

Honeywell

Honeywell Process Solutions

**WS490-Honeywell Workstation
Planning, Installation, and Service Guide**

EP-DPCXX5

Release Independent

May 2012

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Honeywell

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About This Document

This document contains installation and service information for the Dell Precision Workstation 490 (WS490-based Honeywell workstation). The instructions and service information contained herein address the workstation itself, and assumes that associated network communication equipment has been pre-installed by the Honeywell factory or has manuals dedicated to its installation and service. This workstation is not a standard Dell model and cannot be ordered independently from Dell.

Release Information

Document Name	Document ID	Release Number
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Revision Notes

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

Revision	Revision Date	Revision Notes
A	09/16/2006	Initial issue
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C	08/26/2010	ECO P300098
D	06/01/2011	ECO P310057A
E	12/01/2012	ECN 2011-800
F	05/01/2012	Inserted Microsoft Windows 7 Professional 64-bit support

References

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

Release Independent	WS490-Honeywell Workstation Planning, Installation, and Service Guide
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References

Document Title

TPS Users

TPS System Site Planning

TPS System Implementation Guide for Windows 2000

TPS System Planning Guide for Windows 2000

TPS System Administration Guide for Windows 2000

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

Universal Station Service

Universal Station (Ergonomic) Service

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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.
	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.
	<p>CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.</p> <p>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.</p>
	<p>WARNING: Indicates a potentially hazardous situation, which, if not avoided, could result in serious injury or death.</p> <p>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.</p>

Symbol	Definition
	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.
	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 WS490-based 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 PKS system and the TPS system, including Global User Stations (GUS) and APP Nodes. For TPS systems, the platforms have an LCNP4M 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.

Furniture options

The workstation may be mounted in a variety of Honeywell furniture. The following tables lists the types of furniture in which the workstation can be mounted and indicates whether it uses a fixed rail mount or slide tray mount.

Furniture Type	Mounting Option	
	Fixed (rails)	Slide (tray)
Rittal cabinet	Yes	Yes
Classic Console	Yes	Yes
Z Console	Yes	No
EZ Console	Yes	No
Icon Series Console	N/A	N/A

1. Planning

1.1. Introduction

Software requirements

These platforms have been qualified with the Microsoft Windows 2000 Professional, Microsoft Windows XP 32-bit Professional, Microsoft Windows 7 Professional 32-bit, and Microsoft Windows 7 Professional 64-bit operating systems with Honeywell software. Refer to the latest SCN for software applications that have been qualified for use on the WS490-based workstation platform.

BIOS configuration

The workstation platform must have BIOS version A06 or later installed.

1.2 Workstation Overview

Front view

The following figure shows the front view of the workstation. Refer to Table 1-1 for a complete description of the callouts.

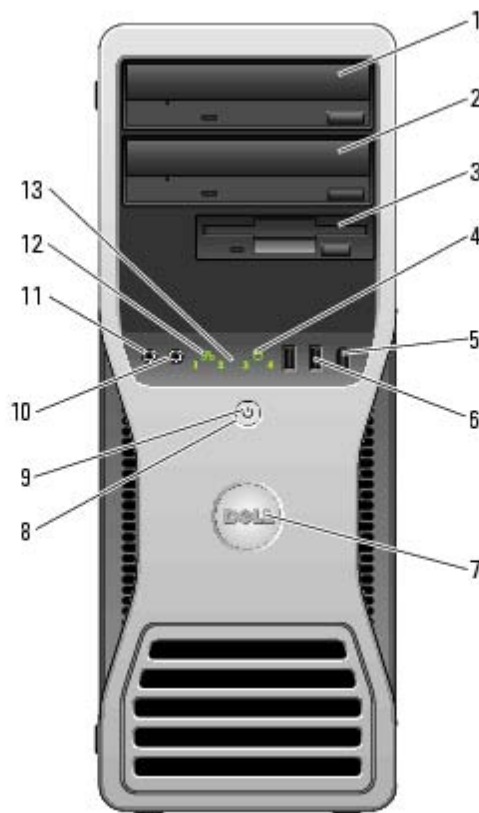


Figure 1-1 Front View of WS490-based Honeywell Workstation

1. Planning

1.2. Workstation Overview

Table 1-1 WS490-based Honeywell Workstation Front Panel Descriptions

No	Item	Description
1	Upper 5.25-inch drive bay	Holds a CD/DVD drive.
2	Lower 5.25inch drive bay	You can use this bay for an optional CD/DVD drive.
3	Empty Bay	
4	Hard-drive activity light	The hard drive light is on when the workstation reads data from or writes data to the hard drive. The light might also be on when a device such as your CD player is operating.
5	IEEE 1394 connector (optional)	Use the optional IEEE 1394 connector for high-speed data devices such as digital video cameras and external storage devices.
6	USB 2.0 connectors (2)	<p>Use the front USB connectors for devices that you connect occasionally, such as flash memory keys or cameras, or for bootable USB devices (refer to System Setup for more information on booting to a USB device).</p> <p>It is recommended that you use the back USB connectors for devices that typically remain connected, such as printers and keyboards.</p>
7	Dell™ rotatable badge	To rotate the Dell badge for tower-to-desktop conversion: remove the front panel (refer to Removing the Front Panel), turn it over, and rotate the plastic handle behind the badge.
8	Power button	<p>Press to turn on the workstation.</p> <p>NOTICE: To avoid losing data, do not use the power button to turn off the workstation. Instead, perform an operating system shutdown.</p> <p>NOTE: The power button can also be used to wake the workstation or to place it into a power-saving state. Refer to Power Management for more information.</p>
9	Power light	The power light illuminates and blinks or remains

No	Item	Description
		<p>solid to indicate different states:</p> <ul style="list-style-type: none"> ○ No light — The workstation is turned off or in a hibernation mode. ○ Steady green — The workstation is in a normal operating state. ○ Blinking green — The workstation is in a power-saving state. ○ Blinking or solid amber — Refer to Power Problems. <p>To exit from a power-saving state, press the power button or use the keyboard or the mouse if it is configured as a wake device in the Windows Device Manager. For more information about sleep states and exiting from a power-saving state, refer to Power Management.</p> <p>Refer to Diagnostic Lights for a description of light codes that can help you troubleshoot problems with your workstation.</p>
10	Headphone connector	Use the headphone connector to attach headphones.
11	Microphone connector	Use the microphone connector to attach a personal workstation microphone for voice or musical input into a sound or telephony program.
12	Network link light	The network link light is on when a good connection exists between a 10-Mbps, 100-Mbps, or 1000-Mbps (or 1-Gbps) network and the workstation.
13	Diagnostic lights (4)	Use these lights to help you troubleshoot a workstation problem based on the diagnostic code. For more information, refer to Diagnostic Lights .

1. Planning

1.2. Workstation Overview

Rear view

The following figure illustrates the rear view of the workstation. Refer to Table 1-2 for a complete description of the callouts

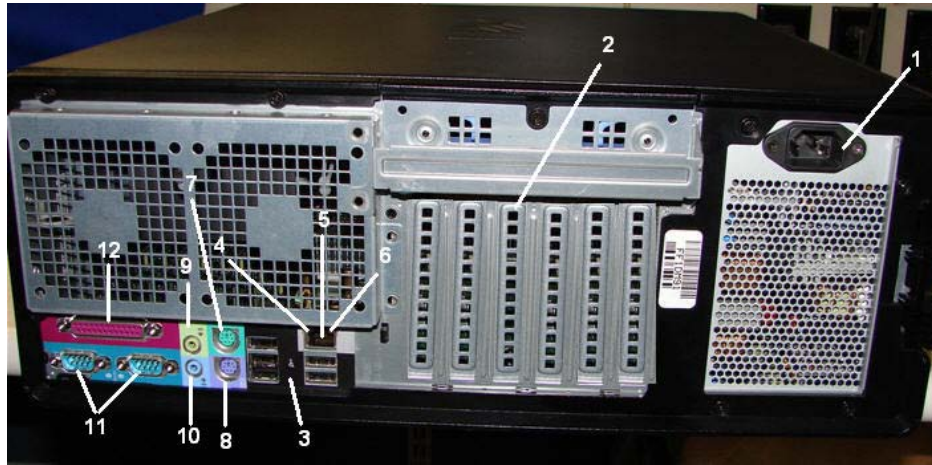


Figure 1-2 Rear View of WS490-based Honeywell Workstation

Table 1-2 WS490-based Honeywell Workstation Rear View Descriptions

No.	Connector	Description
1	Power connector	Power cable.
2	Card slots	Access connectors for any installed cards. Note: The center four slots support full length cards; one PCI-X slot, one PCI Express x8 slot (wired as x4), one PCI Express x16 slot, and one PCI slot; and the top and bottom slots support half length cards; one PCI-X slot and one PCI Express x8 slot (wired as x4).

No.	Connector	Description
3	USB 2.0 connectors (5)	It is recommended that you use the front USB connectors for devices that you connect occasionally, such as flash memory keys or cameras, or for bootable USB devices. Use the back USB connectors for devices that typically remain connected, such as printers and keyboards.
4	Link integrity light	Green — A good connection exists between a 10-Mbps network and the workstation. Orange — A good connection exists between a 100-Mbps network and the workstation. Yellow — A good connection exists between a 1000-Mbps (or 1-Gbps) network and the workstation. Off — The workstation is not detecting a physical connection to the network.
5	Network adapter connector	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 connector on your workstation. A click indicates that the network cable has been securely attached. NOTE: Do not plug a telephone cable into the network connector. On workstations with an additional network connector card, use the connectors on the card and on the back of the workstation when setting up multiple network connections (such as a separate intra and extranet). 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.
6	Network activity light	Flashes a yellow light when the workstation is transmitting or receiving network data. A high volume of network traffic may make this light appear to be in a steady "on" state.
7	PS/2 mouse	Plug a standard PS/2 mouse into the green mouse

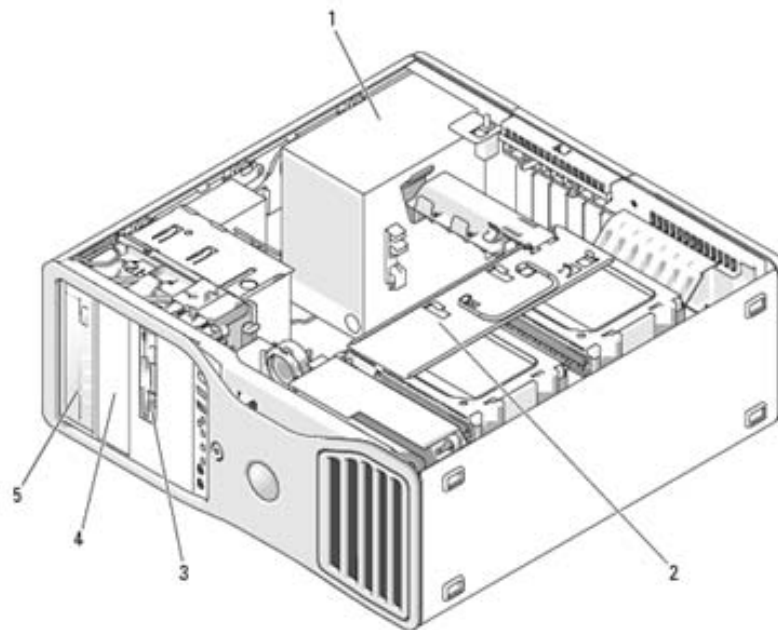
1. Planning

1.2. Workstation Overview

No.	Connector	Description
	connector	connector. Turn off the workstation and any attached devices before you connect a mouse to the workstation. If you have a USB mouse, plug it into a USB connector. If your workstation is running the Microsoft® Windows® XP 32-bit Professional operating system, the necessary mouse drivers have been installed on your hard drive.
8	PS/2 keyboard connector	If you have a standard PS/2 keyboard, plug it into the purple keyboard connector. If you have a USB keyboard, plug it into a USB connector.
9	Line-out/ headphone connector	Use the green line-out connector to attach headphones and most speakers with integrated amplifiers. On workstations with a sound card, use the connector on the card.
10	Line-in connector	Use the blue line-in connector 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.
11	Serial connectors (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 .
12	Parallel connector	Connect a parallel device, such as a printer, to the parallel connector. If you have a USB printer, plug it into a USB connector. NOTE: The integrated parallel connector is automatically disabled if the workstation detects an installed card containing a parallel connector configured to the same address. For more information, refer to System Setup Options .

Inside enclosure

Inside View



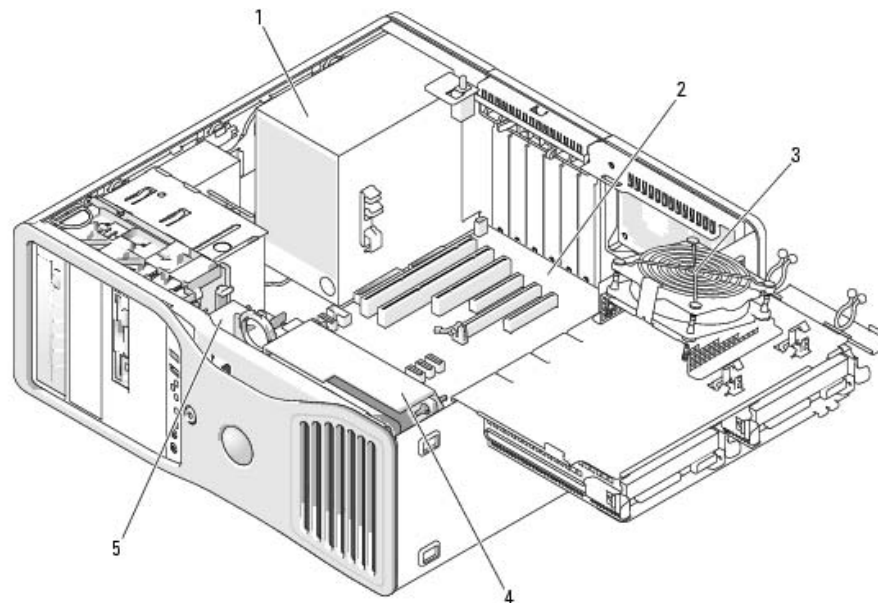
1	power supply
2	rotatable hard drive bay
3	FlexBay
4	lower 5.25-inch drive bay
5	upper 5.25-inch drive bay

1. Planning

1.2. Workstation Overview

Inside enclosure with hard drive bay rotated out

The following image illustrates the inside of the workstation enclosure and identifies the areas within the enclosure.



- 1 Power supply
- 2 System board (motherboard)
- 3 Memory fan on rotatable hard drive carrier
- 4 Front fan
- 5 Card fan

**Figure 1-3 WS490-based Workstation Enclosure
(Hard Drive Bay Rotated Out)**

The following table lists the components that are mounted on the T5400 Honeywell Workstation.

