Vertiv™ PowerIT Basic Rack PDU

Installer/User Guide

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Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures.

Visit https://www.vertiv.com/en-us/support/ for additional assistance.

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1 Overview

The following Vertiv™ PowerIT Rack Power Distribution Units (rPDUs) are covered in this document.

Table 1.1 rPDU Model Series Descriptions

Model	Input	Input Plug Type	AC Main Ratings (Current)	AC Main Ratings (Voltage)	Overcurrent Protection Type (if Applicable)
BR	Single phase	NEMA straight blade, NEMA twist lock	15 A to 20 A	125 V	Single pole thermal
NSV					
SP					
SVR					
VRT					
VSS					
BRE	Single phase	IEC C20	16 A to 20 A	125 V, 250 V	Single pole thermal or hydraulic magnetic
VRTE					
J	Single phase/three phase	NEMA straight blade, NEMA twist lock, IEC, hardwired	10 A to 20 A	100 V to 120 V	None
MJ	Single phase	NEMA straight blade, NEMA twist lock	15 A to 20 A	100 V to 120 V	None
VHV	Single phase/three Phase	NEMA straight blade, NEMA twist lock, IEC, IEC splashproof, hardwired, Schuko, British	10 A to 20 A	120/208 V WYE, 200 V, 208 V to 240 V	None
BRD	Single phase	NEMA twist lock	30 A	125 V	Single pole thermal
VRE	Single phase	NEMA twist lock	30 A	125 V, 250 V	Single pole thermal
VRTD	Single phase	NEMA twist lock	30 A	125 V	Single pole thermal
XP	Single phase/three phase	NEMA straight blade, NEMA twist lock, IEC splashproof	30 A	100 V to 120 V, 120/208 V WYE, 200 V, 208 V to 240 V	Hydraulic magnetic
Y	Three phase	NEMA twist lock, IEC pin and sleeve, hardwired	16 A to 32 A	208 to 240/360 to 415 V WYE	Hydraulic magnetic
ZP	Single phase/three phase	CS8365, IEC pin and sleeve, hardwired	35 A to 120 A	100 to 120 V, 120/208 V WYE, 200 V, 208 to 240 V	Hydraulic magnetic

NOTE: Global versions of the VHV series are intended to be connected to a 16 A AC main branch circuit. Global versions of the XP series are intended to be connected to a 32 A AC mains branch circuit.

1.1 Environmental

The operational environmental limits pertaining to temperature, humidity, and elevation are as defined in the Table 1.2 below.

Table 1.2 Temperature Limits

Model Series	Operating Minimum	Operating Maximum	Storage Minimum	Storage Maximum
BR, BRE, J, L, NSV, SP, SVR, VHV, VRE, VRT, VRTE, VSS, XP, Y, ZP	10 °C (50 °F)	45 °C (113 °F)	-40 °C (-40 °F)	70 °C (158 °F)
BRD, MJ, VRTD	10 °C (50 °F)	25 °C (77 °F)	-40 °C (-40 °F)	70 °C (158 °F)

Table 1.3 Humidity Limits

Parameters	Minimum	Maximum
Operating	5%	95 % (non-condensing)
Storage	5%	95 % (non-condensing)

Table 1.4 Elevation Limits

Model Series	Operating Minimum	Operating Maximum	Storage Minimum	Storage Maximum
BR, BRD, BRE, NSV, SP, SVR, VRE, VRT, VRTD, VRTE, VSS	0 m (0 ft.)	2000 m (6561 ft.)	0 m (0 ft.)	15240 m (50000 ft.)
J, L, MJ, VHV, XP, Y, ZP				

1.1.1 Electrical

Electrical product characteristics and performance are defined in the Table 1.5 below. See the product nameplate for additional rating limits.

Table 1.5 Receptacle Ratings

Receptacle Type	Ratings
NEMA 5-15R or L5-15R	12 A, 125 VAC
NEMA 5-20R or L5-20R	16 A, 125 VAC
NEMA 6-20R or L6-20R	16 A, 250 VAC
NEMA L6-30R	24 A, 250 VAC
NEMA L15-20R	3-phase, 16 A at 250 VAC
NEMA L15-30R	3-phase, 24 A at 250 VAC
IEC-60320 C13	10 A, 250 VAC (UL and CSA 12 A, 250 VAC)
IEC-60320 C19	16 A, 250 VAC (UL and CSA 16 A, 250 VAC)

1.1.2 Regulatory Compliance

Vertiv products are regulated for Safety, Emissions, and Environment Impact per the below agencies and policies.

Underwriter Labratory (UL)

UL standards are used to assess products; test components, materials, systems and performance and evaluate environmentally sustainable products, renewable energies, food and water products, recycling systems and other innovative technologies.

The UL standards specific to this equipment (if applicable) are as noted on the device nameplate.

Federal Communications Commission (FCC)

The federal communications commission (FCC) regulates interstate and international communications by radio, television, wire, satellite, and cable in all 50 states, the District of Columbia and U.S. territories. An independent U.S. government agency overseen by Congress, the commission is the United States primary authority for communications laws, regulation, and technological innovation.

The FCC standards specific to this equipment are:

This class A device complies with part 15 of the FCC rules.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference. (2)This device must accept any interference received, including interference that may cause undesired operation.

This class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

WARNING! Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

ROHS/WEEE

RoHS, also known as lead-free, stands for restriction of hazardous substances. RoHS, also known as Directive 2002/95/EC, originated in the European Union and restricts the use of six hazardous materials found in electrical and electronic products. All applicable products in the EU market after July 1, 2006 must pass RoHS compliance. RoHS impacts the entire electronics industry and many electrical products as well.

WEEE stands for waste from electrical and electronic equipment. WEEE directive 2002/96/EC mandates the treatment, recovery and recycling of electric and electronic equipment (90% ends up in landfills). All applicable products in the EU market must pass WEEE compliance and carry the Wheelie Bin sticker.

See product label for RoHS/WEEE compliance marks.

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2 Installation

Refer images in the Mounting on the next page, to install your rack PDU.

NOTE: Visit http://www.Vertiv.com/ComplianceRegulatoryInfo for important safety information prior to installation.

To install your unit:

1. Using appropriate hardware, mount the unit to the rack.
2. Plug the rPDU into an appropriately-rated and protected branch-circuit receptacle.
3. Plug in the devices to be powered by the rPDU.
4. Turn on each device connected to the rPDU.

NOTE: It is recommended that all connected equipment is powered on in a sequential manner to avoid high inrush current.

NOTE: XP series rPDUs may optionally be configured as isolated ground units. All isolated ground units will be shipped with an enclosure grounding cable. This cable must be connected between the enclosure and a reliable safety ground.

2.1 Mounting

Optional mounting brackets are sold separately.

