HTW-81-FN7 Series

Multi-Stage Thermostat

Introduction

HTW-81-FN7-Munti-Stage thermostat is a device for indoor temperature control. It is mainly applied to heat pump system for heating/cooling, with 3 modes easily switchable: Schedule, Hold and Holiday. The device is of high reliability and practicability,and it can support up to 3H/2C system.

Features：

- Elegant design with 4.3” LCD display
- Individual programming Schedules:
  7 days*4 time periods
- Tempered glass panel with
  capacitive touch buttons
- NTC thermistor

Specification&Application

Power supply： AC24V, 50Hz
Power dissipation：2W
Dimension: 136*94*26mm
Output: <1A (Resistant load)
Temperature range: 41ºF -99ºF (5ºC -37ºC)
Display accuracy: ±0.5 ºC
Wiring: Terminals
Installation dimension: 60mm / 82mm (hole pitch)

1H/1C (conventional)
1H/2C (conventional)
2H/2C (conventional)
2H/1C (conventional)
1H/1C (heat pump)
2H/1C (heat pump)
2H/2C (heat pump)
3H/2C (heat pump)

Safety Information

To protect yourself and others from danger and to protect the device from damage, please read the safety information before using it.

Important!

- A qualified electrician with the understanding of wiring diagrams and knowledge of electrical safety should complete installation following the instructions.
- Before installation, please confirm the real voltage complying with the device’s specification. Cut off any power supply to secure the safety of people and device.
- During installation, protect the device from any physical damage by dropping or bumping. If happens, please contact the supplier for maintenance.
- Keep the device away from acid-base and other corrosive solids, liquids, gases, to avoid

damage.

- Avoid overexertion during operation, to protect device from mechanical damage.
- Read all instructions and documentation and save for future reference.

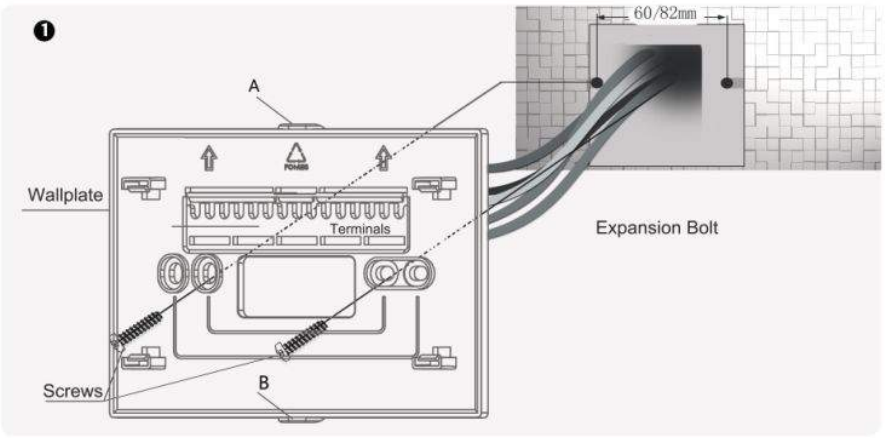
Installation & Wiring

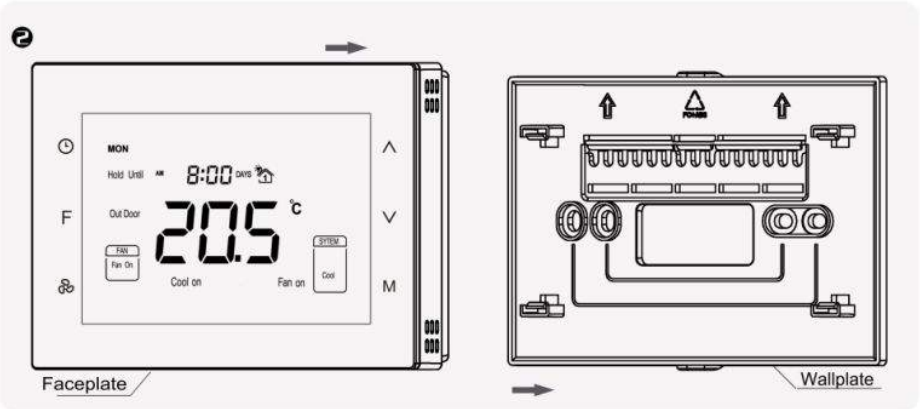
CAUTION: *Cut off power supply at circuit breaker or fuse before installation to avoid fire, shock or death!*

