DATA SHEET

CISCO AC/DC POWER SOLUTION FOR USE WITH CISCO OPTICAL PLATFORMS

The Cisco AC/DC Power Solution provides a scalable platform for the delivery of DC power to equipment-installation sites that have only an AC power source.

PRODUCT OVERVIEW

The Cisco® AC/DC Power Solution is a rack-mounted AC-to-DC power system that provides a compact, scalable solution for powering Cisco optical platforms at site locations with only AC power available. The system accepts AC inputs and converts them to nominal –48 VDC for DC-powered equipment. The Cisco AC/DC Power Solution is available in three configurations (Figures 1, 2, and 3) to accommodate various equipment loads up to 96 amperes (96A) at nominal –48 VDC. This compact system provides N+1 redundancy in rectifiers, automated alarm generation, and integrated DC power distribution through a GMT-type fuse panel or circuit breakers, for powering up to five DC-powered network elements with redundant feeds, complementing the resiliency of Cisco carrier-class optical products.

Figure 1
Small Configuration of Cisco AC/DC Power Solution

Figure 2
Medium Configuration of Cisco AC/DC Power Solution

Figure 3
Large Configuration of Cisco AC/DC Power Solution

The Cisco AC/DC Power Solution can be mounted in a variety of rack types including IEC, ANSI 19-inch, ANSI 23-inch, and ETSI configurations and requires only 5.25-inch (133.4 millimeters [mm]) or 7.0-inch (177.8 mm) of vertical rack space for the small and medium-to-large configurations, respectively. The systems employ rectifier modules in an N+1 load-sharing configuration, each with universal AC input capability, and are shipped with country-specific AC input cables. If user DC power requirements increase in the future, the system scales, in service, from small to medium to large by the simple addition of slide-in rectifier modules and an external distribution panel, providing an economical, simple growth path.

APPLICATIONS

The Cisco AC/DC Power Solution is designed to power equipment requiring nominal –48 VDC input. The solution has been successfully tested with Cisco optical products, including the Cisco ONS 15454 SDH/SONET Multiservice Provisioning Platform, Cisco ONS 15327 SONET Multiservice Platform, and the Cisco ONS 15302 and Cisco ONS 15305 Multiservice Customer Access Platforms. Table 1 outlines typical applications for the solution sizes of the Cisco AC/DC Power Solution.

Table 1. Typical Application Use of Cisco AC/DC Power Solution

Configuration	Typical Powering Application
Small—Up to 13.3/32A at 110/220 VAC	1 x Cisco ONS 15327, ONS 15302, ONS 15305
Medium—Up to 26.6/64A at 110/220 VAC	1 x Cisco ONS 15454 or 2 x ONS 15327, ONS 15302, ONS 15305
Large—Up to 40/96A at 110/220 VAC	2 x Cisco ONS 15454 or 3 x ONS 15327, ONS 15302, ONS 15305

The Cisco AC/DC Power Solution should also be suitable for powering other equipment with nominal –48 VDC requirements.

IMPORTANT FEATURES AND BENEFITS

The Cisco AC/DC Power Solution is designed for flexibility and ease of use. Table 2 outlines important features and benefits of the power solution.

Table 2. Features and Benefits of Cisco AC/DC Power Solution

Feature	Benefit
Compact size	Requires less room in space-constrained locations
N + 1 rectifier module redundancy	Maintains output power for attached equipment during a rectifier-module failure
Alarm contacts	Allow notification of power-solution status
110/220 VAC, 50/60 Hz operation	Supports worldwide applications
A and B DC power feeds	Support carrier-class equipment requiring redundant input power feeds
Multiple power feeds	Provide flexibility to support multiple colocated products from a single power solution
Hot-swappable rectifier modules	Simplify and speed rectifier-module replacement and capacity expansion
Flexible mounting options	Provide mounting hardware to install in popular sizes of equipment racks used around the world

PRODUCT SPECIFICATIONS

Figure 4 and Figure 5 identify the Cisco AC/DC Power Solution's major systems and subsystems.

