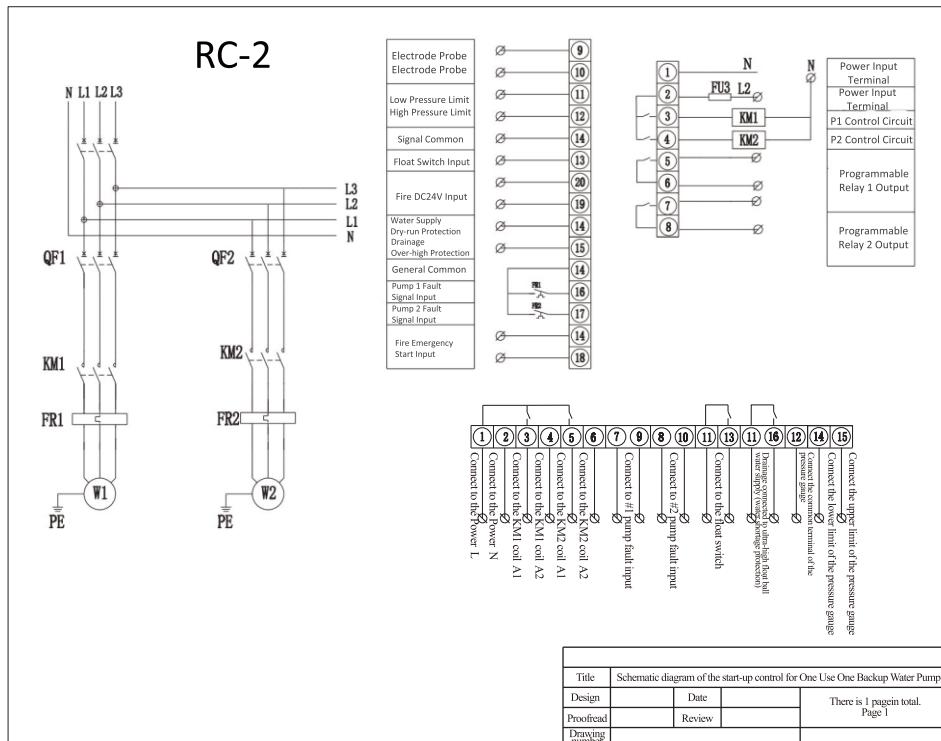


Fault Codes:  
F01: Water shortage;  
F01: 1# pump overload;  
F02: 2# pump overload

Cutout Size: 91\*91



# **RC-2**

## **Dual-Motor Intelligent Start Controller**

### **User Manual**



**I:** The RC-2 dual-motor intelligent start controller is independently developed and produced by our company to meet market demands. It is a smart start controller specially designed for various motors, capable of controlling 2 motors simultaneously. It features multiple working modes and functions for start-stop control via manual, automatic signals, and fire-fighting signals.

Adopting the RC-2 dual-motor controller for multi-motor start and stop control offers advantages such as complete control functions, simple wiring, fewer components, a small cabinet size, shortened production cycle, labor savings, and a reduced failure rate. This significantly cuts down component and labor costs, upgrades the product grade, and enhances its competitiveness.

## II: Normal Operating and Installation Conditions

(1) The maximum ambient air temperature shall not exceed +50°C, and the minimum shall not be lower than -10°C, with the 24-hour average not exceeding +35°C. When the ambient air temperature is +40°C, the relative atmospheric humidity shall not exceed 50%. At lower temperatures, higher relative humidity is allowed. The monthly average maximum relative humidity in the wettest month is 90%, with the monthly average minimum temperature in that month being +25°C. Condensation on the product surface due to temperature changes should also be considered.

(2) The altitude of the installation location shall not exceed 2000m, and the installation category is IV.

(3) This product should be installed in a location free from severe vibration, impact, and where components will not be subject to excessive corrosion.

## III: Mode Selection

(1) In manual mode, any single pump can be started using the button, or both pumps can be started simultaneously. External sources cannot initiate a start. Fire-fighting forced start and fire-fighting linkage can trigger a start in manual mode.

