611

AESP100 series terminal multi-circuit smart power consumption Online monitoring device

Installation and Instruction Manual V1.0

Jiangsu Acrel Electric MFG. Co., Ltd.

Declare

目 录

1. Overview

AESP100 series terminal multi-circuit smart power online monitoring device is used in low-voltage terminal power distribution networks in the fields of industrial, commercial, civil buildings and infrastructure in indoor buildings and similar places. This device is used in conjunction with circuit breakers to conduct real-time monitoring of key electrical factors of power lines, such as voltage, current, power, temperature, energy consumption, etc.

This series of products is suitable for low-voltage power grid systems with single-phase, double live wire, three-phase three-wire, three-phase four-wire neutral point directly grounded (TT) system.

2. Product type

- AESP100 series terminal multi-circuit smart power online monitoring device

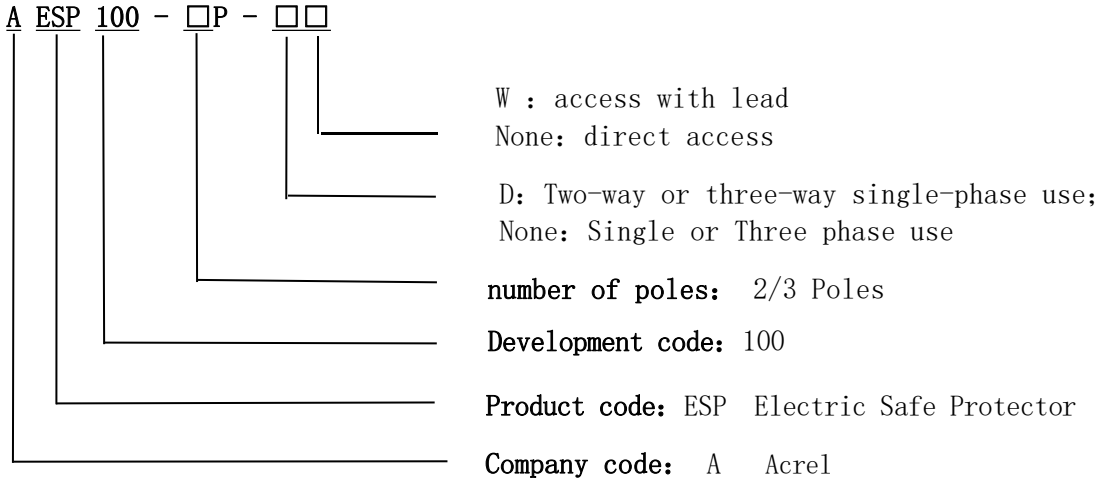


Table1. Device function description table

Type	function description
AESP100-2P	Real-time monitoring of parameters such as voltage, current, power, electric energy and temperature; with various alarm functions such as overvoltage, undervoltage, overload, overcurrent, and overtemperature; the number of poles is 2P; standard RS-485 (MODBUS) communication .
AESP100-3P	Real-time monitoring of parameters such as voltage, current, power, electric energy and temperature; with various alarm functions such as overvoltage, undervoltage, overload, overcurrent, and overtemperature; the number of poles is 3P; standard RS-485 (MODBUS) communication .

- Smart Gateway

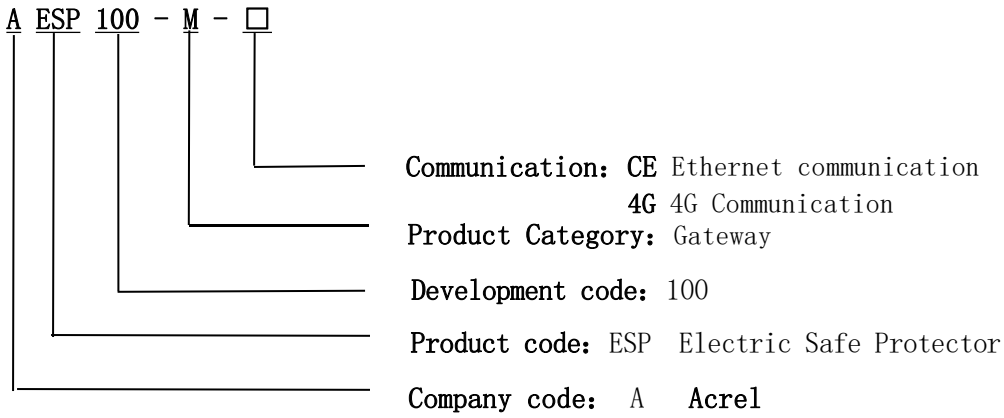


Table2. Smart gateway function description table

AESP100-M-CE	Up to 16 circuits can be connected; real-time data such as voltage, current, power, electric energy, temperature and leakage of each circuit can be viewed; fault, alarm and switching status of each circuit can be viewed; parameters can be set and controlled for each circuit; Rail type installation, LCD liquid crystal display; support event recording; support RS485 communication; support Ethernet communication.
AESP100-M-4G	Up to 16 circuits can be connected; real-time data such as voltage, current, power, electric energy, temperature and leakage of each circuit can be viewed; fault, alarm and switching status of each circuit can be viewed; parameters can be set and controlled for each circuit; Rail type installation, LCD liquid crystal display; support event recording; support RS485 communication; support 4G communication.

