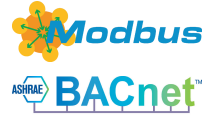


To measure the room's temperature, humidity, and CO<sub>2</sub> and adjust the temperature setpoint. The room operating units can be seamlessly connected to existing third-party controllers thanks to MP-Bus, Modbus RTU, and BACnet MS/TP communication. Commissioning and

parametrization of the device are conveniently done with the Belimo Assistant App. The end user can access the device via the Belimo Display App to read room values and adjust the temperature setpoint. Optional access protection with a four-digit code prevents input by unauthorized people.



5-year warranty


**Technical data**

|                                     |                             |  |
|-------------------------------------|-----------------------------|--|
| <b>Electrical Data</b>              | Nominal voltage             | AC/DC 24 V   |
|                                     | Nominal voltage range       | AC 19.2...28.8 V / DC 19.2...28.8 V                              |
|                                     | Power consumption AC        | 1 VA   |
|                                     | Power consumption DC        | 0.5 W  |
|                                     | Electrical connection       | Spring loaded terminal 0.25...1.5 mm <sup>2</sup>                |
|                                     | Electrical connection note  | Cable Type USA & Canada: CL2 or higher                           |
|                                     | Cable entry                 | Back side<br>Top side<br>Bottom side                             |
| <b>Data bus communication</b>       | Communication               | Modbus RTU<br>BACnet MS/TP                                       |
| <b>Functional Data</b>              | Application                 | air  |
|                                     | Display                     | Belimo Display App<br>Belimo Display App and LED,                |
| <b>Measuring Data</b>               | Measured values             | CO <sub>2</sub><br>relative humidity<br>Dew point<br>Temperature |
| <b>Specification CO<sub>2</sub></b> | Sensing element technology  | NDIR (non dispersive infrared) dual channel                      |
|                                     | Measuring range             | default setting: 0...2000 ppm                                    |
|                                     | Accuracy                    | ±(50 ppm + 2% of measured value)                                 |
|                                     | Long term stability         | ±20 ppm p.a.   |
| <b>Specification Temperature</b>    | Measuring range             | 32...122°F [0...50°C]<br>(default setting)                       |
|                                     | Accuracy temperature active | ±0.5°F @ 77°F [±0.3°C @ 25°C]                                    |
|                                     | Wall Coupling Factor        | 52 %   |
| <b>Specification Humidity</b>       | Measuring range             | Default setting: 0...100% RH                                     |
|                                     | Measuring range dew point   | Default setting: -58...122°F [-50...50°C]                        |

**Technical data**

|                               |                             |  |
|-------------------------------|-----------------------------|--|
| <b>Specification Humidity</b> | Accuracy                    | ±2% between 0...90% RH @ 77°F [25°C]     |
|                               | Long term stability         | ±0.25% RH p.a. @ 77°F [25°C]@ 50% RH     |
| <b>Safety Data</b>            | Protection class IEC/EN     | III, Protective Extra-Low Voltage (PELV) |
|                               | Degree of protection IEC/EN | IP30                                     |
|                               | EU Conformity               | CE Marking                               |
|                               | Certification IEC/EN        | IEC/EN 60730-1 and IEC/EN 60730-2-9      |
|                               | Quality Standard            | ISO 9001                                 |
|                               | Ambient humidity            | Max. 95% RH, non-condensing              |
|                               | Ambient temperature         | 0...50°C [32...122°F]                    |
|                               | Storage temperature         | -40...160°F [-40...70°C]                 |
| <b>Materials</b>              | Housing                     | PC, white, RAL 9003                      |

**Safety Notes**


This device has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application. Unauthorized modifications are prohibited. The product must not be used in relation with any equipment that in case of a failure may threaten humans, animals or assets.

Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Only authorized specialists may carry out installation. All applicable legal or institutional installation regulations must be complied with during installation.

