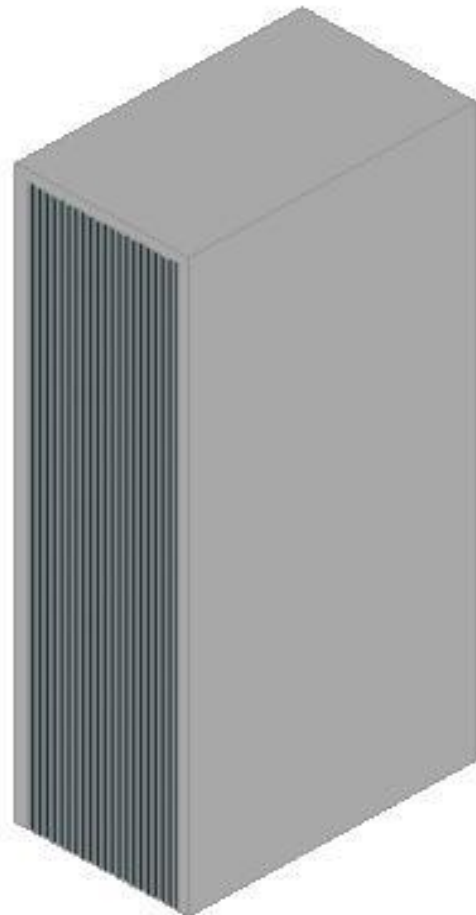
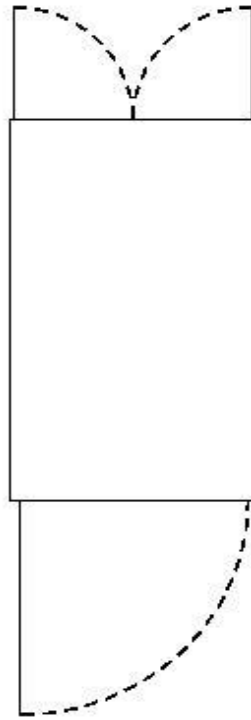




ITEM INFORMATION COVER SHEET

ITEM #			CONTRACTOR INFORMATION			UTILITY INFORMATION			
MODEL #	MANUFACTURER	ITEM DESCRIPTION	I	F	C	REMARKS	ELECTRICAL	SUPPLY	MECHANICAL: WASTE
DC121	Per TS	FOR PLACEMENT ONLY - ORDERED BY MEIJER ITS - Server Rack- incl. CD Subsystem/ Unity Processor/ File Repository/ LP Server/ iScale/ Amp/ Voice Expansion Module/ Svcs Gateway	TS	TS	EC CC	E.C. to provide power. Communication Contractor to make connection. Tech Specialist to install.			

PARTS LIST:



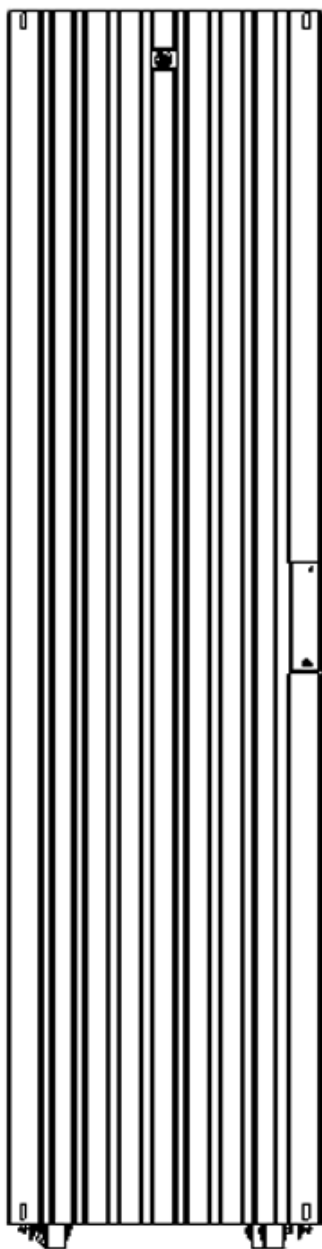
EQUIPMENT CELL INFORMATION	
Date Revised:	7/25/2022
Date Created:	
Cell library:	layout_backrooms
Cell name(s):	SADC121
Additional Information:	

ITEM NUMBER:	DC121
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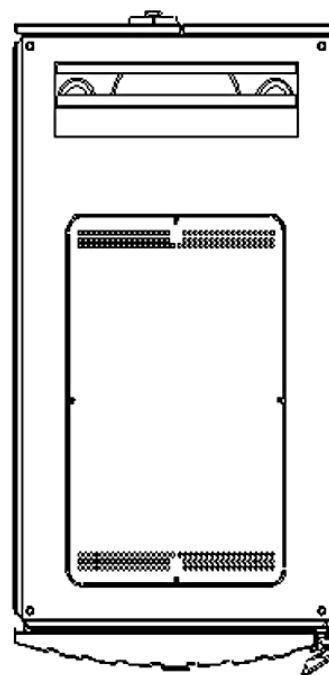
Overview

HP sets the new standard for performance and value in the enterprise with the new 10000 G2 Series Rack family. This new enterprise-class rack combines unparalleled structural integrity, cooling, and cable management; ease of use capabilities and a wide choice of rack, power and switching options to deliver a best in class product. The new rack is designated as HP's universal rack, ideal for all HP rack mounted server and storage products, complementing and protecting your investment in technology. Specifically designed to ensure outstanding cooling and cable management, the 10000 G2 Series Rack is the best choice to enterprise racks.

In addition to the universality of the new racks, important improvements have been made from the previous version, including improved and updated front door design with bright-aluminum finish; improved front and rear door handles and latches, and easier to handle three section side panels.



HP Rack 10000 G2 Series - front view



HP Rack 10000 G2 Series - top view

Overview

At a Glance

- The HP Rack 10000 G2 Series is the first universal rack compatible with all HP rack mounted products including ProLiant, Integrity, Nonstop, HP 9000 and Alpha servers as well as StorageWorks products. This effort simplifies the HP rack product line consolidating all previous rack offerings into a single universal rack for all HP server and storage platforms.
 - The HP Rack 10000 G2 Series also offers many improvements over the HP Rack 10000 Series racks:
 - Front door with updated design
 - Front and rear door handles and lock bars for improved security
 - Side panels come in 3 parts for easier manageability and mounting
 - Cable management accessories
 - Improved CTO pallet with offload metal ramp included
 - Improved mounting of stabilization feet with expanded offering to include regular and heavy-duty stabilization feet in 600 mm and 800 mm wide
 - Expanded offering of rack configurations including:
 - 36U and 42U Rack with rear extension kit included, mounted on a shock pallet for CTO
 - New rack tie-down kit and new grounding kit
 - Three year limited warranty, parts only (3/0/0)
-

Technical Specifications

10642 Rack G2 (42U)

Dimensions (HxDxW)	Total Cabinet Area	78.7 x 39.691 x 24 in (200 x 101.5 x 59.7 cm)
	Shipping (with packaging materials)	86.22 x 48 x 32 in (219 x 121.92 x 81.28 cm)
Weight	Operating	253 lb (114.84 kg)
	Shipping	284 lb (129 kg)
Load	Static	2000 lb (908 kg)
	Dynamic	2000 lb (908 kg)
Color	Doors	Graphite Metallic
	Frame	Carbon

10636 Rack G2 (36U)

Dimensions (HxDxW)	Total Cabinet Area	68.6 x 39.691 x 24 in (173.5 x 101.5 x 59.7 cm)
	Shipping (with packaging materials)	75.25 x 48 x 32 in (191.14 x 121.92 x 81.28 cm)
Weight	Operating	220 lb (100 kg)
	Shipping	272 lb (123 kg)
Load	Static	2000 lb (908 kg)
	Dynamic	1520 lb (690 kg)
Color	Doors	Graphite Metallic
	Frame	Carbon

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The information contained herein is subject to change without notice.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.



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Systems Hardware information

POWER7 information

Model 8202-E4B, 8202-E4C, 8202-E4D, 8205-E6B, 8205-E6C, and 8205-E6D server specifications

Server specifications provide detailed information for your server, including dimensions, electrical, power, temperature, environment, and service clearances.



Limited configurations of the IBM® Power® 740 Express (8205-E6B and 8205-E6C) two-processor socket servers are qualified to the EPA ENERGY STAR Computer Server requirements. The qualified configurations require a minimum of 128 GB of memory. The ENERGY STAR Power and Performance Data Sheet is provided as follows:

- [8205-E6B](#)
- [8205-E6C](#)

Use the following specifications to plan for your server.

Table 1. Dimensions - rack-mounted drawer

Width	Depth	Height	EIA units ¹
440 mm (17.3 in.)	610 mm (24.0 in.)	173 mm (6.8 in.)	4

Table 2. Dimensions - stand-alone model

Width	Depth	Height
328.5 mm (13 in.) (with tip foot)	688 mm (27.0 in.)	541 mm (21.3 in.)
183 mm (7.2 in.) (without tip foot)		

Table 3. Shipping dimensions - rack-mounted drawer

Width	Depth	Height
610 mm (24 in.)	711 mm (28 in.)	1016 mm (40 in.)

¹This is an estimated value.

Table 4. Shipping dimensions - Stand-alone model

Width	Depth	Height
660 mm (26 in.)	737 mm (29 in.)	1016 mm (40 in.)

¹This is an estimated value.

Table 5. Shipping dimensions - Stand-alone model (China)

Width	Depth	Height
660 mm (26 in.)	622 mm (24.5 in.)	1016 mm (40 in.)

¹This is an estimated value.

