Identification and Overview

Carrier 33TS2 series thermostats feature a simple and sleek appearance design featuring black or white color options, a durable mirror surface, and touch sensitive keys to best suit building interior applications. The Fan Coil Unit (FCU) thermostat is designed to control a 3-speed AC/PSC fan motor or ECM 0-10V fan motor with water valve(s). For thermostat part numbers ending in -MW/MB, an RS-485 interface is available for integration into a building automation system via the Modbus-RTU protocol.

Part Number Codestring

33TS2 - 2 - P - XW

- **Color:** W – White; B – Black
- **Communication:** X – Standalone; M – Modbus
- **Features:** P – PSC Fan Motor; E – ECM 0-10V Fan Motor
- **Application:** 2 – 2-pipe FCU; 4 – 4-pipe FCU
- **Model Series:** 2
- **Thermostat:** Carrier 33TS

Part Number	FCU Type	Fan Type	Valve Type	After Temp Setpoint is Achieved	On/Off Timer	S1/S2 Input	RS485	Protocol	Color
33TS2-2-P-XW	2-pipe	PSC fan	0-10V valve	Fan Continues to Operate	•	•		Standalone	White
33TS2-4-P-XW	4-pipe	PSC fan	0-10V valve	Fan Continues to Operate	•	•		Standalone	White
33TS2-2-P-MW	2-pipe	PSC fan	0-10V valve	Fan Continues to Operate		•	•	Modbus	White
33TS2-4-P-MW	4-pipe	PSC fan	0-10V valve	Fan Continues to Operate		•	•	Modbus	White
33TS2-2-E-MW	2-pipe	ECM fan	ON/OFF valve	Fan Continues to Operate		•	•	Modbus	White
33TS2-4-E-MW	4-pipe	ECM fan	ON/OFF valve	Fan Continues to Operate		•	•	Modbus	White
33TS2-2-P-XB	2-pipe	PSC fan	0-10V valve	Fan Continues to Operate	•	•		Standalone	Black
33TS2-4-P-XB	4-pipe	PSC fan	0-10V valve	Fan Continues to Operate	•	•		Standalone	Black

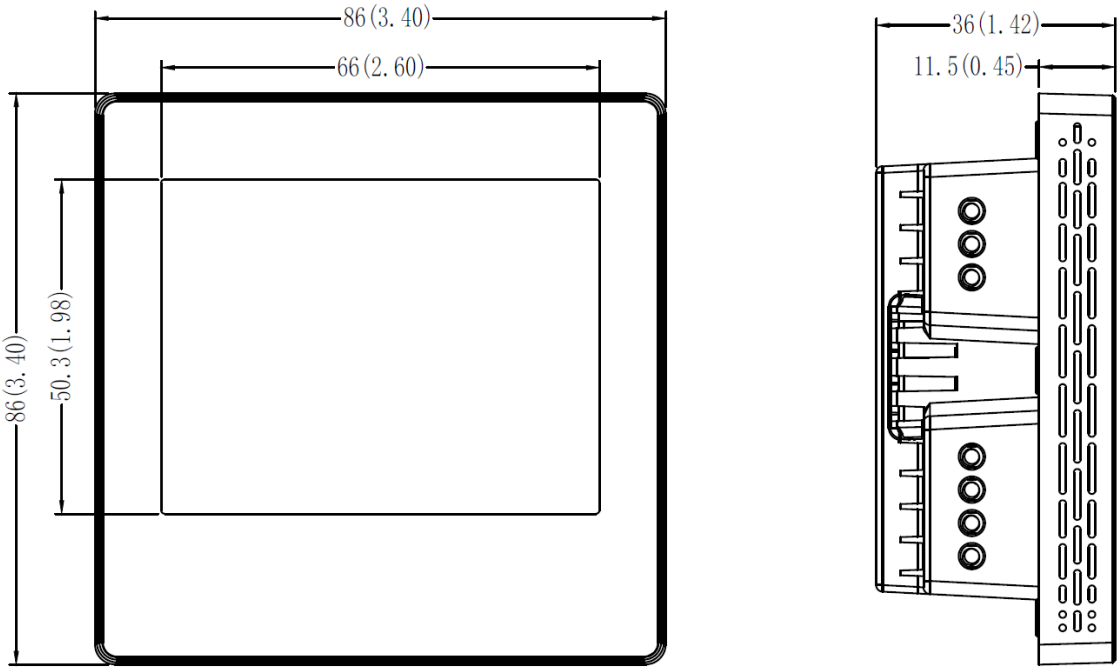
33TS2-2-P-MB	2-pipe	PSC fan	0-10V valve	Fan Continues to Operate		•	•	Modbus	Black
33TS2-4-P-MB	4-pipe	PSC fan	0-10V valve	Fan Continues to Operate		•	•	Modbus	Black
33TS2-2-E-MB	2-pipe	ECM fan	ON/OFF valve	Fan Continues to Operate		•	•	Modbus	Black
33TS2-4-E-MB	4-pipe	ECM fan	ON/OFF valve	Fan Continues to Operate		•	•	Modbus	Black

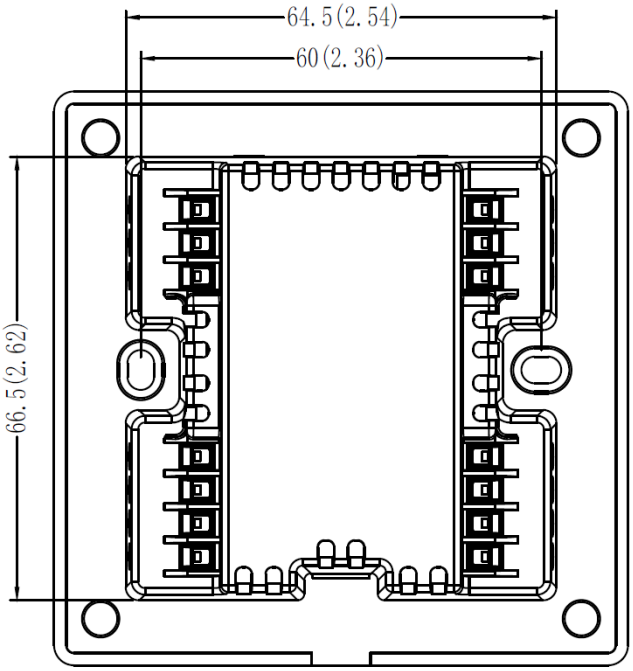
Specifications

Accuracy: ±1°C
Display Resolution: ±0.5°C
Display Temperature Range: 0 ~ 55°C
Operation Environment:
Temperature: 0 ~ 45°C
Humidity: 5 ~ 95% RH (non-condensing)
Power Supply: AC90~240V, 50/60Hz

Wiring Terminations: One 2.5 mm^2 or Two 1.5 mm^2 Wires
Max Load Current: < 2 A (Resistive) , < 1 A (Inductive)
Power Consumption: < 2W
Mounting Hole Dim: 60 mm
Shell Material: PC + ABS Flame Retardant
Protection Level: IP30
Nominal Dimensions: H x W x D (mm): 86 x 86 x 11.5

