

Overview

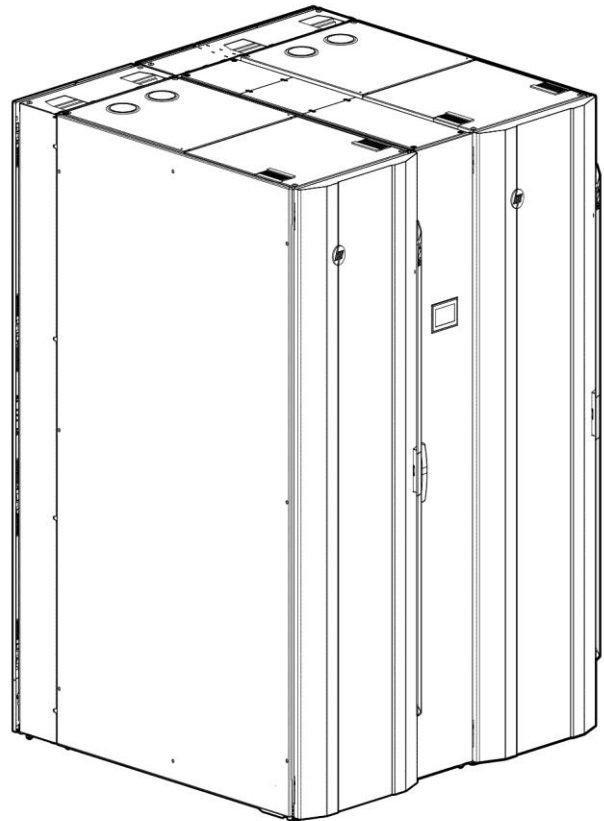
HP Modular Cooling System - MCS 100 and MCS 200

The Modular Cooling System (MCS) is a portfolio of modular, rack based cooling solutions that remove the high levels of heat generated by current advanced server, mass storage and core networking systems. Equipped with rack infrastructure, cooling, and IT power distribution, the MCS provides a standardized high performance cooling approach for servers and other IT equipment installed in server racks. HP's Bi-Directional cooling technology allows simultaneous cooling of two racks when the MCS Expansion Rack is utilized. The MCS racks can cool as little as 5kW, depending on configuration, and as high as 50kW of server capacity, either all on one rack or split between two racks.

HP MCS is designed to complement any new or existing datacenter by allowing the scale of computing power without adding to the heat load in the current datacenter. In addition, by packing up to 10 times the kW capacity of a standard rack, the MCS will extend, considerably, the life of your datacenter. The horizontal air flow of the HP MCS fully supports industry-standard front-to-back cooling designs and with the variable speed fan system all devices receive adequate and evenly distributed cool air, regardless of the mounting position or workload.



HP MCS Unit without Expansion Rack



HP MCS Unit with Expansion Rack

Models

HP MCS Key Features

- Medium To High Density Rack Based Performance Cooling Solutions
- MCS 100 Up To 30kw, 2,800 CFM In Single Or Dual Rack Configurations
- MCS 200 Up To 50kw, 4,500 CFM In Single Or Dual Rack Configurations
- Standard 19" 42U HP Rack Design , Up To 3,000 Lbs. IT Weight Capacity
- MCS-Rack Solution - 1.5 Racks Wide, Maintains Datacenter 2' Tiling Floor Plan
- Front And Rear Rack Containment For Ultra Density And Efficiency
- Up To 6 Hot Scalable/Swappable High Airflow Fans Per MCS
- High Efficiency Heat Exchanger: pPUE Of As Low As 1.05
- Warm Water Cooling Ready: 30kw Of Cooling From 64°F Water
- Extend MCS Cooling To A Second Rack With Optional MCS Expansion Rack
- Integrated Automatic Door Opening System Standard
- MCS System/Environmental Monitor With SNMP Integration
- Integrated Automatic Transfer Switch For Power Input Redundancy
- Condensate Evacuation System For Simplified Maintenance
- Full MCS Services Offering Available: Planning, Deployment, Maintenance