Table 6. Electrical

Electrical characteristics	Properties
Rated voltage and frequency ¹	100 - 127 V ac ³ or 200 - 240 V ac at 47 - 63 Hz (8202-E4B, 8202-E4C, 8205-E6B, and 8205-E6C) 100 - 127 V ac, 200 - 208 V ac, and 220 - 240 V ac (8202-E4D) 200 - 208 V ac and 220 - 240 V ac (8205-E6D)
Thermal output (maximum) ²	2560 Btu/hr (8202-E4B (Power 720 Express)) 2867 Btu/hr (8202-E4C (Power 720 Express)) 3395 Btu/hr (8202-E4D (Power 720 Express)) 4778 Btu/hr (8205-E6B (Power 740 Express)) 5358 Btu/hr (8205-E6C (Power 740 Express)) 5562 Btu/hr (8205-E6D (Power 740 Express))
Maximum power consumption ²	750 W (8202-E4B (Power 720 Express)) 840 W (8202-E4C (Power 720 Express)) 995 W (8202-E4D (Power 720 Express)) 1400 W (8205-E6B (Power 740 Express)) 1570 W (8205-E6C (Power 740 Express)) 1630 W (8205-E6D (Power 740 Express))
Maximum kVA ⁴	0.765 (8202-E4B (Power 720 Express)) 0.857 (8202-E4C (Power 720 Express)) 1.015 (8202-E4D (Power 720 Express)) 1.429 (8205-E6B (Power 740 Express)) 1.602 (8205-E6C (Power 740 Express)) 1.664 (8205-E6D (Power 740 Express))
Power factor	0.98
Inrush current (maximum)	85 A (8202-E4B, 8202-E4C, 8205-E6B, and 8205-E6C) 12 A, 6 A, and 6 A (8202-E4D) 9 A and 9 A (8205-E6D)
Leakage current (maximum)	0.74 mA
Phase	Single
Dual power feature code	2 x 5603
Branch circuit breaker	20 A maximum
Drawer mounted in 7014-T00 and 7014-T42 racks, and power distribution unit (PDU)	0298 or 0299

Notes:

1. The power supplies automatically accept any voltage with the published, rated-voltage range. If dual power supplies are installed and operating, the power supplies draw approximately equal current from the utility (electrical supply) and provide approximately equal current to the load.
2. Power draw and heat load vary greatly by configuration. When planning for an electrical system, it is important to use maximum values. However, when planning for heat load, you can use the IBM Systems Energy Estimator to obtain a heat output estimate based on a specific configuration. See [The IBM Systems Energy Estimator](#) website for more information.
3. Power 720 servers are rated 100 - 127 V ac and 200 - 240 V ac. Power 740 servers are rated at 200 - 240 V ac.

4. To calculate the amperage, multiply kVA by 1000 and divide that number by the operating voltage.

Table 7. Environment requirements

Environment	Temperature
Recommended operating temperature	18°C - 27°C (64°F - 80°F)
Allowable operating temperature	5°C - 35°C (41°F - 95°F)
Nonoperating temperature	5°C - 45°C (41°F - 113°F)
Recommended relative humidity range	5.5°C (42°F) dew point to 60% RH and 15°C (59°F) dew point
Allowable relative humidity range	20% - 80%
Nonoperating relative humidity range	8% - 80%
Shipping temperature	-40°C to 60°C (-40°F to 140°F)
Shipping humidity range	5% - 100%
Operating dew point	28°C (84°F)
Altitude range	0 - 3050 m ¹ (0 - 10000 ft)

¹ Derate maximum dry-bulb temperature 1°C/300 m above 900 m.

Table 8. Noise emissions for the IBM Power 720 Express (8202-E4B, 8202-E4C, and 8202-E4D)

Product description	Declared A-weighted sound power level, L _{Wad} (B)		
	Operating	Idle	Operating
8202-E4B, 8202-E4C, and 8202-E4D single-socket processor, rack-integrated configuration, 2 power supplies, 6 hard drives.	5.6	5.5	40
8202-E4B, 8202-E4C, and 8202-E4D single-socket processor, 2 power supplies, 6 hard drives. Stand-alone system feature code (7572)	5.6	5.5	39
8202-E4B, 8202-E4C, and 8202-E4D single-socket processor, rack-integrated configuration, 2 power supplies, low profile PCIe riser card, 6 hard drives	6.3	6.3	47
8202-E4B, 8202-E4C, and 8202-E4D single-socket processor, rack-integrated configuration, 2 power supplies, 6 hard drives, and acoustic mode off	6.5	6.5	49
8202-E4B, 8202-E4C, and 8202-E4D single-socket processor, rack-integrated configuration, 1 power supply, 6 hard drives	6.5	6.5	51
8202-E4B, 8202-E4C, and 8202-E4D single-socket processor, rack-integrated configuration, 1 power supply, 6 hard drives, and low profile PCIe riser card.	6.7	6.7	52

Notes:

1. L_{Wad} is the statistical upper-limit A-weighted sound power level (rounded to the nearest 0.1 B).
2. L_{pAm} is the mean A-weighted emission sound pressure level measured at the 1-meter bystander position (rounded to the nearest dB).
3. 10 dB (decibel) equals 1 B (bel).
4. All measurements are made in conformance with ISO 7779 and declared in conformance with ISO 9296. Measured at 25° Celsius at a 500 meter altitude.

Table 9. Noise emissions for the IBM Power 740 Express (8205-E6B, 8205-E6C, and 8205-E6D)

Product description	Declared A-weighted sound power level, L _{Wad} (B)	
	Operating	Idle
8205-E6B, 8205-E6C, and 8205-E6D 2 socket processor, 2 power supplies, and IBM rack	6.0	5.9
8205-E6B, 8205-E6C, and 8205-E6D 2 socket processor, 2 power supplies, IBM rack, and low-profile PCIe riser card	6.1	6.1
8205-E6B, 8205-E6C, and 8205-E6D 2 socket processor, 2 power supplies, 8 hard drives, IBM rack, and acoustic mode off	6.4	6.4
8205-E6B, 8205-E6C, and 8205-E6D 2 socket processor, 2 power supplies, 8 hard drives, IBM rack, acoustic mode off, and low-profile PCI riser card	6.6	6.6
8205-E6B, 8205-E6C, and 8205-E6D 2 socket processor, 1 power supply, rack-integrated configuration, and low-profile PCI riser card	6.7	6.7
8205-E6B, 8205-E6C, and 8205-E6D 2 socket processor, 8 hard drives, 2 power supplies, IBM rack, acoustic mode off, low-profile PCI riser card, and rack acoustical doors FC 6248 or 6249.	6.1	6.1

Notes:

1. L_{Wad} is the statistical upper-limit A-weighted sound power level (rounded to the nearest 0.1 B).
2. L_{pAm} is the mean A-weighted emission sound pressure level measured at the 1-meter bystander position (rounded to the nearest dB).
3. 10 dB (decibel) equals 1 B (bel).
4. All measurements are made in conformance with ISO 7779 and declared in conformance with ISO 9296. Measured at 25° Celsius at a 500 meter altitude.

Table 10. Service clearances

Clearances	Front	Back	Left or right
Operating	762 mm (30 in.)	762 mm (30 in.)	
Nonoperating	762 mm (30 in.)	762 mm (30 in.)	762 mm (30 in.)

Electromagnetic compatibility compliance: CISPR 22; CISPR 24; FCC, CFR 47, Part 15 (US); VCCI (Japan); Directive 2004/108/EC (EEA); ICES-003, Issue 4 (Canada); ACMA radio communications standard (Australia, New Zealand); CNS 13438 (Taiwan); Radio Waves Act, MIC Rule No. 210 (Korea); Commodity Inspection Law (China); TCVN 7189 (Vietnam);

Safety compliance: IEC 60950; UL 60950; CSA 60950; EN 60950

Special Hardware Management Console considerations

When the server is managed by a Hardware Management Console (HMC), the console must be provided within the same room and within 8 m (26 ft) of the server. For additional considerations, see [Planning for HMC installation and configuration](#).

Note: As an alternative to the local HMC requirement, you can provide a supported device, such as a PC, with connectivity and authority to operate through a remotely attached HMC. This local device must be in the same room and within 8 m (26 ft) of your server. It must provide functional capabilities equivalent to the HMC that it replaces, and is needed by the

[8205-E6B ENERGY STAR® Power and Performance Data Sheet](#)

[8205-E6C ENERGY STAR® Power and Performance Data Sheet](#)

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PowerEdge R420 rack server

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Get an energy-efficient, dense 1U server for your applications with the PowerEdge™ R420, featuring next-generation processing and flexible I/O options.

Starting Price \$159400

Total Savings ~~\$407~~⁹⁸Dell Price **\$1186**⁰²

Processor

Intel® Xeon® processor E5-2400 and E5-2400 v2 product families

Processor sockets:

2

Internal interconnect:

Intel QuickPath Interconnect (QPI) link: 6.4GT/s; 7.2GT/s; 8.0 GT/s

Cache:

2.5MB per core; core options: 4, 6, 8, 10

Operating System

Microsoft® Windows Server® 2012

Microsoft Windows Server 2008 R2 SP1, x64 (includes Hyper-V®)

Novell® SUSE® Linux Enterprise Server

Red Hat® Enterprise Linux®

Virtualization options:

Citrix® XenServer®
VMware® vSphere® ESXi™
Red Hat Enterprise Virtualization®

Chipset

Intel C602

Memory²

Up to 384GB (12 DIMM slots) 2GB/4GB/8GB/16GB/32GB DDR3 up to 1600MT/s

Storage

Maximum internal storage:

Up to 16TB

Hot-plug hard drive options:

2.5" SATA, nearline SAS, SAS (15K, 10K), SAS SSD, SATA SSD, SAS 512n (15K)

3.5" SATA, nearline SAS, SAS (15K)

Self-encrypting drives available

Cabled hard drive options:

3.5" SATA, nearline SAS, SAS (15K)

Drive Bays

Up to eight 2.5" hot-plug SSD, SAS, or SATA or up to four 3.5" hot-plug SAS, SATA, or SSD

Slots

2 PCIe slots:

With two processors:

One x16 PCIe slot with x16 bandwidth, half-length, half-height

One x16 PCIe slot with x16 bandwidth, half-length, full-height

With one processor:

One x8 PCIe slot with x4 bandwidth, half-length, half-height

One x16 PCIe slot with x16 bandwidth, half-length, full-height

Network Controller

Embedded NIC:

Broadcom® 5720 Dual Port 1Gb LOM

I/O adapter options:

1Gb Ethernet:

Broadcom 5720 Dual Port 1Gb NIC

Broadcom 5719 Quad Port 1Gb NIC

Intel I350 Dual Port 1Gb stand-up adapter
Intel I350 Quad Port 1Gb stand-up adapter

10Gb Converged Ethernet:

Brocade® BR1020 Dual Port 10Gb CNA
QLogic® QLE8262 Dual Port 10Gb DA/SFP+
Broadcom 57810S Dual Port 10Gb Base-T CNA
Broadcom 57810S Dual Port 10Gb DA/SFP+ CNA

