Room Operating Unit CO_2 / Humidity / Temperature

Unit can only be used with ZoneEase VAV solution.
For measuring the temperature, humidity and CO_2 in the room and adjusting temperature and VAV setpoints. The Belimo Display App provides a virtual display, used with the enduser's smartphone. Commissioning and configuration are done with the Belimo Display App via room operating unit or ZoneEase VAV controller.
Connections:
- NFC interface for smartphone commissioning and maintenance
- 1x digital input for potential-free contact (occupancy detection or electric heater state monitoring)

5 YEAR WARRANTY

NFC

Type Overview

Type	Communication	Setpoint	Measured values
P-22RTM-1T-1	Application specific MP-Bus connection	Temperature, Volumetric flow	CO_2, Relative humidity, Temperature
P-22RTH-1T-1	Application specific MP-Bus connection	Temperature, Volumetric flow	Temperature, Relative humidity, Dew point
P-22RT-1T-1	Application specific MP-Bus connection	Temperature, Volumetric flow	Temperature

Technical data

Electrical data	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^2
	Electrical connection note	23-15 AWG, copper conductors only Cable type USA and Canada: CL2 or higher
	Cable entry	Back side Top side Bottom side
Data bus communication	Communication	Application specific MP-Bus connection
Functional data	Application	Air
	Display	Belimo Display App and LED The LED is used for the CO_2 TLF (traffic light function). The LED can be configured and deactivated via Belimo ZoneEase™ VAV App. (Type P-22RTM-1T-1)
	Input/Output	1x digital input for potential-free contact (occupancy detection or electrical heater state monitoring)
Measuring data	Measured values	CO_2 Relative humidity Dew point Temperature

Technical data

Specification CO_2	Sensing element technology	Non-dispersive infrared (NDIR) dual channel
	Measuring range	0...2000 ppm
	Accuracy	±(50 ppm + 2% of measured value)
	Long term stability	±20 ppm p.a.
Specification temperature active	Measuring range	0...50°C [32...122°F]
	Accuracy temperature	±0.3°C @ 25°C [±0.5°F @ 77°F]
	Long term stability	±0.03°C p.a. @ 25°C [±0.05°F p.a. @ 77°F]
Specification Humidity	Measuring range	0...100% RH
	Measuring range dew point	-50...50°C [-60...120°F]
	Accuracy	±2% between 0...90% RH @ 25°C
	Long term stability	±0.25% RH p.a. @ 25°C @ 50% RH
Safety data	Protection class IEC/EN	III, Safety Extra-Low Voltage (SELV)
	Power source UL	Class 2 Supply
	Degree of protection IEC/EN	IP30
	EU Conformity	CE Marking
	Quality Standard	ISO 9001
	UL Approval	cULus according to UL60730-1, CAN/CSA E60730-1
	Type of action	Type 1
	Rated impulse voltage supply	0.5 kV
	Pollution degree	2
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	0...50°C [32...122°F]
	Storage temperature	-40...70°C [-40...160°F]
Materials	Housing	PC, white, RAL 9003 UL94V-0

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. Unauthorised 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 authorised 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

General remarks concerning sensors

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.

Remark: Occurring draft leads to a better carrying-off of dissipative power at the sensor. Thus temporally limited fluctuations might occur upon temperature measurement.

Remarks

Build-up of self-heating by electrical dissipative power

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.

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.

Application notice for humidity sensors

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.

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.

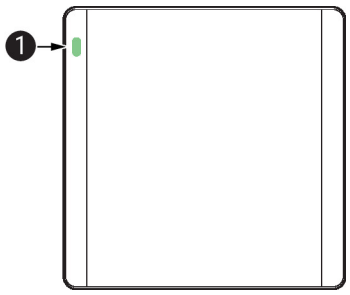
Information self-calibration feature CO_2

All CO_2 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. commonly 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

Auxiliary Digital Input can be used with third-party sensors and switches (window alarm, occupancy detection, etc.). The input values are monitored and transmitted through the application specific MP-Bus to the ZoneEase VAV actuator.

