



# Compact Power Line Shelves

**Model: J85480S1, L20 – L29 shelves**

The 1U (1.75") high CPL family of shelves mount in 19-inch wide frames and provide up to 11kW of 48V output power per shelf. There are four slots for rectifiers. With the exception of L22 & L23, these shelves accept the high power capacity CP2725 rectifier.

<ul style="list-style-type: none"> <li>▪ Only 16.81" wide fits inside a 19" rack</li> <li>▪ Common or split DC Outputs. Each output rated for 100A supplied with either lug landings for 2 AWG wire or 3 – 35A fast-ON connectors.</li> <li>▪ Independent IEC-320 AC input for each rectifier</li> <li>▪ Analog, or dual/redundant I<sup>2</sup>C communications.</li> <li>▪ Adjustable mounting ears for flush or set back positions.</li> <li>▪ Stackable up to 8 high with 32 paralleled power supplies.</li> <li>▪ Isolated output for common output shelves</li> </ul>	
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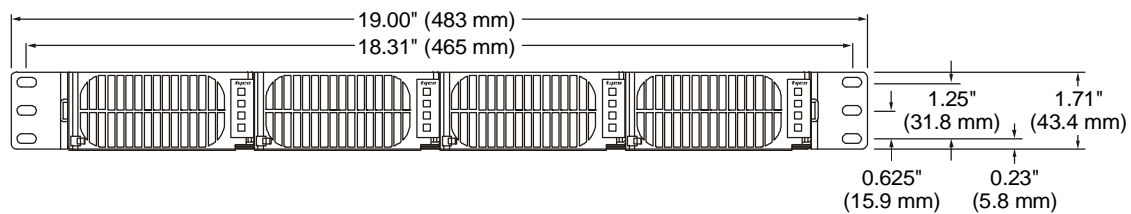
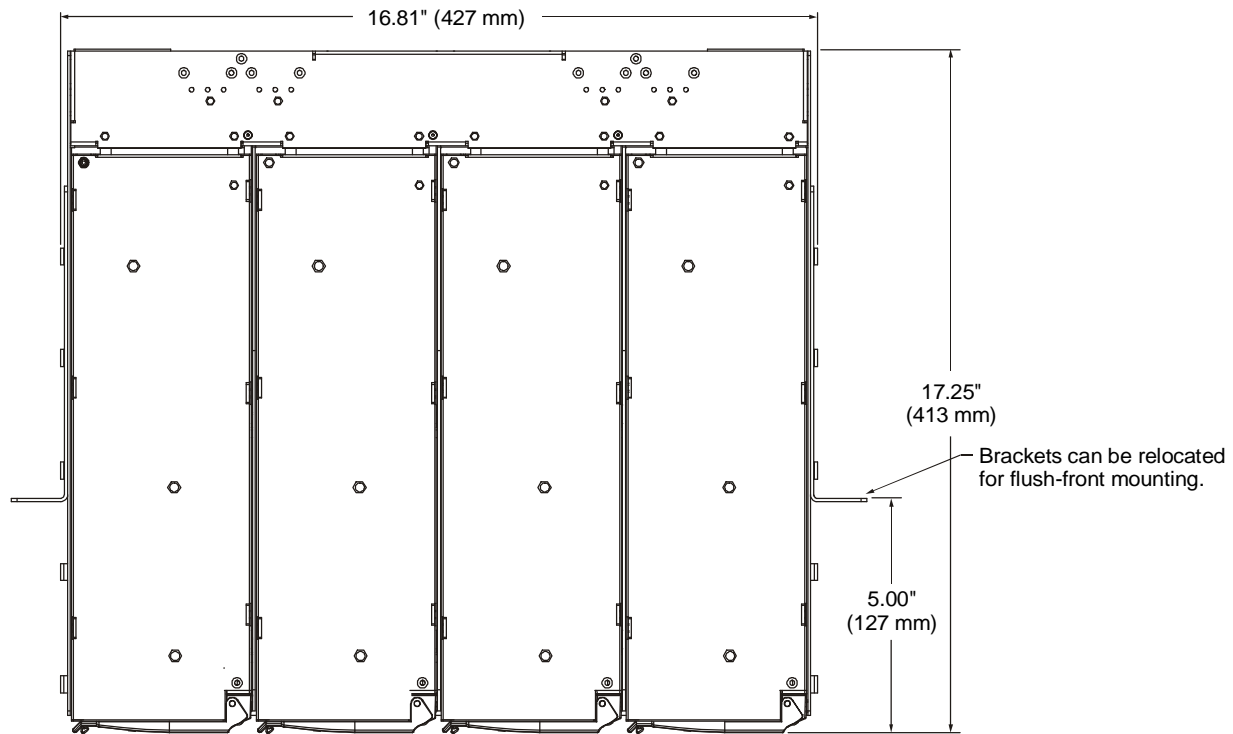
List	Max Power	AC Input Plug	DC Output		Max Rectifier Size	Features		Ordering Codes
			Bus	Termination		Setpoint	Other	
20	11kW	IEC-320, C19	Common	Lugs	CP2725	( ± ) 54Vdc	Analog, I <sup>2</sup> C	CC109147344
21			Split			- 54Vdc		CC109147328
22	8kW	IEC-320, C13	Common		CP2000	( ± ) 48Vdc	Always ON, Analog, I <sup>2</sup> C	CC109148490
23			Common	( ± ) 54Vdc		POE, Analog, I <sup>2</sup> C		CC109150447
24	11kW	IEC-320, C19	Common	FastON	CP2725	( ± ) 54Vdc	Analog, I <sup>2</sup> C	CC109136545
25			Common			( ± ) 48Vdc	Always ON, Analog, I <sup>2</sup> C	CC109147303
29			Split			- 54Vdc	Analog, I <sup>2</sup> C	CC109139184