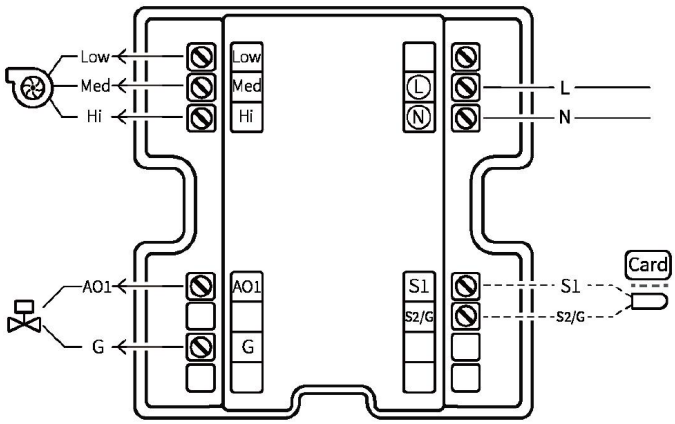
Dimensional Drawing



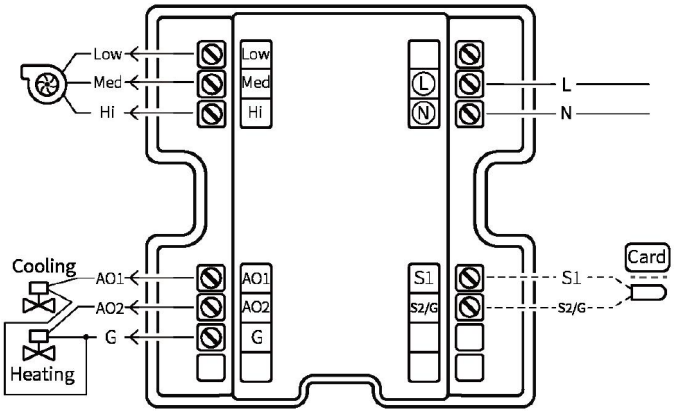

64.5(2.54)
60(2.36)
66.5(2.62)

Wiring Diagram

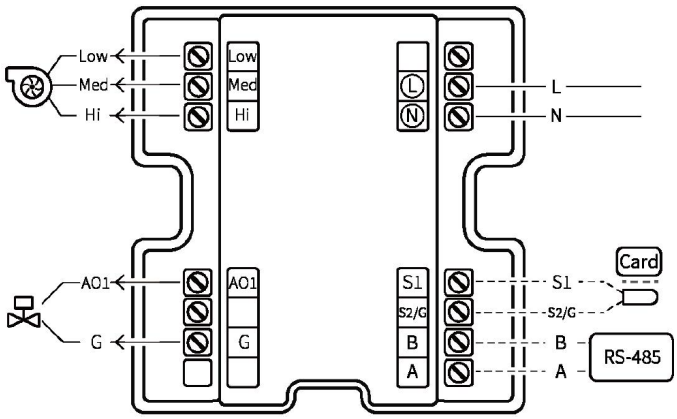
Standalone - 2-Pipe



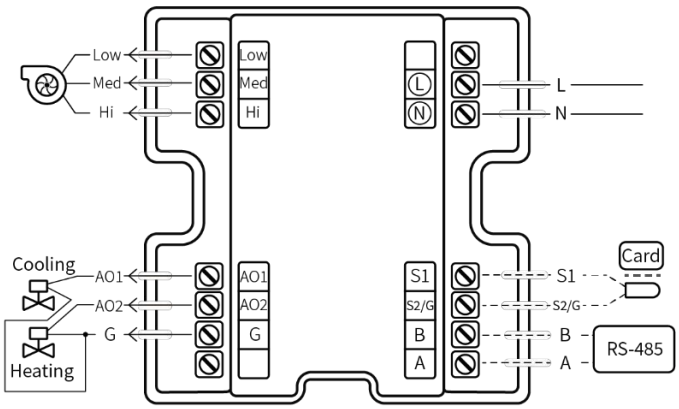
Standalone - 4-Pipe



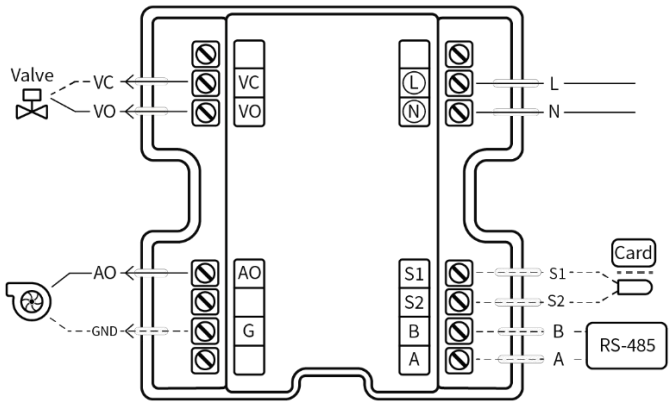
Modbus with PSC Fan - 2-Pipe



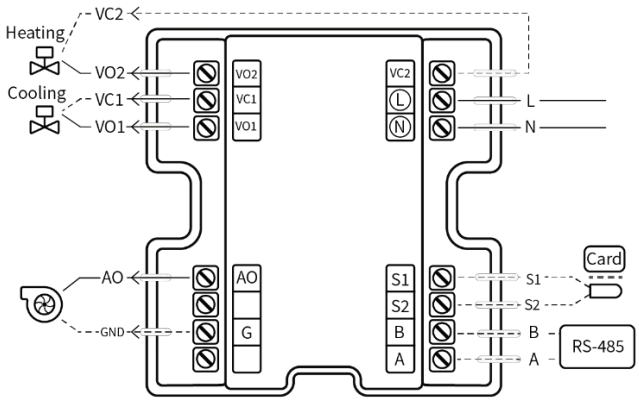
Modbus with PSC Fan - 4-Pipe



Modbus with ECM Fan – 2-Pipe



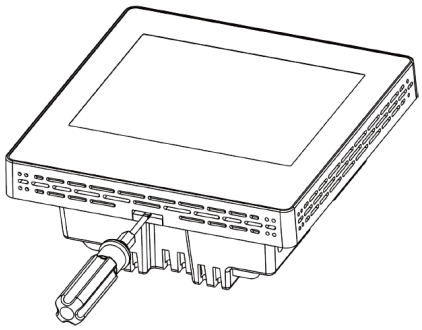
Modbus with ECM Fan – 4-Pipe



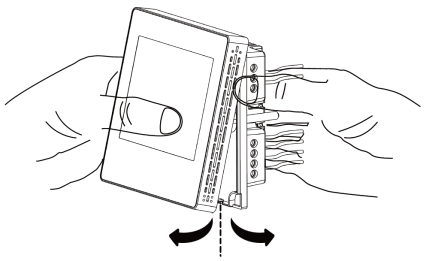
Warning	Risk of electric shock and property damage. Disconnect power supply before making any and all electrical connections. The installation and troubleshooting is to be performed by a qualified electrician only.

Caution	If a normally closed two-wire valve is used on site, only the "open" terminal should be connected. AO1, AO2, and GND must use shielded wire, while A and B should use shielded twisted pair wire. S1, S2, AO1, AO2, GND, A, and B are low-voltage wires and must not share the same conduit with AC220V high-voltage wires. Always separate the wiring to prevent damage to the thermostat.

