611

AESP 100 Series of terminal multi-loop intelligent electricity online monitoring device

Installation and Instructions Manual V1.1

Acrel Electric Co., Ltd.

Declare

The Company reserves the right to modifications to the product specifications described in this manual without notice. Before ordering, please consult the local agent for the new specifications of this product.

Catalogue

1. Overview

AESP100 Series terminal multi-loop intelligent electricity online monitoring device (hereinafter referred to as the device) is applied to the low-voltage terminal distribution network in industrial, commercial, civil buildings and infrastructure and other fields in residential buildings and similar places. This device is used with the circuit breaker to conduct real-time monitoring of the key electrical factors of the power line, such as voltage, current, power, temperature, energy consumption, etc., and has the functions of early warning and alarm and electric energy measurement statistics.

This series of products are suitable for single phase, double fire wire, three-phase three wire, three phase four wire neutral direct grounding (TT) low voltage grid system.

2. Product model number

- AESP100 Series of terminal multi-loop intelligent electricity online monitoring device

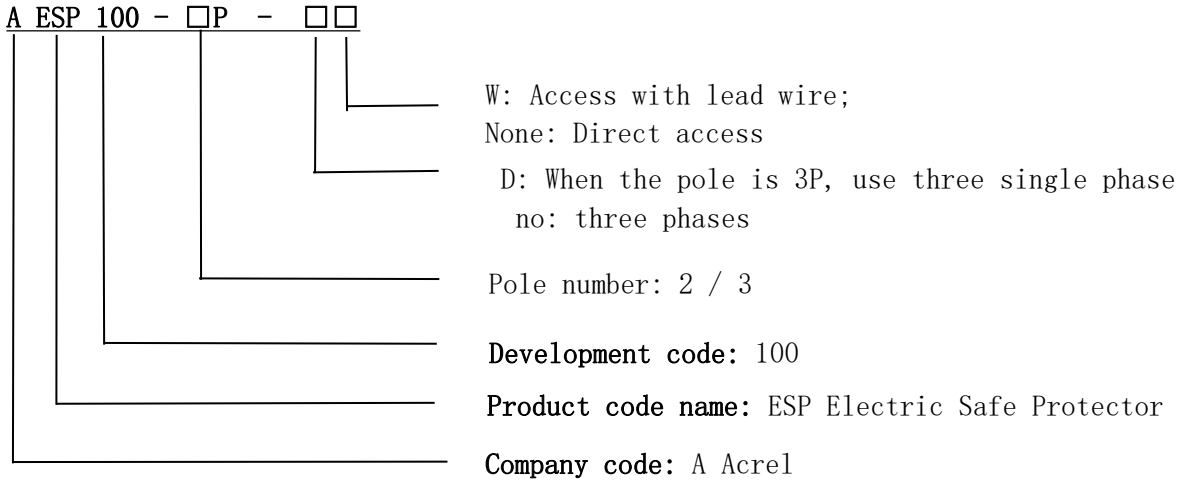


Table 1. Device Function Description Table

Type	functional description
AESP100-2P	It can monitor parameters such as voltage, current, power, electric energy and temperature in real time; it has various alarm functions such as overvoltage, undervoltage, overload, overcurrent, and overtemperature; the pole number is 2P; standard RS-485 (MODBUS) communication.
AESP100-3P	It can monitor parameters such as voltage, current, power, electric energy and temperature in real time; it has various alarm functions such as overvoltage, undervoltage, overload, overcurrent, and overtemperature; the pole number is 3P; standard RS-485 (MODBUS) communication.