The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

**Remarks**

|   |  |
|---|--|
| <b>General Remarks Concerning Sensors</b>                       | <p>The measuring result is influenced by the thermal characteristics of the wall. A solid concrete wall responds to thermal fluctuations within a room more slowly than a light-weight structure wall. A room sensor always detects a mixture of air and wall temperature. This means that the radiant heat of the wall, which is important for comfort, is also included in the measurement result.</p> <p><b>Remark: Occurring draft leads to a better carrying-off of dissipative power at the sensor. Thus temporally limited fluctuations might occur upon temperature measurement.</b></p> |
| <b>Build-up of self-heating by electrical dissipative power</b> | <p>Temperature sensors with electronic components always have a dissipative power which affects the temperature measurement of the ambient air. The dissipation in active temperature sensors shows a linear increase with rising operating voltage. The dissipative power should be taken into account when measuring temperature.</p> <p>Belimo room sensors have adaptive temperature compensation for the entire supply voltage range. This ensures that the ambient temperature is detected with the highest accuracy at all times.</p>   |
| <b>Application notice for humidity sensors</b>                  | <p>The humidity sensor is extremely sensitive. Touching the sensor element or exposing it to aggressive substances like chlorine, ozone, ammonia, hydrogen peroxide or ethanol (i.e. as a cleaning agent) may affect the measurement accuracy.</p> <p>Long-term operation outside the recommended conditions (5...50°C and 20...80% RH) can result in a temporary offset. After returning into the recommended range, this effect disappears.</p>  |

**Remarks**

**Information self-calibration feature CO<sub>2</sub>**

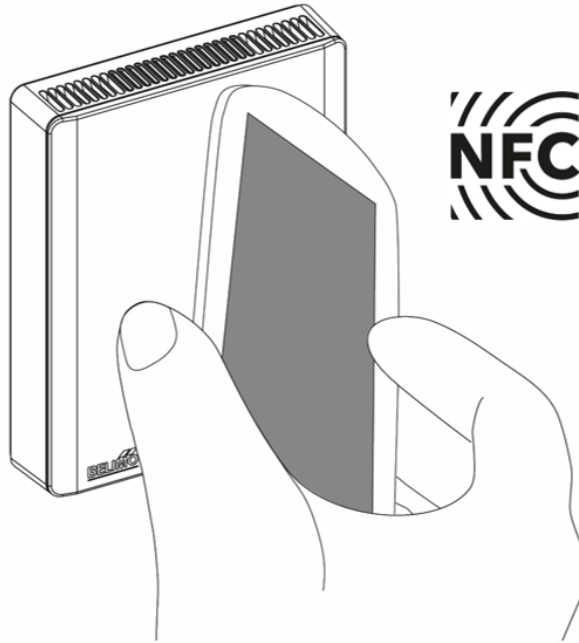
All CO<sub>2</sub> sensors are subject to drift caused by the aging process of the components, resulting in regular re-calibration or replacement of units. However, the dual channel technology integrates automatic self-calibration technology vs. common used ABC-Logic sensors. Dual channel self-calibration technology is ideally suited for applications operating 24/7 hours such as those in hospitals or other commercial applications. Manual calibration is not required.

**Digital input**

The Auxiliary Digital Input can be used with third-party sensors and switches such as window alarms, occupancy detectors, light switches, etc. The input values can be monitored and transmitted through the BACnet and ModBus communication protocol.

**Indicators and Operation**

**Operation**



**Parts included**

Screws

**Accessories**

| Tools | Description  | Type                 |
|-------|--|----------------------|
|       | Belimo Assistant App, Smartphone app for easy commissioning, parametrising and maintenance | Belimo Assistant App |
|       | Converter Bluetooth / NFC  | ZIP-BT-NFC           |

## Service

**NFC connection** Belimo equipment marked with the NFC logo can be operated and configured using the Belimo Assistant App.