**Notes:**

List 22 and 25 shelf is preprogrammed to be always ON and is set to 48Vdc. Either polarity can be grounded.  
 Split shelves L21 and L29 Vout ( - ) is split, however Vout ( + ) is paralleled among the 4 rectifiers. Vout ( + ) should be grounded.  
 All lists, up to 2 shelves can be paralleled for a single I<sup>2</sup>C line. Up to eight shelves may be paralleled for current shared power delivery.  
 All lists, shelf configured set point ensures inter-operability among all rectifiers from CP1800 to CP2725. Rectifiers will proportionately current share relative to their output power capacity.  
 All shelves are RoHS 6 compliant. Order should reflect J85480S1LxxZ where xx is the list number and Z indicates compliance to RoHS 6.

**Consult the factory for product availability set point and other feature options**

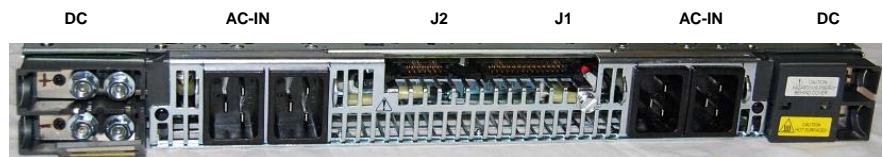
## Package Outline



## Rear Views

**Lists 20, 21, 22, 23**  
Lug output terminations

**Input:**  
L22 & L23 IEC320-C14 sockets<sup>1</sup>  
L20 & L21: IEC320-C20 sockets



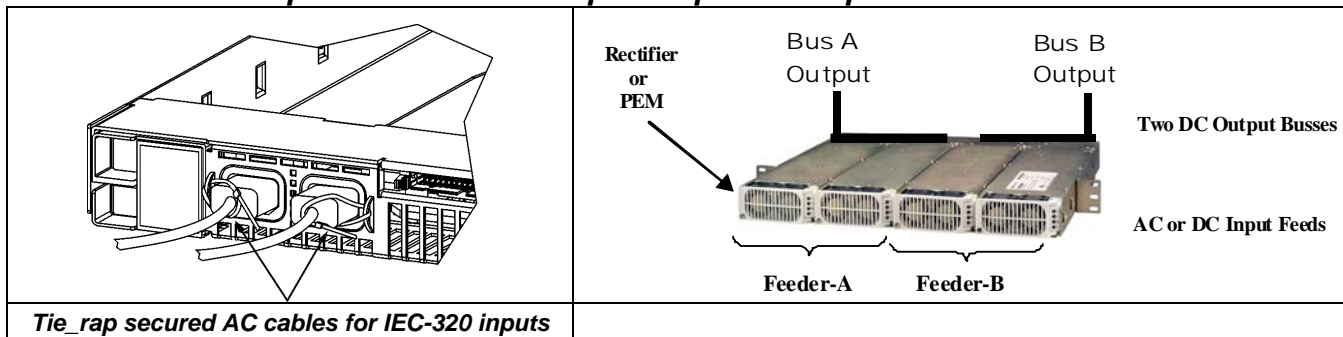
**Lists 24, 25, 29**  
Fast-ON output terminations

