## Scope of application

SJKCPS, also known as "Control and Protective Switching Device", is a new type of product in low-voltage electrical appliances. As a new category of products, its product category code is "CPS", which stands for "Control and Protective Switching Device" in English. CPS complies with the following standards: IEC60947-6-2: (2002) "Low voltage switchgear and control equipment - Part 6- Multifunctional electrical appliances - Section 2: Control and protective switchgear" and GB14048.9-1998 "Low voltage switchgear and control equipment - Multifunctional electrical appliances: Control and protective switchgear" (equivalent to IEC60947-6-2)

## Product Usage

SJKCPS is mainly used in power systems with AC 50HZ (60HZ), rated voltage up to 690V, and current ranging from 0.16A to 125A to connect, carry, and disconnect currents under normal conditions, including specified overload conditions, and to connect, carry, and disconnect currents under specified extraordinary conditions (such as short-circuit currents)

## Product Features

SJKCPS products adopt a modular single product structure, integrating the main functions of traditional circuit breakers (fuses), contactors, overload (or overcurrent, phase failure) protection relays, starters, isolators, etc. They have remote automatic control and local direct manual control functions, panel indication and electromechanical signal alarm functions, overvoltage and undervoltage protection functions, phase failure and phase loss protection functions, and coordinated time current protection characteristics (with inverse time limit, timed limit, and instantaneous three-stage protection characteristics). By selecting functional modules or accessories as needed, control and protection of various types of motor loads and distribution loads can be achieved

## Product type and electrical symbols



图1：电气设计表示方法

Using SJKCPS basic products as the main switch, the following series of products can be formed by combining with various mechanisms and accessories:
a、 Firefighting type control and protection switchgear SJKCPS (F)
b、 Isolation type control and protection switchgear SJKCPS (G)
C、 Leakage type control and protection switchgear SJKCPS (L)
d、 Dual speed motor controller SJKCPSD
e、 Three speed motor controller SJKCPS3
f、 Dual power automatic transfer switch SJKCPSS
g、 Reversible motor controller SJKCPSN
h、 Pressure reducing starter: 1. Star Triangle SJKCPSJ1SJKCPSJ2
2. Autocoupling: SJKCPSZ
3. Resistance: SJKCPSR

## 型号及含义



Note:

Under normal circumstances, when the rated current is below 45A, a 45A main body frame is selected for switches, a 125A main body frame is selected for switches between 45A and 125A, and a 100A main body frame can also be selected for switches below 45A
◇ Basic switch configuration=switch body+electronic overload release+short circuit alarm contact+overload alarm contact (F-type is fire alarm contact)+auxiliary contact (two normally open and one normally closed)
Please determine (design) or adjust (use) the set current le based on the actual load capacity (power)
Auxiliary contact 02 (2 normally open 1 normally closed+1 short circuit 1 fault). Auxiliary contact 06 (3 normally open 3 normally closed+1 short circuit 1 fault). 09 (5 normally open 4 normally closed+1 short circuit 1 fault)

## 技术参数

| 壳架电流 IthA | 主体额定电流 InA | 过载电子脱扣额定电流IeA | 过载电子脱扣额定电流调整范围 | 380V控制功率范围 KW | 使用类别 | 额定电压 V | 额定频率 Hz |
|---|---|---|---|---|---|---|---|
| 45 | SJKCPS-16 | 1 | 0.4~1 | 0.12~0.33 | AC-42 AC-43 AC-44 | 380(400) | 50(60) |
| | | 3 | 1.2~3 | 0.5~1.5 | | | |
| | | 6 | 2.4~6 | 1.5~3 | | | |
| | | 10 | 4~10 | 2.5~5 | | | |
| | | 16 | 6.4~16 | 4.5~7.5 | | | |
| | SJKCPS-32 | 25 | 10~25 | 5.5~11 | | | |
| | | 32 | 13~32 | 11~15 | | | |
| | SJKCPS-45 | 45 | 18~45 | 15~22 | | | |
| 125 | SJKCPS-63 | 63 | 25~63 | 18.5~30 | | | |
| | SJKCPS-80 | 80 | 32~80 | 30~37 | | | |
| | SJKCPS-100 | 100 | 40~100 | 37~45 | | | |
| | SJKCPS-125 | 125 | 50~125 | 40~55 | | | |

**Normal working conditions**

The ambient air temperature should not be lower than -5 ℃, not higher than+40 ℃, and the daily average temperature should not exceed+35C ◇

Altitude: The installation location should not exceed an altitude of 2000 meters.

