

Duct/Immersion Temperature Sensor

Active sensor (0...10 V) for measuring temperature in duct applications. In connection with a stainless steel or brass thermowell also applicable for pipe applications. NEMA 4X / IP65 rated enclosure.


Type Overview

Type	Output signal active temperature	Probe length	Probe diameter
22DT-12H	DC 0...5 V, DC 0...10 V	50 mm	6 mm
22DT-12L	DC 0...5 V, DC 0...10 V	100 mm	6 mm
22DT-12N	DC 0...5 V, DC 0...10 V	150 mm	6 mm
22DT-12P	DC 0...5 V, DC 0...10 V	200 mm	6 mm
22DT-12R	DC 0...5 V, DC 0...10 V	300 mm	6 mm
22DT-12T	DC 0...5 V, DC 0...10 V	450 mm	6 mm

Technical Data

Electrical data	Power Supply DC	15...24 V, ±10%, 0.35 W		
	Power Supply AC	24 V, ±10%, 0.82 VA		
	Electrical connection	Removable spring loaded terminal block max. 2.5 mm ²		
	Cable entry	Cable gland PG11 Ø6...10 mm, with strain relief Ø6...8 mm		
Functional data	Multirange	8 measuring ranges selectable		
	Output signal active note	Output DC 0...5/10 V with Jumper adjustable Voltage output: min. 5 kΩ load		
	Media	Air Water		
Measuring data	Measured values	Temperature		
	Measuring range temperature	Active sensor: range selectable Attention: max. measuring temperature is restricted by max. medium temperature (see Safety data)		
		Setting	range [°C]	range [°F] Factory setting
		S0	-50...50 °C	-30...130 °F
		S1	-10...120 °C	0...250 °F
		S2	0...50 °C	40...140 °F
		S3	0...250 °C	30...480 °F
		S4	-15...35 °C	0...100 °F
		S5	0...100 °C	40...240 °F
		S6	-20...80 °C	40...90 °F
		S7	0...160 °C	0...150 °F
		✓		
		Accuracy temperature active ±0.5 °C @ 21 °C		

Materials	Cable gland	PA6, black
	Housing	Cover: Lexan, Belimo orange NCS S0580-Y6OR Bottom: Lexan, Belimo orange NCS S0580-Y6OR Seal: 0467 NBR70, black
Safety data	Ambient humidity	85% r.H., non-condensing
	Ambient temperature	-35...50 °C [-30...120 °F]
	Medium temperature	-50...160 °C [-60...320 °F]
	Housing surface temperature	Max. 70 °C [160 °F]
	Protection class IEC/EN	III Protective extra-low voltage (PELV)
	Protection class UL	UL Class 2 Supply
	EU Conformity	CE Marking
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-9
	Certification UL	pending
	Degree of protection IEC/EN	IP65
	Degree of protection NEMA/UL	NEMA 4X
	Quality Standard	ISO 9001
	Weight	0.10 kg

Safety notes



The installation and assembly of electrical equipment should only be performed by authorized personnel.

The product should only be used for the intended application. Unauthorised modifications are prohibited! The product must not be used in relation with any equipment that in case of a failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or assets. Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Please comply with

- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual

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 the 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.

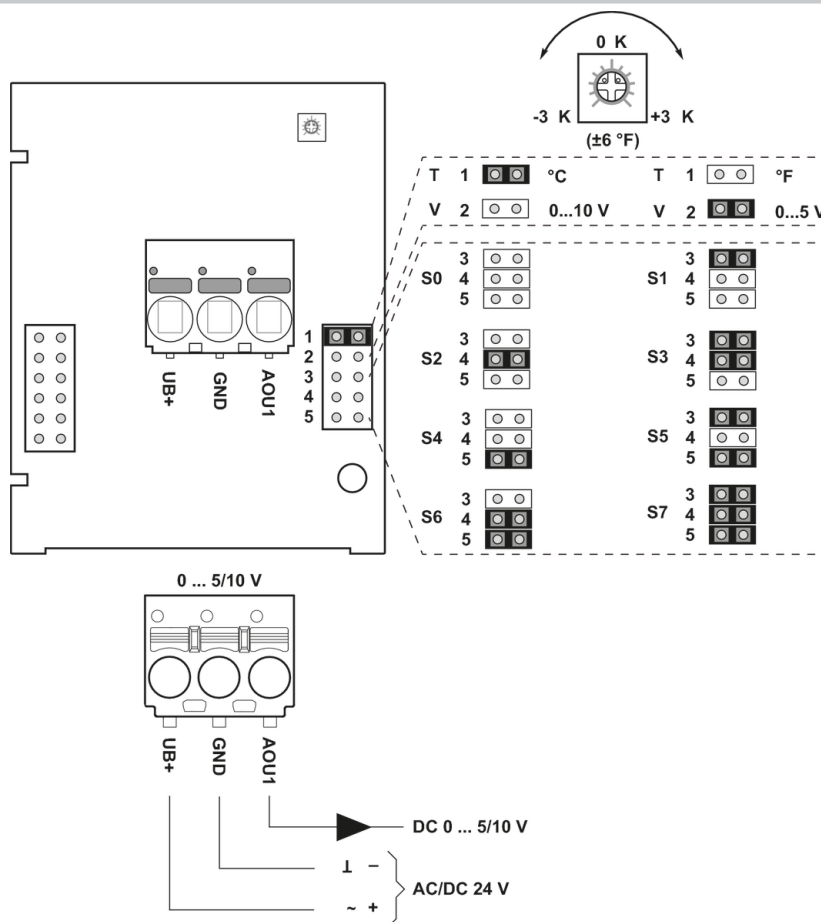
Build-up of Self-Heating by Electrical Dissipative Power

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. In case of a fixed operating voltage (± 0.2 V) this is normally done by adding or reducing a constant offset value. 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.

Accessories

Scope of delivery	Mounting Clip	
	Screws	
Optional accessories air	Adhesive foil	
	Description	Type
Recommended accessories water	Mounting flange 6 mm, Plastic (adjustable), up to max. 120 °C	A-22D-A03
	Mounting flange 6 mm, Brass, up to max. 260 °C	A-22D-A05
	Description	Type
	Thermowell pocket Stainless steel, 50 mm, G1/2", SW27	A-22P-A06
	Thermowell pocket Stainless steel, 100 mm, G1/2", SW27	A-22P-A08
	Thermowell pocket Stainless steel, 150 mm, G1/2", SW27	A-22P-A10
	Thermowell pocket Stainless steel, 200 mm, G1/2", SW27	A-22P-A12
	Thermowell pocket Stainless steel, 300 mm, G1/2", SW27	A-22P-A14
	Thermowell pocket Stainless steel, 450 mm, G1/2", SW27	A-22P-A16
	Thermowell pocket Brass, 50 mm, G1/2", SW22	A-22P-A18
	Thermowell pocket Brass, 100 mm, G1/2", SW22	A-22P-A20
	Thermowell pocket Brass, 150 mm, G1/2", SW22	A-22P-A22
	Thermowell pocket Brass, 200 mm, G1/2", SW22	A-22P-A24
	Thermowell pocket Brass, 300 mm, G1/2", SW22	A-22P-A26
	Thermowell pocket Brass, 450 mm, G1/2", SW22	A-22P-A28
	Syringe thermal contact fluid	A-22P-A44
	Compression fitting with cutting ring, Stainless steel, G 1/4" (external thread) for 6 mm	A-22P-A45

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

Dimensions