3. Technical parameter

Table3. Device technical parameter table

Type		AESP100-2P	AESP100-3P
Poles		2P	3P
Aperture		6.6mm	
Number of loops		1 or 2 single-phase circuits	1 three-phase circuit or 3 single-phase circuits
Rated voltage		AC 220V	
Rated current		10(63)A	
Alarm Function	Overcurrent	Default 100% rated current warning, 110% rated current warning, adjustable threshold	
	Overload	Default 100% rated power warning, 110% rated power alarm, adjustable threshold	

	Overvoltage	Default 110% rated voltage warning, 120% rated voltage warning, adjustable threshold
	Undervoltage	Default 90% rated voltage warning, 80% rated voltage alarm, adjustable threshold
	Overtemperature	Default 80℃ early warning, 100℃ alarm, adjustable threshold
Protection class		IP30
Altitude requirements		2000m
ambient temperature		-10℃～55℃, 24h average temperature not higher than 40℃
Environmental requirements		No explosion hazard, no conductive dust, no enough to corrode metal and damage insulation, no significant vibration
Relative humidity		At +40° C, the relative humidity of the air is 50%, and it can have a higher relative humidity at lower temperatures
Storage temperature		-20℃-70℃
Installation method		Direct installation or lead wire installation with circuit breaker

Table4. AESP100 series intelligent gateway technical parameter table

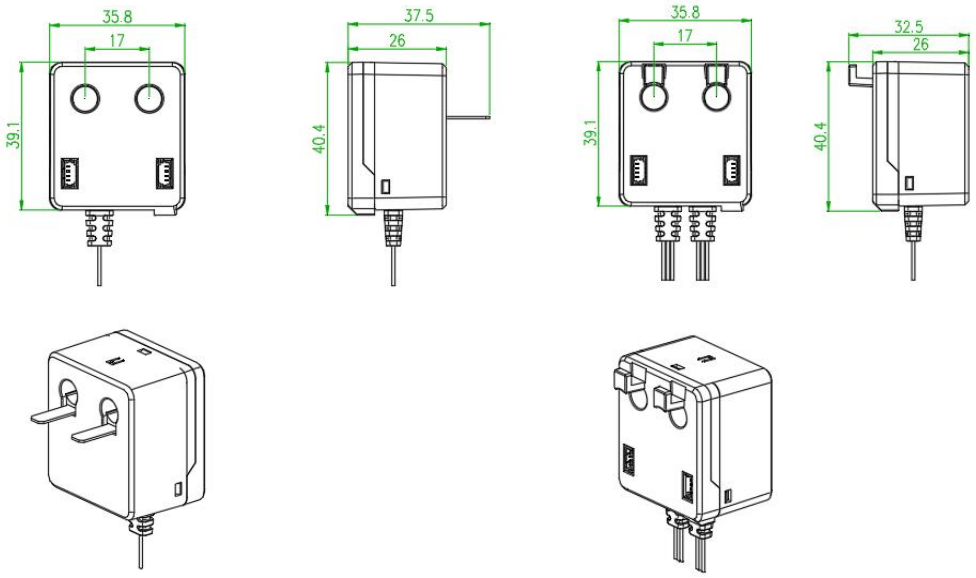
Type	AESP100-M-4G	AESP100-M-CE
Power supply	AC 220V	
Power consumption	≤30W	
Communication	4G	Ethernet
Display	LCD display	
record	Alarm, fault and action records up to 20 records each	
protocol	Modbus、MQTT	
Altitude requirements	2000m	
ambient temperature	-10℃-45℃, 24h average temperature not higher than 35℃	
Environmental requirements	No explosion hazard, no conductive dust, no enough to corrode metal and damage insulation, no significant vibration	
Relative humidity	At +40° C, the relative humidity of the air is 50%, and it can have a higher relative humidity at lower temperatures	
Storage temperature	-20℃-70℃	
Protection class	IP20	

Installation method	Standard 35mm Din rail installation

4. Installation and Wiring

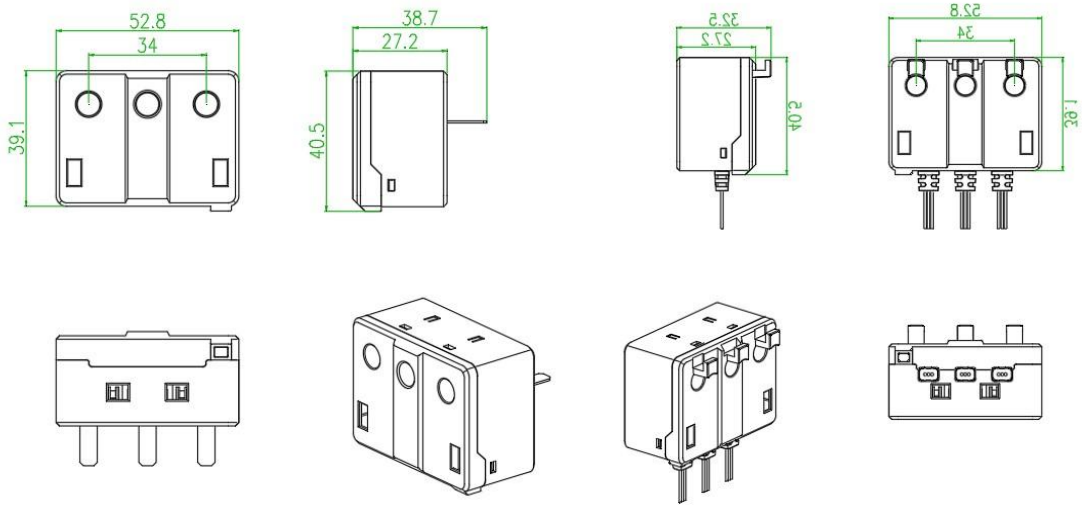
4.1. Outline and installation dimensions (unit: mm)

