



## Features

- Carbon Dioxide (CO<sub>2</sub>) output 0-10 Vdc
- Humidity (rH) output 0-10 Vdc
- Temperature (T) output 0-10 Vdc
- With Display
- Carbon Dioxide (CO<sub>2</sub>) sensor  
NDIR Sensor with auto calibration
- Carbon Dioxide (CO<sub>2</sub>) ranges  
0-2000 ppm or 800 to 1200 ppm, jumper selectable
- Carbon Dioxide (CO<sub>2</sub>) accuracy  
±50 ppm ± 4% (25°C / 1013 mbar)
- Temperature (T) accuracy ± 0.5°K (+10°C to +40°C)
- Humidity (rH) accuracy ± 2% (20 to 80% rH)
- DIP switch on pcb to select:
  - Relative Humidity,
  - Absolute Humidity,
  - Dew Point or
  - Enthalpy
- Passive temperature sensing element  
PT1000, PT100, NTC 10K, NTC 20K, NTC 1.8K , NI1000 etc  
as option
- See all the different types on last page.



RCD 010 THD have display to show actual value of each parameter  
CO<sub>2</sub>+T+rH.

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## Technical data

|                                            |                                                                                                   |
|--------------------------------------------|---------------------------------------------------------------------------------------------------|
| Carbon Dioxide (CO <sub>2</sub> ) output   | 0-10 Vdc                                                                                          |
| Humidity output                            | 0-10 Vdc                                                                                          |
| Temperature output                         | 0-10 Vdc                                                                                          |
| Power supply with 0-10 Vdc output:         | 12-24 Vdc (3-wire)                                                                                |
| Analogue output load 0-10 Vdc:             | 10 to100 kOhm                                                                                     |
| Power supply with 4-20 mA output:          | 12-24 Vdc (3-wire)                                                                                |
| Analogue output load 4-20 mA               | 250 to 600 kOhm                                                                                   |
| Power consumption                          | 9 mA                                                                                              |
| Display version                            | with E-paper display                                                                              |
| Passive temperature sensing element        | PT1000, PT100, NTC 10K, NTC 10K, NTC 1.8K , NI1000 etc (option)                                   |
| Carbon Dioxide (CO <sub>2</sub> ) sensor   | NDIR Sensor with auto calibration                                                                 |
| Carbon Dioxide (CO <sub>2</sub> ) accuracy | ±50 ppm ± 4% (25°C / 1013 mbar)<br>(after operating 72 h and daily supply of fresh air, min 1 h.) |
| Temperature accuracy                       | ± 0.5K ( 10°C to +40°C)                                                                           |
| Humidity accuracy                          | ± 2% (20 to 80% rH)                                                                               |
| Connection                                 | Screw clamps 1,5 mm <sup>2</sup>                                                                  |
| Casing                                     | Material ABS, Colour RAL 9010                                                                     |
| Dimensions Housing (L x W x H):            | 87,5 x 87,5 x 30 mm                                                                               |
| Protection class:                          | IP30                                                                                              |
| Carbon Dioxide (CO <sub>2</sub> ) ranges   | see configuration page 7                                                                          |
| Temperature ranges                         | see configuration page 7                                                                          |
| Relative humidity measuring range:         | see configuration page 7                                                                          |
| Absolute humidity measuring ranges:        | see configuration page 7                                                                          |
| Dew point measuring ranges :               | see configuration page 7                                                                          |
| Enthalpy range:                            | see configuration page 7                                                                          |
| Directive                                  |                                                                                                   |
| Electromagn. EMC                           | 2014/30/EU                                                                                        |
| Low voltage LVD                            | 2014/35/EU                                                                                        |
| Standards                                  | EN 60730-1 2011<br>EN 60730-2-9 2011<br>EN14597                                                   |

## Description

RCD 010 THD is a wall mounted combined Carbon Dioxide (CO<sub>2</sub>) + Humidity (rH) + Temperature (T) transmitter with display to show actual value of each parameter CO<sub>2</sub>+rH+T.

The combined Carbon Dioxide (CO<sub>2</sub>) + Humidity (rH) + Temperature (T) transmitter RCD 010 THD have 3 analogue outputs, i.e. one 0-10 Vdc output for each parameter CO<sub>2</sub>+rH+T.

The RCD 010 THD combined Carbon Dioxide (CO<sub>2</sub>) + Humidity (rH) + Temperature (T) transmitter to be used in air conditioning, ventilation and clean room technology, interior rooms such as residential rooms, offices, hotels, technical rooms, meeting rooms and convention centres.

