172

ARCM200BL 型
电气火灾监控探测器
ARCM200BL type
Electrical Fire Monitoring Detector

安装使用说明书 V1.6

Installation and Operation Instruction V1.6

江苏安科瑞电器制造有限公司

Jiangsu Acrel Electric MFG. Co., Ltd.

申　　明

DECLARATION

本公司保留对本手册所描述之产品规格进行修改的权利，恕不另行通知。订货前，请垂询当地代理商以获悉本产品的新规格。

This company reserve power of revision of product specification described in this manual, without notice. Before ordering, please consult local agent for the latest specification of product.

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1. 概述

1. Overview

ARCM200BL 型电气火灾监控探测器是针对 0. 4kV 以下的 TT、TN 系统设计的，通过对配电回路的剩余电流、导线温度等火灾危险参数实施监控和管理，从而预防电气火灾的发生。

ARCM200BL electrical fire monitoring detector is designed for TT and TN systems below 0. 4kV. It can prevent electrical fires by monitoring and managing fire hazard parameters such as residual current and wire temperature of distribution circuits.

产品采用先进的微控制器技术，集成度高，体积小巧，安装方便，集智能化，数字化，网络化于一身，是建筑电气火灾预防监控、系统绝缘老化预估等的理想选择。

The product adopts advanced micro-controller technology, high integration, small size, easy installation, intelligent, digital, and networked. It is an ideal choice for building electrical fire prevention and monitoring, system insulation aging prediction, etc.

产品符合 GB14287. 2-2014《电气火灾监控系统 第 2 部分：剩余电流式电气火灾监控探测器》、GB14287. 3-2014《电气火灾监控系统 第 3 部分：测温式电气火灾监控探测器》的标准要求。

The product meets the standard requirements of GB14287. 2-2014 《Electrical Fire Monitoring System Part 2: Residual Current Electrical Fire Monitoring Detector》, GB14287. 3-2014 《Electrical Fire Monitoring System Part 3: Temperature Measuring Electrical Fire Monitoring Detector》.

2. 产品型号

2. Product Type

ARCM 200 B L- □

可选功能代号：见下表 Optional function code: refer the chart below

显示方式：液晶显示 Display mode: liquid crystal display

仪表外形：B—96 槽形 Meter shape: B-96 groove shape

产品种类号：安科瑞电气火灾监控探测器

Product Category No.: Acrel Electric Fire Monitoring Detector

表 1 产品规格表

Chart 1 Product Specification

型号 Type	功能描述 Function Description
ARCM200BL-J1	监测一路剩余电流和四路温度，一路继电器输出，声光报警，485 通讯，事件记录，LCD 显示，1 路 RS485/MODBUS 通讯 Monitor one channel of residual current and four channels of temperature, one channel relay output, sound and light alarm, 485 communication, event record, LCD display, and one channel RS485/MODBUS communication
ARCM200BL-J4	监测四路剩余电流和一路温度，四路继电器输出，声光报警，485 通讯，事件记录，LCD 显示，1 路 RS485/MODBUS 通讯 Monitor four channels of residual current and one channel of temperature, four channels relay output, sound and light alarm, 485 communication, event record, LCD display,

	1 channel RS485/MODBUS communication

3. 技术参数

3. Technical Parameter

表 2 技术参数表

Chart 2 Technical Parameter

技术参数 Technical Parameters		ARCM200BL
输入 Input	网络 Network	三相 TT、TNS、TN-C-S 或 TNC(局部 TT) 系统 Three-phase TT, TNS, TN-C-S or TNC (partial TT) system
	额定工作电压 Rated Voltage	AC220V
	频率 Frequency	50Hz
	剩余电流测量范围 Leakage Current Measuring Range	10mA ~ 3000mA
	温度监测范围 Temperature Monitoring Range	NTC 型热敏电阻（0℃ ~ 120℃） NTC type thermistor (0℃ ~ 120℃)
输出 Output	通讯 Communication	RS485 接口，MODBUS-RTU 协议，波特率可设 RS485 interface, MODBUS-RTU protocol, baud rate can be set (4800/9600/19200/38400bps)
	报警方式 Alarm Method	声光报警 Audible alarm
	事件记录 Event Record	20 条报警记录、20 条故障记录、20 条开关记录 20 alarm records, 20 fault records, 20 switch records
报警设置 Alarm Setting	剩余电流报警设定值 Residual current alarm setting value	300mA～1000mA（步长为 1mA） 300mA～1000mA（step length 1mA）
	温度报警设定值 Temperature alarm setpoint	45℃～110℃（步长为 1℃） 45℃～110℃（step length 1℃）
	音响器件声压值 Sound pressure value of audio equipment	大于 70dB，小于 115dB（蜂鸣器前方 1m 处，A 计权） Greater than 70dB, less than 115dB (1m in front of the buzzer, A-weighted)
测量精度 Measurement accuracy		剩余电流±1%或±5mA；温度±5%或±1℃ Residual current±1% or±5mA; Temperature±5% or±1℃

继电器输出 Relay output	输出方式:1 路或 4 路继电器常开触点输出，机械触点，触点容量 AC 220V/1A，DC 30V/1A Output mode: 1-way or 4-way relay normally open contact output, mechanical contact, contact capacity AC 220V/1A, DC 30V/1A
工频耐压 Power frequency withstand voltage	电源与信号输入、继电器输出、通讯端子之间 2 kV/min； 信号输入与继电器输出、通讯端子之间 1.5 kV/min 2 kV/min between power supply and signal input, relay output, and communication terminals; 1.5 kV/min between signal input, relay output and communication terminals
环境 Environment	工作温度：-10℃～+55℃；储存温度：-20℃～+70℃ 相对湿度：5%～95%不结露；海拔高度：≤2500m Working temperature: -10℃～+55℃; Storage temperature: -20℃～+70℃ Relative humidity: 5%~95% non-condensing; Altitude: ≤2500m

4. 安装与接线

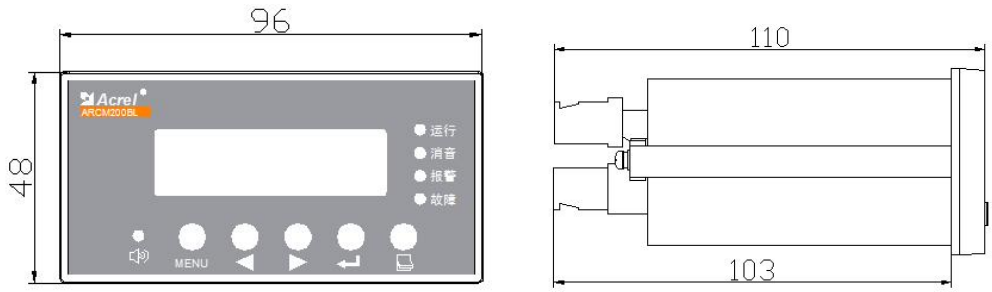
4. Installation and Wiring

4.1 外形及安装尺寸（单位 mm）

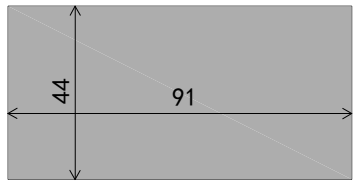
4.1 Outline and Installation Size(Unit mm)

ARCM200BL 外形及安装尺寸。

ARCM200BL Outline and installation dimensions.



正视图 Front View　　侧视图 Side View



盘面开孔 Panel opening

图 1

Fig. 1

4.2 安装方式

4.2 Installation Method

ARCM200BL 型探测器安装方式为嵌入式安装，固定方式为挤压式，如图 2 所示：

The installation method of ARCM200BL type detector is embedded installation, and the fixing method is extrusion type, as shown in Figure 2:

