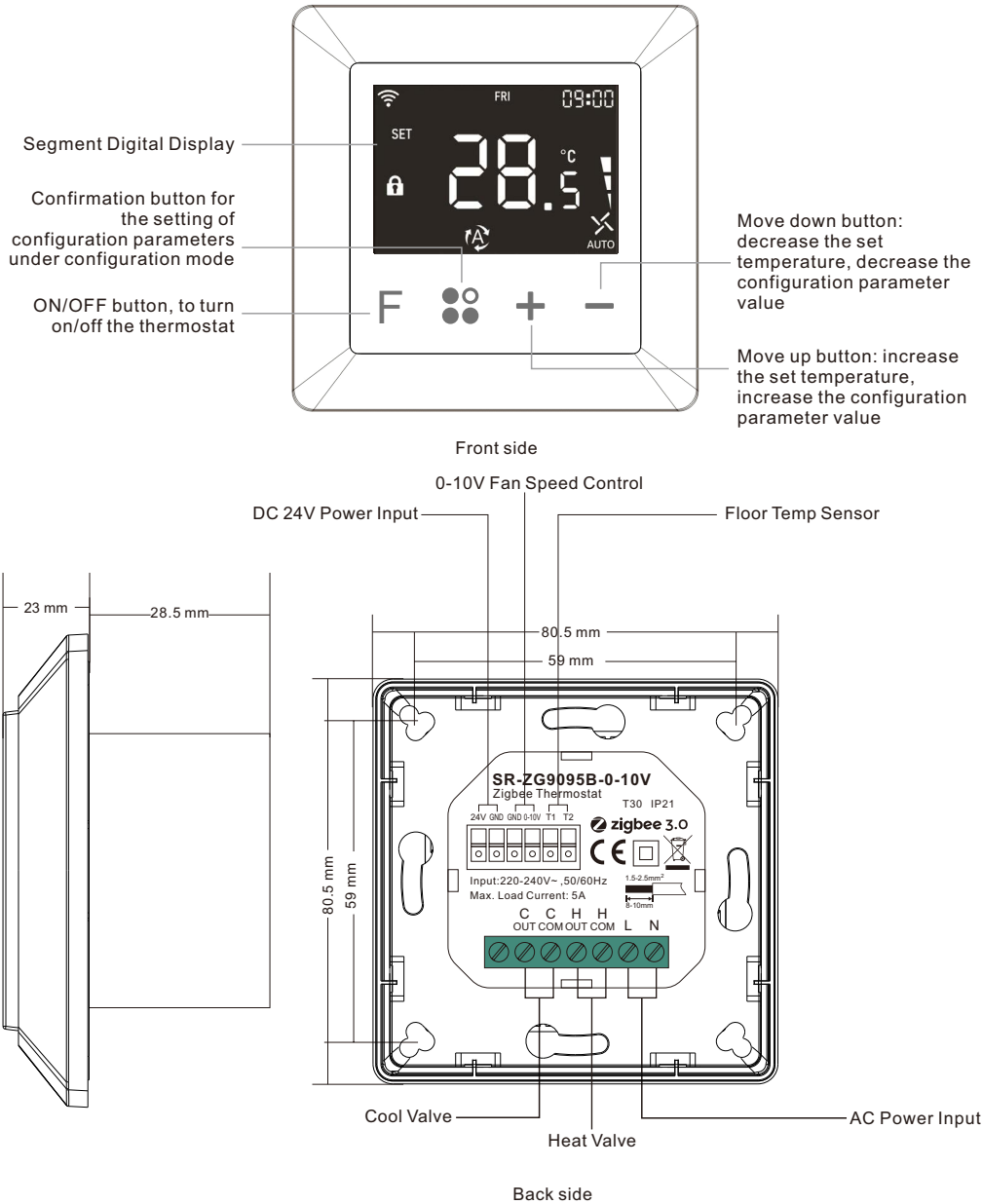


Zigbee Thermostat



Important: Read All Instructions Prior to Installation

Function introduction



Product Data

Max. Voltage	EU: AC-230V/50Hz; US: AC-110V/60Hz
Max. Resistive Load	5A

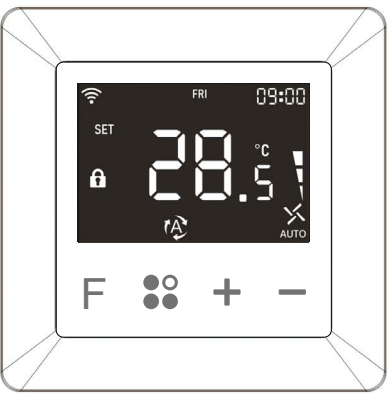
Sensors: Air temperature  
Thermostat mode: Off, Cool, Heat, Auto, Away, Fan only  
Temperature setting: 5-35°C  
Measurement range: 0-60°C  
Accuracy: ±0.1°C

**WARNING: Electrical power must be switched off during installation.**

Home Interface

Standby Interface

On the standby interface, if there is no operation within 6 seconds, the display will go to the lowest brightness.



