COMMSCOPE®

User Manual

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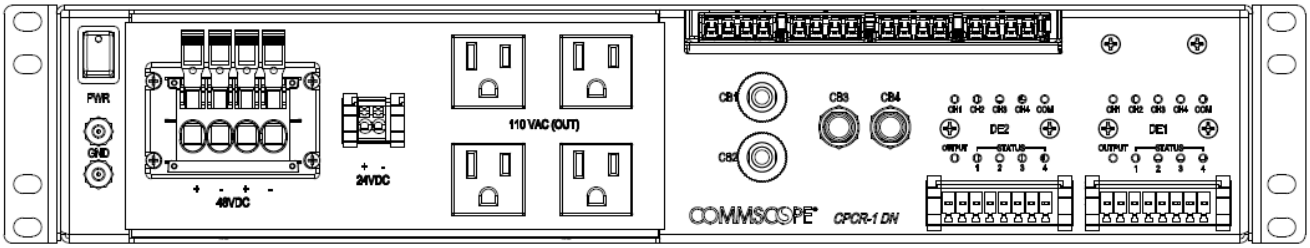
Constellation™ Rackmount Chassis (CPCR-1)



Constellation Rackmount Chassis

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1 INTRODUCTION

Constellation™ delivers power and data over extended distances using a powered fiber cable. The power and data are delivered to the Constellation Powered Backplane (CPCB-1) for ceiling mounted environments or to the Constellation Rackmount Chassis (CPCR-1) for 19” equipment environments.

This user manual describes the Constellation Rackmount Chassis (CPCR-1) for 19” equipment environments. Contents of this manual include a description of these two products and procedures for unpacking and installation.

1.1 Trademarks

CommScope (logo), **CommScope**, **Constellation**, and **Propel** are trademarks of CommScope, Inc.

1.2 Important Safety Cautions

When installing or operating the Constellation Rackmount Chassis (CPCR-1), observe these safety cautions:

- To reduce the risk of fire, electric shock, and injury to persons, read, understand, and adhere to the following instructions as well as any warnings marked on the product.
- This product has a remote risk of electric shock. Never install the product in wet conditions or during lightning storms. Never touch uninsulated power wires or terminals.
- This product is intended for indoor or environmentally controlled spaces.
- Wearing safety glasses during installation of this panel is recommended.
- All wiring that connects to this equipment must meet applicable local and national building codes and network wiring standards.

1.3 Standards Certification

The CommScope Constellation power source is a Limited Power Source per IEC/UL/CSA 62368-1 suitable for supplying a Class 2 circuit under NEC Art. 725 and CEC Rule 16-200.

Note: Always follow local codes.

1.4 Constellation Products

Table 1 lists currently available Constellation products with catalog numbers and Material IDs (MIDs).

Table 1. Constellation Products

PRODUCT	CATALOG #	MID
Power Transmitter	CPCX-12	760254285
Management Module	CTX-MGT	760254286
Power Supply	CPM-3K	760254287
Transmitter Card	CTX-6	760254288
Power Transition Panel	CPT-PP-48C	760254293
Power Patch Cable	CTX-CBL-10	760254294
Powered Backplane	CPCB-1	760252855
Edge Enclosure	CPCE-1	760252854
Rackmount Chassis (single input; NAR)	CPCR-1 SN	760258034
Rackmount Chassis (dual input; NAR)	CPCR-1 DN	760258036
Rackmount Chassis (single input; INT)	CPCR-1 SI	760258035
Rackmount Chassis (dual input; INT)	CPCR-1 DI	760258037
Powered Fiber Cable	Configured to order	CTO
Power Supply Bay Cover	PM500-COVER	760254642

1.5 Constellation Publications

Table 2 lists technical publications available for the Constellation system. These manuals can be accessed online using the QR code on the product, its packaging, or by contacting the CommScope Support Center at https://www.commscope.com/SupportCenter.

Table 2. Constellation Technical Publications

PUBLICATION TITLE	PUBLICATION #
Constellation Power Transition Panel (CPT-PP-48C) User Manual	TC-96354-IP
Constellation Transmitter Card (CTX-6) Data Sheet	TC-96344-IP
Constellation Power Supply (CPM-3K) Data Sheet	TC-96345-IP
Constellation Multi-Chassis Synch Card (CMX-6) Quick Start Guide	TC-96346-IP
Constellation Power Supply Bay Cover (PM500-COVER) Data Sheet	TC-96347-IP
Constellation Management Software for Transmitters User Manual	TC-96348-IP
Constellation Edge Enclosure (CPCE-1) and Powered Backplane (CPCB-1) User Manual	TC-96350-IP
Constellation Best Practices Guide	TC-96352-IP
Constellation Power Transmitter (CPCX-12) Quick Start Guide	TC-96354-IP
Constellation Rackmount Chassis (CPCR-1 XX)	TC-TBD-TBD

1.6 Important Symbols

	Hazardous voltages are present when energized. Do not open this unit while it is energized.
	This symbol indicates the protective earth terminal for the device.
	This symbol indicates the supplementary ground terminal for the device.