(2) In automatic mode, starting via the button is ineffective. Starts can be triggered by input signals from a float, electric contact pressure gauge, water level probe, or external source. Fire-fighting forced start and fire-fighting linkage are effective.

## IV: Working Modes

(1) One-use-one-standby mode: Both pumps 1# and 2# are allowed to operate. For each signal, pump 1# or 2# is started alternately. If the main pump fails, it automatically switches to the standby pump (fault pump switching). When the water level is ultra-high, both pumps are started. Fatigue pump switching (off for 1-32 hours) can be set to default off.

(2) One-main-two-standby mode: Both pumps 1# and 2# are allowed to operate. For each signal, pump 1# is started (if 1# is fault-free; if 1# has a fault, pump 2# is started). If pump 1# fails, it automatically switches to the standby pump 2# (fault pump switching). When the drainage level is ultra-high, both pumps are started. Fatigue pump switching (off for 1-32 hours) can be set to default off.

(3) Two-main-one-standby mode: Both pumps 1# and 2# are allowed to operate. For each signal, pump 2# is started (if 2# is fault-free; if 2# has a fault, pump 1# is started). If pump 2# fails, it automatically switches to the standby pump 1# (fault pump switching). When the drainage level is ultra-high, both pumps are started. Fatigue pump switching (off for 1-32 hours) can be set to default off.

## V: Types of Control Signals

### (1) Float type

1. For drainage: When the water level reaches the normal level and the float switch is closed, the main pump is started. When the water level reaches the ultra-high level and the float switch is triggered, both pumps are started.

2. For water supply: When the water level is lower than the normal level (as detected by the float), the pump is started. A float for water shortage protection is placed in the pool; when the water level in the inlet pool drops low enough to open the float switch, the pump stops.

(2) Electric contact pressure gauge type: Composed of a signal common terminal, a lower pressure limit, and an upper pressure limit. When the pressure is below the lower limit, the common terminal connects to the lower pressure limit, and the motor starts. When the pressure rises to the upper limit, the common terminal connects to the upper pressure limit, and the motor stops.

(3) Water level type: Consists of three probes. The common terminal is placed at the lowest water level. The other two probes are positioned at the middle and high water levels respectively. When the water level rises above the high water level probe, the motor starts. When the water level drops below the middle water level probe, the motor stops. If it is necessary to start both pumps when the water level exceeds a certain point, an additional over-limit probe is required. Place this over-limit probe at the over-limit water level; when the water level rises above this over-limit probe, both pumps are started.

(4) Fire-fighting forced start (BA) type: When a fire-fighting forced start closing signal is received, the motor will start forcefully regardless of whether it is in manual or automatic mode.

(5) Fire-fighting linkage type: When a 24V fire-fighting linkage signal is received, the motor will start forcefully regardless of whether it is in manual or automatic mode.

User Menu: Press the (1) key for 5 seconds to enter the setting menu. Use the (1) and (2) keys to cycle through the menu. Press the (3) key to enter menu data modification. The (2) key decreases the data, and the (3) key increases it. After completing the settings, press the (4) key to exit and save.

Menu Details:

P01	Mode Setting	0: One-use-one-standby mode; 1: One-main-two-standby mode; 2: Two-main-one-standby mode
P02	0 Drainage/1: Water Supply	Default 0: Drainage
P03	Pump Start Delay	0-25 seconds (default 2 seconds)
P04	Pump Stop Delay	0-25 seconds (default 2 seconds)
P05	Fault Pump Switching Time	0-30 seconds (default 5 seconds)
P06	Manual to Automatic Time	OFF-1-30 minutes (default 5 minutes)
P07	Fatigue Pump Switching Time	OFF-1-32 hours (default off)