2.2 Button Description

- F** : ON/OFF button, turn on/off the thermostat, set the fan speed, return
- : Confirmation button for the setting of configuration parameters under configuration mode
- +** : Move up button, increase the set temperature, the fan speed, the configuration parameter value
- : Move down button, decrease the set temperature, the fan speed, the configuration parameter value

Power-On Display




HC: means this device is capable of heating and cooling.  
F: means fan, fan speed controlled by 0-10V output.  
G14: means the main board has already communicated with zigbee, zigbee version is 14, otherwise "G 14" will not be displayed.  
M1.5: means the firmware version number of the main board is 1.5.

## Icon Introduction



Already added to a Zigbee network: the icon  turns on

Child Lock enabled: the icon  turns on

Week display: **MON TUE WED THU FRI SAT SUN**

Real time display: **88:88**

Temperature display: **88.8**

When the "SET" icon on the left side turns on, the displayed temperature is the set temperature.

When the "ROOM" icon on the left side turns on, the displayed temperature is the real time room temperature.

5 modes: Heat , Cool , Auto , Away , Fan only 


Fan speed display: High , Mid , Low , Auto **AUTO**

## Basic Function Introduction

### 1. Turn On/Off the Thermostat

Press and hold button **F** for 3s to turn on/off the thermostat.

### 2. Thermostat Modes(default Auto)

On the Home interface, short press button  to change the mode, each short press will change the mode once. Modes will be cycle changed according to the sequence Heat-Cool-Auto-Away-Fan only...

Note: If Control Sequence Of Operation is configured as heat only, there will be no Cool mode.  
If Control Sequence Of Operation is configured as cool only, there will be no Heat mode.

### 3. Fan Speed Setting(default Auto)

On the Home interface, when the air conditioner is on, short press button **F** to switch the fan speed to low, mid, high and auto.




### 4. Temperature Setting(default 24°C)




A. To increase the set temperature: short press move up button **+** to increase the temperature by 0.5°C, press and hold button **+** to increase the temperature fast.

B. To decrease the set temperature: short press move down button **-** to decrease the temperature by 0.5°C, press and hold button **-** to decrease the temperature fast.

In Cool mode: the default is 28°C, you can directly use **+** and **-** to adjust the temperature;

In Heat mode: the default is 26°C, you can directly use **+** and **-** to adjust the temperature;

In Auto mode: the default cooling is 27°C and heating is 25°C. If the Schedule function is not enabled, press and hold  for 2s to switch between cooling and heating temperature. If the current setting is the cooling temperature, the icon  will flash slowly, otherwise the icon  will flash slowly, and exit the setting if there is no operation within 5s.



In Away mode: default cooling is 30°C, heating is 6°C, press and hold  for 2s to switch between cooling and heating temperature. If the current setting is cooling temperature, the icon  will flash slowly, otherwise the icon  will flash slowly, and exit the setting if there is no operation within 5s.


Note:

4.1 The heating temperature in Auto mode and Away mode must be lower than the cooling temperature. The difference between the two is determined by MinSetpointDeadBand.

4.2 If Control Sequence Of Operation is configured as heat only, the cooling temperature will be invalid  
If Control Sequence Of Operation is configured as cool only, the heating temperature will be invalid

## 5. Child Lock

On the Home interface, press and hold the 3 buttons **F + -** at the same time for over 5 seconds, meanwhile the icon  will flash slowly, which means the child lock is activated. When the device is locked, if any button is pressed, the icon  will flash for 2s.

Under any interface, if the child lock has already been activated, press and hold the 3 buttons **F + -** at the same time for over 5 seconds, meanwhile the icon  will disappear, which means the child lock is deactivated.

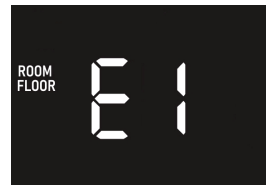
The Child Lock can also be configured through the attribute KeypadLockout of Thermostat User Interface Configuration.

## 6. Identify (Zigbee)

When the device receives Identify command from another device, the display will flash slowly every 0.5S, all icons on the display will turn off and turn on alternately and continuously. During the process, if a button is pressed, the display will recover to normal status and stop flashing, and normal status of the display will maintain 5s if there is no further operation, then the display will continue identify indication status until the identify time expires, once identify time expires, the display will recover to normal status.

## 7 Error Code

If the device is malfunctioning, the error code will flash slowly on the screen, the error codes are as follows:



**E1 or -- °C: sensor error**

**ROOM** : room sensor is in error.

**FLOOR** : floor sensor is in error.

Note 1: if the parameter "Control Reference Sensor P-17" is configured after power on, and the selected sensor is error, even if the alarm is cancelled by pressing a button, the alarm will be displayed again if there is no operation on the buttons 1 minute after the alarm is cancelled.

Zigbee: temperature value is 0x8000.

E4: power on storage error, can not be stored.

E5: wireless module error: can not communicate.

## Operating Mode and Function

### 1. Heat mode

When the set temperature is higher than the real-time temperature of the room, open the hot water valve.

### 2. Cool mode

When the set temperature is lower than the real-time temperature of the room, open the cold water valve.

### 3. AUTO mode

If the Schedule function is not enabled, the thermostat runs according to the set heating and cooling temperatures.





If the Schedule function is enabled, the thermostat runs according to the preset heating and cooling temperature in the Schedule.

