T15PIT-V1-S1-F3 Modulating Digital Thermostat

Installation and operation instructions

3 Speed, Heat/Cool, Proportional-Integral control

T15PIT-V2-S1-F3 modulating digital thermostats are designed to provide Proportional-Integral (PI) modulating control in 2-pipe or 4-pipe fan coil units, zoned commercial heating, Ventilating and various heating and cooling applications. This thermostat can provide modulating analog 0-10V or 0-20mA control signal.

Technical Data

Power…….24V AC 50HZ/60Hz
Temperature setting range……..5℃-45℃
Temperature display range……..0℃-60℃
Accuracy……. 0.5℃
Ambient temperature-operation…….0℃~+50℃（32℉~122℉）
Ambient temperature-transport……..-10℃~+60℃（14℉~140℉）
Terminal output:
On/off Output load…….220V,3A
Modulating output…….0-10V; 0-20mA
Temperature input: thermostat built-in sensor and external sensor

Features

- New vertical design, crosswise installation or vertical installation
- Optional temperature display of Celsius or Fahrenheit scale
- Optional 3 kinds of heating mode
- 3-speed fan control
- Display shows both set points and room temperature simultaneously
- Separately heating and cooling temperature setting
- Permanent user setting retention during power loss, no batteries are required

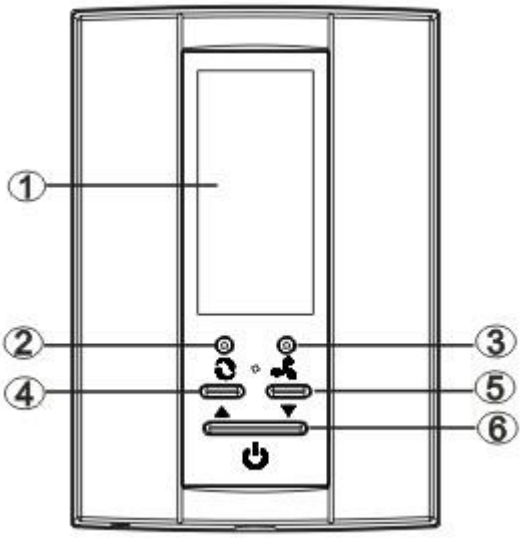
IMPORTANT SAFETY INFORMATION:

- Always turn off power at the main power source by unscrewing fuse or switching circuit breaker to the off position before installing, removing, cleaning, or servicing this thermostat.
- Read all of the information in this manual before installing this thermostat.
- Only a professional contractor should install this thermostat.
- All wiring must conform to local and national building and electrical codes and ordinances.
- Use this thermostat only as described in this manual.

Button and Display

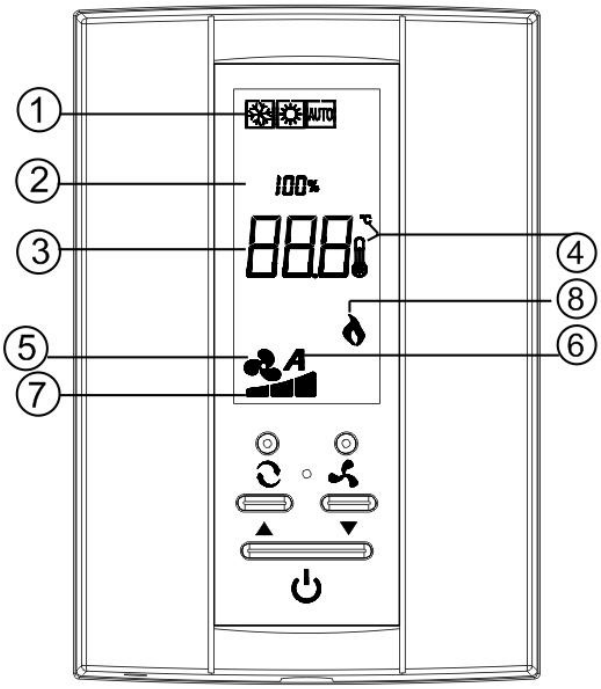
Thermostat Buttons and Switches

① Display area
② System button (COOL, HEAT , AUTO mode)
③ Fan speed option button (HI MED LOW AUTO)
④ Raise button
⑤ Lower button
⑥ Power button



