

TF428S Series Digital Thermostat

Fan Coil Unit Control

SPECIFICATION DATA



General

TF428WNS and TF428WNS/U digital thermostats are designed for 3-speed fan and valve control in a fan coil system, including:

- 2-pipe cooling only/heating only/manual changeover
- 4-pipe cooling/heating manual/automatic changeover
- Ventilation mode
- Manual or automatic 3-speed fan control
- Water valve on/off control

Features

- Memorized time off
- Cycle Per Hour (CPH)
- Random startup
- LCD display with simple user interface
- Room temperature or setpoint temperature display selectable
- Manual or automatic fan speed selectable
- Temperature units in either °C or °F
- User setting can be stored when power loss
- Freeze protection function available
- Keypad lock options

Specifications

Rated voltage& Frequency	220/230VAC, 50/60Hz
Power consumption	<2W
Control	PI, On/off output
Accuracy	±1°C at 21°C
Auto cycle times	100,000 times
Manual cycle times	10,000 times
Protection class	IP20
Set point range	10 ~ 32°C
Display range	0 ~ 37°C
Ambient operating limits	0~ 49°C
Ambient storage limits	-30 ~ 60°C
Humidity limits	5~90% RH, non-condensing
Action type:	1
Pollution degree	2
Protection against electric shock class	Class II
Electronic control software class	Class A
Rated Impulse Voltage:	2500V
Maximum temperature for relay wiring	155°C
Wire Sectional area (Recommendation)	1.0~1.5mm ²
Applied altitude up to 2000m above sea level	

Rating capacity

Working current for the whole product : 4(3)A
 4A: When the load of the thermostat is resistance
 3A: When the load of the thermostat is inductance
 For Fan load 4(2)A
 4A:when the load is resistance;
 2A:When the load is inductance
 For Valve load 2(1)A
 2A: when the load is resistance;
 1A: when the load is Inductance

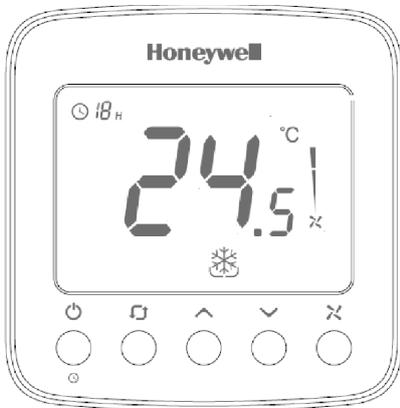
The valve need have overtravel-limit organ to turn off the load.

Model Selection

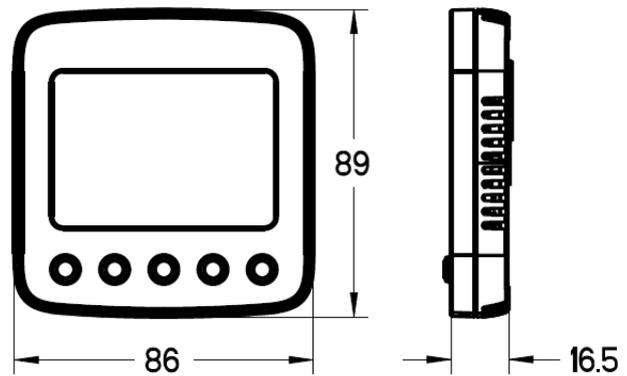
Model Number	Backlight	Application	Power Supply	Ventilation Mode	Energy Saving Mode	Package
TF428WNS/U	White	2/4 pipe FCU	220/230Vac; 50/60Hz	Y	Y	Unit Package
TF428WNS	White	2/4 pipe FCU	220/230Vac; 50/60Hz	Y	Y	Bulk Package

