

## Fields of Application

There are numerous application possibilities for positioning and speed measurement, such as in the textile industry, propulsion

technology, storage and conveyor, packaging machines, printing presses, glass industry, and elevators

## Detailed technical data

### Performance

<b>Pulses per revolution</b>	10 ... 2,500
<b>Measurement step</b>	90° electric / pulses per revolution
<b>Measurement step deviation</b>	± 18° / pulses per revolution
<b>Error limits</b>	± 54° / pulses per revolution
<b>Duty cycle</b>	≤ 0.5 ± 5%
<b>Initialization time</b>	< 3 ms

### Mechanical data

<b>Mechanical design</b>	Solid shaft, face mount flange Blind hollow shaft
<b>Shaft diameter</b>	
Solid shaft, face mount flange	6 mm x 12 mm 1/4" x 15.5 mm
Blind hollow shaft	8 mm (shaft diameter 1/4", 6 mm, 5 mm via collet possible – (see Accessories))
<b>Mass</b>	150 g (with connecting cable)
<b>Shaft material</b>	Stainless steel
<b>Flange material</b>	Aluminum
<b>Housing material</b>	Aluminum
<b>Material, cable</b>	PVC
<b>Start up torque</b>	0.5 Ncm (+20 °C)
<b>Operating torque</b>	0.4 Ncm (+20 °C)
<b>Permissible shaft movement, axial static/ dynamic</b>	
Blind hollow shaft	± 0.5 mm, ± 0.2 mm
<b>Permissible shaft movement, radial static/ dynamic</b>	
Blind hollow shaft	± 0.3 mm, ± 0.1 mm
<b>Permissible shaft load, radial/axial <sup>1)</sup></b>	
Solid shaft, face mount flange	40 N (radial) 20 N (axial)
<b>Operating speed</b>	6,000/min <sup>2)</sup> 6,000/min <sup>3)</sup>
<b>Maximum operating speed</b>	8,000 rpm <sup>4)</sup>
<b>Rotor moment of inertia</b>	
Solid shaft, face mount flange	0.6 gcm <sup>2</sup>
Blind hollow shaft	0.8 gcm <sup>2</sup>
<b>Bearing lifetime</b>	2 x 10 <sup>9</sup> revolutions
<b>Max. angular acceleration</b>	≤ 500,000 rad/s <sup>2</sup>

<sup>1)</sup> Higher values possible by limiting the overall service life.

<sup>2)</sup> Solid shaft: Self-warming 3.3 K per 1,000 rpm.

<sup>3)</sup> Hollow shaft: Self-warming 4.7 K per 1,000 rpm.

<sup>4)</sup> No continuous operation. Signal quality is degraded.

