

SM-2103-SDM
Fan Coil Thermostat

For 2-pipe and 4-pipe Fan Coil Units



Features

- Manual or automatic 3-speed fan control
- On/Off control Heating/Cooling valves
- Auto, Heat, Cool and Ventilation modes
- Manual or automatic Heating/Cooling changeover
- Input for external sensor (air or pipe temperature)
- Input for windows/energy saving contact etc.
- Automatic Heating/Cooling changeover via changeover sensor
- User setpoint limitation
- Clock and time schedule functions (optional)
- Key lock
- Configurable user parameters
- Modbus RTU communication
- White backlight LCD
- Surface Mounting



Application

2103-SDM series Fan Coil Thermostats used in individual rooms or zones in buildings. It is designed for 2 pipe or 4 pipe fan coil units. 2103-SDM has one input as external sensor or open/close contact input, one analog input, five relay output and RS-485 port. It controls the fan coil unit depending on the internal room sensor or external return sensor temperature.

Notes on Usage

Please, read this datasheet carefully. 2103-SDM thermostat safety rules in accordance with the latest technological developments designed and manufactured. To avoid injury and property damage safety warnings must be observed.

Security Advice-Caution

Assembly, maintenance, diagnostic and repair must be done by authorized service. The power supply of the device is 220V AC and it has no internal fuse. Disconnect from power supply before separating front plate.



Ordering Information

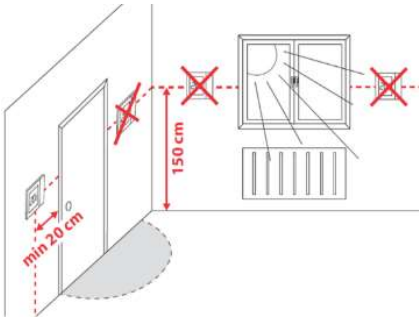
| Product Code | Description | Power | Communication |
|--------------|--|---------|---------------|
| SM-2103-SDM | 3 pcs Digital Outputs (Relay) Fan Control 2 pcs Digital Outputs (Relay) Valve Control 1 pcs Analog Input 1 pcs Digital Input 1 pcs RS-485 Port | 220 VAC | Modbus RTU |

Technical Specification

| | |
|-----------------------|-----------------------|
| Power Supply | 220 VAC±10%, 50/60 Hz |
| Power Consumption | < 2.0W |
| Electrical Connection | Terminal Connectors |

| | |
|------------------------------|---|
| Relay Rating | 5A (2A) |
| Temperature Accuracy | ±0,5°C |
| Temperature Control Accuracy | ±1°C |
| Inputs | 1 pcs Analog Input (NTC 10K) 1 pcs Digital Input |
| Outputs | 5 pcs Digital Output (5 x 5 (2) A Relay) |
| Communication | 1 x RS-485 Port |
| Temperature Setting | 5°C ... 35°C |
| Dimensions | 86 x 86 x 30 mm |
| Mounting | Surface Mounting |

Mounting Location

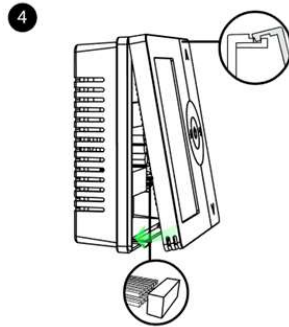
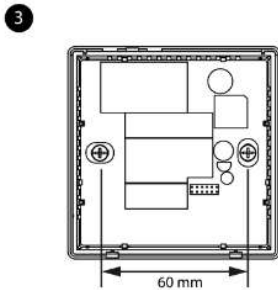
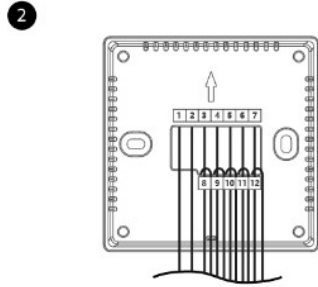
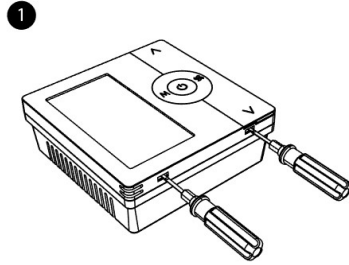


Mount the room thermostat on the cable conduit. Do not mount in niches or bookcases, behind curtains, above or near heat sources. Install at a height of about 1.5 meters from the floor. Devices must be mounted on a clean, dry indoor place without direct airflow from a heating/cooling device. Do not expose to dripping or splashing.

CAUTION: Disconnect the power supply before removing the front cover. Wiring, protection, and earthing should be done in accordance with the directions.



