

HDMO DUCT MOUNT

Carbon Dioxide & Temp Sensor

Modbus RTU, 0-10V or 4-20mA with LCD display and Relay output



USE :

Electronic Duct Temperature & CO₂ measurement & control, with 0-10v, 4-20ma outputs. Capable of direct scaled CO₂ control of EC or VSD driven fresh fan or motorised modulating damper motor for local CO₂ control.

*****Easy and Flexible Configuration via phone App*****

- Selectable CO₂ scaling and output limiting (clipping) options
 - Test mode for on-site installation and wiring verification
 - Configurable relay parameters: set-point, delay, latch, and hysteresis
 - 2 configurable Analogue outputs & 2 relay outputs
 - Automatic internal CO₂ Calibration to maintain accuracy over life time.
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Technical Data

CO₂

Measuring range 1	400 ... 1000 ppm
Accuracy 1	±50ppm ±2.5% of reading
Measuring range 2	1000 ... 2000 ppm
Accuracy 2	±50ppm ±3% of reading
Measuring range 3	2000 ... 5000 ppm
Accuracy 3	±40ppm ±5% of reading
Measurement interval	5 seconds
Response time T63	typical 60 seconds
ABC algorithm, period	on/off, 7 days
Accuracy drift after five years with ABC enabled range	400 ... 2000 ppm
Accuracy	±50ppm ±0.5% of reading
Field calibration points	3

Temperature

Measurement range	-10 ... 60 °C
Accuracy (including non-linearity, hysteresis, and repeatability)	typ. ±0.5°C (15 ... 35°C) typ. ±0.9°C (-10 ... 60 °C)
Accuracy drift ³	< 0.03°C/year
Field calibration points	2

Analog output (two channels)

3-wire, 4-20 mA, 0-10V, 0-5 V, 1-5V	
Accuracy at +25 °C	±0.1% full scale
Temperature dependence	±0.005%/°C full scale
External loads	current output RL < 400 ohm voltage output RL > 10k ohm

Relay output (two contacts) (option)

Contact	SPST NO, 60 VDC/VAC 700mA
Activate	High-point and Low-point with enable
Set point	-65536 ... 65535
Hysteresis	0 ... 9999
On/Off delay	0 ... 3600 second
Latch	on/off

<u>Power supply</u>	15-35 VDC, 24 VAC
Current consume	max. 300mA

<u>Operating temperature</u>	-10 ... 60 °C
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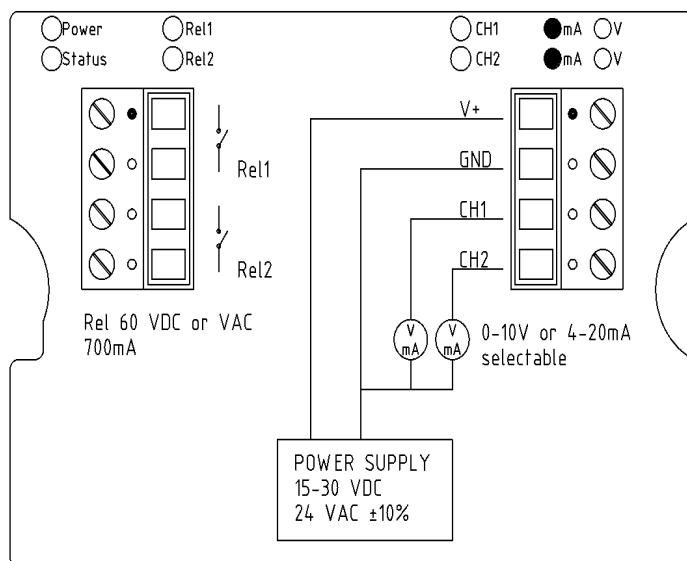
Mechanics

Housing material	PC, Polycarbonate
Probe material	Aluminum
Flange material	Aluminum
Housing classification	IP65
Cable gland	PG9 with strain relief
Cable bushing	4.5 ... 8.2 mm
Terminal block	AWG 12...24
Connection	Cable gland with terminal block