**Input:**  
L24 - 29: IEC320-C20 sockets

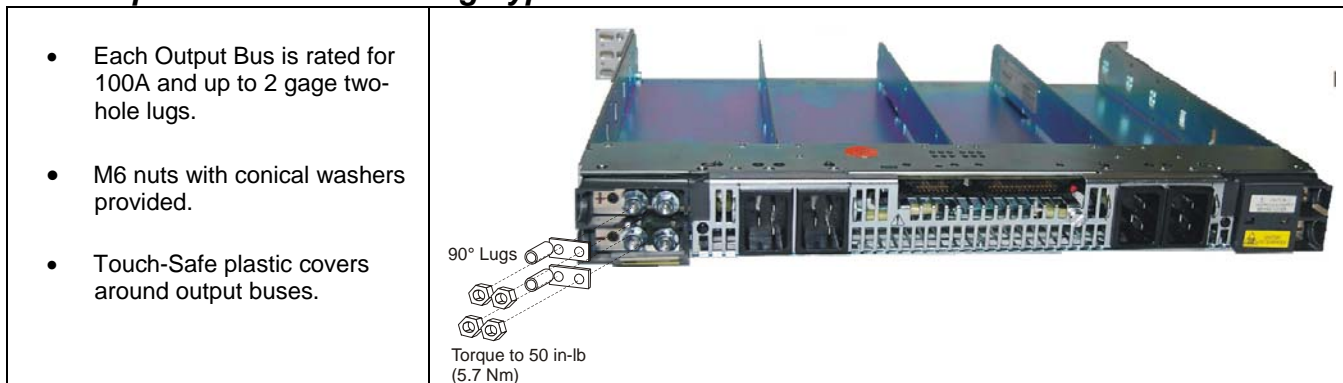


<sup>1</sup> The rear view shows the IEC320-C20 socket version product. The C14 sockets are in similar positions.

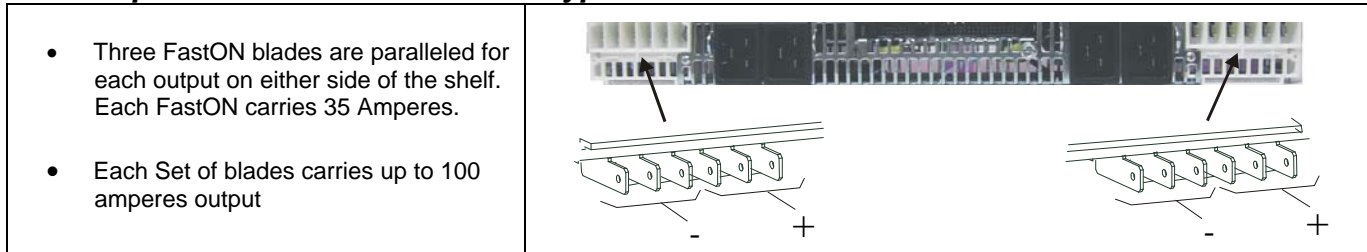
## Rear View - AC Input Connections / Split output concept



