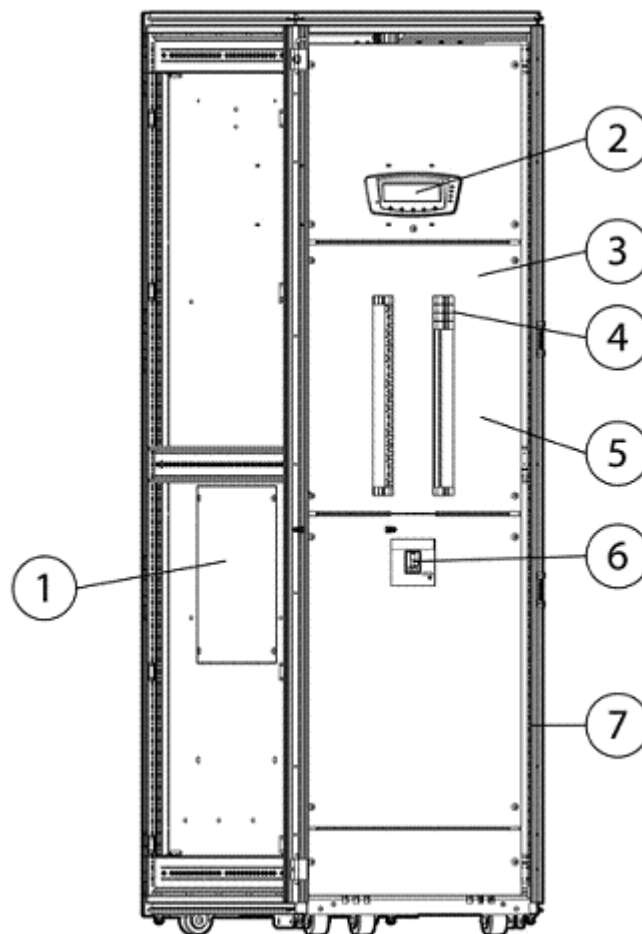


### Overview

It's getting harder to manage a data center efficiently, with rising utility bills and ever-increasing demands due to processor power and server density increases. Growing user requests mean heavier strain on servers and air conditioning units in the data center. For many companies, this puts data center costs and performance under the spotlight making them essential factors for an efficient IT infrastructure. HP helps companies manage their data centers more effectively to decrease power and cooling costs.

The HP Power Distribution Rack (PDR) improves power management in the data center by moving power distribution to the row level. Decentralizing power improves cable management, decreases diagnostic time for problems, and saves installation costs by reducing the size and number of long power feeds required to reach from large wall mounted distribution units. Housed in a single HP Rack 10000 G2 42U rack cabinet, the PDR also saves floor space and allows you to move heat robbing transformers off of the data center floor improving cooling.

Capable of delivering 400 amps (NA) / 200 amps (INTL) redundantly, the HP PDR can power several high density racks with shorter cable runs than conventional site level power distribution systems. Fully redundant inputs and outputs provide dependable power while protecting valuable IT hardware with high quality circuit breakers. Individual branch circuit monitoring and redundant management displays provide the local status and power consumption of each attached rack while the remote management module provides secure communication over a browser, through telnet, and even through ModBus protocols.



HP Power Distribution Rack

### Overview

1. Maintenance access panel, left and right
  2. Management and configuration display, front and rear
  3. Branch circuit breaker panel, front and rear
  4. Branch circuit breakers
  5. Branch circuit monitoring sensors (not shown)
  6. Input circuit breaker, front and rear
  7. Enclosure, HP 10000G2 Series 42U rack with doors
- NEW PDR Remote Management Module (not shown)
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### What's new

New pre-installed HP PDR Management Module allows remote management of the PDR via an embedded web engine, telnet, and ModBus.

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### Models

HP Power Distribution Rack	400 Amp Dual Input Power Distribution Rack, NA	AF514A
	200 Amp Dual Input Power Distribution Rack, INTL	AF515A

### Product Features

<b>Target Applications and Markets</b>	<b>24/7 data centers</b>	The HP Power Distribution Rack (PDR) enables data centers to provide efficient decentralized power to multiple racks from two separate power sources. Complete redundancy within the HP PDR with its dual inputs supporting dual power panels. High amperage input provides almost twice the capacity of many site level power distribution systems in a smaller footprint. Each HP PDR is capable of providing fully redundant power to multiple racks of various voltage configurations.
	<b>Small to Medium size data centers</b>	The HP Power Distribution Rack provides flexible and easy to configure power distribution in a small footprint by using a single, standard 10000 G2 42U rack. The transformer-less design helps keep unnecessary heat out of the data center and improves air conditioning. Pre-configured power drops reduce clutter and improve installation and change management while the PDR's local and remote monitoring capabilities insure you can always determine status and power consumption of each attached rack.
	<b>Collocation Facilities</b>	The HP Power Distribution Rack allows for easy changes in power configurations across multiple racks. Individual branch circuit monitoring allows power usage to be tracked and recorded on a rack by rack basis.

