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ARCM600 Series Electrical Fire Monitoring Equipment

Installation and Use Manual V1.0

Acrel Electric Co., Ltd

Declaration

Acrel reserves the right to modify the product specifications herein without notification. Please consult the local agent about the latest specifications before placing a purchase order.

Content

1. Overview

ARCM600 series electrical fire monitoring equipment is a computer monitoring and control system independently developed by Acrel, which integrates monitoring, alarm and management. The system is suitable for centralized monitoring and management of electrical fire prevention in large shopping malls, residential areas, industrial and mining enterprises, office buildings, shopping malls and hotels.

ARCM600 series electrical fire monitoring equipment through RS485 bus and a number of electrical fire monitoring detectors connected to form a distributed electrical fire monitoring system, real-time monitoring of the working status of electrical lines.

The monitoring equipment can receive and process the leakage, temperature and fault arc signals sent by each detector in real time, and display them on the LCD screen at the same time. When the leakage, ultra-mild fault arc alarm and power or communication failure occurs, the monitoring equipment can send out sound and light alarm signals, and display the fault location and alarm type on the screen. It also has the functions of data storage, query and alarm control signal output, as well as the remote reset control function of the detector.

The equipment has reasonable structure, small size, high reliability, strong function, convenient maintenance and high cost performance. Its system interface is intuitive, easy to use.

Execution standard: the equipment conforms to the national standard GB14287.1 "Electrical fire monitoring system part 1: Electrical fire monitoring equipment".

2. Product model

ARCM600-□□

Additional feature: Additional communication method

Product series code: ARCM600 series electrical fire monitoring equipment

Table 1 Product model function description

Name	Functional specification
ARCM600	One two-bus communication, one RS485 communication, one Ethernet communication, two relay output, and one RS485 communication or RS232 communication is optional.

3. Basic function

3.1. Monitoring alarm function

The monitoring equipment can receive information of leakage, temperature and fault arc from multiple detectors. Sound and light alarm signal will be sent when the alarm is made, and the red "alarm" indicator on the equipment will light up. The display screen indicates the alarm location and type, and records the alarm time. The audible and visual alarm is maintained until the "reset" button (button) of the display screen is pressed to reset the detector remotely. The sound alarm signal can also be manually eliminated by using the "mute" button (key) on the display screen.

3.2. Control output function

When the monitored loop alarms, the control output relay is closed to control the protected circuit or other equipment. When the alarm is cleared, the control output relay is released.

3.3. Fault alarm function

Communication failure alarm: when communication failure occurs between the monitoring equipment and any detector connected or the detector itself occurs, the corresponding detector in the monitoring screen will display

the fault prompt. At the same time, the yellow "fault" indicator on the equipment is on, and the fault alarm sound is emitted.

3.4. Self-checking function

Check whether all status indicators, display screens and speakers in the equipment are normal.

3.5. Alarm record storage query function

When there is leakage, excessive temperature fault arc alarm, or communication and power failure, the alarm location, fault information, alarm time and other information stored in the equipment. When the alarm is relieved or troubleshooting, it will also be recorded. Historical data provides multiple convenient and fast query methods.

3.6. Control function of detector

Through the operation of monitoring software, all detectors connected to the device can be remotely reset control.

3.7. Permission control function

To ensure the safe operation of the monitoring system, the software operation rights of the monitoring device are divided into three levels. Operators at different levels have different operation rights.

4. Main technical parameter

4.1. Main performance indexes of ARCM600 series electrical fire monitoring equipment

4.1.1. Power supply

Rated working voltage AC 220V(85% ~ 110%).

4.1.2. Working system

The 24-hour work day.

4.1.3. Communication method

RS485 communication, Modbus-RTU communication protocol, transmission distance 1km. The communication distance can be extended by repeater.

4.1.4. Monitoring capacity

(1) The monitoring equipment can monitor up to 64 monitoring units (detectors);

(2) It can be equipped with ARCM series monitoring detector.

4.1.5. Monitoring alarm item

(1) Residual current fault (leakage) : fault unit attribute (location, type);

(2) Temperature alarm (overtemperature) : fault unit attributes (location, type);

Monitoring alarm response time: ≤10s;

Monitoring alarm sound pressure level (A meter weight) : ≥70dB / 1m;

Monitoring alarm light display: red LED indicator light, red light alarm signal should be maintained until manual reset;

Monitoring alarm sound signal: can be manually eliminated. When the alarm signal is input again, it can start again.

