



PID Temperature
Controller for Heating

RC-113M User Manual

WEB: WWW.RINGDER.NET

Technique Specification

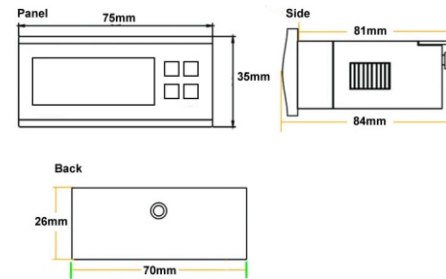
Anycontrol basic technique specification list:

Power supply	220VAC \pm 15%/50HZ
Rated power	\leq 1.5W
Load capacity	MAX resistive load:440W/220V/50HZ
Sensor type	NTC, 25 $^{\circ}$ C/50K Ω
Protection class	IP65
Work or storage	-10 \sim 60 $^{\circ}$ C, RH<90% no condensation
Temp. range	-10 \sim 100 $^{\circ}$ C
Environment	Comply with environmental standards
Wire length	Communication: 1Km, sensor: 100m

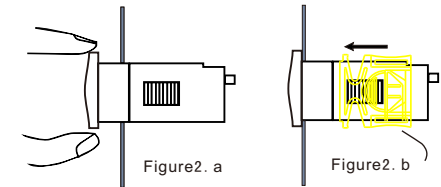
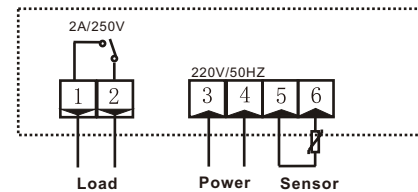
Function and Parameter

Code	Function	Setting Range	Default	Unit
F01	Set Low Limit	-10 \sim Set temp.	-10	$^{\circ}$ C
F02	Set High Limit	Set temp. \sim 100	100	$^{\circ}$ C
F03	Calibration	-7 \sim 7	0.0	$^{\circ}$ C

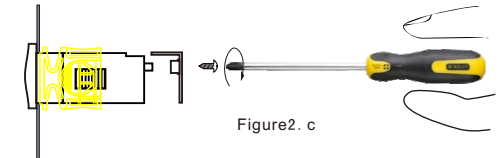
Product Size



Wiring Diagram



After connecting the wire, install the waterproof tailgate (3rd step, Figure2. c);



How to disassemble the controller from the hole?

Firstly disassemble the tailgate, then press the position (Figure2. d) sliding backwards to disassemble the controller;



Product Introduction

This model is specially designed for elaborate heating system, which adopt high accuracy temperature sensor, PID control, minimum temperature inertia, very high control accuracy(0.1C within normal temperature period).

RC-113M PID temperature controller is widely applied to various equipments and places that need to control temperature accurately, such as incubator, Heating equipment in the laboratory etc.

RINGDER
ANYCONTROL



Top Runner in Temperature Measuring and Controlling Industry

Xuzhou Ringder Electrical Equipment Co., Ltd.
E-mail: xzringder@outlook.com
Tel: 86-516-66656756 / 87764448 FAX: 86-516-87769006
Website: <http://www.ringder.net/indexen.asp>
<http://ringder.en.alibaba.com/>
Address: No. 385, Zhongshan North Road, Gulou District, Xuzhou City, Jiangsu Province, China.

1.1 Temperature measurement

1.1.1 Temperature calibration

When there is some difference between the measuring temperature and the real temperature, the difference can be calibrated by menu F3, and calibration method should follow the below formula: F3=real temperature-measuring temperature. Other functions will execute according to the calibrated temperature value.

1.1.2 Sampling period

The sampling period of this model is 1 second fixedly, and other sampling period can be customized.

1.2 Temperature control

Temperature controlling parameters: ST, F01, F02.
ST: is stop temperature that can be adjusted by SET key directly.
F01: is the low limit of setting temp.
F02: is the high limit of setting temp.
These two parameters is used to limit the setting temp range in order to avoid misoperation.
F01 \leq ST \leq F02

1.2.1 Heating status description

The controller can PID adjust the power of the heater, and make the temperature constant around the setting temp. During 25 \sim 42 $^{\circ}$ C, the accuracy can be 0.1 $^{\circ}$ C.

Connect the wires strictly according to the diagram, the voltage must within 220VAC \pm 10%.

The current of the load must: inductive load or filament lamp \leq 10% of the current on the wiring diagram; resistive load \leq 60% of the current on the wiring diagram.