<b>Customer Challenges/ Requirements</b>	<ul style="list-style-type: none"> <li>● Easy access to power multiple servers, storage and other rack mount equipment</li> <li>● Reduce cabling to improve airflow</li> <li>● Ease installation and upgrades to power distribution</li> <li>● Accurately monitor each branch circuit to evaluate power usage</li> </ul>
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<b>Model Features – Power Distribution Rack</b>	<b>Fully redundant</b>	Dual power paths from input through output including dual management displays
	<b>Dual high amperage three phase inputs</b>	Fewer large cable runs to the PDR increase efficiency and reduce cable clutter
	<b>Dual 42 pole position breaker panels (NA)</b>	Each panel is feed by a separate input source and provides for 100-120VAC, 208-240VAC, or 3 phase outputs in any combination
	<b>Dual 48 pole position breaker panels (INTL)</b>	Each panel is feed by a separate input source and provides for 200-240VAC, or 3 phase outputs in any combination <b>NOTE: Branch circuit monitoring is installed for 42 pole positions on each panel. 6 pole positions on each panel are unmonitored.</b>
	<b>Dual Transient Voltage Surge Suppression (TVSS)</b>	A TVSS module protect s each input from passing transients and surges through to the attached equipment
	<b>High quality branch circuit breakers for superior performance</b>	Enterprise grade circuit breakers provide fault protection to individual branch circuits and are available in single pole, dual pole and three pole styles in a variety of amperage ratings
	<b>Local and remote power monitoring</b>	Each PDR provides local monitoring through dual displays and includes a PDR Management Module that provides remote monitoring of input power as well as each individual branch circuit output. Remote monitoring can be securely accessed through a standard web browser, telnet, and Modbus RTU or Modbus IP. Warnings and alerts can be sent over SNMP, email, or through either Modbus protocol to provide notice of impending issues before problems arise.
	<b>Preconfigured metal clad whips (NA)</b>	Pre-cut lengths and preassembled whips save installation time and cost and are certified for a variety of installations

### Product Features

**Preconfigured harmonized whips (INTL)** Precut lengths and preassembled whips save installation time and cost and are certified for a variety of installations

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### Installation

- The HP Power Distribution Rack must be installed by a qualified electrical contractor
- It is strongly recommended that the HP PDR be bayed to other racks in the row or secured by HP 10000 G2 Stabilizing feet or 600W 10000 G2 Rack Tie Down kit
- If power cables are run above the racks the HP Rack Top Cable Trays are recommended
- Start up and Commissioning service is included at no additional charge and must be completed to validate warranty protection. Start up and commissioning service may be performed Monday through Friday during standard business hours. Optional 7x24 Start up and commissioning service is available.

### *Service and Support, HP Care Pack, and Warranty Information*

The HP PDR is covered by a 3 year parts only warranty. Replacement of any component requires a qualified electrical contractor.

