

## CW120-PR3

Programmable Water Fan Coil Thermostat

### 1. Preface

Dear users:

Thank you for choosing our thermostat. Bringing convenience for your common life is the biggest wish of all our colleagues. Please read this manual carefully before using it. It will help you to use the indoor temperature controller correctly.

### 2. Overview

#### 2.1 Product application

CW120-PR3 thermostat can control a single two-wire electric valve and a single three-wire electric valve, or two cold and hot two-wire electric valves.

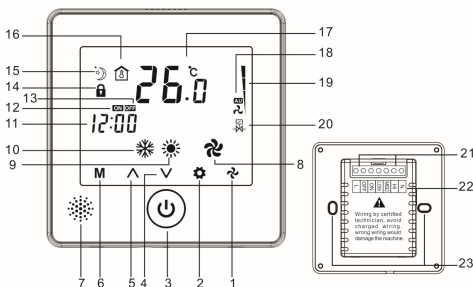
CW120-PR3 thermostat is used for controlling two-pipe, four-pipe or air system. By comparing the ambient temperature with the setting temperature, it controls the terminal fan coil and the electric valve to reach the purpose of adjusting the ambient temperature, be comfort and save energy.

CW120-PR3 thermostat adopts the industrial grade microcomputer control technology, large touch screen, simple operation, stable performance, reliable work.

#### 2.2 Feature

- ▶ With modern shape, available for high-level shopping mall, hotel, office and house.
- ▶ Switch power, AC85~260V
- ▶ Full and touch screen.
- ▶ The screen is made from PMMA.
- ▶ The sunk power key with good touch feeling.
- ▶ With white backlight and automatic light adjustment.
- ▶ The shell with silver paint.
- ▶ Sleep and timer on/off function.
- ▶ AUTO restart function.
- ▶ Protection for low temperature.
- ▶ Temperature calibration.
- ▶ Delay to restart valve.
- ▶ Touch key lock function.
- ▶ Noise reminder.
- ▶ Power touch key with breathing light.
- ▶ To control two-wire, three-wire or cool and hot valve.
- ▶ IR remote control (Purchased separately).

### 3. Sketch and description



Description

Item	Description
1	Fan touch key. Used to change the fan speed as high, middle, low and auto when power is on.
2	Set touch key, used to set timer off and sleep function when power is on and set timer on when power is off.
3	Power touch key, used to turn on and turn off the thermostat.

4	Down touch key, used to reduce the temperature when power is on and change the parameter under the factory setting.
5	Up touch key, used to raise the temperature when power is on and change the parameter under the factory setting.
6	Mode touch key, used to select modes among Cool, Heat, Ventilate and switch different parameter options under factory setting.
7	IR receiving window, used to receive orders from the remote control. (Purchased separately)
8	Fan symbol, to indicate the current working mode is Ventilate.
9	Heat symbol, to indicate the current working mode is heat when power is on, and it means the protection for low temperature when power is off. If the thermostat is working as the protection for the low temperature, the fan symbol will displayed on the screen.
10	Cool symbol, to indicate the current working mode is Cool.
11	Timer symbol, to display the timer date when start the timer on/off.
12	Timer on symbol, lightened when timer on is set.
13	Timer off symbol, lightened when timer off is set.
14	Lock symbol, to indicate the touch keys are locked and only works when power is on. Non-display means the keys are unlocked.
15	Sleep symbol, lightened when sleep mode is on.
16	Ambient temperature symbol, display on the screen means it is the room temperature, and non display means it is the setting temperature.
17	Temperature display, to display the ambient and setting temperature.
18	AUTO fan mode, to indicate the fan adjusts the speed automatically.
19	Manual fan speed, one bar means low speed, 2 bars mean medium speed, 3 bars mean high speed.
20	Valve state, if the valve is opened, the symbol will be lightened.
21	Connector, used to the outer cables.
22	Wire connection indication, to indicate every function of the connection.
23	Screw hole on the board, used to fix the board when installing the cassette.

