Honeywell

Honeywell Process Solutions

T610 Honeywell Server

Planning, Installation, and Service Guide

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Honeywell

Notices and Trademarks

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About This Document

This document contains installation and service information for the Dell PowerEdge T610 Server (T610 Honeywell Server). The instructions and service information contained herein address the server 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 server is not a standard Dell model and you cannot order it independently from Dell.

Release Information

Document Name	Document ID	Release Number	Part no
T610 Honeywell Server Planning, Installation, and Service Guide - pisg610	EP-DPCX15	Release Independent	51154292-909

Revision Notes

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

Revision	Revision Date	Revision Notes
A	09/2010	ECO P300127
B	08/2011	ECO P310057
C	01/2012	ECN 2011-800
D	09/2013	Updated to include 8GB memory configuration for Experion R410 release.

References

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

Document Title	Doc ID
TPS Users	
TPS System Site Planning	SW02-550 or later

Document Title	Doc ID
TPS System Implementation Guide for Windows 2003/XP	TP08X
TPS System Planning Guide for Windows 2003/XP	TP10X
TPS System Administration Guide for Windows XP/2003	TP06X
Experion PKS Users	
Experion PKS Overview	EP-DCSX32 or later
Experion PKS Software Installation and Upgrade Guide	EP-DCXX12 or later
Server and Client Planning Guide	EP-DSX132 or later
Server and Client Configuration Guide (for Experion PKS)	EP-DSXX22 or later
Experion PKS Operators Guide	EP-DSXX42 or later
FTE Users	
Fault Tolerant Ethernet Installation and Service Guide	FE05

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.

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

Symbol	Definition
	**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 Overview

About T610 Honeywell Server

Platforms sold by Honeywell are engineered for the process control mission of Experion and TPS systems to provide consistent and 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. The computer manufacturer builds the platforms according to Honeywell specifications.

Honeywell engineering has tested the T610 Honeywell Server with other Honeywell hardware and software and has qualified its use for specific configurations as identified in the Software Change Notice (SCN). This server is not a standard Dell model and cannot be ordered independently from Dell. The Technical Assistance Center (TAC) is trained to support Honeywell platforms. Use of any other server, including a similar Dell model, is considered a project special and its TAC support is limited according to the services policy.

This release of the server is based upon RAID-5 and dual power supply design. This server provides computer-based functionality for the Experion system and the TPS system. For TPS systems and certain Experion systems configured with Fault Tolerant Ethernet (FTE), the server has an LCNP4E card installed, which allows connection to the TotalPlant Process Network (TPN) coax through the LCN Media Access Unit (MAU). Additionally, the server connects to the Ethernet or FTE using the on board NIC interface or an optional dual NIC card.

Software requirements

The server runs on the following operating systems.

- Windows Server 2003 SP2 for Experion R3xx and TPS 4xx releases.
- Windows Server 2008 non HyperV media,32-bit for Experion R400.x releases
- Windows Server 2008R2 64-bit for Experion R410.x releases.

The server platform runs the latest version of Application Processing Platform (APP Node) or Experion Server (ESVT, ESV, ACE, EHG, or SIM).

BIOS configuration

All server platforms must have BIOS version 1.3.6 or later.

1.2 Description

Honeywell server model number

This user's guide applies to the Honeywell server platform identified in the following table.

Model Number	Description	Part Number
MZ-PCSV22	T610 Honeywell server (Tower Unit)	51154292-100
MZ-PCSV32	T610 Honeywell server (Rack Mount)	51154292-200
MZ-PCSV23	T610 Honeywell MLK server (Tower Unit)	51154292-300
MZ-PCSV33	T610 Honeywell MLKserver (Rack Mount)	51154292-400

Figure 1-1 T610 Honeywell Server (MZ-PCSV22 and MZ-PCSV23) Tower Unit

Figure 1-2 T610 Honeywell Server (MZ-PCSV32 and MZ-PCSV33) Rack Mount

Equipment configuration

The server platform is used for TPS and Experion nodes. Server model number MZ-PCSV32 and MZ-PCSV33 must be mounted only on the 1-meter deep Honeywell cabinet (MP-C1MCB1). Server model number MZ-PCSV22 is a tower unit.

When mounted on a cabinet, the enclosure uses 5U of space. The mounting hardware is pre-assembled in the Honeywell factory.

This server cannot be mounted in the Icon Series console, Classic, or Z/EZ console; hence, this document does not include instructions for these types of installations.

Electronics module

The electronics assemblies for the server platform CPU are as follows.

- For 51154292-100 & 51154292-200

  Intel Xeon 2.8 GHz (Intel X5560) with 5 x 146 GB Hard Disks, RAID-5 and 2GB (2x1GB) DDR3 advanced ECC memory, 120/240 VAC with level two and three cache memory options.

- For 51154292-300 & 51154292-400

  Intel Xeon 2.4 GHz (Intel E5620) with 5 x 146 GB Hard Disks, RAID-5 and 2GB (2x1GB) DDR3 advanced ECC memory, 120/240 VAC with level two and three cache memory options.

The peripheral electronics assemblies are based upon the Peripheral Component Interconnect Express (PCIE) bus or USB 2.0.

Storage and media devices

The RAID-5 SAS controller card is located near the card cage. The standard SDRAM memory for these platforms is 2 GB (2 x 1GB Single Ranked (1R) UDIMM DDR3 Advanced ECC), optionally expandable to 4.0 GB. Memory devices must be from the same memory supplier.

The standard mass storage for these platforms has 5 – 146GB 2.5 ” 15K RPM SAS hard drives, where drives 0, 1, 2, and 3 are in a RAID-5 configuration with the fourth 146GB 2.5 ” 15K RPM SAS hard drive as a hot spare.

All mass storage devices are connected through SAS and SATA. The SATA DVD RW drives are connected through the SATA connector on the motherboard.

Standard features

- Dell motherboard with Single Intel® Xeon® X5560, 2.8Ghz, 8M Cache, Turbo, HT, 1333MHz Max Memory 6.4GT/s QPI. (For Model 51154292-100 and 51154292-200 only).
- Dell motherboard with Single Intel® Xeon® E5620, 4C/8T, 2.4 GHz, L3-12MB, QPI- 5.86 GT/s, QPI Links-2, 80 W, DDR3-800/1066, HT -Y, Turbo-Y. (For Model 51154292-300 and 51154292-400 only).
- Cache
  - L2 : 4MB
  - L3 : 12MB
- Rear Ports
  - One serial
  - One Video
  - Six USB V2.0
  - Two RJ45
  - One ID push button with blue/amber LED
- Optional external VFlash card
  - One optional
  - Flash memory card slot with iDRAC6
  - Enterprise

  - Optional RJ-45 MEA connector
- Front Ports
  - Two USB 2.0
  - ID push button with blue/amber LED
  - One system power on/off button
- Two Integrated NIC (10/100/1000 MB per/sec Broadcom)
- Bus Type: PCIE Expansion slots
  - Five PCIE Generation
  - Two full-height
  - Full-length x8 link (slot two and three)
  - Three full-height, half-length x4 link (slot one, four and five)
- Energy Smart – Two hot-plug high-efficient 570W Power Supply
- Two 110 Volt / 230Volts Power Cords
- Two 2GB (2 x 1GB) 1R UDIMM DDR3 1067MHz Adv. ECC
- SATA DVD-RW Drive
- Five 146 GB or larger, 15 K RPM, 2.5 ” SAS Hard Drives
- Integrated Matrox G200 with 8MB of Cache
- PERC 6/I (Firmware Version 6.2.0-0013, A11) 256 MB
- USB compatible Windows Keyboard
- USB Optical Mouse

Slots configuration

The following is a list of options that can be configured in your platform.

- Five PCIE Generation 2
  - Two full-height, full-length x8 link (slot two and three)
  - Three full-heights, half-length x4 link (slot one, four, and five)

Model No	Description
TP- LCNP04	LCN Interface card PCIE LCNP4E
NE- NICSS1	Card Single NIC PCIE Server
NE- NICS02	NIC Card PCIE dual port STP
NE-NICS03	Dual NIC Card, PCIe,GB , ET Chipset

Note: You can use only one interface card from NE-NICSS1, NE-NICS02 and NE-NICS03 at a time.

Optional features

The following is a list of the additional options that can be configured in your platform.

- Single NIC
- Broadcom dual NIC
- LCNP4E
- Memory upgrade to 4 GB
- Universal ControlNet Interface

Power cords

The following table lists the AC power cords for tower configuration.

Part Description	Part Number
AC power cord, 110 V	Use Dell power cord supplied with server
AC power cord, 220 V	(2) 5130557-100

The following table lists the Honeywell AC power cords (factory installed) for cabinet rack mount configuration.

Part Description	Part Number
AC power cord, 120 V	51107941-115
AC power cord, 240 V	51107941-115

1.3 Platform information

Honeywell documentation

The following table lists other Honeywell publications that may be useful when installing or operating the T610 Honeywell Server platform.

Table 1-1 Honeywell Publications

Publication	Contains information on…
ADP01: *Honeywell Peripheral Adapters*	OEP/IKB adapter with computer platforms that do not have the ISA card.
FE05: *Fault Tolerant Ethernet Installation and Service Guide*	Installing and using the FTE.

Dell documentation

The following table lists Dell publications and other useful sources of information for installing, operating and servicing the Honeywell Server.

