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Dallas, Texas, USA

# INSTALLATION/ OPERATION INSTRUCTIONS

**V0STAT54P-2 Indoor Unit**

**Non-programmable Controller**

CONTROLS

507596-02

02/2016

**THIS MANUAL MUST BE LEFT WITH THE OWNER FOR FUTURE REFERENCE**

## IMPORTANT!

**Frequent changes to operating mode may cause system malfunction. Allow at least one minute between mode changes to allow the system to stabilize.**

## IMPORTANT!

**Electrostatic discharge can affect electronic components. Take precautions to neutralize electrostatic charge by touching your hand and tools to metal prior to handling the control.**

## ⚠WARNING

**Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life.**
**Installation and service must be performed by a licensed professional HVAC installer (or equivalent) or service agency.**

## Shipping and Packing List

**Package 1 of 1 contains;**

1 – Wired Controller
1 – Installation and operation manual
2 – Plastic spacers

## General

The V0STAT54P-2 is a wired non-programmable local controller that controls up to 16 VRF indoor units. These instructions are intended as a general guide and do not supersede local codes in any way. Consult authorities having jurisdiction before installation.

## Requirements

- Four-conductor cable is required for installation.
- Be sure that power supply has been turned off before beginning installation.
- This controller should be used only as described in this manual.

- Do not install the controller on outside walls (where there is unconditioned space on opposite side of wall) or in locations where direct sunlight may be present.

## Installation

**⚠CAUTION**

**Clean controller using a clean, damp cloth. Do not spray cleanser on or around controller.**

**⚠CAUTION**

**Do not install controller in areas where harmful gases containing sulfur or other damaging agents may exist or the controller may be damaged.**

## !CAUTION

**Do not operate controller with wet hands.**

## IMPORTANT!

Read all of the information in this manual before using this controller. All wiring must conform to local and national building and electrical codes and ordinances. **This is a 12 VDC controller. Do not install on voltages higher than 12 VDC.**

- This manual provides the installation instructions for this controller. Refer to the included wiring diagram to connect the controller to the indoor unit.
- The controller is low voltage. Keep a minimum distance of 12" (305 mm) between low voltage control wire and high voltage power wires.
- Ground the shielded control wiring.
- Do not attempt to extend the shielded cable by splicing. Use Terminal Connection Block to make connections.
- Do not use a megger to test insulation.
- The controller cable length should not exceed 66 ft.

1. Remove the controller from the back cover using a flat head screw driver as shown. See figure 1.
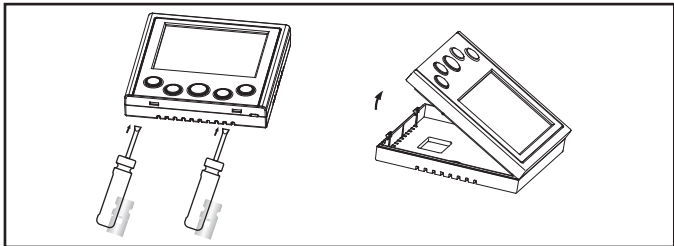


**Figure 1. Remove Controller from Back Cover**

2. Adjust the length of the two plastic spacers as needed to allow the controller to be mounted flush with the wall. *NOTE – Be sure to provide for future maintenance by allowing enough slack in the wiring to allow the controller to be removed from the wall if needed.* See figure 2.
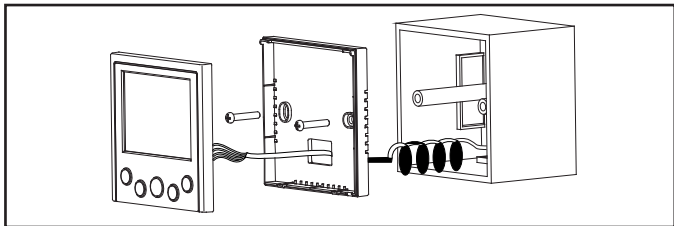3. Attach the back cover using field-provided screws.