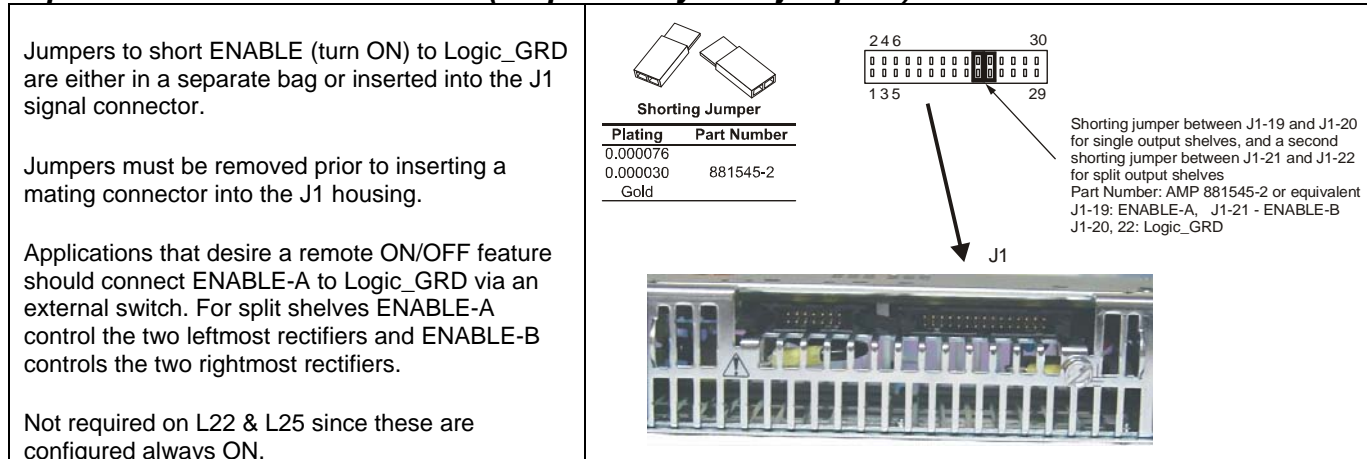
## DC Output Connections – Lug Type



## DC Output Connections – FastON Type



## Operation without a controller (output always ON jumpers)



## Communication Signals: J1 Connector

### Pin out

Pin	Signal	Pin	Signal
1	POWER_CAP_1	16	SDA_1
2	POWER_CAP_2	17	Fault
3	POWER_CAP_3	18	Alert#_0
4	POWER_CAP_4	19	Enable side B
5	MOD_PRES_1	20	Logic_GRD
6	MOD_PRES_2	21	Enable Side A
7	MOD_PRES_3	22	Logic_GRD
8	MOD_PRES_4	23	Alert#_1
9	PFW_1	24	5VA
10	PFW_2	25	OTW
11	PFW_3	26	Reset
12	PFW_4	27	Iso. barrier n/c
13	SCL_0	28	Iso. barrier n/c
14	SCL_1	29	Shelf_Addr_B
15	SDA_0	30	Shelf_Addr_A

Control Interface cable (part # CC848854034)



## Communication Signals: J2 Connector

### Pin out

Pin	Signal	Pin	Signal
1	SCL_0	8	Alert#_1
2	SCL_1	9	Isolation n/c
3	SDA_0	10	Isolation n/c
4	SDA_1	11	Ishare - B
5	Alert#_0	12	Ishare - A
6	5VA	13	8V_INT - B
7	Logic_GRD	14	8V_INT - A

Shelf-to-shelf cable connection (part # CC848848952)



**Notes:** Shelf addressing, 8V\_INT, and current share are referenced to the most negative power output Vout(-) of the shelf. For paralleled shelves the Vout(-) terminations must be tied together in order to ensure proper operation of these functions. Modules could get damaged if this connection is not made.

For address A2=0, leave Shelf\_Addr\_x N/C. For A2=1, connect Shelf\_Addr\_x to Vout(-). For all other signals refer to rectifier data sheet.

## Signal connector part numbers

( AMP – as specified or equivalent)

Connector	Positions	On shelf	Ribbon cable	Individual wires	Crimping tool
J1	30	5102159-7	1658621-7 header	102387-7 header	
		102320-1 latch	1-499252-2 retainer	6-87756-8 pin <sup>2</sup>	91517-1
J2	14	5102159-2	1658621-2 header	102387-2 header	
		102320-1 latch	499252-9 retainer	6-87756-8 pin	91517-1

<sup>2</sup> For 22 – 26ga wires

## Specifications

Parameter	Min	Max	Notes
<b>Input</b>			
AC Input Current, per module		15A 20A	IEC-320, C13 type <sup>3</sup> IEC-320, C19 type <sup>4</sup>
<b>Output</b>			
Programmable output set point	42Vdc	58Vdc	Via software
Max Output Current		200A	100Amax on each side
<b>Environmental</b>			
Operating Temperature Range	-40°C to 65°C for UL recognition and 45°C for VDE certification		
Operating Relative Humidity	0 - 95% (non-condensing)		
Storage Temperature Range	-40°C to 85°C		
EMC	FCC, EN 55022, CISPR22, Level A, conducted and radiated		
Immunity	FCC and CISPR22 (EN55022) Class A2		
<b>Safety/Standards Compliance</b>			
Safety Standards	UL60950-1, CAN/CSA C22.2 No 60950-1, EN60950-1 (VDE 0805-1)		
Certification Marks <sup>5</sup>	VDE Licensed, UL Recognized (Canada and U.S.)		