10Gb Ethernet:

Intel X520 Dual Port 10Gb DA/SFP+ server adapter
Intel X540 Dual Port 10Gb Base-T adapter

FC8/FC4 HBA:

QLogic QLE2460 4Gb Single Port FC HBA
QLogic QLE2462 4Gb Dual Port FC HBA
QLogic QLE2560 8Gb Single Port FC HBA
QLogic QLE2562 8Gb Dual Port FC HBA
Emulex® LPe-12000-E 8Gb Single Port FC HBA
Emulex LPe-12002-E 8Gb Dual Port FC HBA
Brocade 815 8Gb Single Port FC HBA
Brocade 825 8Gb Dual Port FC HBA

Power

Platinum efficiency 550W and 350W power supplies
Silver efficiency cabled 550W power supply
Auto-ranging power supplies

Availability

High-efficiency, hot-plug, redundant power supplies; hot-plug hard drives; TPM; dual internal SD support; fan fault tolerance; optional bezel; luggable tag; ECC memory, interactive LCD screen; ENERGY STAR® compliant

Chassis**Form factor:**

1U rack

Management**Remote management:**

Basic management (default)
iDRAC7 with Lifecycle Controller
iDRAC7 Express (upgrade), iDRAC7 Enterprise (upgrade) 8GB vFlash media (upgrade), 16GB vFlash media (upgrade)

Systems management:

IPMI 2.0 compliant
Dell OpenManage™ Essentials and Dell Management Console
Dell OpenManage Power Center
Dell OpenManage Connections:
OpenManage Integration Suite for Microsoft® System Center

Dell plug-in for VMware® vCenter™

HP Operations Manager, IBM Tivoli® Netcool®, and CA Network and Systems Management

Rack Support

ReadyRails™ II sliding rails for tool-less mounting in 4-post racks with square or unthreaded round holes or tooled mounting in 4-post threaded hole racks, with support for optional tool-less cable management arm

ReadyRails static rails for tool-less mounting in 4-post racks with square or unthreaded round holes or tooled mounting in 4-post threaded and 2-post (Telco) racks

RAID

Internal controllers:

PERC S110 (SW RAID)

PERC H310

PERC H710

PERC H710P

External HBAs (RAID):

PERC H810

External HBAs (non RAID):

6Gbps SAS HBA

Regulatory

Product Safety, EMC and Environmental Datasheets

Dell Regulatory Compliance Home Page

Dell and the Environment

ENERGY STAR®

The Dell PowerEdge R420 has earned the ENERGY STAR® Enterprise Server designation.

ENERGY STAR and the ENERGY STAR mark are registered U.S. marks.



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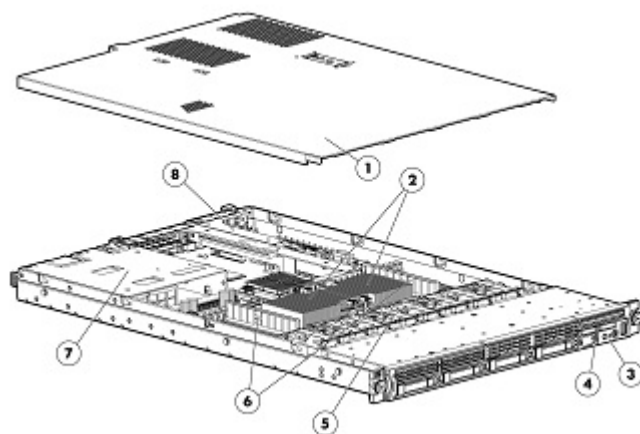
Discussion For

HP ProLiant DL360 Generation 7 (G7) QuickSpecs

Overview

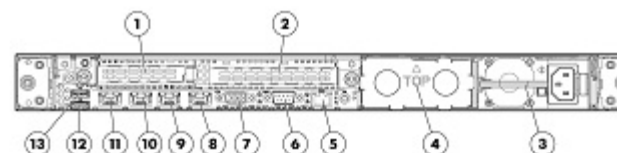
HP ProLiant DL360 Generation 7 (G7)

The HP ProLiant DL360 G7 combines performance, intelligent power and cooling management with IT management tools and essential fault tolerance, all optimized for space constrained installations. A 1U server with the improved performance of the latest Intel 5600 series processors, Unique HP Thermal Logic Technologies that provide leadership in energy efficiencies and ProLiant iLO 3 remote management. HP continues to provide more performance, flexibility and efficiency for space constrained environments.



Front View:

1. Hood Cover
2. Up to two Intel processors
3. Video connector
4. Slide-out System Insight Display (SID)
5. Removable fan modules for easy serviceability
6. Eighteen DIMM slots: DDR3 Registered (RDIMM) or Unbuffered (UDIMM) memory
7. Video connector
8. iLO 3 NIC connector



Rear View:

1. PCI Express expansion slot 1, low profile
2. PCI Express expansion slot 2 full-height full-length x16 (16, 8, 4, 2, 1), 75W +EXT 75W (option for PCI-X card only support)
3. Power supply bay 1 (populated)
4. Power supply bay 2
5. iLO 3 NIC connector
6. Serial connector
7. Video connector
8. iLO 3 NIC connector
9. Serial connector
10. Video connector
11. Video connector
12. Video connector
13. Video connector

Additional Options

Memory

Storage

Power Specifications

Technical Specifications

System Unit	Dimensions (H x W x D) (with bezel)	1.70 x 16.78 x 27.25 in (4.32 x 42.62 x 69.22 cm)		
	Weight (approximate)	Maximum	39.5 lb (17.92 kg) (all hard drives, power supplies, and processors installed)	
		Minimum (one hard drive, power supply, and processor installed)	32 lb (14.51 kg)	
	Input Requirements (for Standard 460W PSU, see power specifications tables for detail on 460W, 750W and 1200W power supplies)	Rated Line Voltage	100 to 240 VAC	
		Rated Input Current	4.5 Amps (at 120VAC) to 2.2 Amps (at 240 VAC)	
		Rated Input Frequency	50 to 60 Hz	
	BTU Rating	Maximum	1773 BTU / hr (at 120 VAC), 1715 (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 or www.hp.com/go/hppoweradvisor			

- Click on the system of interest. Example: DL360 G7
- Follow the instructions of the next screens.

Power Supply Output (per power supply)	Rated Steady-State Power	460 W (at 100 VAC), 460 W (at 200 VAC)
	Maximum Peak Power	460 W (at 100 VAC), 460 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 305 m (1.8° F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10° C/hr (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).
	Non-operating	-30° to 60° C (-22° to 140° F). Maximum rate of change is 20° C/hr (36° F/hr).
Relative Humidity (non-condensing)	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	3050 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 (Single Processor, Note 1)	
	L WAd	4.3 B Average Bystander
	L pAm	27 dBA
	Operating	

L WAd 4.8 B Average Bystander
L pAm 32 dBA

Idle (Dual Processors, Note 2)

L WAd 4.9 B Average Bystander
L pAm 33 dBA

Operating

L WAd 5.4 B Average Bystander
L pAm 38 dBA

NOTES:

Note 1) Configuration tested included an Intel X5520 quad-core 2.27GHz processor, one 72GB SAS HDD, four 250GB 5400 rpm SATA hard drives, six system fans, three 4GB(2x2GB) DIMM's, and one power supply (1P SKU).

Note 2) Configuration tested included two Intel X5520 quad-core 2.27GHz processors, one 72GB SAS HDD, four 250GB 5400 rpm SATA hard drives, eight system fans, six 4GB(2x2GB) DIMM's, and one power supply (2P SKU).

Note 3) Values are subject to change without notification and are for reference only.

Note 4) Performance of system, options, and ancillary equipment will vary depending on the system configuration.

Note 5) Levels presented do not account for non-Hewlett-Packard installed hardware.

**Emissions
Classification (EMC)**

FCC Rating Class A
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: 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.

**Integrated Lights-Out 3 Architecture
(iLO 3)
integrated on system
board**

Processor

Upgradeability

Video Support

Interfaces

Memory

Operating System

PCI Express based health and remote management ASIC

PCI Express RISC processor core running at 250MHz

Option firmware upgradeable via Flash ROM.

1600 x 1200 DVR max resolution

One Ethernet Sideband connection (10/100/1000 Mb/s)

One Ethernet network connection (10/100Mb/s)

128-MB SDRAM with ECC

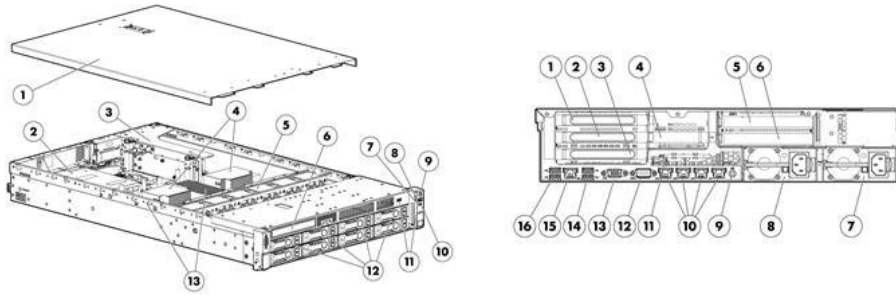
Microsoft Windows 2008 R2

HP ProLiant DL380e Generation 8 (Gen8) QuickSpecs

Overview

HP ProLiant DL380e Generation 8 (Gen8)

The HP ProLiant DL380e Gen8 sets the next generation standards of 2U 2-socket rack servers for the industry. With enhanced configuration flexibility, unmatched performance, and leading energy efficient design the DL380e Gen8 offers the perfect solution for the dynamic compute and storage requirements of today's demanding datacenters.