4.1.6. Fault alarm item

(1) The communication connection line between the monitoring equipment and the detector is broken or short-circuited;

(2) The connection line between the detector and the residual current sensor or temperature sensor is broken or short-circuited;

Fault alarm response time: ≤100s;

Monitoring alarm sound pressure level (A meter weight) : ≥70dB / 1m;

Monitoring alarm light display: yellow LED indicator light, yellow light alarm signal should be maintained until troubleshooting;

Fault alarm sound signal: can be manually eliminated. When there is an alarm signal input again, it can start again;

During the failure, the normal operation of the non-failure circuit is not affected.

4.1.7. Control output

Alarm control output: 2 groups of normally open passive contacts;

Contact capacity: AC220V/1A DC30V/1A.

4.1.8. Self-inspection item

Indicator check: alarm, failure and operation; Screen inspection and audio inspection; Self-checking time-consuming≤60s.

4.1.9. Event logging

(1) Record content: record type, occurrence time, detector number, area, fault description, etc.;

(2) Record query: query according to the date, type, and other conditions.

4.1.10. Operation classification

(1) Daily duty level: real-time status monitoring, event record query;

(2) Monitoring operation level: real-time status monitoring, event record query, remote reset of detector, self-check of equipment;

(3) System management level: real-time status monitoring, event record query, remote reset of detector, self-check of equipment, system parameter query of monitoring equipment, individual detection of each module of monitoring equipment, operator addition and deletion.

4.2. Working environment condition

Workplace: no rain or snow direct attack, no corrosive gas and violent vibration place;

Working environment temperature: -10℃ ~ +55℃

Storage environment temperature: -20℃ ~ +70℃;

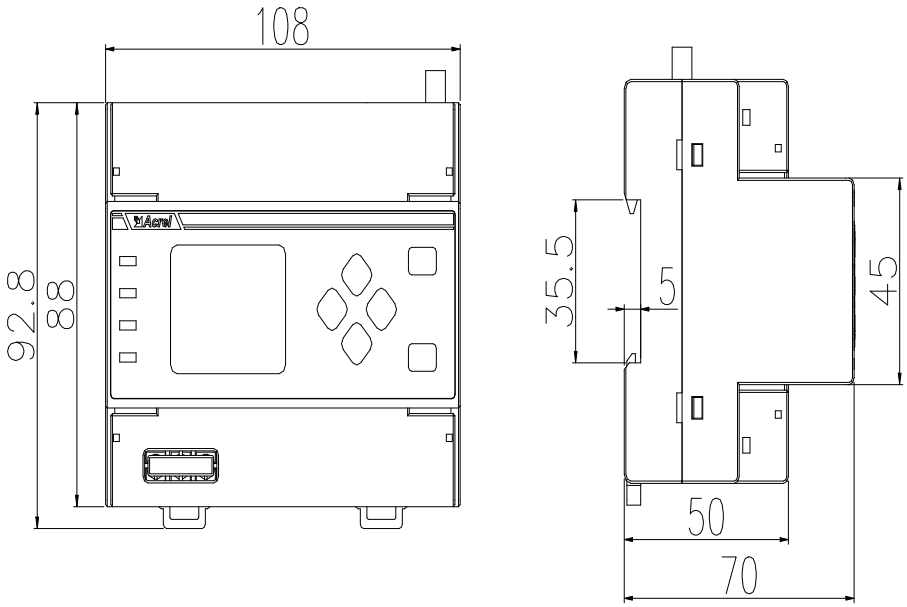
The relative humidity of working environment: the relative humidity of the air≤93%, without condensation;

Altitude: ≤2500m.

5. Shape structure

5.1. ARCM600 series electrical fire monitoring equipment

5.1.1. Overall dimension



5.1.2. Installation method

35mm rail mounting, wall mounting.

