



# Geist™

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.VertivCo.com/en-us/support/> for additional assistance.

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# 1 OVERVIEW

The following 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	15-20 AMPS	125V	Single Pole Thermal
NSV					
SP					
SVR					
VRT					
VSS					
BRE VRTE	Single Phase	IEC C20	16-20 AMPS	125V, 250V	Single Pole Thermal or Hydraulic Magnetic
J	Single Phase/Three Phase	NEMA Straight Blade, NEMA Twist Lock, IEC, Hardwired	10-20 AMPS	100-120V	None
MJ	Single Phase	NEMA Straight Blade, NEMA Twist Lock	15-20 AMPS	100-120V	None
VHV	Single Phase/Three Phase	NEMA Straight Blade, NEMA Twist Lock, IEC, IEC Splashproof, Hardwired, Schuko, British	10-20 AMPS	120/208V WYE, 200V, 208-240V	None
BRD	Single Phase	NEMA Twist Lock	30 AMPS	125V	Single Pole Thermal
VRE	Single Phase	NEMA Twist Lock	30 AMPS	125V, 250V	Single Pole Thermal
VRTD	Single Phase	NEMA Twist Lock	30 AMPS	125V	Single Pole Thermal
XP	Single Phase/Three Phase	NEMA Straight Blade, NEMA Twist Lock, IEC Splashproof	30 AMPS	100-120V, 120/208V WYE, 200V, 208-240V	Hydraulic Magnetic
Y	Three Phase	NEMA Twist Lock, IEC Pin & Sleeve, Hardwired	16-32 AMPS	208-240/360-415V WYE	Hydraulic Magnetic
ZP	Single Phase/Three Phase	CS8365, IEC Pin & Sleeve, Hardwired	35-120 AMPS	100-120V, 120/208V WYE, 200V, 208-240V	Hydraulic Magnetic

**NOTE: Global Versions of the VHV Series are intended to be connected to a 16 Amp AC Main Branch Circuit. Global Versions of the XP Series are intended to be connected to a 32 Amp AC Mains Branch Circuit.**

## 1.1 Environmental

The operational environmental limits pertaining to Temperature, Humidity and Elevation are as defined in the following tables.

**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**

	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)	2,000 m (6561 ft)	0 m (0 ft)	15,240 m (50,000 ft)
J, L, MJ, VHV, XP, Y, ZP				

### 1.1.1 Electrical

Electrical product characteristics and performance are defined in the following tables. Please see the product nameplate for additional rating limits.

**Table 1.5 Receptacle Ratings**

RECEPTACLE TYPE	RATINGS
NEMA 5-15R or L5-15R	12A, 125VAC
NEMA 5-20R or L5-20R	16A, 125VAC
NEMA 6-20R or L6-20R	16A, 250 VAC
NEMA L6-30R	24A, 250VAC
NEMA L15-20R	3-phase, 16A @ 250VAC
NEMA L15-30R	3-phase, 24A @ 250VAC
IEC-60320 C13	10A, 250VAC (UL & CSA 12A, 250VAC)
IEC-60320 C19	16A, 250VAC (UL & CSA 16A, 250VAC)

### 1.1.2 Regulatory Compliance

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

#### Underwriter Laboratory (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, and (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.



## 2 INSTALLATION

Use the following images in the mounting section to install your rack PDU.