### 4. Away mode

This mode can also be used as power saving mode. It is recommended to set the heating temperature to a relatively low temperature and the cooling temperature to a relatively high temperature. You can activate it when going out to prevent freezing and overheating when no one is at home.

## 5. Schedule Function

Under Auto mode, configure the attribute ThermostatProgrammingOperationMode(0x0025) of Thermostat cluster(0x0201) or press and hold button  for over 5s to enable or disable Schedule function.

When this function is enabled, one of the 4 icons will turn on     , which stand for 4 periods of a day: morning, noon, afternoon, night. Default time schedule is as follows:

Monday ~ Friday



7:30: Heat 23°C, Cool 28°C; 12:30: Heat 24°C, Cool 26°C; 18:30: Heat 23°C, Cool 27°C; 22:30: Heat 24°C, Cool 28°C


Saturday, Sunday

7:30: Heat 25°C, Cool 27°C; 12:30: Heat 24°C, Cool 27°C; 18:30: Heat 24°C, Cool 26°C; 22:30: Heat 25°C, Cool 27°C



## System Settings

**Step 1:** On the Home interface, press and hold   button to enter system setting menu, “P-01” means current page is parameter 1 setting page, meanwhile “P-01” flashes.

**Step 2:** Short press button  or button  to select the parameter item that you would like to configure: “P-01” --> “P-02” ...

**Step 3:** Short press button  to enter the selected parameter, value configuration menu of the selected parameter item, corresponding configuration value flashes slowly.

**Step 4:** Short press button  or button  to modify the parameter value.

**Step 5:** Short press button  to confirm and save modification and return to the parent menu, or short press button  to return to the parent menu directly without saving the modification.








**Step 6:** On the system setting page, short press button  to quit system setting interface.


### 3.1 Adding to or Removing from a Zigbee Network - Configuration Parameter “P-01”

#### 3.1.1 Adding to a Zigbee network

**Step 1:** make sure the device has not been added to any Zigbee network, factory reset it to remove it from previous Zigbee network.

**Step 2:** operate your Zigbee gateway or hub to add device, please refer to the manual of your Zigbee gateway to learn how.

**Step 3:** Select parameter item “P-01”, then short press button  to enter parameter value configuration page of “P-01”, then short press button  or  to select “” (“nE.A” means net add), then short press button  , the icon “Ad” (Add) will be shown at the center of the display, meanwhile the icon  will flash slowly, and the device will enter network pairing mode, the network pairing mode will last for 180 seconds, short press  will exit pairing mode. Once timeout, please repeat this step.

**Step 4:** Once added to the Zigbee network successfully, the icon  will stay solid on.

**Note: if the device has not been added to a network, power on it, it will send out network pairing request for around 60 seconds.**

#### 3.1.2 Removing from a Zigbee network

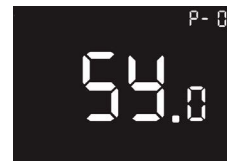
**Step 1:** if the device has already been added to a zigbee gateway, select parameter item “P-01”, then short press button  to enter parameter value configuration page of “P-01”, then short press button  or  to select “” (“nE.L” means net leave), then short press button  , the icon “LE” (Leave) will be shown at the center of the display, meanwhile the icon  will flash slowly.

**Step 2:** Once removed from the Zigbee network successfully, the icon  will disappear.



Adding to a Zigbee Network

Removing from a Zigbee Network



Factory Reset Interface



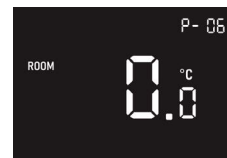
Set LCD Brightness



Set Button Buzzer Volume








Set Button Vibration



Room Temp Compensation

### 3.2 Factory Reset - Configuration Parameter “P-02”

**Step 1:** if the device has already been added to a Zigbee gateway, operate the gateway to remove or reset the device as instructed, please refer to the manual of the Zigbee gateway to learn how.

**Step 2:** Select parameter item “P-02”, then short press button  to enter parameter value configuration page of “P-02”, then short press button  or  to select “” (“Sy.r” means system reset default), the icon “rE” (“rE” means reset default) will be shown at the center of the display, then short press button  to enter factory reset process, and the device will restart. The device will be removed from the Zigbee network and all configuration parameters will be restored to factory default, including energy consumption.

### 3.3 Display Operation Brightness - Configuration Parameter “P-03”

Select parameter item “P-03”, “LI” means lcd light, available setting range is LI.1~LI.3:

LI.1, Low 20%,

LI.2, Mid 50%,

LI.3, High 100% (factory default)

The Display Operation Brightness can also be configured through the proprietary attribute 0x1000 of Thermostat - 0x0201, please refer its detailed description.

### 3.4 Button Buzzer Volume Level - Configuration Parameter “P-04”

Select parameter item “P-04”, “bu” means buzzer, available range is bu.0~bu.3:

bu.0, disabled (factory default),

bu.1, Low,

bu.2, Mid,

bu.3, High

The Button Buzzer Volume Level can also be configured through the proprietary attribute 0x100c of Thermostat - 0x0201, please refer its detailed description.

