SPRKM-2R | CAR PARK GAS SENSOR

Modbus register map

MODBUS REGISTER MAP

INPUT REGISTERS

		Data type	Description	Raw data range	Values
1—15			Reserved, returns 0		
16	VOC Index Level	unsigned integer	VOC Index Level. The baseline is set to index 100.	1—500	1 = Index 1, less VOC content 100 = VOC baseline index 500 = Index 500, more VOC content
17	VOC Index Output Value	unsigned integer	Output value according to VOC Index Level. Adjusted by holding registers 23 and 24.	0—1.000	0 = 0% Output 1.000 = 100% Output
18	VOC Index Alert 1 Indication	unsigned integer	Indicates if VOC Index Level is higher than Alert 1 Level defined by holding register 25.	0—1	0 = VOC measurement OK 1 = VOC measurement high
19	VOC Index Alert 2 Indication	unsigned integer	Indicates if VOC Index Level is higher than Alert 2 Level defined by holding register 26.	0—1	0 = VOC measurement OK 1 = VOC measurement high
20	VOC Index Sensor State	unsigned integer	Flag that shows if the communication with the VOC Index sensor is lost.	0, 1, 4	0 = OK 1 = Fault 4 = Preheating
21	NOx Index Level	unsigned integer	NOx Index level. The baseline is set to index 100.	1—500	1 = NOx baseline index 500 = Index 500, more NOx content
22	NOx Index Output Value	unsigned integer	Output value according to NOx Index level. Adjusted by holding registers 37 and 38.	0—1.000	0 = 0 % Output 1.000 = 100 % Output
23	NOx Index Alert 1 Indication	unsigned integer	Indicates if NOx Index Level is higher than Alert 1 Level defined by holding register 39.	0—1	0 = NOx measurement OK 1 = NOx measurement high
24	NOx Index Alert 2 Indication	unsigned integer	Indicates if NOx Index Level is higher than Alert 2 Level defined by holding register 40.	0—1	0 = NOx measurement OK 1 = NOx measurement high
25	NOx Index Sensor State	unsigned integer	Flag that shows if the communication with the NOx Index sensor is lost.	0, 1, 4	0 = OK 1 = Fault 4 = Preheating
26	CO Level	unsigned integer	CO level.	0—1.000	100 = 100 ppm

INPUT REGISTERS

		Data type	Description	Raw data range	Values
27	CO Output Value	unsigned integer	Output value according to CO level. Adjusted by holding registers 27 and 28.	0—1.000	0 = 0 % 1.000 = 100 %
28	CO Alert 1 Indication	unsigned integer	Indicates if CO value is higher than Alert 1 Level defined by holding register 29.	0—1	0 = CO measurement OK 1 = CO measurement high
29	CO Alert 2 Indication	unsigned integer	Indicates if CO value is higher than Alert 2 Level defined by holding register 30.	0—1	0 = CO measurement OK 1 = CO measurement high
30	CO Sensor State	unsigned integer	Flag that shows if the communication with the CO sensor is lost.	0—1, 4	0 = OK 1 = Fault 4 = Preheating
31	LPG Level	unsigned integer	Liquefied Petrol Gas level.	0,300 —10.000	< 300 = 0 ppm 5.000 = 5.000 ppm
32	LPG Output Value	unsigned integer	Output value according to Liquefied Petrol Gas level. Adjusted by holding registers 31 and 32.	0—1.000	0 = 0 % 1.000 = 100 %
33	LPG Alert 1 Indication	unsigned integer	Indicates if LPG value is higher than Alert 1 Level defined by holding register 33.	0—1	0 = LPG measurement OK 1 = LPG measurement high
34	LPG Alert 2 Indication	unsigned integer	Indicates if LPG value is higher than Alert 2 Level defined by holding register 34.	0—1	0 = LPG measurement OK 1 = LPG measurement high
35	LPG Sensor State	unsigned integer	Indicates the communication with the sensor and whether or not the sensor is being preheated.	0—1,4	0 = OK 1 = Fault 4 = Preheating
36—40			Reserved, returns 0		
41	Ambient Light Intensity	unsigned integer	Measured ambient light intensity.	0—30.000	0 = 0 lux 1.000 = 1.000 lux
42	Ambient Light Level	unsigned integer	Indicates if the ambient light intensity level.	0—3	0 = Dark 1 = Twilight 2 = Daylight 3 = Broad Daylight
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 = Fault