Figure 2.1 Full Length Bracket

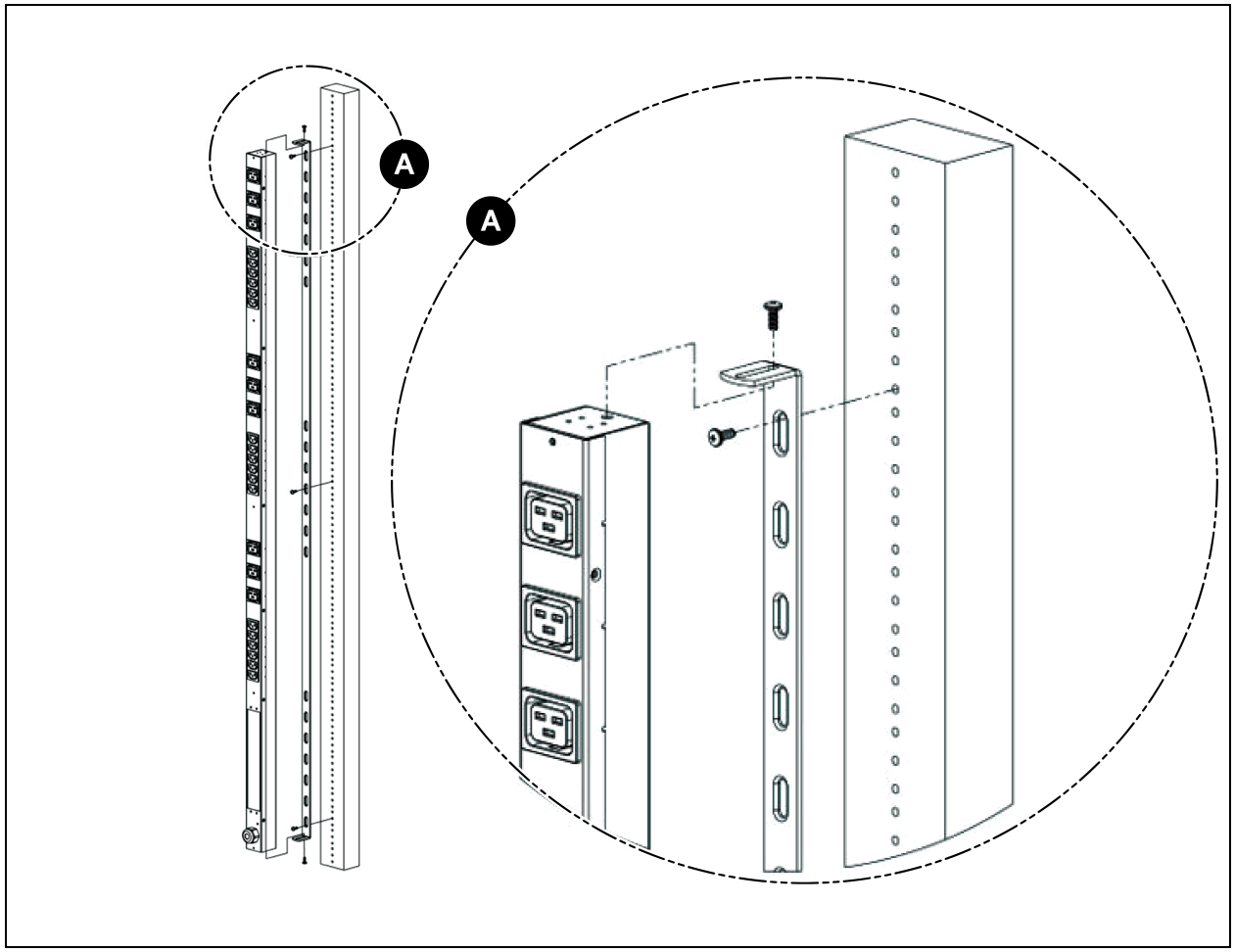


Figure 2.2 Mini L Bracket

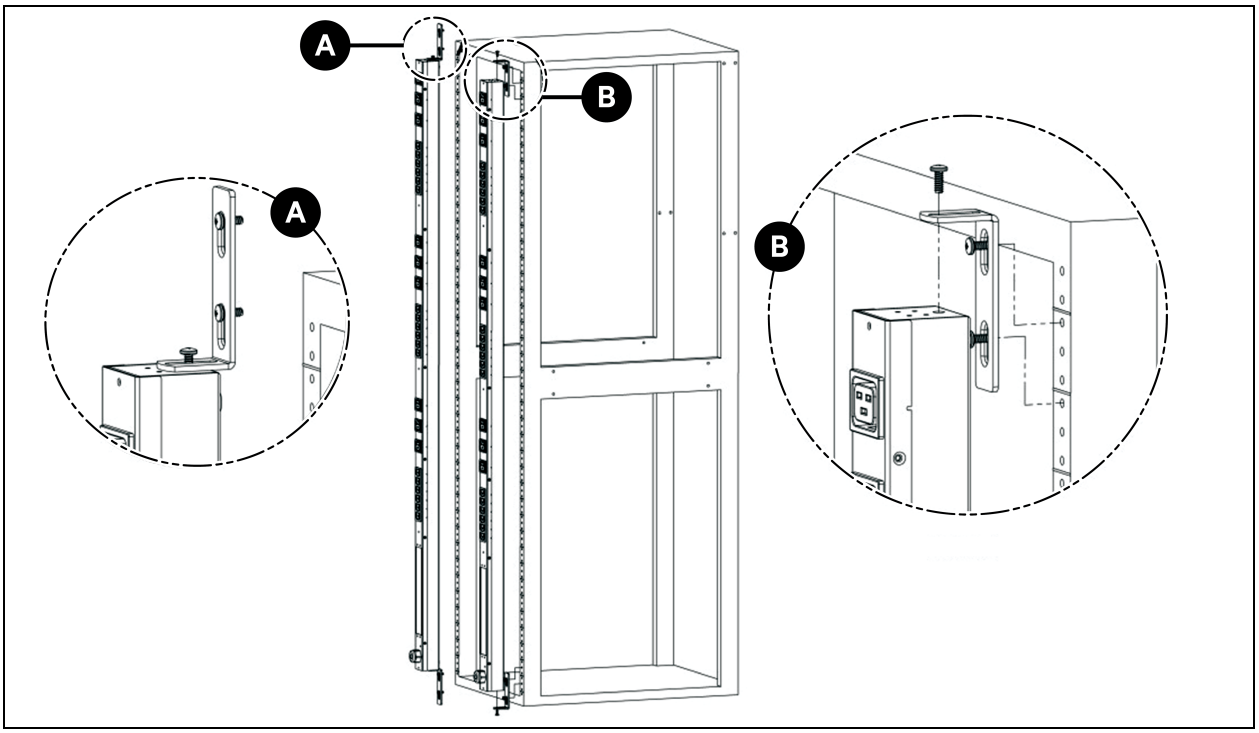


Figure 2.3 Vertical Extension Bracket

