

# DSMFM-4

## Duct-mounted CO<sub>2</sub> sensor



### Description

The DSMFM-4 is a duct-mounted sensor manufactured to measure temperature, relative humidity, CO<sub>2</sub> levels and barometric pressure within buildings with HVAC ventilation systems. Based on the temperature and relative humidity measurements, the dew point is calculated, which is an essential factor in preventing condensation-related issues in the rooms.

- **Key benefits:**
  - Long term stability and accuracy - DSMFM-4 provides precise measurement of T, rH, CO<sub>2</sub> and barometric pressure, as long as the enclosure and the components of the device make it resistant to atmospheric conditions.
  - Real-time data to inform our customers: Connect the device to the SenteraWeb cloud platform, so you can receive real-time data for exceeded values or possible issues with the operation of the sensor.
  - Energy-efficient: The sensor is optimised to save energy and costs, while measuring the desired values.
  - Enhanced air quality control: The device helps our customers supply enough fresh air in the room and maintain the comfort.
  - Easy to be installed: The built-in pluggable terminal block ensures easy installation within minutes and tightly secures the wires, as well as prevents cable loosening.
  - Firmware update: Thanks to the bootloader functionality, the firmware of the unit can be updated, using the Modbus RTU communication.
  - Smooth integration with building management systems: The sensor can be easily connected to a building management system in order to constantly monitor the essential parameters for the indoor air quality.

The sensor is specifically designed for installation within air duct systems, making it ideal for monitoring HVAC systems in commercial, industrial and residential buildings. This sensor provides real-time, reliable data that enables building management systems (BMS) to take actions regarding ventilation control, air quality management and energy consumption optimisation.

### Key Features

Internal storage conditions:

- Temperature: -10—60 °C
- Relative humidity: 10—90 % (non-condensing)

Replaceable CO<sub>2</sub> sensor element:

- Uses ABC algorithm for compensating the baseline drift and can be automatically recalibrated

Wide range of supply voltage:

- 24 VDC / PoM or 24 VAC ± 10%

Minimum recommended airflow velocity:

- 1 m/s

High quality of protection against ingress of fluids and dust:

- Enclosure - IP54
- Probe - IP20
- enclosure material: ABS plastic in grey

Over-voltage protection of the power supply up to 65 VDC

### Intended Area of Use

- Demand controlled ventilation based on CO<sub>2</sub> concentration, temperature and relative humidity
- Air quality monitoring and control in buildings with the following ventilation systems:
  - Exhaust ventilation
  - Supply ventilation
  - Balanced ventilation
  - Energy recovery ventilation

### Technical Specifications

Imax		40 mA
Accuracy	Temperature	± 0,4 °C
	Relative humidity	± 2,5 % rH
	CO <sub>2</sub> levels	±30 ppm + 3 %
	Barometric pressure	±0,5 hPa
Selectable ranges	Temperature	-30—70 °C
	Relative humidity	0—100 % rH
	CO <sub>2</sub>	0—2.000 ppm
	Barometric pressure	300—1.250 hPa



### Article Codes

Article code	Supply
DSMFM-4	24 VDC, PoM (acceptable voltage range: 18—34 VDC)/ 24 VAC ± 10%

### Standards

- Electromagnetic compatibility directive 2014/30/EU:
  - EN 61326-1:2021 – Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
  - EN 61326-2-3:2021 – Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-3: Particular requirements - Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning
  - EN 61326-2-5:2021 – Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-5: Particular requirements - Test configurations, operational conditions and performance criteria for field devices with field bus interfaces according to IEC 61784-1
- Low voltage directive 2014/35/EU:
  - EN 60529:2019 – Degrees of protection provided by enclosures (IP Code)
  - EC 60730-1:2022 – Automatic electrical controls - Part 1: General requirements
- WEEE 2012/19/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
  - EN IEC 63000:2018 – Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances



### Connect Devices to SenteraWeb



Via a Sentera Internet Gateway you can connect your installation to the SenteraWeb HVAC cloud and:

- Easily change the parameter settings of the connected devices remotely
- Define users and give them access to monitor the installation via a standard web browser
- Log data - create diagrams and export logged data
- Receive alerts or warnings when measured values exceed alert ranges or when errors occur
- Create different regimes for your ventilation system - e.g. day-night regime

Please refer to the Modbus Register Map of the product for more details regarding the Modbus registers.

