

ARCM/L 系列

一体式电气火灾监控探测器

ARCM/L series integrated electrical fire
monitoring detector

安装使用说明书 V1.1

Installation Manual V1.1

江苏安科瑞电器制造有限公司

Jiangsu Acrel Electric MFG. Co., Ltd.

申明 State

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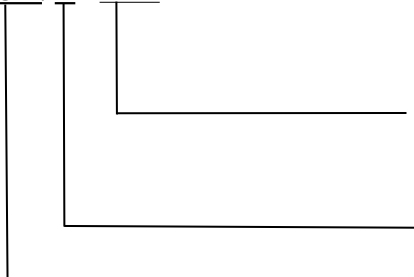
1. 概述 General

ARCM/L 系列一体式电气火灾监控探测器（以下简称探测器）具有 1 路剩余电流监测和 4 路温度监测功能，并能够实时监测并采集回路的剩余电流值和温度值，通过二总线直接和电气火灾监控设备连接使用。探测器可以判断被监测回路的剩余电流或温度是否达到报警设定值，如监测数值大于报警设定值，探测器报警指示灯会常亮，监控设备经过分析处理后可以指示相应故障类型，并发出光报警信号。

ARCM/L series integrated electrical fire monitoring detector has the functions of 1-channel residual current monitoring and 4-channel temperature monitoring, and can monitor and collect the residual current value and temperature value of the circuit in real time. It can be directly connected to electrical fire monitoring equipment through the second bus. The detector can judge whether the residual current or temperature of the monitored circuit reaches the alarm setting value. If the monitoring value is greater than the alarm setting value, the detector alarm indicator light will be always on. Monitoring equipment after analysis and processing can indicate the corresponding fault type, and send out light alarm signal.

2. 产品型号规格 Model

ARCM/L-□



型号规格：见下表

Model: See the table

L: 液晶显示 LCD display

产品类型：安科瑞电气火灾监控产品

Product Type: Acrel electric fire monitoring products

表 1 型号规格表

Table 1 Model Table

型号 Model	功能描述 Functional Description
ARCM/L-L45	检测 1 路剩余电流，4 路温度，二总线通讯，液晶显示，光报警，孔径 $\phi 45\text{mm}$ ，可检测回路最大额定电流为 100A。 Support One-channel residual current monitoring、Four-channel temperature monitoring、One two-bus communication,LCD display,Visual alarm, The aperture $\phi 45\text{mm}$,The maximum rated current of the measuring circuit is 100A.
ARCM/L-L65	检测 1 路剩余电流，4 路温度，二总线通讯，液晶显示，光报警，孔径 $\phi 65\text{mm}$ ，可检测回路最大额定电流为 250A。 Support One-channel residual current monitoring、Four-channel temperature monitoring、One two-bus communication,LCD display,Visual alarm, The aperture $\phi 65\text{mm}$,The maximum rated current of the measuring circuit is 250A.