Figure 4

Front View of Cisco AC/DC Power Solution (Large Configuration)

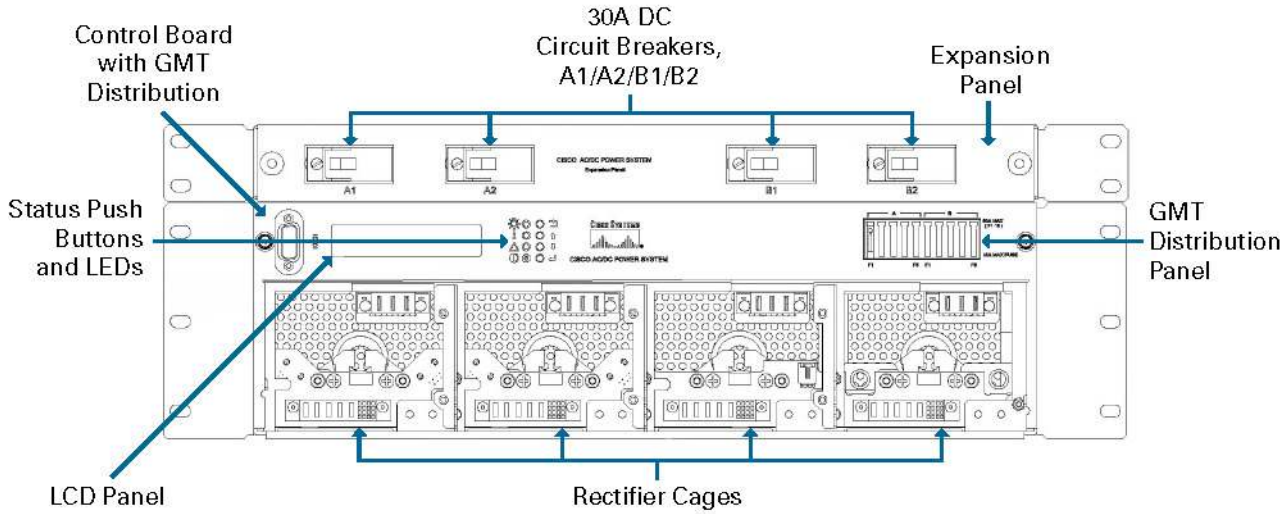

Figure 5

Rear View of Cisco AC/DC Power Solution (Large Configuration)

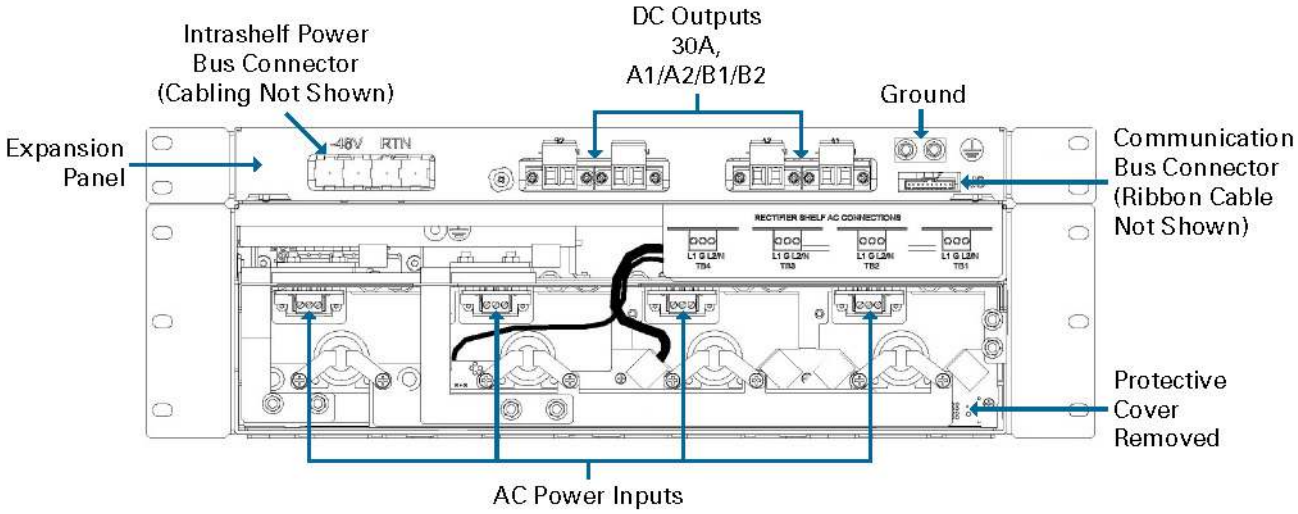

Table 3 through 9 outline the product specifications for the Cisco AC/DC Power Solution.

