TCO2A(-D)

CO_2 and temperature transmitters

A range of room transmitters for measuring carbon dioxide concentration in indoor environments. The transmitter has a built-in CO2 sensor with working range 0...2000 ppm and output signal 0...10 V, as well as built-in 0...10 V temperature sensor (working range 0...50°C).

- Output signal CO2, 0...10 V DC referring to 0...2000 ppm
- Temperature sensor, 0...10 V DC referring to 0...50°C
- CO2 concentration, 0...2000 ppm
- Temperature, 0...50°C
- Good long-term stability

Transmitters with automatic calibration combining measurement of CO2 level and temperature in the same casing. The sensors are mounted in the cover-part of the casing. The cover is easy to detach from the back by means of snap-in grips and detachable terminals. This makes mounting easier. Furthermore, no cables have to be disconnected, simplifying service and replacement. The transmitters are intended for wall mounting in HVAC systems.

CO_2 sensor

The CO_2 concentration is measured using infrared light, a technique that measures the absorption in gases. It has a reference measuring system that compensates values in relation to changes in light intensity. This technique has many advantages:

- Very high accuracy
- Exact identification of the detected gas
- Low risk of contamination
- Short response time
- Excellent long-term stability

Automatic Calibration

The transmitters have automatic calibration, which means that manual recalibration is not required during the lifetime of the transmitter.

Temperature sensors

The unit has built-in 0...10 V temperature sensor, working range 0...50°C.

Note! The sensors are not compensated for internal warm-up. The passive temperature output must be calibrated with a controller.

Supply voltage

The transmitter uses a supply voltage of 24 V AC ±10 %, 50...60 Hz or 15...35 V DC. It automatically detects and adapts to the supply voltage connected.

Display (-D models)

Display models have an LCD display showing carbon dioxide concentration and temperature in an alternating series.

Applications

The carbon dioxide level gives a direct indication of the indoor air quality. This information can be used to control ventilation with high precision and improve the air quality. By increasing the supply air only when necessary, it is possible to minimise energy costs.

The transmitter is especially suited for environments such as cinemas, schools, hospitals, conference rooms, assembly halls, etc.

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Technical data

Supply voltage	24 V AC ±10 %, 50...60 Hz or 15...35 V DC
Power consumption	< 2.5 W
Energy consumption	< 0.5 Wh
Transformer power	5 VA
Electrical connection	Screw terminals max. 1.5 mm2 (AWG 16)
Ambient temperature	0...50 °C
Ambient humidity	10...90 % RH non-condensing
Storage temperature	-25...+60 °C
Protection class	IP30

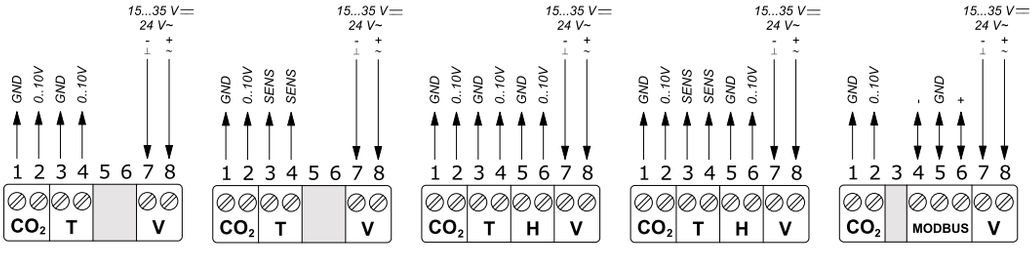
CO_2

Output signal CO2	0...10 V DC referring to 0...2000 ppm
Working range	0...2000 ppm
Accuracy, CO_2	< ± (50 ppm + 2 % of the measured value at 20°C)
Temperature dependency	Typically 5 ppm / K
Long term stability	Typically 20 ppm / year
Time constant	< 90 s
Warmup time	< 5 min