The Display

① Shows thermostat system mode
② Shows thermostat proportional-Integral output percentage or setting temperature
③ Shows measure room temperature or setting temperature
④ Shows temperature unit and temperature mark
⑤ Fan mark
⑥ Auto fan mark
⑦ Shows fan speed option
⑧ Heating output mark

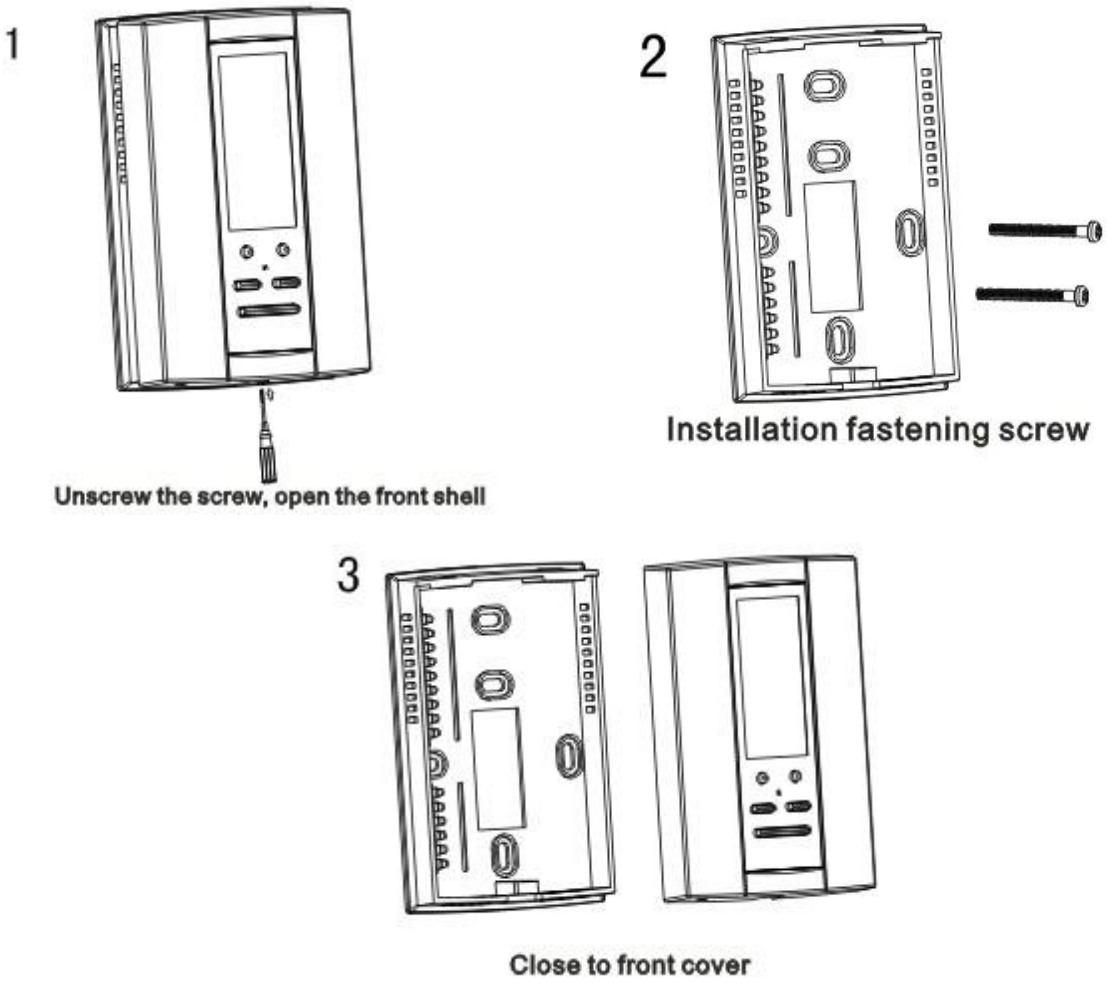


INSTALL THE THERMOSTAT

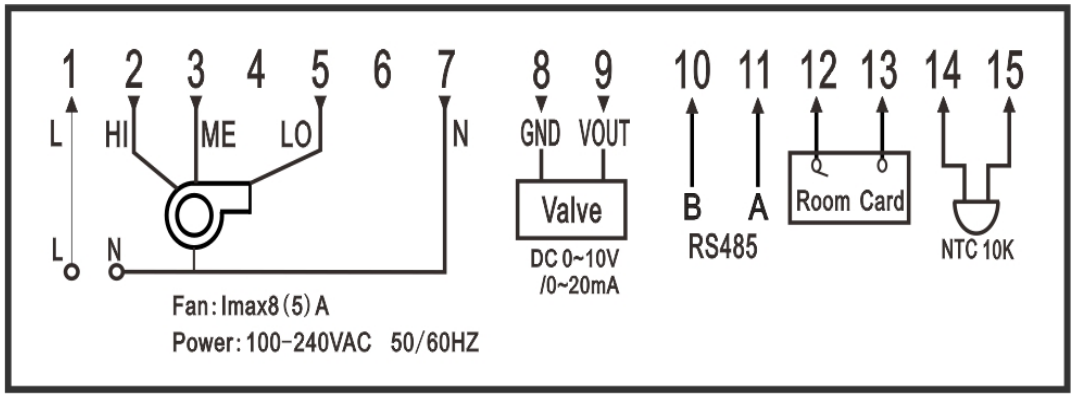
ATTACH THERMOSTAT BASE TO WALL

WARNING: ELECTRICAL SHOCK HAZARD

- ***Turn off power at the main service panel by removing the fuse or switching the appropriate circuit breaker to the OFF position before removing the existing thermostat.***



WIRING DIAGRAM



About wiring terminal description

Terminal 1: connect fan and aux heating switch power

Terminal 2 3 4: Fan output terminal

Terminal 5 6: Aux heating switch terminal, NO connect open, NC connect close

Terminal 7 8: thermostat power 24VAC

Terminal 9 10: Analog VOUT1 0-10V/0-20mA, output terminal, heating valve

Terminal 10 11: Analog VOUT1 0-10V/0-20mA, output terminal, cooling valve; terminal 10 is COM terminal
Terminal 12 13:Room card, 0-5V
Terminal 13 14: External sensor, NTC10K
Terminal 13 is COM terminal

4 pipe system: VOUT1, control heat pipe, connect the heating valve
VOUT2, control cool pipe, connect the cooling valve

2pipe system: VOUT1 terminal is common, control the water valve

Configuration Menu operation