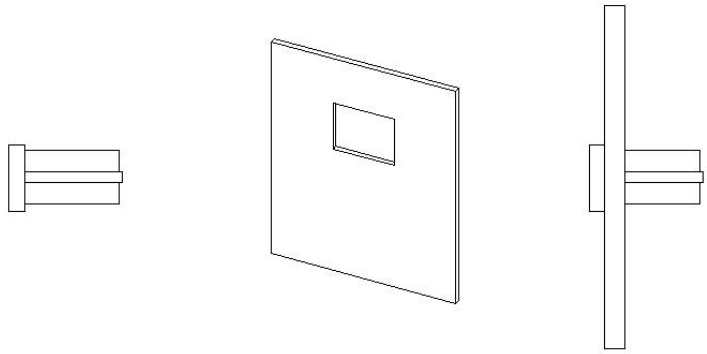


图 2

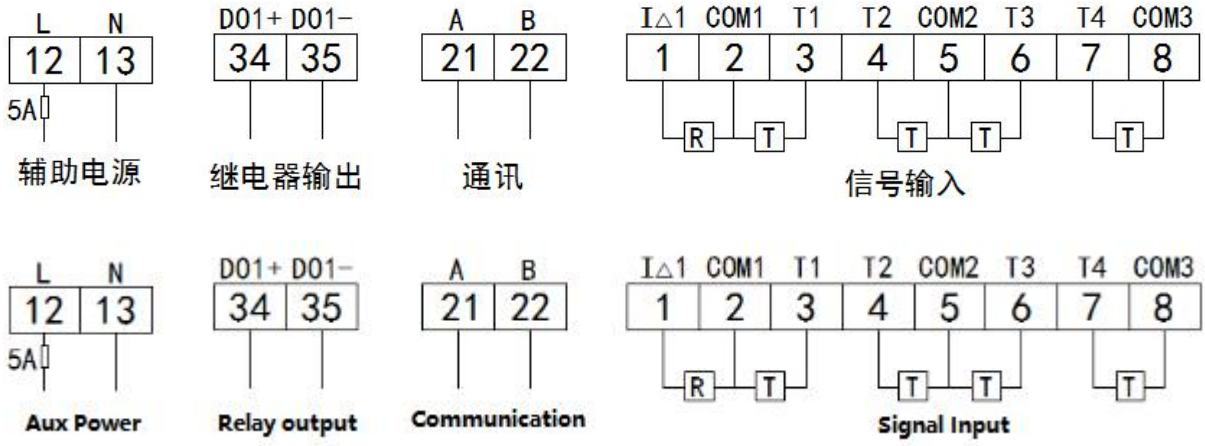
Fig. 2

4.3 接线说明（注：R 表示剩余电流信号；T 表示温度信号）

4.3 Wiring Guidance (Note: R means residual current signal; T means temperature signal)

4.3.1 J1 型接线端子

4.3.1 J1 type terminal block

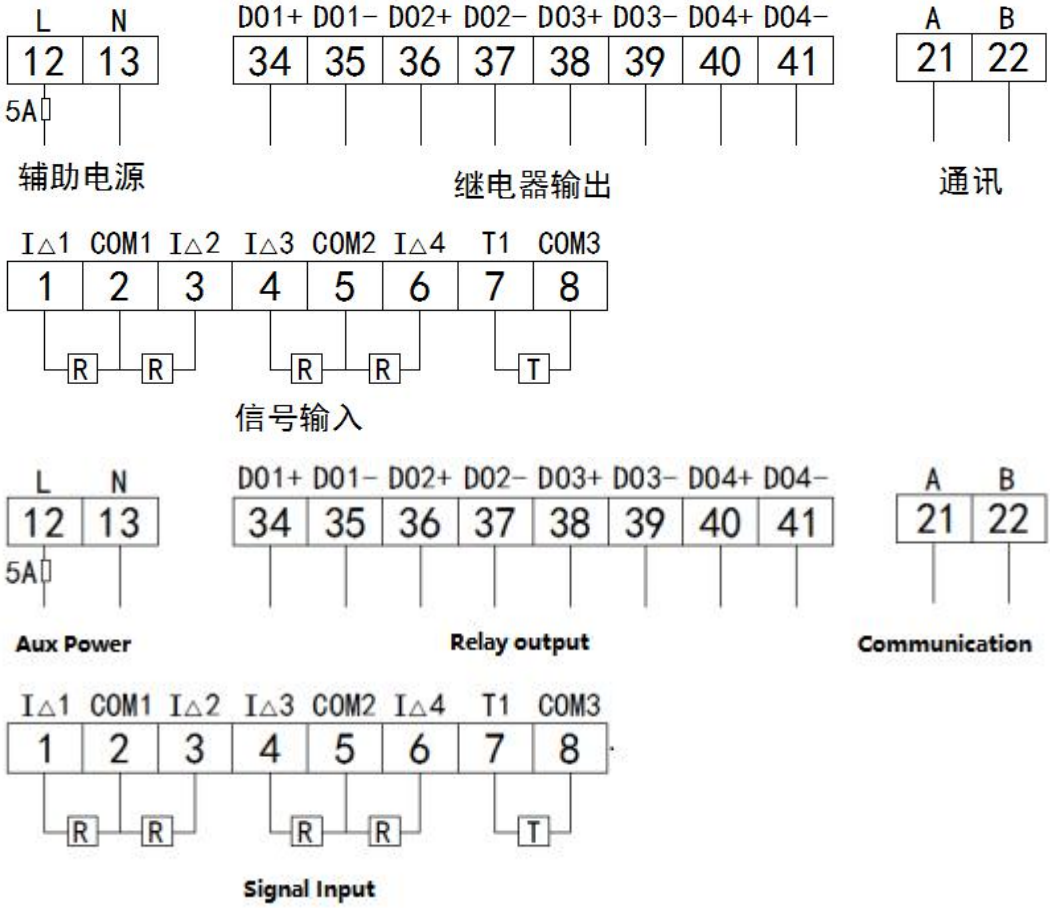


注：“12、13”为辅助电源（保险丝:5A）；“34、35”为继电器输出；“21、22”为通讯；“1、2、3、4、5、6、7、8”为剩余电流信号和温度信号输入。（公共端 COM1、COM2 和 COM3 不可短接）

Note: ″12, 13″ are auxiliary power supply (fuse: 5A); ″34, 35″ are relay output; ″21, 22″ are communication port; ″1, 2, 3, 4, 5, 6, 7, 8″ are residual current signal and temperature signal input. (Common ports COM1, COM2 and COM3 cannot be short-circuited)

4.3.2 J4 型接线端子

4.3.2 J4 type terminal block



注：“12、13”为辅助电源（保险丝:5A）；“34、35、36、37、38、39、40、41”为继电器输出，“21、22”为通讯；“1、2、3、4、5、6、7、8”为剩余电流信号和温度信号输入。（公共端 COM1、COM2、COM3 不可短接）

Note: ″12, 13″ are auxiliary power supply (fuse: 5A); ″34, 35, 36, 37, 38, 39, 40, 41″ are relay outputs, ″21, 22″ are communication; ″1, 2, 3, 4, 5, 6, 7, 8″ are residual current signal and temperature signal input. (Common ports COM1, COM2, COM3 cannot be short-circuited)

4.4 注意事项

4.4 Precautions

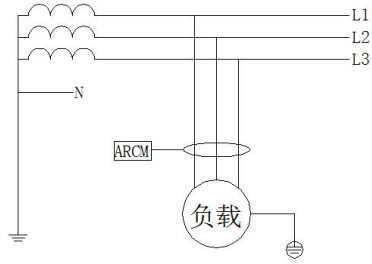
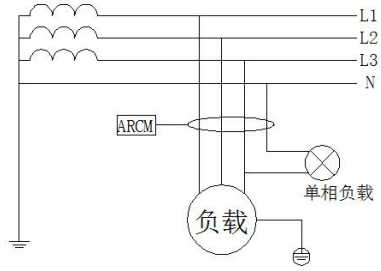
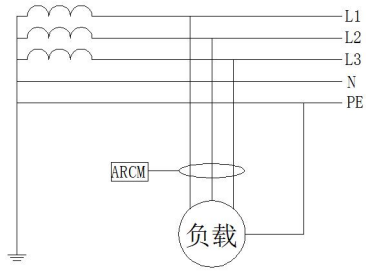
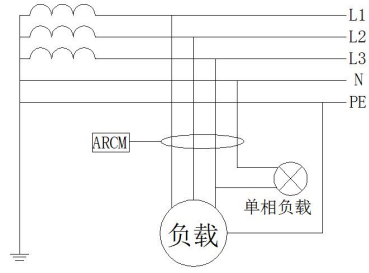
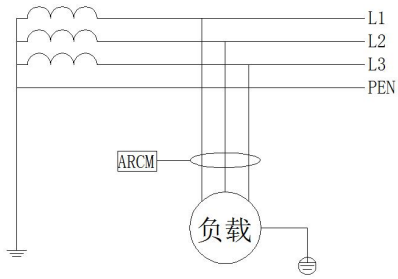
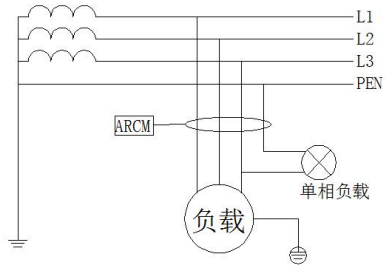
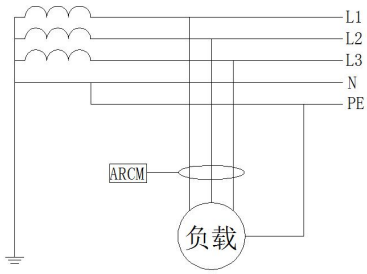
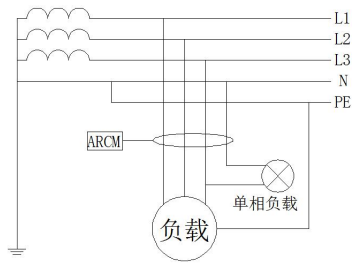
4.4.1 剩余电流互感器接法

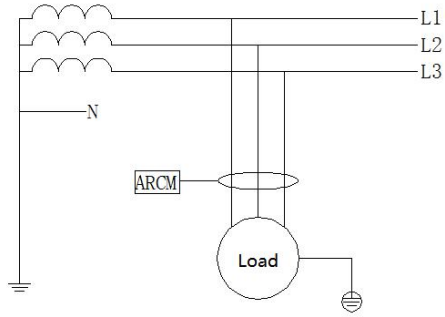
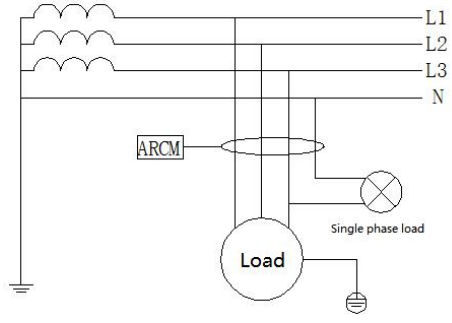
4.4.1 Residual Current Transformer Connection Method

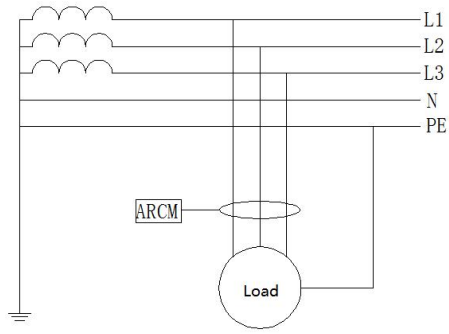
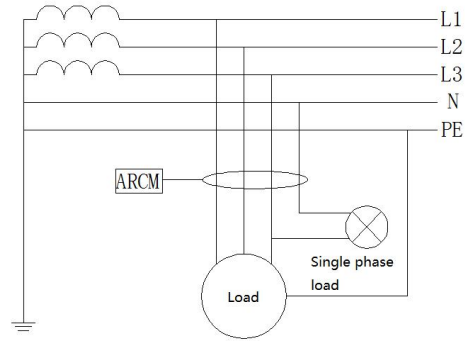
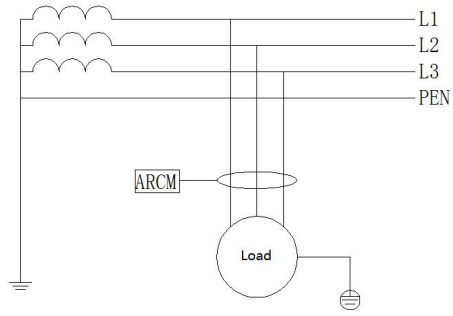
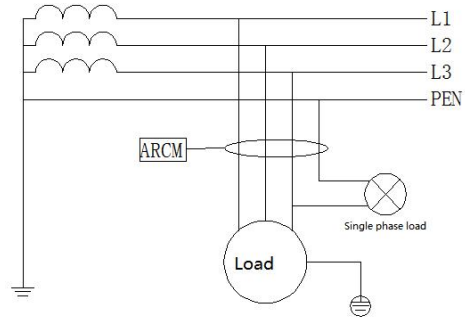
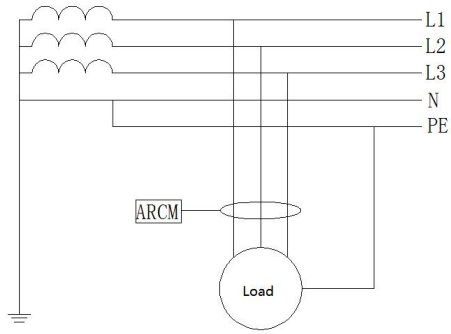
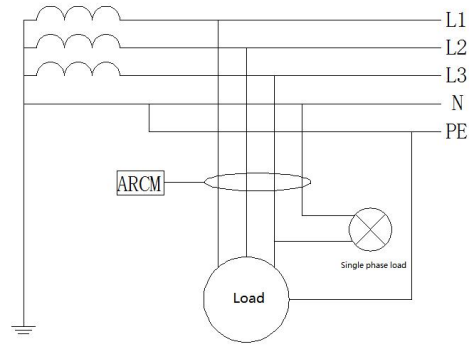
表 3 剩余电流互感器接法表

Chart 3 Leakage Current Transformer Wiring

相别 接线图 接地方式	三相三线	三相四线

TT			
TN	TN-S		
	TN-C		
	TN-C-S		

Phase / Wiring / Ground Method	Three phases three wire	Three phases four wire
TT		

TN	TN-S		
	TN-C		
	TN-C-S		

注：如上表中，剩余电流互感器安装时，必须严格区分 N 线和 PE 线，三相四线制中 N 线必须穿入剩余电流互感器。通过剩余电流互感器的 N 线，不得作为 PE 线，不得重复接地或接设备外露可接近导体。PE 线不得穿入剩余电流互感器。在 TN-C 系统中，必须先将系统改造形成局部 TT 系统，或改造成 TN-C-S 系统，再按上表接线。

Note: As shown in the chart above , when installing the residual current transformer, the N wire and the PE wire must be strictly distinguished. In the three-phase four-wire system, the N wire must pass through the residual current transformer. The N wire passing through the residual current transformer shall not be used as a PE wire, and shall not be repeatedly grounded or connected to an exposed and accessible conductor of the equipment. The PE line shall not pass through the residual current transformer. In the TN-C system, the system must first be transformed into a partial TT system, or transformed into a TN-C-S system, and then connected according to the above table.

4. 4. 2 辅助电源接法

4. 4. 2 Auxiliary Power Connection

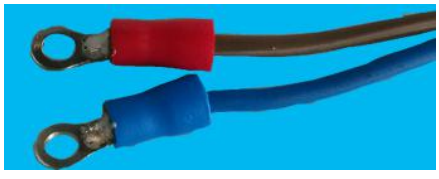


图 3

Fig. 3

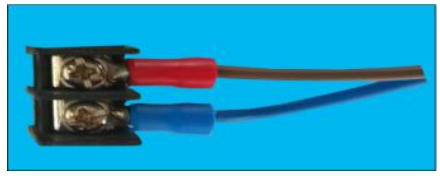


图 4

Fig. 4

结合上图，连接辅助电源时，需按上图 3 的方式做线，做线时，先用压线头压紧，之后用锡固定好；接线如图 4 所示，插入端子排中，用螺丝刀拧紧，保证电源的正常运行。

Combined with the above figure, when connecting the auxiliary power supply, you need to make the wire according to the above Fig.3. When making the wire, first press it with a crimping head, and then fix it with tin; the wiring is shown in Fig.4, insert it into the terminal block, and tighten it with a screwdriver to ensure the normal operation of the power supply.

