

SCT Series

VAV & Fan Coil Thermostats

20260821R0

Modbus RTU Communication & Register Mapping



This document provides the Modbus RTU communication protocol details for the **SCT.2402.T.M Room Thermostat**. It is intended to help users establish a reliable, efficient, and accurate communication interface between the SCT.2402.T.M and building automation systems, PLCs, HMIs, or other Modbus RTU master devices.

The document includes the required communication settings, register addresses, data formats, access types, and parameter descriptions to ensure proper integration and efficient data exchange with the SCT.2402.T.M thermostat.

Modbus RTU Communication

Modbus RTU is a widely used serial communication protocol in industrial automation and building management systems. It enables reliable data exchange between a **Modbus Master** device and one or more **Modbus Slave** devices over an RS-485 communication network.

In a Modbus RTU network, the Master device initiates all communication requests. Slave devices respond only when they receive a valid request addressed to them. Each device on the network must have a unique **Slave Address** to ensure correct communication.

Modbus RTU commonly uses the **RS-485 physical interface**, which allows multiple devices to communicate over the same two-wire bus. For stable and reliable communication, all devices connected to the network must use the same communication parameters, including:

- Baud Rate
- Data Bits
- Parity
- Stop Bits

Modbus data is organized in registers and coils. Depending on the device implementation, these registers may contain operating parameters, measured values, status information, setpoints, alarms, or configuration settings.

Typical Modbus register types include:

- Coils** – Read/Write digital values
- Discrete Inputs** – Read-only digital values
- Input Registers** – Read-only numerical values
- Holding Registers** – Read/Write numerical values

The Modbus protocol uses predefined **Function Codes** to read or write these data areas. The supported function codes and register addresses may vary depending on the connected device.

For reliable RS-485 communication, correct wiring practices should be followed. The communication cable should preferably be a shielded twisted pair, the polarity of the **A/B communication lines** must be observed, and termination resistors should be used where required, especially on long communication lines.

To achieve stable communication performance, avoid star-type wiring whenever possible. Devices should preferably be connected using a **daisy-chain bus topology**, with termination applied at both ends of the RS-485 network.

This document provides the communication parameters and Modbus register definitions required for integration of the **SCT.2402 Room Thermostat** with compatible Modbus RTU master systems.

Warnings



Before installing and operating the device, carefully read the user manual and the instructions below.

- The user is responsible for any damage, loss, or injury caused by improper use or failure to follow these instructions.
- Do not modify, disassemble, or attempt to repair the device.
- Ensure correct supply voltage before powering the device.
- Disconnect power before installation and wiring.

Failure to comply with these instructions may result in device malfunction and will void the warranty.

SCT Series

VAV & Fan Coil Thermostats

20260821R0

Modbus RTU Communication & Register Mapping

Quick Communication Reference

Protocol	Modbus-RTU
Physical Layer	RS-485
Mode	Slave
Default Slave ID	1
Default Baud Rate	9600 bps
Data Bits	8
Parity	None
Stop Bits	1
Register Format	16-bit Signed Integer
Byte Order	Big Endian
Supported Function Codes	03 (0x03) – Read Holding Registers 06 (0x06) – Write Single Register 16 (0x10) – Write Multiple Registers

MODBUS-RTU Configuration

The **SCT.2402.T.M** model supports **Modbus RTU communication** for integration with Building Management Systems (BMS) and HVAC automation networks.

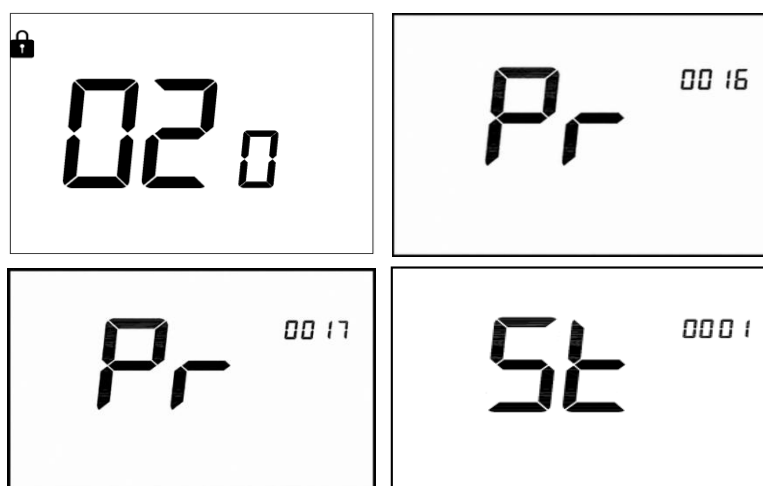
Communication parameters can be configured through the service menu to match system requirements.

Users can configure:

- Slave Address
- Communication Baud Rate

Supported baud rate options:

- 1200 bps
- 2400 bps
- 4800 bps
- 9600 bps
- 19200 bps
- 38400 bps
- 57600 bps



Notes

- Service password: 58
- Modbus Address Parameter: **16**
- Default Baud Rate Parameter: **17**
- Communication format is fixed as **8 Data Bits, No Parity, 1 Stop Bit**
- All Modbus parameters are stored as signed integer values



Warning

Parameter changes in the service menu should only be performed by authorized technical personnel. Incorrect communication settings may interrupt Modbus communication or device operation.