### 3.5 Button Vibration Level - Configuration Parameter “P-05”

Select parameter item “P-05”, “vi” means vibration, available setting range is:

vi.0: vibration disabled (factory default),

vi.1: Low,

vi.2: Mid,

vi.3: High

This value can also be configured through proprietary attribute 0x1001 of Thermostat Cluster - 0x0201, please refer to its detailed description.

### 3.6 Room Temp Sensor Compensation - Configuration Parameter “P-06”

Select parameter item “P-06”, available setting range is:

-2.5 to +2.5, unit is 1°C, factory default value is 0, step value is 0.5°C.

The Room Temperature Sensor Compensation value can also be configured through the attribute 0x0010 of Thermostat - 0x0201, but the unit for the setting value is 0.1°C, please refer its detailed description.



Temp Display Unit



Set Power Up Status



Set System Time



Set System Week



Home Interface Temp Display

### 3.7 Unit of Displayed Temperature - Configuration Parameter “P-07”

Select parameter item “P-07”, “Un” means unit display, available setting range is: “°F” and “°C”, factory default value is °C.

Note: All temperature settings is based on the unit °C.

The Unit of Displayed Temperature can also be configured through the attribute 0x0000 of Thermostat User Interface Configuration, please refer its detailed description.

### 3.8 Power UP Status - Configuration Parameter “P-08”

This parameter is used to set the mode the device will be in after it is re-powered on.

Select parameter item “P-08”, available setting range is:

Pu.a: Auto mode

Pu.p: previous, the mode the device was in before last powering off (factory default)

The Power UP Status value can also be configured through the proprietary attribute 0x1004 of Thermostat - 0x0201, please refer its detailed description.

### 3.9 System Time Setting - Configuration Parameter “P-09”

Select parameter item “P-09”, and enter parameter value configuration page of system time setting page “ti”, the time is displayed at upper right corner, first two digits mean hour, last two digits mean minute, short press button  $\oplus$  or  $\ominus$  to modify the hour or minute value, short press button  $\odot$  to switch between hour and minute setting and save setting.

### 3.10 System Week Setting - Configuration Parameter “P-10”

Select parameter item “P-10”, and enter parameter value configuration page of system week setting page, short press button  $\oplus$  or  $\ominus$  to modify the value, available setting range is Monday ~ Sunday. Short press button  $\odot$  to switch and save setting.

### 3.11 Home Interface Temperature Display - Configuration Parameter “P-11”

Select parameter item “P-11”, and enter parameter value configuration page of home interface temperature display “te” (temp display), which enables the user to set to display set temperature, room temperature or floor temperature, available setting range is:

te.s: set temperature,

te.r: room temperature (factory default),

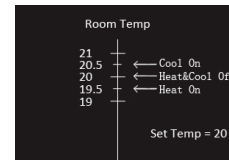
te.f: floor temperature (factory default),

If the home interface shows room temperature, when using button to adjust the set temperature, the display will show the set temperature. After a few seconds of no operation, the home interface will be restored to display room temperature.

This value can also be configured through proprietary attribute 0x1008 of Thermostat Cluster (0x0201), please refer to its detailed description.



Set Operation Type



How Hysteresis Works



Schedule Setting Figure 1



Enter Schedule Setting Figure 2



Hour Setting Figure 3

### 3.12 Control Sequence of Operation - Configuration Parameter “P-12”

This parameter is used to set the operation type and wiring method of thermostat. “co” means control.

Select parameter item “P-12”, available setting range is:

Co.C: two-pipe cooling

Co.H: two-pipe heating

Co.4: four-pipe cooling and heating (factory default)

This Control Sequence of Operation can also be configured through the attribute ControlSequenceOfOperation(0x001B) of Thermostat - 0x0201.

Note: In order to prevent the heating set temperature from being higher than the cooling set temperature, if the mode is changed from two pipes to four pipes, all set temperatures, Schedule program, and MinSetpointDeadBand will be restored to factory settings.

### 3.13 Min Setpoint Dead Band - Configuration Parameter “P-13”

This parameter refers to the minimum difference between cooling and heating temperatures.

Select parameter item “P-13”, available setting range is 10-15, unit is 0.1°C, factory default value is 10(1°C).

This value can also be configured through the attribute MinSetpointDeadBand(0x0019) of Thermostat - 0x0201.

Note: In order to prevent the heating set temperature from being higher than the cooling set temperature, if this parameter is modified, all set temperatures and Schedule program will be restored to factory settings.

The hysteresis used by this device = MinSetpointDeadBand / 2

### 3.14 Schedule Setting - Configuration Parameter “P-14”

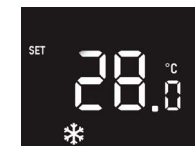
Select parameter item “P-14”, “Sc.s” means “schedule setting”.

After entering the setting, short press buttons  $\oplus$  and  $\ominus$  to select the item to be viewed: hour, minute, cooling set temperature, heating set temperature, corresponding icon will flash slowly. For instance, the figure “Enter Schedule Setting Figure 2” shows the cooling temperature of first period of Monday is 28°C.

If you need to configure an item, after selecting it, short press button  $\odot$  to enter configuration page, the icon will flash slowly, the figure “Hour Setting Figure 3” shows the interface of setting hour and the figure “Cool Temp Setting Figure 4” shows the interface of setting cooling temperature.