Front View:

1. Quick removal access panel
2. Redundant Hot Plug Power Supplies(upgradeable option)
3. Removable Riser Cage assembly
4. Up to 2 Intel E5-2400 Series Processors
5. Removable Hot Plug Fans modules, (optional, full N+1 redundancy)
6. Optical Disk Drive Bay
7. Health LED
8. Network activity LED
9. Power On /Standby button and system power LED button
10. Unit ID LED
11. USB connectors
12. Hard Drive bays
13. 12 DIMM slots: DDR3 Registered(RDIMM), Load Reduced (LRDIMM) or Unbuffered(UDIMM) memory

Rear View:

1. Slot1 PCIe3 x8 (4, 1)
2. Slot2 PCIe3 x16 (8, 4, 1)
3. Only for riser board without SAS support: Slot3 PCIe3 x8 (8, 4, 1)
4. Slot4 PCIe2 x8 (4, 1)
5. Slot5 PCIe3 x16 (16, 8, 4, 1) (optional)
6. Slot6 PCIe3 x16 (8, 4, 1) (optional)
7. Power Supply bay1 (Primary Power Supply)
8. Power Supply bay 2 (Shown populated: optional)
9. Unit ID LED/Button
10. HP Ethernet 1Gb 4-port 366i Adapter (4 x 1GbE)
11. Service tool
12. Serial connector
13. Video connector
14. USB connectors (2)
15. iLO connector
16. USB connectors (2)

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

Entry Processors

NOTE: All support up to 1066MHz DDR3 memory speeds.

Intel® Xeon® E5-2407 (2.2GHz/4-core/10MB/6.4GT-s QPI/80W, DDR3-1066)

Intel® Xeon® E5-2403 (1.8GHz/4-core/10MB/6.4GT-s QPI/80W, DDR3-1066)

Base Processors

NOTE: All support up to 1333MHz DDR3 memory speeds.

Intel® Xeon® E5-2440 (2.4GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2-3/3/4/4/5/5)Turbo

Intel® Xeon® E5-2430 (2.2GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2-3/3/4/4/5/5)Turbo

Intel® Xeon® E5-2430L (2.0GHz/6-core/15MB/7.2GT-s QPI/60W, DDR3-1333, Turbo2-3/3/4/4/5/5)Turbo

Intel® Xeon® E5-2420 (1.9GHz/6-core/15MB/7.2GT-s QPI/95W, DDR3-1333, HT, Turbo2-3/3/4/4/5/5)Turbo

Performance Processors

NOTE: All support up to 1600MHz DDR3 memory speeds.

Intel® Xeon® E5-2470 (2.3GHz/8-core/20MB/8GT-s QPI/95W,DDR3-1600, HT, Turbo2-5/5/6/6/7/7/8/8)Turbo+

Intel® Xeon® E5-2450 (2.1GHz/8-core/20MB/8GT-s QPI/95W, DDR3-1600, HT, Turbo2-5/5/6/6/7/7/8/8)Turbo+

Intel® Xeon® E5-2450L (1.8GHz/8-core/20MB/8GT-s QPI/70W, DDR3-1600, Turbo2-2/2/3/3/4/4/5/5)Turbo+

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

NOTE: Turbo2 indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 8, 7, 6, 5, 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: Up to 2 processors supported. Mixing different processor models is not supported.
NOTE: For the Intel® C600 Chipset E5-2400 Series, the letter preceding the model number indicates the Product Line (E3, E5, E7); 2400x v#, 2 = number of CPUs in a Node, 4 is socket/segment designation, 00 = Processor SKU, x = L for low power SKUs and v# (not yet designated) = version number.

Cache Memory One of the following depending on Model	20MB (1x20MB) Level 3 NOTE: For Eight-core processors. 15MB (1x15MB) Level 3 NOTE: For Six-core processors. 10MB (1x10MB) Level 3 NOTE: For Quad-core processors. NOTE: All processor models above list the L3 Cache associated with that particular processor.
Chipset	Intel® C600 Series Chipset Intel® E5-2400 Processor Family NOTE: For more information regarding Intel chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/ .
Upgradeability	Upgradeable to 2 processors (16 Cores) Up to 12 DIMM slots available NOTE: To take advantage of DIMMs 7-12, a second processor must be installed 10 Gigabit networking options via standup card Optional 2 slot riser (x16, x8) NOTE: To take advantage of the additional 2 PCI slot upgrade, a second processor must be installed. Redundant Power Supply Redundant Fan Optical Drive (8SFF/8LFF only)

On System Management Processor	HP iLO (Firmware: HP iLO 4) NOTE: For more information, visit: http://www.hp.com/go/ilo
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Memory Protection	Advanced ECC Online Spare Lock-step mode
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Memory One of the following depending on Model	Type	HP SmartMemory DDR3 Load Reduced (LRDIMM), Registered (RDIMM) or Unbuffered (UDIMM)
	DIMM Slots Available	12 (6 DIMM slots per processor, 3 channels per processor, 2 DIMMs per channel)
	Maximum Capacity (LRDIMM)	384GB (12 x 32GB LRDIMM @1333MHz)
	Maximum Capacity (RDIMM)	192GB (12 x 16GB RDIMM @1600MHz or 1333MHz)
	Maximum Capacity (UDIMM)	96GB (12 x 8GB UDIMM @1333MHz)
	NOTE: HP memory from previous generation servers are not fully compatible with the HP ProLiant DL380e Gen8 Server.	
	NOTE: To realize the performance memory capabilities listed in this document, HP SmartMemory is required. For additional information, please see the HP SmartMemory QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/14225_div/14225_div.html	
	NOTE: If only one processor is installed, only half the DIMM slots are available	
	NOTE: UDIMM max DIMM population is 12	
	NOTE: Depending on the memory configuration and processor model, the memory speed may run at 1600MHz, 1333MHz, or 1066MHz. Please see Memory Population Table or the Online Memory Configuration Tool at: www.hp.com/go/ddr3memory-configurator .	

Network Controller	The HP ProLiant DL380e Gen8 server offers the customer a quad-port NIC standard with the option to upgrade with a variety of networking options. HP Ethernet 1Gb 4-port 366i Adapter
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Expansion Slots	Expansion Slots #	Technology	Bus Width**	Connector Width	Form Factor	Notes
Primary Riser (Standard)	1	PCIe Gen3.0	X4	X8	Full Length, Full Height Slot	
	2	PCIe Gen3.0	X8	X16	Half Length, Full Height Slot	
	3	PCIe Gen3.0	X8	X8	Half Length, Full Height Slot	
	4	PCIe Gen2.0	X4	X8	Low Profile	
** Indicates the number of physical electrical lanes running to the connector.						
Primary Riser	Expansion Slots #	Technology	Bus Width**	Connector Width	Form Factor	Notes
(Riser with SAS)	1	PCIe Gen3.0	X4	X8	Full Length, Full Height Slot	
	2	PCIe Gen3.0	X8	X16	Half Length,	

Secondary Riser (Optional)	Expansion Slots #	Technology	Bus Width**	Connector Width	Form Factor	Full Height Slot	Notes
						NA	
	3	PCIe Gen3.0	NA	NA	NA	NA	Not available for Riser with SAS
	4	PCIe Gen2.0	X4	X8	Low Profile		

**** Indicates the number of physical electrical lanes running to the connector.**
NOTE: This riser kit comes with B320i Smart Array controller which provides support for up to 8 SAS or SATA drives and requires a SAS license key to support SAS drives.

NOTE: Slot 5 supports up to 225w PCIe cards. An additional Graphic Card Power Adapter Kit is required (663282-B21). See Option Section below for offering.
NOTE: Adding the rear drive cage negates the space required for secondary optional riser slots 5 & 6.

HP Server ROM

HP ROM (Read Only Memory) is now digitally signed using HP's Corporate Signing Service. This signature is verified before the flash process starts, reducing accidental programming and preventing malicious efforts to corrupt system ROM.

HP ROM provides for essential initialization and validation of hardware components before control is passed to the customer-installed operating system. The ROM also provides the capability of booting from various fixed media (HDD, CD-ROM) and removable media (USB), to continue operation to the operating system.

HP ROM performs very early configuration of the video controller, to allow monitoring of initialization progress via an attached monitor. If configuration or hardware errors are discovered during this early phase of hardware initialization, suitable messages are now displayed on the connected monitor. Additionally, these configuration or hardware errors are logged to the Integrated Management Log (IML) to assist in diagnosis.

HP's ProLiant ROM is used to configure the following:

- ⌘ Processor and chipset status registers
- ⌘ System memory, memory map, and memory initialization
- ⌘ System hardware configuration (Integrated PCI devices and optional PCIe cards).
- ⌘ Customer-specific BIOS configuration (using the HP ROM-Based Setup Utility (RBSU)).

NOTE: For further information, please refer to HP's RBSU (ROM based setup utility) user guide: www.hp.com/support/rbsu.

Storage Controller
One of the following depending on Model

Entry Model - SATA	HP Dynamic Smart Array B120i Controller NOTE: Provides support for up to 6 SATA drives and data transmission speeds up to 3Gb/s
Entry Model - SAS	HP Dynamic Smart Array B320i/512MB FBWC Controller NOTE: Provides support for up to 8 SAS/SATA drives, data transmission speeds up to 6Gb/s and includes SAS license key.
Base Models - LFF	HP Dynamic Smart Array B320i/512MB FBWC Controller NOTE: Provides support for up to 8 SATA drives, data transmission speeds up to 6Gb/s and requires purchase of SAS license key for SAS mode.
Base Model - SFF	HP Dynamic Smart Array B320i/512MB FBWC Controller NOTE: Provides support for up to 8 SAS/SATA drives, data transmission speeds up to 6Gb/s and includes SAS license key.
High Performance Models	HP Smart Array P420/1GB FBWC Controller (RAID 0/1/1+0/5/5+0/6/6+0)
Storage Models - LFF	HP Smart Array P420/1GB FBWC Controller (RAID 0/1/1+0/5/5+0/6/6+0)
Storage Models - SFF	HP Smart Array P420/2GB FBWC Controller (RAID 0/1/1+0/5/5+0/6/6+0)

Internal Storage Devices
One of the following depending on Model

Diskette Drive	None
Optical Drive	Optional DVD-ROM, DVD-RW NOTE: This option available with all 8SFF or 8LFF drive bay models.
Hard Drives	None ship standard
Drive Bays	8 SFF drive bays total with Optical Bay Optional: +8SFF drive bay (total of 16SFF drive bays) NOTE: The Optical Drive bay is not available with +8SFF drive bay optional upgrade. 8 LFF drive bays total with Optical Bay 12 LFF drive bays total without Optical Bay Optional: +2 Rear Drive Bays (LFF or SFF) 25 SFF drive bays total without Optical Bay Optional: +2 Rear Drive Bays (LFF or SFF) NOTE: Drive cage changes are not supported except for adding +8SFF to an existing 8SFF drive cage. NOTE: Adding the rear drive cage negates the space required for secondary optional riser slots 5 & 6. NOTE: All Pre-configured Models come populated with some hard

drive blanks installed. Should the customer need additional hard drive blanks, they can order more using either P/N 666987-B21: HP SFF Gen8 Hard Drive Blank Kit or P/N 666986-B21: HP LFF Gen8 Hard Drive Blank Kit. These part numbers for single HDD blanks below are also provided should the customer require replacement HDD blanks for their server.

