

# DSMHX-2R

## Multifunctional duct transmitter with corrosion protection



The DSMHX-2R series are multifunctional duct transmitters which measure temperature, relative humidity and CO<sub>2</sub> concentration level. They are treated with anti-corrosion and ammonia resistant coating that makes them suitable for applications in the agriculture and horticulture industry or other harsh environments. Based on the temperature and relative humidity measurements, the dew point is calculated. The series features a wide range of low voltage power supply and three analogue / modulating outputs. All parameters are accessible via Modbus RTU.

### Key features

- Suitable for harsh environments thanks to the special ammonia resistant coating
- Selectable temperature, relative humidity and CO<sub>2</sub> ranges
- 3 selectable analogue / modulating outputs
- Bootloader for updating the firmware via Modbus RTU communication
- Modbus RTU (RS485)
- Innovative self-calibrating algorithm
- Removable CO<sub>2</sub> NDIR sensor element
- Long-term stability and accuracy

### Area of use

- Monitoring duct temperature, relative humidity and CO<sub>2</sub> level in HVAC applications
- Suitable for harsh environments. Application field: greenhouses, livestock breeding farms, mushroom growing houses, etc.



### Article codes

Article code	Supply	Maximum power consumption	Nominal power consumption	I <sub>max</sub>
<b>DSMHF-2R</b>	18–34 VDC	2,6 W	1,3 W	145 mA
<b>DSMHG-2R</b>	18–34 VDC / 15–24 VAC ±10 %	2,1 W (VAC) / 2,6 W (VDC)	1,3 W (VAC) / 1,48 W (VDC)	155 mA (VAC) / 145 mA (VDC)

### Technical specifications

3 analogue / modulating outputs	0–10 VDC mode: min. load 50 kΩ (R <sub>L</sub> ≥ 50 kΩ)	
	0–20 mA mode: max. load 500 Ω (R <sub>L</sub> ≤ 500 Ω)	
	PWM (open-collector type) mode: 1 kHz, min. load 50 kΩ (R <sub>L</sub> ≥ 50 kΩ), PWM voltage level: 3,3 VDC or 12 VDC	
Typical field of use	Temperature	0–50 °C
	Relative humidity	0–100 % rH (non-condensing)
	CO <sub>2</sub>	400–10.000 ppm
Accuracy	±3 % rH (5–85 % rH)	
	±0,4 °C (-30–70 °C)	
Min. airflow velocity	1 m / s	
Protection standard	Enclosure: IP54, Probe: IP20	
Accuracy	± 0,4 °C (range -30–70 °C)	
	± 3% rH (range 0–100 %)	
Ambient conditions	Temperature	0–50 °C
	Rel. humidity	5–85 % rH (non-condensing)

### Wiring and connections

Article type	DSMHF-2R	DSMHG-2R	
<b>VIN</b>	18–34 VDC	18–34 VDC	15–24 VAC ±10%
<b>GND</b>	Ground	Common ground*	AC ~*
<b>A</b>	Modbus RTU (RS485), signal A		
<b>/B</b>	Modbus RTU (RS485), signal /B		
<b>AO1</b>	Analogue / modulating output 1 for temperature measurement (0–10 VDC / 0–20 mA / PWM)		
<b>GND</b>	Ground AO1	Common ground*	
<b>AO2</b>	Analogue / modulating output 2 for relative humidity measurement (0–10 VDC / 0–20 mA / PWM)		
<b>GND</b>	Ground AO2	Common ground*	
<b>AO3</b>	Analogue / modulating output 3 for CO <sub>2</sub> measurement (0–10 VDC / 0–20 mA / PWM)		
<b>GND</b>	Ground AO3	Common ground*	
<b>Connections</b>	Spring contact terminal blocks, cable cross section: 1,5 mm <sup>2</sup>		

**\*Attention!** The -F version of the product is not suited for 3-wire connection. It has separate grounds for power supply and analogue output. Connecting both grounds together might result in incorrect measurements. Minimum 4 wires are required to connect -F type sensors.

The -G version is intended for 3-wire connection and features a 'common ground'. This means that the ground of the analogue output is internally connected with the ground of the power supply. For this reason, -G and -F types cannot be used together on the same network. Never connect the common ground of -G type articles to other devices powered by a DC voltage. Doing so might cause permanent damage to the connected devices.