Table 1-2 Dell Publications

Publication	Contains information on…	Available
Information Update	Last minute updates about technical changes to your computer or advanced technical-reference material for experienced users or technicians.	Packaged with the computer
Dell™ PowerEdge™ Product Information Guide	Warranty Safety	Packaged with the computer www.dell.com
Getting Started With Your System	Unpacking and connecting the cables.	Packaged with the computer
Quick Installation Guide	Installing and configuring the server operating system.	Packaged with the computer Product Documentation CD

Publication	Contains information on…	Available
Dell™ PowerEdge™ T610 Systems Hardware Owner's Manual	Removing and replacing the parts. Technical specifications. Configuring the system. Troubleshooting.	Product Documentation CD www.dell.com
Rack Installation Instructions — Sliding Rails	Installing the server in a server rack or cabinet.	Packaged with the computer www.dell.com
Windows Installation Instructions and Important Information	Initialization the Windows operating system.	Packaged with the computer www.dell.com
Dell™ Systems – Raid Controller Initialization	Initializing the RAID controller	Packaged with the computer
Dell™ Systems – Upgrading Raid Firmware	Upgrading the RAID firmware	Packaged with the computer
Dell™ PowerEdge™ T610 Systems Hardware Owner's Manual	Diagnosing problems Using status indicators for troubleshooting	Product Documentation CD www.dell.com

1.4 TPN slot requirements

For detailed slot configuration, see Table 4-2.

TPN node setup

Slot No	Description	Option
1	PCIE-X 4	Free Slot
2	PCIE-X 8	Free Slot
3	PCIE X 8	Free Slot
4	PCIE-X 4	Free Slot
5	PCIE-X 4	LCNP4E

1.5 FTE slot requirements

Default configurations for FTE

- Broadcom on-board NICs are enabled without PXE
- If you are using FTE slot only, then use on-board NICs.
- If you are using FTE & EHG, then use single NIC PCIE server for EHG and Broadcom onboard.

Optional Configuration Rules for FTE

- Broadcom on-board NICs are disabled
- If you are using FTE slot only, then use NIC Card PCIE dual port STP
- If you are using FTE & EHG, PCIE NIC Card PCIE dual port STP for FTE, then enable one Broadcom on-board.
- If you are using NIC, then use the BIOS settings.

FTE Supervisory (Default)

Slot No	Description	Option
1	PCIE-X 4	Free Slot
2	PCIE-X 8	Free Slot
3	PCIE X 8	Free Slot
4	PCIE-X 4	Free Slot
5	PCIE-X 4	Free Slot

FTE Supervisory (Optional)

Slot No	Description	Option
1	PCIE-X 4	Dual port NIC
2	PCIE-X 8	Free Slot
3	PCIE-X 8	Free Slot
4	PCIE-X 4	Free Slot

Slot No	Description	Option
5	PCIE-X 4	Free Slot

3 NICs, FTE Co-Joined through Dual NIC (Default)

Slot No	Description	Option
1	PCIE-X 4	Free Slot
2	PCIE-X 8	Free Slot
3	PCIE-X 8	Free Slot
4	PCIE-X 4	Free Slot
5	PCIE-X 4	LCNP4E

3 NICs, FTE Co-Joined through Dual NIC (Optional)

Slot No	Description	Option
1	PCIE-X 4	Dual Port NIC
2	PCIE-X 8	Free Slot
3	PCIE-X 8	Free Slot
4	PCIE-X 4	Free Slot
5	PCIE-X 4	LCNP4E

3 NICs, FTE Co-Joined through Single NIC for EHG (Default)

Slot No	Description	Option
1	PCIE-X 4	Single Port NIC
2	PCIE-X 8	Free Slot
3	PCIE-X 8	Free Slot
4	PCIE-X 4	Free Slot
5	PCIE-X 4	LCNP4E

3 NICs, FTE Co-Joined through On-board Single NIC for EHG (Optional)

Slot No	Description	Option
1	PCIE-X 4	Dual Port NIC
2	PCIE-X 8	Free Slot
3	PCIE-X 8	Free Slot
4	PCIE-X 4	Free Slot
5	PCIE-X 4	LCNP4E

1.6 General Ethernet slot requirements

General Ethernet must be used on the first/second on-board NICs. For more details on slot configuration, see Table 4-3.

Option 1 – Single NIC (One on-board NIC enable)

Slot No	Description	Option
1	PCIE-X 4	Free Slot
2	PCIE-X 8	Free Slot
3	PCIE-X 8	Free Slot
4	PCIE-X 4	Free Slot
5	PCIE-X 4	Free Slot

Option 2 – Dual NICs (Two on-board NICs enable)

Slot No	Description	Option
1	PCIE-X 4	Free Slot
2	PCIE-X 8	Free Slot
3	PCIE-X 8	Free Slot
4	PCIE-X 4	Free Slot
5	PCIE-X 4	Free Slot

Option 3 – 3 NICs (Single NIC with two On-board NICs)

Slot No	Description	Option
1	PCIE-X 4	Single NIC
2	PCIE-X 8	Free Slot
3	PCIE-X 8	Free Slot
4	PCIE-X 4	Free Slot
5	PCIE-X 4	Free Slot

Option 4 – 4 NICs (Dual NIC with two On-board NICs)

Slot No	Description	Option
1	PCIE-X 4	Dual NIC
2	PCIE-X 8	Free Slot
3	PCIE-X 8	Free Slot
4	PCIE-X 4	Free Slot
5	PCIE-X 4	Free Slot

1.7 Honeywell server options

Device options

In addition to the standard configuration for the server, your platform can be configured with additional options based on the model number you ordered. The following table lists optional items for T610 Honeywell server.

Model Number	Option Description
TP-LCNP04-100	LCNP4E
NE-NICSS1-100	Single NIC PT Chipset
NE-NICS02 -100	Dual NIC PT Chipset
NE-NICS03-100	Dual NIC Card ET Chipset
MZ-PCEM12-100	2GB memory,(2x1GB memory modules)
MZ-PCEM14	2GB (1x2GB) memory module

Memory option configuration

The standard memory capacity is 2 GB. The system memory can be increased to 4 GB, MZ PCEM12. Memory devices must be from the same memory supplier.

Table 1-3 shows the placement of memory devices for the memory capacity options. The table is so organized that the DIMM sockets are in the same order as they are located on the motherboard.

Table 1-3 Standard and Optional Memory Configuration (For model 51154292-100 and 51154292-200 only)

DIMM Socket	2 GB Memory (standard)	4 GB Memory
A1	Not available for use	-
A4	Not available for use	-
A2	1 GB	1 GB, 1066 MHz, 1R Adv ECC DDR3

DIMM Socket	2 GB Memory (standard)	4 GB Memory
		UDIMM
A5	-	1 GB, 1333 MHz, 1R Adv ECC DDR3 UDIMM
A3	1 GB	1 GB, 1066 MHz, 1R Adv ECC DDR3 UDIMM
A6	-	1 GB, 1333 MHz, 1R Adv ECC DDR3 UDIMM
Total	**2GB**	**4GB**

Table 1-4 Standard and Optional Memory Configuration (For model 51154292-300 and 51154292-400 only)

DIMM Socket	2 GB Memory (standard)	4 GB Memory
A1	Not available for use	-
A4	Not available for use	-
A2	1 GB	1 GB, 1333 MHz, 1R Adv ECC DDR3 UDIMM
A5	-	1 GB, 1333 MHz, 1R Adv ECC DDR3 UDIMM
A3	1 GB	1 GB, 1333 MHz, 1R Adv ECC DDR3 UDIMM
A6	-	1 GB, 1333 MHz, 1R Adv ECC DDR3 UDIMM
Total	**2GB**	**4GB**

For Experion R410.x, you can expand the memory configuration to 8GB by using the memory module MZ-PCEM14. The following table describes the memory configurations for memory module MZ-PCEM14.

Table 1-5 Standard and Optional Memory Configuration for MZ-PCEM14

DIMM Socket	Memory size	Total memory
A1	Not available for use	-
A4	Not available for use	-
A2	2 GB	-
A5	2 GB	-
A3	2 GB	-
A6	2 GB	8 GB

ATTENTION

If you are using 1GB modules that is 2GB (2x1GB) / 4GB (4x1GB) memory modules, then you must replace the same with MZ-PCEM14 modules for upgrading your memory configuration to 8GB.

1.8 Other options

Honeywell offers a cabinet mounted 8-port KVM switch/control console (model number TP-KVMCB1 for switch with PS/2 interface and model number TP-KVMCB2 for switch with USB interface) to provide a human interface (booting and maintenance activities) to cabinet mounted servers. Either option comes pre-installed from the Honeywell factory.

1.9 Specifications

Environmental specifications for a tower unit

The following tables list environmental limitations for a tower unit.

Table 1-6 Environmental Operating Specifications for a Tower Unit

Description	Tower (Cannot mount on rack)
Temperature	10º to 35º C (50º -95º F)
Relative Humidity	20 to 80%, non-condensing
Max Vibration	0.26 G at 10-350 Hz for 10 minutes
Max Shock	half shock pulse of 31 G for up to 2.6 ms
Altitude	-50 to 10,000 ft (16 to 3048 m)

Table 1-7 Environmental Storage Specifications for a Tower Unit

Description	Tower (Cannot mount on rack)
Temperature	-40º to 65º C (-40º to 149º F)
Relative Humidity	5 to 95%, non-condensing
Max Vibration	1.54 G at 10 – 250 Hz for 15 ms
Max Shock	half shock pulses of 71 G for up to 2 ms
Altitude	-50 to 35,000 ft (16 to 10600 m)

Environmental specifications for a cabinet

The following table lists operating environmental limitations for a cabinet.

