

Average temperature sensor

Active sensor (0...10 V) for measuring the averaging temperature in duct applications. IP65 / NEMA 4X rated enclosure. Supplied with one continuous sensing element across the whole length of the probe to ensure optimum accuracy and eliminate air stratification problems.



5-year warranty



Type Overview

Type	Output signal active temperature	Probe length
22MT-524	0...5 V, 0...10 V	10 ft [3 m]
22MT-525	0...5 V, 0...10 V	20 ft [6 m]

Technical data

<b>Electrical Data</b>	Nominal voltage	AC/DC 24 V																																				
	Remark about nominal voltage range	AC 19...29 V / DC 15...35 V																																				
	Power consumption AC	0.8 VA																																				
	Power consumption DC	0.4 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 (1/2" NPT conduit adapter included)																																				
<b>Functional Data</b>	Sensor technology	based on Pt1000 1/3 DIN																																				
	Application	air																																				
	Multirange	8 measuring ranges selectable																																				
	Voltage output	1 x 0...5 V, 0...10 V, min. resistance 5 kΩ																																				
	Output signal active note	output 0...5/10 V with jumper adjustable																																				
<b>Measuring Data</b>	Measured values	Temperature																																				
<b>Specification Temperature</b>	Measuring range	<p>Active sensor: range selectable                      Attention: max. measuring temperature is restricted by max. fluid temperature (see Safety data)</p> <table border="1"> <thead> <tr> <th>Setting</th> <th>Range [°C]</th> <th>Range [°F]</th> <th>Factory setting</th> </tr> </thead> <tbody> <tr> <td>S0</td> <td>-50...50</td> <td>-30...130</td> <td></td> </tr> <tr> <td>S1</td> <td>-10...120</td> <td>0...250</td> <td></td> </tr> <tr> <td>S2</td> <td>0...50</td> <td>40...140</td> <td></td> </tr> <tr> <td>S3</td> <td>0...250</td> <td>30...480</td> <td></td> </tr> <tr> <td>S4</td> <td>-15...35</td> <td>0...100</td> <td></td> </tr> <tr> <td>S5</td> <td>0...100</td> <td>40...240</td> <td></td> </tr> <tr> <td>S6</td> <td>-20...80</td> <td>40...90</td> <td>✓</td> </tr> <tr> <td>S7</td> <td>0...160</td> <td>0...150</td> <td></td> </tr> </tbody> </table>	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	
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Accuracy temperature active	±0.5°C @ 21°C [±0.9°F @ 70°F] @ measuring range setting S2 and S4																																					

**Technical data**

<b>Specification Temperature</b>	Long term stability	±0.11°F p.a. @ 70°F [±0.06°C p.a. @ 21°C] [±32.1°F p.a.@ 69.8°F]
	Time constant $\tau$ (63%) in the air duct	Typical 100 s @ 0 m/s
<b>Materials</b>	Cable gland	PA6, black
	Housing	Cover: PC, orange Bottom: PC, orange Seal: NBR70, black UV resistant UL94 5VA
<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
	UL 2043 Compliant	Suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC
	Type of action	Type 1
	Rated impulse voltage supply	0.8 kV
	Pollution degree	3
	Ambient humidity	Max. 95% RH, non-condensing
	Ambient temperature	-35...50°C [-30...122°F]
	Fluid temperature	-35...50°C [-30...122°F]
Housing surface temperature	max. 160°F [70°C]	

**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**

**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 (±0.2 V). When switching the supply voltage on/off, onsite power surges must be avoided.

## Remarks

**Build-up of self-heating by electrical dissipative power**

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

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.

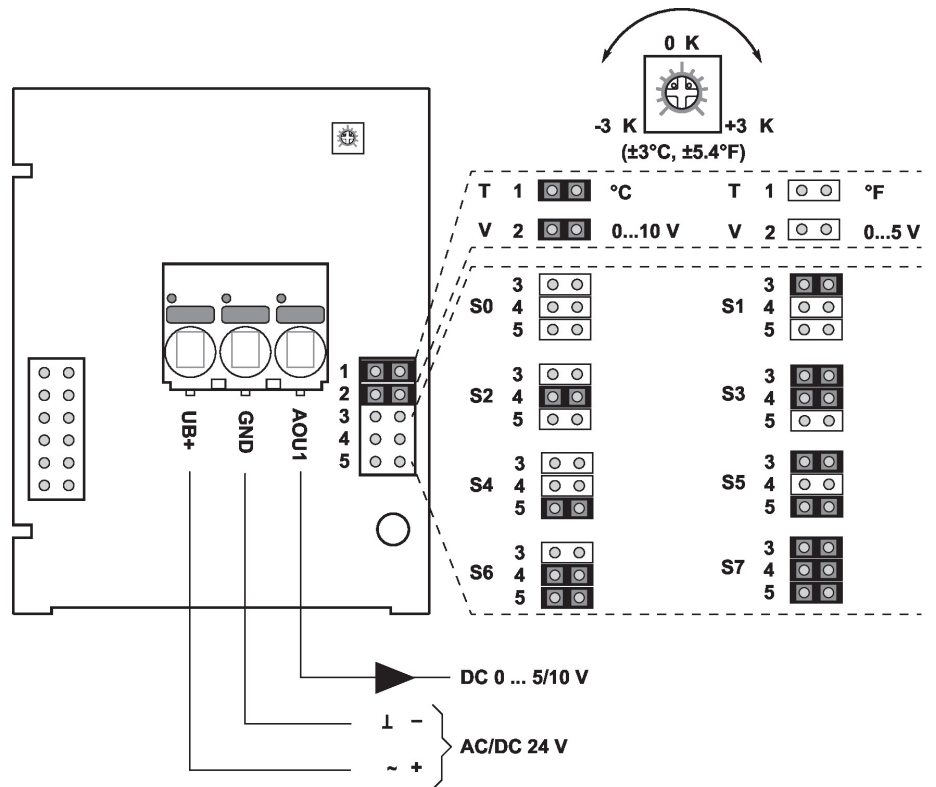
If a readjustment directly at the active sensor should be necessary during later operation, this can be done with the following adjustment methods.

