



施耐德万高(天津)电气设备有限公司

2. 功能扩展

2.1 本控制器可通过外接扩展模块实现消防联动、发电机启停、通讯、远程投备等功能,外扩模块示意图如图 2 所示,功能介绍参考表 3。

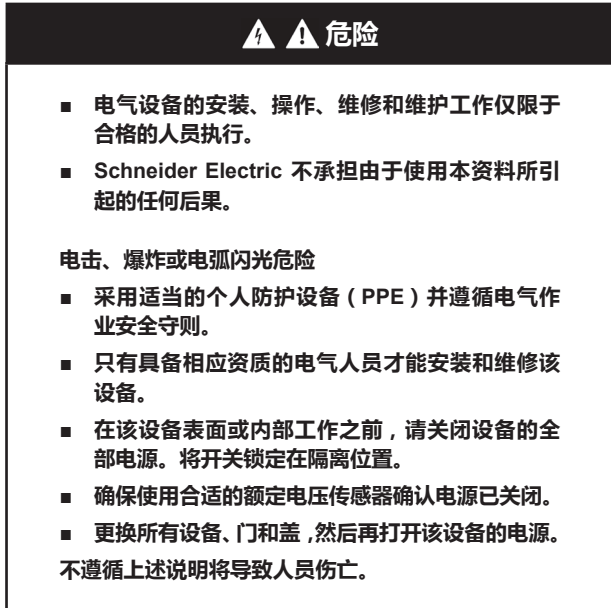
注意：一台控制器不同类型功能模块可以任意组合，同一台控制器上相同功能只能选择 1 次，任意组合的模块不能超过 2 个。



图 2 功能扩展模块外形示意

表 3

序号	模块类型	信号类型	功能介绍
1	X1 消防联动	X1-DC24V 恒压	当模块接入 DC24V 恒压时，控制器进入消防联动状态，断开则退出消防联动状态。有效电压范围为 DC24V±6V。
2	X2 消防联动	X2-DC24V 脉冲	当“消防信号”接入 DC24V 脉冲信号时，控制器进入消防联动状态；当“解除信号”接入 DC24V 脉冲信号时，控制器退出消防联动状态。脉冲信号的脉宽时间应大于 100ms。 “消防信号”和“解除信号”不能同时接入脉冲信号。有效电压范围为 DC24V±6V。
3	X3 消防联动	X3-AC220V 恒压	当模块接入 AC220V 恒压时，控制器进入消防联动状态，断开则退出消防联动状态。有效电压范围为 AC220V±10%。