- Smart Gateway

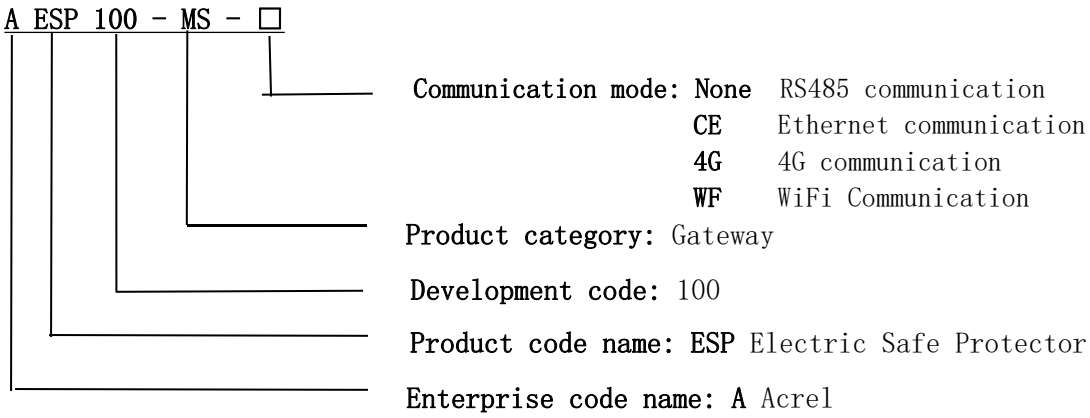


Table 2. Description table of the intelligent gateway function

AESP100-MS-CE	It can connect up to 16 circuits; view real-time data of voltage, current, power, power, temperature, and leakage; view the fault, alarm and split status of each circuit; set parameters for each circuit; guide installation, LCD LCD; support event recording; support RS485 communication; and support Ethernet communication.
AESP100-MS -4G	It can connect up to 16 circuits; view the real-time data of voltage, current, power, power, temperature and leakage of each circuit; view the fault, alarm and split status of each circuit; set parameters for each circuit; guide rail installation, LCD LCD display; support event recording; support RS485 communication; support 4G network communication
AESP100-MS -WF	It can connect up to 16 circuits; view the real-time data of voltage, current, power, temperature and leakage of each circuit; view the fault, alarm and split status of each circuit; set parameters of each circuit; rail installation, LCD display; support event recording; support RS485 communication; support WiFi, network communication

3. Technical parameter

Table 3. Technical parameters of the device

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

		adjustable threshold value
	Overpressure alarm	Default 110% rated voltage warning, 120% rated voltage alarm, adjustable threshold value
	Underpressure alarm	Default 90% rated voltage warning, 80% rated voltage alarm, adjustable threshold
	Overtemperature alarm	Default 80℃ warning, 100℃ alarm, the threshold is adjustable
Levels of protection		IP 30
Elevation requirements		2000m
Ambient temperature		-10℃ ~55℃, the average temperature at 24h was not higher than 40℃
Environmental requirements		No explosion hazard, no conductive dust, no sufficient corrosion of metal and damage to insulation, no significant vibration
Relative humidity		At + 40℃, the relative humidity of the air is 50%, which can have a high relative humidity at lower temperatures
Storage Temperature		-20℃-70℃
Way to install		Cooperate with the circuit breaker for direct installation or lead installation

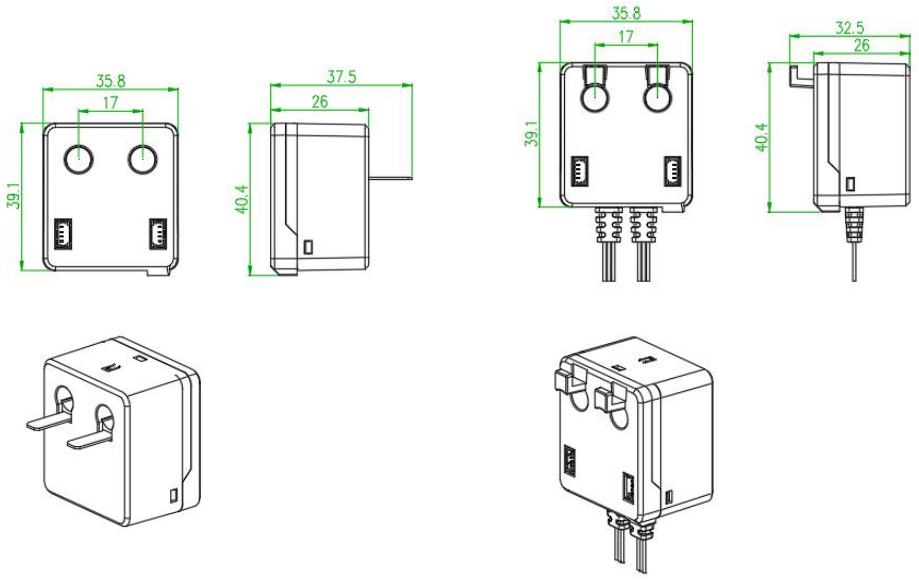
Table 4. Technical parameters of AESP100 series intelligent gateway

Type	AESP100-MS -4G	AESP100-MS -CE	AESP100-MS -WF
Working power supply	AC 220V		
Power dissipation	≤30W		
Communication mode	4G	Ethernet	WiFi
Display mode	The LCD dot-matrix liquid crystal display		
Incident record	Alarm, fault, action record up to 20		
Protocol	ModbusRTU, MQTT, ModbusTCP, et al		
Elevation requirements	2000m		
Ambient temperature	-10℃ -45℃, the average temperature at 24h was not higher than 35℃		
Environmental requirements	No explosion hazard, no conductive dust, no sufficient corrosion of metal and damage to insulation, no significant vibration		
Relative humidity	At + 40℃, the relative humidity of the air is 50%, which can have a high relative humidity at lower temperatures		
Storage temperature	-20℃-70℃		
Levels of protection	IP20		
Way to install	Standard 35mm guide rail installation		