- 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

Description	Type
Mounting plate S housing	A-22D-A09
Mounting kit, with 6 mounting brackets	A-22D-A08
1/2" NPT conduit adapter	

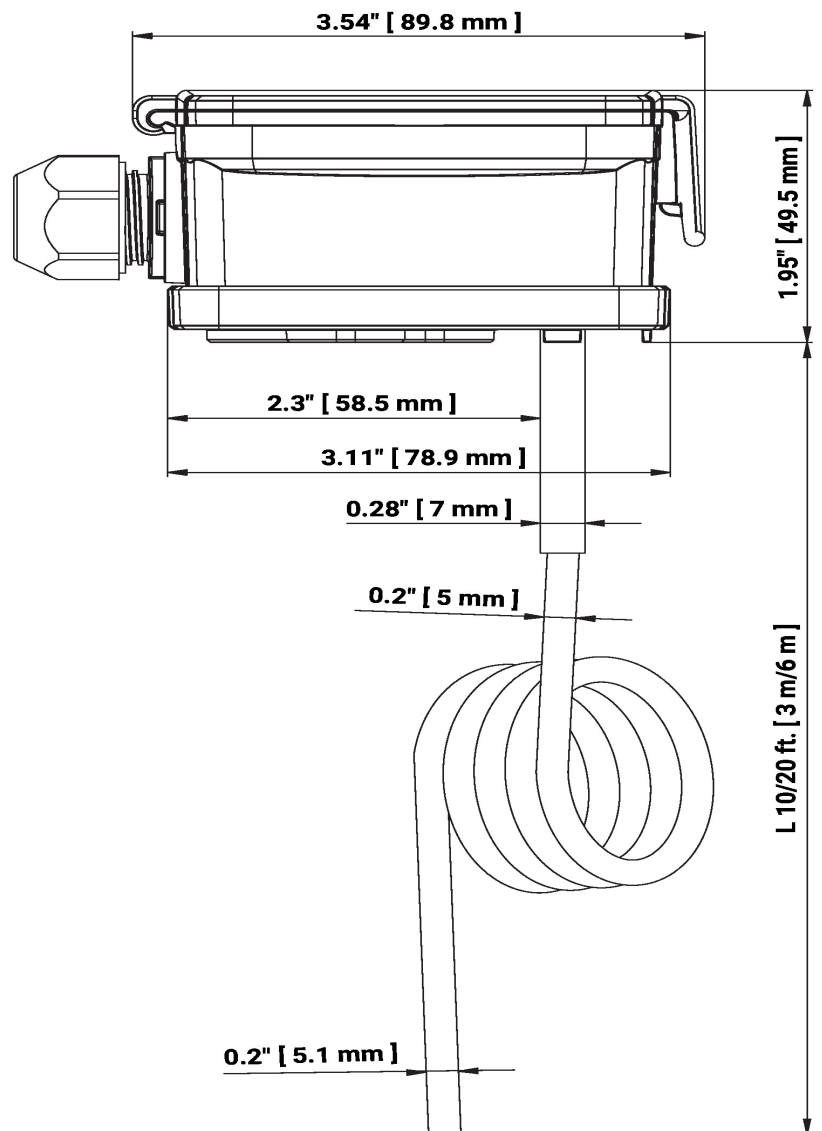
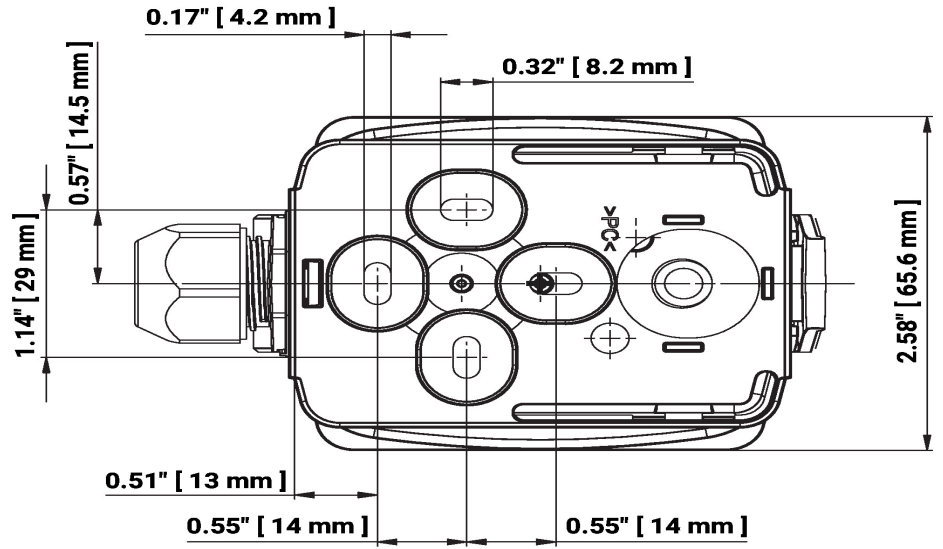
Wiring Diagram



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**



**Dimensions**

L = Probe length

Type	Probe length	Weight
22MT-524	10 ft [3 m]	0.49 lb [0.22 kg]
22MT-525	20 ft [6 m]	0.62 lb [0.28 kg]

**Further documentation**

- Installation instructions