**NOTE: Please visit <http://www.VertivCo.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

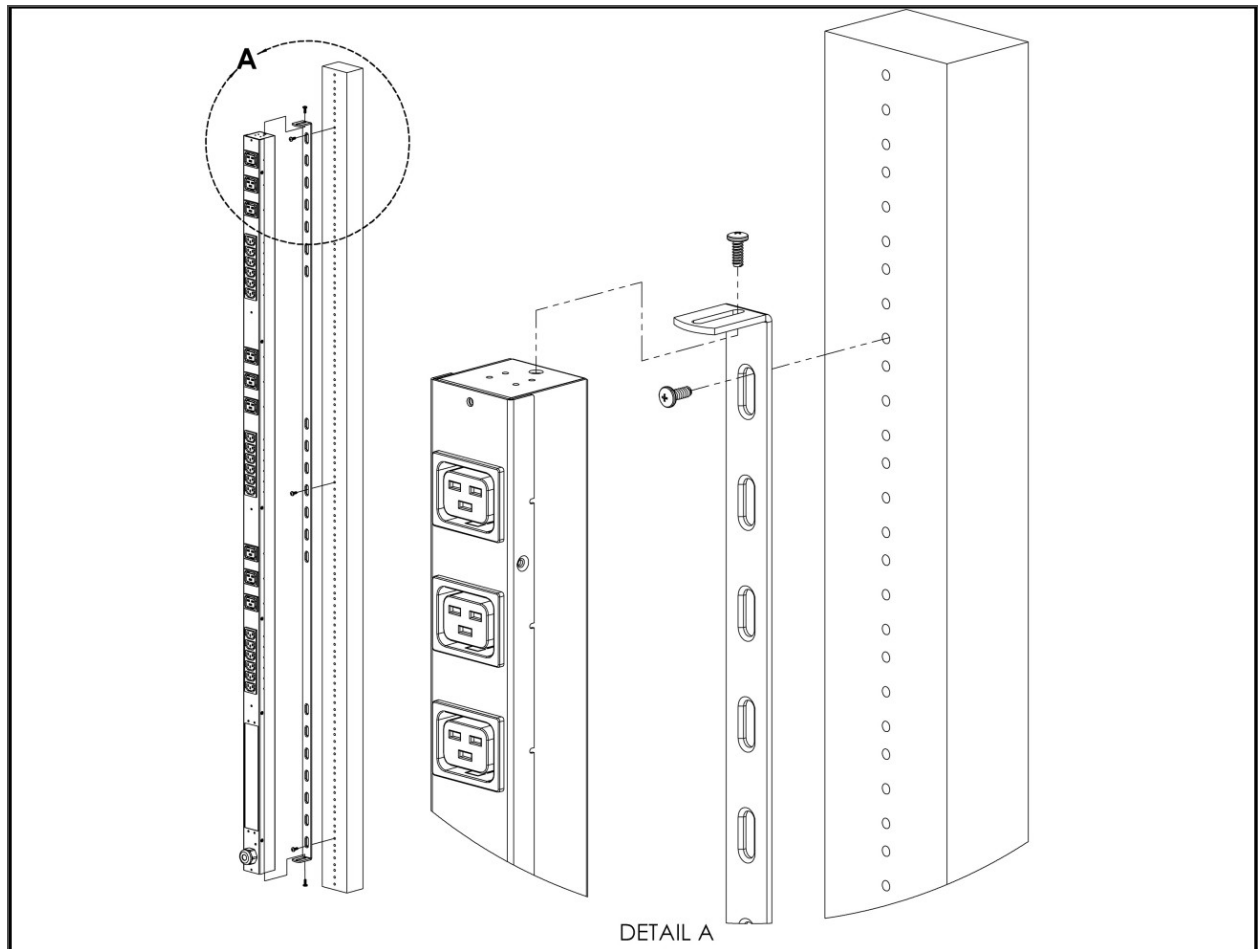


Figure 2.2 Mini L Bracket

