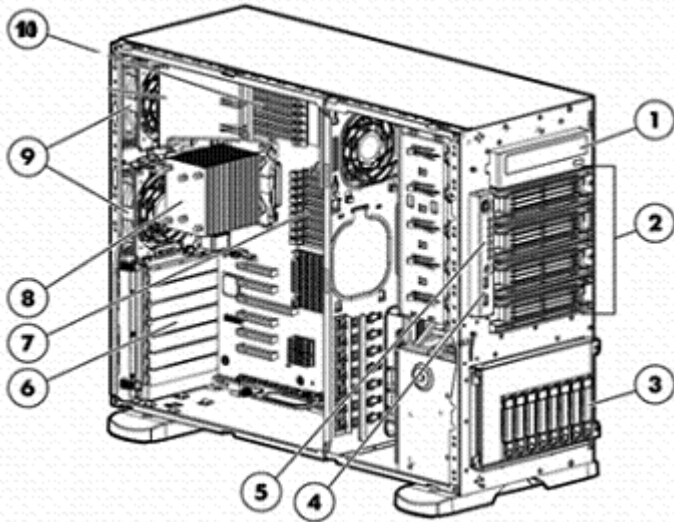


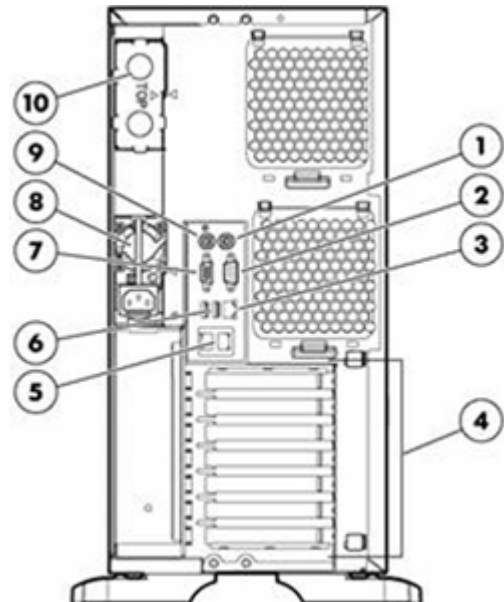
Overview

The HP ProLiant ML350 G6 is the best price-performance, dual-processor Tower server that delivers excellence with performance, expandability and availability. The G6 server has more memory capacity and HDD expandability than previous generations. It combines the latest Intel Xeon 5600 processors with QPI technology, best-in-class availability features, and unsurpassed flexibility in a system ideal for growing businesses and especially well suited to meet the needs of remote branch offices.



Front View-

1. SATA DVD ROM or DVD RW optical drive
2. Four (4) removable media bays
3. Eight (8) 2.5" (shown) or six (6) 3.5" SAS or SATA hot plug drive bays
4. Two (2) USB ports
5. LEDs - System power, Health, Power cap, NIC 1&2, UID
6. Six (6) expansion slots
7. Nine (9) DIMM slots (Processor 2) - DDR3 Registered (RDIMM) or Unbuffered (UDIMM) memory
8. Processor heatsink
9. Three (3) system fans
10. Nine (9) DIMM slots (Processor 1) - DDR3 Registered (RDIMM) or Unbuffered (UDIMM) memory



Rear View-

1. PS/2 mouse port
2. Serial port
3. Dedicated remote management port
4. Six (6) expansion slots
5. Two (2) network ports
6. Two (2) USB ports
7. Video port
8. Power supply bay 1
9. PS/2 keyboard port
10. Power supply bay 2

What's New

- Support for new HP Hard Drive.

Standard Features

NOTE For the Standard Features shipped in the Factory Integrated Models, please see the Configuration Information - Factory Integrated Models section.

Processor

One of the following depending on Model

Six-Core Processors

Intel® Xeon® X5675 (3.06GHz/6-core/12MB/95W, DDR3-1333, HT, Turbo 1/1/2/2/3/3) Processor

Intel® Xeon® X5670 (2.93GHz/6-core/12MB/95W, DDR3-1333, HT, Turbo 1/1/2/2/3/3) Processor

Intel® Xeon® X5660 (2.80GHz/6-core/12MB/95W, DDR3-1333, HT, Turbo 1/1/2/2/3/3) Processor

Intel® Xeon® X5650 (2.66GHz/6-core/12MB/95W, DDR3-1333, HT, Turbo 1/1/2/2/3/3) Processor

Intel® Xeon® E5649 (2.53GHz/6-core/12MB/80W, DDR3-1333, HT, Turbo 1/1/2/2/3/3) Processor

Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W, DDR3-1333, HT, Turbo 1/1/2/2/3/3) Processor

Quad-Core Processors

Intel® Xeon® X5672 (3.20GHz/4-core/12MB/95W, DDR3-1333, HT, Turbo 1/1/2/2/3/3) Processor

Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo) Processor

Intel® Xeon® E5603 (1.60GHz/4-core/4MB/80W) Processor

Intel® Xeon® X5570 (2.93GHz/4-core/8MB/95W, DDR3-1333, HT, Turbo 2/2/3/3) Processor

Intel® Xeon® X5560 (2.80GHz/4-core/8MB/95W, DDR3-1333, HT, Turbo 2/2/3/3) Processor

Intel® Xeon® X5550 (2.66GHz/4-core/8MB/95W, DDR3-1333, HT, Turbo 2/2/3/3) Processor

Intel® Xeon® E5540 (2.53GHz/4-core/8MB/80W, DDR3-1066, HT, Turbo 1/1/2/2) Processor

Intel® Xeon® E5607 (2.26GHz/4-core/8MB/80W, DDR3-1333, HT, Turbo 1/1/2/2/3/3) Processor

Intel® Xeon® L5630 (2.13GHz/4-core/12MB/40W, DDR3-1066, HT, Turbo 1/1/2/2) Processor

Intel® Xeon® L5520 (2.26GHz/4-core/8MB/60W, DDR3-1066, HT, Turbo 1/1/2/2) Processor

Intel® Xeon® L5506 (2.13GHz/4-core/4MB/60W, DDR3-800) Processor

Intel® Xeon® E5606 (2.13 GHz/4-core/8MB/80W, DDR3-1066, HT, Turbo 1/1/2/2/3/3) Processor

Dual-Core Processors

Intel® Xeon® E5502 (1.86GHz/2-core/4MB/80W, DDR3-800) Processor

NOTE HT indicates that the processor model supports Intel® Hyper-Threading Technology.

NOTE Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 4, 3, 2, and 1 cores active.

NOTE DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed.

NOTE For the Intel 5600 and 5500 Series, the letter preceding the model number indicates the performance/wattage of the processor. **H** denotes High Performance/Wattage, **E** denotes Enterprise Performance/Wattage (Mainstream), and **L** denotes Lower Wattage.

NOTE Customers transitioning from 5500 series processors to 5600 series processors must include a third fan along with the two fans present on the server

Cache Memory

One of the following depending on Model

12MB (1 x 12MB) Level 3 cache

NOTE For 5600 series processors (other than those indicated below)

8MB (1 x 8MB) Level 3 cache

NOTE For E5606/E5607/X5570/X5560/X5550/E5540/L5520 processors

4MB (1 x 4MB) Level 3 cache

NOTE For E5603/E5507/E5502/L5506 processors

Standard Features

Chipset Intel® 5520 Chipset
NOTE-For more information regarding Intel® chipsets, please see the following URL-
<http://www.intel.com/products/server/chipsets/>.

Upgradeability Upgradeable to two processors
NOTE-total 4, 8 or 12 cores

Memory Protection Advanced ECC
 Mirroring mode
 Lock-step mode
 Online Spare (Requires X5600 or E5600 processor family)

Memory Type DDR3 Registered (RDIMM) or Unbuffered (UDIMM)
 One of the following depending on model
 Standard (Performance Models) 12 GB (6 x 2 GB) RDIMM
 Standard (Base Models) 6 GB (3 x 2 GB) RDIMM
 Standard (Entry Models) 4 GB (2 x 2 GB) RDIMM
 Standard (Entry Models) 4 GB (1 x 4 GB) RDIMM
 Maximum (RDIMM) 288 GB (18 x 16 GB) RDIMM
 Maximum (UDIMM) 48 GB (12 x 4 GB)
NOTE-Depending on the memory configuration and processor model, the memory speed may run at 1333MHz, 1066MHz, or 800MHz. Please see the Online Memory Configuration Tool at-
www.hp.com/go/ddr3memory-configurator.
NOTE-The 16 GB memory module is a quad ranked 800MHz DDR3 memory.

Network Controller Embedded NC326i PCI Express Dual Port Gigabit Server Adapter

Expansion Slots

| Expansion Slot # | Technology | Bus Width | Connector Width | Bus Number | Form Factor | Notes |
|------------------|------------------|-----------|-----------------|------------|------------------------|-------|
| 6 | PCI Express Gen2 | x4 | x8 | 5 | Standard Height/Length | |
| 5 | PCI Express Gen2 | x4 | x8 | 8 | Standard Height/Length | |
| 4 | PCI Express Gen2 | x8 | x16 | 11 | Standard Height/Length | |
| 3 | PCI Express Gen2 | x8 | x8 | 14 | Standard Height/Length | |
| 2 | PCI Express Gen2 | x4 | x8 | 17 | Standard Height/Length | |
| 1 | PCI Express Gen2 | x4 | x8 | 20 | Standard Height/Length | |

NOTE-Bus number - Default bus assignment (in decimal). Inserting cards with PCI bridges may alter the actual bus assignment number



Standard Features

** Indicates the number of physical electrical lanes running to the connector.

NOTE-Six total expansion slots. One PCI-Express x16 Gen2 (x8 speed)+One PCI-Express x8 Gen2 (x8 speed)+Four PCI-Express x8 Gen2 (x4 speed). Optional PCI-X Expander provides additional two 64-bit/100-MHz PCI-X slots by using a single PCI Express slot.

| | | |
|--|---|--|
| Storage Controller One of the following depending on model | Entry Models | Embedded HP Smart Array P410i/Zero Memory Controller (RAID 0/1/1+0) |
| | Base Models | Embedded HP Smart Array P410i/256MB Controller (RAID 0/1/1+0/5/5+0) Embedded HP Smart Array P410i/512 MB BBWC Controller (RAID 0/1/1+0/5/5+0) |
| | Performance Models | Embedded HP Smart Array P410i/1GB FBWC Controller |
| | Available upgrades-256MB, 512MB with BBWC, Battery kit upgrade (for BBWC), and Smart Array Advanced Pack (SAAP) | |

| | | |
|---------------------------------|----------------|---|
| Internal Storage Devices | Diskette Drive | None included standard (not supported) |
| | Optical Drives | HP Half-Height SATA DVD-ROM Optical Drive |
| | Hard Drives | None standard |

| | | | |
|--|-------------------|-------|------------|
| Maximum Internal Storage One of the following depending on model | Hot Plug LFF SAS | 24TB | 8 x 3TB |
| | Hot Plug LFF SATA | 24TB | 8 x 3TB |
| | Hot Plug SFF SAS | 16TB | 16 x 1TB |
| | Hot Plug SFF SATA | 16TB | 16 x 1TB |
| | Hot Plug SFF SSD | 6.4TB | 16 x 400GB |

| | | |
|-------------------|-------------------------|---|
| Interfaces | Serial | 1 |
| | Network RJ-45 | 3 (1 dedicated for HP Integrated Lights-Out 2 (iLO2)) |
| | Keyboard | 1 |
| | Pointing Device (Mouse) | 1 |
| | Graphics | 1 |
| | SD slot | 1 (internal) |
| | USB 2.0 Ports | 6 (2 front, 2 rear, 2 internal) |

| | |
|-------------------------------------|--------------------------------|
| Industry Standard Compliance | ACPI V2.0 Compliant |
| | PCI-Express Gen2 |
| | PXE Support |
| | WOL Support |
| | PCI-X 1.0a Compliant |
| | Novell Certified |
| | Microsoft® Logo certifications |
| | USB 2.0 Support |
| | SMBIOS 2.6.1 |

Standard Features

Server Power Cords

ProLiant ML servers in a rack-mount configuration no longer ship standard with NEMA power cords that allow connection to 110V US wall outlets in a home or office. These servers are primarily connected to PDU's in data center racks so they now ship standard with only a PDU power cord (416151-B21). If a user wishes to power a ProLiant ML rack-mount server using a 110V receptacle (NEMA-15), the NEMA power cord must be ordered separately. The 12' cord (AF556A) or 6' cord (187335-001) can be purchased online at HP.COM. In a tower configuration, the servers ship standard with a 6' country specific NEMA power cord. If customers require a local power cord, they can check the power cord matrix for the appropriate country specific sku. Please see the following power cord matrix=<http://www.hp.com/go/powercordmatrix>.

Power Supply

One of the following depending on Model

HP 750W CS HE Gold Power Supply (standard on some models)
HP 460W CS HE Gold Power Supply (standard on some models)

Common Slot Power Supplies

HP has a new design for ProLiant power- the new Common Slot Power Supply bay. This design provides the customer with commonality in power supplies across multiple platforms to save on the cost of spares and allows HP to offer multiple power solutions to fit the customers' needs. Many HP ProLiant Servers come with Common Slot, High Efficiency and Right-Size Power Supplies. The new HP Common Slot power supplies are designed for the highest power efficiency without degrading performance of the ProLiant server. Power Supplies have efficiency ratings up to 92%. There are three Right Size power options available depending on the configuration of your server. To make sure you select the correct power supply to meet your configuration, please use the HP Power Advisor at=www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor. All HP Common Slot power sources are UL, CE Mark Compliant, Hot Plug and Redundant.

It is highly recommended that you use the HP Power Advisor in defining the Right-Size power supply for your needs.

The HP ProLiant Common Slot Power supplies meet multiple Energy Efficiency Initiatives=Climate Savers Computing Initiative GOLD and ECOS Consulting 80PLUS GOLD for the 460w and 750w Power Supplies and Climate Savers Computing Initiative Silver, ECOS Consulting 80PLUS Silver for 1200w Power Supply. HP has also been working with the EPA on developing an ENERGY STAR? Computer Server specification and plans on offering models that meet the requirements when they are published. Please visit the ENERGY STAR website at www.energystar.gov for updates on the specification development process and approved platforms.

The HP Power Advisor is located at=www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor

System Fans

3 system fans ship standard

NOTE=Does not include power supply or processor heat sink fans.

N+1 fan redundancy optional with redundant fan kit

Required Cabling

For required cabling information, refer to the HP ProLiant ML350 G6 cabling matrix at=<http://www.hp.com/servers/proliantML350>.