- AESP100-2P



2P direct access　　2P lead access

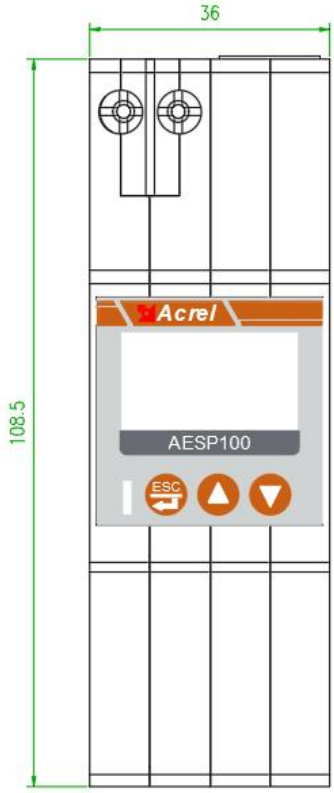
- AESP100-3P



3P direct access　　3P lead access

Picture 1 Device Outline Dimensions

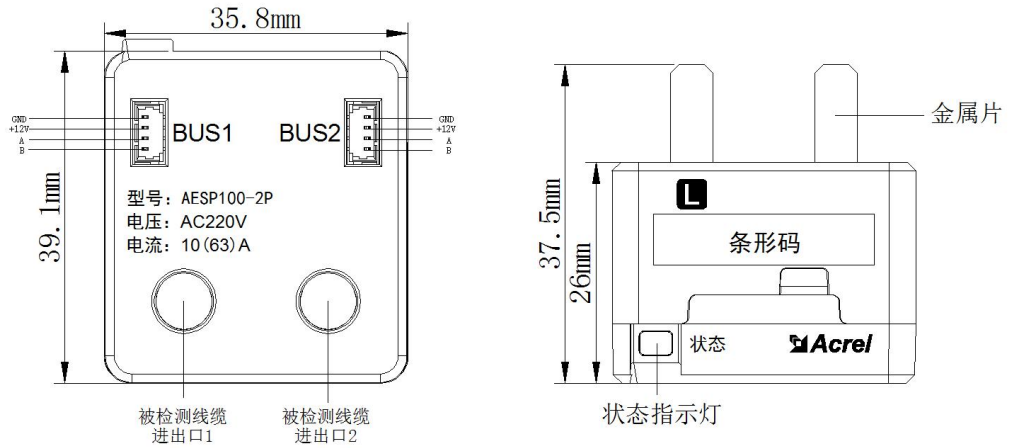
- Smart Gateway



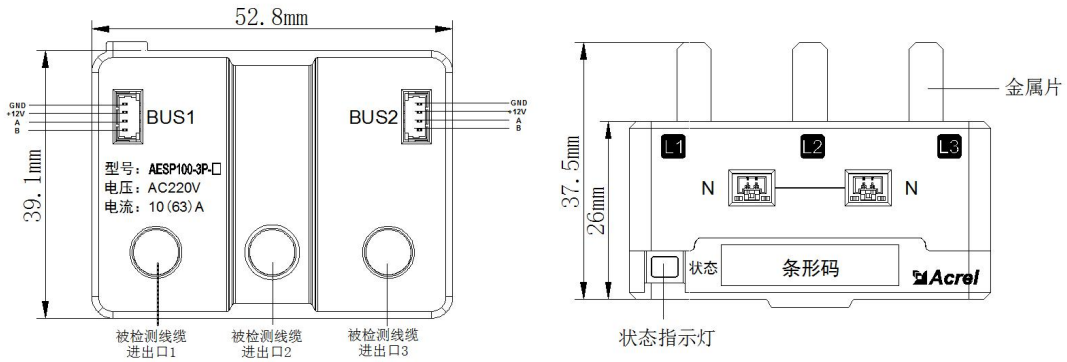
Picture 2 Smart Gateway Outline Dimensions

