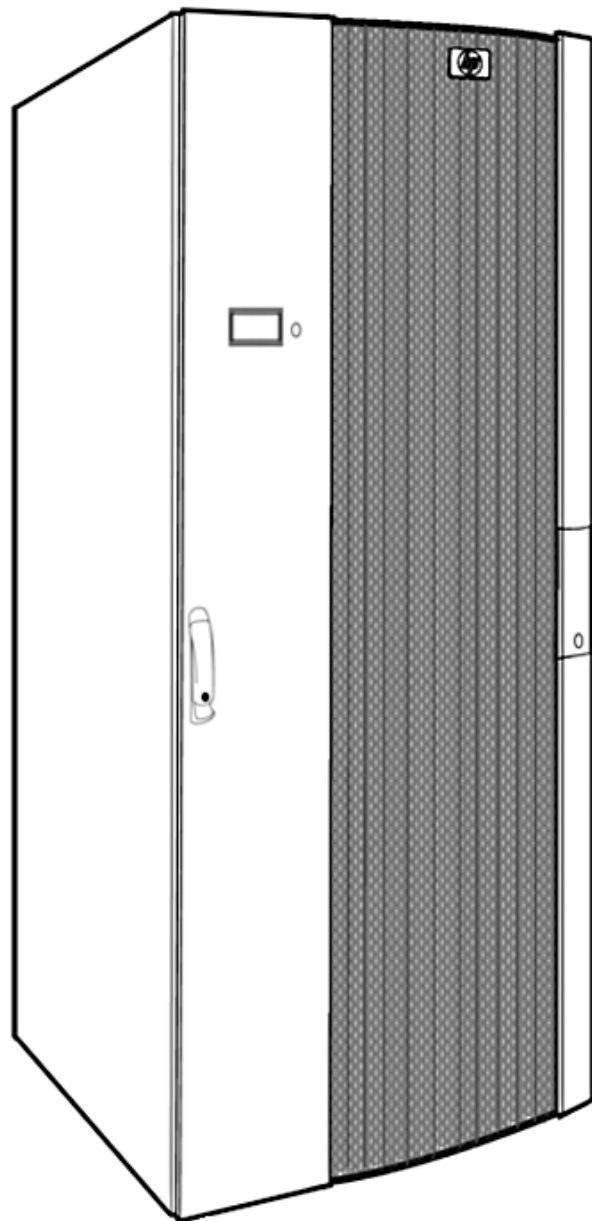


QuickSpecs

HP Modular Cooling System

Overview



What's New

- Automatic door opening system that will swing open the MCS front and rear doors in case of an unexpected change in temperature beyond the established parameters.
- 35kW of cooling capacity, up from 30kW.
- CTO capability of up to 2000 Lbs dynamic load. The MCS now ships standard with heavy duty Shock Pallet to support shipping the MCS integrated with IT equipment. Customers may now use the services of Factory Express or other integration services.

QuickSpecs

HP Modular Cooling System

Overview

At a Glance

- CTO capable with 2000 Lbs dynamic load capacity
- Automatic door opening system ships standard with every MCS. The automatic door opening mechanism is not CTO capable and therefore ships in the accessories box and is to be installed onsite.
- 35KW of cooling capacity for high density deployment of servers and blades.
- 42U rack height and 1.5 racks wide to maintain datacenter tiling configuration
- Ships pre-attached to HP 10642 G2 Series Rack,
- Environmental Monitor and control with SNMP integration to Systems Insight Manager (SIM)
- Hot swappable heat exchangers and fans.
- Power Input Redundancy for dual power source.
- Condensate Evacuation system to prevent condensation from entering air stream.
- 2750 CFM of chilled air placed in front of the servers and/or blades
- Site Preparation Guide available at <http://www.hp.com/go/MCS>

QuickSpecs

HP Modular Cooling System

Models

Site Preparation

HP Modular Cooling System Water Hook-up Kit

AF079A

HP MCS Site Preparation Service

NOTE: Use Per Event Support and Consulting Service

<http://h20219.www2.hp.com/services/cache/11077-0-0-225-121.aspx>.

NOTE: The Modular Cooling System Water Hook-up kit can be ordered ahead of the MCS for site preparation purposes. The kit contains set of 1.25 inches (31.8mm) Quick-disconnect couplings, non-rust, Parallel and Parallel-to-Tapered adapter included to address regional differences.

