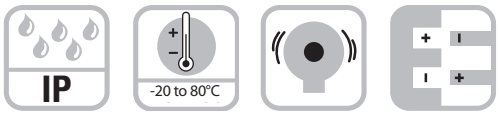
Linear Position Technology
Linear Magnetic Position System

Linear Magnetic Measurement System LI20/B1



High IP | Temperature | Shock/vibration resistant | Reverse polarity protection

Robust

- **Fully potted diecast metal housing.**
- **Increased ability to withstand vibrations and rough installation**: Eliminates machine downtime and repairs. Non-contact technology results in high shock and vibration resistance.
- **Stays sealed even when subjected to harsh everyday use.** Die cast metal housing with up to IP67protection.

Compact

- **Installation depth only 10 mm, width of magnetic band 10 mm.**
- **Installation height only 28 mm.** May be used even where space is very tight.

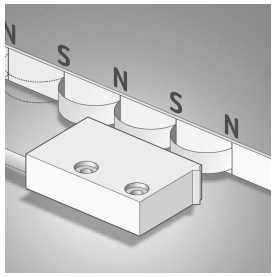
Versatile

- **Fast start-up of the measuring system:** Easy attachment of the magnetic band and the sensor head.
- **Easy mounting with large tolerances possible:** Distance of sensor head to magnetic band from 0.1 to 1.0 mm; tolerates lateral misalignment + 1 mm; LED warning indicator when magnetic field is too weak.

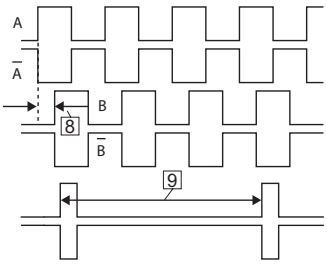
Technical data magnetic sensor LI20:

Output circuit:	Push-Pull	RS422
Supply voltage:	4.8 to 30 VDC	4.8 to 26 VDC
Load/channel, max cable length:	±20 mA, max. 30 m	120 Ohm, RS422 standard
Current consumption (without load):	typ. 25 mA, max. 60 mA	
Short circuit proof outputs: [1]	yes	yes [2]
Min. Pulse interval:	1 µs (edge interval) corresponds to 4 µs/cycle (see signal figures below)	
Output signal:	A, $\overline{A}$, B, $\overline{B}$, I, $\overline{I}$	
Reference signal:	Index periodical	
System Accuracy:	typ. 200 µm, max. ± (0.04 + 0.04 x L) mm, (L in [m], up to L = 50 m, at T = 20°C)	
Repeat accuracy:	±1 increment	
Resolution and speed: [3]	100 µm (post-quadrature), max. 25 m/s 25 µm (post-quadrature), max. 4 m/s 10 µm (post-quadrature), max. 6.5 m/s	
Permissible alignment tolerance:	see draft "Mounting tolerances"	
Gap sensor / magnetic band:	0.1-1.0 mm (0.4 mm recommended)	
Offset:	max. ±1 mm	
Tilting:	max. 3°	
Torsion:	max. 3°	
Working temperature:	-4 to +176°F (-20 to +80°C)	
Shock resistance:	500 g / 1 ms	
Vibration strength:	30 g / 10-2,000 Hz	
Protection class:	IP67 according to DIN 60 529 (housing)	
Humidity:	100%, condensation possible	
Housing:	Zinc die-cast	
Cable:	2 m, PUR 8 x 0.14 mm², shielded, may be used in trailing cable installations	
Status-LED:	Green: Pulse-index; Red: Error Speed too high or magnetic fields too weak (for sensors **T8.LI20.XXXX.X020** and **T8.LI20.XXXX.X050**)	
CE-compliant according to EN 61 000-6-2, EN 61 000-6-4, EN 61 000-6-3		
RoHS compliant acc. to EU guideline 2002/95/EG		

Function principle:



Signal figures



9 periodic index signal (every 2 mm)
The logical assignment A, B and I-Signal can change
8 Min. Pulse interval: pay attention to the instructions in the technical data

[1] With supply voltage correctly applied
[2] A max. of one channel only may be short-circuited: (when +V = 5 V, a short circuit to another channel, 0 V, or +V is permissible.) (when +V = 5-30 V, a short circuit to another channel or to 0 V is permissible.)
[3] At the listed rotational speed the min. pulse interval is 1µs, this corresponds to 250 kHz. For the max. rotational speed range a counter with a count input frequency of not less then 250 kHz should be provided.

