

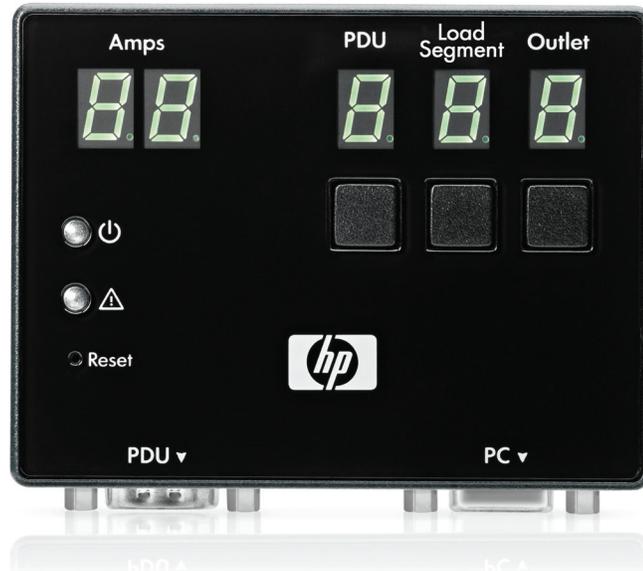


# HP Intelligent Power Distribution Unit

## Avoid downtime

### iPDU in brief

- Six or 12 individually monitored IEC C19 outlets on each core
- 99 percent<sup>1</sup> accurate, high-precision monitoring at or above 1 amp
- Built-in remote Web management
- Rear-mount display
- Flexible core and stick mounting
- Extension bars are sold separately
  - Five IEC C13 outlets per bar, sold in pairs
  - Standard Extension Bars—Monitored as a single-load segment
  - Intelligent Extension Bars—Individually monitored and switchable outlets
- Embedded power line communication (PLC) connectors



The new HP Intelligent Power Distribution Unit (iPDU) brings world-class management and control to rack-mounted power distribution units (PDUs) in order to prevent overprovisioning of power that restricts further growth in your data center.

Based on the modular PDU's flexible core and stick design, the iPDU offers you a new level of remote power monitoring and control in your data center. Integrated remote management in the iPDU core provides high-precision monitoring of current, voltage, wattage, and power that is 99 percent accurate across all six International Electrical Commission (IEC) C19 outlets. Optional Intelligent Extension Bars can be plugged into the core and they have five individually monitored IEC C13 outlets. Each of these outlets can also be remotely managed through common Web browsers.

## HP Power Discovery Services

HP Power Discovery Services automatically tracks new server installation and provides higher precision, control, and automation to power distribution. It helps you enhance data center capacity, while reducing downtime and the possibility of error by human intervention.

Power Discovery Services provides automated server discovery on a network through PLC technology that is embedded into HP Common Slot (CS) Platinum and Platinum Plus power supplies. PLC allows the power supply unit (PSU) to “talk” to the iPDU. The communication between the PSU and iPDU allows:

- Auto-discovery of the servers when plugged into a power source
- Identification of redundant PSUs
- Ability to verify redundant iPDU's
- Avoidance of human errors and prevention of downtime

<sup>1</sup>HP Performance Engineering Team, 2013 benchmark.

Using PLC technology, HP ProLiant G7 or Gen8 servers that come with the HP CS Platinum and Platinum Plus Power Supplies<sup>2</sup> provide identification information such as server name, Universally Unique Identifier (UUID) number, and IP address to the iPDU. This reduces the time necessary to configure power distribution.

The iPDU and the iPDU Intelligent Extension Bars are key components of Power Discovery Services. Power Discovery automatically discovers HP ProLiant servers powered by HP CS Platinum and Platinum Plus Power Supplies. It maps them to individual outlets on the Intelligent Extension Bars, and records server asset information in the iPDU, HP OneView, and HP Insight Control management software. The mapping saves you hours of configuration time and reduces errors caused by human intervention. The iPDU gives you accurate, automated, error-free power mapping, monitoring, and control. Power Discovery is also available for HP c7000 BladeSystem Platinum Enclosure using the new Intelligent AC Power Module when connected directly to iPDU core units.