ARCM/L-L80	<p>检测 1 路剩余电流，4 路温度，二总线通讯，液晶显示，光报警，孔径 $\phi 80\text{mm}$，可检测回路最大额定电流为 400A。</p> <p>Support One-channel residual current monitoring、Four-channel temperature monitoring、One two-bus communication,LCD display,Visual alarm, The aperture $\phi 80\text{mm}$,The maximum rated current of the measuring circuit is 400A.</p>
ARCM/L-L100	<p>检测 1 路剩余电流，4 路温度，二总线通讯，液晶显示，光报警，孔径 $\phi 100\text{mm}$，可检测回路最大额定电流为 600A。</p> <p>Support One-channel residual current monitoring、Four-channel temperature monitoring、One two-bus communication,LCD display,Visual alarm, The aperture $\phi 100\text{mm}$,The maximum rated current of the measuring circuit is 600A.</p>
ARCM/L-L15050	<p>检测 1 路剩余电流，4 路温度，二总线通讯，液晶显示，光报警，内径 $150*50\text{mm}$，可检测回路最大额定电流为 400A。</p> <p>Support One-channel residual current monitoring、Four-channel temperature monitoring、One two-bus communication,LCD display,Visual alarm, The inner diameter $150*50\text{mm}$,The maximum rated current of the measuring circuit is 400A.</p>
ARCM/L-L18030	<p>检测 1 路剩余电流，4 路温度，二总线通讯，液晶显示，光报警，内径 $180*30\text{mm}$，可检测回路最大额定电流为 400A。</p> <p>Support One-channel residual current monitoring、Four-channel temperature monitoring、One two-bus communication,LCD display,Visual alarm, The inner diameter $180*30\text{mm}$,The maximum rated current of the measuring circuit is 400A.</p>
ARCM/L-L22050	<p>检测 1 路剩余电流，4 路温度，二总线通讯，液晶显示，光报警，内径 $220*50\text{mm}$，可检测回路最大额定电流为 800A。</p> <p>Support One-channel residual current monitoring、Four-channel temperature monitoring、One two-bus communication,LCD display,Visual alarm, The inner diameter $220*50\text{mm}$,The maximum rated current of the measuring circuit is 800A.</p>
ARCM/L-L260100	<p>检测 1 路剩余电流，4 路温度，二总线通讯，液晶显示，光报警，内径 $260*100\text{mm}$，可检测回路最大额定电流为 1000A。</p> <p>Support One-channel residual current monitoring、Four-channel temperature monitoring、One two-bus communication,LCD display,Visual alarm, The inner diameter $260*100\text{mm}$,The maximum rated current of the measuring circuit is 1000A.</p>
ARCM/L-L30050	<p>检测 1 路剩余电流，4 路温度，二总线通讯，液晶显示，光报警，内径 $300*50\text{mm}$，可检测回路最大额定电流为 1000A。</p> <p>Support One-channel residual current monitoring、Four-channel temperature monitoring、One two-bus communication,LCD display,Visual alarm, The inner diameter $300*50\text{mm}$,The maximum rated current of the measuring circuit is 1000A.</p>

3. 技术参数 Technical parameters

表 2 技术参数表

辅助电源 Power supply	额定工作电压 Rated voltage	DC24V (通讯总线供电) DC24V (Communication bus power supply)
	功耗 Consumption	≤0.3W
输入 Input	1 路剩余电流, 4 路温度 1-channel residual current, 4-channel temperature	
额定剩余电流动作值 Rated residual current operating value	300mA~1000mA, 步长 1mA (通过后台主机设定) 300mA~1000mA, step size 1mA (set by the background host)	
温度报警设定值 Temperature alarm setting	45°C~140°C, 步长 1°C (通过后台主机设定) 45° C~140° C, step size 1° C (set by the background host)	
动作延迟时间 Action delay time	1S~60S, 步长 1S (通过后台主机设定) 1S~60S, step size 1S (set by the background host)	
剩余电流测量范围 Residual current measuring range	10mA~3000mA	
温度测量范围 Temperature measurement range	0°C~150°C	
测量电网频率 Measuring grid frequency	50Hz	
剩余电流测量精度 Residual current measurement accuracy	1.0 级	
报警 Alarm	光报警, 通信报警 Light alarm, communication alarm	
通讯 Communication	二总线 Two bus	
显示 Display	LCD 液晶显示 LCD liquid crystal display	
工作温度范围 Range of working temperature	-10°C~+55°C	
储存温度范围 Range of storage temperature	-20°C~+70°C	
相对湿度 Relative humidity	≤95%不结露 ≤95% no condensation	
参照标准 Reference standard	GB 14287.2-2014 GB 14287.3-2014	