4. 4. 3 通讯接线

4. 4. 3 Communication Wiring

探测器提供异步半双工 RS485 通讯接口，采用 MODBUS-RTU 协议，各种数据信息均可在通讯线路上传送。理论上在一条线路上可以同时连接多达 32 个探测器，每个探测器均可设定其通讯地址和通讯速率。通讯连接线建议使用 NH-RVVSP2*1. 5mm² 的屏蔽线，分别接 A、B, 屏蔽层单点接大地或悬空，布线时应使通讯线远离强电电缆或者其它强电磁环境。

The detector provides asynchronous half-duplex RS485 communication interface, adopts MODBUS-RTU protocol, and various data information can be transmitted on the communication line. Theoretically, up to 32 detectors can be connected to one line at the same time, and each detector can set its communication address and communication rate. It is recommended to use NH-RVVSP2*1. 5mm² shielded wires for communication cables, which are connected to A and B respectively, and the shielding layer is connected to the ground at a single point or suspended in the air. When wiring, the communication wires should be kept away from strong electric cables or other strong electromagnetic environments.

4. 4. 4 传感器匹配及安装

4. 4. 4 Sensor Matching and Installation

外置传感器有两种，剩余电流互感器和温度传感器，均为定制产品，不可随意替换其它厂商产品使用。接线时，剩余电流互感器二次信号不区分电流方向。安装时温度探头应紧贴线缆、母排表面或线缆接头处安装，安装时以尼龙扎带扎紧即可。另外，根据客户需求，温度探头也可悬空或紧贴柜体安装，用以测量环境或柜体的温度。

There are two types of external sensors, residual current transformer and temperature sensor, both of which are customized products, and cannot be replaced by other manufacturers' products at will. When wiring, the secondary signal of the residual current transformer does not distinguish the current direction. During installation, the temperature probe should be installed close to the cable, the surface of the busbar or the cable joint, and it can be fastened with nylon cable ties during installation. In addition, according to customer needs, the temperature probe can also be suspended in the air or installed close to the cabinet to measure the temperature of the environment or the cabinet.

5. 编程与使用

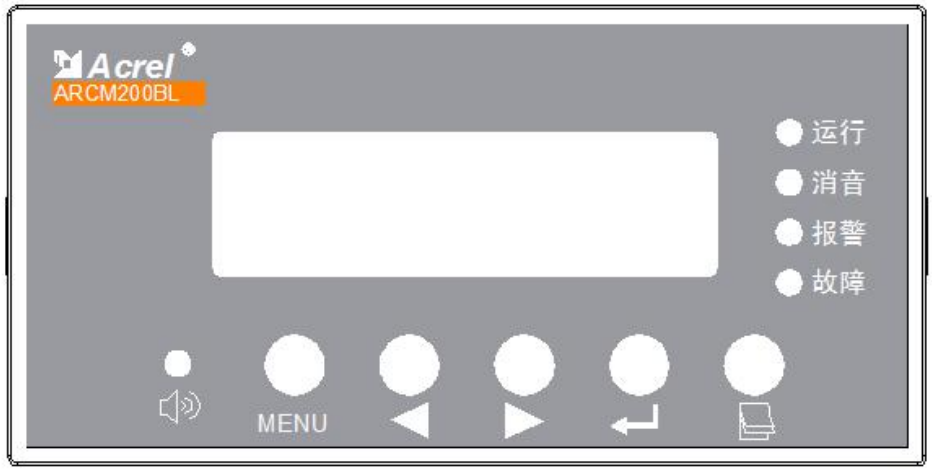
5. Programming and Usage

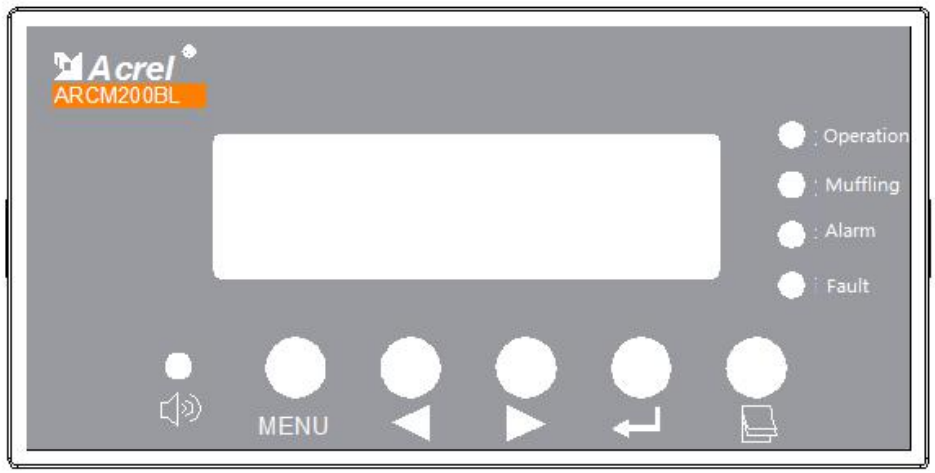
5. 1 测量项目及面板说明

5. 1 Measurement Items and Panel Description

J1、J4 型可监控剩余电流和温度, 并根据剩余电流和温度的大小决定作出报警指令。并且当输入信号达到报警设置时，发出声光报警。

J1 and J4 types can monitor the residual current and temperature, and make an alarm command according to the magnitude of the residual current and temperature. And when the input signal reaches the alarm setting, an audible and visual alarm will be issued.





5.2 LED 指示说明

5.2 LED Instructions

共有 4 个 LED 指示灯用于说明探测器状况：

“运行”（绿色）状态：探测器处于正常运行时，运行指示灯闪烁，闪烁频率大约为一秒一次。

“消音”（绿色）状态：探测器处于消音状态时，消音指示灯常亮。

“报警”（红色）状况：探测器处于报警状态时，报警指示灯常亮。

“故障”（黄色）状况：探测器处于故障时，故障指示灯常亮。

There are 4 LED indicators to indicate the status of the detector:

″Run″(green) state: When the detector is in normal operation, the running indicator flashes, and the flashing frequency is about once a second.

″Mute″(green) state: When the detector is in the state of silencing, the silencing indicator is always on.

″Alarm″(red) status: When the detector is in alarm state, the alarm indicator is always on.

″Fault″(yellow) status: When the detector is in fault, the fault indicator is always on.

5.3 按键编程说明

5.3 Key Programming Instructions

ARCM200BL 共有 5 个按键，从左至右分别为：MENU 菜单键、◂/消音键、▸/复位键、↵/自检键和⎘翻页键。

ARCM200BL has a total of 5 keys, from left to right: MENU key, ◂ / mute key, ▸ / reset key, ↵ / self-test key and ⎘ page turning key.

MENU 菜单键 MENU key	非编程模式下：按该键进入编程模式，装置提示输入密码，或返回上一级菜单； 编程模式下：用于返回上一级菜单，或退出编程模式。 In non-programming mode: press this key to enter programming mode, and the device prompts to enter a password, or return to the previous menu; In programming mode: used to return to the previous menu, or exit programming mode.
◀/消音(左)键 ◀/mute（left）key	非编程模式下：用于切换显示界面；长按时用于警报音的消除，同时消音指示灯点亮，报警指示灯不会熄灭； 编程模式下：用于同级单的切换和光标的移位。 In non-programming mode: used to switch the display interface; long press is used to eliminate the alarm sound, and the silence indicator light is on at the same time, and the alarm indicator light will not go out; In programming mode: used for the switch of the same level list and the shift of the cursor.
▶/复位(右)键 ▶/Reset（right）key	非编程模式下：用于切换显示界面；长按时用于解除报警或故障后的复位； 编程模式下：用于同级菜单的切换和光标的移位。 In non-programming mode: used to switch the display interface; long press is used to release the alarm or reset after the fault; In programming mode: it is used to switch the menu of the same level and shift the cursor.
↵ /自检(回车)键 ↵/Self-test（Enter）key	用于菜单项目的选择确认，及进入下一级菜单；长按时查看当前状态下设备是否完好，进入自检模式。 It is used to confirm the selection of menu items and enter the next level of menu; long press to check whether the device is in good condition in the current state and enter the self-test mode.

翻页键 page key	非编程模式下：用于进入功能设置界面，或输入密码时，用于数值的累加； 编程模式下：用于当前设置内容的更改或数值的累加。 In non-programming mode: used to enter the function setting interface, or when entering the password, it is used for the accumulation of values; In programming mode: used for changing the current setting content or accumulating values.

5.4 液晶显示

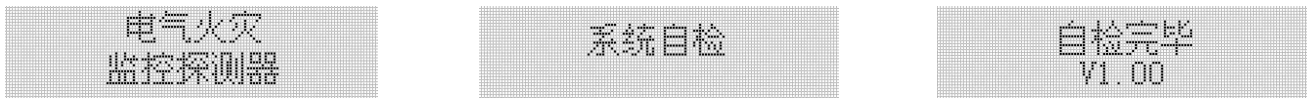
5.4 LCD Display

5.4.1 开机、关机与自检

5.4.1 Startup, Shutdown and Self-test

打开相关联电源设备，上电瞬间，探测器界面显示如左下图所示，所有指示灯同时变亮，探测器进行自检，界面如右下图所示，所有指示灯依次熄灭，最终运行指示灯闪烁，探测器进入正常监视状态。

Turn on the associated power supply, and at the moment of power-on, the detector interface displays as shown in the lower left figure, and all the indicators light up at the same time, and the detector performs self-test.



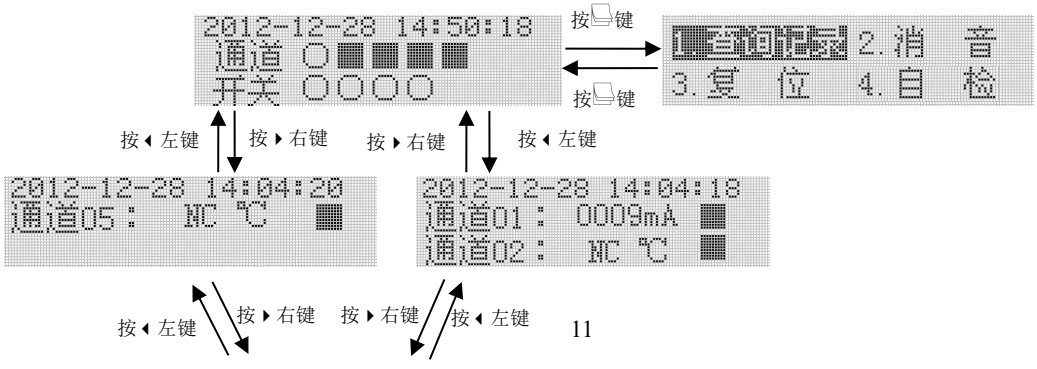
电气火灾监控探测器	Electrical Fire Monitoring Detector
系统自检	System self-test
自检完毕 V1.00	Self-test completed V1.00

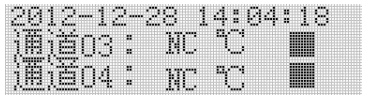
5.4.2 通道状态显示

5.4.2 Channel Status Display

自检完毕进入通道状态显示界面，分别显示通道状态和继电器输出状态。其中□表示通道断开，■表示通道关闭；○表示通道状态正常，●表示通道发生报警，◐表示通道断线，◑表示通道短路（**注：断线和短路针对探测器主体与剩余电流互感器或温度传感器之间的连接线**）。

After the self-test is completed, enter the channel status display interface, which displays the channel status and relay output status respectively. Among them, □ indicates that the channel is disconnected, ■ indicates that the channel is closed; ○ indicates that the channel is in normal state, ● indicates that the channel has an alarm, ◐ indicates that the channel is disconnected, and ◑ indicates that the channel is short-circuited (Note: disconnection and short-circuit refer to the connecting line between the main body of the detector and the residual current transformer or temperature sensor).