Table 1-8 Environmental Operating Specifications for a Cabinet

Description	Cabinets
Ambient room temperature	10° to 35°C (50° to 95°F)
Humidity	20 to 80% RH, non-condensing
Operating vibration	0.012” P-P displ to 12.7 Hz, then 0.1g to 150 Hz; 60 min per axis, all 3 axes
Site induced shock	6g, 10 msec half-sine, 1 positive, 1 negative

Electronic assembly specifications

The following tables list electronic assembly specifications.

Table 1-9 Typical Operating Power Requirements

Description	Requirement
DC POWER	N/A
AC Voltage	120 (90-132) Vrms 240 (180-260) Vrms
AC RMS Current	2.45 Arms 1.34 Arms
AC Power	294 Watts 323 Watts

Table 1-10 Maximum Operating Power Requirements

Description	Requirement
DC POWER	N/A
AC Voltage	120 (90-132) Vrms 240 (180-260) Vrms
AC RMS Current	2.9 Arms 1.55 Arms
AC Power	350 Watts 350 Watts

Table 1-11 Electronic Assembly Weight and Dimensions

Description	Requirement
Height	44.10cm (17.40 in feet)
Width	27.40cm (10.80 in feet)
Depth	62.10cm (24.40") (including PSU with bezel)
Weight	35 kg (77 lbs)

Hard disk drive specifications

The T610 Honeywell server platform has five hard disk drive bays. It uses four 146 GB SAS 2.5” hard drives for RAID-5 (Striping). The fifth hard drive is used as a hot spare drive. There is no option to add additional hard drives. Disk drives in this platform must be the same size (GB) and speed (RPM).

Table 1-12 146 GB Hard Disk Drive Power Requirements

Description	Requirement
DC 5 volt Power (typ)	2.25 Watts
DC 12 volt Power (typ)	13.44 Watts
Other DC POWER	16 Watts Max,4.1 Watts Idle.
AC Power	N/A

Table 1-13 146 GB Hard Disk Drive Weight and Dimensions

Description	Requirement
Height	14.8mm
Width	70mm
Depth	100.5mm
Weight	0.201kgs

Removable media specifications

The T610 Honeywell server platform can be configured with one removable media drive; this drive is SATA DVD-RW drive. The SATA DVD-RW drive is connected to SATA 0 ports on Motherboard.

Table 1-14 Removable Media Operating Power Requirements

Description	DVD ROM Requirements
DC 5 volt Power	6.5Watts

Mouse

The USB mouse is the standard cursor control device and is included with the T610 Honeywell server platforms.

Keyboard

When running Dell diagnostics the USB keyboard must be connected to a USB port on the back panel. After connecting the keyboard, you must download the latest diagnostics from the Dell Support Website at www.support.dell.com.

Honeywell offers a cabinet mounted 8-port KVM switch/control console (model number TP-KVMCB1 for switch with PS/2 interface and model number TP-KVMCB2 for switch with USB interface) to a provide human interface (booting and maintenance activities) to cabinet mounted servers. Either option comes pre-installed from the Honeywell factory.

Monitor

The T610 Honeywell server platforms supports industrial standard video format (typically 1024X768 at a refresh rate of 75Hz) with a multisync monitor and can be only configured with a single screen option. In this configuration, the monitor is connected to the AGP video controller card with 8 MB of memory.

ATTENTION

Touch screen option is not available in the T610 Honeywell server platforms.

Video cable

The video cable must support DDC. If either a monitor or video cable that does not support DDC is connected, the display generator defaults to a resolution that precludes communication with the system software and stops startup. A quick check to determine if a cable is DDC compatible is to check if the pins 5, 9, and 12 of the HD 15 connector are wired. The supplied cable, part number 51196742-200 is DDC compatible.

The server platform supports industrial standard video formats, typically 1280X1024, at a refresh rate of 75Hz or 1024X768 at a refresh rate of 75Hz.

1.10 Industrial regulatory compliance

Overview

The compliance specifications in this section apply to cabinet installations.

WARNING

Honeywell does not claim Safety Compliance or Electromagnetic Compatibility (EMC) Compliance for system equipment configurations that is not described in this guide as standard system configurations. Any equipment configuration other than that described in this publication decertifies the Safety and EMC compliance of this product.

Electromagnetic Compatibility (EMC)

Table 1-15 EMC Specifications

European Community	
Emissions	IEC 61326, 1997 (Industrial Locations, CISPR 11, Class A)
Immunity	IEC 61326, 1997 (Industrial Locations)

ATTENTION

The following formula is a proximity guideline, for use of Portable Transceivers (walkie-talkies) in the frequency range of 80MHz to 1GHz.

D > 0.30$*\sqrt{}$ **{P}** (D must be greater than 0.30 multiplied by the square root of P)
D = Distance from equipment, in meters.
P = Power Output of the Portable Transceivers (walkie-talkies), in Watts.

Examples:
P = 10 Watts, D > 0.949 meters
P = 5 Watts, D > 0.671 meters
P = 1 Watt, D > 0.300 meters

ATTENTION

Electrical cables, which are routed external to the equipment, must be fully shielded cables (360 degree metallic shielding), to comply with the above EMC standards.

Safety compliance

Table 1-16 Safety Compliance

Product Safety Compliance
CSA C22.2 No. 1010.1-92 (R1999) & 1010.1B-97 (R2001) Am. 2
IEC 61010-1, 2001, 2nd edition

ATTENTION

Within the above referenced standards is a “Normative Reference” section citing additional standards, which may apply as, suited and required for product compliance.

1.11 Light industrial regulatory compliance

Overview

The compliance specifications in this section apply to installations other than cabinets.

WARNING

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

Electromagnetic compatibility (EMC)

Table 1-17 Electromagnetic compatibility Specifications

European Community	
Emissions	IEC 61326, 1997 (Basic Requirements, CISPR11, Class A)
Immunity	IEC 61326, 1997 (Basic Requirements)

ATTENTION

The following formula is a proximity guideline, for use of Portable Transceivers (walkie-talkies) in the frequency range of 80MHz to 1GHz

European Community	
	D > √ {P} (D must be greater than the square root of P) D = Distance from equipment, in meters. P = Power Output of the Portable Transceivers (walkie-talkies), in Watts. **Examples:** P = 10 Watts, D > 3.162 meters P = 5 Watts, D > 2.236 meters P = 1 Watt, D > 1.000 meters
	**ATTENTION** Electrical cables, which are routed external to the equipment, must be fully shielded cables (360 degree metallic shielding), to comply with the above EMC standards.

Safety compliance

Table 1-18 Safety Compliance

Product Safety Compliance
CSA C22.2 No. 1010.1-92 (R1999) & 1010.1B-97 (R2001) Am. 2
IEC 61010-1, 2001, 2nd edition

	**ATTENTION** Within the above referenced standards is a “Normative Reference” section citing additional standards, which may apply as, suited and required for product compliance.

2. Installation

2.1 Introduction

This section describes the procedures for installing and cabling the server as a tower unit in a 1-meter deep Honeywell cabinet, model number MP-C1MCB1.

Tasks for installing the server

The following table lists the platform installation tasks.

Table 2-1 Platform Installation Tasks

✓	Task
	Power and grounding requirements *TPN System Installation (SW20-600), Section 4, "System Grounding"*
	Installing the server and connecting the cables.
	Starting the server.

Before you begin

Ensure that you perform the following tasks.

- Ensure that the cabinet is properly grounded.
- Unpack the platform from the box and verify the parts.
- Place the server on a secure surface near the cabinet to mount.
- Ensure that you have the necessary cables ready.

2.2 Power and grounding requirements

Grounding for computer based nodes

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

Grounding cabinets

The *TPN System Installation Manual, SW20-600, Section 4, "System Grounding"* contains information on grounding furniture, including the following:

- Ground wiring overview
- Grounding LCN cabinets and stations
- Cabinet Logic ground
- Grounding LCN cables

AC power warning

53895

	**WARNING** The power supply circuit is connected to AC power when the power cable is connected.

	**ATTENTION** It is strongly recommended that you connect the power cord to a clean power source with backup such as an Uninterruptible Power Source (UPS).

2.3 Cabinet spacing requirements

Server arrangements

Due to physical constraints, only one T610 Honeywell server can be mounted on a 1-meter deep Rittal MP-C1MCB1 cabinet from Honeywell. The server must be mounted on rack space interval 11U through 15U counting from the bottom of the cabinet and moving up.

Thermal test results verified that the Honeywell 1-meter deep cabinet provides adequate AC power and acceptable operating intake air temperatures for up to three T610 rack mount servers. Therefore, on a special project bases, a trained service technician can mount up to two additional servers. The mounting instructions for the additional servers are not in this document. These servers must be mounted on the first 15U of vertical rack space.

The room ambient temperature must be between 10º and 30º C (50º to 86º F).

Unused cabinet spaces

ATTENTION

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

These are available in four height options. Table 2-2 shows the four height options, and the corresponding part and tab numbers.

Table 2-2 Air Duct Baffle and Blank Front Panel Height Options

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

2.4 Installing the server and connecting the cables

Overview

This section describes the procedures for installing and cabling the server as a tower unit or in a 1-meter deep Honeywell cabinet. The human interface can access locally in the cabinet. This procedure assumes a new 1-meter deep equipment cabinet, Honeywell model number MP-C1MCB1, was shipped from the Honeywell factory with Versa Rail slides pre-assembled.

Honeywell server back panel connections

Figure 2-1 shows the back panel of the server and identifies the connectors for all devices.

