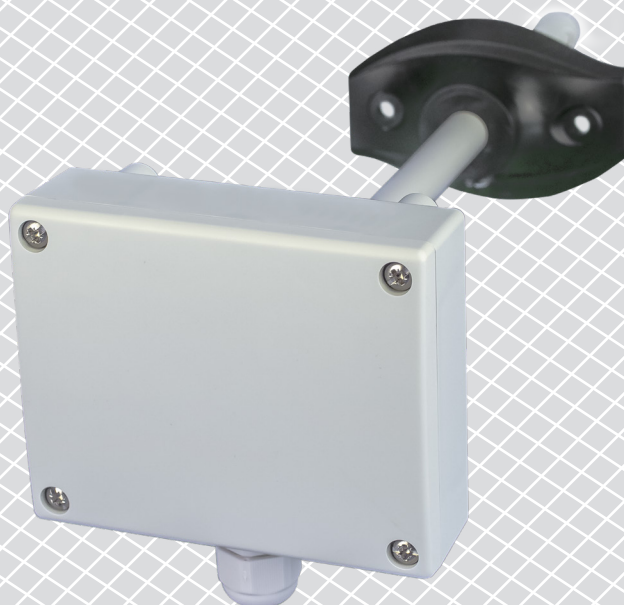


DSCDG0-4 | DUCT CO₂ SENSOR

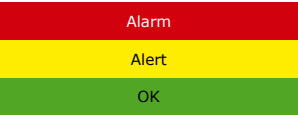
Modbus register map



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. When powered by AC, Supply Voltage Fault is not valid.	Bitwise b0 – b15		b0 = Supply Voltage Vault b1 = Internal Voltage Fault b2 = Memory Fault b3 = Sensor Fault b4 = Undefined b5 = Undefined b6 = Undefined b7 = Undefined b8 = Undefined b9 = Undefined b10 = Undefined b11 = Undefined b12 = Undefined b13 = Undefined b14 = Undefined b15 = Undefined
2	Device Status – Warnings	R	Indicates non-critical warnings related to the specific device part. When powered by AC, Supply Voltage Warning is not valid.	Bitwise b0 – b15		b0 = Supply Voltage Warning b1 = Internal Voltage Warning b2 = Undefined b3 = Sensor Warning b4 = Undefined b5 = Undefined b6 = Undefined b7 = Undefined b8 = Undefined b9 = Undefined b10 = Undefined b11 = Undefined b12 = Undefined b13 = Undefined b14 = Undefined b15 = Undefined
3	Supply Voltage	R	Shows actual supply voltage of the device. When powered by AC, the displayed value is not valid.	150 – 340	1/10 VDC	Example: 240 = 24,0 V DC
4—10			Reserved.			
↓ Temperature ↓						
11	Temperature Level		Measured temperature level.	-300 – 700	1/10 °C	Example: 200 = 20,0 °C

INPUT REGISTERS						
Input register		Data Type	Description	Raw Data Range	Resolution / Unit	Values
13	Temperature Alert / Alarm	R	Indicates that measured temperature level is within OK range (HR13 and HR14), within the Alert range (HR15 and HR16) or in Alarm. Temperature index alert / alarm Temperature [°C] 70 T alarm maximum (HR16) T alert maximum (HR14) T alert minimum (HR13) T alarm minimum (HR15) -30 Alarm Alert OK Alert Alarm 0 – 2 0 = OK 1 = Alert 2 = Alarm			
14	Temperature Sensor State	R	Indicates the state of the temperature sensor.	0 – 4		0 = Sensor OK 1 = Sensor Problem 4 = Sensor Preheating
15—20		R	Reserved.			
↓ Relative Humidity ↓						
21	Relative Humidity Level	R	Measured level of relative humidity.	0 – 1.000	1/10 % rH	Example: 500 = 50,0% rH
23	Relative Humidity Alert / Alarm	R	Indicates that relative humidity level is within OK range (HR23 and HR24), within the Alert range (HR25 and HR26) or in Alarm. Relative humidity index alert / alarm rH [%] 100 RH alarm maximum (HR26) RH alert maximum (HR24) RH alert minimum (HR23) RH alarm minimum (HR25) 0 Alarm Alert OK Alert Alarm 0 – 2 0 = OK 1 = Alert 2 = Alarm			

INPUT REGISTERS						
Input register		Data Type	Description	Raw Data Range	Resolution / Unit	Values
24	Relative Humidity Sensor State	R	Indicates the state of the relative humidity sensor.	0 – 4		0 = Sensor OK 1 = Sensor Problem 4 = Sensor Preheating
25—30			Reserved.			
↓ Dew point ↓						
31	Dew Point Level	R	Calculated dew point level.	- 500 – 700	1/10 °C	Example: 100 = 10,0 °C
33	Dew Point Delta Alert / Alarm	R	Indicates that the Dew point delta (Temperature level (IR11) - Dew point level (IR31)) is below alert / alarm sub-thresholds (HR33 and HR34). Dew point alert / alarm Dew point delta [°C] Dew point delta alert sub-threshold (HR33) Dew point delta alarm sub-threshold (HR34) 0 	0 – 2		0 = OK 1 = Alert 2 = Alarm
34	Dew Point State	R	Indicates the state of the dew point calculation.	0 – 4		0 = Calculation OK 1 = Calculation Problem 4 = Data preparation
35—40			Reserved.			
↓ Carbon Dioxide ↓						
51	Carbon Dioxide Level	R	Measured carbon dioxide concentration level.	0 – 2.000	1 ppm	Example: 1.000 = 1.000 ppm
53	Carbon Dioxide Alerts	R	Indicates that the measured carbon dioxide level is above one or both alert values (HR53 and HR54). CO ₂ level alert / alarm CO ₂ level 2000 CO ₂ level alarm threshold (HR54) CO ₂ level alert threshold (HR53) 0 	0 – 2		0 = Green/OK 1 = Yellow Alert 2 = Red Alert