4. Installation and wiring

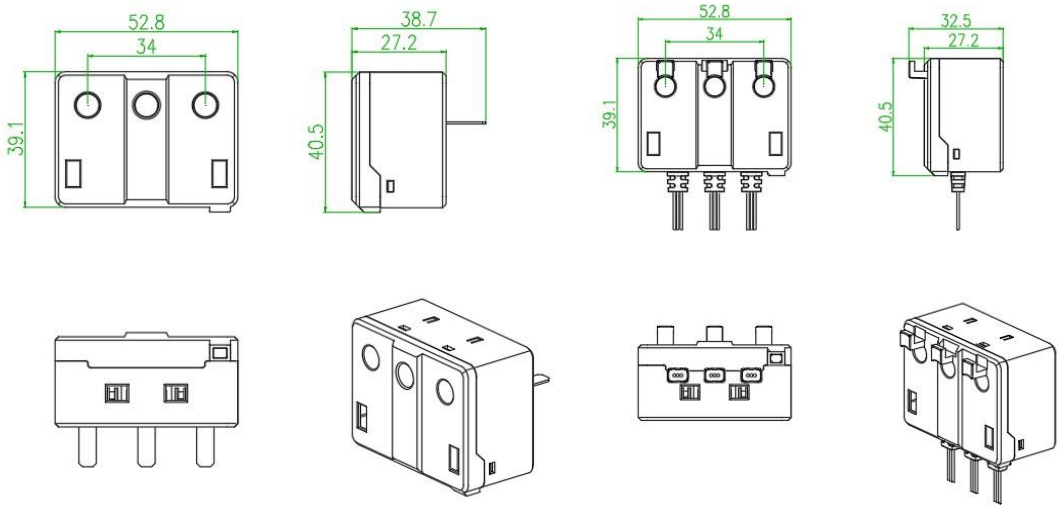
4.1. Appearance and installation dimensions (in mm)

- 2P



2P direct access　　2P lead access

- 3P



3P direct access　　3P lead access

Figure 1. Outline dimensions of the device

- Smart gateway

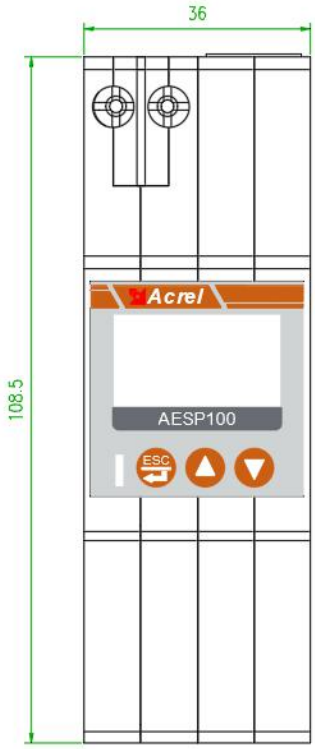
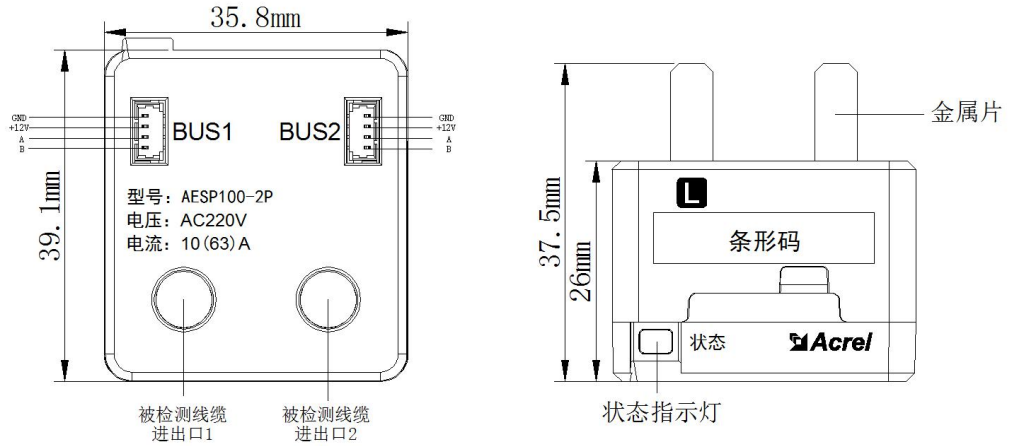


