New Versatile D Series Thermostat User Manual

New Versatile D series FCU thermostats have a minimalist appearance design, convenient interactive operation, accurate temperature sensing, precise temperature control, rich functions and strong configuration flexibilities, which can adapt to the needs of different applications.

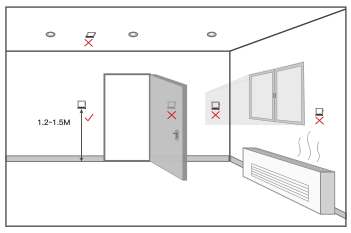
Model

N/M	Model	FCU Type	Fan Type	Set Point Reached	Timer & Schedule	S1/S2 Input	RS-485
1	IL2023DA2-S2L	2-Pipe	AC 3 speed	Fan keep running	√	√	
2	IL2023DB2-S2L	2-Pipe	AC 3 speed	Fan stop running	√	√	
3	IL2023FCV2-DK-S2L	4-Pipe	AC 3 speed	Fan keep running	√	√	
4	IL8023DA2-S2L-MD	2-Pipe	AC 3 speed	Fan keep running		√	√
5	IL8023DB2-S2L-MD	2-Pipe	AC 3 speed	Fan stop running		√	√
6	IL8023FCV2-DK-S2L-MD	4-Pipe	AC 3 speed	Fan keep running		√	√
7	IL8023DA2-S2TL-MD	2-Pipe	AC 3 speed	Fan keep running	√	√	√
8	IL8023DB2-S2TL-MD	2-Pipe	AC 3 speed	Fan stop running	√	√	√
9	IL8023FCV2-DK-S2TL-MD	4-Pipe	AC 3 speed	Fan keep running	√	√	√

Specifications

Accuracy: ±1℃	Power Supply: AC90~240V, 50/60Hz
Display Resolution: 0.5℃	Wiring Terminations: One 2.5 mm² or Two 1.5 mm² Wires
Display Temperature Range: 0 ~ 55℃	Max Load Current: < 2 A (Resistive), < 1 A (Inductive)
Operation Environment: Temperature 0 ~ 45℃	Shell Material: PC + ABS Anti-flaming
Humidity 5 ~ 95% RH (non-condensing)	Dim. H × W × D (mm): 86×86×12.5
Protection Level: IP 30	Mounting Hole Dim: 60 mm
Power Consumption: < 2 W	

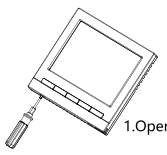
Mounting

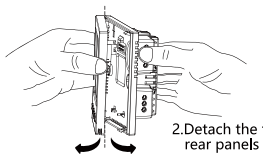


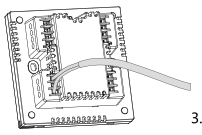
Do not install this product in the following locations:

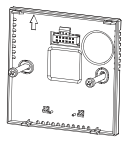
- Locations exposed to direct sunlight.
- Locations where air circulation is obstructed, such as in the corner of a wall, behind a door, etc.
- Near heat-generating equipment.
- Poor thermal insulation on exterior walls.
- Room ceiling.