Modular Cooling System (MCS)

HP Modular Cooling System (WW) CTO ready

AF098A

HP 10642 G2 Rack Rear Extension Kit

AF058A

NOTE: Extension kit is required when racking p-Class Blade enclosure combined with Monitored PDU's.

MCS Onsite Installation

UE005E

NOTE: Install MCS per the product user installation manual. All MCS units ship with shock pallet for CTO.

NOTE: The Rack Rear Extension kit is required when racking the HP c7000 Enclosure in conjunction with an HP Monitored PDU.

NOTE: The purchase of HP Modular Cooling System (P/N AF098A) includes 10642 G2 rack and MCS unit attached.

NOTE: A loaded MCS unit should only be moved by professional movers.

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HP Modular Cooling System

Standard Features

NOTE: For a brief, printer friendly data sheet that describes this product and informs you of the essential capabilities and specifications, please visit: <http://h71028.www7.hp.com/ERC/downloads/4AA0-3604ENW.pdf>.

Product Description

HP Modular Cooling System or MCS is designed for high density server and blade deployments. It recirculates and cools the hot server exhaust air through heat exchangers residing in the MCS unit. The air is then expelled in front of the enclosed rack at a much lower temperature providing sufficient cool air for a load of 35kW of servers or blades.

The MCS unit contains three fans and three heat exchangers deployed along the full height of the rack to ensure that all the equipment installed receives sufficient cooled air. All fans and heat exchangers are swappable while the unit is online, providing great servicing flexibility. Redundant power is ensured through a failover power switch that can be connected to two power sources. The environmental monitor controls the air temperature to the servers and adjusts automatically to meet the pre-established air temperature goal. The environmental monitor interacts with HP SIM (Systems Insight Manager) via SNMP traps.

The Water Hookup kit is made available as a separate kit to prepare the water hookup ahead of the arrival of the MCS.

A Site Preparation Guide is available for download at <http://www.hp.com/go/MCS>. This guide provides details on how to prepare the datacenter for the successful deployment of the MCS. It may be advisable to contact HP Professional Services for a Site Datacenter Thermal Quick Assessment Service, reference HB691A1 and HB691AE. Visit <http://www.hp.com/hps/support> for additional information.

The MCS unit mounted next to a HP 10000 G2 Series rack is designed to occupy 1.5 tiles in the datacenter maintaining tile count for cable routing and access to the plenum.

The MCS is now CTO capable with a dynamic load capacity of 2000 Lbs. For HP CTO services go to http://h20219.www2.hp.com/services/cache/119416-0-0-225-121.html?jumpid=reg_R1002_USENJ

NOTE: A loaded MCS unit should only be moved by professional movers.

HP 10000 G2 Series Rack

All HP rack-mountable products are designed to fit our industry-standard 19-inch wide racks. Racks and rack-mountable components are typically described using "U" measurements. One "U" is 1.75" (44.45 mm) high.

The MCS ships attached to a specially adapted 42U 10000 Series G2 rack 600mm wide (10642). This sturdy, industrial-strength rack series offers the following features:

- **Universal** - Accommodates all HP equipment (ProLiant, Integrity, Integrity NonStop, HP 9000, Alpha, StorageWorks,) in addition to select third party equipment.
- **Design** - The doors on the HP 10000 G2 Series rack bayed to the MCS unit will be fitted with Plexiglas mounted inside the front door and solid split rear doors to prevent air from escaping to the environment.
- **Load Capacity** - The 10642 G2 will accommodate up to 2000 lb. of equipment in a static or dynamic environment. A static environment is one where the rack is positioned into place and the leveling feet are extended prior to equipment being installed. A dynamic environment is one where the rack is shipped on a shock pallet with equipment installed or rolling racks with equipment installed to new locations within the data center.
- **Unique Frame and Rail Design** - Enables fast assembly, easy mounting and outstanding structural integrity. Equipment installation effort is dramatically reduced because the vertical mounting system was specifically designed to minimize the time required to install HP products, and can be used with many other non-HP products as well. U markings on the front and sides of rails make it easy to align parts when installing equipment. Cut outs in the rails also allow for cabling between racks.
- **Security Provisions** - Front and rear doors are lockable, which provides the necessary level of