2 PRODUCT DESCRIPTION

2.1 General Description

The Constellation Rackmount Chassis (CPCR-1) is 2RU chassis that accepts a powered fiber cable feed. It is part of the Constellation Fault Managed Power System and can supply up to 1.8 kW of power across the AC or DC outputs that can be used as desired to power elements in the same or nearby rack structure.

The CPCR-1 comes in four models. Figure 1 shows the CPCR-1 SN. Table 3 highlights the different options available in each model.

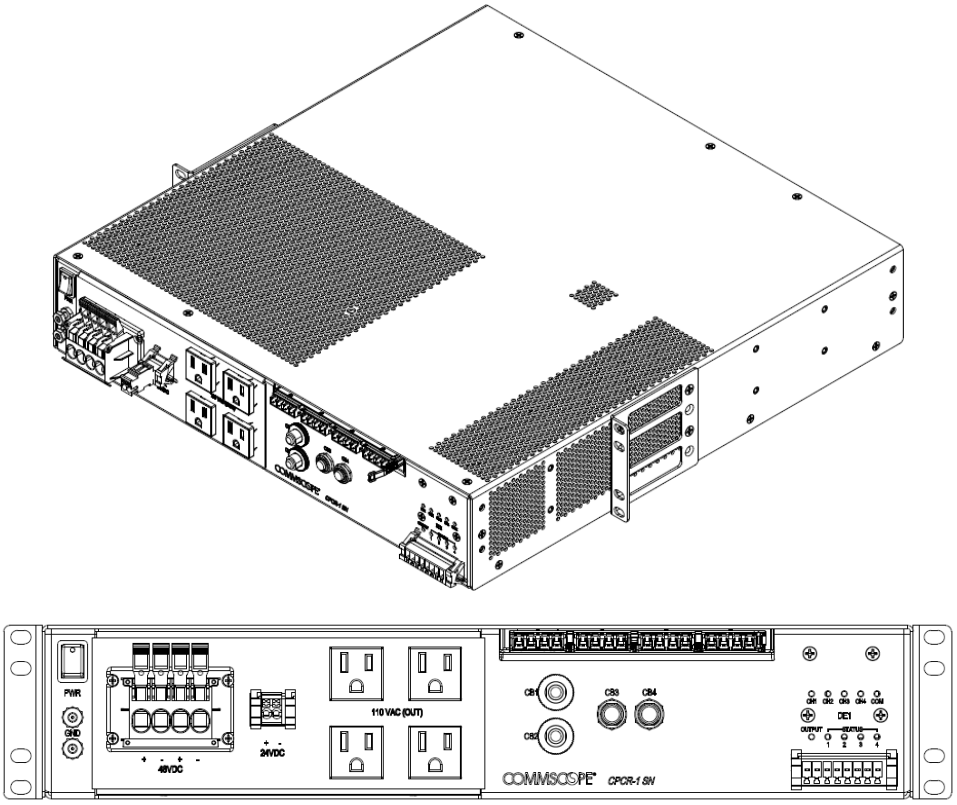

Figure 1. CPCR-1 SN – Single input North American rackmount chassis

Table 3. Rackmount Chassis Options

Model	Pout	VAC/PWR	AC (front)	AC (rear)	Inputs	48 VDC	24 VDC
CPCR-1 SN	1.8 kW	110 / 1 kW	NEMA 5-15	IEC C13	1	1.8 kW	240 W
CPCR-1 SI		230 / 1 kW	IEC C13		1		
CPCR-1 DN		110 / 1 kW	NEMA 5-15		2		
CPCR-1 DI		230 / 1 kW	IEC C13		2		

The CPCR-1 is reversible allowing for the positioning of power inputs and outputs that align with the intended environment. The CPCR-1 also provides a Propel compatible slot that enables convenient fiber breakout. The fiber slot is also reversible so that ease of access is ensured. The CPCR-1 SN and DN are equipped with mounting ears that accommodate installation in a traditional 19” rack. The CPCR-1 SI and DI are equipped with ETSI compatible mounting ears for 21” rack installations.

