

RSMFX-3 | MULTIFUNCTIONAL CO₂ ROOM TRANSMITTER

Modbus register map



MODBUS REGISTER MAP

INPUT REGISTERS					
		Data type	Description	Raw data range	Values
1	Temperature reading	signed integer	Actual temperature level	-300—700	500 = 50,0°C
2	Temperature output value	unsigned integer	Output value according to temperature	0—1.000	1.000 = 100 %
3	Temperature alert flag	unsigned integer	When set to '1' this indicates that the measured temperature exceeds the alert values defined in holding registers 13 and 14	0, 1	0 = Temperature measurement OK 1 = Temperature measurement too low/high
4	Temperature range limit flag	unsigned integer	When set to '1' this indicates that the measured temperature is outside of the range of values specified in holding registers 11 and 12	0, 1	0 = Temperature range OK 1 = Temperature range too low/high
5	Temperature sensor state	unsigned integer	Flag indicating whether communication with the temperature sensor has been lost	0, 1	0 = OK 1 = Fault
6—9			Reserved, return 0		
10	Relative humidity level	unsigned integer	Actual relative humidity level	0—1.000	1.000 = 100 % rH
11	Relative humidity output value	unsigned integer	Output value according to relative humidity	0—1.000	1.000 = 100 %
12	Relative humidity alert flag	unsigned integer	When set to '1' this indicates that the measured relative humidity exceeds the alert values defined in holding registers 21 and 22	0, 1	0 = Relative humidity measurement OK 1 = Relative humidity measurement too low/high
13	Relative humidity range limit flag	unsigned integer	When set to '1' this indicates that the measured relative humidity is outside of the range of values specified in holding registers 19 and 20	0, 1	0 = Relative humidity range OK 1 = Relative humidity range too low/high
14	Humidity sensor state	unsigned integer	Flag indicating whether communication with the humidity sensor has been lost	0, 1	0 = OK 1 = Fault
15	Dew point level	signed integer	Calculated dew point	-700—700	200 = 20,0°C

INPUT REGISTERS

		Data type	Description	Raw data range	Values
16—20			Reserved, return 0		
21	CO ₂ level	unsigned integer	Actual CO ₂ level	0—5.000	2.000 = 2.000 ppm
22	CO ₂ output value	unsigned integer	Output value according to CO ₂	0—1.000	1.000 = 100 %
23	CO ₂ Alert 1 indication	unsigned integer	When set to '1' this indicates that the measured CO ₂ exceeds the Alert 1 value defined in holding register 25	0, 1	0 = CO ₂ measurement OK 1 = CO ₂ measurement too high
24	CO ₂ Alert 2 indication	unsigned integer	When set to '1' this indicates that the measured CO ₂ exceeds the Alert 2 value defined in holding register 26	0, 1	0 = CO ₂ measurement OK 1 = CO ₂ measurement too high
25	CO ₂ sensor status	unsigned integer	Flag indicating whether communication with the CO ₂ has been lost	0, 1	0 = OK 1 = Fault
26—40			Reserved, return 0		
41	Ambient light intensity	unsigned integer	Measured ambient light intensity	0—32.000	1.000 = 1.000 lux
42	Active / Standby	unsigned integer	The Active / Standby light level defined in holding registers 35 and 36 determines whether the device is in active or in standby mode. If the measured light level falls between the two thresholds, the indication is 0 (Low light intensity)	0—2	0 = Low light intensity 1 = Active 2 = Standby
43	Ambient light sensor status	unsigned integer	Flag indicating whether communication with the ambient light sensor has been lost	0, 1	0 = OK 1 = Fault
44—50			Reserved, return 0		

Note: The input registers can be read via the Modbus command: "Read input registers".

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
1	Device slave address	unsigned integer	Modbus device address	1—247		1
2	Modbus baud rate	unsigned integer	Modbus communication baud rate	0—6	0 = 4.800 3 = 38.400 6 = 230.400 1 = 9.600 4 = 57.600 2 = 19.200 5 = 115.200	2
3	Modbus parity	unsigned integer	Parity check mode	0—2	0 = 8N1 1 = 8E1 2 = 8O1	1
4	Device type	unsigned integer	Device type. Read only	1.793—1.795	1.793 = RSMFG-3 1.794 = RSMFF-3 1.795 = RSMFH-3	
5	HW version	unsigned integer	Hardware version of the device. Read only	XXXX	0x0200 = HW version 2.0	
6	FW version	unsigned integer	Firmware version of the device. Read only	XXXX	0x0120 = FW version 1.2	
7			Reserved, returns 0			
8	Modbus safety timeout	unsigned integer	Setting a timeout for no Modbus communication. When the time expires, the output(s) is/are set to 0	0—60	0 = no timeout 60 = 60 minutes	0
9	Modbus network resistor termination (NBT)	unsigned integer	If unit is used as end device of the line, NBT should be connected	0, 1	0 = NBT disconnected 1 = NBT connected	0
10	Modbus registers reset	unsigned integer	Modbus Holding registers (from HR11 onwards) are reset to their default values. This register is automatically reset to '0' once completed	0, 1	0 = Idle 1 = Reset Modbus Registers	0
11	Minimum temperature range	unsigned integer	The minimum temperature range value - it cannot be set higher than the maximum temperature range value minus 5°C	0—(Max - 50)	100 = 10,0°C	0
12	Maximum temperature range	unsigned integer	The maximum temperature range value - it cannot be less than the minimum temperature range value plus 5°C	(Min + 50)—500	500 = 50,0°C	500