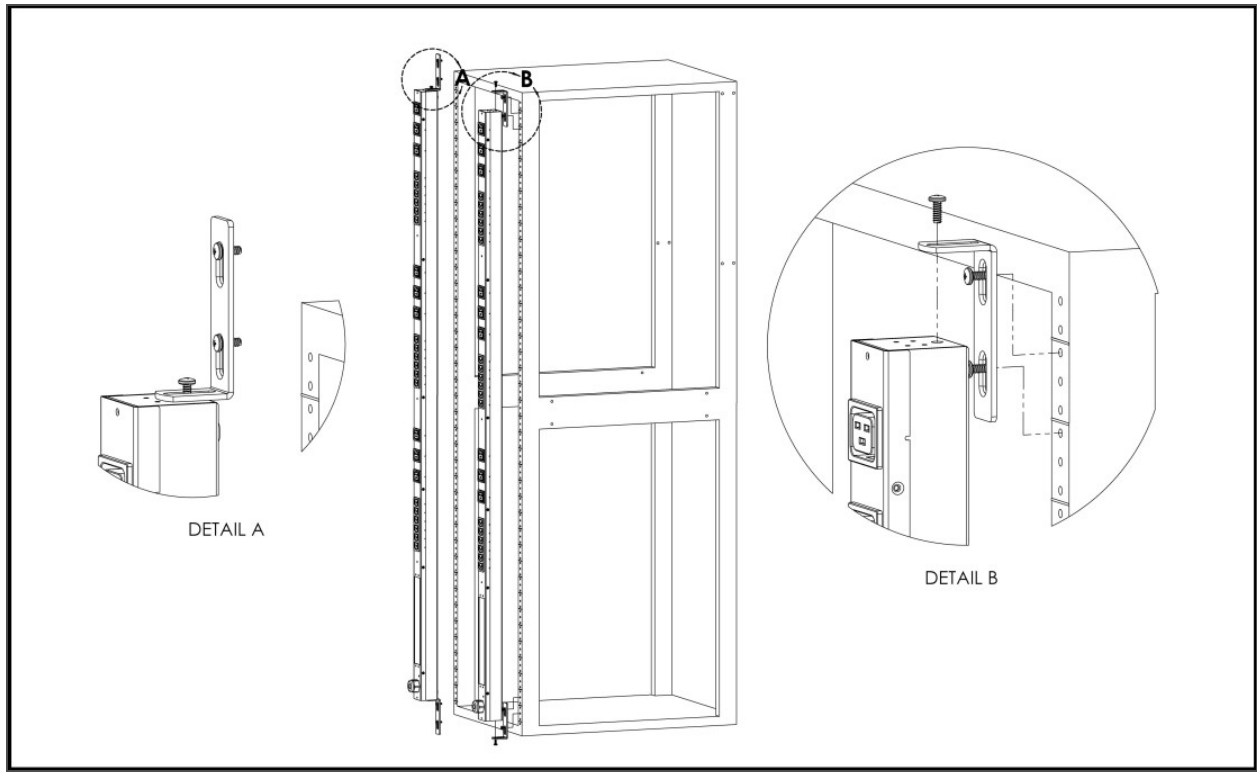


Figure 2.3 Vertical Extension Bracket

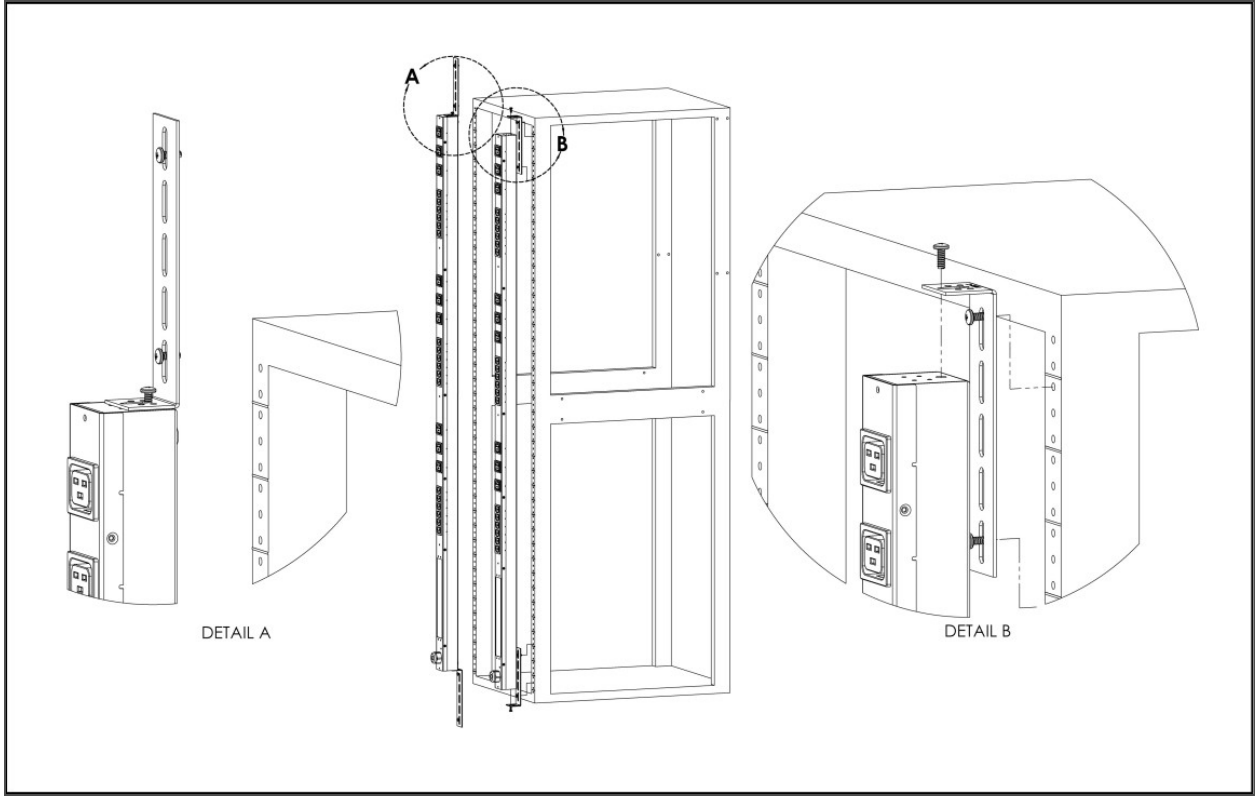


Figure 2.4 Tool-less Mounting Hardware

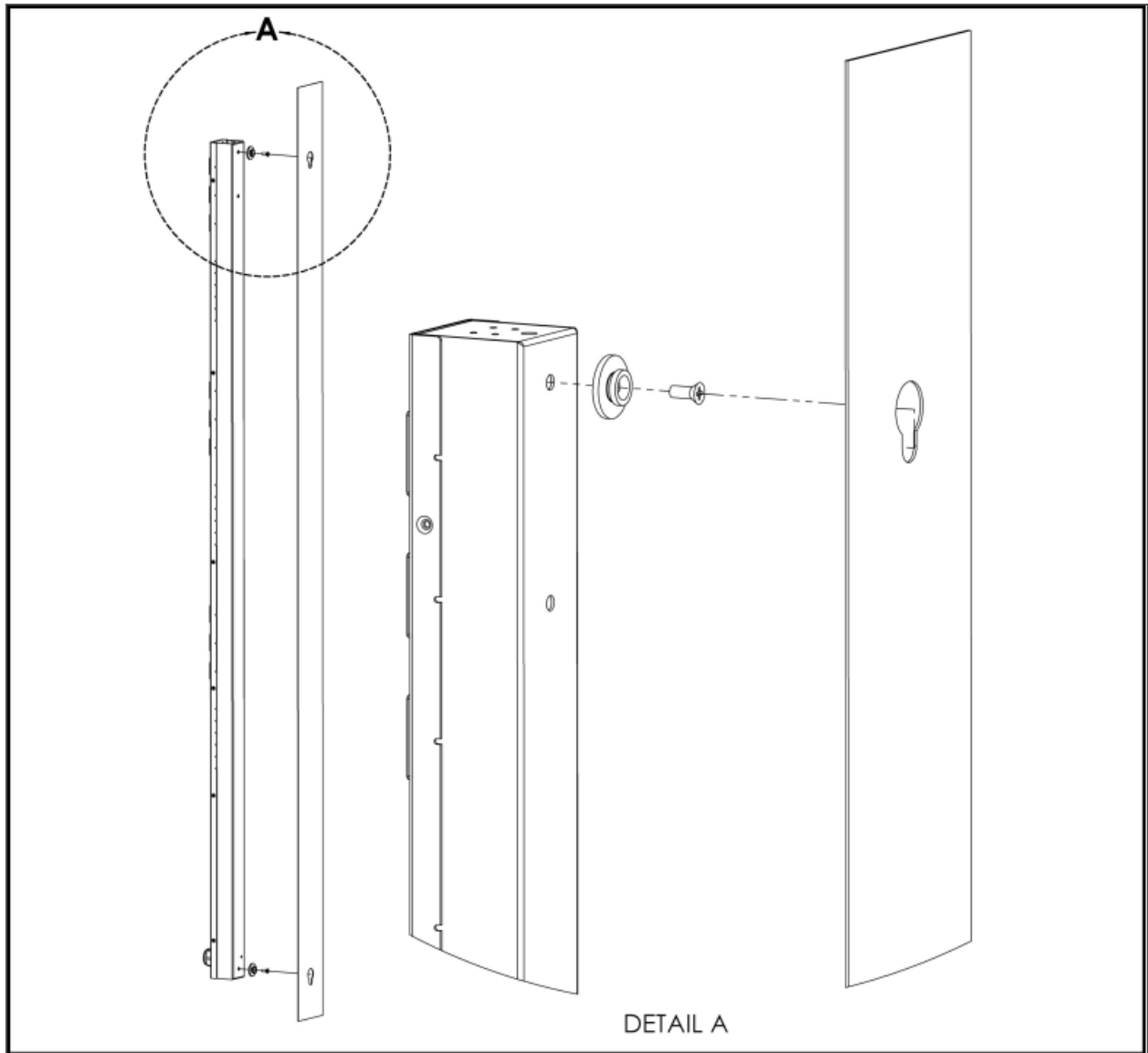


