

Product Information

LABO-T012-I / U / F

**Temperature Transmitter
 LABO-T012 -I / U / F
 (ETK12-I / U / F)**



- Complete transmitter in 12 mm housing
- Analog output 4..20 mA (LABO-T012-I)
- Analog output 0..10 V (LABO-T012-U)
- Frequency output (LABO-T012-F)
- The same transmitter for various piping widths
- User-configurable via plug pin (teaching)
- Same mechanical design available, whether temperature switch, flow transmitter / switch or level switch

Characteristics

The sensors of the LABO-T012 family can be used for measuring and monitoring temperatures in flowing media. They require little space, yet offer a variable sensor length, as well as various fastening options. The 16-bit processor provides linearisation of the PT2000 characteristic curve, and emits the standardised output signal.

The LABO-T012 electronics transmit the result as

- Analog 0/4..20 mA signal (LABO-T012-I)
- Analog 0/2..10 V signal (LABO-T012-U)
- Frequency signal (LABO-T012-F)

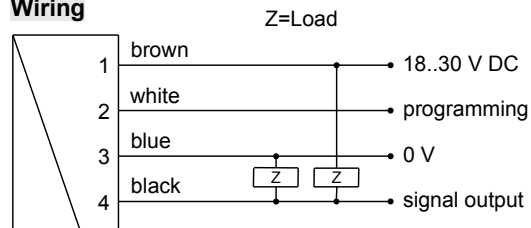
If desired, the full scale value can be set to the currently existing temperature using "teaching".

Technical data

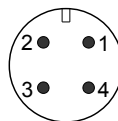
Sensor	platinum resistance sensor	
Process connection	stainless steel threaded connection G 1/2 A or plastic threaded connection M12x1.5	
Nominal width	for DN 15..300, others available on request	
Metering range	0..100 °C	standard range
	-20..+100 °C (or parts of it)	available on request
Measurement accuracy	±1 °C	
Reproducibility	±0.5 °C	

Dynamic (τ)	3 s	
Pressure	PN 63 (with stainless steel threaded connection) PN 4 (with plastic threaded connection)	
Medium temperature	-20..+100 °C	
Ambient temperature	0..60 °C	
Storage temperature	-20..+70 °C	
Media	fluids and gases	
Materials medium-contact	Housing	1.4571
Materials non-medium-contact	Plug	PA
	Contacts	gold-plated
Supply voltage	18..30 V DC (regulated)	
Current requirement at rest	< 60 mA	
Output	LABO-T012-I	4..20 mA Max. load 500 Ohm
	LABO-T012-U	0..10 V Load min. 1 kOhm
	LABO-T012-F	Frequency output "Push-pull" (resistant to short circuits, and reversed polarity protected) I _{out} = 100 mA max. Selectable output frequency, max. 2 kHz
Electrical connection	for round plug connector M12x1, 4-pole	
Ingress protection	IP 67	
Weight	approx. 0.05 kg (excluding screwed connection)	
Conformity	CE	

Wiring



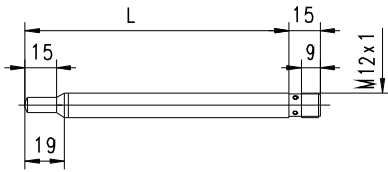
Connection example: PNP NPN



The use of shielded cabling is recommended.

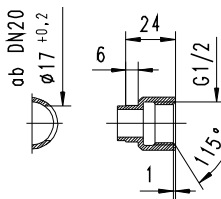
Product Information

Dimensions

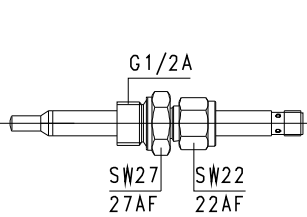


Optional accessories

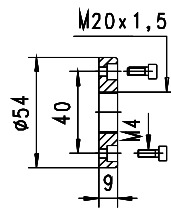
Weld-on adapter



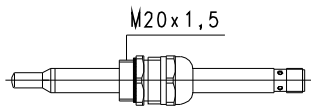
Crimp screw joint



Stainless steel



Flange mounting plastic



Compression fitting plastic

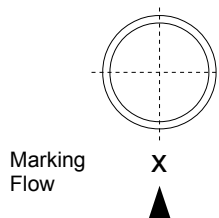
Handling and operation

Note

The full scale value can be programmed by the user via "teaching". Requirement for programmability must be stated when ordering, otherwise the device cannot be programmed. The ECI-1 interface with associated software is available as a convenient option for programming all parameters by PC, and for adjustment.

Installation

Wherever possible, the sensor tip should be positioned in the middle of the pipe. When a flow is present, it should impinge onto the X, in order to achieve the lowest possible response time.



Avoid bubbles or deposits on the sensor. It is therefore best to install at the side. The stainless steel threaded connection is first tightened by hand, and then by 1/4 of a turn, using a spanner. The connection ring of the threaded connection can then no longer be removed from the sensor, and the immersion depth can therefore not be changed further!

Operation and programming

If desired, the metering range end can be set by the user by means of teaching.

For this, proceed as follows:

- The temperature which is to be set is applied to the device.
- Apply an impulse of at least 0.5 seconds and max. 2 seconds duration to pin 2 (e.g. via a bridge to the supply voltage or a pulse from the PLC), in order to accept the measured value.
- When the teaching is complete, pin 2 should be connected to 0 V, so as to prevent unintended programming.

The devices have a yellow LED which flashes during the programming pulse. During operation, the LED acts as a display for the operating voltage.

In order to avoid the need to transit to an undesired operating status during the teach-in, the device can be provided ex-works with a teach-offset. The teach-offset point is added to the currently measured value before saving.

Example: The end of the metering range should be set to 80 °C. However, only 60 °C can be achieved without danger. In this case, the device would be ordered with a "teach-offset" of +20 °C. At 60 °C in the process, a value of 80 °C would then be stored during "teaching".

Ordering code

LABO-T012 - 1. 2. 3. 4.
K1

○=Option

1. Analog output	
I	current output 4..20 mA
U	voltage output 0..10 V
F	frequency output
2. Sensor length L =	
100	123 mm
150	173 mm
200	223 mm
3. Connection material	
K1	stainless steel 1.4571
4. Programming	
N	cannot be programmed (no teaching)
P	<input type="checkbox"/> programmable (teaching possible)

Accessories

- Cable/round plug connector (KB...) see additional information "Accessories"

Product Information

LABO-T012-I / U / F

Options

For LABO-T012-I and LABO-T012-U

Special range for analog output:

Start of metering range (4 mA or 0 V) at °C
Standard = 0 °C

End of metering range (20 mA or 10 V) at °C
Standard = 100 °C

Teach-offset (-100..+100 °C) °C
Standard = 0 °C

For LABO-T012-F

End frequency (max. 2000 Hz) Hz
Standard = 2000 Hz

Special range for frequency output:
Start of metering range (0 Hz) at °C
Standard = 0 °C

End of metering range (end frequency) at °C
Standard = 100 °C

Teach-offset (-100..+100 °C) °C
Standard = 0 °C

Further options available on request.

Accessories

- Screwed connections
- Weld-on adapter
- Round plug connector
- Device configurator ECI-1