Modify the value by short pressing the buttons  $\oplus$  and  $\ominus$ , then short press button  $\odot$  to save the setting, or short press button  $\text{F}$  to quit setting without saving.

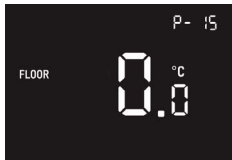
When the thermostat is configured as four-pipe mode, when saving the setting, the heating set temperature+MinSetPointDeadBand should be lower than the cooling set temperature, 4 periods stand for morning, noon, afternoon, night, if the configuration parameters are incorrect, the setting will not be saved and previous setting will be kept, and error warning will be displayed on the screen.



Cool Temp Setting Figure 4



Error Warning Figure 5



Floor Temp Compensation



Set Floor Sensor Type



Set Control Type

3.15 Floor Temp Sensor Compensation - Configuration Parameter “P-15”

Select parameter item “P-15” , available setting range is:  
-2.5 to +2.5, unit is 1°C, factory default value is 0, step value is 0.5°C.  
The Floor Temperature Sensor Compensation value can also be configured through the attribute 0x1005 of Thermostat - 0x0201, but the unit for the setting value is 0.1°C.

3.16 Floor Sensor Type - Configuration Parameter “P-16”

Select parameter item “P-16” , available range is 0~4:  
“12K”: 4, NTC 12K/25°C  
“100K”: 3, NTC 100K/25°C  
“50K”: 2, NTC 50K/25°C  
“15K”: 1, NTC 15K/25°C  
“10K”: 0, NTC 10K/25°C (factory default)  
The Floor Sensor Type can also be configured through the proprietary attribute 0x1002 of Thermostat - 0x0201, please refer its detailed description.  
Note: ±1% accuracy, B25/50=3950K±1%

3.17 Control Reference Sensor - Configuration Parameter “P-17”

Control type means which temperature sensor the device refers to when it adjusts temperature, the icon for control type is “co” (control).  
Select parameter item “P-17” , available setting range is:  
Co.r: room sensor (factory default),  
Co.f: floor sensor  
**Room sensor:** temperature adjustment refers to room sensor temperature (factory default type), heating adjustment is determined by the hysteresis  
**Floor sensor:** temperature adjustment refers to floor sensor temperature, heating adjustment is determined by the hysteresis  
The Control Reference Sensor can also be configured through the proprietary attribute 0x1003 of Thermostat - 0x0201, please refer its detailed description.

3.18 Anti Freezing Temperature - Configuration Parameter “P-18”

Note: This function is valid only when Control Sequence Of Operation - “P-12” is configured as Co.H(two-pipe heating) or Co.4(four-pipe).  
To prevent the room from freezing while no one is at home, this configuration parameter can be used, and it is executed under off status, and the reference sensor is room sensor or floor sensor.  
Select parameter item “P-18” , available setting range is:  
0, means anti freezing is disabled,  
5-10°C, factory default value is 5°C.  
The Anti Freezing Temperature value can also be configured through the proprietary attribute 0x1006 of Thermostat - 0x0201, please refer its detailed description.

4. Zigbee Interface

Zigbee application endpoints:

Endpoint	Profile	Application
0(0x00)	0x0000(ZDP)	ZigBee Device Object (ZDO) - standard management features
1(0x01)	0x0104(HA)	HVAC, DeviceID = 0x0301
242	0x0104(HA)	Green power, DeviceID = 0x0301

4.1. Application Endpoint #0-ZDO

Device standard management features.

4.2. Application endpoint #1-Thermostat

Cluster	supported	Description
0x0000	server	<b>Basic</b> Provides basic information about the device, such as the manufacturer ID, vendor and model name, stack profile, ZCL version, production date, hardware revision etc. Allows a factory reset of attributes, without the device leaving the network.
0x0003	server	<b>Identify</b> Allows to put the endpoint into identify mode. Useful for identifying/locating devices and required for Finding & Binding.
0x0004	server	<b>Groups</b> Allows adding this endpoint to one or more groups. Afterwards the endpoint can be addressed using the group address. This is also a prerequisite for scenes. You may also query group membership and delete group associations.
0x0005	server	<b>Scenes</b> Allows storing one or more scenes per group, where each scene consists of a pre-set on/off state value. You may either store the current values as a scene, or provide scene settings when adding a scene, or delete scenes.
0x0201	server	<b>Thermostat</b>
0x000a	server	<b>Fan Control</b>
0x0019	Client	<b>OTA Upgrade</b> Pull-oriented firmware upgrade. Searches the network for mating servers and allows the server to control all stages of the upgrade process, including which image to download, when to download, at what rate and when to install the downloaded image.
0x000a	Server	<b>Time</b>
0x0204	Server	<b>Thermostat User Interface Configuration</b>

4.2.0 Basic -0x0000 (Server)

Attributes supported:

Attribute	Type	Description
0x0000	INT8U, read-only	<b>ZCLVersion</b> 0x03
0x0001	INT8U , read-only	<b>ApplicationVersion</b> This is the software version number of the application
0x0002	INT8U , read-only	<b>StackVersion</b>
0x0003	INT8U , read-only	<b>HWVersion</b> Hardware version 1
0x0004	string, read-only	<b>ManufacturerName</b>
0x0005	string, read-only	<b>ModelIdentifier</b>

