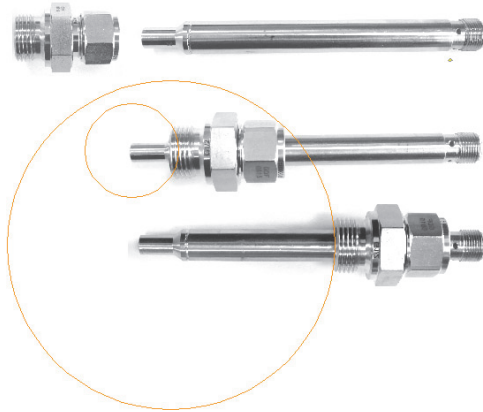


Product Information

LABO-T012-S

**Temperature Switch
ETK12-S**



- Temperature sensor with limit switch in 12 mm housing
- The same transmitter for various piping widths
- User-configurable via plug pin (teaching)
- Same mechanical design available, whether temperature transmitter, flow transmitter / switch or level switch

Characteristics

The sensors of the ETK12 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 electronics of the ETK12-S are a flexibly configurable limit switch.

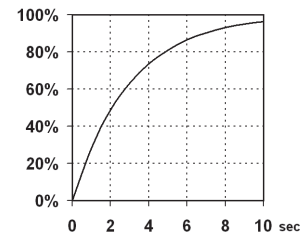
The switching value can be set by the user via teaching (see Handling and Operation). All other values have been preset at the factory, but can be modified by the user with the aid of the optionally available ECI-1 device configurator and a PC.

The adjustable parameters are:

- Switching value
- Hysteresis
- Minimum/maximum monitoring
- Switching delay
- Switchback delay
- Power-On delay
- Teach-Offset

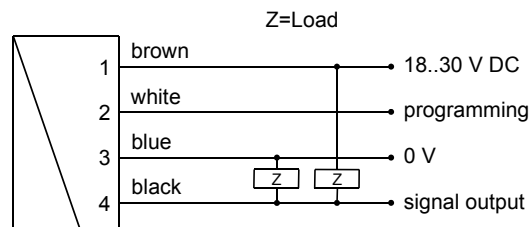
Technical data

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	
Switching range	-20..+100 °C	
Measurement accuracy	±1 °C	
Reproducibility	±0.5 °C	
Dynamic (t)	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 consumption	< 60 mA	
Switching output	transistor output "push-pull" (resistant to short circuits and polarity reversal) I _{out} = 100 mA max.	
Electrical connection	for round plug connector M12x1, 4-pole	
Ingress protection	IP 67	
Weight	approx. 0.05 kg (excluding screwed connection)	
Conformity	CE	

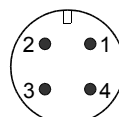


Wiring

The use of shielded cabling is recommended.



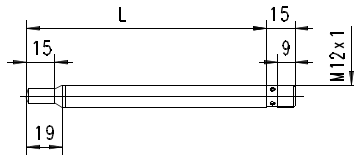
Connection example: PNP NPN



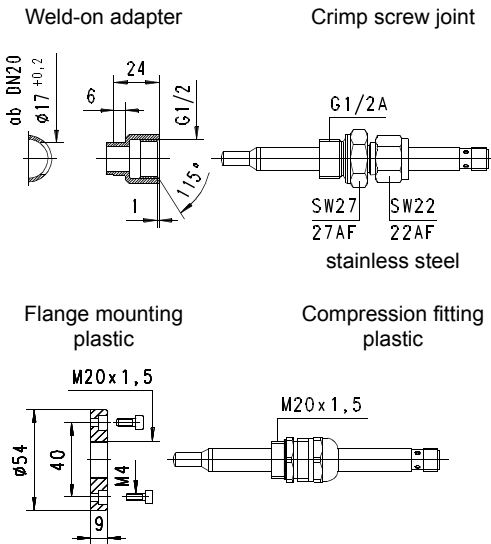
Product Information

LABO-T012-S

Dimensions



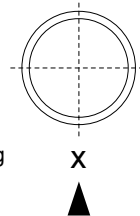
Optional accessories



Handling and operation

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

The switching value 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 a pulse 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.

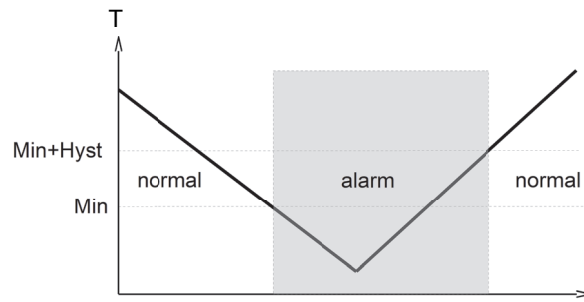
The device has a yellow LED which flashes during the programming pulse. During operation, the LED serves as a status display for the switching output. In order to avoid the need to transit to an undesired operating

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.

