BYF-PC20X Fire Alarm Power Supply

User Manual

Features:

- Meets the requirements for the power supply part in "GB4717-2005," "GB16806-2006," "GB14287.1-2014," and "GB16808-2008"
- Seamless switching between main and standby power
- Meets the experimental requirements for lightning surge, static electricity, fast transient burst, radiated immunity, AC power voltage dips, and instantaneous interruptions
- Good durability and insulation safety, meeting the requirements for voltage withstand and humid heat experiments
- The front panel displays output voltage & main power operation, standby power operation, main power fault, standby power fault, standby power undervoltage, charging status, and silence status signals
- Status signal output includes: Main power fault, standby power fault, output fault, fire power supply operation status; Input includes: Control signals for turning on and off the output
- Long-term overcurrent and short-circuit protection, with automatic recovery
- Perfect battery charge and discharge management, adopting two-stage charging methods with constant current and float charging, and standby battery over-discharge protection
- Standby battery reverse connection protection function
- Standby single-throw function

Specification:

1. Operating environment temperature: -10°C to 40°C, Humidity: ≤ 85%RH (40°C)

2. AC input voltage: AC187V ~ 242V, 50Hz

3. DC output voltage, output current

Outputs	Voltage	Current Max.
	27±1 VDC	20A

Note:

- The test environment for output voltage and output current is: 0~40°C, 45%~75%RH.
- When using battery power supply, the output voltage range is 20V~28.0V.

4. Output DC voltage ripple noise: Ripple ≤ 1%, Peak-to-peak ≤ 2%

5. Insulation resistance (15~35°C, 45%~75%RH): Input-to-chassis > 50MΩ; Output-to-chassis > 20MΩ

6. Dielectric strength (15~35°C, 45%~75%RH):

Input-to-chassis AC1500V (effective value), frequency 50Hz, time 1 minute (leakage current ≤ 5mA)

Output-to-chassis AC500V (effective value),

frequency 50Hz, time 1 minute (leakage current ≤ 10mA)

7. Protection Functions

(1) Overcurrent protection: The output has long-term overcurrent and short-circuit protection, with automatic recovery after the fault is cleared.

(2) Battery limit protection: When the standby battery is in operation and its voltage drops to 21.0±0.5V, the power supply disconnects the discharge circuit to protect the standby battery. At the same time, the buzzer will sound an alarm for 90±1 minutes. After the alarm signal ends, the quiescent leakage current will be less than 500uA to prevent the battery from being damaged by over-discharge.

(3) Battery reverse connection protection: If the battery polarity is reversed, there will be no impact on the battery or the power supply, and the power supply will function normally once the wiring is corrected.

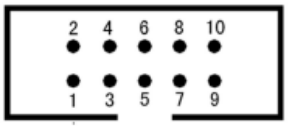
(4) Battery grounding protection: When the positive or negative terminal of the battery is connected to the chassis or the ground, the battery and power supply are not damaged.

8. Battery Charging Function

The charging method is a two-stage pulse charge with constant current and float charge. The effective value of the charging current is 2.3±0.5A (because a pulse charging method is used, the current reading may be inaccurate when measured with a non-true RMS meter, which is normal), and the float voltage is 27.2±0.5V.

9. Working Status Signal Output Function

1) Status Signal Pinout Diagram



Status Signal Pinout Diagram

2) Pin Function Definitions are as follows:

The 1, 2 pins output DC 5V, with a maximum output current of 20mA.

Pin 3 - Main power fault signal: When the main power is working normally, the working status is '1', and this signal is a high level output; When the main power input voltage is ≤145V or the main power is disconnected, the working status is '0', and this signal is a low level output.

Pin 4 - Standby power fault signal: When the standby power is working normally, the working status is '1', and this signal is a high level output; In the main power working state, when the standby power has an undervoltage (≤20V), short circuit, or disconnection fault, the working status is '0', and this signal is a low level output.

Pin 5 - Output fault signal: When the power supply output (19~28V) is normal, the working status is '1', and this signal is a high level output; when the output has an overload or short circuit, the working status is '0', and this signal is a low-level output.

6. Pin - Fire power supply operation signal: When the fire power supply has either main or standby power, or both, and is working normally, the output is '0'; when the fire power supply is in a fault state, the output is '1'.

7, 8 Pins: When the input is '10', the output

is turned on; when the input is '01', the output is turned off; when the input is '11' or '00', the status remains unchanged.

9, 10 Pins: Common ground terminal.

Note: The status signal and outputs 9, 10 share a common ground, the output is a TTL level, and the low-level input should be <0.7V.