4. 安装与接线 Installation and wiring

4.1 产品尺寸 Size

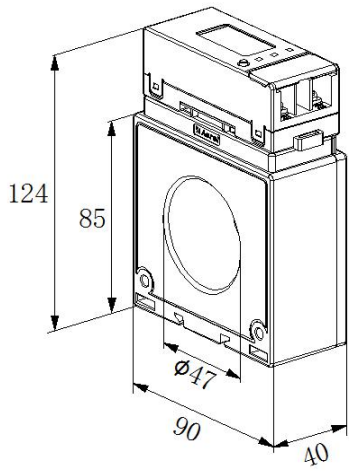


图 1 ARCM/L-L45 外形尺寸
Figure1 Size of ARCM/L-L45

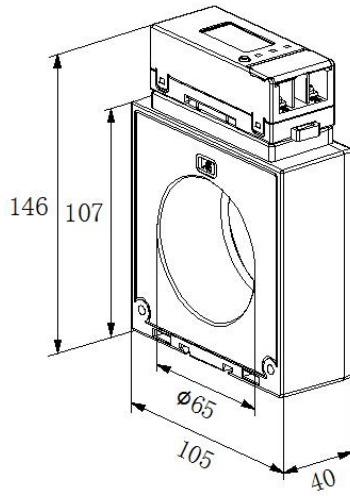


图 2 ARCM/L-L65 外形尺寸
Figure2 Size of ARCM/L-L65

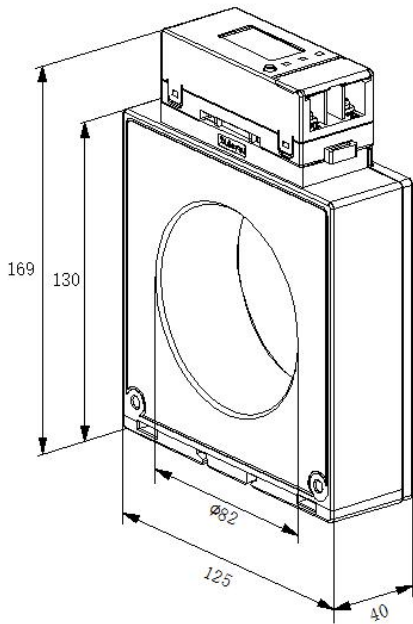


图 3 ARCM/L-L80 外形尺寸
Figure3 Size of ARCM/L-L80

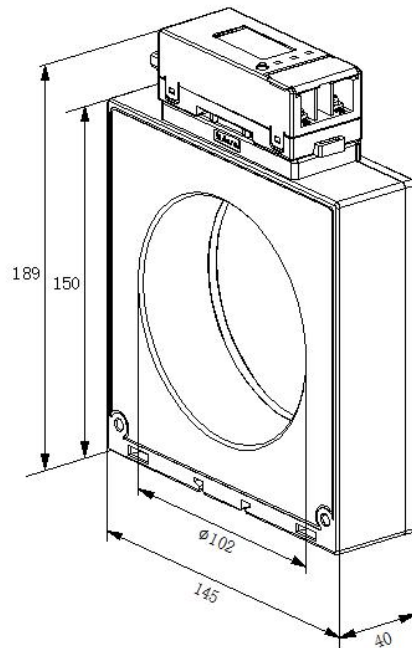


图 4 ARCM/L-L100 外形尺寸
Figure4 Size of ARCM/L-L100

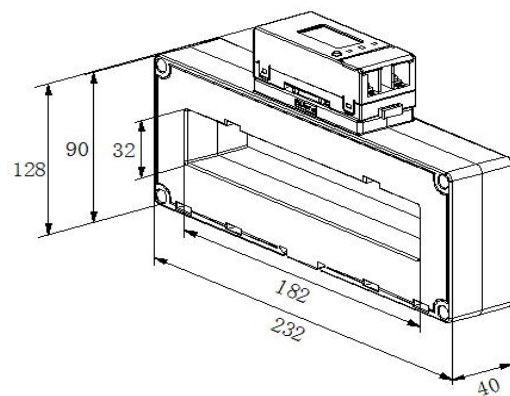
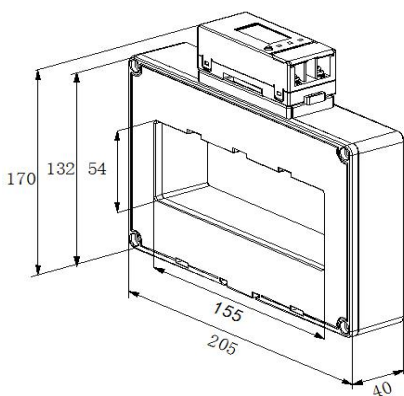