Mounting Instructions



Please follow the below instructions during mounting.

Step 1: Take the thermostat and user manual out of the package. Remove the front cover freeing the hooks at the bottom of the front panel with a flat screwdriver.

Step 2: Connect the cables according to the wiring diagram below.

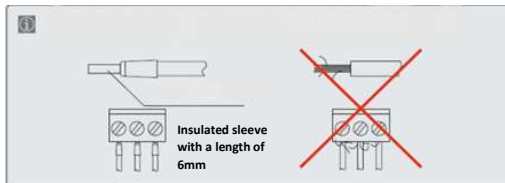
Step 3: Surface mounting in a 60mm wall box. Make sure the back cover is in the appropriate position (according to the arrow on it)

Step 4: Attach Connect the front plate to the back plate. Ensure that the front plate's pins are fully inserted into the back plate. Push the front of the case until you hear a click.

Step 5: Refer to the pictures after installation.

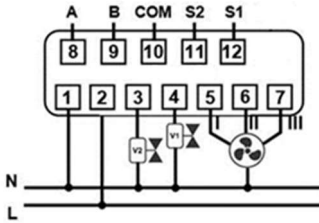
Step 6: Power on the thermostat to work.

Important Note: Using the screws included in the product box is recommended. Otherwise, there could be fitting problems during the mounting.



Caution! *The ends of the connecting wires must be protected against delamination using insulated sleeves as shown in the figure.*

Connection Diagram



2-Pipe: Heating/Cooling Valve

4-Pipe: V1: Cooling Valve

V2: Heating Valve

S1: Dry Contact

S2: Remote Sensor

A/B: Modbus Communication

Configuration Menu Parameters

Switch off the thermostat and press “M” and “▲” for 5 seconds to enter the parameter setting menu.

| No. | Name of Parameter | Parameter Definition | Default |
|-----|---------------------------------------|---|---------|
| P1 | System Type | 0= 2-pipe fan coil unit 1= 4-pipe fan coil unit 2= Cool: FCU, Heat: FCU+ Floor Heating 3= Cool: FCU, Heat: Floor Heating | 0 |
| P2 | Automatic Mode | 0= Manual 1= Automatic | 0 |
| P3 | Sensor Type | 1= Internal sensor only 2= External sensor only 3= Internal sensor & External sensor | 1 |
| P4 | Fan Control | 0= Fan stop after reaching temperature setpoint 1= Fan continuously running after reaching setpoint | 0 |
| P5 | Unoccupancy Status | 0 = Cut off all outputs 1 = Setback setpoint | - |
| P6 | Temperature Display | 0= Show room temperature 1= Show setpoint | 0 |
| P7 | Display Temperature Adjustment | -4°C ~ 4°C | 0 |
| P8 | Dead Band | 1°C ~ 4°C | 1°C |
| P9 | Auto Heat Pipe Temperature | 21°C ~ 40°C For 2-pipe auto mode with external sensor only | 22°C |
| P10 | Auto Cool Pipe Temperature | 10°C ~ 20°C For 2-pipe auto mode with external sensor only | 18°C |
| P11 | Keypad Lockout | 0= All keys available 1= All buttons locked out 2= System button locked out 3= All buttons locked out except the system | 0 |
| P12 | Power Up Status | 0= System off 1= System last state before power off 2= System on | 0 |
| P13 | Energy Saving- Dry Contact (Key Card) | 0= If the card is inserted, S1 and COM will be open. 1= If the card is inserted, S1 and COM are closed. (No Dry Contact) | 0 |
| P14 | Frost Protection | 0= Disable 1= Enable | 0 |

| | | | |
|------------|--------------------------|-------------|---------|
| P15 | Reserved | Reserved | - |
| P16 | Reserved | Reserved | - |
| P17 | Minimum Setpoint | 5°C ~ 22°C | 5°C |
| P18 | Cooling Setpoint Setback | 22°C ~ 32°C | 28°C |
| P19 | Maximum Setpoint | 23°C ~ 35°C | 35°C |
| P20 | Heating Setpoint Setback | 10°C ~ 21°C | 18°C |
| P21 | Heat Delay | 0~4 minute | 0 |
| P22 | Compressor Protection | 0~4 minute | 0 |
| P23 | Fahrenheit/Celsius | F/C | Celsius |

Table Explanation

P1- Selectable System Type: Used to select the unit control type as 2 or 4 pipe.

P2- Auto Mode: This parameter is used to specify the mode change type auto/manually in 2 or 4 pipe systems.