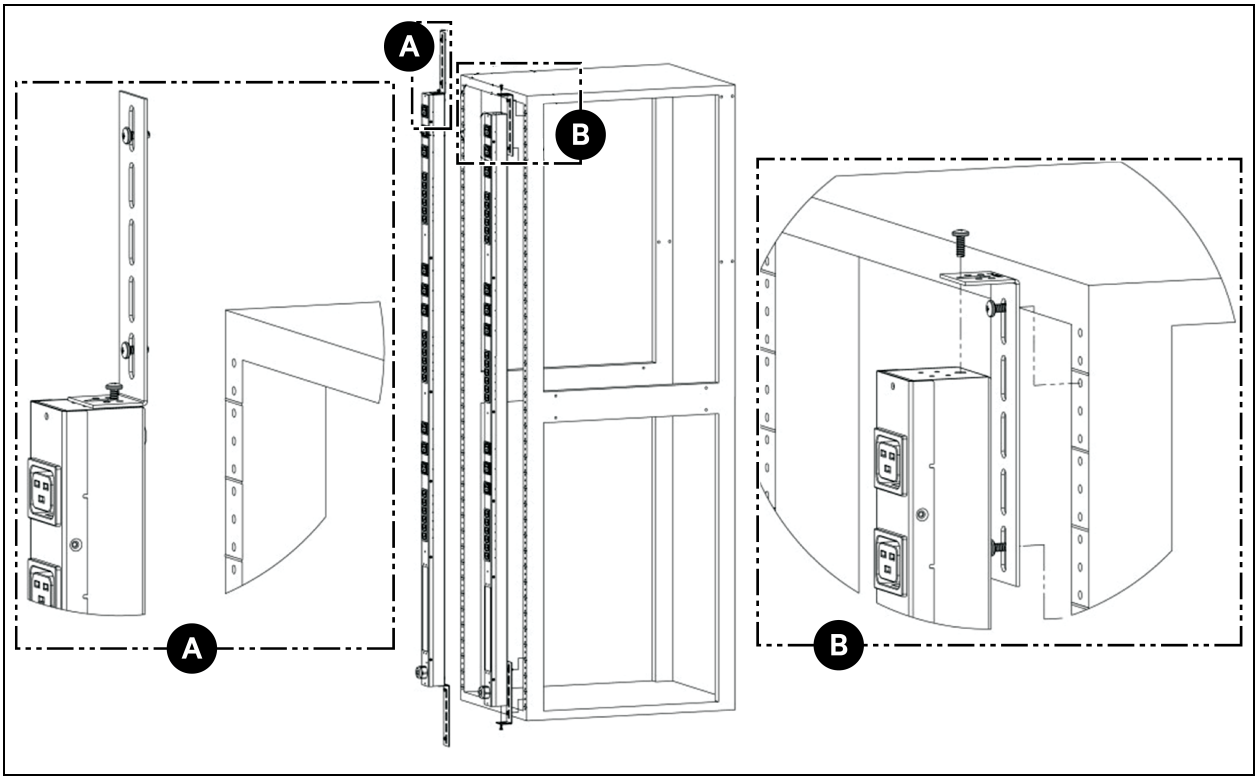


Figure 2.4 Toolless Mounting Hardware

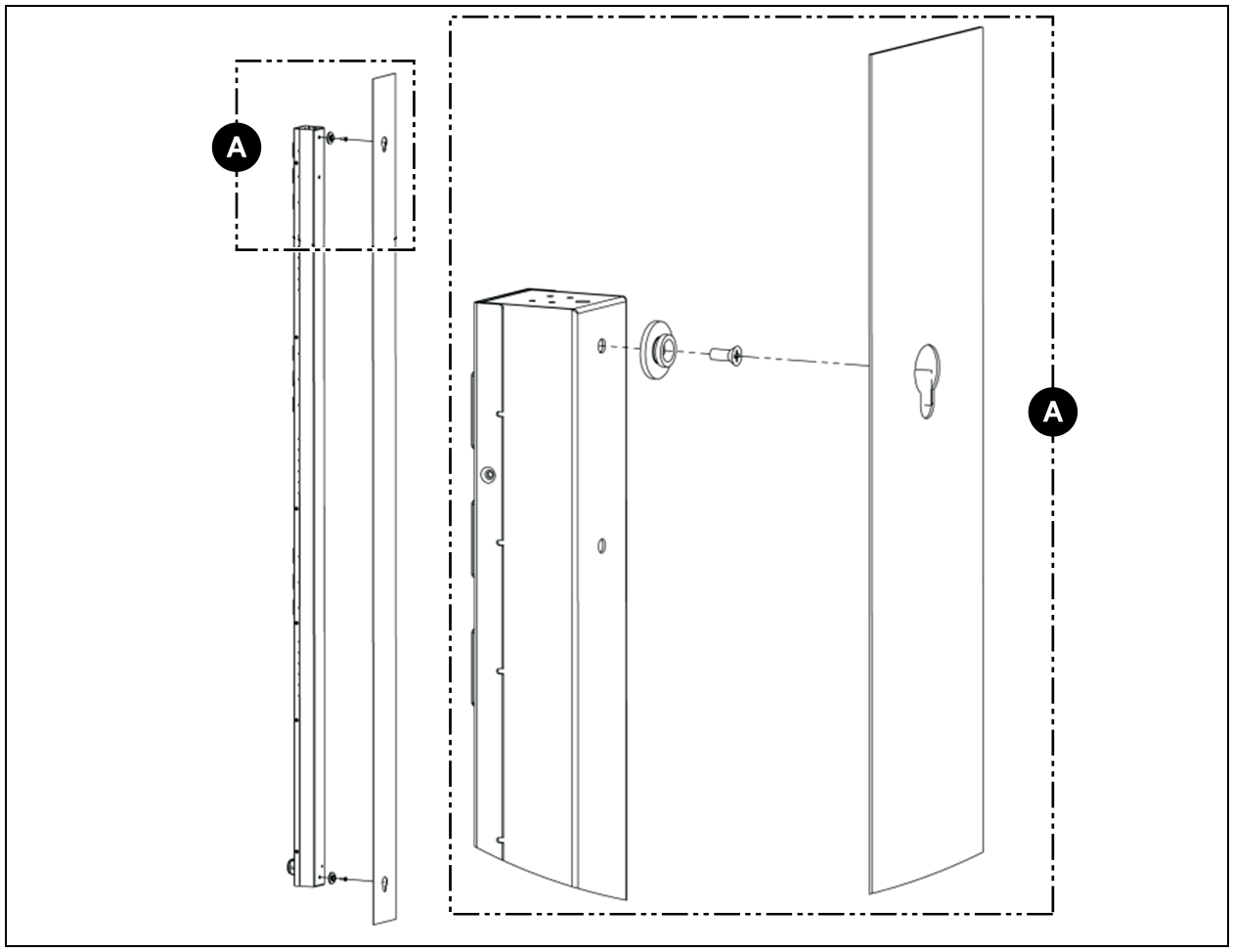
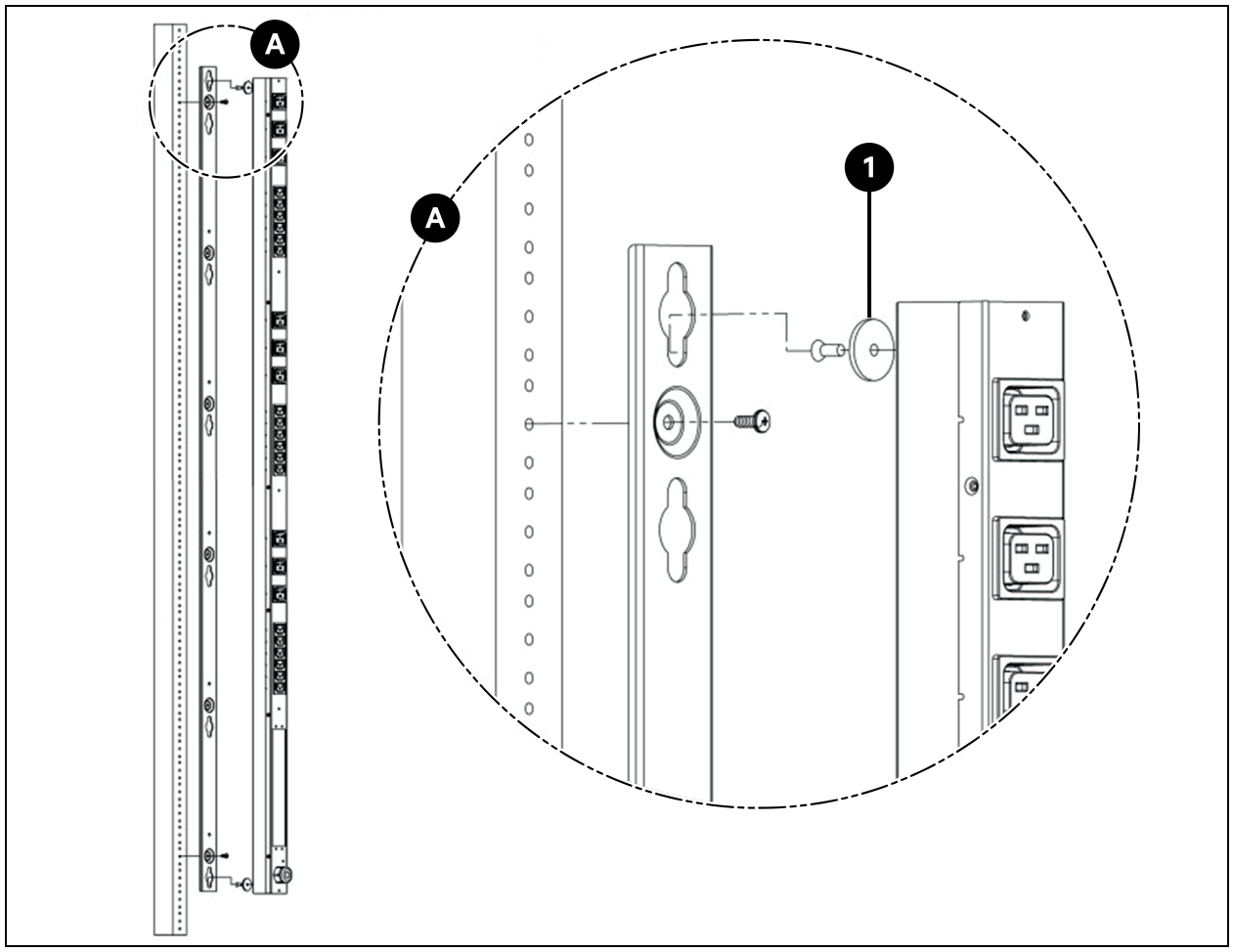