 本产品出厂前已经进行绝缘测试，错误的介电试验将破坏控制系统！插拔扩展模块前必须关闭电源，不遵循上述说明可能导致人员伤亡。



1. 界面说明及操作

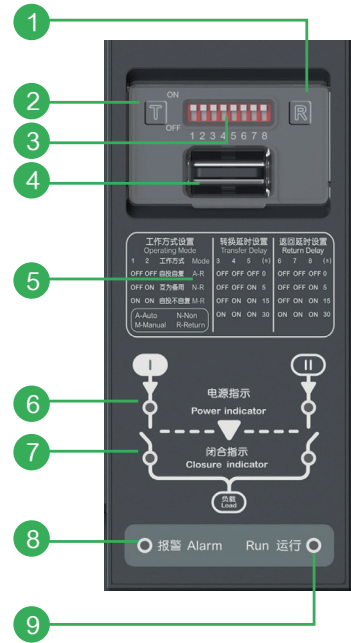


图 1

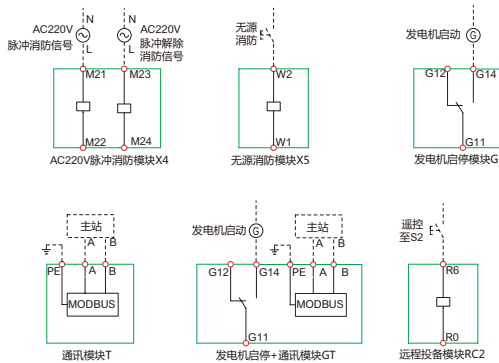


图 3 功能扩展模块端子定义

2.2 外扩模块通过使用卡槽和 $2 \times 5\text{P}$ 插针与控制器对插, 实现模块的安装、固定和电气连接, 外扩模块插配如图 4 所示。

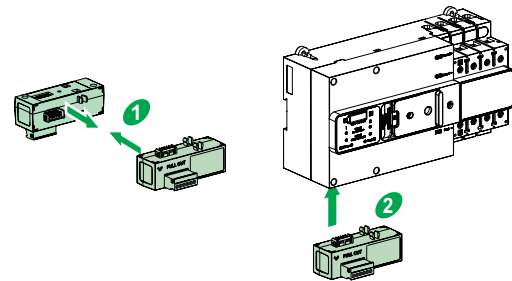


图 4 功能扩展模块安装示意

表 1

序号	功能	说明
1	复位按键	经过维护、开关故障或报警原因消除后，应按“复位”按键。长按“复位”按键 1.5 秒以上，控制器将复位重读程序。
2	测试按键	“测试”功能需要在电源Ⅱ正常情况下，将开关置于自动及电源Ⅰ合闸状态。 1、当电源Ⅱ正常时，按下“测试”功能键，控制器将开启发电机（若配有发电机启停模块，模块动作见表 3），开关完成一次“电源Ⅰ合闸-二分-电源Ⅱ合闸-二分-电源Ⅰ合闸”循环转换后，控制器停止发电机； 2、当电源Ⅱ不正常时，按下“测试”功能键，控制器将开启发电机（若配有发电机启停模块，模块动作见表 3），若电源Ⅱ在 60s 内恢复正常，则控制器将控制开关完成一次“电源Ⅰ合闸-二分-电源Ⅱ合闸-二分-电源Ⅰ合闸”操作循环后，控制器停止发电机；电源Ⅱ在 60s 内仍然不正常，控制器停止发电机，退出测试功能。
3	参数设置拨码	通过上下拨动调节“参数设置拨码”的拨码位置组合，对开关工作状态、转换延时和返回延时进行设置。
4	铅封锁孔	可用铅封将参数设置拨码锁住，防止无关人员操作（部分产品有）
5	拨码真值对照表	拨码状态组合对应产品转换模式及延时时间，详见表 2
6	电源指示	电源正常时常亮，电源偏差超出阈值闪亮，电源没电不亮
7	合闸指示	开关合闸时常亮，开关分闸时不亮
8	报警指示	产品故障报警时点亮
9	运行指示	自动运行正常时点亮，退出自动时不亮

表 2

工作方式设置			转换延时设置 (s)				返回延时设置 (s)			
1	2	工作方式	3	4	5	转换延时	6	7	8	返回延时
OFF	OFF	自投自复	OFF	OFF	OFF	0	OFF	OFF	OFF	0
OFF	ON	互为备用	OFF	OFF	ON	5	OFF	OFF	ON	5
ON	ON	自投不自复	OFF	ON	ON	15	OFF	ON	ON	15
			ON	ON	ON	30	ON	ON	ON	30

3. 故障及报警

当控制器处于正常运行状态时，发生以下情况时，控制器将发出报警：蜂鸣器发出警报声，报警灯闪亮。

3.1 转换超时，当控制器发出转换指令后，没有成功完成切换，则撤销切换指令，停止切换，控制器将发出报警；

3.2 自动状态下，当开关频繁转换 ≥ 6 次/分钟时，控制器自保护锁定并发出报警，1 分钟后自动解除报警锁定；

3.3 在 4 极产品中,出现 A 相 /B 相 /C 相与 N 线反接现象,控制器将发出报警。

注意：当故障报警在复位后没有消除，请尝试将产品切换到手柄操作模式，用手柄操作完成开关从位置 I—II—I，每一步操作间隔 > 1s，完成 I—II—I 操作循环后等待 > 4s 后复位，报警仍没有消除时，请勿擅自拆解维修产品并及时联系制造商。

电话：(86-22) 2374 8888

客户关爱中心热线：400 810 1315

网址：<http://www.se.com.cn>

地址：天津滨海高新技术产业开发区华苑产业区（环外）海泰创新六路 11 号

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Schneider Wingoal (Tianjin) Electric Equipment Co.,Ltd

2. Function Extension

2.1 The controller can realize fire linkage, generator start-stop, communication, Remote to Source II and other functions through external extension modules. External extension modules and their functions are shown in Fig.2 and Table 3.

Note: Different types of function modules of a controller are free to be combined. The same function on the same controller can only be selected once, and no more than two modules can be combined freely.

