

# RTF228WN Digital Thermostat

## 220/230VAC, Fan Coil Control

### SPECIFICATION DATA



### 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 with power loss
- Freeze protection available
- Four keypad lock options
- Heating and cooling setpoint limitation
- Independent installation on 86 size box

### Specifications

Power supply	220/230VAC, 50/60Hz
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
Monitor 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	For Class II application
Electronic control software class	Class A
Rated Impulse Voltage	2500V
Maximum Temperature	155°C
Relay wiring	
Wire sectional area (Recommendation)	1.0-1.5mm <sup>2</sup>
Applied altitude up to 2000m above sea level	
Working current for the whole product : 3(2)A	
3A: When the load of the thermostat is resistance	
2A: When the load of the thermostat is inductance.	
For Fan Load	
3A: when the load is resistance	
1A: when the load is inductance	
For Valve load	
2A: when the load is resistance	
1A: when the load is inductance	
The valve need have overtravel-limit organ to turn off the load	

### General

The RTF228WN/U digital thermostat is designed for 3-speed fan and valve control in a fan coil system, including:

- 2-pipe cool only/heat only/manual changeover
- Ventilation mode
- Manual or automatic 3-speed fan control
- Water valve control

Besides the basic controls, RTF228WN/U featuring **CPH (Cycle Per Hour)** better maintains the room temperature to the setpoint and **memorized time off function** can automatically turn off the thermostat to save energy.

In addition, Resideo **Random start-up function** would help to maintain power grid stability.

## Model Selection

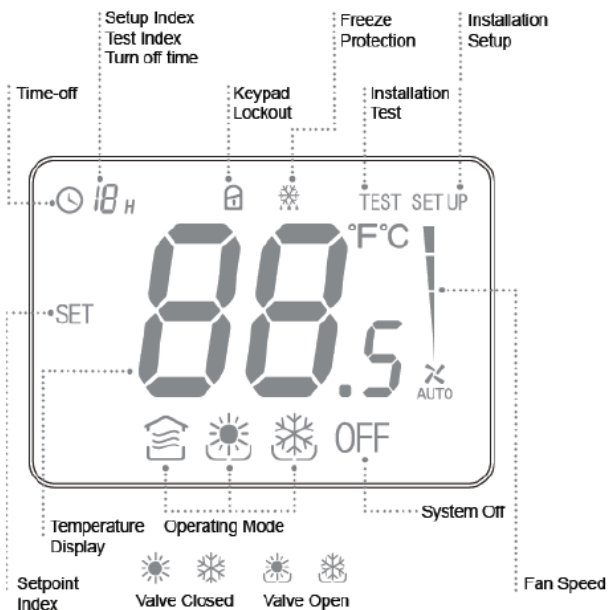
Model Number	Backlight	Application	Ventilation Mode	Automatic Fan	Package
RTF228WN/U	White	2 pipes FCU	Y	Y	unit package
RTF228WN	White	2 pipes FCU	Y	Y	bulk package

## Product Design

### Thermostat Appearance



### 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.

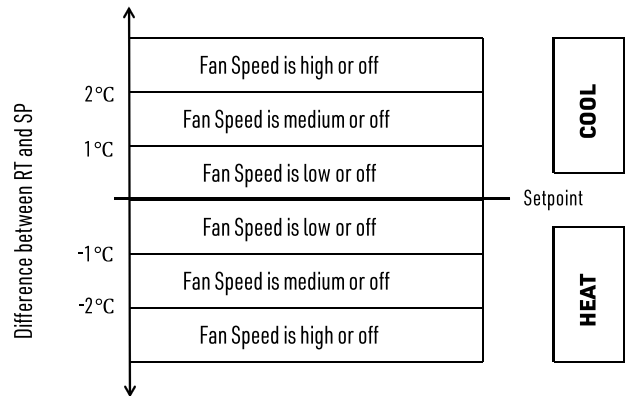


Fig. 1. Fan Speed Ramping Control Algorithm

### 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)

In order to achieve more accurate temperature control, the 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, but the default values are 4 for heating and 3 for cooling.

## 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.



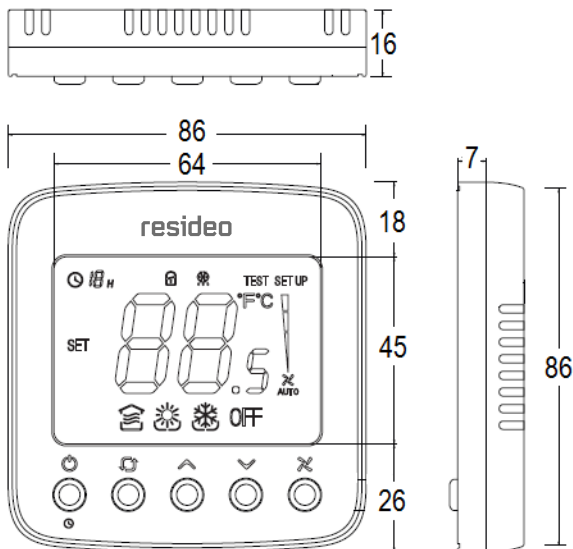
## Backlight

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 and 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".