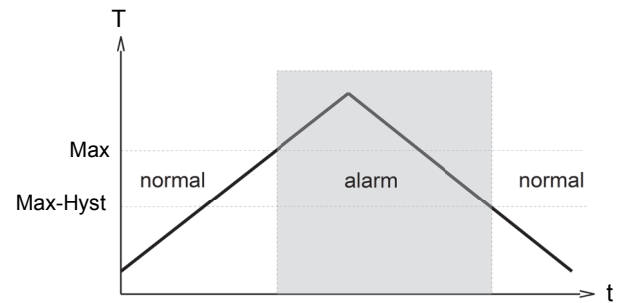
Example: The switching value is to be set to 80 °C, because at this temperature a critical process status is to be notified. However, only 60 °C can be achieved without danger. In this case, the device would be ordered with a "teach-offset" of +20 °C. At 60 °C in the process, a switching value of 80 °C would then be stored during "teaching".

The ETK12-S limit switch can be used to monitor minima or maxima or maxima.

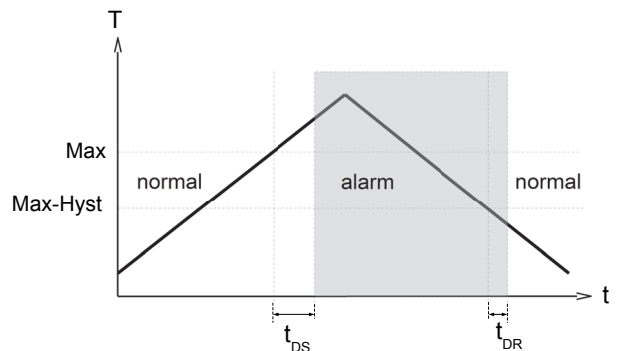
With a minimum-switch, falling below the limit value causes a switchover to the alarm state. Return to the normal state occurs when the limit value plus the set hysteresis is once more exceeded.



With a maximum-switch, exceeding the limit value causes a switchover to the alarm state. Return to the normal state occurs when the measured value once more falls below the limit value minus the set hysteresis.



A switchover delay time (t_{DS}) can be applied to the switchover to the alarm state. Equally, one switch-back delay time (t_{DR}) of several can be applied to switching back to the normal state.

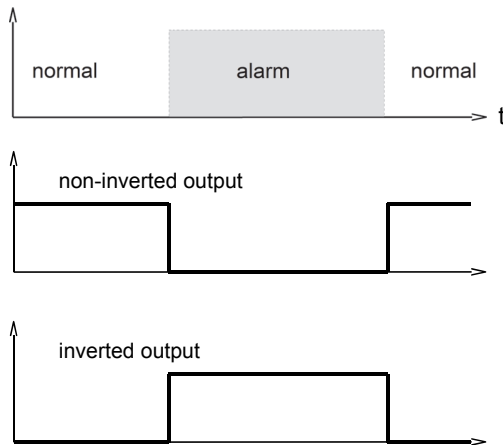


In the normal state the integrated LED is on, in the alarm state it is off, and this corresponds to its status when there is no supply voltage.

In the non-inverted (standard) model, while in the normal state the switching output is at the level of the supply voltage; in the alarm

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state it is at 0 V, so that a wire break would also display as an alarm state at the signal receiver. Optionally, an inverted switching output can also be provided, i.e. in the normal state the output is at 0 V, and in the alarm state it is at the level of the supply voltage.



A Power-On-Delay function (ordered as a separate option) makes it possible to maintain the switching output in the normal state for a defined period after application of the supply voltage.

Ordering code

ETK12 - 1. 2. 3. 4. 5. 6.
 S [] K1 [] [] [] [] []

○=Option

1. Switch	
S	push-pull switch (compatible with PNP and NPN)
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="radio"/> programmable (teaching possible)
5. Switch type	
L	minimum-switch
H	maximum-switch
6. Output	
O	non-inverted output
I	<input type="radio"/> inverted output

Options

- Switching delay period (0.0..99.9 s) [][] . [][] s (from Normal to Alarm)
- Switch-back delay period (0.0..99.9 s) [][] . [][] s (from Alarm to Normal)
- Power-On delay period (0..99 s) [][] s
- Switching output fixed at [][][] °C
- Switching hysteresis [][][] %
- Standard = 2 % of the metering range
- Teach-offset (-100..+100 °C) [][][][] °C
- Standard = 0 °C

Further options available on request.

Accessories

- Screwed connections
- Weld-on adapter
- Cable/round plug connector (KB...) see additional information "Accessories"
- Device configurator ECI-1
- Connection cable