0x0006	string, read-only	<b>DateCode</b> NULL
0x0007	ENUM8, read-only	<b>PowerSource</b> Device power supply, fixed value 0x01 Mains (single phase)
0x0008	ENUM8, read-only	<b>GenericDevice-Class</b> 0XFF
0x0009	ENUM8, read-only	GenericDevice-Type 0XFF
0x000A	octstr read-only	ProductCode 00
0x000B	string, read-only	ProductURL NULL
0x4000	string, read-only	Sw build id 6.10.3.0

Command supported:

Command	Description
0x00	<b>Reset to Factory Defaults Command</b> On receipt of this command, the device resets all the attributes of all its clusters to their factory defaults. Note that networking functionality, bindings, groups, or other persistent data are not affected by this command.

4.2.1 Identify -0x0003 (Server)

Attributes supported:

Attribute	Type	Description
0x0000	INT16U	<b>Identify time</b>

Receive command supported:

Command	Description
0x0000	<b>Identify</b>
0x0001	<b>IdentifyQuery</b>

Generate command supported:

Command	Description
0x0000	<b>IdentifyQueryResponse</b>

4.2.2 Scenes 0x0005 (Server)

Attributes supported:

Attribute	Type	Description
0x0000	int8u, read-only	<b>SceneCount</b> Holds the total number of scenes (across all groups) currently stored on the device.
0x0001	int8u, read-only	<b>CurrentScene</b> If the SceneValid attribute is true, this attribute, together with the CurrentGroup attribute, indicates the currently active scene.

0x0002	int16u, read-only	<b>CurrentGroup</b> If the SceneValid attribute is true, this attribute, together with the CurrentScene attribute, indicates the currently active scene.
0x0003	bool, read-only	<b>SceneValid</b> If true, the scene identified by CurrentGroup and CurrentScene is currently active, i.e. all device attribute values match the values in the scene field set.
0x0004	bitmap8 , read-only	<b>NameSupport</b>

Receive command supported:

Command	Description
0x00	<b>Add Scene</b> Adds a scene with or without a scene field set
0x01	<b>View Scene</b> Returns the scene field set, name and transition times for a scene.
0x02	<b>Remove Scene</b> Removes a scene from the scene table.
0x03	<b>Remove All Scenes</b> Removes all scenes that belong to a particular group.
0x04	<b>Store Scene</b> Stores the device's current state as a scene or updates a previously stored scene accordingly
0x05	<b>Recall Scene</b> Reverts the device's current state using the values from the previously stored field set.
0x06	<b>Get Scene Membership</b>

4.2.3 Groups-0x0004 (Server)

Attributes supported:

Attribute	Type	Description
0x0000	bitmap8, read-only	<b>NameSupport</b> 0, not supported

Receive command supported:

Command	Description
0x00	<b>Add Group</b> Adds the endpoint to a group.
0x01	<b>View Group</b> Determines whether the device belongs to a group and returns the group name, if supported
0x02	<b>Get Group Membership</b> Returns the set of groups this endpoint belongs to
0x03	<b>Remove Group</b> Removes this endpoint from the specified group. Also removes all scenes that refer to this group.



0x04	<b>Remove All Groups</b> Removes this endpoint from all groups. Also removes all scenes that refer to any of the existing groups.
0x05	<b>Add Group if Identifying</b> Adds this endpoint to the group, if the endpoint is identifying.

Generate command supported:

Command	Description
0x00	<b>Add Group Response</b> Adds the endpoint to a group.
0x01	<b>View Group Response</b>
0x02	<b>Get Group Membership Response</b>
0x03	<b>Remove Group Response</b>

4.2.4 Thermostat-0x0201(Server)

Attributes supported:

Attribute	Type	Description
0x0000	int16S , read-only, reportable	<b>LocalTemperature Attribute (room temp)</b> This is room temperature, the maximum resolution this format allows is 0.01 °C. 0x8000 means temperature sensor is invalid.
0x0001	int16S , read-only, reportable	<b>OutdoorTemperature (floor temp)</b> This is floor temperature, the maximum resolution this format allows is 0.01 °C. 0x8000 means temperature sensor is invalid.
0x0010	Int8S , reportable	<b>LocalTemperatureCalibration</b> Room temperature calibration, range is -25~+25, the maximum resolution this format allows 0.1°C. Default value: 0
0x0011	int16S , reportable	<b>OccupiedCoolingSetpoint</b> Range is 500-3200, the maximum resolution this format allows is 0.01 °C. Default is 0xbb8(30.00°C).
0x0012	int16S , reportable	<b>OccupiedHeatingSetpoint</b> Range is 500-3200, the maximum resolution this format allows is 0.01 °C. Default is 0xbb8(30.00°C).
0x0013	int16S , reportable	<b>UnOccupiedCoolingSetpoint</b> Range is 500-3200, the maximum resolution this format allows is 0.01 °C. Default is 0xbb8(30.00°C).
0x0014	int16S , reportable	<b>UnOccupiedHeatingSetpoint</b> Range is 500-3200, the maximum resolution this format allows is 0.01 °C. Default is 0xbb8(30.00°C).
0x001B	Enum8, reportable	<b>ControlSequenceOfOperation</b> Set device supported operation type, supports: 0x00: two-pipe cooling 0x02: two-pipe heating 0x04: four-pipe heating and cooling
0x001C	Enum8, reportable	<b>System Mode</b> System operation mode, supports 0x00(off), 0x01(auto), 0x03(cool), 0x04(heat), 0x07(fan only)
0x0029	Map16, read-only, reportable	<b>HVAC relay state/ ThermostatRunningState</b> Indicates the relay on/off status, supports: bit0: Heat State on/off bit1: Cool State on/off bit2: Fan State on/off