Maximum Internal Storage	Hot Plug SFF SAS	32.4TB	27 x 1.2TB (with 25SFF drive cage + Rear 2SFF drive cage)
	Hot Plug SFF SATA	27.0TB	27 x 1TB (with 25SFF drive cage + Rear 2SFF drive cage)
	Hot Plug LFF SAS	56.0TB	14 x 4TB (with 12LFF drive cage + Rear 2LFF drive cage)
	Hot Plug LFF SATA	56.0TB	14 x 4TB (with 12LFF drive cage + Rear 2LFF drive cage)
	Hot Plug SFF SAS SSD	21.6TB	27 x 800GB (with 25SFF drive cage + Rear 2SFF drive cage)
	Hot Plug SFF SATA SSD	21.6TB	27 x 800GB (with 25SFF drive cage + Rear 2SFF drive cage)
	Hot Plug LFF SATA SSD	11.2TB	14 x 800GB (with 12LFF drive cage + Rear 2LFF drive cage)
Interfaces	Serial	1	
	Video	2 (1 front, 1 back) not active simultaneously	
	LOM Network Ports	4x1GbE ports	
	HP iLO Remote Management Network Port	1 Gb Dedicated	
	SD slot	1 Internal Secure	NOTE: The SD slot is not a hot-pluggable device. Customers should not attempt to plug an SD card into the SD slot while the server is powered.
	USB 2.0 Ports	Up to 7 total: up to 2 front, 4 back, 1 internal (secure)	NOTE: 12LFF and 25SFF drive cage models have 1 front, 4 back and 1 internal USB ports.
Industry Standard Compliance	ACPI 2.0b Compliant		
	PCIe 3.0 Compliant		
	PXE Support		
	WOL Support		
	Microsoft® Logo certifications		
	USB 2.0 Compliant		
Server Power Cords	High voltage power cord ships standard with all part numbers.		
	NOTE: HP ProLiant DL servers no longer ship standard with a 12-foot NEMA 5-15P to C13 power cord that connects to 110V US wall outlets in a home or office. ProLiant DL servers are primarily connected to power distribution units (PDUs) in data center racks and now ship standard with a PDU 6-foot C-14 to C13 power cord (A0K02A). If a user wishes to power a ProLiant DL server using a 110V receptacle (NEMA-15), the 6-foot NEMA 5-15 to C13 power cord must be ordered separately (AF556A). See Power Cords section for Worldwide Power Cord options.		
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 or www.hp.com/go/hppoweradvisor .		
	NOTE: Power Specification and Technical Content for supported power supplies can be found at: http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html		
Common Slot Power Supply	NOTE: Mixing of power supplies in the same server is not supported. All power supplies inside a server must be exactly the same model. Mixing Gold, Platinum, and Platinum Plus certified power supplies is not supported.		
	HP's Common Slot (CS) power supplies allow for commonality of power supplies across a wide range of ProLiant and Integrity servers, as well as HP Storage solutions, and are designed to provide the highest power supply efficiency without degrading system performance. HP CS power supplies are tested by the Electric Power Research Institute (EPRI) and certified through the ECOS 80 Plus power supply program. HP CS power supply options provide efficiency ratings of up to 94% (80 Plus Platinum) and are available in three power output options - 460W, 750W, and 1200W - allowing the customer to "right-size" a power supply for their specific server configuration. All HP Common Slot power sources are UL, CE Mark Compliant, hot-plug and support redundant configurations.		
	NOTE: Mixing of power supplies in the same server is not supported. All power supplies must be of the same output and efficiency rating. If non-matched power supplies are inserted you will get errors and operation will fail.		
	HP CS Platinum Plus power supplies are required when enabling HP's Power Discovery Services, a solution that creates an automated, energy-aware network between IT systems and facilities. This allows your company to reclaim millions of dollars in wasted power capacity and downtime costs across data centers. For more information on HP's Power Discovery Services, go to: www.hp.com/go/ipd .		
	It is highly recommended that you use the HP Power Advisor in defining the "Right-Size" power supply for your needs. HP Power Advisor can be accessed at: www.hp.com/go/hppoweradvisor .		
	NOTE: The 80 PLUS program is a unique forum that unites electric utilities, the computer		

industry, and consumers in an effort to bring energy efficient technology solutions to the marketplace. 80 Plus independently tests power supply efficiency and publicly posts the results on www.80Plus.org.

Redundant Power: Optional (1+ 1) power supplies can be purchased through power supply option kits (see Power Supplies for part numbers).

NOTE: Power Specification and Technical Content for supported power supplies can be found at: http://h18000.www1.hp.com/products/quickspecs/14209_div/14209_div.html

System Fans One of the following depending on Model	<p>4 Hot-Plug Non-redundant Fans ship standard in 1P Models</p> <ul style="list-style-type: none"> ⌘ 1P: 4 fans - non-redundancy ⌘ 1P: 5 fans - redundancy <p>6 Hot-plug Redundant Fans ship standard in 2P Models</p> <ul style="list-style-type: none"> ⌘ 2P: 5 fans - non-redundancy ⌘ 2P: 6 fans - redundancy
NOTE: Customers may separately purchase redundant fans with the 667855-B21 option kit. Additional fan to support redundancy are also included in -B21 processor option kits when upgrading from one processor to two processor.	
Required Cabling	For required cabling information, refer to the HP Web site at: www.hp.com/servers/dl380e-gen8 .
Operating Systems and Virtualization Software Support for ProLiant Servers	<p>Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Oracle Solaris VMware</p> <p>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 and our driver download page http://www.hp.com/support/DL380eGen8</p>
Graphics	<p>Integrated Matrox G200 video standard</p> <ul style="list-style-type: none"> ⌘ 1280 x 1024 (32 bpp) ⌘ 1920 x 1200 (16 bpp) <p>HP iLO 4 On System Management Memory</p> <ul style="list-style-type: none"> ⌘ 16 MB Flash ⌘ 256 MB DDR 3 with ECC (112 MB after ECC and video)
Form Factor One of the following depending on Model	<p>2U Rack form factor Entry models ship with fixed rails. All other models ship with sliding rails and cable management system.</p> <p>8 SFF Drive Bay Version: 3.44 (8.75 cm) Height x 17.54" (44.55 cm) Width x 27.5" (69.85 cm) Length</p> <p>8 LFF Drive Bay Version: 3.44 (8.75cm) Height x 17.54" (44.55 cm) Width x 29.5" (74.94cm) Length</p> <p>12 LFF Drive Bay Version: 3.44 (8.75cm) Height x 17.54" (44.55 cm) Width x 29.5" (74.94cm) Length</p> <p>25 SFF Drive Bay Version: 3.44 (8.75 cm) Height x 17.54" (44.55 cm) Width x 27.5" (69.85 cm) Length</p>
On System Management	<p>HP iLO Management Engine</p> <p>HP iLO Management Engine is a comprehensive set of embedded management features supporting the complete lifecycle of the server, from initial deployment, through ongoing management, to service alerting and remote support. HP iLO Management Engine comes standard on all HP ProLiant Gen8 servers. The HP iLO Management Engine portfolio includes:</p> <ul style="list-style-type: none"> ⌘ HP iLO: The HP iLO (Integrated Lights-Out) management processor is the core foundation for the HP iLO Management Engine ⌘ HP Agentless Management: Provides built in server health monitoring and alerting capability without OS agents, that starts working the moment a power cord and an Ethernet cable are connected. ⌘ HP Active Health System: Always on, continuous monitoring for increased stability and shorter downtimes; 100% configuration history; Health and service alerts and easy export and upload to Service and Support. ⌘ HP Intelligent Provisioning: Lets customers provision and configure a single server without any separate media. No more SmartStart CDs or Smart Update Firmware DVD are needed. ⌘ To start Intelligent Provisioning: ⌘ Press the F10 key during the ProLiant Gen8 server boot process (also known as power on self test or POST). ⌘ Please go to the Intelligent Provisioning website at www.hp.com/go/intelligentprovisioning for additional information and to view usage videos. ⌘ Use the Service Pack for ProLiant (SPP) at www.hp.com/go/spp to get firmware and software updates. ⌘ HP iLO Mobile App: Enables the ability to access, deploy, and manage your server anytime from anywhere from select smartphones and mobile devices. For additional information please visit: www.hp.com/go/ilo/mobileapp

NOTE: For more information, visit: <http://www.hp.com/go/ilo> or HP iLO Management Engine technologies whitepaper

HP Insight Management	HP Service Pack for ProLiant	<p>HP Service Pack for ProLiant (SPP) and HP Smart Update Manager (HP SUM) provide a comprehensive approach to firmware and system software maintenance. Together they provide better operating stability and ensure maximum uptime. The SPP will be updated at a predictable cadence, typically coinciding with new HP server hardware launches. By enabling firmware to be updated online and integrating firmware and system software updates in one operation, HP SUM and the SPP offer faster updates of individual servers and dramatically faster updates of entire BladeSystem enclosures. Further improving system uptime and stability is the fact that HP provides 12 months of support for each Service Pack for ProLiant release.</p> <p>The user experience around HP SUM and the SPP has been improved in several ways, starting with the web download. A single web page provides access to a single download containing both the latest version of HP SUM and the latest SPP. Optional smaller subsets with only specific types of servers or specific operating systems are offered to save on download time. The HP SUM application provides a straightforward, intuitive user interface that guides the user through the steps of discovery, analyses and update, providing comprehensive information on available updates, criticality and interdependencies. This information is also available in reports. By providing the option of multiple local or shared repositories which can be easily updated from hp.com, HP SUM provides the tools to optimize stability and consistency throughout the company. While HP SUM and the SPP recommend the combinations of firmware and system software that HP has found to be the best practice, the application gives customers the flexibility to set their own specific baseline.</p> <p>The Service Pack for ProLiant has been rigorously tested with specific attention for interaction between firmware, drivers and agents both within the server as well as in interaction with the BladeSystem enclosure components (Onboard Administrator and Virtual Connect). This testing ensures the highest quality as well as providing the input for HP SUM to deploy updates taking into account all interdependencies, when determining the correct updates and order of update deployment.</p> <p>NOTE: The Service Pack for ProLiant (which includes HP SUM) can be downloaded from www.hp.com/go/spp/download. More information can be found: http://www.hp.com/go/SmartUpdate, www.hp.com/go/spp and http://www.hp.com/go/hpsum</p>
Security	<p>Power-on password Serial interface control Administrator's password</p>	
Warranty	<p>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.</p> <p>NOTE: Server Warranty includes 3-Year Parts, 1-Year Labor, 1-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</p>	

Optional Features

HP Insight Management	HP Insight Control	<p>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. HP Insight Control also supports Location and Power Discovery Services to automate many configuration, asset tracking, and power management tasks to speed implementation and prevent downtime. For more information, see http://www.hp.com/go/insightcontrol.</p> <p>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.</p>
	HP iLO Essentials	<p>HP iLO Essentials license ideal for small and medium business customers. The specially created HP iLO Essentials (a subset of iLO Advanced functionality) saves SMB customers time and money, by ease of remote server set up through the interactive virtual media,</p>



The world's best-selling solid-state, web-centric, multi-brand scale server.