The mounting ears for the CPCR can be positioned at different locations on the side of the chassis so that the unit aligns with neighboring equipment.

Note: This user manual does not cover installation of non-CommScope equipment such as switches.

2.2 Rackmount Chassis (CPCR-1 XX)

2.2.1 Main Features

Figure 2 shows the enclosure as viewed from the front and rear

The main features are:

- **Basic Structure**—is a 2RU chassis equipped with power inputs on one side and power outlets on both the front and rear.
- **Cassette Bracket**—provides mounting locations for one 8- or 16-fiber Propel connection component. Mounting is accommodated on the front or rear of the chassis.
- **Power Outlets**—are available for powering local equipment. These outlets are described in more detail in Section 4.1 on page 10 and in other sections of this user manual.

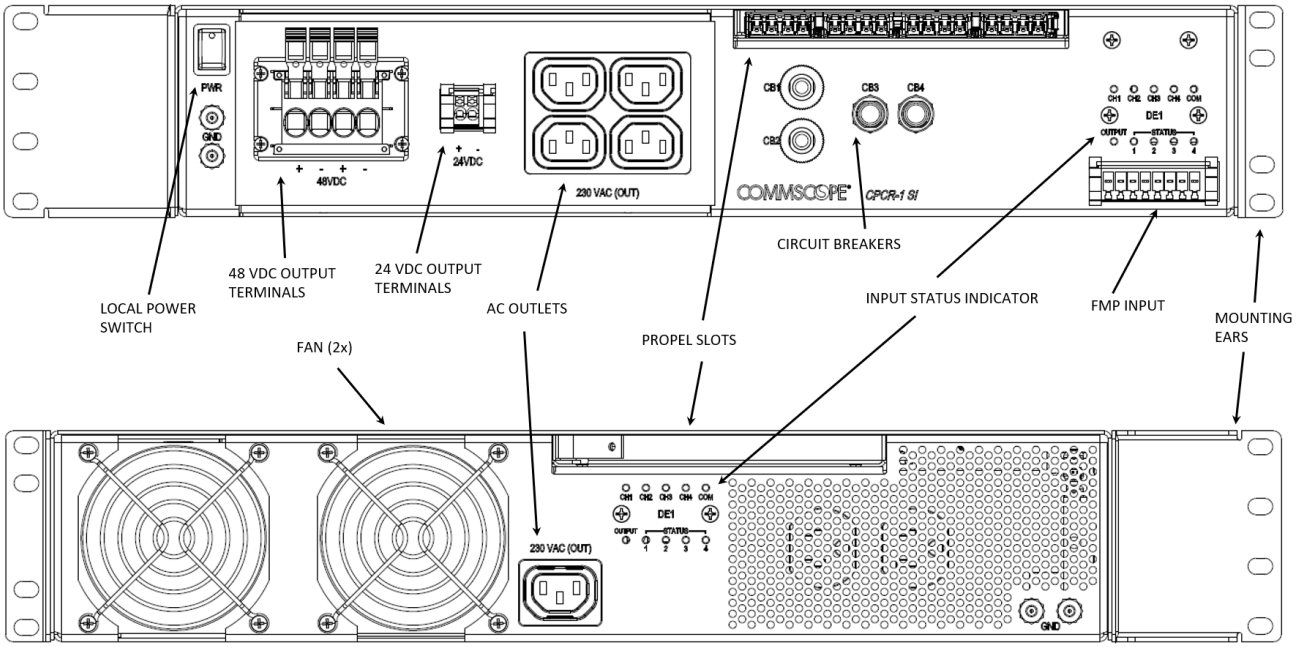

Figure 2. Main features of the CPCR-1 XX (CPCR-1 SI shown)

2.2.2 Dimensions

Figure 3 provides dimensions for the Rackmount Chassis (CPCR-1).