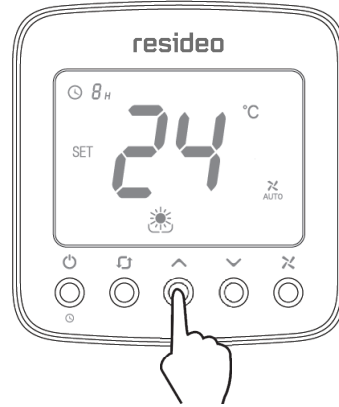
## Dimensions (mm)



## Operating Mode

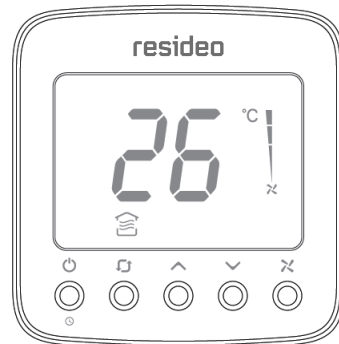
### Comfort Mode

In comfort mode, the setpoint can be changed by pressing up and down button. Applications include cool only, heat only and manual heat/cool changeover.



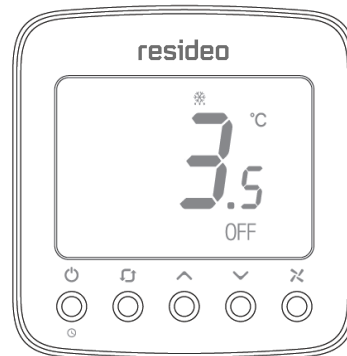
### Ventilation Mode

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 (default) or enabled 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.



## Wiring

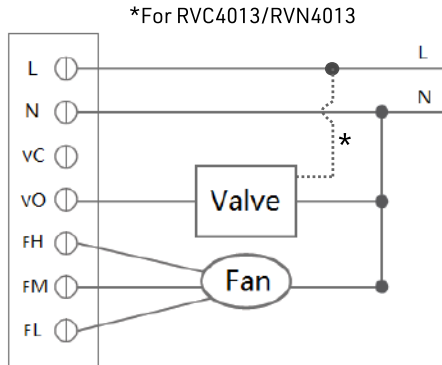


Fig. 2. RVC4013/RVN4013/RVC4043/RV4043 /RV4044 Wiring

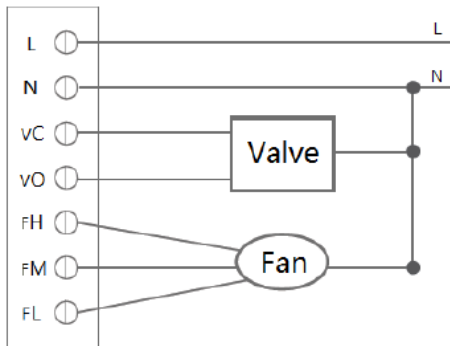


Fig. 3. RVN6013 Wiring

## Terminal Designations

Item	Terminal	Description
1	L	220/230VAC, Live wire
2	N	Neutral wire
3	vC	Heating / Cooling valve close
4	vO	Heating / Cooling valve open
5	FH	High speed fan
6	FM	Medium speed fan
7	FL	Low speed fan

## Trouble Shooting Tips

If	Then...
Heating system does not respond	<ul style="list-style-type: none"> <li>Set the mode to heating by pressing the mode button</li> <li>Make sure the temperature is set above the room temperature.</li> <li>Make sure "heat on" icon shows on the display</li> <li>Wait 5 minutes for the system to respond</li> </ul>
Cooling system does not respond	<ul style="list-style-type: none"> <li>Set the mode to cooling by pressing the mode button</li> <li>Make sure the temperature is set below the room temperature</li> <li>Make sure "cool on" icon shows on the display</li> <li>Wait 5 minutes for the system to respond</li> </ul>
The fan doesn't work	<ul style="list-style-type: none"> <li>Make sure fan mode isn't set to auto</li> <li>Check heating or cooling system works well.</li> </ul>
The mode or fan button doesn't work	<ul style="list-style-type: none"> <li>Make sure keypad is unlocked.</li> <li>Check that thermostat is on.</li> </ul>
The up or down button doesn't work	<ul style="list-style-type: none"> <li>Make sure keypad is unlocked.</li> <li>Make sure the system doesn't work in ventilation mode</li> <li>Check that thermostat is on.</li> </ul>
The system turns off automatically	<ul style="list-style-type: none"> <li>Make sure the memorized time off value isn't set to "0".</li> </ul>



### Products & Solutions

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Subject to change without notice.