**Figure 2. Installation**

4. At the controller, wire the field-provided 4-conductor shielded cable to X / Y / GND / 12V terminal of the controller. See figure 3.
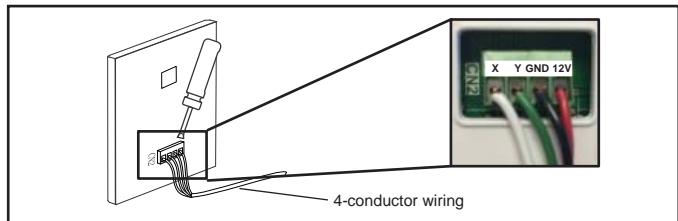


4-conductor wiring

**Figure 3. Connection at Controller**

5. Reattach the controller to the back cover.
6. Connect the controller to one or more indoor units, up to 16. Use 4-conductor shielded cable to connect to the first indoor unit. *NOTE - Wiring is polarity sensitive.* See figure 4.



*NOTE - Connect up to 16 indoor units*
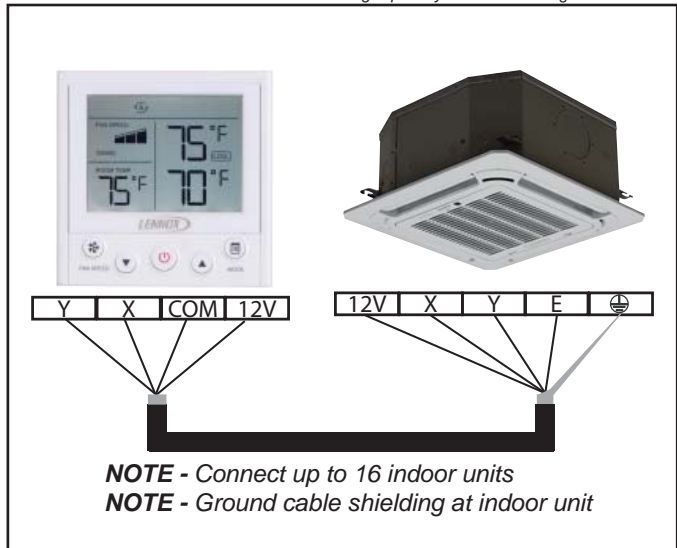*NOTE - Ground cable shielding at indoor unit*

**Figure 4. Wire to one Indoor Unit**

7. Daisy chain 3-conductor control wiring to each additional indoor unit using the X Y E terminals in the electrical control box of the indoor unit. Do not daisy chain 12V power cable. See figure 5. *NOTE - Wiring is polarity sensitive.*
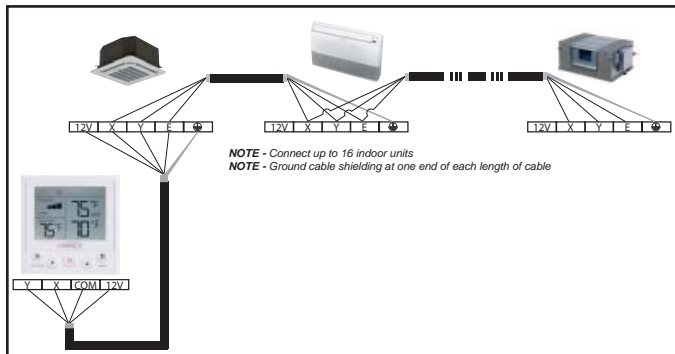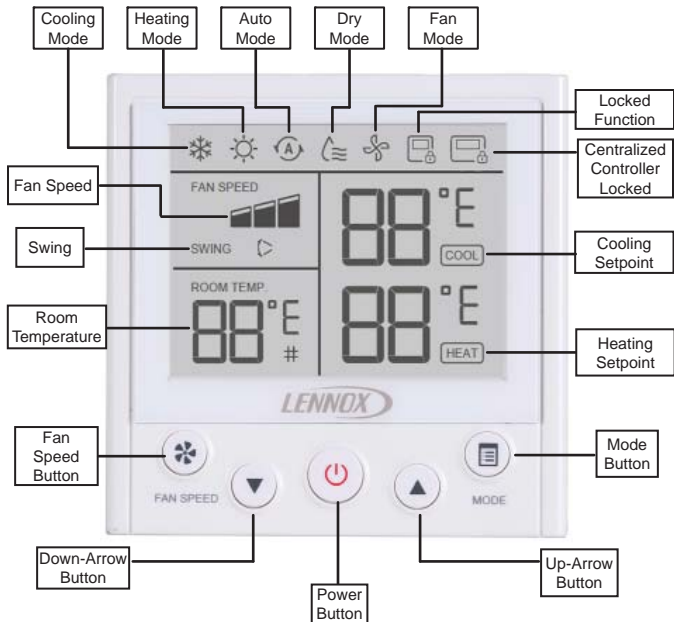