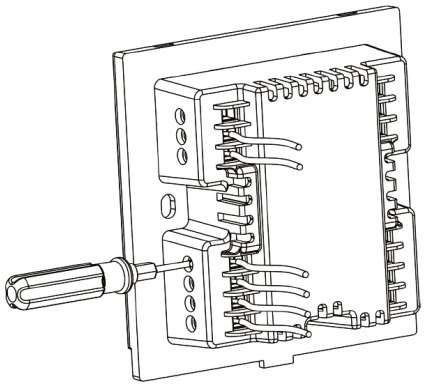
Installation Diagram



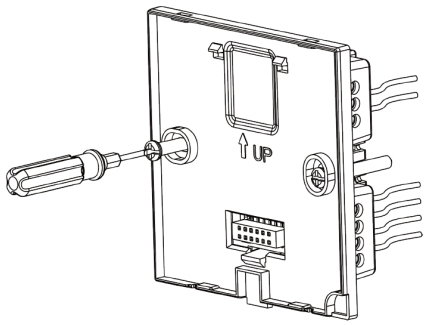
1. Open the front panel



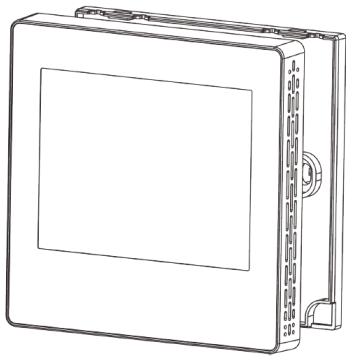
2. Detach the front and rear panels



3. Wiring



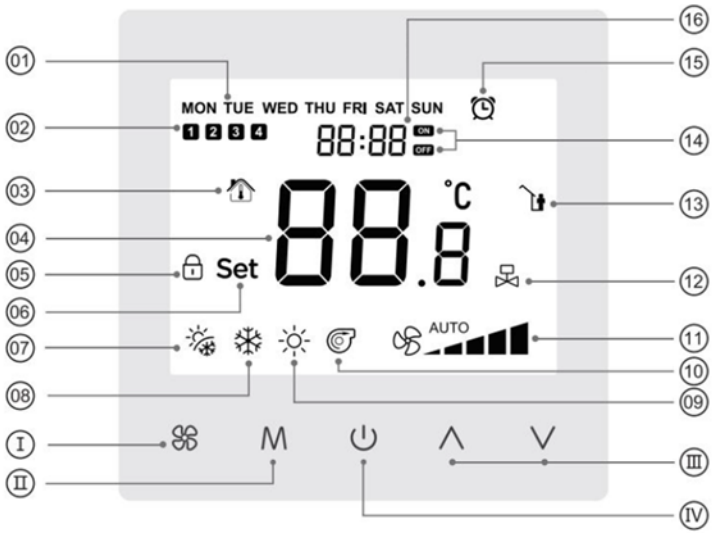
4. Set the screws



5. Fasten the front and rear panels

Warning	This product must be installed by a professional. Read this manual carefully before installation. Improper installation will cause damage to the equipment. Wire correctly in strict accordance with the wiring diagram.

Icon Description

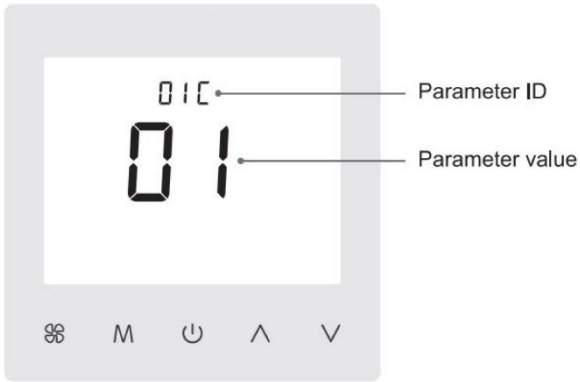


⑴	Week	⑼	Heating Mode
⑵	Time Bucket	⑽	Ventilation Mode
⑶	Room Temp	⑾	Fan Speed
⑷	Temp Display	⑿	Valve On/Off
⑸	Key Lock	⒀	Key Card Connection
⑹	Setting Temp	⒁	On/Off Timer
⑺	Auto Mode	⒂	Following Schedule
⑻	Cooling Mode	⒃	Time

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 key for 5s.
- Enter the advanced parameter setting interface: in the power off state, press and hold ⏻ + ∨ for 5s. Parameter names with * are advanced parameters.
- Change parameter settings: after entering the menu, press ⌘ key (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 keys, 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 keys ⏻



Tip	After exiting the menu do not power the device off for 30 seconds so that the parameters can be saved.

Parameters Settings

Part Numbers: 33TS2-2-E-MW | 33TS2-4-E-MW | 33TS2-2-E-MB | 33TS2-4-E-MB

ID	Name	Default Value	Description
01C	Modbus address	01	01-64
01	Key lock range[2]	00	00：No lock 01：Lock on/off key 02：Lock temperature adjustment 04：Lock fan speed key 08 : Locking mode setting
02	Temporary local unlocking*	01	00：Disable 01：Enable
03	Normal menu operation permissions*	00	00：Read+write 01：Only read
04	Temperature display value correction	00	Range: -5~5°C
05	Power-down memory	02	00：Power down 01：Power on 02：Power-down memory
06	Low temperature protection	00	00：Disabled 01：Enable
07	Protection low temperature*	05	Range：0-17°C
08 †	Clock setting and timer	00	00：No timer 01：One timer 02：Repeating timer † XB and XW (Standalone) models only
09 †	Clock setting and time period programming	00	00: No programming 01: 5+2 programming 02: 7 days 4 periods programming † XB and XW (Standalone) models only
10	Customize shortcut function keys	06	Range: ID
11	Main area displayed the content	00	00: Room temp 01: Set point temp
12	Set point temp upper limit*	35	Range: 2-90°C
13	Set point temp lower limit*	05	Range: 0-88°C
14	Backlight trigger mode*	00	00: Press key triggered 01: Always on ⚠ **Caution** “Always on” is intended for use during maintenance activities ONLY. Turn off to avoid inaccurate temperature readings.

16	Return difference setting*	01	Range：1-5°C
51A	DC fan drive low voltage *	2	Range：1-7V，step size：0.1
52A	DC fan drive high voltage *	10	Range：4-10V；step size：0.1
58A	Fan control zone *	3	Range：3-10℃；step size：0.5
22	S1/S2 input option*	00	00: Temperature sensor 01: Dry contact (keycard accessory)
26	Key card input*	01	00: Normally open (Close: occupied; Connect open: unoccupied) 01: Normally close (Close: unoccupied; Connect open: occupied)
27	Occupancy status association Options	01	00: Disable 01: ECO mode
01U	FCU type*	--	00：2-pipe 01：4-pipe
02U	Mode setting*	02	00: Heating only 01: Cooling only 02: Cooling + heating (manual set) 03: Cooling + heating (auto)
05U	4 pipe auto mode dead zone*	01	Range ：1-3°C；step size：1
06U	DA/DB select *	--	00：DA - Fan continues to operate after set point is reached 01：DB - Fan shuts off after set point is reached
07U	Ventilation mode *	01	00：Disable 01：Enable
08U	Anti-cold air delay *	--	Range：0-300s
01E	ECO mode: cool set point	28	Range：22-32°C
02E	ECO mode: heat set point	16	Range：10-21°C
03E	ECO mode: Fan speed	00	00：Ultra Low 01：Low 02：Medium 03：High 04：Ultra High
04E	ECO mode: differential	02	Range：1-5°C
02C	Baud rate*	00	00：4800 01：9600 02：19200 03：38400

03C	Parity bite*	01	00：No parity 01：Odd 02：Even
28	Action if remote sensor fails*	00	00: Switch to built-in sensor automatically 01: Alert, remote sensor failure
29	Room temp. high alarm threshold*	55	Range：35–90
01o	Software version[3]	--	Current version
05o	Protocol version[3]	--	Current protocol version
02o	Reset options*	00	00: No reset 01: Reset to factory default

* Advanced parameter

NOTES

- The table covers the parameters for all models of this series of products. The parameter table may be different for specific models.
- Combining values is supported. For example, if the parameter value is set to 03 (03=01+02), 01: on/off key and 02: temp. adjustment are locked.
- " -- " indicates that the parameter default setting may vary for different models.