通道	Channel
开关	Switch
按⌨键	Press⌨Button
1. 查询记录	1. Query records
2. 消音	2. Muffling
3. 复位	3. Reset
4. 自检	4. Self-test
按◂左键	Press ◂ Left Button
按▸右键	Press ▸ Right Button
通道 05	Channel 05
通道 01	Channel 01
通道 02	Channel 02
通道 03	Channel 03
通道 04	Channel 04

状态符号定义表：

Status symbol definition table:

通道 Channel	□	■	○	●	◐	◑
	断开 Disconnect	关闭 Closed	正常 Normal	报警 Alarm	断线 Disconnect	短路 Short-circuit

注：断线和短路针对探测器主体与剩余电流互感器或温度传感器之间的连接线。

Note: The broken wire and short circuit refer to the connecting wire between the main body of the detector and the residual current transformer or temperature sensor.

5. 4. 3 功能设置界面

5. 4. 3 Function Setting Interface

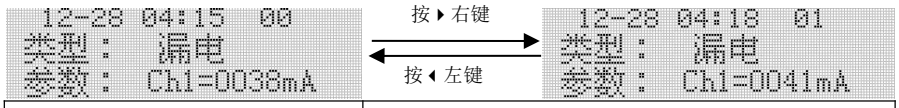
在功能设置界面下，用户可以选择所需的功能，设备具有查询记录、消音、复位、自检功能。

In the function setting interface, the user can select the required function, and the device has the functions of query record, silence, reset and self-test.

1. 查询记录	1. Query records
2. 消音	2. Muffling
3. 复位	3. Reset
4. 自检	4. Self-test
按↵键	Press ↵ Button
按 MENU 键	Press MENU Button
1. 报警记录	1.Alarm Record
2. 故障记录	2.Fault Record
3. 开关记录	3.Switch Record

①如若想查看报警记录，按↵键进入报警记录界面，由下图可查看具体的报警类型、参数与时间，右上角的数据“00”表示第 1 条数据，之后若有更多的报警记录可依次为“01、02……19”（最多 20 条），按◂左键或▸右键进行界面切换，方便工作人员正确的处理或做好应对措施。具体操作如下图所示：

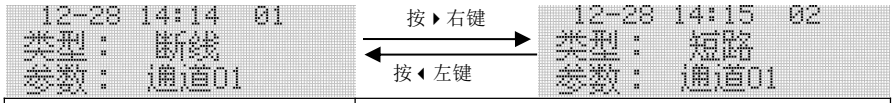
①If you want to view the alarm records, press the ↵ button to enter the alarm record interface, and you can view the specific alarm types, parameters and time from the figure below. The data ″00″ in the upper right corner indicates the first data, and if there are more alarm records in sequence, ″01，02. . . 19″（up to 20），press the left◂ or right▸ button to switch the interface, which is convenient for the staff to handle correctly or take countermeasures. The specific operation is shown in the figure below：



类型：	Type：
漏电	Leakage
参数：	Parameter:
按▸右键	▸Right click
按◂左键	◂Left click

②如若想查看故障记录，按左键或右键选择“2. 故障记录”，按↵键进入故障记录界面可查看故障类型、参数与时间，右上角的数据“00”表示第 1 条数据，之后若有更多的故障记录可依次为“01、02……19”（最多 20 条），按◂左键或▸右键进行界面切换，从而更容易去解决问题。具体操作如下图所示：

②If you want to check the fault record, press the left or right button to select ″2. Fault record″, and press the ↵ button to enter the fault record interface to view the fault type, parameters and time. The data ″00″ in the upper right corner indicates the first data. If there are more fault records in turn, they can be ″01，02. . . 19″（up to 20），press the left or right button to switch the interface, so that it is easier to solve the problem. The specific operation is shown in the figure below：

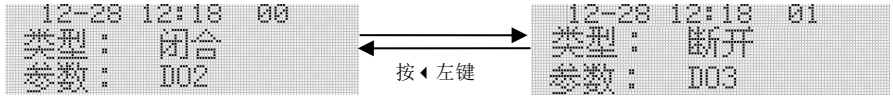


类型：	Type：
断线	Disconnected
参数：	Parameter：
通道 01	Channel 01
按▸右键	▸Right click
按◂左键	◂Left click
短路	Short Circuit

③如若想查看开关记录，按左键或右键选择“3. 开关记录”，按↵键进入开关记录界面可查看开关类型、参数与时间，右上角的数据“00”表示第 1 条数据，之后若有更多的开关记录可依次为“01、02……19”（最多 20 条），按◂左键或▸右键进行界面切换，对开关的现有状态一目了然。具体操作如下图所示：

③If you want to view the switch record, press the left or right button to select ″3. Switch record″, press the ↵ button to enter the switch record interface to view the switch type, parameters and time, the data ″00″ in the upper right corner indicates the first data, and if there are more switch records in turn, it can be ″01，02. . . 19″（up to 20），press the left ◂ or right▸ button to switch the interface, and the current state of the switch can be seen at a glance. The specific operation is shown in the figure below：

按▸右键



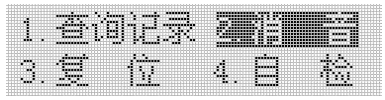
类型：	Type：
闭合	Closure
参数：	Parameter:
按▶右键	▶Right click
按◀左键	◀Left click
断开	Disconnect

5.4.4 消音

5.4.4 Muffling

当发生报警时，功能设置界面下，按左键或右键选择“2.消音”，按↵键消除装置的报警声音，同时消音指示灯点亮，报警指示灯不会熄灭。具体显示界面如下：

When an alarm occurs, in the function setting interface, press the left or right button to select ″2. Silence″, press the ↵ button to eliminate the alarm sound of the device, and the silence indicator light is on at the same time, and the alarm indicator light will not go out. The specific display interface is as follows:



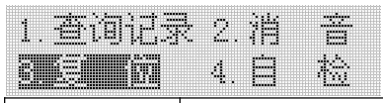
1.查询记录	1. Query records
2.消音	2. Muffling
3.复位	3. Reset
4.自检	4. Self-test

5.4.5 复位

5.4.5 Reset

当解除报警或故障后，功能设置界面下，按左键或右键选择“3.复位”，按↵键复位。具体显示界面如下：

After the alarm or fault is removed, in the function setting interface, press the left or right button to select ″3. Reset″, and press the ↵ button to reset. The specific display interface is as follows:



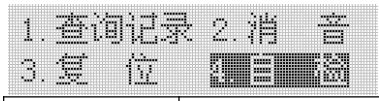
1.查询记录	1. Query records
2.消音	2. Muffling
3.复位	3. Reset
4.自检	4. Self-test

5.4.6 自检

5.4.6 Self-test

如若想查看当前状态下设备是否完好，功能设置界面下，按左键或右键选择“4.自检”，按↵键使装置进入自检状态。具体显示界面如下：

If you want to check whether the device is in good condition in the current state, in the function setting interface, press the left button or right button to select ″4. Self-check″, and press the ↵ button to make the device enter the self-check state. The specific display interface is as follows:



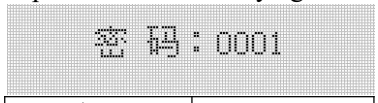
1. 查询记录	1. Query records
2. 消音	2. Muffling
3. 复位	3. Reset
4. 自检	4. Self-test

5.5 编程

5.5 Programming

按 MENU 键，进入编程密码界面：通过按左右键移动光标，翻页键进行数值的累加。输入用户密码(默认密码为 0001，万能密码为 0008)，输好后按↵回车键进入。若此时又不想进行编程设置，再按 MENU 键便可以退回非编程界面。

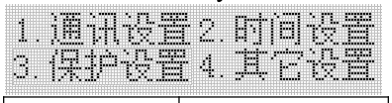
Press the MENU key to enter the programming password interface: move the cursor by pressing the left and right keys, and accumulate the values by pressing the page key. Enter the user password (the default password is 0001, and the universal password is 0008), and press Enter key ↵ after entering. If you do not want to perform programming settings at this time, press the MENU key again to return to the non-programming interface.



密码	Password

1、密码正确后进入设置界面，在此模式下按左右键选择需要的菜单，按↵回车键进入下一级菜单进行设置。如下图所示：

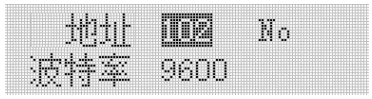
1. After the password is correct, enter the setting interface. In this mode, press the left and right keys to select the desired menu, and press ↵ the Enter key to enter the next menu for setting. As shown below:



1. 通讯设置	1. Communication Settings
2. 时间设置	2. Time setting
3. 保护设置	3. Protection Settings
4. 其他设置	4. Other settings

2、“通讯设置”界面下，可以对地址和波特率和校验方式进行修改或设置；
“时间设置”界面下，可对日期、时间进行修改或设置；
“保护设置”界面下，可对报警参数和保护类型进行修改或设置；
“其它设置”界面下，可对密码、背光进行修改或设置，以及是否记录清零和是否测试进行设置。

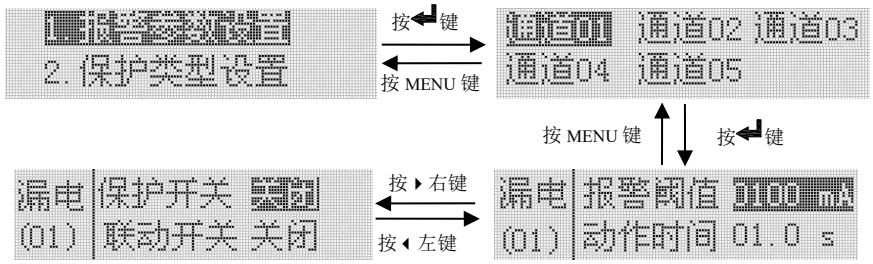
2、 Under the ″Communication Settings″ interface, you can modify or set the address, baud rate and verification method;
In the ″Time Setting″ interface, you can modify or set the date and time;
In the ″Protection Settings″ interface, you can modify or set the alarm parameters and protection types;
Under the ″Other Settings″ interface, you can modify or set the password, backlight, and set whether to record and clear and whether to test.



通讯设置

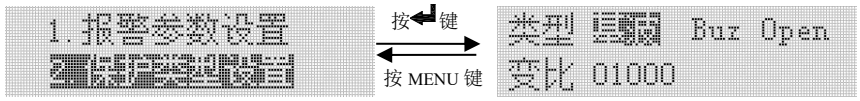
时间设置

地址	Address
波特率	Baud rate
通讯设置	Communication settings
日期	Date
时间	Time
时间设置	Time Setting



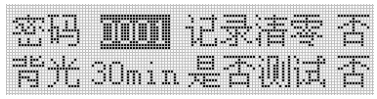
漏电设置

1. 报警参数设置	1. Alarm parameter setting
2. 保护类型设置	2. Protection type setting
按↵键	Press ↵ Button
按 MENU 键	Press MENU Button
通道 01	Channel 01
通道 02	Channel 02
通道 03	Channel 03
通道 04	Channel 04
通道 05	Channel 05
漏电(01)	Leakage（01）
报警阈值	Alarm threshold
动作时间	Action time
按▸右键	▸Click Right
按◂左键	◂Click Left
保护开关	Protection switch
联动开关	Linkage switch
关闭	Closure
漏电设置	Leakage setting



保护设置

1. 报警参数设置	1. Alarm parameter setting
2. 保护类型设置	2. Protection type setting
按↵键	Press ↵ Button
按 MENU 键	Press MENU ↵Button
类型	Type
基波	Base wave
变比	Ratio
保护设置	Protection Setting



其它设置

密码	Password
记录清零	Record Clear
否	No
背光	Backlight
是否测试	Whether to test
其他设置	Other Setting

设置完成后按回车键确认，再按 Menu 键返回，直到是否保存设置界面时，此时通过按◀、▶键来进行是否选择保存数据，按回车键确认并退出设置界面。

After the setting is completed, press the Enter key to confirm, and then press the Menu key to return until the interface of whether to save the setting is reached. At this time, press the key to select whether to save the data, press the Enter key to confirm and exit the setting interface.