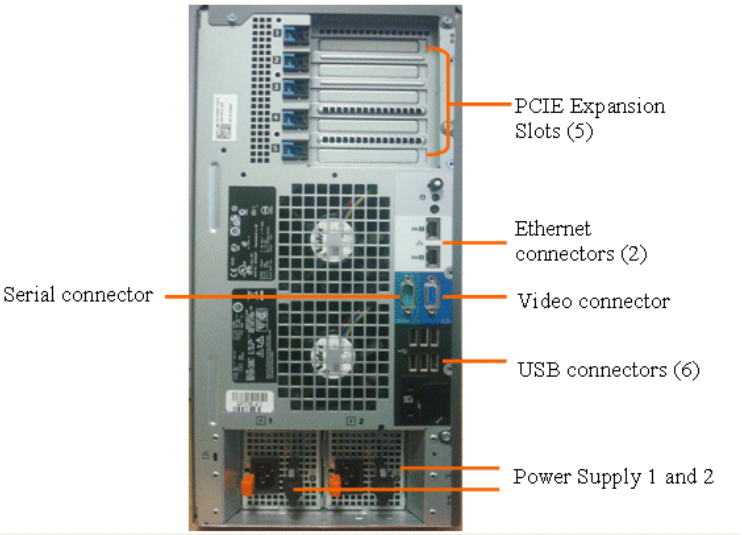


Figure 2-1 Back panel of T610 Honeywell Server

Installing the server

The following table describes the steps to install the server.

Step	Action
1	Connect the power cords and all cables to the back panel of the server. Go to section 2.6 to start up your server.
2	Fully extend the right and left Versa Rail slides (pre-installed at the Honeywell factory) in the cabinet.
3	Lower the server into the J-shaped slots on each slide, starting with the slot closest to the cabinet.
4	Gently push the server toward the cabinet until the retaining clips snap into place.
	 **ATTENTION** The Versa Rail kit includes a cable management arm (installed in the Honeywell factory) that mounts to the rear of the Versa Rail. AC power cords and KVM cables are pre-routed through the cable management arm. For additional information, see the "*Rack Installation Guide*" shipped with the*"* provided with the instructions shipped with the cabinet.
5	Slide the server directly into the cabinet and engage the captivated retaining screws in the front flange of the Versa Rails.
6	After both retaining screws are engaged in the threaded inserts, tighten them until the server rack mount flanges contact the front mounting rails of the cabinet.
7	If you are using the 8-port KVM, switch/control console for your human interface (pre-installed in the Honeywell factory), connect the KVM cable mouse and keyboard connections to the USB connectors on the rear of the server. The KVM cable has separate USB connections for the mouse and keyboard or they can be combined into one USB connector through USB to PS/2 adapter (included with the KVM cable).

Connecting the cables

The following table describes the procedure to connect the power cords and cables to the back panel of the server.

Step	Action
1	Connect the video cable and network interface cables.
	WARNING AC power cords from all computing nodes mounted on a given cabinet must be distributed across the two power entries as equally as possible. Failure to do so may result in tripping the circuit breakers.
2	Connect the Honeywell AC power cords.
	ATTENTION Ensure that the power cords are connected to separate power entries. For more information on power cord, refer to Power cords.
3	o If you are not using Fault Tolerant Ethernet (FTE), connect the Ethernet cable to the on-board RJ-45 connector. o If you are using an Intel® Dual NIC card for FTE, connect the FTE cable to the NIC card in the expansion slot. o If you are using the on-board NICs for FTE, connect the FTE cable to the on-board RJ-45 connector.
4	Tighten the cables, and verify that all cables have proper strain relief.
	TIP Install the air duct baffles and blank front panels, if necessary. See section 2.5.
	ATTENTION Any unused rack mount space must have an air duct baffle and blank front panel installed.

2.5 Installing air duct baffles and blank front cover

This section describes the steps to install the air duct baffle and blank front cover in the cabinet. This is available in four height options; refer to Table 2-2 for height options. Installing the parts ensures that the airflow within the cabinet allows proper cooling of the computing nodes.

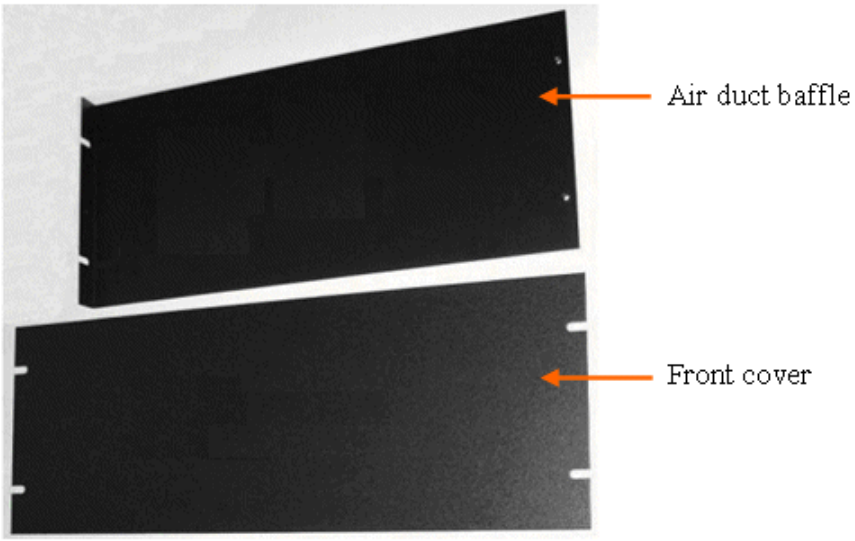
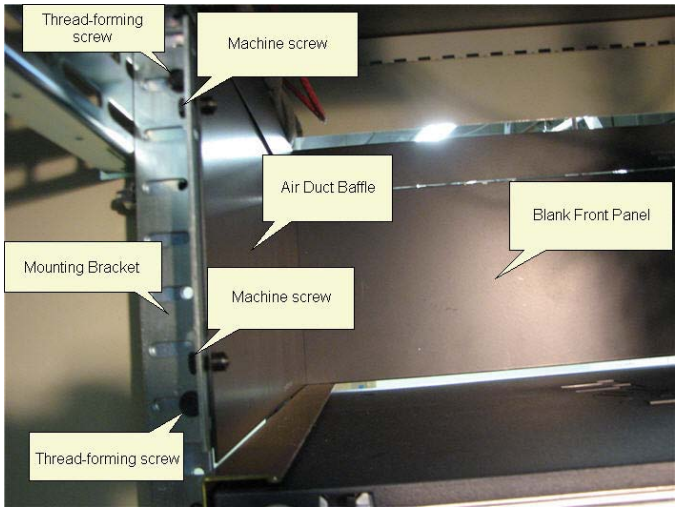
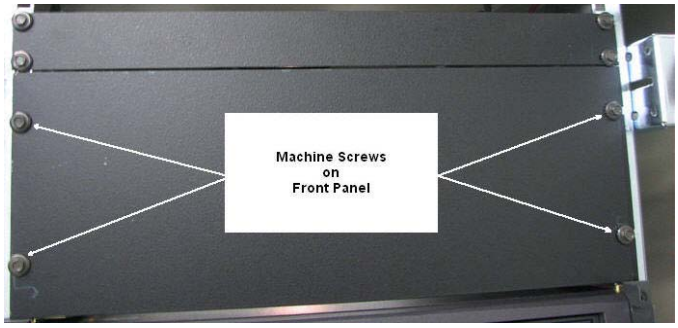


Figure 2-2 Install Air duct baffle and Front cover

Step	Action
1	Place the air duct baffle inside the cabinet with the bent tab resting along the front of the right cabinet rail. 
2	Place the blank front panel across the front of the cabinet rails. 
3	Attach the blank front panel to the air duct baffle and right cabinet rail using two machine screws and two external tooth washers threaded into the two clip nuts.
4	Tighten the screws.
5	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 screws.

Step	Action
6	Attach the rear-mounting bracket to the rear cabinet rail using two thread forming screws and two external tooth washers.
7	Tighten the screws.
8	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.
9	Tighten the screws.

2.6 Starting the server

Before you begin

ATTENTION

Cabinet mounted servers that do not have a KVM switch/console require the connection of the USB mouse and keyboard (supplied with the server) for starting the server.

Turning on the power

The following table describes the steps to turn on the power.

Step	Action
1	Press the power button on the front panel of the T610 Honeywell server.
2	Wait for the power light to become solid green.
3	If the power light does not become solid green, refer to the *Troubleshooting* section in the *Dell™ PowerEdge™ T610 Systems Hardware Owner's Manual.*

Configuring RAID in T610 Honeywell servers

Perform the following steps to configure a new virtual disk of RAID5 four physical disks and one hot spare.

	ATTENTION You must perform the following steps only when the RAID level is not configured on the host machine, and when the server contains only five hard drives. While performing the following steps, you cannot access the information present in the hard drives.
Step	**Action**
1	Turn on the server.
2	After starting the server, the message ***Power Edge Expandable RAID controller BIOS Copyright© 2008, LSI Corporation Press <Ctrl>, <R> to Run Configuration utility*** appears. Press **CTRL+R**.
3	The **VD Mgmt (Virtual Disk Management)** screen appears. Select **Controller#**.
4	Press **F2** to display the menu of available actions.
5	Select the **Clear Configuration** using the ARROW keys.
	ATTENTION By performing this action, data will be completely inaccessible from the hard drives.
6	You are prompted with the message ***Are you sure you want to clear configuration?*** Select **Yes** to delete the existing virtual disk, if any.
7	Select **Controller #**, and then Press **F2** to display the menu of available actions.
8	Select **Create New VD** and press **ENTER**. The **Create New VD** screen appears. The cursor is on the **RAID Level** option.
9	Press **ENTER** to display the RAID levels.
10	Select a **RAID-5** using the arrow keys, and then press **ENTER**.
11	Press the **TAB** key and then move the cursor to the list of physical disks.