6. LCD display and button operation

6.1. Indicator layout and function description

Panel layout of ARCM600 series electrical fire monitoring equipment is shown in Figure 1:

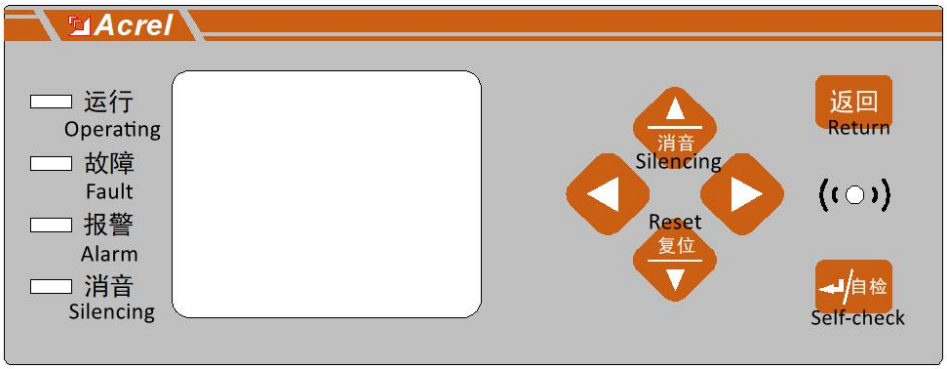


Figure 1 Schematic diagram of monitoring device panel

Operating indicator light (green) : When the device is running normally, the indicator light blinks at an interval of one second.

Fault indicator light (yellow) : when the system fails (such as communication failure, power failure, etc.), the fault indicator is always on;

Alarm indicator light (red) : when the equipment receives the alarm signal sent by the detector, the alarm

indicator is always on;

Silencing indicator light (green) : when the software silences, the indicator is always on;

6.2. Button operation

The instrument can be set by pressing the buttons, and the instrument can be muffled, self-check and reset. ARCM600 series electric fire monitoring equipment has 6 buttons, including: ◂left button, ▸right button, ▲/ muffled button, ▼/ Reset button, Return button and ↵/self-test Enter button.

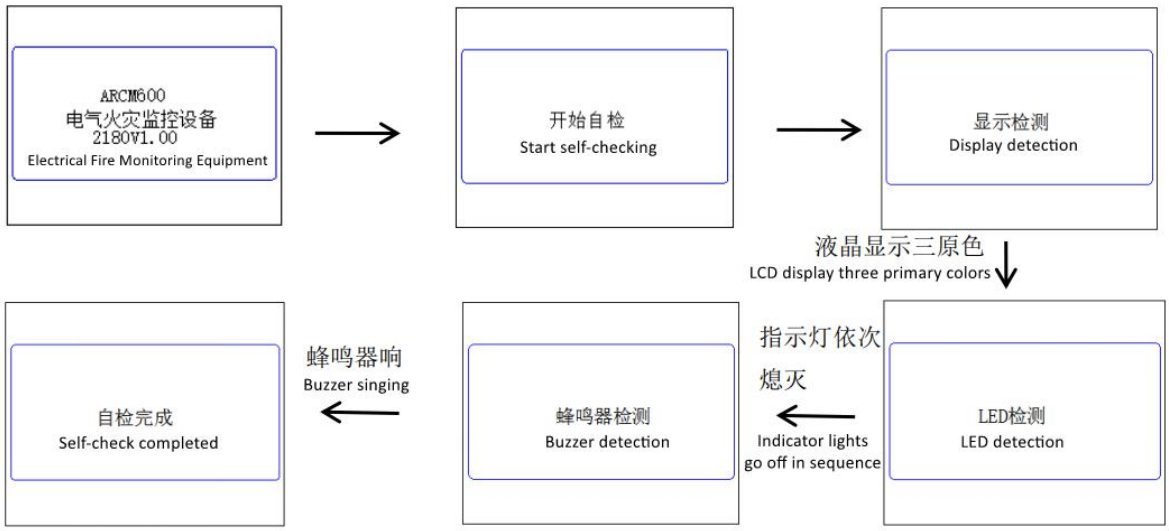
Table 2 Functions of buttons

▲/ muffled button	Long press muffled button to achieve the mute function; Used to move the cursor up in the same level menu
◂left button, ▸right button	Used for the left and right switching of the same level menu
▼/ Reset button	Long press Reset button to display the login page. Then enter the password and press Enter button to reset the system; Used to move the cursor down in the same level menu
Return button	Return to the upper-level menu
↵ /self-test Enter button	Long press Enter button to realize self-check function; Used for menu item selection confirmation, and enter the next level menu.