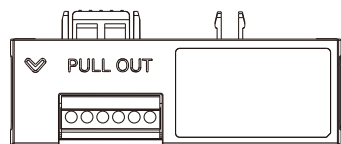


Fig.2 Outline of function extension module

Table 3

No.	Module type	Signal type	Function
1	X1 Fire linkage	X1-DC24V Constant voltage	When the module is connected to DC24V constant voltage, the controller enters the fire linkage state, and when the input voltage is turned off, it exits the fire linkage state. Effective voltage range: DC24V $\pm$ 6V.
2	X2 Fire linkage	X2-DC24V Pulse	When the "fire signal" is connected to DC24V pulse signal, the controller enters the fire linkage state; when the "release signal" is connected to DC24V pulse signal, the controller exits the fire linkage state. Pulse width time of the pulse signal: >100ms. The "fire signal" and "release signal" cannot be simultaneously connected to the pulse signal. Effective voltage range: DC24V $\pm$ 6V.
3	X3 Fire linkage	X3-AC220V Constant voltage	When the module is connected to AC220V constant voltage, the controller enters the fire linkage state, and when the module is disconnected, it exits the fire linkage state. Effective voltage range: AC220V $\pm$ 10%.

 **DANGER**

- Electrical equipment should be installed, operated, serviced, and maintained on qualified personnel.
- No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors, and covers before turning on power to this equipment.

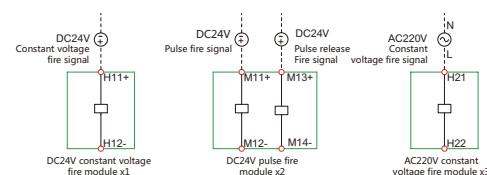
Failure to follow these instructions will result in death or serious injury.

 Insulation test is done in factory ,wrong dielectric test will damage the controller.Power must be turned off before plugging or unplugging the extension module.Failure to follow these instructions can result in death or serious injury.

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Table 3 (cont.)

No.	Module type	Signal type	Function description
4	X4 Fire linkage	X4-AC220V Pulse	When the "fire signal" is connected to AC220V pulse signal, the controller enters the fire linkage state; when the "release signal" is connected to AC220V pulse signal, the controller exits the fire linkage state. Pulse width time of the pulse signal: >100ms. The "fire signal" and "release signal" cannot be simultaneously connected to the pulse signal. Effective voltage range: AC220V ± 10%.
5	X5 Fire linkage	X5-passive signal	When W1 and W2 terminals are short-circuited and closed, the controller enters the fire linkage state, and when it is disconnected, the controller exits the fire linkage state.
6	G generator start-stop module	Passive	When the generator is started (Source I is abnormal), G14 and G11 are closed, G12 and G11 are open. (Contact current capacity: DC30V / 2A). When the generator is stopped (Power I is restored, Power I is closed), G14 and G11 are disconnected, G12 and G11 are closed. (Contact current capacity: DC30V / 2A).
7	T communication module	Modbus	The controller communicates with external devices through the communication module (RS485); up to 16 communication modules can be simultaneously connected to each bus loop.
8	GT generator start / stop & communication module	Passive & Modbus	It has generator start-stop and communication functions.
9	RC2 Remote to Source II (emergency)	Passive	When R6 and R0 are closed, ATS transfers to Source II, and when they are open ATS transfers to Source I.



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1. Interface and Operation

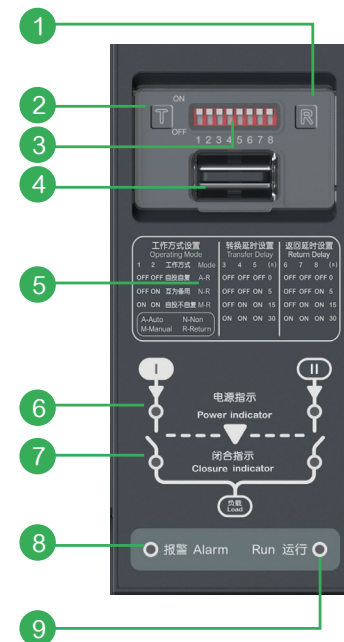


Fig. 1

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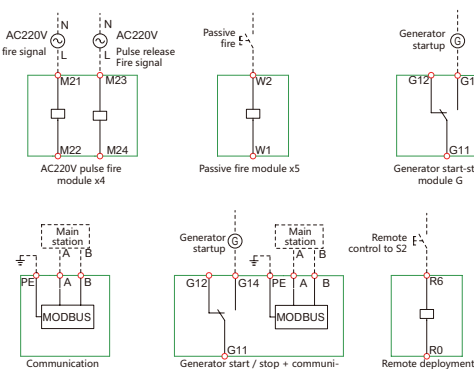


Fig.3 Terminal definitions of extension modules

2.2 External extension module is inserted into the controller via slots and 2 × 5P pins to install and fix modules and enable their electrical connection. The external extension modules are matched as shown in Fig.4.