Installation

Step1

Seperate the Wallplate from the faceplate by pulling them at A and B, and then insert all wires into the right terminals according to the wiring diagram. Fixed the Wallplate into the junction box with M4*18mm screws. Please pay more attention to the installation direction of the Wallplate(as shown at right).





Step2

Check all the wires, and then evenly push the faceplate into the Wallplate till the Wallplate and faceplate fit tightly.

Wiring diagram

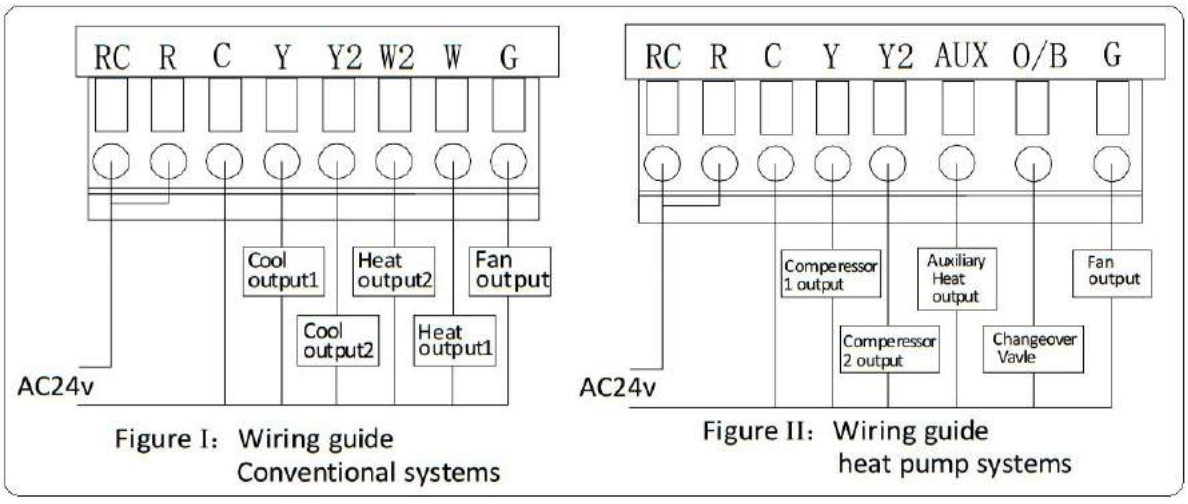


Figure I: Wiring guide Conventional systems

Figure II: Wiring guide heat pump systems

Wiring Terminals

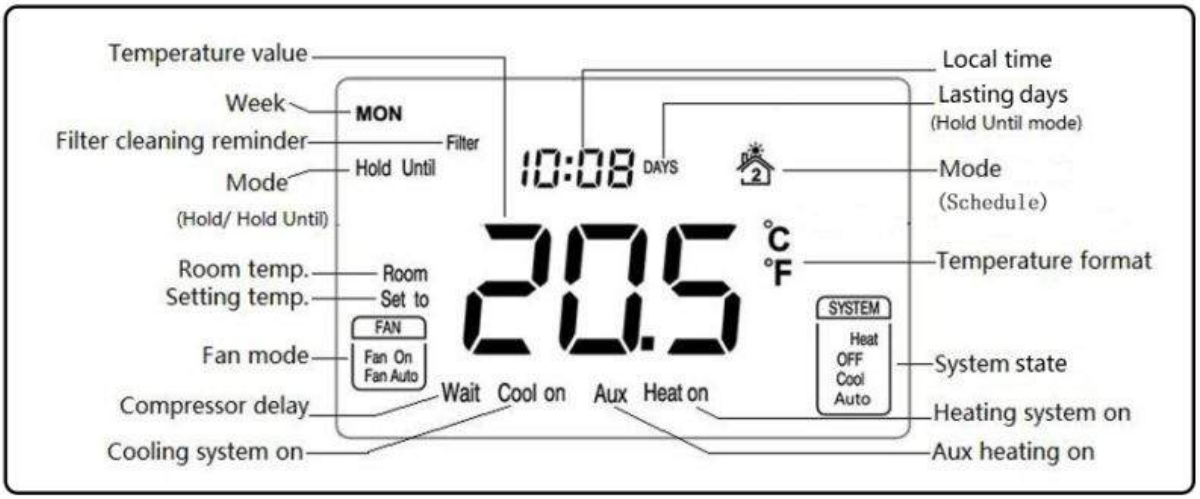
Terminals	Explanation	Remark
RC	Cooling power (two transformers)	Joined with R by jumper (one transformer)
R	Heating power (two transformers)	Joined with RC by jumper (one transformer)
W (O/B)	Heat output	Changeover valve output (heat pump)
