

## 6.3 Description of Each Control Operation

### 1 Basic Function

#### 1.1 Cooling mode

##### 1.1.1 Cooling condition and process

- a. When  $T_{\text{indoor amb.}} \geq T_{\text{preset}} + 1^{\circ}\text{C}$  ( $2^{\circ}\text{F}$ ), the unit operates in cooling mode. Meanwhile, compressor and outdoor fan operate and indoor fan operates at set fan speed.
- b. When  $T_{\text{indoor amb.}} \leq T_{\text{preset}} - 1^{\circ}\text{C}$  ( $2^{\circ}\text{F}$ ), compressor and outdoor fan stop operation, while indoor fan operates at set fan speed.
- c. When  $T_{\text{preset}} - 1^{\circ}\text{C}$  ( $2^{\circ}\text{F}$ )  $< T_{\text{indoor amb.}} < T_{\text{preset}} + 1^{\circ}\text{C}$  ( $2^{\circ}\text{F}$ ), the unit keeps original operation status.

1.1.2 In this mode, the set temperature range is  $16^{\circ}\text{C} \sim 30^{\circ}\text{C}$  ( $61^{\circ}\text{F} \sim 86^{\circ}\text{F}$ )

#### 1.2 Dry Mode

##### Dry Conditions and Process

- a. When  $T_{\text{amb.}} > T_{\text{preset}} + 2^{\circ}\text{C}$  ( $4^{\circ}\text{F}$ ), the unit will operate in Cool mode, and the fan will run at low speed.
- b. When  $T_{\text{preset}} - 2^{\circ}\text{C}$  ( $4^{\circ}\text{F}$ )  $\leq T_{\text{amb.}} \leq T_{\text{preset}} + 2^{\circ}\text{C}$  ( $4^{\circ}\text{C}$ ), the unit will operate in Dry mode. In that case, the indoor fan will operate at low speed. The compressor and the outdoor fan will stop for 6 min and operate for 4min circularly.
- c. When  $T_{\text{amb.}} < T_{\text{preset}} - 4^{\circ}\text{F}$  ( $2^{\circ}\text{C}$ ), the compressor will stop working and the fan will operate at low speed.

Under this mode, the setting temperature range is  $16 \sim 30^{\circ}\text{C}$  ( $61 \sim 86^{\circ}\text{F}$ )

#### 1.3 Energy saving mode

##### 1.3.1 Drying condition and process

- a. When  $T_{\text{indoor amb.}} \geq T_{\text{preset}} + 1^{\circ}\text{C}$  ( $2^{\circ}\text{F}$ ), the compressor will be turned on and the fan will run at set fan speed.
- b. When  $T_{\text{indoor amb.}} \leq T_{\text{preset}} - 1^{\circ}\text{C}$  ( $2^{\circ}\text{F}$ ), the compressor will stop operation and the indoor fan will also stop operation after operating at set fan speed for 60s.
- c. When  $T_{\text{preset}} - 1^{\circ}\text{C}$  ( $2^{\circ}\text{F}$ )  $< T_{\text{indoor amb.}} < T_{\text{preset}} + 1^{\circ}\text{C}$  ( $2^{\circ}\text{F}$ ), the unit will keep previous operation status.

1.3.2 In this mode, the set temperature range is  $16^{\circ}\text{C} \sim 30^{\circ}\text{C}$  ( $61^{\circ}\text{F} \sim 86^{\circ}\text{F}$ ) .

#### 1.4 Heating mode

1.4.1 When  $T_{\text{indoor amb.}} \leq T_{\text{preset}} + 1^{\circ}\text{C}$  ( $2^{\circ}\text{F}$ ), the unit will operate at heating mode. Meanwhile, 4-way valve and compressor will operate. Fan will operate at cold air prevention condition;

1.4.2 When  $T_{\text{indoor amb.}} \geq T_{\text{preset}} + 3^{\circ}\text{C}$  ( $6^{\circ}\text{F}$ ), compressor will stop operation while 4-way valve will be energized. Fan will operate at blowing residual heat mode.

1.4.3 When  $T_{\text{preset}} + 1^{\circ}\text{C} < T_{\text{indoor amb.}} < T_{\text{preset}} + 3^{\circ}\text{C}$  ( $6^{\circ}\text{C}$ ), the unit will keep its previous operation status;

1.4.4 Under this mode, the temperature setting range is  $16 \sim 30^{\circ}\text{C}$  ( $61 \sim 86^{\circ}\text{F}$ ).

#### 1.5 Fan mode

- a. In this mode, compressor and electric heating pipe will stop operation and fan will operate at set speed.

b. In this mode, the set temperature range is 16°C~30°C (61°F~86°F) .

#### 1.6. Auto Mode

Working conditions and process

a. When  $T_{amb} \geq 26^{\circ}\text{C}$  (79 °F), the unit will operate in Cool mode.  $T_{preset}=25^{\circ}\text{C}$  (77°F)

b. When  $T_{amb} \leq 22^{\circ}\text{C}$  (72 °F), the heat pump unit will operate at heating mode and the cooling only unit will operate at fan mode;  
 $T_{preset}=20^{\circ}\text{C}$  (68°F) ;

When  $22^{\circ}\text{C}$  (72 °F)  $< T_{amb} < 26^{\circ}\text{C}$  (79 °F) , the unit will maintain its previous running state. But if the unit is energized for the first time, it will operate at fan mode.

### 2. Other function

#### 2.1 Swing

When the fan operates, if swing is set, the swing motor will operate; When swing stops, the louver will stop in the position at that time.

#### 2.2 Buzzer

Upon energization or operation, the buzzer will give out sound.