Electrical data

<b>Electrical interface</b>	4.5 V ... 5.5 V, TTL/RS422 7 V ... 30 V, TTL/RS422 7 V ... 30 V, HTL Push Pull 7 V... 27 V, HTL Push Pull, 3 channel 4.5 V ... 5.5 V, Open Collector NPN, 3 channel 4.5 V ... 30 V, Open Collector NPN, 3 channel
<b>Connection type</b>	Cable, 5 or 8-wire, universal, 0.5 m <sup>2)</sup> Cable, 5 or 8-wire, universal, 1.5 m <sup>2)</sup> Cable, 5 or 8-wire, universal, 3 m <sup>2)</sup> Cable, 5 or 8-wire, universal, 5 m <sup>2)</sup> Cable, 5 or 8-wire, universal, 10 m <sup>2)</sup> Cable, 8-wire with male connector M12, universal, 0.5 m Cable, 8-wire with male connector M23, universal, 0.5 m <sup>1)</sup>
<b>Operating current without load</b>	
4.5 V...5.5 V, TTL/RS422	≤ 50 mA
4.5 V ... 5.5 V, Open Collector NPN, 3 channel	≤ 50 mA
<b>Max. power consumption without load</b>	
7 V ... 30 V, TTL/RS422	< 0.5 W
7 V ... 30 V, HTL Push Pull	< 0.5 W
7 V... 27 V, HTL Push Pull, 3 channel	< 0.5 W
4.5 V ... 30 V, Open Collector NPN, 3 channel	< 0.5 W
<b>Max. load current</b>	
Open Collector	≤ 30 mA
TTL/HTL	≤ 30 mA
<b>Maximum output frequency</b>	300 kHz
<b>Reference signal, number</b>	1
<b>Reference signal, position</b>	90 degrees electric, logically gated with A and B
<b>Reverse polarity protection</b>	
4.5 V ... 5.5 V, TTL/RS422	–
7 V ... 30 V, TTL/RS422	✓
7 V ... 30 V, HTL Push Pull	✓
7 V... 27 V, HTL Push Pull, 3 channel	✓
4.5 V ... 5.5 V, Open Collector NPN, 3 channel	✓
4.5 V ... 30 V, Open Collector NPN, 3 channel	✓
<b>Short-circuit protection of outputs <sup>3)</sup></b>	
4.5 V ... 5.5 V, TTL/RS422	✓
7 V ... 30 V, TTL/RS422	✓
7 V ... 30 V, HTL Push Pull	✓
7 V... 27 V, HTL Push Pull, 3 channel	–
4.5 V ... 5.5 V, Open Collector NPN, 3 channel	✓
4.5 V ... 30 V, Open Collector NPN, 3 channel	✓
<b>MTTFd: mean time to dangerous failure</b>	600 years (EN ISO 13849-1) <sup>4)</sup>

<sup>1)</sup> M23 male connector for central mounting

<sup>2)</sup> Number of wires depending on electrical interface: Interface A, C, E: 8-wire; Interface G, P, R: 5-wire.

<sup>3)</sup> Short-circuit protection is only guaranteed when Us and GND are connected correctly.

<sup>4)</sup> This product is a standard product and does not constitute a safety component as defined in the Machinery Directive. Calculation based on nominal load of devices, average ambient temperature 40 °C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532".

Ambient data

<b>EMC</b>	According to EN 61000-6-2 and EN 61000-6-3 (class A)
<b>Enclosure rating</b>	IP 65
<b>Permissible relative humidity</b>	90% (condensation of optical surfaces not permitted)
<b>Operating temperature range</b>	
4.5 V ... 5.5 V, TTL/RS422	-20 °C ... +85 °C (-35 °C ... +95 °C upon request)
7 V ... 30 V, TTL/RS422	-20 °C ... +85 °C (-35 °C ... +95 °C upon request)
7 V ... 30 V, HTL Push Pull	-20 °C ... +85 °C (-35 °C ... +95 °C upon request)
7 V... 27 V, HTL Push Pull, 3 channel	-20 °C ...+70 °C
4.5 V ... 5.5 V, Open Collector NPN, 3 channel	-20 °C ... +85 °C (-35 °C ... +95 °C upon request)
4.5 V ... 30 V, Open Collector NPN, 3 channel	-20 °C ... +85 °C (-35 °C ... +95 °C upon request)
<b>Storage temperature range</b>	-40 °C ... +100 °C, without packaging
<b>Resistance to shocks</b>	100 g/ 6 ms (EN 60068-2-27)
<b>Resistance to vibrations</b>	20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

Type code

Solid shaft

**Mechanical design**

- 3 Face mount flange, solid shaft, Ø 6 mm, length 12 mm
- 8 Face mount flange, solid shaft, Ø 1/4" mm, length 15.5 mm

**Electrical interface**

- A 4.5 ... 5.5 V, TTL/RS-422, 6 channel
- C 7 ... 30 V, TTL/RS-422, 6 channel
- E 7 ... 30 V, HTL Push Pull, 6 channel
- G 7 ... 27 V, HTL Push Pull, 3 channel
- P 4.5 ... 5.5 V, Open Collector NPN, 3 channel
- R 4.5 ... 30 V, Open Collector NPN, 3 channel

