

CPS4048+ (48 V Cabinet Power System) 19-Inch (483mm) Shelf

3300W (60A) Temperature Hardened System

Input: 208 Vac to 265 Vac (autoranging)

**Output: -48 Vdc
(up to 60 Amps)**



Model J85500R-3

The low-maintenance, outside-plant CPS4048+ integrates advanced technology in an extremely efficient modular design capable of a variety of combinations in either stand-alone or multiple-shelf configurations. It is part of the CPS4000 family which includes a 48V, 23in. (584mm) shelf and a 24V version. The CPS4048+ is ideally suited for today's fast-growing remote telecom applications, particularly those in harsh environments.

Wide Temperature Range

The CPS4048+ incorporates temperature-hardened electronics and is suitable for use in remote applications at a wide temperature range, -40°C to +65°C (-40°F to +149°F), with excursions up to +75°C (167°F).

Multiple Configurations

The CPS4048+ in a 19 inch shelf is available in the following configurations:

- A rectifier plant capable of providing 48V power with a load range of up to 60A in a single 19 inch shelf and up to 120A in a two-shelf plant.

- A rectifier/ringer plant in which 48V rectifiers provide load power and also power 50 VA or 100 VA ringers. Two half-width ringers may be installed in the first rectifier shelf slot to provide 50 VA or 100 VA of redundant ringing power.

Plug-In Modules

The available plug-in power modules consist of the following:

- -48V, 15A rectifier, 88.5% efficient
- 50 VA or 100 VA ringing generator, at 20 Hz or 25 Hz.
- Alarm and Control Unit
- Distribution modules

CPS4048+ offers low-voltage battery disconnect and thermal management as optional battery-management features.

Applications

- Digital loop carrier cabinets
- Remote switching cabinets
- Personal communications services (PCS/GSM)
- Fiber-in-the-loop power node cabinets
- Intelligent Vehicle Highway System (IVHS)

Benefits

- Maximum Design Efficiency
 - The CPS4048+ increases power density and flexibility by incorporating four power modules in one shelf measuring 8.75 inch (223mm) high by 12 inch (305mm) deep.
 - Power modules, alarm module, low-voltage battery disconnect contactor, and battery thermal compensation are all housed in one compact shelf.
 - Modular growth capabilities of the CPS and distribution system means the initial system can be engineered to meet immediate power requirements and grow incrementally as system power demand increases.
 - All equipment is front-accessible, ideally suited for use in cabinets and other space-restrictive environments.
- Cost Efficiency
 - Unique, lightweight components and front-access system architecture reduce installation and maintenance time and expense.
 - Near-unity power factor corrected rectifiers with improved efficiency can result in lower utility costs.
 - Incremental system expansion can minimize initial purchase outlay.
- Enhanced Reliability
 - The CPS4048+ Battery Plant has been designed using switchmode technology, strictly controlled manufacturing processes, and the highest quality standards to ensure excellent performance, superior reliability, and an extended service life.
- Continuous Operation
 - Hot-pluggable rectifiers can be easily added to the system without any interruption of service.
- System Safeguards
 - Low-voltage battery disconnect and thermal management options provide protection for using equipment and batteries.
 - All equipment is designed to withstand Telcordia NEBS Zone 4 earthquake conditions (except the IR30C and IR40C battery trays).

- EMI Performance
 - The power systems EMI performance is CISPR Class A.
 - The CPS4048+ can be deployed in EMI-sensitive sites such as customer premise cabinets.
- Safety/Standards Compliant
 - UL* Listed, CUL Listed, and VDE† Licensed.
 - CE Marked.

Rectifier

- Model ES660C rectifier in the 19-inch shelf, operates from a nominal 200/208/240 Vac source (autoranging) and provides 48/52/54.5 Vdc at 15A over the temperature range -40°C to +65°C
- Meets telecommunications power needs within the 15A to 120A range with capacity upgrades from one rectifier in a single shelf to two shelves with eight rectifiers

Controller

Model ES647B controller provides monitor and control of plant functions, issues plant alarms, alarm LEDs, provides battery thermal management and sets plant parameters.

Ringing Generator

- The CPS4048+ can accommodate two half-width ringing generators that occupy half slots in the left-most power slot:
 - ES620: 50 VA at 100 Vrms/ 20 Hz
 - ES620B: 50 VA at 75 Vrms/ 25 Hz
 - ES621: 100 VA at 100 Vrms/ 20 Hz
 - ES621B: 100 VA at 90 Vrms/20 Hz
 - ES622B: 100 VA at 80 Vrms/25 Hz
 - ES622C: 100 VA at 100 Vrms/ 20 Hz

* **UL** is a registered trademark of Underwriters Laboratories, Inc.

