



TCO2A(-D)

CO₂ 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

Function

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.

CO₂ sensor

The CO₂ 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 environ-

MAIN OFFICE BRESSANONE

I-39042 Bressanone (BZ)
via Julius-Durst-Str. 50
VAT No. IT02748450216

tel: +39 0472 830626
fax: +39 0472 831840
www.industrietechnik.it

TCO2A(-D)

ments such as cinemas, schools, hospitals, conference rooms, assembly halls, etc.

Technical data

Supply voltage	24 V AC $\pm 10\%$, 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 mm ² (AWG 16)
Ambient temperature	0...50 °C
Ambient humidity	10...90 % RH non-condensing
Storage temperature	-25...+60 °C
Protection class	IP30

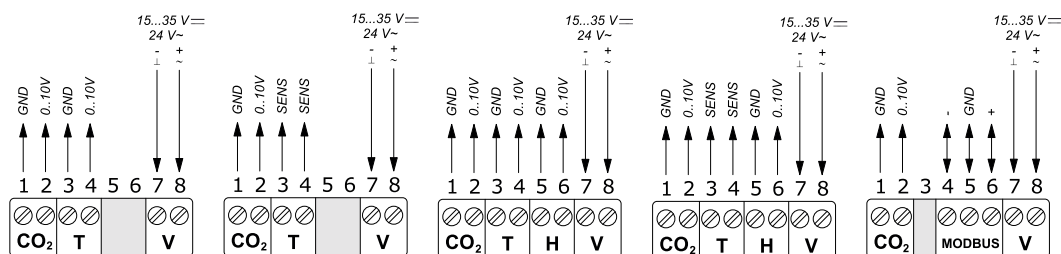
CO₂

Output signal CO ₂	0...10 V DC referring to 0...2000 ppm
Working range	0...2000 ppm
Accuracy, CO ₂	< $\pm$ (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

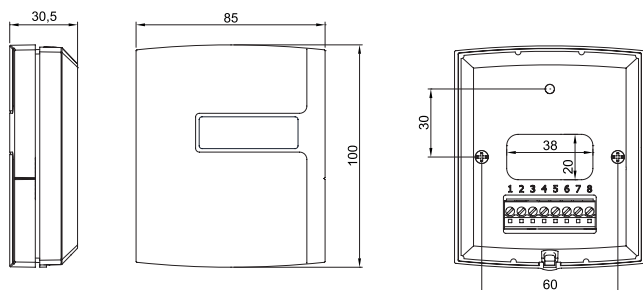
Temperature (0...10 V)

Temperature sensors	0...10 V DC referring to 0...50°C
Working range	0...50°C
Accuracy	$\pm 0.4^\circ\text{C}$

Wiring



Dimensions



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TC02A(-D)