Model No.	Description
TP-LCNP02	LCNP4M
NE-NICS01	Intel PRO 100/1000 Dual NIC
MZ-PCEB23	Intel PRO 1000 Single NIC - Desktop Adapter
MZ-QUAD04	MATROX QID Quad Video Controller – PCI Express (Lead Free)
TP-RPWR01	Remote Power harness
DELL – CFI, 320 -4762	ATI FireGL V3400 dual video card, PCI Express (Lead Free)
MZ-PCEM03	1GB Memory Expansion
NE-NICSS1	Card Single NIC PCIe, Server
NE-NICS02	NIC Card PCIe Dual Port STP
NE-NICS03	NIC Card PCIe GB ET Chipset
MZ-QUAD06	Quad Video Card PCIe (NVS450)

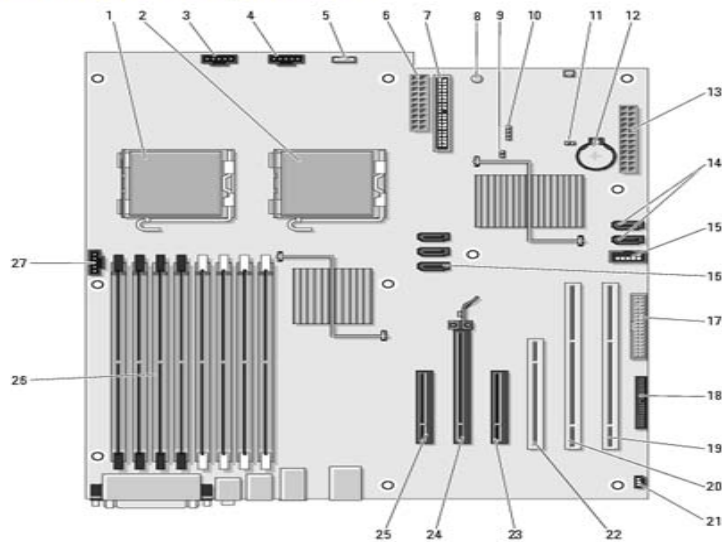
1. Planning

1.2. Workstation Overview

System board

The following image illustrates the system board components.

System Board Components



1	primary processor connector (CPU_0)	15	Flexbay connector (USB)
2	secondary processor connector (CPU_1)	16	SATA connectors (SATA_2, SATA_1, SATA_0)
3	front fan connector (FAN_FRONT)	17	floppy drive (DSKT)
4	card cage fan (FAN_CCAAG)	18	front panel connector (FRONTANEL)
5	internal speaker connector (INT_SPKR)	19	PCI-X card slot (SLOT6_PCIX)
6	power connector (POWER2)	20	PCI-X card slot (SLOT5_PCIX)
7	IDE drive connector (IDE)	21	chassis intrusion header (INTRUDER)
8	standby power light (AUX_PWR)	22	PCI card slot (SLOT4_PCI)
9	password jumper (PSWD)	23	PCI Express x8 card slot, wired as x4 (SLOT3_PCIE)
10	auxiliary hard-drive LED connector (AUX_LED)	24	PCI Express x16 card slot (SLOT2_PCIE)
11	RTC reset jumper (RTCRST)	25	PCI Express x8 card slot, wired as x4 (SLOT1_PCIE)
12	battery socket (BATTERY)	26	memory module connectors (DIMM_1-8)
13	main power connector (POWER1)	27	memory fan connector (FAN_MEM)
14	SATA connectors (SATA_4, SATA_3)		

Diagnostic Indicators

There are four lights on the front of the workstation. How these lights display indicate various states of the workstation. The lights can be off or green. When the workstation starts normally, the lights flash. If the workstation malfunctions, the pattern of the lights and also that of the power button help to identify the problem. These lights also indicate sleep states. Refer to Dell's Quick Reference Guide shipped with the workstation or to Dell's Web site at

<http://support.dell.com/support/edocs/systems/ws490/multlang/QRG/DAO/ND224A00MR.pdf>.

1. Planning

1.3. Workstation Configurations

1.3 Workstation Configurations

Workstation furniture options

The workstation can be positioned vertically or horizontally and used as a desktop unit or mounted in the following Honeywell furniture.

- Classic Console
- E and EZ Console
- Icon Series Console
- Rittal Cabinet

When mounted in a cabinet, the enclosure uses the following amount of space:

- Slide Mount: 5U (8.75") of rack space
- Fixed Mount: 4U (7.00") of rack space



Figure 1-4 WS490-based Workstation for Cabinets and Consoles

Electronics module

The peripheral electronics assemblies in the workstation are based upon either the Peripheral Component Interconnect (PCI) bus, PCI Express (PCI-E), PCI Extended (PCI-X), or USB 1.1/2.0 protocols.

Storage and media devices

The standard mass storage for the workstation is an 80 GB or larger SATA hard drive. Except for the floppy drive, all mass storage and removable media devices connect using EIDE depending on the configuration. The system has one EIDE connection for the DVD±RW drive and two serial ATA (SATA) ports for mass storage. For the Icon Series Console, external media devices connect to the USB 2.0 ports.

Options

The workstation comes with the following options:

Standard options

- Xeon motherboard (single or dual CPU)
- 1333 megahertz front side bus
- 4 megabyte or greater L2 Cache
- Ports: 2 serial ports (9-pin) , 1 parallel (DB25), 8 USB 2.0 – 2 front & 5 back & 1 Internal,
- Slots: 1 PCI Express x 16 graphics slot, 2 PCI Express x 8 wired as x 4, 1 PCI Express x 16, 1 32-bit/33 MHz PCI, and 2 64-bit/100 MHz PCI-X
- Integrated Sound (Sound Blaster® emulation)
- LAN: Integrated Gigabit Ethernet Controller
- 750 watts power factor correcting power supply (auto ranging)
- 1 gigabyte (2x512MB) 667 MHz DDR2 ECC SDRAM, expandable to 2 GB, 3GB, or 4GB
- DVD±RW drive with Sonic Record Now
- Serial ATA 80 gigabyte or larger, 7200 RPM, hard disk drive
- 3.5" 1.44 megabyte floppy drive
- ATI FireGL V3400 dual video controller (128 MB)

Additional options

- LCNP4M (mid-size)
- Matrox QID quad video display card
- Dual NIC for FTE
- Single NIC for Workstation
- Remote power/circuit breaker assembly
- Additional 1 gigabyte memory modules (2x512 MB)
(M2-PCEM03 - 51153731-903)

1. Planning

1.3. Workstation Configurations

Specific slot configurations

The single/dual video display option is the default option for the workstation platform. The Quad video display option includes three screen and quad screen video capabilities. The following tables define the slot requirements for workstation configurations for TPS, FTE, and Experion systems. Those devices identified as *optional* are only present if you specifically ordered them.

The Intel Pro 1000 MT PCI based NIC Server adapter is supplied with Honeywell Configured Dell PWS490 Workstation. PWS490 platform supports optional PCIe based NIC adapters and Intel Pro 1000 PT Single and Dual Port or Intel Pro 1000 ET Dual port adapters. You must install optional PCIe based NIC adapter in slot-1. Do not mix the NIC controllers

Table 1-3 Slot Configuration for TPS Systems

Slot Identification	Device
<i>Single/Dual video configuration</i>	
PCI-X – Slot 6	
PCI-X – Slot 5	LCNP4M
PCI – Slot 4	
PCI-E – Slot 3	
PCI-E x 16 – Slot 2	ATI – FireGL Dual Video Card
PCI-E x 4 – Slot 1	Empty or Power Adapter
<i>Quad video configuration</i>	
PCI-X – Slot 6	Single Intel PRO 1000 Ethernet (Optional) or Empty
PCI-X – Slot 5	LCNP4M
PCI – Slot 4	
PCI-E – Slot 3	
PCI-E x 16 – Slot 2	MATROX QID Quad Video Card or Nvidia Quadro NVS450 (Optional)
PCI-E x 4 – Slot 1	Empty or Power Adapter Harness

Table 1-4 Slot Configuration for FTE Systems

Slot Identification	Device
<i>Single/Dual video configuration</i>	
PCI-X – Slot 6	Dual Intel Pro 1000 Ethernet
PCI-X – Slot 5	LCNP4M
PCI – Slot 4	
PCI-E – Slot 3	
PCI-E x 16 – Slot 2	ATI – FireGL Dual Video Card
PCI-E x 4 – Slot 1	Empty or Power Adapter Harness
<i>Quad video configuration</i>	
PCI-X – Slot 6	Dual Intel Pro 1000 Ethernet
PCI-X – Slot 5	LCNP4M
PCI – Slot 4	
PCI-E – Slot 3	
PCI-E x 16 – Slot 2	MATROX QID Quad Video Card or Nvidia Quadro NVS450 (Optional)
PCI-E x 4 – Slot 1	Empty or Power Adapter Harness

1. Planning

1.3. Workstation Configurations

Table 1-5 Slot Configuration for Experion Systems

Slot Identification	Device
Single/Dual video configuration	
PCI-X – Slot 6	
PCI-X – Slot 5	LCNP4M
PCI – Slot 4	
PCI-E – Slot 3	
PCI-E x 16 – Slot 2	ATI – FireGL Dual Video Card
PCI-E x 4 – Slot 1	Empty or Power Adapter Harness
Quad video configuration	
PCI-X – Slot 6	
PCI-X – Slot 5	LCNP4M
PCI – Slot 4	
PCI-E – Slot 3	
PCI-E x 16 – Slot 2	MATROX QID Quad Video Card or Nvidia Quadro NVS450 (Optional)
PCI-E x 4 – Slot 1	Empty or Power Adapter Harness

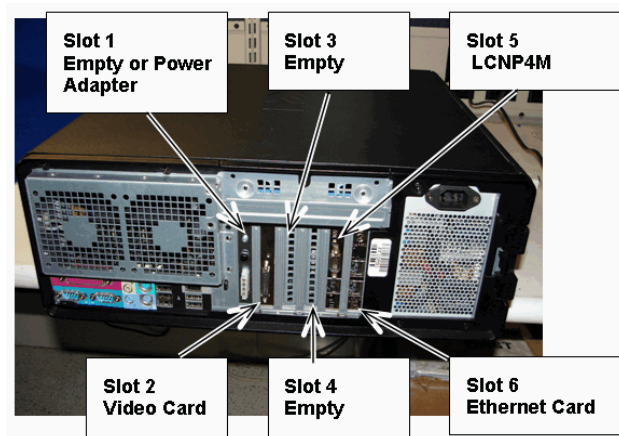


Figure 1-5 Example Slot Configuration

Memory configurations

The standard installed memory for the workstation is 1 GB. It can be expanded to 2, 3 or 4 GB by installing additional memory modules in the appropriate sockets as illustrated in the Figure 1-6. The memory devices must be from the same memory supplier, ECC, single rank, registered, X8 organization.

DIMM Socket	1 GB Memory (standard)	2 GB Memory	3 GB Memory	4 GB Memory
1	512 MB	512 MB	512 MB	512 MB
2	512 MB	512 MB	512 MB	512 MB
3	Empty	512 MB	512 MB	512 MB
4	Empty	512 MB	512 MB	512 MB
5	Empty	Empty	512 MB	512 MB
6	Empty	Empty	512 MB	512 MB
7	Empty	Empty	Empty	512 MB
8	Empty	Empty	Empty	512 MB

Figure 1-6 Memory Configuration

1. Planning

1.4. Finding Information for Your Workstation

1.4 Finding Information for Your Workstation

Honeywell documentation

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

Table 1-6 Honeywell Publications

Publication	Contains information on
ADP01: <i>Honeywell Peripheral Adapters</i>	Contains information for using the OEP/IKB adapter with workstation platforms that do not have the ISA card.
RE02: <i>Long-Haul Remote Systems Installation and Upgrade</i>	Contains information for using Honeywell's long-haul remote (300 feet) option.
FE05: <i>Fault Tolerant Ethernet Installation and Service Guide</i>	Contains information for installing and using FTE on a TPS or Experion PKS node.

Dell documentation

The following table lists Dell publications and other sources of information that are useful when installing, operating, or servicing the workstation.

Table 1-7 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
System Information Label	System board connectors Location of system board components	Located on the inside cover of your workstation.
<i>Dell System Information Guide</i>	Warranty information Safety information	Packaged with the workstation www.dell.com
<i>Setup and Quick Reference Guide</i>	How to set up my workstation How to care for my workstation Troubleshooting information	Packaged with the workstation www.dell.com

Publication	Contains information on	Available
	How to run the Dell Diagnostics How to open my workstation cover How to locate other documentation	
<i>Dell Precision™ Workstation 490 User's Guide</i>	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
<i>The Dell Precision™ 490 Service Manual.</i>	Details on workstation configuration How to remove and replace parts	Product Documentation CD www.dell.com

1.5 Specifications

Environmental specifications for cabinets and consoles

The following table lists allowable operating environmental limitations for cabinets and consoles.

Description	Cabinets	Consoles
Ambient room temperature	5 – 30 deg C	5 – 30 deg C
Humidity	20 – 80% RH, non-condensing	20 – 80% RH, non-condensing
Operating vibration	0.012" P-P displ to 12.7 Hz, then 0.1g to 150 Hz	0.012" P-P displ to 20 Hz, then 0.15g to 150 Hz
Site induced shock	6g, 10 msec half-sine	10g, 10 msec half-sine

1. Planning

1.5. Specifications

System specifications

Table 1-8 Specifications

Description	Specification
<i>Operating power requirements</i>	
AC Voltage	120 (90-135) Vrms 240 (180-265) Vrms
AC RMS Current	1.0 Arms 0.6 Arms
AC Power	750 Watts Max
<i>Weight and dimensions</i>	
Height	170.94 mm
Width	448.06 mm
Depth	470.92 mm
Weight	17.7 Kg depending on options
<i>Hard disk drive specifications (80GB) no option for second hard drive</i>	
DC 5 volt Power (typ)	5 Watts +/- 5%
DC 12 volt Power (typ)	12 Watts +10%, -8%
Other DC POWER	22 Watts Max, 10.0 Watts idle
AC Power	N/A
Height	25.4 mm
Width	101.6 mm
Depth	146.0 mm
Weight	0.6 kg

Removable media specifications

The following table lists specifications for removable media that can be used with the workstation platform.

Table 1-9 Specifications for Removable Media

Removable Media Power Requirements		
Description	Device Requirements	
	DVD±RW * EIDE/USB2.0	Zip Drive * SCSI/USB20
DC 5 volt Power	6.0 Watts	5.0
DC 12 volt Power	21.6 Watts	N/A
Other DC POWER	N/A	N/A
AC Power	N/A	N/A
AC RMS Current	N/A	N/A
AC Power	N/A	N/A
Height	40.64 mm	41.5
Width	146.05 mm	148
Depth	14.22 mm	163
Weight	1.20 kg	.067
* Media drives mounted on Icon Series with an IDE to USB or SCSI to USB adaptor.		

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 decertifies the Safety and EMC compliance of this product.

1.5. Specifications

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 <i>TPN System Installation (SW20-600)</i> , Section 4, "System Grounding"
✓	Verify pinning for external media drives is correct	Section 2.3, Pinning Media Drives
✓	Install the workstation in the furniture	Section 2.4, Install Workstation into the Icon Series Console Section 2.5, Install Workstation in Z and EZ Console Section 2.6, Install Workstation in Classic Console Section 2.7, Install the Workstation in Cabinets
✓	Connect device cables	Section 2.9, Connecting Cables
✓	If you are remoting the workstation, connect the remote components.	For short haul remote: <i>Remote Peripheral Systems Installation and Upgrade (RE01)</i> . For long haul remote: <i>Long-Haul Remote Systems Installation and Upgrade (RE02)</i> .

2. Installation

2.2. Power and Grounding Requirements

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 consoles and 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
- Grounding Stations in Z-Console Furniture

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 therefore there is no positioning switch to be set.

2.3 Pinning Media Drives

Configure SCSI address for removable media drives

The workstation does not use a SCSI card option. If installing in and Icon Series Console, a SCSI to USB adapter may be used for a SCSI interface.