12	Press the **SPACEBAR** key and then select disk 00:00,00:01,00:02 and 00:03.
13	Press **TAB** key and then move the cursor to **Advanced Settings**. Press the **spacebar** to make the settings active.
14	Press **TAB** key and then move the cursor to **Initialize**. Press the spacebar to make the selection.
15	Press **TAB** key and then move the cursor to **OK** and press **ENTER**.
16	The computer prompts you with the message ***Initialization will destroy data on the virtual disk. Are You Sure you want to continue***. Press **OK**.
17	The message appears ***Virtual disk initialization complete***. Press **OK**.
18	Press **CTRL+N** to access the **PD Mgmt (Physical Disk Management)** screen.
19	Highlight the drive 00: 04 using the ARROW key, and then press **F2** to display the menu of available actions.
20	Highlight **Make Global HS** using the arrow keys, and then press **ENTER**.
21	Select **Yes** to confirm the Hot Spare disk creation.
22	Press **CTRL+P**. The **VD Mgmt (Virtual Disk Management)** screen appears.
23	Highlight **Virtual Disk#** using the ARROW key. On the right pane of the menu, Check size of Virtual disk it must be 408.378GB (if you are using 146GB HDDs).
24	Press **ESC** to exit. The computer prompts you with the message ***Are you sure you want to exit.***
25	Press **OK** to exit from the Virtual Disk Management screen.
26	Press **CTRL+ALT+DELETE** to restart the server.

Starting the TDC Emulator Services

If this is a TPS node with the LCNP4E board installed, start the TDC Emulator service. Perform the following steps to start the service.

Step	Action
1	Choose **Start > Run**. The **Run** dialog box appears.
2	In the **Open** textbox, type *services.msc*
3	Right-click *TDC Emulator service* and click **start**, to start the service.

Checking the LCNP4E status

Perform the following steps to verify the LCNP4E passed self-test.

Step	Action
1	Choose **Start > Programs > Honeywell TPS > LCNP Status**.
2	Verify that the LCNP status indicates **Passed Self Test** and the circle is green.
3	Verify that **TPN Address** appears in the **LEDs** field of the LCNP Status display, after the board, 0 is configured. You must reset the LCNP after configuration.

REFERENCE

Refer to the LCNP Status section in the *LCNP Status User's Guide* for more information.

3. Operation

3.1 Overview

Front view of server

The following figure shows the front view of the server.

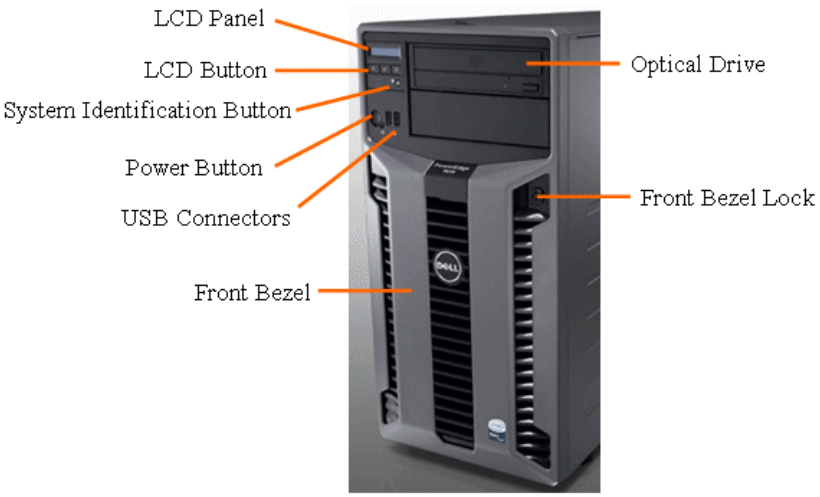


Figure 3-1 Front view of T610 Honeywell Server

Additional references

The following table lists the Dell publications that contain operation and servicing information.

Table 3-1 Dell Publications for Operation and Servicing

Publication	Contains information on	Available
Information Update	Last minute updates about technical changes to your computer or advanced technical-reference material for experienced users or technicians.	Packaged with the computer

Publication	Contains information on	Available
Dell™ PowerEdge™ T610 Product Information Guide	Warranty and safety.	Packaged with the computer www.dell.com
Dell™ PowerEdge™ T610 Systems Hardware Owner's Manual	Removing and replacing the parts. Technical specifications. Configuring the system. Troubleshooting	Product Documentation CD www.dell.com
Rack Installation Instructions — Sliding Rails	Installing the system in a server rack or cabinet.	Packaged with the computer www.dell.com
Windows Installation Instructions and Important Information	Initialization the Windows operating system.	Packaged with the computer www.dell.com

3.2 Network connections

Overview

The server platform must be connected to an LCN network and/or an Ethernet network. The Broadcom dual embedded GB NICs are enabled without PXE in the system BIOS. For FTE configurations using the Broadcom dual NIC card for connectivity, the BIOS must be disabled. Refer to Section 4.5 to verify BIOS settings.

Ethernet network

Two Ethernet 10/100/1000 embedded Base T connections are standard on the server platform. Most TPS/Experion FTE systems use the on-board NICs. If you are using FTE, you must install the FTE cables according to the specific instructions in the *FTE Installation and Service Guide*. Some Experion configurations using the on-board NICs may also use an additional single or Intel® Dual NIC card.

LCN network

The connection to the LCN is made through a Local Control Network Processor (LCNP4E) card. This card is a Honeywell card that allows the TPS Operator Station to emulate Universal Stations. This card provides the communication path for the server to other LCN modules. The LCNP4E consists of an LCNP4E card, a MAU cable, and the LCN MAU (Media Access Unit). The LCNP4E card is a half-length PCIE card that consumes PCIE-X 4 slot 5. The LCNP4E, MAU, and MAU cable are required to connect to the LCN Network.

The LCN node address must meet the customer requirements. If the LCN address is not known, the node address must be set to zero. Setting the address to zero allows the node to connect to the LCN without the risk of an address conflict with some other node. This is consistent with the current LCN standard procedure.

The server platform uses a digital system clock. When the server platform is added to an existing system that contains node running analog clocks, that system must have at least two KxLCN boards for analog/digital conversion.

ATTENTION

The LCNP4E (model number TP-LCNP04-100) is required.

LCN cables

The two cables and T-connectors (and terminators, if applicable) must be located underneath (the future location) of the unit, with an additional loop, 1 meter in length (with a T-connector). This loop can be routed into the rear of the platform where the connection is made to the LCN MAU. The cable between the LCNP4E board and the LCN MAU is 2 meters in length.

Cabinet mounted server

The two LCN cables and with T-connectors (and terminators, if applicable) are routed vertically inside the left rear corner of the cabinet (when viewed from the rear door) near the vertical cable duct where the connection is made to the LCN MAU. The cable between the LCNP4E board and the LCN MAU is two meters in length.

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 B connections are made through a single cable from the LCNP4E board to the LCN Media Access Unit (MAU) contained in a metal housing.

MAU connection

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

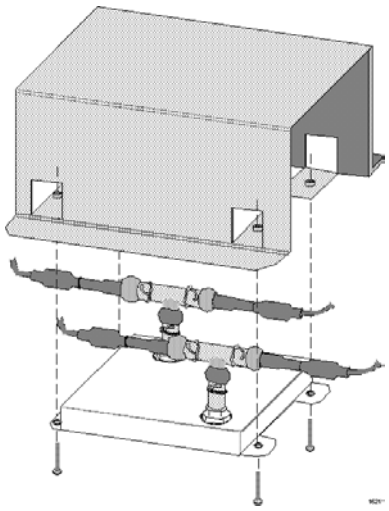


Figure 3-2 LCN MAU to LCN Cable T-Connections

ControlNet Network

A ControlNet Network is a single coaxial trunk cable broken up into segments interconnected by links. Node Connections to the network are created through a Tap and drop cable. Repeaters are used to link segments together and for changes in media from coax to fiber optic. All points on the network must either have an interface card or a terminator. Terminators are comprised of termination resistors, which are used to mark the beginning and end of a trunk segment and Tap Dummy Load(TDL) which terminate a drop cable when no node is present. The model number for the ControlNet Universal Interface is TC-PCIC02-100.

	REFERENCE -EXTERNAL: Controlnet Network interface must be connected to T610 Honeywell Server using Magma PCIe to PCI converter box. For more information on how to connect, refer to the *Magma PCI Expansion Chassis Installation Instructions (PE4DR-HNWL)* supplied with the Magma hardware kit.

4. Servicing

4.1 Servicing T610 Honeywell server

Before you begin

	**ESD HAZARD** Shut down the server.
	**SHOCK HAZARD** o To avoid electrical shock, ensure that you unplug the computer from the electrical outlet. o Disconnect the power cords and cables from the back panel.
	**CAUTION** Before you begin any of the procedures in this section, follow the safety instructions in the *Dell System Information Guide*.
	**ATTENTION** o Remove the server from the cabinet or tower unit and place on a secure surface. o After removing the cover, ensure that you do not disconnect the cables from the system board.

Removing the Front bezel

A lock on the bezel restricts access to the hard drives. To remove or install any of these drives, you must first remove the front bezel.