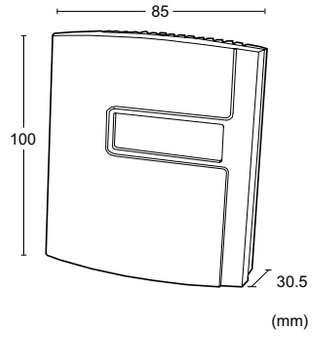
Temperature (0...10 V)

Temperature sensors	0...10 V DC referring to 0...50°C
Working range	0...50°C
Accuracy	±0.4°C

Wiring



Dimensions



Models

Article	Description	Display	Output signal	Accuracy, temperature
TCO2A	CO_2 + °C	-	0…10 V + 0…10 V	± 0.4 °C
TCO2A-D	CO_2 + °C	X	0…10 V + 0…10 V	± 0.4 °C
TCO2A-PT100	CO_2 + PT100, 100 Ohm (0°C)	-	0…10 V + ohm	± 0.3 °C
TCO2A-PT1000	CO_2 + PT1000, 1000 Ohm (0°C)	-	0…10 V + ohm	± 0.3 °C
TCO2A-NTC1.8	CO_2 + NTC 1.8, 1800 Ohm (25°C)	-	0…10 V + ohm	± 0.5 °C
TCO2A-NTC2.2	CO_2 + NTC 2.2, 2252 Ohm (25°C)	-	0…10 V + ohm	± 0.2 °C
TCO2A-NTC10-01	CO_2 + NTC 10, 10 kOhm (25°C)	-	0…10 V + ohm	± 0.2 °C
TCO2A-NTC10-02	CO_2 + NTC 10, 10 kOhm (25°C)	-	0…10 V + ohm	± 0.3 °C
TCO2A-NTC10-03	CO_2 + NTC 10, 10 kOhm (25°C)	-	0…10 V + ohm	± 0.25 °C
TCO2A-NTC20	CO_2 + NTC 20, 20 kOhm (25°C)	-	0…10 V + ohm	± 0.2 °C
TCO2A-NI1000-01	CO_2 + Ni1000, 1000 Ohm (0°C)	-	0…10 V + ohm	± 0.5 °C
TCO2A-NI1000-02	CO_2 + Ni1000, 1000 Ohm (0°C)	-	0…10 V + ohm	± 0.5 °C
TCO2A-D-PT100	CO_2 + PT100, 100 Ohm (0°C)	X	0…10 V + ohm	± 0.3 °C
TCO2A-D-PT1000	CO_2 + PT1000, 1000 Ohm (0°C)	X	0…10 V + ohm	± 0.3 °C
TCO2A-D-NTC1.8	CO_2 + NTC 1.8, 1800 Ohm (25°C)	X	0…10 V + ohm	± 0.5 °C
TCO2A-D-NTC2.2	CO_2 + NTC 2.2, 2252 Ohm (25°C)	X	0…10 V + ohm	± 0.2 °C
TCO2A-D-NTC10-01	CO_2 + NTC 10, 10 kOhm (25°C)	X	0…10 V + ohm	± 0.2 °C
TCO2A-D-NTC10-02	CO_2 + NTC 10, 10 kOhm (25°C)	X	0…10 V + ohm	± 0.3 °C
TCO2A-D-NTC10-03	CO_2 + NTC 10, 10 kOhm (25°C)	X	0…10 V + ohm	± 0.25 °C
TCO2A-D-NTC20	CO_2 + NTC 20, 20 kOhm (25°C)	X	0…10 V + ohm	± 0.2 °C
TCO2A-D-NI1000-01	CO_2 + Ni1000, 1000 Ohm (0°C)	X	0…10 V + ohm	± 0.5 °C
TCO2A-D-NI1000-02	CO_2 + Ni1000, 1000 Ohm (0°C)	X	0…10 V + ohm	± 0.5 °C
TCO2A-M	CO_2 + °C	-	Modbus	± 0.2 °C
TCO2A-D-M	CO_2 + °C	X	Modbus	± 0.2 °C
TCO2AU	CO_2 + °C + RH	-	0…10 V + 0…10 V + 0…10 V	± 0.4 °C
TCO2AU-PT100	CO_2 + RH + PT100, 100 Ohm (0°C)	-	0…10 V + 0…10 V + ohm	± 0.3 °C