0x0020	Enum8	<b>StartOfWeek</b> 0
0x0021	Int8u , read-only	<b>NumberOfWeeklyTransitions</b> Fixed value 7
0x0022	Int8u , read-only	<b>NumberOfDailyTransitions</b> Fixed value 4, 4 time periods
0x0019	int8S , reportable	<b>MinSetpointDeadBand</b> The minimum set difference between heating and cooling temperature in Auto and Away mode. Default is 10(1°C), in steps of 0.1°C. Its range is 0x0a to 0x0F(1°C to 1.5°C)
0x0025	Map8 , reportable	<b>ThermostatProgrammingOperationMode</b> Bit0 0 – Simple/setpoint mode. This mode means the thermostat setpoint is altered only by manual up/down changes at the thermostat or remotely, not by internal schedule programming. 1 – Schedule programming mode. This enables or disables any programmed weekly schedule configurations. Note: It does not clear or delete previous weekly schedule programming configurations

Proprietary Attributes:

Attribute	Type	Manufacturer code	Description
0x1000	ENUM8, reportable	0x1224	<b>Operate Display Brightnesss</b> Segment digital display brightness: 1, low 20% 2, mid 50% 3, high 100% (default)
0x1001	ENUM8 reportable	0x1224	<b>Button Vibration Level</b> 0, vibration disabled (default) 1, low 2, mid 3, high
0x1002	ENUM8 reportable	0x1224	<b>FloorSenserType</b> Select external (Floor) sensor type: Value=4 : NTC 12K/25 Value=3 : NTC 100K/25 Value=2 : NTC 50K/25 Value=1 : NTC 15K/25 Value=0 : NTC 10K/25 (Default)
0x1003	ENUM8 reportable	0x1224	<b>ControlType</b> The referring sensor for temperature control: Value=1: Room sensor(Default) Value=2: floor sensor
0x1004	ENUM8 reportable	0x1224	<b>PowerUpStatus</b> The mode the device will be in when re-powered on: Value=0: Auto mode Value=1: The mode the device was in before last powering off
0x1005	INT8S, reportable	0x1224	<b>FloorSenserCalibration</b> External (floor) sensor temperature compensation value, value range is -30~+30, unit is 0.1°C, default value is 0

0x1006	INT8U, reportable	0x1224	<b>Anti Freezing Mode Configuration</b> 0: disabled 5~10: temperature (5°C by default)
0x100C	ENUM8 reportable	0x1224	<b>Button Beeper Volume</b> 0, beeper disabled (default) 1, low 2, mid 3, high
0x1008	ENUM8 reportable	0x1224	<b>Temperature Display</b> Value=0: displays room temp (default) Value=1: displays set temp Value=2: displays floor temp
0x2002	ENUM8 reportable	0x1224	<b>Away Mode Enable</b> Value=0: Away mode disabled, restored to Auto mode Value=1: Away mode enabled

Command supported:

Command	Description
0x0000	<b>Setpoint Raise/Lower</b> Increase or decrease the set temperature according to current mode, unit is 0.1°C Mode only support: 0x00 Heat (adjust Heat Setpoint) 0x01 Cool (adjust Cool Setpoint)
0x0001	<b>SetWeeklySchedule</b> Configuration of time periods for Auto mode. Note: 1. Number of Transitions for Sequence must be 4, meaning you need to set 4 preset time points, with time intervals increasing sequentially. 2. Mode for Sequence must be 3, supporting only heat and cool. 3. If a schedule for a day of the week is configured, the existing schedule will be overwritten. 4. The schedule configured by this command will only execute the preset values in Auto mode. 5. If ControlSequenceOfOperation is set to 0x04(Cooling and Heating 4-pipe, the cooling set temperature must be >=the heating set temperature+MinSetPointDeadBand, otherwise it will prompt failure.
0x0002	<b>GetWeeklySchedule</b>
0x0003	<b>ClearWeeklySchedule</b>

#### 4.2.5 Fan Control 0x0202 (Server)

Attributes supported:

Attribute	Type	Description
0x0000	ENUM8, reportable	<b>Fan Mode</b> Current speed of the fan, supports: off(0x00), low(0x01), mid(0x02), high(0x03), auto(0x05) Fan mode can be off only when the device is in off mode,
0x0001	ENUM8, reportable	<b>Fan Mode Sequence</b> Only support 0x02(fan, off, low, mid, auto)

#### 4.2.6 Time-0x000A(server)

The Time cluster is a general cluster for time it is based on a UTC time in seconds since 0 hrs 0 mins 0 sec on 1st January 2000. Refer to [Z2] for ZigBee specification of the time cluster.