Product Design

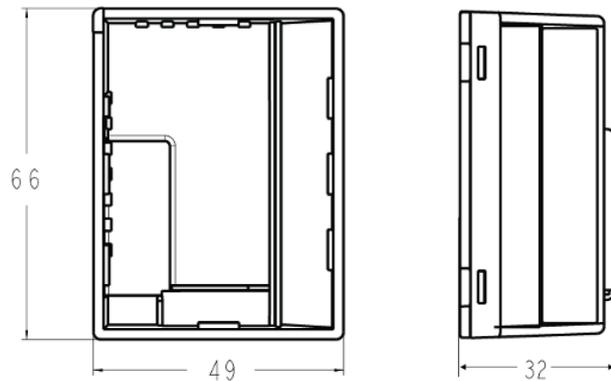
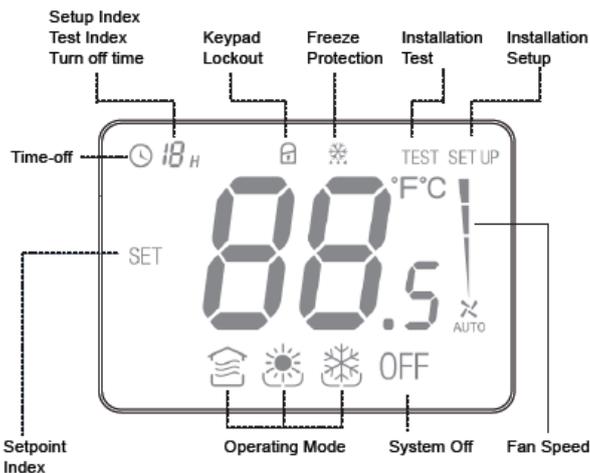
Thermostat appearance



Dimensions (mm)



LCD display



Function

Valve Control

Thermostat measures the room temperature via integrated sensor and maintains the setpoint by delivering on/off valve control command outputs.

The fan setting can be selected as manual or automatic 3-speed operation. When in "manual" mode, the fan is switched to the selected speed via control output FH (high), FM (Medium), FL (Low).

While in "automatic" mode, fan speed depends on the difference between room temperature and setpoint. When room temperature reaches the setpoint, the valve will be closed, and the fan will be closed in the meanwhile.

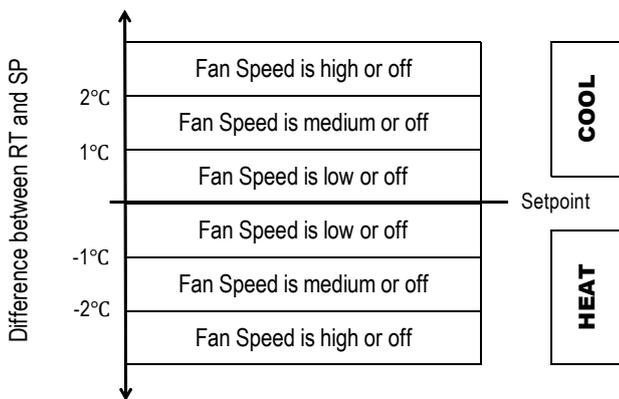


Fig. 1. Fan Speed Ramping Control Algorithm

Memorized Time Off

The time off feature will automatically turn off the thermostat after a selectable amount of time. To change the time setting, press and hold the power button for more than 3 seconds and press "up" and "down" button to change the value when the thermostat is working.

NOTE: The setting range is from 0 to 12 hours. The step is 1 hour and the default value is 0.



Backlight

To turn on the backlight, press any key. The backlight will timeout 8 seconds after the last key is pressed. When in ISU and Installation test mode, the backlight will timeout 60 seconds after the last key is pressed.

Keypad Lockout

Keypad lockout can be set in ISU or over Modbus. The default status is "all keys available". Keypad lock can be optioned to "mode button locked", "Fan and mode buttons locked", "all buttons (except power button) locked" and "all buttons locked".

Temperature Display

The displayed temperature can be set to room temperature or setpoint. The setting can be changed during ISU (Installation Set Up) process.

