SM2103-SDWM
Fan Coil Thermostat
For 2-pipe and 4-pipe Fan Coil Units

Modbus

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 TCP communication
- White backlight LCD
- Surface Mounting

Application

SM2103-SDWM series Fan Coil Thermostats used in individual rooms or zones in buildings. It is designed for 2 pipe or 4 pipe fan coil units. The SM2103-SDWM device has a digital input that can be used as an On/Off contact, a passive input that can be used as an external sensor input, and five relay outputs. The thermostat controls the fan coil unit based on the room sensor or external sensor temperature.

Notes on Usage

Please, read this document carefully. SM2103-SDWM 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
SM2103-SDWM	3 pcs Digital Outputs (Relay) Fan Control 2 pcs Digital Outputs (Relay) Valve Control 1 pc Passive Input 1 pc Digital Input	Max. 2.0 VA	Modbus TCP/IP

Technical Specification

Power Supply	220 VAC ±10%, 50/60 Hz
Power Consumption	Max. 2.0 VA
Electrical Connection	Terminal Connectors

Temperature Accuracy	±0,5°C
Calibration Sensitivity	±1°C
Inputs	1 pc Passive Input (NTC 10K) 1 pc Digital Input (Dry Contact)
Outputs	5 pcs Digital Output
Temperature Setting	5°C … 35°C
Dimensions	86 x 86 x 30 mm
Mounting	Surface Mounting

* There are relays with 5A current capability on the product. The recommended maximum current level for optimum relay life is 4A for resistive loads and 2A for inductive loads.

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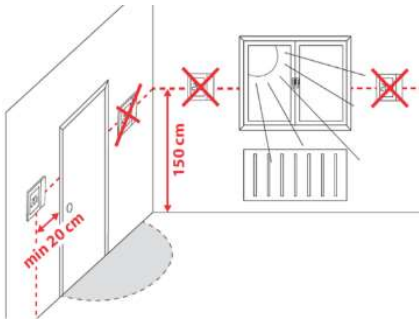
Mount the room thermostat on the cable conduit. Do not mount in niches or bookcases, behind curtains, above or near heat sources. Install at a height of about 1.5 meters from the floor. Devices must be mounted on a clean, dry indoor place without direct airflow from a heating/cooling device. Do not expose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

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Mounting Instructions
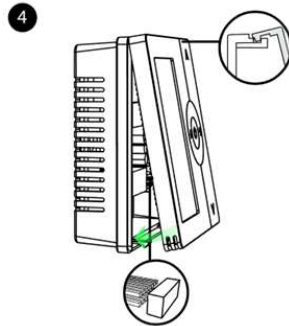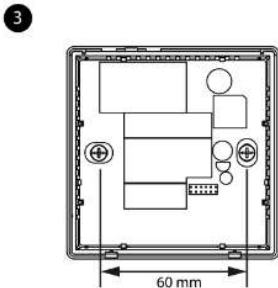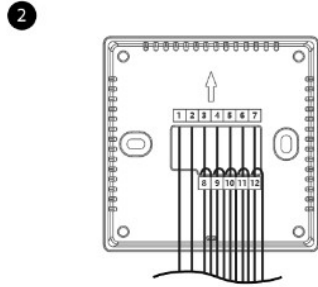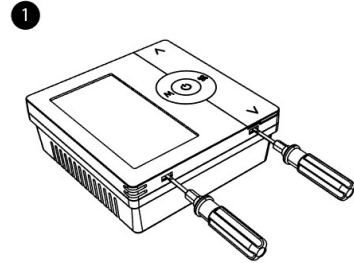
Please follow the below instructions during mounting.

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.

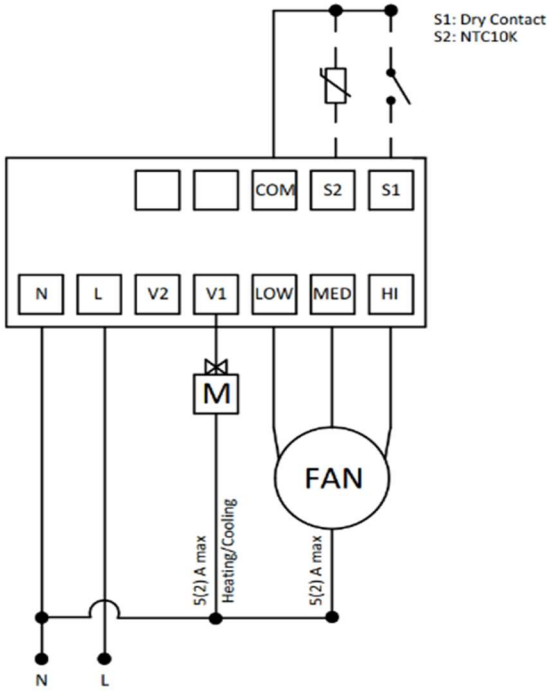**Step 6:** Power on the thermostat to work.