2.4 Install Workstation into the Icon Series Console

Use the following procedure to install the system workstation, air dam, and air gasket into the electronics enclosure of the Icon Series console.

Note: In the following procedure, “left” and “right” refer to viewing the electronics enclosure from the rear.

Step	Action
1	Place the workstation in the electronic enclosure with the back (connectors) of the workstation facing the left side of the enclosure. Make sure the workstation is centered and pushed up against the two elastomer bumpers at the bottom of the enclosure.
2	Fasten the tie-down straps into the slots of the enclosure cradle. Notice that there are multiple slots for the ends of the tie-down straps. The straps may be moved inward or outward depending on the size of the workstation. Attach the straps on the inward slots. Next, adjust the strap lengths so when the fastener is latched the straps are snug against the workstation.
3	Remove the adhesive from the air gasket (“L” shaped foam) and place it on top of the workstation as illustrated in Figure 2-2 on page 48. The adhesive keeps the gasket in place. The gasket stops exhaust air from re-circulating around the workstation.
4	Remove the adhesive from the air dam (clear flat sheet with two chamfered corners). Cover the ventilation slots at the bottom of the electronic enclosure near the front side of the workstation, with the chamfers downward. For the WS490 this is the right side. The dam causes cooling air to be drawn down from the back panel area (refer to Figure 2-1).
5	Test that the electronics enclosure can be closed and opened without binding. With some workstations, it may be necessary to trim or augment the air gasket.

2. Installation

2.4. Install Workstation into the Icon Series Console

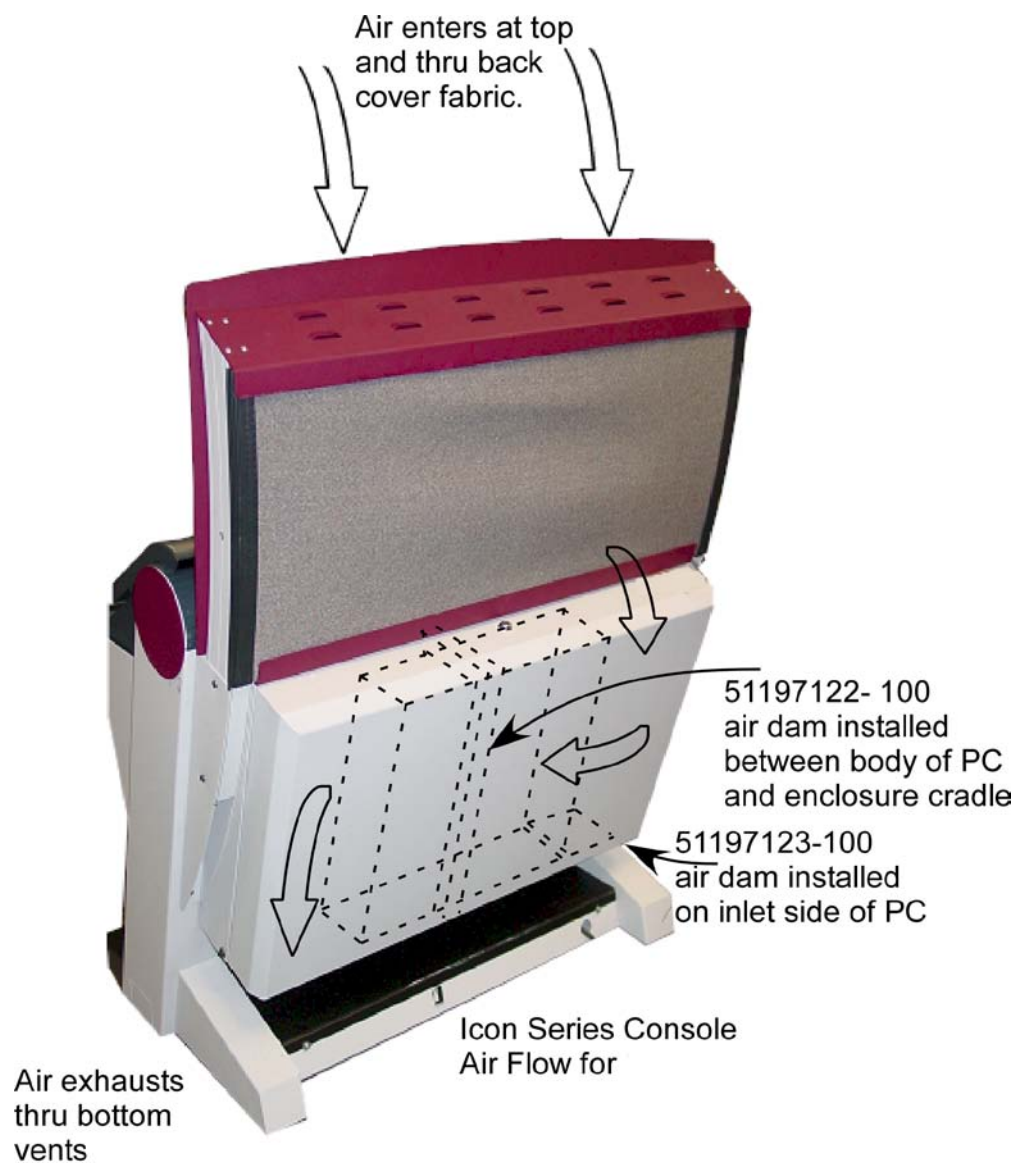



Figure 2-1 Air flow and Air Dam Arrangement for WS490-based Workstation


Connect system cables

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

Step	Action
1	If PS/2 mouse and keyboard are not being used, skip this step. Connect the PS/2 mouse and PS/2 keyboard extension cables to the PS/2 connectors.
2	Connect the audio cable from the amplifier to the audio (green) port.
3	<p>If you are not using Fault Tolerant Ethernet (FTE), connect the Ethernet cable to the RJ-45 connector on the Network Interface Card on the back of the PC by the USB ports (Motherboard Ethernet connection).</p> <p>If you are using FTE, you must connect the FTE cables according to the instructions in the <i>FTE Installation and Service Guide</i>.</p>
4	<p>For Dual Video adapters, follow steps 5 and 6.</p> <p>For Quad Video adapters, follow steps 7 and 8.</p>
5	<p>Note: For certain video adapters, DV1-D connection to the monitors can be used, if needed.</p> <p>For certain dual video adapters, a DVI-to-VGA converter is required, as illustrated here. The converter could be preinstalled. The second video channel is already VGA so a converter is not required.</p> 


2. Installation

2.4. Install Workstation into the Icon Series Console

Step	Action
6	<p>Connect the video cables to the analog video connectors on the video adapter.</p> <p>If you are in doubt about which output is #1 or #2, simply try one combination; this can be reversed later. Proceed to step 9.</p>
7	<p>Note: For certain video adapters, DVI-D connections to the monitors can be used, if needed.</p> <p>For certain quad adapters, connect the digital to analog converters to each of the adapter cables, as illustrated.</p> 


2. Installation

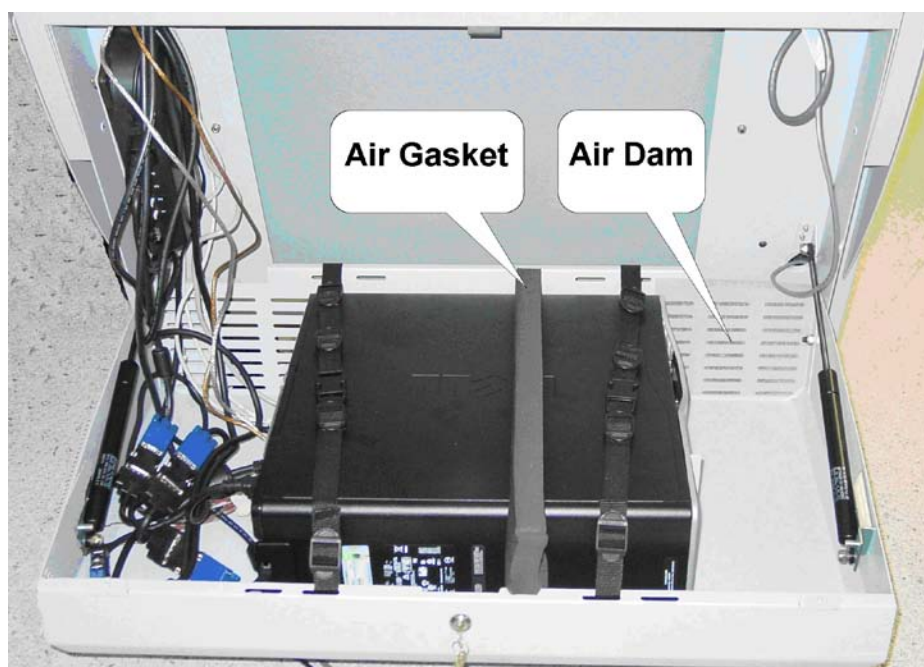
2.4. Install Workstation into the Icon Series Console

Step	Action
8	<p>Connect the video adapter cable to the connector on the Quad video adapter/board. (This image illustrates this connection with the workstation outside of the enclosure on a desk.)</p> 
9	<p>Check the other ends of all the video cables to make sure they are connected to the appropriate connector on the monitors.</p>
10	<p>If your console has an OEP, connect the Serial cable from the OEP adapter to the COM1 port of the workstation.</p>
11	<p>The LCN MAU, if present, is preinstalled in the treadle area. Connect the LCN MAU cable to the MAU connector on the LCNP4 card if one is present. If other networks are being used, configure their MAU and cables appropriately.</p>
12	<p>Connect the one or two USB Hub cables to the workstation USB port(s).</p>
13	<p>Connect the workstation power cable to the workstation.</p>
14	<p>Arrange all cables so the enclosure can be raised and lowered without pinching, jamming or straining any cable.</p>

2. Installation

2.4. Install Workstation into the Icon Series Console

Step	Action
15	<p>The lower valance of the back panel has ten 2 inch holes. These are for both cable passage and air flow. Four hole plugs are also present. Install or move the hole plugs to the left side of the lower valance, into the left side holes. The left side holes are not filled with cables.</p>  <p>INSTALL HOLE PLUGS IN THESE HOLES IF THEY ARE NOT FILLED WITH CABLING</p> <p>KEEP THESE HOLES FREE FOR AIR INTAKE</p>
16	<p>Close the enclosure, securing it with the lock and, if necessary, shipping screws.</p>



**Figure 2-2 Icon Series Console Electronic Enclosure
(loaded with workstation)**

2.5 Install Workstation in Z and EZ Console

Overview


This section provides instructions for installing a newly purchased WS490-based Honeywell workstation in a newly purchased Honeywell Z or EZ-console. The workstation has arrived from the Honeywell factory packaged in the Dell OEM shipping carton. This procedure assumes that a new Z or EZ console was shipped from the Honeywell factory with workstation hardware pre-installed.

Z and EZ mounting requirements

The workstation is installed in a fixed 15-degree reclining position in the upper or lower furniture bay of Z and EZ console furniture.



Install workstation in Z or EZ console

Use this procedure to install the workstation in the Z or EZ console furniture bay.

Step	Action
1	<p>From the rear of the console, loosen the two fasteners on the rear cover. Remove the rear cover and set it aside.</p> 
2	<p>Slide the furniture bay cover off the mounting railings.</p>


2. Installation

2.5. Install Workstation in Z and EZ Console

Step	Action
3	<p>Drape the installed cable harnesses over the sides of the module mounting brackets such that the console mounting rails are clear of any installed cables.</p> 
4	<p>Remove the rubber feet from the bottom and side of the workstation.</p> 

2. Installation

2.5. Install Workstation in Z and EZ Console

Step	Action
5	<p>Place the front of the workstation on the mounting railings, and slide the workstation into the furniture bay until the distance between the rear edge of the workstation and the vertical return flange on the rear cover retaining bracket is approximately 127mm [5"].</p> 

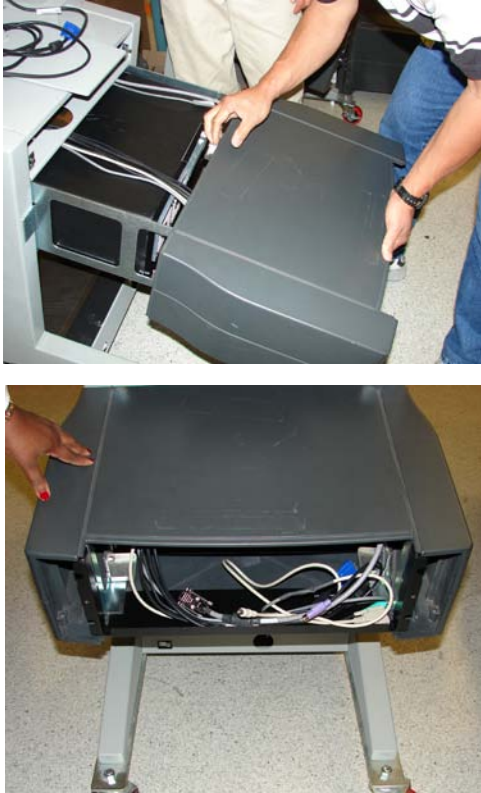
2. Installation

2.5. Install Workstation in Z and EZ Console

Step	Action
6	<p>Install the left retaining bracket over the lower edge of the side mounting rail as illustrated below. Make sure the distance between the back panel of the workstation and the lip of the rear cover retaining bracket is five (5) inches as illustrated below.</p>  <p>Secure the bracket by tightening the M5 hex locknut.</p>  <p>In a similar manner, position and attach the right retaining bracket.</p>

2. Installation

2.5. Install Workstation in Z and EZ Console

Step	Action
7	<p>Position the cable harnesses such that they are routed across the top of the workstation and insure that the cables lay flat and are not crossed. Slide the enclosure over the workstation and rail assembly.</p> 
8	<p>Go to Section 2.9, Connecting Cables, after connecting all cables return here to replace the rear cover.</p>
9	<p>Replace the rear cover and tighten both fasteners. Installation procedure is complete. Go to Section 3.1 to start up the workstation.</p>

2. Installation

2.6. Install Workstation in Classic Console

2.6 Install Workstation in Classic Console

Overview

This section provides instructions for installing a newly purchased WS490-based Honeywell workstation in a newly purchased Honeywell classic console. The workstation has arrived from the Honeywell factory packaged in the Dell OEM shipping carton. This procedure assumes that a new classic console was shipped from the Honeywell factory with workstation hardware pre-installed.

Classic console mounting requirements

The workstation is installed in the lower mounting location in a horizontal position in the classic console using a slide mount or fixed mount option. The following table describes the requirements for these mounting options.

Table 2-2 Slide and Fixed Mounting Requirements

Option	Rack Space Needed	Maximum WS490s	Mounting Requirements
Slide	5U (8.75 inches)	1 per console	Must be mounted on bottom of console The 3U of unused space must have a 3U blank front panel and air baffle installed.
Fixed	4U (7.00 inches)	2 per console	If only one workstation is installed, it must be mounted in the console's lower mounting location with a 4U blank front panel and air duct baffle installed in the unused space.

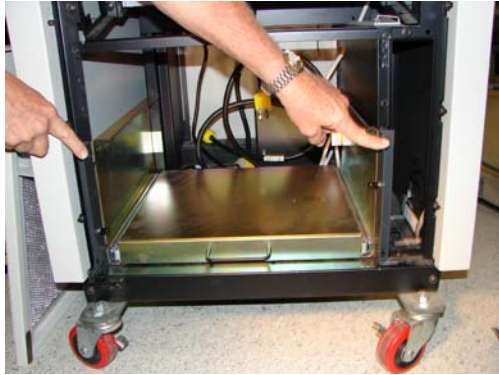

Install workstation in classic console using the fixed mount option

Use this procedure to install the workstation in classic console furniture using the fixed mount option.