6.3. LCD display

6.3.1. Boot-up and self-check

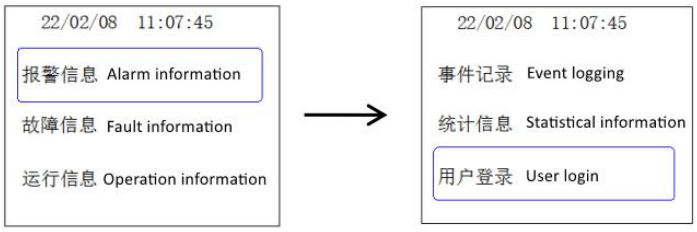
Power on the electrical fire monitoring device and perform self-check on the device. The following figure shows the page. All indicator lights turn on at the same time, and turn off in turn, the buzzer rings, and finally the running indicator light blinks. The electrical fire monitoring device enters the normal monitoring state.



6.3.2. Main menu interface

After the self-check is completed, enter the main menu status interface, and press ▲ ▼ to switch the cursor.

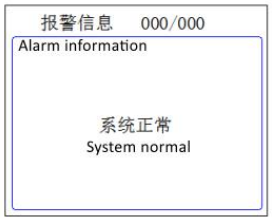
There are six options for alarm information, fault information, operation information, event record, statistics and user login.



6.3.3. Alarm information

In the main menu, use ▲ ▼ key to switch the blue border, select the alarm information and enter the alarm information page through ↵/self-check button, you can view the alarm information on this page. You can use ◄ left button, ► right button, ▲ up button, and ▼ button to move the page and toggle alerts.

When everything is normal, the alarm information page is shown as the picture below:



When residual current or overtemperature alarm occurs, the page will be displayed as the figure below:

In the figure 001/007, 001 indicates the first alarm message, and 007 indicates seven alarm messages.

Residual current alarm

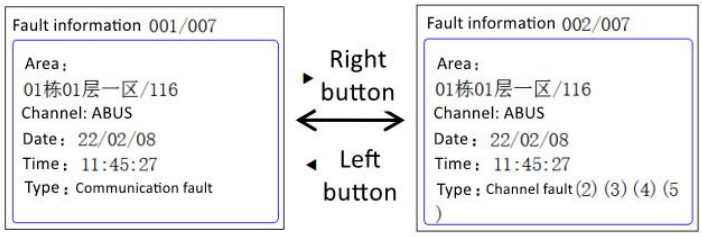
Over-temperature alarm

6.3.4. Fault information

On the main menu, use ▲ ▼ key to switch the blue border. Select the fault information and press ↵/self-check button to enter the fault information page. You can view the fault information on this page. You can use ◄ left button, ▲ Up button, and ▼ Down button to move the page and toggle fault information.

When a fault occurs, the page will be shown as follows:

Communication fault has a higher priority than channel fault. In channel fault, (2), (3), (4) and (5) correspond to four channel temperatures from T1-T4.

