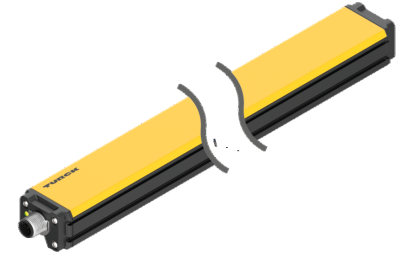


# LI500P0-Q25LM0-HESG25X3-H1181

## Inductive Linear Position Sensor



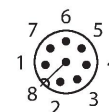
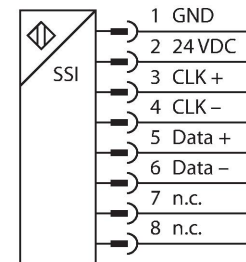
### Technical data

|                                        |                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------|
| Type                                   | LI500P0-Q25LM0-HESG25X3-H1181                                                            |
| ID                                     | 1590205                                                                                  |
| Measuring principle                    | Inductive                                                                                |
| <b>General data</b>                    |                                                                                          |
| Measuring range                        | 500 mm                                                                                   |
| Resolution                             | 0.001 mm                                                                                 |
| Nominal distance                       | 1.5 mm                                                                                   |
| Blind zone a                           | 29 mm                                                                                    |
| Blind zone b                           | 29 mm                                                                                    |
| Reproducibility                        | ≤ 18 µm                                                                                  |
| Linearity deviation                    | ≤ 0.05 % f.s.                                                                            |
| Temperature drift                      | ≤ ± 0.0001 %/K                                                                           |
| Hysteresis                             | not applied                                                                              |
| <b>Electrical data</b>                 |                                                                                          |
| Operating voltage $U_B$                | 15...30 VDC                                                                              |
| Ripple $U_{ss}$                        | ≤ 10 % $U_{Bmax}$                                                                        |
| Isolation test voltage                 | 0.5 kV                                                                                   |
| Short-circuit protection               | yes                                                                                      |
| Wire break/reverse polarity protection | yes/yes (voltage supply)                                                                 |
| Communication protocol                 | SSI                                                                                      |
| Output function                        | 8-pin, 25 Bit, Gray, synchronous                                                         |
| Process data area                      | Bit 0 ... Bit 19                                                                         |
| Diagnostic bits                        | Bit 21: Positioning element left the measuring range and is outside the detectable area. |

### Features

- Rectangular, aluminium / plastic
- Versatile mounting possibilities
- Measuring range displayed via LED
- Immune to electromagnetic interference
- Extremely short blind zones
- Resolution 0.001 mm
- 15...30 VDC
- Male M12 x 1, 8-pin
- SSI output
- 25 bit, Gray-coded, synchronous
- SSI clock rate: 62.5 kHz ... 1 MHz

### Wiring diagram



### Functional principle

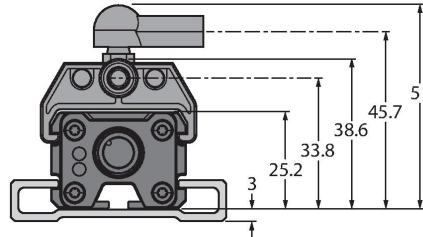
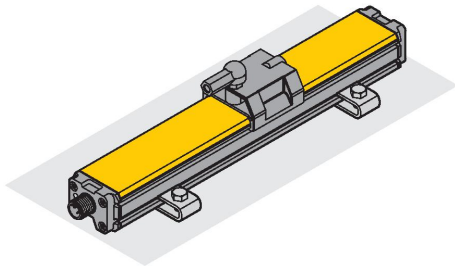
## Technical data

The measuring principle of linear position sensors is based on RLC coupling between the positioning element and the sensor, whereby an output signal is provided proportional to the position of the positioning element. The rugged sensors are wear and tear-free, thanks to the contactless operating principle. They convince through their excellent repeatability, resolution and linearity within a broad temperature range. The innovative technology ensures a high immunity to electromagnetic DC and AC fields.

|                                 |                                                                                                                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                 | Bit 22: Positioning element is in the measuring range, lower signal quality (e.g. distance too large)<br>Bit 23: Positioning element is outside the measuring range<br>Bit 24: synchronous operation active |
| Sample rate                     | 5000 Hz                                                                                                                                                                                                     |
|                                 | The sensor's sampling rate depends on the master's SSI cycle time. Sampling rate 1... 5 KHz in synchronized operating mode                                                                                  |
| Current consumption             | < 50 mA                                                                                                                                                                                                     |
| <b>Mechanical data</b>          |                                                                                                                                                                                                             |
| Design                          | Profile, Q25L                                                                                                                                                                                               |
| Dimensions                      | 558 x 35 x 25 mm                                                                                                                                                                                            |
| Housing material                | Aluminum/plastic, PA6-GF30, Anodized                                                                                                                                                                        |
| Active area material            | Plastic, PA6-GF30                                                                                                                                                                                           |
| Electrical connection           | Connector, M12 × 1                                                                                                                                                                                          |
| <b>Environmental conditions</b> |                                                                                                                                                                                                             |
| Ambient temperature             | -25...+70 °C                                                                                                                                                                                                |
| Vibration resistance            | 55 Hz (1 mm)                                                                                                                                                                                                |
| Shock resistance                | 30 g (11 ms)                                                                                                                                                                                                |
| Protection class                | IP67                                                                                                                                                                                                        |
| MTTF                            | 138 years                                                                                                                                                                                                   |
| Power-on indication             | LED, Green                                                                                                                                                                                                  |
| Measuring range display         | multifunction LED, green, yellow, yellow flashing                                                                                                                                                           |
| UL certificate                  | E210608                                                                                                                                                                                                     |

## Mounting instructions

### Mounting instructions/Description



Extensive mounting accessories provide various options for installation. The measuring principle of RLC coupling makes the sensor immune to magnetized metal splinters and other interference fields.