Figure 2.5 Toolless Full Length Bracket



Item	Description
1	Toolless shoulder washer

Figure 2.6 Single Side Mount Unit Brackets

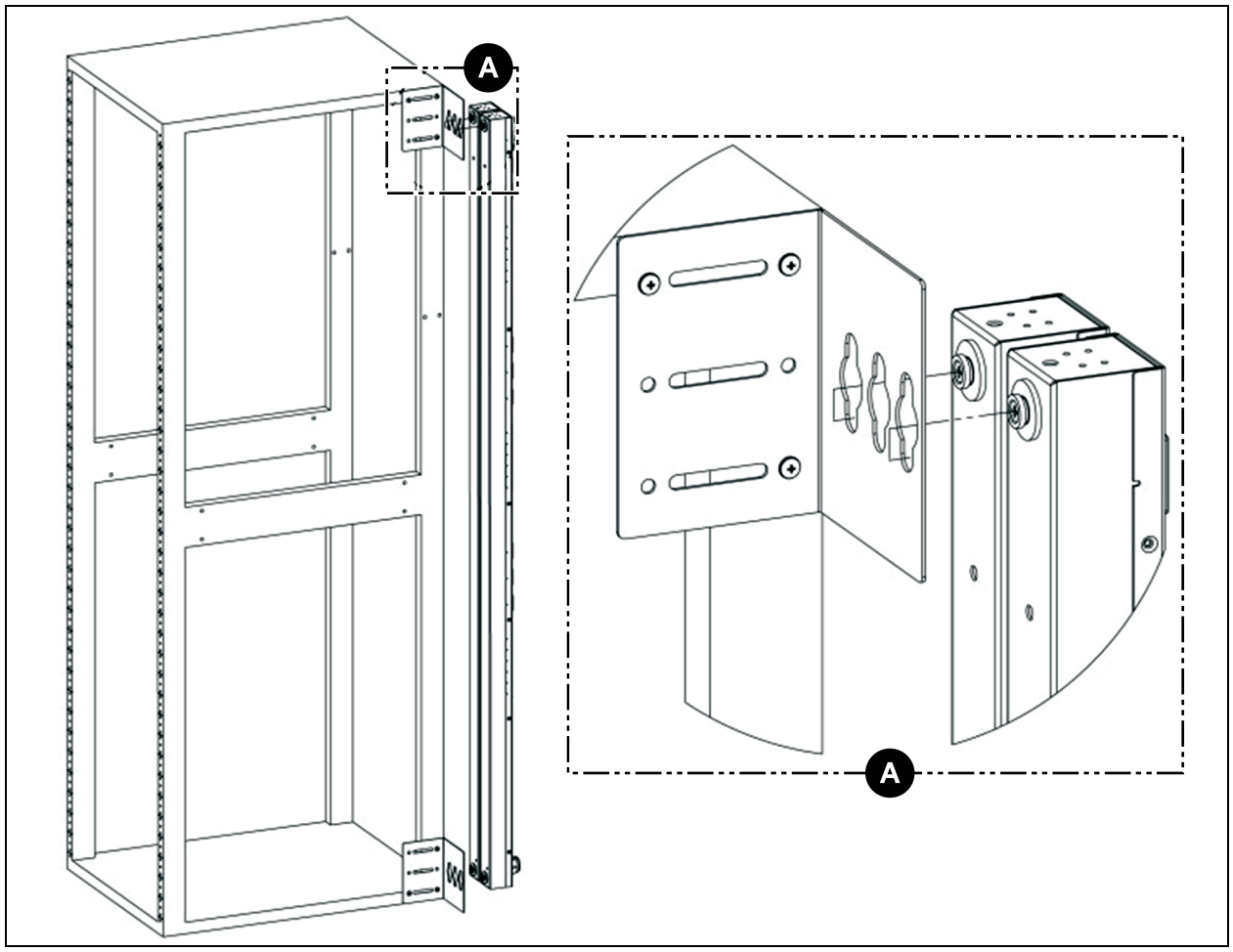
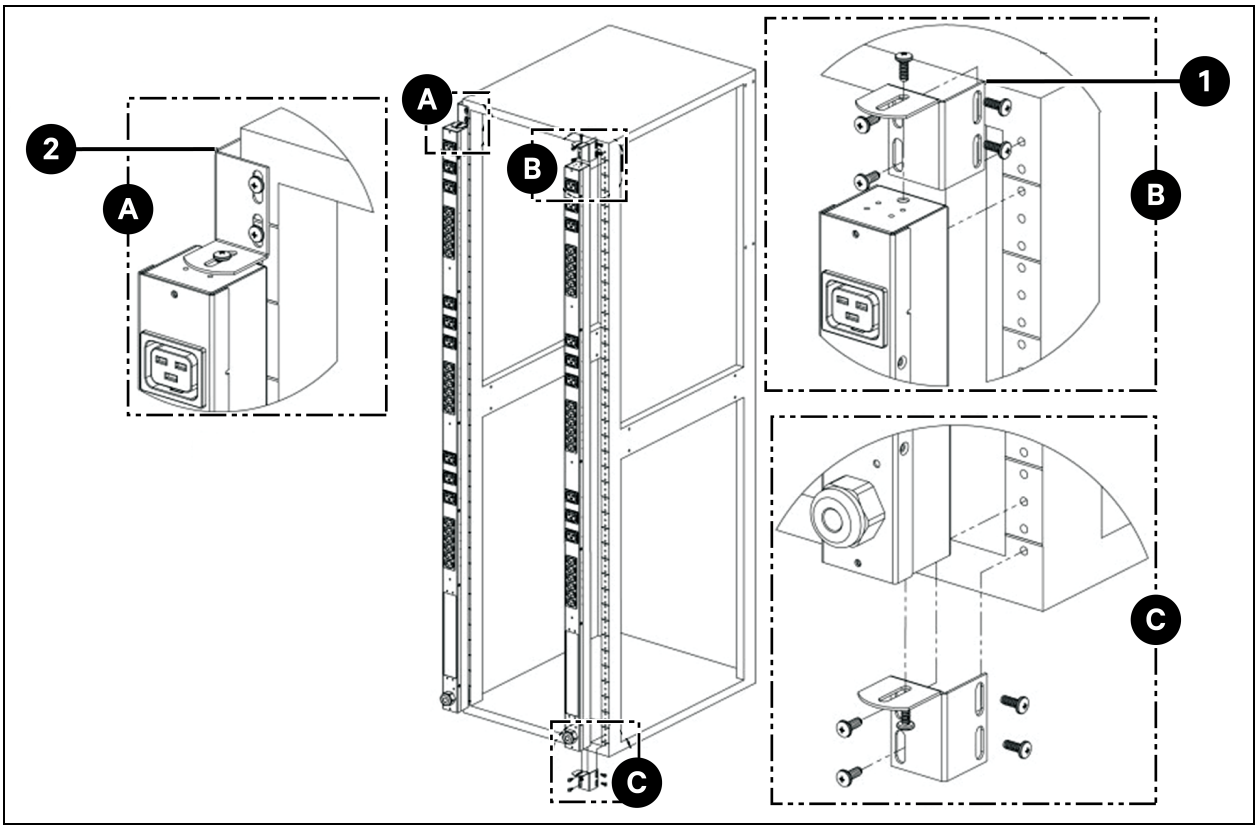


Figure 2.7 Offset Side Mount Brackets



Item	Description
1	Right side option
2	Left side option

Figure 2.8 7 Inch Extension Brackets (XB-7)

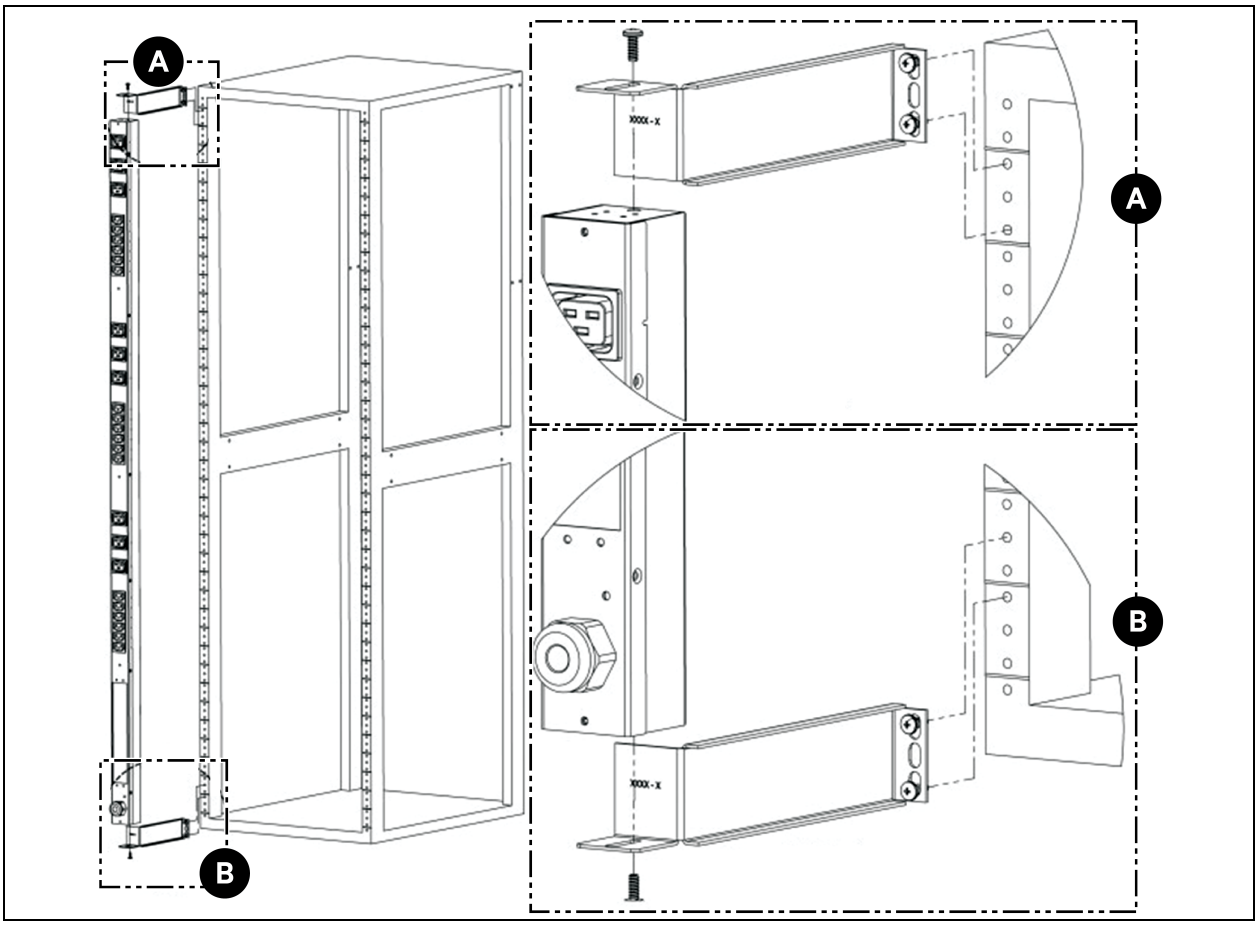


Figure 2.9 Flush Mount Brackets (FM)