## iPDU—Key features and benefits

### Accuracy in power-monitoring

- *Topology*—Automatically detects and maps servers and BladeSystem Enclosures to specific power outlets for balanced power usage.
- *Accuracy*—Effectively measures power usage to all outlets on the core and the Intelligent Extension Bars.
- *Data collection*—Efficiently gathers information from all monitoring points at half-second intervals so the latest data is collected.
- *Sensitivity*—Effectively measures power consumption below 100 MW and lets you know when a server is plugged in and not just powered on.
- *Information*—Easily identifies available power capacity to add more servers.

### Greater flexibility

- *Multiple mounting options*—This saves valuable rack space. Flexible mounting of extension bars eases cable management.
- *Architecture*—Mix different kinds of extension bars on an iPDU core for a variety of configurations.
- *Monitoring*—Displays power consumption for the core, stick, and outlet levels at the rack or remotely from standard Web browsers.
- *Control*—Remotely control power per outlet or even per pair of outlets for redundantly powered equipment.

### Superior protection

- *Individual breakers for each load segment*—Prevents a problem in one segment from causing a power outage on the entire PDU.
- *Event alerts*—SNMP and email alerts notify operators of impending issues that could cause a power outage.
- *Lock-out outlets*—Remotely locking-out individual outlets on the Intelligent Extension Bars, which prevents unauthorized equipment from overloading PDUs or circuits.
- *Automatic redundancy checking*—Detects power configuration errors automatically and notifies IT administrators/operators.
- *Included three-year warranty*—Safeguard your IT investment so you can make the most of it.

### Simple and easy to use

- *Installation*—Compatible with industry-standard racks.
- *Configuration*—Simply assign an IP address to the iPDU and it is ready to use.
- *Integration*—Automatically detected by HP OneView, HP Systems Insight Manager (SIM) and Insight Control Power Management software.
- *Multiple account levels*—Users can be assigned full or restricted access levels as required.

<sup>2</sup>To review server-specific QuickSpecs and check for power supply compatibility visit: [h18004.www1.hp.com/products/servers/rackandpower/powersupplies/ipd/index.html](http://h18004.www1.hp.com/products/servers/rackandpower/powersupplies/ipd/index.html)

**Table 1.** Intelligent PDUs (North America, Japan, and South America except Chile and Argentina)

Part number	Input circuit	kVA	C19	Extension bars	C13	Input cord
AF520A	30A, 208v, 1 $\phi$ <sup>3</sup>	4.9	6	Core only	n/a	NEMA L6-30p
AF521A	50A, 208v, 1 $\phi$	8.3	6	Core only	n/a	Non-NEMA CS8265C
AF522A	30A, 208v, 3 $\phi$ Delta	8.6	6	Core only	n/a	NEMA L15-30P
AF533A	50A, 208v, 3 $\phi$ Delta	14.4	6	Core only	n/a	Non-NEMA CS8365C
AF523A	60A, 208v, 1 $\phi$ Delta	17.3	6	Core only	n/a	IEC 309 460P9W
AF900A	20A, 415v, 3 $\phi$ Wye	11	6	Core only	n/a	NEMA L22-20
AF901A	30A, 415v, 3 $\phi$ Wye	17.3	6	Core only	n/a	IEC309 530P6S
AF902A	30A, 415v, 3 $\phi$ Wye	17.3	6	Core only	n/a	NEMA L22-30
AF531A	30A, 208v, 3 $\phi$	4.9	6	Four standard extension bars	20 <sup>4</sup>	NEMA L6-30p
AF532A	30A, 208v, 3 $\phi$ Delta	8.6	6	Four standard extension bars	20 <sup>4</sup>	NEMA L15-30P
AF535A	60A, 208v, 3 $\phi$ Delta	17.3	12	Core only	n/a	IEC 309 460P9W
AF537A	30A, 415v, 3 $\phi$ Wye	17.3	12	Core only	n/a	IEC309 530P6S

**Table 2.** Intelligent PDUs (international models)

Part number	Input circuit	kVA	C19	Extension bars	C13	Input cord
AF525A	32A, 220–240v, 1 $\phi$	7.3	6	Core only	n/a	IEC 309 332P6, three wire, two pole 32A
AF526A	16A, 380–415v, 3 $\phi$ Wye	11	6	Core only	n/a	IEC 309 516P6, five wire, four pole 16A
AF527A	32A, 380–415v, 3 $\phi$ Wye	22	6	Core only	n/a	IEC 309 532P6, five wire, four pole 32A
AF534A	32A, 220–240v, 1 $\phi$	7.3	6	Four standard extension bars	20 <sup>4</sup>	IEC 309 332P6, three wire, two pole 32A
AF538A	32A, 380–415v, 3 $\phi$ Wye	22	12	Core only	n/a	IEC 309 532P6, five wire, four pole 32A

