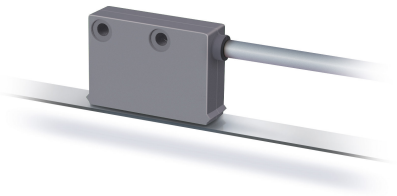
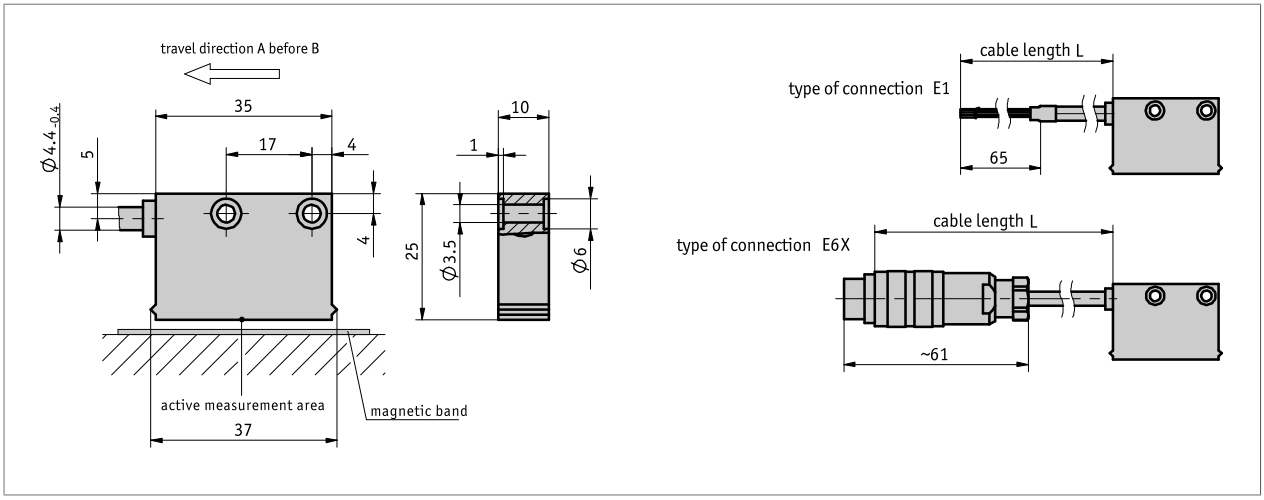
# Compact sensor, incremental, digital interface, reading distance 20 mm

## Profile

- Max. resolution of 0.25 mm
- Repeat accuracy ±2 increments (max. ±0.5 mm)
- Works with magnetic tape MB4000
- Reading distance ≤20 mm





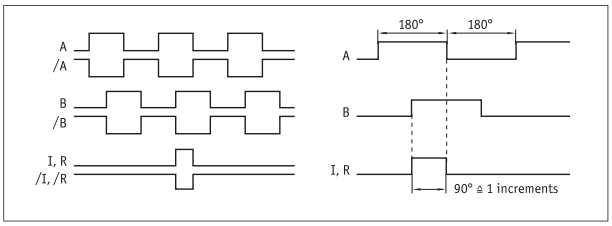

## Mechanical data

| Feature | Technical data | Additional information |
|---|---|---|
| Housing | plastic ABS gray | |
| Sensor/band reading distance | 5 ... 20 mm | |
| Cable sheath | PUR, suitable for drag-chain use | 4-core ø $4.4_{-0.4}$ mm; 6, 8-core ø $5_{-0.4}$ mm |
| Cable bending radius | 5x cable diameter | static |
| | 7.5x cable diameter | dynamic |
| Service life of cable | >5 Million cycles | Under the following test conditions:<br>travel 4.5 m<br>travel speed 3 m/s<br>acceleration 5 m/s$^2$<br>ambient temperature 20 °C ±5 °C. |

## Electrical data

| Feature | Technical data | Additional information |
|---|---|---|
| Operating voltage | 24 V DC ±20 % | reverse polarity protection |
| | 5 V DC ±5 % | no reverse polarity protection |
| Current consumption | <50 mA | PP, unloaded |
| | <25 mA | LD |
| Output circuit | PP, LD (RS422), TTL | |
| Output signals | A, /A, B, /B, I, /I | 90° off-phase |
| Output signal level high | UB - 2.5 V | PP |
| | RS422 specific | LD |
| | >2.4 V | TTL |
| Output signal level low | <0.8 V | PP |
| | RS422 specific | LD |
| | <0.4 V | TTL |
| Latency | 1.5 µs | |
| Pulse width of reference signal | 1 Increment(s) | |
| Real-time requirement | speed-proportional signal output | |
| Type of connection | open cable end | |
| | plug connector | 7/8-pole |