**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:** 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.

### Related Options

Startup and Commissioning Service	7x24 after hours Start up and Commissioning Service Uplift <b>NOTE:</b> 8x5 Standard business hours, Monday through Friday Start up and Commissioning Service is included with the PDR at no additional charge. <b>NOTE:</b> Go to <a href="http://www.hp.com/go/pdr">www.hp.com/go/pdr</a> to schedule start up and Commissioning service.	AF516A
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Circuit Breakers	<b>Circuit Breakers – NA</b> BREAKER, 20A, SINGLE POLE, NA (110-120 volt) 455337-001 BREAKER, 30A, SINGLE POLE, NA (110-120 volt) 455337-002 BREAKER, 20A, TWO POLE, NA (200-240 volt) 455337-003 BREAKER, 30A, TWO POLE, NA (200-240 volt) 455337-004 BREAKER, 50A, TWO POLE, NA (200-240 volt) 455337-005 BREAKER, 30A, THREE POLE, NA (200-240 volt 3 phase) 455337-006 BREAKER, 60A, THREE POLE, NA (200-240 volt 3 phase) 455337-007 <b>Circuit Breakers – INTL</b> BREAKER, 16A, SINGLE POLE, MCB TYPE B, INTL (200-240 volt) 455345-001 BREAKER, 32A, SINGLE POLE MCB TYPE B, INTL (200-240 volt) 455345-002 BREAKER, 16A, THREE POLE, MCB TYPE B, INTL (380-415 volt 3 phase) 455345-003 BREAKER, 32A, THREE POLE, MCB TYPE B, INTL (380-415 volt 3 phase) 455345-004 BREAKER, 63A, THREE POLE, MCB TYPE B, INTL (380-415 volt 3 phase) 455345-005
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Pre-Configured Power Cabling	<b>NOTE:</b> Metal clad cables have an addition eight feet of wire beyond the conduit length that is listed. <b>North America</b> <b>L5-30 Power Cables</b> L5-30R Power cable in flexible metal clad conduit, 10 feet, NA 455237-010 L5-30R Power cable in flexible metal clad conduit, 20 feet, NA 455237-020 L5-30R Power cable in flexible metal clad conduit, 30 feet, NA 455237-030 <b>L6-20 Power Cables</b> L6-20R Power cable in flexible metal clad conduit, 10 feet, NA 455238-010 L6-20R Power cable in flexible metal clad conduit, 20 feet, NA 455238-020 L6-20R Power cable in flexible metal clad conduit, 30 feet, NA 455238-030 <b>L6-30 Power Cables</b> L6-30R Power cable in flexible metal clad conduit, 10 feet, NA 455239-010 L6-30R Power cable in flexible metal clad conduit, 20 feet, NA 455239-020 L6-30R Power cable in flexible metal clad conduit, 30 feet, NA 455239-030 <b>CS8269 Power Cables</b> CS8269 Power cable in flexible metal clad conduit, 10 feet, NA 455240-010 CS8269 Power cable in flexible metal clad conduit, 20 feet, NA 455240-020 CS8269 Power cable in flexible metal clad conduit, 30 feet, NA 455240-030 <b>NOTE:</b> CS8269 cables are for use with HP Power Distribution Units the have CS8265 inlet cords <b>L15-30 Power Cables</b> L15-30R Power cable in flexible metal clad conduit, 10 feet, NA 455241-010 L15-30R Power cable in flexible metal clad conduit, 20 feet, NA 455241-020 L15-30R Power cable in flexible metal clad conduit, 30 feet, NA 455241-030
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### Related Options

#### L21-30 Power Cables

L21-30R Power cable in flexible metal clad conduit, 10 feet, NA 455242-010

L21-30R Power cable in flexible metal clad conduit, 20 feet, NA 455242-020

L21-30R Power cable in flexible metal clad conduit, 30 feet, NA 455242-030

**NOTE:** Can be used to connect to the HP R8000/3 Uninterruptible Power System (UPS).

#### IEC-60309 Power Cables

**NOTE:** IEC309 460C9 uses a 60 amp, 4 wire 3 pole connector for use with the following HP Monitored Power Distribution Unit: HP 17.3 kVA S348 Monitored PDU-single input, 3Ø, 60A (NA/JPN).

IEC-60309 460C9 Power cable in flexible metal clad conduit, 10 feet, NA 455244-010

IEC-60309 460C9 Power cable in flexible metal clad conduit, 20 feet, NA 455244-020

IEC-60309 460C9 Power cable in flexible metal clad conduit, 30 feet, NA 455244-030

#### International

##### IEC309 16 amp Single Phase

IEC309 16 amp single phase harmonized power, 10 feet (3.0 meter) 455249-010

IEC309 16 amp single phase harmonized power, 20 feet (6 meter) 455249-020

IEC309 16 amp single phase harmonized power, 30 feet (9.1 meter) 455249-030

##### IEC309 32 amp Single Phase

IEC309 32 amp single phase harmonized power, 10 feet (3.0 meter) 455250-010

IEC309 32 amp single phase harmonized power, 20 feet (6 meter) 455250-020

IEC309 32 amp single phase harmonized power, 30 feet (9.1 meter) 455250-030

##### IEC309 16 amp Three Phase

IEC309 16 amp three phase, 5 wire, 4 pole harmonized power cable, 10 feet (3.0 meter) 455251-010

IEC309 16 amp three phase, 5 wire, 4 pole harmonized power cable , 20 feet (6 meter) 455251-020

IEC309 16 amp three phase, 5 wire, 4 pole harmonized power cable , 30 feet (9.1 meter) 455251-030

##### IEC309 32 amp Three Phase

IEC309 32 amp three phase, 5 wire, 4 pole harmonized power, 10 feet (3.0 meter) 455252-010