Part Numbers: 33TS2-2-P-XW | 33TS2-4-P-XW | 33TS2-2-P-MW | 33TS2-4-P-MW | 33TS2-2-P-XB | 33TS2-4-P-XB | 33TS2-2-P-MB | 33TS2-4-P-MB

ID	Name	Default Value	Description
01C	Modbus address	01	01-64
01	Key lock range[2]	00	00：No lock 01：Lock on/off key 02：Lock temperature adjustment 04：Lock fan speed key 08: Locking mode setting
02	Temporary local unlocking*	01	00：Disable 01：Enable
03	Normal menu operation permissions*	00	00：Read+write 01：Only read
04	Temperature display value correction	00	Range: -5~5°C
05	Power-down memory	02	00：Power down 01：Power on 02：Power-down memory
06	Low temperature protection	00	00：Disable 01：Enable

07	Protection low temperature*	05	Range: 0~17°C
08 †	Clock setting and timer	00	00：No timer 01：One timer 02：Repeating timer † XB and XW (Standalone) models only
09 †	Clock setting and time period programming	00	00: No programming 01: 5+2 programming 02: 7 days 4 periods programming † XB and XW (Standalone) models only
10	Customize shortcut function keys	06	Range: ID
11	Main area displayed the content	00	00: Room temp 01: Set point temp
12	Set point temp upper limit*	35	Range：2-90°C
13	Set point temp lower limit*	05	Range：0~88°C
14	Backlight trigger mode*	00	00: Press key triggered 01: Always on **Caution** "Always on" is intended for use during maintenance activities ONLY. Turn off to avoid inaccurate temperature readings.
16	Return difference setting*	01	Range: 1-5°C
10A	Cooling Proportion(P)*	10	Range：1-99, Step size ：1
11A	Heating Proportion(P)*	10	Range：1-99, Step size ：1
12A	Integral parameter (I)*	1	Range：1-99, Step size ：1
14A	Control period*	10	Range：1-99（s）, Step size ：1
16A	Regulating valve dead zone*	5	Range：1-99
22	S1/S2 input option*	00	00: Temperature sensor 01: Dry contact (keycard accessory)
26	Key card input*	01	00: Normally open (Close: occupied; Connect open: unoccupied) 01: Normally close (Close: unoccupied; Connect open: occupied)
27	Occupancy status association options*	01	00: Disable 01: ECO mode 02: On/off
01U	FCU type*	--	00：2-pipe 01：4-pipe
02U	Mode setting*	02	00: Heating only 01: Cooling only 02: Cooling + heating(manual set) 03: Cooling + heating(auto)

05U	4 pipe auto mode dead zone*	01	Range ：1-3°C
06U	DA/DB select *	--	00：DA - Fan continues to operate after set point is reached 01：DB - Fan shuts off after set point is reached
07U	Ventilation mode*	01	00：Disable 01：Enable
08U	Anti-cold air delay*	00	Range：0-300s
10U	Fan speed option*	02	00：Single speed 02：3 speed
01E	ECO mode: cool set point	28	Range：22-32°C
02E	ECO mode: heat set point	16	Range：10-21°C
03E	ECO mode: fan speed	00	00：Low speed 01：Med speed 02：High speed
04E	ECO mode: differential	02	Range：1-5°C
02C	Baud rate*	00	00：4800 01：9600 02：19200 03：38400
03C	Parity bite*	01	00：No parity 01：Odd 02：Even
28	Action if remote sensor fails*	00	00: Switch to built-in sensor automatically 01: Alert, remote sensor failure
29	Room temp. high alarm threshold*	55	Range：35–90
01o	Software version[3]	--	Current version
05o	Protocol version[3]	--	Current protocol version
02o	Reset options*	00	00: No reset 01: Reset to factory default

* Advanced parameter

NOTES

- 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 column "Suitable models".
- Combining values is supported. For example, if the parameter value is set to 03 (03=01+02), 01: on/off key and 02: temp. adjustment are locked.
- " -- " indicates that the parameter default setting may vary for different models.

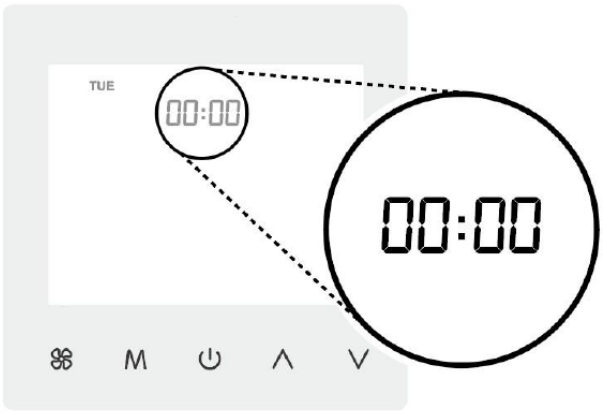
Shortcuts Key Table

Name	Trigger Mode	Description
Display temp. offset	When power off press and hold the ∧ and ∨ keys for 5s	Range: -5~5°C, the display value of the thermostat 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 on/off key for 5s	Go to the parameter settings menu to view or modify normal parameters.
Temporary unlock	When power off press and hold M and ∨ key for 5s	When the key lock is activated, the keys can be temporarily unlocked in this way; if no key presses in 30s thermostat returns to locked state automatically.
Advanced parameter	Press the on/off and ∨ for 5s	Go to the parameter settings menu to view or modify normal and advanced parameters.
Normal parameter shortcuts	When power off press and hold ∨ key for 5s	Users can associate this shortcut to any parameter item, and the associated parameter ID is "10".

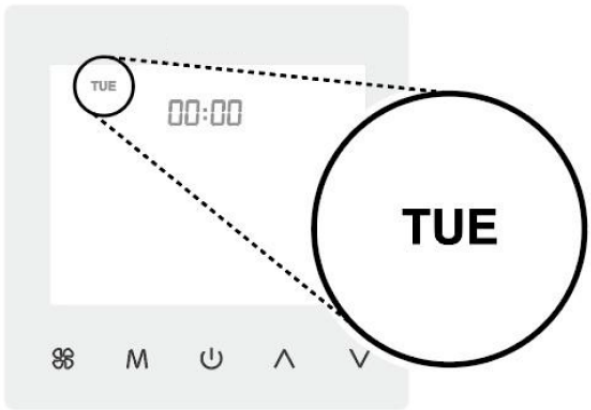
Clock Settings (Standalone only, -XB and -XW models)

- 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 key to enter the clock setting interface.
- Press the M key to switch the setting items, and press the ∧ or ∨ key to adjust the setting value; when the modification is complete, press ⏻ key to save the settings.