Step	Action
1	Remove the console door to access the console enclosure.
2	Determine an appropriate location for the workstation by referring to the requirements listed in Table 2-2.



2. Installation

2.6. Install Workstation in Classic Console

Step	Action
3	<p>If the retaining brackets are attached, loosen the two captivated fasteners on each retaining bracket and remove them. This image illustrates a slide mount configuration, but the brackets are similar for the fixed mount configuration.</p> 
4	<p>Verify that the console mounting rails are clear of any installed cables.</p> 


2. Installation

2.6. Install Workstation in Classic Console

Step	Action
5	<p>Slide the workstation all the way into the console enclosure between the mounting railings as illustrated.</p> <p>Replace the two retaining brackets and tighten the four captivated fasteners.</p>  A photograph showing a workstation unit being slid into the console enclosure. The unit is dark-colored with a silver front panel featuring a Honeywell logo and a vent. It is being positioned between two vertical mounting rails. A red tool is visible on the floor next to the unit.
6	<p>If you are installing a second workstation in the console, repeat steps 2 through 5 for the second workstation, then go to Section 2.9, Connecting Cables.</p> <p>If you are not installing a second workstation and if an air duct baffle and blank front panel is not already installed continue to the next step.</p>
7	<p>Install a 4U high air duct baffle against the console right mounting rail.</p>  A photograph showing a person's hand installing a 4U high air duct baffle against the console right mounting rail. The baffle is a dark-colored metal frame. The workstation unit is visible inside the console enclosure. A red tool is visible on the floor next to the unit.

2. Installation

2.6. Install Workstation in Classic Console

Step	Action
8	<p>Attach the blank front panel to the console rails using two hex head screws and two washers, making sure the flat side of the washer touches the screw head and the washer teeth touch the panel.</p>  <p>Note: Installing a blank front panel ensures that the airflow within the console allows proper cooling of the workstation.</p>
9	Go to Section 2.9, Connecting Cables.

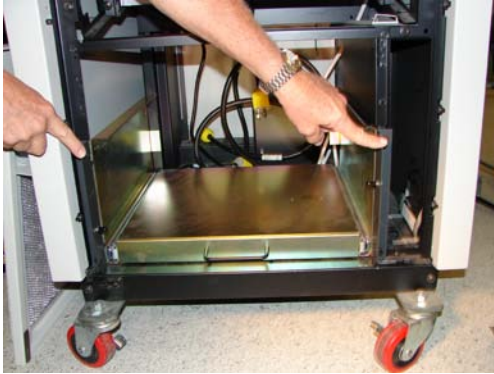
Install workstation in classic console using slide mount option

Use this procedure to install the workstation in classic console furniture using the slide mount option.

Step	Action
1	Remove the console door to access the console enclosure.



2. Installation

2.6. Install Workstation in Classic Console

Step	Action
2	<p>If the retaining brackets are attached, loosen the two captivated fasteners on each retaining bracket and remove them.</p> 
3	Verify that the slide mount bottom and sides are clear of any installed cables.
4	Using the mounting tray handle, fully extend the tray from the console.
5	Place the workstation on the mounting tray and slide the tray back into the console.
6	Replace the two retaining brackets and tighten the four captivated fasteners.
7	<p>If an air duct baffle and blank front panel are already installed, go to Section 2.9, Connecting Cables.</p> <p>If an air duct baffle and blank front panel are not installed continue to the next step.</p>

2. Installation

2.6. Install Workstation in Classic Console

Step	Action
8	<p>Install a 3U high air duct baffle against the console right mounting rail.</p> 
9	<p>Attach the blank front panel to the console rails using two hex head screws and two washers, making sure the flat side of the washer touches the screw head and the washer teeth touch the panel.</p>  <p>Note: Installing a blank front panel ensures that the airflow within the console allows proper cooling of the workstation.</p>
10	<p>Go to Section 2.9, Connecting Cables.</p>

2. Installation

2.7. Install the Workstation in Cabinets

2.7 Install the Workstation in Cabinets

Overview

This section provides instructions for installing a newly purchased WS490-based Honeywell workstation in a newly purchased Honeywell cabinet (800mm deep equipment cabinet, Honeywell model number MP-C8LCB1 or 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 workstation hardware pre-installed.

The workstation mounts horizontally in a cabinet. 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 WS490	5U 8.75 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 six (6) computing nodes can be installed in an 800mm deep cabinet and a maximum of nine (9) computing nodes can be installed in a 1000mm deep cabinet.
Fixed mounted WS490	4U 7.00 inches	
Human interface: 8 port KVM switch; 15-inch LCD; keyboard & cursor device	1U 1.75 inches	Mount in rack space 13U 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 illustrates the four height options and the corresponding part and tab numbers each.

Table 2-3 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 using the fixed mount option

Use this procedure to install the workstation in the cabinet using the fixed mount option.

Step	Action
1	Open the cabinet door to access the inside of cabinet.


2. Installation

2.7. Install the Workstation in Cabinets

Step	Action
2	<p>If the retaining brackets are attached, loosen the two captivated fasteners on each bracket and remove them.</p> 
3	<p>Verify that the cabinet mounting rails are clear of any installed cables.</p>
4	<p>Slide the workstation all the way into the cabinet enclosure between the mounting railings until it touches the return flanges formed out of the mounting rails.</p>
5	<p>Replace the two retaining brackets and tighten the four captivated panel fasteners. Next, adjust the stops in the retaining brackets such that the vinyl caps contact the workstation's front bezel. Tighten the stops.</p>
6	<p>Go to the "Install air duct baffles and blank panel front covers in cabinet" procedure in this section.</p>


Install workstation in cabinet using the slide mount option

Use this procedure to install the workstation in the cabinet using the slide mount option.

Step	Action
1	Open the cabinet door to access the inside of cabinet.
2	If the retaining brackets are attached, loosen the two captivated fasteners on each bracket and remove them.
3	Verify that the slide mount bottom and sides are clear of any installed cables.
4	Using the mounting tray handle, pull the tray to its fully extended and locked position. 

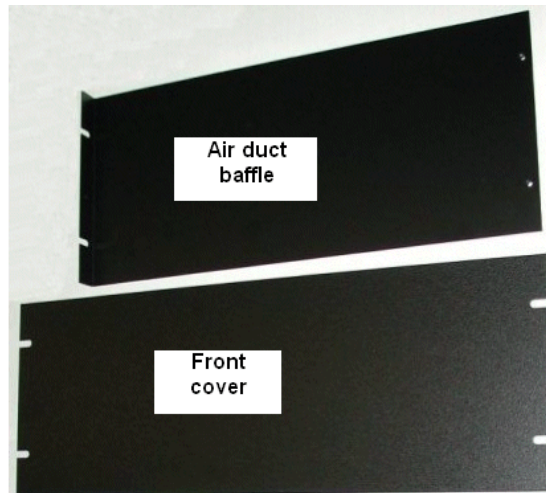
2. Installation

2.7. Install the Workstation in Cabinets

Step	Action
5	<p>Place the workstation on the mounting tray so the bottom surface of the front bezel is aligned with the front surface of the slide tray and slide the tray back into the console.</p> <p>Note: a different workstation is illustrated in the following image.</p> 
6	<p>Replace the two front retaining brackets and tighten the four captivated fasteners. Next, adjust the stops in the front retaining brackets such that the vinyl caps contact the workstation's front bezel. Tighten the stops.</p>
7	<p>From the rear of the cabinet, slide the workstation rear retainer bracket (L-shaped angle bracket) forward in its slot until it contacts the back surface of the workstation chassis. Tighten the lock nut.</p>
8	<p>Go to the "Install air duct baffles and blank panel front covers in cabinet" procedure in this section.</p>

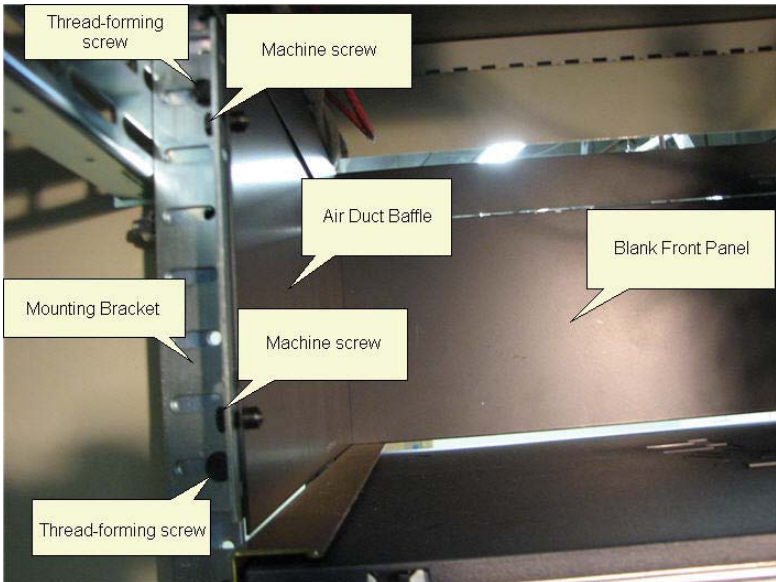

Install air duct baffles and blank panel front covers in cabinet

Use this procedure to install the air duct baffle and blank panel front cover in the cabinet. Installing these parts ensures that the airflow within the cabinet allows proper cooling of the workstations.



2. Installation

2.7. Install the Workstation in Cabinets

Step	Action
1	<p>Place the air duct baffle inside the cabinet with the bent tab resting along the front of the right cabinet rail.</p>  <p>The diagram shows the interior of a cabinet with a metal rail on the right. An air duct baffle is being positioned against the rail. Labels point to various components: 'Thread-forming screw' at the top and bottom of the rail, 'Machine screw' at the top and bottom of the baffle, 'Air Duct Baffle' pointing to the baffle itself, 'Blank Front Panel' pointing to the panel on the right, and 'Mounting Bracket' pointing to a bracket on the left rail.</p>
2	<p>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 and tighten the screws.</p>  <p>The diagram shows the front panel of the cabinet. A label 'Machine Screws on Front Panel' points to four screws: two on the left and two on the right, which are used to attach the panel to the rails.</p>
3	<p>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 the clip</p>

Step	Action
	nuts and tighten the 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.
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 2.9, Connecting Cables.

2.8 Installing Optional Components

Honeywell provides a number of other options that may be installed in the cabinet with your workstation. Each of the following options is packaged with installation instructions.

Component	Description
OEP/IKB adapter	Used to connect an OEP or IKB that uses an ISA connection to the workstation's serial port. Refer to <i>Honeywell Peripheral Adapters (ADP01)</i>
Long-haul remote components	Used for remotng the workstation up to 300 feet from the cabinet. Refer to <i>Long-Haul Remote Systems Installation and Upgrade (RE02)</i> .

The following figure illustrates a suggested placement of optional adapters in a console.
Note: an earlier model workstation is displayed.

2. Installation

2.9. Connecting Cables

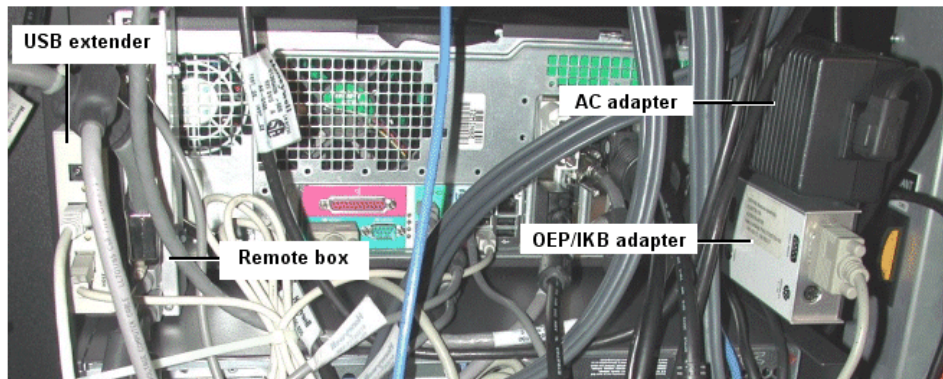


Figure 2-3 Suggested Placement of Optional Adapters

2.9 Connecting Cables

Connect cables to the workstation

This section contains information for connecting the power cord and cables to the workstation platform.

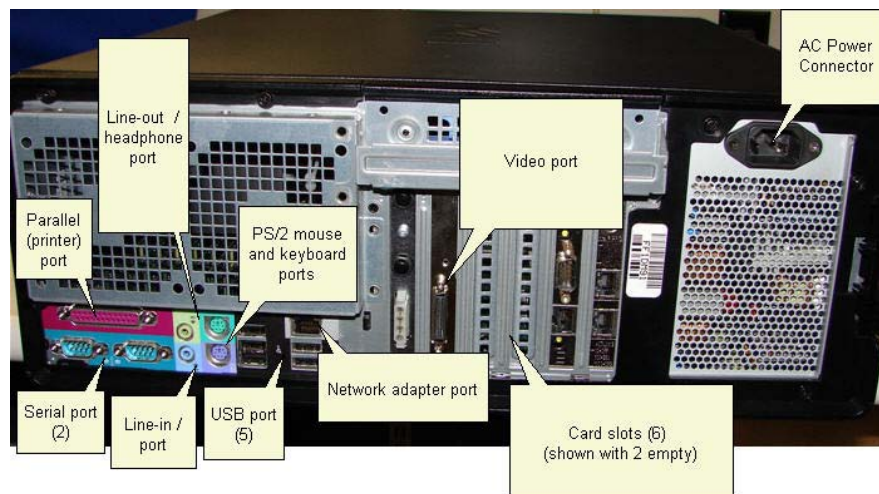


Figure 2-4 Connect Cables to WS490-based Workstation

Step	Action
1	<p>Connect a parallel device, such as a printer, to the parallel port. If you have a USB printer, plug it into a USB port.</p> <p>NOTE: The integrated parallel port is automatically disabled if the workstation detects an installed card containing a parallel port configured to the same address. For more information, refer to System Setup Options.</p>
2	<p>Use the green line-out port to attach headphones and most speakers with integrated amplifiers.</p> <p>On workstations with a sound card, use the connector on the card.</p>
3	<p>Plug a standard PS/2 mouse into the green mouse port. Turn off the workstation and any attached devices before you connect a mouse to the workstation. If you have a USB mouse, plug it into a USB port.</p> <p>If your workstation is running the Microsoft® Windows® XP 32-bit Professional operating system, the necessary mouse drivers have been installed on your hard drive.</p>
4	<p>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.</p> <p>NOTE: Do not plug a telephone cable into the network port.</p> <p>On workstations with an additional network connector card, use the connectors on the card and on the back of the workstation when setting up multiple network connections (such as a separate intra and extranet).</p> <p>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.</p>
5	<p>Use the back USB port for devices that typically remain connected, such as printers and keyboards.</p> <p>It is recommended that you use the front USB ports for devices that you connect occasionally, such as flash memory keys or cameras, or for bootable USB devices.</p>
6	<p>If you have a standard PS/2 keyboard, plug it into the purple keyboard port. If you have a USB keyboard, plug it into a USB port.</p>

2. Installation

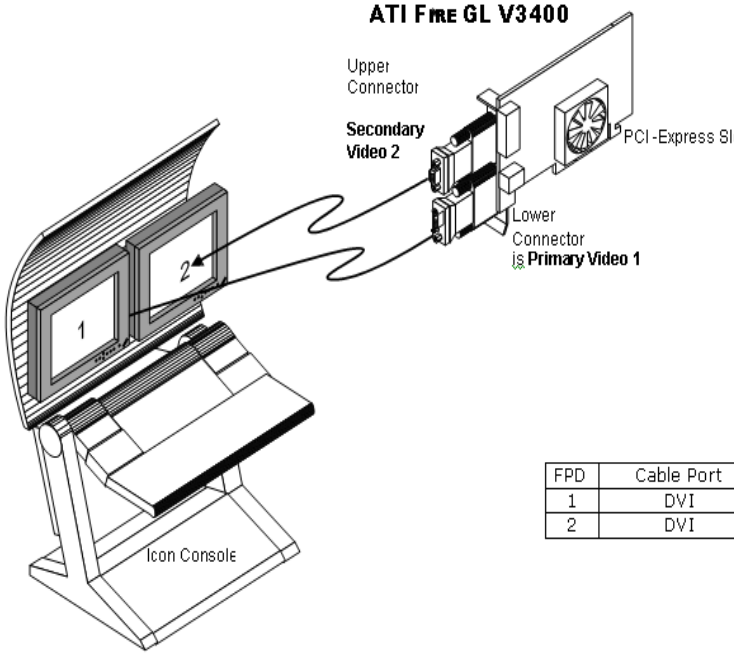
2.9. Connecting Cables

Step	Action
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.
8	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 . Refer to Table 2-7 for applicable serial port connections.
9	Connect the AC power cord.