IEC309 32 amp three phase, 5 wire, 4 pole harmonized power, 20 feet (6 meter) 455252-020

IEC309 32 amp three phase, 5 wire, 4 pole harmonized power, 30 feet (9.1 meter) 455252-030

### Related Options

Available Rack Options	600W 10000 G2 Rack Tie Down	AF076A
	<b>NOTE:</b> For HP 10000 G2 Series only. The tie down kit is used to secure the rack to the datacenter floor. This is not a Zone 4 approved product.	
	HP 10K G2 600mm Stabilizer Option Kit (Graphite)	AF062A
	Rack Coupling Kit (Carbon)	248929-B21
	<b>NOTE:</b> Supported by both the Rack 10000 and Rack 10000 G2 series. Supports 24 in and 600 mm floor tile spacing. The kit is used to join two or more 10000 series racks of the same height together in minutes to create a multi-bay configuration.	
	9000/10000 Offset Baying Kit (42U)	248931-B21
	<b>NOTE:</b> This kit can be used to connect 9000 and 10000 series racks of the same U height together. Kit contents include hardware for connecting racks and a panel to cover the 100mm gap at the rear of the two racks.	
	10642 G2 (42U) Side Panels (set of two) (Graphite Metallic)	AF054A
	<b>NOTE:</b> The lightweight, locking side panels for the G2 Series racks come in 3 sections for better handling.	
	Rack Top Cable Trays, 600W	383982-B21
	<b>NOTE:</b> This is an 8-pack.	
	Rack to Rack Adjustable Cable Tray, Aisle Transfer Bridge	383984-B21
	<b>NOTE:</b> The Aisle Transfer bridge allows for cabling trays to be connected even across different aisles in the datacenter.	
	<b>NOTE:</b> These kits mount on the top of the 9000 and 10000 Series rack (except the S10614 rack). Kit color is graphite.	

### Compatibility

#### Compatibility Matrix

North America			
PDU or UPS	Whip	Breaker	Poles positions used
2.8 kVA LV mPDU 252663-D71 UPS R3000LV AF422A, AF425A	L5-30R Power cable 455237-xxx	30A Single Pole 455337-002	One
3.6 kVA HV mPDU 252663-B24 UPS R3000HV AF423A, AF424A	L6-20R Power Cable 455238-xxx	20A Two Pole 455337-003	Two
4.9 kVA HV mPDU 252663-D72, 252663-D74 UPS R5500 AF426A	L60-30R Power Cable 455239-xxx	30A Two Pole 455337-004	Two
8.3 kVA HV mPDU (corded) 252663-D73, 252663-D75	CS8269 Power Cable 455240-xxx	50A Two Pole 455337-005	Two
8.3 kVA HV mPDU (Hard wired) 252663-B21	Not Applicable	50A Two Pole 455337-005	Two
8.6 kVA 3Ø mPDU AF512A	L15-30R Power Cable 455241-xxx	30A Three Pole 455337-006	Three
UPS R8000/3 AF431A	L21-30 Power Cord 455242-xxx	30A Three Pole 455337-006	Three
S1140 8.3 kVA Monitored PDU AF506A	CS8269 Power Cable 455240-xxx	50A Two Pole 455337-005	Two
S2140 16.6 kVA Monitored PDU AF505A	CS8269 Power Cable 455240- xxx (two required)	50A Two Pole 455337-005 (two required)	Two per breaker
S1324 8.6 kVA Monitored PDU AF504A	L15-30R Power Cable 455241-xxx	30A Three Pole 455337-006	Three
S2324 17.3 kVA Monitored PD AF503A	L15-30R Power Cable 455241- xxx (two required)	30A Three Pole 455337-006 (two required)	Three per breaker
S124 8.3 kVA Monitored PDU AF914A	L60-30R Power Cable 455239-xxx	30A Two Pole 455337-004	Two
S348 17.3 kVA Monitored PDU AF916A	IEC-60309 460C9 Power Cord 455244-xxx	60A Three Pole 455337-007	Three

**NOTE:** "-xxx" = power cable length

	-010 = 10ft (3m)		-015 = 15ft (4.5m)		-020 = 20ft (6m)
PDU or UPS	Whip	Breaker	Poles positions used		
3.6 kVA HV mPDU 252663-B24 UPS R3000DTC AF414A UPS RT2200 AF411A	IEC 309 16 Amp 1Ø Power Cord 455249-005	16 Amp Single Pole 455345-001	One		