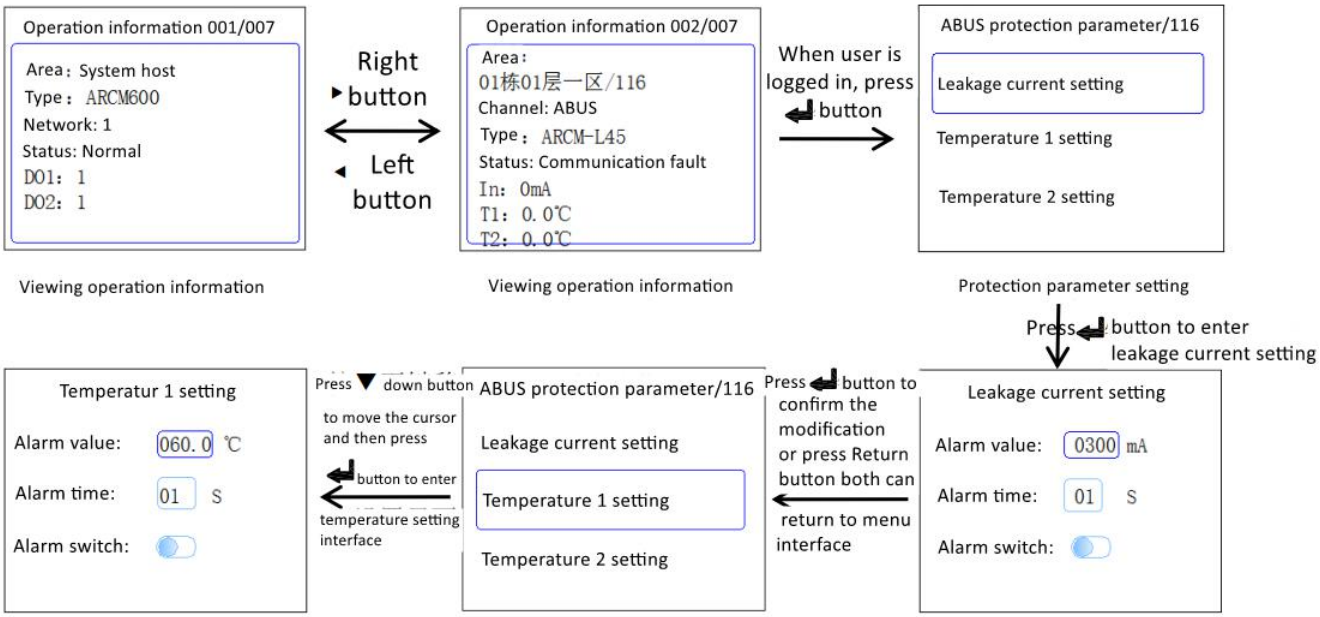


6.3.5. Operation Information

In the main menu, use ▲ ▼ key to switch the blue border, select the running information and enter the running information page through ↵/self-check button, you can view the running information on this page. You can

use ◂left button, ▸right button, ▲ up button, and ▼ down button to move the page and toggle running information. After login, the user returns to the operation information interface, and press Enter button on the corresponding point interface to enter the protection parameter interface, where the alarm values of leakage current and four-channel temperature can be set. After setting, press ↵/self-check button to save.

The operating information operation interface is shown as the figure below:



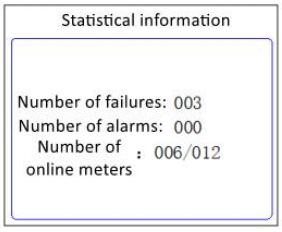
6.3.6. Event logging

In the main menu, use ▲ ▼ key to switch the blue border, select the event record and enter the event record page through ↵/self-check button. You can view the events recorded in the table on this page. You can use ◂ left button, ▸ right button, ▲ up button, and ▼ down button to move pages and toggle events.

Event logging menu records all events of ARCM600 series electrical fire monitoring equipment, including boot-up, self-check, muffler, communication failure, communication line failure, communication line recovery, disconnection failure, etc. The recording mode is as follows:

6.3.7. Statistical information

In the main menu, use ▲ ▼ key to switch the blue border, select the statistics and then enter the statistics page by ↵/self-check button, you can view the number of online meters, the number of fault information and the number of alarm information on this page.



7. System Setting

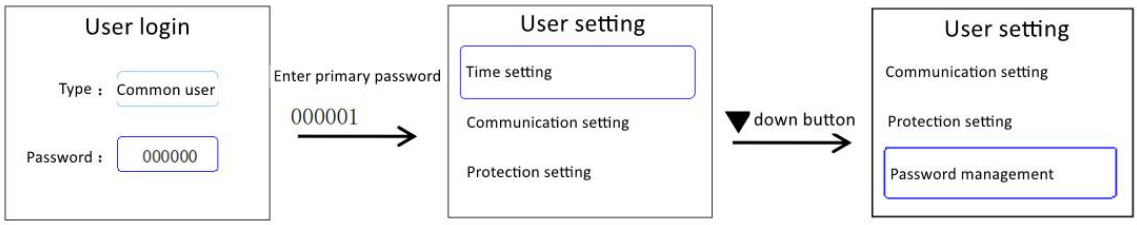
In the main menu, use ▲ ▼ key to switch the blue border, select the user login and enter the user login page through ↵/self-check button, you can set the system for the electrical fire monitoring equipment. On the login page, you can choose from three types of users: common user, system user, and super user. The three types of users have different system setting permissions.