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TURCK Industrial Automation

Linear Magnetic Measurement System LI20/B1

Technical data magnetic band B1:

Pole gap:	2 mm from pole to pole
Dimensions:	Width: 10 mm, Thickness: 1.7 mm incl. masking tape
Temperature coefficient:	(11±1)x10^{-6}/K
Temperature ranges:	working temperature: -4 to +176°F (-20 to +80°C) storage temperature: -40 to +176°F (-40 to +80°C)
Mounting:	adhesive joint
Measuring:	0.1 m (to receive an optimal result of measurement, the magnetic band should be ca. 0.1 m longer than the desired measuring length)
Bending radius:	≥ 50 mm

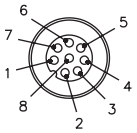
Pin configuration:

Pin	Signal	Color
1	0 V	WH
2	+V	BN
3	A	GN
4	$\overline{A}$	YE
5	B	GY
6	$\overline{B}$	PK
7	Z	BU
8	$\overline{Z}$	RD

Shield is on the housing

Wiring Diagram:

Male encoder view



M12 ***eurofast***® pinout
8-pin

Mating cordset:
E-RKC 8T-930-*

* Length in meters.

Part number key: Magnetic sensor LI20

T8.LI20.11X1.2XXX-XM-E-RSS 8T

Options for molded connection only.

Model

Design
1 = standard

Pulse interval
1 = standard

Supply voltage and interface
1 = 4.8-26 VDC, RS422
2 = 4.8-30 VDC, push-pull

Type of connection
1 = cable (PUR), 2 m

* with quadruple evaluation

Connection (optional)
E-RSS 8T = 8-pin M12 ***eurofast***®

Mold on Length
Overall length in meters.
0.2M = 0.2 meters

Code (Resolution*)
005 = 100 µm
020 = 25 µm
050 = 10 µm

(only connected with magnetic band B1)

Reference signal
2 = index periodic

Part number key: Magnetic band B1

8.B1.10.010.XXXX

Model

Width
10 = 10 mm

Length
0010 = 1 m
0050 = 5 m
0100 = 10 m
Other lengths up to 50 m on request

Accessories:

- See page J1, Connectivity, for cables and connectors

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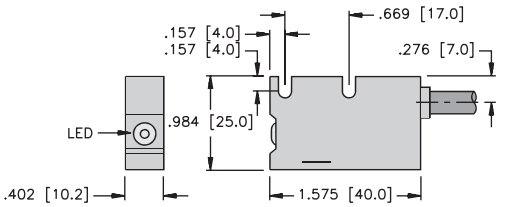
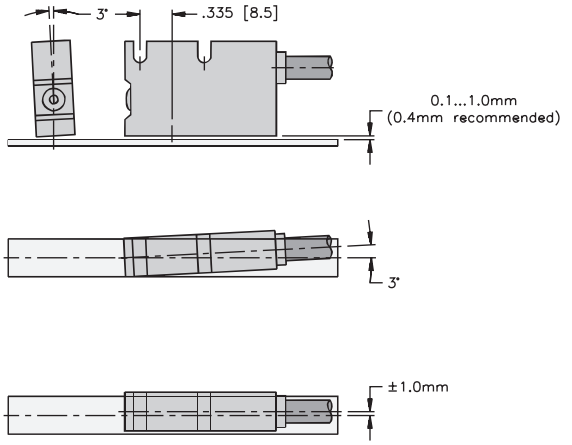
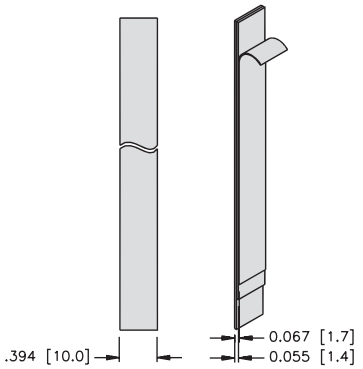
Dimensions: Magnetic sensor LI20



Permissible Mounting tolerances:



Dimensions: Magnetic band B1



Display Type 572 for LI20

Counter series with two individually scalable encoder inputs: HTL or TTL. In each case A $\overline{A}$, B $\overline{B}$, for count frequencies up to 1 MHz per channel. Operating modes may be selected for position or event counter, total counter, difference counter, cut-to-length display, diameter calculator, batch counter and more.

- Two separate freely scalable count inputs – HTL or TTL – also with inverted inputs.
- Max. input frequency 1 MHz/ channel.
- Four freely programmable solid-state outputs, each with 350 mA output current.
- Step or tracking preset.
- AC and DC supply voltage.
- May be used as a counter or position display with limit values.
- Monitoring function, where two values are monitored or calculated with respect to each other.
- Four programmable inputs with various functions, such as reset, gate, display memory, reference input or switching between the display values.
- Optional scalable analog output 0/4 to 20 mA, +/-10 V or 0 to10 V.
- Two auxiliary power supplies for sensors: 5.2 VDC and 24 VDC.
- Standard interface RS 232.

Part number key specification

Position display, 6 digits, with 4 fast switch outputs and serial interface: `6.572.0116.D05`

Position display, 6 digits, with 4 fast switch outputs and serial interface and scalable analog output: `6.572.0116.D95`

Position display, 8 digits, with 4 fast switch outputs and serial interface: `6.572.0118.D05`

Position display, 8 digits, with 4 fast switch outputs and serial interface and scalable analog output: `6.572.0118.D95`

For detailed product specifications, see page E15.