**Important Note:** Using the screws included in the product box is recommended. Otherwise, there could be fitting problems during the mounting.
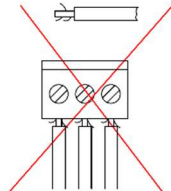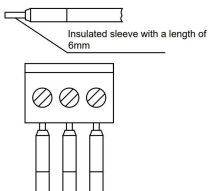
The ends of the connection wires must be protected against delamination using insulated sleeves as shown on the figure.

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Connection Diagram

S1: Dry Contact
S2: NTC10K

Connection Diagram for 2-Pipe Fan Coil

S1: Dry Contact
S2: NTC10K
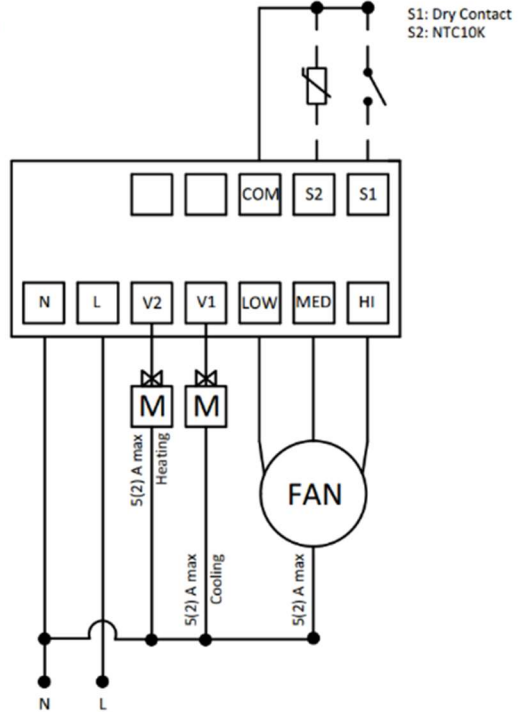
Connection Diagram for 4-Pipe Fan Coil

Configuration Menu Parameters

Switch off the thermostat and press **"M"** and **"⌃"** for 5 seconds to enter the parameter setting menu.

No.	Parameter Name	Parameter Definition	Default
P1	System Type	0= 2-pipe fan coil unit 1= 4-pipe fan coil unit	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/Valve Control Selection	0 = Valve Dependent 1 = Valve Independent	0
P5	Contact Status	0 = Cut off all outputs 1 = Setback setpoint	-
P6	Main Screen	0= Show room temperature 1= Show setpoint temperature	0
P7	Main Screen Temperature Calibration	-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	Keylock	0= All keys available 1= All keys locked out 2= On/Off key locked out 3= All keys locked out except the On/Off	0
P12	Power Failure	0 = Device starts off 1 = Keep State Before Power Failure 2 = Device starts 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	Energy Saving Cooling SetPoint	22°C ~ 32°C	28°C
P19	Maximum Setpoint	23°C ~ 35°C	35°C
P20	Energy Saving Heating SetPoint	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- Contact Status: When the hotel card is pulled out, the contact 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.

P6-Main Screen: This parameter determines the temperature to be displayed on the main screen.

0= Display Room temperature

1= Display SetPoint temperature

P7- Main Screen Temperature Calibration: This parameter is used to calibrate the main screen 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 range10°C ~20°C).

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

P12- Power Failure: This parameter adjusts the condition that the device will continue when the power failure happens.

0 = Device starts off

1 = Keep State Before Power Failure

2 = Device starts on

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 setpoint 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.

SM2103-SDWM Modbus Parameters

The thermostat provides simple integration with the building management system using the Modbus TCP communication protocol. Thermostats communicate as Modbus TCP slave devices and allow real-time data transfer.

To enter the device Modbus configuration menu, the device must be connected to the Wi-Fi network.

The device appears on the Wi-Fi network as "**GW2103_XXX**". The network password is "**123456789**".

You can access the communication configuration menus by going to "**192.168.4.1"** from the browser.