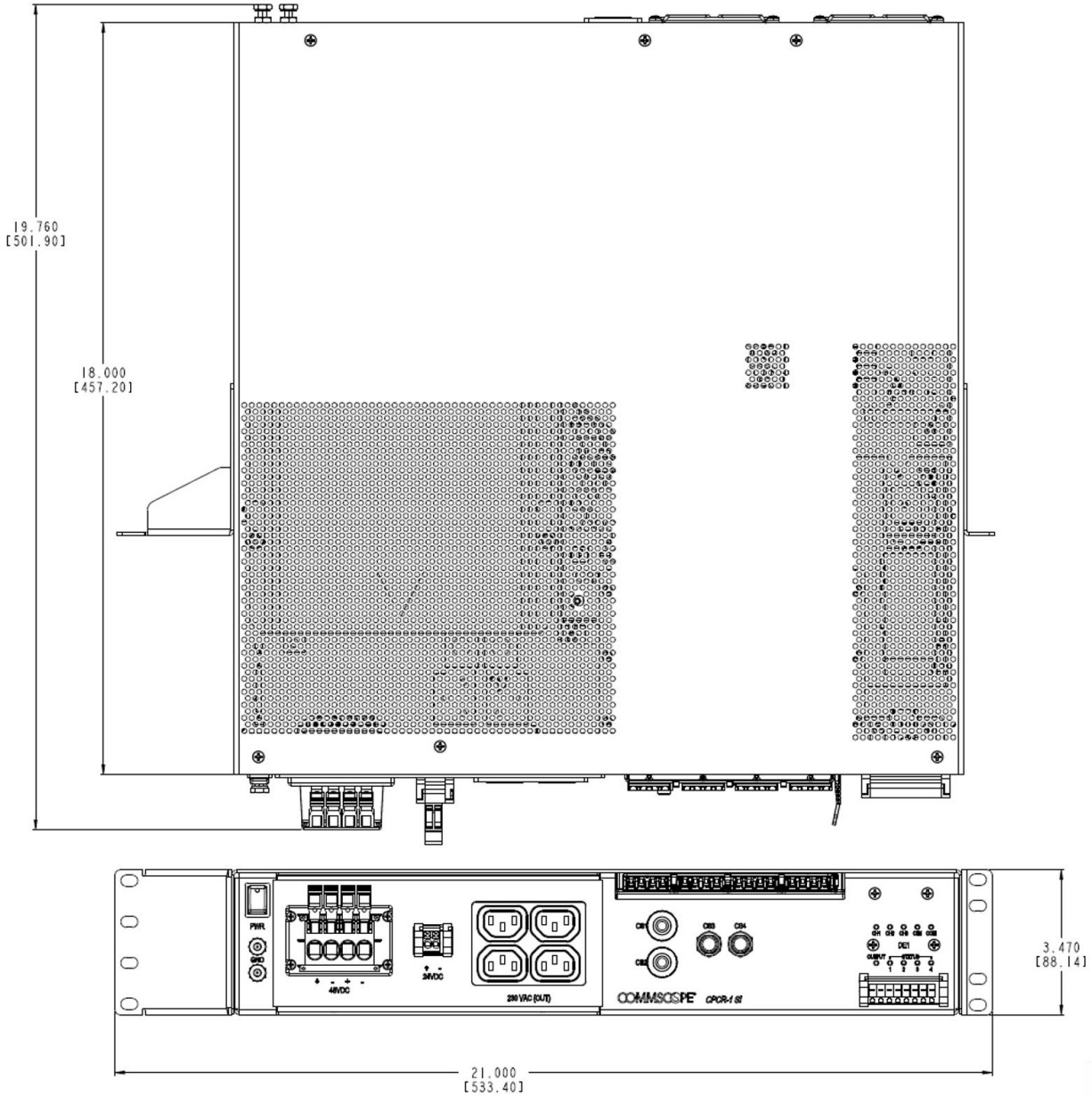

Figure 3. Dimensions of the CPCR-1 SI

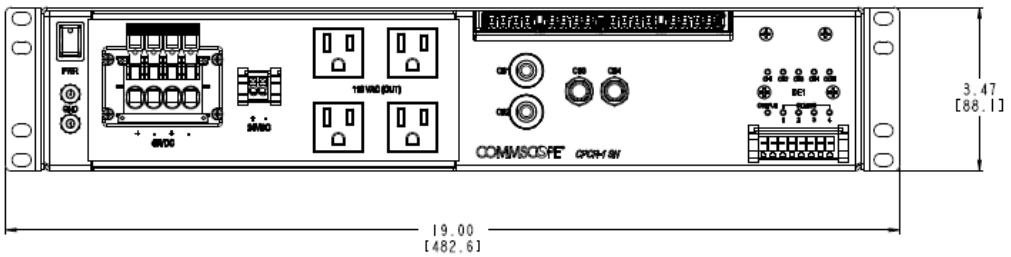

Figure 4. Dimensions of the CPCR-1 SN

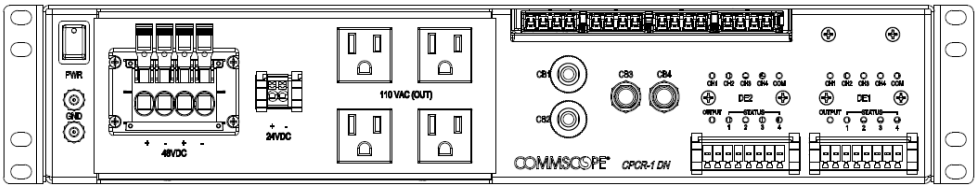

Figure 5. Image of the front of the CPCR-1 DN

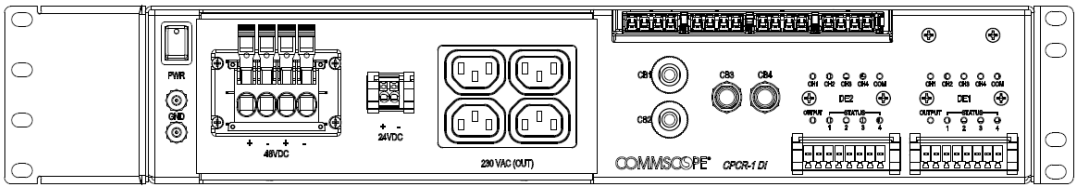

Figure 6. Image of the front of the CPCR-1 DI

- **110 VAC Outlets (available on the CPCR-1 SN and CPCR-1 DN)** —are used to direct power to elements mounted in the enclosure.
- **230 VAC Outlets (available on the CPCR-1 SI and CPCR-1 DI)** —are used to direct power to elements mounted in the enclosure.
- **PWR Switch**—can be toggled to enable or disable power to the VAC Outlets, 48 VDC Outputs, and 24 VDC Output. Toggling the switch does not affect the 12 VDC fans, which run continuously.

Note: The Rackmount Chassis can supply a total of 1.8 kW of power divided between the five VAC outlets, two 48 VDC outputs, and one 24 VDC output.

- **48 VDC Power Output**—Maximum power draw is 1.8 kW (40 A).
- **24 VDC Power Output**—Maximum power draw is 240 W (10 A).
- **110 / 230 VAC Power Output**—Maximum power draw is 1 kW (9 A / 4.3 A).

3 UNPACKING AND INSPECTION

3.1 Unpacking

Use the following procedure to unpack and inspect the product. The enclosure and backplane come in separate boxes. Verify parts against Table 4 below.

Table 4. Parts List for Rackmount Chassis

DESCRIPTION	QTY
Rackmount chassis	1
Mounting ears	2
Filter cage	1
Four-point support attachments (optional)	2

3.2 Inspection

1. Inspect the exterior of the shipping boxes for evidence of rough handling that may have damaged the components in the container.
2. Open the boxes and remove the items listed in Table 4 while carefully checking the contents for damage.
3. If damage is found or items are missing, contact the CommScope Support Center using the URL: http://www.commscope.com/SupportCenter
4. If damage is found, save the damaged components for inspection by the carrier.

4 OPERATION

4.1 Power Usage

Figure 4 provides detail on the power output ports including amperage and outlet style.