Assembly and Installation

2.1 Assembly



Warning:

The controller must be connected by trained electricians according to the user manual strictly, and avoid installing in the below environments:

- Relative humidity $>$ 90%, have condensation
- The places that temperature $<-10^{\circ}$ C or $>60^{\circ}$ C;
- The places that have inflammables and explosives;
- Strong vibration or struck
- Exposed to the continuous water mist spraying;
- Exposed to the dust;
- Exposure to corrosive and pollution gas (for example: the gas, smoke or salt fog that contain sulfur or ammonia;
- Wireless electromagnetic interference or strong magnetic fields(near to transmitting antenna or switch board room);

2.2 Please install the controller according to the following

Cut out a hole at the installing position: 71*29mm

- Detach the slide fasteners, and put the controller into the hole. (1st step, Figure2. a);
- Install the fasteners; (2nd step, Figure2. b);

User Interface & Button Function

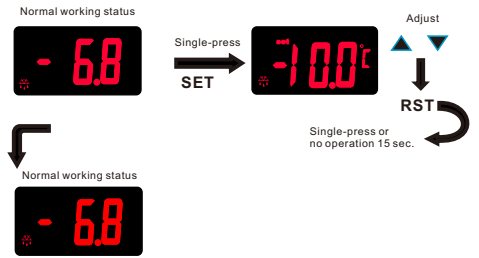
3.1 Display Area



No.	Meaning	Working Status		
		Display	Not Display	Flash
1	Alarm		Non alarm status	Alarm status
2	Heat Equipment	Work status	Stop status	
3	Set Indicator	Set status	Non set status	

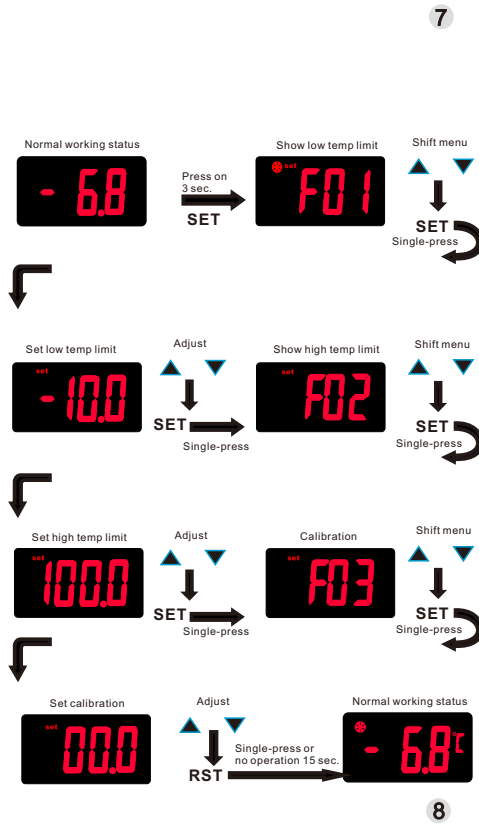
3. 2 Set the stop temperature

Press **SET** key can set the stop temperature, press **▲ ▼** key can adjust the stop temperature; when finishing adjustment, press **RST** key to save and exit, or auto save and exit after 15 seconds without any operation.



3.2 Set Other Parameters

Press **SET** key for 3 seconds, enter into menu setting mode. Press **▲ ▼** key can shift parameter. If need to change the value of the parameter, press **SET** key, then use **▲ ▼** key to adjust the parameters's value. When finishing setting, press **SET** key to return to menu. Adjust the parameters in turn. When finishing all settings, press **RST** key 3 seconds or no operation for 15 seconds to save and exit.



Alarm, Error & Troubleshooting

Alarm error and troubleshooting

When alarm occur, icon flash, and buzzer sounds, if it is not sensor fault, the fault code and temperature value will alternate display, e.g. If it show FS, means the room sensor temp exceed the storage protection temp in the defrost mode; if it is sensor fault, it will only display the fault code.

Code	Reason	Troubleshooting
EEH	Sensor short circuit or exceed the highest measuring temperature	Check the temperature of environment where the sensor is placed, and whether the sensor is short circuit, then repair correspondingly.
EEL	Sensor open circuit or exceed the lowest measuring temperature	Check the temperature of environment where the sensor is placed, and whether the sensor is open circuit, then repair correspondingly.

Attention:
When alarming, press any key to mute the alarm, but the icon will keep flashing, and the fault code will keep displaying until trouble removal.

Accessory

Sensor wire x 1; slide fastener x 2
tailgate x 1; user manual x 1;

4.1 Sensor

The sensors that meet RINGDER criteria can apply to the product, and the sensor cannot be put into the water directly. The below is some parameters:

Wire: $\varnothing 2.1\text{mm} \times 2\text{m}$; sensor size: $\varnothing 4\text{mm} \times 20\text{mm}$

Attention please:
Please avoid overload, load short circuit, misuse, human damage etc., which is not covered by the warranty. Load short circuit can damage the PID output immediately!

- The controller can be installed as far as about 100m, but the cross section of the shielded wire must above 1mm and any head of the wire mustn't connect earth.
- This model controller adopts NTC sensor without positive and negative polarity, so no requirement for connection order.
- Please choose the suitable wire rod to connect, and check connection fastness.
- Please remember to cut off the power supply before connecting.

This product has passed the European CE certification, and conform to ISO9001 total quality control system.