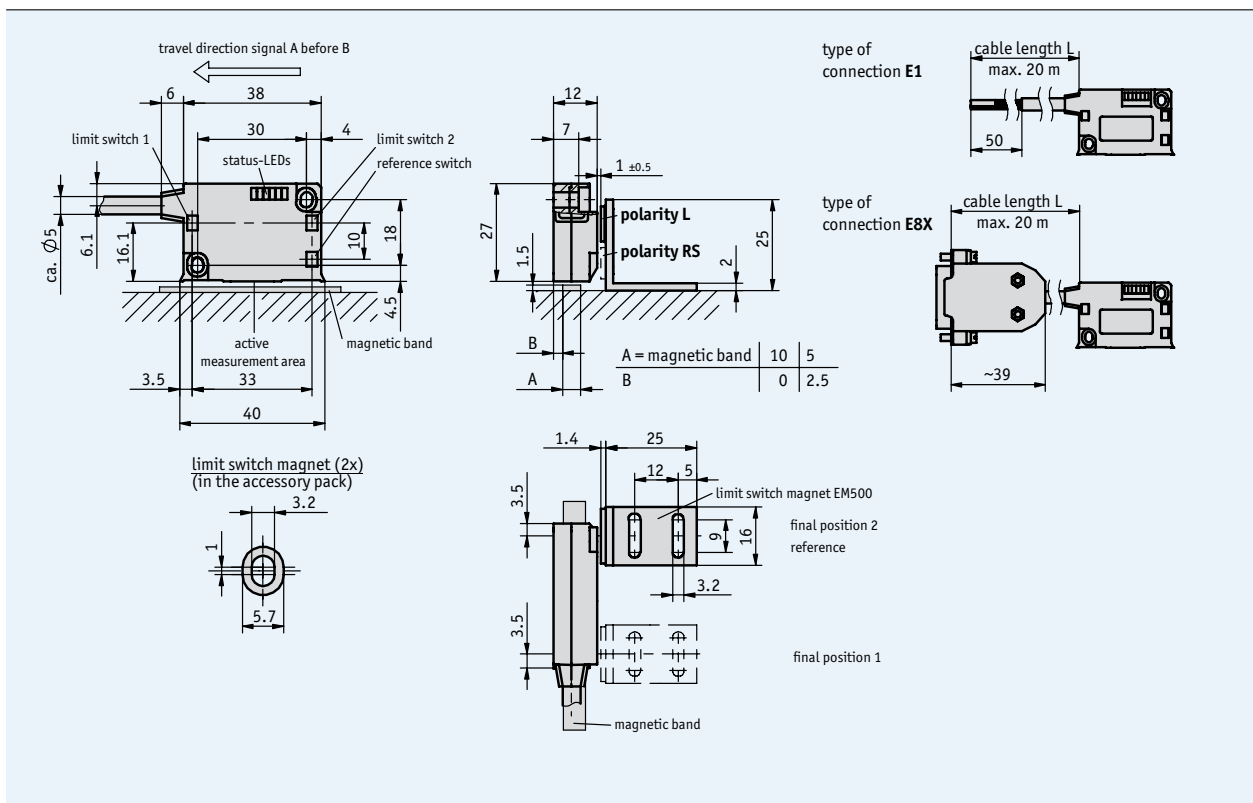


**Profile**

- Max. resolution up to 1  $\mu\text{m}$
- Repeat accuracy  $\pm 0.01 \text{ mm}$
- Status LED display
- Index signal periodical or reference signal with lateral scanning fixed
- Laterally allocated limit switches
- robust metal housing



## Mechanical data

Feature	Technical data	Additional information
Scale embodiment	MB500, EM500	
System accuracy	$\pm(0.025 + 0.01 \times L)$ mm, L in m	
Repeat accuracy	max. $\pm 0.01$ mm	
Sensor/band reading distance	0.1 ... 2 mm	
Sensor/limit switch magnet reading distance	1.0 mm $\pm 0.5$ mm	
Travel speed	depends on resolution and pulse interval	see table
Housing	zinc die casting	
Sensor cable	PUR	drag chain-compatible
Operating temperature	-10 ... +70 °C	
Storage temperature	-30 ... +80 °C	
Humidity	100 % rh	condensation permitted
Protection category	IP67	
Max. measuring length	infinite	

### Travel speed

Resolution (mm)		Travel speed $V_{\text{max}}$ (m/s)								
		0.001	0.005	0.010	0.025	0.050	0.100	0.200	0.500	1.000
Pulse interval ( $\mu\text{s}$ )	0.20	4.00	16.00	25.00	40.00	60.00	100.00	160.00	250.00	400.00
	0.50	1.60	6.40	10.00	16.00	24.00	40.00	64.00	100.00	160.00
	1.00	0.80	3.20	5.00	8.00	12.00	20.00	32.00	50.00	80.00
	2.50	0.32	1.28	2.00	3.20	4.80	8.00	12.80	20.00	32.00
	4.00	0.20	0.80	1.25	2.00	3.00	5.00	8.00	12.50	20.00
Counting frequency (kHz)	1250.00	4.00	16.00	25.00	40.00	60.00	100.00	160.00	250.00	400.00
	500.00	1.60	6.40	10.00	16.00	24.00	40.00	64.00	100.00	160.00
	250.00	0.80	3.20	5.00	8.00	12.00	20.00	32.00	50.00	80.00
	100.00	0.32	1.28	2.00	3.20	4.80	8.00	12.80	20.00	32.00
	62.50	0.20	0.80	1.25	2.00	3.00	5.00	8.00	12.50	20.00