### Modbus registers



The Sensistant Modbus configurator allows you to easily monitor and/or configure Modbus parameters.

The parameters of the unit can be monitored / configured through the 3SModbus software platform. You can download it from the following link:

<https://www.sentera.eu/en/3SMCenter>



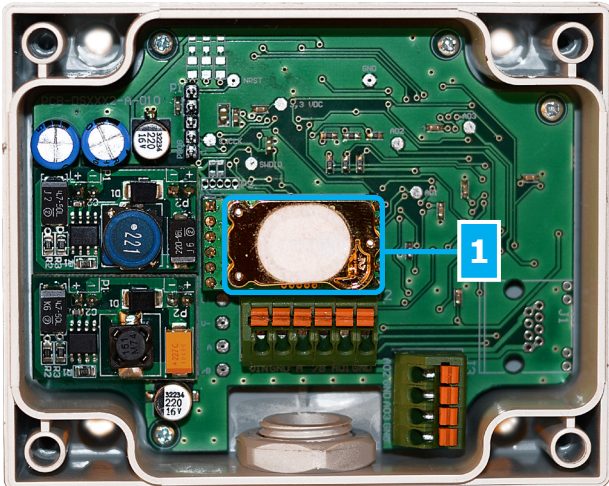
For more information about the Modbus registers, please refer to the product Modbus Register Map.

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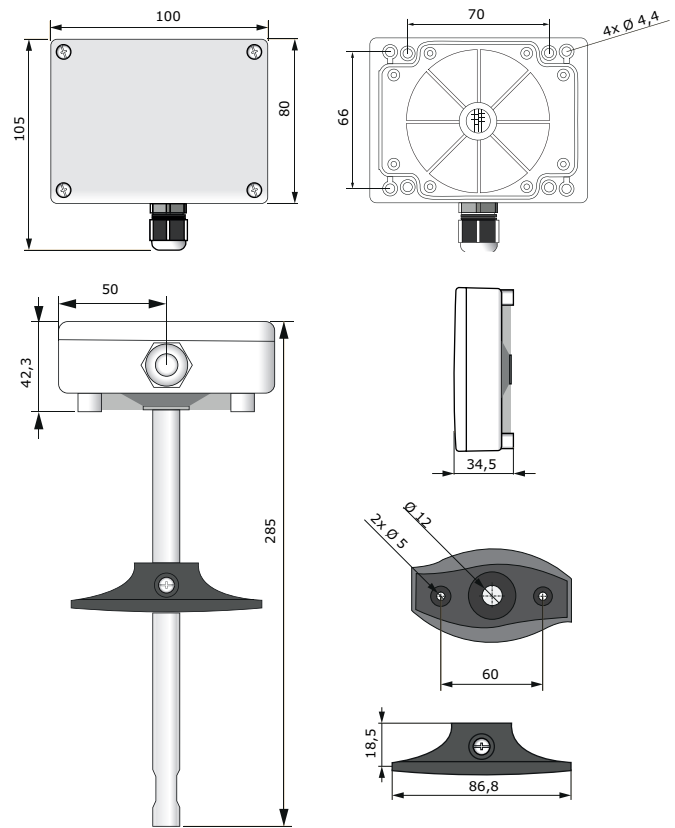
## Settings



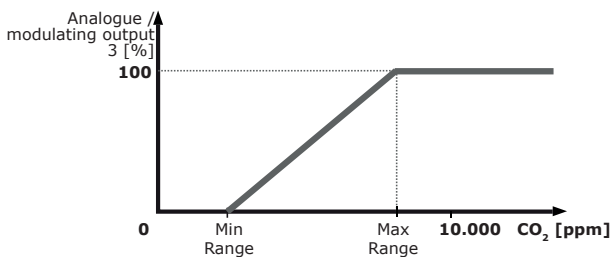
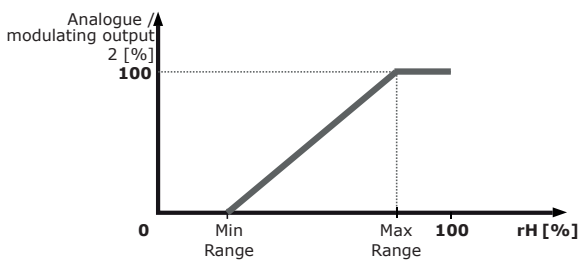
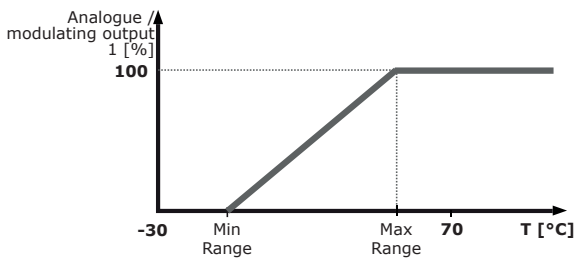
1 - CO<sub>2</sub> sensor element

