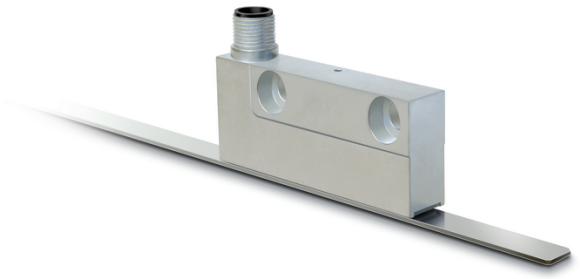
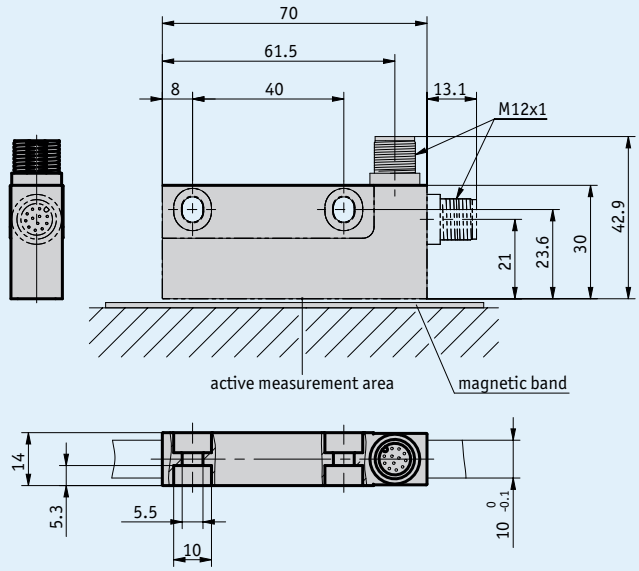
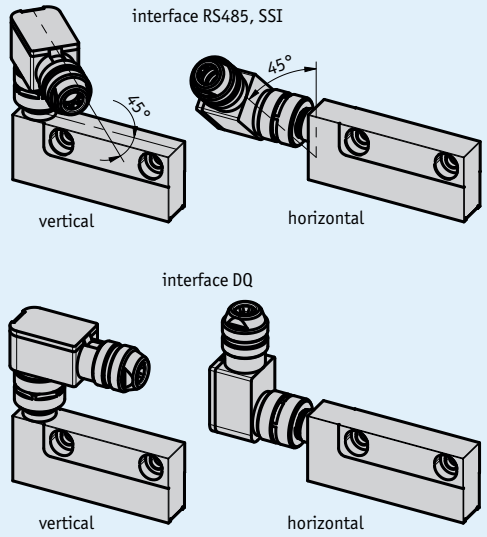
Profile

- Max. resolution 1 µm
- Repeat accuracy 2 µm
- System accuracy up to 10 µm
- 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
- Industry 4.0 ready







Mechanical data

Feature	Technical data	Additional information
Housing	zinc die-cast	
Sensor/band reading distance	≤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	≤1.2 W	RS485, SSI
	≤1.6 W	DRIVE-CLiQ
Temperature sensor input	external sensor, type KTY84	DRIVE-CLiQ (12-pole plug connector)
SSI clock speed input	≤750 kHz	caution: max. clock rate depends on cable length
Output voltage	1 V_{PP}	RS485, SSI
Period length of sin/cos output	1000 µm	RS485, SSI
Interface	SSI, RS485, DRIVE-CLiQ	
Real-time requirement	speed-proportional signal output	sin/cos output (RS485, SSI)
Cycle time	<25 µs	RS485, SSI
	<30 µs	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 µm	
System accuracy	±10 µm	at T_U = 20 °C
Repeat accuracy	≤2 µm	unidirectional
Measuring range	≤4000 mm	
Travel speed	≤2 m/s	static operation (RS485, SSI)
	≤10 m/s	dynamic operation (sin/cos) (RS485, SSI)
	≤5 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 °C ($MTTF_d$), DRIVE-CLiQ
	3.82 x 10^{-9}/h	at 40 °C (PFH), DRIVE-CLiQ
Error detection	92.2 %	at 40 °C (DC_{avg}), DRIVE-CLiQ
Safe position	<6 mm	DRIVE-CLiQ

Ambient conditions

Feature	Technical data	Additional information
Ambient temperature	-30 ... 85 °C	RS485, SSI
	-30 ... 80 °C	DRIVE-CLiQ
Storage temperature	-40 ... 85 °C	
Expansion coefficient	(11 ±1) x 10^{-6}/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 m/s², 11 ms	EN 60068-2-27
Vibration resistance	100 m/s², 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
0V	0V	12

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

DRIVE-CLiQ with temperature sensor input*

Signal	Pin
+24 V	1
T_{sens}+	2
GND	3
TXN	4
TXP	5
NC	6
RXN	7
RXP	8
DÜA	9
T_{sens}-	10
nc	11
DÜB	12

* works only with a temperature sensor connected

Industry 4.0

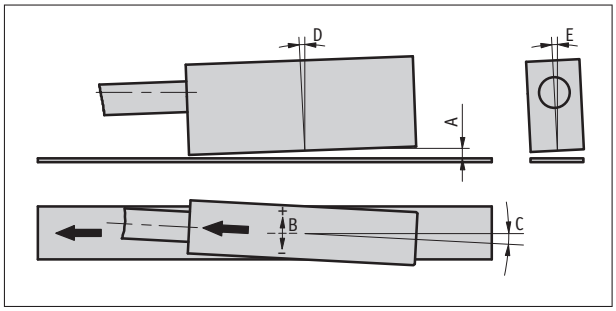
In most cases, data exchange with the magnetic encoders is limited to the exchange of process data. In addition to the process data, intelligent drives provide additional information that can be evaluated for condition monitoring up to predictive maintenance:

Process Data	Smart Value	Smart Function
Actual position	Temperature	Plausibility monitoring

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.

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



symbolic sensor representation

Order

Ordering information

One or more system components are required:

Magnetic band MBA111 www.siko-global.com
Mounting kit ZB3053 www.siko-global.com

Ordering table

Feature	Ordering data		Specification	Additional information
Interface	SSI	A	RS422	
	DQ		DRIVE-CLiQ	
	RS485		SIKONETZ3	
Temperature sensor	K	B	without cable	
	E		for external temperature sensor	only with DQ interface
Connector position	H	C	horizontal	
	V		vertical	
Software	S	D	standard	with SSI, RS485, DQ without SIL2
	SW1		SIL2-compliant	Only with DQ. SIL2-compliance only ensured with ZB3053 mounting kit; 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	*www.siko-global.com*
Mating Connector Overview	*www.siko-global.com*
Mating connector, DQ, 8-pole, socket	*Order key 83525*
Mating connector, DQ, 8-pole, angle socket	*Order key 87599*
Mating connector, SSI, RS485, DQ with temperature sensor input, 12-pole, socket	*Order key 85277*
Mating connector, SSI, RS485, DQ with temperature sensor input, 12-pole, angular socket	*Order key 85278*
Installation tool ZB3055	*www.siko-global.com*