### 4. Basic operation

- 4.1 Power on/off: Press "⏻" to turn on the thermostat, the screen displays mode symbol. Press "⏻" again to turn off the thermostat and the symbol will disappear, at the mean time the fan coil, electric valve, electric ball valve or electric fan will be off.
- 4.2 Temperature set: Turn on the air conditioner, press "▲" or "▼" touch key to set the temperature. First pressing is to display the current setting temperature and the numbers flash. Then press "▲" and "▼" touch keys to raise or reduce the temperature. The temperature value of each pressing is 0.5°C. Hold "▲" or "▼" to speed up the setting.
- 4.3 Mode select: Turn on the air conditioner, press "M" key to switch the working mode. First pressing is to display the current setting and the symbol will flash. Keep pressing, the mode will be switched among COOL ("❄️"), HEAT ("🔥"), VENTILATE ("🌀").
- 4.4 Fan speed select: Turn on the air conditioner, press "🌀" to select the fan speed among high, medium, low, AUTO. First pressing is to display the current fan speed and the symbol flashes. Keep pressing to select the other speeds.  
 Noted: under AUTO fan speed mode, the speed will be switched automatically. The temperature difference between the ambient and the setting is over 3°C, the speed is high. The temperature difference between the ambient and the setting is 2-3°C, the speed is medium. The temperature difference between the ambient and the setting is

within 1°C, the speed is low. If the ambient temperature reaches the setting, the fan will stop, or by changing the default parameter, let the fan keeps working.

4.5 Timer function: Turn on the air conditioner, press "🕒" touch key, "🕒" is displayed on the screen and flashes. Keep pressing to adjust the timer off value. The timer value is over 16h, then cancel the timer off. Turn off the air conditioner, press "🕒" touch key, the screen displays timer on 1h and the symbol flashes. Keep pressing to adjust the timer on value. The timer value is over 16h, then cancel the timer on.

Noted: When setting the temperature, fan speed, mode and timer, if the corresponding symbol flashes, it means under setting. And the system will confirm the setting without any operation in 5sec. During the 5sec, the thermostat keeps the original setting.

4.6 Quick lock & unlock touch key: No matter the air conditioner is on or off, press and hold "🔒" touch key for 5sec, the screen will display "🔒", then release the touch key to lock the touch keys. Once the touch keys are locked, except power touch key, other touch keys are no longer used. Press and hold "🔒" touch key for 5sec again, then release the touch key to unlock.

4.7 Backlight: When pressing touch keys or using remote control, the backlight is highlight. After 20s without any operations, the backlight changes as low light automatically and the thermostat enters energy saving state.

4.8 Buzzer reminder: buzzer noise reminds to turn on/off the air condition, it can be also closed on the default setting.

4.9 Remote control available (Purchased separately): Remote could control the thermostat.

### 5. Electric valve and fan

#### 5.1 Electric valve control

##### 5.1.1 Two-pipe water system (F1=1, F1=2)

On COOL (HEAT) MODE, when the ambient temperature is higher (lower) 0.5°C than the setting, open the electric valve. When the ambient temperature reaches the setting, close the electric valve.

##### 5.1.2 Four-pipe water system (F1=3)

On COOL mode, when the ambient temperature is higher 0.5°C than the setting, open the cold water valve, and when the ambient temperature is lower the setting, close the cold water valve. Hot water valve keeps closed. On HEAT mode, when the ambient temperature is lower 0.5°C than the setting, open the hot water valve, and when the ambient temperature is higher than the setting, close the cold water valve. Cold water valve keeps closed.

5.2 Fan control: The three outputs of fan speed are high, medium, low. The fan has two working modes, by changing the default parameter F03 to select it.

- A) F3=1 fan working mode1: When the ambient temperature reaches the setting, the fan stops working.
- B) F3=2 fan working mode2: When the ambient temperature reaches the setting, the fan keeps working.

### 6. Parameter setting

Users can add more functions and change parameters by setting the default parameters, in order to fit for different kinds of applications.

#### 6.1 Enter the setting mode

6.1.1 Turn off the air conditioner, press and hold "⚙️" touch key for 5sec, the clock area on the screen displays "F01", and temperature area displays related parameter. Release the touch key and enter the setting mode.

6.1.2 Press "⚙️" touch key again to switch the items among F01-F11. Press "▲" and "▼" to adjust the corresponding parameters.

6.1.3 Press "⏻" touch key to save and cancel the setting. Or it cancels the setting automatically without any operations on 30sec, and restore turn to the previous parameters.