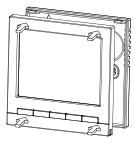
Installation diagram


1.Open the front panel


2.Detach the front and rear panels


3.Wiring

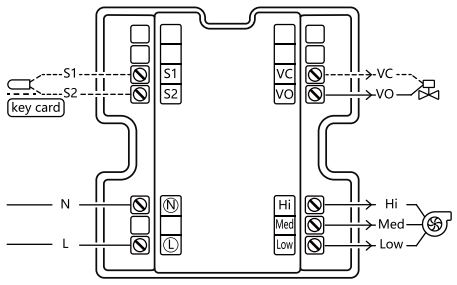

4.Set the screws


5.Fasten the front and rear panels

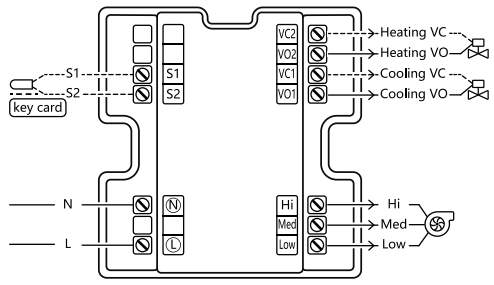
Warn:
This product must be installed by a professional, please read this manual carefully before installation, improper installation will cause damage to the equipment. Please wire correctly in strict accordance with the wiring diagram.

Wiring

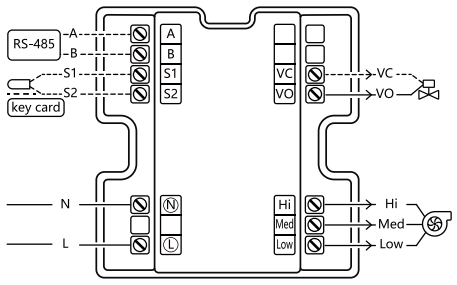
For models: ① IL2023DA2-S2L , ② IL2023DB2-S2L



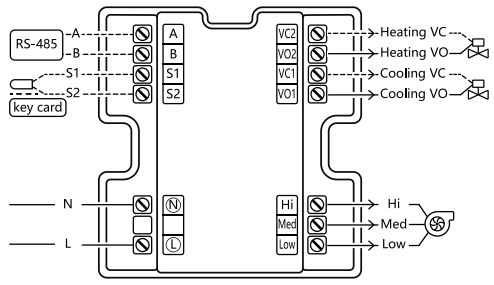
For models: ③ IL2023FCV2-DK-S2L



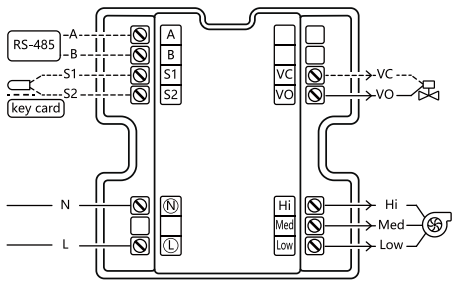
For models: ④ IL8023DA2-S2L-MD , ⑤ IL8023DB2-S2L-MD



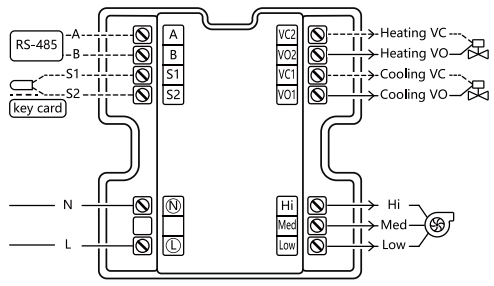
For models: ⑥ IL8023FCV2-DK-S2L-MD



For models: ⑦ IL8023DA2-S2TL-MD , ⑧ IL8023DB2-S2TL-MD

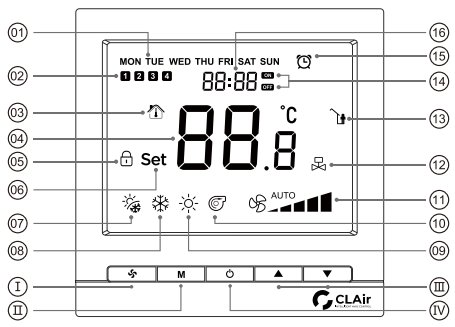


For models: ⑨ IL8023FCV2-DK-S2TL-MD



Note: If the normally closed two-wire valve is used on site, only the "VO" terminal can be connected.