4.2. Terminal Description

- AESP100-2P Terminal

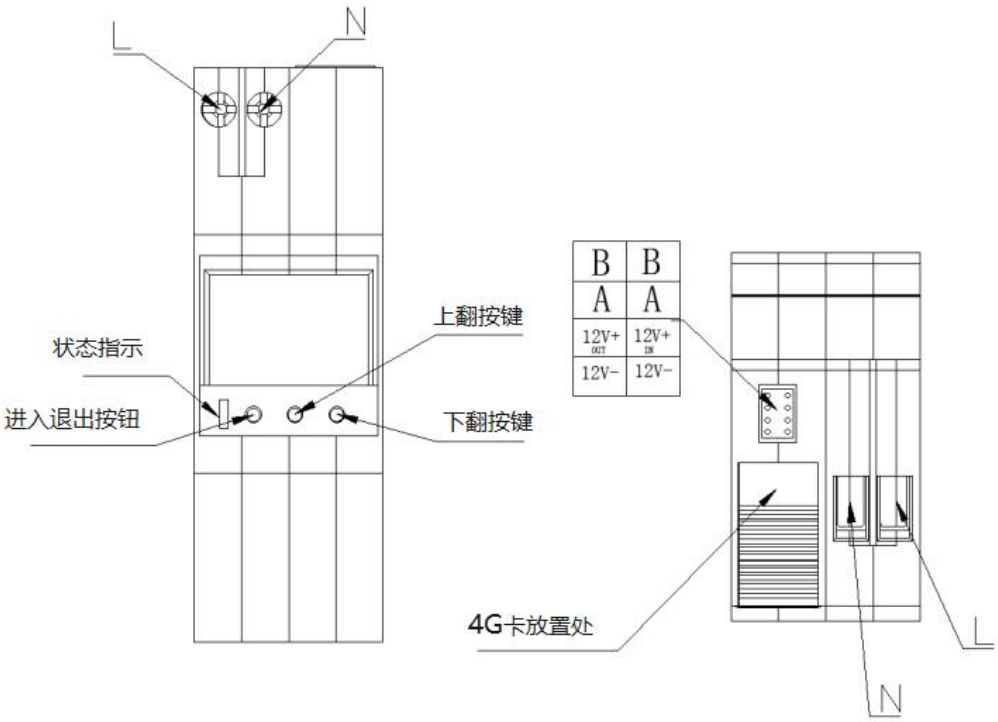


- AESP100-3P Terminal



Picture 3 Device wiring terminal diagram

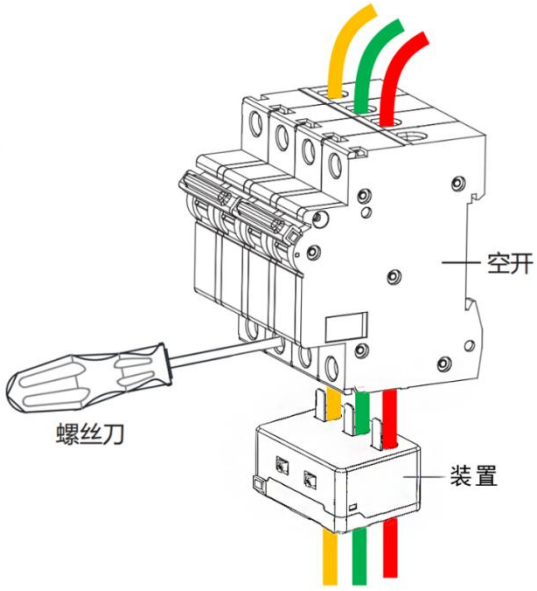
- Smart gateway Terminal



Picture 4 Smart gateway wiring terminal diagram

4.3. Wiring diagram

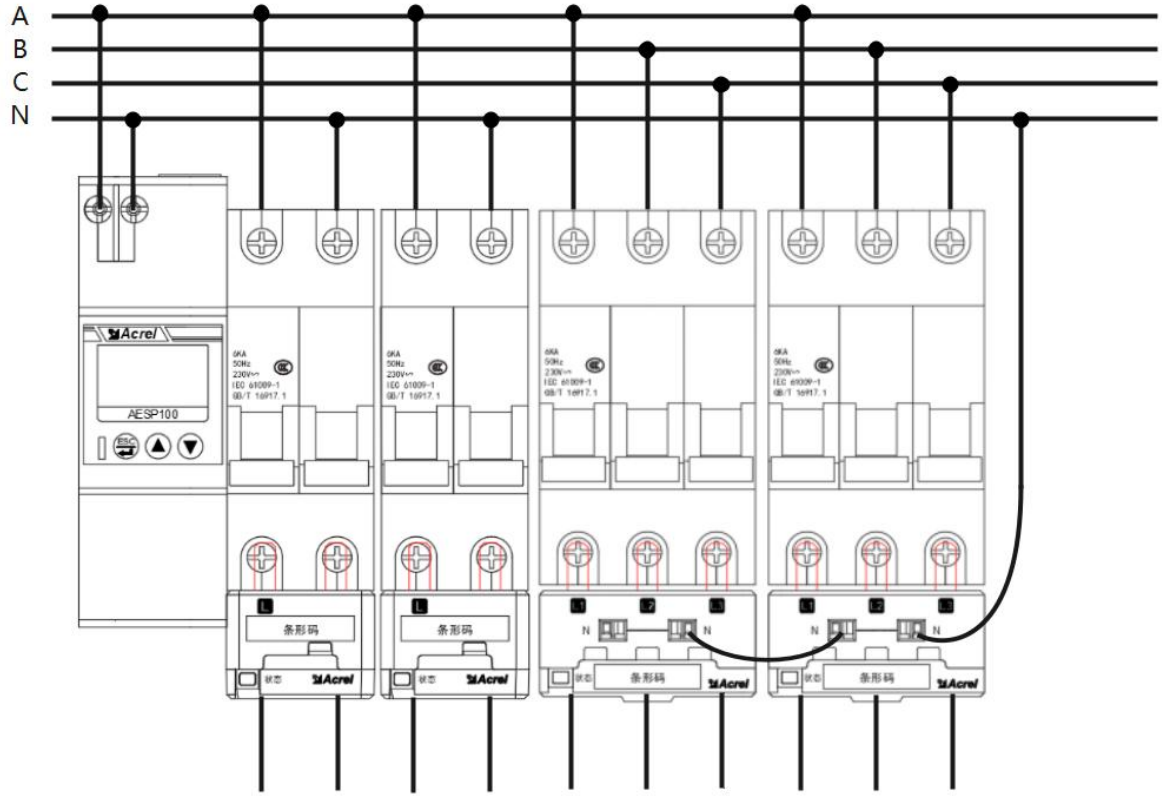
- Device Wiring diagram



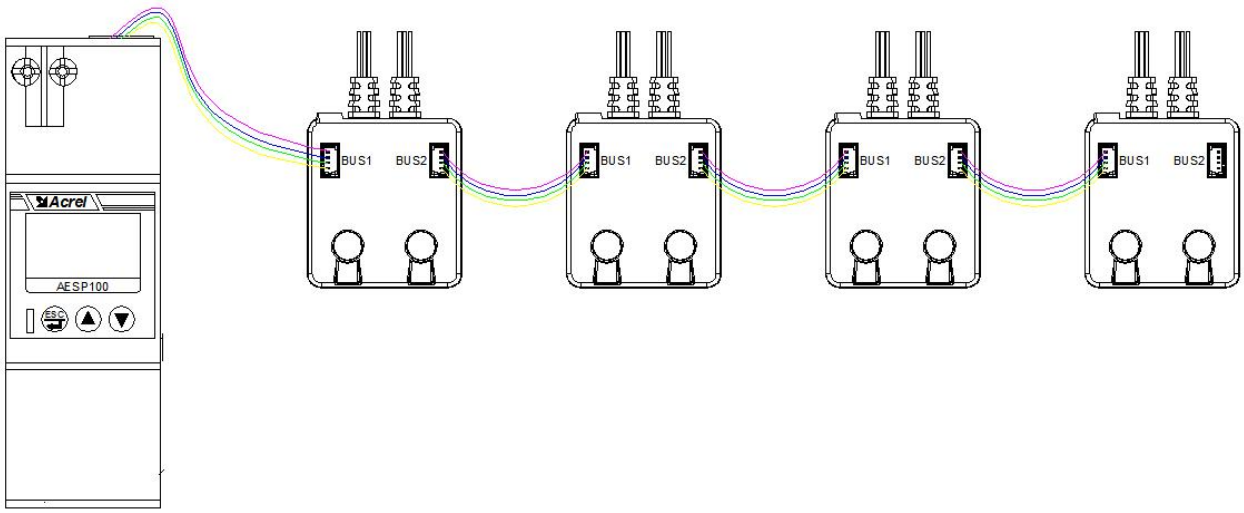
Picture 5 Device wiring diagram

4.4. Installation method

Picture 6 is an example of installation and wiring of AESP100 series online monitoring device with circuit breaker and smart gateway, for reference only.



Picture 6. Device installation wiring example diagram



Picture 7. 4 pin Terminal wiring diagram

Note: Various types of devices can be installed in any combination, and one gateway can connect up to 16 loop monitoring devices.

4.5. System network diagram

Picture 8. System network diagram

5. Use the operation guide

5.1. Device Indicator Description

Indicator Description:

- Green: If it goes out for 2s and flashes for 0.1s, it is in normal operation.