*NOTE - Connect up to 16 indoor units*
*NOTE - Ground cable shielding at one end of each length of cable*

**Figure 5. Wire Multiple Indoor Units**

## Specifications

**Table 1. Specifications**

| Input voltage | 12 VDC |
|---|---|
| Ambient temperature | 23~110°F (-5~43°C) |
| Ambient humidity | RH40%~RH90% |

## Description of Buttons



- Cooling Mode
- Heating Mode
- Auto Mode
- Dry Mode
- Fan Mode
- Locked Function
- Centralized Controller Locked
- Fan Speed
- Swing
- Room Temperature
- FAN SPEED
- SWING
- ROOM TEMP.
- COOL — Cooling Setpoint
- HEAT — Heating Setpoint
- LENNOX
- Fan Speed Button
- FAN SPEED
- Down-Arrow Button
- Power Button
- Up-Arrow Button
- Mode Button
- MODE

## Operation

*NOTE - Indoor units connected to a local controller may also be controlled by a centralized controller. Indoor units respond to the last command sent. It is recommended that indoor units be controlled from a single source of control, either local controller or centralized controller but not both, to avoid conflicts in commands.*

After powering on the controller, wait 30 seconds for initialization The indoor unit cannot be controlled by the controller until initialization is complete.

### Start/Stop Operation
Press the power button.
- Controller ON: LED display lit.
- Controller OFF: LED display not lit.

### Set Operation Mode
Press the Mode button to scroll through the mode selections.
- Cool – System operates in cooling mode.
- Heat – System operates in heating mode.
- Auto -- System operates in auto mode.
- Dry -- System operates in dehumidification mode. *NOTE - fan speed cannot be adjusted during dry mode.*
- Fan – Fan only, no heating or cooling.

### To set (or change) the room temperature setting (setpoint)
Press the up-arrow & down-arrow buttons to adjust the setpoint.

When in Auto mode, separate heating and cooling setpoints can be set. Press the Mode button to switch between heating and cooling setpoints.

**Louver Swing Operation**

Press both the up-arrow button and the down-arrow button simultaneously to start louver auto swing operation. The louvers will move automatically until stopped.

Press both the up-arrow button and the down-arrow button simultaneously again to stop the swing operation. The louvers will remain in position where stopped. Do not move louvers manually; only move louvers using the auto swing function. *NOTE - Not available on all indoor unit types.*

**Lock Operation**

Some operational functions can be locked. See table 2
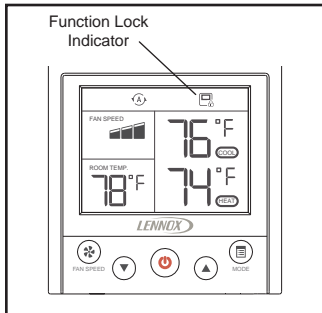


**Figure 6. Function Lock Indicator**

**Table 2. Lock Operation Functions**

| Lock Type | Operation<br>Simultaneously press the buttons shown below | User Experience |
|---|---|---|
| Lock operation mode |  | The Mode button is inactive. User cannot change operation mode using this controller. |
| Lock fan speed |  | The fan speed button is inactive. User cannot change fan speed using this controller. |
| Lock temperature increase |  | The Up-arrow button is inactive. User cannot raise setpoint using this controller. |
| Lock temperature decrease |  | The Down-arrow button is inactive. User cannot lower setpoint using this controller. |
| Lock ON/OFF status |  | The Power button is inactive User cannot turn the indoor unit on or off using this controller. |
| Lock all buttons |  | All buttons are inactive. User cannot make any changes to the indoor unit using this controller. |
| Unlock all buttons |  | All buttons are active. User can make any changes to the indoor unit using this controller. |

**Centralized Controller Locks Controller**

If a function of the indoor unit is locked by a centralized controller (e.g. mode, temperature setpoint, swing, etc.), the V0STAT54P-2 controller will not be able to adjust that locked function.

The function must be unlocked at the centralized controller before the local controller can operate it.