Connect remaining cables and power

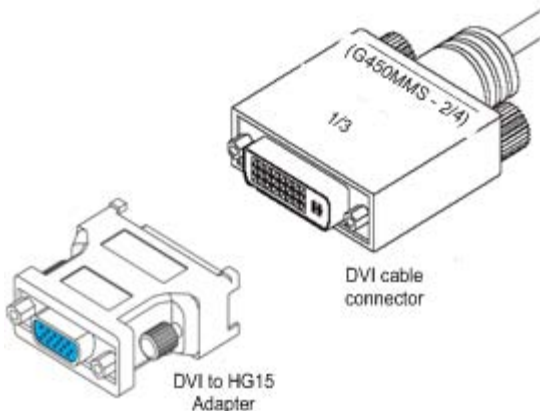
Use this procedure to connect the remaining cables to the workstation.

Step	Action
1	If you have an IKB that uses the OEP/IKB adapter: <ul style="list-style-type: none">• Connect the PS/2 keyboard cable from the OEP/IKB adapter to the keyboard PS/2 port.• Connect the DB9 serial extension cable to the serial port.
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 <i>FTE (FE05) Installation and Service Guide</i> .
3	Connect the LCN MAU cable to the MAU connector on the LCNP4M card.
4	Connect any USB devices or Hubs to the USB ports, including the USB IKB if you are using one.

Step	Action						
Connecting monitors (single/dual video card)							
5	<p>Connect the DVI to HD15 adapter to the lower digital connector and connect the primary video cable to that adapter.</p> <p>If you are connecting two video devices, connect a DVI to HD15 adapter to the upper digital connector and connect the secondary video cable to the top adapter</p> <p>Video Arrangement</p>  <table><tr><td>FPD</td><td>Cable Port</td></tr><tr><td>1</td><td>DVI</td></tr><tr><td>2</td><td>DVI</td></tr></table>	FPD	Cable Port	1	DVI	2	DVI
FPD	Cable Port						
1	DVI						
2	DVI						

2. Installation

2.9. Connecting Cables

Step	Action
Connecting monitors (quad video card (Icon Series only))	
6	<p>Connect the DVI to HD15 adapters to the Quad video DVI Cable by adding the VGA adapters (HD15) to each video connector in the DVI cable as illustrated.</p>  <p>The diagram illustrates the connection of a DVI to HD15 adapter to a DVI cable connector. The DVI cable connector is a rectangular component with a DVI-D port on one side and a BNC connector on the other. The DVI to HD15 adapter is a small, L-shaped component with a DVI-D port on one side and a blue 15-pin HD15 connector on the other. The adapter is shown being inserted into the DVI cable connector.</p>
7	<p>Connect the Quad video DVI Cable to the video connector on the video card.</p>
8	<p>Connect the video cables according to the information in the following "Connect Icon Series Monitors" procedure.</p>
9	<p>Secure any loose cables, and verify that all cables have proper strain relief.</p>

Connect Icon Series Monitors

For systems that have three or four video outputs, the workstation uses the Quad video DVI Cable connected to a quad video card. You must connect the monitors to the correct channels identified in Table 2-4. Also refer to Figure 2-5 and Figure 2-6.

Note a DVI to HG15 adapter must be installed on each of the Quad video DVI Cable prior to attaching the video cables from the displays.

Table 2-4 Video Channels

Channel	Four Monitor Connection	Three Monitor Connection
1	DVI Cable connector labeled 1/5	DVI Cable connector labeled 1/5
2	DVI Cable connector labeled 2/6	DVI Cable connector labeled 2/6
3	DVI Cable connector labeled 3/7	DVI Cable connector labeled 3/7
4	DVI Cable connector labeled 4/8	Not used

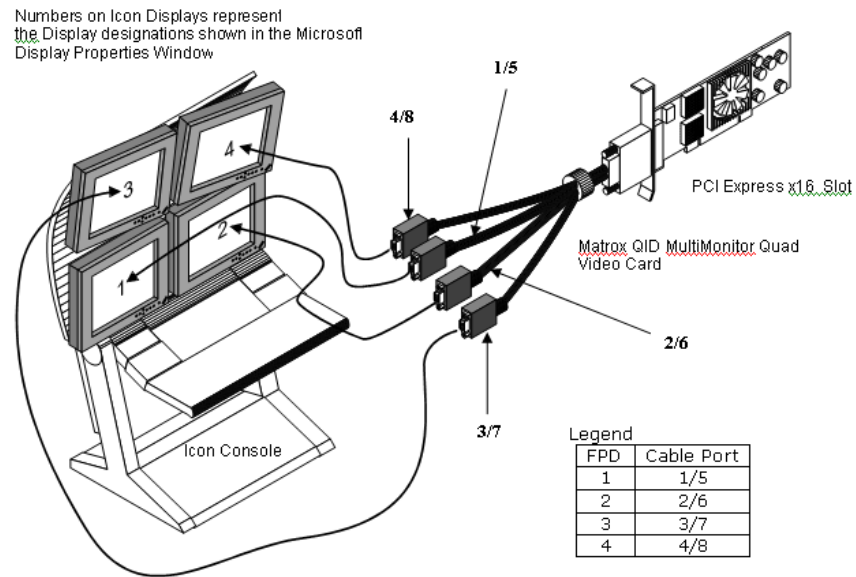


Figure 2-5 Four Monitor Configuration

2. Installation

2.9. Connecting Cables

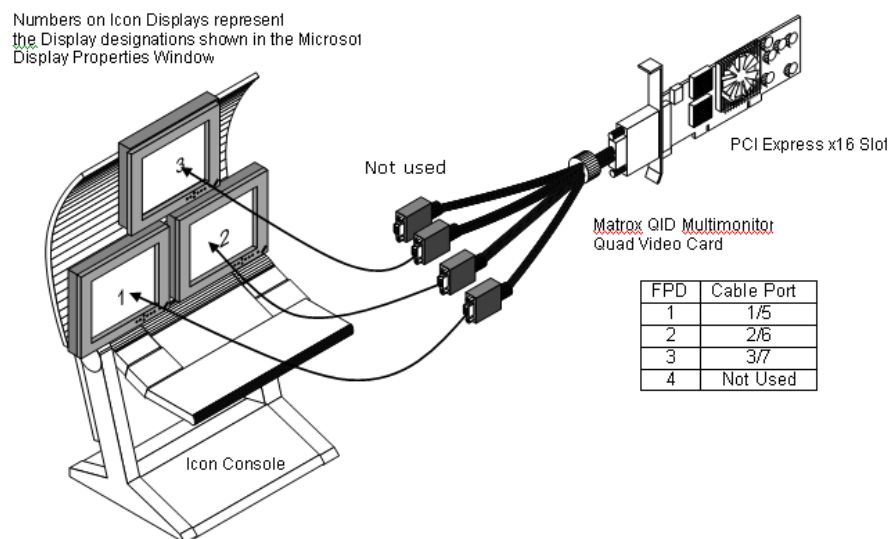


Figure 2-6 Three monitor configuration

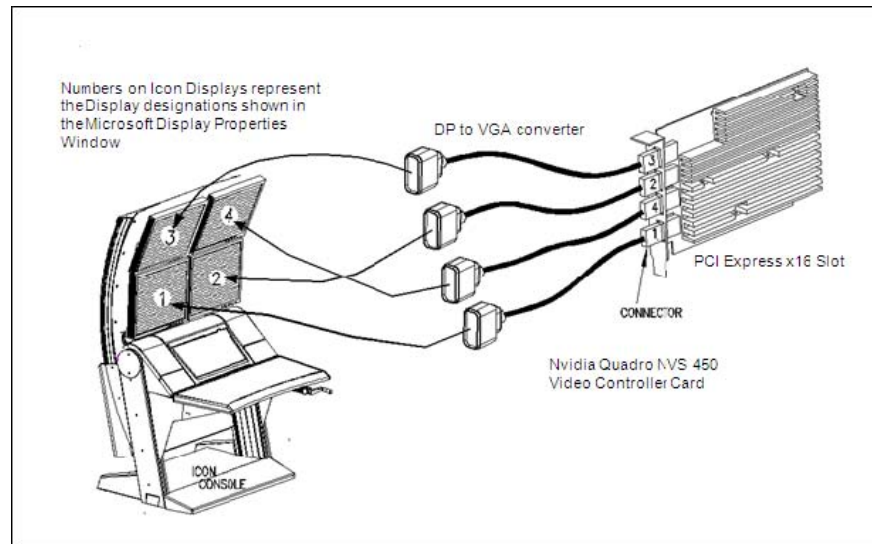


Figure 2-7 Quad screen video layout using NVIDIA quadro NVS450 video controller (Optional)



ATTENTION

Based on the Microsoft Windows XP 32-bit Professional, Microsoft Windows 7 Professional 32-bit, or Microsoft Windows 7 Professional 64-bit release, the monitor connection method differs in NVS450 Quad Display Controller.

For quad monitor connection, refer to the Table 2-5 to connect the monitors with NVS450 quad display controller

Table 2-5 NVIDIA Quadro NVS450 quad display controller quad monitor connection

Windows XP 32-bit Professional Quad Monitor Connection		Microsoft Windows 7 Professional 32-bit, or Microsoft Windows 7 Professional 64-bit Quad Monitor Connection	
FPD	Cable Port	FPD	Cable Port
1	1	1	1

2. Installation

2.9. Connecting Cables

Windows XP 32-bit Professional Quad Monitor Connection		Microsoft Windows 7 Professional 32-bit, or Microsoft Windows 7 Professional 64-bit Quad Monitor Connection	
FPD	Cable Port	FPD	Cable Port
2	2	4	2
3	3	2	3
4	4	3	4

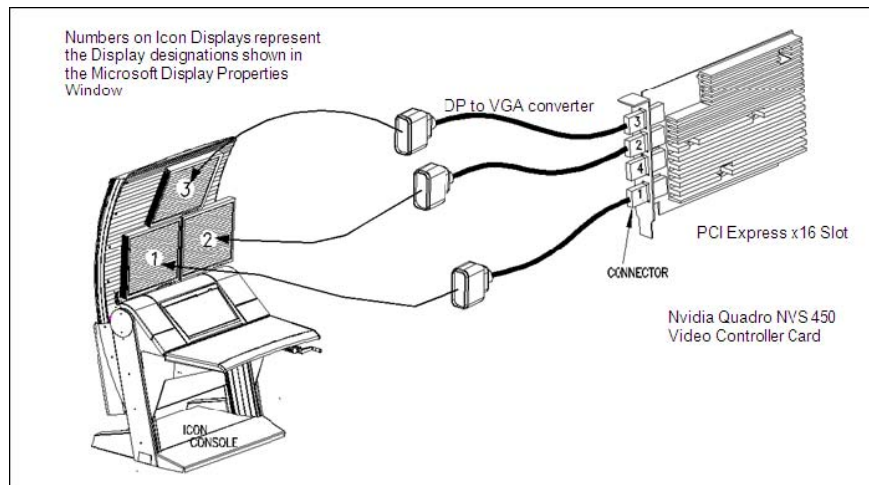


Figure 2-8 Triple monitor video layout using NVIDIA quadro NVS450 video controller (Optional)

For triple monitor connection, refer to the Table 2-6 to connect the monitors with NVS450 triple display controller.

Table 2-6 NVIDIA Quadro NVS450 quad display controller quad monitor connection

Microsoft Windows XP or Microsoft Windows 7 Professional 32-bit, Microsoft Windows 7 Professional 64-bit Triple Monitor Connection	
FPD	Cable Port
1	1
2	2
3	3
4	Do not use

2. Installation

2.10. Connecting Adapters

2.10 Connecting Adapters

Workstation serial ports

The workstation has two standard 9-pin serial ports COM 1 and COM 2. Refer to Figure 2-4 to view the serial ports. You must connect Honeywell devices to the correct serial port as defined in the following table.

Table 2-7 COM Port Connections

Honeywell Device	Connect to this Serial Port
OEP	COM1 (configured as COM3)
IKB	COM1 (configured as COM3)
Non-USB Touchscreen	COM2 (configured as COM4) Note: A USB port is used for a flat panel display touchscreen on the Icon Series Console.

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.