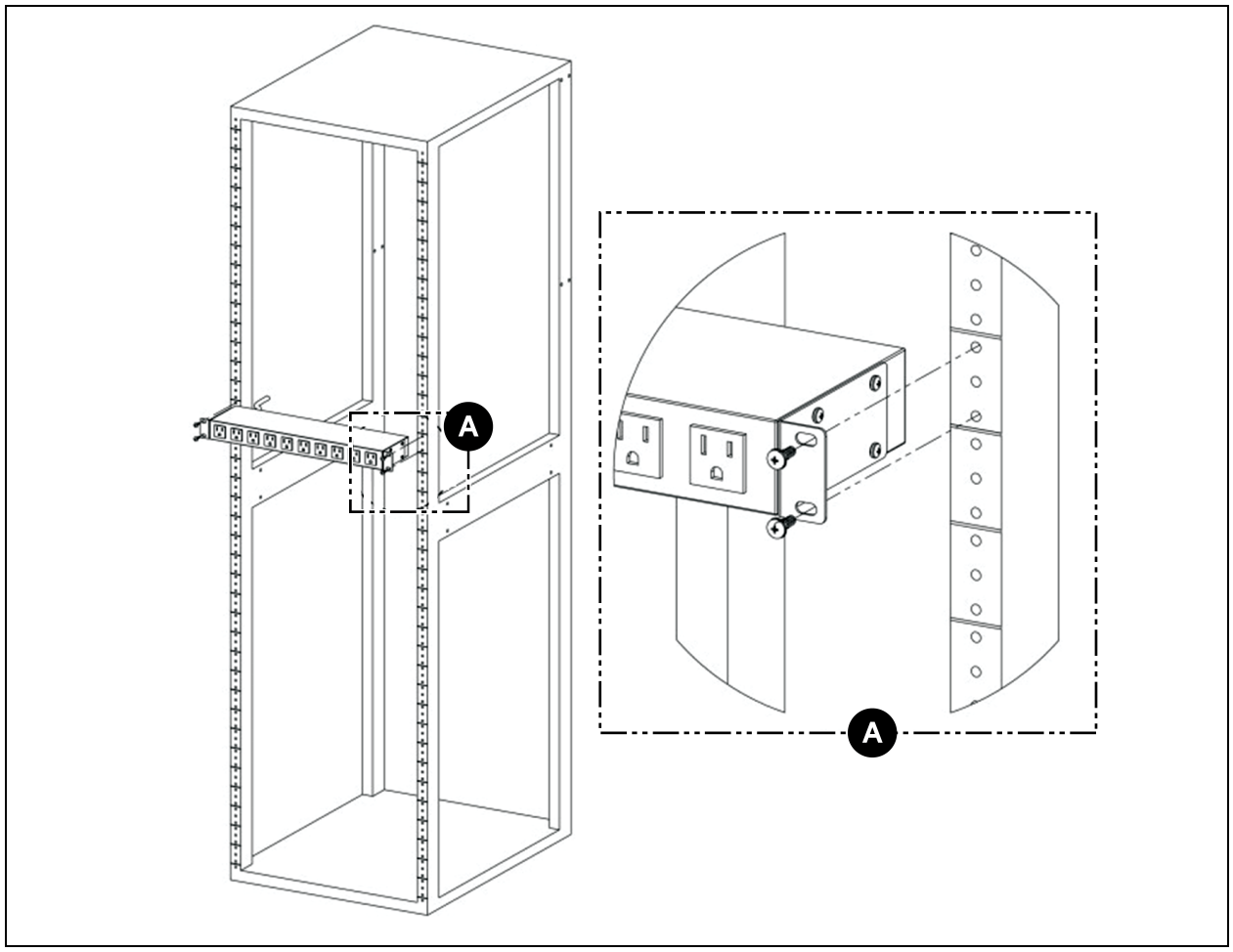


Figure 2.10 Adjustable Mount Brackets (AM)

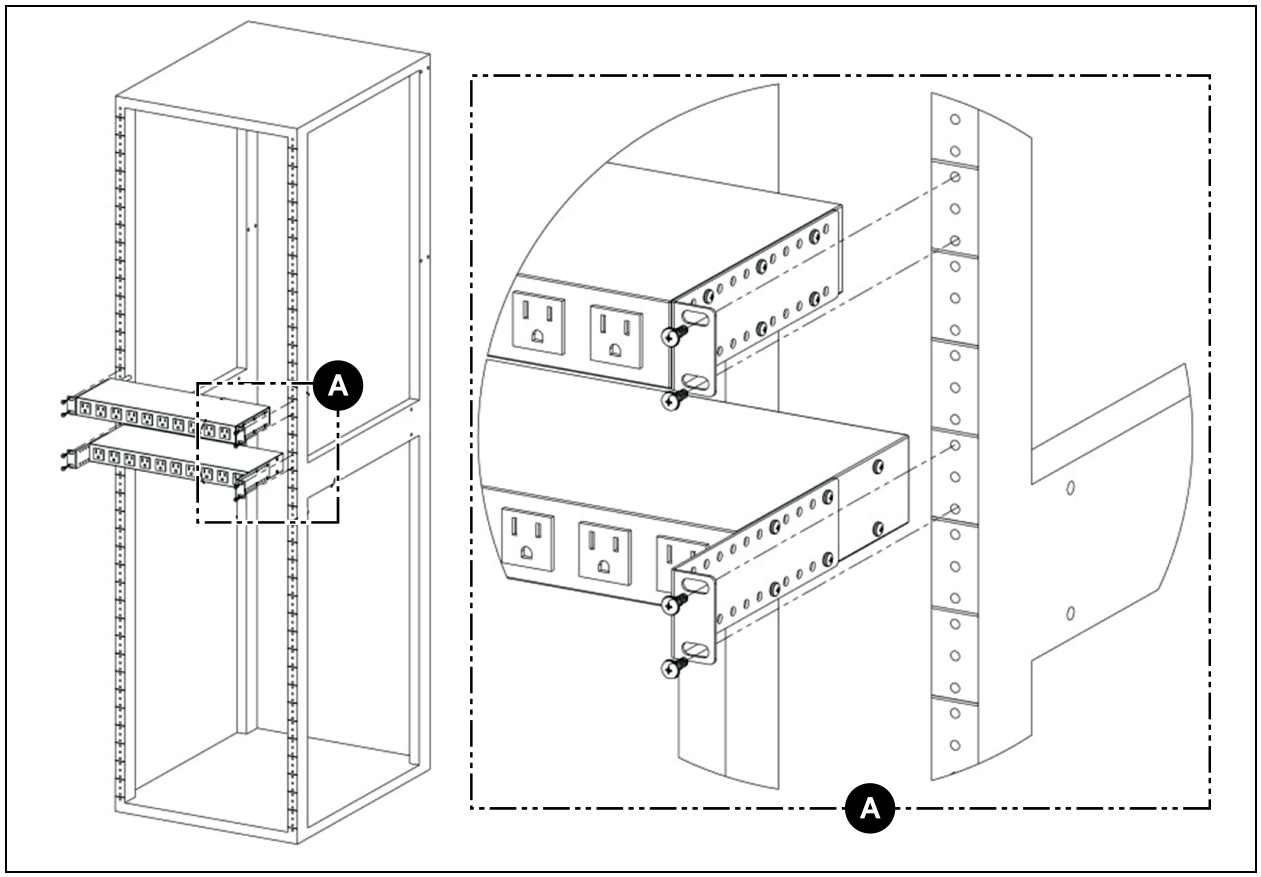


Figure 2.11 Panel Mount Brackets (PM)