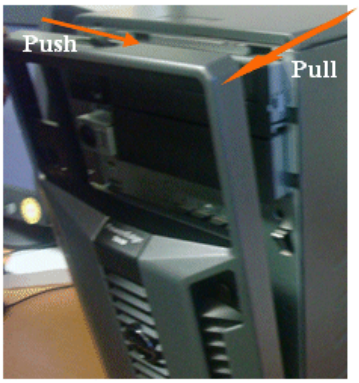


Figure 4-1 Remove the Front bezel of T610 Honeywell server

To remove the front bezel, perform the following steps.

Step	Action
1	Push the top lever in the direction of the arrow until it releases the bezel from the top of the chassis.
2	Pull the bezel away from the chassis, removing the bezel tabs from the slots.

Removing the Side cover

A lock on the side cover bezel restricts access to the motherboard. To remove or installs the components on the motherboard; you must first remove the side cover.

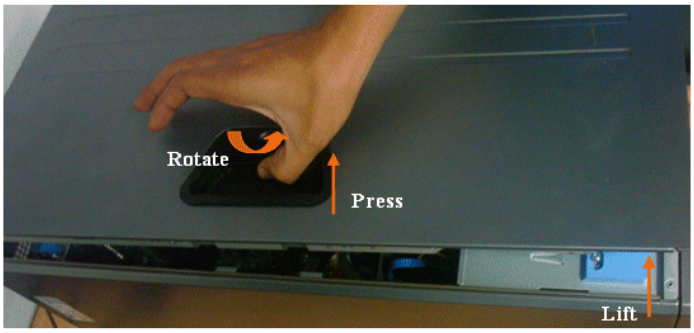


Figure 4-2 Remove the side cover of T610 Honeywell server

To remove the side cover, perform the following steps.

Step	Action
1	Turn the lock on the cover release latch counterclockwise to unlock position.
2	Press the release latch, and rotate the latch end of the cover away from the system.
3	Lift the cover away from the system.

4.2 Servicing the LCNP4E

LCNP4E board description

The LCNP4E board has 256 MB of onboard memory.

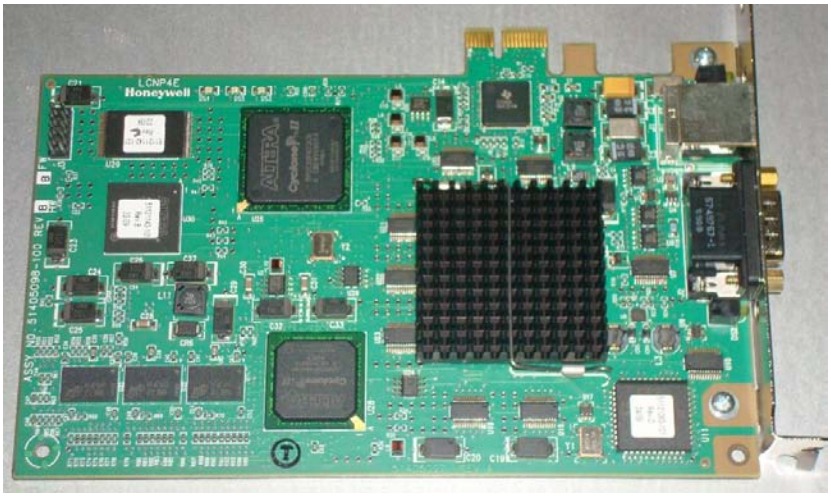


Figure 4-3 LCNP4E Board

Replacing the LCNP4E board

The LCNP4E board is located in the PCIE slot 5. Refer to the following steps to replace the LCNP4E card. See also *Dell™ PowerEdge™ T610 Systems Hardware Owner's Manual*

	**ESD HAZARD** The LCNP4E board is an electro statically sensitive device. Use a grounding strap and grounded work surfaces and equipment when handling this component. Store and transport the parts only in electro statically safe containers.

Step	Action
1	Disconnect the LCN MAU cable from the LCNP4E board.
2	Remove the expansion card stabilizer located at the top.
3	Open the blue plastic expansion card retainer adjacent to the LCNP4E card in PCIE slot 5. 
4	While wearing a grounded ESD wrist strap, grasp the LCNP4E card at the corners and gently remove the existing card from PCIE slot 5.
5	Insert the replacement LCNP4E card firmly into PCIE slot 5, until the card is fully seated.
6	Align the LCNP4E card edge with the card edge guide.
7	Install the screw that secures the assembly card bracket to the expansion slot cage. (The top of this screw may be on the underside of the bracket.)
8	Close the blue expansion card retainer.
9	Replace the cover and bezel.

10	Reconnect the LCN MAU cable to the LCNP4E card.
	ATTENTION Do not route cables over or behind the cards. Cables routed over the cards can prevent the system cover from closing properly or cause damages the equipment.
11	Close the cover and bezel.
12	Replace the server in the cabinet.
13	Connect the power cords and cables to the back panel of the server.
14	Connect the LCN MAU cable.
15	Press the Power On/Off button on the server, to turn on the power.

4.3 Servicing the hard disk drives and power supply

Overview

The server from Honeywell is configured with five 146 GB SAS hard drives for RAID-5 configuration and the fifth hard drive is a hot spare. The configuration also contains redundant power supplies. Both the hard disk drives and power supplies are hot swappable and must be of same capacity and speed. You must replace only one power supply and/or hard disk drive at a time in a system that is turned on. Refer to the Dell documentation for detailed instructions on swapping the power supply and hard disk drive.

References

The following table lists the specific Dell publications and relevant sections for troubleshooting and servicing the hard disk drives and power supplies.

Table 4-1 Dell Publications for Hard Disk Drives and Power Supplies

Publication	Contains information on…
Dell™ PowerEdge™ T610 Systems Hardware Owner's Manual	System Overview Basic Troubleshooting Indicators, Codes, and Messages Removing and Installing Parts

Publication	Contains information on…
	Jumpers and Connectors Using the System Setup Program Finding Software Solutions Running the System Diagnostics Troubleshooting Your System Installing System Options Installing Drives Getting Help Jumpers, Switches, and Connectors I/O Ports and Connectors Abbreviations and Acronyms

4.4 Servicing Honeywell options

Overview

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

Slot requirements for TPN node setup

The following table identifies the specific slots for the Honeywell options for a TPN node configuration.

Table 4-2 Slot Requirements for TPN Node Configuration

Slot No	Description	Option
1	PCIE-x 4	Free Slot
2	PCIE-X 8	Free Slot
3	PCIE X 8	Free Slot
4	PCIE x 4	Free Slot
5	PCIE x 4	LCNP4E

Slot requirements for General Ethernet and FTE node setup

The following table identifies the specific slots for each of the Honeywell options for general Ethernet and FTE node configurations.

Table 4-3 Slot Requirements for General Ethernet and FTE Node Configurations

Configuration	PCIE-x 4	PCIE-x 8	PCIE-x 8	PCIE-x 4	PCIE-x 4
FTE Supervisory (Default)	Free Slot	Free Slot	Free Slot	Free Slot	Free Slot
FTE Supervisory (Optional)	Free Slot	Free Slot	Free Slot	Free Slot	Free Slot
3 NICs, FTE co-joined through Dual NIC (Default)	Free Slot	Free Slot	Free Slot	Free Slot	LCNP4E
3 NICs, FTE co-joined through Dual NIC (Optional)	Dual NIC	Free Slot	Free Slot	Free Slot	LCNP4E
3 NICs, FTE co-joined through single NIC for EHG (Default)	Single NIC	Free Slot	Free Slot	Free Slot	LCNP4E
3 NICs, FTE co-joined through on-board single NIC for EHG (Optional)	Dual NIC	Free Slot	Free Slot	Free Slot	LCNP4E
1 NIC, Standard Ethernet through one on-board NIC	Free Slot	Free Slot	Free Slot	Free Slot	Free Slot

Configuration	PCIE-x 4	PCIE-x 8	PCIE-x 8	PCIE-x 4	PCIE-x 4
2 NICs, Standard Ethernet through two on-board NICs	Free Slot	Free Slot	Free Slot	Free Slot	Free Slot
3 NICs, Standard Ethernet through two on-board NICs plus single NIC	Single NIC	Free Slot	Free Slot	Free Slot	Free Slot
4 NICs, Standard Ethernet through two on-board NICs plus dual NIC	Dual NIC	Free Slot	Free Slot	Free Slot	Free Slot

Replacing the cards in expansion slots

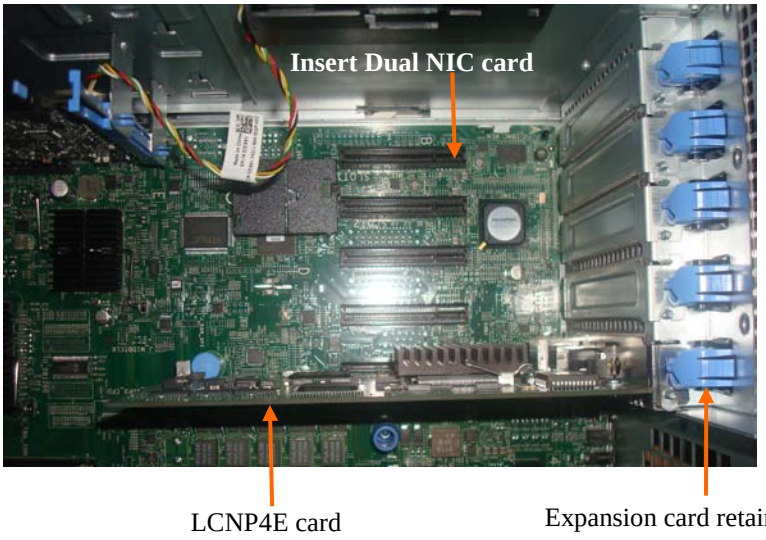
The following procedure contains information on replacing the expansion cards in the PCIE slots. See also *Dell™ PowerEdge™ T610 Systems Hardware Owner's Manual.*

Before you begin

See section 4.1.