- Red: If 2s off, 0.1s flashes, temperature failure;
- Red: If the 0.5s interval flashes, it is alarm;
- Red: If it is always on, it means that the device measures that there is voltage in the loop;
- Enter the automatic address allocation, the Red and Green lights flash for 0.5s, after the address is allocated, it will be displayed according to the actual status;

5.2. Intelligent gateway button panel and indicator light description

Picture 9 Smart Gateway Button Panel Diagram

Button Description:

- ESC/↵ : Confirm or return button;
- ▲: page up;
- ▼: page down;

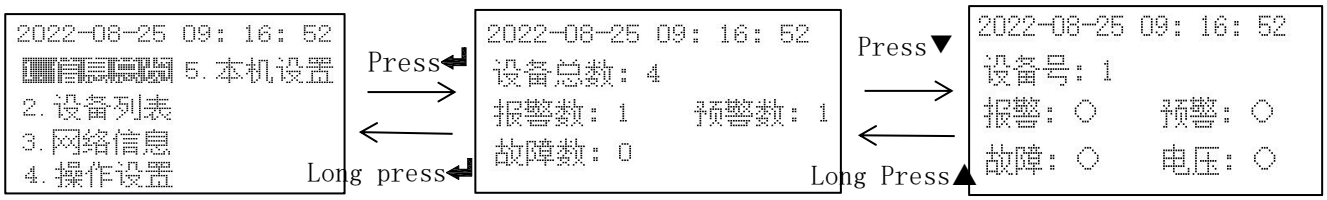
Indicator light description:

- Green: 2s off, 0.1s flashing, running state;
- Red: If it goes out for 2s and flashes for 0.1s, there is a loop failure;
- Red: If the 0.5s interval flashes, there is a loop alarm;

5.3. interface operation

5.3.1. Current device status display

After the device is powered on, select "1. Information overview", and turn the page through the ▲ and ▼ keys on the smart gateway panel to query the device status of each device numbe.