**Connection type**

- J Cable, 5 or 8-wire, universal, 0.5 m <sup>1)</sup>
- K Cable, 5 or 8-wire, universal, 1.5 m <sup>1)</sup>
- L Cable, 5 or 8-wire, universal, 3 m <sup>1)</sup>
- M Cable, 5 or 8-wire, universal, 5 m <sup>1)</sup>
- N Cable, 5 or 8-wire, universal, 10 m <sup>1)</sup>
- P Cable, 8-wire universal, 0.5 m, with male connector M12, 8-pin
- Q Cable, 8-wire universal, 0.5 m, with male connector M23, 12-pin

**Flange design**

- O Face mount flange, standard hole pattern
- A Face mount flange, hole pattern A (only with shaft S3)

**Resolution**

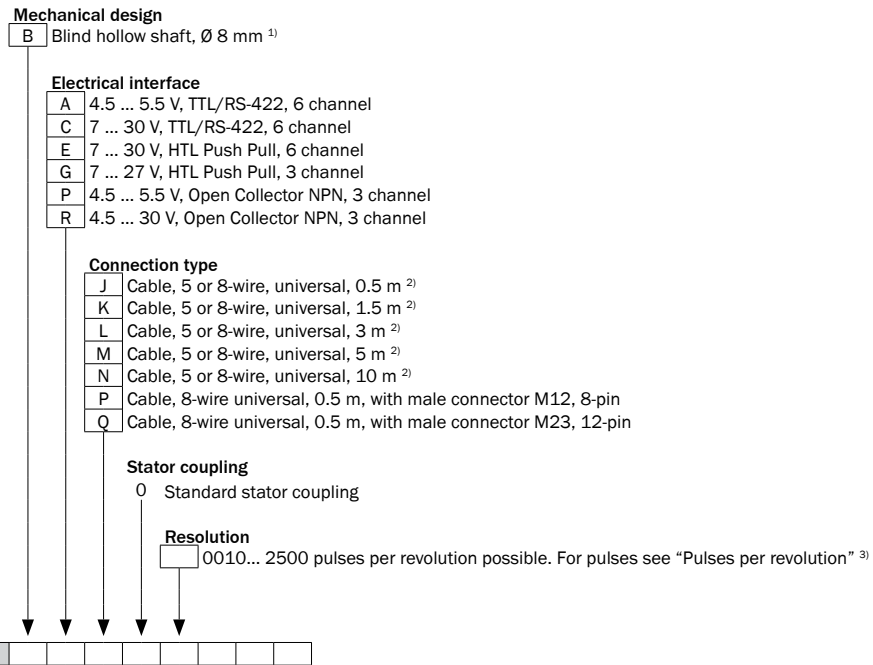
0010... 2500 pulses per revolution possible. For pulses see "Pulses per revolution" <sup>2)</sup>



<sup>1)</sup> Number of wires depending on electrical interface: Interface A, C, E: 8-wire; Interface G, P, R: 5-wire.

<sup>2)</sup> Other pulse on request.

## Hollow shaft



<sup>1)</sup> Shaft diameter 1/4", 6 mm, 5 mm via collet possible (see Accessories).

<sup>2)</sup> Number of wires depending on electrical interface: Interface A, C, E: 8-wire; Interface G, P, R: 5-wire.

<sup>3)</sup> Other pulse on request.

## Pulses per revolution

	E
	0010
	0020
	0050
	0100
	0120
	0125
	0200
	0250
	0256
	0300
	0360
	0400
	0500
	0512
	0600
	1,000
	1,024
	1,200
	2,000
	2,048
	2,500