注：

1）地址选择范围：001-247（最多 247 位）；

2）波特率：4800、9600、19200、38400 四种可选；

3）校验方式：No:无校验 、Even:偶校验、Odd:奇校验三种可选。

保护设置中，保护类型设置为基波，在通道显示界面时间后会显示~，设置为全波则不显示。选择基波如图所示。

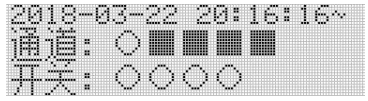
Note:

1）Address selection range: 001-247 (up to 247 bits);

2）Baud rate: 4800, 9600, 19200, 38400 four options;

3）Check mode: No: no check, Even: even check, Odd: odd check.

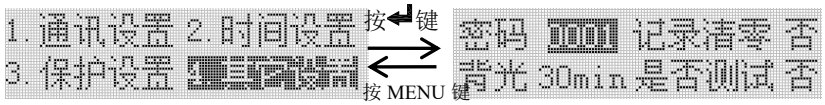
In the protection setting, if the protection type is set to fundamental wave, ~ will be displayed after the time on the channel display interface, and if it is set to full wave, it will not be displayed. Select the fundamental wave as shown in the figure.



通道	Channel
开关	Switch

其它设置界面可对密码、背光进行修改或设置，以及是否记录清零和是否测试进行设置。可通过◀左键或▶右键进行切换选择。修改完毕后按↵键确认修改，再连续按两下 MENU 键进入是否保存设置的选择界面，可在此对修改内容进行保存确认。确认完毕后按↵键确认选择。

Other settings interface can modify or set the password, backlight, and set whether to clear the record and whether to test. It can be switched by left or right button. After the modification is completed, press the key to confirm the modification, and then press the MENU key twice continuously to enter the selection interface of whether to save the settings, where you can save and confirm the modified content. After confirming, press the key to confirm the selection.



1. 通讯设置	1. Communication Settings
2. 时间设置	2. Time setting
3. 保护设置	3. Protection Settings
4. 其他设置	4. Other settings
按↵键	Press ↵ Button
按 MENU 键	Press MENU Button
密码	Password
记录清零	Record Clear
否	No
背光	Backlight
是否测试	Whether to test

6. 功能应用

6. Function Application

6.1 剩余电流监测

6.1 Leakage Current Monitoring

在线监测配电线路的剩余电流，当超过剩余电流报警设定值时，且持续时间超过延时设定值后，执行报警或者断开断路器的操作。可以根据线路正常漏电流的大小设定报警设定值 I△n，在该值的设置上应遵循不小于被保护电气线路正常泄漏电流最大值的两倍，且不大于 1000mA。对装设二级或多级剩余电流保护的场所，上一级的剩余电流报警设定值必须大于下一级的剩余电流报警设定值；并且上一级的延时要大于下一级的延时。

Online monitoring of the residual current of the distribution line, when the residual current alarm setting value is exceeded, and the duration exceeds the delay setting value, an alarm or disconnection of the circuit breaker is performed. The alarm setting value I△n can be set according to the normal leakage current of the line, and the setting of this value should be not less than twice the maximum value of the normal leakage current

of the protected electrical line, and not greater than 1000mA. For places where two or more levels of residual current protection are installed, the residual current alarm setting value of the upper level must be greater than the residual current alarm setting value of the lower level; and the delay of the upper level must be greater than that of the lower level.

参数 Parameter	范围 Range	步长 Step length
剩余电流报警设定值 Residual current alarm setting value	20～1000mA	1mA
动作延时时间 Action delay time	0.1～60.0S	0.1S
保护方式 Protection Method	关闭/打开 Open/Close	
联动开关 Linkage Switch	无/DO1 None/DO1	

保护方式：剩余电流保护方式可以设置为关闭、打开，联动可以设置为无、DO1。在保护方式打开和联动开关处于 DO1 状态下当检测到剩余电流值超过报警值时，报警 LED 灯常亮，达到动作延时后触发相应动作。若在延时过程中，剩余电流值小于剩余电流报警值时，不会动作。

Protection mode: The residual current protection mode can be set to off or on, and linkage can be set to none or DO1. When the protection mode is turned on and the linkage switch is in the DO1 state, when the residual current value exceeds the alarm value, the alarm LED light is always on, and the corresponding action is triggered after the action delay is reached. If the residual current value is less than the residual current alarm value during the delay process, it will not act.

出厂默认剩余电流报警设定值为 300mA，动作延时时间为 10.0S，保护方式为关闭。

The factory default residual current alarm setting value is 300mA, the action delay time is 10.0S, and the protection mode is off.

6.2 温度保护

6.2 Temperature Protection

通过温度传感器监测配电箱、线缆或线缆连接处的温度，超过温度动作设定值时，延时一定时间，执行报警或者断开断路器的操作。温度传感器的安装必须固定稳定，防止跌落造成线路短路。

Monitor the temperature of the distribution box, cable or cable connection through the temperature sensor. When the temperature exceeds the set value of the action, it will delay for a certain period of time to perform an alarm or disconnect the circuit breaker. The installation of the temperature sensor must be fixed and stable to prevent short circuit caused by falling.

参数 Parameter	范围 Range	步长 Step length
温度动作设定值 Temperature Action setpoint	45.0～110.0℃	1℃
动作延时时间	0.1～60.0S	0.1S

Action Delay Time		
保护方式 Protection Method	关闭/打开 Open/Close	
联动开关 Linkage Switch	无/DO1 None/DO1	

保护方式：温度保护模式可以设置为关闭、打开，联动可以设置为无、DO1。在保护方式打开和联动开关处于 DO1 状态下当检测到温度值超过动作设定值时延时，达到动作延时后触发动作。在延时过程中，温度值下降到温度设定值以下时，不会动作。

Protection mode: The temperature protection mode can be set to off or on, and the linkage can be set to none or DO1. When the protection mode is turned on and the linkage switch is in the DO1 state, when the detected temperature value exceeds the action setting value, the delay will be delayed, and the action will be triggered after the action delay is reached. During the delay process, when the temperature value drops below the temperature setting value, it will not act.

出厂默认温度报警设定值是 60℃，动作延时时间为 1.0S，保护方式为关闭。

The factory default temperature alarm setting value is 60° C, the action delay time is 1.0S, and the protection mode is off.

6.3 消防联动功能

6.3 Fire Linkage Function

当发生火灾时，消防联动系统发出指令，通过装置使断路器脱扣，强制切断非消防设备的电源。装置接收到消防联动信号时，将跟根据相应的动作设置做出相应的保护动作。

When a fire breaks out, the fire linkage system issues an instruction to trip the circuit breaker through the device to forcibly cut off the power supply of non-firefighting equipment. When the device receives the fire linkage signal, it will take corresponding protection actions according to the corresponding action settings.

出厂默认保护方式为关闭。

The factory default protection mode is off.

6.4 自检和试验功能

6.4 Self-test and Test Function

装置具备自检和试验功能，在没有故障或报警时，在“报警记录”界面下长时按住回车键进入自检状态，按试验组合键进入试验状态，查看设备是否完好。

The device has self-inspection and test functions. When there is no fault or alarm, press the Enter key for a long time in the ″Alarm Record″ interface to enter the self-inspection state, press the test combination key to enter the test state, and check whether the equipment is in good condition.

6.5 集中监控

6.5 Integrated Monitoring

集中监控计算机通过 RS485，接受现场采集信号，发出报警信号及控制指令，及时断开故障线路。采用 Modbus-RTU 协议通讯，通讯距离为 1.2 公里，同一链路可监控 32 台装置。

The centralized monitoring computer receives on-site acquisition signals through RS485, sends out alarm signals and control instructions, and disconnects faulty lines in time. Using Modbus-RTU protocol communication, the communication distance is 1.2 kilometers, and the same link can monitor 32 devices.

6.6 报警复位（解除报警）

6.6 Alarm Reset（Disalarm）

当发生报警时，可以按动←回车键来消除报警声音和复位继电器输出状态；如果在进行复位操作后未排除报警故障，装置将再次进入故障报警或脱扣状态。

When an alarm occurs, you can press the ←Enter key to eliminate the alarm sound and reset the output state of the relay; if the alarm fault is not eliminated after the reset operation, the device will enter the fault alarm or tripping state again.

7. 通讯协议

7. Communication Protocol

7.1 通讯协议概述

7.1 Communication Protocol Overview

该装置使用 Modbus-RTU 通讯协议，Modbus 协议详细定义了校验码、数据序列等，这些都是特定数据交换的必要内容。Modbus 协议在一根通讯线上使用主从应答式连接（半双工），这意味着在一根单独的通讯线上信号沿着相反的两个方向传输。首先，主计算机的信号寻址到一台唯一的终端设备（从机），然后，终端设备发出的应答信号以相反的方向传输给主机。

The device uses the Modbus-RTU communication protocol, and the Modbus protocol defines the check code, data sequence, etc. in detail, which are necessary for specific data exchange. The Modbus protocol uses a master-slave acknowledgment connection (half-duplex) on one communication line, which means that signals travel in opposite directions on a single communication line. First, the signal from the master computer is addressed to a single end device (slave), then the reply signal from the end device is transmitted in the opposite direction to the master.

Modbus 协议只允许在主机（PC 等）和终端设备之间通讯，而不允许独立的终端设备之间的数据交换，这样各终端设备不会在它们初始化时占据通讯线路，而仅限于响应到达本机的查询信号。**（默认通信设置值：地址为 0001，波特率为 9600）**

The Modbus protocol only allows communication between the host (PC, etc.) and terminal equipment, but does not allow data exchange between independent terminal equipment, so that each terminal equipment does not occupy the communication line when they are initialized, but is limited to responding to the inquiry signal arriving at the machine. **(Default communication setting value: address is 0001, baud rate is 9600)**

7.1.1 传输方式

7.1.1 Transfer Method

信息传输为异步方式，并以字节为单位，在主机和从机之间传递的通讯信息是 11 位格式，包含 1 个起始位、8 个数据位（最低的有效位先发送）、无奇偶校验位、1 个停止位。

The information transmission is asynchronous and takes bytes as the unit. The communication information transmitted between the master and the slave is in 11-bit format, including 1 start bit, 8 data bits (the least significant bit is sent first), no parity bit, and 1 stop bit.

7.1.2 信息帧格式

7.1.2 Info Frame Format

地址码 Address code	功能码 function code	数据区 data area	CRC 校验码 CRC check code
1 字节 1 byte	1 字节 1 byte	n 字节 N byte	2 字节 2 byte

地址码：地址码在帧的开始部分，由一个字节（8 位二进制码）组成，十进制为 0～255。这些位标明了用户指定的终端设备的地址，该设备将接收来自与之相连的主机数据。每个终端设备的地址必须是唯一的，仅被寻址到的终端会响应包含了该地址的查询。当终端发送回一个响应，响应中的从机地址数据便告诉了主机哪台终端正与之进行通信。

Address code: The address code is at the beginning of the frame, consisting of one byte (8-bit binary code), and the decimal system is 0~255. These bits indicate the address of the user-specified terminal device that will receive data from the connected host. The address of each terminal device must be unique, and only the addressed terminal will respond to queries containing this address. When the terminal sends back a response, the slave address data in the response tells the host which terminal it is communicating with.