### Wiring and Connections

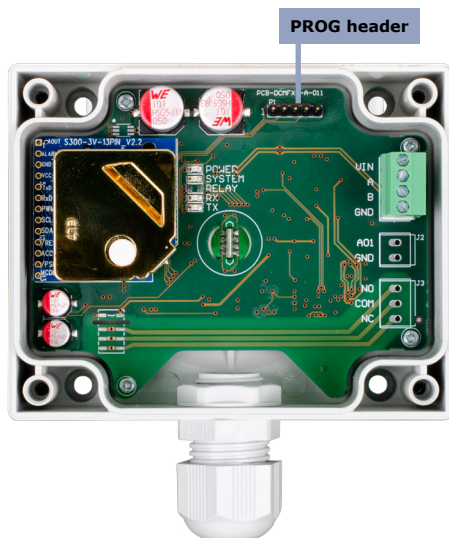
VIN	24 VDC, PoM/ 24 VAC ± 10%
GND	Common ground
A	Modbus RTU (RS485), signal A
/B	Modbus RTU (RS485), signal /B
Connection type	Pluggable terminal block, Cat5 or EIB cable

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## Settings



PROG header, P1



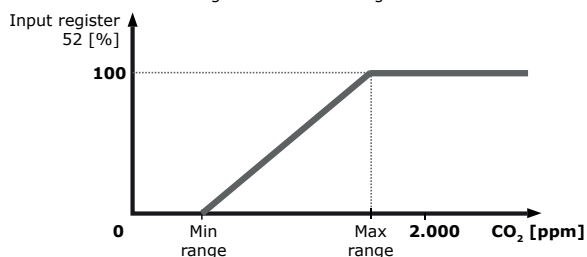
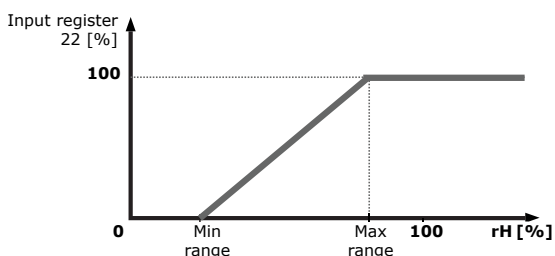
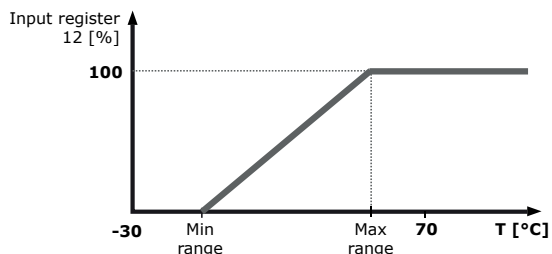
Put a jumper onto pins 1 and 2 and wait for at least 5 seconds to reset the Modbus communication parameters



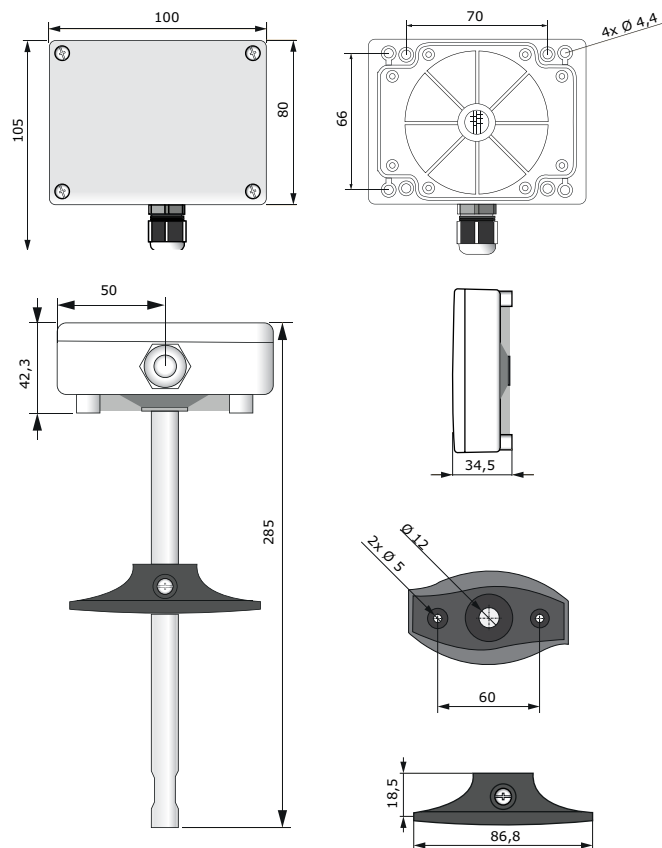
Put a jumper onto pins 3 and 4 and restart the power supply to enter bootloader mode

( - indicates the position of the jumper)

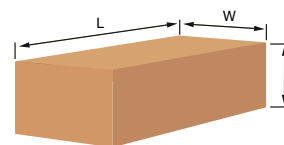
## Operational Diagrams



## Installation and Dimensions



## Packaging



Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
DSMFM-4	Unit (1 pc.)	310	110	110	0,15 kg	0,28 kg
	Box (20 units)	1200	380	505	3,02 kg	6,68 kg
	Palette (320 units)	1200	800	2170	48,3 kg	126,3 kg

## Global Trade Item Numbers 14 (GTIN 14)

Packaging	DSMFM-4
Unit	5401003018972
Carton	5401003504444
Palette	5401003701461