Table 3. Distribution Specifications

Parameter	Small Configuration	Medium Configuration	Large Configuration
Solution requires	Shelf assembly with control board with GMT-type distribution 2 rectifier modules 4 AC IEC power cables	Shelf assembly with control board with GMT-type distribution Expansion panel with 2 circuit breakers 3 rectifier modules 4 AC IEC power cables	Shelf assembly with control board with GMT-type distribution Expansion panel with 4 circuit breakers 4 rectifier modules 4 AC IEC power cables
Solution output power (–48 VDC)	13.3A at 110/120 VAC input 32A at 208/220 VAC input	26.6A at 110/120 VAC input 64A at 208/220 VAC input	40A at 110/120 VAC input 96A at 208/220 VAC input
DC fusing: GMT-type	10 positions (five A-side and five B-side) 15A (maximum per fuse) 50A (maximum for GMT-type distribution block)	Same	Same
DC fusing: Circuit breakers	Not applicable	Two positions (one A-side and one B-side) 30A 100A (maximum for expansion panel)	Four positions (two A-side and two B-side) 30A 100A (maximum for expansion panel)
Cabling, –48 VDC output, GMT-type (user-supplied)	20 American Wire Gauge (AWG) to 14AWG (0.8-mm to 1.6-mm) cables—15A maximum capacity Up to 10 cables	Same	Same
Cabling, –48 VDC output, circuit breaker (user-supplied)	Not applicable	12 AWG to 8 AWG (2.1-mm to 3.3-mm) cables—30A maximum capacity Up to 2 cables	12 AWG to 8 AWG (2.1-mm to 3.3-mm) cables—30A maximum capacity Up to 4 cables

Table 4. AC Input Specifications

Commercial Power	AC Input Cable	AC Cable Rating	Required AC Breaker Size (user supplied)
110/120 VAC	Individual Phoenix style, 14 AWG (2.0 mm) per AC input (see Table 8 for selecting appropriate AC cable for country specific connections)	9.1A	15A per AC power feed (maximum 4)
208/220 VAC		9.1A	15A per AC power feed (maximum 4)

Table 5. Rectifier Module Specifications

Parameter	110/120 VAC Operation	208/220 VAC Operation
AC input voltage	85 to 185 VAC	185 to 250 VAC
DC output voltage	–50 VDC constant output	
Maximum wattage	675W	1600W
Cooling	Fan-cooled, speed-controlled, alarmed	

Table 6. Platform Specifications

Parameter	Small Configuration	Medium Configuration	Large Configuration
Dimensions (W x H x D)	19 x 5.25 x 10.8 in. 483 x 133.4 x 274 mm	19 x 7 x 10.8 in. 483 x 177.8 x 274 mm	19 x 7 x 10.8 in. 483 x 177.8 x 274 mm
Weight	32 lb (14.5 kg)	47.2 lb (21.4 kg)	52.1 lb (23.6 kg)
Mounting	ANSI 19-inch or 23-inch, ETSI, IEC		
AC cable entry	Rear		
DC cable entry, GMT-type	Side entry through cable trough		
DC cable entry, circuit breaker	Not applicable	Rear of 1-rack unit (RU) high DC distribution expansion panel	Rear of 1-RU high DC distribution expansion panel
Operating temperature	–40 to 131°F (–40 to 55°C) (>2000m/6500 ft)		
Storage temperature	–58 to 185°F (–50 to 85°C) (<2000m/6500 ft)		
Humidity	10 to 90%, noncondensing		
Audible noise	<60 dBA		

Table 7. Alarm Specifications

Parameter	Value
Contact closure	Dry contact
Alarm 1	Low system voltage
Alarm 2	AC main failure
Alarm 3	Rectifier-module failure
Alarm 4	Fuse or circuit-breaker failure

Table 8. AC Cable Specifications

Country	Connection Type
Argentina	220 VAC
Australia	230 VAC
China	220 VAC
European Union	230 VAC
Italy	230 VAC
Japan	100 VAC
United Kingdom	230 VAC
United States (110 VAC)	110/120 VAC
United States (220 VAC)	220/240 VAC

Table 9. Regulatory Certifications

Parameter	Specification
Radiated EMC	EN 61000-6-2, EN 61000-6-3, FCC Part 15, Class B
EMC	EN 61000-6-2, EN 61000-6-4
Safety	CSA C22-2 No. 950, UL 1950 and IEC60950/EN 60950
ESD Immunity	EN61000-4-2
RF Immunity	EN61000-4-3
Surge Immunity	IEC/EN61000-4-5
Fast Transient/Burst Immunity	IEC/EN61000-4-4
NEBS	Level 3, Class B Certification
ETSI	300-386-TC

ORDERING INFORMATION

Table 10 provides ordering information for the Cisco AC/DC Power Solution. To place an order, visit the Cisco Ordering Home Page.