P3- Sensor Type: 1= Internal sensor only, 2= External sensor only, 3= The external sensor attaches to water pipe for measuring the water pipe temperature to change mode between heat and cool automatically, this function is only available under 2-pipe fan coil (Parameter 1=0) and auto system (Parameter 2=1) at the same time. System works in cooling mode if the water temperature is less than or equal to certain temperature (Default as 18°C see Parameter 10) and work in heating mode if the water temperature is higher than or equal to certain temperature (Default as 22°C see Parameter 9)

P4- Fan Control: This parameter determines the operating status of the fan after the room temperature reaches the set value.


P5- Unoccupied Status: When the hotel card is pulled out, the unoccupancy status will be 0= No output; 1= Thermostat will work in energy saving mode with setback setpoint, and the fan will run at low speed.

P7- Display Temperature Adjustment: This parameter is used to calibrate the room temperature by -4°C to 4°C.

P8- Dead Band: This parameter determines the zone where the device will not heat or cool. Until the difference between the set point and room temperature exceeds this zone device won't do heating or cooling.

For example, under the cooling mode, the setpoint is 25°C with dead band=1C, the cool air will be only available if the room temperature ≥ 26C.

P9 & P10- Auto Heat/Cool Mode pipe temperature: Only available when Parameter 1 =0, Parameter 2=1 and Parameter 3 =3 at the same time. means the system will work as auto changeover under 2-pipe system. The fan will be only activated if the external sensor measure water in the fan coil pipe is hot or cold enough, this is for anti-freezing air blow under heating mode if the pipe water is not hot enough (temperature set range 21°C ~40°C), also for energy saving under cooling mode if the pipe water is not cold enough (temperature set range 10°C ~20°C).


P11- Keypad lock: Keypad lock can be activated with this parameter. The symbol  will show on the screen.

P12- Power Up Status: This parameter determines in which state the device will be turned on after the power reset. The device will follow three states:

0: Keep the system off.

1: Keep the system's original status before the power failure.

2: Switch the system on automatically.

P13- Energy Saving-Hotel Card function: A dry contact (such as a hotel key card) can activate the energy-saving mode with icon  appearing on the screen.

P14- Frost Protection: This parameter is used to activate or deactivate the frost protection scenario. If measured temperature decreases under 6°C when frost protection is activated, the thermostat will be working in heating mode until the temperature increase over 8°C.

P17&P19- Temperature Limited: This parameter determines the maximum and minimum set values that can user selectable.

P18&P20- Energy Saving Set: Under Energy saving mode (P13), the thermostat will set the setpoint as setback temperature for energy saving.

Caution! Parameter 1 is for product -4 only. 3,5,9,13,16,17,19 parameters are for -D product.

SM-2103-SDM Modbus Parameters

Thermostats come with the option of Modbus communication. The support of Modbus communication allows simple integration of the thermostats with a building management system using standard Modbus serial communication. Thermostats communicate as a Modbus RTU slave device over a serial RS-485 connection, allowing for the transfer of real-time data. RS-485 communication parameters such as baud rate, parity check and Modbus address can be adjusted. These parameters are defined for each thermostat in the Parameter Settings Table. If required, adjust the settings to disable the Modbus connection. Connection to the RS-485 network is made via dedicated terminals on the back of the thermostat and marked A (+) and B (-). The following Modbus register types and formats are supported:

| Address | Parameter Name | Description |
|---------|-----------------|---|
| 1 | Media | RS485 |
| 2 | Baud Rate | 19200BPS/9600 BPS /4800 BPS |
| 3 | Transmit Mode | RTU |
| 4 | Data Unit | Additional address+ Functional code+ Data 1...N+ CRC High bit, CRC low bit |
| 5 | Address | 1-32 |
| 6 | Function Code | 3,6,16 |
| 7 | Data Quantity | <255 |
| 8 | Data | 0-255 |
| 9 | CRC Control | CRC-16 |
| 10 | Byte Format | 11 digits: 1 start digit+ 8 data digit+ odd parity digit+ 1 stop digit |
| 11 | Check Method | CRC-16 |
| 12 | 0 Address | Broadcast Address |
| 13 | Port Definition | A (+), B (-) |

The following points can be modified in the parameter menu.