Electromagnetic compatibility

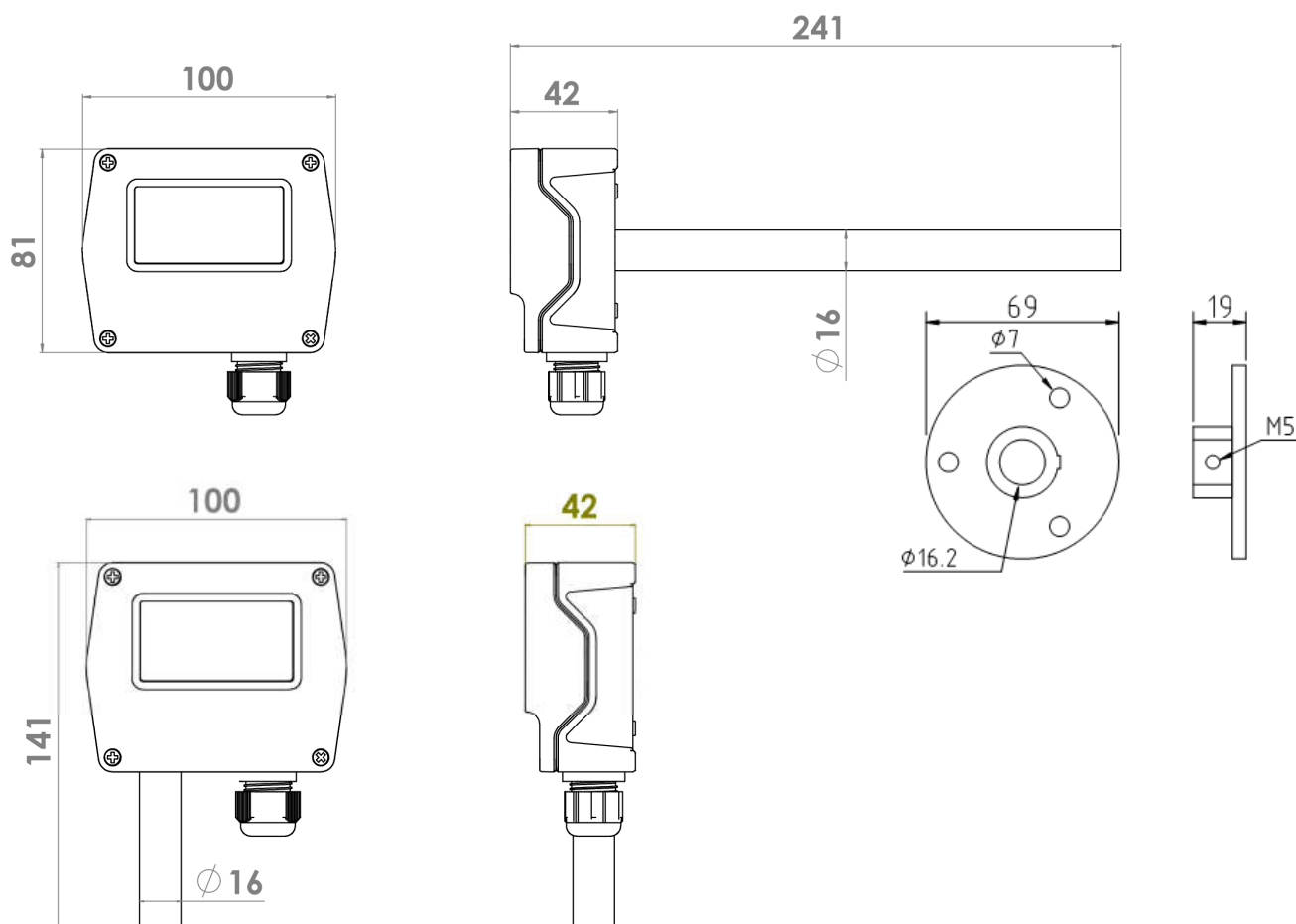
Complies with EMC standard
EN61326-1, Industrial Environment

Wiring



Dimension

Dimension in mm



Calibration —CO₂ and Temperature Calibration

This page allows calibration of both CO₂ and temperature readings.

CO₂ Auto-calib setting

Force re-calibrate: Forces the device to perform an immediate calibration.

Auto-calib on/off setting: Enables or disables the CO₂ auto-calibration function.

Auto-calib reference parameter: Sets the reference value for background concentration. The default value is 400 ppm, with an adjustable range of 0–20000 ppm.

Calibrate Carbon dioxide

Available only when Auto-calib was set off.

Displays the current CO₂ concentration reading and allows manual calibration.

Select the calibration point, press **Start Calibrate**, and enter the standard CO₂ concentration to complete calibration.

Press **Delete** to remove the calibration point and restore factory settings.

Calibrate Temperature

Displays the current temperature reading and supports both single-point and multi-point calibration.

Select the calibration point, press **Start Calibrate**, and enter the reference temperature to complete calibration.

Press **Delete** to remove the calibration point and restore factory settings.

The screenshot shows a mobile application interface for calibration. At the top, there's a blue header with a menu icon, the title 'Calibration', and a 'DEVICES' button with a dropdown arrow. Below the header, the 'CO2 Auto setting' section includes a 'Force re-calibrate' button, an 'Auto-calib on/off setting' toggle set to 'On', and an 'Auto-calib reference parameter' set to '400'. The 'Calibrate Carbon dioxide' section shows a 'Carbon dioxide' reading of '405', a 'Start Calibrate' button, and a 'Delete' button. Below this is a table with columns 'Point', 'Edit', 'Standard', and 'Measure'. It contains three rows: Point 1 with an 'Edit' radio button selected, Point 2 with an 'Edit' radio button, and Point 3 with an 'Edit' radio button. The 'Calibrate Temperature' section shows a 'Temperature' reading of '25.95', a 'Start Calibrate' button, and a 'Delete' button. Below this is a table with columns 'Point', 'Edit', 'Standard', and 'Measure'. It contains two rows: Point 1 with an 'Edit' radio button selected, and Point 2 with an 'Edit' radio button.