Table 10. Ordering Information

Product Name	Part Number
Cisco AC/DC Power Solution, assemble to order (ATO)	CSCO-ACDC-SYS
Expansion Class Options for ATO	
SMALL SYSTEM – CORE Small system includes the following equipment: • 1 x shelf assembly including control board with GMT-type distribution (CSCO-SM-PWR-SA) • 2 x rectifier modules (CSCO-PWR-RECT) • 1 x ship kit type 1 (CSCO-SHP-KIT-1) Choose one power cable type from the available option classes • 4 x AC power cables (CSCO-PWR-CBL-xxx)	CSCO SMALL SYS OPT
MEDIUM SYSTEM • 1 x shelf assembly including control board with GMT-type distribution (CSCO-SM-PWR-SA) • 3 x rectifier modules (CSCO-PWR-RECT) • 1 x ship kit type 1 (CSCO-SHP-KIT-1) • 1 x expansion panel with two 30A circuit breakers in A1/B1 positions (CSCO-EXP-PANEL) • 1 x ship kit type 2 (CSCO-SHP-KIT-2) Choose one power cable type from the available option classes • 4 x AC power cables (CSCO-PWR-CBL-xxx)	CSCO MED SYS OPT

Product Name	Part Number
LARGE SYSTEM • 1 x shelf assembly including control board with GMT-type distribution (CSCO-SM-PWR-SA) • 4 x rectifier modules (CSCO-PWR-RECT) • 1 x ship kit type 1 (CSCO-SHP-KIT-1) • 1 x expansion panel with two 30A circuit breakers in A1/B1 positions (CSCO-EXP-PANEL) • 1 x ship kit type 2 (CSCO-SHP-KIT-2) • 2 x 30A circuit breakers, one for position A2 and one for position B2 (CSCO-CKT-BRK) Choose one power cable type from the available option classes • 4 x AC power cables (CSCO-PWR-CBL-xxx)	CSCO LARGE SYS OPT
Spares	
Shelf assembly with control board and GMT-type distribution	CSCO-SM-PWR-SA=
Rectifier module, plug-in, 13.3A at 110 VAC, 32A at 220 VAC, Cisco AC/DC Powering Solution	CSCO-PWR-RECT=
Expansion panel including two 30A circuit breakers installed in A1/B1 positions, Cisco AC/DC Power Solution	CSCO-EXP-PANEL=
Circuit breakers, 30A, x 1, includes installation document, Cisco AC/DC Power Solution	CSCO-CKT-BRK=
Control board	CSCO-CNTRL-BRD=
Ship kit type 1 for shelf assembly, includes 3 sets of mounting brackets, 19-in., 23-in., and ETSI, eight GMT-type fuses (two 15A, two 10A, two 5A, and two 2A), system documentation, Cisco AC/DC Power Solution	CSCO-SHP-KIT-1=
Ship kit type 2 for expansion panel, includes 3 sets of mounting brackets, 19-in., 23-in., and ETSI, Cisco AC/DC Power Solution	CSCO-SHP-KIT-2=
AC power cable, Argentina, Cisco AC/DC Power Solution	CSCO-PWR-CBL-ARG=
AC power cable, Australia, Cisco AC/DC Power Solution	CSCO-PWR-CBL-AUS=
AC power cable, China, Cisco AC/DC Power Solution	CSCO-PWR-CBL-CHN=
AC power cable, European Union nations, Cisco AC/DC Power Solution	CSCO-PWR-CBL-EU=
AC power cable, Italy, Cisco AC/DC Power Solution	CSCO-PWR-CBL-ITL=
AC power cable, Japan, Cisco AC/DC Power Solution	CSCO-PWR-CBL-JPN=
AC power cable, United Kingdom, Cisco AC/DC Power Solution	CSCO-PWR-CBL-UK=
AC power cable, 110 VAC North America, Cisco AC/DC Power Solution	CSCO-PWR-CBL-NA1=
AC power cable, 220 VAC North America, Cisco AC/DC Power Solution	CSCO-PWR-CBL-NA2=

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WARRANTY INFORMATION

The Cisco AC/DC Power Solution provides an industry-leading, 5-year hardware warranty. For more details on Cisco warranty information, please visit: http://www.cisco.com/en/US/products/prod_warranties_item09186a00801e7cdc.html

FOR MORE INFORMATION

For more information about the Cisco AC/DC Power Solution, visit: http://www.cisco.com/en/US/products/ps6063/index.html or contact your local account representative.

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