1. Set the hours and minutes



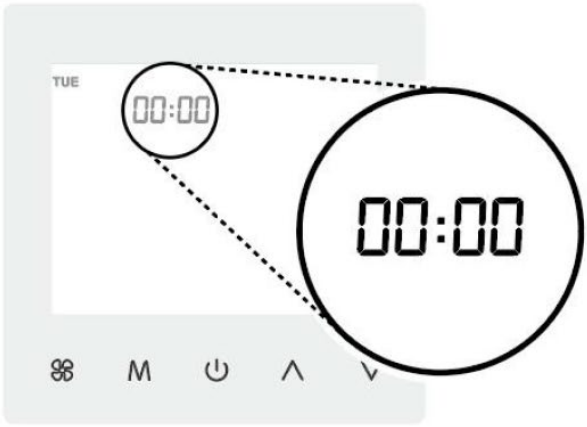
2. Set the date



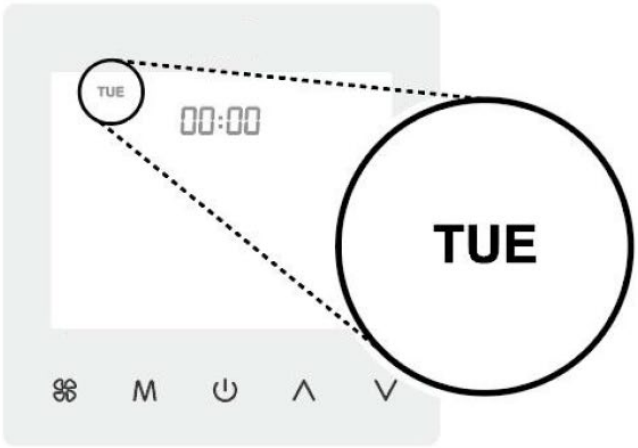
Timer on/off

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

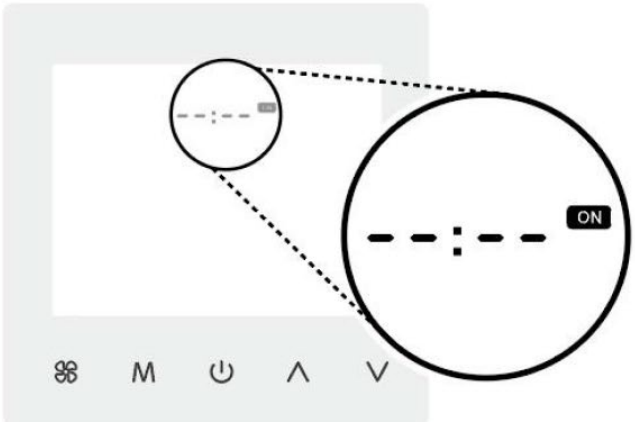
1. Calibrate the hours and minutes



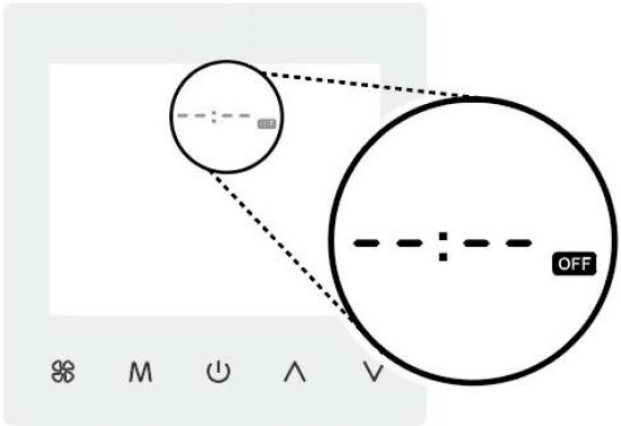
2. Calibrate the weeks



3. Set a timer to turn on



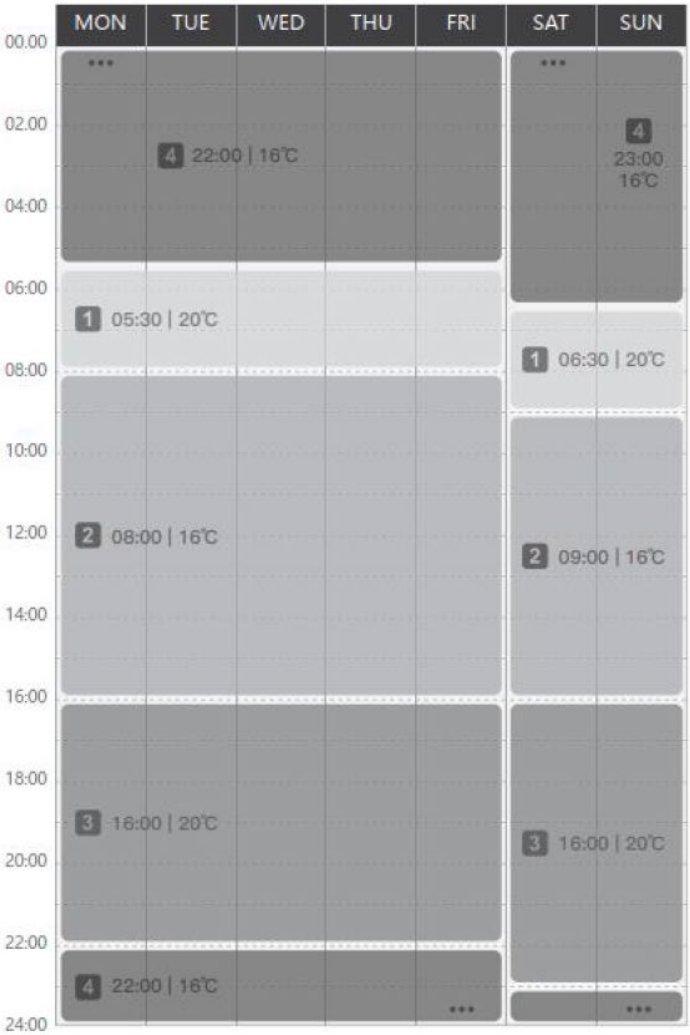
4. Set a scheduled turn off



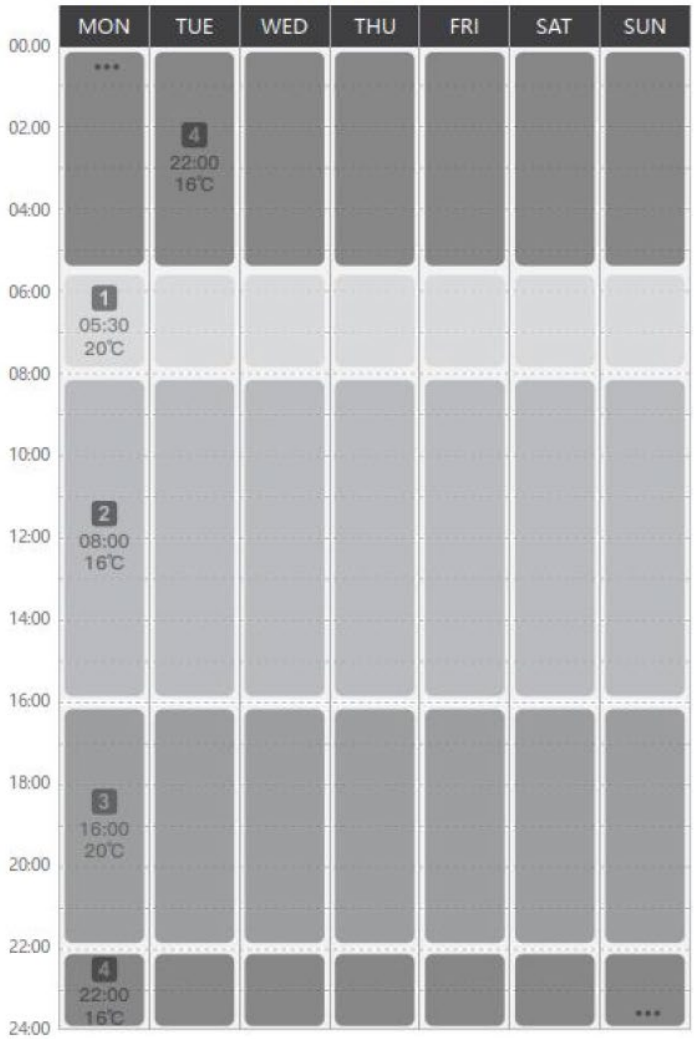
Clock and Schedule setting

- The 5+2 mode refers to the weekly plan being divided into two parts: weekdays and weekends, with 4 periods defined in each part, a 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

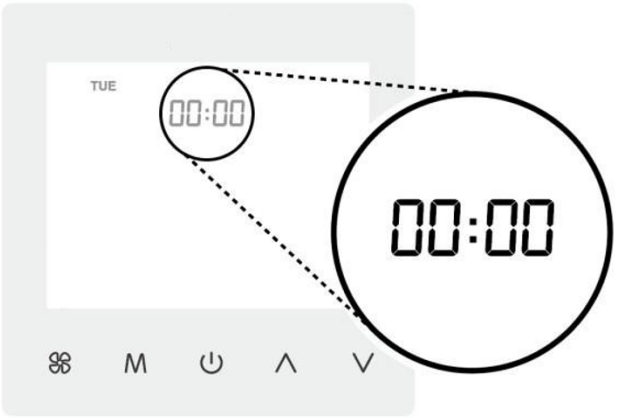


Periods	Parameter	Weekday	Weekends
1	Start time	05:30	06:30
	Set point	20℃	20℃
2	Start time	08:00	09:00
	Set point	16℃	16℃
3	Start time	16:00	16:00
	Set point	20℃	20℃
4	Start time	22:00	23:00
	Set point	16℃	16℃