Common user: it can set the time, communication setting, protection setting and password management, the initial password 000001;

System user: it can set the time, communication setting, protection setting, password management and point management, the initial password 000002;

Super user: it can set time, communication setting, protection setting, password management, point management and other settings, the initial password 000003;

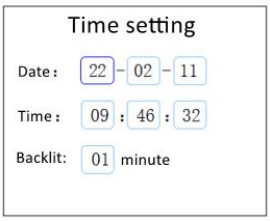
After common users log in, the interface is shown as the figure below:



The login page of system user is the same as that of super user, but the permissions are different.

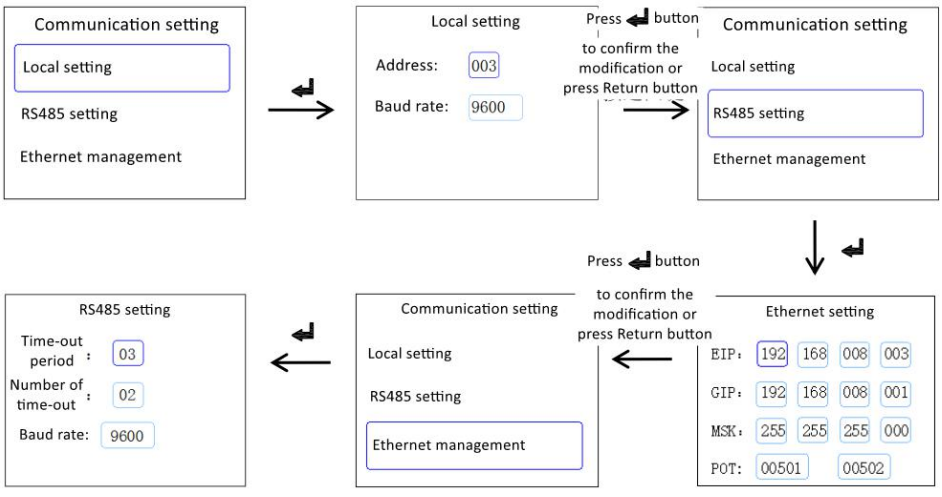
7.1. Time Setting

Select Time Setting by pressing ↵ button to adjust the date, time, and backlight time of the electrical fire monitoring device. After adjustment, press ↵ button twice to confirm the selection. If you want to cancel the operation, press the Return button.