◇ Atmospheric conditions: When the ambient temperature is+40 ° C, the relative humidity of the atmosphere does not exceed 50%; There may be higher humidity at lower ambient temperatures. When the monthly average minimum temperature is 25C, the average maximum relative humidity for that month is 90%. Measures must be taken to prevent condensation on the product due to temperature changes
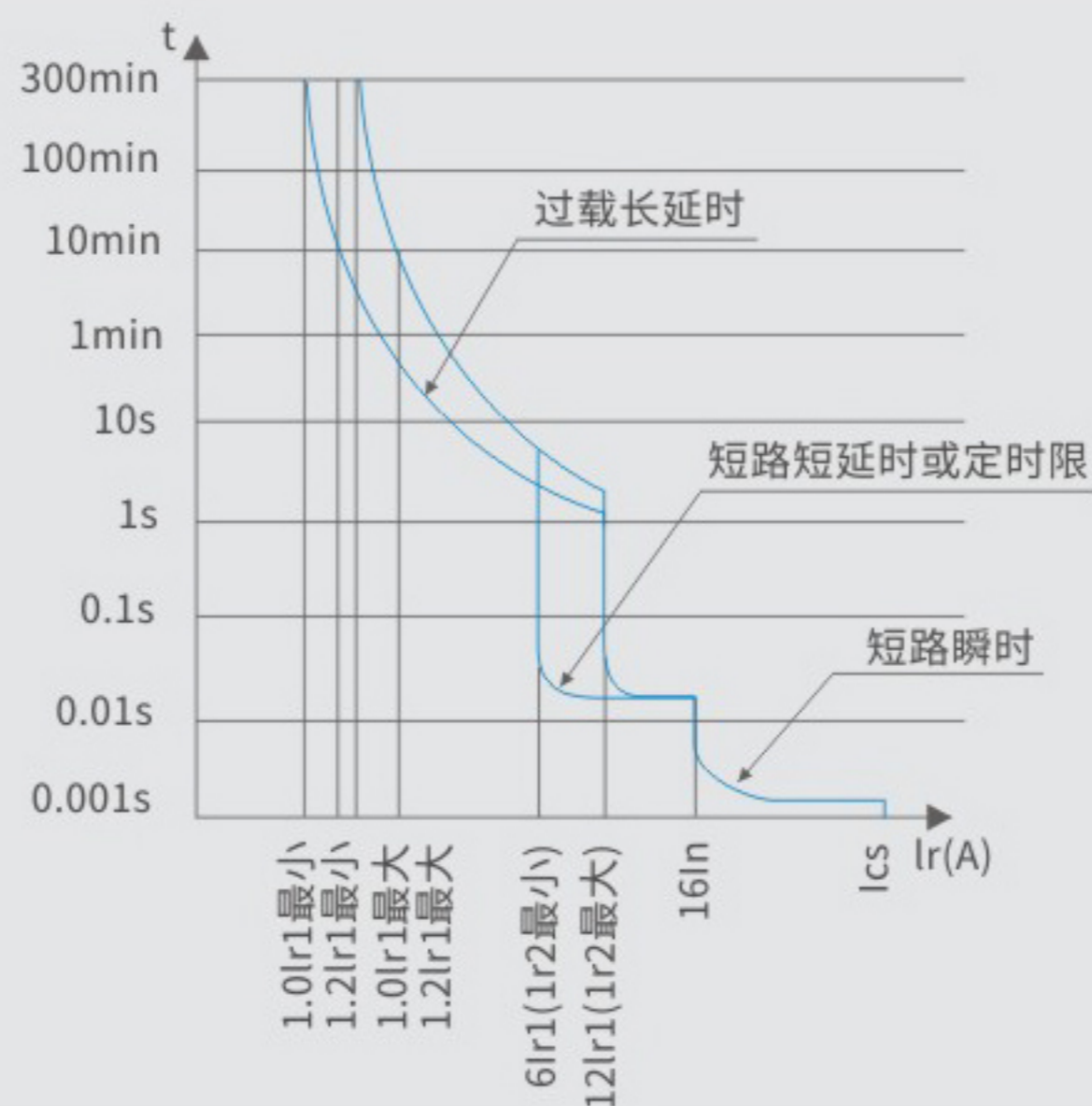
◇ Pollution level; Level 3 installation category: I1, Ⅲ
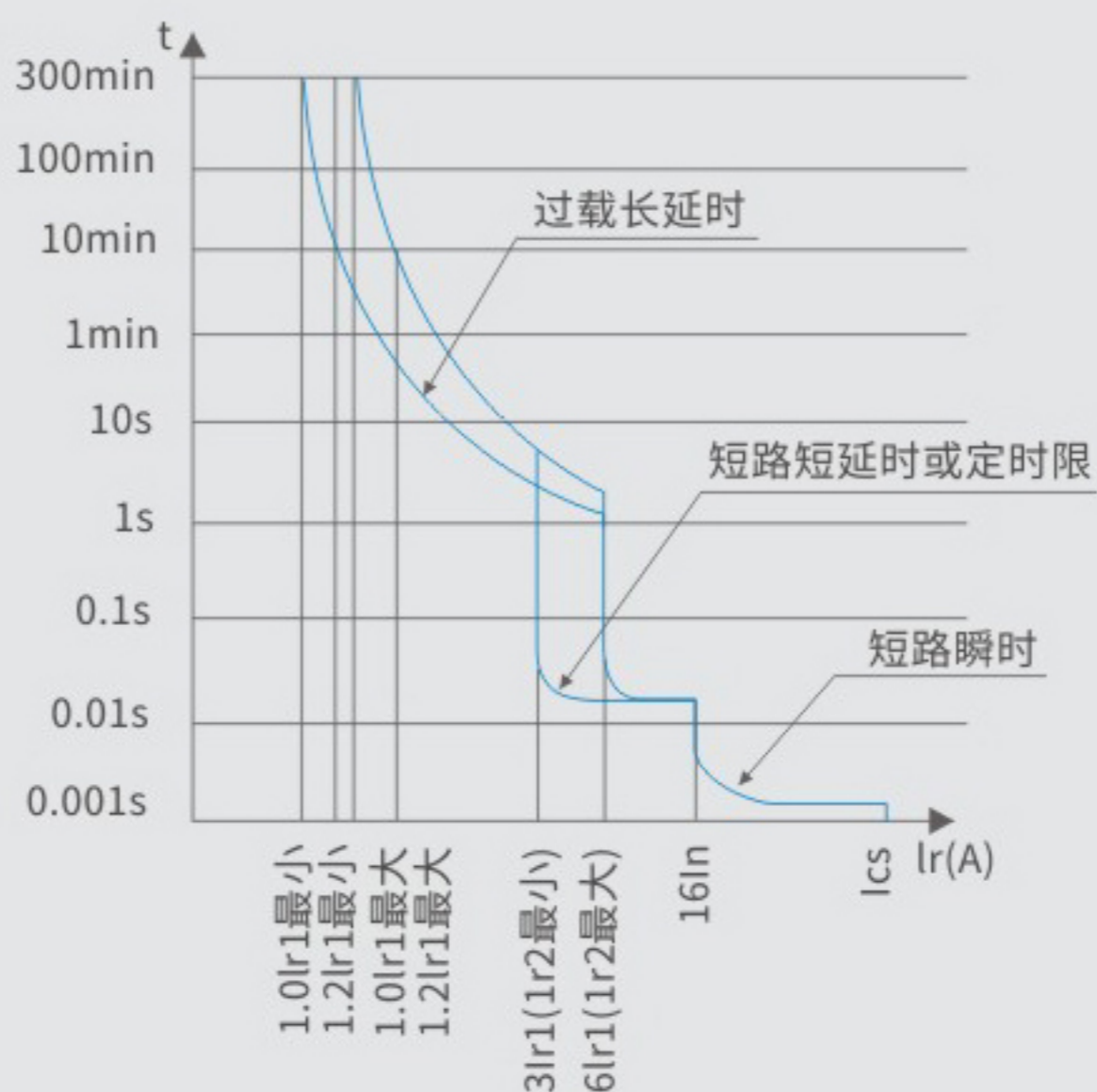
◇ Shell protection registration: IP20

