OCCOM-R | INTELLIGENT CO / NO_2 SENSOR FOR HARSH ENVIRONMENTS

Modbus register map

MODBUS REGISTER MAP

INPUT REGISTERS

		Data type	Description	Raw data range	Values
1	Actual temperature value	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 = No 1 = Yes
6—9			Reserved, return 0		
10	Actual relative humidity value	unsigned integer	Actual relative humidity level	0—1.000	1.000 = 100,0 % rH
11	Relative humidity output value	unsigned integer	Output value according to relative humidity	0—1.000	0 = 0 % 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 humidity sensor is lost	0, 1	0 = No 1 = Yes
15	Calculated dew point	signed integer	Calculated dew point	-700—700	200 = 20,0°C

INPUT REGISTERS

		Data type	Description	Raw data range	Values
16—25			Reserved, return 0		
26	CO level	unsigned integer	Relevant CO level	1—1.000	100 = 100 ppm
27	CO Output value	unsigned integer	Output value according to CO	0—1.000	0 = 0 % 1.000 = 100 %
28	CO alert flag	unsigned integer	Flag indicates that measured CO level is outside set alert values. Set to '1' when the measured value is outside the CO values defined by holding registers 29 and 30	0, 1	0 = CO measurement OK 1 = CO measurement too low/high
29	CO range limit flag	unsigned integer	Flag indicates that measured CO is outside set range limit values. Set to '1' when the measured CO is outside limit range values set defined by holding registers 27 and 28	0, 1	0 = CO range OK 1 = CO range too low/high
30	CO sensor state	unsigned integer	Flag that shows if the communication with the CO sensor is lost	0, 1, 4	0 = Sensor OK 1 = Error 4 = Preheating
31	NO_2 level	unsigned integer	Relevant NO_2 level	5—1.000	100 = 1 ppm
32	NO_2 output value	unsigned integer	Output value according to NO_2	0—1.000	0 = 0 % 1.000 = 100 %
33	NO_2 alert flag	unsigned integer	Flag indicates that measured NO_2 level is outside set alert values. Set to '1' when the measured value is outside the NO_2 values defined by holding registers 33 and 34	0, 1	0 = NO_2 measurement OK 1 = NO_2 measurement too low/high
34	NO_2 range limit flag	unsigned integer	Flag indicates that measured NO_2 is outside set range limit values. Set to '1' when the measured NO2 is outside limit range values set defined by holding registers 31 and 32	0, 1	0 = NO_2 range OK 1 = NO_2 range too low/high
35	NO_2 Sensor state	unsigned integer	Flag that shows if the communication with the NO_2 sensor is lost	0, 1, 4	0 = Sensor OK 1 = Error 4 = Preheating
36—38			Reserved, return 0		
39	Actual output value	unsigned integer	Actual value of the output	0—1.000	0 = 0 % 1.000 = 100 %

INPUT REGISTERS

		Data type	Description	Raw data range	Values
40	Output control mode	unsigned integer	The source of the output value	1, 2, 5, 6, 99	1 = Temperature 2 = Relative humidity 5 = CO 6 = NO_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 = No 1 = Yes
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*	1.776	OCCOM-R = 1.776	
5	HW version	unsigned integer	Hardware version of the device, *read only*	XXXX	0x0110 = HW version 1.1	
6	FW version	unsigned integer	Firmware version of the device, *read only*	XXXX	0x0110 = FW version 1.1	
7—8			Reserved, return 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 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	signed integer	Minimum value of temperature range, cannot be set higher than maximum temperature range minus 5°C	-300—(Max. range —50)	100 = 10,0°C	-300
12	Maximum temperature range	signed integer	Maximum value of temperature range, cannot be set less than minimum temperature range plus 5°C	(Min. range + 50) —700	700 = 70,0°C	700
13	Minimum temperature alert	signed integer	Minimum temperature alarm value	Min. temperature range—Max. temperature alarm	100 = 10,0°C	-300

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
14	Maximum temperature alert	signed integer	Maximum temperature alarm value	Min. temperature alarm—Max. temperature range	700 = 70,0°C	700
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. range - 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. range + 50) —1000	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—26			Reserved, return 0			
27	Minimum CO range	unsigned integer	Minimum value of CO, cannot be set higher than maximum value minus 10 ppm	1—(Max. range – 10)	100 = 100 ppm	1
28	Maximum CO range	unsigned integer	Maximum value of CO, cannot be set lower than minimum value plus 10 ppm	(Min. range + 10) —1000	100 = 100 ppm	1.000
29	Minimum CO alert	unsigned integer	Minimum CO alarm value	Min. CO range—Max. CO alarm	10 = 10 ppm	1
30	Maximum CO alert	unsigned integer	Maximum CO alarm value	Min. CO alarm—Max. CO range	200 = 200 ppm	100
31	Minimum NO_2 range	unsigned integer	Minimum value of NO_2, cannot be set higher than maximum value minus 0,1 ppm	5—(Max. range -10)	10 = 0,1 ppm	5
32	Maximum NO_2 range	unsigned integer	Maximum value of NO_2, cannot be set lower than minimum value plus 0,1 ppm	(Min. range + 10) —1000	100 = 1 ppm	1.000

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
33	Minimum NO_2 alert	unsigned integer	Minimum NO_2 alarm value	Min. NO_2 range—Max. NO_2 alarm	10 = 0,1 ppm	5
34	Maximum NO_2 alert	unsigned integer	Maximum NO_2 alarm value	Min. NO_2 alarm—Max. NO_2 range	100 = 1 ppm	100
35	Active 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 level	unsigned integer	The ambient light level below which 'Standby' is indicated in input register 42	0—32.000	10 = 10 lux	10
37—44			Reserved, return 0			
45	Output 1 min value	unsigned integer	Set minimum value of output 1 signal in percentage	0—400	200 = 20 %	0
46	Output 1 max value	unsigned integer	Set maximum value of output 1 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 1 or digital output value)	0—1	0 = Off 1 = On	1
48—56			Reserved, return 0			
57	Relative humidity sensor selection (On/Off)		Turn ON or OFF the rH sensor (related to output 1 or digital output value)	0—1	0 = Off 1 = On	1
58—66			Reserved, return 0			
67	CO / NO_2 sensor selection	unsigned integer	Turn ON or OFF the CO / NO_2 sensor (related to output 1 or digital output value)	0—2	0 = Off 1 = CO 2 = NO_2	1
68—70			Reserved, return 0			

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***