## Controller Settings

- Press and hold the Fan speed button and the Mode button for 5 seconds to access the controller settings.
- Use Table 3 to setup the controller.
- When in Settings mode:
  - Press the Fan speed button to accept the current setting parameters and proceed to the next setting.
  - Press the Up-arrow and Down-arrow buttons to adjust parameters.
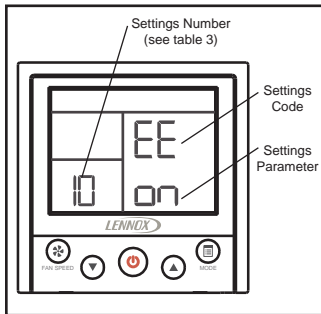- Press the Power button to restart controller.



**Figure 7. Controller Settings**

**Table 3. Controller Settings**

| Code | Function | Settings No. | Value | Note |
|------|----------|--------------|-------|------|
| EE | Power off – Memory settings for Auto Mode *NOTE – When Auto mode is being used, setpoint, fan speed, and operation mode (cooling or heating) is memorized by the indoor unit.* | 10 | on (default) | *When Auto mode is being used, the controller will memorize the user setting of Auto mode before powering off. When power is restored, the controller mode will be set to Auto mode.* |
| | | 11 | off | *When Auto mode is being used, the controller will not memorize the user setting of Auto mode before powering off. When power is restored, the controller mode will be set to the operation mode of indoor unit (cooling or heating).* |
| CF | Temperature unit | 20 | °C | The controller will use °C |
| | | 21 | °F (default) | The controller will use °F |
| Gr | Not used | 40 | Not used | Not used |
| Fr | Room temperature sensor location | 50 | 0 | Use indoor unit sensor |
| | | 51 | 1 (default) | Use controller sensor *NOTE - Required setting if multiple indoor units are connected to the controller.* |

| Code | Function | Settings No. | Value | Note |
|------|----------|--------------|-------|------|
| t1 | Room temperature sensor calibration | 60 | Fahrenheit:-4°F/ -3°F/ -2°F/ -1°F/ 0°F (Default)/ 1°F/ 2°F/ 3°F/ 4°F Celsius: -2°C/ -1°C/ 0°C (Default)/ 1°C/ 2°C | Adjust the calibration of the room temperature senor. Value selected will be added to the temperature sensor value. |
| Au | Auto mode enable/disable | 70 | on (default) | Auto mode enable (heat recovery systems only) |
| | | 71 | iff | Auto mode disable (heat pump systems) |
| Th | Setpoint upper limitation for heating mode | 80 | Fahrenheit: 86°F~62°F (86°F default) Celsius: 30°C~17°C (30°C default) | When the system is in heating mode, users can not set the temperature higher than the set value. |
| Tl | Setpoint lower limitation for cooling mode | 90 | Fahrenheit: 62°F~86°F (62°F default) Celsius: 17°C~30°C (17°C default) | In cooling mode, users cannot set the temperature lower than the set value. |
| FC | Set indoor unit fan ON/OFF when cooling requirement is satisfied. | A0 | on (default) | Keeps the indoor fan on when cooling setpoint is satisfied. |
| | | A1 | off | Turns the indoor fan off when cooling setpoint is satisfied. |

| Code | Function | Settings No. | Value | Note |
|------|----------|--------------|-------|------|
| FH | Set indoor unit fan ON/OFF when heating requirement is satisfied. | b0 | on (default) | Keeps the indoor fan on when heating setpoint is satisfied. |
| | | b1 | -- | Turns the indoor fan off when heating setpoint is satisfied. |
| *NOTE - FH code only.* Simultaneously press the Fan Speed, Down-Arrow, Up-Arrow and Mode buttons to toggle between "on" and "--". | | | | |
| dr | HHE Relay Kit - Enable or Disable Alternative Heat (note: see setting L0, code d5 for Alternate Heat settings) | C0 | on | Enable Alternative Heat using the HHE Relay Kit. |
| | | C1 | off (default) | Disable Alternative Heat using the HHE Relay Kit. |
| d1 | HHE Relay Kit - Auxiliary Heat Settings | d3 | 3°F/2°C (default) | When using the HHE relay kit, auxiliary heat will be activated when room temperature is 3°F/2°C lower than setpoint in heating mode. |
| | | d5 | 5°F/3°C | When using the HHE relay kit, auxiliary heat will be activated when room temperature is 5°F/3°C lower than setpoint in heating mode. |