INPUT REGISTERS

		Data type	Description	Raw data range	Values
44–45		Reserved, returns 0			
46	VOC Air Quality Indication	unsigned integer	Indicates air quality based on the VOC Index Level.	0—7	0 = Preparing 1 = Excellent 2 = Very Good 3 = Good 4 = Fair 5 = Poor 6 = Bad 7 = Very Bad
47	VOC Air Quality Trend	unsigned integer	Indicates the air quality trend (improving/deteriorating) over the past minutes, based on VOC measurement.	0—3	0 = Preparing 1 = Stable 2 = Improving 3 = Deteriorating
48	NOX Air Quality Indication	unsigned integer	Indicates air quality based on the NOX Index Level.	0, 3—7	0 = Preparing 3 = Good 4 = Fair 5 = Poor 6 = Bad 7 = Very Bad
49	NOX Air Quality Trend	unsigned integer	Indicates the air quality trend (improving/deteriorating) over the past minutes, based on NOX measurement.	0—3	0 = Preparing 1 = Stable 2 = Improving 3 = Deteriorating

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	XXXX	SPRKM-2R = 1.792	
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	0x0100 = FW version 1.0	
7–8			Reserved, return 0			
9	Modbus Termination Resistor	unsigned integer	Modbus termination resistor state.	0—1	0 = disconnected 1 = connected	0
10	Modbus Termination Resistor	unsigned integer	Resets Modbus holding registers (HR23-HR80) to default values. This register is automatically reset to '0'	0—1	0 = Idle 1 = Reset Modbus Registers	0
11–22			Reserved, returns 0			
23	Minimum VOC Index 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
24	Minimum VOC Index Range	unsigned integer	Minimum temperature alarm value	Min. temperature range—Max. temperature alarm	100 = 10,0°C	0

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
25	Minimum VOC Index Range	unsigned integer	Maximum temperature alarm value	Min. temperature alarm—Max. temperature range	500 = 50,0°C	500
26	Minimum VOC Index Range	unsigned integer				
27	Minimum CO 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
28	Maximum CO 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
29	CO Alert 1 Level	unsigned integer	Minimum relative humidity alarm value	Min. relative humidity range—Max. relative humidity alarm	200 = 20,0 % rH	0
30	CO Alert 2 Level	unsigned integer	Maximum relative humidity alarm value	Min. relative humidity alarm—Max. relative humidity range	1.000 = 100 % rH	1.000
31	Minimum LPG range		Reserved, return 0			
32	Maximum LPG range	unsigned integer	Minimum value of CO, cannot be set higher than maximum value minus 10 ppm. If CO level is above this value, alarm is set.	0—(Max. range—10)	100 = 100 ppm	0
33	LPG Alert 1 Level	unsigned integer	Maximum value of CO, cannot be set lower than minimum value plus 10 ppm. If CO level is above this value, alarm is set.	(Min. range +10)—1.000	1.000 = 1.000 ppm	150
34	LPG Alert 2 Level	unsigned integer				
35	Maximum of Moderate Light Level Range	unsigned integer	CO warning value	Min. CO alarm—Max. CO range	100 = 100 ppm	100
36	Minimum Moderate Light Level Range	unsigned integer	Minimum LPG range, cannot be set higher than maximum LPG range minus 100 ppm. If LPG level is below this value, alarm is set.	300—(Max. range—100)	300 = 300 ppm	300

HOLDING REGISTERS

		Data type	Description	Raw data range	Values	Factory default values
37	Minimum NOx Range	unsigned integer	Maximum LPG range, cannot be set less than minimum LPG range plus 100 ppm. If LPG level is above this value, alarm is set.	(Min. range + 100)—10.000	4.200 = 4.200 ppm = 20 % LEL	4.200
38	Maximum NOx Range	unsigned integer	Reserved, returns 0			
39	NOx Alert 1 Level	unsigned integer	LPG warning value	Min. LPG range—Max. LPG range	2.100 = 2.100 ppm = 10 % LEL	2.100
40	NOx Alert 2 Level	unsigned integer	The ambient light level above which 'Active' is indicated in input register 42	0—32.000	100 = 100 lux	100
41 –78			Reserved, returns 0			
79	LED indication	unsigned integer	LED indication related to one of the parameters	1, 2, 5, 7	1 = temperature 2 = relative humidity 5 = CO 7 = LPG	7
80	LED 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*