NOTE=Please see the Storage& section of this QuickSpecs for important information on controllers and cables required to support SAS or SATA hard drives as well as storage management software available for SATA hard drives.

Standard Features

Operating Systems and Virtualization Software Support for ProLiant Servers

Microsoft Windows Server
Red Hat Enterprise Linux (RHEL)
SUSE Linux Enterprise Server (SLES)
NetWare
NOTE NetWare support on Intel Xeon 5500 family only.
VMware
HP Citrix Essentials for XenServer

NOTE For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at <http://www.hp.com/go/ossupport>

Graphics

Integrated ATI RN50, 64MB video standard

- 16 bit color—maximum resolution of 1600 x 1200
- 32 bit color—maximum resolution of 1280 x 1024

NOTE Maximum resolution available via iLO remote console is 1280 x 1024.

Form Factor

Tower or Rack (5U)

NOTE Rack models (with a Tower to Rack conversion kit) support

- Square or round hole racks 24& 36& deep, including HP Rack System /E and HP Systems
- Telco racks with 3rd part option kit from Rack Solutions
<http://www.racksolutions.com/hp>

HP Insight Management

HP Insight Foundation

Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters.

HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecycle. This provides the customer with higher levels of operational efficiency and highly reliable systems—<http://www.hp.com/go/foundation>

The foundation pack includes

- HP SmartStart
- HP Management DVD
- HP ProLiant Smart Update Firmware DVD

NOTE In an effort to support reducing our environmental impact, the HP Insight Foundation Suite for ProLiant media will be available as a selectable option for this server at time of order of a CTO SKU. This will allow customers to order the number of media kits that best meet their needs and eliminate receiving unnecessary duplicate media.

HP Integrated Lights-Out (iLO)

HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and Insight Dynamics

Standard Features

for ProLiant, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service. For more information, visit www.hp.com/go/iLO

Intelligent Manageability HP Systems Insight Manager
SmartStart
Redundant ROM
System Firmware Update
ROMPaq
ProLiant RBSU (ROM-Based Setup Utility)
Automatic Server Recovery-2 (ASR-2)
Dynamic Sector Repairing (with Smart Array Controller)
Drive Parameter Tracking (with Smart Array Controller)
Pre-Failure Warranty (covers processors, memory, and SAS hard drives)

Security Power-on password
Setup password
Serial interface control
Disk configuration lock
Power switch security

Warranty

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners resellers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Hard drives have either a one year or three year warranty—refer to the specific hard drive QuickSpecs for details.

NOTE—Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories—1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part—2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at—

<http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

Optional Features

| | | |
|------------------------------|---------------------|---|
| HP Insight Management | HP Insight Control | HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. For more information, see http://www.hp.com/go/insightcontrol . |
| | | HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, see http://www.hp.com/services/insight . |
| | HP Insight Dynamics | HP Insight Dynamics for ProLiant, a product option, is advanced infrastructure management software that enables IT staff to instantly adjust their environments to meet dynamic business demands by provisioning, optimizing and protecting complex infrastructure in minutes. It's a powerful toolkit, integrated-by-design, that accelerates complex technology projects and simplifies daily operations, transforming data center economics. With Insight Dynamics IT professionals can plan capacity and power continuously, balance workloads across physical and virtual resources, and ensure cost-effective high availability. It also enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements. In addition to the previous functional benefits, it also provides a cost-effective disaster recovery for physical and virtual environments that works with HP Continuous Access software for both the Enterprise Virtual Array and the XP storage array allowing application environments to be reactivated in minutes with the touch of a button to a remote location. NOTE For more information, visit http://www.hp.com/go/insightdynamics |

Storage Software

Whether you need to solve a specific data protection, archiving, or storage command and control challenge, or deliver on strategic consolidation, compliance, or continuity initiatives, look no further than HP storage software. Our storage software helps you reduce costs, simplify storage infrastructure, protect vital assets and respond faster to business opportunities.

Storage software that gets the job done

- **Data Protection and Recovery Software**
Whether you're a large enterprise or a smaller business, HP data protection and recovery software will cost-effectively protect you against disaster and ensure business continuity.
- **Data Archive and Migration Software**
HP's storage software enables you to comply with data retention and retrieval requirements, improve application performance, and reduce costs by efficiently migrating infrequently accessed or less valuable data to lower cost storage.
- **Storage Resource Management Software (SRM)**
HP's storage resource management software reduces operational costs and provides the command and control foundation you need to efficiently manage and visualize your physical and virtual environments.
- **Data Replication Software**
HP offers array-based and host-based replication software for use in disaster recovery, testing, application development and reporting.

Optional Features

- **Storage Device Management Software**

Maximize your investment in HP storage and networking with software that enables hardware-specific configuration, performance tuning and connectivity management.

- **HP StoreVirtual VSA**

With HP StoreVirtual VSA you can use the power of virtualization to turn a set of heterogeneous and disconnected physical disk drives in your servers and storage devices into a single pool of logical storage capacity.

NOTE—For more information available Storage Software including QuickSpecs, please see—
www.hp.com/go/storage/software.

HP Proactive Insight experience

Prevent problems with innovative, automated monitoring tools and proactive services. The HP Proactive Insight experience consist of using Insight Online, Insight Remote Support, and Proactive Care Support Service as one integrated solution. The Proactive Insight experience provides you with expert advice and personalized, cloud-based automated IT support, helping to prevent unplanned down time and solve problems quickly. For more information, visit—www.hp.com/go/proactiveinsightexperience

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage—HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to—<http://www.hp.com/go/factory-express>

HP Simple Configurator

SCE is a guided self service tool to help sales and non technical people provide customers with initial configurations in 3 to 5 minutes. You may then send the configuration on for configuration help, or use in your existing ordering processes. If you require custom rack configuration or configuration for products not available in SCE, please contact HP's Customer Business Center or an Authorized Partner for assistance.
<http://www.hp.com/products/configurator>

Service and Support

Service and Support

HP Technology Services for Industry Standard Servers and BladeSystem

Capitalizing on HP ProLiant server and HP BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know HP infrastructure hardware and software best - the experienced professionals at HP Services.

What HP ProLiant and BladeSystem Services can do for you

HP ProLiant and BladeSystem Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. This way, HP proposes services solutions that include more than just uplift of base warranty. You can get the support you need by choosing from one of a number of service packaged solutions we have designed to address wider set of customer support needs².

HP Technology Services meets business challenges with services offered in three packages -

Optimized Care Package, Standard Care Package, and Basic Care Package - available for each product group. Such packaged solutions enable customers to optimize technology operations, minimize risk and drive better business outcomes with easy-to-buy, easy-to-use scalable support packages for servers, storage, networking and software.

Optimized Care Package

Supports maintaining servers at optimum performance availability

HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN>

HP Installation and Startup for Insight Control Software

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

3-Year HP Critical Advantage

Provides end-to-end infrastructure support solution for business critical applications running on virtualized/x86 infrastructures, enabling the customers to cost effectively build, operate, and continuously improve their IT environment

<http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA3-1772ENW>

Additional Services² Microsoft or Linux or VMware education courses + Facility & technology environmental assessment services + Energy Efficiency Design, Factory Express

Standard Care Package

Package that maintains high level of server availability

HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN>

HP Installation and Startup for Insight Control Software

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

3-Year HP 6 hour Hardware Support Onsite Call-to-Repair Service

Provides an IT manager with a team of support specialists who will quickly begin troubleshooting the system to help return the hardware to operating condition within 6 hours of the initial service request to the HP Global Solution Center

Service and Support

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EN.pdf>

3-Year , HP 24x7 Software Support for Insight Control

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE.pdf>

Additional Services - Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware Installation & Start Up, and Software Support) Install and Startup Services for Insight Control) Microsoft or Linux or VMware education courses) +30 Proactive Select Credits, Factory Express

Basic Care Package

Delivers minimum recommended support service level

HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN>

HP Installation and Startup for Insight Control Software

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

3-Year HP 24x7 4 hour Response, Hardware Support Onsite Service

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-9972ENW.pdf>

3-Year , HP 24x7 Software Support for Insight Control

Provides for the deployment and basic configuration of HP Insight Control on HP ProLiant ML and DL series servers or HP BladeSystem servers

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE.pdf>

Additional Services - Software OS (Microsoft, Linux (SUSE/Red Hat) & VMware Installation & Start Up and Software Support) +10 Proactive Select Credits, Factory Express

Insight Remote Support

The packages include HP Insight Remote Support that uses proven technology to deliver secure, reliable 24x7 remote monitoring, diagnoses, and problem resolution. It is available at no additional cost to all warranty, HP Care Pack Service, and service agreement customers.

For more information

To learn more on HP ProLiant servers and HP BladeSystem servers, please contact your HP sales representative or HP Authorized Channel Partner. Or visit <http://www.hp.com/services/proliant>

Pre-configured Models

NOTE For the Standard Features shipped in the [Factory Integrated Models](#), please see the [Configuration Information - Factory Integrated Models](#) section.

NOTE Pre-configured models ship with the configurations below. Options can be selected from the Core or Additional options section of this QuickSpecs.

NOTE HP does not allow factory integration of options into pre-configured models. Any additional options purchased will be shipped separately.

NOTE If you desire a custom configuration please see [Configuration Information - Factory Integrated Models](#) section of this QuickSpecs.

NOTE Not all models are available in all regions. Check with your local country HP offices for availability.

Entry Models

| | | |
|--|---|---|
| HP ProLiant ML350 G6 E5606 1P 4GB-R P410i/ZM 460W RPS LFF Tower Server 638180-xx1 | Processor Cache Memory Memory Network Controller Storage Controller Hard Drive Internal Storage Optical Drive Power Supply Fans Accessories Form Factor Warranty | (1) Intel® Xeon® E5606 (2.13GHz/4-core/8MB/80W, DDR3-1066, HT, Turbo 1/1/2/2/3/3) Processor 8MB (1 x 8MB) L3 cache 4GB (1 x 4GB) PC3-10600R (DDR3-1333) Registered DIMMs Embedded NC326i PCI Express Dual Port Gigabit Server Adapter HP Smart Array P410i/Zero Memory Controller None ship standard (6) LFF SATA/SAS HDD bays; upgradeable to (8) in total HP Half-Height SATA DVD-ROM Optical Drive (1) 460 Watt Hot-Plug (Redundancy enabled) power supply 3 fans ship standard PS/2 Keyboard and Mouse ship standard NOTE EURO (-421) Models excludes the keyboard. Tower (5U) Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response |
|--|---|---|

Base Models

| | | |
|---|--|--|
| HP ProLiant ML350 G6 E5645 1P 6GB-R P410i/256 750W RPS SFF Server 638181-xx1 | Processor Cache Memory Memory Network Controller Storage Controller Hard Drive Internal Storage Optical Drive Power Supply Fans Accessories Form Factor | (1) Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W, DDR3-1333, HT, Turbo 1/1/2/2/3/3) Processor 12MB (1 x 12MB) L3 cache 6GB (3 x 2GB) PC3-10600 (DDR3-1333) Registered DIMMs Embedded NC326i PCI Express Dual Port Gigabit Server Adapter Embedded HP Smart Array P410i/256MB Controller None ship standard (8) SFF SAS/SATA HDD Bays; upgradeable to (16) HP Half-Height SATA DVD-ROM Optical Drive (1) 750 Watt Hot-Plug (Redundancy enabled) power supply 3 fans ship standard PS/2 Keyboard and Mouse ship standard NOTE EURO (-421) Models excludes the keyboard. Tower (5U) |
|---|--|--|

Pre-configured Models

| | | |
|--|---------------------------|--|
| | Warranty | Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response |
| HP ProLiant ML350 G6 E5620 1P 6GB-R P410i/256 460W RPS Tower Server 594869-xx1 | Processor | (1) Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W, DDR3-1066, HT, Turbo (1/1/2/2) Processor |
| | Cache Memory | 12MB (1 x 12MB) L3 cache |
| | Memory | 6GB (3 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs |
| | Network Controller | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter |
| | Storage Controller | Embedded HP Smart Array P410i/256MB Controller |
| | Hard Drive | None ship standard |
| | Internal Storage | (8) SFF SAS/SATA HDD Bays†upgradeable to (16) |
| | Optical Drive | SATA DVD ROM |
| | Power Supply | (1) 460 Watt Hot-Plug (Redundancy enabled) power supply |
| | Fans | 3 fans ship standard |
| | Accessories | PS/2 Keyboard and Mouse ship standard NOTE=EURO (-421) Models excludes the keyboard. |
| | Form Factor | Tower (5U) |
| | Warranty | Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response |

Performance Models

| | | |
|--|---------------------------|--|
| HP ProLiant ML350 G6 X5650 2P 12GB-R P410i/1GB FBWC 750W RPS Tower Server 594874-xx1 | Processor | (2) Intel® Xeon® X5650 (2.66GHz/6-core/12MB/95W, DDR3-1333, HT, Turbo 1/1/2/2/3/3) Processors |
| | Cache Memory | 12MB (1 x 12MB) L3 cache |
| | Memory | 12 GB (6 x 2GB) PC3-10600R (DDR3-1333) Registered DIMMs |
| | Network Controller | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter |
| | Storage Controller | Embedded HP Smart Array P410i/1G FBWC Controller |
| | Hard Drive | None ship standard |
| | Internal Storage | (8) SFF SAS/SATA HDD Bays†upgradeable to (16) |
| | Optical Drive | SATA DVD ROM |
| | Power Supply | (2) 750 Watt Hot-Plug Redundant power supplies |
| | Fans | 4 full Redundant fans |
| | Accessories | PS/2 Keyboard and Mouse ship standard NOTE=EURO (-421) Models excludes the keyboard. |
| | Form Factor | Tower (5U) |
| | Warranty | Server Warranty includes 3-Year Parts, 3-Year Labor, 3-Year Onsite support with next business day response |

Pre-configured Models

Country Code Key

xx=00

xx=01

xx=03

xx=04

xx=05

xx=20

xx=29

xx=37

xx=42

xx=AA

Tower Code Key

US

Australia

UK

Germany

France

Brazil

Japan

APD

Europe

NOTE—EURO (-421) Models excludes the keyboard.

PRC

Rack Code Key

US

N/A

N/A

N/A

N/A

N/A

Japan

APD

Europe

PRC

Configuration Information - Factory Integrated Models

NOTE—This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on configurable product offerings and requirements.

NOTE—Configure-to-order (CTO) servers must start with a CTO Chassis.

NOTE—FIO indicates that this option is only available as a factory installable option.