## 技术参数

| 壳架电流 IthA | 主体额定电流 InA | 过载电子脱扣额定电流IeA | 过载电子脱扣额定电流调整范围 | 380V控制功率范围 KW | 使用类别 | 额定电压 V | 额定频率 Hz |
|---|---|---|---|---|---|---|---|
| 45 | SJKCPS-16 | 1 | 0.4~1 | 0.12~0.33 | AC-42 AC-43 AC-44 | 380(400) | 50(60) |
| | | 3 | 1.2~3 | 0.5~1.5 | | | |
| | | 6 | 2.4~6 | 1.5~3 | | | |
| | | 10 | 4~10 | 2.5~5 | | | |
| | | 16 | 6.4~16 | 4.5~7.5 | | | |
| | SJKCPS-32 | 25 | 10~25 | 5.5~11 | | | |
| | | 32 | 13~32 | 11~15 | | | |
| | SJKCPS-45 | 45 | 18~45 | 15~22 | | | |
| 125 | SJKCPS-63 | 63 | 25~63 | 18.5~30 | | | |
| | SJKCPS-80 | 80 | 32~80 | 30~37 | | | |
| | SJKCPS-100 | 100 | 40~100 | 37~45 | | | |
| | SJKCPS-125 | 125 | 50~125 | 40~55 | | | |

◆ 电动机保护曲线图

◆ 配电保护曲线图



## 用于电机控制(使用类别：AC-42、AC-43、AC-44)的动作特性

◆ 电动机控制用动作特性

| 序号 | 额定电流(In)倍数 | 与Ie有关的约定时间h | 基准温度 |
|------|------------------|---------------------|----------|
| 1 | 1.0 | 2h内不脱扣 | |
| 2 | 1.2 | 2h内脱扣 | +20℃ |
| 3 | 1.5 | 4min内脱扣 | |
| 4 | 7.2 | 4-10s脱扣 | |