图 5 ARCM/L-L15050 外形尺寸
Figure5 Size of ARCM/L-L15050

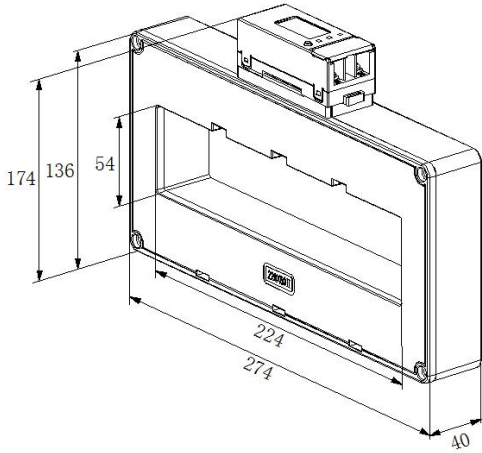


图 6 ARCM/L-L18030 外形尺寸
Figure6 Size of ARCM/L-L18030

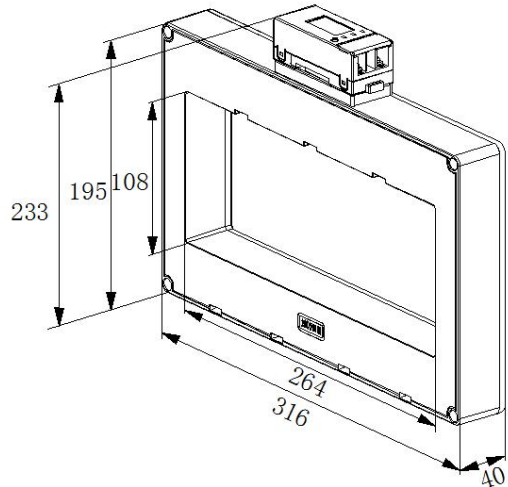


图 7 ARCM/L-L22050 外形尺寸
Figure7 Size of ARCM/L-L22050

图 8 ARCM/L-L260100 外形尺寸
Figure8 Size of ARCM/L-L260100

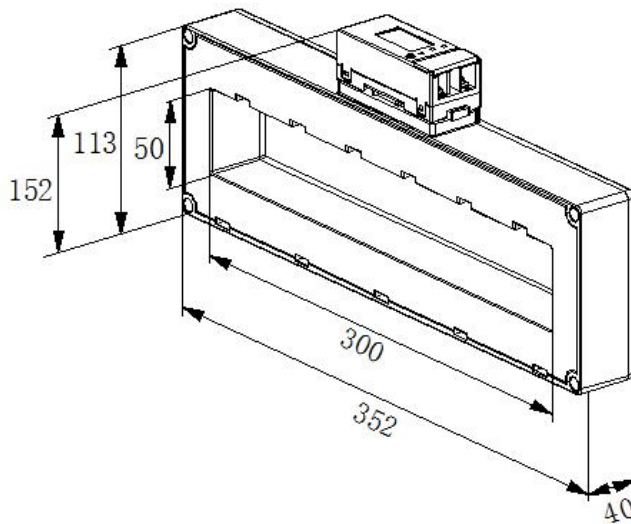


图 9 ARCM/L-L30050 外形尺寸
Figure9 Size of ARCM/L-L30050

4.2 安装方式 Installation

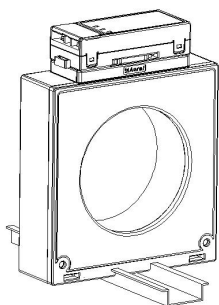


图 10 35 导轨式固定安装

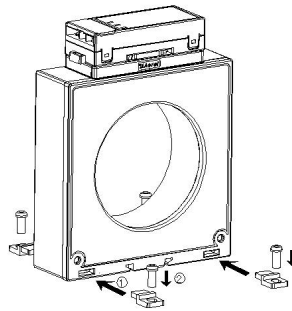


图 11 底板式插片固定安装

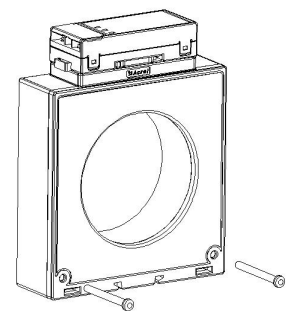


图 12 壁挂式螺丝固定安装

Figure10 35 din rail installation
Figure11 Base plate insert fixed installation
Figure12 Wall-mounted screw fixed installation

