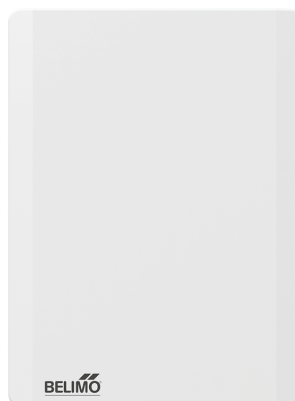# BELIMO®

Room Sensor Temperature

Active room temperature sensor with incorporated NFC technology. Selectable outputs include 0...5V, 0...10V, 2...10V and MP-Bus. NFC capabilities allow for easier setup, commissioning and troubleshooting.

5

5-year warranty

MP⌇BUS®

NFC

Type Overview

Type	Communication	Output signal active temperature
22RT-59-1	MP-Bus	0...5 V, 0...10 V, 2...10 V, MP-Bus

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 block 0.25...1.5 mm²
	Cable entry	Wire openings at the backside (for In-wall wiring) and top-/bottom side (for On-wall wiring)
Functional Data	Communicative control	MP-Bus
	Application	air
Measuring Data	Measuring values	Temperature
	Measuring range temperature	30...120°F [0...50°C]
	Accuracy temperature active	±0.9°F @ 77°F [±0.5°C @ 25°C]
	Time Constant τ (63%) in the room	typical 960 s
	Wall Coupling Factor	52 %
Materials	Housing	white, RAL 9003

Safety Data	Ambient humidity	max. 95% r.H., non-condensing
	Ambient temperature	30...120°F [0...50°C]
	Fluid temperature	30...120°F [0...50°C]
	Storage temperature	-4...140°F [-20...60°C]
	Protection class IEC/EN	III Protective extra-low voltage (PELV)
	EU Conformity	CE Marking
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-9
	Degree of protection IEC/EN	IP30
	Degree of protection NEMA/UL	NEMA 1
	Quality Standard	ISO 9001

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 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 in a much slower than a light-weight structure wall. Room temperature sensors installed in flush-mounted boxes have a longer response time to thermal variations. In extreme cases they detect the radiant heat of the wall even if the air temperature in the room is lower for example. The quicker the dynamics of the wall (temperature acceptance of the wall) or the longer the selected inquiry interval of the temperature sensor is the smaller the deviations limited in time are.

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. This dissipative power should be taken into account when measuring temperature. As Belimo transducers work with a variable operating voltage, only one operating voltage can be taken into consideration, for reasons of production engineering. Transducers 0...10 V / 4...20 mA have a standard setting at an operating voltage of DC 24 V. That means, that at this voltage, the expected measuring error of the output signal will be the least. For other operating voltages, the offset error will be increased by a changing power loss of the sensor electronics. If a re-calibration should become necessary later directly on the sensor, this can be done by means of a trimming potentiometer on the sensor board.

Digital input

Auxiliary Digital Input can be used with third-party sensors and switches (window alarm, occupancy detector, etc.). The input values are monitored and transmitted only through the MP-Bus communication protocol.

Scope of delivery

Screws

Accessories

Service tools accessories

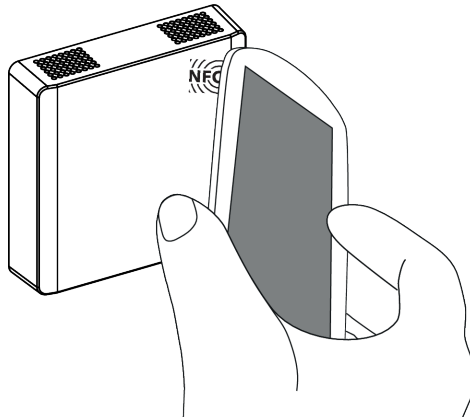| Description	Type
Belimo Assistant App, Smartphone app for easy commissioning, parameterising and maintenance	Belimo Assistant App
Converter Bluetooth / NFC	ZIP-BT-NFC