† **VDE** is a registered trademark of Verband Deutscher Elektrotechniker E.V.

Distribution Modules

- All CPS4000 distribution modules may be used with the 19-inch CPS4000 shelf. Three in-shelf distribution options are available; all take one full power module slot:
 - ES610 module provides 12 primary bus outputs protected by GMT-type fuses.
 - ES611 module provides six primary bus outputs; four are protected by 3A to 30A circuit breakers, and two by GMT-type fuses.
 - The ES613 module provides 12

CPS4048+ 19-Inch Shelf (48V Cabinet Power System)

secondary bus outputs protected by 1/4A to 10A GMT-type fuses. For more information on distribution panels refer to the ED83135-30 datasheet.

Battery

- Accepts up to four strings of Tyco IR or VR batteries. The CPS4048+ can also be configured to work with most VRLA batteries.
- The option for temperature compensating the battery float voltage over the temperature range of -20°C to +55°C (ES647B EURO Mode) or 25°C to 55°C (ES647B NFTA Mode) is being offered. This switch-selectable option will provide a higher float voltage for temperatures below 20°C. (EURO) By boosting the float voltage as battery temperatures decrease, the battery capacity reduction at low temperatures can be minimized. The conventional slope thermal compensation from 25°C to 55°C (NFTA) is a switch-selectable alternative.

Safety Requirements

Shelves equipped with rectifiers and/or ringers are **UL** Listed per subject letter 1801: "Power Distribution Center for Communication Equipment."

Rectifiers* and ringers are recognized per **UL**1950 and **CSA**† 22.2 950 Certified and **VDE** Licensed to EN 60950/IEC 950. The plant primary output voltages meet SELV requirements.

Product must be installed only in restricted-access areas in accordance with Articles 110-16, 110-17, and 110-18 of the **National Electric Code**‡, ANSI/NFPA Number 70 or per applicable local codes where the steady-state ambient temperature does not exceed 65°C with excursions to 75°C. The output voltage of the ES660C rectifiers and the rectifier output of CPS shelves meet SELV requirements per **UL**1950 and IEC950.

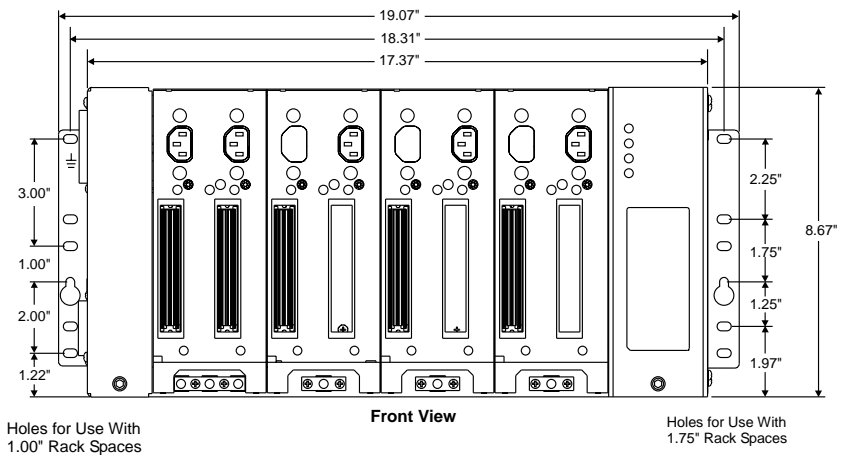
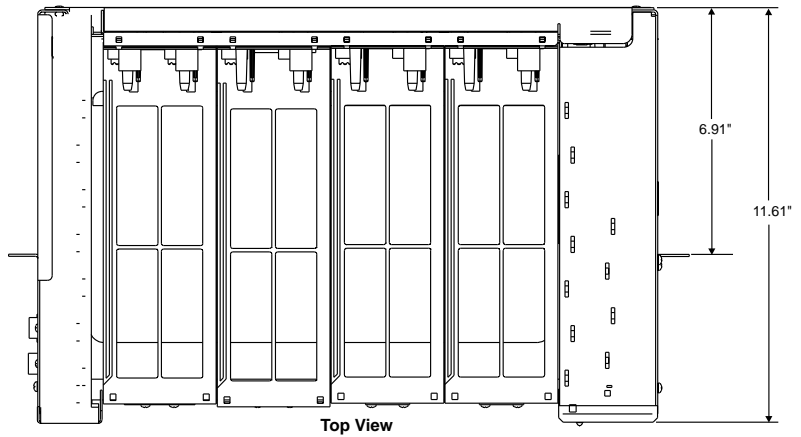
Secondary output can be equipped with ringers with outputs >60 Vdc (not evaluated for **VDE**).