### 6.2 The factory default parameters list

Code	Parameter Function	Setting range	Parameter description	Default setting
F01	Valve type	1-3	1: Two-wire valve 2: Three-wire valve 3: Cold / heat valve	2
F02	Temperature correction	-9~9°C	Adjust the temperature error	0°C
F03	Fan mode	1-2	1. The temperature reaches the setting, stop the fan. 2. The temperature reaches the setting, keep the fan working.	1
F04	Low temperature protection	1-2	1. Turn off the protection 2. Turn on the protection	1
F05	AUTO restart	1-2	1. Turn off the function 2. Turn on the function	1
F06	Delay to open the valve	1-2	1. Turn off the function 2. Turn on the function	1
F07	Touch key lock	1-2	1. Turn off the function 2. Turn on the function	1
F08	Breathing light	1-2	1. Turn off the function 2. Turn on the function	2
F09	Backlight saving energy	1-2	1. First level saving energy 2. Second level saving energy	1
F10	Buzzer	1-2	1. Turn off the function 2. Turn on the function	2
F11	Room temperature display	1-2	1. Display the room temperature 2. Display the setting temperature	1

#### 6.3 Parameter description

- 6.3.1 F01: Set the valve type, refer to 5.1 about electric valve control.
- 6.3.2 F02: Temperature correction: The location of the thermostat or other factors result the temperature error, it can correct the ambient temperature among -9 ~ +9°C to fix the error.
- 6.3.3 F03: Fan mode setting references to 5.2 about fan control.
- 6.3.4 F04: Low temperature function: Turn on the protection. The thermostat is off, when the ambient temperature is lower than 5°C, the thermostat will start HEAT mode and "❄️" symbol flashes the fan automatically works at high speed and the electric valve (or hot water valve) is opened. When the ambient temperature is higher than 7°C, the thermostat will be turned off automatically to prevent the water pipe freezing from influencing the water circulation.
- 6.3.5 F05: AUTO restart: Turn on the AUTO restart function, the thermostat will automatically save all the setting before the power failure, and it will restore turn the previous parameters.
- 6.3.6 F06: Valve delayed started: Turn on the function, if the valve is powered off, it needs to wait 3min to restart.
- 6.3.7 F07: Touch key lock: The touch keys are locked, except the power touch key, others are unusable.
- 6.3.8 F08: Breathing light: Turn on the breathing light, when power is on, the power indicator light will slowly brighten and darken as the human breathing.
- 6.3.9 F09: Backlight saving energy: On first level saving energy, without any operation in 20sec, the backlight will automatically adjust to low luminance to decrease the power dissipation. On second level saving energy, without any operation in 20sec, the backlight will automatically adjust to slight light to fix for the sleeping environment.
- 6.3.10 F10: Buzzer function: Turn on the buzzer function, when pressing the touch keys and using remote control, the buzzer makes a sound to remind the operation.

6.3.11 F11: Setting temperature display: Turn on the setting temperature display, the thermostat displays the setting temperature all the time. Turn off the setting temperature display, the thermostat displays the setting temperature for 5sec when pressing the touch keys or using remote control, after then the thermostat will display the room temperature.

**6.4 Factory reset**

When the power is off, press and hold "M" touch key for 6sec, the screen will display "dEF", then press "O" touch key to restore the factory setting.

**7. Installation**

**7.1 Install preparation**

7.1.1 Please refer to 10. Tips and attention.

7.1.2 Make the following preparation:

7.1.2.1 Ensure thermostat location, install the 86x86 junction box ahead of time, the screws are equipped with thermostat.

7.1.2.2 According to the equipment (valve and fan. etc) needs to be controlled and thermostat model, pick up the corresponding diagram.

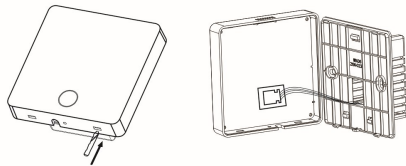
7.1.2.3 Settle the wires, and mark all of them to help the following connection.

7.1.2.4 Turn off the main power switch, carefully check the fan, valve connected correct and all the marks clear.

**7.2 Installation steps**

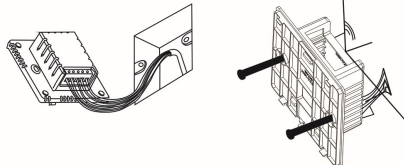
7.2.1 Complete all the preparation, please install the thermostat follow the diagram and description.

7.2.2 Attention: Complete the installation and tear off the protective film on the screen.



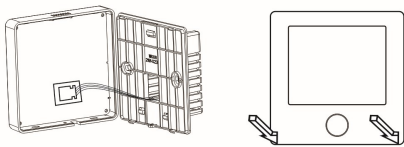
Step 1: As shown, open the thermostat.

Step 2: Take off the connection wire on the board.