## 用于配电线路负载(使用类别：AC-40、AC-41)的热脱扣器动作特性

◆ 配电工作特性

| 使用类别 | 整定电流(Ir1)的倍数 | | 与Ie有关的约定时间h | | 基准温度 |
|----------|---------|---------|---------|----------|----------|
| | A1) | B2) | Ie＜63A | Ie≥63A | |
| AC-40 | 1.05 | 1.3 | 1 | 2 | +30℃ |
| AC-41 | | | | | |

注：

◇ A表示热脱扣各极通以电流整定值的A倍电流时在约定时间内不脱扣。

◇ B表示紧接上试验通以电流整定值的B倍电流时应在约定时间内脱扣。

## 产品使用类别及典型用途

| 电路 | 使用类别 | 典型用途 |
|------|----------|----------|
| 主电路 | AC-20A | 在无条件下闭合和断开电路 |
| | AC-40 | 配电电路，包括混合的电阻性和由电抗器组成的电感负载 |
| | AC-41 | 无感或微感负载、电阻炉 |
| | AC-42 | 滑环型电动机：启动、分断 |
| | AC-43 | 笼型感应电动机：启动、运转中分断 |
| | AC-44 | 笼型感应电动机：启动、反接制动或反向运转、点动 |
| | AC-45a | 放电灯的通断 |
| | AC-45b | 白炽灯的通断 |

| 电路 | 使用类别 | 典型用途 |
|---|---|---|
| 辅助电路 | AC-15 | 控制交流电磁铁负载 |
| | AC-20A | 在无线条件下闭合和断开电路 |
| | AC-21A | 通断电阻性负载，包括适当的过载 |
| | DC-13 | 控制直流电磁铁负载 |
| | DC-20A | 在无线条件下闭合和断开电路 |
| | DC-21A | 通断电阻性负载，包括适当的过载 |

## SJKCPS组成系统与分立电器构成的系统比较

| 序号 | 技术性能 | 分立元件 | SJKCPS |
|---|---|---|---|
| 1 | 分断能力 | 10-50KA | 35-80kA |
| 2 | 机械寿命 | 500-1000万次 | 500-1000万次 |
| 3 | 电寿命 | 10-15万次 | 10-15万次 |
| 4 | 整定电流调节 | 曲线 | 直线 |
| 5 | 线路匹配一致性 | 差 | 好 |
| 6 | 限流能力 | 低 | 高 |
| 7 | 自配命保护性能 | 无 | 有 |
| 8 | 连续运行特性 | 无 | 有 |

## 电流和连接导线

| 工作电流范围(A) | 连接导线截面(mm²) |
|---|---|
| 0<I<8 | 1.5 |
| 8<I<12 | 2.5 |
| 12<I<20 | 4 |
| 20<I<25 | 6 |
| 25<I<50 | 10 |
| 50<I<63 | 16 |
| 63<I<100 | 25 |