Figure 2.5 Tool-less Full-length Bracket

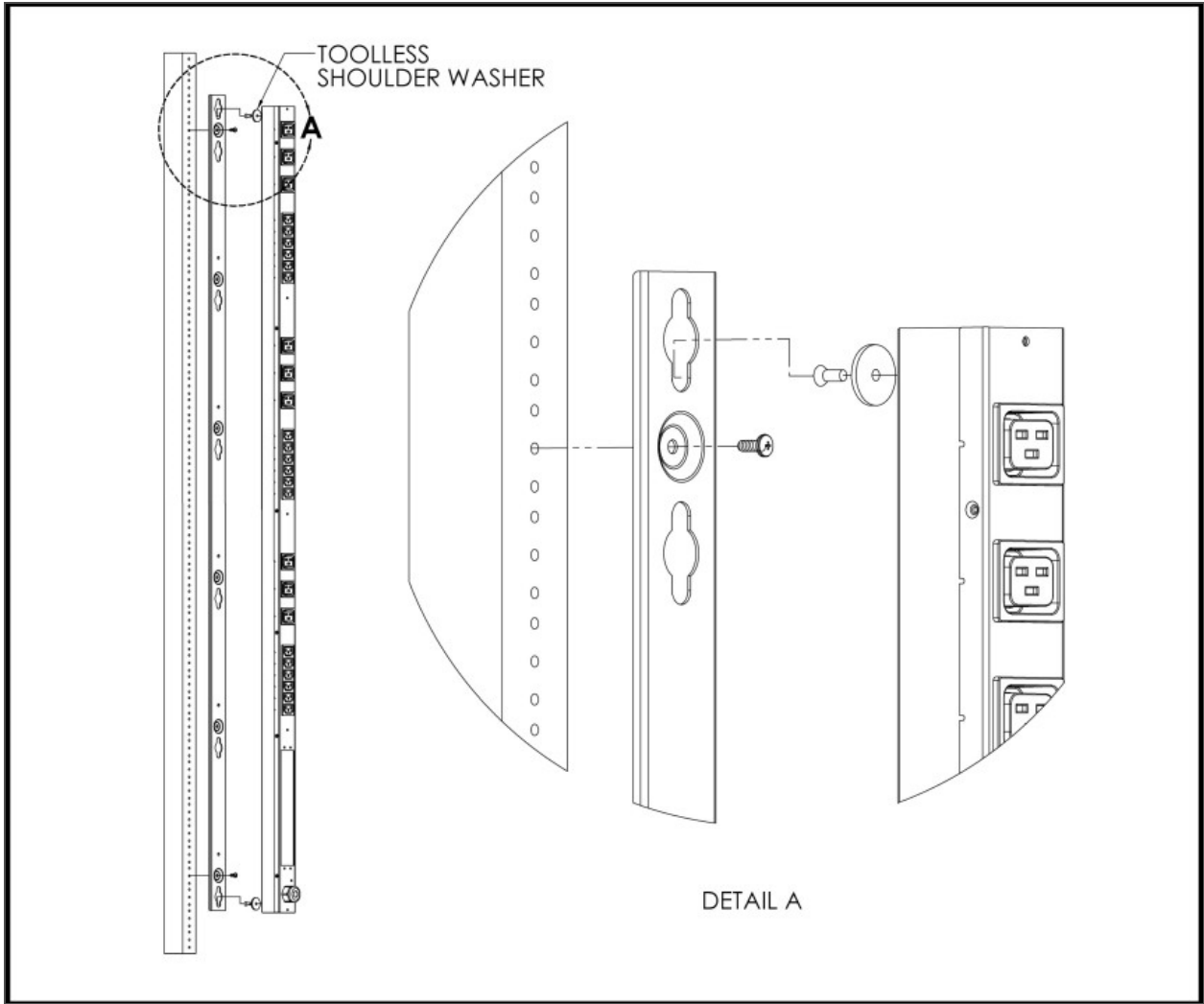


Figure 2.6 Single Side-mount Unit Brackets

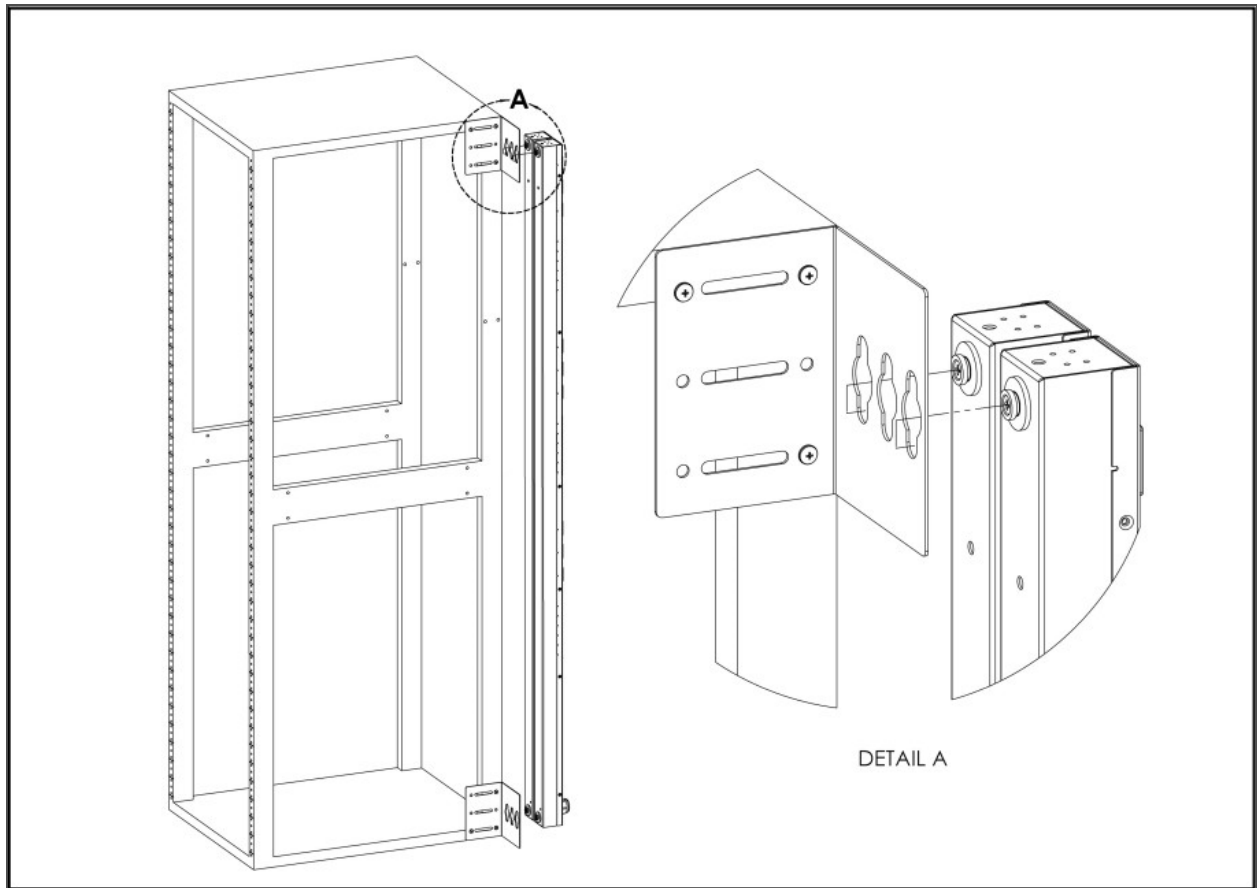