SCT Series

VAV & Fan Coil Thermostats

20260821R0

Modbus RTU Communication & Register Mapping

Modbus Register List

Register Address	Offset	Parameter Name	Data Type	R/W	Range	Scale	Unit	Description
General Device Control Values								
40001	0	Device Enable	UINT16	R/W	0...1	1	-	0:OFF 1:ON
40002	1	Room Temperature	INT16	R	150...400	0,1	°C	280 value means 28 °C.
40003	2	Temperature Setpoint	UINT16	R/W	150...300	0,1	°C	280 value means 28 °C.
40004	3	HVAC Operation Mode	UINT16	R/W	0...3	1	-	0 : Fan Only 1 : Heating 2 : Cooling 3 : Full Auto
40005	4	Fan Speed Setpoint	UINT16	R/W	1...7	1	Stage	1 : Stage 1 2 : Stage 2 3 : Stage 3 4 : Stage 4 5 : Stage 5 6 : Stage 6 7 : Auto Fan Mode
Monitoring								
40006	5	Current Fan Stage	UINT16	R	1...6	1	Stage	Current active fan stage.
40007	6	Current Fan Analog Output	UINT16	R	0...1000	0,01	V	0 : 0.00 V 1000 : 10.00 V
40008	7	Current Valve Analog Output	UINT16	R	0...1000	0,01	V	0 : 0.00 V 1000 : 10.00 V
400012	11	Remote On/Off Contact Status	UINT16	R	0...1	1	-	0 : No Signal 1 : Signal Active
System Locks & Alarm								
40013	12	Key Lock	UINT16	R/W	0...1	1	-	0 : Key Lock Disabled 1 : Key Lock Enabled
40014	13	Setpoint Adjustment Lock	UINT16	R/W	0...1	1	-	0 : Adjustment Enabled 1 : Temperature Setpoint Adjustment Disabled
40015	14	Fan Control Lock	UINT16	R/W	0...1	1	-	0 : Adjustment Enabled 1 : Fan Stage Adjustment Disabled
40016	15	Mode Change Lock	UINT16	R/W	0...1	1	-	0 : Adjustment Enabled 1 : Operating Mode Change Disabled
Date & Time								
40019	18	Weekly Schedule Status	UINT16	R	0...2	1	-	0 : No Weekly Schedule 1 : Weekly Schedule Active / Device Running 2 : Weekly Schedule Active / Device Stopped
40020	19	Current Day of Month	UINT16	R	0...31	1	Day	
40021	20	Current Month	UINT16	R	0...12	1	Month	
40022	21	Current Year	UINT16	R	0...99	1	Year	Two-digit year value.
40023	22	Current Hour	UINT16	R	0...23	1	Hour	24-hour format.
40024	23	Current Minute	UINT16	R	0...59	1	Minute	
40025	24	Current Second	UINT16	R	0...59	1	Second	
40025	25	Current Day of Week	UINT16	R	1...7	1	Day	1 : Sunday 2 : Monday 3 : Tuesday 4 : Wednesday 5 : Thursday 6 : Friday 7 : Saturday

SCT Series

VAV & Fan Coil Thermostats

20260821R0

Modbus RTU Communication & Register Mapping

Modbus Register List

Register Address	Offset	Parameter Name	Data Type	R/W	Range	Scale	Unit	Description
Weekly Schedule								
40027	26	Monday Start Time	UINT16	R/W	0...2359	1	HHMM	1210 value means 12:10
40028	27	Monday Stop Time	UINT16	R/W	0...2359	1	HHMM	1830 value means 18:30
40029	28	Tuesday Start Time	UINT16	R/W	0...2359	1	HHMM	1210 value means 12:10
40030	29	Tuesday Stop Time	UINT16	R/W	0...2359	1	HHMM	1830 value means 18:30
40031	30	Wednesday Start Time	UINT16	R/W	0...2359	1	HHMM	1210 value means 12:10
40032	31	Wednesday Stop Time	UINT16	R/W	0...2359	1	HHMM	1830 value means 18:30
40033	32	Thursday Start Time	UINT16	R/W	0...2359	1	HHMM	1210 value means 12:10
40034	33	Thursday Stop Time	UINT16	R/W	0...2359	1	HHMM	1830 value means 18:30
400035	34	Friday Start Time	UINT16	R/W	0...2359	1	HHMM	1210 value means 12:10
400036	35	Friday Stop Time	UINT16	R/W	0...2359	1	HHMM	1830 value means 18:30
400037	36	Saturday Start Time	UINT16	R/W	0...2359	1	HHMM	1210 value means 12:10
40038	37	Saturday Stop Time	UINT16	R/W	0...2359	1	HHMM	1830 value means 18:30

Communication / Service Notes

- Service password: 20
- Modbus Slave ID is configured using Service Parameter 16.
- Modbus baud rate is configured using Service Parameter 17:
0=1200, 1=2400, 2=4800, 3=9600, 4=19200, 5=38400, 6=57600 bps.
- Serial format is fixed at 8 data bits, No parity, 1 stop bit (8N1).
- All parameters are Holding Registers.

