CTHRC2(-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.

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.

Short facts about CTHRC2(-D)

- Output signal Modbus
- CO$_2$ concentration, 0...2000 ppm
- Temperature, 0...50°C
- Humidity, 10...90 % RH
- Good long-term stability
- Modbus communication

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, 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.

Communication via Modbus

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

Modbus

≋REGIN

THE CHALLENGER IN BUILDING AUTOMATION

Models

Model	Description
CTHRC2	CO_2, humidity and temperature transmitter for Modbus communication
CTHRC2-D	CO_2, humidity and temperature transmitter for Modbus communication with display

Technical data

Output signal	Modbus
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
Dimensions (WxHxD)	85 x 100 x 30.5 mm

CO_2

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

Temperature

Working range	0...50°C
Accuracy at 20°C	±0.2°C

Humidity

Working range	10...90 % RH
Accuracy at 20°C	±2 %

Communication

Type	Modbus RTU
Baud rate	4800, 9600, 19200, 38400 bits/s
Factory settings	
Baud rate	19200 bits/s
Parity	Even
Address of unit	1

$C\epsilon$

EMC emissions & immunity standards: This product conforms to the requirements of the EMC Directive 2004/108/EC through product standards EN 61000-6-1 and EN 61000-6-3.
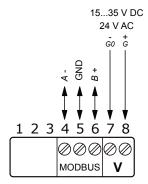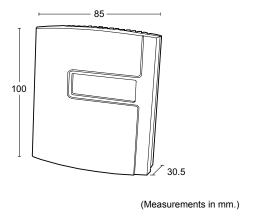**RoHS:** This product conforms to the Directive 2011/65/EU of the European Parliament and of the Council.

Wiring and dimensions

15...35 V DC
24 V AC

(Measurements in mm.)

Product documentation

Document	Type
CTHRC2(-D)_inst	Instruction for the transmitter range

The document can be downloaded from www.regincontrols.com.

≋REGIN
THE CHALLENGER IN BUILDING AUTOMATION