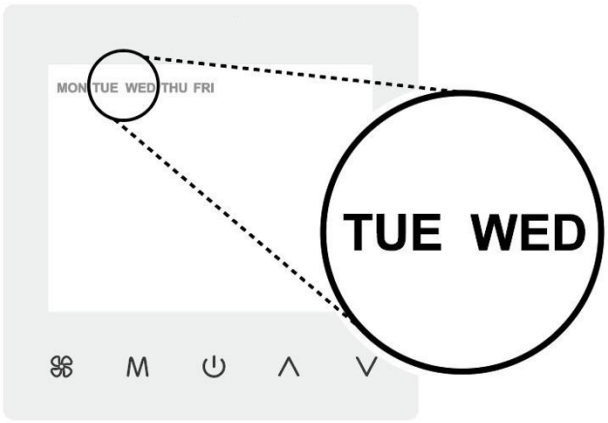
Periods	Parameter	Everyday
1	Start time	05:30
	Set point	20℃
2	Start time	08:00
	Set point	16℃
3	Start time	16:00
	Set point	20℃
4	Start time	22:00
	Set point	16℃

- After entering the parameter configuration menu, select the "09" parameter, set the parameter value to "01" (Weekday & weekends), and then press and hold the M key to enter the schedule setting process.
- Press the M key to switch the setting items, and press the ∧ or ∨ key to adjust the setting value; When the modification is done, press the ⏻ key to save the settings.

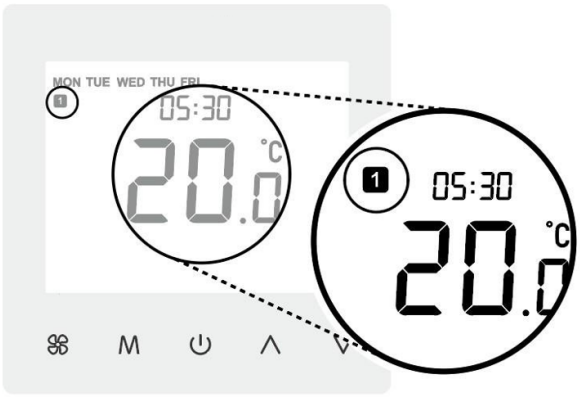
1. Calibrate the current time (hours, minutes and weeks)



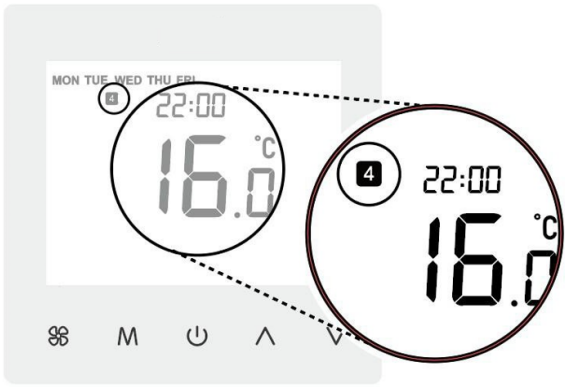
2. Set a schedule for weekdays (Monday to Friday)



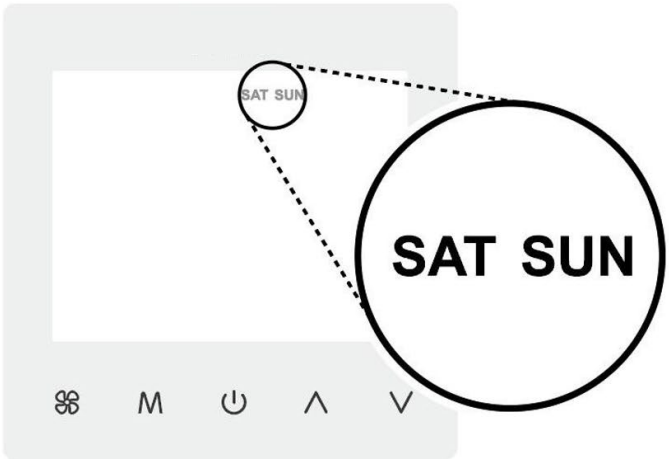
3. Set the time period 1 start time and set point



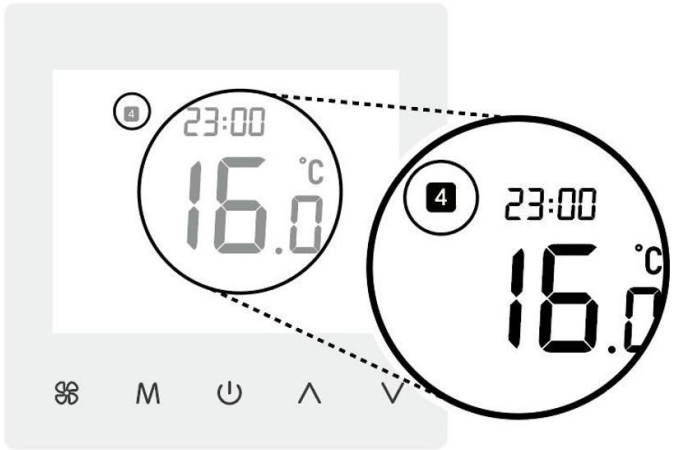
4. Set the time period 2 3 4 start time and set point



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



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



Functions and Logic Control

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 by default), the heating valve is opened, and when the room temperature rises to the set temperature, the heating valve is closed.
AC 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. **Part Number** 33TS2-4-P-XW 33TS2-4-P-XB 33TS2-4-P-MW 33TS2-4-P-MB 33TS2-2-P-XW 33TS2-2-P-XB 33TS2-2-P-MW 33TS2-2-P-MB **Fan status after valve closing:** Fan continues to operate/run after setpoint is reached
ECM Fan control	The fan speed is automatically adjusted according to the difference between the room temperature and the set point. **Part Number** 33TS2-2-E-MW 33TS2-2-E-MB 33TS2-4-E-MW 33TS2-4-E-MB **Fan status after valve closing:** Fan continues to operate/run after setpoint is reached
Freeze Protection	After power off, when the room temperature drops to less than or equal to the Freeze Protection set point temperature (5 °C by default), the heating is turned on and the fan runs at high speed. After the room temperature rises to Freeze Protection 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 keys.
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 automatically replaces 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 built-in sensor, "" displays on screen When room temp. is from remote sensor, "" does not display on screen

Faults and Alarms

- 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 "LO". 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 enters the fault alarm state. In the fault alarm state, the thermostat shuts down the valve and fan, and displays the fault code in the main display area. For details about the fault types corresponding to the fault codes, see the 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 decides 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

Bit	Failure Type	Display	Bit	Failure Type	Disp
BIT0	Internal sensor short	E1	BIT4	External sensor short	E3
BIT1	Internal sensor open	E2	BIT5	External sensor open	E4
BIT2	Internal sensor high temp	HI	BIT6	External sensor high temp	HI
BIT3	internal sensor low temp	L0	BIT7	External sensor low temp	L0

Register Address Table

Part Numbers: 33TS2-2-E-MW | 33TS2-4-E-MW | 33TS2-2-E-MB | 33TS2-4-E-MB

Parameter item	Address	Command	Remarks
Power ON/OFF	11	01/05	0: OFF; 1: ON
Low temp. protection	12	01/05	0: disable; 1: enable
FCU type	14	01/05	0: 2-pipe; 1: 4-pipe
Fan operation when no demand	15	01/05	0: DA-Fan on; 1: DB-Fan off
Ventilation mode	16	01/05	0: disable; 1: enable

Parameter item	Address	Command	Remarks
FCU valve status	11	02	0: OFF; 1: ON
Dry contact input status	13	02	0: close; 1: open
Low temp. protection status	15	02	0: OFF; 1: ON

Parameter item	Address	Command	Remarks
Room temp.	11	04	265: 26.5°C(room temp. = read value/10)
Set point	12	04	255: 25.5°C(set temp. = read value/10)
Summary of Operating Status 1	13	04	Check table: info1
Summary of Operating Status 2	14	04	Check table: info2
Remote sensor temp.	16	04	265: 26.5°C(room temp. = read value/10)
Alarm	19	04	Check table: Alarm
Firmware version	60	04	
Protocol version	61	04	The protocol-version field is two bytes: the high byte is ASCII “A” (0x41) for non-billing mode or “B” (0x42) for billing mode, and the low byte is the 8-bit version number (e.g. V1.0 → decimal 10 → 0x0A), so non-billing-mode V1.0 is sent as 0x41 0x0A (0x410A).