Y	Cool output	Compressor output (heat pump)
G	Fan output	
C	24VAC common	Connect only when AC power
Y2	Cool output 2	2nd stage compressor output (heat pump)
W2(AUX)	Heat output 2	Auxiliary heat output (heat pump)

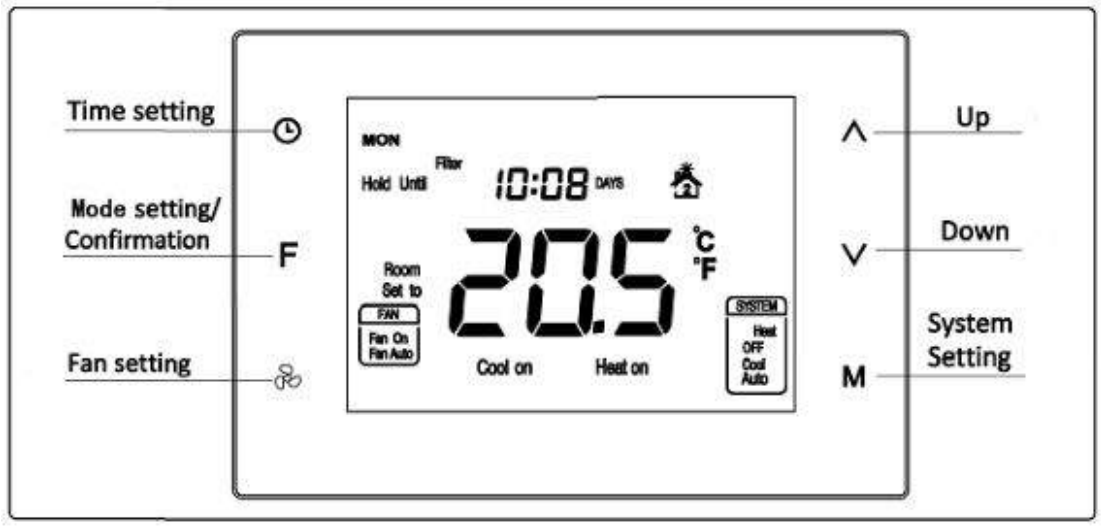
Controlling Type

No.	Type	Terminals	Wiring	Compressor delay
0.0	1H/1C (conventional)	R、G、W、Y	Diagram conventional systems	none
1.0	1H/2C (conventional)	R、G、W、Y、Y2		none
2.0	2H/2C (conventional)	R、G、W、Y、W2、Y2		none
3.0	2H/1C (conventional)	R、G、W、Y、W2		none
4.0	1H/1C (heat pump)	R、G、O/B、Y	Diagram heat pump systems	1 min (default)
5.0	2H/1C (heat pump)	R、G、O/B、Y、AUX		1 min (default)
6.0	2H/2C (heat pump)	R、G、O/B、Y、Y2		1 min (default)
7.0	3H/2C (heat pump)	R、G、O/B、Y、AUX、Y2		1 min (default)

* **Note:** Before operation, pls set the controlling type based on the real situation by referring to the Secret Menu (last page) and following the instruction.