Step 1—Base Configuration (choose one of the following configurable models)

HP Models

ML350G6 Tower Models

HP ProLiant ML350 G6 SFF Configure-to-order Tower Chassis 483447-B21

Includes—

Embedded NC326i PCI Express Dual Port Gigabit Server Adapter
 Embedded Smart Array P410i Controller
 Eight (8) Hot-Plug (SFF) SAS/SATA Drive Bays
 Seven (7) HDD blanks
 Six (6) Expansion slots—One Express x16 Gen2 (x8 speed)†One PCI-Express x8 Gen2 (x8 speed)†Four PCI-Express x8 Gen2 (x4 speed)
 Six (6) USB ports
 PS/2 Keyboard & Mouse (selection required)
 Tower Form Factor

HP ProLiant ML350 G6 LFF Configure-to-order Tower Chassis 483448-B21

Includes—

Embedded NC326i PCI Express Dual Port Gigabit Server Adapter
 Embedded Smart Array P410i Controller
 Six (6) Hot-Plug (LFF) SAS/SATA Drive Bays
 Five (5) HDD blanks
 Six (6) Expansion slots—One Express x16 Gen2 (x8 speed)†One PCI-Express x8 Gen2(x8 speed)†Four PCI-Express x8 Gen2 (x4 speed)
 Six (6) USB ports
 P/S 2 Keyboard & Mouse (selection required)
 Tower Form Factor

ML350G6 Rack Models

HP ProLiant ML350 G6 SFF Configure-to-order Rack Server 483443-B21

Includes—

Embedded NC326i PCI Express Dual Port Gigabit Server Adapter
 Embedded Smart Array P410i Controller
 Eight (8) Hot-Plug (SFF) SAS/SATA Drive Bays
 Seven (7) HDD blanks
 Six (6) Expansion slots—One Express x16 Gen2 (x8 speed)†One PCI-Express x8 Gen2 (x8 speed)†Four PCI-Express x8 Gen2 (x4 speed)
 Six (6) USB ports
 Rack (5U) Form Factor

HP ProLiant ML350 G6 LFF Configure-to-order Rack Server 483444-B21

Includes—

Embedded NC326i PCI Express Dual Port Gigabit Server Adapter
 Embedded Smart Array P410i Controller
 Six (6) Hot-Plug (LFF) SAS/SATA Drive Bays
 Five (5) HDD blanks
 Six (6) Expansion slots—One Express x16 Gen2 (x8 speed)†One PCI-Express x8 Gen2 (x8 speed)†Four PCI-Express x8 Gen2 (x4 speed)
 Six (6) USB ports



Configuration Information - Factory Integrated Models

Rack (5U) Form Factor

Step 2= Choose Required Options (only one of the following from each list unless otherwise noted)

HP Processors

Six-Core Processors

| | |
|--|------------|
| HP ML350 G6 Intel® Xeon® X5675 (3.06GHz/6-core/12MB/95W) FIO Processor Kit | 638315-L21 |
| HP ML350 G6 Intel® Xeon® X5660 (2.80GHz/6-core/12MB/95W) FIO Processor Kit | 601238-L21 |
| HP ML350 G6 Intel® Xeon® X5650 (2.66GHz/6-core/12MB/95W) FIO Processor Kit | 601240-L21 |
| HP ML350 G6 Intel® Xeon® E5649 (2.53GHz/6-core/12MB/80W) FIO Processor Kit | 638316-L21 |
| HP ML350 G6 Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W) FIO Processor Kit | 638317-L21 |

Quad-Core Processors

| | |
|--|------------|
| HP ML350 G6 Intel® Xeon® X5672 (3.20GHz/4-core/12MB/95W) FIO Processor Kit | 638314-L21 |
| HP ML350 G6 Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W) FIO Processor Kit | 601246-L21 |
| HP ML350 G6 Intel® Xeon® E5607 (2.26GHz/4-core/8MB/80W) FIO Processor Kit | 638318-L21 |
| HP ML350 G6 Intel® Xeon® E5606 (2.13GHz/4-core/8MB/80W) FIO Processor Kit | 638319-L21 |
| HP ML350 G6 Intel® Xeon® E5603 (1.60GHz/4-core/4MB/80W) FIO Processor Kit | 638320-L21 |
| HP ML350 G6 Intel® Xeon® L5630 (2.13GHz/4-core/12MB/40W) FIO Processor Kit | 601252-L21 |

NOTE= Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors

HP Memory

Registered DIMMs (RDIMMs)

NOTE= Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors

| | |
|--|------------|
| HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500656-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593339-B21 |
| HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500658-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500662-B21 |
| HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit | 500666-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit | 604504-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit | 604506-B21 |
| HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit | 627812-B21 |

NOTE= Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors

Unbuffered with ECC DIMMs (UDIMMs)

NOTE= All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool=www.hp.com/go/ddr3memory-configurator.

NOTE= Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see=<http://h18004.www1.hp.com/products/servers/platforms/energyefficient/>

| | |
|---|------------|
| HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit | 500668-B21 |
| HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit | 500670-B21 |
| HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit | 500672-B21 |



Configuration Information - Factory Integrated Models

| | |
|--------------------------|---|
| HP Power Supplies | <p>HP 4GB (1x4GB) Dual Rank x8 PC3L-10600 (DDR3-1333) Unbuffered CAS-9 Low Power Memory Kit 619488-B21</p> <p>NOTE- Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at www.hp.com/go/hppoweradvisor</p> <p>HP 460W Common Slot Gold Hot Plug Power Supply Kit 503296-B21</p> <p>HP 750W Common Slot Gold Hot Plug Power Supply Kit 512327-B21</p> <p>HP 1200W Common Slot Silver Hot Plug Power Supply Kit 500172-B21</p> <p>NOTE- Option Kits contain optional power supply, an IEC power cable and PDU IEC cables.</p> |
|--------------------------|---|

Step 3- Choose Additional Factory Integratable Options

| | |
|-------------------------------|---|
| HP Storage Controllers | <p>HP Smart Array P212/256 BBWC 1-ports Int/1-ports Ext PCIe x8 FIO SAS Controller 491191-B21</p> <p>NOTE- SAS Controller supporting RAID 0/1/1+0/5.</p> <p>HP Smart Array P411/256 BBWC 2-ports Ext PCIe x8 FIO SAS Controller 491193-B21</p> <p>NOTE- SAS Controller supporting RAID 0/1/1+0/5.</p> <p>Upgrade Options</p> <p>HP 256MB Factory Integrated P-Series Cache Module 534108-B21</p> <p>NOTE- Available for P410i only.</p> |
| HP Insight Software | <p>HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Single Server FIO License 582765-B21</p> |

Step 4- Choose Additional Options for Factory Integration

NOTE- For additional options, please refer to the [Core Options](#) and [Additional Options](#) section below.

Core Options

NOTE—Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

| | | |
|--------------------------|--|------------|
| HP Unique Options | HP ML350 G6 Redundant Fan/Baffle Kit | 515081-B21 |
| | HP ML350/ML330G6 2 Slot PCI-X Riser Kit | 488413-B21 |
| | NOTE —The HP PCI-X Expander kit converts a single PCI Express slot (Slot 1) into two full height, full length 64-bit 100MHz PCI-X slots. The PCI-X Expander Kit can only be plug in Slot 1. | |
| | HP ML350G6 Tower to Rack Conversion Kit | 534534-B21 |
| | NOTE —See Redundant Options section below for Hot Plug Redundant Power supplies. | |
| | HP 2.5 Hard Disk Drive Blank Kit | 503771-B21 |

HP Processors

Six-Core Processors

| | |
|--|------------|
| HP ML350 G6 Intel® Xeon® X5675 (3.06GHz/6-core/12MB/95W) Processor Kit | 638315-B21 |
| HP ML350 G6 Intel® Xeon® X5670 (2.93GHz/6-core/12MB/95W) Processor Kit | 601236-B21 |
| HP ML350 G6 Intel® Xeon® X5660 (2.80GHz/6-core/12MB/95W) Processor Kit | 601238-B21 |
| HP ML350 G6 Intel® Xeon® X5650 (2.66GHz/6-core/12MB/95W) Processor Kit | 601240-B21 |
| HP ML350 G6 Intel® Xeon® E5649 (2.53GHz/6-core/12MB/80W) Processor Kit | 638316-B21 |
| HP ML350 G6 Intel® Xeon® E5645 (2.40GHz/6-core/12MB/80W) Processor Kit | 638317-B21 |

Quad-Core Processors

| | |
|--|------------|
| HP ML350 G6 Intel® Xeon® X5672 (3.20GHz/4-core/12MB/95W) Processor Kit | 638314-B21 |
| HP ML350 G6 Intel® Xeon® E5620 (2.40GHz/4-core/12MB/80W) Processor Kit | 601246-B21 |
| HP ML350 G6 Intel® Xeon® E5607 (2.26GHz/4-core/8MB/80W) Processor Kit | 638318-B21 |
| HP ML350 G6 Intel® Xeon® E5606 (2.13GHz/4-core/8MB/80W) Processor Kit | 638319-B21 |
| HP ML350 G6 Intel® Xeon® E5603 (1.60GHz/4-core/4MB/80W) Processor Kit | 638320-B21 |
| HP ML350 G6 Intel® Xeon® L5630 (2.13GHz/4-core/12MB/40W) Processor Kit | 601252-B21 |

HP Memory

Registered RDIMMs

| | |
|--|------------|
| HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500656-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593339-B21 |
| HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500658-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500662-B21 |
| HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit | 500666-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit | 604504-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit | 604506-B21 |

NOTE—Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors

| | |
|---|------------|
| HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit | 627812-B21 |
|---|------------|

Unregistered with ECC UDIMMs

| | |
|---|------------|
| HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit | 500668-B21 |
| HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit | 500670-B21 |
| HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit | 500672-B21 |



Core Options

HP 4GB (1x4GB) Dual Rank x8 PC3L-10600 (DDR3-1333) Unbuffered CAS-9 Low Power Memory Kit 619488-B21

NOTE—All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool—www.hp.com/go/ddr3memory-configurator.

NOTE—Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see—www.hp.com/go/proliant-energy-efficient.

HP Drive Cage Options

HP ML350/370 G6 8 Small Form Factor (SFF) 2nd Drive Cage Kit 507803-B21

NOTE—The Second drive cage installation replaces 2 internal optical bays. It is required to purchase a SAS RAID controller or SAS Expander Card to support over 8 HDD

NOTE—To cover an empty SFF HDD slot, please order the following SFF hard drive blank spare kit—392613-001

HP ML350/ML/DL370G6 2 Large Form Factor Drive Kit 487936-B21

NOTE—The Second drive cage installation replaces 2 internal optical bays.

NOTE—To cover an empty LFF HDD slot, please order the following LFF hard drive blank spare kit—389015-001

HP Optical Drives

HP Half-Height SATA DVD-ROM Optical Drive 447326-B21

HP Half-Height SATA DVD-RW Optical Drive 447328-B21

NOTE—Please note that some of the earlier BTO models may not support adding SATA Optical Drives. To ensure compatibility of the SATA Optical Drives, please add additional optical drives only on models with Quad-Core 5400 Series.

HP Hard Drives

NOTE—The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

NOTE—Hard drives have either a one year or three year warranty—refer to the specific hard drive QuickSpecs for details.

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

HP 900GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 619291-B21

HP 600GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 581286-B21

HP 450GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 581284-B21

HP 300GB 6G SAS 15K rpm SFF (2.5-inch) Hot Plug Enterprise 3 yr Warranty Hard Drive 627117-B21

HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 507127-B21

HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 512547-B21

SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives

HP 600GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 516828-B21

HP 450GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 516816-B21

HP 300GB 6G SAS 15K rpm LFF (3.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive 516814-B21

SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives

HP 3TB 6G SAS 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive 625031-B21

HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive 507616-B21

HP 1TB 6G SAS 7.2K rpm LFF (3.5-inch) Dual Port Midline 1yr Warranty Hard Drive 507614-B21

Core Options

NOTE—Please see the QuickSpecs for Technical Specifications and additional information—

<http://h18000.www1.hp.com/products/quickspecs/12244..div/12244..div.html>
(Worldwide)

SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives

HP 1TB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive 605835-B21

HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive 507610-B21

SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives

HP 1TB 3G SATA 7.2K rpm SFF (2.5-inch) Hot Plug Midline 1yr Warranty Hard Drive 625609-B21

HP 500GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive 507750-B21

SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives

HP 3TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive 628059-B21

HP 2TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive 507632-B21

HP 1TB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive 454146-B21

HP 500GB 3G SATA 7.2K rpm LFF (3.5-inch) Midline 1yr Warranty Hard Drive 458928-B21

SATA Hot Plug LFF (3.5-inch) Entry (ETY) Drives

HP 250GB 3G SATA 7.2K rpm LFF (3.5-inch) Entry 1yr Warranty Hard Drive 571230-B21

NOTE—SATA hard drives have a 1-year warranty. Please see the QuickSpecs for Technical Specifications and additional information—

<http://h18000.www1.hp.com/products/quickspecs/13021..div/13021..div.html>
(Worldwide)

3G SATA MLC Hot Plug SFF (2.5-inch) Enterprise Mainstream Solid State Drives

HP 400GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive 636597-B21

HP 200GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive 636595-B21

HP 100GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive 636593-B21

3G SATA MLC Hot Plug LFF (3.5-inch) Enterprise Mainstream Solid State Drives

HP 400GB 3G SATA MLC SFF (2.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive 636611-B21

HP 200GB 3G SATA MLC LFF (3.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive 636609-B21

HP 100GB 3G SATA MLC LFF (3.5-inch) Enterprise Mainstream 3yr Warranty Solid State Drive 636607-B21

6G SAS SLC Hot Plug Enterprise Performance Solid State Drives

HP 400GB 6G SAS SLC SFF (2.5-inch) Enterprise Performance 3yr Warranty Solid State Drive 632494-B21

HP 200GB 6G SAS SLC SFF (2.5-inch) Enterprise Performance 3yr Warranty Solid State Drive 632492-B21

NOTE—Please see the QuickSpecs for Technical Specifications and additional information—

<http://h18000.www1.hp.com/products/quickspecs/14038..div/14038..div.html>
(Worldwide)

Hard Drive Kits

HP 2.5 Hard Disk Drive Blank Kit 503771-B21

Core Options

HP Networking

Gigabit Ethernet adapters

HP NC112T PCI Express Gigabit Server Adapter 503746-B21

HP NC360T PCI-E Dual Port Gigabit Server Adapter 412648-B21

HP NC364T PCI-E Quad Port Gigabit Server Adapter 435508-B21

NOTE—Does not support Windows 2000.