ESD HAZARD

Expansion cards are electro statically sensitive device. Use a grounding strap and grounded work surfaces and equipment when handling these components. Store and transport parts only in electro statically safe containers.

Step	Action
1	Disconnect the cables from the expansion card.
2	Remove the expansion card stabilizer located at the top.
3	Open the blue expansion card retainer adjacent to the slot. 
4	While wearing a grounded ESD wrist strap, grasp the expansion card at the corners and gently remove it from the slot.
5	o If you are replacing an expansion card, align the expansion card edge with the card edge guide and insert the expansion firmly into the slot until the card is fully seated o If you are removing an expansion card permanently, install a metal filler bracket over the empty expansion slot opening. o If you are installing a new expansion card, remove the metal filler bracket. Align the expansion card edge with the card edge guide and insert the expansion firmly into the slot unit the card is fully seated.

Step	Action
	ATTENTION Keep this bracket in case you need to remove the expansion card later. Filler brackets must be installed over empty expansion card slots to maintain Federal Communications Commission (FCC) certification of the system. The brackets also keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.
6	Close the expansion card retainer.
7	Connect expansion card cable to the expansion card.
	ATTENTION Do not route cables over or behind the cards. Cables routed over the cards can prevent the system cover from closing properly or cause damages the equipment.
8	Close the cover and bezel.
9	Replace the server in the cabinet.
10	Connect the power cords and cables to the back panel of the server.
11	Press the Power On/Off button on the server, to turn on the power.

Adding additional memory

The standard memory capacity is 2 GB. The system memory can be increased to 4 GB, MZ PCEM12. Memory devices must be from the same memory supplier.

Table 4-4 shows the placement of memory devices for the memory capacity options. The following table so is organized that the DIMM sockets are in the same order as they are located on the motherboard.

Table 4-4 Memory Upgrade Configuration

DIMM Socket	2 GB Memory (standard)	4 GB Memory
A1	Not available for use	-
A4	Not available for use	-
A2	1 GB	1 GB

DIMM Socket	2 GB Memory (standard)	4 GB Memory
A5	-	1 GB
A3	1 GB	1 GB
A6	-	1 GB
Total	**2GB**	**4GB**

For Experion R410.x, you can expand the memory configuration to 8GB by using the memory module MZ-PCEM14. The following table describes the memory configurations for memory module MZ-PCEM14.

DIMM Socket	Memory size	Total memory
A1	Not available for use	-
A4	Not available for use	-
A2	2 GB	-
A5	2 GB	-
A3	2 GB	-
A6	2 GB	8 GB

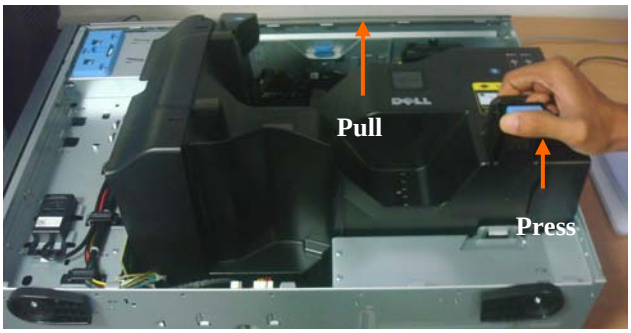
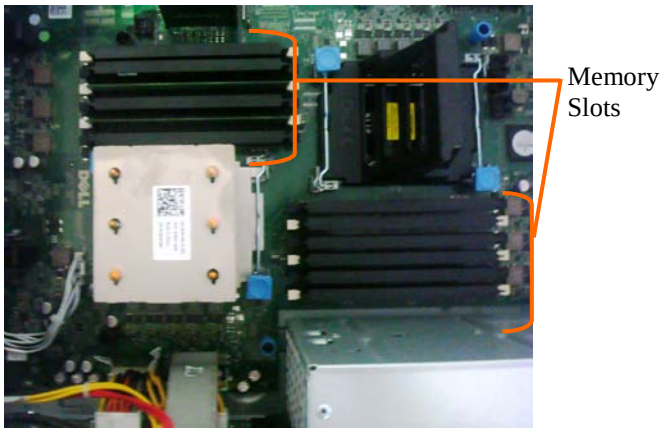
ATTENTION

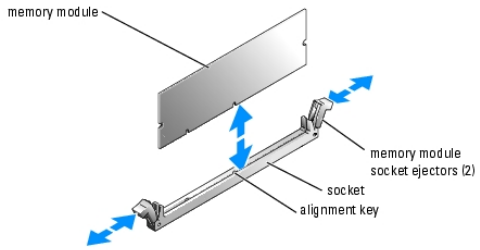
When adding additional memory, you might get a warning message stating that memory is not optimal, due to the interleaf memory socket design. You can ignore this message.

Refer the following steps to upgrade the memory. See also *Dell™ PowerEdge™ T610 Systems Hardware Owner's Manual.*

ESD HAZARD

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

Step	Action
1	Press and hold the shroud release latch in the direction of the arrow. 
2	Pull the shroud up and out of the chassis.
	 **CAUTION** The DIMMs are hot to the touch for some time after the system has been powered down. Allow time for the DIMMs to cool before handling them. Handle the DIMMs by the edges and avoid touching DIMM components.
3	The DIMM sockets are now exposed. Refer to Table 4-4 for DIMM socket configuration. 
4	While wearing a grounded ESD wrist strap, press the socket ejectors on the memory module socket down to allow the memory module to be inserted into the socket.

Step	Action
5	Insert the memory module. 
6	Align the memory module's edge connector with the alignment key on the memory module socket, and insert the memory module into the socket.
	ATTENTION The memory module socket has an alignment key that allows you to install the memory module in the socket only in one way.
7	Press down the memory module with your thumbs while pulling up on the socket ejectors with your index fingers to lock the memory module into the socket. When the memory module is properly seated in the socket, the socket ejectors on the memory module socket align with the socket ejectors on the other sockets that have memory modules installed.
8	Close the shroud and on the chassis and ensure that release handle closes securely.
9	Close the side cover.
10	Replace the server in the cabinet.
11	Connect the power cords and cables to the back panel of the server.
12	Press the Power On/Off button on the server, to turn on the power.

4.5 Verifying the BIOS settings

Purpose

All Honeywell systems must have the Honeywell recommended BIOS version. Honeywell configures specific BIOS settings in the factory for each of the server platform configurations. BIOS settings for the server are listed in the Table 4-5 and Table 4-6 list the specific BIOS settings for FTE and non-FTE configurations using a Broadcom dual NIC card for connectivity.

Table 4-5 BIOS Settings (default)

Configuration	BIOS setting		
	NIC Card PCIE dual port STP	**Broadcom Dual onboard NIC**	**Card single NIC PCIE Server**
FTE only	none	Use both NICs	none
FTE with EHG	none	Use both NICs	install
No FTE, but 1 or 2 Ethernet ports	none	Use 1 or 2 NICs (Enable both the NICs through BIOS settings)	none
No FTE, but 3 Ethernet ports	none	Use both NICs (Enable both the NICs through BIOS settings)	install
No FTE, but 4 Ethernet ports	install	Use both NICs (Enable both NICs through BIOS settings)	none

Table 4-6 BIOS Settings (optional)

Configuration	BIOS setting		
	NIC Card PCIE dual port STP	**Broadcom Dual onboard NIC**	**Card single NIC PCIE Server**
FTE only	install	Disable (through BIOS settings)	none
FTE with EHG	install	Use 1 NIC (Enable both the NICs through BIOS Settings)	none
No FTE, but 1 or 2 Ethernet ports	none	Enable two NIC (through BIOS settings)	none
No FTE, but 3 Ethernet ports	none	Enable two NIC (through BIOS settings)	install
No FTE, but 4 Ethernet ports	install	Enable two NIC (through BIOS settings)	none

BIOS settings for Model 51154292-100 and 51154292-200

Entering the BIOS

The following steps describe to access BIOS and view the settings.

ATTENTION

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

Step	Action
1	Turn on the server.
2	Press **F2** on the keyboard to enter the BIOS Setup.
3	Check the BIOS version is 1.3.6 or later.

The following tables lists the BIOS settings configured in the factory for the server platform.

