

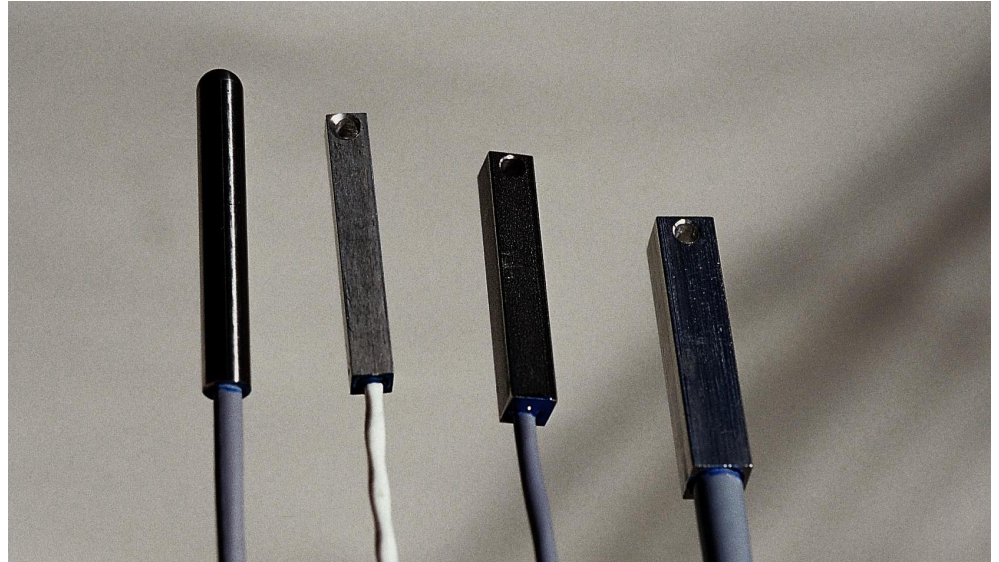
ES

External temperature sensor

GmbH

LISTEC[®]

Lineare Sensor Technik



The aluminium or stainless steel casing contains the semiconductor temperature sensor. The casing can either be rectangular, for direct mounting onto the monitored object, or round, to be used as a probe.

The temperature sensor and the connecting cable are both glued into the casing, therefore sealing the entire assembly hermetically.

The connecting cables are either 2m, 5m or 10m long. Three cable types are available, allowing installation under various conditions.

The sensor can be used in the temperature range -55°C to $+150^{\circ}\text{C}$ (cable type LiTCT) and measures temperatures with $0,1^{\circ}$ accuracy.

External sensors are available for the **LIST**[®] - and **δ-LIST**[®] -System.

External sensors can be connected to a **LIST**[®] -System via external sensor modules (MODx). Each module allows the connection of up to 4 external sensors to a control unit. A maximum of 3 MODx can be built into one connection box, i.e. 12 Sensors per connection box.

The **δ-LIST**[®] -system allows the direct connection of the temperature sensors to the bus and, thus, to the evaluation and control unit.

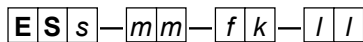
Due to the continuous temperature interrogation by the sensor control unit, a continual function check of all sensors is given.

The external sensors can also be combined with sensor cable systems.

Ordering information

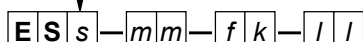
When ordering external sensors, always specify the complete type-code for the required version. The type-code is made up of the following ordering information.

All options must be recorded in the type code:



where: s = Sensor type
 mm = Casing material
 f = Casing form
 k = Cable type
 ll = Cable length

Sensor type



Sensor type A

for use with the LIST®-system, whereby their connection takes place via MODx-modules. The sensors can be used together with SEC20 sensor cable and the control units SCU2000, SCU3000 and SCS4010.

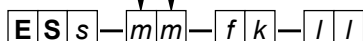
Measuring range: -40°C...+150°C

Sensor type D

for use with the δ-LIST®-System, whereby all sensors are connected in parallel via standard terminals. These sensors can be used together with SEC15 sensor cable and the control unit SCU800.

