



LIK 41

Exposed Linear Encoder
compact model range

- n Extremely small dimensions of scanning head for crowded installation conditions
- n High resolution and accuracy
- n High interpolation accuracy due to electronic signal control
- n Signal processing in the 15 pin D Sub connector

- n Integrated signal interpolation up to 100x in the connector
- n Wide mounting tolerances
- n Simple mounting of the scale tapes because of double-side adhesive tapes

Technical data

Mechanical data	<p>Mass of measuring head 3g</p> <p>Recommended resolution 0.05 µm; 0.1 µm; 0.2 µm; 0,5 µm; 1.0 µm; 5.0 µm</p> <p>Travel speed</p> <ul style="list-style-type: none"> - without interpolation (maximum) 600 m/min resp. 10 m/s - with 50x interpolation (maximum) 96 m/min resp. 1.6 m/s <p>Measuring length up to 30 m (only for steel scale tapes)</p> <p>Scale tape</p> <ul style="list-style-type: none"> - Material steel or glass - Grating period (GP) 20 µm standard - Reference marks - periodically every 50 mm, starting from the middle of the measuring length - distance coded at 1000 x GP - at the center of the measuring length - others on request <p>Linear expansion coefficient</p> <ul style="list-style-type: none"> - DOUBLEFLEX- scale tape 10.5 x 10⁻⁶ deg⁻¹ - SINGELFLEX- scale tape as function of material of the mounting surface - glass scale 8 x 10⁻⁶ deg⁻¹ <p>Accuracy classes</p> <ul style="list-style-type: none"> - DOUBLEFLEX- scale tape ±1 µm; ±2 µm; ±3 µm; ±5 µm - SINGELFLEX- scale tape ±5 µm; other on request - glass scale ±1 µm
Electrical data	<p>Scanning frequency max. 500 kHz</p> <p>Output interfaces</p> <ul style="list-style-type: none"> - Voltage output 1V_{pp} - Square wave output (RS 422) RS 422 with interpolation up to 100x <p>Supply voltage 5V DC ±10%</p> <p>Power consumption</p> <ul style="list-style-type: none"> - Voltage output 50 mA ±10 mA - Square wave output 150 mA ±10 mA <p>Cable lengths</p> <ul style="list-style-type: none"> - cable connected to the scanning head max. 3 m (standard length 0.3m, 0.5m, 1m, 1.5m, 2m, 3m) - Permissible total cable length max. 100 m with extension cable
Ambient conditions	<p>Operating temperature range 0°C ... 55°C</p> <p>Storage temperature range -20°C ... +70°C</p> <p>Vibration (50Hz ... 2000Hz) ≤200ms⁻²</p> <p>Shock (11ms) ≤400ms⁻²</p> <p>Humidity 93% (no condensing)</p>

Pin assignment

PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	housing
1V _{pp}	-	-	-	U ₀₋	U ₂₋	U ₁₋	-	5V	0V	-	-	U ₀₊	U ₂₊	U ₁₊	-	shield
RS 422	-	-	NAS	Z ₀₋	Z ₂₋	Z ₁₋	-	5V	0V	-	AS	Z ₀₊	Z ₂₊	Z ₁₊	-	shield
cable l & 3.7 mm	-	-	VT	PK	RD	BN	-	BU	WH	-	-	GY	BK	GN	-	

Ordering key for scanning head

LIK 4 1 - L 4 2 - T Z Designation example

Sensor

4 Sensor with one scanning field; SV3- R

Grating period

- 20 µm

Output signals

C	sinusoidal signal 1 V _{pp}
L	square wave signal RS 422 with 5x interpolator
M	square wave signal RS 422 with 10x interpolator
I	square wave signal RS 422 with 25x interpolator
N	square wave signal RS 422 with 50x interpolator
P	square wave signal RS 422 with 100x interpolator

Frequency/ Edge separation

X	distinguishing mark for clock frequency of counter on request (only valid for versions with interpolation)
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Connectors on cable

Z 15pin D Sub; electronics in the connector

Cable fixed to the scanning head (∅ 3.7 mm)

R	0.3 m
S	0.5 m
T	1 m
P	1,5 m
V	2 m
W	3 m
U ¹	other length on request (length max. 3 m)

Version²

-	standard
3 ¹	non- magnetic scanning head

Installation conditions

2 thread M2.5 in the scanning head

1 ... supplied with surcharge

2 ... vacuum version up to 10⁻⁹ mbar possible

Ordering key for scale tapes

MT 1 0 - 1 1 B P 00770 Designation example

Material

1	steel
2	glass *

Design type

0 ³	DOUBLEFLEX, standard	(ML+18mm)
1	SINGLEFLEX, standard	(ML+14mm)
5 ¹	reduced scale tape length (steel)	(ML+11mm)
6	reduced scale length (glass)	(ML+6mm)

Accuracy class

1	± 1 µm
2	± 2 µm
3	± 3 µm
4	± 5 µm

Fixing

0 ¹	without bonding pad
1 ²	bonding pad at start of measuring length
3	without adhesive tape
5 ^{**}	bonding pad at end of measuring length ²

measuring length (ML) [mm]

Grating period GP

P 20 µm

Position of reference mark

O	without reference mark
B	in the center of measuring length
F	distance coded with 1000 * GP ⁴
N	at 50 mm spacings, starting at center of measuring length
E ^{**}	customized version ⁵

1 ... only for SINGLEFLEX scale tape

2 ... only for DOUBLEFLEX scale tape

3 ... min. ML DOUBLEFLEX scale tape = 100 mm
max. ML DOUBLEFLEX scale tape = 7300 mm

4 ... max. ML = 8000 mm

5 ... indication in XXXXX mm after beginning of ML

* ... max. scale length = 100 mm

**... supplied for a surcharge



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