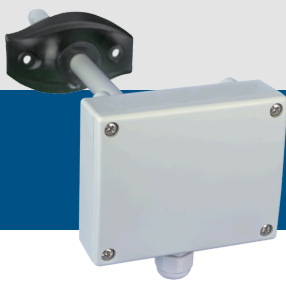


DSCDG3-4

Duct CO₂ sensor



Description

DSCDG3-4 is a duct sensor that measures carbon dioxide (CO₂), temperature (T) and relative humidity (rH). The CO₂ level is measured via NDIR (non-dispersive infrared) technology, which has long-term precision and stability.

This device has an ABC self-calibrating algorithm, which compensates for the gradual drifting of the NDIR CO₂ sensor. This algorithm is designed for applications where CO₂ concentrations drop to outside ambient conditions (± 400 ppm) for at least 15 minutes once every 7-day period, which is typically seen during unoccupied periods. The lowest reading during a 7-day period is considered fresh outside air (i.e. the baseline). The ABC algorithm is enabled by default and can be disabled via Holding Register 58 through Modbus communication.

Key Features

- Measurements are transmitted via 3 analogue outputs or via Modbus RTU communication
- Easy firmware updates via Modbus RTU communication
- Robust enclosure made of Acrylonitrile Butadiene Styrene (ABS) plastic
- Remote access to device data through Modbus RTU communication
- Over-voltage protection of the power supply up to 65 VDC
- Reliable temperature and relative humidity measurements as sensing elements require no calibration


Article Code

Article code	Supply voltage
DSCDG3-4	24 VDC / 24 VAC \pm 10%

Area of Use

- Demand controlled ventilation based on CO₂ concentration, temperature and relative humidity
- Air quality monitoring in air ducts

Standards

- Low Voltage Directive 2014/35/EU 
- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Commission Delegated Directive (EU) 2015/863 (RoHS 3) of 31 March 2015 amending Annex II to Directive 2011/65/EU of the European Parliament and of the Council as regards the list of restricted substances
- WEEE Directive 2012/19/EU

Warnings and Attention Points

- This product is intended for indoor use only.
- Avoid mounting the device in locations affected by direct sunlight.
- Turn off the power supply before all servicing and maintenance.
- Applying overvoltage to any of the intelligent sensor parts will cause improper operation or failure to the internal circuit.
- Do not short-circuit the terminals or the input and output wiring.
- During operation, the unit must be closed.
- If the unit does not work according to the instructions, the wiring connections, supply voltage and settings need to be checked.



Technical Specifications

Imax	80 mA
Minimum recommended air flow velocity	1 m/s
Accuracy of measurements	
CO ₂ level	$\pm(30 \text{ ppm} + 3 \%)$
Temperature	$\pm 0,4 \text{ }^{\circ}\text{C}$
Relative humidity	$\pm 2,5 \%$ rH
Measurement ranges	
CO ₂ level	0–2.000 ppm
Temperature	-30–70 $^{\circ}\text{C}$
Relative humidity	0–100 % rH
Analogue output	
0–10 VDC	(load resistance $\geq 1 \text{ k}\Omega$)
2–10 VDC	(load resistance $\geq 1 \text{ k}\Omega$)
0–5 VDC	(load resistance $\geq 1 \text{ k}\Omega$)
0–20 mA	(load resistance $\leq 500 \Omega$)
4–20 mA	(load resistance $\leq 500 \Omega$)
PWM Push-Pull	(frequency = 1kHz, load resistance $\geq 1 \text{ k}\Omega$, output voltage level = 12 VDC)
PWM Open Collector	(frequency = 1kHz, pull-up resistance $\geq 1 \text{ k}\Omega$, pull-up voltage level $\leq 12 \text{ VDC}$)
Operating conditions	
Temperature	-10–50 $^{\circ}\text{C}$
Relative humidity	10–90 % (non-condensing)
Storage conditions	
Temperature	-10–60 $^{\circ}\text{C}$
Relative humidity	5–80 % rH
Protection standard	
Enclosure	IP54
Probe	IP20
Enclosure type	
Material	Acrylonitrile Butadiene Styrene (ABS) plastic
Colour	Grey (RAL 7035)