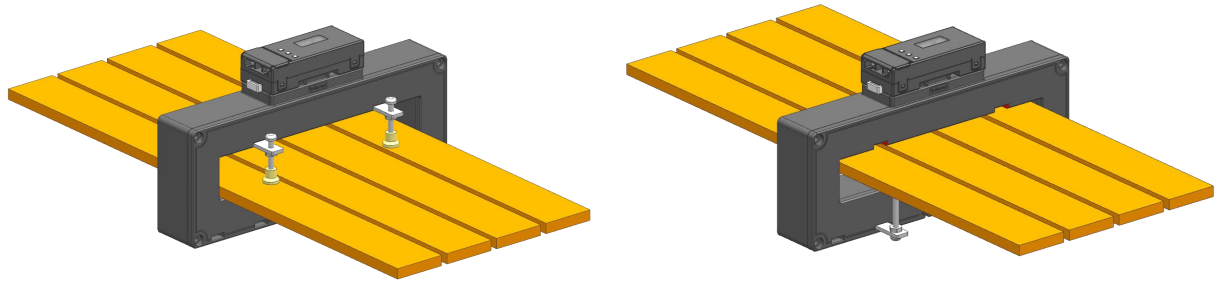


图 13 双片压盘固定安装

Figure13 Double plate pressure plate fixed installation

4.3 接线端子说明 Terminal description

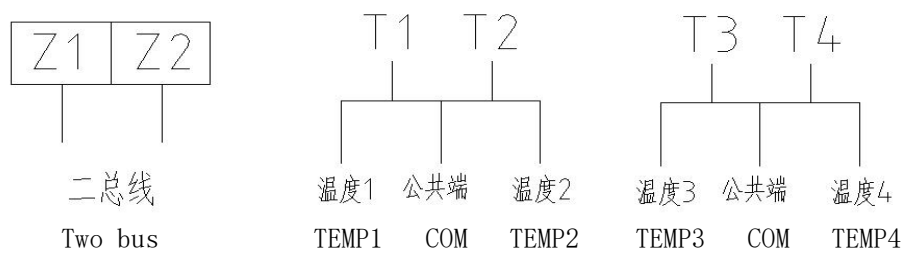


图 14 接线端子图

Figure14 Terminal

接线端子说明：Z1、Z2 号端子为二总线接入，无极性；温度传感器则对应相应的温度和公共端接入即可，无极性。

Terminal description: Terminals Z1 and Z2 are connected to the second bus and have no polarity; the temperature sensor can be connected to the corresponding temperature and common terminal, and has no polarity.

4.4 线路示意图 Wiring diagram

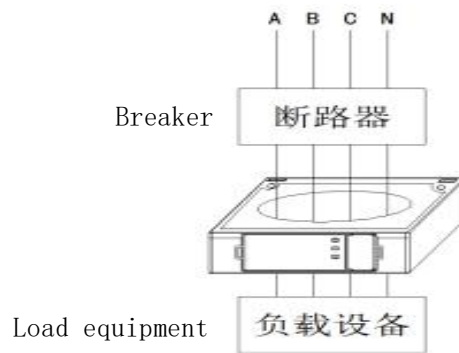


图 15 线路示意图

Figure15 Wiring diagram

5. 使用操作指南 Operation guide

5.1 面板介绍 Panel introduction



图 16 面板图
Figure16 Panel

指示灯状态定义如下：

The indicator status is defined as follows:

运行指示灯（绿色）：监控设备正常运行时，指示灯间隔 1 秒闪烁；

Running indicator (green):When the monitoring device is running normally, the flashing cycle of the indicator is one second.;

故障指示灯（黄色）：当与探测器相连的传感器有断线或短路故障发生时，故障指示灯常亮；

fault indicator (yellow):When the sensor connected to the detector has a disconnection or a short-circuit fault, the fault indicator is always on;

报警指示灯（红色）：当探测器检测的剩余电流值达到报警设定值时，报警指示灯常亮。

alarm indicator (red):when the residual current value detected by the detector reaches the alarm setting value, the alarm indicator is always on.

5.2 按键设置 Key setting

液晶显示剩余电流，四路温度监测和地址。其中地址可通过按键对监控设备进行参数设置，在液晶显示地址界面长按按键进入设置模式，当光标跳动后短按按键 可以修改地址的各位，长按按键跳转到十位的修改，个十百位修改方式相同。设置结束后长按按键即修改地址成功。

LCD display residual current, 4-channel temperature monitoring and address. The address is adjustable, in the LCD address interface, long press the key to enter the setting mode, when the cursor jumps, if you short press the key, you can modify the address of each and long press the key jump to ten modify. Also, the modification method is the same as the ones, tens, and hundreds. After setting the IP address, hold down the key to change the IP address.