### Signal patterns




*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.*

## System data

| Feature | Technical data | Additional information |
|---|---|---|
| Resolution | 0.25, 0.5, 1, 2 mm | |
| System accuracy | ±2 mm at $T_U$ = 20° C | length-dependent error depends on the mounting situation |
| Repeat accuracy | ±2 Increment(s) | |
| Measuring range | ∞ | |
| Travel speed | ≤15 m/s | |

## Ambient conditions

| Feature | Technical data | Additional information |
|---|---|---|
| Ambient temperature | -10 ... 70 °C | |
| Storage temperature | -30 ... 80 °C | |
| Relative humidity | 100 % | condensation admissible |
| EMC | EN 61000-6-2 | interference resistance / immission |
| | EN 61000-6-4 | emitted interference / emission |
| Protection category | IP67 | EN 60529 |
| Shock resistance | 500 m/s², 11 ms | EN 60068-2-27 |
| Vibration resistance | <100 m/s², 5 ... 150 Hz | EN 60068-2-6 |

## pin assignment

### not inverted

| Signal | E1 | E6X |
|---|---|---|
| GND | black | 1 |
| +UB | brown | 2 |
| A | red | 3 |
| B | orange | 4 |
| nc | | 5 |
| nc | | 6 |
| nc | | 7 |

### inverted

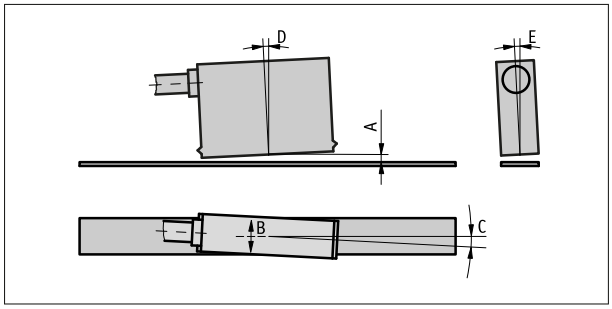
| Signal | E1 | E6X |
|---|---|---|
| A | red | 1 |
| B | orange | 2 |
| nc | | 3 |
| +UB | brown | 4 |
| GND | black | 5 |
| /A | yellow | 6 |
| /B | green | 7 |

### Inverted with reference signal

| Signal | E1 | E6X |
|---|---|---|
| A | red | 1 |
| B | orange | 2 |
| I | blue | 3 |
| +UB | brown | 4 |
| GND | black | 5 |
| /A | yellow | 6 |
| /B | green | 7 |
| /I | violet | 8 |

## Hint for mounting

| | |
|---|---|
| **A**, Sensor/tape reading distance | 5 ... 20 mm |
| **B**, Lateral offset | ±5 mm |
| **C**, Alignment error | ±10° |
| **D**, Longitudinal inclination | ±3° |
| **E**, Lateral inclination | ±3° |



Symbolic representation

## Order

### Ordering information

One or more system components are required:
Magnetic tape MB4000 www.siko-global.com

### Ordering table

| Feature | Ordering data | | Spezifikation | Additional information |
|---|---|---|---|---|
| Operating voltage | A | 4 | 10 ... 30 V DC | |
| | | 5 | 5 V DC | A voltage drop is to be expected with increasing cable length. This must be taken into account in the electrical design. |
| Type of connection | B | E1 | open cable ends | |
| | | E6X | bullet connector without mating connector | |
| | | | cable extension on request | |
| Cable length | C | ... | 01.0 ... 20 m, in intervals of 1 m | |
| | | | others on request | |
| Output circuit | D | PP | push-pull | only with operating voltage 4 |
| | | LD | Line Driver | only with I output signal |
| | | TTL | TTL | only with NI output signal |
| output signal | E | NI | not inverted | |
| | | I | inverted | not with TTL output circuit |

## Compact sensor, incremental, digital interface, reading distance 20 mm

| Feature | Ordering data | | Spezifikation | Additional information |
|---|---|---|---|---|
| reference signal | F | 0 | without | |
| | | I | periodic index | only with I output signal |
| Resolution | G | ... | 0.25, 0.5, 1, 2 in mm | |

### Order key

MSK4000 - [ ] - A - [ ] - [ ] - [ ] - [ ] - [ ] - [ ] - [ ]

A B C D E F G

**Scope of delivery:**
MSK4000, Fastening set, Installation Instructions