Figure 2. Dimension diagram of the intelligent gateway

4.2. Description of the wiring terminal

- The AESP100-2P wiring terminal



- The AESP100-3P wiring terminal

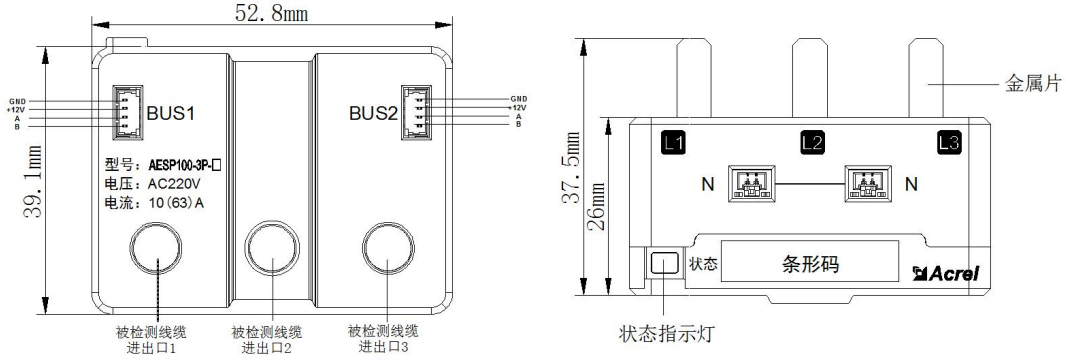


Figure 3. Schematic diagram of terminal terminal

- Intelligent gateway wiring terminal

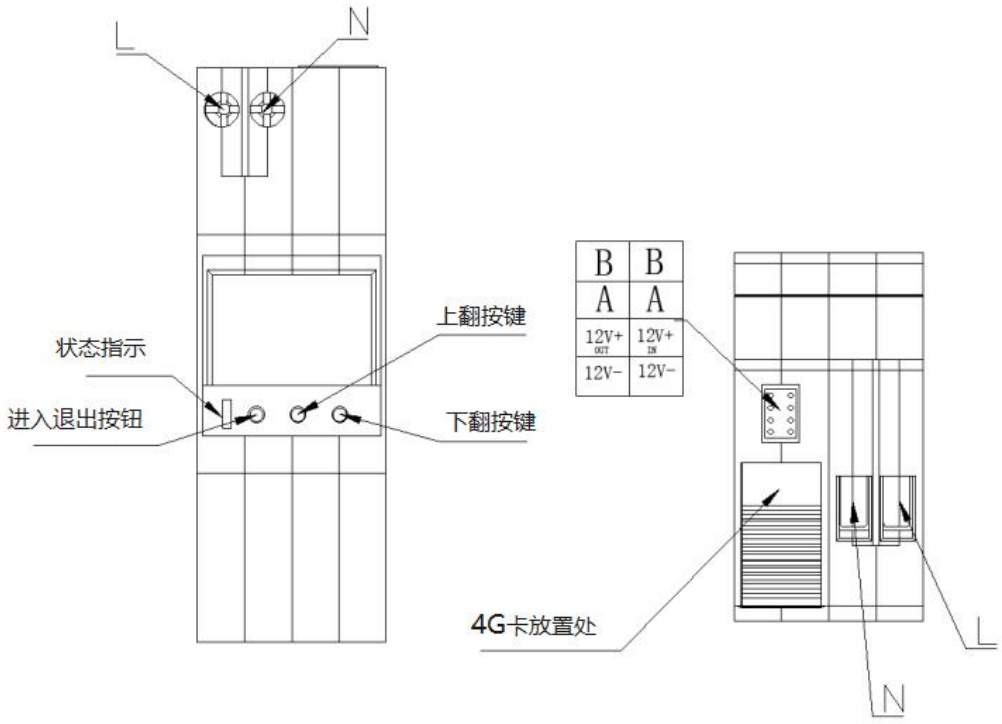


Figure 4. Schematic diagram of the intelligent gateway wiring terminal

4.3. Wiring schematic diagram

- Schematic diagram of the device wiring

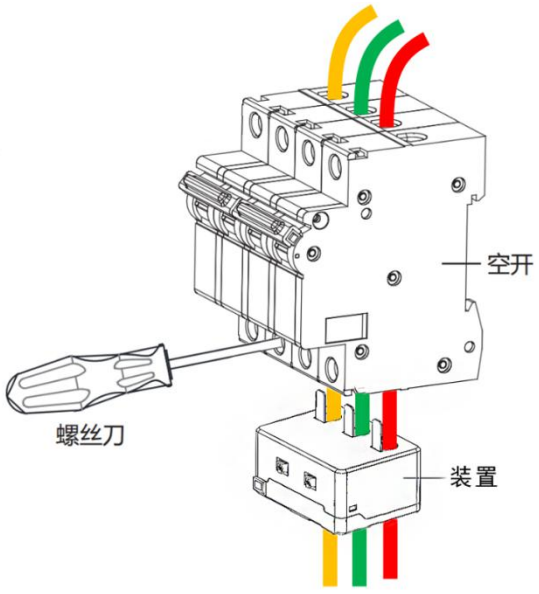


Figure 5 Device iring diagram diagram

4.4. Installation method

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

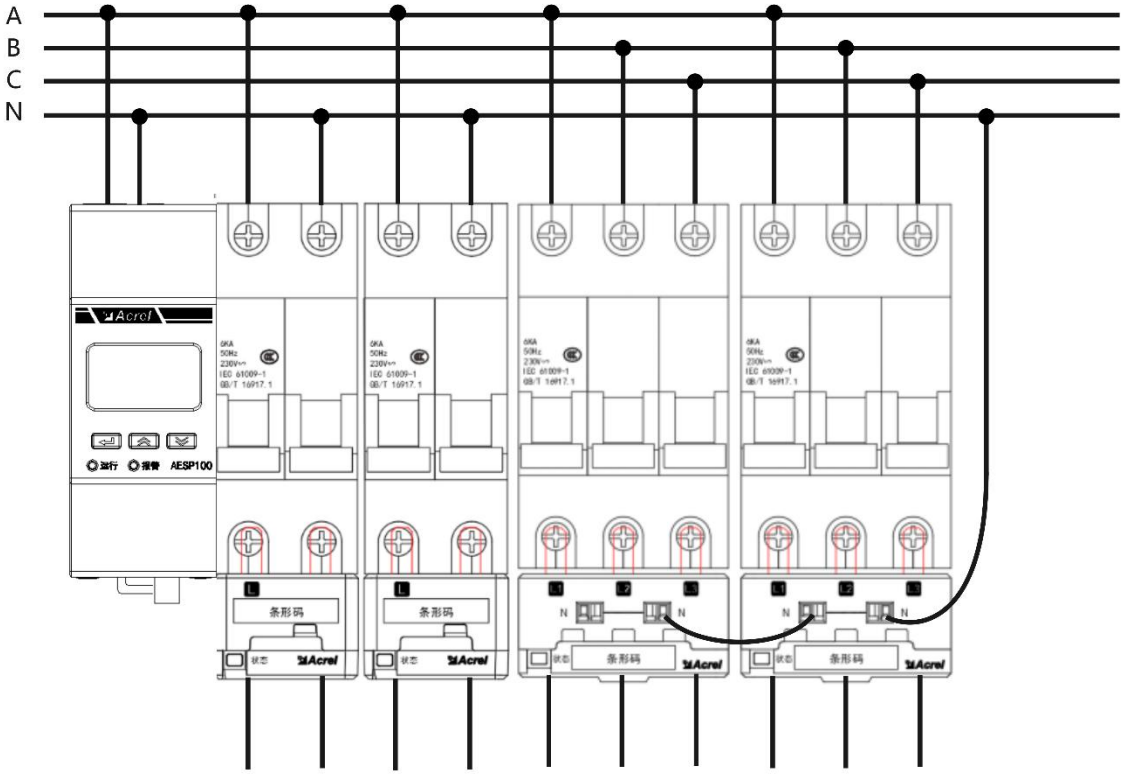


Figure 6. Device installation wiring example diagram

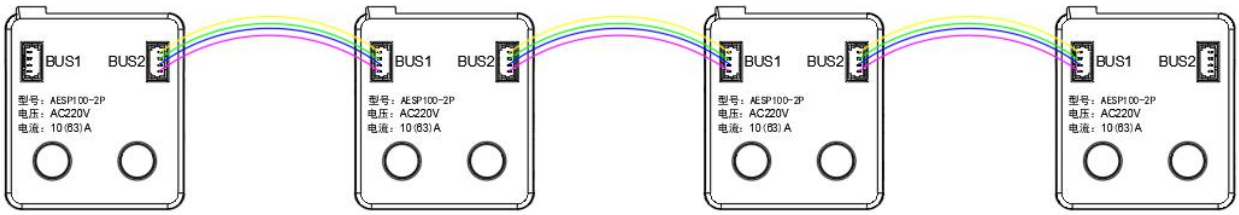


Figure 7. 4pin terminal wiring diagram

Note: Each type of device can be installed in any combination, and one gateway can connect the monitoring device with up to 16 circuits.

4.5. Network diagram of the system

Figure 8 is the networking diagram of the AESP 100 series monitoring device combined with the intelligent gateway system.

Figure 8. System networking diagram

5. Use the operational guide

5.1. Description of the device indicator light

The light description:

- Green: if 2s is extinguished, 0.1s is flashing, normal operation state;
- Red: if 2s is out, 0.1s flashing, temperature failure;
- Red: if 0.5s interval flashing, alarm;
- Red: if often bright, it means that the device measures the voltage in the circuit;
- Enter the automatic allocation address, the traffic light 0.5s flashing, assign the address, according to the actual status display;

5.2. Description of intelligent gateway key panel and indicator light

Figure 9. Smart Gateway key panel diagram

Keynote:

- ↵: Confirm or return to the key;
- ▲: Uppage;
- ▼: Next page;

Instructions for indicator light:

- Green light: 2s off, 0.1s flashing, running state;
- Red: if 2s is out, 0.1s flashes, there is a loop fault;
- Red: if the 0.5s interval flashes, there is a loop alarm;