Icon description

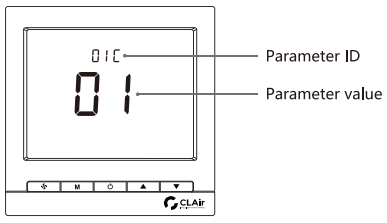


①	Week	⑨	Heating mode
②	Time bucket	⑩	Ventilation mode
③	Room temp	⑪	Fan speed
④	Temp display	⑫	Valve on/off
⑤	Button lock	⑬	Key card conneciton
⑥	Setting temp	⑭	On/off timer
⑦	Auto mode	⑮	Following schedule
⑧	Cooling mode	⑯	Time

Ⅰ	Fan speed	Ⅲ	Setting
Ⅱ	Mode	Ⅳ	ON/OFF

Parameter configuration

- Enter the normal parameter setting interface: in the power off state, press ⏻ and hold the button for 5s.
- Enter the advanced parameter setting interface: in the power off state, press and hold ⏻ + ▼ for 5s.
- Change parameter settings: after entering the menu, press button (page up) or **M** key (page down) to switch the parameter ID and use the ▲ or ▼ keys to adjust the parameter value.
- Exit the parameter setting menu: no buttons, automatically save the settings and exit the menu after 30 seconds of operation, and directly save the settings and exit the menu by pressing the buttons ⏻ .



Note: After exiting the menu, please make sure that the device does not power off for 30 seconds so that the parameters can be saved.

Parameter setting table [1]

ID	Name	Default value	Description	Suitable Models
01C	Address	01	01 ~ 32	4 ~ 9
01	Button lock [2]	00	00: No lock 04: Lock fan speed button 01: Lock On/Off button 08: Locking mode setting 02: Lock temperature adjustment	1 ~ 9
02	Temporary unlock*	01	00: Disable 01: Enable	1 ~ 9
03	Normal parameter options*	00	00: Read+wirte 01: Read only	1 ~ 9
04	Display Temp. offset	00	Range: -5 ~ 5℃	1 ~ 9
05	Thermostat state after power restored	02	00: Off 02: Last state 01: On	1 ~ 9
06	Anti frozen	00	00: Disable 01: Enable	1 ~ 9
07	Anti frozen set point	05	Range: 0 ~ 17℃	1 ~ 9
08	Clock setting && timer	00	00: Disable 02: Rapeated timing 01: Once timing	1 ~ 3 7 ~ 9
09	Clock setting && schedule	00	00: Diable 02: 7 days 4 periods 01: Weekday	1 ~ 3 7 ~ 9
10	Normal parameter shortcut [1]	06	Range: ID	1 ~ 9
11	Display temp. option	00	00: Room temp 01: Set point	1 ~ 9
12	Set point high limit*	35	Range: 2 ~ 90℃	1 ~ 9
13	Set point low limit*	05	Range: 0 ~ 88℃	1 ~ 9
14	Backlight active condition*	00	00: Press button triggered 01: Often bright	1 ~ 9
16	Differential*	01	Range: 1 ~ 5℃	1 ~ 9
22	S1/S2 input option*	00	00: Temperature sensor 01: Dry contactor	1 ~ 9

Parameter setting table [1]