Ordering information

Solid shaft, face mount flange

- **Shaft diameter:** 6 mm

Electrical interface	Voltage range	Connection type	Range of pulses per revolution	Type	Part no.
TTL/RS422	4.5 V ... 5.5 V	Cable, 8-wire universal, 0.5 m	100	DBS36E-S3AJ00100	1061237
			360	DBS36E-S3AJ00360	1061238
			400	DBS36E-S3AJ00400	1061239
			500	DBS36E-S3AJ00500	1061240
			1,024	DBS36E-S3AJ01024	1060867
		Cable, 8-wire, universal, 1.5 m	100	DBS36E-S3AK00100	1060535
			360	DBS36E-S3AK00360	1060536
			400	DBS36E-S3AK00400	1060537
			500	DBS36E-S3AK00500	1060538
			1,000	DBS36E-S3AK01000	1060539
			1,024	DBS36E-S3AK01024	1060144
			2,048	DBS36E-S3AK02048	1058602
	2,500	DBS36E-S3AK02500	1060268		
	7 V ... 30 V	Cable, 8-wire universal, 0.5 m	500	DBS36E-S3CJ00500	1066387
			100	DBS36E-S3CK00100	1063772
		Cable, 8-wire, universal, 1.5 m	500	DBS36E-S3CK00500	1062944
			1,000	DBS36E-S3CK01000	1064515
			1,024	DBS36E-S3CK01024	1067267
2,048			DBS36E-S3CK02048	1059906	
2,500			DBS36E-S3CK02500	1068997	
HTL/push pull	7 V ... 30 V	Cable, 8-wire universal, 0.5 m	100	DBS36E-S3EJ00100	1061242
			360	DBS36E-S3EJ00360	1061243
			400	DBS36E-S3EJ00400	1061244
			500	DBS36E-S3EJ00500	1061245
			1,000	DBS36E-S3EJ01000	1061246
			1,024	DBS36E-S3EJ01024	1061247
		Cable, 8-wire, universal, 1.5 m	100	DBS36E-S3EK00100	1060540
	200		DBS36E-S3EK00200	1062679	
	256		DBS36E-S3EK00256	1065241	
	360		DBS36E-S3EK00360	1060541	
	400		DBS36E-S3EK00400	1060542	
	500		DBS36E-S3EK00500	1060543	
	1,000		DBS36E-S3EK01000	1060544	
	1,024		DBS36E-S3EK01024	1060545	
	2,048		DBS36E-S3EK02048	1059907	
	2,500		DBS36E-S3EK02500	1061133	
	Cable, 8-wire with male connector M12, universal, 0.5 m		2,048	DBS36E-S3EP02048	1068156

Electrical interface	Voltage range	Connection type	Range of pulses per revolution	Type	Part no.
HTL/push pull	7 V ... 27 V	Cable, 8-wire, universal, 1.5 m	100	DBS36E-S3GK00100	1077487
			360	DBS36E-S3GK00360	1077488
			500	DBS36E-S3GK00500	1077490
			600	DBS36E-S3GK00600	1077491
			1,000	DBS36E-S3GK01000	1077492
			1,024	DBS36E-S3GK01024	1077493
			2,000	DBS36E-S3GK02000	1077494
			2,048	DBS36E-S3GK02048	1077496
			2,500	DBS36E-S3GK02500	1077497
Open Collector	4,5 V ... 30 V	Cable, 8-wire, universal, 1.5 m	100	DBS36E-S3RK00100	1077498
			360	DBS36E-S3RK00360	1075928
			500	DBS36E-S3RK00500	1077499
			600	DBS36E-S3RK00600	1075930
			1,000	DBS36E-S3RK01000	1075929
			1,024	DBS36E-S3RK01024	1077500
			2,000	DBS36E-S3RK02000	1077501
			2,048	DBS36E-S3RK02048	1077502
			2,500	DBS36E-S3RK02500	1077503