The metering device will use this cluster as a server– provided that a suitable Time Server is available on the network (most likely on the Gateway/concentrator)

Attributes supported:

Attribute	Type	Description
0x0000	UTC	Time
0x0001	MAP8	TimeStatus 0x02 bit0:0, not master clock Bit1:1, Synchronized
0x0002	Int32s	Time zone Default: 0

#### 4.2.7 OTA Upgrade-0x0019(Client)

OTA complies with standard Zigbee protocol.

#### 4.2.8 Thermostat User Interface Configuration-0x0204(Server)

Attributes supported:

Attribute	Type	Description
0x0000	Enum8, reportable	<b>TemperatureDisplayMode</b> 0x00 Temperature in °C 0x01 Temperature in °F
0x0001	Enum8, reportable	<b>KeypadLockout</b> 0x00 No Lockout 0x01 - 0x05 lockout

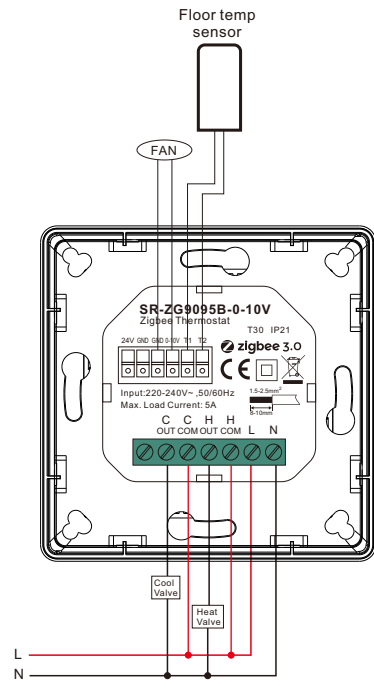
#### 4.3 Application Endpoint #242-GreenPower



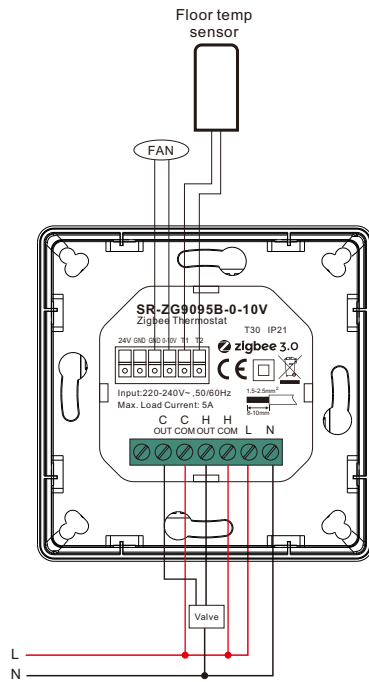
## Wiring Diagram

### 1. With AC Power Input

#### Four-pipe cooling and heating



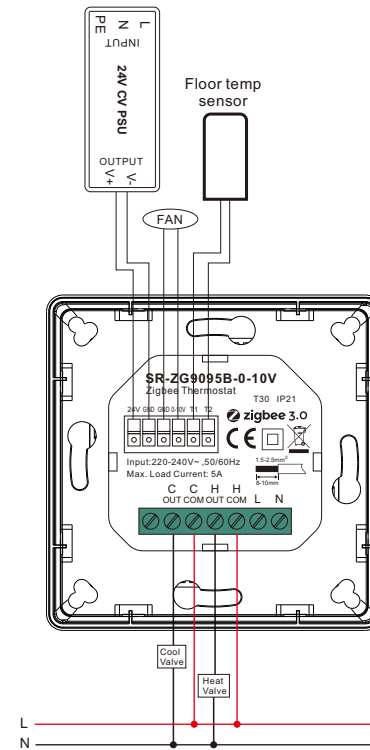
#### Two-pipe cooling or heating



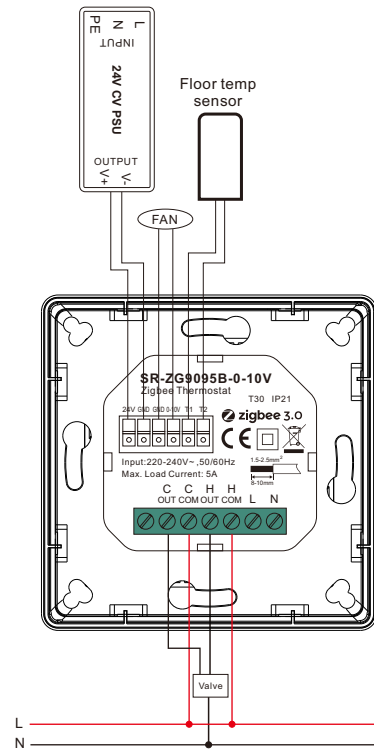
C: Cool valve  
H: Heat valve  
24V, GND: DC24V power  
GND, 0-10V: 0-10V output  
T1, T2: Floor temp sensor  
N: Neutral line  
L: Live line

### 2. With DC Power Input

#### Four-pipe cooling and heating



#### Two-pipe cooling or heating



C: Cool valve  
H: Heat valve  
24V, GND: DC24V power  
GND, 0-10V: 0-10V output  
T1, T2: Floor temp sensor  
N: Neutral line  
L: Live line