5.3. Interface operation

5.3.1. Current device status display

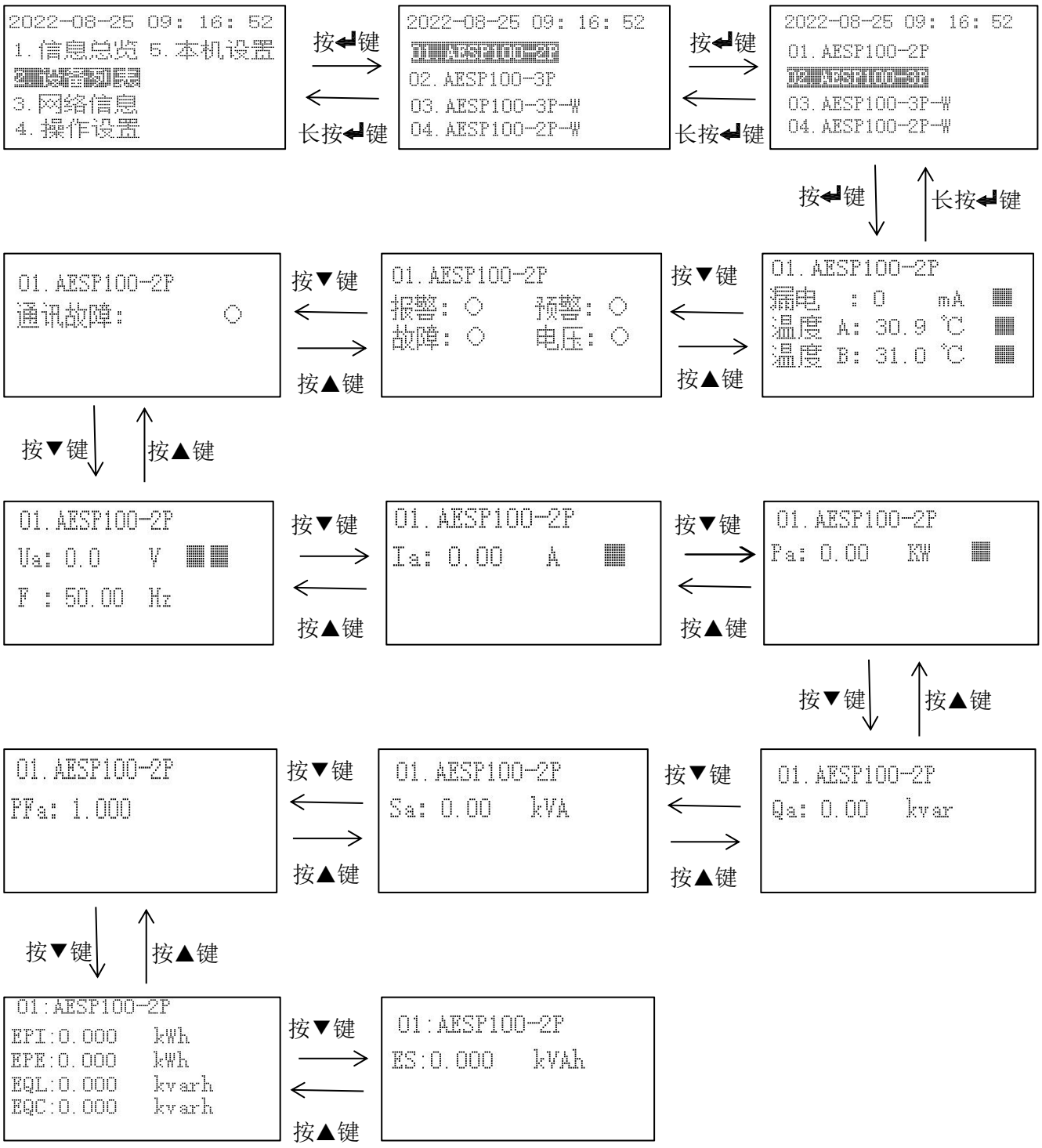
After the device is powered on, the device status of each device number can be checked by turning the ▲ and ▼ keys on the smart gateway panel. The device status interface is shown below.

Note: The status definition table is as follows.

definition symbol	○	●
report to the police	alarm free	Have the alarm
early warning	No early warning	Have early warning
hitch	trouble-free	out-of-order
voltage	There is no voltage in the loop	There is voltage in the loop

5.3.2. Display of the electrical parameter data of the current equipment

Press the entry key in the main interface, select "Device List", and then select the device that needs to view the data. Press the entry key, and you can turn the page through the ▲ key and the ▼ key. The following figure shows the energy parameter data display interface.



