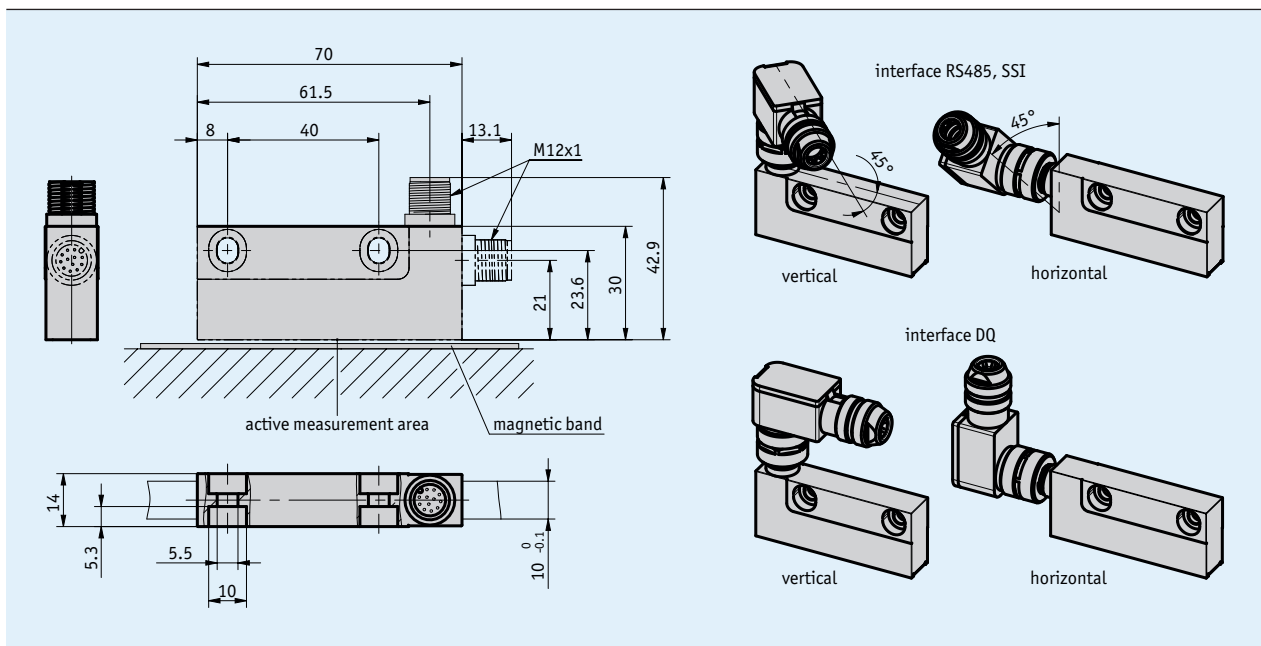
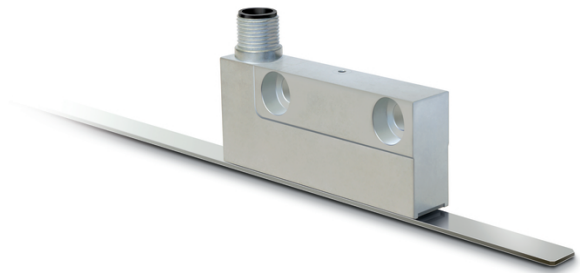


### Profile

- Max. resolution 1  $\mu\text{m}$
- Repeat accuracy 2  $\mu\text{m}$
- System accuracy up to 10  $\mu\text{m}$
- SSI, RS485, DRIVE-CLiQ output circuits
- Additional analog real-time signal output Sin/Cos 1  $V_{SS}$  for highly dynamic control (SSI/RS485)
- Signal period 1 mm
- Certified according to SIL2 (DRIVE-CLiQ) for safety applications



### Mechanical data

| Feature                      | Technical data | Additional information                  |
|------------------------------|----------------|---|
| Housing                      | zinc die-cast  |   |
| Sensor/band reading distance | $\leq 0.3$ mm  | (without masking tape on magnetic tape) |