| Code | Function | Settings No. | Value | Note |
|------|----------|--------------|-------|------|
| d5 | HHE Relay Kit - Alternative Heat Settings (note: see setting CX, code dr for to set Alternative heat to Enable/Disable). When alternative heat is enabled and outdoor ambient temperature is lower than the setting, The alternate heat source is the only heat source for heating, the VRF system will stop supplying heat until ambient temperature is higher than the setting. | L0 | 0 | 7°F/-14°C |
| | | | 1 (default) | 10°F/-12°C |
| | | | 2 | 15°F/-9°C |
| | | | 3 | 20°F/-7°C |
| | | | 4 | 25°F/-4°C |
| | | | 5 | 30°F/-1°C |
| | | | 6 | 35°F/-2°C |
| | | | 7 | 40°F/4°C |
| | | | 8 | 45°F/7°C |
| | | | 9 | 50°F/10°C |
| | | | 10 | 55°F/13°C |
| | | | 11 | 60°F/16°C |
| | | | 12 | 65°F/18°C |
| | | | 13 | 70°F/21°C |
| | | | 14 | 72°F/22°C |

## Indoor Unit Status Query

- Press and hold the Mode button for 5 seconds to access the indoor unit status query.
- Use the up-arrow and down-arrow buttons to scroll through the indoor unit statuses
  - Indoor unit operation status (Figure 8)
  - Indoor unit evaporator coil temperature (T2 and T2b) (Figure 9)
  - Room temperature sensor location (wired controller or indoor unit) (Figure 10)
  - On/Off status of dry contact one (Fan) (Figure 11)
  - On/Off status of dry contact two (CTON) (Figure 12)
  - On/Off status of dry contact three (HTON) (Figure 13)
  - On/Off status of dry contact four (AUXH) (Figure 14)
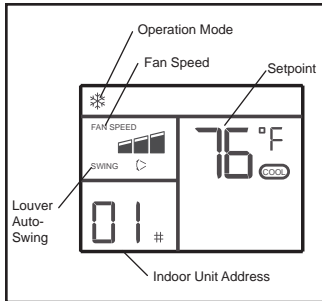


**Figure 8. Indoor Unit Operation Status**
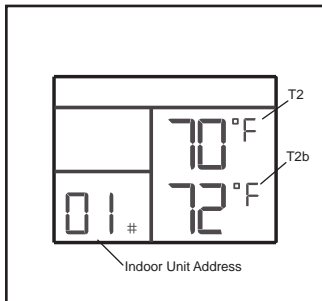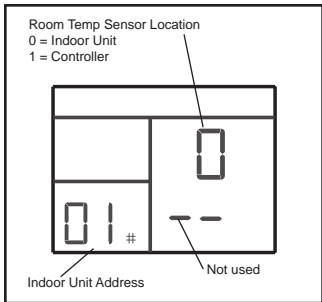


**Figure 9. Indoor Unit Coil Temperature**

**Figure 10. Room Temp Sensor Location**

Room Temp Sensor Location
0 = Indoor Unit
1 = Controller

Indoor Unit Address

Not used
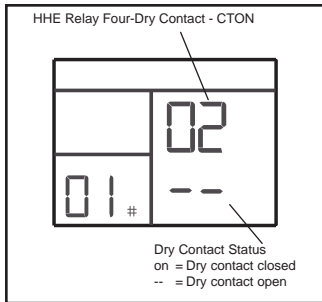


**Figure 12. On/Off Status of HHE Relay - CTON**

HHE Relay Four-Dry Contact - CTON

Dry Contact Status
on = Dry contact closed
-- = Dry contact open



**Figure 11. On/Off Status of HHE Relay - Fan**

HHE Relay Four-Dry Contact - Fan

Dry Contact Status
on = Dry contact closed
-- = Dry contact open
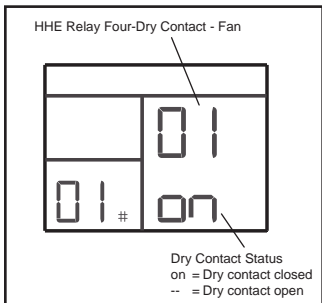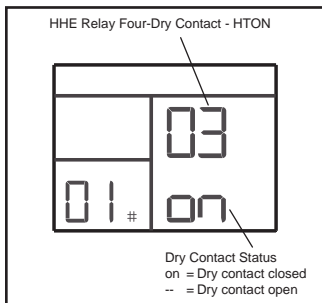