RCD 010 THD can be connected with DDC/PLC controller or other automation system such BAS, BMS, BEMS etc

### Notes:

The RCD sensor unit is designed for normal ambient conditions (ambient air), aggressive gases can destroy the RCD sensor unit. The location has a decisive effect on the measurement accuracy. Windows (cold outer wall) or near door (drafts) should be avoided.

## E-paper Display

The display versions for RHT room humidity and temperature sensor is an E-Paper display that reflect light just as regular paper, therefore the display is a passive (non-luminating) display.

Thin, light, flexible, good contrast, low energy consumption and no light reflections.

Easy reading even with high insolation and ambient brightness.

E-Paper displays only need energy when the display contents change.

Optics and readability are significantly better than with monochrome LCD's or other bi-stable systems.

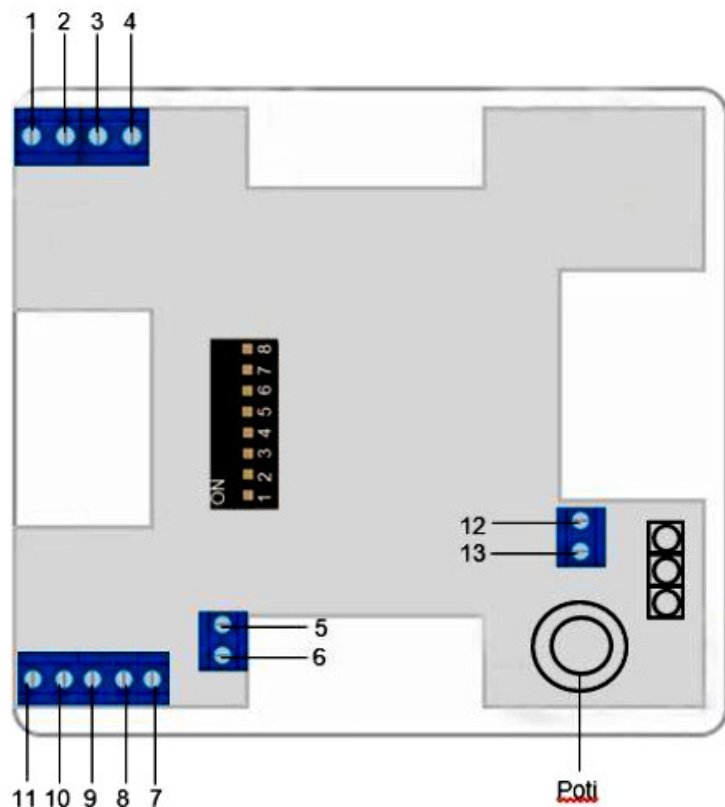
High readability independent of the reader's perspective.



