# CTHRC(-D)

$CO_2$, humidity and temperature transmitters with communication

*A range of room transmitters for measuring carbon dioxide concentration in indoor environments. The unit also has built-in measurement of temperature and relative humidity.*

- ✓ Output signal Modbus
- ✓ Modbuskommunikation
- ✓ $CO_2$ 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 a built-in temperature sensor, working range 0...50°C.

### 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.

### 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.

### 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.

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— 1 —

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**Communication via Modbus**
The transmitters communicate via Modbus and are to be integrated into a network.

## Technical data

| | |
|---|---|
| **Supply voltage** | 24 V AC/DC (21.6…26.4 V AC / 15…35 V DC) |
| **Output signal** | Modbus |
| **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 |
| **Colour** | Signal white RAL 9003 |

## Technical data, $CO_2$ sensor

| | |
|---|---|
| **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

| | |
|---|---|
| **Working range** | 0...50°C |
| **Accuracy** | ±0.2°C |

## Technical data, humidity sensor

| | |
|---|---|
| **Working range** | 10...90 % RH |
| **Accuracy at 20°C** | ±3 % |

## Communication

| | |
|---|---|
| **Type** | Modbus RTU |
| **Baud rate** | 4800, 9600, 19200, 38400 bits/s |
| **Default baud rate** | 19200 bits/s |
| **Default parity** | Even |
| **Default address of unit** | 1 |

## Models

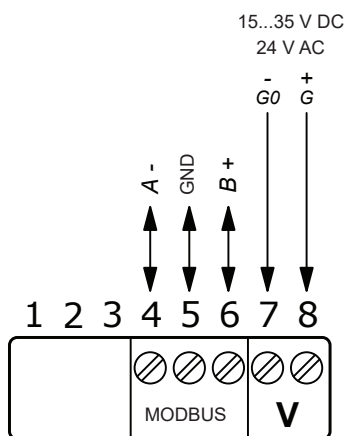| Article | Description |
|---|---|
| CTHRC | $CO_2$, humidity and temperature transmitter for Modbus communication |
| CTHRC-D | $CO_2$, humidity and temperature transmitter for Modbus communication with display |

## CE

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

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— 2 —

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## Dimensions

85

100

30.5

(mm)

## Wiring

15...35 V DC
24 V AC

-
G0

+
G

A -

GND

B +

1 2 3 4 5 6 7 8

MODBUS V
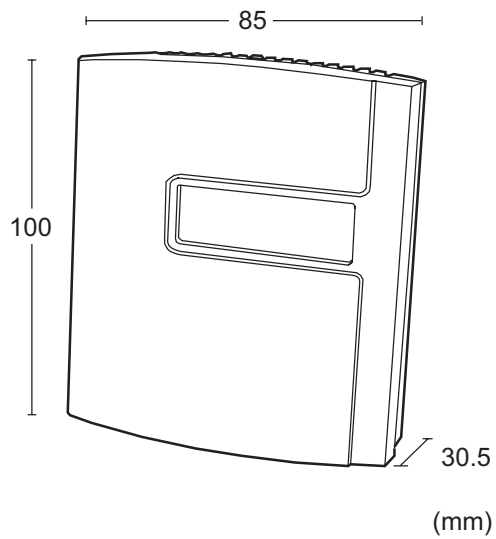
## Product documentation

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

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