Modular Cooling System (MCS) 100 and 200

HP MCS 100 Cooling Unit

BW976A

- The MCS 100 Cooling Unit (BW976A) Includes:
 - MCS Cooling Unit, 10kW Capacity, Expandable to 30kW with additional fan modules (BW978A)
 - 1200 mm. (HP 642 Rack) 19" Rack, Expandable with MCS Expansion Rack Option
 - 1 Fan (BW978A) Included Standard - 10kW Expandable Increments to 30kW or N+X redundancy with each additional BW978A
 - Options: Automatic Door Opening Kit, Expansion Rack, 200 mm. Rack Extension Kit, LCD Touchscreen, Automatic Transfer Switch, Additional Fans, Condensate Pump, 277V Input, and Connection Kit.

HP MCS 200 Cooling Unit

BW974A

- The MCS 200 Cooling Unit (BW974A) includes:
 - MCS 200 Cooling Unit, 30kW Capacity, Expandable to 50kW or N+X redundancy with additional fan modules (BW978A)
 - 1200 mm. (HP 10k Rack) 19" Rack, Expandable with MCS Expansion Rack Option
 - 4 Fans (BW978A) Included Standard - 30kW Expandable to 50kW with additional fan modules (BW978A)
 - LCD Touchscreen
 - Automatic Transfer Switch
 - Condensate Pump
 - Automatic Door Opening Kit
 - 200 mm. Rack Extension Kit
 - Optional: Expansion Rack, 277V Input, Connection Kit

MCS Options

HP MCS Expansion Rack	Allows for MCS cooling unit cooling capacity to be shared between two IT racks. Includes all necessary hardware.	
	HP Modular Cooling System 100 Expansion Rack NOTE: Optional for the MCS100, ships separately	BW977A
	HP Modular Cooling System 200 Expansion Rack NOTE: Optional for the MCS 200, ships separately	BW975A
HP MCS Scalable Fans	Provides additional hot-pluggable capacity or redundancy for the MCS System	
	HP Modular Cooling System Scalable Fan Unit NOTE: See "MCS Capacity Chart" for cooling and airflow reference of MCS 100/MCS 200	BW978A
HP MCS Rear Rack Extension	200 mm. rear rack extension for the MCS system (IT Rack and Cooling System). Provides more room for rack mounted PDU's. Includes all necessary hardware.	
	HP 42U Rack 200mm Rear Extension Kit NOTE: Optional for the MCS 100, included standard in the MCS 200	AF036A
HP MCS Touchscreen	LCD management display unit located on front of MCS unit	
	HP Modular Cooling System 100 Touchscreen Display NOTE: Optional for the MCS 100, Standard with the MCS 200	BW981A
HP MCS Condensation Pumps	Condensation pump is used in addition to the condensation evacuation system in the MCS and provides additional fail-over redundancy	
	HP Modular Cooling System Condensation Pump NOTE: Optional for the MCS 100, Standard with the MCS 200	BW982A
HP MCS 277 Volt Kit	Allows for the MCS to accept 208V to 277V AC power Input	
	HP Modular Cooling System 277 Volt Kit NOTE: Optional for the MCS 100 and MCS 200	BW983A
HP MCS Auto Transfer Switch	Provides dual power input functionality of the MCS system. ATS module fits inside	
	HP Modular Cooling System Auto Transfer Switch NOTE: Optional for the MCS 100, Standard with the MCS 200	BW979A
HP MCS Grounding Kit	Electrical grounding for the MCS System (IT rack and cooling unit)	
	HP Rack Grounding Kit	BW891A
HP MCS Automatic Door Opening Kit	HP Modular Cooling System Auto Door Release Kit	BW980A
	NOTE: System Requires Auto Transfer Switch (BW979A) NOTE: Optional for MCS 100, Standard with the MCS 200	
HP Universal 1U Filler Panels	Blanking panels are made from high grade molded plastic, and designed to be installed without tools. Using blanking panels is recommended to ensure proper airflow in unused rack U space.	
	HP 1U 10-pack Black Universal Filler Panel NOTE: Pack of 10	BW928A
	HP 1U 100-pack Black Universal Filler Panel NOTE: Pack of 100	BW929A