NOTE—There is a maximum of five NC364T PCI Express Quad Port Gigabit Server Adapter NICs allowed in this server.

HP NC365T 4-port Ethernet Server Adapter 593722-B21

HP NC373F PCI-E Multifunction 1000SX Gigabit Svr Adapter 394793-B21

HP NC373T PCI-E Multifunction Gigabit Server Adapter 394791-B21

HP NC375T PCI Express Quad Port Gigabit Server Adapter 538696-B21

HP NC382T PCI Express Dual Port Multifunction Gigabit Server Adapter 458492-B21

10 Gigabit Ethernet adapters

HP NC522SFP Dual Port 10GbE Gigabit Server Adapter 468332-B21

HP NC523SFP 10Gb 2-port Server Adapter 593717-B21

HP NC550SFP Dual Port 10GbE Server Adapter 581201-B21

HP NC552SFP 10Gb 2-port Ethernet Server Adapter 614203-B21

NOTE—Please see the QuickSpecs for Technical Specifications and additional information—www.hp.com/go/ProLiantNICs

HP I/O Expansion Options

HP ML350/ML330G6 2 Slot PCI-X Riser Kit 488413-B21

NOTE—The HP PCI-X Expander kit converts a single PCI Express slot (Slot 1) into two full height, full length 64-bit 100MHz PCI-X slots. The PCI-X Expander Kit can only be plug in Slot 1.

HP Power Supplies

NOTE—Prior to making a power supply selection it is highly recommended that the HP Power Advisor is run to determine the right size power supply for your server configuration. The HP Power Advisor is located at—www.hp.com/go/hppoweradvisor.

Power Supplies

HP 460W Common Slot Gold Hot Plug Power Supply Kit 503296-B21

HP 750W Common Slot Gold Hot Plug Power Supply Kit 512327-B21

HP 1200W Common Slot Silver Hot Plug Power Supply Kit 500172-B21

NOTE—Option Kits contain optional power supply, an IEC power cable and PDU IEC cables.

HP Cooling Options

HP ML350 G6 Redundant Fan/Baffle Kit 515081-B21

Additional Options

NOTE—Some options may not be integrated at the factory. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for additional information.

HP Insight Software

HP Insight Control

HP Insight Control including 1yr 24x7 Technical Support and Updates Electronic License T9074BAE

HP Insight Control including 1yr 24x7 Support ProLiant ML/DL/BL-bundle Electronic License TC278AAE

HP Insight Control including 1yr 24x7 Technical Support and Updates Single Server License 452148-B22

HP Insight Management Media Kit 436222-B21

NOTE—HP Insight Management Media Kit contains DVDs without licenses. Contains HP Systems Insight Manager, HP Insight Control, HP Matrix Operating Environment, and Virtual Connect Enterprise Manager software. Uses an integrated installer to perform quick and accurate software installation and updates.

HP Insight Control Server Deployment including 1yr 24x7 Support Electronic License T9082AAE

HP Insight Control Server Deployment including 1yr 24x7 Support Single Server License 452151-B21

NOTE—Electronic and Flexible-Quantity licenses can be used to purchase multiple licenses with a single activation key.

NOTE—Customer will receive a license entitlement certificate. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.

NOTE—Licenses ship without media. Media kits can be ordered separately, or can be downloaded at <http://www.hp.com/go/insightupdates>.

NOTE—For additional license options please see the QuickSpecs at <http://h18000.www1.hp.com/products/quickspecs/12631..div/12631..div.html>

HP Integrated Lights-Out (iLO)

HP Integrated Lights-Out (iLO) Advanced for ProLiant

HP iLO Advanced including 1yr 24x7 Technical Support and Updates Electronic License TA850AAE

HP iLO Advanced Electronic License with 3yr 24x7 Tech Support and Updates BD506AAE

HP iLO Advanced including 1yr 24x7 Technical Support and Updates Single Server License 512485-B21

HP iLO Advanced 1 Server License with 3yr 24x7 Tech Support and Updates BD505A

NOTE—For additional license options please see the QuickSpecs at <http://h18004.www1.hp.com/products/quickspecs/14276..div/14276..div.html>

NOTE—For more information, visit <http://www.hp.com/go/ilo>.

Additional Options

HP I/O Accelerator Options

Second Generation Accelerators

| | |
|--|------------|
| HP 365GB Multi Level Cell G2 PCIe ioDrive2 for ProLiant Servers | 673642-B21 |
| HP 785GB Multi Level Cell G2 PCIe ioDrive2 for ProLiant Servers | 673644-B21 |
| HP 1205GB Multi Level Cell G2 PCIe ioDrive2 for ProLiant Servers | 673646-B21 |
| HP 2410GB Multi Level Cell G2 PCIe ioDrive2 Duo for ProLiant Servers | 673648-B21 |

First Generation Accelerators

| | |
|--|------------|
| HP 160GB Single Level Cell PCIe ioDrive for ProLiant Servers | 600278-B21 |
| NOTE -A low-profile PCI bracket is included for use in low-profile slots. | |
| HP 320GB Multi Level Cell PCIe ioDrive for ProLiant Servers | 600279-B21 |
| NOTE -A low-profile PCI bracket is included for use in low-profile slots. | |
| HP 320GB Single Level Cell PCIe ioDrive Duo for ProLiant Servers | 600281-B21 |
| HP 640GB Multi Level Cell PCIe ioDrive Duo for ProLiant Servers | 600282-B21 |
| HP 1.28TB Multi Level Cell PCIe ioDrive Duo for ProLiant Servers | 641027-B21 |

NOTE-Please see the QuickSpecs for Technical Specifications and additional information-

<http://h18000.www1.hp.com/products/quickspecs/13587..div/13587..div.html>
(Worldwide)

HP Graphics Options

| | |
|-------------------------------------|------------|
| HP 350/370G6 Graphic Card Cable Kit | 537721-B21 |
|-------------------------------------|------------|

HP Security

| | |
|-----------------------------------|------------|
| HP Trusted Platform Module Option | 488069-B21 |
|-----------------------------------|------------|

NOTE-The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline. For more information about TPM, including a white paper, go to-www.hp.com/go/TPM.

NOTE-ProLiant OS pre-installed units will come with the partition required for TPM deployment.

NOTE-The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

HP Storage Controllers

SAS Controllers

HP Smart Array P212 Controller

| | |
|--|------------|
| HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller | 462828-B21 |
| HP Smart Array P212/256 1-ports Int/1-ports Ext PCIe x8 SAS Controller | 462834-B21 |

HP Smart Array P410 Controller

| | |
|---|------------|
| HP Smart Array P410/256 2-ports Int PCIe x8 SAS Controller | 462862-B21 |
| HP Smart Array P410/512 BBWC 2-ports Int PCIe x8 SAS Controller | 462864-B21 |
| HP Smart Array P410/512 FBWC 2-ports Int PCIe x8 SAS Controller | 578230-B21 |
| HP Smart Array P410/1G FBWC 2-ports Int PCIe x8 SAS Controller | 572532-B21 |

NOTE-HP NHP Internal SAS/SATA 4 Port Cable Kit (487734-B21) is required when adding Smart Array P410 Controller on Non-Hot Plug SATA/SAS server models.



Additional Options

HP Smart Array P411 Controller

| | |
|---|------------|
| HP Smart Array P411/256 2-ports Ext PCIe x8 SAS Controller | 462830-B21 |
| HP Smart Array P411/512 BBWC 2-ports Ext PCIe x8 SAS Controller | 462832-B21 |
| HP Smart Array P411/512 FBWC 2-ports Ext PCIe x8 SAS Controller | 578229-B21 |
| HP Smart Array P411/1G FBWC 2-ports Ext PCIe x8 SAS Controller | 572531-B21 |

Smart Array P812 Controller

| | |
|--|------------|
| HP Smart Array P812/1G FBWC 2-ports Int/4-ports Ext PCIe x8 SAS Controller | 487204-B21 |
|--|------------|

Optional Upgrades

| | |
|---------------------------------|------------|
| HP 256MB P-series Cache Upgrade | 462968-B21 |
|---------------------------------|------------|

NOTE—Supported on HP Smart Array P212 & HP Smart Array P410/ZM Controller only.

| | |
|--|------------|
| HP 512MB P-Series Battery Backed Write Cache Upgrade | 462967-B21 |
|--|------------|

NOTE—Supported on HP Smart Array P410 Controller, and HP Smart Array P411 Controller only.

| | |
|-----------------------------|------------|
| HP 650 mAh P-Series Battery | 462969-B21 |
|-----------------------------|------------|

NOTE—Supported on HP Smart Array P212 Controller, HP Smart Array P410 Controller, and HP Smart Array P411 Controller only.

| | |
|--|------------|
| HP 15 Position 24in SFP Battery Cable Assembly | 496029-B21 |
|--|------------|

NOTE—Supported on HP Smart Array P212 Controller, HP Smart Array P410 Controller, and HP Smart Array P411 Controller only.

| | |
|-----------------------------------|------------|
| HP 512MB Flash Backed Write Cache | 534916-B21 |
|-----------------------------------|------------|

NOTE—Supported on the Smart Array P410i Controller only.

| | |
|---------------------------|------------|
| HP 1GB Flash Backed Cache | 534562-B21 |
|---------------------------|------------|

NOTE—Supported on the Smart Array P410i Controller only.

| | |
|-----------------------------|------------|
| HP 24 Bay SAS Expander Card | 468406-B21 |
|-----------------------------|------------|

| | |
|---|------------|
| HP Smart Array Advanced Pack including 1yr 24x7 Technical Support and Updates Single Server License | 516471-B21 |
|---|------------|

NOTE—This part number can be used to purchase a single license or to order multiple licenses with a single activation key. Customers will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Include one year of 24x7 HP Software Technical Support Services.

NOTE—Please see the QuickSpecs for Technical Specifications and additional information—

<http://h18000.www1.hp.com/products/quickspecs/13203..div/13203..div.html>
(Smart Array P212 Controller)

<http://h18000.www1.hp.com/products/quickspecs/13201..div/13201..div.html>
(Smart Array P410 Controller)

<http://h18000.www1.hp.com/products/quickspecs/13202..div/13202..div.html>
(Smart Array P411 Controller)

<http://h18000.www1.hp.com/products/quickspecs/13558..div/13558..div.html>
(Smart Array P812 Controller)

<http://h18000.www1.hp.com/products/quickspecs/13200..div/13200..div.html>
(Smart Array Advanced Pack)

SAS HBA

| | |
|---|------------|
| HP Modular Smart Array SC08e 2-ports Ext PCIe x8 SAS Host Bus Adapter | 614988-B21 |
|---|------------|

NOTE—Please see the QuickSpecs for additional information—

<http://h18004.www1.hp.com/products/quickspecs/13082..div/13082..div.html>

SCSI HBA

Additional Options

HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter 412911-B21
NOTE Supports external drive attach.
NOTE Please see the following QuickSpecs for additional information
<http://h18000.www1.hp.com/products/quickspecs/12566..div/12566..div.html>

HP Tape Backup

NOTE For the complete range of tape drives, autoloaders, libraries and media see <http://www.hp.com/go/tape>. For hardware and software compatibility of HP tape backup products see <http://www.hp.com/storage/SPOCK> and www.hp.com/go/ebs.

HP StoreEver DAT 160 SAS Internal Tape Drive Q1587B
NOTE Connection using HP Smart Array P212 Controller (462828-B21) recommended.

HP StoreEver LTO-2 Ultrium 448 SAS Internal Tape Drive DW085B

HP StoreEver LTO-4 Ultrium 1760 SAS Internal WW Tape Drive EH919B
NOTE Connection using HP Smart Array P212 Controller (462828-B21) recommended.

HP StoreEver LTO-4 Ultrium 1840 SAS External Tape Drive EH861B
NOTE Connection using HP Smart Array P212 Controller (462828-B21) recommended.

HP StoreEver LTO-5 Ultrium 3000 SAS Internal Tape Drive EH957B
NOTE Connection using HP Smart Array P212 Controller (462828-B21) recommended.

HP LTO-5 Ultrium 3000 SAS External Tape Drive EH958B
NOTE Connection using HP Smart Array P212 Controller (462828-B21) recommended.

HP StoreEver LTO-6 Ultrium 6250 Tape Drive in 1U Rack-mount Kit COL99A

HP StoreEver LTO-6 Ultrium 6650 Internal Tape Drive EH963A

HP StoreEver LTO-6 Ultrium 6650 External Tape Drive EH964A

HP StoreEver LTO-6 Ultrium 6250 Internal Tape Drive EH969A

HP StoreEver LTO-6 Ultrium 6250 External Tape Drive EH970A

HP Disk Backup

HP D2D Backup Systems with Backup Data Deduplication

HP StoreOnce D2D4112 Backup System EH993C

HP StoreOnce D2D2502i Backup System EJ001C

HP StoreOnce D2D2504i Backup System EJ002C

HP RDX Removable Disk Backup Systems USB

HP RDX320 USB3.0 Internal Disk Backup System B7B62A

HP RDX500 USB3.0 Internal Disk Backup System B7B64A

HP RDX1000 USB3.0 Internal Disk Backup System B7B67A

HP StoreOnce Backup systems

HP StoreOnce 2620 iSCSI Backup BB852A

HP StoreOnce 4220 Backup BB855A

Additional Options

HP Storage Options

NOTE—The following is a list of all Fibre Channel Host Bus Adapters for Windows and Linux. For detailed compatibility information please see—
<http://h18006.www1.hp.com/storage/saninfrastructure/hba.html>

Brocade Fibre Channel HBAs

| | |
|---|--------|
| HP 82B 8Gb 2-port PCIe Fibre Channel Host Bus Adapter | AP770B |
| HP 81B 8Gb 1-port PCIe Fibre Channel Host Bus Adapter | AP769B |
| HP 41B 4Gb 1-port PCIe Fibre Channel Host Bus Adapter | AP767B |
| HP 42B 4Gb 2-port PCIe Fibre Channel Host Bus Adapter | AP768B |

Emulex Fibre Channel HBAs

| | |
|--|--------|
| HP 82E 8Gb 2-port PCIe Fibre Channel Host Bus Adapter | AJ763B |
| HP 82Q 8Gb 2-port PCIe Fibre Channel Host Bus Adapter | AJ764A |
| HP 81E 8Gb 1-port PCIe Fibre Channel Host Bus Adapter | AJ762B |
| HP FC2142SR 4Gb 1-port PCIe Fibre Channel Host Bus Adapter | A8002B |
| HP FC2242SR 4Gb 2-port PCIe Fibre Channel Host Bus Adapter | A8003B |