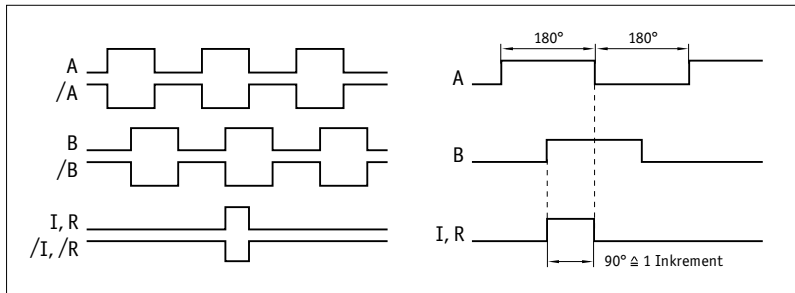
### EM500

Feature	Technical data	Additional information
Material	aluminium	
Operating temperature	-10 ... +70 °C	
Storage temperature	-30 ... +80 °C	

## Electrical data

Feature	Technical data	Additional information
Operating voltage	6.5 V DC ... 30 V DC 4.75 V DC ... 6 V DC	reverse-polarity protection on UB no reverse-polarity protection on UB
Current consumption	<50 mA (PP) off-load <25 mA (LD) off-load	
Type of connection	flying leads D-SUB 9-pin or D-SUB 15-pin	
Output circuit	PP LD	
Output signals	A, /A, B, /B Option: I, /I or R, /R and L1, L2	
Pulse width of reference signal	1 or 4 increments	
Resolution	0.001, 0.005, 0.01, 0.025, 0.05, 0.1 mm	
Interference protection class	3	IEC-61000-6-2
Real-time requirement	real-time signal processing	
Signal level high	>UB - 2.5 V >2.5 V	with PP with LD
Signal level low	<0.8 V	

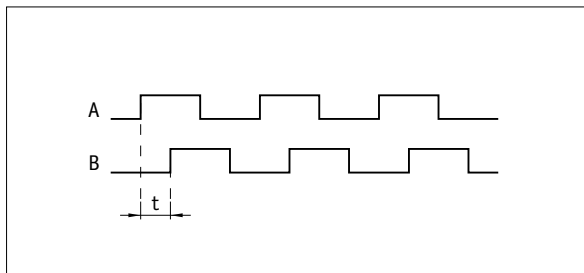
### Signal forms



**!** The logical condition of signals A and B is not defined in reference to the index signal I or the reference signal R. It can deviate from the signal form.

**!** Reference or index signal with 4 increments (360°) signal length is only valid from the 5th counting step onwards. A corresponding delay should be taken into consideration after switching on the operating voltage.

### Pulse interval



**Example: Pulse interval t = 1 μs**

(i.e., the downstream unit must be able to process 250 kHz)

$$\text{Formula for counting frequency} = \frac{1}{1 \mu\text{s} \times 4} = 250 \text{ kHz}$$

### Pin assignment

#### Inverted with index signal or final position

signal	E1	E8X
A	red	1
B	orange	2
I, R, L1	blue	3
+UB	brown	4
GND	black	5
/A	yellow	6
/B	green	7
/I, /R, L2	violet	8
N.C.		9

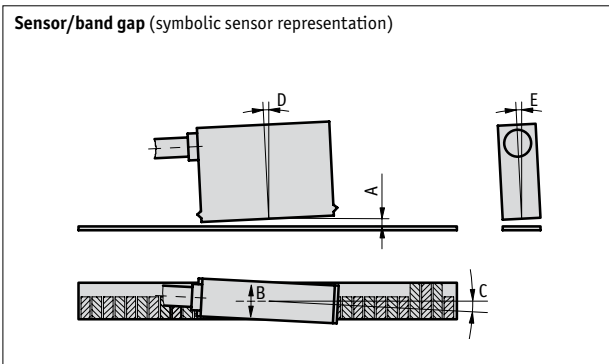
#### Inverted with index signal and final position

signal	E1	E8X
L1	grey	1
L2	white	2
/I, /R	violet	3
I, R	blue	4
/B	green	5
B	orange	6
A	red	7
/A	yellow	8
GND	black	10
+UB	brown	12
screen	screen	14
N.C.		9, 11, 13, 15

### Mounting instruction

On systems with reference points on the magnetic band, please ensure the correct alignment of the sensor and band (see diagram).

A, Sensor/band reading distance	0.1 ... 2.0 mm
B, Lateral offset	max. ±2 mm
C, Misalignment	<±3°
D, Longitudinal tilt	<±1°
E, Lateral tilt	<±3°



## Order

## ■ Order table MSK5100

Feature	Order data	Specifications	Additional information
Operating voltage	10	6.5 ... 30 V DC	
	11	4,75 ... 6 V DC	
Type of connection	E1	flying leads, 2 m cable	
	E8X	D-SUB without mating connectors	
		cable extensions on request	
Cable length L	...	1 ... 20 m, in steps of 1 m	
		others on request	
Output circuit	PP	push-pull	only operating voltage 10
	LD	line driver	
Reference signal	O	without	
	I	index periodic	
	R	fixed reference	
Final position signal	EM	with	
	EO	without	
Resolution	...	0.001, 0.005, 0.010, 0.025, 0.050, 0.1	
Pulse interval in µs	...	0.2, 0.5, 1, 2.5, 4, 8, 16, 32, 66	

## ■ Order code

MSK5100 -  -  -  -  -  -  -  -  -

## ■ Order table EM500

Feature	Order data	Specifications	Additional information
Polarity MB	L	final position	
	RS	reference	

## ■ Order code

EM500 -

**Scope of delivery:** MSK5100, User information, Allen fastening screws  
M3 x 14 mm ISO 4762, lock washers M3 DIN 7980, strain  
relief for sensor cable, distance gage 0.8 mm

**Scope of delivery:** EM500