

# 4 Power System

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## About This Chapter

This part describes the requirements for the input power supply, DC power supply, and high frequency on/off rectifier.

### [4.1 Requirments for the Input Power](#)

The cabinet can be supplied with –48 V DC, +24 V DC, or 110/220 V AC.

### [4.2 Requirements for the Power Supply System](#)

To ensure normal power supply, the power supply system must meet the requirements described subsequently.

### [4.3 Requirements for the Configuration of the High-Frequency Switch Rectifier](#)

The capacity of the high-frequency switch rectifier must meet the requirements for the communication load power and the battery charge power. The configuration of the quantity of the rectifiers is as follows: One when the number of the main rectifiers is less than or equal to ten, and one for every ten when the number of the main rectifiers exceeds ten.

## 4.1 Requirments for the Input Power

The cabinet can be supplied with  $-48\text{ V DC}$ ,  $+24\text{ V DC}$ , or  $110/220\text{ V AC}$ .

The input power must meet the following requirements:

- Allowed voltage range
  - $-48\text{ V DC}$ :  $-40\text{ V DC}$  to  $-60\text{ V DC}$
  - $+24\text{ V DC}$ :  $+21\text{ V DC}$  to  $+29\text{ V DC}$
  - $110/220\text{ V AC}$ : See [Table 4-1](#).

**Table 4-1** Requirments for the  $110/220\text{ V AC}$  voltage

Input Voltage Range	Power Freuquency	Voltage Distortion
90%-110% of the nominal value	98%-102% of the nominal value	Total harmonious components are less than 10%.

- Regulated voltage precision  
If the input AC voltage ranges from 85% to 110% of the rated value, the load current ranges from 5% to 100% of the rated value, and the output voltage of the rectifier ranges from  $-46.0\text{ V}$  to  $-56.4\text{ V}$ , the regulated voltage precision of the rectifier is less than or equal to 1%.
- On/Off overshoot amplitude  
The on/off overshoot amplitude is not greater than  $\pm 5\%$  of the output DC voltage.
- Peak-to-peak noise voltage  
The peak-to-peak noise voltage is less or equal to  $200\text{ mV}$ .
- Dynamic response  
The restore time is less than  $200\text{ ms}$  with the overshoot not exceeding  $\pm 5\%$  of the DC input voltage.

## 4.2 Requirements for the Power Supply System

To ensure normal power supply, the power supply system must meet the requirements described subsequently.

### DC Power Supply System

- The design of the capacity of the DC power supply system should fully take the maximum load of the system in dynamic and static modes into consideration.
- To shorten the DC feed route as much as possible, you must place the power equipment close to the telecommunications equipment. To reduce power consumption and installation cost, ensure that the voltage drop of the loop between the batter port and the port on the equipment is less than  $3.2\text{ V}$ .
- The macro communications venues consist of multiple independent power supply systems that supply power to the equipment rooms on different floors.

- A medium-capacity site can use either an integrated power room or dispersed power supply mode. A small-capacity site uses integrated power supply mode. The circuit boards must be protected from the corrosive gases given out by the batteries.
- The dispersed power supply mode is recommended. Multiple DC power supply systems and power devices can be used.
- Standard DC power supply system is used and the output voltage meets related requirements.
- To raise the reliability of the whole power supply system, you should raise the reliability of the AC power supply system and reduce the battery capacity. If the reliability of the AC power supply system is difficult to raise, you can as well increase the battery capacity.

## AC Power Supply System

- Independent power network of good power supply quality must be used.
- The working current and fault current of the devices must be fully taken into consideration. Each independent device must be configured with an AC distribution protection device and the protection threshold must be greater than that of the lower-level device.
- If the voltage stability is not satisfactory, voltage stabilizers must be used in the following situations:
  - The equipment is directly supplied with the mains power and the voltage of the mains supply exceeds +5% to -10% of the rated value or exceeds the allowed range.
  - The equipment is not directly supplied with the mains power and the voltage of the mains supply exceeds +5% to -15% of the rated value or exceeds the allowed range.
- The UPS power supply system or the inverter power supply system is required to be used during uninterrupted communication.
- To ensure normal operation of the important communication devices, the electric generator set must be ready in case of a mains supply failure. The capacity of the electric generator set must be greater than or equal to 1.5 or 2 times that of the devices supplied with uninterrupted AC power.

## 4.3 Requirements for the Configuration of the High-Frequency Switch Rectifier

The capacity of the high-frequency switch rectifier must meet the requirements for the communication load power and the battery charge power. The configuration of the quantity of the rectifiers is as follows: One when the number of the main rectifiers is less than or equal to ten, and one for every ten when the number of the main rectifiers exceeds ten.