QLogic Fibre Channel HBAs

| | |
|--|--------|
| HP 81Q 8Gb 1-port PCIe Fibre Channel Host Bus Adapter | AK344A |
| HP FC1142SR 4Gb 1-port PCIe Fibre Channel Host Bus Adapter | AE311A |
| HP FC1242SR 4Gb 2-port PCIe Fibre Channel Host Bus Adapter | AE312A |

Converged Network Adapter

| | |
|--|--------|
| HP CN1100E Dual Port Converged Network Adapter | BK835A |
| HP CN1000Q Dual Port Converged Network Adapter | BS668A |

HP Disk Storage Systems Disk Enclosures

| | |
|-------------------------|--------|
| HP D2600 Disk Enclosure | AJ940A |
| HP D2700 Disk Enclosure | AJ941A |

NOTE—Please see the QuickSpecs for additional options and configuration information at—
<http://h18000.www1.hp.com/products/quickspecs/13404..div/13404..div.html>
 (Worldwide)

HP Uninterruptible Power Systems

HP Tower UPS

HP T1500 G3 UPS Models

| | |
|--|--------|
| HP T1500 G3 1400VA INTL Tower Uninterruptible Power System | AF451A |
| HP T1500 G3 1400VA NA Tower Uninterruptible Power System | AF450A |
| HP T1500J JP Uninterruptible Power System | AF458A |

NOTE—Please see the QuickSpecs for additional information—
<http://h18000.www1.hp.com/products/quickspecs/13160..div/13160..div.html>
 (Worldwide)

HP T1000 G3 UPS Models

| | |
|--|--------|
| HP T1000 G3 1000VA INTL Tower Uninterruptible Power System | AF449A |
| HP T1000 G3 1000VA NA Tower Uninterruptible Power System | AF448A |
| HP T1000J JP Uninterruptible Power System | AF457A |

HP R1500 G3 Uninterruptible Power Supply (UPS)

| | |
|--|--------|
| HP R1.5kVA G3 1U NA Uninterruptible Power System | AF469A |
|--|--------|



Additional Options

| | |
|---|--------|
| HP R1.5KVA G3 1U JP/TW Uninterruptible Power System | AF470A |
| HP R1.5KVA G3 1U INTL Uninterruptible Power System | AF471A |

NOTE—Please see the QuickSpecs for additional information—

<http://h18000.www1.hp.com/products/quickspecs/14059..div/14059..div.html>
(Worldwide)

R5000 Uninterruptible Power System (UPS)

| | |
|---|--------|
| HP R5KVA 3U IEC309-32A High Voltage INTL Uninterruptible Power System | AF461A |
| HP R5KVA 3U L630 High Voltage NA/JP Uninterruptible Power System | AF460A |

NOTE—Please see the QuickSpecs for additional information—

<http://h18000.www1.hp.com/products/quickspecs/14109..div/14109..div.html>
(Worldwide)

R7000 Uninterruptible Power System (UPS)

| | |
|--|--------|
| HP R7KVA 4U 50A High Voltage NA/JP Uninterruptible Power System | AF462A |
| HP R7KVA 4U IEC-32A High Voltage INTL Uninterruptible Power System | AF463A |
| HP R5KVA and R7KVA 3U Extended Runtime Module | AF464A |

NOTE—Please see the QuickSpecs for additional information—

<http://h18000.www1.hp.com/products/quickspecs/14110..div/14110..div.html>
(Worldwide)

HP R/T3000 G2 Uninterruptible Power System (UPS)

| | |
|---|--------|
| HP R/T3000 G2 2U Detachable Cord High Voltage INTL Uninterruptible Power System | AF468A |
| HP R/T3000 G2 2U L530 Low Voltage NA/JP Uninterruptible Power System | AF466A |
| HP R/T3000 G2 2U L620 High Voltage NA/JP Uninterruptible Power System | AF467A |

NOTE—Please see the QuickSpecs for additional information—

<http://h18000.www1.hp.com/products/quickspecs/14058..div/14058..div.html>
(Worldwide)

NOTE—For additional information on HP Uninterruptible Power Systems please go to—
www.hp.com/servers/rackups.

NOTE—For additional information on sizing your server, please reference—
<http://www.upssizer.com>.

NOTE—Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the “HP Power Cord Matrix” link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link—www.hp.com/products/powercords.

Additional Options

HP Power Distribution Units

Monitored PDUs

HP Monitored Power Distribution Unit—Full Rack Version

| | |
|---|--------|
| HP 8.6kVA 24A Single Input Three Phase NA/JP Monitored Power Distribution Unit | AF504A |
| HP 8.3kVA 40A Single Input Single Phase NA/JP Monitored Power Distribution Unit | AF506A |
| HP 11kVA 16A Single Input Three Phase INTL Monitored Power Distribution Unit | AF508A |
| HP 7.3kVA 32A Single Input Single Phase INTL Monitored Power Distribution Unit | AF510A |

HP Monitored Power Distribution Unit—Half Rack Version

| | |
|---|--------|
| HP 4.9kVA 24A Single Input Single Phase NA/JP Monitored Power Distribution Unit | AF914A |
| HP 7.3kVA 32A Single Input Single Phase INTL Monitored Power Distribution Unit | AF915A |

NOTE—Please see the following QuickSpecs for additional information—
<http://h18000.www1.hp.com/products/quickspecs/12118..div/12118..div.html>
 (Worldwide)

Modular PDUs 1U/0U

NOTE—1U/0U mounting brackets shipped with the unit (optimized for 10000 G2 and 9000 series racks).

| | |
|--|------------|
| HP 3.6kVA 16A High Voltage INTL Modular Power Distribution Unit | 252663-B24 |
| HP 4.9kVA 24A High Voltage NA/JP Modular Power Distribution Unit | 252663-D72 |
| HP 8.3kVA 40A High Voltage NA/JP Modular Power Distribution Unit | 252663-D73 |
| HP 7.3kVA 32A High Voltage INTL Modular Power Distribution Unit | 252663-B31 |

NOTE—For additional information on HP Power Distribution Units including accessories please go to—www.hp.com/go/pdu.

NOTE—Please see the UPS and PDU cable matrix's on the HP Power Protection and Management page. Under Power Cords, click on the [HP Power Cord Matrix](#) link. That link will list cable descriptions, requirements, and specifications for UPS and PDU units. Please see the following link—www.hp.com/products/powercords.

NOTE—This PDU has a detachable input power cord and allows for adaptability to country specific power requirements.

NOTE—Please see the following QuickSpecs for additional options including shorter jumper cables and country specific power cords—
<http://h18000.www1.hp.com/products/quickspecs/11041..div/11041..div.html>
 (Worldwide)

HP Intelligent Power Distribution Units (iPDU)

iPDU Core Units

| | |
|---|--------|
| HP 4.9kVA 24A Single Phase NA/JP Core Intelligent Modular Power Distribution Unit | AF520A |
| HP 8.6kVA 24A Three Phase NA/JP Core Intelligent Modular Power Distribution Unit | AF522A |
| HP 7.3kVA 32A Single Phase INTL Core Intelligent Modular Power Distribution Unit | AF525A |
| HP 11kVA 16A Three Phase INTL Core Intelligent Modular Power Distribution Unit | AF526A |

iPDU Extension Bars

| | |
|--|--------|
| HP 5x13 Intelligent PDU Extension Bar G2 Kit | AF547A |
| HP 5x13 Outlets Power and UID LEDs Pair Standard Extension Bar | AF528A |

NOTE—Please see the QuickSpecs for Technical Specifications and additional information—
<http://h18000.www1.hp.com/products/quickspecs/13650..div/13650..div.html>
 (Worldwide)

Additional Options

HP Rack Options

HP TFT7600 G2 KVM Console Rackmount Keyboard Monitor

| | |
|---|--------|
| HP TFT7600 G2 KVM Console Rackmount Keyboard US Monitor | AZ870A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard UK Monitor | AZ871A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard DE Monitor | AZ872A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard FR Monitor | AZ873A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard IT Monitor | AZ874A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard ES Monitor | AZ875A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard DK Monitor | AZ876A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard NO Monitor | AZ877A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard SE/FI Monitor | AZ878A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard CH Monitor | AZ879A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard PT Monitor | AZ880A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard BE Monitor | AZ881A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard JP Monitor | AZ882A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard RU Monitor | AZ883A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard Intl Monitor | AZ884A |
| HP TFT7600 G2 KVM Console Rackmount Keyboard US TAA Monitor | AZ885A |

NOTE-Please see the QuickSpecs for Technical Specifications and additional information-

<http://h18000.www1.hp.com/products/quickspecs/13731..div/13731..div.html>
(Worldwide)

HP 1U Rackmount Keyboard with USB

| | |
|---|--------|
| HP 1U IT Rackmount Keyboard with USB | AG076A |
| HP 1U US Rackmount Keyboard with USB | AG072A |
| HP 1U BE Rackmount Keyboard with USB | AG083A |
| HP 1U DK Rackmount Keyboard with USB | AG078A |
| HP 1U FR Rackmount Keyboard with USB | AG075A |
| HP 1U DE Rackmount Keyboard with USB | AG074A |
| HP 1U INT Rackmount Keyboard with USB | AG086A |
| HP 1U NO Rackmount Keyboard with USB | AG079A |
| HP 1U PT Rackmount Keyboard with USB | AG082A |
| HP 1U RU Rackmount Keyboard with USB | AG085A |
| HP 1U ES Rackmount Keyboard with USB | AG077A |
| HP 1U SE/FI Rackmount Keyboard with USB | AG080A |
| HP 1U Rackmount Keyboard with USB | AG081A |
| HP 1U UK Rackmount Keyboard with USB | AG073A |
| HP 1U JP Rackmount Keyboard with USB | AG084A |

NOTE-Please see the QuickSpecs for Technical Specifications and additional information-

<http://h18000.www1.hp.com/products/quickspecs/12465..div/12465..div.html>
(Worldwide)

HP USB Keyboard and Mouse

| | |
|--|------------|
| HP USB BFR with PVC Free IN Keyboard/Mouse Kit | 672097-D63 |
|--|------------|

Additional Options

NOTE—Please see the QuickSpecs for Technical Specifications and additional information—

<http://h18000.www1.hp.com/products/quickspecs/13972..div/13972..div.html>
(Worldwide)

NOTE—For additional information regarding Rack Options, please see the following URL—

<http://www.hp.com/go/rackandpower>.

HP Server Console Switches

| | |
|---|------------|
| HP Server Console 0x2x8 Port Analog Switch | AF616A |
| HP Server Console 0x2x16 Port Analog Switch | AF617A |
| HP TAA 0x2x16xKVM Server Console G2 Switch | AF626A |
| HP KVM CAT5 1-pack USB Interface Adapter | 336047-B21 |

HP Server Console Switch G2 with Virtual Media & CAC

| | |
|--|------------|
| HP 0x2x16 KVM Server Console Switch G2 with Virtual Media CAC Software | AF618A |
| HP 0x2x32 KVM Server Console Switch G2 with Virtual Media CAC Software | AF619A |
| HP KVM CAT5 1-pack USB Interface Adapter | 336047-B21 |

NOTE—Please see the QuickSpecs for Technical Specifications and additional information—

<http://h18000.www1.hp.com/products/quickspecs/13475..div/13475..div.html>
(Worldwide)

HP IP Console Switch G2 with Virtual Media & CAC

| | |
|---|--------|
| HP 1x4 USB/PS2 KVM Console Switch | AF611A |
| HP 1x1Ex8 KVM IP Console Switch G2 with Virtual Media CAC Software | AF620A |
| HP 2x1Ex16 KVM IP Console Switch G2 with Virtual Media CAC Software | AF621A |
| HP 4x1Ex32 KVM IP Console Switch G2 with Virtual Media CAC Software | AF622A |

NOTE—Please see the QuickSpecs for Technical Specifications and additional information—

<http://h18000.www1.hp.com/products/quickspecs/13474..div/13474..div.html>
(Worldwide)

Rack Kits

| | |
|---|------------|
| HP ML350G6 Tower to Rack Conversion Kit | 534534-B21 |
|---|------------|

HP USB and SD Options

| | |
|--------------------------------------|------------|
| HP 2GB USB Flash Media Drive Key Kit | 608447-B21 |
|--------------------------------------|------------|

NOTE—HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to HP VMware Getting Started Guide for installation instructions.

| | |
|---|------------|
| HP 4GB Secure Digital High Capacity Flash Media Kit | 580387-B21 |
|---|------------|

NOTE—Blank SD media device is supported for use with VMware and Citrix. SD media must be installed in the internal slot of the ProLiant server. Learn more at <http://www.hp.com/go/proliantvirtualization>.

| | |
|--------------------------------------|------------|
| HP USB 2-Button Optical Scroll Mouse | DC172B |
| HP USB Standard Keyboard US | DT528A#ABA |

Additional Options

HP Care Pack Services

Hardware Services On-site Service

HP 3 year 4 hour 13x5 ProLiant ML350(p) Hardware Support U4512E

HP 3 year 4 hour 24x7 ProLiant ML350(p) Hardware Support U4513E

HP 3 year 6 hour 24x7 Call to Repair ProLiant ML350(p) Hardware Support U4514E

Proactive Care Personalized Support Option

NOTE- To add an onsite Account Support Manager (ASM) to Proactive Care. ASM is an assigned resource who delivers support planning and brings technical expertise and best practices advice for the customer's environment.

HP 3yr Provides annual personalized proactive supp for existing Proactive Care ISS centric environmt U6W98E

Installation Services

NOTE- Reduce the time required to get your system up and running and help minimize disruptions to your business.

HP Install ProLiant ML350(p) Service U4522E

HP Startup ProLiant ML350(p) Service U4523E

NOTE- For more information, customer/resellers can contact-

<http://www.hp.com/services/carepack>

Memory

NOTE—Memory configurations listed do not apply to **Factory Integrated Models**.