Models

Article	Description	Display	Output signal	Accuracy, temperature
TC02A	CO ₂ + °C	-	0...10 V + 0...10 V	± 0.4 °C
TC02A-D	CO ₂ + °C	X	0...10 V + 0...10 V	± 0.4 °C
TC02A-PT100	CO ₂ + PT100, 100 Ohm (0°C)	-	0...10 V + ohm	± 0.3 °C
TC02A-PT1000	CO ₂ + PT1000, 1000 Ohm (0°C)	-	0...10 V + ohm	± 0.3 °C
TC02A-NTC1.8	CO ₂ + NTC 1.8, 1800 Ohm (25°C)	-	0...10 V + ohm	± 0.5 °C
TC02A-NTC2.2	CO ₂ + NTC 2.2, 2252 Ohm (25°C)	-	0...10 V + ohm	± 0.2 °C
TC02A-NTC10-01	CO ₂ + NTC 10, 10 kOhm (25°C)	-	0...10 V + ohm	± 0.2 °C
TC02A-NTC10-02	CO ₂ + NTC 10, 10 kOhm (25°C)	-	0...10 V + ohm	± 0.3 °C
TC02A-NTC10-03	CO ₂ + NTC 10, 10 kOhm (25°C)	-	0...10 V + ohm	± 0.25 °C
TC02A-NTC20	CO ₂ + NTC 20, 20 kOhm (25°C)	-	0...10 V + ohm	± 0.2 °C
TC02A-Ni1000-01	CO ₂ + Ni1000, 1000 Ohm (0°C)	-	0...10 V + ohm	± 0.5 °C
TC02A-Ni1000-02	CO ₂ + Ni1000, 1000 Ohm (0°C)	-	0...10 V + ohm	± 0.5 °C
TC02A-D-PT100	CO ₂ + PT100, 100 Ohm (0°C)	X	0...10 V + ohm	± 0.3 °C
TC02A-D-PT1000	CO ₂ + PT1000, 1000 Ohm (0°C)	X	0...10 V + ohm	± 0.3 °C
TC02A-D-NTC1.8	CO ₂ + NTC 1.8, 1800 Ohm (25°C)	X	0...10 V + ohm	± 0.5 °C
TC02A-D-NTC2.2	CO ₂ + NTC 2.2, 2252 Ohm (25°C)	X	0...10 V + ohm	± 0.2 °C
TC02A-D-NTC10-01	CO ₂ + NTC 10, 10 kOhm (25°C)	X	0...10 V + ohm	± 0.2 °C
TC02A-D-NTC10-02	CO ₂ + NTC 10, 10 kOhm (25°C)	X	0...10 V + ohm	± 0.3 °C
TC02A-D-NTC10-03	CO ₂ + NTC 10, 10 kOhm (25°C)	X	0...10 V + ohm	± 0.25 °C
TC02A-D-NTC20	CO ₂ + NTC 20, 20 kOhm (25°C)	X	0...10 V + ohm	± 0.2 °C
TC02A-D-Ni1000-01	CO ₂ + Ni1000, 1000 Ohm (0°C)	X	0...10 V + ohm	± 0.5 °C
TC02A-D-Ni1000-02	CO ₂ + Ni1000, 1000 Ohm (0°C)	X	0...10 V + ohm	± 0.5 °C
TC02A-M	CO ₂ + °C	-	Modbus	± 0.2 °C
TC02A-D-M	CO ₂ + °C	X	Modbus	± 0.2 °C
TC02AU	CO ₂ + °C + RH	-	0...10 V + 0...10 V + 0...10 V	± 0.4 °C
TC02AU-PT100	CO ₂ + RH + PT100, 100 Ohm (0°C)	-	0...10 V + 0...10 V + ohm	± 0.3 °C
TC02AU-PT1000	CO ₂ + RH + PT1000, 1000 Ohm (0°C)	-	0...10 V + 0...10 V + ohm	± 0.3 °C
TC02AU-NTC1.8	CO ₂ + RH + NTC 1.8, 1800 Ohm (25°C)	-	0...10 V + 0...10 V + ohm	± 0.5 °C
TC02AU-NTC2.2	CO ₂ + RH + NTC 2.2, 2252 Ohm (25°C)	-	0...10 V + 0...10 V + ohm	± 0.2 °C
TC02AU-NTC10-01	CO ₂ + RH + NTC 10, 10 kOhm (25°C)	-	0...10 V + 0...10 V + ohm	± 0.2 °C
TC02AU-NTC10-02	CO ₂ + RH + NTC 10, 10 kOhm (25°C)	-	0...10 V + 0...10 V + ohm	± 0.3 °C
TC02AU-NTC10-03	CO ₂ + RH + NTC 10, 10 kOhm (25°C)	-	0...10 V + 0...10 V + ohm	± 0.25 °C
TC02AU-NTC20	CO ₂ + RH + NTC 20, 20 kOhm (25°C)	-	0...10 V + 0...10 V + ohm	± 0.2 °C
TC02AU-Ni1000-01	CO ₂ + RH + Ni1000, 1000 Ohm (0°C)	-	0...10 V + 0...10 V + ohm	± 0.5 °C
TC02AU-Ni1000-02	CO ₂ + RH + Ni1000, 1000 Ohm (0°C)	-	0...10 V + 0...10 V + ohm	± 0.5 °C
TC02AU-D	CO ₂ + °C + RH	X	0...10 V + 0...10 V + 0...10 V	± 0.4 °C
TC02AU-D-PT100	CO ₂ + RH + PT100, 100 Ohm (0°C)	X	0...10 V + 0...10 V + ohm	± 0.3 °C
TC02AU-D-PT1000	CO ₂ + °C + RH	X	0...10 V + 0...10 V + ohm	± 0.3 °C
TC02AU-D-NTC1.8	CO ₂ + RH + NTC 1.8, 1800 Ohm (25°C)	X	0...10 V + 0...10 V + ohm	± 0.5 °C
TC02AU-D-NTC2.2	CO ₂ + RH + NTC 2.2, 2252 Ohm (25°C)	X	0...10 V + 0...10 V + ohm	± 0.2 °C
TC02AU-D-NTC10-01	CO ₂ + RH + NTC 10, 10 kOhm (25°C)	X	0...10 V + 0...10 V + ohm	± 0.2 °C
TC02AU-D-NTC10-02	CO ₂ + RH + NTC 10, 10 kOhm (25°C)	X	0...10 V + 0...10 V + ohm	± 0.3 °C
TC02AU-D-NTC10-03	CO ₂ + RH + NTC 10, 10 kOhm (25°C)	X	0...10 V + 0...10 V + ohm	± 0.25 °C
TC02AU-D-NTC20	CO ₂ + RH + NTC 20, 20 kOhm (25°C)	X	0...10 V + 0...10 V + ohm	± 0.2 °C
TC02AU-D-Ni1000-01	CO ₂ + RH + Ni1000, 1000 Ohm (0°C)	X	0...10 V + 0...10 V + ohm	± 0.5 °C
TC02AU-D-Ni1000-02	CO ₂ + RH + Ni1000, 1000 Ohm (0°C)	X	0...10 V + 0...10 V + ohm	± 0.5 °C
TC02AU-M	CO ₂ + RH + °C	-	Modbus	± 0.2 °C
TC02AU-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.

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