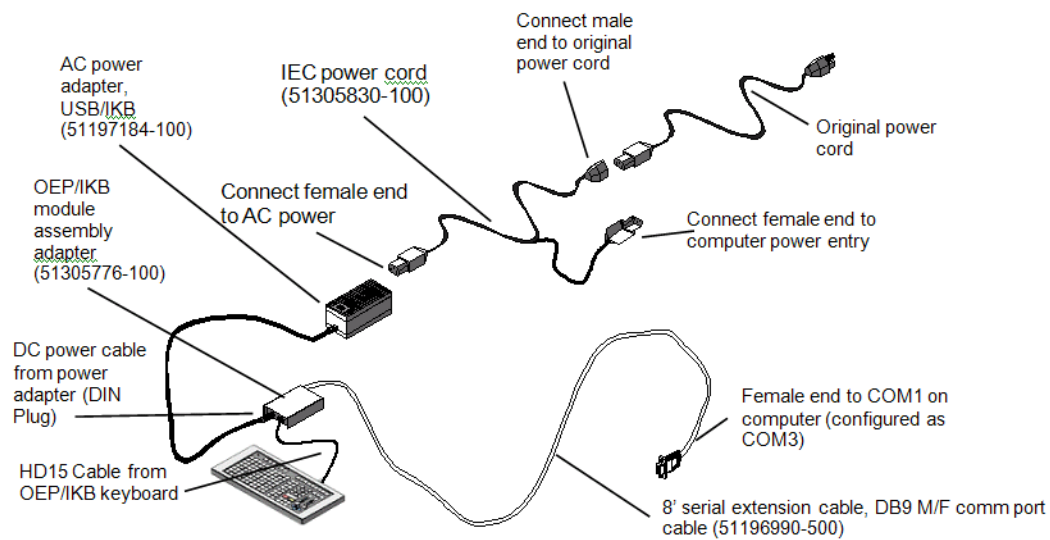


Figure 2-9 OEP/IKB Adapter Connections for OEP

2. Installation

2.10. Connecting Adapters

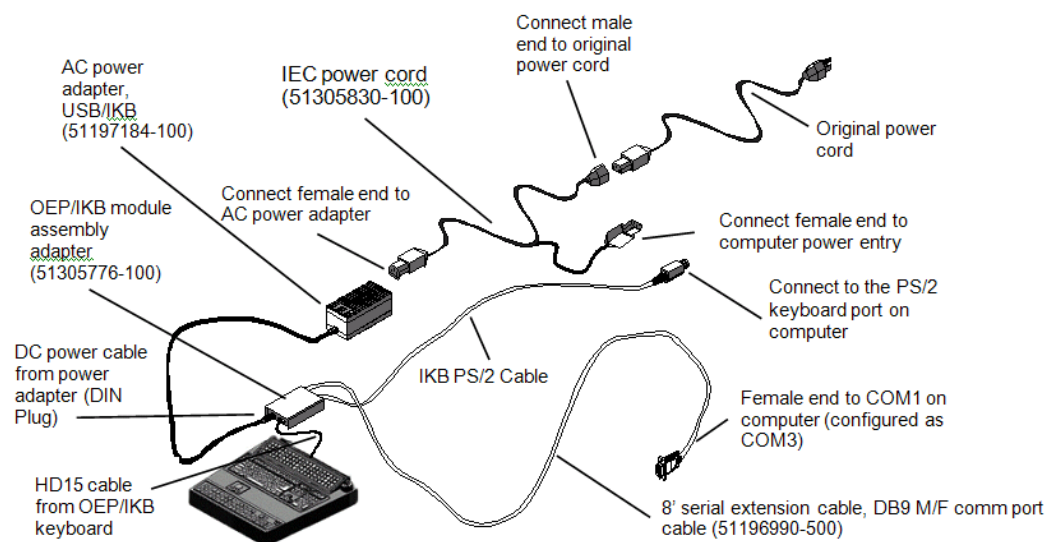


Figure 2-10 OEP/IKB Adapter Connections for IKB

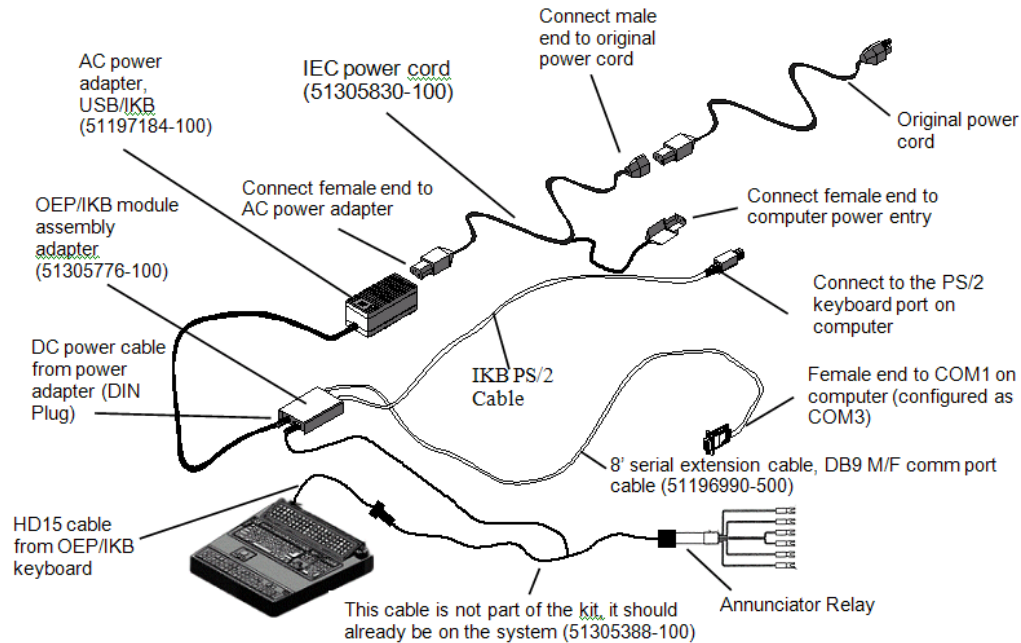


Figure 2-11 OEP/IKB Adapter Connections for IKB with Annunciator Relay

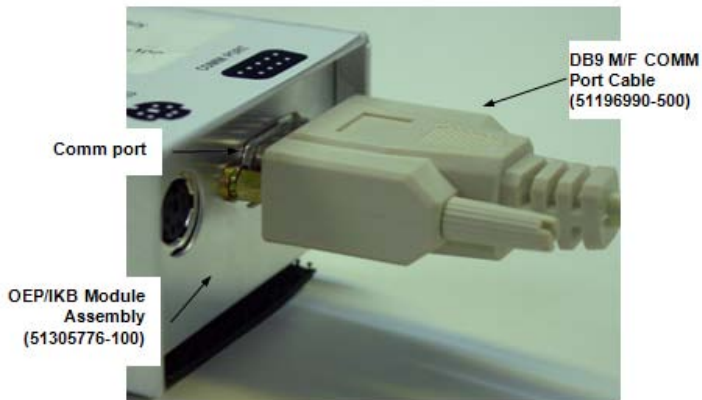

Install OEP/IKB adapter

Use this 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 it to the mouse PS/2 port on the workstation.

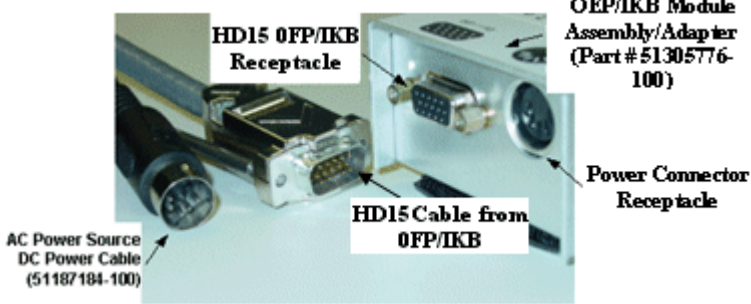
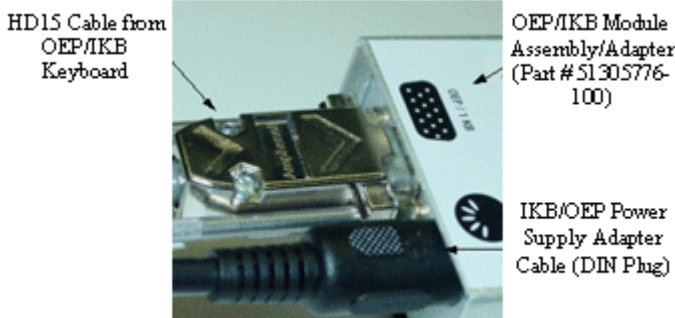
2. Installation

2.10. Connecting Adapters

Step	Action
4	<p>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).</p>  <p>The image shows a close-up of the OEP/IKB Module Assembly (51305776-100) with a DB9 M/F COM Port Cable (51196990-500) connected to its COM PORT. Labels point to the 'Comm port' and the 'OEP/IKB Module Assembly (51305776-100)'.</p>
5	<p>Secure the connection by tightening the thumbscrews located on the cable end.</p>
6	<p>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.</p>
7	<p>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).</p>  <p>The image shows the OEP/IKB Module Assembly (51305776-100) with two cables connected: the IKB PS/2 KB Cable (51305381-500) to the PS/2 KEYBOARD connector and the DB9 M/F COM Port Cable (51196990-500) to the COM1 PORT connector. Labels point to the 'OEP/IKB Module Assembly (51305776-100)', 'IKB PS/2 KB Cable (51305381-500)', and 'DB9 M/F COM Port Cable (51196990-500)'.</p>

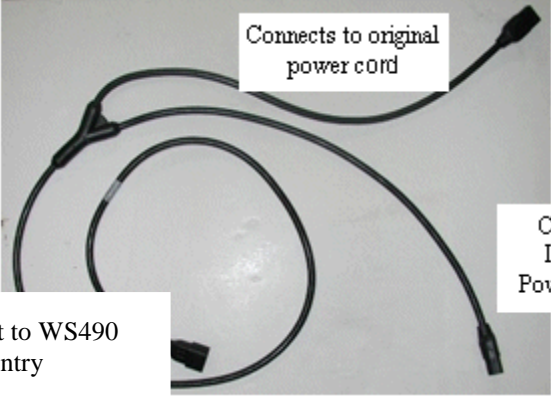
2. Installation

2.10. Connecting Adapters

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	<p>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).</p> 
10	<p>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/adaptor by tightening the thumbscrews located on the cable's end.</p> 

2. Installation

2.10. Connecting Adapters

Step	Action
11	<p>Connect the IEC power cord (51305830-100):</p> <ul style="list-style-type: none">• Connect one female end to the OEP/IKB power adapter (51197184-100).• Connect the other female end to the WS490 power entry.• Connect the male end to the original workstation power cord. 

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 to the touchscreen adapter box.
- Touchscreen is connected to the DB9 socket on the back of the monitor.
- Touchscreen is connected to the DB9 socket on the touchscreen frame.


Connect touchscreen adapter cable

Use this procedure to connect the supplied touchscreen adapter cable to the touchscreen device and the workstation.

Step	Action
1	Remove the existing DB9 touchscreen cable.

2. Installation

2.10. Connecting Adapters

Step	Action
2	<p>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 the DB9 socket on the box as illustrated.</p> 
3	<p>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.</p>
4	<p>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.</p> <p>Notes: If 3 or 4 do not apply to your configuration you must upgrade to a flat panel display for touchscreen functionality.</p> <p>If you are mounting in a console the CRT cover needs to be removed.</p>
5	<p>Connect the other end of the touchscreen cable (end with the 4-pin connector) to the COM2 serial port on the workstation.</p>
6	<p>Connect the 4-pin connector to the remote power circuit assembly card on the workstation.</p>

2. Installation

2.10. Connecting Adapters

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
	Check LCNP status
	Set monitor resolution
	Configure three monitors for Icon Series Consoles

Turn on power and check 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.
3	If the power light does not become solid green, refer to the “Advanced Troubleshooting” section of the <i>Dell Precision™ Workstation 490 User's Guide</i> .

3. Operation

3.1. Starting up your Workstation

Check LCNP status

If this is a TPS node with the LCNP4M 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

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:

- CRT type monitors: 75 Hz
- FPD type monitors: 60 Hz

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

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

Configure three monitors for Icon Series Consoles

Use this procedure if you have a quad video configuration and are not using all four of the available video display connectors on the installed video cards.

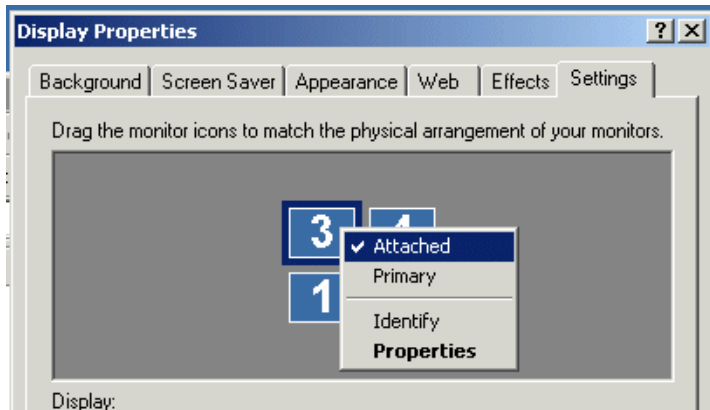


ATTENTION

If you are not using all available channels on the installed video cards, you must configure your monitors such that the monitors are connected to the lowest and highest channels.

For example: If you are using 3 monitors with the two dual video cards installed, you must:

- Attach the monitors to channels 1, 2 and 4.
- In the monitor settings, disable monitor 3 and leave monitors 1, 2, and 4 attached.

Step	Action
1	Verify that the monitors are physically attached to at least the highest and lowest video channels. Refer to Figure 2-6, Three monitor configuration.
2	Select Start > Settings > Control Panel .
3	Double-click the Display Icon Series and select the Settings tab.
4	Right-click on monitor to be disabled (most likely number 3).
5	Select Attached to uncheck the option and disable the monitor. Click OK. 

3. Operation

3.2. Network Connections

3.2 Network Connections

Overview

Each 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 workstation platform. A Dual NIC option is available for FTE. The on board Ethernet connection must be disabled in the System BIOS prior to installation of the Dual Intel PRO 100/1000 controller. If you are using FTE, you must install the FTE cables according to the specific instructions in the *FTE Installation and Service Guide*. The following table provides the network controller details for R4xx only.

Model No.	Description
NE-NICSS1	Single NIC card, PCIE, server
NE-NICS02	Dual port NIC card, PCIE, STP
NE-NICS03	NIC card PCIe GB ET Chipset
NE-NICS01	Intel PRO 100/1000 Dual NIC
MZ-PCEB23	Intel PRO 1000 Single NIC - Desktop Adapter

LCN network

The connection to the LCN is made via an optional Local Control Network Processor LCNP4M (mid size) card. This card provides the communication path for the workstation to other LCN modules. The LCN Network Connection consists of an LCNP4M card, a MAU cable and the LCN MAU (Media Access Unit). The LCNP4, MAU and MAU cable are required to connect to the LCN Network. For the workstation the LCNP4M consists of a PCI/PCI-X Express 3.3 / 5.0 Volt LCNP4M medium size card, a MAU cable and the LCN MAU.

The LCN node address should be set to the address the customer requires and configured in the Network Configuration File (NCF). 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 node. This is consistent with the current LCN standard procedure.

Refer to *LCN System Installation*, Subsection 3.6 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 LCNP4M board to the LCN Media Access Unit (MAU) contained in a metal housing.

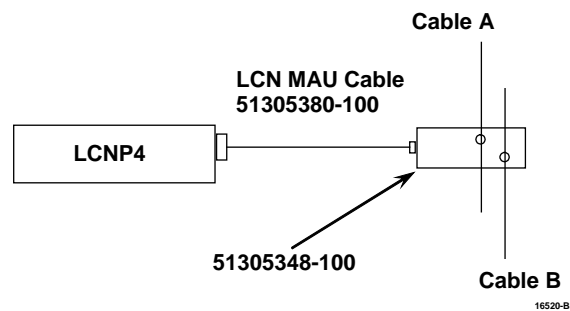


Figure 3-1 LCN MAU to LCN Cabling

MAU connection

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

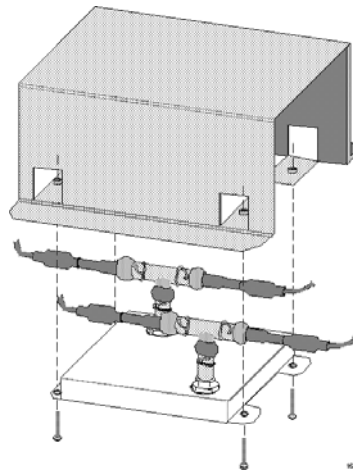


Figure 3-2 LCN MAU to LCN Cable T-Connections

3. Operation

3.2. Network Connections

Z-Console connection to the LCN coax cable

The mounting for the LCN MAU is located in the footrest area of the Ergonomic (Z) console.