DDR3 memory population guidelines

For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool—www.hp.com/go/ddr3memory-configurator

Some DIMM installation guidelines are summarized below—

- For servers with eighteen (18) memory slots—
 - There are three (3) channels per processor—six (6) channels per server
 - There are three (3) DIMM slots for each memory channel—eighteen (18) total slots
 - Memory channel 1 consists of the three (3) DIMMs that are closest to the processor
 - Memory channel 3 consists of the three (3) DIMMs that are furthest from the processor
- DIMM slots that are white should be populated first
- Do not mix Unbuffered memory (UDIMMs) with Registered memory (RDIMMs)
- Do not install DIMMs if the corresponding processor is not installed
- If only one processor is installed in a 2CPU system, only half of the DIMM slots are available
- To maximize performance, balance the total memory capacity between all installed processors
- It is not required, but it is recommended to load the channels similarly if possible
- If any Quad rank DIMMs are installed, all channels are limited to only 2 DIMMs per channel
- You can only install two quad-rank DIMMs per channel
- You can only install two UDIMMs per channel—if available, the third slot in the channel must remain empty
- Populate DIMMs from heaviest load (quad-rank) to lightest load (single-rank) within a channel
- Heaviest load (DIMM with most ranks) within a channel goes furthest from the chipset
- For memory mirroring mode, channel 3 must be unpopulated. Channels 1 and 2 are populated identically
- For lock-step mode, channel 3 must be unpopulated. DIMMs in channels 1 and 2 will be installed in pairs. The paired slots will be 1,4—2,5—3,6 on a 3DPC system or 1,4—2,5—7 on a 2DPC system
- Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors
- If mixing DIMM voltage is a requirement, please note that the DIMMs will run at 1.5V since all 1.35V are capable of supporting 1.5V operations

| DIMM slot/capacity/populated speed table | | | | | | | | | | | |
|---|----------------------------------|-----------------------|------|------|--------|--------|-----------------------|---|-------------------------|-----------------------|------|
| DIMM Type -> | Registered DIMMS (RDIMMs) | | | | | | | Unbuffered with ECC DIMMs (UDIMMs) | | | |
| DIMM Rank -> | Single Rank (1R) | Dual Rank (2R) | | | | | Quad Rank (4R) | | Single Rank (1R) | Dual Rank (2R) | |
| DIMM Capacity -> | 4GB | 2GB | 4GB | 8GB | 8GB | 16GB | 4GB | 16GB | 1GB | 2GB | 4GB |
| DIMM Native Speed (MHz) -> | 1333 | 1333 | 1333 | 1067 | 1333 | 1333 | 1067 | 1067 | 1333 | 1333 | 1333 |
| Voltage | LV/Std | Std | Std | Std | LV/Std | LV/Std | Std | Std | Std | Std | Std |
| SLOTS THAT CAN BE POPULATED | | | | | | | | | | | |
| 18 slot servers | 18 | 18 | 18 | 18 | 18 | 18 | 12 | 12 | 12 | 12 | 12 |
| MAXIMUM CAPACITY (GB) | | | | | | | | | | | |
| 18 slot servers | 72 | 36 | 72 | 144 | 144 | 288 | 48 | 192 | 12 | 24 | 48 |
| POPULATED DIMM SPEED (MHz) | | | | | | | | | | | |



Memory

| | | | | | | | | | | | |
|--------------------|-------|-------|-------|------|-------|-------------|------|------|------|------|-------|
| 1 DIMM Per Channel | 1333 | 1333 | 1333 | 1067 | 1333 | 1333 | 1067 | 1067 | 1333 | 1333 | 1333 |
| 2 DIMM Per Channel | 1333* | 1333* | 1333* | 1067 | 1333* | 1066/1333** | 800 | 800 | 1333 | 1333 | 1333* |
| 3 DIMM Per Channel | 800 | 800 | 800 | 800 | 800 | 800*** | n/a | n/a | n/a | n/a | n/a |

* Supported with ROM update via ROM Based Setup Utility (RBSU). UDIMM support is only on 12-slot servers.

** 2DPC-LV runs at 1066, Std voltage runs at 1333

*** 3DPC-LV/Std voltage runs at 800

NOTES

- PC3-10600 DIMMs have a maximum speed of 1333MHz. PC3-8500 DIMMs have a maximum speed of 1066MHz
- Mixing DIMM speeds is allowed, but the system processor speed rules always override the DIMM capabilities
- If you do mix DIMM speeds, the memory bus will default to the minimum clock rate of all DIMMs in the system - even if the slower DIMM is on the other processor
- If you install 1x 1066MHz DIMM in channel 1 and 1x 1333MHz DIMM in channel 2, the maximum speed will be 1066MHz If you install 1x 1066MHz DIMM in channel 1 and 5x 1333MHz DIMMs with 1 DIMM Per Channel (DPC) in each of the other channels, the maximum speed will be 1066MHz
- If you install 1x 1066MHz DIMM in channel 1 and 5x 1333MHz DIMMs with 1 DIMM Per Channel (DPC) in each of the other channels, you run at 1066MHz
- If you install 3DPC in one channel (if applicable) and 1DPC in all other channels, you run at 800MHz
- Maximum memory speed will also depend on the processor installed
- References to the above MHz speeds are for the various speeds of DDR3 DIMMs†1333 refers to DDR3-1333, etc.

DIMM slot and configuration diagrams

Basic memory slot & population diagram

- Population order†start with **A** first, **B** second, **C** third, etc.

| 18 DIMM SLOTS (9 per CPU node) | | | | | |
|--------------------------------|--------|------------------|--------|------------------|--------|
| CPU1 | | | CPU2 | | |
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | G | 1 | G | Chnl 1 |
| | 2 | D | 2 | D | |
| | 3 | A | 3 | A | |
| Chnl 2 | 4 | H | 4 | H | Chnl 2 |
| | 5 | E | 5 | E | |
| | 6 | B | 6 | B | |
| Chnl 3 | 7 | I | 7 | I | Chnl 3 |
| | 8 | F | 8 | F | |
| | 9 | C | 9 | C | |

Standard memory configuration (1 CPU model)

- 6GB, consisting of three (3) 2GB dual-rank PC3-10600 RDIMMs (Base Model)

Memory

| | CPU1 | | CPU2 | | |
|--------|--------|--------------------------|--------|----------------------|--------|
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | G ⁺ empty | 1 | G ⁺ empty | Chnl 1 |
| | 2 | D ⁺ empty | 2 | D ⁺ empty | |
| | 3 | A ⁺ 2GB RDIMM | 3 | A ⁺ empty | |
| Chnl 2 | 4 | H ⁺ empty | 4 | H ⁺ empty | Chnl 2 |
| | 5 | E ⁺ empty | 5 | E ⁺ empty | |
| | 6 | B ⁺ 2GB RDIMM | 6 | B ⁺ empty | |
| Chnl 3 | 7 | I ⁺ empty | 7 | I ⁺ empty | Chnl 3 |
| | 8 | F ⁺ empty | 8 | F ⁺ empty | |
| | 9 | C ⁺ 2GB RDIMM | 9 | C ⁺ empty | |

Standard memory plus optional memory (1 CPU model)

- 54GB, consisting of three (3) 2GB RDIMMs plus six (6) 8GB RDIMMs (Base Model)
 - 3x 2GB dual-rank PC3-10600 RDIMMs
 - 6x 8GB dual-rank PC3-8500 RDIMMs

| | CPU1 | | CPU2 | | |
|--------|--------|--------------------------|--------|----------------------|--------|
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | G ⁺ 8GB RDIMM | 1 | G ⁺ empty | Chnl 1 |
| | 2 | D ⁺ 8GB RDIMM | 2 | D ⁺ empty | |
| | 3 | A ⁺ 2GB RDIMM | 3 | A ⁺ empty | |
| Chnl 2 | 4 | H ⁺ 8GB RDIMM | 4 | H ⁺ empty | Chnl 2 |
| | 5 | E ⁺ 8GB RDIMM | 5 | E ⁺ empty | |
| | 6 | B ⁺ 2GB RDIMM | 6 | B ⁺ empty | |
| Chnl 3 | 7 | I ⁺ 8GB RDIMM | 7 | I ⁺ empty | Chnl 3 |
| | 8 | F ⁺ 8GB RDIMM | 8 | F ⁺ empty | |
| | 9 | C ⁺ 2GB RDIMM | 9 | C ⁺ empty | |

Standard memory replaced with optional memory (1 CPU model)

RDIMM maximum configuration (1 CPU model)

- 96GB, consisting of six (6) 16GB quad-rank PC3-8500 RDIMMs

Memory

| | CPU1 | | CPU2 | | |
|--------|--------|---------------------------|--------|----------------------|--------|
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | G ⁻ empty | 1 | G ⁻ empty | Chnl 1 |
| | 2 | D ⁻ 16GB RDIMM | 2 | D ⁻ empty | |
| | 3 | A ⁻ 16GB RDIMM | 3 | A ⁻ empty | |
| Chnl 2 | 4 | H ⁻ empty | 4 | H ⁻ empty | Chnl 2 |
| | 5 | E ⁻ 16GB RDIMM | 5 | E ⁻ empty | |
| | 6 | B ⁻ 16GB RDIMM | 6 | B ⁻ empty | |
| Chnl 3 | 7 | I ⁻ empty | 7 | I ⁻ empty | Chnl 3 |
| | 8 | F ⁻ 16GB RDIMM | 8 | F ⁻ empty | |
| | 9 | C ⁻ 16GB RDIMM | 9 | C ⁻ empty | |

UDIMM maximum configuration (1 CPU model)

- 24GB, consisting of six (6) 4GB dual-rank PC3-10600 UDIMMs

| | CPU1 | | CPU2 | | |
|--------|--------|--------------------------|--------|----------------------|--------|
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | G ⁻ empty | 1 | G ⁻ empty | Chnl 1 |
| | 2 | D ⁻ 4GB UDIMM | 2 | D ⁻ empty | |
| | 3 | A ⁻ 4GB UDIMM | 3 | A ⁻ empty | |
| Chnl 2 | 4 | H ⁻ empty | 4 | H ⁻ empty | Chnl 2 |
| | 5 | E ⁻ 4GB UDIMM | 5 | E ⁻ empty | |
| | 6 | B ⁻ 4GB UDIMM | 6 | B ⁻ empty | |
| Chnl 3 | 7 | I ⁻ empty | 7 | I ⁻ empty | Chnl 3 |
| | 8 | F ⁻ 4GB UDIMM | 8 | F ⁻ empty | |
| | 9 | C ⁻ 4GB UDIMM | 9 | C ⁻ empty | |

Standard memory replaced with optional memory (2 CPU model)

RDIMM maximum configuration (2 CPU model)

- 288GB, consisting of eighteen (18) 16GB dual-rank PC3L-10600 RDIMMs

| | CPU1 | | CPU2 | | |
|--------|--------|---------------------------|--------|---------------------------|--------|
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | G ⁻ empty | 1 | G ⁻ empty | Chnl 1 |
| | 2 | D ⁻ 16GB RDIMM | 2 | D ⁻ 16GB RDIMM | |
| | 3 | A ⁻ 16GB RDIMM | 3 | A ⁻ 16GB RDIMM | |
| Chnl 2 | 4 | H ⁻ empty | 4 | H ⁻ empty | Chnl 2 |
| | 5 | E ⁻ 16GB RDIMM | 5 | E ⁻ 16GB RDIMM | |
| | 6 | B ⁻ 16GB RDIMM | 6 | B ⁻ 16GB RDIMM | |
| Chnl 3 | 7 | I ⁻ empty | 7 | I ⁻ empty | Chnl 3 |
| | 8 | F ⁻ 16GB RDIMM | 8 | F ⁻ 16GB RDIMM | |
| | 9 | C ⁻ 16GB RDIMM | 9 | C ⁻ 16GB RDIMM | |



Memory

UDIMM maximum configuration (2 CPU model)

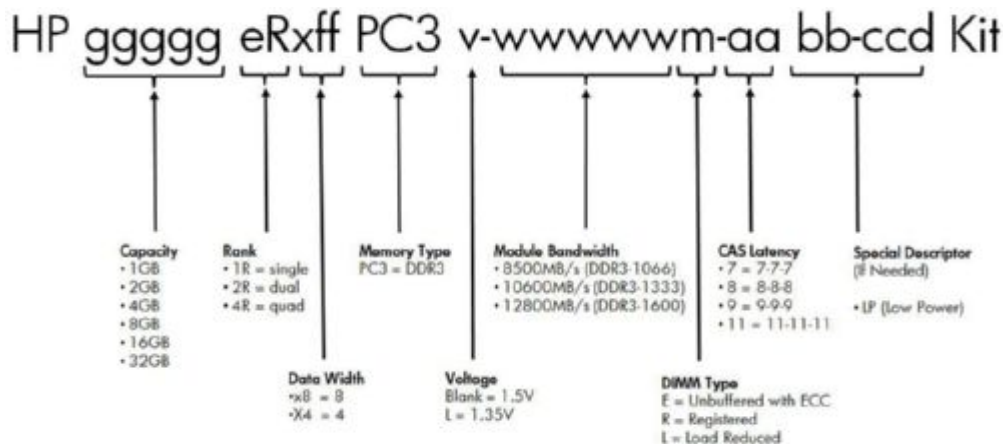
- 48GB, consisting of twelve (12) 4GB dual-rank PC3-10600 UDIMMs

| | CPU1 | | CPU2 | | |
|--------|--------|------------------|--------|------------------|--------|
| | slot # | population order | slot # | population order | |
| Chnl 1 | 1 | G=empty | 1 | G=empty | Chnl 1 |
| | 2 | D=4GB UDIMM | 2 | D=4GB UDIMM | |
| | 3 | A=4GB UDIMM | 3 | A=4GB UDIMM | |
| Chnl 2 | 4 | H=empty | 4 | H=empty | Chnl 2 |
| | 5 | E=4GB UDIMM | 5 | E=4GB UDIMM | |
| | 6 | B=4GB UDIMM | 6 | B=4GB UDIMM | |
| Chnl 3 | 7 | I=empty | 7 | I=empty | Chnl 3 |
| | 8 | F=4GB UDIMM | 8 | F=4GB UDIMM | |
| | 9 | C=4GB UDIMM | 9 | C=4GB UDIMM | |

NOTE—Capacity references are rounded to the common Gigabyte values.

