

## CRF1-T-FC03

### Fan Coil Thermostats

#### Description

This Fan coil thermostats are widely used in all commercial and residential buildings room temperature control, accuracy control provides you comfortable environment, and have the effect of saving energy and reducing up to **30%** power consumption.

External Sensor (Change over or remote temperature )  
( NTC 10k, N/O Occupancy contact ) .

The power supply is 24 VAC.



Order Code	2/4 Pipe FCU	Communication	Output	Inputs
• CRF1-T-FC03	2 Pipe	NON	230V / 3 Steps Actuator 1x0...10 V	NTC 10k N/O Occupancy Contact

#### Application

**This universal thermostats work with :**

- » 2-pipe fan coil unit
- » 3-Speed Fan.
- » 0-10V valve.
- » Dry contact for window or door, Hotel card holder.
- » External sensor for air or pipe temperature.

## Technical data

### Specification

Power supply	24 VAC±10%, 50/60 Hz
Temperature setting range	5-35°C
Temperature accuracy	± 0.5°C
Temperature control Accuracy	± 1°C
Fan type	Three-speed fan
Relay Rating	5A
Valve Control	0-10V valve
Remote Sensor Type	NTC 10k
Dry contact	Dry Contact for window, door or hotel card holder
Storage temperature	-20C~60C, Operating temperature: 0~50°C
Max Humidity	5~95%
Power consumption	<2W
Grade of protection	IP30
Backlight	White
Installation type	Flush mounting, Hole pitch: 60mm
Dimension	H86XW86XD13 mm

## User Guide

### User Guide:

**ON/OFF:** Press power button to switch ON and OFF thermostat.

**Temperature Setting:** Press "▼" to reduce temperature, press "▲" to raise temperature

**Mode:** Press "M" to change mode between Cool ❄️, Heat 🔥 and Ventilation 🌀, mode will be confirmed by pressing other button or automatically after 6 seconds.

**Fan:** Press "🌀" to change 3-speed 🌀 ~ 🌀🌀 🌀🌀🌀 or Auto fan 🌀, Auto Low-speed if difference between room-temperature and set-point exceed 1°C, Auto Med-speed when exceed 2°C, Auto Hi-speed when exceed 3°C.

**Valve:** control 0-10V valve, user can set up the voltage output by flowing steps:

Switch off the thermostat and press "M" and "▼" 5 seconds to enter parameter setting menu, press the "M" or "🌀" to change the item, and press "▼" "▲" to change the value.

Item 01: Heating mode KP, Range from 1~99, Default=10

Item 02: Cooling mode KP, Range from 1~99, Default=10

Item 03: Sampling time, Range from 1~99,(S), Default=20

Item 04: KI, Range from 1~99, Default=1

Item 05: KD, Used

Item 06: Span, Range from 1~99, Default=5

**Warning: the value above must set by specialized installation person!!!**

**Backlight:** Any key press will activate the backlight. Backlights will timeout 6 seconds after last key press.

**Keypad Lockout:** (ONLY available when Item 11 set to 1/2/3): Press "▼" and "▲" for 3 seconds to lock the buttons and press "▼" and "▲" for 3 seconds to unlock.

## Functional Description

### Parameter table

Switch off the thermostat and press "M" and "▲" 5 seconds to enter parameter setting menu, press the "M" or "⚙" to change the item, and press ▼ ▲ to change the value, press power button "⏻" or wait 30S to exit and save all settings .

No.	Name of Parameter	Parameter definition
1	System type	0:2-pipe fan coil unit (Default) 1: Reserved 2: Reserved 3: Reserved
2	Auto Mode	0: manual (Default) 1: auto
3	Sensor type	1: internal sensor only (Default) 2: external sensor only 3: internal sensor& external sensor
4	Fan control	0: fan stop after reach temperature setpoint (Default) 1: fan continuous running after reach setpoint
5	Unoccupancy status	0: cut off all outputs 1: setback setpoint (Default)
6	Temperature Display	0 = show room temperature (Default) 1 = show setpoint
7	Display Temp. adjustment	-4C~4C Default=0)
8	Dead band	1-4C(Default=1)
9	Auto heat pipe temperature	21~40C (Default value 22C) for 2-pipe auto mode with external sensor only
10	Auto Cool pipe temperature	10~20(Default value 18C) for 2-pipe auto mode with external sensor only
11	Keypad Lockout	0 All keys available(default) 1 All buttons locked out 2 System button Locked out 3 All buttons locked out except System
12	Power Up Status	0: System Off(default), 1: System last state before power off 2: System On
13	Energy saving-- Dry Contact (Key Card)	0: If the card is inserted, S1 and COM will be open (NC Dry Contact as Default) 1: If the card is inserted, S1 and COM will be closed (NO Dry Contact)
14	Freeze Protection	0: Disable (Default) 1: Enable
15	Programmable	1: non-programmable 2: Timer on/off (Default) 3: Programmable 4: Timer + Programmable
16	Preheat Temp.	21-50C(Default=38)
17	Minimum setpoint	5-18C (Default value=5C)
18	Cooling Setpoint setback	22-32C(Default=28)
19	Maximum setpoint	20-35C (Default value=35C)
20	Heating Setpoint setback	10-21C(Default=18)
21	Cooling only	0: Cool, Heat & Ventilation (Default) 1: Cool & Ventilation

