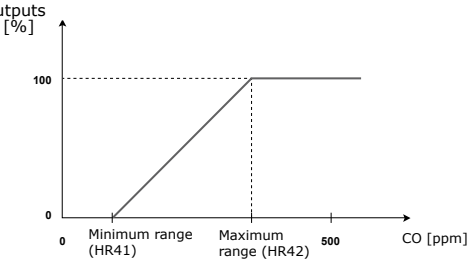
ISCMG2-4 | CO SENSOR FOR PARKING GARAGES

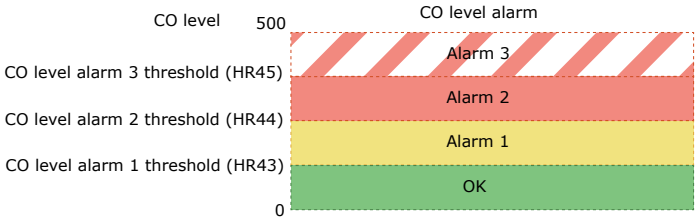
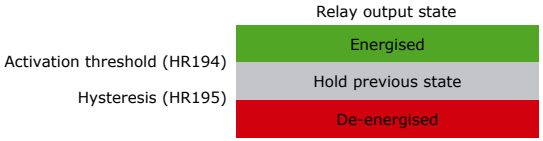
Modbus register map

MODBUS REGISTER MAP

INPUT REGISTERS

Input register		Data Type	Description	Raw Data Range	Resolution / Unit	Values	
↓ General ↓							
1	Device Status – Errors	R	Indicates the critical faults of the specific device part.	Bitwise b0 – b15		b0 = b1 = b2 = b3 = b4 – b15 =	Supply Voltage Fault Internal Voltage Fault Memory Fault Sensor Fault Undefined
2	Device Status – Warnings	R	Indicates non-critical warnings related to the specific device part.	Bitwise b0 – b15		b0 = b1 = b2 – b15 =	Supply Voltage Warning Internal Voltage Warning Undefined
3	Supply Voltage	R	Shows actual supply voltage of the device.	180 – 340		240 =	24,0 V DC
4—10			Reserved, returns 0.				
↓ Carbon Monoxide ↓							
41	Carbon Monoxide Level	R	Measured carbon monoxide concentration.	0 – 500	1 ppm	0 = 500 =	0 ppm 500 ppm
42	Carbon Monoxide Output Value	R	Output value according to carbon monoxide level and set measurement range (HR41 and HR42). Analogue outputs value IR45, [%] 	0 – 1.000	1/10 %	0 = 1.000 =	0,0 % Output 100 % Output

INPUT REGISTERS

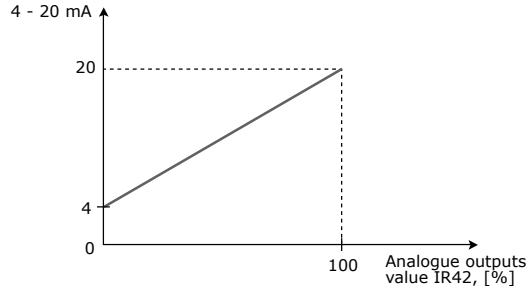
Input register		Data Type	Description	Raw Data Range	Resolution / Unit	Values
43	Carbon Monoxide Alarms	R	Indicates that the measured carbon monoxide level is above one or two or all three alarm values (HR43, HR44 and HR45). 	0 – 3		0 = OK (Green) 1 = Alarm 1 (Yellow) 2 = Alarm 2 (Red) 3 = Alarm 3 (Blinking Red)
44	Carbon Monoxide Sensor State	R	Indicates state of carbon monoxide sensor.	Bitwise b0 – b15		b0 = Sensor Problem b1 = Manual Zero Calibration b2 = Sensor Preheating
45	Carbon Monoxide TWA Level	R	The averaged carbon monoxide concentration measured over a period specified in the HR46.	0 – 500		0 = 0 ppm 500 = 500 ppm
46—50			Reserved, returns 0.			
↓ Analogue Output 1 ↓						
162	Output 1 Value	R	Actual value of analogue output 1. As a percentage of full range according to output type.	0 – 1.000	1/10 %	**Example:** 500 = 50,0% Output
163 – 170			Reserved, returns 0.			
↓ Relay Output 1 ↓						
192	Relay Output 1 State	R	Indicates state of relay output 1 based on settings in HR193 and HR194. 	0 – 1		0 = De-energized 1 = Energized
193—200			Reserved, returns 0.			