ID	Name	Default value	Description	Suitable Models
26	Dry contact input type*	01	00: Normally open 01: Normally close	1 ~ 9
27	Dry contact input function*	01	00: Disable 02: On/off 01: ECO mode	1 ~ 9
01U	FCU type* [3]	--	00: 2 pipe 01: 4 pipe	3, 6, 9
02U	Mode option* [4]	02	00: Only heating 02: Cooling+heating (manual set) 01: Only cooling 03: Cooling+heating (auto)	--
05U	Dead band of 4-pipe changeover*	01	Range: 1 ~ 3℃	3, 6, 9
06U	Fan status when valve close* [3]	--	00: DA 01: DB	1 ~ 9
07U	Ventilation mode*	01	00: Disable 01: Enable	1 ~ 9
08U	Anti cold air delay*	00	Range: 0 ~ 60S	1 ~ 9
10U	Fan speed option*	02	00: Singel fan 02: 3 speed fan	1 ~ 9
01E	ECO mode: cool set point	28	Range: 22 ~ 32℃	1 ~ 9
02E	ECO mode: heat set point	16	Range: 10 ~ 21℃	1 ~ 9
03E	ECO mode: fan speed	00	00: Low speed 02: High speed 01: Med speed	1 ~ 9
04E	ECO mode: differential	02	Range: 1 ~ 5℃	1 ~ 9
02C	Baud rate	00	00: 4800 02: 19200 01: 9600 03: 38400	4 ~ 9
03C	Parity bite	01	00: No parity 02: Even 01: Odd	4 ~ 9
28	Action if remote sensor fails*	00	00: Switch to build-in sensor automatically; 01: Alert remote sensor failure.	1 ~ 9
29	Room temp. high alarm threshold*	55	Range: 35 – 90 ℃	1 ~ 9
01o	Software version [3]	--	Current version	1 ~ 9
05o	Protocol version [3]	--	Current protocol version	4 ~ 9
02o	Restore default parameter*	00	00: Save user setting parameter 01: Restore factory parameter	1 ~ 9

Note: [1] The table covers the parameters for all models of this series of products, and the parameter table will be different when it comes to a specific model, please refer to the column "Suitable models".
[2] Combining values is supported. For example, if the parameter value is set to 03 (03=01+02), 01: on/off button and 02: temp. adjustment are locked.
[3] "--" indicates that the parameter default setting may varies for different models and production batches.
[4] Parameter value 03: Cool & heat (auto) is only available for models 3, 6, 9; the other options are suitable for models 1~9.

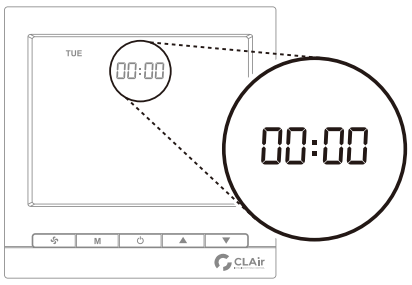
Shortcut key table

Name	Trigger Mode	Description
Display temp. offset	When power off, press and hold the ▲ and ▼ buttons for 5s	Range: -5~5℃, the display value of the thermostate is corrected, and the built-in sensor of the temperature value can also come from the external sensor
Normal parameter	When power off, press and hold ⏻ button for 5s	Go to the parameter settings menu to view or modify normal parameters
Temporary unlock	When power off, press the **M** and ▼ buttons for 5s	When the key lock is activated, the buttons can be temporarily unlocked in this way; if no button presses in 30s, thermostat returns to locked state automatically
Advanced parameter	Press the ⏻ and ▼ buttons for 5s	Go to the parameter settings menu to view or modify normal and advanced parameters
Normal parameter shortcut	When power off, press and hold ▼ button for 5s	Users can associate this shortcut to any parameter item, and the associated parameter ID is "10"

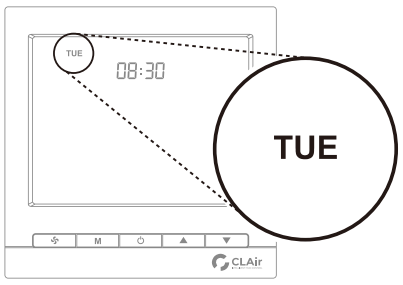
Clock setting

- After entering the parameter configuration menu, select the "08" or "09" parameter, set the parameter value to "00", and then press and hold the **M** button to enter the clock setting interface.
- Press the **M** button to switch the setting items, and press the ▲ or ▼ button to adjust the setting value; when the modification is complete,press ⏻ button to save the settings.