### Table Explanation

**1-Selectable System Type:** control 2-pipe fan coil unit only

**2-Auto Mode:** you can set your 2-pipe system running as manual or auto season changeover

**3-Sensor Type:** 1: Internal sensor only. 2: external sensor only 3: the external sensor attaches to water pipe for measuring the water pipe temperature to change mode between Heat and Cool automatically, this function is **only** available under 2-pipe Fan coil (Option 1=0) and auto system (Option 2=1) at the same time System works in cooling mode if the water temperature is less than or equal to certain temperature (Default as 18°C see option 10), and work in heating mode if the water temperature is higher than or equal to certain temperature (Default as 22°C, see option 9).

**4-Fan Control:** when the room temperature reaches setpoint, you can set the fan stop running or continuous blowing

**5-Unoccupied Status:** when the hotel card is pulled out, the unoccupancy status will be: 0: no output; 1: thermostat will work in energy saving mode with setback setpoint, fan will run at low speed

**7-Display Temperature adjustment:** calibrate the room temperature by the range from -4C to 4C


**8-Dead Band:** the cool/heat will be only activated if differential temperature between setpoint and room temperature  $\geq$  the dead band. For example, under cooling mode, the setpoint is 25C with dead band=1C, the cool air will be only available if the room temperature  $\geq$  26C.

**9&10- Auto Heat/Cool Mode pipe temperature:** **Only** available when option 01 =0, option 02 =1 and option 03 =3 at the same time. means the system will work as auto changeover under 2-pipe system. The fan will be only activated if the external sensor measure water in the fan coil pipe is hot or cold enough, this is for anti-freezing air blow under heating mode if the pipe water is not hot enough (temperature set range 21~40C), also for energy saving under cooling mode if the pipe water is not cold enough (temperature set range 10~20C)

**11-Keypad lock:** can be set to 4 types for different people authorization, the symbol  will show on the screen .

**12-Power Up Status:** when the electricity power is failure and back again, the thermostat will follow three types: 0: keep system off; 1: keep the system original status before the power failure. 2: switch the system on automatically

#### 13-Energy Saving-Hotel Card function

A dry contact (such as hotel key card) can activate the energy saving mode with icon  appearing on screen.

**14-Freezing protection:** when thermostat is in OFF mode while the acquired temperature is below 6C, the thermostat will start heat mode until the temperature rises to 8C

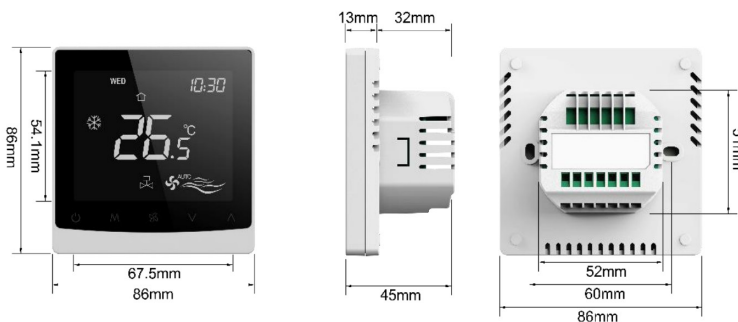
**17&19 Temperature Limited:** you can set the Minimum cooling and Maximum heating setpoint to save energy

**18&20** under Energy saving mode (when option 13 activates), the thermostat will set the setpoint as setback temperature for energy saving.

**21- Cooling Only:** you can choose if you need heat mode in thermostat

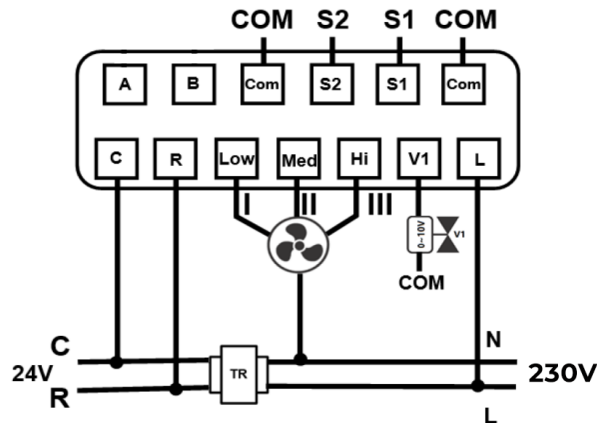
**22,23 : Not Available for this model, DO NOT CHANGE ANY VALUE!**

### Dimension



**Wiring Diagram**

L,N is 230 VAC Power supply !