Step 3: Connect all the wires according to the diagram.

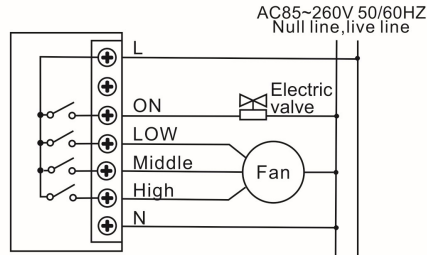
Step 4: Use the screws in the box to make the board stable on the wall.



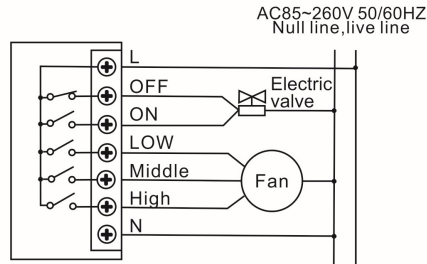
Step 5: Plug the connection wire on the board.

Step 6: Cover the thermostat panel on the board.

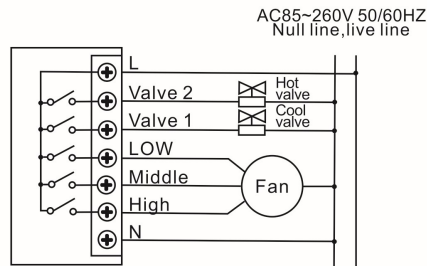
**8. Diagram**



Connection of two-wire valve



Connection of two-wire valve



Connection of cool and hot valve

**9. Failure process**

Statement: Please ask the professionals to repair.

Failure	Solution
Fail to power on	1. Check L, N correct and stable 2. Check the power touch key work well 3. First to change the main board, if still not work, then to change the power board.
Gibberish on the screen	The back shell is distorted when installed, loosen the two screws.
No output	1. The connection wire between the main board and the power board damaged. 2. First to change the main board, if still not work, then to change the power board.
Remote control failure	1. Check the batteries is fine. 2. Change a new remote control.
The screen displays E1	The sensor failure, replace the front board.

**10. Notes for touch screen**

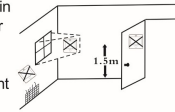
1. Please don't touch the screen when the oil or the water stains on your hands.
2. If the screen is stained by water or dusty, it will reduce the sensitivity, even result the touch screen failure.
3. Please use the soft cloth to clean the touch screen.
4. Please don't operate the touch screen with hard objects, to prevent scratching the surface.

**11. Tips and attention**

**11.1 Location to install thermostat**

The right installation location is as shown in the right diagram, height usually 1.5 meter from ground. It should avoid following conditions.

1. Corner, near door or window, on the front or back of the door.
2. Out of temperature control space, closed heating pipe or flue.
3. Near air pipe or radiator
4. Direct sunlight place or near other heating item. (TV)



**11.2 Notice to installation of the temperature controller**

1. If using hard plastic wire for installation, please make the proper anger.
2. Please connected all components strictly follow the Wiring diagram.
3. One controller can drive one FCU and 1 two-pipe electric valve or 2 four-pipe electric valves.
4. One controller can drive one air vent or air valve.
5. Cannot drive magnetic element like electromagnetic valve.
6. When assemble and disassemble flat cable, use thumbs to push the connector out, do not pull it.
7. Please do not press on LCD and do not hit controller.
8. LCD temperature controller is precise electric equipment, cannot fall during installation.
9. Please do not let water, mud and other litter into temperature controller.
10. Please take the LCD protection film before using.

**12. Technical Specifications**

Temperature sensing element	NTC
Temperature control precision	±1℃
Temperature Setting	5-35℃
Display range	0-50℃
Working Condition	0-45℃
Humidity	5-95%RH
Key	Touching Key
Supply voltage	AC85-260V,50/60HZ
Consumable Power	<1W
Terminal block	2 lines X 1.5 mm <sup>2</sup> , or 1 line x 2.5mm <sup>2</sup>
Load limitation	2A with resistant load; 1A with inductive load
Shell	Fire-retardant PMMA+ABS
Dimension	86x86x16 mm
Installation	60mm standard
Protection	IP30

**13.Parts**

Packing box	1pcs
Thermostat	1pcs
Manual	1pcs
Screw	2pcs



the remote control is optional  
Purchased separately

**14. Statement**

★ The manual is only available for our thermostat, reserve the right of final interpretation.