1. Set the hours and minutes



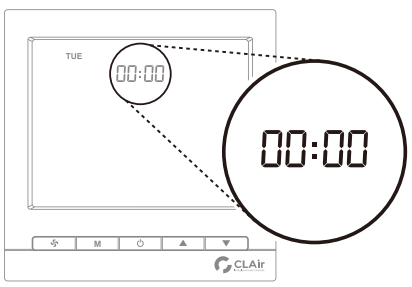
2. Set the date



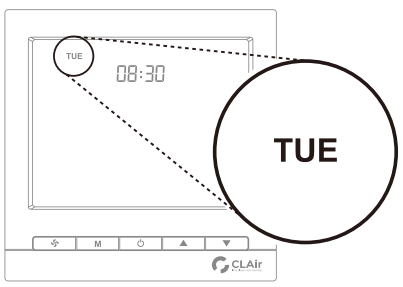
Timer on/off

- After entering the parameter configuration menu, select the "08" parameter, set the parameter value to "01" (single timing) or "02" (repeat timing) as needed, and then press and hold the **M** button to enter the timing setting process.
- Press the **M** button to switch the setting items, press the ▲ or ▼ buttons to adjust the setting value, and when the time is set to "--:--", it means that this timer option is disabled; press ⏻ button to save the settings after the modification is completed.