## Ordering Information

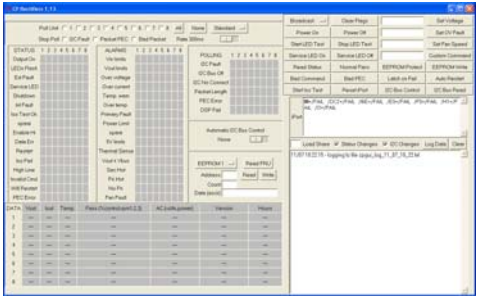


Part Number	Description	Comcode	Usage
<b>Blank Slot Fillers</b>			
	Central Office White	CC848822263	All
	Raven Black	CC848781534	
	Graphite	CC848825233	
<b>Extensions and mounting brackets</b>			
	CP 19 inch mounting bracket kit (includes two brackets and mounting hardware)	CC109145760	L8
	1U high extension bracket kit for 23" cabinets (includes two brackets and mounting hardware)	CC848844803	All
	2U high extension bracket kit for 23" cabinets (includes two brackets and mounting hardware)	848683009	All
<b>Cables for J85480S1 Shelves</b>			
	Individual wire ser cable for attaching a controller to the power shelf – 6 ft. One end mates into J1 the other end not terminated.	CC848854034	All
	Cable set from J1 of the shelf to the CPL Interface Board	CC848848960	All
	Inter-shelf cable set for interconnecting J2 signals between shelves	CC848848952	All
	Output cable set: 2 AWG DC Lug termination– 10 ft ( 1 RED and 1 BLACK cable)	848748987	L20, L21, L22, L23
	m6 screw with conical washer	901377010	L20, L21, L22, L23
	Output cable set: FastON terminations one end – 10ft 3 red and 3 black 10ga wires	CC848851931	L24, L25, L29
	AC input cable: IEC 320 C13 plug (one end), other end not terminated , 14 AWG, 14 ft,	847861192	L22, L23
	AC input cable: IEC320 C19 straight plug (one end), other end not terminated	CC848847368	All but L22 & L23
	AC input cable: IEC320 C19 right angle plug (one end), other end not terminated	848713376	All but L22 & L23

<sup>3</sup> IEC320 – C13 plugs are rated for 10A international and 15A in North America

<sup>4</sup> IEC320 – C19 plugs are rated for 16A international and 20A in North America

<sup>5</sup> Certifications pending

## Support Tools

<p>Graphical User Interface</p>	<p>This program exercises the various commands and functions available via the i<sup>2</sup>C interface of the power supply. Two independent GUIs can demonstrate the two independent i<sup>2</sup>C multiplexed lines. Find out who is in control, take over control.</p> <p>The GUI has an automated polling feature and records all state changes in a time stamped automated fashion. Monitoring of the power system is therefore trivial for long periods of time.</p>	
<p>Interface Board</p>	<p>This board can be used independently or in combination with the GUI interface</p> <p>LEDs display the status of the analog signals and dip switches change the signal state to the power supply.</p> <p>In addition, two connectors are provided for interfacing to the two i<sup>2</sup>C lines of the power supplies.</p>	
<p>Total Communications Solution</p>	<p>This is a nuts and bolts complete hardware solution that starts from either the USB or RS232 port of a computer and ends with a cable set that connects into the J1 signal connector of the shelf.</p> <p>In between is the interface board and a commercially available converter that translates the computer signals into i<sup>2</sup>C and vice versa.</p> <p>The converter is an <b>MIIC-202</b> IPort manufactured by Micro Computer Control (mcc-us.com).</p>	

## Safety

### Product Labeling

Follow all warnings and instructions marked on the product. Some of the safety symbols used with the CP platform of rectifiers and J85480S1 Shelf may include the following. They may also be accompanied by instructions:

#### Mounting and Installation

- This product shall be installed in compliance with mounting requirements for the ultimate application.
- This product must be installed, serviced, and operated only by skilled and qualified personnel who have the necessary knowledge and practical experience with electrical equipment and who understand the hazards that can arise when working on this type of equipment. This product is intended for use in a Restricted Access Location.
- This equipment is to be used in controlled environments (an area where the humidity is maintained at levels that cannot cause condensation on the equipment, the contaminating dust is controlled, and the steady-state ambient temperature is within the range specified).
- This equipment has been evaluated for use in a continuous ambient temperature of up to 55°C and the application environment should not exceed 55°C.