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

HOLDING REGISTERS

Holding register		Data Type	Description	Raw Data Range	Resolution / Units	Values	Factory Default Values
			↓ General ↓				
1	Device slave address	R/W	Modbus device address.	1 – 247			1
2	Modbus baud rate	R/W	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	R/W	Parity check mode.	0 – 2		0 = 8N1 1 = 8E1 2 = 8O1	1
4	Device type	R	Device type.	XXXX		Device specific	1826 = ISCMG2-4
5	HW version	R	Hardware version of the device.	XXXX		Hardware version specific 0x0100 = HW version 1.00	Depends on hardware release
6	FW version	R	Firmware version of the device.	XXXX		Firmware version specific 0x0100 = FW version 1.00	Depends on firmware release
7—8			Reserved, returns 0.				
9	Modbus network resistor termination (NBT)	R/W	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	R/W	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
			↓ Carbon monoxide ↓				
41	Minimum Carbon Monoxide Range	R/W	Minimum carbon monoxide concentration value that corresponds to minimum output value, cannot be set higher than maximum carbon monoxide range (HR42).	0 – 300	1 ppm	**Example:** 0 = 0 ppm	0
42	Maximum Carbon Monoxide Range	R/W	Maximum carbon monoxide concentration value that corresponds to maximum output value, cannot be set lower than minimum carbon monoxide range (HR41).	0 – 300	1 ppm	**Example:** 50 = 50 ppm	100
43	Carbon Monoxide Alarm 1 Level	R/W	Carbon monoxide alarm level used to control alarm register IR43. Must be set lower than HR44.	0 – 300	1 ppm	**Example:** 20 = 20 ppm	20

HOLDING REGISTERS

Holding register		Data Type	Description	Raw Data Range	Resolution / Units	Values	Factory Default Values
44	Carbon Monoxide Alarm 2 Level	R/W	Carbon monoxide alarm level used to control alarm register IR43. Must be set higher than HR43 and lower than HR45.	0 – 300	1 ppm	**Example:** 50 = 50 ppm	50
45	Carbon Monoxide Alarm 3 Level	R/W	Carbon monoxide alarm level used to control alarm register IR43. Must be set higher than HR44.	0 – 300	1 ppm	**Example:** 100 = 100 ppm	100
46	TWA Period of Alarm 1 and Alarm 2	R/W	Selection of the TWA period for Alarm 1 and Alarm 2. If set to 0, Alarms are triggered when value in IR41 exceeds a threshold levels specified in HR43, HR44.	0 – 60	1 min	**Example:** 0 = 0 min	0
47	Delay Period of Alarm 3	R/W	Defines the duration for which the sensor must measure level of carbon monoxide above the value in HR45. When this time elapses, the alarm is triggered. If set to 0, Alarm is triggered when value in IR41 exceeds a threshold level specified in HR45.	0 – 5	1 min	**Example:** 0 = 0 min	0
48	Carbon Monoxide Baseline Control	R/W	Selects the baseline control mode. If Factory is selected, device will reset its baseline reference to value written by manufacturer. If Manual Start is selected, device will save current CO concentration as 0 ppm reference. After selecting any of these two options, status will be automatically changed to the Idle.	0, 2, 4		0 = Factory 2 = Manual Start 4 = Idle (read-only)	4
49—50			Reserved, returns 0.				
			↓ Analogue Output 1 ↓				
161	Output 1 Source	R/W	Indicates the actual source of signal used for analogue output 1.	Bitwise b0 is LSB		b0 = Overwrite (highest priority) b1 – b3 = Reserved b4 = Carbon Monoxide Sensor b5 – b15 = Reserved	b4
162	Output 1 override value	R/W	Override value for output 1.	0 – 1.000	1/10 %	**Example:** 1.000 = 100% Output	0
163	Output 1 type	R/W	Select analogue / modulating output type. 	0 – 6		0 = 0 – 10 VDC 1 = 0 – 20 mA 2 = PWM 12 VDC 3 = PWM Open Collector 4 = 2 – 10 V 5 = 4 – 20 mA 6 = 0 – 5 V	0

HOLDING REGISTERS							
Holding register		**Data Type**	**Description**	**Raw Data Range**	**Resolution / Units**	**Values**	**Factory Default Values**
166—170			Reserved, returns 0				
↓ Relay Output 1 ↓							
191	Relay Output 1 Source	R/W	Indicates the actual source of signal used for relay output 1.	Bitwise b0 is LSB		b0 = Overwrite (highest priority) b1 – b3 = Reserved b4 = Carbon Monoxide Sensor b5 – b15 = Reserved	b4
192	Relay Output 1 override value	R/W	Override value for relay output 1.	0 – 1		0 = De-energized (OFF) 1 = Energized (ON)	0
193	Relay Activation Threshold	R/W	Defines the concentration at which the relay will be activated.	0 – 300	1 ppm	**Example:** 20 = 20 ppm	20
194	Hysteresis	R/W	Defines the offset applied below the activation threshold (HR193) for relay deactivation, preventing rapid switching near the threshold.	2 – 10	1 ppm	**Example:** 5 = 5 ppm	5
195—200			Reserved, returns 0				
↓ LED Indication ↓							
222	LED Indication Brightness	R/W	Selection of LED indication brightness. When OFF state is selected, yellow and red indication will light at minimum brightness.	0 – 10		0 = Off 1 = 10% Brightness 2 = 20% Brightness 3 = 30% Brightness 4 = 40% Brightness 5 = 50% Brightness 6 = 60% Brightness 7 = 70% Brightness 8 = 80% Brightness 9 = 90% Brightness 10 = Full Brightness	5
223—230			Reserved, returns 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