LED indicates status:

Green:

Sensor is supplied properly, asynchronous mode

Green flashing:

Sensor is supplied properly, synchronous mode

Green fast flashing:

Sensor is supplied properly but is not receiving CLK pulses from the SSI master

LED indicates measuring range

Green:

Positioning element is in range

Yellow:

Positioning element is in range, signal low (e.g. distance too great), see status bit 22

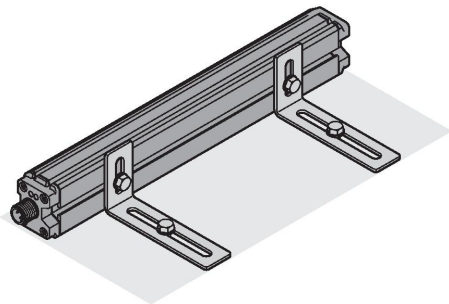
Yellow flashing:

Positioning element is out of range, see status bit 23

LED OFF:

Positioning element is outside the programmed range (only with teachable versions)

Note: Pin 8 should be kept potential-free

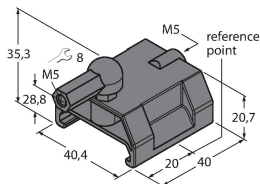


## Accessories

### P1-LI-Q25L

6901041

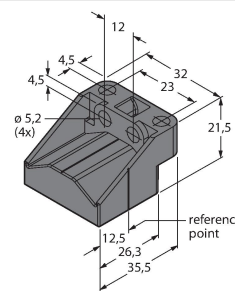
Guided positioning element for linear position sensors LI-Q25L, inserted in the groove of the sensor



### P2-LI-Q25L

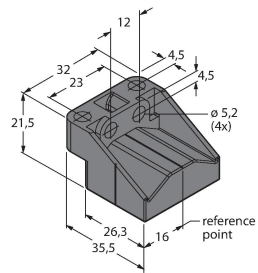
6901042

Floating positioning element for linear position sensors LI-Q25L; the nominal distance to the sensor is 1.5 mm; pairing with the linear position sensor at a distance of up to 5 mm or misalignment tolerance of up to 4 mm.



## P3-LI-Q25L

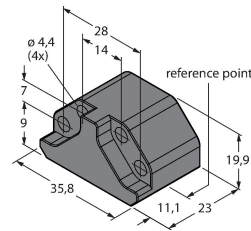
6901044



Floating positioning element for LI-Q25L linear position sensors; operational at an offset of 90°; nominal distance to sensor 1.5 mm; pairing with linear position sensor at a distance of up to 5 mm; misalignment tolerance of up to 4 mm

## P6-LI-Q25L

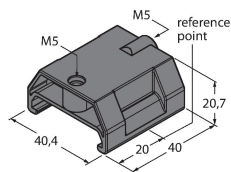
6901069



Floating positioning element for linear position sensors LI-Q25L; the nominal distance to the sensor is 1.5 mm; pairing with the linear position sensor at a distance of up to 5 mm or misalignment tolerance of up to 4 mm.

## P7-LI-Q25L

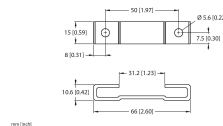
6901087



Guided positioning element for linear position sensors LI-Q25L, without ball joint

## M1-Q25L

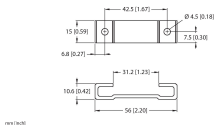
6901045



Mounting foot for linear position sensors LI-Q25L; material: aluminum; 2 pcs. per bag

## M2-Q25L

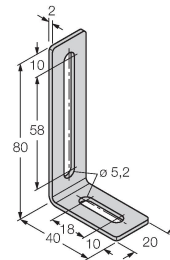
6901046



Mounting foot for linear position sensors LI-Q25L; material: aluminum; 2 pcs. per bag

## M4-Q25L

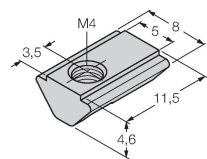
6901048



Mounting bracket and sliding block for linear position sensors LI-Q25L; material: Stainless steel; 2 pcs. per bag

## MN-M4-Q25

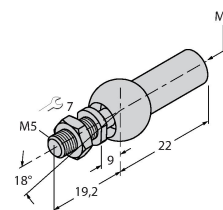
6901025



Sliding block with M4 thread for the backside profile of the LI-Q25L; material: galvanized steel; 10 pcs. per bag

## AB-M5

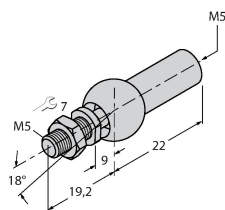
6901057



Axial Joint for Guided Positioning Elements

## ABVA-M5

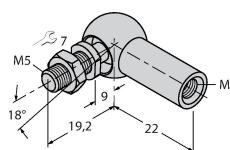
6901058



Axial joint for guided positioning element, stainless steel

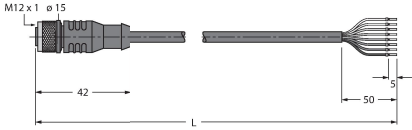
## RBVA-M5

6901059



Angle joint for guided positioning element, stainless steel

Wiring accessories

| Dimension drawing                                                                 | Type           | ID      |                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------|----------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | E-RKC 8T-264-2 | U-04781 | Connection cable, female M12, straight, 8-pin (twisted pairs), shielded, cable length: 2 m, sheath material: PVC, black; cULus approval; other cable lengths and qualities available, see <a href="http://www.turck.com">www.turck.com</a> |