### Electrical data

| Feature                         | Technical data                   | Additional information   |
|---------------------------------|----------------------------------|--|
| Operating voltage               | 4.5 ... 30 V DC                  | reverse polarity protected (RS485, SSI)                                |
|                                 | 10 ... 30 V DC                   | reverse polarity protected, SELV/PELV (DRIVE-CLiQ)                     |
| Power input                     | $\leq 1.2$ W                     | RS485, SSI   |
|                                 | $\leq 1.6$ W                     | DRIVE-CLiQ   |
| Temperature sensor input        | external sensor, type KTY84      | DRIVE-CLiQ (12-pole plug connector)                                    |
| SSI clock speed input           | $\leq 750$ kHz                   | caution: max. clock rate depends on cable length                       |
| Output voltage                  | 1 $V_{pp}$                       | RS485, SSI   |
| Period length of sin/cos output | 1000 $\mu\text{m}$               | RS485, SSI   |
| Interface                       | SSI, RS485, DRIVE-CLiQ           |  |
| Real-time requirement           | speed-proportional signal output | sin/cos output (RS485, SSI)  |
| Cycle time                      | $< 25$ $\mu\text{s}$             | RS485, SSI   |
|                                 | $< 30$ $\mu\text{s}$             | DRIVE-CLiQ   |
| Type of connection              | M12 plug connector (A-coded)     | 12-pole, 1x pin (RS485, SSI, DRIVE-CLiQ with temperature sensor input) |
|                                 | M12 plug connector (A-coded)     | 8-pole, 1x pin (DRIVE-CLiQ)  |

### System data

| Feature           | Technical data                 | Additional information  |
|-------------------|--------------------------------|---|
| Pole length       | 1 mm                           |   |
| Resolution        | 1 $\mu\text{m}$                |   |
| System accuracy   | $\pm 10 \mu\text{m}$           | at $T_U = 20 \text{ }^\circ\text{C}$  |
| Repeat accuracy   | $\leq 2 \mu\text{m}$           | unidirectional  |
| Measuring range   | $\leq 4000 \text{ mm}$         |   |
| Travel speed      | $\leq 2 \text{ m/s}$           | static operation (RS485, SSI)   |
|                   | $\leq 10 \text{ m/s}$          | dynamic operation (sin/cos) (RS485, SSI)  |
|                   | $\leq 5 \text{ m/s}$           | DRIVE-CLiQ  |
| Functional safety | SIL 2 according to EN 61508    | as well as EN 61800-5-2 category 3, PL d according to EN ISO 13849-1: 2008 (DRIVE-CLiQ) |
| Failure rate      | 413 year(s)                    | at $40 \text{ }^\circ\text{C}$ (MTTF <sub>d</sub> ), DRIVE-CLiQ                         |
|                   | $3.82 \times 10^{-9}/\text{h}$ | at $40 \text{ }^\circ\text{C}$ (PFH), DRIVE-CLiQ  |
| Error detection   | 92.2 %                         | at $40 \text{ }^\circ\text{C}$ (DC <sub>avg</sub> ), DRIVE-CLiQ                         |
| Safe position     | $< 6 \text{ mm}$               | DRIVE-CLiQ  |

### Ambient conditions

| Feature               | Technical data                        | Additional information              |
|-----------------------|---------------------------------------|-------------------------------------|
| Ambient temperature   | $-30 \dots 85 \text{ }^\circ\text{C}$ | RS485, SSI                          |
|                       | $-30 \dots 80 \text{ }^\circ\text{C}$ | DRIVE-CLiQ                          |
| Storage temperature   | $-40 \dots 85 \text{ }^\circ\text{C}$ |                                     |
| Expansion coefficient | $(11 \pm 1) \times 10^{-6}/\text{K}$  |                                     |
| 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, mating connector mounted  |
| Shock resistance      | $500 \text{ m/s}^2$ , 11 ms           | EN 60068-2-27                       |
| Vibration resistance  | $100 \text{ m/s}^2$ , 5 ... 150 Hz    | EN 60068-2-6                        |

### Pin assignment

#### ■ RS485, SSI

| RS485  | SSI    | PIN |
|--------|--------|-----|
| adjust | adjust | 1   |
| D+     | D+     | 2   |
| D-     | D-     | 3   |
| nc     | T-     | 4   |
| +UB    | +UB    | 5   |
| /sin   | /sin   | 6   |
| sin    | sin    | 7   |
| /cos   | /cos   | 8   |
| cos    | cos    | 9   |
| config | config | 10  |
| nc     | T+     | 11  |
| OV     | OV     | 12  |