Figure 2.7 Offset Side-mount Brackets

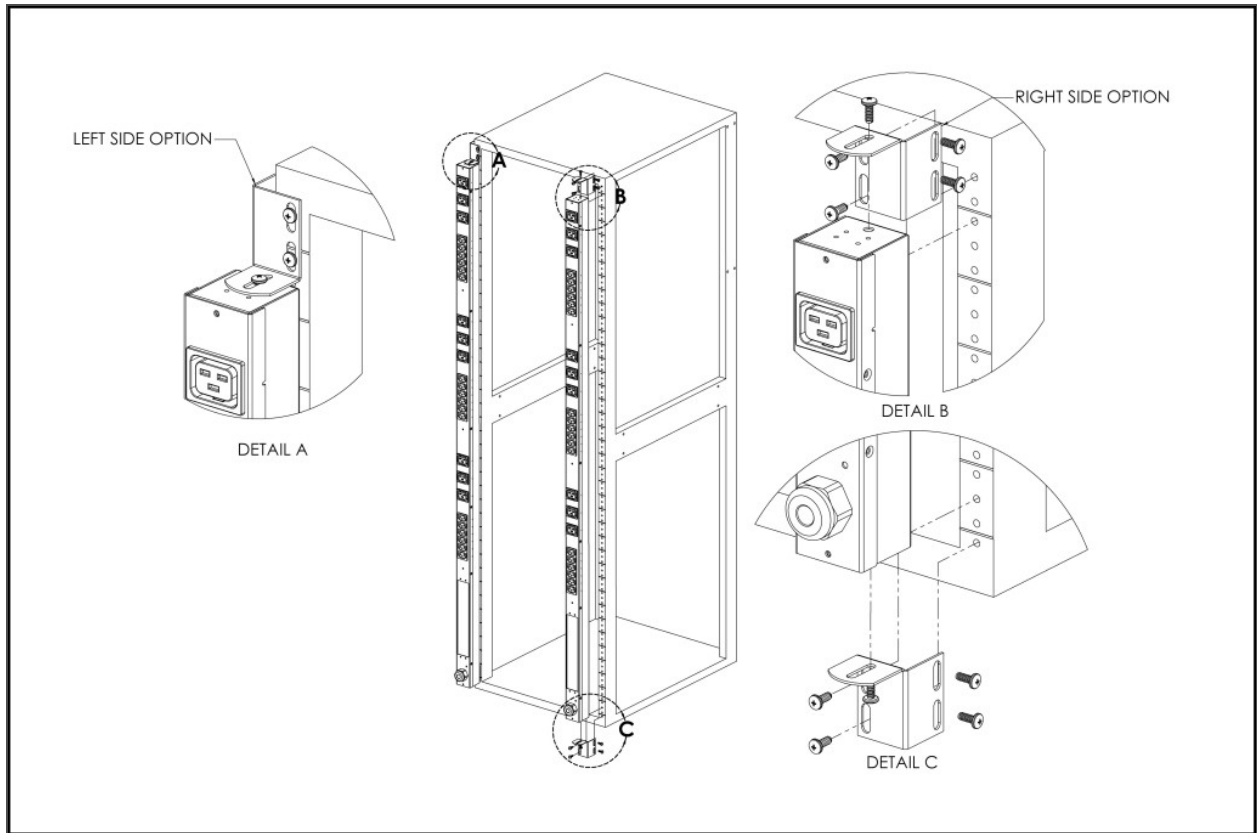


Figure 2.8 7" Extension Brackets (XB-7)

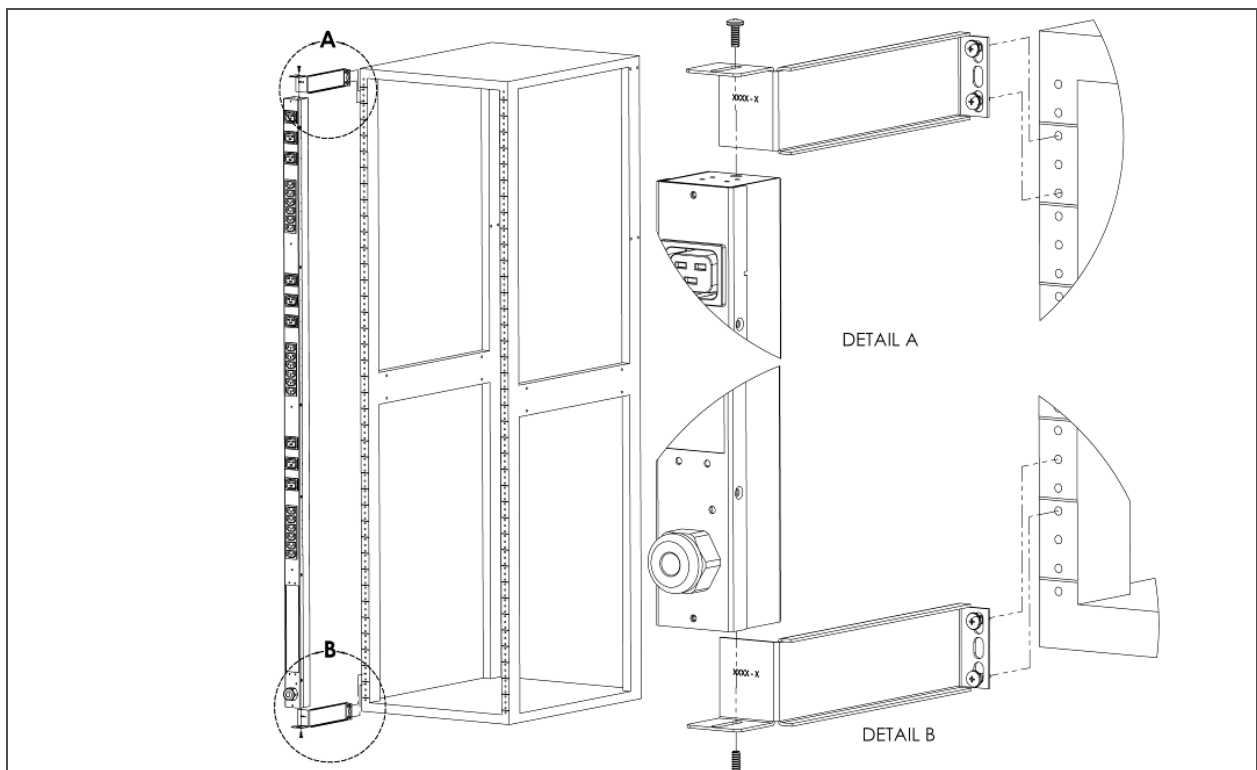




Figure 2.9 Flush Mount Brackets (FM)