- 1GB = 1024MB
- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB
- 16GB = 16384MB

DDR3 memory options part number decoder



Following are memory options available from HP:

Memory

Registered DIMMs (RDIMMs)

| | |
|---|------------|
| HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500656-B21 |
| HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 593339-B21 |
| HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500658-B21 |
| HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit | 500662-B21 |
| HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit | 500666-B21 |

Memory

HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit 604504-B21

HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit 604506-B21

NOTE-Low Voltage DIMMs can only be used with Intel® Xeon® processor 5600 series processors

HP 16GB (1x16GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 LP Memory Kit 627812-B21

Unbuffered with ECC DIMMs (UDIMMs)

HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit 500668-B21

HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit 500670-B21

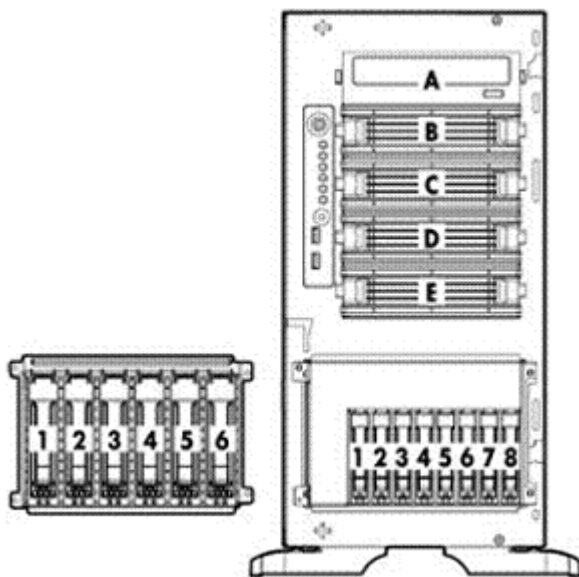
HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit 500672-B21

HP 4GB (1x4GB) Dual Rank x8 PC3L-10600 (DDR3-1333) Unbuffered CAS-9 Low Power Memory Kit 619488-B21

NOTE-All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool-www.hp.com/go/ddr3memory-configurator.

NOTE-Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see-
<http://h18004.www1.hp.com/products/servers/platforms/energyefficient/>

Storage



1 - 6 6 x 3.5" (LFF) Hot-Plug SAS/SATA hard drive bays

Or

1 - 8 8 x 2.5" (SFF) Hot-Plug SAS/SATA hard drive bays

B,C,D,E Available half height media bays

A-E Removable Optical Drive

D+E 8 x 2.5" (SFF) Hot-Plug SAS/SATA hard drive bays
or
2 x 3.5" (LFF) Hot-Plug SAS/SATA hard drive bays

Drive Support

| | Quantity Supported | Position Supported | Controller |
|---|--------------------|--------------------|----------------------------|
| Removable Media | | | |
| HP Half-Height SATA DVD-ROM Optical Drive | Up to 1 | A-E | Integrated SATA Controller |
| HP Half-Height SATA DVD RW Optical Drive | Up to 1 | A-E | Integrated SATA Controller |

Hard Drives

NOTE- The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

NOTE- Hard drives have either a one year or three year warranty[†] refer to the specific hard drive QuickSpecs for details.

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

| | Quantity Supported | Position Supported | Controller |
|------------------|--|--------------------|--|
| 900GB 6G SAS 10K | Up to 16 SFF | 1-8 and D+E | HP Smart Array P212/Zero Memory Controller |
| 600GB 6G SAS 10K | | | HP Smart Array P212/ 256 MB Controller |
| 450GB 6G SAS 10K | | | HP Smart Array P410/256 MB Controller |
| 300GB 6G SAS 10K | | | HP Smart Array P410/512 MB BBWC Controller |
| 300GB 6G SAS 15K | | | HP Smart Array P410/512 MB FBWC Controller |
| 146GB 6G SAS 15K | | | HP Smart Array P410/1G FBWC Controller |
| | | | HP Smart Array P411/256 MB Controller |
| | | | HP Smart Array P411/512 MB BBWC Controller |
| | | | HP Smart Array P411/512 MB FBWC Controller |
| | | | HP Smart Array P411/1G FBWC Controller |
| | HP Smart Array P812/1G Flash Backed Cache Controller | | |

Storage

SAS Hot Plug LFF (3.5-inch) Enterprise (ENT) Drives

| | Quantity Supported | Position Supported | Controller |
|------------------|--------------------|--------------------|--|
| 600GB 6G SAS 15K | Up to 8 LFF | 1-6 and D+E | HP Smart Array P212/Zero Memory Controller |
| 450GB 6G SAS 15K | | | HP Smart Array P212/ 256 MB Controller |
| 300GB 6G SAS 15K | | | HP Smart Array P410/256 MB Controller |
| | | | HP Smart Array P410/512 MB BBWC Controller |
| | | | HP Smart Array P410/512 MB FBWC Controller |
| | | | HP Smart Array P410/1G FBWC Controller |
| | | | HP Smart Array P411/256 MB Controller |
| | | | HP Smart Array P411/512 MB BBWC Controller |
| | | | HP Smart Array P411/512 MB FBWC Controller |
| | | | HP Smart Array P411/1G FBWC Controller |
| | | | HP Smart Array P812/1G Flash Backed Cache Controller |

SAS Hot Plug LFF (3.5-inch) Midline (MDL) Drives

| | Quantity Supported | Position Supported | Controller |
|-----------------|--------------------|--------------------|--|
| 3TB 6G SAS 7.2K | Up to 6 LFF | 1-6 and D+E | HP Smart Array P212/Zero Memory Controller |
| 2TB 6G SAS 7.2K | | | HP Smart Array P212/ 256 MB Controller |
| 1TB 6G SAS 7.2K | | | HP Smart Array P410/256 MB Controller |
| | | | HP Smart Array P410/512 MB BBWC Controller |
| | | | HP Smart Array P410/512 MB FBWC Controller |
| | | | HP Smart Array P410/1G FBWC Controller |
| | | | HP Smart Array P411/256 MB Controller |
| | | | HP Smart Array P411/512 MB BBWC Controller |
| | | | HP Smart Array P411/512 MB FBWC Controller |
| | | | HP Smart Array P411/1G FBWC Controller |
| | | | HP Smart Array P812/1G Flash Backed Cache Controller |

SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives

| | Quantity Supported | Position Supported | Controller |
|-------------------|--------------------|--------------------|--|
| 1TB 6G SAS 7.2K | Up to 16 SFF | 1-8 and D+E | HP Smart Array P212/Zero Memory Controller |
| 500GB 6G SAS 7.2K | | | HP Smart Array P212/ 256 MB Controller |
| | | | HP Smart Array P410/256 MB Controller |
| | | | HP Smart Array P410/512 MB BBWC Controller |
| | | | HP Smart Array P410/512 MB FBWC Controller |
| | | | HP Smart Array P410/1G FBWC Controller |
| | | | HP Smart Array P411/256 MB Controller |
| | | | HP Smart Array P411/512 MB BBWC Controller |
| | | | HP Smart Array P411/512 MB FBWC Controller |
| | | | HP Smart Array P411/1G FBWC Controller |
| | | | HP Smart Array P812/1G Flash Backed Cache Controller |

SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives

| | Quantity Supported | Position Supported | Controller |
|------------------|--------------------|--------------------|--|
| 1TB 3G SATA 7.2K | Up to 16 | 1-8 and D+E | HP Smart Array P212/Zero Memory Controller |



Storage

500GB 3G SATA 7.2K

HP Smart Array P212/ 256 MB Controller
 HP Smart Array P410/256 MB Controller
 HP Smart Array P410/512 MB BBWC Controller
 HP Smart Array P410/512 MB FBWC Controller
 HP Smart Array P410/1G FBWC Controller
 HP Smart Array P411/256 MB Controller
 HP Smart Array P411/512 MB BBWC Controller
 HP Smart Array P411/512 MB FBWC Controller
 HP Smart Array P411/1G FBWC Controller
 HP Smart Array P812/1G Flash Backed Cache Controller

| | Quantity Supported | Position Supported | Controller |
|--|--|--------------------|--|
| SATA Hot Plug LFF (3.5-inch) Midline (MDL) Drives | | | |
| 3TB 3G SATA 7.2K | Up to 6 LFF | 1-6 and D+E | HP Smart Array P212/Zero Memory Controller |
| 2TB 3G SATA 7.2K | | | HP Smart Array P212/ 256 MB Controller |
| 1TB 3G SATA 7.2K | | | HP Smart Array P410/256 MB Controller |
| 500GB 3G SATA 7.2K | | | HP Smart Array P410/512 MB BBWC Controller |
| | | | HP Smart Array P410/512 MB FBWC Controller |
| | HP Smart Array P410/1G FBWC Controller | | |
| | HP Smart Array P411/256 MB Controller | | |
| | HP Smart Array P411/512 MB BBWC Controller | | |
| | HP Smart Array P411/512 MB FBWC Controller | | |
| | HP Smart Array P411/1G FBWC Controller | | |
| | HP Smart Array P812/1G Flash Backed Cache Controller | | |

| | Quantity Supported | Position Supported | Controller |
|--|--------------------|--------------------|--|
| SATA Hot Plug LFF (3.5-inch) Entry (ETY) Drives | | | |
| 250GB 3G SATA 7.2K | Up to 8 | 1-6 and D+E | HP Smart Array P212/Zero Memory Controller |
| | | | HP Smart Array P212/ 256 MB Controller |
| | | | HP Smart Array P410/256 MB Controller |
| | | | HP Smart Array P410/512 MB BBWC Controller |
| | | | HP Smart Array P410/512 MB FBWC Controller |
| | | | HP Smart Array P410/1G FBWC Controller |
| | | | HP Smart Array P411/256 MB Controller |
| | | | HP Smart Array P411/512 MB BBWC Controller |
| | | | HP Smart Array P411/512 MB FBWC Controller |
| | | | HP Smart Array P411/1G FBWC Controller |
| | | | HP Smart Array P812/1G Flash Backed Cache Controller |

| | Quantity Supported | Position Supported | Controller |
|--|--|--------------------|--|
| SATA Hot Plug 2.5" Enterprise Mainstream Solid State Drives | | | |
| 400GB 3G SATA MLC SFF | Up to 16 | 1-8 and D+E | HP Smart Array P212/Zero Memory Controller |
| 200GB 3G SATA MLC SFF | | | HP Smart Array P212/ 256 MB Controller |
| 100GB 3G SATA MLC SFF | | | HP Smart Array P410/256 MB Controller |
| | | | HP Smart Array P410/512 MB BBWC Controller |
| | | | HP Smart Array P410/512 MB FBWC Controller |
| | HP Smart Array P410/1G FBWC Controller | | |



Storage

HP Smart Array P411/256 MB Controller
 HP Smart Array P411/512 MB BBWC Controller
 HP Smart Array P411/512 MB FBWC Controller
 HP Smart Array P411/1G FBWC Controller
 HP Smart Array P812/1G Flash Backed Cache Controller

SATA Hot Plug 3.5" Midline (MDL) Solid State Drives

| | Quantity Supported | Position Supported | Controller |
|-----------------------|--------------------|--------------------|--|
| 400GB 3G SATA MLC LFF | Up to 8 | 1-6 and D+E | HP Smart Array P212/Zero Memory Controller |
| 200GB 3G SATA MLC LFF | | | HP Smart Array P212/ 256 MB Controller |
| 100GB 3G SATA MLC LFF | | | HP Smart Array P410/256 MB Controller |
| | | | HP Smart Array P410/512 MB BBWC Controller |
| | | | HP Smart Array P410/512 MB FBWC Controller |
| | | | HP Smart Array P410/1G FBWC Controller |
| | | | HP Smart Array P411/256 MB Controller |
| | | | HP Smart Array P411/512 MB BBWC Controller |
| | | | HP Smart Array P411/512 MB FBWC Controller |
| | | | HP Smart Array P411/1G FBWC Controller |
| | | | HP Smart Array P812/1G Flash Backed Cache Controller |

6G SAS Hot Plug Enterprise Performance Solid State Drives

| | Quantity Supported | Position Supported | Controller |
|----------------------|--------------------|--------------------|--|
| 400GB 6G SAS SLC SFF | Up to 16 | 1-8 and D+E | HP Smart Array P212/Zero Memory Controller |
| 200GB 6G SAS SLC SFF | | | HP Smart Array P212/ 256 MB Controller |
| | | | HP Smart Array P410/256 MB Controller |
| | | | HP Smart Array P410/512 MB BBWC Controller |
| | | | HP Smart Array P410/512 MB FBWC Controller |
| | | | HP Smart Array P410/1G FBWC Controller |
| | | | HP Smart Array P411/256 MB Controller |
| | | | HP Smart Array P411/512 MB BBWC Controller |
| | | | HP Smart Array P411/512 MB FBWC Controller |
| | | | HP Smart Array P411/1G FBWC Controller |
| | | | HP Smart Array P812/1G Flash Backed Cache Controller |

6G SAS Hot Plug Enterprise Performance Solid State Drives

| | Quantity Supported | Position Supported | Controller |
|----------------------|--------------------|--------------------|--|
| 800GB 6G SAS MLC SFF | Up to 16 | 1-8 and D+E | HP Smart Array P212/Zero Memory Controller |
| 400GB 6G SAS MLC SFF | | | HP Smart Array P212/ 256 MB Controller |
| 200GB 6G SAS MLC SFF | | | HP Smart Array P410/256 MB Controller |
| | | | HP Smart Array P410/512 MB BBWC Controller |
| | | | HP Smart Array P410/512 MB FBWC Controller |
| | | | HP Smart Array P410/1G FBWC Controller |
| | | | HP Smart Array P411/256 MB Controller |
| | | | HP Smart Array P411/512 MB BBWC Controller |
| | | | HP Smart Array P411/512 MB FBWC Controller |
| | | | HP Smart Array P411/1G FBWC Controller |
| | | | HP Smart Array P812/1G Flash Backed Cache Controller |



Storage

External Storage

| | Quantity Supported | Position Supported | Host Controller or Adapter |
|----------------------|--------------------|--------------------|---|
| D2700 Disk Enclosure | Up to 2 Up to 4 | External | HP Smart Array P411/256 MB Controller HP Smart Array P411/512 MB BBWC Controller HP Smart Array P411/512 MB FBWC Controller HP Smart Array P411/1G FBWC Controller HP Smart Array P812/1G Flash Backed Cache Controller |

Tape and Disk-Based Backup

NOTE For the complete range of tape drives, autoloaders, libraries and media, including the internal fitting models, see <http://www.hp.com/go/tape>. For the complete range of D2D Backup Systems see <http://www.hp.com/go/d2d>. For the complete range of RDX drives and media see <http://www.hp.com/go/rdx>. For hardware and software compatibility of HP disk and tape backup products see <http://www.hp.com/storage/SPOCK>.