## Configuration

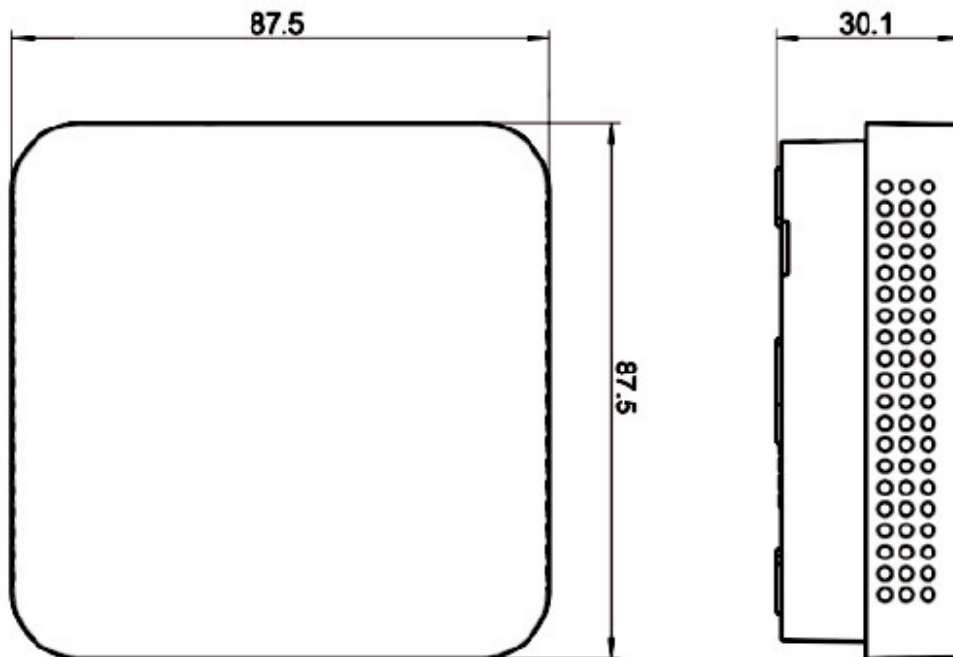
| Temperature-ranges | Range           | 1   | 2                   | Humidity-Ranges | Range             | 3   | 4   | 5   | 6   | Setting CO2-Ranges | Setting          | 7   | 8   |
|--------------------|-----------------|-----|---------------------|-----------------|-------------------|-----|-----|-----|-----|--------------------|------------------|-----|-----|
|                    | -30°C ... +70°C | OFF | OFF                 |                 | Relative humidity |     |     |     |     |                    | Range CO2        |     |     |
|                    | -20°C ... +80°C | ON  | OFF                 |                 | 0 % ... 100%      | OFF | OFF | OFF | OFF |                    | 0... 2000 ppm    | OFF |     |
|                    | 0°C ... +50°C   | ON  | ON                  |                 | Absolute humidity |     |     |     |     |                    | 800...1200 ppm   | ON  |     |
|                    | 0°C ... +100°C  | OFF | ON                  |                 | 0 g/m³ ... 30g/m³ | ON  | OFF | OFF | OFF |                    | Auto-Calibration |     |     |
|                    |                 |     |                     |                 | 0 g/m³ ... 50g/m³ | ON  | ON  | OFF | OFF |                    | OFF              |     | ON  |
|                    |                 |     |                     |                 | 0 g/m³ ... 80g/m³ | ON  | ON  | ON  | OFF |                    | ON               |     | OFF |
|                    |                 |     |                     |                 | Mix ratio         |     |     |     |     |                    |                  |     |     |
|                    |                 |     |                     |                 | 0 g/kg ... 30g/kg | OFF | OFF | OFF | ON  |                    |                  |     |     |
|                    |                 |     |                     |                 | 0 g/kg ... 50g/kg | OFF | OFF | ON  | ON  |                    |                  |     |     |
|                    |                 |     |                     |                 | 0 g/kg ... 80g/kg | OFF | ON  | ON  | ON  |                    |                  |     |     |
|                    |                 |     |                     |                 | Dew point         |     |     |     |     |                    |                  |     |     |
|                    |                 |     |                     |                 | 0°C ... +50°C     | OFF | ON  | ON  | OFF |                    |                  |     |     |
|                    |                 |     |                     |                 | -50°C ... +100°C  | ON  | OFF | OFF | ON  |                    |                  |     |     |
|                    |                 |     |                     |                 | -20°C ... +80°C   | OFF | ON  | OFF | ON  |                    |                  |     |     |
|                    |                 |     | Enthalpy            |                 |                   |     |     |     |     |                    |                  |     |     |
|                    |                 |     | 0 kJ/kg ... 85kJ/kg | ON              | ON                | ON  | ON  |     |     |                    |                  |     |     |