- The CE mark if provided on the product is applied to show conformance to the requirements outlined in the European Union's Low Voltage Directive {2006/95/EC} and EMC Directive {2004/108/EC}.
- The J85480S1 shelf has been evaluated for hot swapping.
- A separate protective Earthing terminal is provided at the rear of the shelf
  - the building installation shall provide a means for connection to protective earth; and
  - the equipment is to be connected to that means; and
  - a SERVICE PERSON shall check whether or not the socket-outlet from which the equipment is to be powered provides a connection to the building protective earth. If not, the SERVICE PERSON shall arrange for the installation of a PROTECTIVE EARTHING CONDUCTOR from the separate protective Earthing terminal to the protective earth wire in the building.

**Output Connections**

- All field wiring should comply with the U.S. National Electrical Code (NEC) and/or applicable local codes/standards.
- Routing of the DC output cables should guarantee that cables are not in contact with sources of heat and surfaces that may damage the cable insulation.
- The DC output is not provided with a fuse or circuit breaker suitable for branch circuit protection. Therefore, the power shelf should be mounted in the same rack or cabinet as the equipment being powered. Use interconnecting power cables suitable for the application and sized to carry the rated output current. The interconnecting cables should be capable of carrying the overload current and short circuit current without damage or risk of fire.
- The output for the system is SELV and has available power greater than 240VA.
- Insulation on output field-wired conductors should be rated no less than 90°C. Wiring internal to enclosed equipment cabinets should be rated at 105°C (minimum). The provided DC output cords (red and black wires) are rated for 105°C.
- Before opening the insulating cover to gain access to load and ground connections, ensure all power supplies are disconnected from the AC MAINS.

**AC Input Connections**

- AC branch circuits to this equipment must be protected with fuses or circuit breakers sized as required by the U.S. National Electric Code (NEC) and/or local codes. Up to four AC mains power cords are required to power the shelf (one for each rectifier). Each power cord should be connected to a separate AC mains branch circuit with an overcurrent protector rated at no more than 20A, except for the L22 and L23 shelves that should be protected by an overcurrent protector rated at no more than 15A.
- The power supply mains inlet may be used as the means to provide AC protective earthing.
- An accessible AC disconnect/protection device to remove AC power from the equipment in the event of an emergency must be provided. An accessible socket-outlet/receptacle installed near the equipment is also acceptable as a disconnect.
- The equipment is powered by multiple AC inputs (one per rectifier). Disconnect all AC sources of power before servicing.
- These units are to be used with TN-S power systems only.

**Safety Symbols and Guidelines**

Read and understand all instructions before attempting any installation of this product. When installing, operating, or maintaining the J85480S1 Power System, basic safety precautions should always be followed to reduce the risk of fire, electric shock, and injury to persons. Such precautions include the following:



This symbol identifies the need to refer to the equipment instructions for important information.



This symbol identifies the presence of hazardous AC or DC voltages or hazardous energy levels. In the context of this product

- The DC output cables contain electrical energy levels capable of causing heating and arcing if shorted to metal objects. Make connections with the power disconnected.
- Hazardous AC voltage and DC electrical energy is contained within the enclosure of the power shelf. No user or field serviceable parts inside.



This symbol is used to identify safety earth ground connection points within the equipment.

## **German Safety Guidelines**

### Installationsanleitung

- Alle Ausgänge des Gerätes erfüllen die Anforderungen für SELV nach IEC/EN60950-1.
- Die Ausgänge des Gerätes liegen über den Limits für Energiegefahr nach IEC/EN60950-1 (>240 VA). Das Gerät ist zum Einbau in ein Montage-Rack bestimmt. Siehe Einbaubestimmungen in der Montageanleitung, um eine Gefährdung des Benutzers während der Installation zu vermeiden.

### **ACHTUNG:**

#### **Hoher Ableitstrom Vor Anschluss an den Versorgungsstromkreis unbedingt Erdungsverbinding herstellen**

- Das Produkt ist zum Gebrauch in einer Umgebungstemperatur von max. 55°C bestimmt.
- Die Gerätestecker des Produktes sind dazu bestimmt, eine sichere Erdung des Gerätes herzustellen.
- Das Produkt ist zum Gebrauch in einer Umgebung mit Verschmutzungsgrad 2 nach IEC/EN60950 bestimmt.
- Die Netzteile des Gerätes können während des Betriebes einzeln ausgetauscht werden (Hot Swapping).
- Das Gerät wurde zusammen mit den Anschlussleitungen (ohne Anschlussstecker) geprüft. Die Installation eines Steckers des jeweiligen Landes, sollte nur durch geschultes Service Personal durchgeführt werden. Als alternative könnte eine Vorinstallation des Steckers bereits bei der Herstellung erfolgt sein.



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