The configuration menu allows you to set certain thermostat operating characteristics to your system or personal requirements. Switch off the thermostat, long press button ↻ more than 3 seconds to enter the configuration menu, The display will show the first item in the configuration menu 1. Press ↻ button to shift to the next menu item, use ▲ or ▼to select. To exit the menu , pressing power button to switch off the thermostat. Thermostat will exit the configuration menu if no buttons are pressed within 20 seconds. The configuration menu chart summarizes the configuration options. An explanation of each option as follows:

Item	Press buttons	Displayed (factory default)	Press▲、▼to select	Description
1	↻ For 3 seconds	CL (0)	-4 --- +4	Select temperature display adjustment higher or lower
2	↻	AH (35℃)	20℃—45℃	Select maximum temperature limitation
3	↻	AL (5℃)	5℃—20℃	Select minimum temperature limitation
4	↻	FC(℃)	℃/℉	Select temperature unit
5	↻	bL（2）	1/2/3	Select display backlight mode 1: without backlight 2:without any button, backlight will light off after 10 seconds 3: backlight will keep on always
6	↻	rE (rE)	rE/rd	Memorize option before power loss rE: With memorize option before power loss rd: without memorize option before power loss
7	↻	LA (ON)	ON/OFF	Fan stop option ON: Fan will not stop if there is no call for heat or cool OFF: Fan will stop with the valve if there is no call for heat or cool
8	↻	CH (4)	4/2	Control system option 4: 4 pipe system 2: 2 pipe system
9	↻	CA(18℃)	10℃- 18℃	Select energy-saving temperature for heating