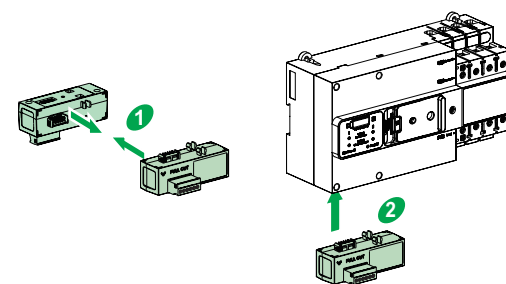


Fig.4 Installation of extension modules

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Table 1

No.	Function	Description
1	Reset button	Press the Reset button when ATS failure or alarm is eliminated after maintenance. Press and hold the "Reset" button for more than 1.5s, the controller will reset.
2	Test button	The "test" function needs to set the switch in the automatic and power closing state under the normal condition of power I. 1. When Source II is normal, press the "Test" button, the controller will turn on the generator (See Table 3 for the operation of the generator start-stop module if it is provided), the switch completes one cycle "Source I closed - Both off-Source II closed - Both off - Source I closed", then the controller turn off the generator; 2. When Power II is abnormal, press the "Test" key, the controller will turn on the generator (See Table 3 for the operation of the generator start-stop module if equipped). If Power II restores within 60s, the controller will control the switch to complete One cycle "Source I closed – Both off – Source II closed – Both off – Source I closed" and then turn off the generator; if Source II is still abnormal within 60s, the controller will turn off the generator and exit the test function.
3	Parameter setting dial (DIP)	By turning the DIP to on or off position, you can set the ATS operating state and time delay etc.
4	Seal lock	The DIP may be sealed to prevent arbitrary operation (for certain products)
5	Dial truth-value comparison table	The dial status combination corresponds to the product switching mode and delay, see Table 2. With the DIP you can define the time delay and operating mode of ATS
6	Power indicator	It is on for normal power supply, flickers for power deviation beyond the threshold and goes out when the power is off
7	Closure indicator	It is on when the switch is closed, and off when the switch is open.
8	Alarm indicator	It turns on in case of a fault alarm
9	Operation indicator	It is on for normal automatic operation and goes out when automatic operation is exited

Table 2

Operating mode setting			Transfer time delay setting (s)				Return time delay setting (s)			
1	2	Operating mode	3	4	5	Transfer time delay	6	7	8	Return time delay
OFF	OFF	Auto Return	OFF	OFF	OFF	0	OFF	OFF	OFF	0
OFF	ON	Non Return	OFF	OFF	ON	5	OFF	OFF	ON	5
ON	ON	Manual Return	OFF	ON	ON	15	OFF	ON	ON	15
			ON	ON	ON	30	ON	ON	ON	30

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3. Faults and Alarms

During normal operation, the controller will alarm under following circumstances: audible buzzer and flickering alarm indicator.

3.1 Transfer timed out: When the controller fails to complete transfer upon issuing the transfer command, the transfer command is canceled, the controller will give an alarm;

3.2 In the automatic state, when the ATS is frequently transferred ≥ 6 times/min, the controller is self-locked and gives an alarm, and the alarm lock is automatically released after 1min:

3.3 In 4-pole products, if Phase A / B / C and Neutral are reversely connected, the controller will alarm.

Note: If the fault alarm is not cleared after resetting, please try to use the handle to transfer ATS in manual position, then to complete I-II switching cycle with more than 1 second interval and wait for more than 4 seconds to reset. If the alarm is still not cleared, do not disassemble and repair the product and timely contact the manufacturer.

Tel: (86-22) 2374 8888
Customer hot-line: 400 810 1315
Website: <http://www.se.com.cn>
Address: No.11 Haitai Chuangxin 6th Road, Huayuan Industrial Zone (Outer Ring),
Binhai Hi-Tech Industrial Development Area, Tianjin

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