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
13	Minimum temperature alert	unsigned integer	Minimum temperature alarm value	Min. temperature range—Max. temperature alarm	100 = 10,0°C	0
14	Maximum temperature alert	unsigned integer	Maximum temperature alarm value	Min. temperature alarm— Max. temperature range	500 = 50,0°C	500
15—18			Reserved, return 0			
19	Minimum relative humidity range	unsigned integer	The minimum relative humidity range value - it cannot be set higher than the maximum relative humidity range value minus 5%	0—(Max - 50)	200 = 20,0 % rH	50
20	Maximum relative humidity range	unsigned integer	The maximum relative humidity range value - it cannot be less than the minimum relative humidity range value plus 5%	(Min + 50)—1000	1.000 = 100 % rH	950
21	Minimum relative humidity alert	unsigned integer	Minimum relative humidity alarm value	Min. relative humidity range—Max. relative humidity alarm	200 = 20,0 % rH	300
22	Maximum relative humidity alert	unsigned integer	Maximum relative humidity alarm value	Min. relative humidity alarm—Max. relative humidity range	1.000 = 100 % rH	700
23	Minimum CO ₂ range	unsigned integer	Minimum value of the CO ₂ range. The value is used for calculating CO ₂ output level	0—(Max - 100)	1.000 = 1.000 ppm	350
24	Maximum CO ₂ range	unsigned integer	Maximum value of the CO ₂ range. The value is used for calculating CO ₂ output level	(Min + 100)—5.000	2.000 = 2.000 ppm	2.000
25	CO ₂ Alert 1 level	unsigned integer	CO ₂ value for 'Alert 1'. When the CO ₂ value exceeds this value, Input register 23 will indicate '1'	0—(Alert 2 Level - 100)	400 = 400 ppm	900
26	CO ₂ Alert 2 level	unsigned integer	CO ₂ value for 'Alert 2'. When the CO ₂ value exceeds this value, Input register 24 will indicate '1'	(Alert 1 Level + 100)—5.000	2.000 = 2.000 ppm	1.200
27—34			Reserved, return 0			
35	Active level	unsigned integer	Value for active ambient light level. If this value is exceeded, Input register 42 will indicate 'Active'	0—32.000	100 = 100 lux	100

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
36	Standby level	unsigned integer	Value for standby ambient light level. If below this value, Input register 42 will indicate 'Standby'	0—32.000	10 = 10 lux	10
37—39			Reserved, return 0			
40	CO ₂ module self-calibration	unsigned integer	Enables or disables the self-calibration technique of the CO ₂ module. If it is enabled, it is recommended that the CO ₂ concentration drops to the outside level (400 ppm) at least once over a 7-day period	0, 1	0 = Disabled 1 = Enabled	1
41	Output 1 Temperature - type	unsigned integer	Select analogue / modulating output 1 type	1—3	1 = 0—10 VDC 2 = 0—20 mA 3 = PWM	1
42	Output 1 overwrite enable/disable	unsigned integer	Enables the direct control over the temperature output 1	0, 1	0 = Disabled 1 = Enabled	0
43	Output 1 overwrite value	unsigned integer	Overwrite value for output 1. Active only if Holding register 42 is set to 1	0—1.000	1.000 = 100 %	0
44	Output 1 internal voltage source selection	unsigned integer	Selection of internal voltage source for PWM output 1	0, 1	0 = 3,3 VDC 1 = 12,0 VDC	0
45—50			Reserved, return 0			
51	Output 2 Humidity - type	unsigned integer	Select analogue / modulating output 2 type	1—3	1 = 0—10 VDC 2 = 0—20 mA 3 = PWM	1
52	Output 2 overwrite enable/disable	unsigned integer	Enables the direct control over the relative humidity output 2	0, 1	0 = Disabled 1 = Enabled	0
53	Output 2 overwrite value	unsigned integer	Overwrite value for output 2. Active only if Holding register 52 is set to 1	0—1.000	1.000 = 100 %	0
54	Output 2 internal voltage source selection	unsigned integer	Selection of internal voltage source for PWM output 2	0, 1	0 = 3,3 VDC 1 = 12,0 VDC	0
55—60			Reserved, return 0			

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
61	Output 3 CO ₂ - type	unsigned integer	Select analogue/ modulating output 3 type	1—3	1 = 0—10 VDC 2 = 0—20 mA 3 = PWM	1
62	Output 3 overwrite enable/disable	unsigned integer	Enables the direct control over the CO ₂ output 3	0, 1	0 = Disabled 1 = Enabled	0
63	Output 3 overwrite value	unsigned integer	Overwrite value for output 3. Active only if Holding register 62 is set to 1	0—1.000	0 = 0 % 1.000 = 100 %	0
64	Output 3 internal voltage source selection	unsigned integer	Selection of internal voltage source for PWM output 3	0, 1	0 = 3,3 VDC 1 = 12 VDC	0
65—78			Reserved, return 0			
79	LED indication	unsigned integer	Choose a sensor to be associated with LED indication	1—3	1 = Temperature 2 = rH 3 = CO ₂	3
80	LED brightness	unsigned integer	Set LED brightness	0—10	0 = OFF 50 = 50 %	5

Note: The holding registers can be managed via the following Modbus commands: "Read Holding Registers", "Write Single Register" or "Write Multiple Registers".

The free Sentera configuration and monitoring software 3SModbus can be downloaded via: <https://www.sentera.eu/eu/3SMCenter>