeywell.com
Netherlands	07:00 – 18:00	0800 020 3498	+31 (0)20 524 1609	hpscustomersupport@honeywell.com
Norway	07:00 – 18:00	800–11478	47–852–287–16	hpscustomersupport@honeywell.com
Sweden	07:00 – 18:00	0200883167	+46 (0)8 509 097 84	hpscustomersupport@honeywell.com
United Kingdom	06:00 – 17:00	08002797226	+44 (0)20 3031 1064	hpscustomersupport@honeywell.com

Southern Europe

Country	Local Time Business Hours	Phone	Facsimile	Email
Belgium	07:00 – 18:00	080048580	+32 (0)2 791 96 02	hpscustomersupport@honeywell.com
France	07:00 – 18:00	0805100041	+33 (0)1 72 74 33 44	hpscustomersupport@honeywell.com
Luxembourg	07:00 – 18:00	8002–8524	+352 24611292	hpscustomersupport@honeywell.com
Spain	07:00 – 18:00	800099804	+34 91 791 56 25	hpscustomersupport@honeywell.com
Portugal	06:00 – 17:00	800–8–55994	+34 91 791 56 25	hpscustomersupport@honeywell.com

Eastern Europe

Country	Local Time Business Hours	Phone	Facsimile	Email
Bulgaria	08:00 – 19:00	700 20771	+359 (0)2 489 7384	hpscustomersupport@honeywell.com
Croatia	07:00 – 18:00	0800 80 6392	+420 227 204 957	hpscustomersupport@honeywell.com
Czech Republic	07:00 – 18:00	800 142 784	+420 227 204 957	hpscustomersupport@honeywell.com
Hungary	07:00 – 18:00	06 800 20 699	+36 (06) 1 577 7371	hpscustomersupport@honeywell.com
Poland	07:00 – 18:00	00 800 121 50 46	+48 22 485 35 10	hpscustomersupport@honeywell.com
Romania	08:00 – 19:00	0 800 800 178	+40 (0)31 710 7590	hpscustomersupport@honeywell.com
Russia Federation	09:00 – 20:00	8.10.80 02-412 50 11	+7 495 796 98 94	hpscustomersupport@honeywell.com
Slovakia	07:00 – 18:00	0800 002 340	+421 (0)2 3301 0376	hpscustomersupport@honeywell.com

Central Europe

Country	Local Time Business Hours	Phone	Facsimile	Email
Austria	07:00 – 18:00	0800 006438	+43 (0)1 253 6722 4904	hpscustomersupport@honeywell.com
Germany	07:00 – 18:00	0800 7239098	+49 (0)30 6908 8463	hpscustomersupport@honeywell.com

Greece	08:00 – 19:00	00800 12 9493	+30 21 1 268 6973	hpscustomersupport@honeywell.com
Israel	08:00 – 19:00	1 809 407 309	+972 (0)2 591 6148	hpscustomersupport@honeywell.com
Italy	07:00 – 18:00	8000 35205	+39 06 96681356	hpscustomersupport@honeywell.com
Switzerland	07:00 – 18:00	00 080 035	+41 (0)31 560 41 60	hpscustomersupport@honeywell.com

Middle East and South Africa

Country	Local Time Business Hours	Phone	Email
Bahrain	08:00 – 19:00	8008 1343	hpscustomersupport@honeywell.com
Oman	08:00 – 19:00	8007 7595	hpscustomersupport@honeywell.com
Qatar	08:00 – 19:00	800 5460	hpscustomersupport@honeywell.com
Saudi Arabia	08:00 – 19:00	800 844 5309	hpscustomersupport@honeywell.com
South Africa	07:00 – 18:00	0800 983 634	hpscustomersupport@honeywell.com
Turkey	08:00 – 19:00	00800 448823587	hpscustomersupport@honeywell.com
United Arab Emirates	09:00 – 20:00	8000 444 0300	hpscustomersupport@honeywell.com

Other regions

Region	Phone	Facsimile	Email
Pacific	1300-364-822 (toll free within Australia) +61-8-9362-9559 (outside Australia)	+61-8-9362-9564	GTAC@honeywell.com

India	+91-20-6603-2718 / 19 1800-233-5051	+91-20-6603-9800	Global-TAC-India@honeywell.com
Korea	+82-80-782-2255 (toll free within Korea)	+82-2-792-9015	Global-TAC-Korea@honeywell.com
People's Republic of China	+86-21-2219-6888 800-820-0237 400-820-0386		Global-TAC-China@honeywell.com
Singapore	+65-6823-2215	+65-6445-3033	GTAC-SEA@honeywell.com
Japan		+81-3-6730-7228	Global-TACJapanJA25@honeywell.com

World Wide Web

Honeywell Process Solutions support website:

http://www.honeywellprocess.com/support

Elsewhere

Contact your nearest Honeywell office.

5.4 Training classes

Honeywell holds technical training classes on Experion PKS. These classes are taught by experts in the field of process control systems. For more information about these classes, contact your Honeywell representative, or see http://www.automationcollege.com

Honeywell

Honeywell International
Process Solutions
1860 W Rose Garden Lane
Phoenix, AZ 85027