**Figure 13. On/Off Status of HHE Relay - HTON**

HHE Relay Four-Dry Contact - HTON

Dry Contact Status
on = Dry contact closed
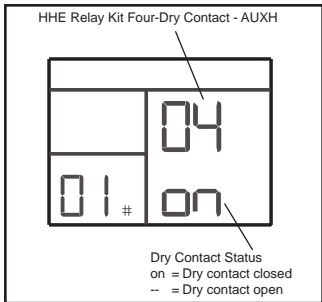-- = Dry contact open

**Figure 14. On/Off Status of HHE Relay Kit - AUXH**

**Connected to Multiple Indoor Units**

Press the Fan speed button to switch to additional indoor units. The controller will display operation mode, fan speed, temperature setting, swing status and address of indoor unit.
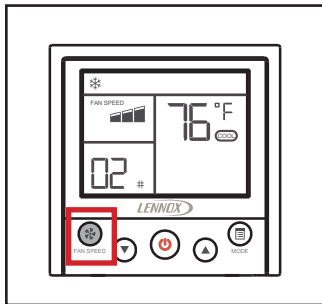


**Figure 15. Switch to Next Indoor Unit**

## Fault Code Query

- Press and hold the Mode button for 5 seconds to access the indoor unit status query.
- Press the Mode button to access the fault code query. The last 10 fault codes are stored.
- Press the Fan Speed button to scroll through the fault codes.
- When multiple fault codes have occurred at the same time, use the up-arrow and down-arrow buttons to see each code.
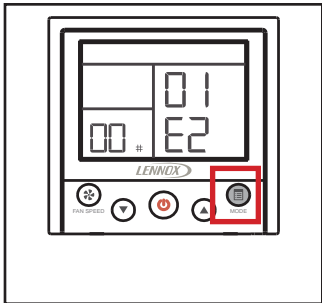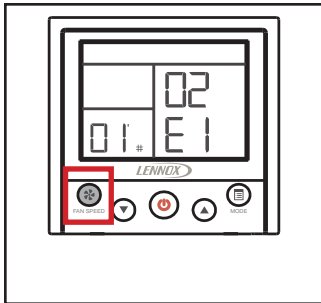


**Figure 16. Enter Fault Code Query**



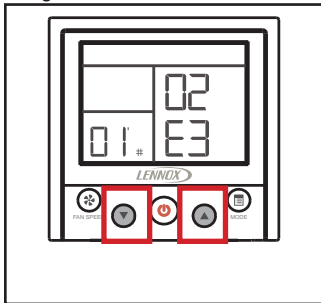**Figure 17. View Past 10 Fault Codes**



**Figure 18. Switch Between Fault Codes**

## Error Codes

- The V0STAT54P-2 controller displays the last 10 error codes. To view error codes, see the instructions on the previous page.
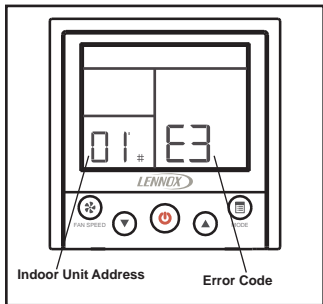- If the error code is for an indoor unit, the unit address also displays.



**Figure 19. Error Code Display**

**Table 4. Indoor Unit Error Codes**

| Error Code | Description |
|------------|-------------|
| F0 | Communication error between the indoor unit and the wired controller (may affect other indoor units in the system) |
| F1 | Communication error between the indoor unit and the controller |
| F2 | Controller EEPROM error |
| E1 | Communication error between the indoor unit and the outdoor unit |
| E2 | T1 temperature sensor error |
| E3 | T2A temperature sensor error |
| E4 | T2B temperature sensor error |
| E5 | Outdoor unit error |
| E7 | Indoor unit EEPROM error |
| E8 | Indoor unit DC motor error |
| EE | Condensate pump error |