| | Position Supported | Controller | Controller/HBA Option Kit Part Number |
|--|----------------------|---|---------------------------------------|
| HP SCSI Tape Drives LTO-1 Ultrium 232 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-3 Ultrium 960 LTO4 Ultrium 1760 LTO-4 Ultrium 1840 DAT 40 DAT 72 DAT 160 | Internal or External | HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter NOTE Please check the full compatibility information at http://www.hp.com/storage/SPOCK | 412911-B21 |
| HP SCSI Rack Mount Kits 1U Rack-Mount Kit 3U Rack-Mount Kit | External | HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter | 412911-B21 |
| HP USB Tape Drives DAT 40 DAT 72 DAT 160 DAT 320 | Internal or External | USB 2.0 Port | N/A |
| HP USB Rack Mount Kits 1U USB Rack-Mount Kit | External | USB 2.0 Port | |
| HP SAS Tape Drives DAT 160 DAT 320 LTO-2 Ultrium 448 LTO-3 Ultrium 920 LTO-4 Ultrium 1760 LTO-4 Ultrium 1840 | Internal or External | HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller NOTE Please check the full compatibility information at http://www.hp.com/storage/SPOCK | 462828-B21 |



Storage

LTO-5 Ultrium 3000
LTO-5 Ultrium 3280

| | | | |
|--|----------------------|--|------------|
| HP SAS Rack Mount Kits 1U Rack-Mount Kit 3U Rack-Mount Kit | External | HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller NOTE -Please check the full compatibility information at http://www.hp.com/storage/SPOCK | 462828-B21 |
| HP SCSI Tape Autoloaders DAT 72x10 Autoloader 1/8 G2 Autoloader | External | HP SC11Xe Ultra320 Single Channel/ PCIe x4 SCSI Host Bus Adapter | 412911-B21 |
| HP SCSI Tape Libraries MSL2024 MSL4048 MSL8096 MSL6000 | External | NOTE -Please check the full compatibility information at http://www.hp.com/storage/SPOCK | |
| HP SAS Tape Autoloaders and Libraries 1/8 G2 Autoloader MSL2024 MSL4048 MSL8096 | External | HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller NOTE -Please check the full compatibility information at http://www.hp.com/storage/SPOCK | 462828-B21 |
| HP Fibre Channel Tape Libraries MSL2024 MSL4048 MSL8096 MSL6000 | External | Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for connectivity information and the supported Fibre Channel HBAs shown in this QuickSpec. | |
| HP USB RDX Removable Disk Backup System RDX160 RDX320 RDX500 RDX750 RDX1TB | Internal or External | USB 2.0 port | N/A |
| HP D2D Backup Systems, iSCSI D2D2500i D2D4000i | External | Embedded Network Controller. If the server requires a hardware iSCSI initiator, the QLogic QLA4050 Host Bus Adapter is recommended. | |
| HP D2D Backup Systems, Fibre Channel D2D4000fc | External | Direct server attach is not supported, requires connection via SAN fabric. See http://www.hp.com/storage/SPOCK | |



Storage

Power Specifications

| HP 460W Common Slot Gold Hot Plug Power Supply Kit | | | | | | | |
|---|------------|------------|------------|------------|------------|------------|------------|
| Part Number | 503296-B21 | | | | | | |
| Input Voltage Range (Vrms) | 100 to 240 | | | | | | |
| Frequency Range (Nominal) (Hz) | 50/60 | | | | | | |
| Nominal Input Voltage (Vrms) | 100 | 120 | 200 | 208 | 220 | 230 | 240 |
| Maximum Rated Output Wattage Rating | 460 | 460 | 460 | 460 | 460 | 460 | 460 |
| Nominal Input Current (A rms) | 5.5 | 4.5 | 2.6 | 2.5 | 2.4 | 2.3 | 2.2 |
| Maximum Rated Input Wattage Rating (Watts) | 526 | 520 | 505 | 505 | 503 | 503 | 503 |
| Maximum Rated VA (Volt-Amp) | 548 | 542 | 527 | 527 | 524 | 524 | 524 |
| Efficiency (%) | 87.5 | 88.5 | 91 | 91 | 91.5 | 91.5 | 91.5 |
| Power Factor | 0.97 | | | | | | |
| Leakage Current (mA) | 0.42 | 0.50 | 0.83 | 0.87 | 0.92 | 0.96 | 1.00 |
| Maximum Inrush Current (A peak) | 30 | | | | | | |
| Maximum Inrush Current duration (mS) | 20 | | | | | | |
| Maximum British Thermal Unit Rating (BTU-Hr) | 1794 | 1773 | 1725 | 1725 | 1715 | 1715 | 1715 |

| HP 750W Common Slot Gold Hot Plug Power Supply Kit | | | | | | | |
|---|------------|------------|------------|------------|------------|------------|------------|
| Part Number | 512327-B21 | | | | | | |
| Input Voltage Range (Vrms) | 100 to 240 | | | | | | |
| Frequency Range (Nominal) (Hz) | 50/60 | | | | | | |
| Nominal Input Voltage (Vrms) | 100 | 120 | 200 | 208 | 220 | 230 | 240 |
| Maximum Rated Output Wattage Rating | 750 | 750 | 750 | 750 | 750 | 750 | 750 |
| Nominal Input Current (A rms) | 8.9 | 7.4 | 4.3 | 4.1 | 3.9 | 3.7 | 3.6 |
| Maximum Rated Input Wattage Rating (Watts) | 857 | 847 | 824 | 825 | 820 | 820 | 820 |
| Maximum Rated VA (Volt-Amp) | 894 | 884 | 859 | 859 | 854 | 854 | 854 |
| Efficiency (%) | 87.5 | 88.5 | 91 | 91 | 91.5 | 91.5 | 91.5 |
| Power Factor | 0.97 | | | | | | |
| Leakage Current (mA) | 0.42 | 0.50 | 0.83 | 0.87 | 0.92 | 0.96 | 1.00 |
| Maximum Inrush Current (A peak) | 30 | | | | | | |
| Maximum Inrush Current duration (mS) | 20 | | | | | | |
| Maximum British Thermal Unit Rating (BTU-Hr) | 2925 | 2892 | 2812 | 2812 | 2797 | 2797 | 2797 |

Power Specifications

| HP 1200W Common Slot Silver Hot Plug Power Supply Kit | | | | | | | |
|---|------------|------------|------------|------------|------------|------------|------------|
| Part Number | 500172-B21 | | | | | | |
| Input Voltage Range (Vrms) | 100 to 240 | | | | | | |
| Frequency Range (Nominal) (Hz) | 50/60 | | | | | | |
| Nominal Input Voltage (Vrms) | 100 | 120 | 200 | 208 | 220 | 230 | 240 |
| Maximum Rated Output Wattage Rating | 800 | 900 | 1200 | 1200 | 1200 | 1200 | 1200 |
| Nominal Input Current (A rms) | 9.7 | 9.0 | 7.0 | 6.8 | 6.4 | 6.1 | 5.9 |
| Maximum Rated Input Wattage Rating | 930 | 1034 | 1348 | 1348 | 1348 | 1348 | 1348 |
| Maximum Rated VA (Volt-Amp) | 970 | 1079 | 1406 | 1406 | 1406 | 1406 | 1406 |
| Efficiency (%) | 86 | 87 | 89 | 89 | 89 | 89 | 89 |
| Power Factor | 0.97 | | | | | | |
| Leakage Current (mA) | 0.42 | 0.50 | 0.83 | 0.87 | 0.92 | 0.96 | 1.00 |
| Maximum Inrush Current (A peak) | 30 | | | | | | |
| Maximum Inrush Current duration (mS) | 20 | | | | | | |
| Maximum British Thermal Unit Rating (BTU-Hr) | 3174 | 3530 | 4600 | 4600 | 4600 | 4600 | 4600 |

NOTE To review typical system power ratings use the HP Power Advisor which is available online located at url= www.hp.com/go/proliant-energy-efficient or www.hp.com/go/hppoweradvisor.

NOTE Option Kits contain optional power supply, an IEC power cable and PDU IEC cables.

Technical Specifications

| | | | |
|--------------------|---|--|---|
| System Unit | Tower Dimensions (H x W x D) (with feet/bezel) | 18.5 x 8.59 x 23.46 in (47 x 21.8 x 59.6 cm) | |
| | Rack Dimensions (H x W x D) (with feet/bezel) | 8.54 x 17.5 x 21.9 in. (21.7 x 44.5 x 55.7cm) | |
| | Tower Weight (approximate) | Maximum (all hard drives, power supplies, and processors installed) | 70 lb (31.8 kg) |
| | | Minimum (one hard drive, power supply, and processor installed) | 54 lb (24.5 kg) |
| | Rack Weight (approximate) | Maximum (all hard drives, power supplies, and processors installed) | 66 lb (29.9 kg) |
| | | Minimum (one hard drive, power supply, and processor installed) | 48 lb (21.8 kg) |
| | Input Requirements (per power supply) | Rated Line Voltage | 100 to 240 VAC |
| | | Rated Input Current | 7.1 Amps (at 120VAC) to 3.5 Amps (at 240 VAC) |
| | | Rated Input Frequency | 50 to 60 Hz |
| | | Rated Input Power | 852 W |
| | BTU Rating | Maximum | 460W - 1773 BTU / hr (at 120 VAC), 1715 (at 240 VAC) 750W - 2892 BTU / hr (at 120 VAC), 2797 (at 240 VAC) 1200W - 3530 BTU / hr (at 120 VAC), 4600 (at 240 VAC) |
| | | Power Specifications | |
| | | To review typical system power ratings use the HP Power Advisor which is available via the online tool located at URL- www.hp.com/go/proliant-energy-efficient | |
| | Power Supply Output (per power supply) | - Click on the system of interest. Example=ML350 G6 | |
| | | - Follow the instructions of the next screens. | |
| | | Rated Steady-State Power | 460(750) W (at 100 VAC), 460(750) W (at 200 VAC) |
| | | Maximum Peak Power | 460(750) W (at 100 VAC), 460(750) W (at 200 VAC) |
| | | NOTE -See Power Supply Specifications tables for complete details on 460W PSU and optional 750W and 1200W Power Supply Options. | |
| | System Inlet Temperature | Operating | 10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 304.8 m (1.8°F per every 1000 ft) above sea level to a maximum of 3048 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr |

Technical Specifications

| | | | |
|--|--|--|--|
| | | (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F). | |
| Relative Humidity (non-condensing) | Non-operating | -30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr). | |
| | Operating | 10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing. | |
| | Non-operating | 5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing. | |
| Altitude | Operating | 3048 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min). | |
| | Non-operating | 9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min). | |
| Acoustic Noise | Listed are the declared A-Weighted sound power levels (LWAd) and declared average bystander position A-Weighted sound pressure levels (LpAm) when the product is operating in a 23°C ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109). | | |
| | Idle | | |
| | | L WAd | 4.7 B (1P Non-Redundant) 4.6 B (2P Redundant) |
| | | L pAm | 32.48dB (1P Non-Redundant) 31.18dB (2P Redundant) |
| | Operating | | |
| | | L WAd | 4.8 B (1P Non-Redundant) 4.7 B (2P Redundant) |
| | | L pAm | 32.39dB (1P Non-Redundant) 31.62dB (2P Redundant) |
| Emissions Classification (EMC) | FCC Rating | Class B | |
| | Normative Standards | CISPR 22 [†] EN55022 [†] EN55024 [†] FCC CFR 47, Pt 15 [†] ICES-003 [†] CNS13438 [†] GB9254 [†] K22 [†] K24 [†] EN 61000-3-2 [†] EN 61000-3-3 [†] EN 60950-1 [†] IEC 60950-1 | |

NOTE—The Listed sound levels apply to standard shipping configurations. Additional options may result in increased sound levels.

NOTE—Product conformance to cited product specifications is based on sample (type) testing, evaluation, or assessment. This product or family of products is eligible to bear the appropriate compliance logos and statements.

Technical Specifications

| | | | | |
|-------------------------------------|---|--|---|--|
| Smart Array P410i Controller | Dimensions | Embedded | | |
| | Disk Drive and Enclosure Interface - Transfer rate | 6Gb/s SAS (Serial Attached SCSI) 3Gb/s SATA (Serial ATA) | | |
| | SAS Connectors | 2 internal 4X connectors | | |
| | Cache Memory Speed | DDR2-800MHz with 40 or 72-bit wide bus | | |
| | Server Interface | x4 PCIe 2.0 provides 2GB/s maximum bandwidth | | |
| | SAS Speed | 8 6Gb/s SAS links provide 4.8GB/s maximum bandwidth | | |
| | Cache Memory | Zero Memory RAID has no cache memory 40-bit 256MB ECC protected cache (battery upgrade available) 72-bit 512MB BBWC or 72-bit 512MB and 1G FBWC | | |
| | Logical Drives Supported | Zero Memory, Up to 2 logical volumes (8 physical drives) Up to 64 logical drives with cache | | |
| | Host Memory Addressing | 64-bit, supporting greater than 4GB server memory space | | |
| | RAID Support | RAID 6, 6+0 (Advanced Data Guarding) NOTE= RAID 6, 6+0 can be enabled with one of the following combinations ² <ul style="list-style-type: none"> • 256 MB cache, Battery kit and Smart Array Advanced Pack License key option upgrades • 512 MB BBWC/FBWC and Smart Array Advanced Pack License key option upgrades • 1G FBWC and Smart Array Advanced Pack License key option upgrades RAID 5, 5+0 (Distributed Data Guarding) NOTE= A minimum of 256 MB cache is required to enable RAID 5, 5+0 support RAID 1+0 (Striping & Mirroring) RAID 0 (Striping), RAID 1 (Mirroring) | | |
| | <hr/> | | | |
| | Embedded NC326i PCI Express Dual Port Gigabit Server Adapter | Network Interface Compatibility | 10Base-T/100Base-TX/1000Base-TX IEEE 802.3 10Base-T IEEE 802.3ab 1000Base-T IEEE 802.3u 100Base-TX | |
| | | Data Transfer Method | PCI Express, four lanes (x4) | |
| Controller | | BCM5715 | | |
| Network Transfer Rate | | 10Base-T (Half-Duplex) | 10 Mb/s | |
| | | 10Base-T (Full-Duplex) | 20 Mb/s | |
| | | 100Base-TX (Half-Duplex) | 100 Mb/s | |
| | | 100Base-TX (Full-Duplex) | 200 Mb/s | |
| | | 1000Base-TX (Half and Full-Duplex) | 2000Mb/s | |
| Connector | | RJ-45 | | |
| Cable Support | | 10Base-T | Categories 3, 4 or 5 UTP ³ up to 328 ft (100 m) | |
| | 10/100/1000Base-TX | Category 5 UTP ³ up to 328 ft (100 m) | | |

Technical Specifications

Environment-friendly Products and Approach

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to <http://www.hp.com/go/green>. To recycle your product, please go to <http://www.hp.com/go/green> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.