## 常见的故障问题及判定解除方法

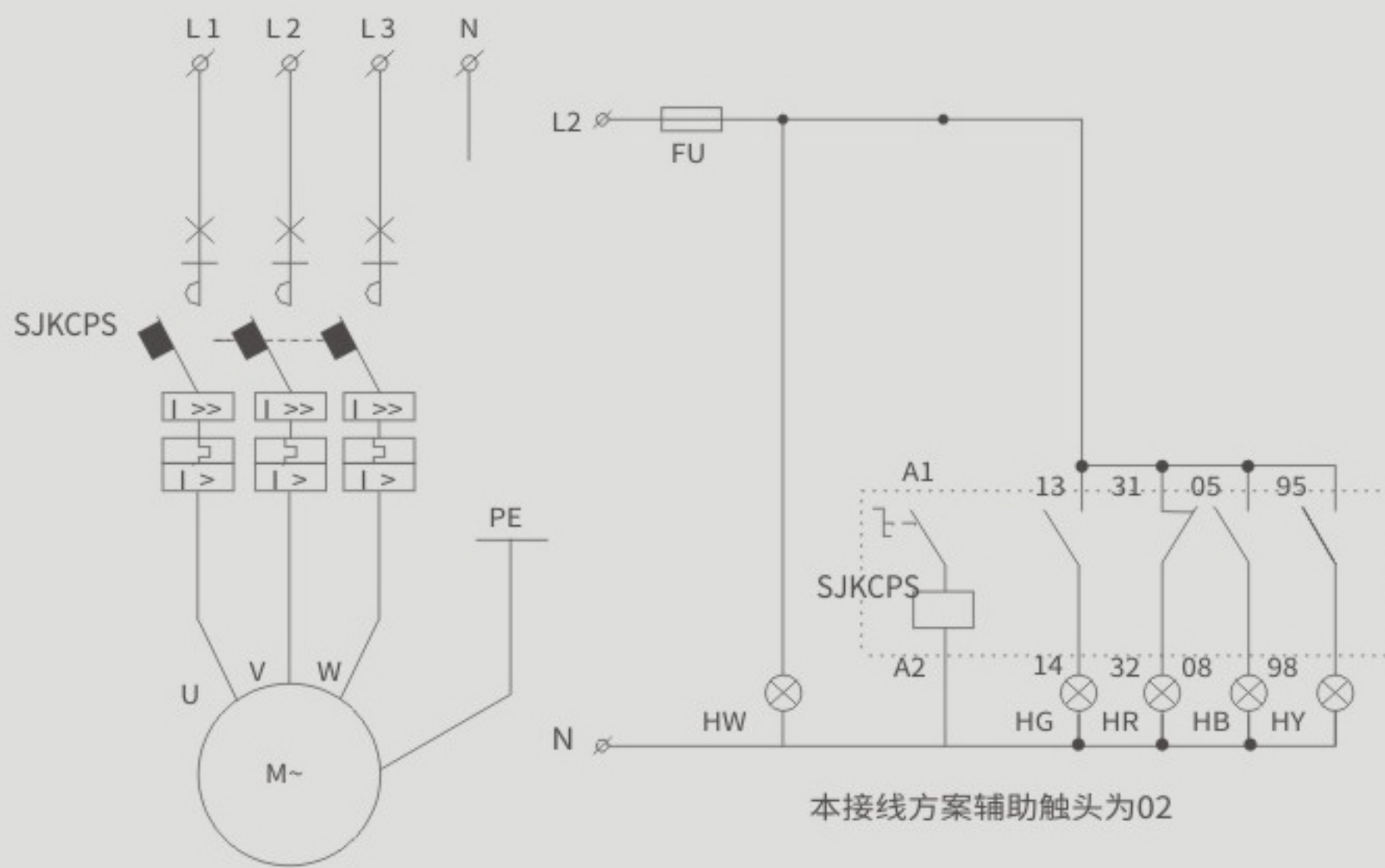| 序号 | 故障现象 | 故障原因 | 处理方法 |
|---|---|---|---|
| 1 | 通电源，SJKCPS不工作 | 1.操作旋钮是否在"AUTO"位置<br>2.查A1、A2控制电源是否正常 | 将操作旋钮旋至"AUTO"位置正确接入控制电源 |
| 2 | 通电源，SJKCPS线圈烧毁 | 查A1、A2控制电源是否接错，短路 | 更换SJKCPS线圈或查控制电路 |
| 3 | SJKCPS开关不自锁 | 1.辅助触头13、14<br>2.查A1、A2控制电源是否过低 | 开关闭合时辅助触头不通则附件有问题，更换可查控制电路 |
| 4 | SJKCPS闭合，电机不工作 | 查三相电源 | 接入正确的三相电源 |
| 5 | 电机起动，SJKCPS保护 | 1.查05、08短路触头是否闭合：95、98过载触头通不通<br>2.查05、08、95、98二对故障辅助触头都闭合 | 1.负载回路有短路<br>2.请查看实际负载和SJKCPS是否匹配 |
| 6 | 负载运行一段时间，SJKCPS保护 | SJKCPS智能脱扣器保护 | 1.空载运行SJKCPS<br>2.按移位键进入故障查询<br>3.LED显示其故障原因(最近3次)<br>4.依据查循的故障类型请排查处理故障 |
| 7 | 电机烧毁，SJKCPS来保护 | SJKCPS的le等参数设定不正确 | 根据实际负载，重新设定SJKCPS参数 |

## Job Characteristics

SJKCPS adopts LED display with voltmeter and ammeter functions for various operating and fault states; Equipped with various function keys, various parameters can be set, and the set parameters can still be saved after power failure, with fault memory function

