RSTHX-3 | ROOM TEMPERATURE AND RELATIVE HUMIDITY 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	Output value Ao1 (T)	unsigned integer	Output value Ao1 (Temperature)	0—1.000	0 = 0 % 1.000 = 100 %
3	Temperature Alert Flag 1	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 1 OK 1 = Temperature measurement 1 too low/high
4	Temperature Range Limit Flag 1	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 1 OK 1 = Temperature range 1 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			Reserved, returns 0		
7	Temperature alert Flag 2	unsigned integer	Flag indicates that measured Wall Temperature is outside set alert values. Set to '1' when the measured value is outside the Wall Temperature alert values defined by holding registers 17 and 18	0, 1	0 = Temperature measurement 2 OK 1 = Temperature measurement 2 too low/high
8	Temperature range limit Flag 2	unsigned integer	Flag indicates that measured Wall Temperature is outside set range limit values. Set to '1' when the measured Wall Temperature is outside Wall limit range values defined by holding registers 15 and 16	0, 1	0 = Temperature range 2 OK 1 = Temperature range 2 too low/high
9			Reserved, returns 0		
10	Relative Humidity Level	unsigned integer	Actual relative humidity level	0—1.000	1.000 = 100 % rH
11	Output value Ao2 (rH)	unsigned integer	Output value Ao2 (Relative humidity)	0—1.000	0 = 0 % 1.000 = 100 %
12	Relative Humidity Alert Flag 1	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 1 OK 1 = Relative humidity measurement 1 too low/high

INPUT REGISTERS

		Data type	Description	Raw data range	Values
13	Relative Humidity Range Limit Flag 1	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 1 OK 1 = Relative humidity range 1 too low/high
14	Humidity Sensor State	unsigned integer	Flag that shows if the communication with 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	Relative Humidity Alert Flag 2	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 25 and 26	0, 1	0 = Relative humidity measurement 2 OK 1 = Relative humidity measurement 2 too low/high
17	Relative Humidity Range Limit Flag 2	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 23 and 24	0, 1	0 = Relative humidity range 2 OK 1 = Relative humidity range 2 too low/high
18—21			Reserved, return 0		
22	Output value Ao3 (T or rH)	unsigned integer	Output value Ao3 (Temperature or Relative humidity). Depending from HR 70 settings	0—1.000	0 = 0 % 1.000 = 100 %
23—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	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 light 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 = Ambient Light sensor 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 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	1.747—1.749	1.747 = RSTHF-3 1.748 = RSTHG-3 1.749 = RSTHH-3	
5	HW version	unsigned integer	Hardware version of the device. Read only	XXXX	0x0100 = HW version 1.0	
6	FW version	unsigned integer	Firmware version of the device. Read only	XXXX	0x0110 = FW version 1.1	
7			Reserved, returns 0			
8	Modbus safety timeout	unsigned integer	After time with no Modbus communication, outputs are set to 0	0—60	0 = no timeout 60 = 60 minutes	0
9	Modbus Network Bus 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 1	unsigned integer	Minimum value of temperature range 1, cannot be set higher than maximum temperature range 1 minus 5°C	0—(Max—50)	100 = 10,0°C	0
12	Maximum Temperature Range 1	unsigned integer	Maximum value of temperature range 1, cannot be set less than minimum temperature range 1 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 1	unsigned integer	Minimum temperature alarm value 1	Min. temperature range 1—Max. temperature alarm 1	100 = 10,0°C	0
14	Maximum Temperature Alert 1	unsigned integer	Maximum temperature alarm value 1	Min. temperature alarm 1—Max. temperature range 1	500 = 50,0°C	500
15	Minimum temperature range 2	unsigned integer	Minimum value of temperature range 2, cannot be set higher than maximum temperature range 2 minus 5°C	0—(Max—50)	100 = 10,0°C	0
16	Maximum temperature range 2	unsigned integer	Maximum value of temperature range 2, cannot be set less than minimum temperature range 2 plus 5°C	(Min+50)—500	500 = 50,0°C	500
17	Minimum temperature alert 2	unsigned integer	Minimum temperature alarm value 2	Min. temperature range 2—Max. temperature alarm 2	100 = 10,0 °C	0
18	Maximum temperature alert 2	unsigned integer	Maximum temperature alarm value 2	Min. temperature alarm 2—Max. temperature range 2	500 = 50,0 °C	500
19	Minimum relative humidity range 1	unsigned integer	Minimum value of relative humidity range 1, cannot be set higher than maximum relative humidity range minus 5%	0—(Max—50)	200 = 20,0 % rH	0
20	Maximum relative humidity range 1	unsigned integer	Maximum value of relative humidity range 1, cannot be set less than minimum relative humidity range plus 5%	(Min+50)—1.000	850 = 85 % rH	1.000
21	Minimum relative humidity alert 1	unsigned integer	Minimum relative humidity alarm value 1	Min. relative humidity range 1—Max. relative humidity alarm 1	200 = 20,0 % rH	0
22	Maximum relative humidity alert 1	unsigned integer	Maximum relative humidity alarm value 1	Min. relative humidity alarm 1—Max. relative humidity range 1	850 = 85 % rH	1.000
23	Minimum relative humidity range 2	unsigned integer	Minimum value of relative humidity range 2, cannot be set higher than maximum relative humidity range minus 5%	0—(Max—50)	200 = 20,0 % rH	0
24	Maximum relative humidity range 2	unsigned integer	Maximum value of relative humidity range 2, cannot be set less than minimum relative humidity range plus 5%	(Min+50)—1.000	850 = 85 % rH	1.000

