PDU48/300DF DCDU Intelligent DCDU Power Subrack Installation & Commissioning Manual

To ensure the smooth operation, please read this manual carefully before installing and operating the PDU48/300DF-S1, PDU48/300DF-S2, PDU48/300DF-S3 intelligent DCDU power subrack (power subrack for short).

1 Appearance

PDU48/300DF-S1 power subrack is shown in Figure 1-1.

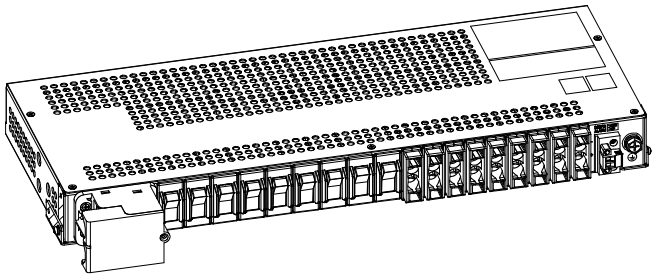


Figure 1-1 The appearances of PDU48/300DF-S1

PDU48/300DF-S2 power subrack is shown in Figure 1-2.

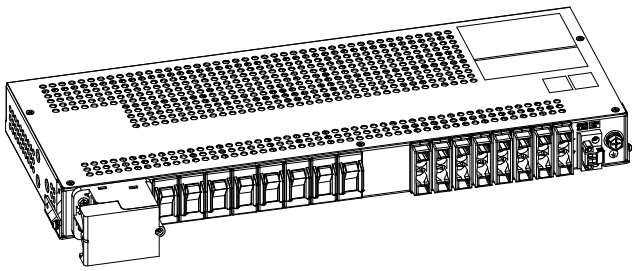


Figure 1-2 The appearances of PDU48/300DF-S2

PDU48/300DF-S3 power subrack is shown in Figure 1-3.

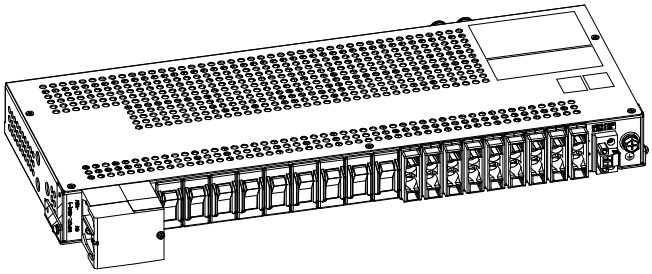


Figure 1-3 The appearances of PDU48/300DF-S3

2 Technical Specification

Table 2-1 Technical specification

Parameter	Description
Operating temperature	-5°C ~ +40°C
Storage temperature	-40°C ~ +70°C
Relative humidity	5%RH ~ 95%RH
Altitude	≤ 2000m
Others	No conductive dust or erosive gases. No possibility of explosion
Input voltage range	-40Vdc ~ -58Vdc, decided by superior input current. There is no input protection for the subrack, which requires the superior input power supply to configure the circuit breaker or fuse for protection.
DC output	PDU48/300DF-S1: Hydraulic MCB: 40A × 9
	PDU48/300DF-S2: Hydraulic MCB: 40A × 4, 30A × 4
	PDU48/300DF-S3: Hydraulic MCB: 40A × 9
Output voltage	Nominal voltage: -48Vdc Range: -40Vdc～-58Vdc, decided by superior input current
DC SPD	8/20uS Inrush current, nominal current 15kA. Alarm dry contact with NC-COM.
Dimensions	W(mm) × D(mm) × H(mm): 440mm (No hanger) x 165mm(No device) × 43.4mm
Weight	About 3Kg (packaging)

3 Installation

3.1 Installation Preparation

Unpacking inspection

The power subrack should be unpacked and inspected after it arrives at the installation site. The inspection shall be done by representatives of both the user and Vertiv Tech Co., Ltd.

To inspect the power subrack, you should open the packing case, take out the packing list and check against the packing list that the power subrack is correct and complete. Make sure that the power subrack is delivered intact.

Cable preparation

The cable design should meet relevant industry standards. It is recommended to use the RVVZ cables as AC cables. The cable should reach at least 70°C heat durability. The suggested CSA is between 35mm^2 and 50mm^2.

The CSA of the power subrack grounding cable should be consistent with that of the maximum power distribution cable and not less than 16mm^2.

To select the load cable CSA, see Table 3-1.