Cycle Per Hour (CPH)

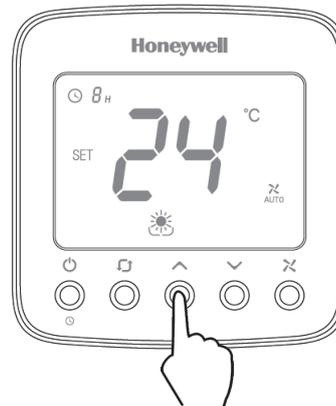
CPH function enables the thermostat to open the valve several times per hour as the room temperature gets close to the setpoint.

The value can be changed in the ISU, the default values are 4 for heating and 3 for cooling.

Operating Mode

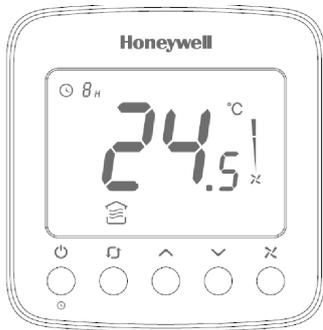
Comfort Mode

In comfort mode, the setpoint and fan speed can be changed by pressing corresponding buttons. Comfort mode including 2-pipe cool only/heat only/manual changeover and 4-pipe manual/auto changeover applications.



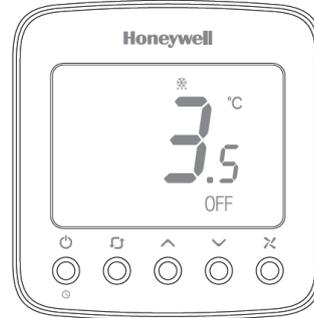
Ventilation Mode

Press “mode” button to enter “ventilation” mode. In “ventilation” mode, no output for valve while the fan will operate at selected fan speed.



Freeze Protection Mode

Freeze protection can be selected as disabled or enabled (default) in the ISU. In freeze protection mode (only in heating applications), when thermostat is off and the temperature is below 6°C, the thermostat will activate heating mode until the temperature rises to 8°C.



Installation and Wiring

TF428 Series can be installed in standard 86 size junction box directly.

⚠ The screws must be locked tightly to avoid wire break off from the terminals.
The temperature of mounting box and wall should be in the operating temperature range.

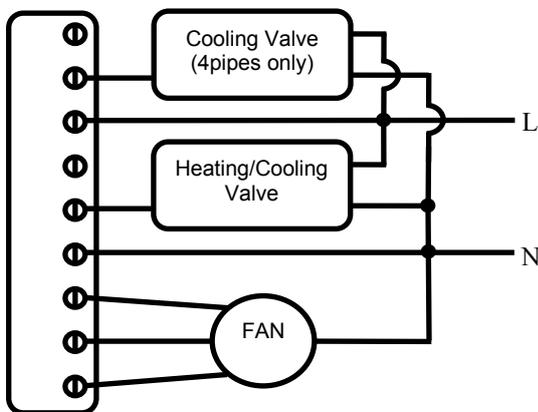
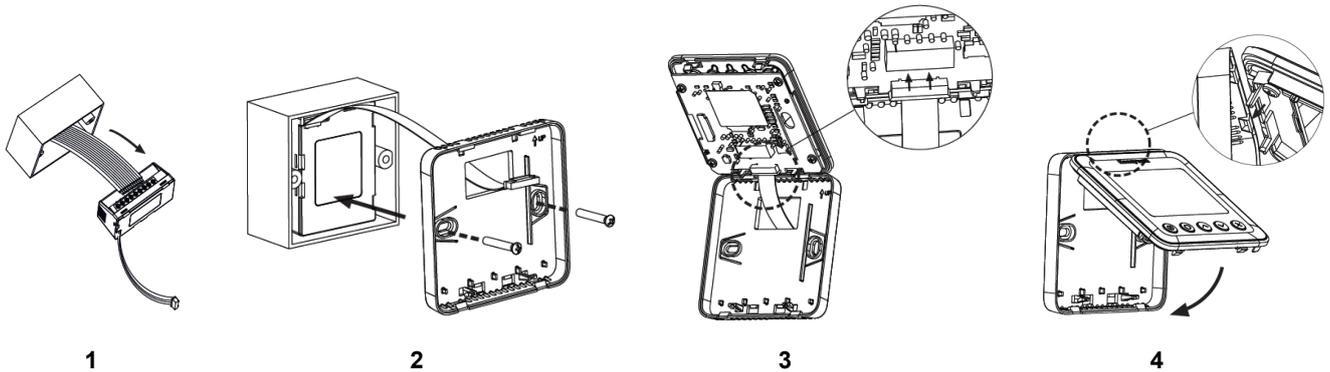