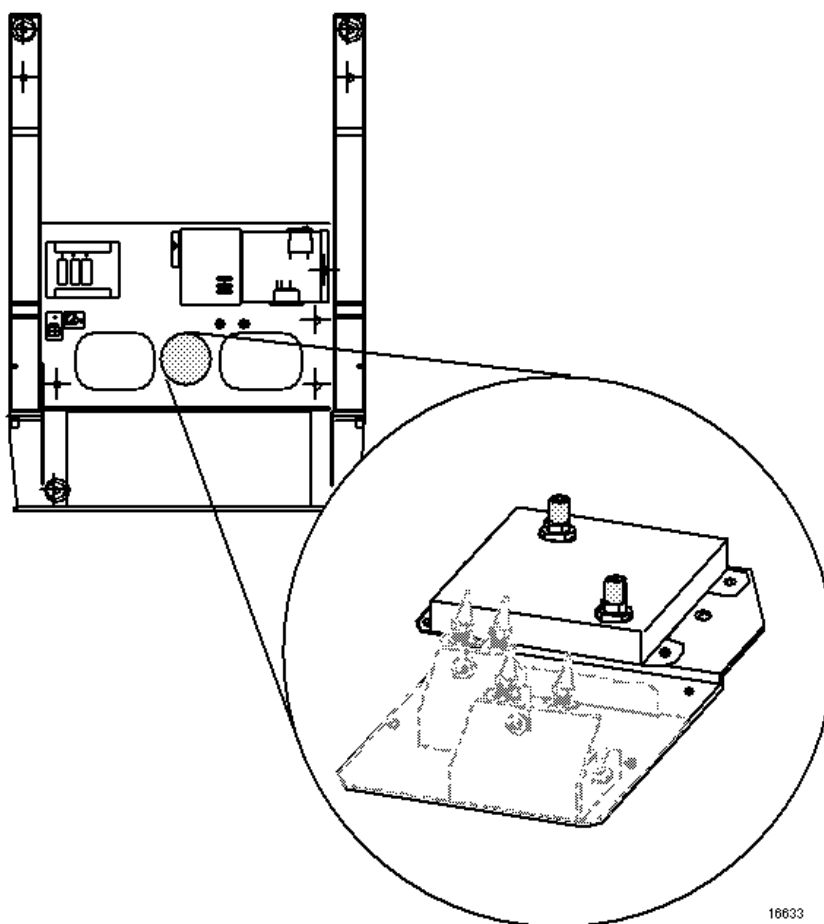


Figure 3-3 Location of LCN MAU

Connecting LCN coax to LCN MAU in Z-Console

Step	Action
1	Connect the color-coded A cables to the color-coded T-connector on the BNC connector marked A.
2	Connect the color-coded B cables to the color-coded T-connector on the BNC connector marked B.

Classic Console connection to the LCN Coax Cable

The LCN MAU is mounted to the EMC cover that is attached to the rear of the platform enclosure.

Step	Action
1	Follow the color-coding while connecting the color-coded A cables to the color-coded T-connector on the BNC connector marked A.
2	Follow the color-coding while connecting the color-coded B cables to the color-coded T-connector on the BNC connector marked B.

3. Operation

3.2. Network Connections

4. Servicing

4.1 Accessing the Enclosure of the Workstation

Overview

This section contains procedures for removing the workstation from a Z or EZ console, classic console, and a cabinet. The procedures apply to the workstation.

Before you begin servicing



Attention

Perform a complete system shutdown before you begin any of the procedures in this section.



CAUTION

Before you begin any of the procedures in this section, follow the safety instructions in the *Dell System Information Guide*.



CAUTION

To avoid electrical shock, always unplug your workstation from the electrical outlet before opening the cover.



Attention

Be careful when opening the workstation cover to ensure that you do not accidentally disconnect cables from the system board.

Perform workstation shutdown

The following workstation shutdown procedure is applicable to workstations mounted in a Z or EZ console, classic console, or cabinet.

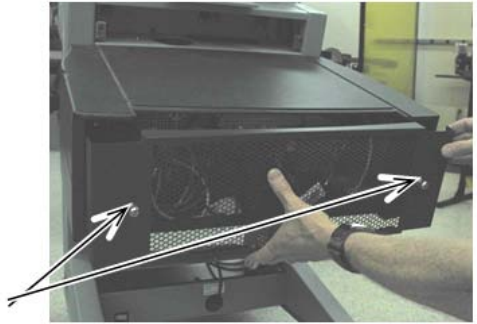
4. Servicing

4.1. Accessing the Enclosure of the Workstation

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 in a Z or EZ console

If the workstation is mounted in the Z or EZ console, you must remove it from the furniture before servicing.

Step	Action
1	<p>From the rear of the console, loosen the fasteners on the rear cover and remove the rear cover.</p> <div data-bbox="686 1178 1159 1499"></div> <p>Rear Cover fasteners</p>
2	<p>The electronic module sleeve is held in place by detents on the top and bottom of the cover, near the back edge. Lift the back edge of the cover slightly to allow the top detents to clear the top of the workstation. You may also have to push down on the bottom of the cover as you slide it toward you and off the workstation.</p>

4. Servicing

4.1. Accessing the Enclosure of the Workstation



Step	Action
	
3	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.
4	Loosen the M5 hex locknuts on the each retaining bracket and remove them. These will be re-installed later in this document. 
5	Lift the workstation off the frame and place it on a suitable work surface.

Remove the workstation from a classic console (fixed or slide mount)

If the workstation is mounted using the fixed or slide mount option, you must remove it from the furniture before servicing. The images below show a fixed mount option.

4. Servicing

4.1. Accessing the Enclosure of the Workstation


Step	Action
1	At the front of the console, 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
2	Open the rear console door to access the console enclosure.
3	<p>If the retaining brackets are attached, loosen the two captivated fasteners on each retaining bracket and remove them. These will be re-installed later in this document.</p> 
4	<p>If using fixed mount option, slide the workstation from the console mounting railings and place it on a suitable work surface.</p> <p>If using slide mount option, pull the slide tray out and place the workstation on a suitable work surface or you may service the workstation while still on the slide tray.</p> 

4. Servicing

4.1. Accessing the Enclosure of the Workstation

Remove the workstation from a cabinet (fixed or slide mount)

If the workstation is mounted using the fixed or slide mount option, you must remove it from the furniture before servicing. The image below 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.
4	<p>If the retaining brackets are attached, loosen the two captivated fasteners on each retaining bracket and remove them. These will be re-installed later in this document.</p> 
5	<p>If using a fixed mount option, slide the workstation from the cabinet mounting railings and place it on a suitable work surface.</p> <p>If using a slide mount option, pull the slide tray out and place the workstation on a suitable work surface or you may service the workstation while still on the slide tray.</p>

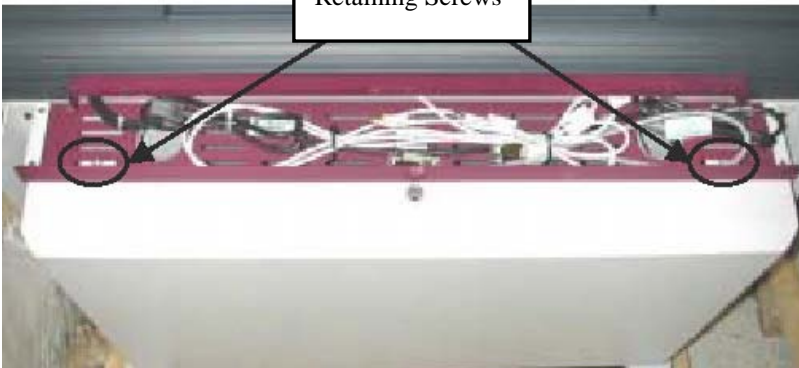

Remove the workstation from a Icon series console

If the workstation is mounted in an Icon Series console, you must remove it from the furniture before servicing.

Step	Action
1	Perform a SHUTDOWN of the Windows operating system.
2	Turn off power to the workstation if it has a separate power switch, and disconnect the AC power cord.

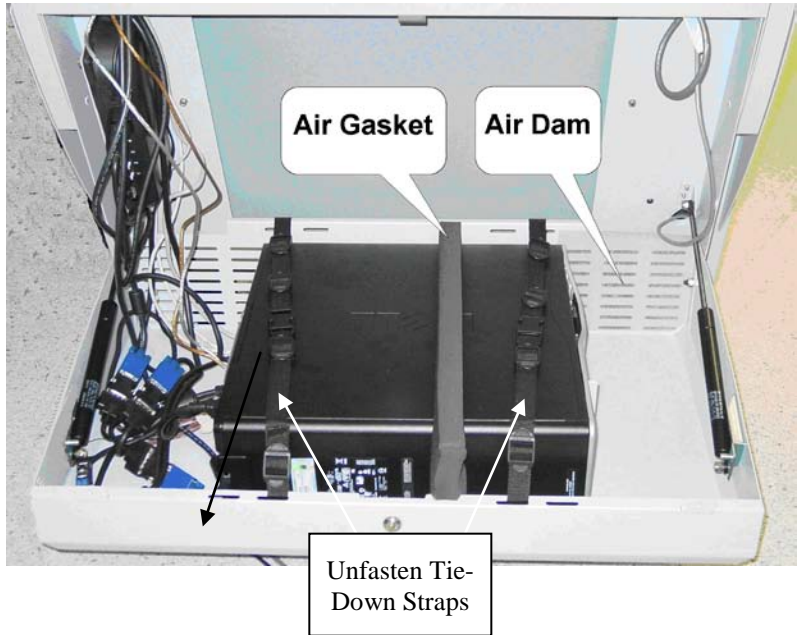
4. Servicing

4.1. Accessing the Enclosure of the Workstation

Step	Action
3	Turn off power to the console station.
4	<p>From the back of the console, remove the two retaining screws that secure the electronic enclosure to the lower valance.</p> <p>Retaining Screws</p> 
5	<p>If you have the Power Worksurface version, stand to the side, the enclosure lowers atomically. Use the key to unlock the electronics enclosure and open the latch.</p> <p>If you have the earlier Icon Series Console, hold the top of the electronic enclosure and push down to open it and guide it down to the floor.</p> 

4. Servicing

4.1. Accessing the Enclosure of the Workstation

Step	Action
6	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.
7	Unfasten the tie-down straps and remove air gasket. 
8	Remove the workstation from the enclosure and set on a secure surface.



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 console or cabinet.

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

4. Servicing

4.2. Servicing the LCNP4M

Step	Action
2	<p>From the back of the workstation, slide the cover release latch to the left and gently lift up on the cover.</p>  
3	<p>Service the hardware components as required:</p> <ul style="list-style-type: none">• For servicing the LCNP4M board, refer to Section 4.2 in this document.• For servicing other Honeywell installed options, refer to Section 4.3 in this document.• For other components, refer to the Dell service manual.

4.2 Servicing the LCNP4M

LCNP4M board description

The LCNP4M board has 16 MB of on-board memory that is soldered to the board.

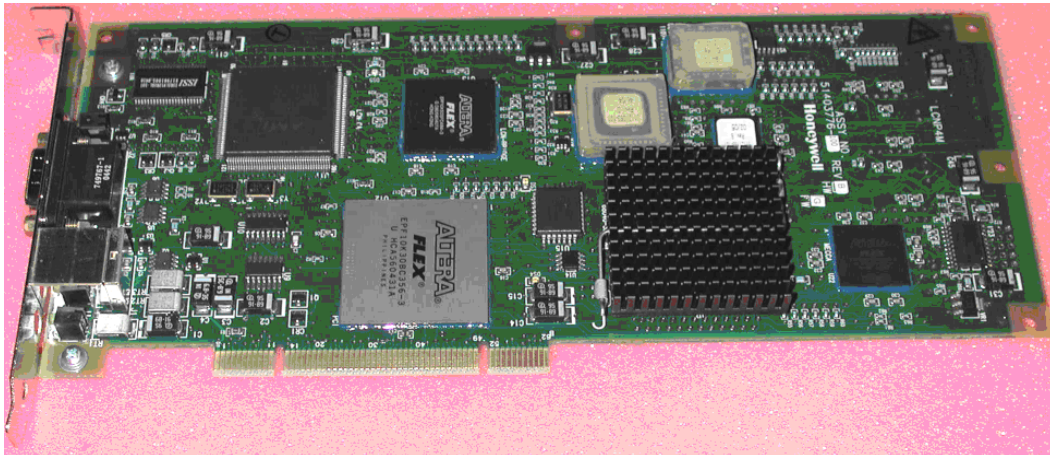


Figure 4-1 LCNP4M Board

Replace the LCNP4M board

The LCNP4M board is located in the PCI-X slot 5 in the workstation. Use this procedure to replace the LCNP4M assembly.




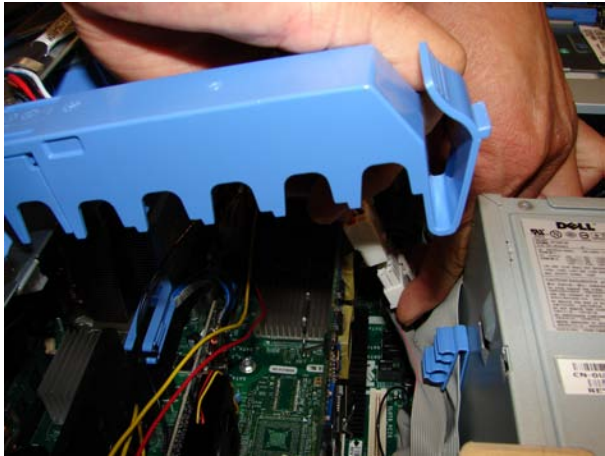
ESD HAZARD

The LCNP4M board is an electrostatically sensitive device. Use a grounding strap and grounded work surfaces and equipment when handling this component. Store and transport parts only in electrostatically safe containers.

4. Servicing

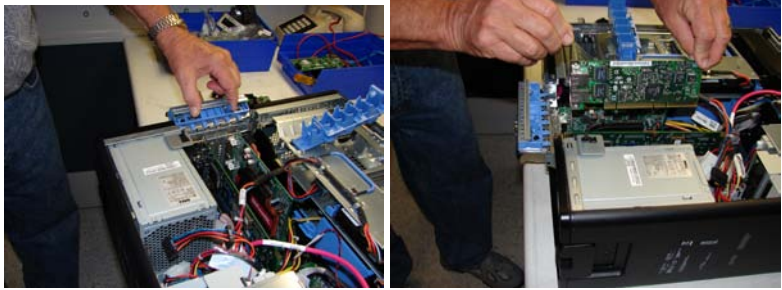
4.2. Servicing the LCNP4M

Step	Action
1	Perform all necessary procedures in Section 4.1 to access the LCNP4M assembly including: <ul style="list-style-type: none">• Shut down system• Disconnect power from the workstation• Remove the workstation from furniture• Accessing the inside of the electronics enclosure• Disconnect cable from LCNP4M board.
2	Disconnect the LCN MAU cable from the LCNP4M board.

Step	Action
3	<p>Release the tab on the card retention arm, and lift it up to access the LCNP4M board. Disconnect the white connector on the drive power cable.</p>  

4. Servicing

4.2. Servicing the LCNP4M

Step	Action
4	<p>While wearing a grounded ESD wrist strap, lift the card holder over to expose the mounting screws. Remove the LCNP4M board assembly from the PCI-X slot 5.</p> 
5	Verify that the new LCNP4M board has the correct LCN pin assignments.
6	Insert the new LCNP4M board assembly in the PCI-X slot 5.
7	Reconnect the white connector on the drive power cable. Replace the card holder and card retention arm making sure the tab locks into place.
8	Replace the workstation cover and place the workstation in the furniture using the appropriate installation procedures in Section 2, "Installation".
9	Press the Power On/Off button on the front of the platform to turn the power back on.
10	Run the Configurator to re-establish the correct node number.
11	Reconnect the LCN MAU cable.
12	Restart the Operating System.