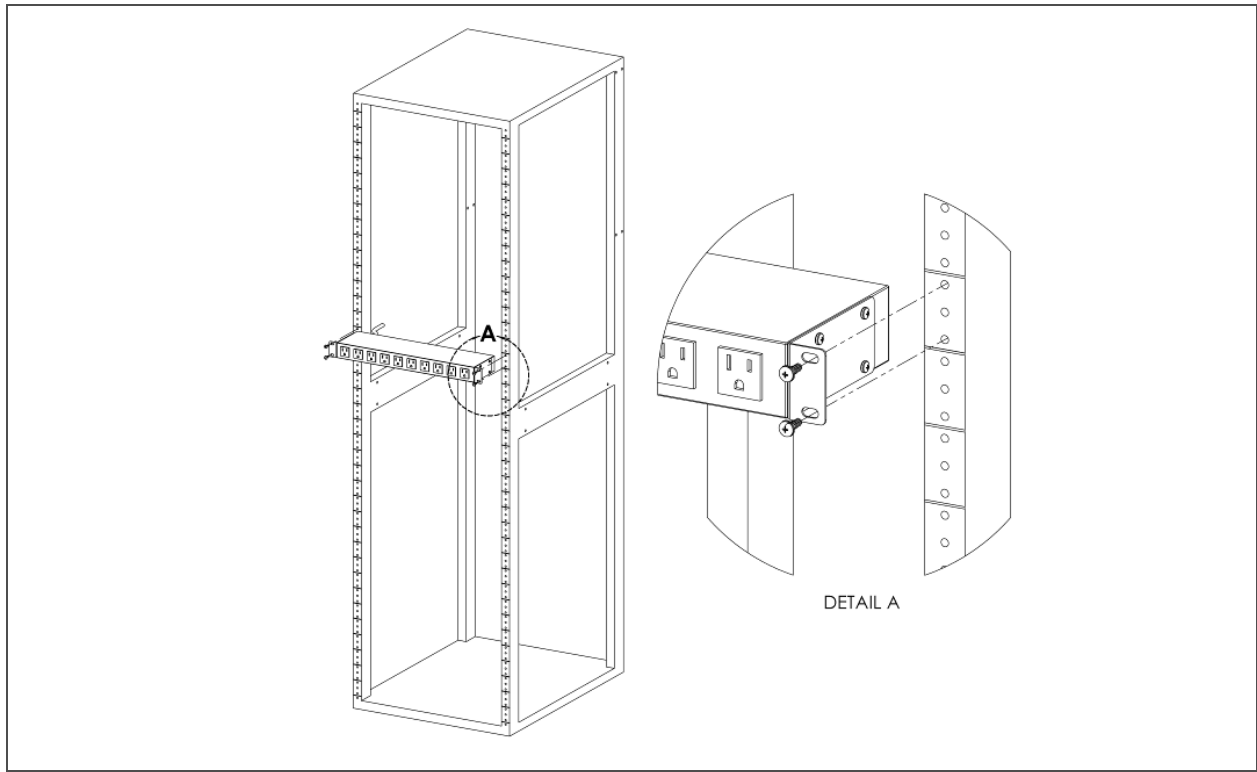


Figure 2.10 Adjustable Mount Brackets (AM)

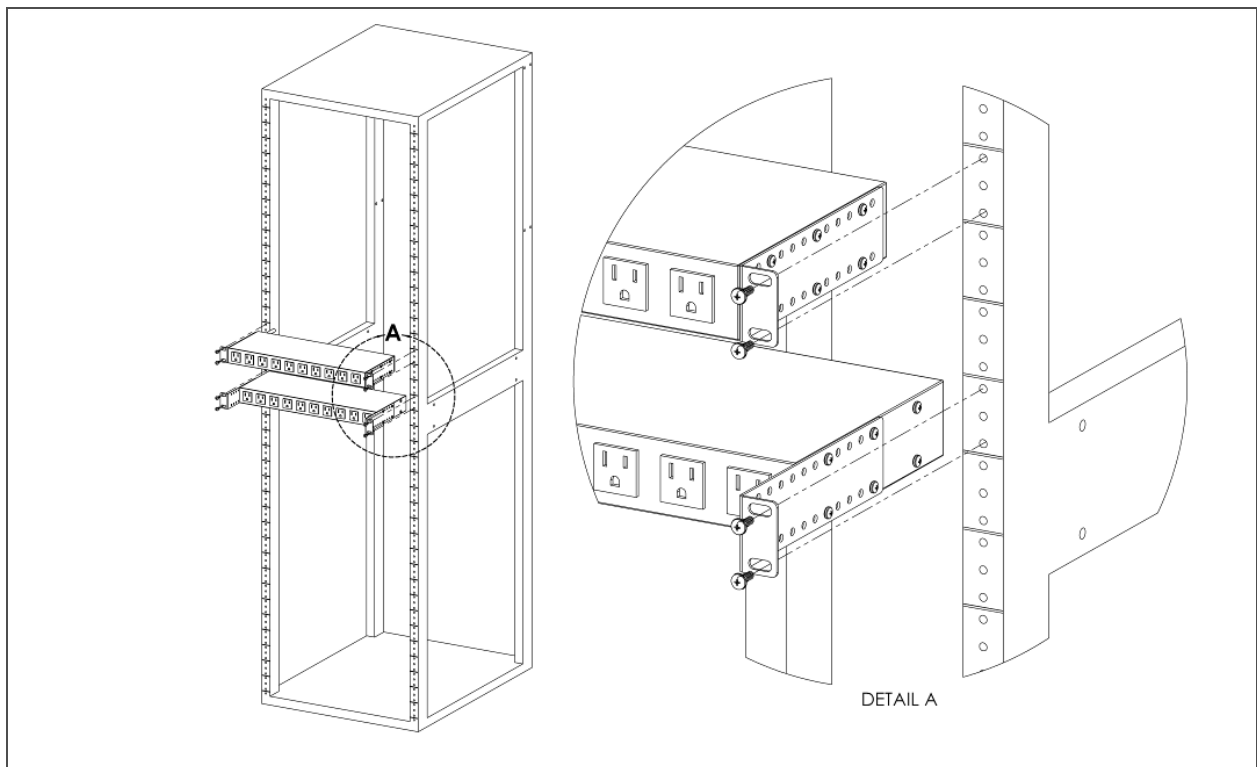


Figure 2.11 Panel Mount Brackets (PM)