INPUT REGISTERS						
Input register		Data Type	Description	Raw Data Range	Resolution / Unit	Values
54	Carbon Dioxide Sensor State	R	Indicates the state of the carbon dioxide sensor.	0 – 4		0 = Sensor OK 1 = Sensor Problem 4 = Sensor Preheating
55—60			Reserved.			
↓ Barometric Pressure ↓						
141	Barometric Pressure Level	R	Measured atmospheric pressure.	300 – 1.250	1 hPa	Example: 1.000 = 1.000 hPa
142—143			Reserved.			
144	Barometric Pressure Sensor State	R	Indicates the state of the pressure sensor.	0 – 4		0 = Sensor OK 1 = Sensor Problem 4 = Sensor Preheating
145—150			Reserved.			
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	DSCDG0-4
5	HW version	R	Hardware version of the device	XXXX		Hardware version specific 0x0100 = HW version 1.0	Depends on hardware release
6	FW version	R	Firmware version of the device	XXXX		Firmware version specific 0x0100 =FW version 1.0	Depends on firmware release
7—8			Reserved.				
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		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
↓ Temperature ↓							
13	Temperature Alert Minimum	R/W	Temperature alert minimum level used to control IR13.	HR15 – HR14	1/10°C	Example: 200 = 20,0 °C	190
14	Temperature Alert Maximum	R/W	Temperature alert maximum level used to control IR13.	HR13 – HR16	1/10°C	Example: 300 = 30,0 °C	300

HOLDING REGISTERS							
Holding register		Data Type	Description	Raw Data Range	Resolution / Units	Values	Factory Default Values
15	Temperature Alarm Minimum	R/W	Temperature alarm minimum level used to control IR13.	-300 –HR13	1/10°C	Example: 100 = 10,0 °C	100
16	Temperature Alarm Maximum	R/W	Temperature alarm maximum level used to control IR13.	HR14 – 700	1/10°C	Example: 400 = 40,0 °C	400
17—19			Reserved.				
20	Temperature Correction Value	R/W	Manual temperature offset correction value	-50 – 50	1/10°C	Example: 50 = 5,0 °C	0
↓ Relative Humidity ↓							
23	Relative Humidity Alert Minimum	R/W	Relative humidity alert minimum level used to control IR23.	HR25 – HR24	1/10 % rH	Example: 300 = 30,0% rH	300
24	Relative Humidity Alert Maximum	R/W	Relative humidity alert maximum level used to control IR23.	HR23 – HR26	1/10 % rH	Example: 700 = 70,0% rH	700
25	Relative Humidity Alarm Minimum	R/W	Relative humidity alarm minimum level used to control IR23.	0 – HR23	1/10 % rH	Example: 100 = 10,0% rH	100
26	Relative Humidity Alarm Maximum	R/W	Relative humidity alarm maximum level used to control IR23.	HR24 – 1000	1/10 % rH	Example: 900 = 90,0% rH	900
27—29			Reserved.				
30	Relative Humidity Correction Value	R/W	Manual relative humidity offset correction value	-100 – 100	1/10 % rH	Example: 100 = 10,0% rH	0
↓ Dew point ↓							
33	Dew Point Delta Alert Sub-threshold	R/W	Dew point delta alert sub-threshold used to control IR33.	HR34 – 100	1/10°C	Example: 20 = 2,0°C	40
34	Dew Point Delta Alarm Sub-threshold	R/W	Dew point delta alarm sub-threshold used to control IR33.	0 – HR33	1/10°C	Example: 20 = 2,0°C	20
35—40			Reserved.				

HOLDING REGISTERS							
Holding register		Data Type	Description	Raw Data Range	Resolution / Units	Values	Factory Default Values
↓ Carbon dioxide ↓							
53	Carbon Dioxide Alert 1 Level	R/W	Carbon dioxide alert level used to control alert register IR53.	0 – HR54	1 ppm	Example: 1.000 = 1.000 ppm	900
54	Carbon Dioxide Alert 2 Level	R/W	Carbon dioxide alert level used to control alert register IR53.	HR54 – 2.000	1 ppm	Example: 1.000 = 1.000 ppm	1.200
56—57			Reserved.				
58	Carbon Dioxide 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 Auto-matic is selected, it is advisable that the CO ₂ concentration drops to lowest level at least once in a 7 day period. If Manual Start is selected, device will save current CO ₂ concentration as 400 ppm reference. The procedure takes 12 minutes, after what mode will be automatically changed to Manual Completed.	0 – 3		0 = Factory 1 = Automatic 2 = Manual Start 3 = Manual Completed (read-only)	1
59			Reserved.				
60	Carbon Dioxide Correction Value	R/W	Manual carbon dioxide offset correction value. Default value is set according to NASA CO₂ chart taking into account ABC algorithm	-200 – 200	1 ppm	Example: 200 = 200 ppm	20
↓ Barometric Pressure ↓							
141—149			Reserved.				
150	Barometric Pressure Correc-tion Value	R/W	Manual barometric pressure correction value	-100 – 100	1 hPa	Example: 100 = 100 hPa	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							