System Date and Time

Item	Value
System Time	(As appropriate)
System Date	(As Appropriate)

Memory information

Item	Value
System Memory Size	2GB or more depending on the memory installed on server
System Memory Type	ECC DDR3
System Memory Speed	1067 MHz or later
Video Memory	8 MB
System Memory Testing	Enabled
Memory Operation Mode	Advanced ECC Mode
Node Interleaving	Disabled

CPU information

Item	Value
64-bit	Yes
Core Speed	2.80 GHz or later
Bus Speed	6.40GT/S
Execute Disable	Enabled
Number of cores per processor	4

Item	Value
Logical Processor	Enabled
Virtualization Technology	Disabled
Adjacent Cache Line Prefetch	Enabled
Hardware Prefetcher	Enabled
Execute Disable	Enabled
No. Of Cores/Processor	All
Demand Based Power Management	Disabled
Turbo Mode	Enabled
C-State	Enabled
C1- E State	Enabled
Processor 1 Family-Model-Stepping	06-1A-5 or later
Intel® Xeon® CPU E5560	2.80 GHZ or later
Level 2 Cache	4x256 KB
Level 3 Cache	8MB
Number of Cores	4

SATA settings

Item	Value
Embedded SATA	ATA Mode
Port A	Auto
Model	TSST Corp DVD +/- RW TS-H653F
Drive Type	Optical Drive
Capacity	N/A

Item	Value
Port B	Off

Boot settings

Item	Value
Boot Mode	BIOS
Boot Sequence	
SATA Optical drive Hard drive C:	Enabled Enabled
Boot Sequence Retry	Disabled

Integrated devices

Item	Value
Integrated RAID Controller	Enabled
User Accessible USB Ports	All Ports ON
Internal USB Port	On
Internal SD Card Port	Off
Embedded NIC 1 and NIC 2	Enabled
Embedded GB NIC 1 MAC Address Capability Detected	Enabled Xxxxxxxxxxxx TOE If you are using an Intel Dual NIC card in your configuration, see Table 4-5.
Embedded GB NIC 2 MAC Address	Enabled Xxxxxxxxxxxx

Item	Value
Capability Detected	TOE If you are using an Intel Dual NIC card in your configuration, see Table 4-6.
OS Watchdog Timer	Disabled
I/OAT DMA Engine	Disabled
Embedded Video Controller	Enabled

PCI IRQ assignment

Item	Value
Embedded NIC 1	IRQ 15
Embedded NIC 2	IRQ 14
Integrated RAID	IRQ 15
Embedded USB UHCI Controller 4	IRQ 14
Embedded USB UHCI Controller 5	IRQ 11
Embedded USB UHCI Controller 2	IRQ 10
Embedded USB UHCI Controller 1	IRQ 6
Embedded USB UHCI Controller 2	IRQ 5
Embedded USB UHCI Controller 3	IRQ 6
Embedded USB UHCI Controller 6	IRQ 5
Embedded USB UHCI Controller 1	IRQ 6
Embedded Video	IRQ 10
Embedded SATA	IRQ 14

Serial communication

Item	Value
Serial Communication	On without Console Redirection
External Serial Connector	COM1
Fail-Safe Baud Rate	115200
Remote Terminal Type	VT100/VT220
Redirection After Boot	Enabled

Embedded server management

Item	Value
Front-Panel LCD Options	Model Number
User Defined LCD String	<Enter>

System security

Item	Value
System Password	Not Enabled
Setup Password	Not Enabled
Password Status	Unlocked
Power Button	Enabled
TPM Security	Off
TPM Activation	No Change
TPM Clear	No
NMI Button	Disabled
AC Power Recovery	Off
AC Power Recovery Delay	Immediate
User Defined Delay	Enter

Item	Value
Keyboard NumLock	On
Report Keyboard Errors	Report
F1/F2 Prompt on Error	Enabled

Quitting the BIOS

Perform the following steps to exit the BIOS settings.

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

BIOS settings for Model 51154292-300 and 51154292-400

Entering the BIOS

The following steps describe to access BIOS and view the settings.

ATTENTION

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

Step	Action
1	Turn on the server.
2	Press **F2** on the keyboard to enter the BIOS Setup.
3	Check the BIOS version is 2.1.15[1.1.29] or later.

The following tables lists the BIOS settings configured in the factory for the server platform.

System Date and Time

Item	Value
System Time	(As appropriate)
System Date	(As Appropriate)

Memory information

Item	Value
System Memory Size	2GB or more depending on the memory installed on server
System Memory Type	ECC DDR3
System Memory Speed	1067 MHz or later
System Memory Voltage	1.35V
Video Memory	8 MB
System Memory Testing	Enabled
Memory Operation Mode	Advanced ECC Mode
Node Interleaving	Disabled
Memory Operation Voltage	Auto

CPU information

Item	Value
64-bit	Yes
Core Speed	2.4GHz or later
Bus Speed	5.86GT/S OPI
Logical Processor	Enabled
Virtualization Technology	Disabled

Item	Value
Adjacent Cache Line Prefetch	Enabled
Hardware Prefetcher	Enabled
DCU Streamer Prefetcher	Enabled
Data Reuse	Enabled
Execute Disable	Enabled
No. Of Cores/Processor	All
Demand Based Power Management	Disabled
Turbo Mode	Enabled
C-State	Enabled
C1- E State	Enabled
Processor 1 Family-Model-Stepping	06-2C-2 or later
Intel® Xeon® E5620	2.4GHz or Later
Level 2 Cache	4x256 KB
Level 3 Cache	12MB
Number of Cores	4

SATA settings

Item	Value
Embedded SATA	ATA Mode
Port A	Auto
Model	TSST Corp DVD +/- RW TSH653F
Drive Type	Optical Drive
Capacity	N/A

Item	Value
Port B	Off

Boot settings

Item	Value
Boot Mode	BIOS
Boot Sequence	
SATA Optical drive Hard drive C:	Enabled Enabled((Integrated RAID PERC6/i Integrated)
Boot Sequence Retry	Disabled

Integrated devices

Item	Value
Integrated RAID Controller	Enabled
User Accessible USB Ports	All Ports ON
Internal USB Port	On
Internal SD Card Port	Off
Embedded NIC 1 and NIC 2	Enabled
Embedded GB NIC 1 MAC Address Capability Detected	Enabled Xxxxxxxxxxxx TOE
Embedded GB NIC 2 MAC Address Capability Detected	Enabled Xxxxxxxxxxxx TOE
OS Watchdog Timer	Disabled

Item	Value
I/OAT DMA Engine	Disabled
Embedded Video Controller	Enabled

PCI IRQ assignment

Item	Value
Embedded NIC 1	IRQ 15
Embedded NIC 2	IRQ 14
Integrated RAID	IRQ 15
Embedded USB UHCI Controller 4	IRQ 14
Embedded USB UHCI Controller 5	IRQ 11
Embedded USB EHCI Controller 2	IRQ 10
Embedded USB UHCI Controller 1	IRQ 6
Embedded USB UHCI Controller 2	IRQ 5
Embedded USB UHCI Controller 3	IRQ 6
Embedded USB UHCI Controller 6	IRQ 5
Embedded USB EHCI Controller 1	IRQ 6
Embedded Video	IRQ 10
Embedded SATA1	IRQ 14

Serial communication

Item	Value
Serial Communication	On without Console Redirection
Serial port address	Serial Device 1 = Com1 Serial Device 2 = Com 2
External Serial Connector	Serial Device 1
Fail-Safe Baud Rate	115200
Remote Terminal Type	VT100/VT220
Redirection After Boot	Enabled

Embedded server management

Item	Value
Front-Panel LCD Options	User defined String
User Defined LCD String	<Enter>

Power Management

Item	Value
Power Management	OS Control
CPU Power Performance Management	OS DBPM
Fan Power and Performance Management	Minimum Power
Memory Power and Performance Management	Maximum Performance

System security

Item	Value
Intel® AES-NI	Enabled
System Password	Not Enabled
Setup Password	Not Enabled
Password Status	Unlocked
TPM Security	Off
TPM Activation	No Change
TPM Clear	No
Power Button	Enabled
NMI Button	Disabled
AC Power Recovery	Off
AC Power Recovery Delay	Immediate

Item	Value
User Defined Delay	Enter
Keyboard NumLock	On
Report Keyboard Errors	Report
F1/F2 Prompt on Error	Enabled

Quitting the BIOS

Perform the following steps to exit the BIOS settings.

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

4.6 Spare parts

The following table lists the Optimal Replaceable Units (ORUs) for the server.

Table 4-7 Spare Parts for T610 Honeywell Server

Item	Description	Part No.
Rack mount Rails for T610	Versa rails for T610	51154292-905
Processor(for Tab 100/200)	Intel® Xeon® X5560, 2.8Ghz, 8M Cache, Turbo, HT, 1333MHz Max Memory 6.4GT/s QPI.	51154292-904
Processor(for Tab 300/400)	Intel® Xeon® E5620, 4C/8T, 2.4 GHz (2.66 GHz Turbo), L3-12MB, QPI- 5.86 GT/s, QPI Links-2, 80 W, DDR3-800/1066, HT -Y, Turbo-Y.	51154292-911
Chipset	Intel 5520	-
NIC	Two Embedded Broadcom Gigabit	-

Item	Description	Part No.
	NIC or greater	
RAID Controller	PERC6/I (Firmware Version 6.2.0-0013, A11), RAID 5 configuration	-
RAM	2GB, 2 x 1GB ECC DDR 3 UDIMM advanced ECC	51154292-901
Mouse	USB Optical Mouse	51154292-902
Keyboard	USB Standard Windows Keyboard	51154292-903
DVD Drive	SATA-DVD RW Drive	51154292-906
Video Memory Upgrade	None	-
Hard Drive	5, hot-swappable, 2.5” 146GB SAS, 15K rpm minimum	-
Power	Energy Smart – Two hot-plug high-efficient 570W PSU	-
I/O Expansion	5 PCIE Generation 2	-
Warranty/Service	Next Business Day, Parts & Labor Service, Service 3 years	-
Manuals	Reference & Installation Guide Diagnostics & Troubleshooting Guide	51154292-908
Software(for Tab 100 and 200 only)	Windows 2003 Server Standard Service Pack 2 loaded as a downgrade from Windows Server 2008 Standard Drivers for above hardware content System	51154292-907
Miscellaneous	-	-

5. Notices

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5.1 Documentation feedback

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

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5.2 How to report a security vulnerability

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

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

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

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

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

- Send an email to security@honeywell.com.

or

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

5.3 Support

For support, contact your local Honeywell Process Solutions Customer Contact Center (CCC). To find your local CCC visit the website, https://www.honeywellprocess.com/en-US/contact-us/customer-support-contacts/

5.4 Training classes

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

Honeywell

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