10. Working Status Indicator Lights

Main Power Working Indicator Light	When the main power is within the normal supply range, the main power indicator light is on. When the main power is ≤145V or is disconnected, the main power indicator light is off.	**Standby Power Working Indicator Light**	When the main power fails and the standby power is supplying power, the standby power working light is on. When the main power is normal, the standby power working light is off.
Standby Power Undervoltage Indicator Light	When the standby power is in operation, the standby power undervoltage light is off if the standby power voltage is ≥22V. The standby power undervoltage light is on when the standby power voltage is <22V.	**Standby Power Fault Indicator Light**	When the main power is working, the standby power fault light is on if the standby power has a short circuit, power disconnection (line), or other faults. When the standby power is normal, the standby power fault light is off.
Main Power Fault Indicator Light	When the standby power is normal and the main power voltage is ≤145V or disconnected, the main power fault light is on. When the main power voltage is normal, the main power fault light is off.	**Charging Indicator Light**	When the main and standby power are normal, the power supply charges the standby battery, and the charging status light is on. The power supply stops charging the standby battery, and the charging status light turns off, when the main or standby power has a fault, or when the standby battery voltage is higher than 27.2±0.5V.
Silence Indicator Light	When the power supply has a main power undervoltage, a standby power fault, or a standby power undervoltage fault, press the silence button and the silence indicator light will turn on. When the fault is cleared or a new fault occurs, the silence indicator light will turn off.	**Silence button and Fault alarm**	When the power supply has a main power undervoltage, a standby power fault, or a standby power undervoltage fault, the power supply will emit an audible alarm. Pressing the silence button can eliminate the alarm sound, and at the same time, the silence indicator light will turn on.

11. Buzzer Alarm and Silence Function

Buzzer Alarm: When a main power fault, standby power fault, or standby power undervoltage occurs, the buzzer will sound an alarm, which can be silenced by pressing the silence button; when the output is short-circuited, the buzzer will sound an alarm, but it cannot be silenced by pressing the silence button at this time; when the standby power is working and the standby power voltage is <21.0±0.5V, the power supply will stop outputting, and the buzzer will sound an alarm, which cannot be silenced by pressing the silence button at this time; the buzzer alarm will stop sounding after 90±1 minutes.

Silence Button: Pressing the silence button can silence the buzzer alarm, except when the standby power working voltage is <21.0±0.5V or the output is short-circuited.

Wiring

- Connect the "PE" terminal to the ground.
- The 220V mains power is connected to the power supply terminals marked "AC220V N, L".
- The battery is connected to the two terminals marked "Battery," do not reverse the polarity.
- The electrical equipment is connected to the output terminals.

Warning: Please ensure that the "PE" ground terminal is well-grounded before connecting the AC220V to protect the safety of personnel and equipment!

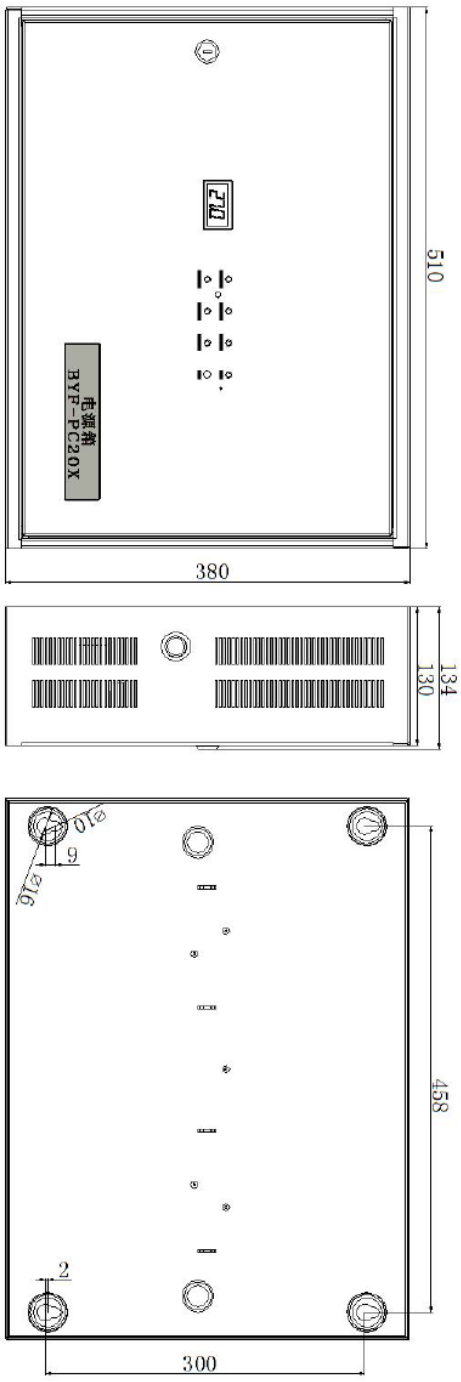
Before wiring, please confirm that the input voltage is within the allowable range, as damage caused by overvoltage is not covered by the

warranty!

Note: Do not connect the positive and negative poles of the power output incorrectly to avoid damaging the electrical equipment!

Recommendation: Please install the battery inside the chassis on-site!

Dimensions (Unit: mm)



Warranty

- Under normal use, the free warranty period is 18 months, with lifetime maintenance. Warranty location: Shanghai.
- Contact: 86-21-22819718/Mailing Address: No. 1188, Jiuye Road, Qingpu District, Shanghai.