MCS Options

HP MCS Hook-Up Kit	Kit provides easy connection of the MCS to chilled water system. Includes hose assembly, elbow Allows water connection from bottom (vertical) or from top (vertical) or from back (horizontal) HP Modular Cooling System Hookup Kit	BW971A
HP MCS Services	Installation Services HP Install Modular Cooling-Series SL5042 Rack Service NOTE: Installation of MCS per the product user installation manual, BTO MCS units only.	UE005E
For More Information	Modular Cooling System (MCS) Website: http://www.hp.com/go/mcs	

Technical Specifications

MCS Per Rack Capacity Chart

# of Fans (BW978A)	MCS 100	MCS 100 w/Expansion Rack	MCS 200	MCS 200 w/Expansion Rack
1 Fan	10kW (934 CFM)	5kW (467 CFM)	N/A	N/A
2 Fans	20kW (1,866 CFM) 10kW N+1	10kW (933 CFM) 5kW N+1	N/A	N/A
3 Fans	30kW (2,800 CFM) 20kW N+1	15kW (1,400 CFM) 10kW N+1	N/A	N/A
4 Fans	30kW N+1 20kW N+2	15kW N+1 10kW N+2	30kW (3,000 CFM)	15kW (1,600 CFM)
5 Fans	N/A	N/A	40kW (3,750 CFM) 30kW N+1	20kW (2,000 CFM) 15kW N+1
6 Fans	N/A	N/A	50kW (4,500 CFM) 40kW N+1, 30kW N+2	25kW (2,400 CFM) 20kW N+1, 15kW N+2

NOTE: Cooling performance is rated at 43°F EWT, MCS with Expansion Rack capacity/airflow is pooled and doesn't have to be evenly split between racks ex. MCS 100 with 3 fans provides at total of 2,800 CFM - one rack can use 2,000 CFM and the other can use 800 CFM with no problem.

MCS 100 and MCS 200 Specifications

NOTE: The specifications below are for the base MCS (100 or 200) unit without Expansion Rack.

		MCS 100 (Intl.)	MCS 200 (Intl.)
Unpacked Dimensions (HxWxD)	Height in U	42U	
	Height	78.9 in. (2,004 mm.)	
	Width	36 in (915 mm.)	
	Depth	51.6 in. (1,311 mm.)	59.5 in. (1,510 mm.)
	Net Weight (w/MCS Rack)	919 lbs. (417 kg.)	1,054 lbs. (478 kg.)
Packed Specifications*	Shipping Height	90 in (2,285 mm.)	
	Shipping Width	48 in (1,219 mm.)	
	Shipping Depth	72 in (1,829 mm.)	
	Shipping Weight	1,479 lbs. (670 kg.)	1,614 lbs. (732 kg.)
	Shipping Ramp Length	103 in (2,616 mm.)	
	Offloading Ramp Clearance	20.28 ft. (6.18 m.)	
Rack	Static IT Rack Load	3,000 lbs. (1,364 kg.)	
	Dynamic IT Rack Load	2,000 lbs. (907 kg.)	2,300 lbs. (1,043 kg.)
	Door Color	Black With Silver Extrusion	
	Frame Color	Black	
	Rack Front Door	Contained - Transparent Polycarbonate Insert Behind Mesh	
	Rack Rear Doors	Contained - Solid, Split Doors	
	Rack Side Panels Included	Yes	
Cooling	Cooling System Type	Chilled Water	
	Heat Exchanger	(1) 30 kW	(1) 50 kW
	Fan Type	Electrically Commutated (EC), 0-100%	
	Fans	1 Standard, Supports Up To 4	4 Standard, Supports Up To 6
	Max Cooling Capacity	30 kW	50 kW
	Air Flow To Servers	2,800 CFM Max.	4,500 CFM Max.
	Chilled Water Inlet Temperature	Recommended: 45°F to 64°F (7°C to 18°C)	
	Max. Chilled Water Flow Rate	13.2 GPM (50 LPM)	32.8 GPM (124 LPM)
	Chilled Water Pressure Drop	7.3 PSI @ 13.2 GPM (50 LPM)	17 PSI @ 32.8 GPM (124 LPM)
	Water Connection Location	Bottom, Overhead	