5.3 显示与操作 Display and operation

5.3.1 仪表上电 Instrument powered on

仪表上电后，界面显示如下图所示，所有指示灯同时变亮，所有指示灯依次熄灭，最终运行指示灯闪烁。监控设备进入正常监控状态。

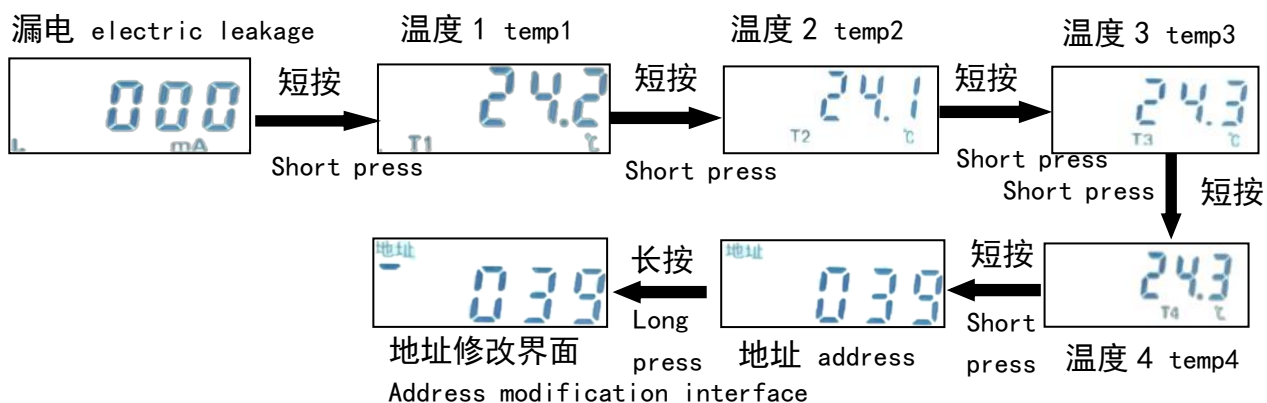
After the instrument is powered on, the following figure is interface display. All lights go on at the same time, all lights go off in turn. Then the monitoring device enters the normal monitoring state.



5.3.2 操作与显示界面 Operation and display interface

在地址修改界面，短按进行数字大小调整，长按进行个十百数位切换，切换至百数位时，再长按则保存修改的地址并退出地址修改界面。

In the address modification interface, short press to resize the number, long press to switch ones, tens, and hundreds. When switch to the hundreds place, you can long press to save the changed address and exit the address modification interface.



6. 常见故障分析与排除 Common instrument failure analysis and elimination

- 若探测器运行指示灯不亮，则请检查辅助电源是否接好。

If the detector running indicator light is off, please check whether the power is connected.

- 探测器通讯时通讯指示灯会闪烁。当探测器和监控单元或监控设备进行通讯时，若通讯指示灯不闪烁且监控单元或监控设备接收不到探测器上传的数据，请检查探测器通讯地址是否与主机一致，是否有冲突。若都正确，且通讯指示灯不闪烁则进行一次断电再上电，上电后如果现象依旧则送修。

The communication indicator light will flash when the detector communicates. When the detector communicates with the monitoring unit or device, if the communication indicator does not flash and the monitoring unit or device cannot receive the data uploaded by the detector, check whether the communication address of the detector is consistent with that of the host or whether there is a conflict. If they are correct and the communication indicator does not flash, power them on again. If the fault persists, you need to repair them.

7. 安装要求 Requirements of installation

- 必须让具有资格的安装人员安装此探测器，并且安装之前要仔细阅读使用说明。

This detector must be installed by a qualified installer, and the instructions must be read carefully before installation.

- 接线时按照使用说明中的接线方式接线，接线完成后要认真核对接线是否正确，以免通电后损坏探测器、产生危险事故。

When wiring, follow the wiring method in the instruction manual. After the wiring is completed, carefully check whether the wiring is correct, so as to avoid damage to the detector and dangerous accidents after power on.

- 对探测器进行送检、维修之前要切断所有电源和检测控制连接线。

Before sending the detector for inspection and maintenance, cut off all power and inspection control cables.