Info1	Bit15~14	Bit13	Bit12	Bit11~8	Bit7	Bit6	Bit5~3	Bit2~1	Bit0
	Reserve	Lock	Fan auto	Fan speed status	Reserve	FCU valve	Operation mode	Main temp. display type	Power on/off

Lock	Bit13： 0: unlock; 1: lock
Fan auto	Bit12： 0: not auto; 1: auto
Fan speed status	Bit11~bit8：0: off; 1: fan-speed 1; 2: fan-speed 2; 3: fan-speed 3; 4: fan-speed 4; 5: fan-speed 5
FCU valve	Bit6： 0: off; 1: on
Operation mode	Bit5~bit3： 1: cool; 2: heat; 3: vent; 4: auto heat cool not mode; 5: auto cool; 6: auto heat
Main temp. display type	Bit2~bit1： 1: room temp; 2: set point; 3: Alarm code
Power on/off	Bit0 0: off; 1: on

Info2	Bit15~6	Bit5~4	Bit3~2	Bit1~0
	Reserve	Room temp source	Reserve	Occupancy status

Room temp source	Bit5~Bit4： 1: built-in sensor ; 2: remote sensor;
Occupancy status	Bit1~bit0： 0: disable; 1: occupied; 2: unoccupied

Alarm	Bit15~8	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Reserve	Low temp.	High temp.	Open	Short	Low temp.	High temp.	Open	Short
		Remote sensor				Built-in sensor			

Parameter item	Address	Command	Def	Remarks
Set point	11	03/06	250	set temp. = read value/10
Power ON/OFF	12	03/06	0	0: off; 1: on; 2: low temp. protection (read only)
Fan speed	13	03/06	1	AC fan: 1: Low; 2: Med; 3: High; 4: Auto ECM fan: 0: Auto; 1: Speed 1; 2: Speed 2; 3: Speed 3; 4: Speed 4; 5: Speed 5 ;
Room temp.	14	03	--	265: 26.5°C (room temp. = read value/10)
Operation mode	15	03/06	1	1: Cool 2: Heat 3: Ventilation 4: Automatic heating and cooling (read-only)
Remote sensor temp.	16	03	--	room temp. = read value/10
FCU valve status	17	03	--	0: off;1: on
Fan status	18	03	--	Range: 0-100 （0-10.0v） step: 1
Dry contact input status	21	03	--	0: close; 1: open
Protocol version	22	03/06	0	The protocol-version field is two bytes: the high byte is ASCII“A” (0x41) for non-billing mode or “B” (0x42) for billing mode, and the low byte is the 8-bit version number (e.g. V1.0 → decimal 10 → 0x0A), so billing-mode V1.0 is sent as 0x42 0x0A (0x420A).
Temporary local unlocking	23	03/06	1	0: disable; 1: enable
Normal menu operation permissions	24	03/06	0	0: read + write; 1: only read
Room temp. offset	25	03/06	0	Range -50~50; step:5; offset temp. = read value/10
Power-down memory	100	03/06	2	00: Power down; 01: Power on; 02: Power-down memory
Low temp. protection	101	03/06	0	0: disable; 1: enable
Low temp. protection temp.	102	03/06	50	Range: 0~170: 0~17°C; step:5
Home screen displayed temp.	103	03/06	0	0: room temp.; 1: temp. set point
Set point upper limit	104	03/06	350	Range: 20~900: 2~90°C; step: 5
Set point lower limit	105	03/06	50	Range: 0~880: 0~88°C; step:5
Backlit setting	107	03/06	0	0: trigger by key; 1: always on ⚠ **Caution** “Always on” is intended for use during maintenance activities ONLY. Turn off to avoid inaccurate temperature readings.
Differential	108	03/06	10	Range: 10~50: 1~5°C; step:5
S1/S2 setting	110	03/06	0	0: remote sensor; 1: dry contact input (keycard accessory)
Dry contact input setting	112	03/06	1	0: normal open;1: normal close
Occupancy action setting	113	03/06	1	0: no action; 1: trigger ECO mode; 2: turn off thermostat
FCU type	115	03/06	--	0: 2-pipe; 1: 4-pipe
Operation mode setting	116	03/06	2	0: heat only; 1: cool only; 2: cool & heat (manual); 3: cool & heat (auto)
4-pipe auto mode deadband	121	03/06	10	Range: 10~30: 1~3°C; step: 10
Fan operation when no demand	122	03/06	--	0: fan on; 1: fan off

Ventilation mode	123	03/06	1	0: disable; 1: enable
Anti-Cold Air Start Delay	124	03/06	0	Range: 0~300s; step: 10
Address	127	03/06	1	Range: 1~64; step: 1
Communication settings	128	03/06	0×10	Check table: COM
Custom Shortcut Functions	140	03/06	--	Example: 01C: Hbyte->0x01 Lbyte->C（ASCII）->0x43 01C->0x0143 01o: Hbyte->0x01 Lbyte->o（ASCII）->0x6F 01o->0x016F 01: Hbyte->0x01 Lbyte->00 ->0x00 01->0x0100
Remote temp. sensor fault action	142	03/06	0	0: change to built-in sensor; 1: Alarm sensor failure
Room alarm hi temp threshold	143	03/06	550	Range: 350~900: 35~90°C; step: 5
ECO mode: cooling set point	144	03/06	280	Range: 220~320: 22~32°C; step: 5
ECO mode: heating set point	145	03/06	160	Range: 100~210: 10~21°C; step: 5
ECO mode: fan speed	146	03/06	0	0: fan-speed 1; 1: fan-speed 2; 2: fan-speed 3; 3: fan-speed 4; 4: fan-speed 5（ECM fan）
ECO mode: differential	147	03/06	20	Range: 10~50: 1~5°C; step: 5
ECM fan output lower limit	251	03/06	20	Range: 10-70 (1V-7V)
ECM fan output upper limit	252	03/06	100	Range: 40-100 (4V-10V)
ECM fan control range	253	03/06	30	Range: 30-100（1-10°C）

COM	Bit15~6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Reserve	Parity bit		Baud rate			

Parity bit	Bit5~Bit4: 0: No parity; 1: Odd; 2: Even
Baud rate	Bit3~bit0: 0: 4800; 1: 9600; 2: 19200; 3: 38400

Part Numbers: 33TS2-2-P-XW | 33TS2-4-P-XW | 33TS2-2-P-MW | 33TS2-4-P-MW | 33TS2-2-P-XB 33TS2-4-P-XB | 33TS2-2-P-MB | 33TS2-4-P-MB

Parameter item	Address	Command	Remarks
Power ON/OFF	11	01/05	0: OFF; 1: ON
Low temp. protection	12	01/05	0: disable; 1: enable
FCU type	14	01/05	0: 2-pipe; 1: 4-pipe
Fan operation when no demand	15	01/05	0: DA-Fan on; 1: DB-Fan off
Ventilation mode	16	01/05	0: disable; 1: enable

Parameter item	Address	Command	Remarks
FCU valve status	11	02	0: OFF; 1: ON
Dry contact input status	13	02	0: open; 1: close
Low temp. protection status	15	02	0: OFF; 1: ON

Parameter item	Address	Command	Remarks
Room temp.	11	04	265: 26.5°C(room temp. = read value/10)
Set point	12	04	255: 25.5°C(set temp. = read value/10)
Summary of Operating Status 1	13	04	Check table: info1
Summary of Operating Status 2	14	04	Check table: info2
Remote sensor temp.	16	04	265: 26.5°C(room temp. = read value/10)
Alarm	19	04	Check table: Alarm
Firmware version	60	04	
Protocol version	61	04	The protocol-version field is two bytes: the high byte is ASCII “A” (0x41) for non-billing mode or “B” (0x42) for billing mode, and the low byte is the 8-bit version number (e.g. V1.0 → decimal 10 → 0x0A), so non-billing-mode V1.0 is sent as 0x41 0x0A (0x410A).