SJKCPS has RS485 communication interface and supports multiple fieldbus
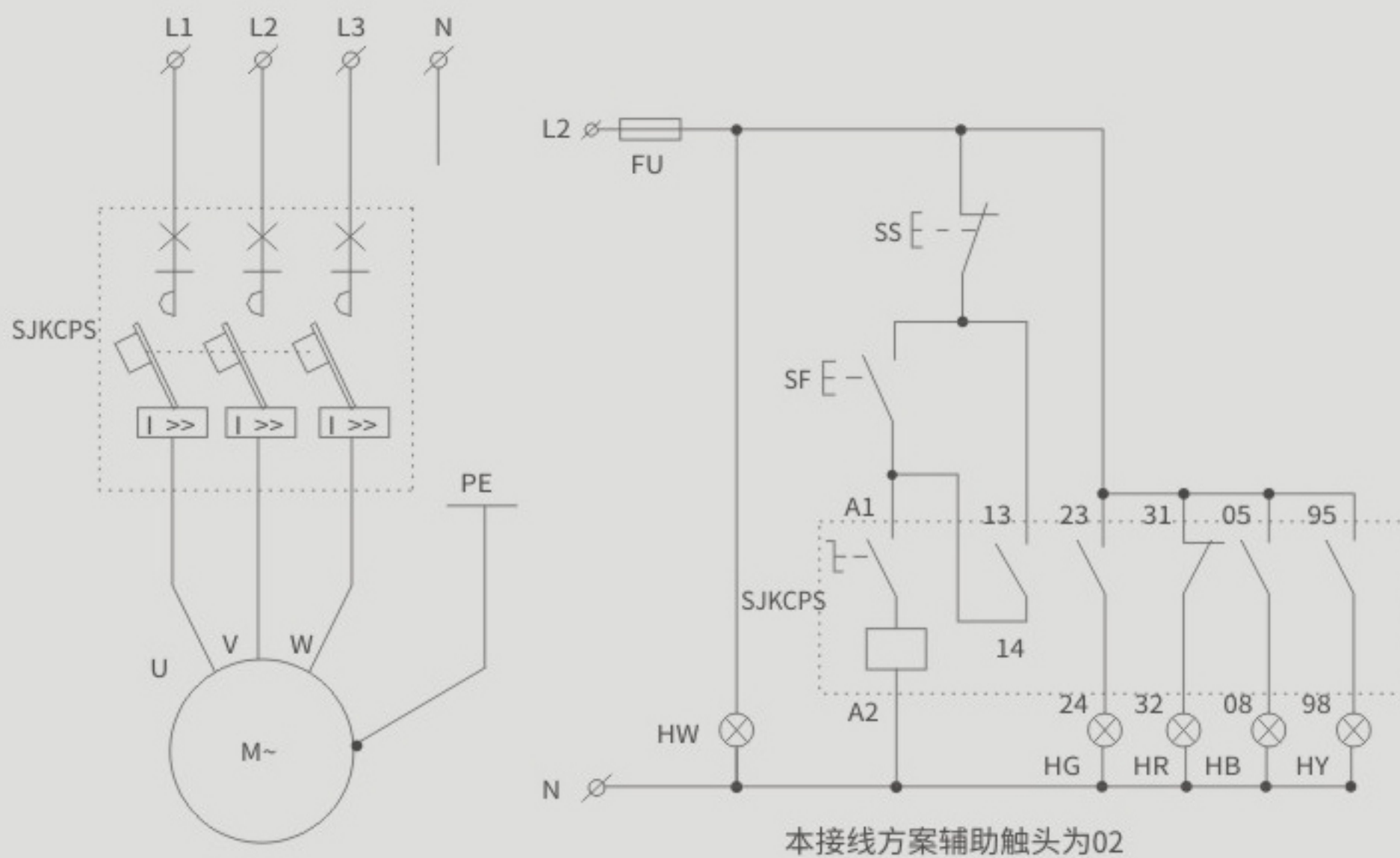
SJKCPS is particularly suitable for motor control and protection. Within the set starting time, it only protects against phase failure, overvoltage, undervoltage, short circuit, leakage, and three-phase imbalance, which can avoid the impact of high starting current of the motor. The locked rotor protection can effectively prevent the motor from accidentally burning out, while the undercurrent protection protects the motor that does not allow no-load operation. SJKCPS can be equipped with accessories for external alarm and remote control. It can also form various electrical forms such as Y/△ starter, dual speed motor control, and dual power automatic transfer switch

## 基本电气控制图



本接线方案辅助触头为02

| 二次电源 | 电源保护 | 电源信号 | 就地手动控制 | | 辅助信号 | | 报警信号 | |
|---|---|---|---|---|---|---|---|---|
| | | | | | 运行 | 停止 | 短路 | 故障 |

手动控制(面板控制)



本接线方案辅助触头为02

| 二次电源 | 电源保护 | 电源信号 | 就地手动控制 | | 辅助信号 | | | 报警信号 | |
|---|---|---|---|---|---|---|---|---|---|
| | | | 起动 | 停止 | 自锁 | 运行 | 停止 | 短路 | 故障 |

手动控制+就地控制

| 二次电源 | 电源保护 | 电源信号 | 就地与远距离手动控制及运行信号 | 报警信号 | | 辅助信号 |
|---|---|---|---|---|---|---|
| | | | | 短路 | 故障 | 停止 |

