

# CTHR2(-D)

CO<sub>2</sub>, humidity and temperature transmitters



A range of room transmitters for measuring carbon dioxide concentration in indoor environments. The transmitter has a built-in CO<sub>2</sub> sensor with output signal 0...10 V, a PT1000 sensor with separate terminals, as well as an output signal for relative humidity.

- ✓ Output signal CO<sub>2</sub>, 0...10 V DC referring to 0...2000 ppm
- ✓ Temperature sensor; PT1000 class DIN B
- ✓ Output signal humidity, 0...10 V DC referring to 0...100 % RH
- ✓ CO<sub>2</sub> concentration, 0...2000 ppm
- ✓ Temperature, 0...50°C, PT1000
- ✓ Humidity, 10...90 % RH
- ✓ Good long-term stability

## Function

Transmitters with automatic calibration combining measurement of CO<sub>2</sub> 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<sub>2</sub> sensor

The CO<sub>2</sub> 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 a built-in PT1000 temperature sensor, working range 0...50°C.

**Note!** The PT1000 sensor is not compensated for internal warm-up. The passive temperature output must be calibrated with a controller.

## Relative humidity

The transmitters have a capacitive thin-film element that provides a signal proportional to the relative humidity.

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

## Supply voltage

The transmitter uses a supply voltage of 24 V AC  $\pm 10\%$ , 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, 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

<b>Supply voltage</b>	24 V AC $\pm 10\%$ , 50...60 Hz or 15...35 V DC
<b>Power consumption</b>	< 2.5 W
<b>Energy consumption</b>	< 0.5 Wh
<b>Transformer power</b>	5 VA
<b>Electrical connection</b>	Screw terminals max. 1.5 mm <sup>2</sup> (AWG 16)
<b>Ambient temperature</b>	0...50°C
<b>Ambient humidity</b>	10...90 % RH non-condensing
<b>Storage temperature</b>	-25...+60°C
<b>Protection class</b>	IP30
<b>Dimensions (WxHxD)</b>	85 x 100 x 30.5 mm

## Technical data, CO<sub>2</sub> sensor

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

## Technical data, temperature sensor

<b>Temperature sensor</b>	PT1000 class DIN B
<b>Working range</b>	0...50°C
<b>Accuracy</b>	$\pm 0.3^\circ\text{C}$

## Technical data, humidity sensor

<b>Output signal humidity</b>	0...10 V DC referring to 0...100 % RH
<b>Working range</b>	10...90 % RH
<b>Accuracy at 20°C</b>	$\pm 3\%$

## Models

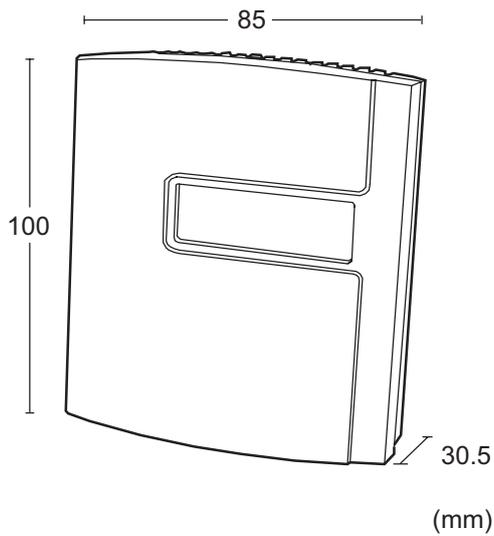
Article	Description
CTHR2	CO <sub>2</sub> , humidity and temperature transmitter
CTHR2-D	CO <sub>2</sub> , humidity and temperature transmitter with display

## CE

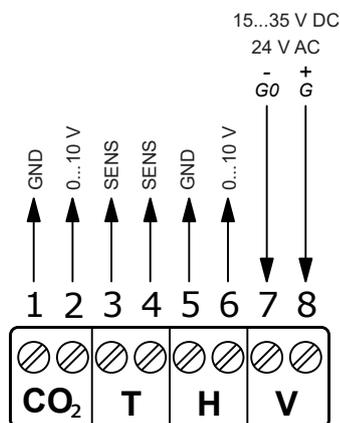
**EMC emissions & immunity standards:** This product conforms to the requirements of the EMC Directive 2014/30/EU through product standards EN 61000-6-1 and EN 61000-6-3.

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

## Dimensions



## Wiring



GND and G0 are internally connected. The PT1000 sensor can either be connected via a separate signal neutral or to GND or G0 using a jumper.

## Product documentation

Document	Description
CTHR2(-D)_inst	Instruction for the transmitter range

The product documentation can be downloaded from [www.regincontrols.com](http://www.regincontrols.com)