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Wi-Fi Settings

WiFi Setting Menu

Personal
If you are using a WPA2-Personal network, the personal option must be active.

SSID: The network name you want to connect to must be entered.
Password: The network password to which you want to connect should be written here.

Enterprise
If you are using a WPA2-Enterprise network, the Enterprise option must be active.

SSID: The network name you want to connect to must be entered.
User: The username given to you on the network should be written here.
Password: The network password to which you want to connect should be written here.
AID: Fill in the user-based password given to you on the network here.

Static IP: It is used when it is desired to enter Static IP to the device. When activated, the IP Address, Gateway, and Netmask must be edited. If it is not activated, the device will automatically receive IP from the modem it is connected to.

IP Address: It is the address of the device on the network.

Gateway IP: This is the section where the router gateway address will be entered.

Subnet: This is the section to enter the subnet.

Click the **"Save"** button to save the transactions made. If you want to start the system with the made settings, press the **"Start"** button and the device will restart itself with the made settings.

Modbus Ayarları (Modbus Settings)

Modbus Settings

Start

Modbus Setting	
TCP Port :	502
Connection Timeout :	20000

SAVE

TCP Port

It is the port number to be used in TCP connection. Default: 502

Connection Timeout (ms)

The device will automatically terminate the connection if there is no query from the established TCP connection for the specified time. Connection timeout can be adjusted between 1-500 seconds. If this value is low, the device will frequently terminate the TCP connection.

Click the **"Save"** button to save the transactions made. If you want to start the system with the made settings, press the **"Start"** button and the device will restart itself with the made settings.

Communication Factory Settings

ON

The on-board key communication is used to restore factory settings. While the Switch is in the "ON" position, the device is powered on. After waiting for 5 seconds, the Switch is brought back to the "OFF" position. After this process is completed, the reset takes place.

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	Modbus Address (Decimal)	Parameter Name	Description
03/06/16	0	Fan Mode	00= High speed 01= Medium speed 02= Low speed 03= Auto speed
03/06/16	1	Mode	1= Cool 2= Heat 3= Ventilation
03/06/16	2	Start/Stop	00: Thermostat Off 01: Thermostat On 02: Frost protection (read-only)
03/06/16	3	SetPoint	5°C ~ 35°C
03/06/16	4	Timer On (hour)	(0 ~ 24)
03/06/16	5	Timer On (minute)	(0 ~ 60)
03/06/16	6	Timer Off (hour)	(0 ~ 24)
03/06/16	7	Timer Off (minute)	(0 ~ 60)

03	8	Communication Check	If it is 0/1, it means that the device's communication is active.
03	9	Room Temperature	0-50°C
03	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	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	12	External sensor	Temperature Range 0°C ~ 99°C
03	13	Reserved	-
03/06/16	14	Reserved	-
03/06/16	15	Enable Frost Protection	00= OFF, 01= ON
03/06/16	16	Programmability	01= Manual 02= Timer 03= Programmable 04= Timer + Programmable
03/06/16	17	Thermostat status after Power Recovery	0= OFF 1= Back to the status before the power failure. 2= ON
03/06/16	18	Keylock	00= Disable 01= Lock all keys 02= Lock ON/OFF button 03= Lock all buttons except the ON/OFF button
03/06/16	19	Temperature Display	00= Show room temperature 01= Show SetPoint temperature
03/06/16	20	SetPoint Min Temperature	5°C ~ 18°C
03/06/16	21	SetPoint Max Temperature	20°C ~ 40°C
03/06/16	22	Differential Temperature	1°C ~ 4°C
03/06/16	23	Sensor Selection	01= Internal 02= External 03= Internal & External
03/06/16	24	Contact Type	00: NO 01: NC

03/06/16	25	Contact Status	00: Cut off all outputs 01: Entry ECO mode
03/06/16	26	Energy Saving Heating Set	10°C ~ 21°C
03/06/16	27	Energy Saving Cooling Set	22°C ~ 32°C
03/06/16	28	Fan Operation after Temperature reaches SetPoint	00= Fan off 01= Fan on
03/06/16	29	2/4 pipe selection	00= 2-pipe 01= 4-pipe
03/06/16	30	Heat/Cool changeover	00: Manual 01: Auto 02: Reserved
03/06/16	31	Preheat Temp. Setting	21°C ~ 50°C
03/06/16	32	Auto Cool Temp. Setting	10°C ~ 20°C
03/06/16	33	Auto Heat Temp. Setting	21°C ~ 40°C

Dimensions