Return on Investment

- Reduces scale pricing errors, which saves your stores thousands per day - in each department
- Adds longevity to legacy scales, allowing you to migrate to newer technology at your own pace

Features & Benefits

- Quick and easy installation
- Works with no moving parts, so there are fewer points of failure
- Enables you to point your web-browser at the iScale for a status check, as well as the status of all scales being served
- Self-upgrading and updating, as it retrieves updates and system configurations from headquarters
- Automatic retrieval of production totals for fresh food management when used with ADC's P-Cubed Production Management system

ADC's **iScale** is a solid-state, rack-mountable server, one per store, that connects and manages any combination of serial and Ethernet barcode labeling printer scales, regardless of manufacturer, in your store.

iScale is a unique, self-configuring Internet appliance that requires no integration, no modifying of your existing network and no installation to your existing In Store Processor.

Simply plug the **iScale** into your network hub and connect to your scales using Ethernet, WI-FI or ADC's range of modular serial connectors.

With the **iScale**, you can greatly reduce the effort of platform integration, thereby allowing a faster Return on Investment (ROI) and more application functionality.

By running its Linux operating system and InterScale application code off a compact flash drive, the **iScale** has solid state reliability. There are no moving parts, no spinning hard drive and no cooling fan, which means fewer points of failure.

iScale is ADC's hardware platform for the **InterScale** Scale Server software in each of your stores, allowing data to be hosted to your mix of barcode-labeling scales and printers. The Scale Server software automatically formats **InterScale** scale-neutral information to your

individual barcode-labeling scales and printers. The Scale Server software can alternatively run on your own in-store computer or even a PC-based scale.

If you have no "legacy" serial scales left in the store you can even run the Scale Server on a centralized server for many stores, but without the resilience offered by an in-store Scale Server, such as the **iScale**.

Rigorous closed-loop feedback proactively notifies your staff about scale-outages and communication issues for fast fixes.

Four different **iScale** modules are available:

- **Zero-Port:** For stores with all Ethernet scales
- **Two-Port:** 2 serial ports, supporting up to 2 x 32 RS485 serial scales
- **Four-Port:** 4 serial ports, supporting up to 4 x 32 RS485 serial scales
- **Eight-Port:** 8 serial ports, supporting up to 8 x 32 RS485 serial scales, plus any number of Ethernet scales

With the **iScale**, you're provided with a constant 24/7 'spare in the air' support program, which guarantees a replacement **iScale** is quickly up-and-running with replacement by in-store staff - no service technician call is needed.

iScale is brought to you by





iScale helps save you time and money. A 100+ store chain had the following to say about the **iScale**:

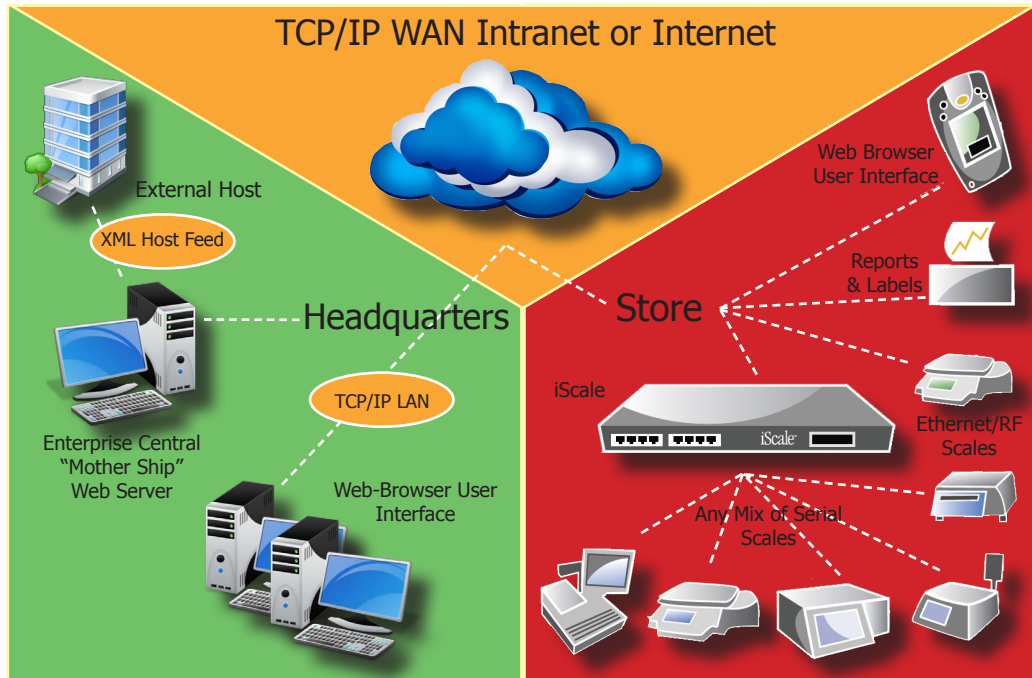
“By installing an ADC iScale in each of our stores, we were able to incur very little IT support, while still allowing distributed architecture as a failsafe against WAN outages. This lifted a large burden off of our networking team,” said John Keeter, Store Systems Manager, Lowes Foods. “For example, we were able to download pricing information ahead of time, so if the network were to go down, we would still have the information we needed.”

InterStore Software Suite

InterStore, ADC's Fresh Item Management (FIM) software suite, brings together ADC's three world-class grocery item management toolsets InterScale, NutriGen and P-Cubed - under one powerful and integrated portal.

InterStore is a centralized solution utilizing the latest Internet technologies for managing every aspect of a fresh item's lifecycle in the stores of your grocery chain.

The below diagram outlines the **iScale's** Web-Centric Architecture.



Founded in 1989, ADC is a leading provider of Fresh Item Management technology to the grocery and fresh foods industries. P-Cubed is a part of **ADC's InterStore Fresh Item Management Suite**, alongside



InterScale brand-neutral scales management and NutriGen recipe management systems. More than 90 leading supermarket chains and over 9,000 stores in 10 countries use ADC's software solutions. For more information call toll-free in the USA: 1.800.910.4232 or internationally: +1.813.849.1818 or visit www.AppliedDataCorp.com or www.InterStore.Net.



Keeping Fresh Profitable



iScale™ Modular In-Store Connectivity



Retail barcode-labeling scale and printer scale connectivity options for ADC's iScale in-store thin-server, from legacy serial scales through to the latest Ethernet and Radio Frequency (RF) scales, from any mix of vendors.

Problem 1: I have many scale brands and models that use different Ethernet, wireless and serial protocols (RS232, RS485 half duplex, RS485 full duplex and RS422) in my store.

ADC Solution: The iScale has zero (for all Ethernet scales), 2, 4 or 8 serial ports, each configurable via a web-browser to provide signals at the scale's protocol. The iScale can support all scale brands and types, including any mix of serial, Ethernet and wireless scales in the store.

Problem 2: I am replacing an older scales management system. Can my existing communications wiring be re-used?

ADC Solution: If the serial scales are pre-wired for a previous scales management system, the existing cabling can generally be re-used. ADC supplies part numbered adapter cables to connect the home run(s) to iScale's serial RJ45 ports. Alternately, iScale can emulate a Mettler-Toledo 8461 Master scale to your existing scales management system, allowing iScale to be the gateway to Ethernet and wireless scale technology from any mix of vendors.

Problem 3: New scale types can use Ethernet connection which is preferred for standardization and performance reasons, but the legacy scale equipment uses serial communications.

ADC Solution: For wiring to serial scales, ADC recommends the use of Cat5 Ethernet modular cable and connectors, with a home run to each scale, each terminating at a patch panel in the same rack as the iScale, providing that the total length of cables to be used for RS485 serial communications does not exceed 4,000 feet (1.220 meters). Your LAN cabling contractors are experienced in this Ethernet style cabling and can use standard Ethernet continuity tools. When the serial scale is replaced by an Ethernet scale in the future, the home run to the scale can be re-used for Ethernet. Alternately, iScale can emulate a Toledo 8461 Master scale to your existing scales management system, allowing iScale to be a gateway to new Ethernet and wireless scale technology from any mix of vendors.

Problem 4: The many scale brands and models each use different serial connectors. RJ11 for Hobart Ultima/Quantum, DB9 for Hobart SP1500, Tijimi for TEC, DB25 for Ishida, etc.

ADC Solution: Scale type specific patch cables are supplied by ADC from a standard parts catalog, each available in lengths of 2 or 8 feet. RJ45 male at one end, scale type specific connector at the other end. ADC has encapsulated the proprietary serial scale connections in a part numbered cable. You don't need to be concerned with pinouts.

Serial Hobart, Digi, TEC, Mettler-Toledo, Ishida Master, Bizerba Scales

Mettler-Toledo satellite scales served directly by iScale, no Toledo Master scale (existing TNET wiring can be re-used). Directly serves Ethernet client scales too.

Scale type specific patch cables to serial scale, supplied by ADC. Available in lengths of 2 or 8 feet. RJ45 male at one end, scale type specific connector.

RJ45 female Ethernet style "biscuit" connector. Typically used in Ethernet wiring.
Benefit: Inexpensively and locally available standard part, re-used in the move to Ethernet.