功能码：功能码告诉了被寻址到的终端执行何种功能。下表列出了该系列仪表用到的功能码，以及它们的意义和功能。

Function code: The function code tells the addressed terminal what function to perform. The following table lists the function codes used in this series of meters, as well as their meanings and functions.

功能 Function	定义 Definition	操作 Operation
03H/04H	读数据寄存器 read data register	获得一个或多个寄存器的当前二进制值 Get the current binary value of one or more registers
10H	预置多寄存器 preset multiple registers	设定二进制值到一系列多寄存器中 Set binary values to a series of multi-registers

数据区：数据区包含了终端执行特定功能所需要的数据或者终端响应查询时采集到的数据。这些数据的内容可能是数值、参考地址或者设置值。例如：功能码告诉终端读取一个寄存器，数据区则需要指明从哪个寄存器开始及读取多少个数据，内嵌的地址和数据依照类型和从机之间的不同内容而有所不同。

Data area: The data area contains the data required by the terminal to perform specific functions or the data collected when the terminal responds to queries. The contents of these data may be numerical values, reference addresses or setting values. For example: the function code tells the terminal to read a register, and the data area needs to indicate which register to start from and how much data to read. The embedded address and data vary according to the type and the content of the slave.

CRC 校验码：错误校验（CRC）域占用两个字节，包含了一个 16 位的二进制值。CRC 值由传输设备计算出来，然后附加到数据帧上，接收设备在接收数据时重新计算 CRC 值，然后与接收到的 CRC 域中的值进行比较，如果这两个值不相等，就发生了错误。

CRC check code: The error check (CRC) field occupies two bytes and contains a 16-bit binary value. The CRC value is calculated by the transmitting device and then attached to the data frame. The receiving device recalculates the CRC value when receiving the data, and then compares it with the value in the received CRC field. If the two values are not equal, an error occurs.

生成一个 CRC 的流程为：

The process of generating a CRC is:

1、预置一个 16 位寄存器为 0FFFFH（全 1），称之为 CRC 寄存器。

1. Preset a 16-bit register as 0FFFFH (all 1), called CRC register.

2、把数据帧中的第一个字节的 8 位与 CRC 寄存器中的低字节进行异或运算，结果存回 CRC 寄存器。

2. XOR the 8 bits of the first byte in the data frame with the low byte in the CRC register, and store the result back in the CRC register.

3、将 CRC 寄存器向右移一位，最高位填以 0，最低位移出并检测。

3. Shift the CRC register one bit to the right, fill the highest bit with 0, and take out and detect the lowest bit.

4、如果最低位为 0，重复第三步（下一次移位）；如果最低位为 1，将 CRC 寄存器与一个预设的固定值（0A001H）进行异或运算。

4. If the lowest bit is 0, repeat the third step (the next shift); if the lowest bit is 1, XOR the CRC register with a preset fixed value (0A001H).

5、重复第三步和第四步直到 8 次移位，这样处理完了一个完整的八位。

5. Repeat the third step and the fourth step until 8 shifts, thus processing a complete eight bits.

6、重复第 2 步到第 5 步来处理下一个八位，直到所有的字节处理结束。

6. Repeat steps 2 to 5 to process the next eight bits until all bytes are processed.

7、最终 CRC 寄存器的值就是 CRC 的值。

7. The final value of the CRC register is the value of the CRC.

此外还有一种利用预设的表格计算 CRC 的方法，它的主要特点是计算速度快，但是表格需要较大的存储空间，该方法此处不再赘述，请参阅相关资料。

In addition, there is a method of calculating CRC by using a preset table. Its main feature is that the calculation speed is fast, but the table requires a large storage space. This method will not be described here, please refer to the relevant information.

7.2 功能码简介

7.2 Introduction to Function Codes

7.2.1 功能码 03H：读寄存器

7.2.1 Function code 03H: read register

此功能允许用户获得设备采集与记录的数据及系统参数。主机一次请求的数据个数没有限制，但不能超出定义的地址范围。

This function allows users to obtain data collected and recorded by the device and system parameters. There is no limit to the number of data requested by the host at one time, but it cannot exceed the defined address range.

下面的例子是从地址为 01 号仪表 ARCM200BL 读 3 个采集到的基本数据 （数据帧中每个地址占用 2 个字节）回路 1~3 的保护设定值，其中回路 1 保护设定值的地址为 1033H，回路 2 保护设定值的地址为 1034H，回路 3 保护设定值的地址为 1035H。

The following example reads 3 basic data collected from ARCM200BL with address 01 (each address in the data frame occupies 2 bytes) and the protection setting values of circuits 1~3, where the address of the protection setting value of circuit 1 is 1033H, the address of the protection setting value of circuit 2 is 1034H, and the address of the protection setting value of circuit 3 is 1035H.

主机发送 Host sends	发送信息 Send Message	从机返回 Slave return	返回信息 Return Message

地址码 Address code		01H
功能码 Function code		03H
起始 地址 Initial Address	高字节 H byte	10H
	低字节 L byte	33H
寄存器数量 Registers Number	高字节 H byte	00H
	低字节 L byte	03H
CRC 校 验 码 CRC check code	低字节 L byte	F1H
	高字节 H byte	04H

地址码 Address code		01H
功能码 Function code		03H
字节数 Byte Number		06H
寄存器 1033 数据 Register 1033 data	高字节 H byte	00H
	低字节 L byte	2DH
寄存器 1034 数据 Register 1034 data	高字节 H byte	00H
	低字节 L byte	37H
寄存器 1035 数据 Register 1035 data	高字节 H byte	00H
	低字节 L byte	41H
CRC 校 验 码 CRC check code	低字节 L byte	FCH
	高字节 H byte	8DH

7.2.2 功能码 10H：写寄存器

7.2.2 Function code 10H: write register

功能码 10H 允许用户改变多个寄存器的内容，该仪表中时间日期可用此功能号写入。主机一次最多可以写入 16 个（32 字节）数据。

Function code 10H allows users to change the contents of multiple registers, and the time and date in the instrument can be written with this function number. The host can write up to 16 (32 bytes) of data at a time.

下面的例子是预置地址为 01 的装置日期和时间为 18 年 01 月 01 日，11 点 59 分 59 秒。

The following example is to preset the date and time of the device with address 01 as January 01, 18, 11:59:59.

主机发送 Host sends	发送信息 Send Message
地址码 Address code	01H
功能码	10H

从机返回 Slave return	返回信息 Return Message
地址码 Address code	01H
功能码	10H

Function code		
起始地址 Initial Address	高字节 H byte	11H
	低字节 L byte	00H
寄存器数量 Registers Number	高字节 H byte	00H
	低字节 L byte	03H
字节数 Byte Number		06H
1100H 待写入数据 1100H Data to be written	高字节 H byte	12H
	低字节 L byte	01H
1101H 写入数据 1101H data input	高字节 H byte	01H
	低字节 L byte	0BH
1102H 待写入数据 1102H Data to be written	高字节 H byte	3BH
	低字节 L byte	3BH
CRC 校验码 CRC check code	低字节 L byte	AA H
	高字节 H byte	D3H

Function code		
起始 地址 Initial Address	高字节 H byte	11H
	低字节 L byte	00H
寄存器数量 Register Number	高字节 H byte	00H
	低字节 L byte	03H
CRC 校验码 CRC check code	低字节 L byte	85H
	高字节 H byte	34H

7.3 探测器参数地址表

7.3 Detector Parameter Address Table

7.3.1 电气火灾相关参数寄存器地址表，起始地址 0x1000：

7.3.1 Electrical fire related parameter register address table, start address 0x1000:

序号 Serial Number	寄存器地址 Register Address	参数 Parameter	读/写 R/W	数值范围 Value Range	类型 Type

1	0x1000	预留 Reserve			
2	0x1001	断线状态 Offline Status	R	B0~B4，表示回路 1~回路 5； Bit0 = 1：回路 1 断线；Bit0 = 0：回路 1 不断线。 … B0~B4, means loop 1~loop 5; Bit0 = 1: Loop 1 disconnected; Bit0 = 0: Loop 1 disconnected. …	Word
3	0x1002	短路状态 Short circuit state	R	B0~B4，表示回路 1~回路 5； Bit0 = 1：回路 1 短路；Bit0 = 0：回路 1 不短路。 … B0~B4, means loop 1~loop 5; Bit0 = 1: Loop 1 is short-circuited; Bit0 = 0: Loop 1 is not short-circuited. …	Word
4	0x1003	报警状态 Alarm Status	R	B0~B4，表示回路 1~回路 5； Bit0 = 1：回路 1 报警；Bit0 = 0：回路 1 不报警。 … B0~B4, means loop 1~loop 5; Bit0 = 1: Loop 1 alarm; Bit0 = 0: Loop 1 does not alarm. …	Word
5	0x1004	预留 Reserve			
6	0x1005	漏电测量值 Leakage measurement	R	测量范围：漏电-300~9999； 表示回路 1 实时漏电电流测量值； 注（J1 只有 1 路漏电，J4 有 4 路漏电） Measuring range: Leakage -300~9999; Indicates the real-time leakage current measurement value of loop 1; Note（J1 has only 1 way of leakage, J4 has 4 ways of leakage）	Word
7	0x1006	温度/漏电测量值 Temperature/ leakage measurement	R	测量范围：漏电-300~9999，（温度 0~1200，为 1 位小数）； 表示回路 2 实时测量值； Measuring range: Leakage -300~9999, (temperature 0~1200, 1 decimal place); Indicates the real-time measured value of loop 2;	Word

8	0x1007	温度/漏电测量值 Temperature/ leakage measurement	R	测量范围：漏电-300~9999，（温度 0~1200，为 1 位小数）； 表示回路 3 实时测量值； Measuring range: Leakage -300~9999, (temperature 0~1200, 1 decimal place); Indicates the real-time measured value of loop 3;	Word
9	0x1008	温度/漏电测量值 Temperature/ leakage measurement	R	测量范围：漏电-300~9999，（温度 0~1200，为 1 位小数）； 表示回路 4 实时测量值； Measuring range: Leakage -300~9999, (temperature 0~1200, 1 decimal place); Indicates the real-time measured value of loop 4;	Word
10	0x1009	温度测量值 Temperature measurement	R	测量范围：0~1200（温度为 1 位小数）；表示回路 5 实时测量值； Measuring range: 0~1200 (temperature is 1 decimal place); indicates the real-time measured value of loop 5;	Word
11~21	0x100A~ 0x1014	预留 Preserve			
22	0x1015	漏电报警值 Leakage alarm value	R	测量范围：0~9999； 表示回路 1 实时漏电报警值； Measuring range: 0~9999; Indicates the real-time leakage alarm value of circuit 1;	Word
23	0x1016	温度/漏电报警值 Temperature/ leakage alarm value	R	测量范围：漏电-300~9999，（温度 0~1200，为 1 位小数）； 表示回路 2 报警值； Measuring range: Leakage -300~9999, (temperature 0~1200, 1 decimal place); Indicates the alarm value of loop 2;	Word
24	0x1017	温度/漏电报警值 Temperature/ leakage alarm value	R	测量范围：漏电-300~9999，（温度 0~1200，为 1 位小数）； 表示回路 3 报警值； Measuring range: Leakage -300~9999, (temperature 0~1200, 1 decimal place); Indicates the alarm value of circuit 3;	Word
25	0x1018	温度/漏电报警测量值 Temperature/ leakage alarm measured value	R	测量范围：漏电-300~9999，（温度 0~1200，为 1 位小数）； 表示回路 4 报警值； Measuring range: Leakage -300~9999, (temperature 0~1200, 1 decimal place); Indicates the alarm value of loop 4;	Word