## Electrical connection

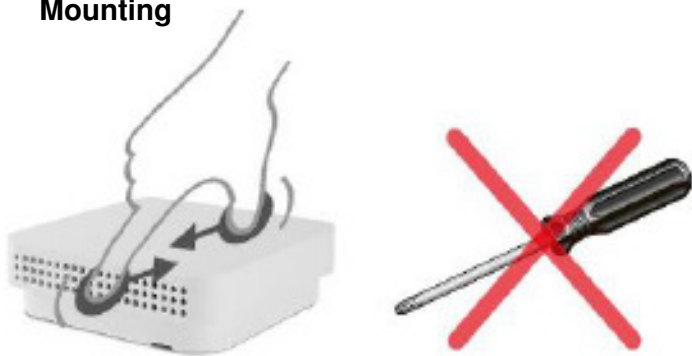


| Pin        | CO2                  | CO2/°C                | CO2/°C/rF                 |
|------------|----------------------|-----------------------|---------------------------|
| <i>Pin</i> | <i>Assignment</i>    | <i>Assignment</i>     | <i>Assignment</i>         |
| 1          | -                    | U <sub>out</sub> Temp | U <sub>out</sub> Temp     |
| 2          | -                    | -                     | U <sub>out</sub> Humidity |
| 3          | U <sub>out</sub> CO2 | U <sub>out</sub> CO2  | U <sub>out</sub> CO2      |
| 4          | -                    | -                     | -                         |
| 5          | passive poti         | passive poti          | passive poti              |
| 6          | passive poti         | passive poti          | passive poti              |
| 7          | +Ub                  | +Ub                   | +Ub                       |
| 8          | GND                  | GND                   | GND                       |
| 9          | relais NC            | relais NC             | relais NC                 |
| 10         | relais C             | relais C              | relais C                  |
| 11         | relais ND            | relais ND             | relais ND                 |
| 12         | passive sensor       | passive sensor        | passive sensor            |
| 13         | passive sensor       | passive sensor        | passive sensor            |

## Dimensions



## Mounting



The convection must be aligned at the bottom to ensure a flow of air up

The sensor should always be mounted on the opposite wall of the radiator.

Ideal mounting height of 1.5 m above the floor.

## Ordering

| Type no.        | CO <sub>2</sub> Output | Temperature Output | Humidity Output | Display | Direct Temp. Temperature |
|-----------------|------------------------|--------------------|-----------------|---------|--------------------------|
| RCD 010         | 0-10 Vdc               | No                 | No              | No      | No                       |
| RCD 010 T       | 0-10 Vdc               | 0-10 Vdc           | No              | No      | No                       |
| RCD 010 TH      | 0-10 Vdc               | 0-10 Vdc           | 0-10 Vdc        | No      | No                       |
| RCD 010 D       | 0-10 Vdc               | No                 | No              | Yes     | No                       |
| RCD 010 TD      | 0-10 Vdc               | 0-10 Vdc           | No              | Yes     | No                       |
| RCD 010 THD     | 0-10 Vdc               | 0-10 Vdc           | 0-10 Vdc        | Yes     | No                       |
| RCD 010 XXX     | 0-10 Vdc               | No                 | No              | No      | Yes                      |
| RCD 010 T XXX   | 0-10 Vdc               | 0-10 Vdc           | No              | No      | Yes                      |
| RCD 010 TH XXX  | 0-10 Vdc               | 0-10 Vdc           | 0-10 Vdc        | No      | Yes                      |
| RCD 010 D XXX   | 0-10 Vdc               | No                 | No              | Yes     | Yes                      |
| RCD 010 TD XXX  | 0-10 Vdc               | 0-10 Vdc           | No              | Yes     | Yes                      |
| RCD 010 THD XXX | 0-10 Vdc               | 0-10 Vdc           | 0-10 Vdc        | Yes     | Yes                      |
| RCD 420         | 4-20 mA                | No                 | No              | No      | No                       |
| RCD 420 T       | 4-20 mA                | 4-20 mA            | No              | No      | No                       |
| RCD 420 TH      | 4-20 mA                | 4-20 mA            | 4-20 mA         | No      | No                       |
| RCD 420 D       | 4-20 mA                | No                 | No              | Yes     | No                       |
| RCD 420 TD      | 4-20 mA                | 4-20 mA            | No              | Yes     | No                       |
| RCD 420 THD     | 4-20 mA                | 4-20 mA            | 4-20 mA         | Yes     | No                       |
| RCD 420 XXX     | 4-20 mA                | No                 | No              | No      | Yes                      |
| RCD 420 T XXX   | 4-20 mA                | 4-20 mA            | No              | No      | Yes                      |
| RCD 420 TH XXX  | 4-20 mA                | 4-20 mA            | 4-20 mA         | No      | Yes                      |
| RCD 420 D XXX   | 4-20 mA                | No                 | No              | Yes     | Yes                      |
| RCD 420 TD XXX  | 4-20 mA                | 4-20 mA            | No              | Yes     | Yes                      |
| RCD 420 THD XXX | 4-20 mA                | 4-20 mA            | 4-20 mA         | Yes     | Yes                      |



RCD 010

XXX = Passive sensor  
PT100, PT100 1/3 DIN,  
PT1000, PT1000 1/3 DIN,  
NI1000, NI1000/TK5000,  
NTC 1.8K, NTC 5K, NTC 10K, NTC 20K, KTY81-210

Example: RCD 010 THD PT1000

**RCD 010 THD is the standard type,  
all other types are manufactured  
and supplied on request**

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