10		CC (25℃)	(25℃-30℃)	Select energy-saving temperature for cooling
11		LE (SC)	SC/OC/OO	Activate energy saving mode option SC: with room card, activate the energy mode by open circuit OC: with room card, activate the energy mode by close circuit OO: without room card function
12		LI (0)	0/1/2	Temperature display option 0: Show setting temperature and room temperature 1: only show room temperature 2: only show setting temperature
13		d0(5℃)	1℃- 10℃	Select Proportional band
14		d1 (5)	0 — 10	Select integral action time
15		d2（2）	1/2/3	Aux heating mode 1: Proportional-Integral heating 2:Proportional-Integral and Aux heating simultaneously 3: Aux heating
16		d3(2)	0/1/2	Temperature sensor control option 0: Return air temperature sensor active 1:Room temperature sensor active 2 :Mix temperature sensor active

Note: 1. Only when you select 3 for item 15, item 12 is valid

2. Only when you connect the external sensor, the system mode can be changed to heating, cooling, and AUTO mode. In AUTO mode, if the temperature differential is 5℃ between inlet air temperature and room temperature, the thermostat will switch system mode automatically. When the inlet air temperature is higher 5℃ than the room temperature, will switch to heating mode, conversely will switch to cooling mode. If in AUTO mode and break off the external sensor, the system will switch according to the temperature differential.

3.System mode

Cooling mode: Proportional-Integral control cooling

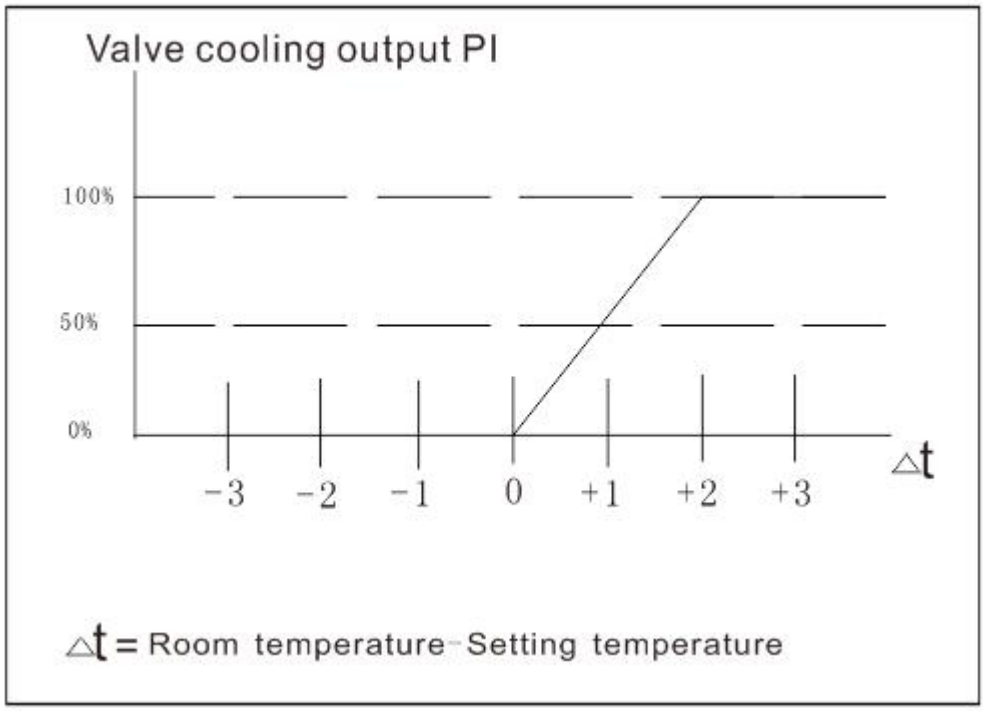
Heating mode: Proportional-Integral control heating, Aux heating, Proportional-Integral and Aux heating simultaneously(two stage heating)