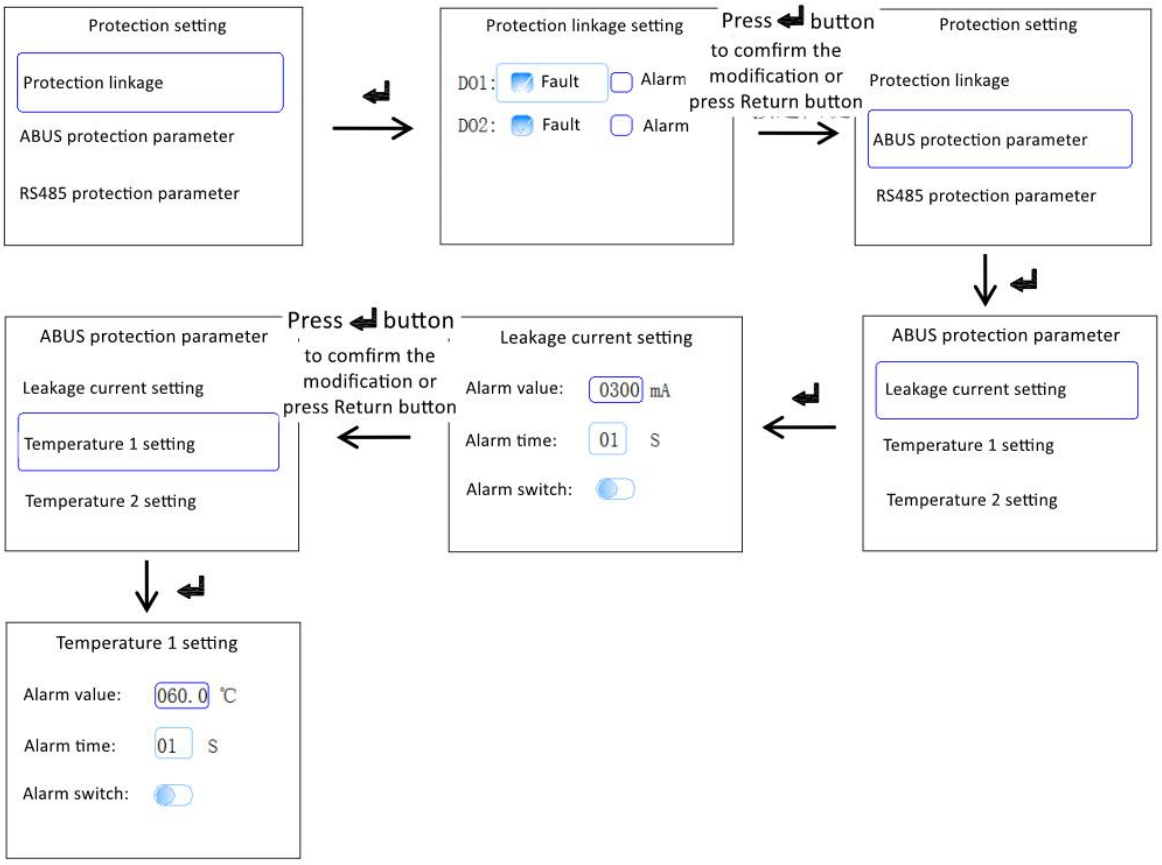
7.2. Communication Setting

Select Communication Setting by pressing ↵ button to adjust the communication between the local device, RS485, and Ethernet of the electrical fire monitoring device. After adjustment, press ↵ button twice to confirm the selection.



7.3. Protection Setting

Select Protection Setting by pressing ↵ button to adjust the protection linkage, ABUS protection parameter, and RS485 protection parameter of the electrical fire monitoring device. After adjustment, press ↵ button twice to confirm the selection.



Protection linkage: Set protection association for DO1 and DO2, and select whether to enable fault information and alarm information.

ABUS protection parameter: Set the alarm value, alarm time and whether to open or not of leakage current and four-way temperature;

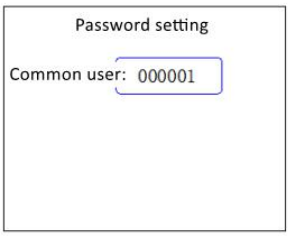
RS485 protection parameter: Set the alarm value, alarm time and whether to open or not of leakage current and four-way temperature. The display interface is consistent with the display interface of ABUS protection parameter.

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

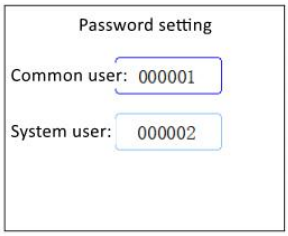
Temperature: Detect the temperature in a short period of time, and alarm when it exceeds the threshold. The time and threshold can be adjusted according to the actual situation.

7.4. Password setting

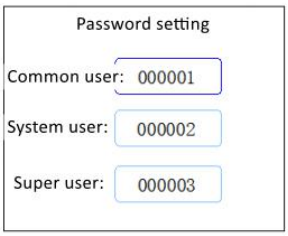
Under the menus of "Common User", "System User" and "Super User", select "Password Setting", and press ↵ button to reset the password. After entering the new password in the password setting interface, press ↵ button to confirm the modification of the password.