SCT Series

VAV & Fan Coil Thermostats

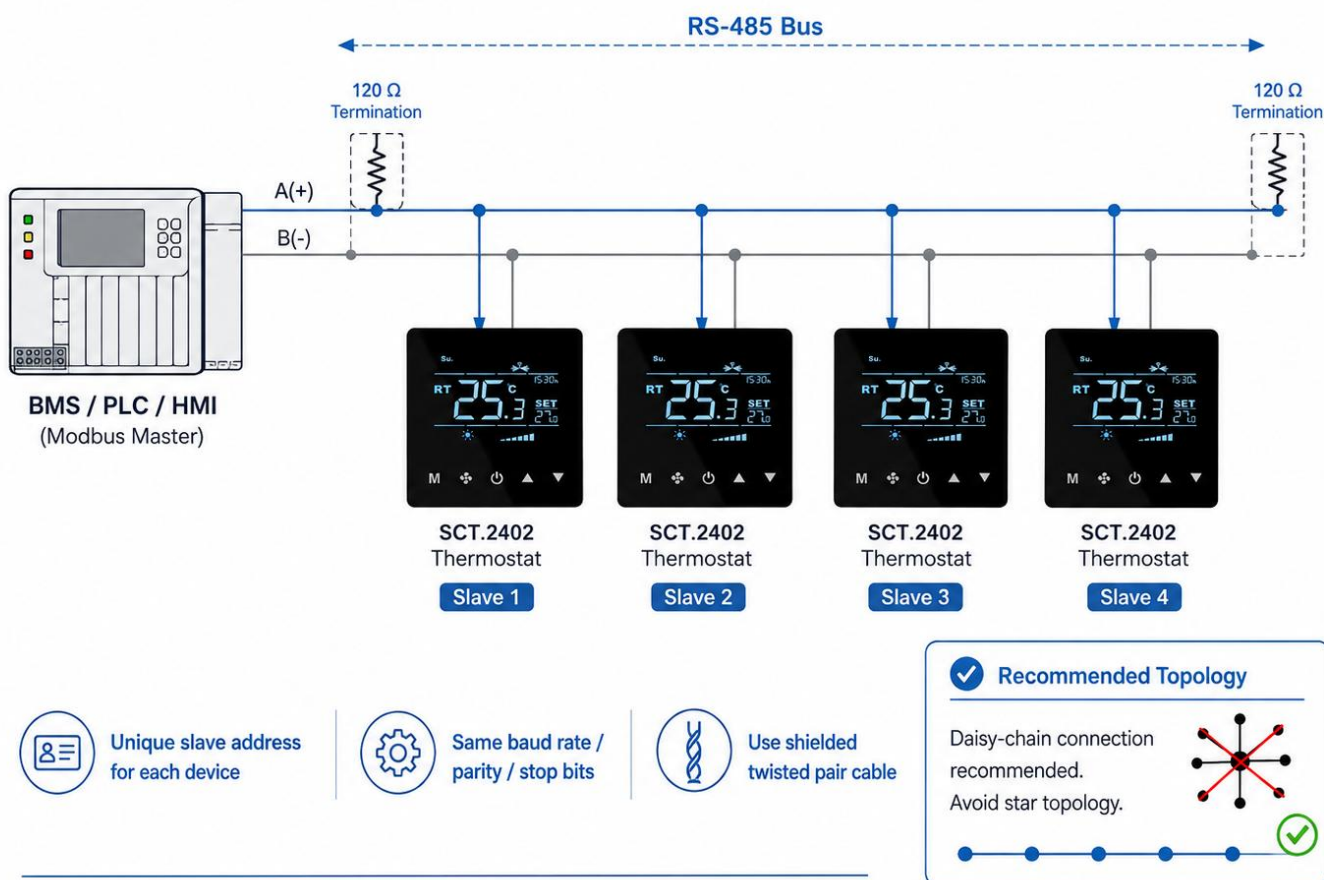
20260821R0

Modbus RTU Communication & Register Mapping

Modbus RTU Wiring & Network Topology

The following diagram illustrates the recommended RS-485 wiring topology for connecting multiple SCT.2402 thermostats to a Modbus RTU master device.

Modbus RTU (RS-485) Connection Topology – SCT.2402 Thermostats



Note: Ensure proper grounding of the shield at one end only (typically at the master end).

Modbus Communication Troubleshooting

Problem	Possible Cause	Recommended Action
No communication	Incorrect Slave Address	Check parameter 16
No response	Baud rate mismatch	Check parameter 17
CRC / intermittent errors	Incorrect wiring / noise	Check A/B polarity and cable
Communication unstable	Missing termination	Check 120 Ω termination
Wrong values	Incorrect data type / scaling	Check INT16 and scale
Only one device works	Duplicate Slave Address	Assign unique addresses