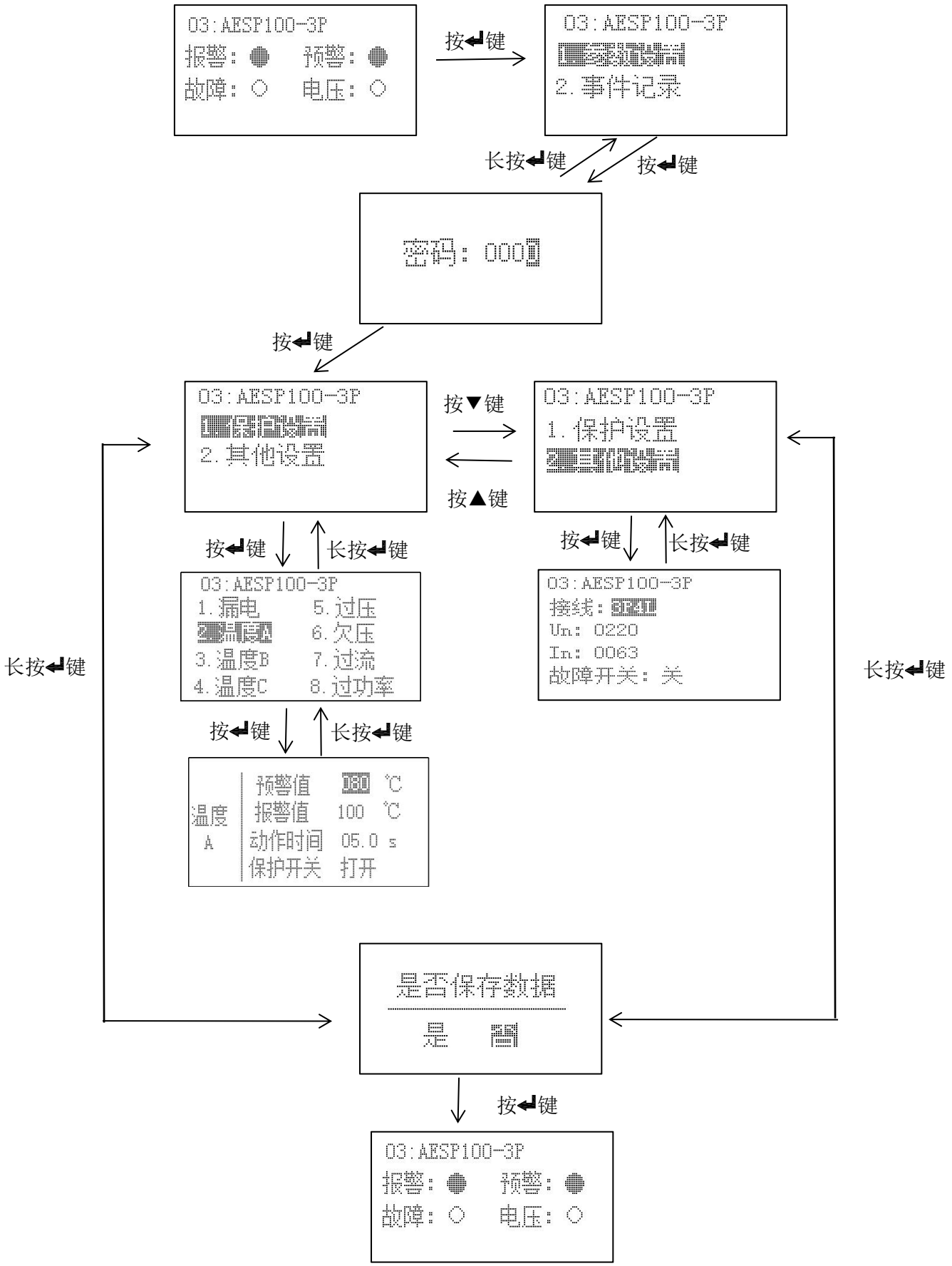
pour:

1, Ua represents the voltage in phase A, F represents the frequency; IA represents phase A current; Pa represents the active power in phase A; Qa represents the reactive power in phase A; Sa means A phase at power; PFa represents the power factor of phase A.

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

5.3.3. Current device parameter settings

Press the return key on the main interface, select "2. Device List", select the circuit to set the protection parameters, such as "03: AESP100-3P", press the return key on any electric parameter data display page, select "parameter setting", enter the password "0001", and select each protection parameter for setting.



Notice:

1, through the ▲ key, ▼ key can be on the leakage, temperature, overvoltage, overvoltage, overcurrent, overpower modification or setting.

2, temperature: detect the temperature in a short time, exceed the alarm value to alarm, the time and threshold can be adjusted with the actual.

3. Leakage: detect the residual current in a short time, exceed the alarm value for alarm, the time and threshold can be adjusted with the actual.

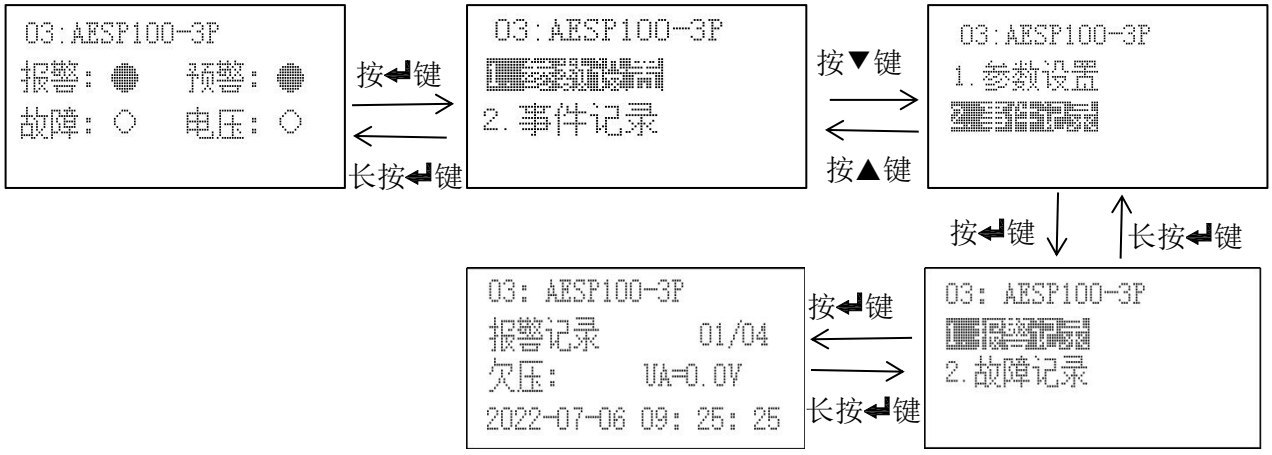
4, overvoltage, undervoltage: detect the voltage in a short time, exceed the alarm value for alarm, the time and threshold value can be adjusted with the actual.