Ordinary user right



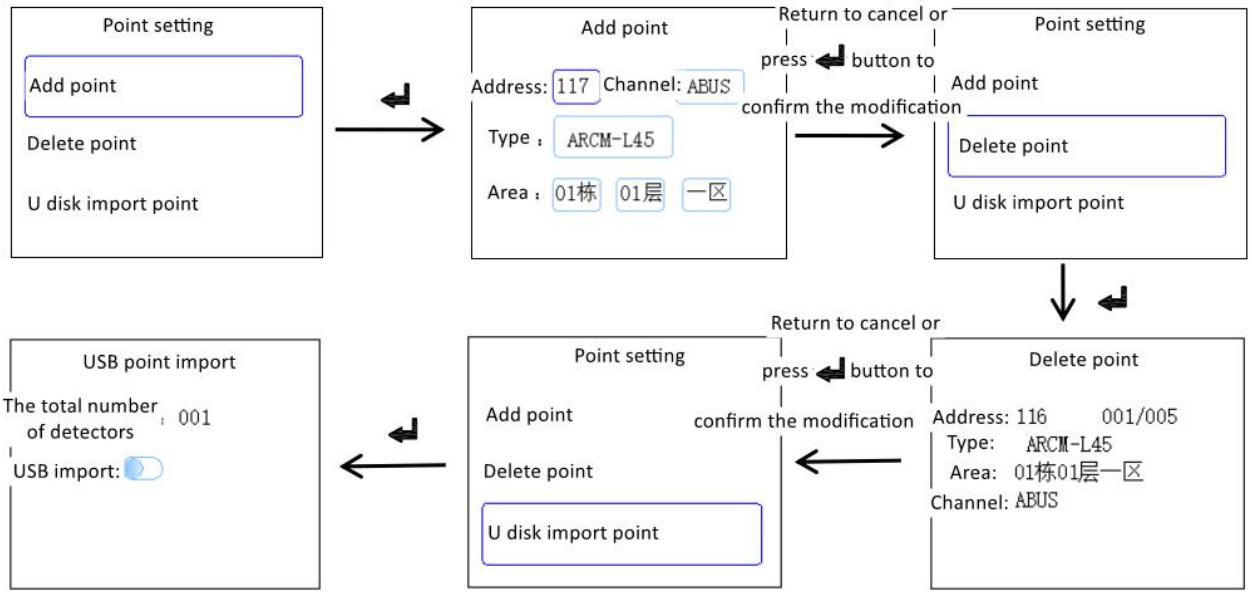
System user right



Super user right

7.5. Point management

Select "Point Management" and press ↵ button to adjust the point of the electrical fire monitoring equipment. After the adjustment is completed, press ↵ button twice to confirm the selection.



● When adding points, fill in the address of the slave that needs to be added in the address;

● When deleting a point, use ◄ left button and ► right button to select the point to be deleted and then press ↵ button to confirm the selection;

● In the USB point import interface, control the on and off of USB import switch. Only when the switch is turned on can the point be imported by means of USB transmission.

All the above points about adding, deleting or importing should be powered off and restarted the monitoring device after the setting is completed, and it will take effect after restarting.

7.6. Other settings

The permissions of other settings are only possessed by super users, and the functions of clearing detectors and clearing event records can be completed on this interface.

8. Installation and Commissioning

8.1. Equipment installation

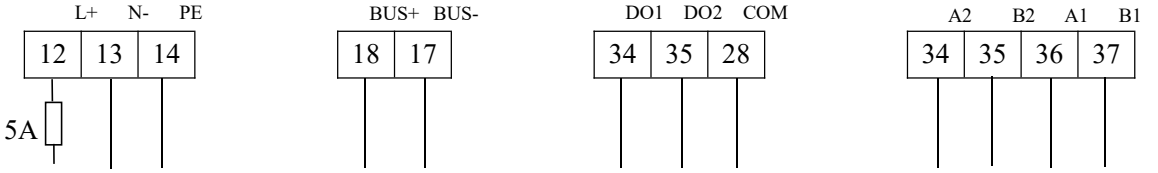
8.1.1. Environment

The equipment should be installed in a dry, clean place away from heat sources and strong electromagnetic fields.

8.1.2. Installation location

The equipment is installed on the wall, and it is preferably installed in the fire control room. If there is no fire control room, it can also be installed on the wall of a manned substation (power distribution room) or a manned room.

8.1.3. Wiring instruction



Auxiliary power supply Two bus communication Digital input 485 communication

8.1.4. Installation requirement

● This equipment must be installed by a qualified installer and the instructions for use must be read carefully before installation;

● When wiring, follow the wiring method in the instructions for use. After the wiring is completed, carefully check whether the wiring is correct, so as to avoid damage to the equipment and dangerous accidents after power-on;

● When installing or dismantling the equipment, please confirm that the working power supply and related parts of the power supply have been cut off to avoid electric shock, causing danger and personal injury;

● Please follow the relevant specifications for wiring to avoid accidents such as short circuits and open circuits, and also facilitate future maintenance and repairs;

● The normal operation of the equipment depends on the correct installation, setting and operation. Before installation, please read the relevant contents of the installation, setting and operation in detail to ensure the normal operation of the device.

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