#### 2.3 Sleep function

a. In Cool, Energy-saving or Dry mode, 1 hour after setting Sleep function,  $T_{preset}$  will increase 1°C(2°F); 2hours later,  $T_{preset}$  will not increase 2°C(4°F) totally. Then, the setting temperature will not change, but the upper limit of setting temperature is 30°C(86°F).

b. In heat mode, 1 hour after setting Sleep function,  $T_{preset}$  will decrease 1°C(2°F); 2hours later,  $T_{preset}$  will not decrease 2°C(4°F) totally. Then, the setting temperature will not change, but the lower limit of setting temperature is 16°C(61°F).

c. In Auto and Fan mode, there is no Sleep function.

d. If Sleep function has been set, the mode change will cancel the Sleep function.

#### 2.4 Auto fan speed

a. Auto fan speed under heating mode or auto fan mode:

$T_{amb} \leq T_{preset} - 2^{\circ}\text{C}$  (4°F) High speed;

$T_{preset} - 2^{\circ}\text{C}$  (4°F)  $< T_{amb} < T_{preset}$  Medium speed;

$T_{amb} \geq T_{preset}$  Low speed;

b. Auto fan speed under cooling mode

$T_{amb} \geq T_{preset} + 2^{\circ}\text{C}$  (4°F) High speed;

$T_{preset} < T_{amb} < T_{preset} + 2^{\circ}\text{C}$  (4°F) Medium speed;

$T_{amb} \leq T_{preset}$  Low speed;

- b. Auto fan speed under energy saving mode or fan mode is as that under cooling mode.
- c. If under dry mode, the auto fan speed will be always low speed. Only LED lamp for low speed is on.

## 2.5 Alarm for Cleaning Filter

After the cumulative running of fan reaches 250h, the LED lamp of cleaning filter is on to remind customer of cleaning filter.

## 2.6 Timer Function

- a. Timer on: it can be set when the unit is turned off. Set time range of timer is 0.5h~24h. The interval of each setting is 0.5h. When timer on is reached, the unit will operate at set mode.
- b. Timer off: it can be set when the unit is operating. Set time range of timer is 0.5h~24h. The interval of each setting is 0.5h. When timer off is reached, the unit will be turned off.

## 2.7 Memory Function

When the unit is energized again after power failure, it will resume the previous operation status. If the unit is operating when power failure occurs, the compressor will be started up in 3 min later as the unit is energized again.

## 2.8 LED lamp, "Dual 8" NixieTube

- a. When the unit is operating in cooling mode, LED lamp of cooling will be on.
- b. When the unit is operating in fan mode, LED lamp of fan mode will be on and "dual 8" nixie tube will display ambient temperature. The temperature can't be adjusted.
- c. When the unit is operating at energy-saving mode, there is no LED lamp that will be on and "dual 8" nixie tube will display ambient temperature. The temperature can be adjusted.
- d. Under fan mode, the LED lamp for fan mode will be on while under dry mode, the LED lamp for dry mode will be on.
- e. When fan speed is low, medium or high, the corresponding LED lamp (indicating low, medium or high speed) will be on. If it is auto fan speed, the LED lamp of auto fan speed will be on.
- d. When timer is set, the LED lamp of timer will be on. When the unit is under heating mode, the LED lamp for heating mode will be on.

## 2.9 Set Temperature

- a. The temperature can be set by button "UP/DOWN" and the set temperature will be displayed on nixie tube. If pressing "UP/DOWN" button for long time, the set temperature will be increased rapidly.
- b. °C or °F can be switched on nixie tube by pressing buttons "UP" and "down" simultaneously for 3 seconds.

## 2.10 Button

- a. ON/OFF button is used for turning on or turning off the unit. When the unit is turned off, press this button to turn on the unit; when the unit is turned on, press this button to turn off the unit.

- b. SWING button is used for controlling swing function. If swing function is set, press this button to turn it off. If it is not set, press this button to turn it on.
- c. FANSPEED button is used for adjusting fan speed. The fan speed will be circulated according to the sequence of AUTO FAN, FANL, FANM, FANH, ATUO FAN.
- d. UP, DOWN buttons are used for increasing and decreasing temperature and timer.
- e. Mode button is used for mode switching. For heat pump unit, Mode will be circulated according to sequence of AUTO, COOL, DRY, FAN, HEAT; The HEAT mode signal will be ineffective for cooling only unit and mode will be circulated according to the sequence of AUTO, COOL, DRY, FAN.
- f. Energy-saving mode can only be set by the energy-saving button on remote controller.
- g. Sleep function can only be set by the Sleep button on remote controller.

### 3. Protection Function

#### 3.1 Freeze Protection

When the unit operates at cooling mode, if freeze protection is detected, the compressor will stop operation and indoor fan will operate at set speed. When freeze protection is removed, the unit will resume previous operation after 3 minutes later.

#### 3.2 Defrosting

When the unit starts defrosting, "H1" is displayed and LED lamp for heating will be off for 3s and blinks once.

#### 3.3 Detection of temperature sensor malfunction

- a) The ambient temperature sensor is open or short circuit: dual-8 displays F1, the cooling indicator lamp pauses 3s and blinks 1 time; it is on 0.5s and off 0.5s during blinking.
- b) The tube temperature sensor is open or short circuit: dual-8 displays F2, the cooling indicator lamp pauses 3s and blinks 2 times; it is on 0.5s and off 0.5s during blinking.
- c) If malfunctions happened together, the malfunction protection code will be circularly displayed by rotary method.
- d) If there is malfunction for temperature sensor, when the unit is on, the compressor or electric heating pipe will stop operation, the fan will stop when the compressor or electric pipe reaches the temperature point.