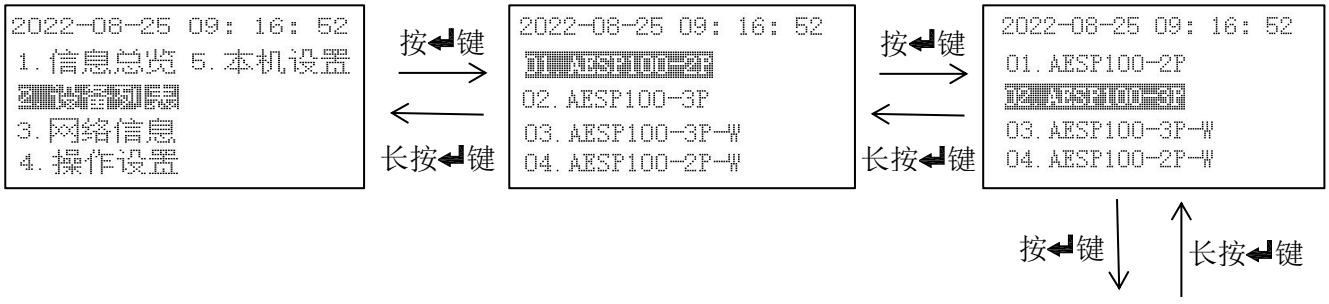


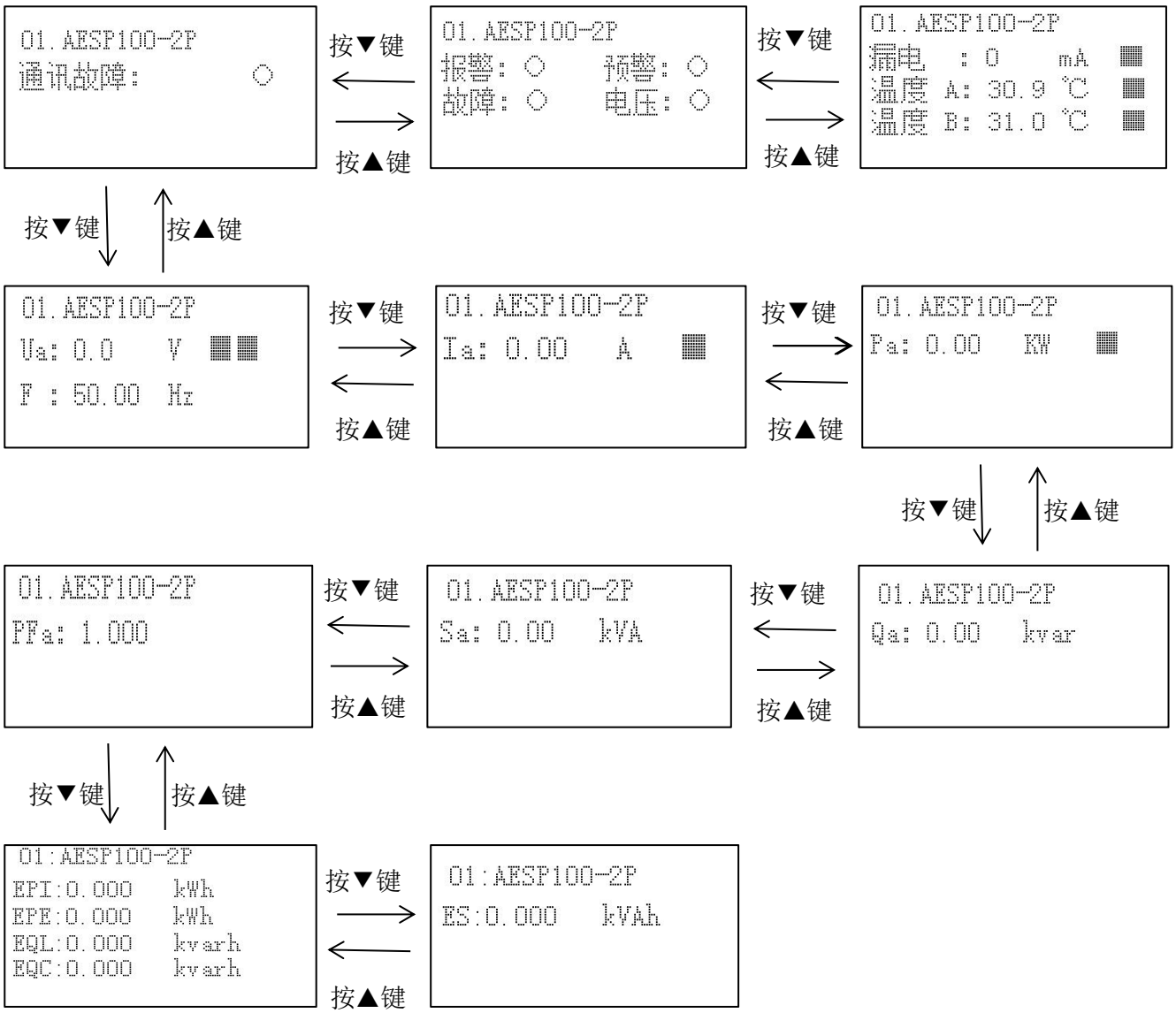
Note: The state definition table is as follows.

definition symbol	○	●
Alarm	None	exist
early warning	None	exist
Fault	None	exist
Voltage	None	exist

5.3.2. Current equipment electrical parameter data display

On the main interface, press the Enter key, select "2. Device List", then select the device whose data needs to be viewed, press the Enter key, and use the ▲ and ▼ keys to turn the page to query the device electrical parameter data display interface.