QuickSpecs

HP Modular Cooling System

Standard Features

security to prevent unauthorized entry. Side panels are also lockable* allowing for your entire rack row to be secure

HP MCS Key Features

- **Cooling Capacity of up to 35kW** - MCS has been designed to support a full load of blade servers, which, at their maximum configuration require a power load of 35kW. The MCS unit will provide over 2700 CFM of cool air distributed along the full height of the rack.
- **Power Input Redundancy** - Automatically detects power failure and switches to alternate source.
- **Environmental Control and Safety** - The MCS features full environmental control of the cooled air temperature being placed in front of the servers. The heat exchanger unit features safety quick disconnect valves that prevent accidental chilled water leakage during service. A water leak detector ships standard with the MCS. Alarms can be sent via SNMP traps to Systems Insight Manager (SIM).
- **Hot-swappable components** - Fans and heat exchangers can be replaced while the unit is operating allowing for great flexibility in servicing the MCS.

Industry Standard Support All rack products are 19 inch RETMA standard and will support select third-party equipment. For additional rack information, please refer to the HP 10000 G2 Series rack QuickSpecs at: <http://h18004.www1.hp.com/products/servers/proliantstorage/racks/10000series.html>

Components

The following brick level options/components do not have individual HP Care Pack Services. These items will be included in product HP Care Pack Services into which they are installed.

Disk Drives	Tape Drives	CD/DVD ROM	SCSI Hubs in SBBs	Adapters
Bus Converters	Backplane RAID Controllers	Power Supplies	Cabling	Fans

Service and Support Offerings (HP Care Pack Services)

HP Modular Cooling System: One year warranty, parts only (1-0-0)

HP 10642 G2 Series Rack: Three year warranty, parts only (3-0-0)

NOTE: Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details.

Care Pack services provide a range of life cycle support options that let you choose the service levels that meet your business requirements, from basic to mission-critical.

A full range of HP Care Pack hardware and software services are available including:

- Installation and start up
- Education courses
- Extended onsite hardware coverage hours from same business day 13 hours, 5 day to 24 hours, 7 days call window with options including 4-hour response or 6-hour Call To Repair
- Comprehensive range of software technical support for Microsoft, Linux, ProLiant Essentials and VMware-based IT solutions helping to deliver high level of application availability. Response times range from 30 mins for critical problems to 2 hours.
- System Management, Performance Services and Mission Critical Support Solution

NOTE: For more information on HP Care Pack services, contact any of our worldwide sales offices or resellers or visit our worldwide Web site on the internet at: <http://www.hp.com/hps/carepack>

NOTE: For more complete information on HP Services offerings, customers and resellers, please visit us at: <http://www.hp.com/hps>

NOTE: Additional information regarding worldwide limited warranty and technical support is available at: <http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html>

NOTE: For additional information on Server Services, Rack and Power Options, please visit: <http://h20219.www2.hp.com/services/cache/111072-0-0-225-121.html>



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HP Modular Cooling System

Standard Features

NOTE: The information contained herein is subject to change without notice and is provided "as is" without warranty of any kind.

NOTE: The warranties for HP products and services are set forth in the express limited warranty statements accompanying such products and services.

NOTE: 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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HP Modular Cooling System

Related Options

NOTE: This is a list of supported options. Some may be discontinued.

Rack Light Kit	110V/220V Rack Light Kit (supports 10000 Series racks) NOTE: This neon light kit is mounted inside the rack and used to provide light to the rear section of the rack.	361589-B21
9000/10000 Grounding Kit	10000 G2 Rack Grounding Kit	AF074A
Cable Management	Cable Management "D" Rings Kit Hook and loop strips (50 pk)	168233-B21 379820-B21
Universal 1U Filler Panels (Carbon Graphite)	HP 10pk Carbonite 1U Universal Filler Panel HP 100pk Carbonite 1U Universal Filler Panel	AF070A AF071A
Rack Drawer	2U Universal Drawer	361591-B21
Rack Shelves	150 lbs (68 kg) Fixed Utility Shelf 220 lbs (100 kg) Sliding Shelf	253449-B21 234672-B21
Cable Trays Kits	Rack Top Cable Tray, 600W, 8-Pack Rack to Rack Adjustable Cable Tray, Aisle Transfer Bridge	383982-B21 383984-B21
Rear Extension Kits	10642 G2 Rear Extension Kit (155mm) NOTE: The 10642 G2 extension kit is required when using HP monitored PDU's.	AF058A
Service and Support Offerings (HP Care Pack Services)	Hardware Services On-site Service Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic 4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic 4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic 6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic Installation Services MCS Onsite Installation, (Install MCS per the product user installation manual, BTO MCS units only, no CTO units)	UE001E UE002E UE003E UE004E UE005E