Cat5 home runs from each scale's biscuit to the patch

Wired Ethernet scale

ADC's passive parallel hubs to connect serial RS485 scale connections in parallel (one scale brand/ per hub)

ADC's Rack Mount iScale Thin-Server with LCD display, showing the IP address

R.F. Access Point

R.F. Ethernet

Standard Ethernet style patch panel in the rack terminating serial scale home runs.
Benefit: Inexpensive and locally available standard part, re-useable in the move to Ethernet.

RJ45 LAN Port

RJ11 SDLC Port

Existing Ethernet hub connected to WAN via router

Standard Ethernet patch cords carrying Ethernet signals.

Standard Ethernet style patch cords, carrying RS485 serial signals.
Benefit: Inexpensive, locally available quality standard part, reusable by serial or Ethernet.





700 SERIES MIXER/ AMPLIFIERS:

A-706

A-712

A-724

TOA 700 SERIES MIXER/AMPLIFIERS offer versatile features and outstanding value for installed sound applications such as boardrooms, educational facilities, houses of worship and many others.

The 700 Series model lineup includes the **A-706** (60 W), **A-712** (120 W), and **A-724** (240 W); all manufactured with proven TOA quality and reliability. Features include six mic/line inputs, two auxiliary line inputs and a 900 Series module port. Each mic/line input includes a mic trim control and 23 VDC phantom power. Speaker outputs consist of 70.7 V, 25 V and 4 ohm. An auxiliary line output can be used for recording or connection to an external booster amplifier.

An Auto-Mute function provides voice-activated priority override. You can assign inputs to activate or respond to the muting function with rear panel DIP switches. Muting can also be activated with an external switch-closure.

Other features include channel and master volume controls, bass/treble, processor insert jacks and output level meter. Master volume and power on/off can also be controlled remotely. Short-circuit and thermal protection circuitry ensures extended operation. Optional accessories include the MB-25B rack-mount kit and YA-920 volume control security knob.

The 700 Series is UL and cUL listed with competitive pricing and a five-year warranty.



HIGHLIGHTS

- **Nine Channel Integrated Mixer/Amplifiers** for paging and background/foreground music distribution
- **Proven TOA Quality and Reliability** with wide frequency response, very low noise and distortion, and excellent output regulation
- **Three Models:**
 - A-706 (60 W)
 - A-712 (120 W)
 - A-724 (240 W)
- **Six Mic/Line Inputs**, balanced, with mic trim, 23 VDC phantom power and removable terminal block connector
- **Two Auxiliary Inputs**, unbalanced, with dual-RCA jacks for convenient connection of stereo sources
- **Module Slot** accepts 900 Series plug-in modules with additional features
- **Transformer-Isolation for Telephone Paging Applications** (Input #1)
- **25 V, 70.7 V and 4 Ohm Speaker Outputs** with removable terminal block connector
- **Auto-Mute Priority Function** assignable via external switches
 - Channels 1-3 and Module configurable as Mute Send
 - Channels 1-8 and Module configurable as Mute Receive
- **Auto-Mute SENSE Control** for adjusting mute activation threshold
- **External Mute Terminals** for activating mute function with external switch-closure
- **Individual Channel and Master Volume Controls**
- **Bass/Treble Tone Controls**
- **Output Level Meter and Power Indicator**
- **Remote Master Volume** controlled with an external 10k ohm linear-taper potentiometer
- **Auxiliary Output** for connecting an external amplifier or recording device
- **Pre-amp. Out / Power Amp. In Insert Jacks** for connecting external signal processors
- **Remote AC Turn-On** for activating power with an external switch-closure
- **Turn-On Delay** disconnects output during power-up
- **Over-current and Thermal Protection Circuitry** prevents potential damage from overloads, short-circuit and overheating
- **Detachable IEC-type AC Power Cord**
- **Volume Control Security Knobs Included (4)**
- **Optional Rack-Mount Kit**, model MB-25B (2 RU)
- **UL / cUL Listed**
- **Five Year Warranty**

OPTIONAL ACCESSORIES

Plug-in Modules (see back page)

MB-25B Rack-mount Kit (2 RU)

PF-511 Perforated Rack Panel (1 RU)

YA-920 Volume Control Security Knob

IT-455 Input Transformer (channels 2 and 3)

SPECIFICATIONS

700 SERIES
MIXER/AMPLIFIERS

Tel: 800-733-7088
Fax: 800-733-9766
www.toaelectronics.com



Type	Nine channel mixer/amplifier
Output Power	A-706: 60 W RMS, A-712: 120 W RMS, A-724: 240 W RMS
Frequency Response	50 - 20k Hz (± 3 dB)
Total Harmonic Distortion	0.5% at 1k Hz, rated output
Inputs	Input 1 - 6: Mic -70 to -50 dBV, 600 Ω /Line -10 dBV, 600 Ω Input 1: transformer-balanced, Phoenix 3P terminal Input 2-6: electronically-balanced, Phoenix 3P terminal Input 7 - 8: Line -20 dBV, 10k Ω , unbalanced RCA pin jack (stereo-sum) Module: Specifications dependent on module type Power IN: 0 dBV, 10k Ω , unbalanced, RCA pin jack
Outputs	Speaker OUT: 70.7 V line, 25 V line, and 4 - 16 Ω , Phoenix 4P terminal Minimum Impedance: 70.7 V line: 83 Ω (A-706), 42 Ω (A-712), 21 Ω (A-724) 25 V line: 10 Ω (A-706), 5.2 Ω (A-712), 2.6 Ω (A-724) Preamp OUT: 0 dBV, 600 Ω , unbalanced, RCA pin jack Rec OUT: 0 dBV, 600 Ω , unbalanced, RCA pin jack
Output Regulation	Less than 2 dB, no load to full load
Phantom Power	23 VDC, switchable, Inputs 1 - 6
Module Slot	Card edge connector connects to audio input and output points of TOA 900 Series modules. Use of Mute-type modules is not required in 700 Series models.
Dynamic Range	Input 1 - 6: >70 dB Input 7 - 8, Module: >80 dB (Band Pass: 20 Hz - 20k Hz, with Tone Controls centered)
Tone Control	Bass: ± 10 dB at 100 Hz, Treble: ± 10 dB at 10k Hz
Control Input	Remote Volume: 10k Ω linear-taper potentiometer, Phoenix terminal Power Remote: No-voltage make contact input Open voltage: 28 VDC (when unit power is OFF) Short-circuit: Under 10 mA, Phoenix terminal Mute Control: No-voltage make contact input Open voltage: 28 VDC (when unit power is OFF) Short-circuit: Under 10 mA, Phoenix terminal
Indicator	5-point LED output level meter, Power indicator LED
Power Source	120 VAC, 60 Hz
Power Consumption (Based on UL/CSA standard)	A-706: 68 W, A-712: 110 W, A-724: 215 W
Operating Temperature	14 ^o F to 104 ^o F (-10 ^o C to + 40 ^o C)
Finish	Panel: ABS resin, black, hair line Case: Steel plate, black
Dimensions (W x H x D)	16.8" x 4.3" x 14.68" (420 x 107.7 x 367 mm)
Weight	A-706: 20.55 lbs (9.3 kg), A-712: 27.85 lbs (12.6 kg), A-724: 29.84 lbs (13.5 kg)
Accessories (included)	4 x Volume Control Security Knobs: YA-920

APPLICATIONS

Airports	Convenience Stores	Offices
Audio/Visual	Educational Facilities	Public Address
Auditoriums / Theatres	Fitness Clubs / Gymnasiums	Restaurants
Banks	Hotels / Hospitality	Retail Stores
Bars / Lounges / Nightclubs	Houses of Worship	Theme Parks
Boardrooms	Industrial / Warehouses	Training Rooms
Business Music	Museums	
Conference Facilities	Music Distribution	