Technical Specifications

	Water Connection Pipe Size	1.75 in. (44.45 mm.)		
	Water Connection Coupling	1.25 in. (31.75 mm. BSPP (G type) supplied in MCS Hook up Kit		
	Condensation Evacuation	Yes (gravity drain standard and condensate pump option)		
Power Input	Nominal Input Voltage	208 to 230 VAC +/- 10% (208 to 277V Input is Optional)		
	Voltage Frequency Range	50/60 Hz		
	Input Power Draw	1,800 Watts Max.	2,800 Watts Max.	
	Rated Line Current	18A per line cord		
	Max Inrush Current	200A peak		
	Circuit Breaker Rating	20A per line cord		
	Power Factor Correction	>0.95 at all loads		
	Ground Leakage Current (Ma)	<19.4mA per line cord		
	Input Connections	NEMA L6-20P (IEC309), 277V Option is L6-30P		
	Power Cords	1 (2 if Automatic Transfer Switch option is used)	2 (Using standard Automatic Transfer Switch)	
	Power Input Redundancy	Yes, with optional auto transfer switch, transfer time 2 ms.		
	Environment	Humidity Range	Allowable 20%-80% (non-condensing) Recommended min. 41.9° F (5.5° C) dew point Recommended max. 60% relative humidity and 59° F (15° C) dew point	
Environmental Monitoring	Water Temperature Monitor	Yes		
	LCD Control Panel	Optional: LCD Display	Multi-function LCD status and control console	
	SIM 5.0 Integration	Yes (SNMP traps)		
Communications & Management	RJ45 Port	1		
Warranty	Standard MCS Warranty	1-0-0		
	Standard Rack Warranty	3-0-0		
Certifications	Regulatory Approvals	UL Listing 484 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 EN61000-4-11 CB report to IEC 60950-1 TÜV / GS EN 60335-1 (according to 60335-2-40)		

Technical Specifications

MCS 100 and MCS 200 Expansion Rack Specifications			
NOTE: The MCS Expansion Rack ships separately and must be attached onsite.			
		MCS 100	MCS 200
Dimensions	Height in U	42U	
	Height	78.9 in. (2,004 mm.)	
	Width	23.6 in. (600 mm.)	
	Depth	47.2 in. (1,200 mm.)	55.1 in. (1,399 mm.)
	Shipping Height (on skid)	85 in. (2,159 mm.)	
	Shipping Width (on skid)	36 in. (914.4 mm.)	
	Shipping Depth (on skid)	68 in. (1,727 mm.)	
	Ramp Length	107 in. (2,718 mm.)	
	Offloading Ramp Clearance	20.6 ft. (6.28 mm.)	
	Weight	Net	299 lbs. (135 kg.)
Shipping		584 (265 kg.)	680 lbs. (308 kg.)
Load	Static	3,000 lbs. (1,364 kg.)	
	Dynamic	2,000 lbs. (1,043 kg.)	2,300 lbs. (1,043 kg.)
Color	Doors	Black With Silver Extrusion	
	Frame	Black	
Warranty	MCS Expansion Rack	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.

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.

Summary of Changes

Date	Version History	Action	Description of Change:
12-Feb-2014	From Version 4 to 5	Changed	Models, MSC Options, and Technical Specifications sections were revised.
		Removed	Hardware services on-site was removed from HP MSC services.
24-Apr-2014	From Version 3 to 4	Changed	Formatting changes were made.
18-Apr-2014	From Version 2 to 3	Changed	Formatting changes were made.
01-Apr-2014	From Version 1 to 2	Changed	Changes were made throughout the QuickSpec.

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