**NOTE:** UPS R3000DTC and R/T2200 require E7808A or AF581A optional inlet cable to connect to this whip.

### Compatibility

7.3 kVA mPDU 252663-B31, 252663-B33 UPS R5500 AF416A	IEC 309 32 Amp 1Ø Power Cord 455251-xxx	32 Amp Single Pole 455345-002	One
9.2 kVA mPDU 252663- B32,252663-B34	Requires IEC 60309 363C6 connector (not supplied by HP)	63 Amp Single Pole (not supplied by HP)	Three
11 kVA 3Ø mPDU AF513A	IEC 309 16 Amp 3Ø Power Cord 455250-xxx	16 Amp Three Pole 455345-003	Three
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S1132 7.3 kVA Monitored PDU AF510A	IEC 309 32 Amp 1Ø Power Cord 455251-xxx	32 Amp Single Pole 455345-002	One
S2132 14.7 kVA Monitored PDU AF509A	IEC 309 32 Amp 1Ø Power Cord 455251-xxx (two required)	32 Amp Single Pole 455345-002 (two required)	One per breaker
S1316 11 kVA Monitored PDU AF508A	IEC 309 16 Amp 3Ø Power Cord 455250-xxx	16 Amp Three Pole 455345-003	Three
S2316 22.1 kVA Monitored PDU AF507A	IEC 309 16 Amp 3Ø Power Cord 455250-xxx (two required)	16 Amp Three Pole 455345-003 (two required)	Three per breaker
S132 7.3 kVA Monitored PDU AF915A	IEC 309 32 Amp 1Ø Power Cord 455251-xxx	32 Amp Single Pole 455345-002	One
S332 22.1 kVA Monitored PDU AF917A UPS R8000/3 AF432A	IEC 309 32 Amp 3Ø Power Cord 455252-xxx	32 Amp Three Pole 455345-004	Three
<b>NOTE:</b> "-xxx" = power cable length			
	-010 = 10ft (3m)	-015 = 15ft (4.5m)	-020 = 20ft (6m)

### Technical Specifications

Model	400 Amp Dual Input PDR (NA)				200 Amp Dual Input PDR (INTL)			
Part number	AF514A				AF515A			
Rack Information	10000G2 Series, 42U, Shock Pallet (side panels not included)							
Maximum Input (VAC)	Dual 400A, 208V 60Hz 3Ø Wye				Dual 200A, 380-415V 50Hz 3Ø Wye			
Maximum amperage	320A per phase				200A per phase			
Maximum kVA and KW output per panel	115kVA/ 115KW				138kVA/138KW			
Output voltages	120V, 208v single phase, 208V 3 phase Delta and 208V 3 phase Wye				200-240V single phase, 380-415V 3 phase Wye (dependant on input voltage)			
Breaker Panels	2 x 400A, 42 pole				2 x 200A, 48 pole			
Branch circuit breakers	Cutler Hammer 1 inch bolt on				Cutler Hammer 1 inch bolt on			
Input Breaker	400 amp 3 pole Cutler Hammer K-Frame				200 amp 3 pole Cutler Hammer K-Frame			
<b>Transient Voltage Surge Suppression</b>								
UL 1449 SECOND EDITION SUPRESSED VOLTAGE RATING (SVR)	L-N	L-G	N-G	L-L	L-N	L-G	N-G	L-L
	500V	500V	500V	800V	800V	800V	800V	1500V
EMI/RFI Noise Attenuation	40 db @ 100kHz							
Filter Bandwidth	10 kHz to 100MHz							
Response time	<0.5 ns							
Line Frequency	47 – 65 Hz							
Line Voltage	+/- 15% nominal							
Operating Temperature	-40° to +140° F (-40° to +60° C)							
Relative Humidity	0 – 95% non-condensing							
Operating Altitude	0 to 28,000 ft (0 to 91,863.24 m)							
Audible Noise	none							
Max Continuous Operating Voltage	Greater than 115% of nominal voltage							
<b>Dimensions</b>								
Operating								
(HxDxW)	78.7 x 39.691 x 24 in (200 x 101.5 x 59.7 cm)							
Weight (no breakers)	510 lbs (231 kg)				530 lbs (240 kg)			
<b>Shipping</b>								
(HxDxW)	86.22 x 48 x 32 in (219 x 121.92 x 81.28 cm)							
Weight	626 lbs (284 kg)				646 lbs ( 293 kg)			

### Technical Specifications

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#### 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 [www.hp.com/go/green](http://www.hp.com/go/green). To recycle your product, please go to [www.hp.com/go/green](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: [www.hp.com/go/green](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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