- 探测器的正常运行依赖于正确的安装、设置和操作，安装之前请仔细阅读安装、设置和操作的相关内容，以保证探测器的正常运行。

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

8. 附件说明 Description of the Attachment

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℃~150℃ 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。其外形尺寸如下(单位 mm)：

The temperature sensor is an NTC thermistor customized by the company, which provides a temperature monitoring signal of 0° C to 120° C for the detector. It can be used to monitor the temperature of cables or power distribution boxes to achieve temperature protection. Its dimensions are as follows (unit mm)：

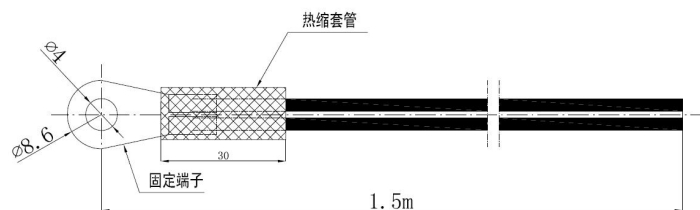


图 17 尺寸图

Figure17 dimension figure

9. 注意事项 Precautions

9.1 该探测器主要安装于建筑、工业等低压配电 TN、TT 系统。其剩余电流电保护功能适用于 TN-C-S 系统、TN-S 系统及局部 TT 系统，但不适用于 TN-C 系统。

The detector is mainly installed in low voltage power distribution TN and TT systems in buildings and industries. Its residual current electrical protection function is suitable for TN-C-S system, TN-S system and local TT system, but not for TN-C system.

9.2 剩余电流互感器一般设计安装于楼层电源总进线端，探测器设计安装于配电箱或控制箱（柜）的箱门上，有利于值班人员观察各种数据信息。系统终端控制台应安装值班室、消防中心，有利值班人员监督并及时发现隐患。

Residual current transformers are generally designed to be installed at the main incoming terminal of the floor power supply, and detectors are designed to be installed on the door of the distribution box or control box (cabinet), which is beneficial for the on-duty personnel to observe various data information. The system terminal console should be installed with a duty room and a fire center, so that the duty personnel can supervise and discover hidden dangers in time.

9.3 温度传感器即可以监测线缆的温度，也可以监测配电柜的温度，但在使用时，请将温度传感器与被测点紧密接触，避免因为没有正确安装而带来后患。

The temperature sensor can monitor the temperature of the cable as well as the temperature of the power distribution cabinet, but when using it, please contact the temperature sensor closely with the measured point to avoid future troubles due to improper installation.

9.4 电气火灾监控系统应符合 GB13955《剩余电流动作保护装置的运行》。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動作特性应当协调配合，从而实现具有動作选择性的分级保护。

The electrical fire monitoring system shall comply with GB13955 "Installation and Operation of Residual Current Action Protection Devices". In order to avoid large-scale power outages, graded protection should be adopted, that is, the residual current protection device on the power supply end or branch line should be coordinated with the operating characteristics of the residual current protection device at the end, so as to achieve graded 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 $I_{\Delta n} < 30\text{mA}$ ，额定动作时间 $T_n < 0.1\text{s}$ ，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 GB13955.6 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, low sensitivity delay type residual current protection device should be selected in the power supply inlet end or branch main circuit. At the end, the residual current action value is $I_{\Delta N} < 30\text{mA}$, and the rated action time is $T_n < 0.1\text{s}$, which is mainly used for protection against personal shock, and is complementary to the electrical fire monitoring system. One or several of

the detectors can be installed at the general 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 total incoming line is 200~500mA. Important load: including fire, security, emergency power supply, channel lighting lines and places where power failure is not allowed. According to GB139554.6, the detector should be set as an alarm mode for protection; When it collected leakage current, over-current and other signals exceed the alarm value, only sound and light alarm signals are issued, and the power supply is not cut off. At the same time, the collected signals are transmitted to the control center through the bus mode. It can be set to power off by yourself, which not only ensures the safety of power consumption, but also ensures the continuity of power supply.

9.5 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。

Residual current transformers can be installed at the incoming or outgoing end of the circuit breaker. During installation, the N line and PE line must be strictly distinguished. The N line should pass through the residual current transformer of the residual current fire monitoring system. The N line of the residual current transformer of the detector shall not be used as the PE line, and shall not be repeatedly grounded or connected to the exposed accessible conductor of the equipment. The PE line shall not intervene in 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 neutral line can only be used as the neutral line of this circuit. It is forbidden to connect with the working neutral line of other circuits. And other lines or equipment cannot use lines or equipment that have adopted residual current protectors. the working zero line.

9.6 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。

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

更改记录

更改前	更改后	更改内容
/	V1.0	
V1.0	V1.1	1. ARCM/L-L15050、ARCM/L-L18030 的最大额定电流改为 400A； ARCM/L-L22050 的最大额定电流改为 800A； ARCM/L-L260100 的最大额定电流改为 1000A； 2. 安装方式中增加双片压盘固定安装。

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