* ES660C rectifiers are intended for integration into end-user equipment. All required procedures for CE Marking of end-user equipment should be followed.

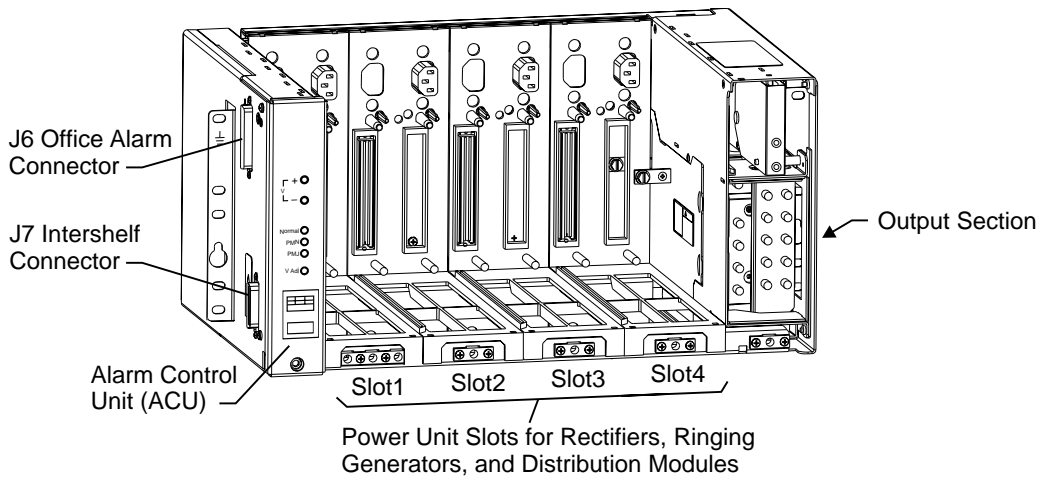
† CSA is a registered trademark of Canadian Standards Association.

‡ **National Electrical Code** is a registered trademark of the National Fire Protection Association.

Outline Drawings



CPS 48 V 19 in. Cabinet Power System



CPS4048+ 48 V 19 in. Cabinet Power System,
Standard Shelf

Specifications

CPS4048+ 48 V Cabinet Power System

Plant	One or two shelves per plant: One initial or master shelf per plant One supplementary or slave shelf per plant
Power Slots	Four power slots per shelf; maximum of eight power slots per plant
Plant Architecture	One primary output power bus per shelf; maximum of 60 A, per shelf One secondary output power bus per shelf for ringing generators
Input Distribution:	
Primary Bus	Dual ac feed, one feed for even numbered slots and one feed for odd numbered slots
Secondary	Four ac feeds, feeds to slots one through four Single feed on the primary bus provides dc input power ringer
Output Distribution:	
Primary Bus	Bulk power outputs (to loads or distribution and protection panels): double-hole lugs Battery inputs: double-hole lugs to terminate four battery strings
Secondary Bus	Panel-mounted mate-n-lock connector for ringer outputs
Protection and Distribution:	
Primary Bus	ES610 plug-in protection and distribution module: 12 GMT-type fuses; module output limited to 25 A ES611 plug-in protection and distribution module: four circuit breakers available from 3 A to 30 A, and two GMT-type fuses Remote protection and distribution modules; fuses or circuit breakers
Secondary Bus	ES613 plug-in and distribution module: 12 GMT-type fuses Remote protection and distribution modules; fuses or circuit breakers
Maximum Recharge Current	Installed plant 48 V rectifier capacity minus plant 48 V load
Low-Voltage Disconnect	40.5 V \pm 0.5 V or 42 V \pm 0.5 V (selectable)

Electrical and Thermal

Efficiency (Rectifier)	88.5% typical at 208 Vac/240 Vac
Power Factor	>0.98 for loads >60% full load
Regulation	\pm 0.5%
ac Drain (per Rectifier)	5.1 A at 180 Vac; 3.8 A at 240 Vac
Temperature Range	-40 °C to +65 °C (-40 °F to 149 °F)

Environmental

Altitude	-200 ft. to +13,000 ft. (-61 m to +3962 m) For altitudes above 5000 ft, derate the temperature by 3.6 °F per 1000 ft. For altitudes above 1524 m, derate the temperature by 0.656 °C per 100 m
Humidity	10%—95% noncondensing
Audible Noise	<65 dBA measured from 2 ft. or 0.6 m from one-shelf plants

