CTHRA(-D)
CO_2, humidity and temperature transmitters

A range of room transmitters for measuring carbon dioxide concentration in indoor environments. The transmitter has a built-in CO_2 sensor with output signal 0…10 V, a 0…10 V output signal for temperature, as well as a 0…10 V output signal for relative humidity.

- ✓ Output signal CO_2, 0…10 V DC referring to 0…2000 ppm
- ✓ Output signal temperature, 0…10 V DC referring to 0…50°C
- ✓ Output signal humidity, 0…10 V DC referring to 0…100 % RH
- ✓ CO_2 concentration, 0…2000 ppm
- ✓ Temperature 0...50°C
- ✓ Humidity, 10…90 % RH
- ✓ Good long-term stability
- ✓ RCBC algorithm

Function

Transmitters with automatic calibration combining measurement of CO_2 level, temperature and relative humidity 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 sensor
The unit has built-in 0…10 V and PT1000 temperature sensors, working range 0...50°C.

Relative humidity
The transmitters have a capacitive thin-film element that provides a 0...10 V signal proportional to the relative humidity in the range 0...100 % RH.

The measuring element responds quickly to changes in humidity and has excellent long-term stability.

RCBC algorithm
The transmitter is equipped with a function that can be activated to get a more stable CO_2 level in a room that is not used for parts of a day.

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Display (-D models)

Display models have an LCD display showing carbon dioxide concentration, temperature and humidity 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.

Technical data

Supply voltage	24 V AC/DC (21.6…26.4 V AC / 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
Dimensions (WxHxD)	85 x 100 x 30.5 mm

Technical data, CO_2 sensor

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

Technical data, temperature sensor

Output signal, temperature	0...10 V DC referring to 0...50°C
Working range	0...50°C
Accuracy	±0.4°C

Technical data, humidity sensor

Output signal, humidity	0…10 V DC referring to 0…100 % RH
Working range	10…90 % RH
Accuracy at 20°C	±0.3 %

Models

Article	Description
CTHRA	CO_2, humidity and temperature transmitter
CTHRA-D	CO_2, humidity and temperature transmitter with display

CE

This product carries the CE mark. More information is available at www.regincontrols.com.

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Dimensions

85

100

30.5

(mm)

Wiring

-
G0

+
G

1 2 3 4 5 6 7 8

| CO$_2$ | T | H | V |
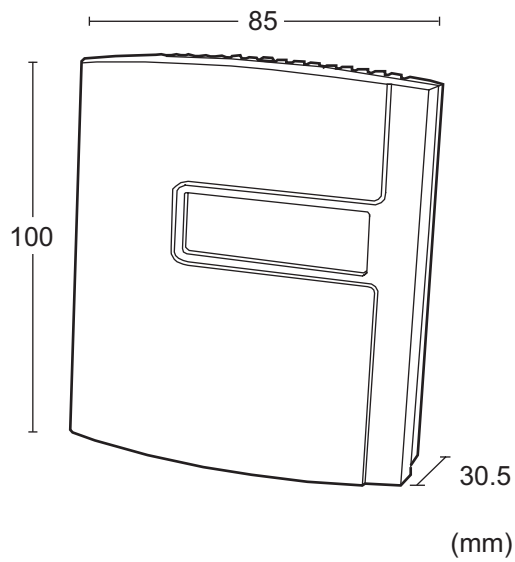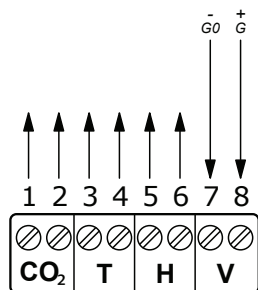
Product documentation

All documentation can be downloaded from www.regincontrols.com.

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