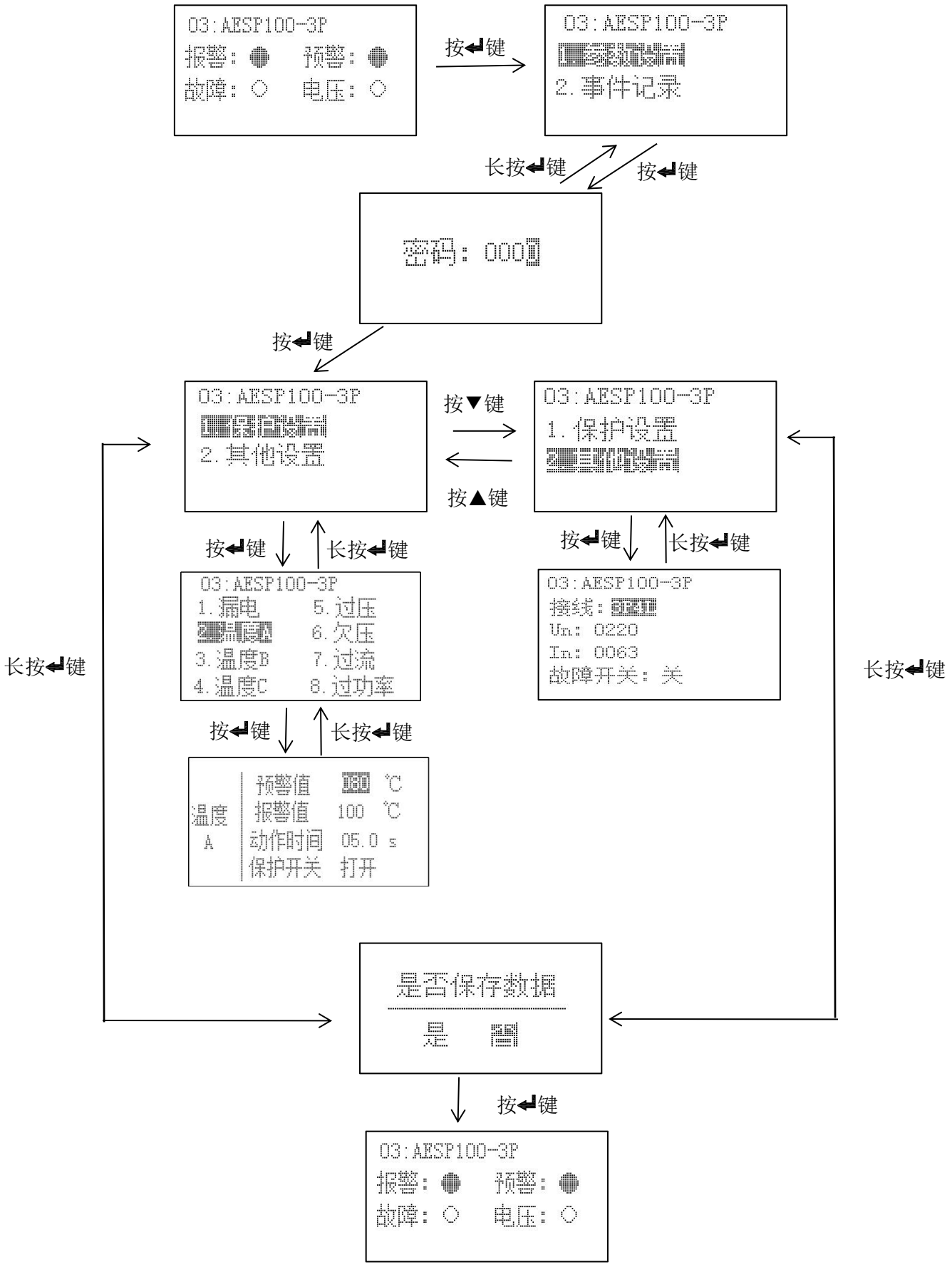
Notice :

1、Ua means A-phase voltage, F means frequency; Ia means A-phase current; Pa means A-phase active power; Qa means A-phase reactive power; Sa means A-phase apparent power; PFa means A-phase power factor.

2、EPI represents the value of absorbed active energy, EPE represents the value of released active energy, EQL represents the value of inductive reactive energy, EQC represents the value of capacitive reactive energy, and ES represents.

5.3.3. Current device parameter settings

Press Enter on the main interface, select "2. Device List", select the circuit whose protection parameters need to be set, for example: "03: AESP100-3P", press Enter on any electrical parameter data display page, select " Parameter setting", enter the password "0001", you can select each protection parameter to set.



Notice ：

1、The leakage, temperature, overvoltage, undervoltage, overcurrent, and overpower can be modified or set by the ▲ key and the ▼ key.

2、Temperature: Detect the temperature in a short period of time, and alarm when it exceeds the alarm value. The time and threshold can be adjusted according to the actual

situation.

3、Leakage: detect the residual current in a short time, and alarm when it exceeds the alarm value. The time and threshold can be adjusted according to the actual situation.