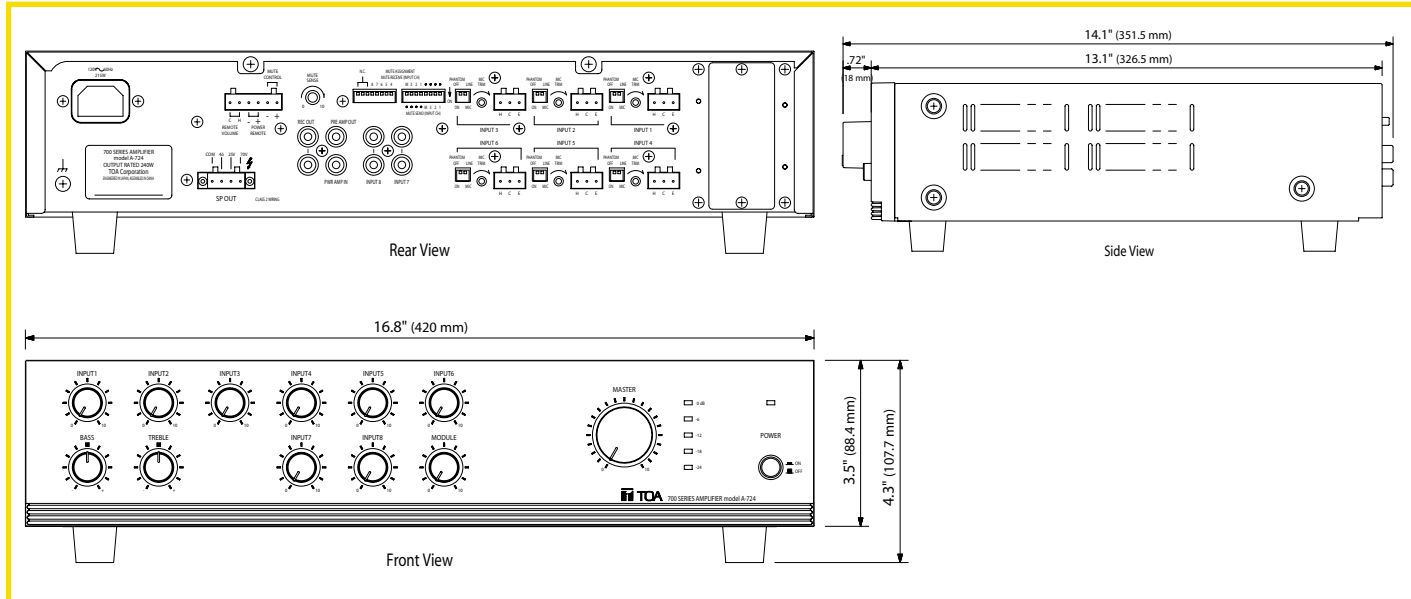


700 SERIES
MIXER/AMPLIFIERS

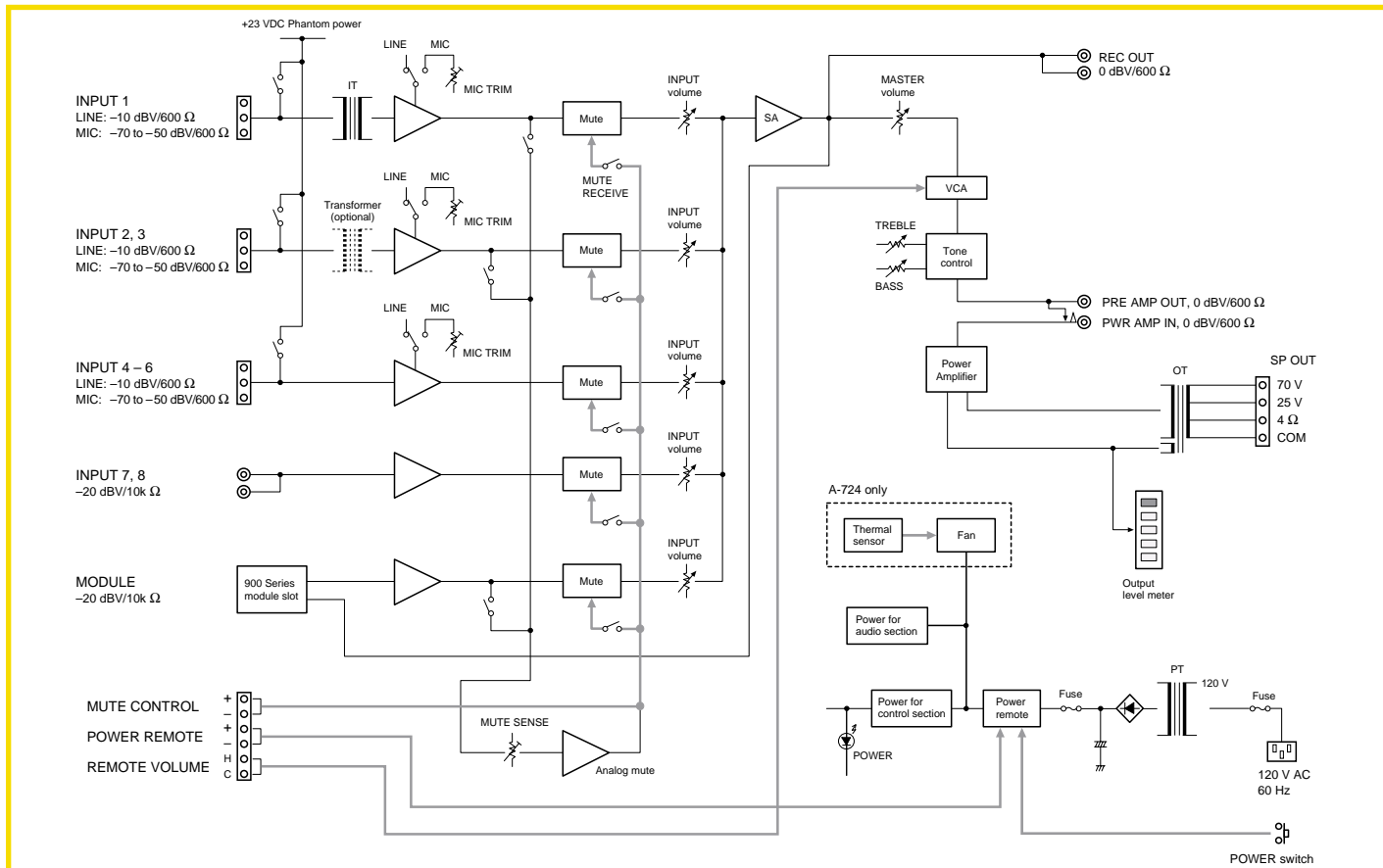
Tel: 800-733-7088
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SPECIFICATIONS

DIMENSIONAL DRAWING



BLOCK DIAGRAM





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700 SERIES MIXER/AMPLIFIERS



MODULE SELECTION CHART



	Model	Description
Microphone Input Modules	M-01F	Microphone Input Module, Balanced, 200 Ω , Lo/Hi-Cut Filters, Female XLR
	M-01M	Same as M-01F with Male XLR
	M-01P	Same as M-01F with Phone Jack
	M-01S	Same as M-01F with Removable Terminal Block
	M-03P	Microphone Input Module, HiZ, Unbalanced, 50k Ω , Lo/Hi-Cut Filters, Phone Jack
	M-21S	Microphone Input Module, Balanced, 200 Ω , Lo/Hi-Cut Filters, Remote Vol. Control, Screw Terminals
	M-51F	Microphone Input Module, Balanced, 200 Ω , Lo-Cut Filter, Voice Gate, Female XLR
	M-51S	Same as M-51F with Removable Terminal Block
	M-61F	Microphone Input Module, Balanced, 200 Ω , Lo/Hi-Cut Filters, Compressor, Female XLR
	M-61S	Same as M-61F with Removable Terminal Block
Line Input Modules*	B-01F	Balanced Line Input Module, 10k Ω Transformer, Female XLR
	B-01S	Balanced Line Input Module, 10k Ω Transformer, Removable Terminal Block
	B-21S	Balanced Line Input Module, 10k Ω Transformer, Remote Volume Control, Screw Terminals
	L-01F	Line Matching Input Module, 600 Ω Transformer, Balanced, Female XLR
	L-01S	Same as L-01F with Removable Terminal Block
	U-01F	Line Input Module, Unbalanced, 220k Ω , Female XLR
	U-01P	Same as U-01F with Phone Jack
	U-01R	Same as U-01F with RCA Jack
	U-01S	Same as U-01F with Removable Terminal Block
	U-03R	Stereo Line Input Module, Lo/Hi-Cut Filters, Stereo Summing Dual RCA Jacks
	U-03S	Line Input Module, Lo/Hi-Cut Filters, Removable Terminal Block
	U-14R	Dual Input Priority Module w/ AGC, Stereo Summing Dual RCA Jacks NEW!
	U-21S	Line Input Module, Unbalanced, 220k Ω , Remote Volume Control, Screw Terminals
	U-61S	Line Input Module, Unbalanced, 220k Ω , Compressor, Removable Terminal Block
Special Function Modules	E-03R	900 Series Processor Module for F-121C/CM Speakers, Dual RCA Jacks
	E-04R	900 Series Processor Module for H-1 Speakers, Dual RCA Jacks
	E-05R	900 Series Processor Module for H-2/H-2WP Speakers, Dual RCA Jacks
	E-06R	900 Series Processor Module for H-3/H-3WP Speakers, Dual RCA Jacks
	E-07S	900 Series Low Pass Filter Output Module for FB-100 and HB-1, Removable Terminal Block
	S-01S	Signal Generator Module, 1 kHz Sine Wave, Removable Terminal Block
	S-02S	Signal Generator Module, Buzzer/Yelp, Removable Terminal Block
	S-04S	Signal Generator Module, 8 Selectable Tones, Removable Terminal Block
	S-20S	Digital Message/Tone Module w/ USB, Removable Terminal Block NEW!
	T-01S	Line Output Module, Balanced, 600 Ω , Removable Terminal Block
	T-02S	Line Input Module for Music-on-Hold, Unbalanced, 220k Ω Input, 600 Ω Balanced Output, Screw Terminals
V-01S	Remote Master Volume Control (VCA) Module, Removable Terminal Block NEW!	

* For Line Input Modules: Use "B" modules w/ transformer isolation for balanced/unbalanced sources. Use "L" modules only for 600 ohm impedance matching. Use "U" for unbalanced sources w/ short cables (\leq 15 feet).

Visit www.toaelectronics.com to download:

- Specification Sheets
- Architect and Engineering Specifications
- 900 Series Module Guide
- Installation Manual
- CAD Files
- High-resolution Images

Literature Order #: L-700SERIES
 Specifications subject to change without notice.
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Avaya EM200 specifications

The following table of technical specifications provides detailed information on the physical dimensions and tolerances of the EM200 expansion module:

Table 10: EM200 specifications

Description	Value
Height	2.62 in. (66.5 mm)
Width	19 in. (482.6 mm)
Depth	12.8 in. (325 mm)
Weight of empty chassis	under 11 pounds (under 5 Kg)
Weight of chassis with media modules and brackets	13 pounds (6 Kg)
Ambient working temperature	32° to 104°F (0° to 40°C)
Operation altitude	up to 10,000 ft. (3000 m)
Front Clearance	12 in. (30 cm)
Rear Clearance	18 in. (45 cm)
Humidity	10-90% relative humidity, non-condensing
Power rating	90V-264V AC, 48-62 Hz
BTU	430 BTU/h
Max current	3 A



Specifications

Junos OS version tested

Junos OS 11.4r5

Firewall performance (max)

1.8 Gbps

IPS performance (NSS 4.2.1)

230 Mbps

AES256+SHA-1 / 3DES+SHA-1 VPN performance

300 Mbps

Maximum concurrent sessions

128 K (Base) / 256 K (High Mem)

New sessions/second (sustained, TCP, 3-way)

8,500

Maximum security policies

4,096

Maximum users supported

Unrestricted

Maximum available slots for IOCs

N/A

WAN / LAN fixed ports

16 x 10/100/1000BASE-T

CX111 3G/4G modem support

Yes

WAN / LAN PIMs

T1/E1

ADSL2 Annex A

ADSL2 Annex B

G.SHDSL

VDDSL2 Annex A

DOCSIS 3.0 Cable Modem

GbE SFP

Sync Serial

High-availability support

Yes

AppSecure Services

Junos OS 11.4

Dimensions and Power

Dimensions (W x H x D): 17.5 x 1.75 x 15.1 in (44.4 x 4.4 x 38.5 cm)

Weight: Chassis: 11.2 lb (5.1 kg)

Non-PoE / 12.3 lb (5.6 kg) PoE No interface modules

Power supply 100–240 VAC, 150 W

Non PoE / 350 W PoE

Maximum power draw: 150 W

Average power consumption: 61 W (LM), 65 W (HM), 179 W (PoE)