**CRF1-T-FC03**

**2-pipe:**

V1,COM: Cool/Heat 0-10V valve

S1,COM: Dry contact

S2,COM: Remote sensor

R,C: 24V Power supply

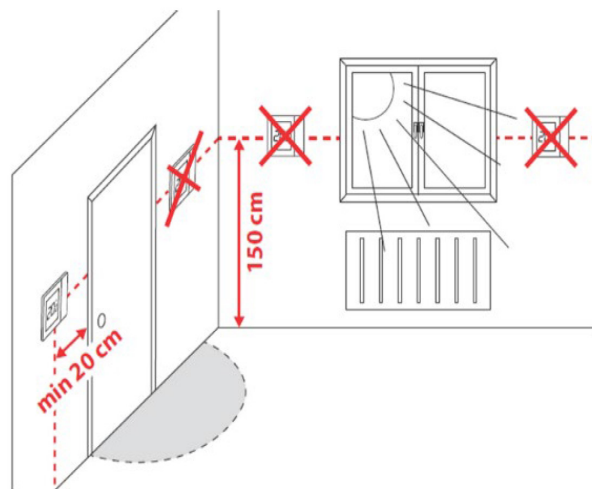
Terminal Definition: 1: C; 2:R; 3:Low; 4: Med; 5: Hi; 6:V1; 7: L

For example, CRF1-T-FC03, the fan is 230V/24V power supply 3-speed ON/OFF signal. please connect 230V/24V Live to the "L" so that the 24V thermostat can transfer the 230V/24V voltage to the 3-speed fan.

Which means what voltage you input to L, and the L will give the same voltage to the 3-speed fan.

**Mounting and Installation**

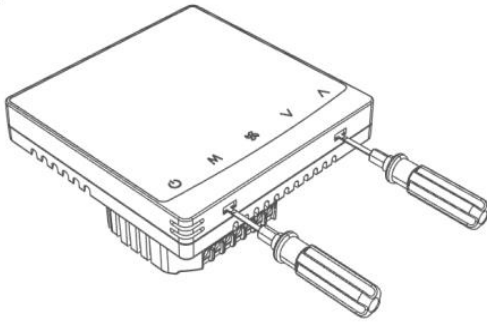
Mount the room thermostat on the conduit box. Do not mount on a wall in niches or book shelves, behind curtains, above or near heat sources. Mount about 1.5 m above the floor.



Devices must be mounted on clean, dry indoor place without direct airflow from a heating / cooling device, and not be exposed to dripping or splashing ,Before removing the front cover, disconnect the power supply. Wiring, protection and earthing must be installed in compliance with local regulations.

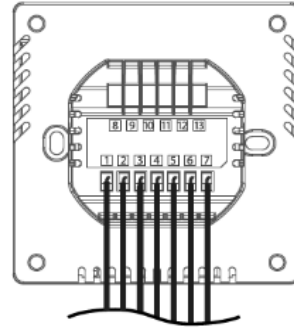
**Installation**

1

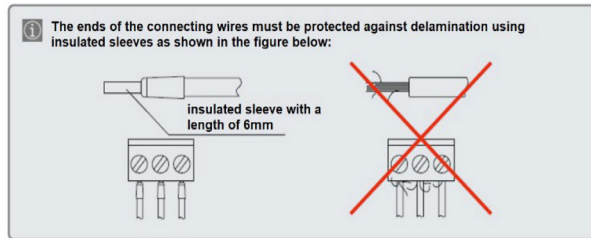


Remove the front cover by prying hooks with flat screw driver at the bottom of the front panel

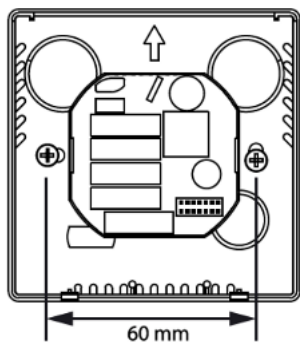
2



For the convenience of installation, the first step is to wire the volt-free wires, low-voltage wires then high voltage wires. Check the wires are property connected.

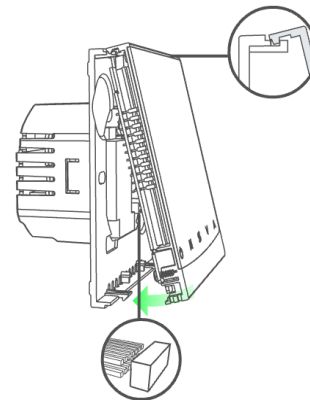


3



Flush mounting in a 60mm wall box. Make sure the back cover is in the appropriate position (according to the arrow on it)

4



Fit the front part of the casing to the top edge and make sure the pins are properly positioned. Push the front of the casing until you hear positive click.



**Disposal**

The device is considered electronic equipment for disposal in terms of the applicable local Directive and may not be disposed of as domestic garbage.

- Device disposal through channels provided for this purpose.
- Comply with all local & currently applicable laws & regulations.