Turn off the thermostat, press and hold the "M" key for five seconds to enter the Modbus parameter. Press "M" three times to enter each item below:

Item 01: "Address": From 01~32. Press "M" 3 times to enter item 02

Item 02: "Baud rate": 01:4800, 02: 9600, 03:19200. Press "M" 3 times to enter item 03

Item 03: "Parity": 00: No Parity, 01: Odd Parity, 02: Even Parity

Press power button "⏻" or wait 30 sec to exit and save all settings.

| Address | Parameter Name | Description |
|---------|----------------|---|
| 1 | Address | 1-32 (Default=1) |
| 2 | Baud Rate | 1- 4800 (Default) 2- 9600 3- 19200 |
| 3 | Byte Format | 0- None Parity 1- Odd Parity (Default) 2- Even Parity |

Note: After each parameter setting, the device will turn off the parameter screen by itself (about 1 minute). Then the power of the device should be turned off and on. If this operation is not performed, the parameters will return to their default settings.

| Function Code | Holding Register Address | Fan Coil | Definition |
|---------------|--------------------------|----------------------|--|
| 03/06/16 | 1(0) | Fan Mode | 00= High speed 01= Medium speed 02= Low speed 03= Auto speed |
| 03/06/16 | 2(1) | Mode | 1= Cool 2= Heat 3= Ventilation |
| 03/06/16 | 3(2) | Thermostat Status | 00: Thermostat OFF 01: Thermostat AÇIK 02: Frost protection (read-only) |
| 03/06/16 | 4(3) | Set Room Temperature | 5°C ~ 35°C |
| 03/06/16 | 5(4) | Timer On (hour) | (0 ~ 24) |
| 03/06/16 | 6(5) | Timer On (minute) | (0 ~ 60) |
| 03/06/16 | 7(6) | Timer Off (hour) | (0 ~ 24) |
| 03/06/16 | 8(7) | Timer Off (minute) | (0 ~ 60) |
| 03 | 9(8) | Communication Check | Communicate between 0/1 |
| 03 | 10(9) | Room Temperature | 0-50°C |
| 03 | 11(10) | Output | Bit0= Cooling valve(4-pipe) 0: OFF, 1: ON Bit1= Fan low speed 0: OFF, 1: ON Bit2= Fan medium speed 0: OFF, 1: ON Bit3= Fan high speed 0: OFF, 1: ON Bit4= Heating valve (4-pipe) 0: OFF, 1: ON Bit5-7= Reserved |
| 03 | 12(11) | Error Information | Bit0: Internal sensor error 0= OK, 1= Error Bit1: External sensor error 0= OK, 1= Error Bit2: Reserved Bit3: Reserved Bit4-Bit7: Reserved |

| | | | |
|----------|--------|--|--|
| 03 | 13(12) | External sensor | Temperature Range 0°C ~ 99°C |
| 03 | 14(13) | Reserved | - |
| 03/06/16 | 15(14) | Reserved | - |
| 03/06/16 | 16(15) | Enable Frost Protection | 00= OFF, 01= ON |
| 03/06/16 | 17(16) | Programmable | 01= Manual 02= Timer 03= Programmable 04= Timer + Programmable |
| 03/06/16 | 18(17) | Thermostat status after Power Recovery | 0= OFF 1= Back to the status before the power failure. 2= ON |
| 03/06/16 | 19(18) | Keypad lockout | 00= Disable 01= Lock all buttons 02= Lock ON/OFF button 03= Lock all buttons except the ON/OFF button |
| 03/06/16 | 20(19) | Temperature Display | 00= Show room temperature 01= Show set temperature |
| 03/06/16 | 21(20) | Set Min Temperature | 5°C ~ 18°C |
| 03/06/16 | 22(21) | Set Max Temperature | 20°C ~ 40°C |
| 03/06/16 | 23(22) | Differential Temperature | 1°C ~ 4°C |
| 03/06/16 | 24(23) | Sensor Selection | 01= Internal 02= External 03= Internal & External |
| 03/06/16 | 25(24) | Occupancy/dry contact close/open | 00: Occupied when open circuit 01: Occupied when short-circuit |
| 03/06/16 | 26(25) | Unoccupied Status | 00: Cut off all outputs 01: Entry ECO mode |
| 03/06/16 | 27(26) | Unoccupied Heating set temperature range | 10°C ~ 21°C |
| 03/06/16 | 28(27) | Unoccupied cooling set temperature range | 22°C ~ 32°C |
| 03/06/16 | 29(28) | Fan operation after setting temperature is reached | 00= Fan off 01= Fan on |
| 03/06/16 | 30(29) | 2/4 pipe selection | 00= 2-pipe 01= 4-pipe |
| 03/06/16 | 31(30) | Heat/Cool changeover | 00: Manual 01: Auto 02: Reserved |
| 03/06/16 | 32(31) | Preheat Temp. Setting | 21°C ~ 50°C |
| 03/06/16 | 33(32) | Auto Cool Temp. Setting | 10°C ~ 20°C |
| 03/06/16 | 34(33) | Auto Heat Temp. Setting | 21°C ~ 40°C |

Dimensions