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
25	Minimum relative humidity alert 2	unsigned integer	Minimum relative humidity alarm value 2	Min. relative humidity range 2—Max. relative humidity alarm 2	200 = 20,0 % rH	0
26	Maximum relative humidity alert 2	unsigned integer	Maximum relative humidity alarm value 2	Min. relative humidity alarm 2—Max. relative humidity range 2	850 = 85 % rH	1.000
27—34			Reserved, return 0			
35	Active mode 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 mode 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—40			Reserved, return 0			
41	Output type Ao1	unsigned integer	Select analogue/modulating type Ao1	1—3	1 = 0—10 VDC 2 = 0—20 mA 3 = PWM	1
42	Output overwrite enable Ao1	unsigned integer	Enables the direct control over output Ao1	0, 1	0 = Disabled 1 = Enabled	0
43	Output overwrite value Ao1	unsigned integer	Overwrite value for output Ao1. **Active only if Holding register 42 is set to 1**	0—1.000	0 = 0 % 1.000 = 100 %	0
44	Output internal voltage source selection Ao1	unsigned integer	Selection of internal voltage source for modulating output Ao1	0, 1	0 = 3,3 VDC 1 = 12,0 VDC	0
45	Minimum value output Ao1	unsigned integer	Set minimum value of output Ao1 in percentage	0—400	200 = 20 % output	0
46	Maximum value output Ao1	unsigned integer	Set maximum value of output Ao1 in percentage	600—1000	800 = 80 % output	1000

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
47—50			Reserved, return 0			
51	Output type Ao2	unsigned integer	Select analogue/modulating type Ao2	1—3	1 = 0—10 VDC 2 = 0—20 mA 3 = PWM	1
52	Output overwrite enable Ao2	unsigned integer	Enables the direct control over output Ao2	0, 1	0 = Disabled 1 = Enabled	0
53	Output internal voltage source selection Ao2	unsigned integer	Overwrite value for output Ao2. **Active only if Holding register 52 is set to 1**	0, 1	0 = 0 % 1.000 = 100 %	0
54	Internal voltage source selection Output 2 (rH)	unsigned integer	Selection of internal voltage source for modulating output Ao2	0, 1	0 = 3,3 VDC 1 = 12,0 VDC	0
55	Minimum value output Ao2	unsigned integer	Set minimum value of output Ao2 in percentage	0—400	200 = 20 % output	0
56	Maximum value output Ao2	unsigned integer	Set maximum value of output Ao2 in percentage	600—1000	800 = 80 % output	1000
57—60			Reserved, return 0			
61	Output type Ao3	unsigned integer	Select analogue/modulating output Ao3	1—3	1 = 0—10 VDC 2 = 0—20 mA 3 = PWM	1
62	Output overwrite enable Ao3	unsigned integer	Enables the direct control over output Ao3	0, 1	0 = Disabled 1 = Enabled	0
63	Output overwrite value Ao3	unsigned int	Overwrite value for output Ao3. **Active only if Holding register 62 is set to 1**	0—1.000	0 = 0 % 1.000 = 100 %	0
64	Output internal voltage source selection Ao3	unsigned int	Selection of internal voltage source for modulating output Ao3	0, 1	0 = 3,3 VDC 1 = 12 VDC	0
65	Minimum value output Ao3	unsigned int	Set minimum value of output Ao3 in percentage	0—400	200 = 20 % output	0

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
66	Maximum value output Ao3	unsigned int	Set maximum value of output Ao3 in percentage	600—1000	800 = 80 % output	1000
67—69			Reserved, return 0			
70	Output Ao3 measurement selection	unsigned int	Selection which measurement range 2 to be used for output Ao3	0—2	0 = Off 1 = Temperature 2 = Relative humidity	0
71—78			Reserved, return 0			
79	LED Indication	unsigned integer	Select sensor to be related to LED indication	1—3	1 = Output 1 2 = Output 2 3 = Output 3	1
80	LED Brightness	unsigned integer	Set LED brightness	0—10	0 = OFF 1 = 10 % 10 = 100 %	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*