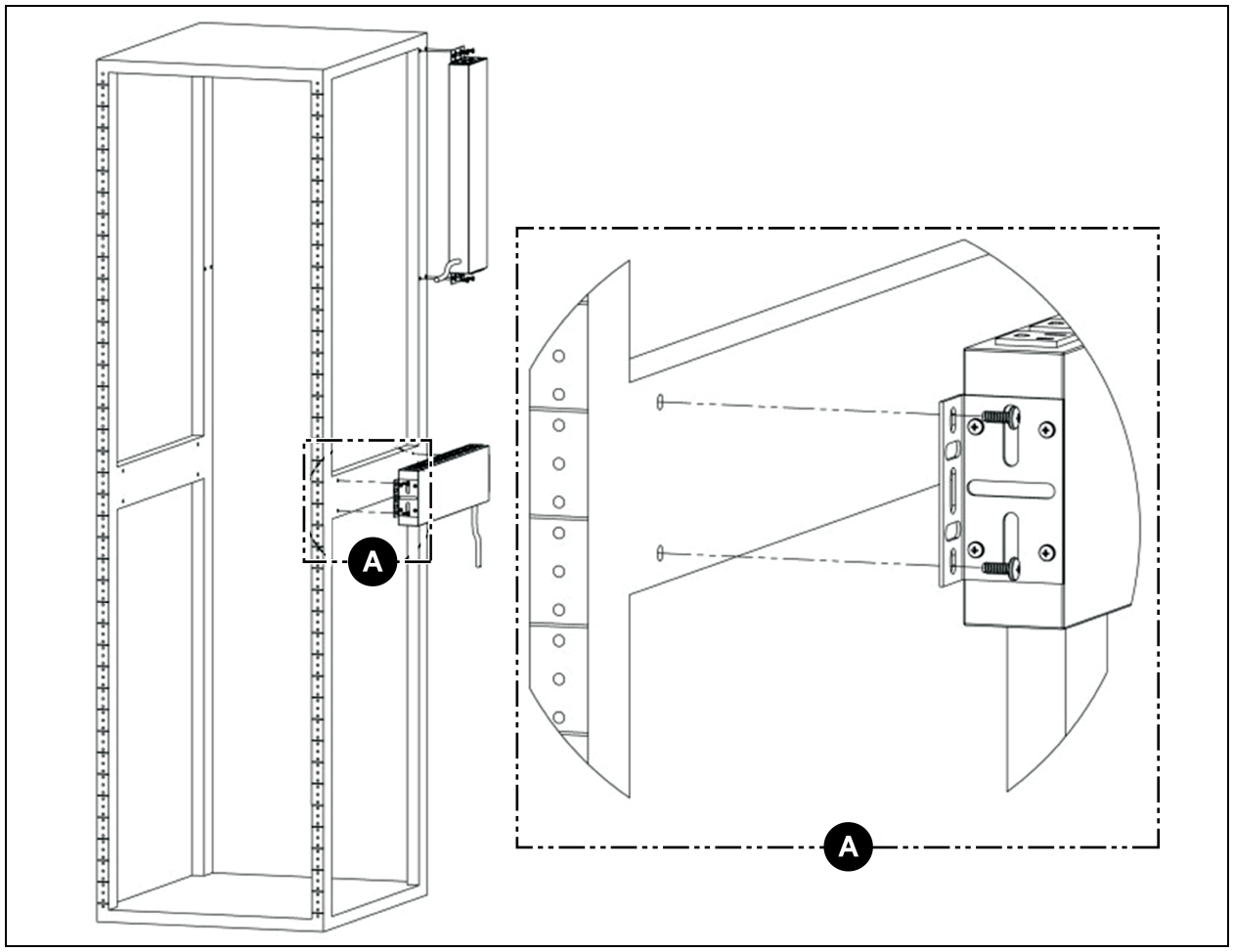


Figure 2.12 23 Inch Conversion Mounting Brackets (23-RM)

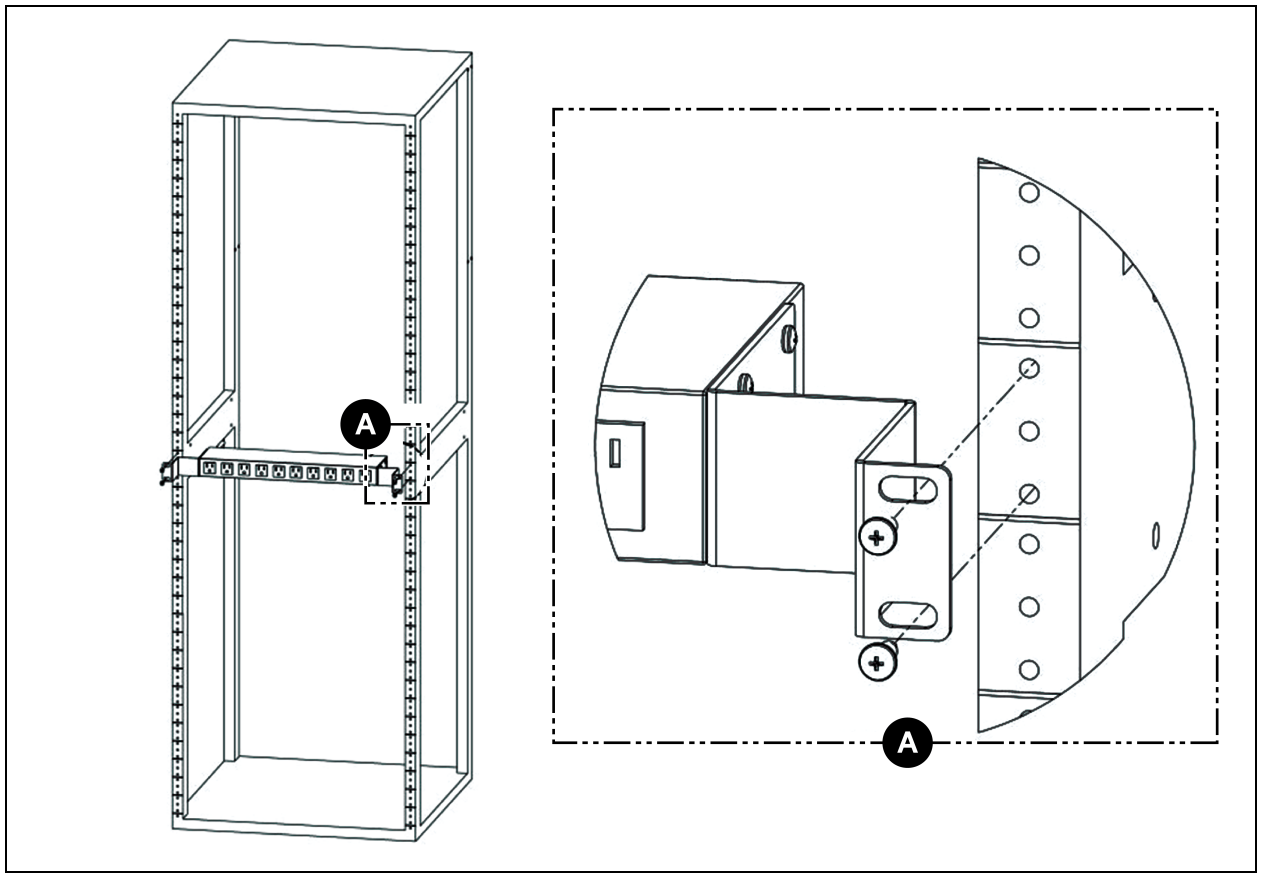


Figure 2.13 19 Inch Horizontal/Panel Mount Brackets (7938)