Analog Output (All items displayed in blue text are adjustable.)

This device provides **two output channels (CH1 and CH2)**, each of which can be configured to output either **CO₂** or **temperature** data.

The system supports **five analog output ranges** to meet various application needs:

- **4–20 mA** (default range)
- **0–20 mA**
- **0–10 V**
- **0–5 V**
- **1–5 V**

The analog output range can be freely defined according to the desired physical quantity. For example:

When the CO₂ concentration is **0 ppm**, the output is **4 mA**;
when the concentration is **2000 ppm**, the output is **20 mA**.
Intermediate values are converted linearly between these limits.

If users prefer not to have the current or voltage reach the absolute minimum or maximum, the **Clipping limit (%)** can be adjusted to restrict the upper and lower output boundaries, expressed as a percentage.

Error output defines the output behavior in the event of a fault condition. For output modes that do not include zero (such as 4–20 mA), two error output options are available:

- **Low:** 3.8 mA
- **High:** 21 mA

Users can select the appropriate error output behavior according to their monitoring or alarm requirements.

Test mode & Test value:

When test mode is enabled, a desired test value can be set.

The device will force the output to this fixed value, allowing convenient verification during installation or system testing.

Analog output		DEVICES	
CH 1			
Carbon dioxide	402		
Output level	7.2		
Status	Analog ON		
Test mode on/off	Off		
Test value	0.0		
Analog range	4_20mA		
Mesaurement	Carbon dioxide		
Present item	ppm		
Low scale	0		
High scale	2000		
Low clipping limit %	0		
High clipping limit %	100		
Error output	3.8		
CH 2			
Carbon dioxide	78.46		
Output level	20.5		
Status	Analog ON		
Test mode on/off	Off		
Test value	0.0		

Relay Output (All items displayed in blue text are adjustable.)

This device provides **two relay outputs**, each of which can be configured to operate based on either **CO₂** or **temperature**.

Temperature display can be switched between **Celsius (°C)** and **Fahrenheit (°F)**.

In the **Low / High setpoint value** fields, you can define the upper and lower trigger thresholds.

The **Low / High setpoint enable / disable** options allow you to enable or disable these threshold functions.

Hysteresis prevents frequent switching of the relay output when the measured value fluctuates near the setpoint, which could otherwise cause communication or control instability. For example, if the **Low / High setpoint** are set to **0 / 500** and **Hysteresis** is **10**: When the value rises to **501**, the relay is triggered to **ON**; when it decreases to **498**, it remains **ON** because it is still within the hysteresis range. Only when it drops to **490** (**500 – 10**) or below will the relay turn **OFF**. (Adjustable range: **0–9999**)

ON / OFF Delay defines the signal delay time for relay switching, with a configurable range of **0–3600** seconds. This function adds a delay before sending the signal to the host system, ensuring compatibility with slower controllers that may require additional processing time.

Error output determines the relay state when an error occurs, with selectable options of **Activate** or **Deactivate**.

Latch function is used to record abnormal trigger events. When enabled, if a reading exceeds the setpoint, the relay status (**Status**) will remain **Activate** even if the value later returns to the normal range.

The state will reset to **Deactivate** only after manually pressing **Un Latch**.

When the latch function is disabled, the relay status (**Activate / Deactivate**) will update dynamically based on whether the current value exceeds the setpoint.

Test mode & Test value

When test mode is enabled, the relay output can be manually set to **Activate** or **Deactivate**, allowing convenient verification during installation or system testing.

The screenshot shows a configuration page titled "Relay output" with a "DEVICES" tab. It contains two sections for "Relay output 1" and "Relay output 2".

Relay output 1 settings:

- Carbon dioxide: 406
- Status: Deactivate
- unlatch: Un Latch (button)
- Test mode on/off: Off
- Test value: Deactivate
- Mesaurement: Carbon dioxide
- Present item: ppm
- Low setpoint enable / disable: Disable
- High setpoint enable / disable: Enable
- Low setpoint value: 0
- High setpoint value: 500
- Hysteresis (0 ... 9999): 0
- ON-Delay (0 ... 3600 second): 5
- OFF-Delay (0 ... 3600 second): 0
- Latch (on/off): On
- Error output: Deactivate

Relay output 2 settings:

- Temperature: 25.75
- Status: Deactivate