#### ■ DRIVE-CLiQ with temperature sensor input\*

| Signal                         | Pin |
|--------------------------------|-----|
| +24 V                          | 1   |
| T <sub>sens</sub> <sup>+</sup> | 2   |
| GND                            | 3   |
| TXN                            | 4   |
| TXP                            | 5   |
| NC                             | 6   |
| RXN                            | 7   |
| RXP                            | 8   |
| DÜA                            | 9   |
| T <sub>sens</sub> <sup>-</sup> | 10  |
| nc                             | 11  |
| DÜB                            | 12  |

\* works only with a temperature sensor connected

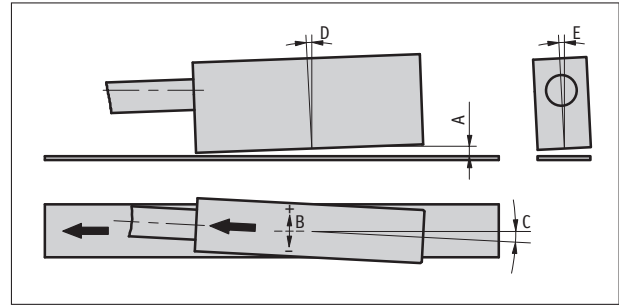
#### ■ DRIVE-CLiQ without temperature sensor input

| Signal | PIN |
|--------|-----|
| +24 V  | 1   |
| DÜA    | 2   |
| RXP    | 3   |
| RXN    | 4   |
| GND    | 5   |
| TXN    | 6   |
| TXP    | 7   |
| DÜB    | 8   |

### Hint for mounting

When mounting sensor and magnetic tape, please be careful to align both system components correctly. The arrow marks on the tape and sensor must point in the same direction when mounting the components.

|   |  |
|---|--|
| <b>A</b> , Sensor/tape reading distance | ≤0.3 mm  |
| <b>B</b> , Lateral offset               | +0.4 mm, -0.2 mm   |
| <b>C</b> , Alignment error              | <±1°   |
| <b>D</b> , Longitudinal tilt            | max. sensor/tape <b>A</b> reading distance must never be exceeded. |
| <b>E</b> , Lateral tilt                 | max. sensor/tape <b>A</b> reading distance must never be exceeded. |



symbolic sensor representation

### Order

#### Ordering information

One or more system components are required:

Magnetic band MBA111  
Mounting kit ZB3053

[www.siko-global.com](http://www.siko-global.com)  
[www.siko-global.com](http://www.siko-global.com)

#### Ordering table

| Feature            | Ordering data | Specification                   | Additional information   |
|--------------------|---------------|---------------------------------|--|
| Interface          | SSI           | RS422                           |  |
|                    | DQ            | DRIVE-CLiQ                      |  |
|                    | RS485         | SIKONETZ3                       |  |
| Temperature sensor | K             | without cable                   |  |
|                    | E             | for external temperature sensor | only with DQ interface   |
| Connector position | H             | horizontal                      |  |
|                    | V             | vertical                        |  |
| Software           | S             | standard                        | with SSI, RS485, DQ<br>without SIL2  |
|                    | SW1           | SIL2-compliant                  | Only with DQ.<br>SIL2-compliance only ensured with ZB3053 mounting kit;<br>it is imperative that the kit is ordered as well! |

#### Order key

MSA111C -  -  -  -   
                  A      B      C      D

**Scope of delivery:** MSA111C, Mounting instructions, distance gage

#### Accessories:

- Cable extension KV12S2, SSI, RS485, DQ with temperature sensor input
- Mating Connector Overview
- Mating connector, DQ, 8-pole, socket
- Mating connector, DQ, 8-pole, angle socket
- Mating connector, SSI, RS485, DQ with temperature sensor input, 12-pole, socket
- Mating connector, SSI, RS485, DQ with temperature sensor input, 12-pole, angular socket
- Installation aid ZB3055

[www.siko-global.com](http://www.siko-global.com)  
[www.siko-global.com](http://www.siko-global.com)  
Order key 83525  
Order key 87599  
Order key 85277  
Order key 85278  
[www.siko-global.com](http://www.siko-global.com)