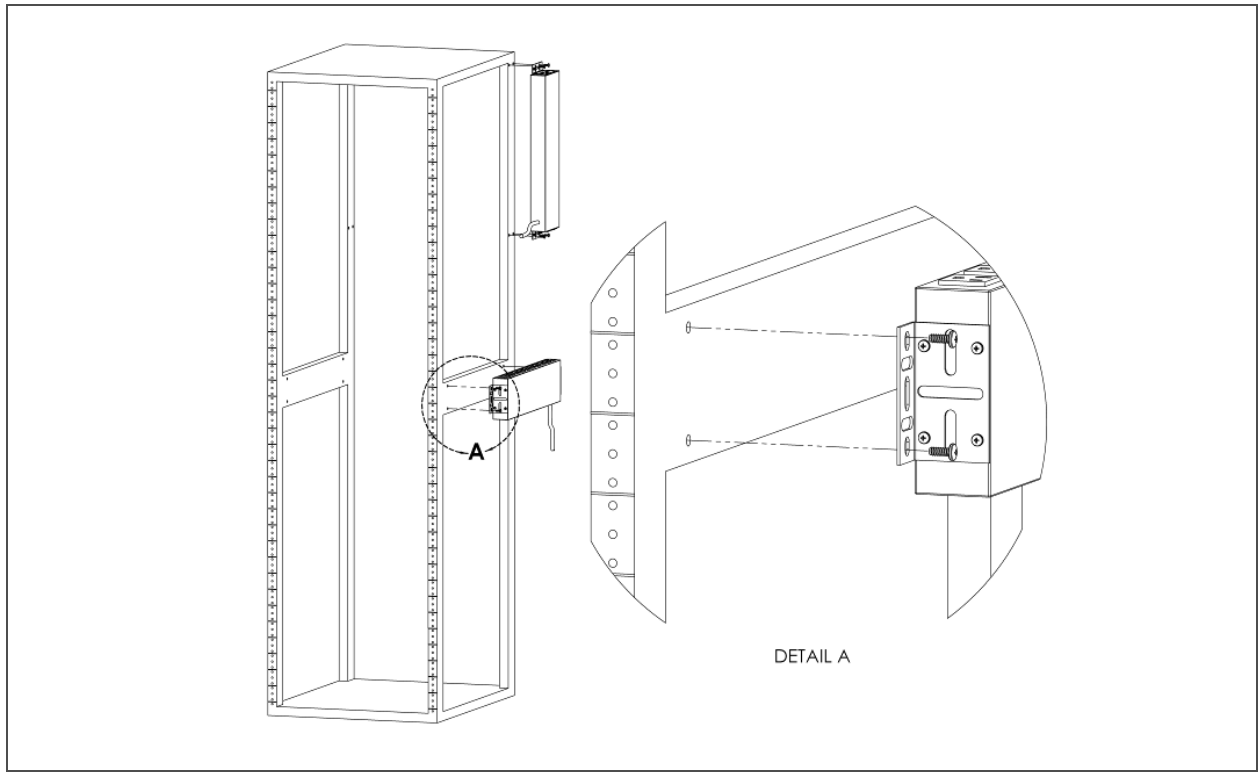


Figure 2.12 23" Conversion Mounting Brackets (23-RM)

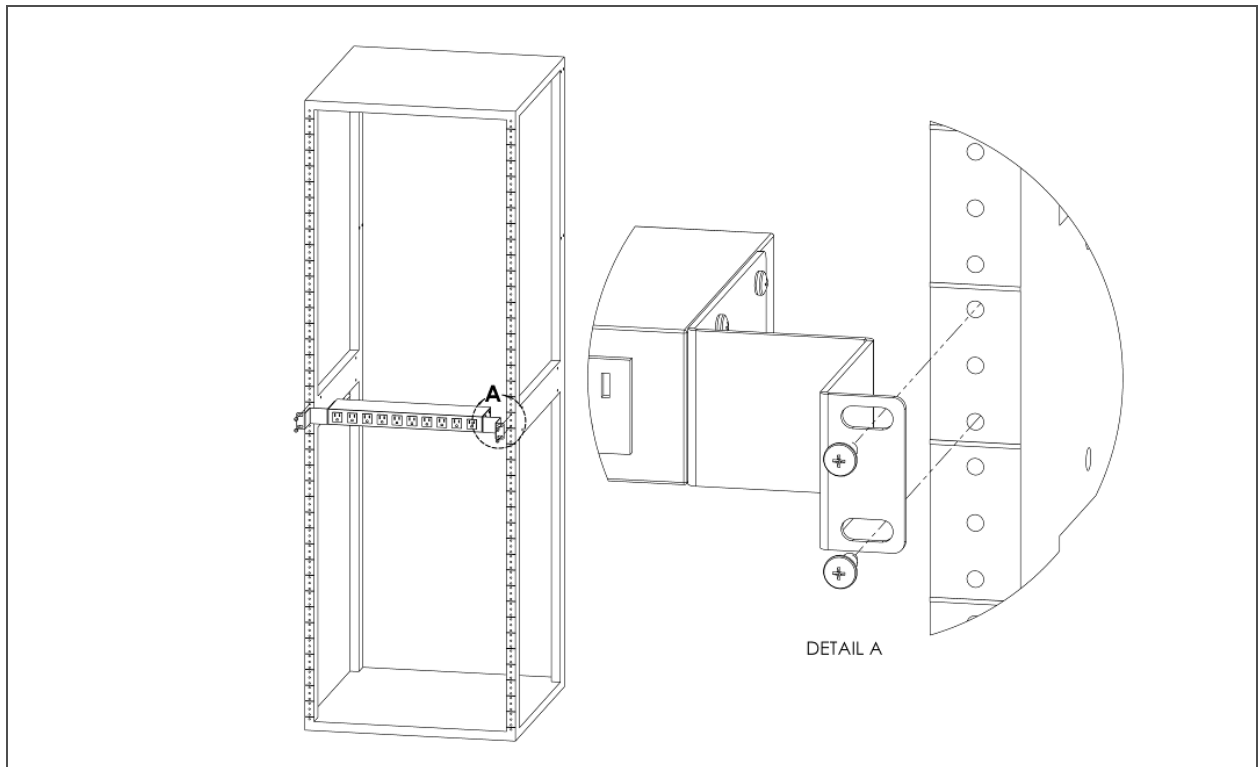


Figure 2.13 19" Horizontal/Panel Mount Brackets (7938)