Display & Buttons





Operation

Temperature format(℃/ ℉)

In normal display interface, press ◴ & **F** button synchronically for at least 3 sec to switch between ℃ and ℉. (*Not available in **Hold** or **Hold Until** Mode.*)

Local time setting

Press & hold ◴ for 3 sec to enter interface for local time setting. Touch ◴ to switch among Week, Hour & Minute, and then press ∨ or ∧ to set the parameters of flashing item. Press **F** once, "Set to" displayed and temperature value flashing for 5 sec. Users can choose to change the value for temperature setting. If not, press **F** again to save the time value and return to normal display.

(*Local time can not be set in **Hold Until** mode*)

System state setting

In normal display interface, press M slowly to switch among "**Heat**, **OFF**, **Cool** & **Auto**". After the state change, "Set to" displays and temperature value flash for 5 sec. Users can choose to change the value for temperature setting. If not, press **F** twice to save the change and return to normal display.

(Changed value only valid in this current Schedule, and will lose if Schedule, system state changes or power off)

- **OFF**: In this state, Heating, Cooling and Fan will all forced close. Displays keep on.
- **Auto**: In this state, a constant temperature will be kept. Device will activate/ stop heating/cooling system automatically according to the setting and room temperature.

Conventional system

- **Heat**

  Room temp.≤Setting temp.-1℃, "Heat on" displays and 1st stage heating system is on;

  Room temp.≤Setting temp.-2℃, "Heat on"& "AUX" display and 2nd stage heating system is on; *(not available for 1 stage heat system)*

Room temp.≥Setting temp., heating system stops and "Heat on" disappears from screen.

Note: 2nd heat stops and "AUX" disappears when temp. difference is less than 1 ℃.

- **Cool**

Room temp.≥ Setting temp.+1 ℃, "Cool on" displays and 1st stage cooling system is on;

Room temp.≥ Setting temp.+2 ℃, "Cool on" stays and 2nd stage cooling system is on ;

(not available for 1 stage cool system)

Room temp.≤ Setting temp., cooling system stops and "Cool on" disappears from screen.

Note: 2nd cool stops when temp. difference is less than 1 ℃.

Heat pump system

- **Heat** (Changeover valve keep closed)

Room temp.≤Setting temp.-1℃, "Heat on" displays and 1st stage heating system is on;

Room temp.≤Setting temp.-2℃, "Heat on" stays and 2nd stage heating system is on;

Room temp.≤Setting temp.-3℃, "Heat on"& "AUX" display and Aux heating system is on;

Room temp.≥Setting temp., heating system stops and "Heat on" disappears from screen.

Note: Aux heat stops and "AUX" disappears when temp. difference is less than 2 ℃. 2nd heat stops when temp. difference is less than 1 ℃.

- **Cool** (Changeover valve keep open)

Room temp.≥ Setting temp.+1 ℃, "Cool on" displays and 1st stage cooling system is on;

Room temp.≥ Setting temp.+2 ℃, "Cool on" stays and 2nd stage cooling system is on;

Room temp.≤ Setting temp., cooling system stops and "Cool on" disappears from screen.

Note: 2nd cool stops when temp. difference is less than 1 ℃.

Compressor protection

After an operation of heating/cooling system, there is a 1 min compressor off time to protect compressor. "Wait" will display on the screen if next operation is activated within the 1 min period.

Fan mode setting

Press to switch among "Fan on & Fan Auto".

- **Fan on**： Fan is always on.
- **Fan Auto**：Fan runs automatically only when heating/cooling system is on.

*(If system is in **OFF** state, the fan will always off)*

Mode setting

Press **F** to switch among "**Schedule**, **Hold** & **Hold Until** (Holiday)" modes.