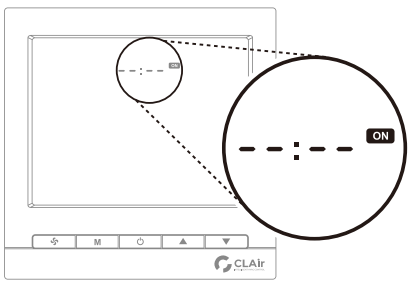
1. Calibrate the hours and minutes



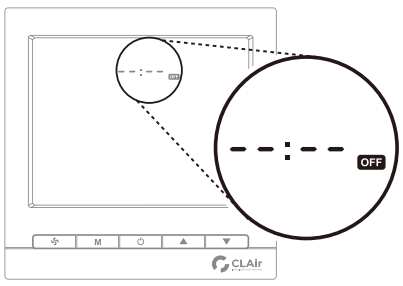
2. Calibrate the weeks



3. Set a timer to turn on



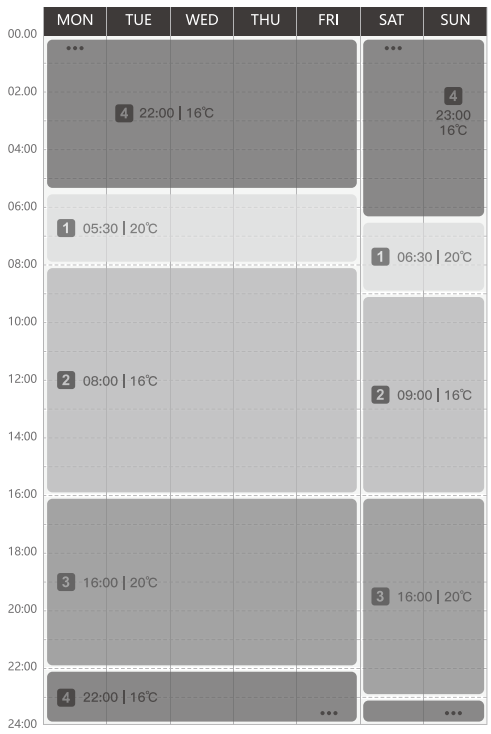
4. Set a scheduled turn off



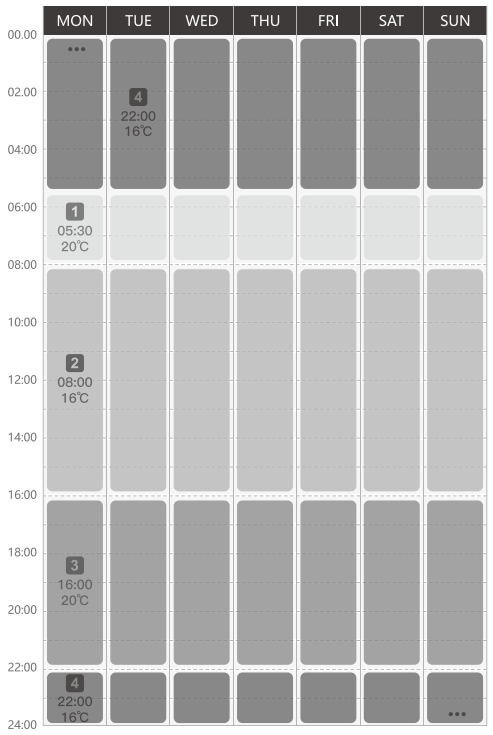
Clock & Schedule setting

- Start time and set point are defined in each period.
- The 7-day mode refers to the weekly schedule being programmed independently for 7 days, with 4 periods per day, each of which defines the start time and set point.

5+2 mode: 4 periods to program the default time and set point



7-day mode: 4 periods, default time and set point

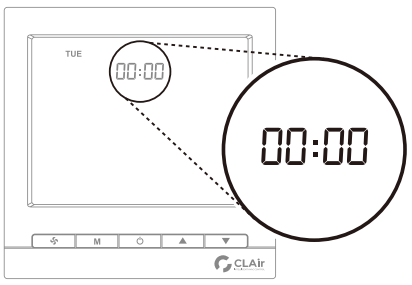


Periods	Parameter	Weekday	Weekends
1	Start time	05:30	06:30
	Set point	20℃	20℃
2	Start time	08:00	09:00
	Set point	16℃	16℃
3	Start time	16:00	16:00
	Set point	20℃	20℃
4	Start time	22:00	23:00
	Set point	16℃	16℃

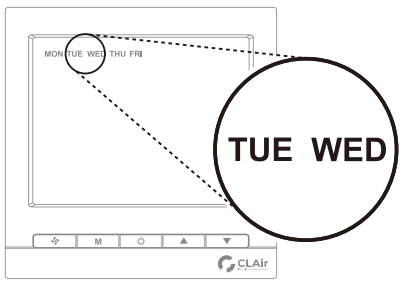
Periods	Parameter	Everyday
1	Start time	05:30
	Set point	20℃
2	Start time	08:00
	Set point	16℃
3	Start time	16:00
	Set point	20℃
4	Start time	22:00
	Set point	16℃

- After entering the parameter configuration menu, select the "09" parameter, set the parameter value to "01" (weekdays & weekends), and then press and hold the **M** button to enter the schedule setting process.
- Press the **M** button to switch the setting items, and press the ▲ or ▼ buttons to adjust the setting value; when the modification is done, press the ⏻ button to save the settings.

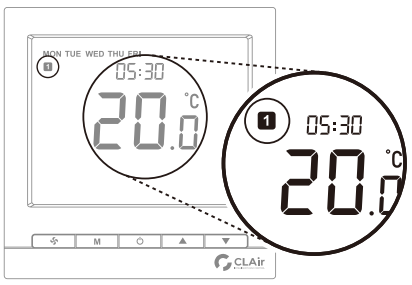
1. Calibrate the current time (hours, minutes and weeks)



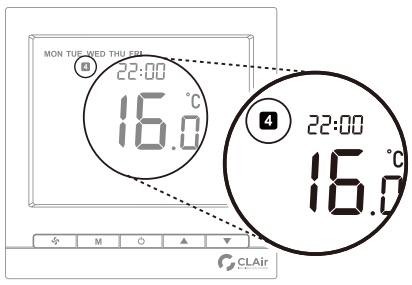
2. Set a schedule for weekdays (Monday to Friday)