Indicators and Operation



1 CO_2 TLF (traffic light function), available on the P-22RTM-1T-1 sensor

Colours: green, yellow and red. LED can be configured and deactivated via Belimo ZoneEase™ VAV App.

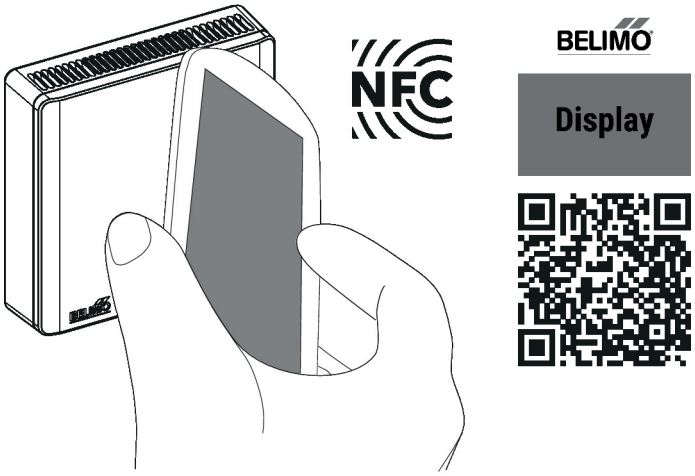
Indicators and Operation

Operation

With the Belimo Display App, actual values of the room unit can be displayed and setpoints can be adjusted. This means that no display on the room unit is required. Thanks to communication via NFC (near field communication), third parties cannot access safety critical data.

How it works:

1. Download the Belimo Display App
2. Hold the smartphone to the room unit
3. View/adjust actual values or setpoints
4. To activate the setpoints, hold the smartphone to the room unit again



Parts included

Screws

Accessories

Tools

Description	Type
Belimo ZoneEase™ VAV App, Smartphone app for easy commissioning, configuration and maintenance (Android smartphones only)	Belimo ZoneEase™ VAV App
Converter Bluetooth / NFC	ZIP-BT-NFC

Service

NFC connection

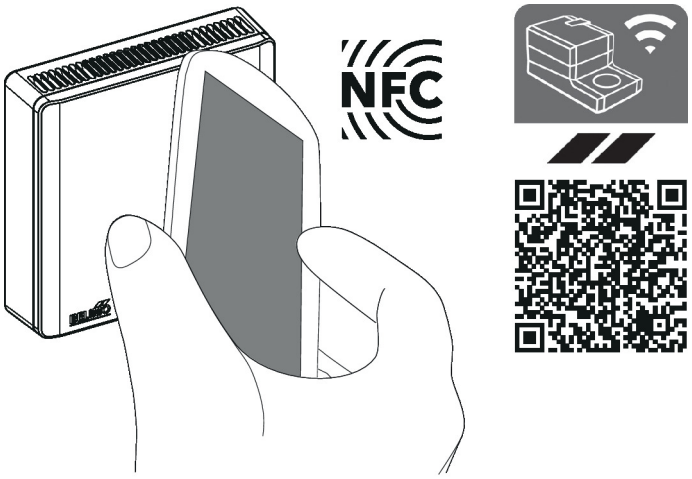
Belimo equipment marked with the NFC logo can be operated and configured with the Belimo ZoneEase™ App.

Requirement:

- NFC- or Bluetooth-capable smartphone
- Belimo ZoneEase™ VAV App (Google Play)

Align NFC-capable smartphone on the sensor so that both NFC antennas are superposed.

Connect Bluetooth-enabled smartphone via the Bluetooth-to-NFC converter ZIP-BT-NFC to the sensor. Technical data and operating instructions can be found in the ZIP-BT-NFC data sheet.