26	0x1019	温度报警值 Temperature alarm value	R	测量范围：0~1200（温度为 1 位小数）； 表示回路 5 报警值； Measuring range: 0~1200 (temperature is 1 decimal place); Indicates the alarm value of circuit 5;	Word
27~41	0x101A~ 0x1028	预留 Preserve			
42	0x1029	DO 状态 Do Status	R/W	B0~B3，表示 DO1~DO4； Bit0=0：DO1 打开；Bit0=1：DO1 闭合。 … 注：J1 型只有 1 路 DO，J4 型有 4 路 DO。 B0~B3, means DO1~DO4; Bit0=0: DO1 is open; Bit0=1: DO1 is closed. … Note: J1 type has only 1 DO, J4 type has 4 DO.	Word
43~47	0x102A~ 0x102E	预留 Preserve			
48	0x102F	DO 关联 DO association	R/W	B0~B3，表示回路 1~回路 4； Bit0 = 1：回路 1 报警时关联 DO1； Bit0 = 0：回路 1 报警时未关联 DO1。 … 注：J1 型报警时回路 1-4 只关联 DO1， J4 型报警时回路 1-4 与 DO1-4 一一对应。 B0~B3, means loop 1~loop 4; Bit0 = 1: Associate DO1 when loop 1 alarms; Bit0 = 0: DO1 is not associated when loop 1 alarms. … Note: When the J1 type alarms, loops 1-4 are only associated with DO1, When the J4 type alarms, the circuits 1-4 correspond to DO1-4 one by one.	Word
49	0x1030	预留 Preserve			
50	0x1031	保护开关 Protection switch	R/W	B0~B5，表示回路 1~回路 5； Bit0 = 1：回路 1 打开报警； Bit0 = 0：回路 1 关闭报警。 …… B0~B5, means loop 1~loop 5;	Word

				Bit0 = 1: Loop 1 is open for alarm; Bit0 = 0: Loop 1 closes the alarm. . . .	
51	0x1032	保护类型 Protection type	R/W	基波保护：FFFF；全波保护：0000。 Fundamental wave protection: FFFF; full wave protection: 0000.	Word
52	0x1033	漏电保护设定值 Leakage protection setting value	R/W	测量范围：-300~9999； 表示回路 1 保护设定值； Measuring range: -300~9999; Indicates the protection setting value of circuit 1;	Word
53	0x1034	温度/漏电保护设定值 Temperature/ leakage protection setting value	R/W	测量范围：漏电-300~9999，（温度 0~1200，为 1 位小数）； 表示回路 2 保护设定值； Measuring range: Leakage -300~9999, (temperature 0~1200, 1 decimal place); Indicates the setting value of circuit 2 protection;	Word
54	0x1035	温度/漏电保护设定值 Temperature/ leakage protection setting value	R/W	测量范围：漏电-300~9999，（温度 0~1200，为 1 位小数）； 表示回路 3 保护设定值 Measuring range: Leakage -300~9999, (temperature 0~1200, 1 decimal place); Indicates the circuit 3 protection setting value	Word
55	0x1036	温度/漏电保护设定值 Temperature/ leakage protection setting value	R/W	测量范围：漏电-300~9999，（温度 0~1200，为 1 位小数）； 表示回路 4 保护设定值 Measuring range: Leakage -300~9999, (temperature 0~1200, 1 decimal place); Indicates the circuit 4 protection setting value	Word
56	0x1037	温度保护设定值 Temperature protection set point	R/W	测量范围：0~1200（温度为 1 位小数）；表示回路 5 保护设定值 Measuring range: 0~1200 (temperature is 1 decimal place); indicates the set value of circuit 5 protection	Word
57~67	0x1038~ 0x1042	预留 Preserve			
68	0x1043	漏电保护延	R/W	测量范围：1~600（小数点为 1 位小数，单位为 s）；	Word

		时 Leakage Protection Delay		表示回路 1 保护延时值； Measuring range：1~600（the decimal point is 1 decimal place，the unit is s）； Indicates the protection delay value of circuit 1；	
69	0x1044	温度/漏电保护延时 Temperature/ leakage protection delay	R/W	测量范围：1~600（小数点为 1 位小数，单位为 s）； 表示回路 2 保护延时值； Measuring range：1~600（the decimal point is 1 decimal place，the unit is s）； Indicates the protection delay value of circuit 2；	Word
70	0x1045	温度/漏电保护延时 Temperature/ leakage protection delay	R/W	测量范围：1~600（小数点为 1 位小数，单位为 s）； 表示回路 3 保护延时值； Measuring range：1~600（the decimal point is 1 decimal place，the unit is s）； Indicates the protection delay value of circuit 3；	Word
71	0x1046	温度/漏电保护延时 Temperature/ leakage protection delay	R/W	测量范围：1~600（小数点为 1 位小数，单位为 s）； 表示回路 4 保护延时值； Measuring range：1~600（the decimal point is 1 decimal place，the unit is s）； Indicates the protection delay value of circuit 4；	Word
72	0x1047	温度/漏电保护延时 Temperature/ leakage protection delay	R/W	测量范围：1~600（小数点为 1 位小数，单位为 s）； 表示回路 5 保护延时值； Measuring range：1~600（the decimal point is 1 decimal place，the unit is s）； Indicates the protection delay value of circuit 5；	Word
73~99	0x1048~ 0x1062	预留 Preserve			
100	0x1063	Clear	R/W	读取数值为 0； 写入 0x1234 时，清除报警（复位）； 写入 0x4321 时，自检。 The read value is 0； When writing 0x1234，clear the alarm（reset）； When writing 0x4321，self-test.	Word

7.3.2 系统设置信息相关参数寄存器地址表，起始地址 **0x1100**：

7.3.2 System setting information related parameter register address table, starting address 0x1100:

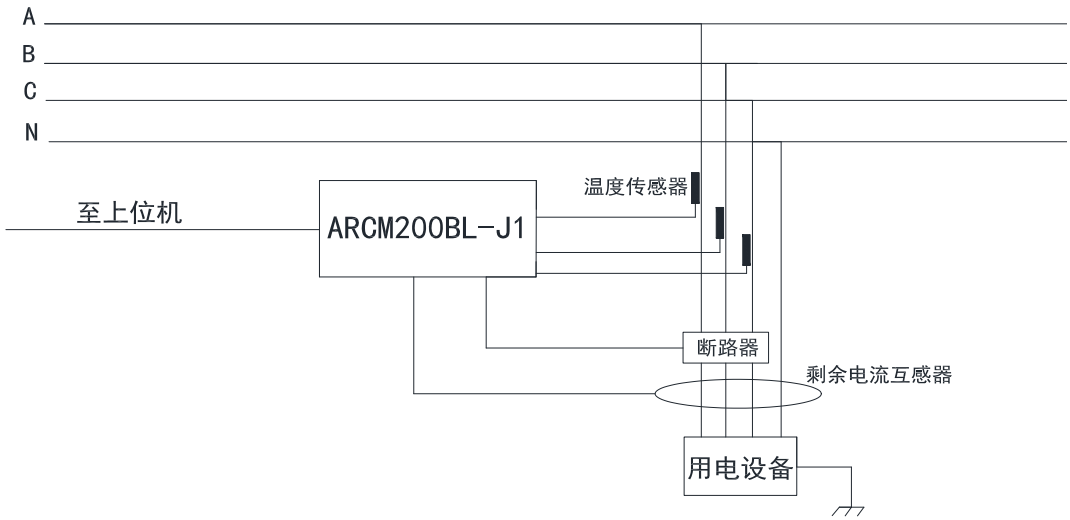
序号 Serial number	寄存器地址 Register address	参数 Parameter	读/写 Read/Write	数值范围 Value Range	类型 Type
1	0x1100 高位 0x1100 high	年 Year	R/W	00-99	Word
	0x1100 低位 0x1100 low	月 Month	R/W	1-12	Word
2	0x1101 高位 0x1101 high	日 Day	R/W	1-31	Word
	0x1101 低位 0x1101 low	时 Hour	R/W	0-23	Word
3	0x1102 高位 0x1102 high	分 Minute	R/W	00-59	Word
	0x1102 低位 0x1102 low	秒 Second	R/W	00-59	Word
4~5	0x1103~ 0x1104	预留 Preserve			
6	0x1105	通讯 1 地址 Correspondence 1 address	R/W	1-247	Word
7	0x1106	通讯 1 波特率 Communication 1 baud rate	R/W	4800、9600、19200、38400	Word
8~9	0x1107~ 0x1108	预留 Preserve			
10	0x1109	密码 Password	R/W	1-9999	Word
11	0x110A	背光时间 Backlight time	R/W	0-99 min 0 表示常亮 0-99 min 0 means constant light	Word
12	0x110B	液晶对比度 LCD Contrast	R/W	20-40，默认 30 20-40, default 30	Word

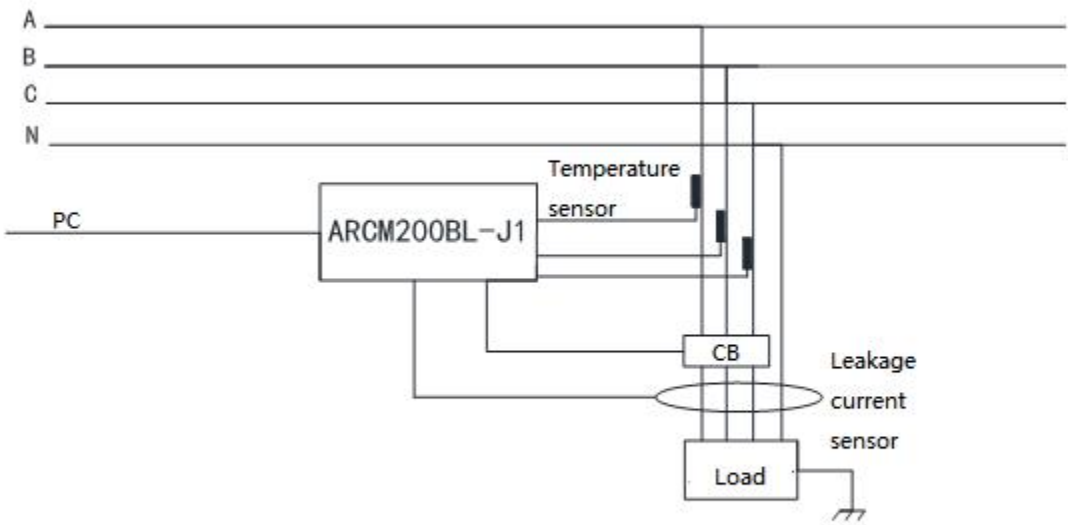
8. 典型应用及附件

8. Typical Application and Attachment

8.1 典型接线图

8.1 Typical Wiring Diagram





8.2 分级保护应用原则

8.2 Application Principles of Hierarchical Protection

系统应用中常有分级保护，常见 2～3 级，上下级的选择性原则：

1）动作电流方面，上级设备的设置必须最少是下级设备的两倍；

2）脱扣时间方面，上级设备的延迟时间应大于下一级剩余电流保护装置的动作时间，且动作时间差不得小于 0.2 s。

There are often hierarchical protections in system applications, usually 2 to 3 levels, and the selectivity principle of upper and lower levels:

1）In terms of operating current, the setting of the upper-level equipment must be at least twice that of the lower-level equipment;

2）In terms of tripping time, the delay time of the upper-level equipment should be greater than the action time of the residual current protection device at the next level, and the action time difference should not be less than 0.2 s.

