RCMFX-2R | INTELLIGENT MULTIFUNCTIONAL ROOM SENSOR

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	0 = 0 % 1.000 = 100 %
3	Temperature alert flag	unsigned integer	Flag indicates that measured temperature is outside set alert values. Set to '1' when the measured value is outside the Temperature alert values defined by holding registers 13 and 14	0, 1	0 = Temperature measurement OK 1 = Temperature measurement too low / high
4	Temperature range limit flag	unsigned integer	Flag indicates that measured temperature is outside set range limit values. Set to '1' when the measured temperature is outside limit range values defined by holding registers 11 and 12	0, 1	0 = Temperature range OK 1 = Temperature range too low/high
5	Temperature sensor state	unsigned integer	Flag that shows if the communication with temperature sensor is lost	0, 1	0 = OK 1 = Temperature sensor problem
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	Flag indicates that measured relative humidity is outside set alert values. Set to '1' when the measured value is outside the Relative humidity alert values defined by 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	Flag indicates that measured relative humidity is outside set range limit values. Set to '1' when the measured Relative humidity is outside limit range values defined by 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 that shows if the communication with the humidity sensor is lost	0, 1	0 = OK 1 = Humidity sensor problem
15	Dew point level	signed integer	Calculated dew point	-700—700	200 = 20,0°C
16—20			Reserved, return 0		

INPUT REGISTERS

		Data type	Description	Raw data range	Values
21	CO_2 level	unsigned integer	CO_2 level	0—2.000	1.000 = 1.000 ppm
22	CO_2 output value	unsigned integer	CO_2 output value	0—1.000	1.000 = 100 %
23	CO_2 alert flag	unsigned integer	Flag indicates that measured CO_2 level is outside set alert values. Set to '1' when the measured value is outside the CO_2 values defined by holding registers 25 and 26	0, 1	0 = CO_2 measurement OK 1 = CO_2 measurement too low / high
24	CO_2 range limit flag	unsigned integer	Flag indicates that measured CO_2 is outside set range limit values. Set to '1' when the measured CO_2 is outside limit range values set defined by holding registers 23 and 24	0, 1	0 = CO_2 range OK 1 = CO_2 range too low/high
25	CO_2 sensor fault	unsigned integer	Flag that shows if the communication with the CO_2 sensor is lost	0, 1	0 = OK 1 = Fault
26—38			Reserved, return 0		
39	Actual output value	unsigned integer	The actual output value	0—1.000	1.000 = 100 %
40	Output control mode	unsigned integer	The source of the output value	0, 1, 2, 3 and 99	0 = overwrite 1 = temperature 2 = rH 3 = CO_2 ... = ... 99 = all OFF
41	Ambient light intensity	unsigned integer	Measured ambient light intensity	0—32.000	1.000 = 1.000 lux
42	Active / Standby	unsigned integer	Active or Standby indication according the Active / Standby light level defined by holding registers 35 and 36. If the measured light level is between the two levels the indication is 0 (Low intensity)	0—2	0 = Low light intensity 1 = Active 2 = Standby
43	Ambient light sensor state	unsigned integer	Flag that shows if the communication with the ambient light sensor is lost	0, 1	0 = OK 1 = ALS problem
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 1 = 9.600 2 = 19.200 3 = 38.400 4 = 57.600 5 = 115.200 6 = 230.400	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	1.608—1.610	1.608 = RCMFG-2R 1.609 = RCMFF-2R 1.610 = RCMFH-2R	
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	0x0240 = FW version 2.4	
7			Reserved, returns 0			
8	Modbus safety timeout	unsigned integer	Timeout setting for no Modbus communication. After time runs out, with no Modbus communication, all outputs SET to minimum output	0—60	0 = no timeout 10 = 10 minutes	0
9	Modbus network resistor termination (NBT)	unsigned integer	Set device as end device of the line / or not by connecting NBT	0, 1	0 = NBT disconnected 1 = NBT connected	0
10	Modbus registers reset	unsigned integer	Resets Modbus Holding registers (above 10) to default values. When finished this register is automatically reset to '0'	0, 1	0 = Idle 1 = Reset Modbus Registers	0
11	Minimum temperature range	unsigned integer	Minimum value of temperature range, cannot be set higher than maximum temperature range minus 5°C	0—(Max - 50)	100 = 10,0°C	0
12	Maximum temperature range	unsigned integer	Maximum value of temperature range, cannot be set less than minimum temperature range 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	Minimum value of relative humidity range, cannot be set higher than maximum relative humidity range minus 5%	0—(Max-50)	200 = 20,0 % rH	0
20	Maximum relative humidity range	unsigned integer	Maximum value of relative humidity range, cannot be set less than minimum relative humidity range plus 5%	(Min + 50)—1.000	1.000 = 100 % rH	1.000
21	Minimum relative humidity alert	unsigned integer	Minimum relative humidity alarm value	Min. relative humidity range—Max. relative humidity alarm	200 = 20,0 % rH	0
22	Maximum relative humidity alert	unsigned integer	Maximum relative humidity alarm value	Min. relative humidity alarm—Max. relative humidity range	1.000 = 100 % rH	1.000
23	Minimum CO_2 range	unsigned integer	Minimum CO_2 range, cannot be set higher than maximum CO_2 range minus 100 ppm	0—(Max-100)	400 = 400 ppm	400
24	Maximum CO_2 range	unsigned integer	Maximum CO_2 range, cannot be set less than minimum CO_2 range plus 100 ppm	(Min + 100)—2.000	2.000 = 2.000 ppm	2.000
25	Minimum CO_2 alert	unsigned integer	Minimum CO_2 alarm value	Min. CO_2 range – Max. CO_2 alarm	400 = 400 ppm	400
26	Maximum CO_2 alert	unsigned integer	Maximum CO_2 alarm value	Min. CO_2 alarm – Max. CO_2 range	2.000 = 2.000 ppm	2.000
27—34			Reserved, return 0			