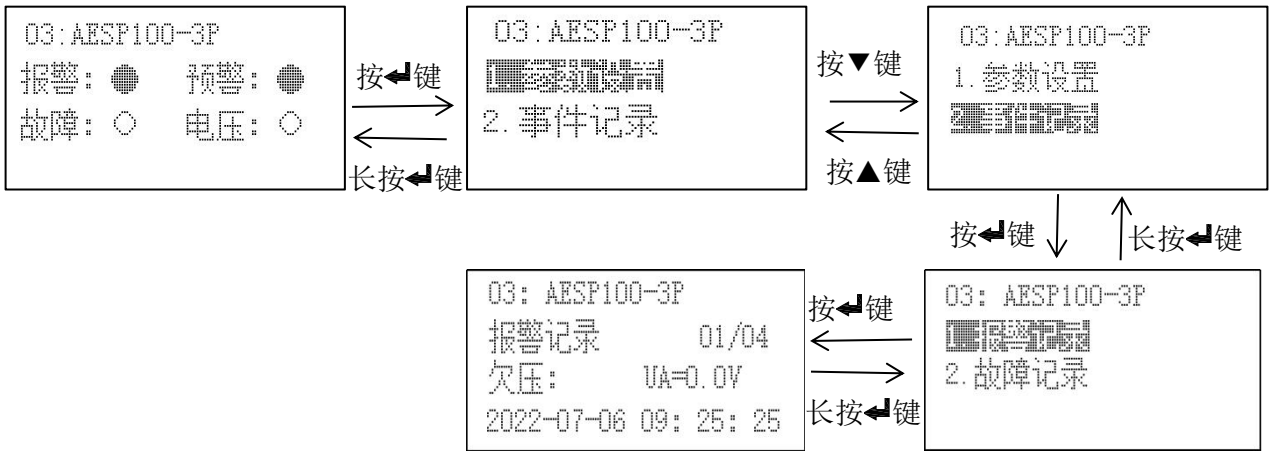
4、Overvoltage and undervoltage: detect the voltage in a short period of time, and alarm when it exceeds the alarm value. The time and threshold can be adjusted according to the actual situation.

5、Overcurrent: detect the current in a short period of time, and alarm when it exceeds the alarm value. The time and threshold can be adjusted according to the actual situation.

6、Over power: detect power, alarm when it exceeds the alarm value, and the time and threshold can be adjusted according to the actual situation.

5.3.4. Current device event record query

Press the Enter key on the main page, select "2. Device List", select the circuit whose event record needs to be viewed, for example: "03: AESP100-3P", select "Event Record" and press the Enter key to view the alarm and fault Record.



Notice ：

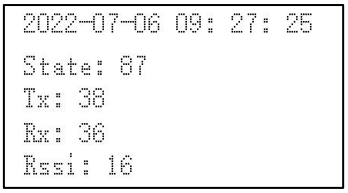
1）The data "01" in the upper right corner of the alarm record indicates the first data, and the subsequent alarm records can be "02, 03...20" (up to 20); the number after "01" indicates the current number of alarm records. .

2）The data "01" in the upper right corner of the fault record represents the first data, and the subsequent alarm records can be "02, 03...20" (maximum 20); the number after "01" represents the current number of fault records.。

3）For data recording, press the ▲left key and the ▼right key to switch the interface.

5.3.5. Current device network information display

Press the Enter key on the main page, select "3. Network Information", as shown in the figure, and switch the interface by pressing the ▲left key and the ▼right key.



（1）

Information interface (1) In the interface, there are four displayed values, the

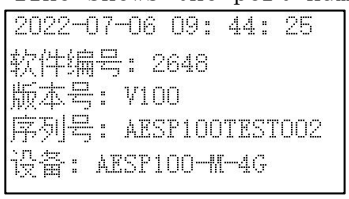
meanings are as follows:

- **Rssi**: The current signal value is displayed after Rssi
- **State**: The display after State is the state of the current module, there are ten states from 0 to 9, and the meanings of the numbers corresponding to 0 to 9 are as follows
  - **0** initialization
  - **1** Get IMEI serial number
  - **2** Check SIM card Get card number
  - **3** set network mode
  - **4** Waiting for GPRS to attach
  - **5** Check signal value
  - **6** set network mode
  - **7** connect to the server
  - **8** server is connected
  - **9** close server connection
- TX: The number of sent data is displayed after TX
- Rx: The number of received data is displayed after Rx

（2）

Under the information interface (2) interface, the first line displays the domain name (if the domain name is not set, it will not be displayed),

The second line shows the port number to connect to the server.

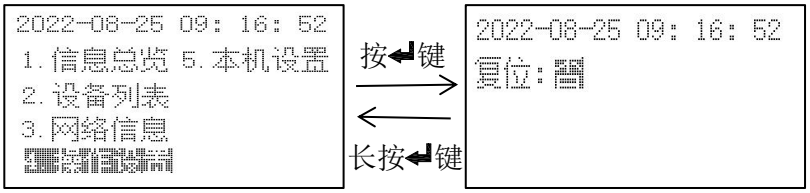


（3）

Under the information interface (3) interface, the software number, version number and serial number are displayed.

5.3.6. Current device operation settings

Press the Enter key on the main page, select "4. Network Information", the display is as shown in the figure, and the reset operation can be performed.



6. Common fault analysis and troubleshooting

- If the indicator light of the instrument does not light up, please check whether the power supply is connected well;
- If the red indicator light of the instrument is not always on, check whether the incoming line at the upper end of the circuit breaker is energized;

- If the indicator light of the meter flashes red once every 2s, send it directly for repair;
- If the gateway data is not refreshed, check whether the communication line with the slave module is normally connected;
- If the gateway is not upload, please check the cause of the failure according to the network status;

7. Precautions

- Before using the product, please check whether the appearance is in good condition. If there is any damage, please contact the seller to replace it in time.
- According to the instruction manual for correct wiring, check carefully after the wiring is completed to ensure that the wiring is correct.