Measuring range: -40°C...+100°C

Casing material



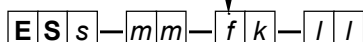
Material AL

Aluminium sensor casing

Material A2

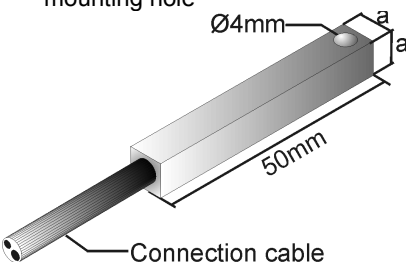
A2 quality stainless steel casing

Casing form



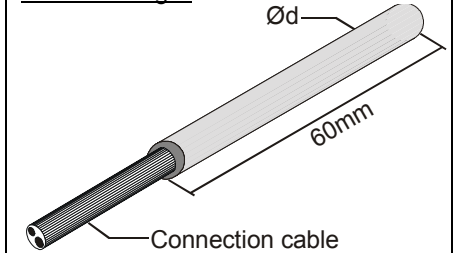
Rectangular casing E

- with 4 mm mounting hole
- Sensor directly next to the mounting hole



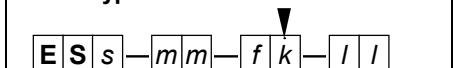
- Dimensions: a x a x 50 mm
- Cable type N a = 7 mm
- Cable type + a = 7 mm
- Cable type O a = 10 mm

Round casing R



- used as probe
- Dimensions: Ød x 60 mm
- Cable type N d = 8 mm
- Cable type + d = 8 mm
- Cable type O d = 12 mm

Cable type



Cable type N

Type: LiYCY
 Temperature: -10°C...+80°C
 Sheath: PVC-mixture; largely oil and gasoline resistant

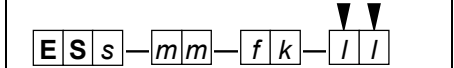
Cable type +

Type: LiTCT
 Temperature: -55°C...+150°C
 Sheath: chemical- and corrosion resistant, non-flammable

Cable type O

Type: ÖLFLEX-Classic-400CP
 Temperature: -40°C...+80°C
 Sheath: PUR control cable, Halogen-free, UV-resistant, cold-flexible and oil-resistant (RAL 7001)
 Core insulation: Special-PVC

Cable length



Available cable lengths are:
02 = 2 m
05 = 5 m
10 = 10 m

Example

The type number **ESD-AL-E+05** describes a δ-LIST external sensor in an aluminium housing (7 x 7 x 50 mm), with a 5 m LiTCT heat resistant connection cable.

Accessories

LIST® Accessories

External sensor module MODx

The MODx house the LIST®- addressing modules and are required for the connection of the external sensors of the sensor type A to the a LIST®- system. The MODx is supplied in a snap-on housing for DIN rails.

- MOD1** Module for 1 ES
- MOD2** 2 fold module for max. 2 ES
- MOD3** 3 fold module for max. 3 ES
- MOD4** 4 fold module for max. 4 ES

Connection Module CCM

The connection module contains over-voltage protection circuitry for LIST®- systems.

δ-LIST® Accessories

The external sensors of the sensor type D are connected to the δ-LIST- bus via standard terminals. All sensors are connected in parallel.

Connection Module CCM

The connection module contains over-voltage protection circuitry for δ-LIST®-Systems.

Connection boxes CBO

One connection box can be fitted with either 3 MODx or 2 MODx and 1 CCM. Both systems allow a maximum of 12 sensors and 2 bus cables per connection box.

CBO 10 type connection boxes are used in areas where the risk of mechanical damage is low.

CBO 20 type connection boxes are used outdoors, in tunnels and areas where the risk of mechanical damage is high (e.g. belt conveyors).

CBO 10/4mod Connection Box

Connection box for max. 12 external sensors.
 Material: ABS, Thermoplastic
 Protection: IP 65
 L x W x H: 240 x 160 x 90 mm (without cable-glands)
 Colour: light-grey RAL7035

CBO 20/4mod Connection Box

Connection box for max. 12 external sensors.
 Material: glass-fibre reinforced Polyester
 Protection: IP 65
 L x W x H: 240 x 165 x 100 mm (without cable-glands)
 Colour: grey