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
35	Active light level	unsigned integer	The ambient light level above which 'Active' is indicated in input register 42	0—32.000	100 = 100 lux	100
36	Standby light level	unsigned integer	The ambient light level below which 'Standby' is indicated in input register 42	0—32.000	10 = 10 lux	10
37—39			Reserved, return 0			
40	CO_2 module self calibration	unsigned integer	Enables or disables the CO_2 module self calibration technique. If enabled it is advisable that the CO_2 concentration drops to outside level (400 ppm) in a 7-day period	0, 1	0 = Disabled 1 = Enabled	1
41	Output 1 mode	unsigned integer	Select analogue / modulating output 1 type	1—3	1 = 0—10 VDC 2 = 0—20 mA 3 = PWM	1
42	Output 1 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	200 = 20 %	0
44	Internal voltage source selection Output 1	unsigned integer	Selection of internal voltage source for PWM output 1	0, 1	0 = 3,3 VDC 1 = 12 VDC	0
45	Minimum output 1 value	unsigned integer	Set minimum value of output signal in percentage	0—400	200 = 20 %	0
46	Maximum output 1 value	unsigned integer	Set maximum value of output signal in percentage	600—1.000	600 = 60 %	1.000
47	Temperature sensor selection (On/Off)	unsigned integer	Turn ON or OFF the temperature sensor (related to output value - input register 39 and 40)	0, 1	0 = Off 1 = On	1
48—56			Reserved, return 0			

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
57	Relative humidity sensor selection (On/Off)	unsigned integer	Turn ON or OFF the rH sensor (related to output value - input register 39 and 40)	0, 1	0 = Off 1 = On	1
58—66			Reserved, return 0			
67	CO_2 sensor selection (On/Off)	unsigned integer	Turn ON or OFF the CO2 sensor (related to output value - input register 39 and 40)	0, 1	0 = Off 1 = On	1
68—78			Reserved, return 0			
79	LED indication	unsigned integer	LED indication related to one of the parameters	1—3	1 = Temperature 2 = Relative humidity 3 = CO_2	3
80	LED intensity / brightness	unsigned integer	LED intensity (incrementing with step of 10 %)	0—10	0 = OFF 5 = 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/en/3SMCenter*