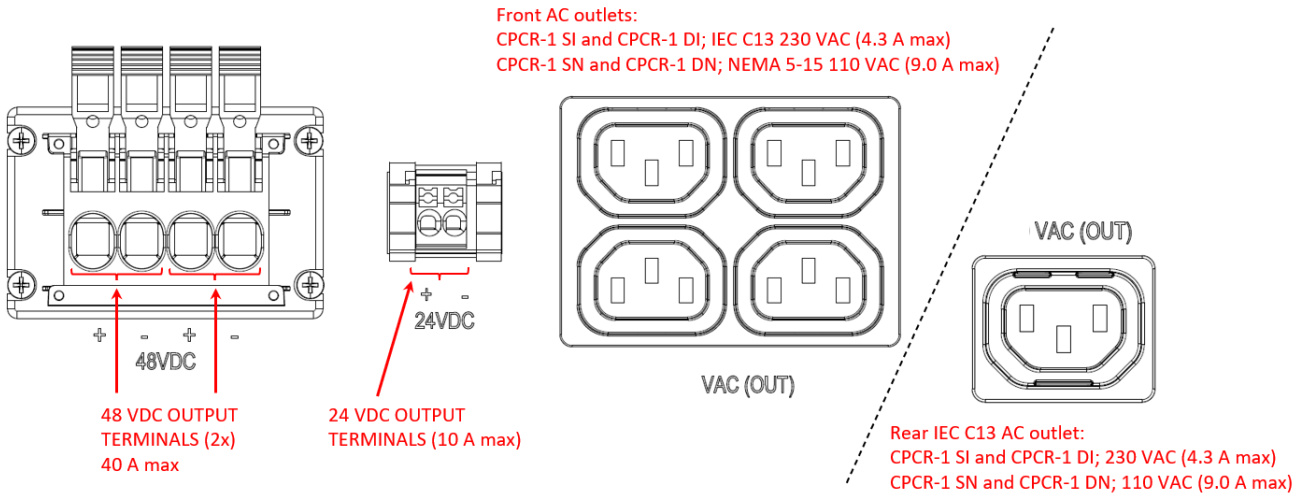

Figure 4. Output Power Detail

Caution! The enclosure is equipped with a PWR switch. When the switch is engaged, the AC and DC outputs are live. To disable these outlets, toggle the PWR switch. Toggling the PWR switch does not affect the 12 VDC fans, which run continuously.

4.2 General

The CPCR-1 is designed to safely power information technology and operational technology equipment. The enclosure is equipped with sensors that monitor the temperature of the CPCR-1. The CPCR-1 has a local power-down switch so that equipment supported by the rackmount enclosure can be powered down and removed or added without having to power down chassis remotely.

Note: Power up includes a short delay between when the incoming and outgoing power is established. This will be evident if the power to the enclosure is toggled off and on using the local power disable switch.

4.3 Circuit Breakers

There are four circuit breakers included on the exterior of the CPCR-1. These are intended to limit over-current events. If the maximum recommended output current drawn from the 24 VDC or 48 VDC outlets is exceeded, the circuit breakers will trip effectively shutting down those power ports. The circuit breakers are labeled with the amperage they support and can be reset by pressing the button that has tripped. Customers should be aware that a tripped breaker represents an operating condition that exceeds recommended current draw and should take steps to limit the current draw to less than the maximum. The maximum current draw from the 48 VDC output ports is 40 A. The maximum current draw from the 24 VDC output ports is 10 A.

4.4 Dual Input Chassis

The CPCR-1 DN and CPCR-1 DI are equipped with two power input ports. These units are equipped with a power balancing automatic transfer switch (PBATS) that draws its power from both sources. If one of the sources becomes disabled, power draw is shifted to the remaining source without disrupting the outputs. Once the disabled source is re-enabled, the power balancing circuit will return to drawing power from both sources.

The dual input chassis can also be used to extend the distance over which power can be supplied. In this mode, the PBATS is intended to operate as a dual-input non-redundant supply. At maximum power draw and extended distance, both input sources are required if maximum output power is to be maintained.

4.5 Power Distance Curves

This section is under review – TBD

4.6 Inrush Current

As with any circuit, there exists the possibility to activate the safety features of the CPCR-1 when connecting loads that draw a high startup or inrush current. The CPCR-1 has been designed with inrush currents in mind and is capable of handling inrush introduced by loads such as enclosure air conditioning units.

Introducing significant inrush current under load may activate the CPCR-1 over current protection circuit and force the unit into a safe-shutdown state. To restore the system to its normal operating state, de-energize the enclosure completely using the CPCX-12 management GUI, wait two minutes, and re-energize the enclosure using the same GUI.

4.7 Grounding

The CPCR-1 includes a double lug ground point on the front and rear of the chassis (Figure 8). These are electrically equivalent. One of these two points shall be connected to the same ground as the transmitter (CPCX-12). Grounding should be carried out in accordance with all local and national electric codes.

The Chatsworth Products Rack Bonding Busbar (PN: 10610-019) is recommended for customers who require a localized telecom ground.