4.3 Replacing/Adding Other Options

Overview

This section contains procedures for adding or replacing optional components 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.


Replace/add video card

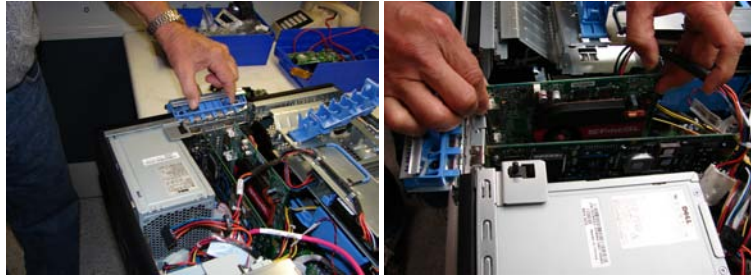
The video card is located in the PCI-E slot 2 in the workstation. Use this procedure to replace the video card.

Step	Action
1	<p>Perform all necessary procedures in Section 4.1 to access the video card in the PCI-E slot 2, including:</p> <ul style="list-style-type: none">• Shut down system• Disconnect power from the workstation• Remove the workstation from furniture• Accessing the inside of the electronics enclosure• Disconnect cables from the card being replaced.

4. Servicing

4.3. Replacing/Adding Other Options

Step	Action
2	<p>Remove any adapters and cables from the video card. Release the tab on the card retention arm and lift it up to access the video card slot. Disconnect the white connector on the drive power cable.</p> 

Step	Action
3	<p>While wearing a grounded ESD wrist strap, lift the card holder over to expose the mounting screws. Remove the video assembly from the PCI-E slot 2.</p> 
4	<p>Insert the new single/dual or quad video card in the PCI-E slot 2.</p> <p>Note: Do not mix flat panel displays and CRTs in a multi-screen configuration on a single platform.</p>
5	<p>Reconnect the white connector on the drive power cable. Replace the card holder and card retention arm making sure the tab locks into place.</p>
6	<p>Replace the workstation cover and place the workstation in the furniture using the appropriate installation procedures in Section 2, "Platform Installation".</p>


Replace/add the dual NIC


The dual NIC card is located in the PCI-X slot 6 in the workstation. Use this procedure to replace or add the dual NIC card. If you are adding the FTE dual NIC, you must have access to the *FTE Installation and Service Guide*.

Step	Action
1	<p>Perform all necessary procedures in Section 4.1 to access the dual NIC card in the PCI-X, slot 6, including:</p> <ul style="list-style-type: none"> • Shut down system • Disconnect power from the workstation • Remove the workstation • Accessing the inside of the electronics enclosure • Disconnect cables to the card being replaced.

4. Servicing

4.3. Replacing/Adding Other Options

Step	Action
2	<p>Release the tab on the card retention arm, and lift it up to access the NIC card slot. Disconnect the white connector on the drive power cable.</p> 

Step	Action
3	<p>While wearing a grounded ESD wrist strap, lift the card holder over to expose the mounting screws.</p>  <p>If you are replacing an existing NIC, remove it from the PCI-X slot 6.</p>
4	Insert the new NIC card in PCI-X slot 6.
5	Reconnect the white connector on the drive power cable. Replace the card holder and card retention arm making sure the tab locks into place.
6	<p>Replace the workstation cover and place the workstation in the furniture using the appropriate installation procedures in Section 2, "Platform Installation".</p> <p>Note: You must reconnect your FTE cables according to the procedures in the <i>FTE Installation and Service Guide</i> in order to verify that the two connectors on the NIC are connected to the right switches.</p>


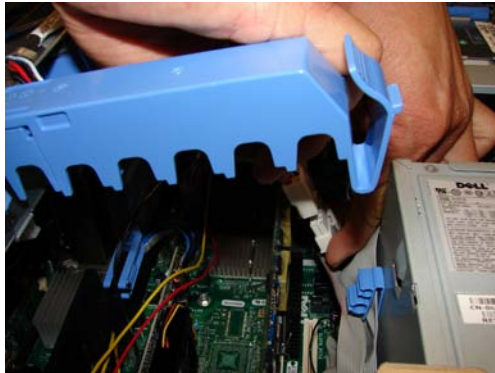
Replace/add the power adapter card

The power adapter card is located in the PCI-E slot 1 in the workstation. Use this procedure to replace or add the power adapter card.

Step	Action
1	<p>Perform all necessary procedures in Section 4.1 to access the power adapter card in the PCI-E slot 1, including:</p> <ul style="list-style-type: none"> • Shut down system • Disconnect power from the workstation • Remove the workstation from furniture • Accessing the inside of the electronics enclosure • Disconnect cables to the card being replaced.

4. Servicing

4.3. Replacing/Adding Other Options

Step	Action
2	<p>Release the tab on the card retention arm and lift it up to access the power adapter card slot. Disconnect the white connector on the drive power cable.</p>  
3	<p>Disconnect the 4-pin Molex connector from the Y cable and remove the power adapter card.</p>
4	<p>Insert the new power adapter card in PCI-E slot 1.</p>
5	<p>Connect the 4-pin molex connector on the power adapter card assembly's cable harness to the Y power cable.</p>
6	<p>Reconnect the white connector on the drive power cable. Replace the card holder and card retention arm making sure the tab locks into place.</p>
7	<p>Replace the workstation cover and place the workstation in the furniture using the appropriate installation procedures in Section 2, "Platform Installation".</p>


Add additional memory to the workstation



ESD HAZARD

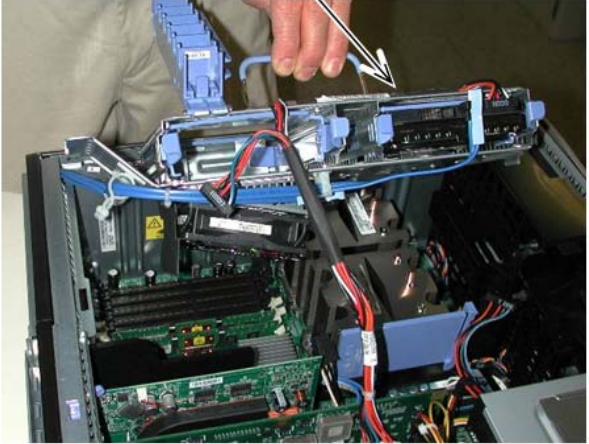

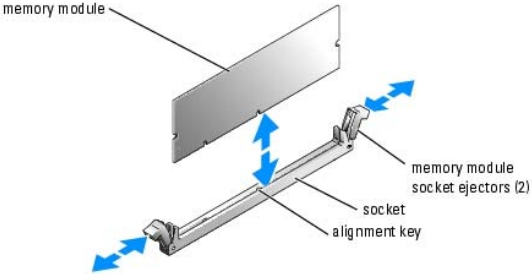
Memory is electrostatically sensitive. Use a grounding strap and grounded work surfaces and equipment when handling these components. Store and transport parts only in electrostatically safe containers.

Use this procedure to add one, two, or three additional gigabits of memory to the workstation. Refer to Figure 1-6 for memory module configuration.

Step	Action
1	Perform all necessary procedures in Section 4.1 to access the memory slots, including: <ul style="list-style-type: none">• Shut down system• Disconnect power from the workstation• Remove the workstation from furniture• Accessing the inside of the electronics enclosure.
2	Release the tab on the card retention arm and lift it up. Disconnect the white connector on the drive power cable. 

4. Servicing

4.3. Replacing/Adding Other Options

Step	Action
3	<p>Lift the card holder by its handle.</p> 
	<p>CAUTION</p> <p>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.</p>
4	<p>The DIMM sockets are now exposed. Refer to Figure 1-6 for DIMM socket configuration.</p>
5	<p>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.</p> 
6	<p>Align the memory module's connector with the alignment key on the memory</p>

Step	Action
	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.
7	Press down on the memory module with your thumbs while pulling up on 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.
8	Lower the card holder back into place.
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, "Platform Installation".

4.4 Spare Parts Lists

Ordering workstation spare parts

This section contains lists of spare parts available from Honeywell.

Table 4-1 Spare Parts for the Workstation

Description	Part No.
1 GB memory expansion Ram (2-512 MB)	51153731-911
Processor (4 MB L2)	51153731-907
3.5 inch Floppy Drive	51153731-905
DVD±RW	51153731-909
80 GB Seagate, 7.2K RPM SATA Hard Drive	51153731-910
Mouse (USB)	51153731-901
Keyboard (USB)	51153731-902
Video card	51153731-908

4. Servicing

4.4. Spare Parts Lists

Description	Part No.
Speakers	51199586-911
LCNP4M Assembly	51403776-100
Dual NIC for FTE	51197085-200
Power Adapter card	51305840-100

Other spare parts from Honeywell

The following table lists part numbers for Honeywell furniture.

Table 4-2 Spare Parts for Honeywell Furniture

Description	Part No.
Blank panel front cover, 1U (1.75 in)	51201248-100
Air duct baffle, 1U (1.75 in)	51303521-100
Blank panel front cover, 2U (3.5 in)	51201248-200
Air duct baffle, 2U (3.5 in)	51303521-200
Blank panel front cover, 3U (5.25 in)	51201248-300
Air duct baffle, 3U (5.25 in)	51303521-300
Blank panel front cover, 4U (7 in)	51201248-400
Air duct baffle, 4U (7 in)	51303521-400
Screw, M5 x 16, self tapping for blank front panel covers	51195168-616
Screw, M5 x 12, hex for air baffles	51108888-612
Washer, (8 for front covers, 4 for air baffles)	51109931-100

4.5 Verifying Correct 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 workstation are listed in Table 4-3, so that you may verify the correct settings.

Accessing BIOS

Use this procedure to access BIOS and view the settings. **DO NOT** attempt this procedure unless you are familiar with BIOS.

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

BIOS Settings for Dual Processor

This table lists the BIOS settings configured in the factory for the dual processor workstation.

Table 4-3 BIOS Settings for Dual Processor

System Info	
System	Dell System Workstation 490
BIOS Version	A06 or greater
Processor Info CPU 0	
Type	Intel® XEON™ CPU 2.66 GHz or greater
Clock Speed	2.66 GHz or greater
Bus Speed	1333 MHz or greater
L2 Cache	4 MB or greater
ID	06F6 or equivalent
64 Bit	Yes (Intel® EM64T)
Processor Info CPU 1	
Type	Intel® XEON™ CPU 2.66 GHz or greater
Clock Speed	2.66 GHz or greater
Bus Speed	1333 MHz or greater
L2 Cache	4 MB or greater
ID	06F6 or equivalent

4. Servicing

4.5. Verifying Correct BIOS Settings

64 Bit	Yes (Intel® EM64T)
Boot Sequence	
	Onboard or USB CD-ROM Drive
	Onboard or USB Floppy Drive
	Onboard SATA Hard Drive
	Onboard Network Controller
Drives	
Diskette Drive	Internal
Drive 0: SATA -0	ON
Drive 1: SATA-1	OFF
Drive 2: SATA -2	OFF
Drive 3: SATA-3	OFF
Drive 4: SATA-4	OFF
Drive 5: PATA-0	ON
Drive 6: PATA-1	OFF
SATA Operation	RAID Auto detect / AHCI
Smart Reporting	Off
Onboard Devices	
Integrated NIC	ON OFF if FTE is installed for TPS systems
Integrated Audio	ON
USB Controller	No Boot
Front USB Ports	ON
LPT Port Mode	PS/2
LPT Port Address	378H
Serial Port 1	AUTO
Serial Port 2	AUTO
PS/2 Mouse Port	ON
Video	
Primary Video	PEG (ATI V3400, default) PCIe x 16 (Matrox QID)
Performance	
Speed Step	OFF
Virtualization	OFF
Limit CPUID Value	OFF
Snoop Filter	ON
ACL Prefetch	OFF
HW Prefetch	ON

FSB Optimization	OFF
Security	
Admin Password	Not set
System Password	Not set
Password Changes	Unlocked
Chassis Intrusion	OFF
TPM Security	OFF
Execute Disable	ON
Power Management	
AC Recovery	OFF
Auto Power On	OFF
Auto Power Time	12:00 AM
Low Power Mode	OFF
Remote Wakeup	OFF
Suspend Mode	S3
Maintenance	
Service Tag	XXXXXXX
SERR Message	OFF
Load Defaults	Cancel
Event Log	Mark All Entries
POST Behavior	
Fast Boot	OFF
Numlock Key	ON
OS Install	OFF Note: This BIOS parameter appears when there is 3.0 GB or more of memory installed.
Post Hotkeys	Setup & Boot Menu
Keyboard Errors	Report

BIOS Settings for Single Processor

This table lists the BIOS settings configured in the factory for the single processor workstation.

Table 4-4 BIOS Settings for Single Processor

System Info	
System	Dell System Workstation 490
BIOS Version	A06 or greater
Processor Info	

4. Servicing

4.5. Verifying Correct BIOS Settings

Type	Intel® XEON™ CPU 2.66 GHz or greater
Clock Speed	2.66 GHz or greater
Bus Speed	1333 MHz or greater
L2 Cache	4 MB or greater
ID	06F6 or equivalent
64 Bit	Yes (Intel® EM64T)
Boot Sequence	
	Onboard or USB CD-ROM Drive
	Onboard or USB Floppy Drive
	Onboard SATA Hard Drive
	Onboard Network Controller
Drives	
Diskette Drive	Internal
Drive 0: SATA -0	ON
Drive 1: SATA-1	OFF
Drive 2: SATA -2	OFF
Drive 3: SATA-3	OFF
Drive 4: SATA-4	OFF
Drive 5: PATA-0	ON
Drive 6: PATA-1	OFF
SATA Operation	RAID Autodetect / AHCI
Smart Reporting	Off
Onboard Devices	
Integrated NIC	ON OFF if FTE is installed for TPS systems
Integrated Audio	ON
USB Controller	No Boot
Front USB Ports	ON
LPT Port Mode	PS/2
LPT Port Address	378H
Serial Port 1	AUTO
Serial Port 2	AUTO
PS/2 Mouse Port	ON
Video	
Primary Video	PEG (ATI V3400, default) PCIe x 16 (Matrox QID)
Performance	
SpeedStep	OFF

4. Servicing

4.5. Verifying Correct BIOS Settings

Virtualization	OFF
Limit CPUID Value	OFF
Snoop Filter	ON
ACL Prefetch	OFF
HW Prefetch	ON
FSB Optimization	OFF
Security	
Admin Password	Not set
System Password	Not set
Password Changes	Unlocked
Chassis Intrusion	OFF
TPM Security	OFF
Execute Disable	ON
Power Management	
AC Recovery	OFF
Auto Power On	OFF
Auto Power Time	12:00 AM
Low Power Mode	OFF
Remote Wakeup	OFF
Suspend Mode	S3
Maintenance	
Service Tag	XXXXXXX
SERR Message	OFF
Load Defaults	Cancel
Event Log	Mark All Entries
POST Behavior	
Fast Boot	OFF
Numlock Key	ON
OS Install	OFF
Post Hotkeys	Setup & Boot Menu
Keyboard Errors	Report

4. Servicing

4.5. Verifying Correct BIOS Settings

Honeywell

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