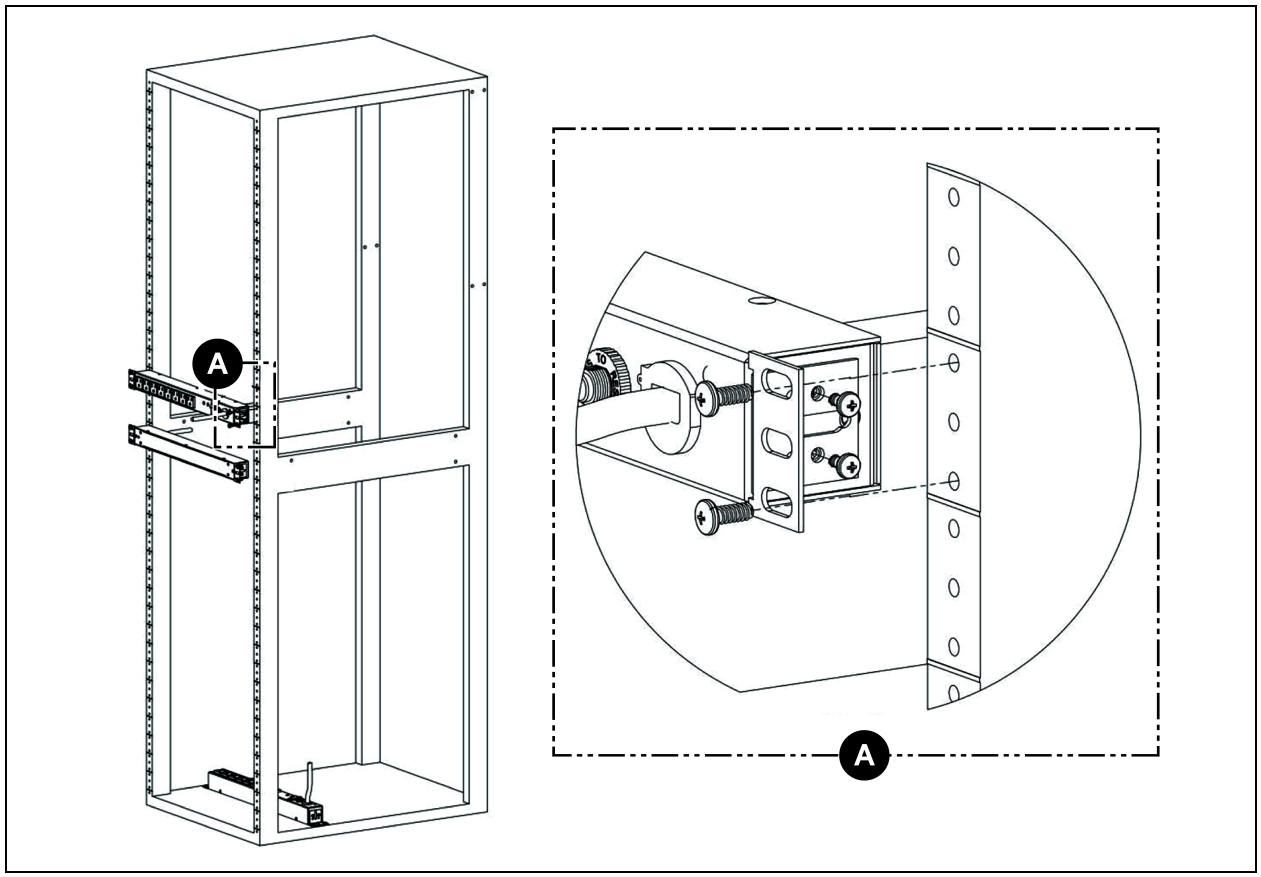
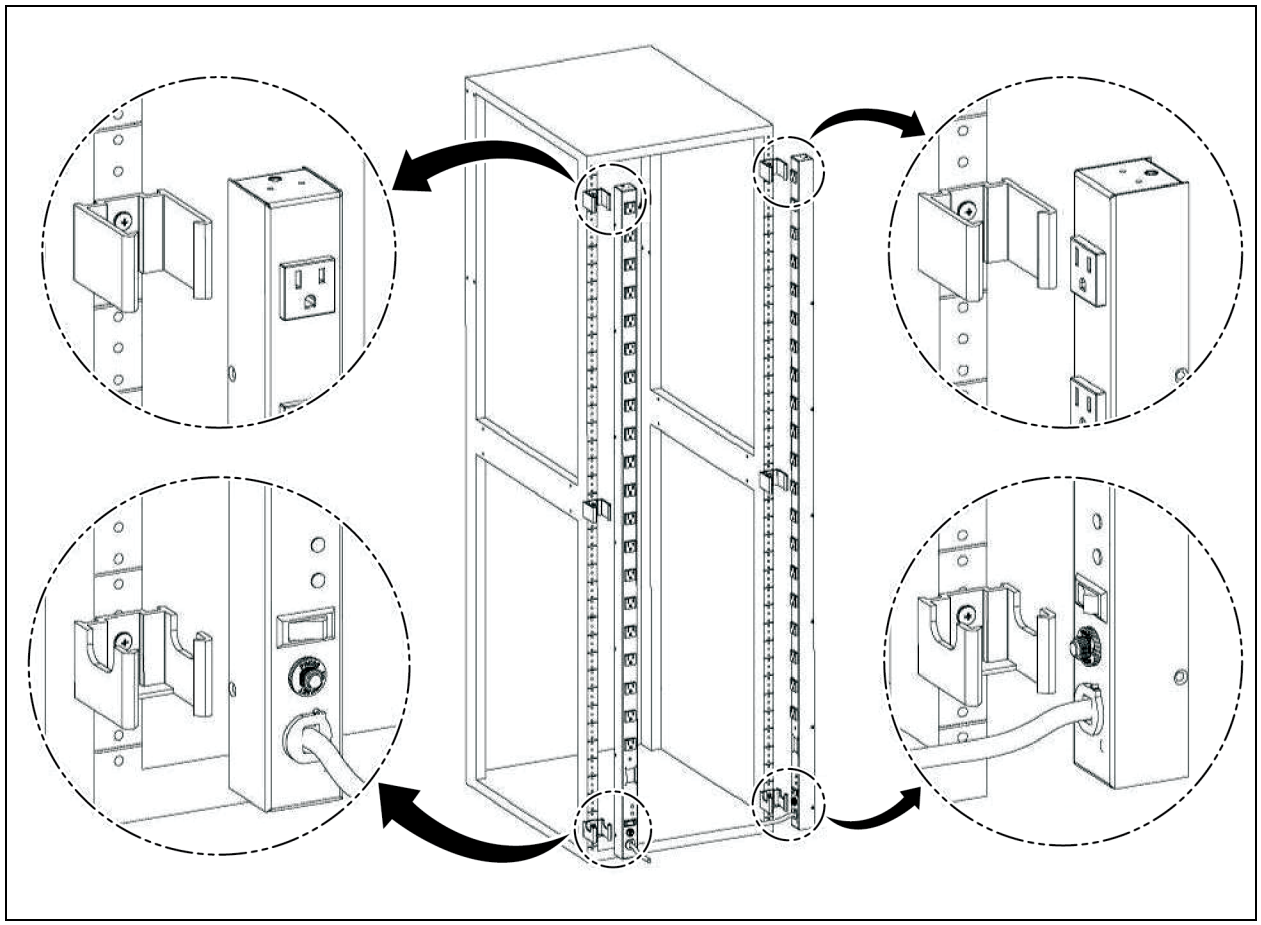


Figure 2.14 Top and Bottom Mounting Clips (9083C and 9084C)



NOTE: Mounting clips are only intended for use with NSV and VSS Series rPDUs. Using the top and bottom mounting clips, attach the rPDU to the rack as shown in **Figure 2.14** above.

2.1.1 Optional Surge Suppression

The SP, SVR, and VSS series rPDUs include a surge suppression circuit that is designed to prevent voltage surges on the input power line from reaching devices powered by the rPDU. The surge suppression circuit uses metal oxide varistors (MOVs) connected between line, neutral, and ground wires to prevent voltage surges from damaging connected devices.

Figure 2.15 Surge Suppression LEDs

Table 2.1 Surge Protection Circuit Rating

Number	Description
Protection modes	Line-line, line-neutral, neutral-ground
Maximum clamping voltage	340 V
Energy absorption	720 Joules
Green light indicator	Power on
Red light indicator	Surge protection active