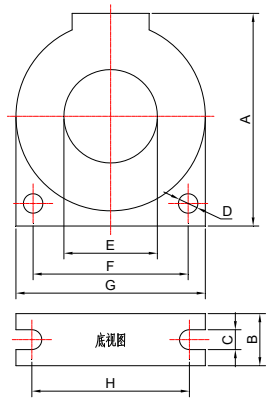
8.3 AKH-0.66L 系列剩余电流互感器选型（选购时应按实际需求确定此附件型号）

8.3 Type Selection of AKH-0.66L Series Residual Current Transformer（The model of this accessory should be determined according to actual needs when purchasing）

外形 Shape	型号 Type	额定电流比 Rated current ratio	准确级 Accuracy class	额定参考电流（A） Rated current (A)	内孔尺寸（mm） Hole size
	AKH-0.66L-20	1000mA/1mA	1	0-16A	Φ30
	AKH-0.66L-45	1000mA/1mA	1	16-150A	Φ45
	AKH-0.66L-80	1000mA/1mA	1	150-300A	Φ65
	AKH-0.66L-100	1000mA/1mA	1	300-600A	Φ85
	AKH-0.66L-150	1000mA/1mA	1	600-1000A	Φ105
	AKH-0.66L-200	1000mA/1mA	1	1000-1500A	Φ200
	AKH-0.66L-170×30	5A/5mA	1	100-200A	172×34
	AKH-0.66L-210×160	5A/5mA	1	450-800A	210×160
	AKH-0.66L-260×160	5A/5mA	1	450-800A	260×160
	AKH-0.66L-300×50	5A/5mA	1	500-1000A	300×50
	AKH-0.66L-350×50	5A/5mA	1	500-1000A	350×50
	AKH-0.66L-400×50	5A/5mA	1	1000-1250A	400×50
	AKH-0.66L-400×160	5A/5mA	1	1000-1250A	400×160
	AKH-0.66L-500×50	5A/5mA	1	1500-2000A	497×50
	AKH-0.66L-500×160	5A/5mA	1	1500-2000A	500×160
	AKH-0.66L-650×50	5A/5mA	1	2000-3000A	655×50
	AKH-0.66L-800×50	5A/5mA	1	3000-5000A	800×50
	AKH-0.66L-780×160	5A/5mA	1	3000-5000A	780×160

配套传感器的型号将根据回路的额定电流和导线粗细来选择相应规格的剩余电流互感器；如果对互感器的外形和量程有特殊需求可以来电洽谈。

The model of the supporting sensor will select the residual current transformer of the corresponding specification according to the rated current of the circuit and the thickness of the wire; if you have special requirements for the shape and range of the transformer, please call to discuss.



底视图	Bottom view

8.4　NTC 温度传感器

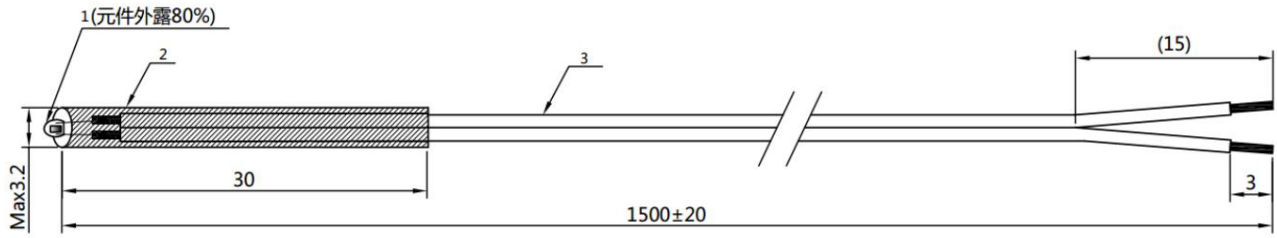
8.4　NTC Temperature Sensor

温度传感器为本公司定制的 NTC 热敏电阻，它为探测器提供 0℃～120℃的温度监控信号，可以用来监测线缆或配电箱体的温度，实现温度保护。

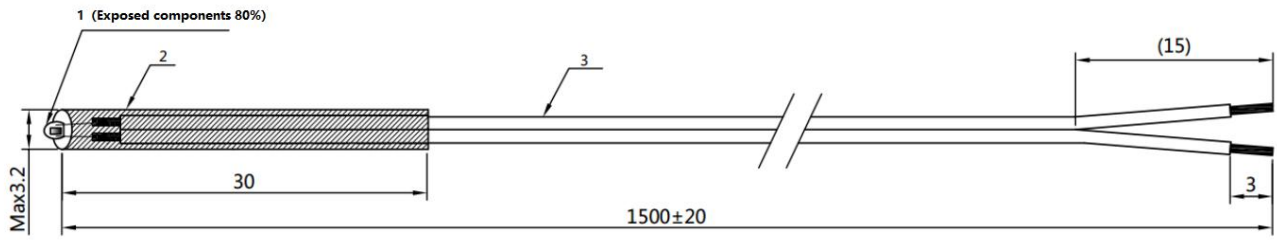
The temperature sensor is an NTC thermistor customized by our company, which provides a temperature monitoring signal of 0° C to 120° C for the detector, which can be used to monitor the temperature of cables or distribution boxes to achieve temperature protection.

其外形尺寸如下（单位 mm）：

Its dimensions are as follows（Unit mm）:



尺寸单位：MM



Size unit：MM

9.　常见故障分析与排除

9.　Analysis and Troubleshooting of Common Faults

- 若仪表运行指示灯不亮，请检查电源是否接好；
- 若仪表故障指示灯常亮，请检查漏电流或温度传感器接线是否正确；

● 若仪表显示通道温度为 NC，请检查温度传感器接线是否正确。

● If the running indicator light of the meter is off, please check whether the power supply is connected properly;

● If the fault indicator light of the instrument is always on, please check whether the leakage current or the wiring of the temperature sensor is correct;

● If the indicator shows that the channel temperature is NC, please check whether the wiring of the temperature sensor is correct.

10. 注意事项

10. Precautions

10. 1、该探测器主要安装于建筑、工业等低压配电 TN、TT 系统。其剩余电流保护功能适用于 TN-C-S 系统、TN-S 系统及局部 TT 系统，不宜设置在 IT 系统的配电线路和消防配电线路中。

10. 1. The detector is mainly installed in low-voltage power distribution TN and TT systems such as buildings and industries. Its residual current protection function is suitable for TN-C-S system, TN-S system and local TT system, and should not be installed in the power distribution lines of IT systems and fire protection power distribution lines.

10. 2、电气火灾监控系统的设置不应影响供电系统的正常工作，不宜自动切断供电电源。

10. 2. The setting of the electrical fire monitoring system should not affect the normal operation of the power supply system, and should not automatically cut off the power supply.

10. 3、该探测器应以设置在低压配电系统首端为基本原则，宜设置在第一级配电柜（箱）的出线端。在供电线路泄露电流大于 500mA 时，宜在下一级配电柜（箱）设置。

10. 3. The basic principle is that the detector should be installed at the head end of the low-voltage power distribution system, and it should be installed at the outlet end of the first-level power distribution cabinet (box). When the leakage current of the power supply line is greater than 500mA, it should be installed in the next-level power distribution cabinet (box).

10. 4、电气火灾监控系统应符合《剩余电流动作保护装置的安装和运行》GB13955。为了避免大面积停电，应采用分级保护，即电源端或分支线路上的剩余电流保护装置应与末端的剩余电流保护装置的动作特性应当协调配合，从而实现具有动作选择性的分级保护。

10. 4. The electrical fire monitoring system shall comply with GB13955 ″Installation and Operation of Residual Current Action Protective Devices″. In order to avoid large-scale power outages, hierarchical protection should be adopted, that is, the residual current protection device on the power supply end or branch line should coordinate with the operating characteristics of the residual current protection device at the end, so as to realize the hierarchical protection with action selectivity.

一般情况下，在电源进线端或分支主回路上，应选用低灵敏度延时型的剩余电流保护装置。而在末端，剩余电流动作值 I△n<30mA，额定动作时间 Tn<0. 1s，主要用于防人身触电保护，与电气火灾监控系统是互补关系。建筑各楼层总进线处可安装一台或若干台该探测器，但应根据正常泄漏电流大小，正确设定动作参数。一般总进线处的剩余电流为 200~500mA。重要负荷：包括消防、安防、应急电源、通道照明线路及不允许断电的场所，根据 GB139554. 6 规定，应将探测器设置为报警方式保护；在采集漏电电流、过电流等信号，超过报警值时，只发出声光报警信号，不切断电源，同时将采集的信号通过总线方式，传送到控制中心，可设置手动断电模式，既保证了用电安全，又保证了供电的不间断性。

In general, a low-sensitivity time-delay residual current protection device should be selected at the power inlet terminal or branch main circuit. At the end, the residual current operating value I△n<30mA, rated operating time Tn<0. 1s, mainly used for personal electric shock protection, and is a complementary relationship with

the electrical fire monitoring system. One or several detectors can be installed at the main incoming line of each floor of the building, but the action parameters should be set correctly according to the normal leakage current. Generally, the residual current at the main incoming line is 200~500mA. Important loads: including fire protection, security, emergency power supply, channel lighting lines and places where power failure is not allowed. According to the regulations of GB139554. 6, the detector should be set to alarm mode protection; when the leakage current, overcurrent and other signals are collected and exceed the alarm value, only the sound and light alarm signal will be sent out, and the power supply will not be cut off.

10. 5、剩余电流互感器可安装在断路器的进线端或出线端。安装时，必须严格区分 N 线和 PE 线，N 线应通过剩余电流火灾监控系统的剩余电流互感器。通过探测器的剩余电流互感器的 N 线不得作为 PE 线，不得重复接地或接设备外露可接近导体。PE 线不得介入电气火灾监控装置。

10. 5. The residual current transformer can be installed at the incoming or outgoing end of the circuit breaker. During installation, the N wire and PE wire must be strictly distinguished, and the N wire should pass through the residual current transformer of the residual current fire monitoring system. The N wire of the residual current transformer passing through the detector shall not be used as the PE wire, and shall not be repeatedly grounded or connected to the exposed and accessible conductor of the equipment. The PE line shall not interfere with the electrical fire monitoring device.

装设了该探测器的支路，其工作零线只能作为本回路的零线，禁止与其它回路工作零线相连，其它线路或设备也不能借用已采用剩余电流保护器后的线路或设备的工作零线。

For the branch circuit where the detector is installed, its working zero line can only be used as the zero line of this circuit, and it is forbidden to connect with the working zero line of other circuits, and other lines or equipment cannot borrow the working zero line of the line or equipment that has adopted the residual current protector.

10. 6、安装完毕后应由专业技术人员设定参数符合现场实际要求，同时要进行操作实验，保证探测器的正常运行。

10. 6. After the installation is completed, the parameters should be set by professional technicians to meet the actual requirements of the site. At the same time, operation experiments should be carried out to ensure the normal operation of the detector.

修订记录
Revision history

更改前 Before Revision	更改后 After Revision	更改内容 Revision Content
V1.3	V1.4	1、修改外形尺寸； 2、修改温度报警设定值； 3、修改操作界面，增加校验方式和基波的保护设置。 1. Modify the external dimensions; 2. Modify the temperature alarm setting value; 3. Modify the operation interface, increase the verification mode and the protection setting of the fundamental wave.
V1.4	V1.5	1、修改技术参数表温度监测范围和温度报警设定值； 2、修改外形及安装尺寸图，安装方式图，测量项目及面板说明图； 3、修改温度动作设定值范围； 4、修改温度/漏电测量值，报警值，保护设定值温度测量范围； 5、修改NTC温度传感器温度监控信号。 1. Modify the temperature monitoring range and temperature alarm setting value of the technical parameter table; 2. Modify the appearance and installation dimension diagram, installation method diagram, measurement items and panel description diagram; 3. Modify the temperature action set value range; 4. Modify the temperature/leakage measurement value, alarm value, protection set point temperature measurement range; 5. Modify the temperature monitoring signal of the NTC temperature sensor.
V1.5	V1.6	1、工作电压改为AC220V，与检验报告一致； 2、剩余电流互感器选型更新； 3、技术参数表格测量精度修改。 1. The voltage is changed to AC220V, which is consistent with the inspection report; 2. Update type selection of AKH-0.66L series residual current transformer; 3.Modify the measurement accuracy of technical parameter table.

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