Table 3-1 Selection of Load cable CSA

Load route rated current	Max. allow-able current	Min. cable CSA	Max. cable length (voltage drop: 0.5V, with min. CSA)	Max. cable CSA	Max. cable length (voltage drop: 0.5V, with max. CSA)
40A	33A	6mm^2	2.3m	16mm^2	6.3m
30A	25A	6mm^2	3m	16mm^2	8.3m
Note: 1. 16mm^2 cable should be used when the branch load is at its maximum allowable current. 2.The specs are applicable at ambient temperature of 20°C. If the temperature is higher than this, the CSA of the cable should be increased					

3.2 Mechanical Installation

The installation modes of the power subrack include rack installation.

Rack installation

Insert the power subrack to the rail, and use panel to fasten the power subrack and the rail through the hangers. Refer to Figure 3-1.

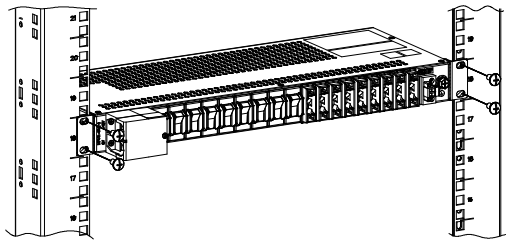


Figure 3-1 PDU48/300DF rack installation

3.3 Electrical Connection

Danger

1. Switch off all MCBs before the electrical connection.
2. Only qualified personnel shall perform the cable connection.
3. When there are multiple power inputs in the DCDU subrack input, be careful to disconnect all power supplies when power is off.

Note

For some installations, because of space constraints, you should first connect the cables to the power subrack and then install the power subrack.

Connecting power cables

Refer to Figure 3-2, Figure 3-3, Figure 3-4 for the connection terminals of power subrack.

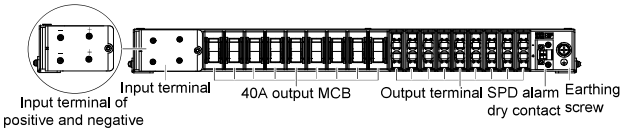


Figure 3-2 Connection terminals of PDU48/300DF-S1

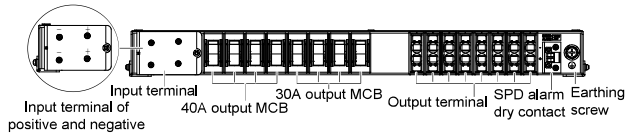


Figure 3-3 Connection terminals of PDU48/300DF-S2

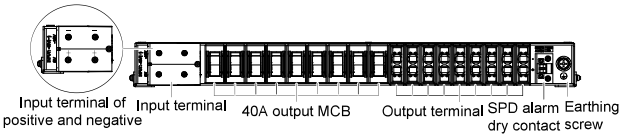
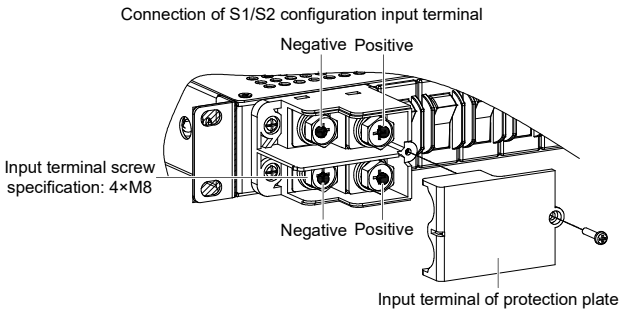


Figure 3-4 Connection terminals of PDU48/300DF-S3



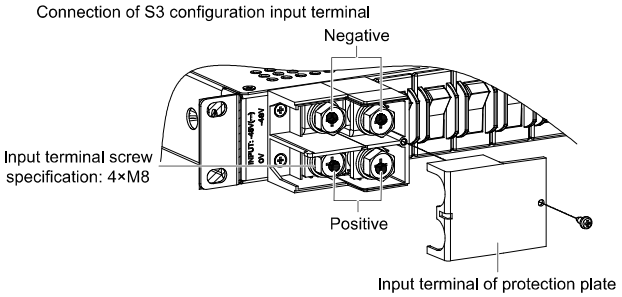


Figure 3-5 Diagram of Input terminal

Subrack input connection terminal can be connected in single or double. Connect input cable to matched OT terminal before installing the input cable, and then remove the input terminal protection plate. Reinstall the protection plate after the input cable correctly connected (The arrangement of positive and negative input terminals of S1/S2 configuration subrack is different from S3 configuration subrack. It is necessary to pay attention to the wiring of silkscreen label on the subrack., see Figure 3-5). The specification of earthing screw is M6.The OT terminals matching the cable should be pressed to connect the earthing cable for fixing.