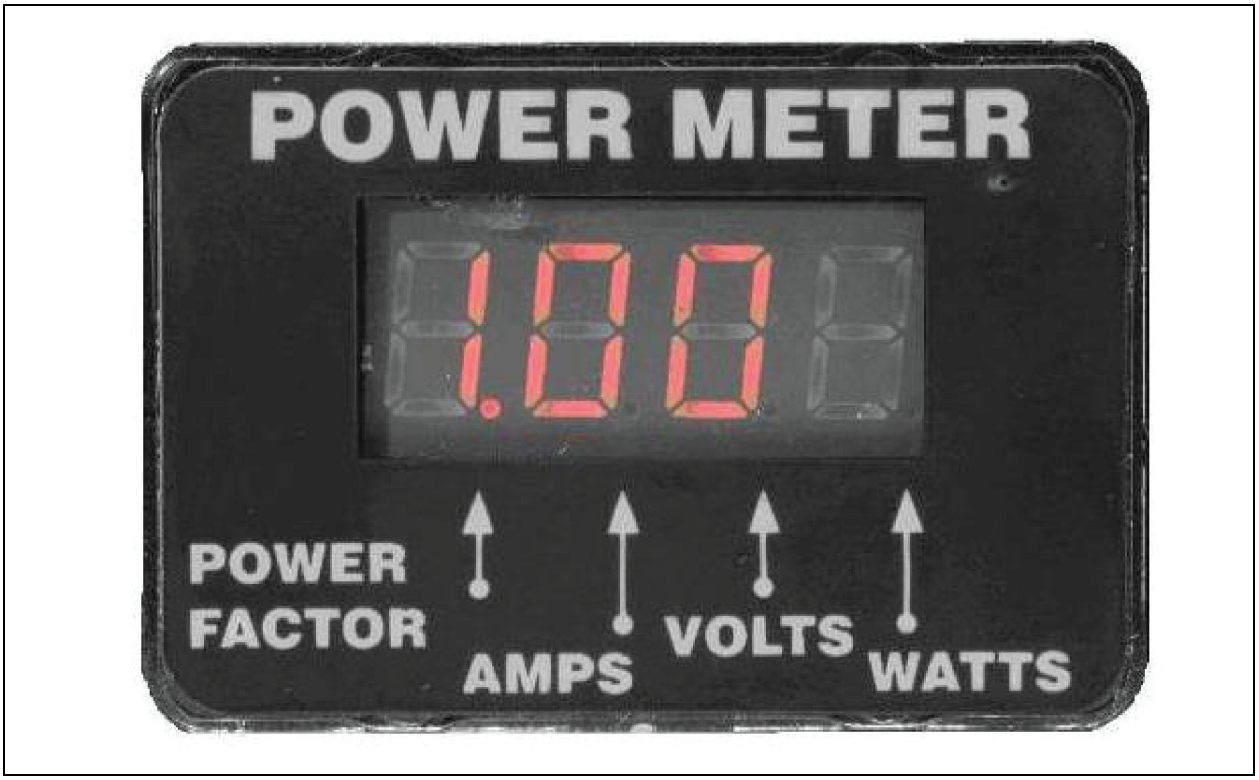
2.1.2 Optional Local Metering

Power Meter

The Power Meter (PM)-1 is a low-power, high accuracy meter capable of measuring true Root Mean Square (RMS) current, voltage, power, and power factor. These values are individually shown on a 4-digit LED display, which continuously scrolls through the four different measured values. Each one of these displayed parameters is defined below. The power meter automatically cycles through the displayed values when the rPDU is connected to AC mains power.

- Current: rPDU output current draw measured in true RMS amperes.
- Voltage: rPDU output voltage measured in true RMS voltage.
- Power: rPDU output power measured in Watts—referred to as real or active power.
- Power Factor: Ratio of real rPDU output power to apparent rPDU output power.

Figure 2.16 Power Meter Display



Current Meter

The Current Meter (CM)-1 is a low-power, high accuracy meter capable of measuring true RMS current. The value of current is continuously shown on a 4-digit LED display. The current meter automatically displays the value of output current when the rPDU is connected to AC mains power.

Figure 2.17 Current Meter

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Appendices

Appendix A: Rack In-line Power Measurement Unit

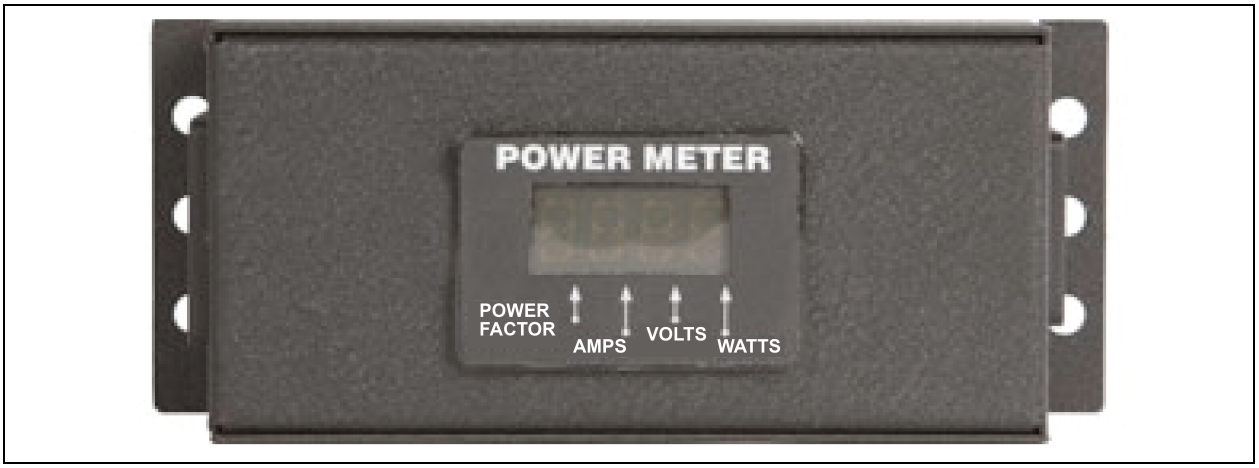
A.1 Product Specifications

Vertiv™ PowerIT Basic Rack PDUs not equipped with local current monitoring can be retrofit with L-series inline power monitoring units. The L-series products are inline power monitoring units intended for connection between an AC mains circuit and a rack power distribution unit (rPDU). The inline power monitoring units are designed to be powered by a single phase AC input circuit and have an outlet or output cord and connector body for connection to an external device (such as an rPDU). The inline power monitoring units are rated from 12 A to 32 A depending on the unit's configuration. Inline power monitoring units can be configured with a local current meter or power meter to perform the monitoring functions.

Table A.1 L-Series Inline Power Monitoring Units

Part Number	Model Number	Amps (A)	Volts (V)	Plug Type	Receptacle Type
12416	GLCE-001C13-00C14	10	230	IEC C14	IEC C13
G1113	GLCE-002C19-00C20	16	230	IEC C20	IEC C19
15693	LCE-001C13-00C14	15	125 or 208	IEC C14	IEC C13
15694	LCE-002C19-00C20	20	125 or 208	IEC C20	IEC C19

Figure A.1 L-Series Inline Power Monitoring Unit



A.2 Detachable Power Supply Cords

L-series inline power monitoring units may optionally be configured with an AC inlet for connection to AC mains power. Use only detachable power supply cords of the appropriate size and type, as stated below, with the unit. Use only with light PVC sheathed flexible cords (according to IEC 60227) or ordinary tough rubber-sheathed flexible cords (according to IEC 60245) that terminate in an attachment plug meeting local/national code requirements.

For global units use a minimum 1.5 mm^2 nominal conductor cross-sectional area detachable power supply cord with ratings of 300 V and 75 °C (167 °F). The power supply cord cable designation should be H03VV-F, H03VVH2-F, or better.

For North American units use a minimum 14 AWG power supply cord with ratings of 300 V and 75 °C (167 °F). The power supply cord cable designation should be SJT or better.

To install an L-Series inline power monitoring unit:

NOTE: Visit http://www.Vertiv.com/ComplianceRegulatoryInfo for important safety information prior to installation.

1. Using the appropriate hardware, mount the In-line meter to the rack.
2. Plug the in-line meter into de-energized branch circuit receptacle.
3. Connect the external device to the in-line meter's output outlet or connector.
4. Turn on the branch circuit to energize the in-line meter.
5. Power on the external device.

NOTE: Branch circuit should be sized based on the in-line meter's nameplate electrical rating. For North American units, the branch circuit should have a current rating equal to 125% of the unit's nameplate current rating. For global units, the branch circuit should have a current rating equal to the unit's nameplate current rating.

Appendix B: Troubleshooting

Ensure all devices plugged in to the rack PDU receptacles are receiving power.

No service or maintenance is required. Do not attempt to open the rPDU or you may void the warranty. There are no serviceable parts inside the rPDU. It is recommended that power be removed from the unit before installing or removing any equipment.

B.1 Technical Support

Technical support can be found at www.vertivco.com/support.

Americas

- Website: www.vertiv.com/geist
- Email: support@vertiv.com
- Telephone: 1-888-630-4445

Europe and Middle East

- Technical Support: www.vertiv.com/en-emea/support
- Email: eoc@vertiv.com
- Telephone: 1-800-1155-4499

Asia

- Telephone (English): 1-888-630-4445 (US number)
- Telephone (Chinese): +86 755 8663 9505

Appendix C: Technical Support and Contacts

C.1 Technical Support/Service in the United States

Vertiv Group Corporation

24x7 dispatch of technicians for all products.

1-800-543-2378

Liebert® Thermal Management Products

1-800-543-2778

Liebert® Channel Products

1-800-222-5877

Liebert® AC and DC Power Products

1-800-543-2378

C.2 Locations

United States

Vertiv Headquarters

505 N Cleveland Ave

Westerville, OH, 43082, USA

Europe

Via Leonardo Da Vinci 8 Zona Industriale Tognana

35028 Piove Di Sacco (PD) Italy

Asia

7/F, Dah Sing Financial Centre

3108 Gloucester Road, Wanchai

Hong Kong

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