Thermostat Function Description

Cooling mode（Proportional-Integral（PI） control cooling）

Example: P-band is 2℃

The valve cooling output PI and the temperature differential(room temperature and setting temperature) as following picture,



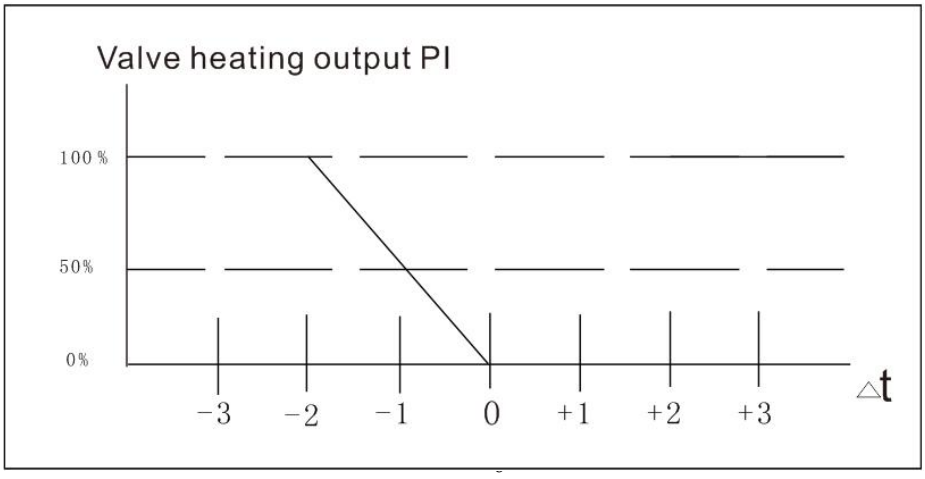
If we set the P-band is 2℃, when the room temperature is higher 2℃ than the setting temperature, the terminal 11 will 100% output, the cooling equipment actuator will 100% open; when the room temperature is equal or lower than setting temperature, the terminal 11 will stop output(0% output), the cooling equipment actuator will fully close. The LCD will display the current output PI value.

※ PI value =△t/P-band

Heating Mode

Proportional-Integral（PI）control heating

Example: P-band is 2℃



If we set the P-band is 2℃, when the room temperature is lower 2℃ than the setting temperature, the terminal 9 will 100% output, the heating equipment actuator will 100% open; when the room temperature is equal or higher than setting temperature, the terminal 9 will stop output(0% output), the cooling equipment actuator will fully close. The LCD will display the current output PI value. In this mode, the aux heating terminal 6 will not output, means without aux heating.

Switch control heating(Aux heating)

This is an aux heating function, when the room temperature is lower over 1℃ than the setting temperature, terminal 6 will have output, will open the aux heating; when the room temperature is higher 1℃ than the setting temperature, terminal 6 will stop output, will close the aux heating.

Proportional-Integral and switch (aux heating) control heating simultaneously

When the room temperature is lower below 3℃(P-band plus 1℃) than the setting temperature, the terminal 9 will start output according to the PI valve and control the valve; when the room temperature is lower 3℃（P-band plus 1℃）, the terminal 6(aux heating terminal) will start output, and the aux heating mode open; When the room temperature is only lower 2℃(P-band) than the setting temperature, the aux heating terminal close, the valve still is control by the PI value.

Fan speed instruction

Continuously press button, you can select HI speed, MED speed, LOW speed and AUTO speed, the LCD will display corresponding marks. If you select the AUTO speed:

Cooling mode: if the room temperature is higher or equal 3℃than the setting temperature, the fan will run HI speed; if the room temperature is higher or equal 2℃ and lower or equal 3℃ than the setting temperature, the fan will run MED speed. Other will run LOW speed.

Heating mode: if the setting temperature is higher 3℃ than the room temperature, the fan will run HI speed; if the setting temperature is higher or equal 2℃ and lower or equal 3℃ than the room temperature, the fan will run MED speed. Other will run LOW speed.

CUSTOMER ASSISTANCE

After reading this guide, if you have any question about the operation of your thermostat, please contact your installer or service provider.