P08	Inspection Cycle	OFF-1-999 hours (default off)
P09	Inspection Running Time	3-120 seconds (default 15 seconds)
P10	Programmable Relay 1	0: Off; 1: Manual; 2: Automatic; 3: Pump 1 fault; 4: Pump 2 fault; 5: All faults; 6: Water level ultra-high fault; 7: Water shortage fault; 8: Inspection output; 9: Fire-fighting linkage
P11	Programmable Relay 2	0: Off; 1: Manual; 2: Automatic; 3: Pump 1 fault; 4: Pump 2 fault; 5: All faults; 6: Water level ultra-high fault; 7: Water shortage fault; 8: Inspection output; 9: Fire-fighting linkage
P12	Fault Input Terminal	0: Open-circuit fault; 1: Closed-circuit fault (default 0); 2: Connect AC contactor normally open contact to thermal relay normally closed contact, then to common terminal

## VI: Menu Description

The factory default settings of this product meet the requirements of most users. If changes are needed, adjustments can be made according to the menu descriptions and language prompts. The product menu includes P01 with three mode settings (0: one-use-one-standby mode; 1: one-main-two-standby mode; 2: two-main-one-standby mode). P02 (working mode: 0: drainage; 1: water supply) is selectable by the user. P03 and P04 (pump start and stop delays) mainly prevent frequent starts caused by unstable external signals. P05 is the fault pump switching delay time. P06 (manual to automatic time) ensures that if the user switches to manual mode and leaves the controller, it will automatically switch back to automatic mode within the set time when there is no operation. P07 (fatigue pump switching time) allows for pump switching after a pump has been operating for a set period. P08 (inspection cycle) enables users to perform regular automatic rust removal and testing as required. P09 (inspection running time) allows users to set the duration of inspections as needed. P10 and P11 (programmable relays) can be set to provide the required feedback signals, with 9 options per group; each group can only select one option as the normally closed feedback output signal. P12 (fault terminal selection) allows choosing 0 (normally open) or 1 (normally closed) as the fault point, or 2 (forming a fault point by connecting the AC contactor's normally open contact to the thermal relay's normally closed contact). This can determine if the operating pump is working; if not, it will switch to the standby pump.

## VII: Wiring Method

1	Power N input terminal	220V power input (380V available on request)	11	Pressure Start	Connect to the lower limit of the electric contact pressure gauge
2	Power L input terminal		12	Pressure Stop	Connect to the upper limit of the electric contact pressure gauge
3	Connect to #1 Pump Contactor (or KBO coil)	Conducts with pin 2 of the power input terminal when starting (closed)	13	Float Input	Connect to the float switch
4	Connect to #2 Pump Contactor (or KBO coil)	Conducts with pin 2 of the power input terminal when starting (closed)	14	Signal Common Terminal	
5	Programmable Relay 1	0: Off; 1: Manual; 2: Automatic; 3: Pump 1 fault; 4: Pump 2 fault; 5: All faults; 6: Water level ultra-high fault; 7: Water shortage fault; 8: Inspection output; 9: Fire-fighting linkage	15	Water Shortage or Over-limit Protection	In water supply mode, when connected to the common terminal and the inlet pool, it forms water shortage protection. If no protection is required, it should be short-circuited; otherwise, the controller will display a water shortage. In drainage mode, it forms ultra-high level protection with the common terminal, and both pumps are started when the level is ultra-high
6			16	1# Pump Fault Input	Connect to the 1# pump thermal relay
7	Programmable Relay 2	0: Off; 1: Manual; 2: Automatic; 3: Pump 1 fault; 4: Pump 2 fault; 5: All faults; 6: Water level ultra-high fault; 7: Water shortage fault; 8: Inspection output; 9: Fire-fighting linkage	17	2# Pump Fault Input	Connect to the 2# pump thermal relay
8			18	Fire-fighting Forced Start	Forms a closed circuit with the common terminal for forced start; opens to stop
9	Electrode Input	Connect to the water level probe	19	Fire-fighting Linkage	
10	Electrode Input	Connect to the water level probe	20	Fire-fighting Linkage	Input 24V fire-fighting signal to start