
MODBUS PROTOCOL

Modbus Transport Protocols

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:

Serial number	Specification	Protocol Specification
1	Media	RS485
2	Baud Rate	19200BPS/9600 BPS /4800 BPS
3	Transmit Mode	RTU
4	Data Unit	Additional address + Function code+ Data 1.....N+ CRC High byte, CRC Low byte
5	Address	1-32
6	Function Code	3, 6, 16
7	Data Qty	<255
8	DATA	0-255
9	CRC check	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 (-)

03/06/16 Command message:

Function Code	Holding Register Address	Fan Coil	Data Description
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 ON 02: Frost Protect (read only)
03/06/16	4(3)	Set Room Temperature	Temperature (5~35℃)
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
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~+99℃)
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 Recover	0: OFF 1: Back to 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 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	Set Range (5~18°C)
03/06/16	22(21)	Set Max Temperature	Set Range (20~40°C)
03/06/16	23(22)	Differential Temperature	Set Range (1~4°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	Set Range (10~21°C)
03/06/16	28(27)	Unoccupied cooling set temperature range	Set Range (22~32°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	Set Range (21~50°C)
03/06/16	33(32)	Auto Cool Temp. Setting	Set Range (10~20°C)
03/06/16	34(33)	Auto Heat Temp. Setting	Set Range (21~40°C)
03	35	AO1 Output percent	For example 10%, output=10
03	36	AO2 Output percent	For example 10%, output=10

Temperature Value:

E.G: Temperature : 25.5°C, the date(255) : 00 FF

Temperature : 5.0°C, the date(50) : 00 32