

Active sensor (4...20 mA) for measuring the temperature in pipe and air applications. Incorporates a stainless steel probe and plenum-rated cable. NEMA 4X / IP65 rated enclosure.



## Type Overview

Type	Output signal active temperature	Cable length	Probe length	Probe diameter
22CT-14H	4...20 mA	2 m	50 mm	6 mm

## Technical data

<b>Electrical data</b>	Nominal voltage	DC 24 V		
	Nominal voltage range	DC 13.5...26.4 V		
	Power consumption DC	0.5 W		
	Electrical connection	Pluggable spring loaded terminal block max. 2.5 mm <sup>2</sup>		
	Cable entry	Cable gland with strain relief ø6...8 mm		
<b>Functional data</b>	Sensor Technology	Based on Pt1000 1/3 DIN		
	Application	Air Water		
	Multirange	8 measuring ranges selectable		
	Current output	1x 4...20 mA, max. resistance 500 Ω		
<b>Measuring data</b>	Measured values	Temperature		
	Measuring range temperature	Active sensor: range selectable Attention: max. measuring temperature is restricted by max. fluid temperature (see Safety data)		
		Setting	Range [°C]	Range [°F] Factory setting
		S0	-50...50	-30...130
		S1	-10...120	0...250
		S2	0...50	40...140
		S3	0...250	30...480
		S4	-15...35	0...100
		S5	0...100	40...240
		S6	-20...80	40...90
		S7	0...160	0...150 ✓
<b>Materials</b>	Accuracy temperature active	±0.5°C @ 21°C [±0.9°F @ 70°F] @ measuring range setting S2 and S4		
	Time constant τ (63%) in air duct	Typical 155 s @ 0 m/s Typical 35 s @ 3 m/s		
	Time constant τ (63%) in water pipe	With thermowell A-22P-A.. and thermal contact fluid Typical 7 s with thermowell brass Typical 9 s with thermowell stainless steel		
	Cable gland	PA6, black		

<b>Materials</b>	Mounting plate	PC, grey RAL 7001
	Housing	Cover: PC, orange Bottom: PC, orange Seal: NBR70, black UV resistant
<b>Safety data</b>	Protection class IEC/EN	III, Protective Extra-Low Voltage (PELV)
	Power source UL	Class 2 Supply
	Degree of protection IEC/EN	IP65
	Degree of protection NEMA/UL	NEMA 4X
	Enclosure	UL Enclosure Type 4X
	EU Conformity	CE Marking
	Certification IEC/EN	IEC/EN 60730-1
	Quality Standard	ISO 9001
	Type of action	Type 1
	Rated impulse voltage supply	0.8 kV
	Installation method	Independently mounted control
	Pollution degree	3
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-35...50°C [-30...122°F]
	Fluid temperature	-50...180°C [-60...355°F]
	Housing surface temperature	Max. 70°C [160°F]

### 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

When using lengthy connection wires (depending on the cross section used) the measuring result might be falsified due to a voltage drop at the common GND-wire (caused by the voltage current and the line resistance). In this case, 2 GND-wires must be wired to the sensor - one for supply voltage and one for the measuring current.

Sensing devices with a transducer should always be operated in the middle of the measuring range to avoid deviations at the measuring end points. The ambient temperature of transducer electronics should be kept constant. The transducers must be operated at a constant supply voltage ( $\pm 0.2$  V). When switching the supply voltage on/off, onsite power surges must be avoided.

### 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.

In case of a fixed operating voltage ( $\pm 0.2$  V), this is normally done by adding or reducing a constant offset value. As Belimo transducers work with a variable operating voltage, for reasons of production engineering only one operating voltage can be taken into consideration. Transducers 0...10 V / 4...20 mA have a standard setting at an operating voltage of DC 24 V. This 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 readjustment directly at the active sensor should be necessary during later operation, this can be done with the following adjustment methods.

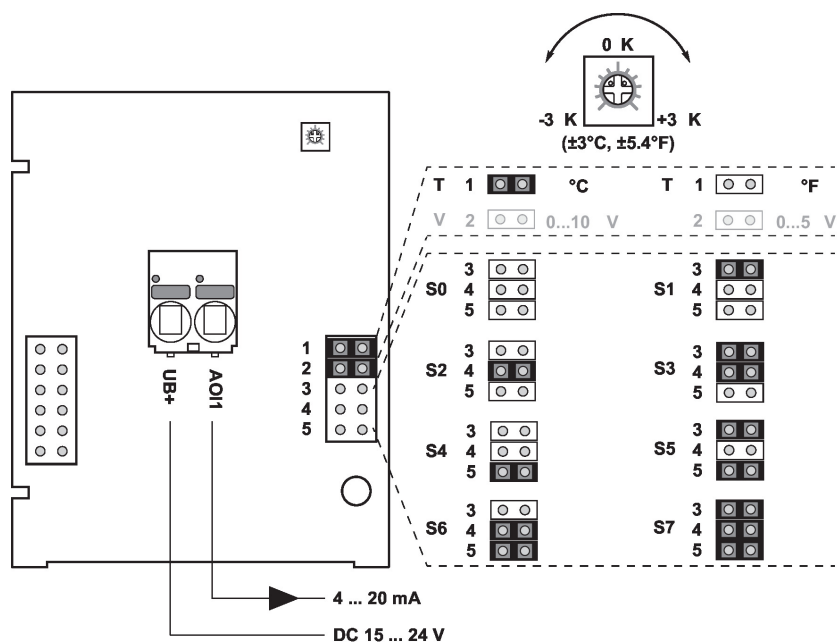
- For sensors with NFC or dongle with the corresponding Belimo app
- For sensors with a trimming potentiometer on the sensor board
- For bus sensors via bus interface with a corresponding software variable