- **Schedule**

Any icon from stands for one time period, and there are 4 periods can be set in one day.

➢ Press to switch among **7 days → 5+2 days → a whole week: [** MON→TUE→WED→THU →FRI→SAT→SUN→ (MON TUE WED THU FRI) → (SAT SUN) → (MON TUE WED THU FRI SAT SUN) **]**;

- Press ∨ or ∧ to change the flashing **hour**, **minute** & **temperature** value of the chosen day and time period;
- Press M to save your setting and enter into next period. Users will enter interface for setting the 1st period of Monday at the first time;
- After 4 periods have been set of one day, press ⏲ to save and enter schedule setting for the following day.
- During setting, press **F** twice or leave for 15 sec will quit and return to normal display.

Factory setting Schedules: *(Applied in Heat/Cool/Auto system)*

Periods	Time	Temperature		Fan
		Heating	Cooling/ Auto	
1	06 : 00	21.0℃	25.5℃	Fan Auto
2	08 : 00	16.5℃	29.5℃	Fan Auto
3	18 : 00	21.0℃	25.5℃	Fan Auto
4	22 : 00	16.5℃	28.0℃	Fan Auto

（Notes:In the process of time periods setting,press ❀ button to modify Fan on or fan Auto）

- **Hold**

This mode comes after "**Schedule**" by pressing **F**. In this mode, device will keep a constant temperature until next change.

- **"Hold"** & "Set to" display and temperature value flashing. Press ∨ or ∧ can change the value, and press **F** to save the setting;
- Press M can set system state;
- Press ❀ can set fan mode.

- **Hold Until (Holiday)**

This mode comes after "**Hold**"by pressing **F** again. In this mode, device will follow the setting temperature and lasting days when users are out for a holiday. And then back to follow **Schedules** after the holiday.

- **"Hold Until"** & "Set to" display and temperature value flashing. Press ∨ or ∧ can change the value, and press **F** to save the setting. Then days value flashing, users can choose from 1-365 days by pressing ∧ or ∨;
- Press M can set system state;
- Press ❀ can set fan mode.

Override temperature setting

During any Schedule period, press ∧ or ∨ can enter an interface for temperature setting. Press ∧ or ∨ to change setting temperature, and press **F** to save the change. The changed setting only valid in the current Schedule period, device will follow the original schedule in next period.

Filter cleaning reminder

"Filter" will flash on the screen to remind users of cleaning furnace filter, and 90 calendar days are the default timing. In **Schedule** mode, to press ❀ for 3 sec, "Filter" will disappear from

screen.

Sensor error

If "**FF**" flashes at temperature display area, it means the temp. sensor is out of work(short-circuit or broken-circuit), all the outputs will be forced close, and only back to normal work until the sensor circuit is normal again.

Resorting factory settings

Press & M for 3 sec, "set to" displays and temperature value flashing, then press **F** to restore factory settings.

Installation Set-Up Process-ISU

In **Schedule** Mode, long press∧and∨synchronically can enter into ISU menu, and the code is 5138. Press ∧ or ∨ can change the setting, and press M can save and switch to the following item.

Table 1

Item	Explain	Range	Default	Remark
0	Controlling Type	0.0-7.0	0.0	See table "Controlling Type"
1	(1H/1C) Differential	0.5℃/1℃/1.5℃/2℃	1.0℃	
2	Temperature calibration	-10℃~10℃	0.0℃	
3	Temperature setting upper limit	0-99.5℃	37.0℃	Upper limit value > lower limit value
4	Temperature setting lower limit	0-99.5℃	5.0℃	
5	Filter change reminder	1 /2 /30 /60 /90 /120 days	090 days	
6	Clock format	12 /24 hours	24.0	
7	Compressor protection delay	0~10min	1.0min	
8	Back light setting	ON/OF	OF	ON back-lit always on OF back-lit half bright when no operation
9	Temperature format	℃/℉	℃	
	Restore factory setting	OF/ON	OF	ON for restoring