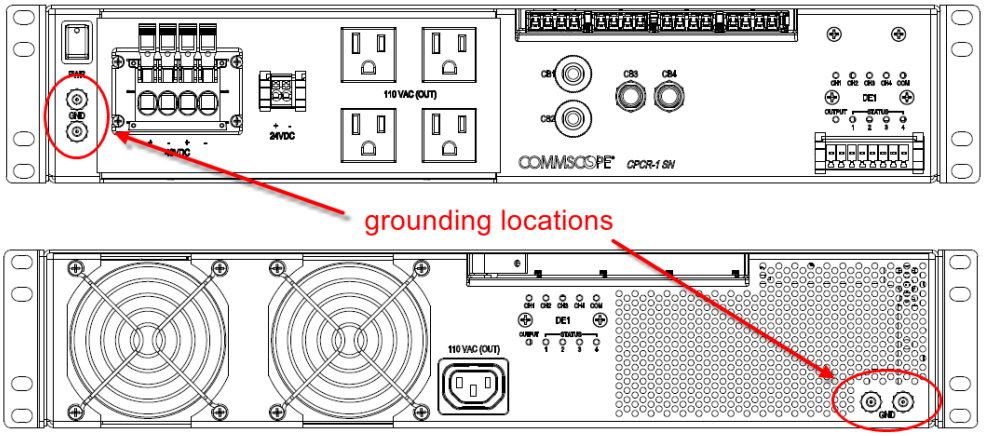

Figure 8. Grounding locations on the CPCR-1

4.8 Mounting

The CPCR-1 is supplied with mounting tabs or ears that are intended to support the unit when installed in a 19” or 21” rack. When supporting the unit at its midpoint, CommScope recommends the use of one set of mounting tabs. When supporting the unit at a point away from its midpoint, CommScope recommends employing four points of support. If the CPCR is to be employed in a dynamic application (mounted in a rack and shipped to its final destination), CommScope recommends the use of four points of support. Figures 9 and 10 illustrate the method of supporting the chassis from the midpoint and using four points of support respectively.