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Wiring and Connections



Supply voltage and Modbus communication

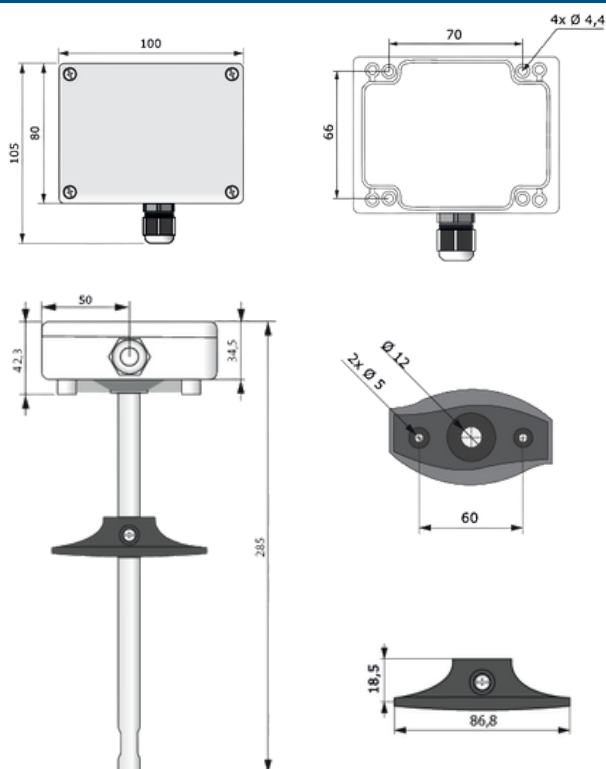
VIN	24 VDC / 24 VAC ± 10%
A	Modbus RTU (RS485), signal A
B	Modbus RTU (RS485), signal /B
GND	Common ground

Analogue outputs

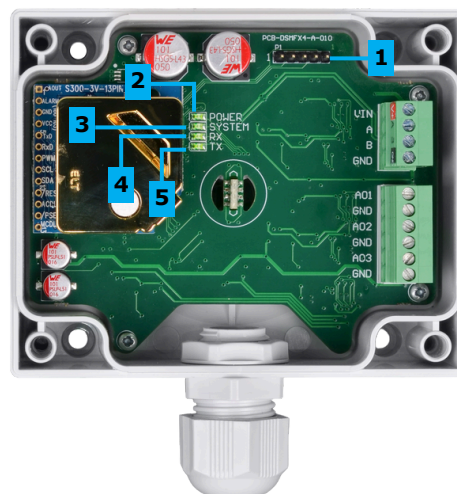
AO1	Analogue output 1
GND	Analogue output 1, common ground
AO2	Analogue output 2
GND	Analogue output 2, common ground
AO3	Analogue output 3
GND	Analogue output 3, common ground

Cable characteristics	Cat5 or EIB cable, cross section ≥ 0,5 mm ²
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Fixing and Dimensions

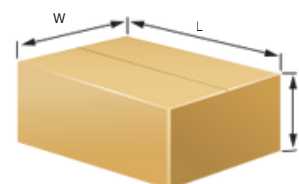


Settings and Indications



1 - PROG header, P1		Put a jumper onto pins 1 and 2 and wait for at least 5 seconds to reset the Modbus communication parameters
On-board LED indication		
2 - Power ON indication	ON	The internal power supply (3,3 VDC) of the device is OK.
3 - System indications	ON	The device is powered and the system is OK.
	Slow blinking	The device is powered, but there is a system error. Blinking frequency: 1 time per second / 1 Hz
	Fast blinking	The device is powered and is in bootloader mode. Blinking frequency: 2 times per second / 2 Hz
4 - RX indication	Blinking	A Modbus request from a master (client) is received.
5 - TX indication	Blinking	A Modbus response from the device is transmitted.

Packaging



Article code	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight [kg]	Gross weight [kg]
DSCDG3-4	Unit (1 pc.)	310	115	115	0,13	0,26
	Box (24 pcs.)	590	380	505	3,07	7,25
	Pallet (384 pcs.)	1.200	800	2.170	49,15	135,35

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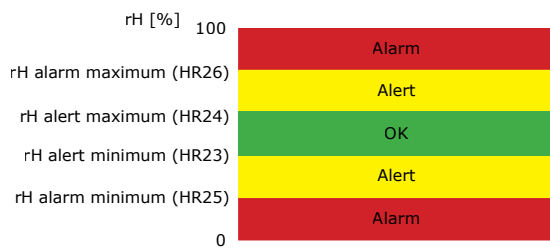
Duct CO₂ sensor



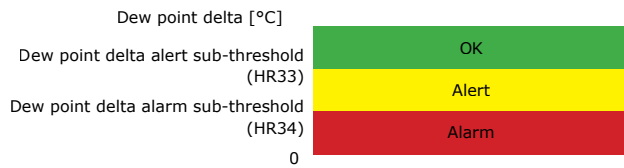
Temperature Diagram



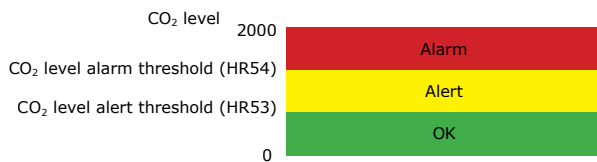
Relative Humidity Diagram



Dew Point Diagram



CO₂ Level Diagram



Global Trade Item Numbers 14 (GTIN 14)

Article code	Unit	Box	Pallet
DSCDG3-4	5401003019061	5401003504512	5401003701508