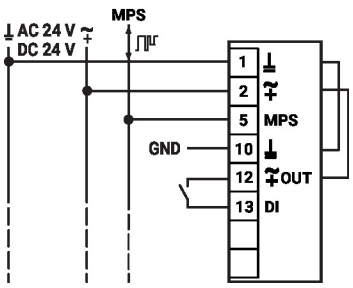


Wiring diagram

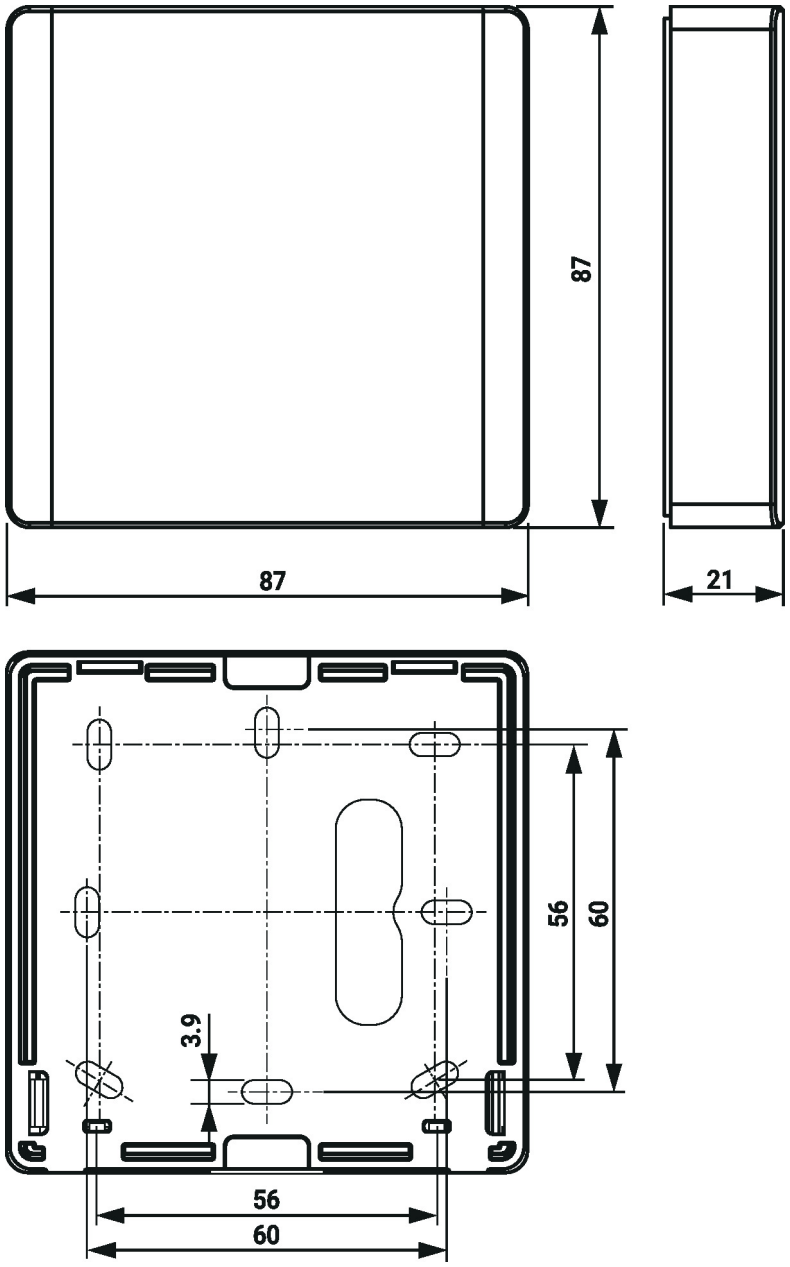
Supply from isolating transformer.

GND = 1
AC/DC 24 V = 2
MPS = 5
GND = 10
Digital Input, e.g. occupancy detection or eletric heater state monitoring (depending on selected ZoneEase VAV application) = 12/13

- Connections 1 and 2 (DC/AC 24 V) and 5 (application-specific MP-Bus signal) must be wired to the terminals of the ZoneEase VAV actuator (L/NMV-BAC-001/2)
- Connections 10 (GND), 12 (24 V) and 13 (DI) can be wired for occupancy detection (occupancy switch) or electric reheater state monitoring (depending on selected ZoneEase VAV application)



Dimensions



Further documentation

- Installation instructions
- ZoneEase VAV actuators: technical data sheet
- ZoneEase VAV application description