就地控制+远程控制

## 基本型操作面板图及安装尺寸

**自由脱扣位置：**
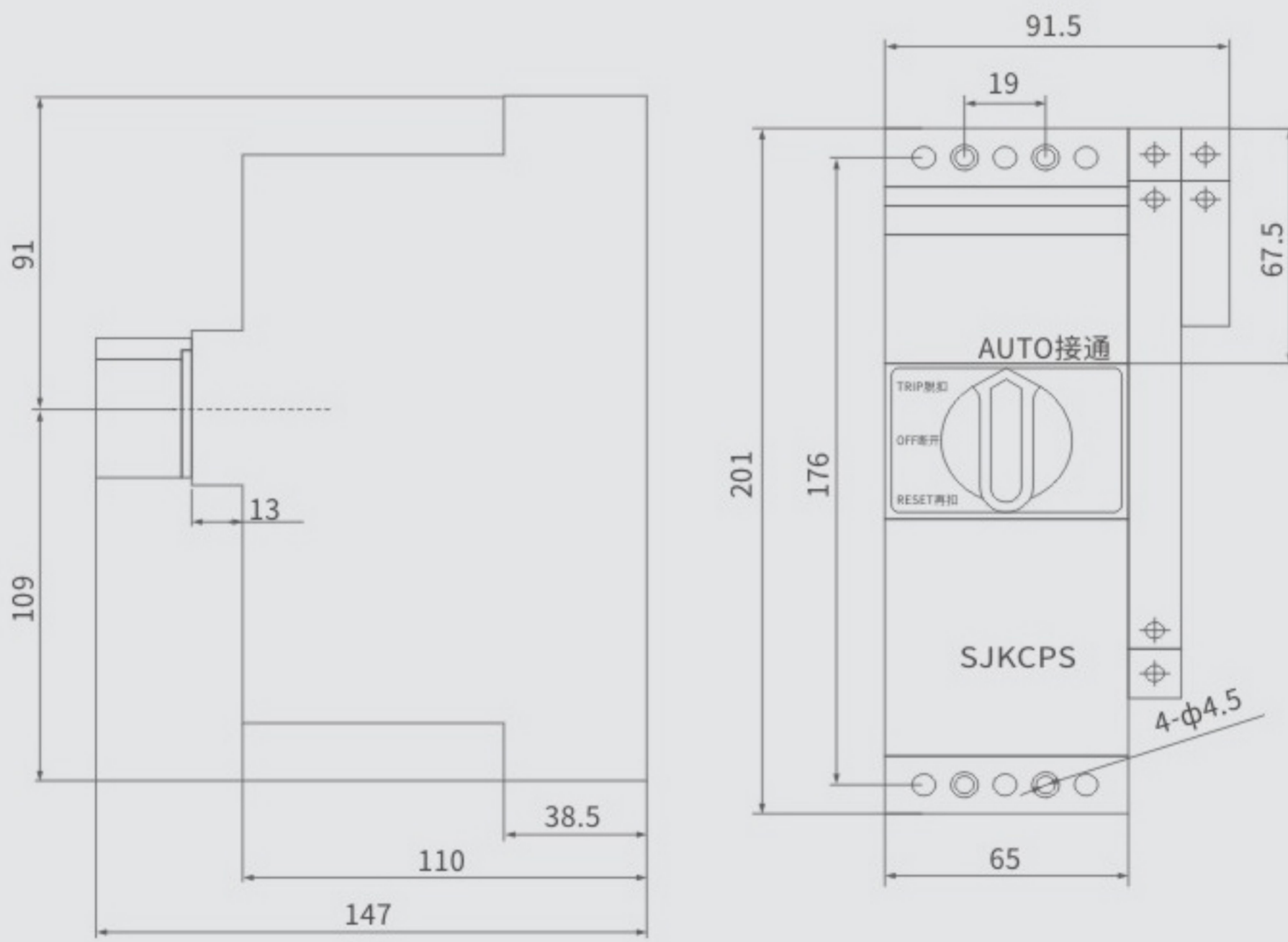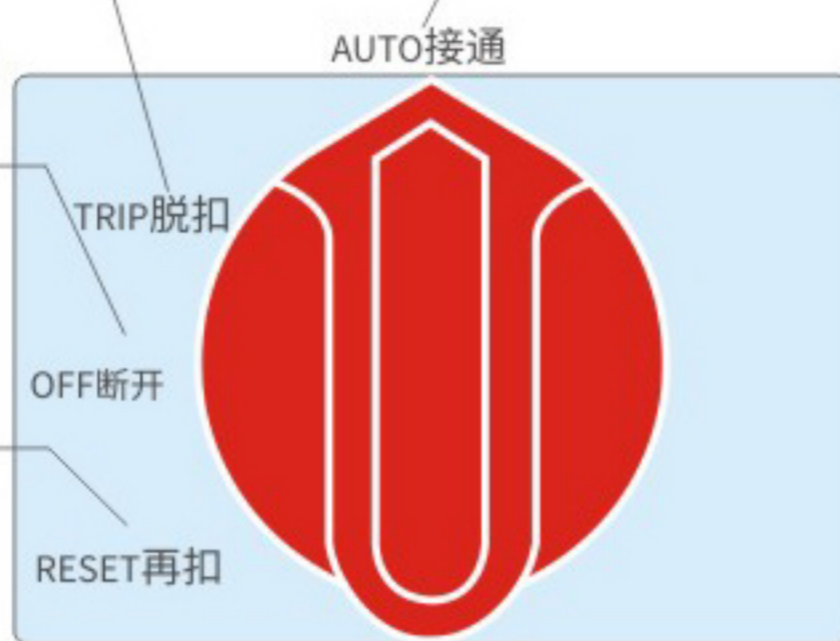在接通的电路中如出现过载、短路、断缺相、过欠压等故障时，相应功能模块动作，使主触头和电磁线圈控制触头均断开时位置。
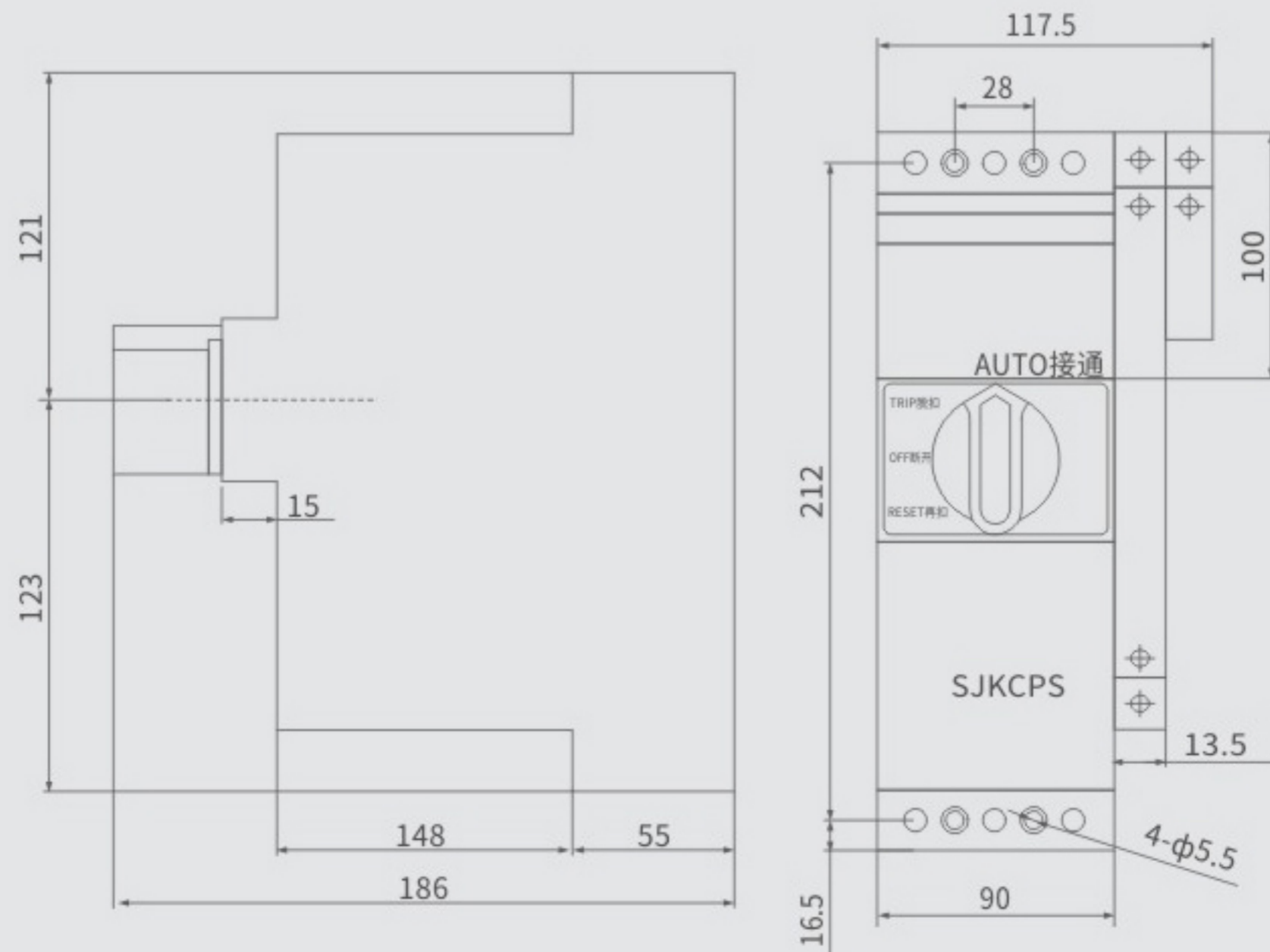
**断开位置：**
线圈触头处于断开位置，SJKCPS主触头也处于断开位置

**再扣位置：**
操作旋钮转动至该位置时才可自由脱扣的SJKCPS开关电器正常复位并再扣。

**控制(自动或手动)位置：**
此状态下SJKCPS开关电器内部控制线圈触头在闭合位置，通过线圈控制电路的通断，此状态下可远程自动控制。

AUTO接通

TRIP脱扣

OFF断开

RESET再扣



SJKCPS-45型安装尺寸



SJKCPS-125型安装尺寸