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HP Modular Cooling System

Technical Specifications

MCS Specifications

Dimensions	Height in U	42U
	Maximum Height	78.7 in (1,999 mm)
	Maximum Width	35.8 in (909 mm)
	Maximum Depth	51 in (1,270 mm)
	Shipping Height (on skid)	88.5 in (2248mm)
	Shipping Width (on skid)	48 in (1220 mm)
	Shipping Depth (on skid)	70 in (1778mm)
	Ramp length	103 in (2616mm)
	Total length required for offloading MCS	20.25 ft (6.17m)
Weight	Net (including rack)	1190 lbs (540 kg)
	Shipping	1370 lbs (621.4 kg)
Load	Static	2000 lbs (908 kg)
	Dynamic (CTO) weight allowed	2000 lbs (0 kg)
Color	Graphite Metallic	Doors
	Carbon	Frame
Hot Swap Components	Heat exchangers	Yes
	Fans	Yes
Cooling	Cooling agent	Primary or auxiliary chilled water supply
	Condensate evacuation tube	Yes
	Air temperature regulation	Yes
	Heat exchangers	3
	Fans	3
	Rack Front door	Transparent polycarbonate insert behind mesh
	Rack Rear doors (split)	Solid, no mesh
	Chilled water connections	Bottom rear
	MCS mounting location	Left hand side
	Side panels included	Yes
	Max Cooling capacity	35kW
	Air Temperature to servers	Settable, suggested at 68-77 °F (20-25°C)
	Air Flow to servers	2750 CFM Max
	Recommended Chilled Water inlet temperature	45.0 °F (7.00 °C)
	Maximum Chilled Water Flow Rate	20 gpm (1.27 lps)
	Chilled Water Pressure Drop	25 psid

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Technical Specifications

	Water connections	1.25 in (31.8mm)	
	Coupling type	1.25 in (31.8mm) Quick-disconnect coupling, Parallel (parallel-to-tapered adapter included in AF079A)	
	Flexible hose length (pre-installed)	36 in (914mm)	
	Pipe thread	Parallel (parallel-to-tapered adapter included)	
Power Input	Nominal Input Voltage	208-240 VAC + - 10%	
	Frequency range (min-max)	50/60 Hz	
	Input Power	2000 Watts Max	
	Single phase	Yes	
	Rated line current	15 A per line cord	
	Max inrush current	54 A peak for 20 ms per line cord	
	Dropout carry through time at min voltage	20 ms	
	Circuit breaker rating	20A per line cord	
	Power factor correction	>0.98 at all loads	
	Ground leakage current (mA)	<3.0 (mA) per line cord	
	Input Connections USA, Japan	NEMA L6-20P	
	Input Connections International	IEC309 (16 Amps)	
	Power Cords	2 (for redundancy)	
	Power input redundancy	Yes, with auto failover switch	
	Environment	Room temperature requirements	41.0 °F (5°C) Min to 95.0 °F (35.00 °C) Max
		Humidity Range	Allowable 20%-80% Recommended 40%-55%
Environmental Monitoring	Air temperature to servers control	Yes	
	Water-In temperature monitor	Yes	
Communications & Management	Control panel	Multi-function LCD status and control console	
	SIM 5.0 Integration	Yes, via SNMP traps	
	RJ 45 Plug	1	
Certifications	Regulatory Approvals	UL Listing 484,	
		CUL Canadian std. 22.2 No.236	
		EN61000-3-2	
		EN61000-3-3 Flicker	
		EN61000-4-2	
		EN61000-4-3	
		EN61000-4-4	
		EN61000-4-5	
EN61000-4-6			
EN61000-4-8			

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HP Modular Cooling System

Technical Specifications

EN61000-4-11
CB report to IEC 60950-1
TÜV / GS EN 60335-1 (according to 60335-2-40)

Warranty	Standard MCS Warranty	1-0-0
	Standard Rack Warranty	3-0-0

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.
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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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