Blind hollow shaft

- **Shaft diameter:** 8 mm

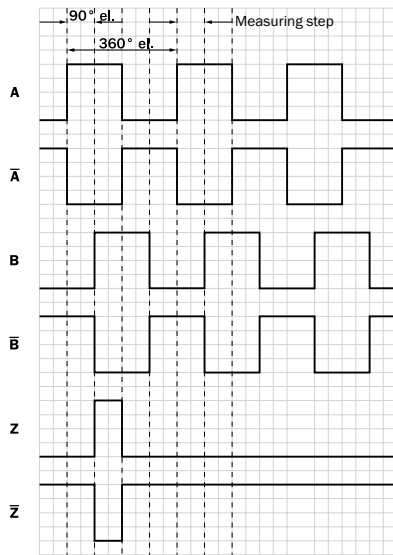
Electrical interface	Voltage range	Connection type	Range of pulses per revolution	Type	Part no.	
TTL/RS422	4.5 V ... 5.5 V	Cable, 8-wire universal, 0.5 m	360	DBS36E-BBAJ00360	1061249	
			400	DBS36E-BBAJ00400	1061250	
			500	DBS36E-BBAJ00500	1061251	
			1,000	DBS36E-BBAJ01000	1061252	
			1,024	DBS36E-BBAJ01024	1060868	
			100	DBS36E-BBAK00100	1060524	
		Cable, 8-wire, universal, 1.5 m	360	DBS36E-BBAK00360	1060525	
			400	DBS36E-BBAK00400	1060526	
			500	DBS36E-BBAK00500	1060527	
			1,000	DBS36E-BBAK01000	1060528	
			1,024	DBS36E-BBAK01024	1060147	
			2,048	DBS36E-BBAK02048	1058603	
	7 V ... 30 V	Cable, 8-wire, universal, 1.5 m	2,500	DBS36E-BBAK02500	1061235	
			100	DBS36E-BBCK00100	1060148	
		Cable, 8-wire with male connector M12, universal, 0.5 m	1,000	DBS36E-BBCK01000	1065589	
			2,048	DBS36E-BBCK02048	1062240	
			100	DBS36E-BBEJ00100	1061253	
			360	DBS36E-BBEJ00360	1061254	
HTL/push pull	7 V ... 30 V	Cable, 8-wire universal, 0.5 m	400	DBS36E-BBEJ00400	1061255	
			500	DBS36E-BBEJ00500	1061256	
			1,000	DBS36E-BBEJ01000	1061257	
			1,024	DBS36E-BBEJ01024	1061258	
			2,000	DBS36E-BBEJ02000	1068715	
			2,500	DBS36E-BBEJ02500	1062490	
			Cable, 8-wire, universal, 1.5 m	100	DBS36E-BBEK00100	1060529
		200		DBS36E-BBEK00200	1064320	
		360		DBS36E-BBEK00360	1060530	
		400		DBS36E-BBEK00400	1060531	
		500		DBS36E-BBEK00500	1060532	
		1,000		DBS36E-BBEK01000	1060533	
		1,024		DBS36E-BBEK01024	1060534	
		7 V ... 27 V	Cable, 8-wire with male connector M12, universal, 0.5 m	2,048	DBS36E-BBEK02048	1059910
	100			DBS36E-BBEP00100	1065770	
	200			DBS36E-BBEP00200	1068935	
	Cable, 8-wire universal, 0.5 m			100	DBS36E-BBGJ00100	1077475
				500	DBS36E-BBGJ00500	1077476
				600	DBS36E-BBGJ00600	1077481
		1,000	DBS36E-BBGJ01000	1077482		
1,024		DBS36E-BBGJ01024	1077388			
2,000		DBS36E-BBGJ02000	1077483			
2,048		DBS36E-BBGJ02048	1077480			
2,500	DBS36E-BBGJ02500	1077477				

Electrical interface	Voltage range	Connection type	Range of pulses per revolution	Type	Part no.	
HTL/push pull	7 V ... 27 V	Cable, 8-wire, universal, 1.5 m	100	DBS36E-BBGK00100	1077478	
			360	DBS36E-BBGK00360	1077504	
			500	DBS36E-BBGK00500	1077479	
			600	DBS36E-BBGK00600	1077505	
			1,000	DBS36E-BBGK01000	1077507	
			1,024	DBS36E-BBGK01024	1077509	
			2,000	DBS36E-BBGK02000	1077510	
			2,048	DBS36E-BBGK02048	1077511	
			2,500	DBS36E-BBGK02500	1077512	
Open Collector	4.5 V ... 5.5 V	Cable, 8-wire, universal, 1.5 m	200	DBS36E-BBPK00200	1065144	
			500	DBS36E-BBPK00500	1064120	
			1,000	DBS36E-BBPK01000	1067836	
			2,048	DBS36E-BBPK02048	1059911	
			2,500	DBS36E-BBPK02500	1065791	
			Cable, 8-wire with male connector M12, universal, 0.5 m	360	DBS36E-BBAP00360	1067379
				500	DBS36E-BBAP00500	1068192
				1,000	DBS36E-BBAP01000	1066259
				1,024	DBS36E-BBAP01024	1062784
				2,500	DBS36E-BBAP02500	1062785
	4,5 V ... 30 V	Cable, 8-wire, universal, 1.5 m	100	DBS36E-BBRK00100	1077513	
			360	DBS36E-BBRK00360	1077514	
			500	DBS36E-BBRK00500	1077515	
			600	DBS36E-BBRK00600	1077516	
			1,000	DBS36E-BBRK01000	1075931	
			1,024	DBS36E-BBRK01024	1075932	
			2,000	DBS36E-BBRK02000	1077517	
			2,048	DBS36E-BBRK02048	1077518	
			2,500	DBS36E-BBRK02500	1077519	