Replaceable in case of faulty operation

## Fixing and dimensions



## Operational diagram(s)



## Standards

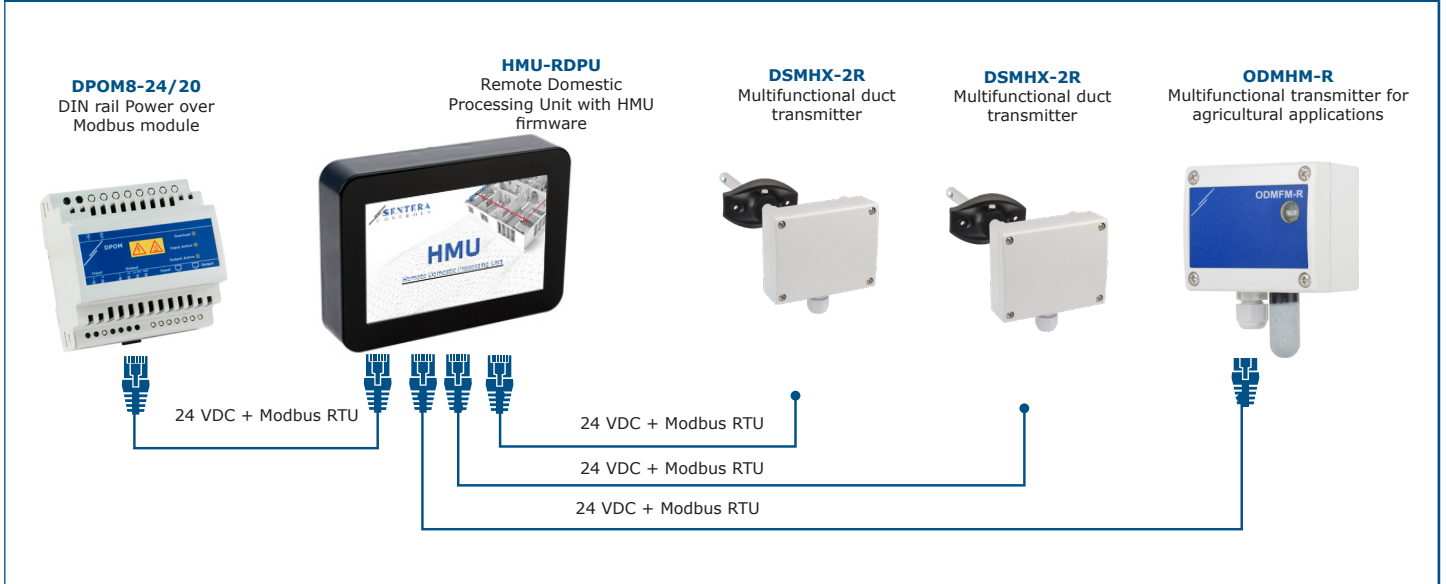
- EMC Directive 2014/30/EC:
  - EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
  - EN 61326-2-3:2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 2-3: Particular requirements - Test configuration, operational conditions and performance criteria for transducers with integrated or remote signal conditioning
- High protective conformal coating
  - MIL-I-46058C qualified
  - IPC-CC-830
- RoHS Directive 2011/65/EC and EPA 33/50 compliant



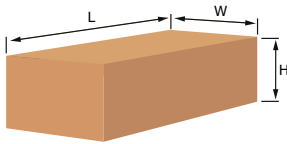
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## Application example



## Packaging



Article	Packaging	Length [mm]	Width [mm]	Height [mm]	Net weight	Gross weight
DSMHX-2R	Unit (1 pc.)	310	115	115	0,16 kg	0,24 kg
	Box (20 pcs.)	590	380	505	3,20 kg	6,03 kg