Requirements:

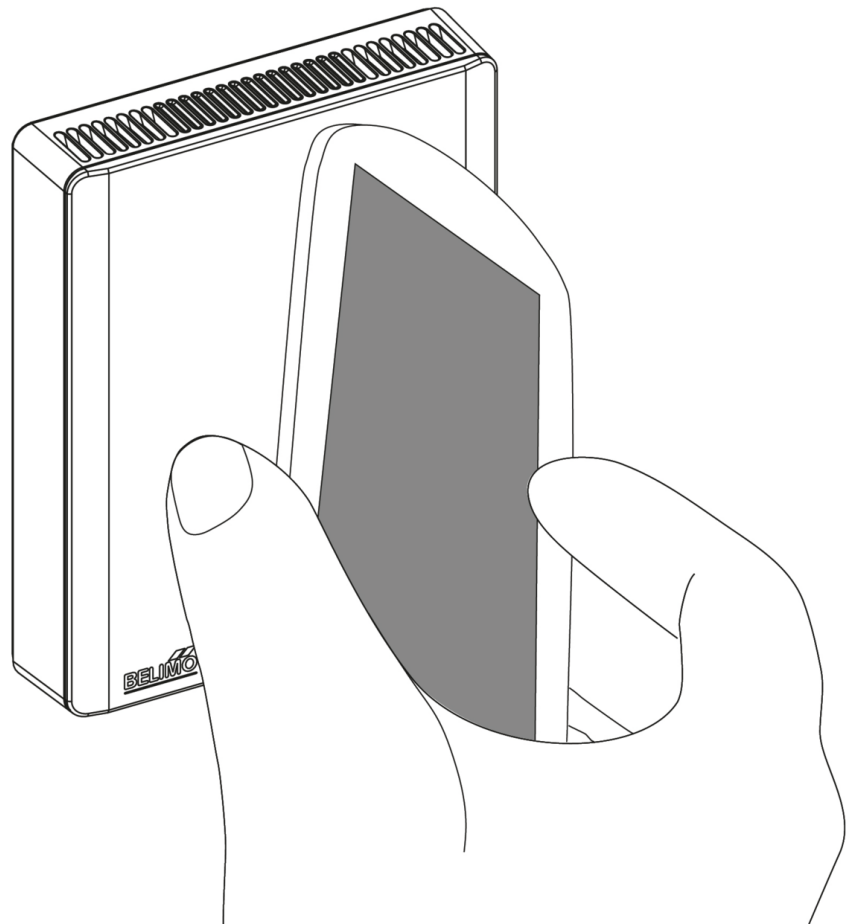
- Smartphone with NFC or Bluetooth
- Belimo Assistant App (Available on Google Play & Apple AppStore)

Smartphone with NFC:

Place NFC-capable smartphone flat on the room sensor so that both NFC antennas are superposed.

Smartphone with Bluetooth without NFC:

Connect Bluetooth enabled smartphone via ZIP-BT-NFC (Bluetooth to NFC Converter) to the sensor. Technical data and operation instructions are shown on the ZIP-BT-NFC technical data sheet.