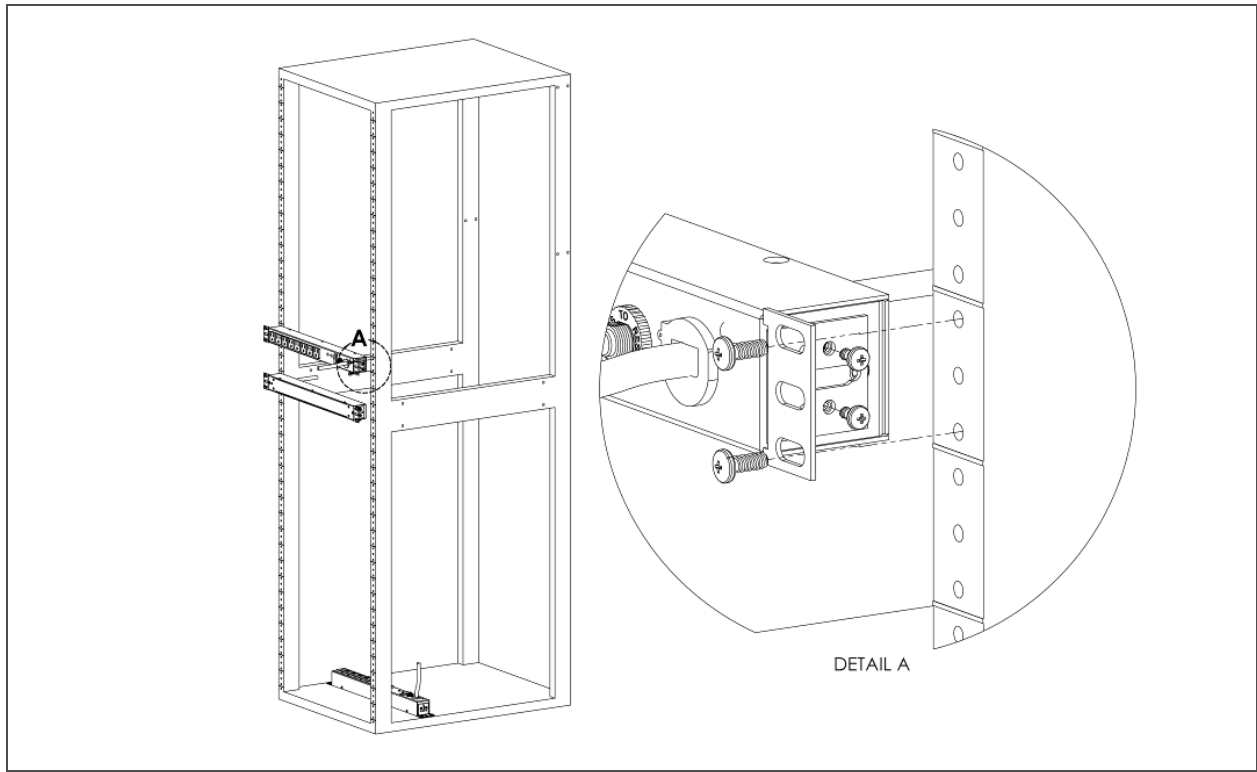
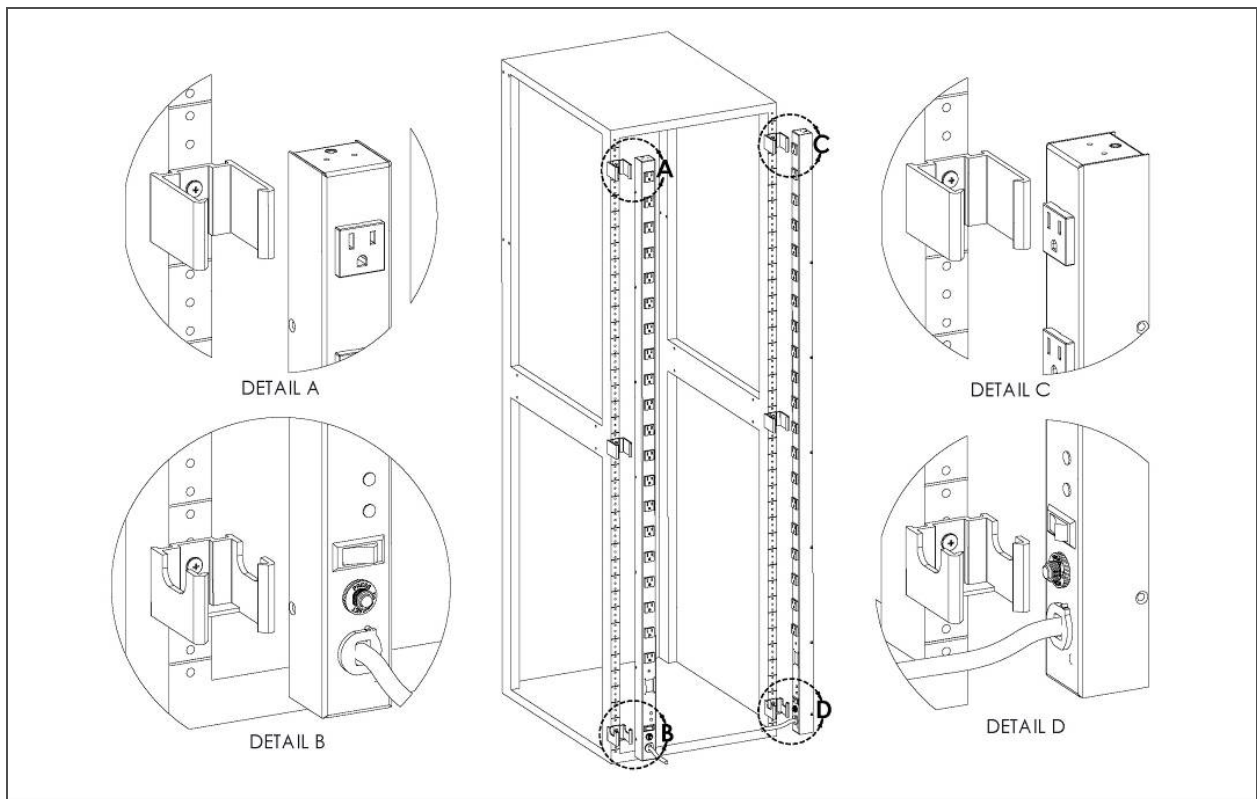


Figure 2.14 Top and Bottom Mounting Clips (9083C & 9084C)



**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.

### 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	340V
Energy Absorption	720 Joules
Green Light Indicator	Power On
Red Light Indicator	Surge Protection Active

### 2.1.2 Optional local metering

#### Power meter

The Geist PM-1 power meter is a low-power, high accuracy meter capable of measuring true 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 Amps.
- 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 Geist CM-1 current meter 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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## 3 APPENDICES

### Appendix A: Rack In-line Power Measurement Unit

#### A.1 Product Specifications

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 to 32 Amps depending on the unit's configuration. Inline power monitoring units can be configured with a Geist local current meter or power meter to perform the monitoring functions.

**Table A.1 L-Series Inline Power Monitoring Units**

PART #	MODEL #	AMPS	VOLTS	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<sup>2</sup> nominal conductor cross-sectional area detachable power supply cord with ratings of 300 V and 75 °C. 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. The power supply cord cable designation should be SJT or better.

To install an L-Series inline power monitoring unit:

**NOTE: Please visit <http://www.VertivCo.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](http://www.VertivCo.com/support).

#### Americas

- Website: [www.VertivCo.com/geist](http://www.VertivCo.com/geist)
- Email: [support@VertivCo.com](mailto:support@VertivCo.com)
- Telephone: 1-888-630-4445

#### Europe and Middle East

- Technical Support: [www.VertivCo.com/en-emea/support](http://www.VertivCo.com/en-emea/support)
- Email: [eoc@VertivCo.com](mailto:eoc@VertivCo.com)
- Telephone: 1-800-1155-4499

#### Asia

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

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