TCO2AU-PT1000	CO_2 + RH + PT1000, 1000 Ohm (0°C)	-	0…10 V + 0…10 V + ohm	± 0.3 °C
TCO2AU-NTC1.8	CO_2 + RH + NTC 1.8, 1800 Ohm (25°C)	-	0…10 V + 0…10 V + ohm	± 0.5 °C
TCO2AU-NTC2.2	CO_2 + RH + NTC 2.2, 2252 Ohm (25°C)	-	0…10 V + 0…10 V + ohm	± 0.2 °C
TCO2AU-NTC10-01	CO_2 + RH + NTC 10, 10 kOhm (25°C)	-	0…10 V + 0…10 V + ohm	± 0.2 °C
TCO2AU-NTC10-02	CO_2 + RH + NTC 10, 10 kOhm (25°C)	-	0…10 V + 0…10 V + ohm	± 0.3 °C
TCO2AU-NTC10-03	CO_2 + RH + NTC 10, 10 kOhm (25°C)	-	0…10 V + 0…10 V + ohm	± 0.25 °C
TCO2AU-NTC20	CO_2 + RH + NTC 20, 20 kOhm (25°C)	-	0…10 V + 0…10 V + ohm	± 0.2 °C
TCO2AU-NI1000-01	CO_2 + RH + Ni1000, 1000 Ohm (0°C)	-	0…10 V + 0…10 V + ohm	± 0.5 °C
TCO2AU-NI1000-02	CO_2 + RH + Ni1000, 1000 Ohm (0°C)	-	0…10 V + 0…10 V + ohm	± 0.5 °C
TCO2AU-D	CO_2 + °C + RH	X	0…10 V + 0…10 V + 0…10 V	± 0.4 °C
TCO2AU-D-PT100	CO_2 + RH + PT100, 100 Ohm (0°C)	X	0…10 V + 0…10 V + ohm	± 0.3 °C
TCO2AU-D-PT1000	CO_2 + °C + RH	X	0…10 V + 0…10 V + ohm	± 0.3 °C
TCO2AU-D-NTC1.8	CO_2 + RH + NTC 1.8, 1800 Ohm (25°C)	X	0…10 V + 0…10 V + ohm	± 0.5 °C
TCO2AU-D-NTC2.2	CO_2 + RH + NTC 2.2, 2252 Ohm (25°C)	X	0…10 V + 0…10 V + ohm	± 0.2 °C
TCO2AU-D-NTC10-01	CO_2 + RH + NTC 10, 10 kOhm (25°C)	X	0…10 V + 0…10 V + ohm	± 0.2 °C
TCO2AU-D-NTC10-02	CO_2 + RH + NTC 10, 10 kOhm (25°C)	X	0…10 V + 0…10 V + ohm	± 0.3 °C
TCO2AU-D-NTC10-03	CO_2 + RH + NTC 10, 10 kOhm (25°C)	X	0…10 V + 0…10 V + ohm	± 0.25 °C
TCO2AU-D-NTC20	CO_2 + RH + NTC 20, 20 kOhm (25°C)	X	0…10 V + 0…10 V + ohm	± 0.2 °C
TCO2AU-D-NI1000-01	CO_2 + RH + Ni1000, 1000 Ohm (0°C)	X	0…10 V + 0…10 V + ohm	± 0.5 °C
TCO2AU-D-NI1000-02	CO_2 + RH + Ni1000, 1000 Ohm (0°C)	X	0…10 V + 0…10 V + ohm	± 0.5 °C
TCO2AU-M	CO_2 + RH + °C	-	Modbus	± 0.2°C
TCO2AU-D-M	CO_2 + RH + °C	X	Modbus	± 0.2°C

CE

EMC emissions & immunity standards: This product conforms to the requirements of the EMC Directive 2014/30/EU through the product standards EN 60730-1 and EN 60730-2-14.

RoHS: This product conforms to the Directive 2011/65/EU of the European Parliament and of the Council.