## Wiring Diagram



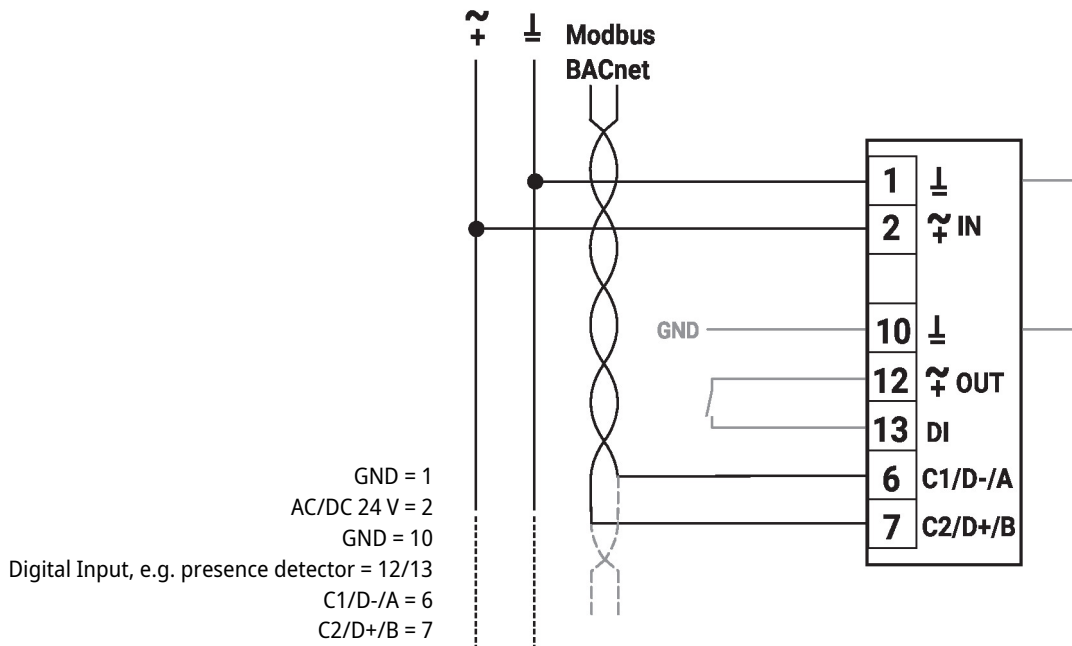
Notes

Supply from isolating transformer.

The wiring of the line for BACnet MS/TP / Modbus RTU is to be carried out in accordance with applicable RS485 regulations.

Modbus / BACnet: Supply and communication are not galvanically isolated. Connect earth signal of the devices with one another.

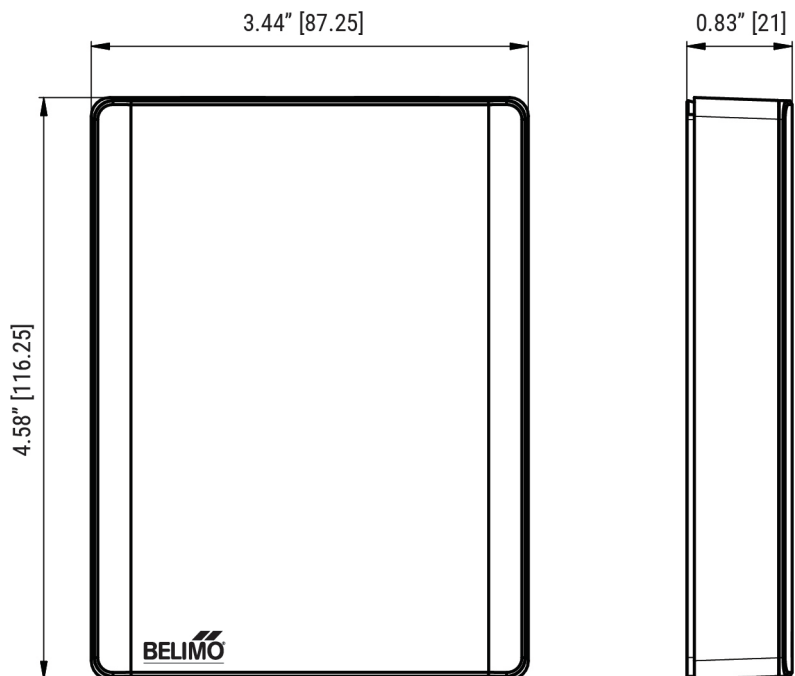
Wiring Diagram



**Detailed documentation**

The separate document Sensor Modbus-Register informs about Modbus register, addressing, parity and bus termination (DIP1: address, DIP2: baud rate, parity, bus termination)  
 The separate document, BACnet PICS, informs about the PICS, MAC addressing and bus termination (DIP1 & DIP2).

Dimensions



Further documentation

- BACnet Interface description
- Modbus Interface description
- Installation instructions