Service

Operating controls and indicators

Belimo equipment marked with the NFC logo can be operated and parameterized with the Belimo Assistant App.
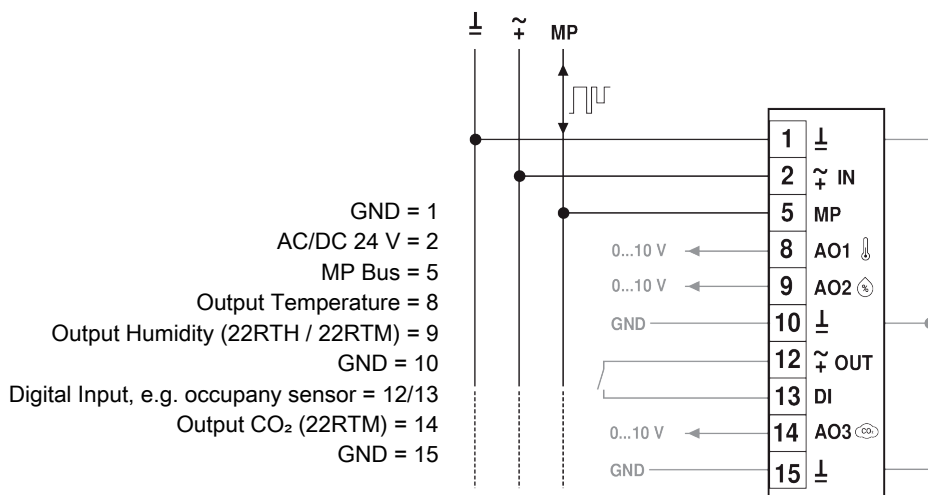
Requirement:
- NFC- or Bluetooth-capable smartphone
- Belimo Assistant App (Google Play & Apple AppStore)

Align NFC-capable smartphone on the sensor so that both NFC antennas are superposed.
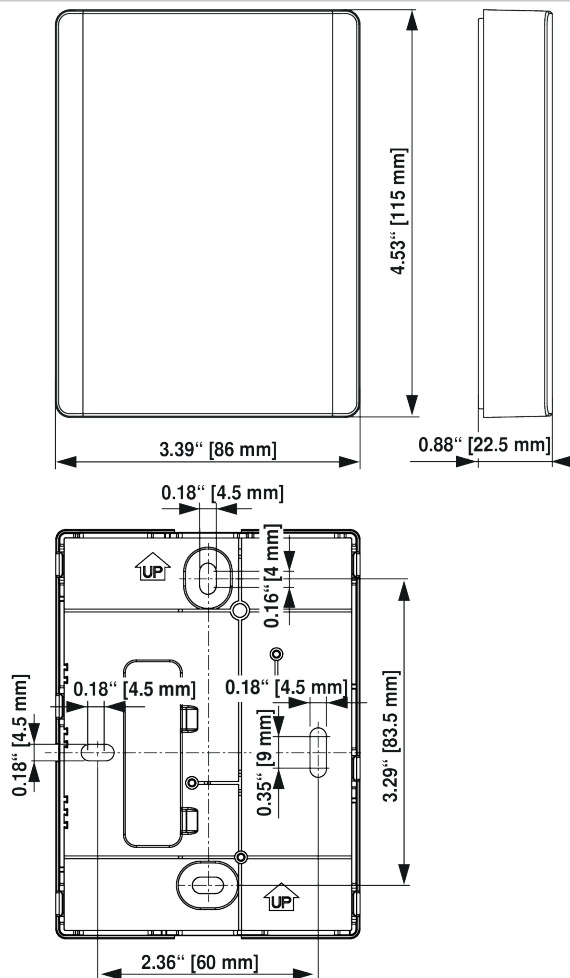
Connect Bluetooth-enabled smartphone via the Bluetooth-to-NFC Converter ZIP-BT-NFC to the sensor. Technical data and operation instructions are shown in the ZIP-BT-NFC data sheet.

Wiring Diagram

GND = 1
AC/DC 24 V = 2
MP Bus = 5
Output Temperature = 8
Output Humidity (22RTH / 22RTM) = 9
GND = 10
Digital Input, e.g. occupany sensor = 12/13
Output CO₂ (22RTM) = 14
GND = 15

1	⊥
2	⁓₊ IN
5	MP
8	AO1
9	AO2
10	⊥
12	⁓₊ OUT
13	DI
14	AO3
15	⊥

0...10 V → 8 AO1
0...10 V → 9 AO2
GND → 10
0...10 V → 14 AO3
GND → 15

Dimensions

Type	Weight
22RT-59-1	0.31 lb [0.14 kg]