Fig 2. Honeywell VC4013/VN4013/VS4016 wiring

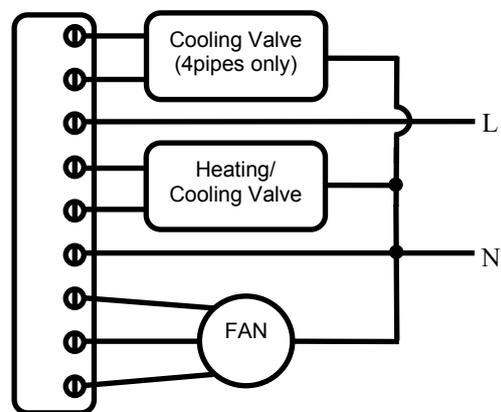


Fig 3. Honeywell VC6013/VN6013 wiring

Terminal Designations

Terminal	Description
vC2	Cooling valve close(connected when in 4-pipe application only)
vO2	Cooling valve open(connected when in 4-pipe application only)
L	Live wire
vC	Heating/Cooling valve close
vO	Heating/Cooling valve open
N	Neutral wire
fH	2 pipe_VC4013/VC6013: valve open 4 piep_VC4013 Heating valve open
fM	Line wire
fL	Neutral wire

ISU (Installation Setup)

Press and hold the “mode” and “up” buttons together for more than 3 seconds to enter or exit ISU. Change the ISU code by pressing the “mode” button and then change the option setting by pressing the “up” and “down” button refer to the following introduction.

ISU Code	Description	Options
1	System Type	0 Heating only
		1 Cooling only
		2 Two pipes heating/cooling manual (Default)
		4 Four pipes manual
		5 Four pipes auto
2	Temp. Scale	0 °F
		1 °C (Default)
3	Fan Control Type	0 Auto only
		1 Manual only (3 speed: Low→Med→High→Low)
		2 Users can choose auto or manual (Default)
4	Switching Differential for 4-pipe Auto Changeover With Single Setpoint	1°C (2°F)
		1.5°C (3°F)(Default)
		2°C (4°F)
		3°C (5°F)

ISU Code	Description	Options
5	CPH (Heat)	1~12 4(Default)
6	CPH (Cool)	1~6 3(Default)
7	Display Temp. adjustment	-2~2°C, 0.5°C. Default 0°C (-4~4°F, 1°F. Default 0°F)
8	Temp. Display	0 room temp. (Default)
		1 set point
9	Heating Range Stops	10~32°C. Default 32°C (50~90°F. Default 90°F)
10	Cooling Range stops	10~32°C Default 10°C (50~90°F. Default 50°F)
11	Keypad lockout	0 All keys are available (Default)
		1 mode button locked out
		2 Fan and mode button locked out
		3 All button locked out except power button
12	Freeze Protection	0 Disabled
		1 Enabled (Default)
13	Power Recovery status	0 OFF
		1 Previous status (Default)

Honeywell

Home and Building Technologies

Honeywell Environmental and Combustion Controls (Tian Jin) Co., Ltd
No. 158, NanHai Road
Tianjin Economic-Technological Development Area
Tianjin, 300457, P.R.C.