### Parts included

Parts included	Description	Type
	Mounting plate S housing	A-22D-A09
	Dowels	
	Screws	

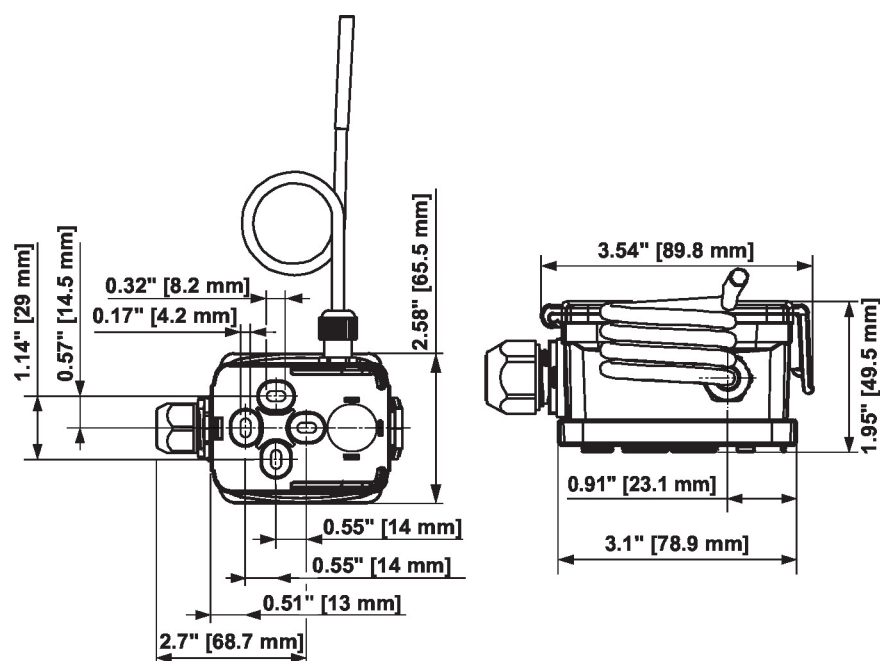
### Accessories

Optional accessories	Description	Type
	Connection adapter flex conduit, M20x1.5, for cable gland 1 x 6 mm, Multipack 10 pcs.	A-22G-A01.1
Optional accessories air	Description	Type
	Mounting flange for sensor probe 6 mm, up to max. 120°C [248°F], Plastic	A-22D-A03
	Mounting flange for sensor probe 6 mm, up to max. 260°C, Brass	A-22D-A05
Recommended accessories water	Description	Type
	Thermowell Stainless steel, 50 mm, G 1/2", SW27	A-22P-A06
	Thermowell Stainless steel, 100 mm, G 1/2", SW27	A-22P-A08
	Thermowell Stainless steel, 150 mm, G 1/2", SW27	A-22P-A10
	Thermowell Stainless steel, 200 mm, G 1/2", SW27	A-22P-A12
	Thermowell Stainless steel, 250 mm, G 1/2", SW27	A-22P-A29
	Thermowell Stainless steel, 300 mm, G 1/2", SW27	A-22P-A14
	Thermowell Stainless steel, 450 mm, G 1/2", SW27	A-22P-A16
	Thermowell Brass, 50 mm, R 1/2", SW22	A-22P-A18
	Thermowell Brass, 100 mm, R 1/2", SW22	A-22P-A20
	Thermowell Brass, 150 mm, R 1/2", SW22	A-22P-A22
	Thermowell Brass, 200 mm, R 1/2", SW22	A-22P-A24
	Thermowell Brass, 250 mm, R 1/2", SW22	A-22P-A30
	Thermowell Brass, 300 mm, R 1/2", SW22	A-22P-A26
	Thermowell Brass, 450 mm, R 1/2", SW22	A-22P-A28
	Syringe with thermal paste	A-22P-A44
	Compression fitting, Stainless steel, G 1/4" (external thread) for 6 mm, with cutting ring	A-22P-A45
	Cold barrier, Plastic, L 50 mm, for thermowell A-22P-A..	A-22P-A51

**Wiring diagram**


The adjustment of the measuring ranges is made by changing the bonding jumpers.  
The output value in the new measuring range is available after 2 seconds.

Setting	Range [°C]	Range [°F]	Factory setting
S0	-50...50	-30...130	
S1	-10...120	0...250	
S2	0...50	40...140	
S3	0...250	30...480	
S4	-15...35	0...100	
S5	0...100	40...240	
S6	-20...80	40...90	
S7	0...160	0...150	✓

**Dimensions**


Type	Probe length	Weight
22CT-14H	50 mm	0.20 kg

## Further documentation

- Installation instructions