Info1	Bit15~14	Bit13	Bit12	Bit11~8	Bit7	Bit6	Bit5~3	Bit2~1	Bit0
	Reserve	Lock	Fan auto	Fan speed status	Reserve	FCU valve	Operation mode	Main temp. display type	Power on/off

Lock	Bit13： 0: unlock; 1: lock
Fan auto	Bit12： 0: not auto; 1: auto
Fan speed status	Bit11~bit8：0：off；1：Low； 2：med；3：high；
FCU valve	Bit6： 0: off; 1: on
Operation mode	Bit5~bit3： 1: cool; 2: heat; 3: vent; 4: auto heat cool not mode; 5: auto cool; 6: auto heat
Main temp. display type	Bit2~bit1： 1: room temp; 2: set point; 3: Alarm code
Power on/off	Bit0 0: off; 1: on

Info2	Bit15~6	Bit5~4	Bit3~2	Bit1~0
	Reserve	Room temp source	Reserve	Occupancy status

Room temp source	Bit5~Bit4： 1: built-in sensor ; 2: remote sensor;
Occupancy status	Bit1~bit0： 0: disable; 1: occupied; 2: unoccupied

Alarm	Bit15~8	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Reserve	Low temp.	High temp.	Open	Short	Low temp.	High temp.	Open	Short
		Remote sensor				Built-in sensor			

Parameter item	Address	Command	Def	Remarks
Set point	11	03/06	250	set temp. = read value/10
Power ON/OFF	12	03/06	0	0: off; 1: on; 2: low temp. protection (read only)
Fan speed	13	03/06	1	AC fan: 1: Low; 2: Med; 3: High; 4: Auto
Room temp.	14	03	--	265: 26.5°C(room temp. = read value/10)

Operation mode	15	03/06	1	1: Cool 2: Heat 3: Ventilation 4: Automatic heating and cooling (read-only)
Remote sensor temp.	16	03	--	room temp. = read value/10
FCU valve status	17	03	--	Range：0-100 （0-10.0v） step：1
Fan status	18	03	--	0: off; 1: low; 2: med; 3: high
Dry contact input status	21	03	--	0: close; 1: open
Key lock range	22	03/06	0	Range: 0–15; 0: No lock; 1: Lock power on/off; 2: Lock temperature adjustment ; 4: Lock fan-speed setting; 8: Lock operation mode setting Example: to lock both temperature adjustment (02) and fan-speed setting(04), set the parameter to 02 + 04 = 06.
Temporary local unlocking	23	03/06	1	0: disable; 1: enable
Normal menu operation permissions	24	03/06	0	0: read+write; 1: only read
Room temp. offset	25	03/06	0	Range -50~50; step:5; offset temp. = read value/10
Power-down memory	100	03/06	2	00: Power down; 01: Power on; 02: Power-down memory
Low temp. protection	101	03/06	0	0: disable; 1: enable
Low temp. protection temp	102	03/06	50	Range: 0~170: 0~17°C; step:5
Home screen displayed temp.	103	03/06	0	0: room temp.; 1: temp. set point
Set point upper limit	104	03/06	350	Range: 20~900: 2~90°C; step: 5
Set point lower limit	105	03/06	50	Range: 0~880: 0~88°C; step:5
Backlit setting	107	03/06	0	0: trigger by key; 1: always on ⚠ **Caution** “Always on” is intended for use during maintenance activities ONLY. Turn off to avoid inaccurate temperature readings.
Differential	108	03/06	10	Range: 10~50: 1~5°C; step:5
S1/S2 setting	110	03/06	0	0: remote sensor; 1: dry contact input (keycard accessory)
Dry contact input setting	112	03/06	1	0: normal open;1: normal close
Occupancy action setting	113	03/06	1	0: no action; 1: trigger ECO mode; 2: turn off thermostat
FCU type	115	03/06	--	0: 2-pipe; 1: 4-pipe
Operation mode setting	116	03/06	2	0: heat only; 1: cool only; 2: cool & heat (manual); 3: cool & heat (auto)
4-pipe auto mode deadband	121	03/06	10	Range: 10~30: 1~3°C; step: 10
Fan operation when no demand	122	03/06	--	0: fan on; 1: fan off

Ventilation mode	123	03/06	1	0: disable; 1: enable
Anti-Cold Air Start Delay	124	03/06	0	Range: 0~300s; step: 10
AC fan speed setting	126	03/06	2	0: single speed (connect high terminal); 2: 3-speed
Address	127	03/06	1	Range: 1~64; step: 1
Communication settings	128	03/06	0×10	Check table: COM
Custom Shortcut Functions	140	03/06	--	Example: 01C: Hbyte->0x01 Lbyte->C（ASCII）->0x43 01C->0x0143 01o: Hbyte->0x01 Lbyte->o（ASCII）->0x6F 01o->0x016F 01: Hbyte->0x01 Lbyte->00 ->0x00 01->0x0100
Remote temp. sensor fault action	142	03/06	0	0: change to built-in sensor; 1: Alarm sensor failure
Room alarm high temp. threshold	143	03/06	550	Range: 350~900: 35~90°C; step: 5
ECO mode: cooling set point	144	03/06	280	Range: 220~320: 22~32°C; step: 5
ECO mode: heating set point	145	03/06	160	Range: 100~210: 10~21°C; step: 5
ECO mode: fan speed	146	03/06	0	0: low ; 1: med; 2: high （AC fan）
ECO mode: differential	147	03/06	20	Range: 10~50: 1~5°C; step: 5
Cooling proportional parameter (P)	200	03/06	10	Range：1~99，step：1
Heating proportional parameter (P)	201	03/06	10	Range：1~99，step：1
Integral parameter (I)	202	03/06	1	Range：1~99，step：1
Sampling cycle period	204	03/06	10	Range：1~99，step：1
Proportional valve span	206	03/06	5	Range：1~99

COM	Bit15~6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
	Reserve	Parity bit		Baud rate			

Parity bit	Bit5~Bit4: 0: No parity; 1: Odd; 2: Even
Baud rate	Bit3~bit0: 0: 4800; 1: 9600; 2: 19200; 3: 38400

Restrict Coil and Register Commands for Gen5 Devices

Be advised that for Gen5 Devices enabling the **Restrict Coil and Register Commands** setting precludes you from including some Modbus devices on the same serial network. This is particularly relevant for devices that contain datatypes requiring multiple register writes, such as float and float32, commonly present in Variable Frequency Drives (VFDs).

Appendix – Symbols Key

 **Warning**	Potential for death, serious injury, or permanent damage to a system.
 **Caution**	Potential for injury, damage to a system, or system failure.
 **Tip**	Useful information not related to injury or system damage.