## Interfaces

### Signal outputs for electrical interfaces TTL and HTL



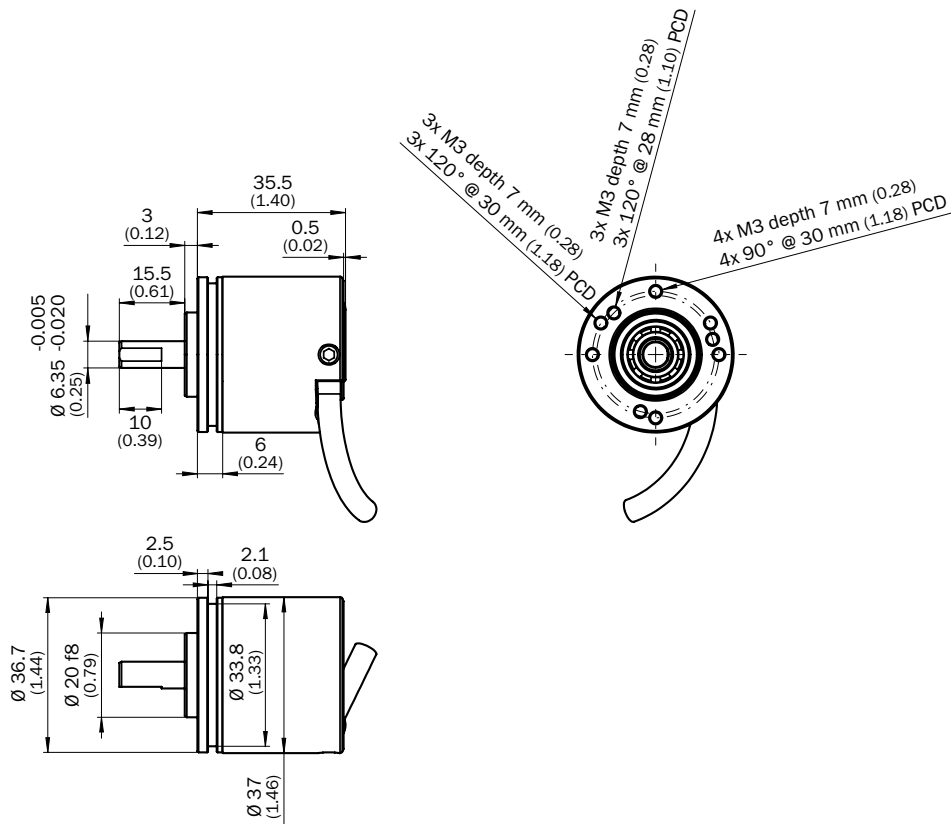
Supply voltage	Output
4.5 V ... 5.5 V	TTL/RS422
7 V ... 30 V	TTL/RS422
7 V ... 30 V	HTL Push Pull
7 V ... 27 V	HTL Push Pull, 3 channel
4.5 V ... 5.5 V	Open Collector NPN, 3 channel
4.5 V ... 30 V	Open Collector NPN, 3 channel

CW with view on the encoder shaft in direction "A", compare dimensional drawing.