5, overcurrent: detect the current in a short time, exceed the alarm value to alarm, the time and threshold can be adjusted with the actual.

6, Overpower: detection power, exceed the alarm value to alarm, the time and threshold can be adjusted with the actual.

5.3.4. Query of the current device event record

Press the return key on the main page, select "2. Device List", select the circuit to view the event record, such as "03: AESP100-3P", select "Event Record" and press the return key to view the alarm and fault record.



Notice:

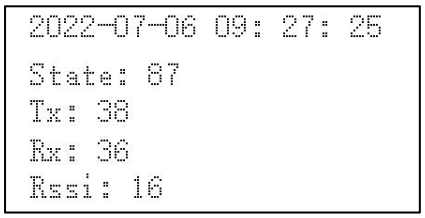
1) The data "01" in the upper right corner of the alarm record indicates the first data, and the subsequent alarm record can be " 02,03.....20 "(up to 20); the number after" 01 " indicates the current number of alarm records.

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

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

5.3.5. Display of the current device network information

Return to the home page and select "3. Network Information" as shown in the figure.

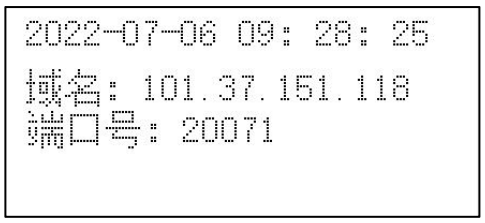


(1)

Under the information interface (1) interface, there are four values displayed,

meaning as follows:

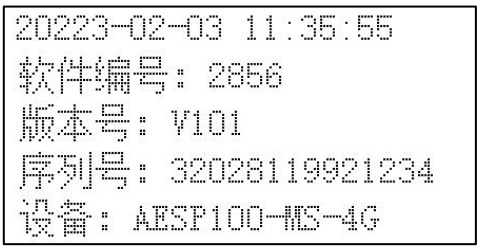
- Rssi: The current signal value is displayed after Rssi
- State: State shows the state of the current module, there are ten states of 0~9, among which the number corresponding to 0~9 are as follows
  - 0 Initialization
  - 1 and obtained the IMEI serial number
  - 2 Check the SIM card to obtain the card number
  - 3. Set up the network mode
  - 4 Wait for the GPRS to attach
  - 5 Check the signal value
  - 6. Set up the networking mode
  - 7 Connect to the server
  - 8 The server is already connected
  - 9 Close the server connection
- TX: The number of sent data is displayed after TX
- Rx: The number of received data is displayed after Rx



（2）

Information interface (2) interface, the first row shows the domain name (if the domain name is not set, no display),

The second row shows the port number of the connecting server.

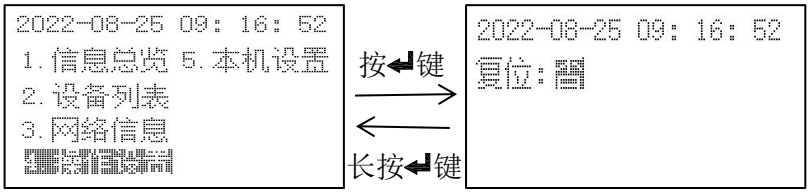


（3）

Information interface (3) interface, display the software number, version number and serial number.

5.3.6. Current device operation settings

Press the return key on the home page, select "4. Network Information", display as shown in the figure, can be reset operation.



6. Common fault analysis and troubleshooting

- If the instrument indicator light is not on, please check whether the power supply is well connected;
- If the instrument red indicator light is not always on, check whether the upper end of the circuit breaker is charged;
- If the instrument indicator flashes red every 2s, it will be sent for repair;
- If the gateway data is not refreshed, check whether the communication line from

the module is normal connection;

- If the gateway is not online, please check the cause of the fault according to the network status;

7. matters need attention

- Before using the product, please check whether the appearance is in good condition. If there is damage, find the seller for replace in time.
- Wire correctly according to the instruction manual, and carefully check after the wiring to ensure the wiring is correct.

Change the record

Revised edition	Revision time	Revised terms
V1.0	2023.03	/
V1.1	2025.2	Modify the smart gateway model to AESP100-MS and add the AESP100-MS-WS model parameters

Headquarters: Acrel Co., Ltd.
Trade Company: Acrel E-Business(Shanghai)Co., Ltd.
Address: No.253 Yulv Road, Jiading District, Shanghai, China
TEL.: 0086-21-69156352
Web-site: www.acrel-electric.com
E-mail: sales@acrel-electric.com
Postcode: 201801
Manufacturer: Jiangsu Acrel Electrical Manufacturing Co., Ltd.
Address: No.5 Dongmeng Road, Dongmeng industrial Park, Nanzha Street, Jiangyin City, Jiangsu Province, China
TEL./Fax: 0086-510-86179970
Web-site: www.jsacrel.com
E-mail: sales@email.acrel.cn
Postcode: 214405

2025.02