**Table 3.** Intelligent PDU options

<b>iPDU Extension Bars (in pairs)</b>	
AF547A	Individually switched and monitored outlets; power line communication support
AF528A	Standard extension bars for iPDU; 5 x C13; monitored as single-load segment only
<b>Power line communication power cables for power discovery</b>	
SG506A	2.5 ft (.76 m) C13-C14 IPD power cable, single
SG507A	2.5 ft (.76 m) C13-C14 IPD power cable, five pack
SG508A	4.5 ft (1.3 m) C13-C14 IPD power cable, single
SG509A	4.5 ft (1.3 m) C13-C14 IPD power cable, five pack
SG510A	6 ft (1.8 m) C13-C14 IPD power cable, single
SG511A	6 ft (1.8 m) C13-C14 IPD power cable, five pack
D9Y24A	8 ft (2.4 m) C13-C14 IPD power cable, single
D9Y25A	6 ft (2.4 m) C13-C14 IPD power cable, five pack
SG512A	10 ft (3 m) C13-C14 IPD power cable, single
TK744A	4.5 ft (1.3 m) C19-C20 IPD power cable, single
TK745A	4.5 ft (1.3 m) C19-C20 IPD power cable, three pack
TK738A	6.5 ft (2 m) C19-C20 IPD power cable, single
TK739A	6.5 ft (2 m) C19-C20 IPD power cable, three pack
TK740K	8 ft (2.5 m) C19-C20 IPD power cable, single
TK741A	8 ft (2.5 m) C19-C20 IPD power cable, three pack
TK742A	10 ft (3 m) C19-C20 IPD power cable, single
TK743A	10 ft (3 m) C19-C20 IPD power cable, three pack

<sup>3</sup>  $\phi$  denotes the number of electrical phases.<sup>4</sup> Each extension bar occupies one IEC C19 outlet on iPDU core.

Customize your IT lifecycle management, from acquisition of new IT, management of existing assets, and removal of unneeded equipment.

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## HP Insight Control

HP OneView and Insight Control are essential management software that help deploy servers quickly, manage the health of virtual or physical servers proactively, control servers remotely, and streamline power consumption. OneView and Insight Control's power management integrates seamlessly with Power Discovery Services to automatically discover and map the power distribution inside a rack.

## HP Common Slot Platinum and Platinum Plus Power Supplies

Choose from any of the CS Platinum Power Supplies, or one of the two new CS Platinum Plus Power Supplies. Platinum Plus power supplies are rated as the most efficient in the industry with a power efficiency of at least 94 percent. This efficiency level is the highest rating recognized by 80 PLUS and Electric Power Research Institute (EPRI). All these power supplies are Platinum-certified through the ECOS/80 PLUS certification program.

## HP BladeSystem Enclosure support

Power Discovery Services is fully supported by the c7000 BladeSystems Platinum Enclosure. Adding the new Intelligent AC module to any c7000 BladeSystem enclosure enables Power Discovery Services when connected directly to any six or 12 out iPDU core unit. Power Discovery Services will automatically detect where the c7000 enclosure is plugged in and insure redundancy across iPDU inputs.

## HP Services

### When technology works, business works

The challenge of virtually every IT organization is similar: to develop and maintain an agile, efficient server infrastructure that delivers the service levels your business needs. HP Technology Services offer a comprehensive portfolio of HP Care Pack Services to help design, deploy, manage, and support your IT environment, enabling cost-effective upgrades to standard warranty with easy-to-buy, easy-to-use support packages.

### Rack option hardware support

HP Care Pack services support rack-mounted HP ProLiant DL servers, storage products, and all HP-branded rack hardware options that qualify for inclusion with your server at the time of or after purchase. Additionally, 22-inch and smaller external monitors, power distribution units, and uninterruptible power supply (UPS) options up to 12 kVA are covered under the same service level as the server for up to three years from the date of purchase at no additional cost. For more information, visit: [hp.com/services/proliant](http://hp.com/services/proliant) or [hp.com/go/proliant/carepack](http://hp.com/go/proliant/carepack).

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