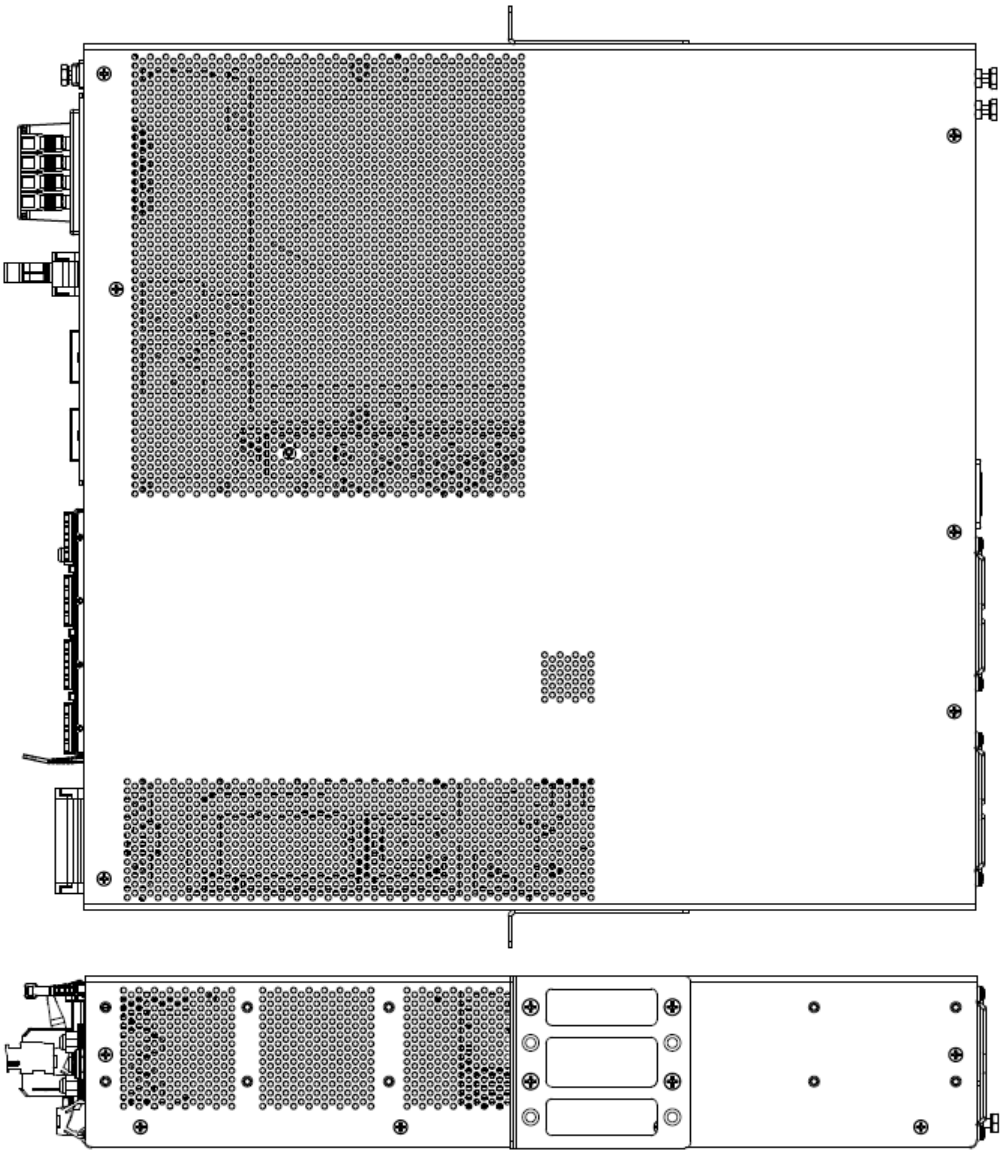

Figure 9. CPCR support at midpoint using two support tabs

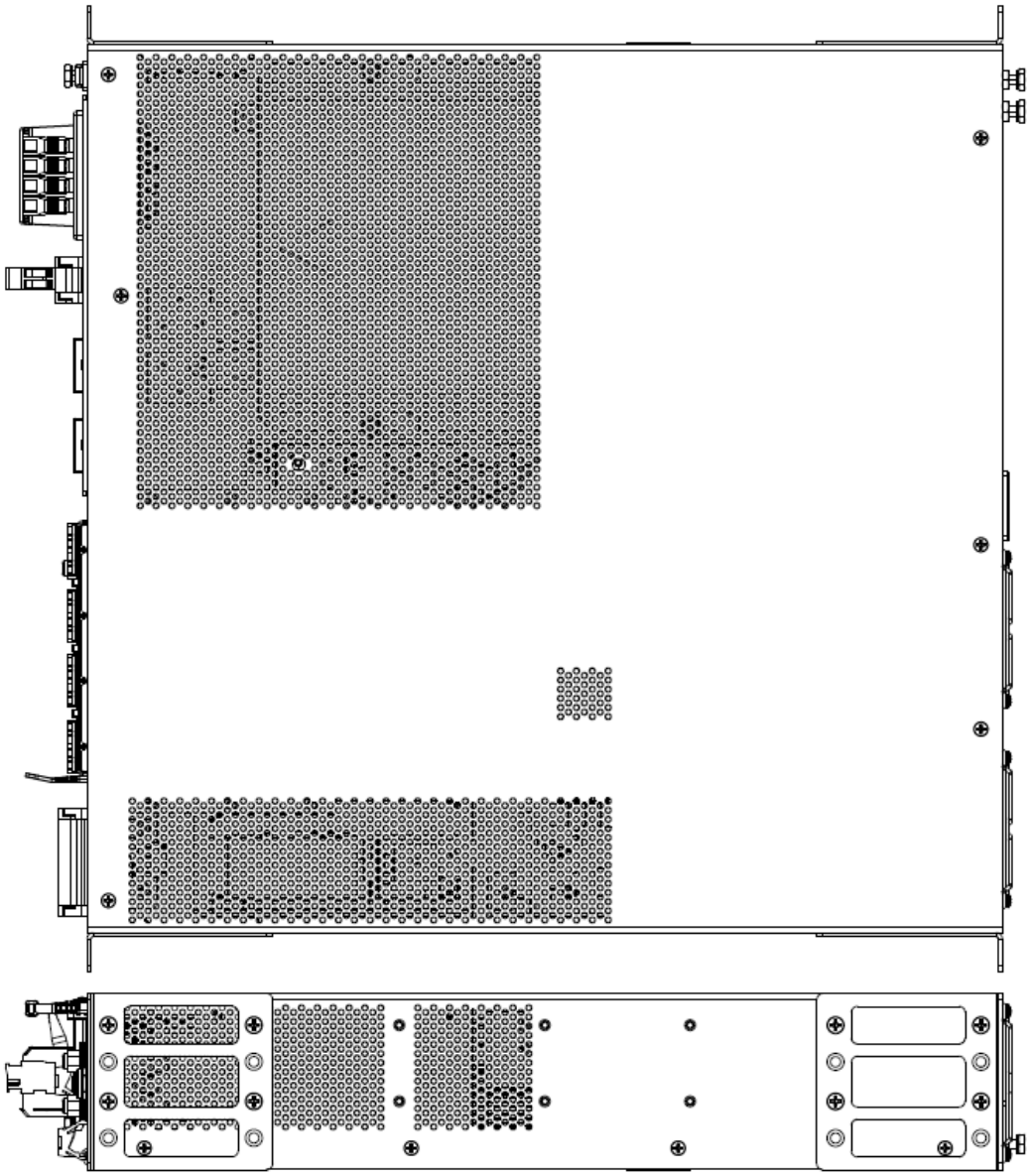

Figure 10. CPCR four-point support for dynamic/off-center mounting

5 CONTACT INFORMATION

- To find out more about CommScope® products, visit us on the web at www.commscope.com
- For technical assistance, customer service, or to report any missing/damaged parts, visit us at http://www.commscope.com/SupportCenter