Specifications (continued)

Safety/Standards Compliance

Electrostatic Discharge	IEC 801-2 Level 3, EN 61000-4-2
Radiated and Conducted Emissions	CISPR 22, Class A
Electromagnetic Immunity	Meets Bellcore GR-001089-CORE
Earthquake Rating	Zone 4, upper floors
Rectifier Shelf Equipped With Rectifiers	UL Listed per Subject Letter 1801: "Power Distribution Center for Communications Equipment," UL certified to CSA 22.2 60950-00 VDE Licensed per EN 60950
Rectifiers	Recognized per UL 60950 and CSA 22.2 60950-00; VDE Licensed to IEC60950 CE Marked (meets 73/23/EEC as amended by 93/68/EEC directives)

Physical	Depth	Width	Height	Weight
Rectifier	10.75 in. (273 mm)	3.2 in. (61 mm)	8.75 in. (222 mm)	10 lb. (4.5 kg)
Single-Shelf Plant	12 in. (305 mm)	17.3 in. (438 mm)	8.75 in. (222 mm)	20 lb. (9.2 kg)
Single-Shelf Plant w/Four Rectifiers	12 in. (305 mm)	17.3 in. (438 mm)	8.75 in. (222 mm)	60 lb. (27.2 kg)

* Weights assume one distribution panel, one CPS4048+ with five rectifiers, and batteries. For a second CPS4048+ shelf, add 85 lbs.

Ordering Information

CPS4048 PLUS 48V /19 Inch

Shelf Description	Model	Comcode
48 V shelf, two ac feeds with twist lock plugs, slope thermal mgmt	J85500R3 L4, 25R, 37A	108960949
48 V shelf, four ac feeds with NEMA plugs	J85500R3 L4,21R,37A	108967068
48 V shelf, two ac feeds with twist lock plugs, LVD	J85500R3 L4,25R,36	108964784
48 V shelf, two ac feeds with twist lock plugs, supplementary shelf	J85500R3 L4, 25RB, 34	108960931
48 V, 15A Rectifier	ES660C	108286055
Alarm Control Unit	ES647B	108960295
50 VA at 100 Vrms/20Hz Ringing Generator	ES620	107138679
50 VA at 75 Vrms/25Hz Ringing Generators	ES620B	107864845
100 VA at 90 Vrms/20Hz Ringing Generator	ES621B	108276601
100 VA at 80 Vrms/25Hz Ringing Generator	ES622B	108407909
100 VA at 100 Vrms/20Hz Ringing Generator	ES622C	108541517
Distribution Module	ES610	107266397
Distribution Module	ES611	107502825
Distribution Module	ES613	107966616
LVD Circuit Pack Replacement for shelf J85500R3 L4, 25R, 36	BSP2	107332984
Thermistor Kit Assembly		847198751
ACU Slot Cover		847345576
dc Fan Cradle Assembly		847244100

Related Product Literature

Document Title	Document Number
CPS4024+, +24V Cabinet Power System	DS03-037
CPS4000 Plug-In Distribution Modules	DS03-036
CPS4048+, 48V 23-Inch Cabinet Power System	DS03-038
ED83135-30 Distribution Panel	DS03-014



World Wide Headquarters

Tyco Electronics Power Systems, Inc.
3000 Skyline Drive, Mesquite, TX 75149, USA
+1-800-843-1797
power.tycoelectronics.com
email: techsupport1@tycoelectronics.com

Europe, Middle-East and Africa Headquarters

Tyco Electronics (UK) Ltd
Tel: +44 (0) 1344 469 300, Fax: +44 (0) 1344 469 301

Caribbean-Latin America-Brazil Headquarters

Tyco Electronics Power Systems
Tel: +56 2 209 8211, Fax: +56 2 223 1477

Asia-Pacific Headquarters

Tyco Electronics Singapore Pte Ltd
Tel: +65 6416 4283, Fax: +66 6416 4299

India

Tyco Electronics Systems India Pte Ltd
Tel: +91 80 841 1633 x3001

Tyco Electronics Corporation reserves the right to make changes to the product(s) or information contained herein without notice. No liability is assumed as a result of their use or application. No rights under any patent accompany the sale of any such product(s) or information.

©2003 Tyco Electronics Power Systems, Inc., (Mesquite, Texas) All International Rights Reserved.
Printed in U.S.A.

July 2003
DS03-039 Rev 2