We can press the wire connection of the tube-type terminal, and recommend to select suitable tube-type terminal as cable contact while installing the output cable for the PDU48/300DF. When bare conductor is connected, the strip length of wire is 13-15mm, pay attention to protect the cable core from straightening and spreading.

Operation method of output terminal connection (Take pressure-tube-type terminal wire as an example): Refer to Figure 3-6, the selection of slotted screwdriver blade is 6-7 mm wide, can ensure good operation of the terminal push pressing block(See Figure 3-9). Use tube type terminal crimp cable (After crimped, The dimension of terminal should meet the dimension requirements as shown in Figure 3-9.),such as E16-12 tube type terminal, the length of metal part is 12 to 13 mm, cable strip length is 12 to 13mm. The screwdriver is perpendicular to the front of the terminal, the screwdriver blade must be put on the small groves position of terminal push pressing block, push it to the end with the right force, the cable into the terminal hole, The insulation shell of the cable ear is basically flush with the hole surface (See Figure 3-7) that insert the cable in place, and then loosen the screwdriver. The diagram of overall wiring operation is shown in Figure 3-8. When removing the cable, use the above specification slotted screwdriver, push the terminal push pressing block to the end with appropriate force, then pull out the cable, and release the screwdriver.

Figure 3-6 Screwdriver blade

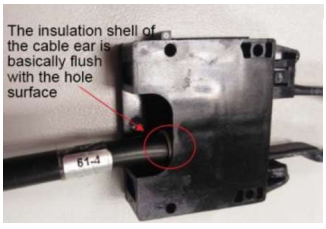


Figure 3-7 Cable flush

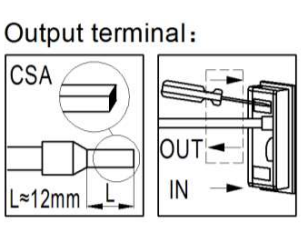


Figure 3-8 overall wiring operation

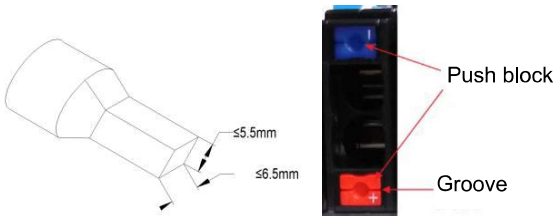


Figure 3-9 Demension of terminal crimped and push block

Connect the power cables according to the descriptions listed in Table 3-2.

Table 3-2 Description of the cable connections

Cable		Connection	
		From	To
Grounding cable		Grounding terminal	Grounding copper bar of the machine room or ground
DC input cable		DC output terminals of upstream power supply	Power subrack input terminals
DC output cable	Positive(0V)	Positive terminal	Positive terminal of the load
	Negative(-48V)	Negative terminal	Negative terminal of the load

4 Testing

4.1 Installation Check And Power On

Before the test, inform the chief manufacturer representative. Only trained electrical engineer can test and operate this equipment. In operation, the installation personnel are not allowed to wear conductive objects such as watches, bracelets, bangles and rings.

During operation, note the hazardous voltage to avoid the severe or fatal physical injury and property damage. Before power-on, check the power subrack to ensure the proper earthing. Installation check must be done before testing.

Make sure that the MCBs of the upstream power supply are switched off, and that all the devices are properly installed.

Installation check

Item	OK	Remark
Check whether the input and output cable connection, and the power subrack grounding are correct and reliable	☐	

Startup preparations

Item	OK	Remark
Make sure that all the MCBs are switched off	☐	

Startup

Item	OK	Remark
Switch on the output fuse or output MCB of the upstream power supply	☐	
Check the power subrack voltage and busbar polarity with a voltmeter. The voltage difference between the measured value and displayed value should be less than ±0.3V	☐	

4.2 Final Steps

Item	OK	Remark
Make sure that materials irrelevant to the equipment have been all removed	☐	
Check and hand over the spare parts that the user has purchased	☐	
Note down all the operations taken, including time of	☐	
the operation and name of the operator	☐	

Note

1. The maintenance must be conducted under the guidance of related safety regulations.
2. Only trained personnel with adequate knowledge about the power subrack shall maintain the inner parts.

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