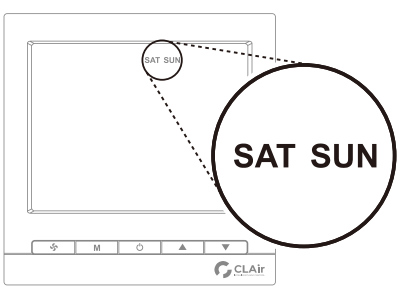
3. Set the time period 1 start time and set point



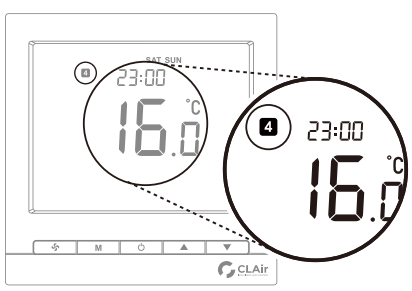
4. Set the time period 2 3 4 start time and set point



5. Set a schedule for weekend (Saturdays and Sundays)



6. Set the start time and set point for the 4 periods in turn



Description of functions and control logic

Function	Description
Valve control	In cooling mode, when the room temperature is higher than the set point + differential (1°C by default), the cooling valve is opened, and when the room temperature drops to the set point the cooling valve is closed. In heating mode, when the room temperature is lower than the set point + differential (1°C bydefault), the heating valve is opened, and when the room temperature rises to the set point, the heating valve is closed.
Fan control	The fan speed is automatically adjusted according to the difference between the room temperature and the set point: when the difference is 1°C, the low speed; when the difference of 2°C, medium speed; high speed when the difference is 3°C or higher.
Anti frozen protect	After power off, when the room temperature drops to less than or equal to the Anti-frozen point temperature (5°C by default), the heating is turned on and the fan runs at high speed; after the room temperature rises to Anti-frozen set point +2°C, the heating is stopped and the fan is turned off.
Normal parameter shortcuts	Users can set the menu items corresponding to the shortcut buttons.
S1/S2 input	The input terminal can be configured as either a temperature sensor (AI) or a dry contact input (DI). When an external sensor is connected to the S1/S2, it will automatically replace the built-in sensor as the thermostat's display temperature. When the S1/S2 is connected to the keycard, the keycard signal can be associated with the energy-saving mode (default configuration) or on/off via the parameter configuration.
4 pipe auto mode	When the system is configured as 4 pipe controls and the model is set to cool & heat (auto), manual switching mode is prohibited, and the thermostat automatically switches between cooling and heating modes according to the set point and room temperature.
Room temp. source	When room temp. is from build-in sensor, "🏠" display on screen; When room temp. is from remote sensor, "🏠" do not display on screen.

Faults and alarms

Alarm for over/low room temperature and sensor failure

- When the indoor measured temperature exceeds the "indoor high temperature alarm threshold" (parameter 29), it enters the indoor high temperature alarm state, and the main display area displays "H1"; when the temperature is lower than 0°C, enter the indoor low temperature alarm state, and the main display area will display "L0". The indoor temperature measurement may come from a built-in sensor or an external sensor, depending on the parameter settings.
- In the case that the indoor temperature measurement comes from the built-in sensor, if the built-in sensor is broken/short-circuited, it will enter the fault alarm state. In the fault alarm state, the thermostat will shut down the valve and fan, and display the fault code in the main display area. For details about the fault types corresponding to the fault codes, see below table.
- If the S1/S2 terminals are connected to an external temperature sensor, the indoor temperature is measured from the external sensor. If the external sensor has a break/short circuit fault, it is decided whether to enter the fault alarm state or automatically switch to the built-in sensor to continue working according to the configuration of parameter 28.

Alarm information table

Bit	Failure Type	Display	Bit	Failure Type	Display
BIT0	internal sensor short	E1	BIT4	external sensor short	E3
BIT1	internal sensor open	E2	BIT5	external sensor open	E4
BIT2	internal sensor over temp	H1	BIT6	external sensor high temp	H1
BIT3	internal sensor low temp	L0	BIT7	external sensor low temp	L0