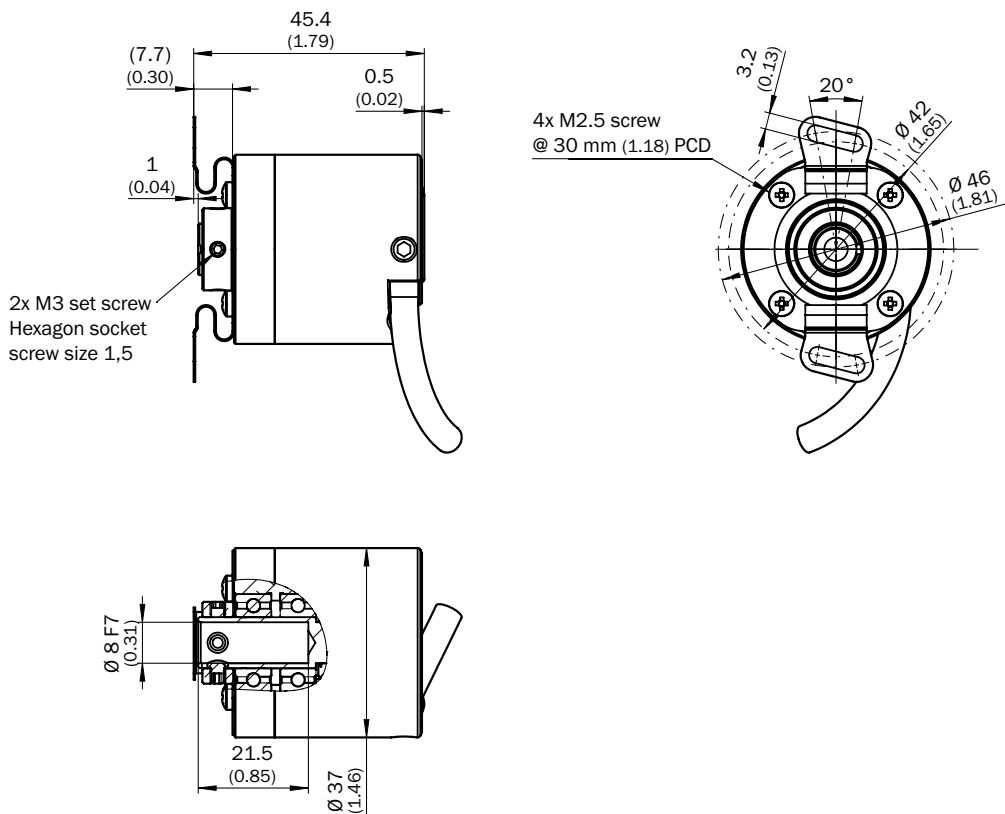
Interfaces G, P, R only for channels A, B, Z.



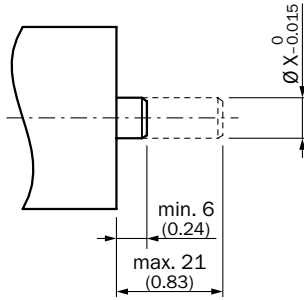
Solid shaft, face mount flange, shaft 1/4" x 15.5 mm, standard hole pattern



Blind hollow shaft, cable outlet



## Proposed fitting

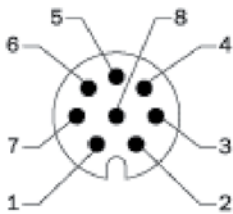


Diameter X	Encoder	Collet
5 mm	DBS36E-BB	2066991
6 mm		2056390
1/4"		upon request
8 mm		not required

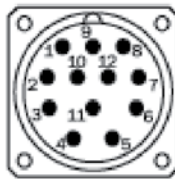
## PIN assignment

### 8-core cable

View of M12 device connector on cable



View of M23 device connector on cable




Wire color	Pin 8-pole for M12	Pin 12-pole for M23	Signal HTL/ OC 3-channel	Signal TTL/ HTL 6-channel	Explanation
brown	1	6	Not connected	A-	Signal wire
white	2	5	A	A	Signal wire
black	3	1	Not connected	B-	Signal wire
pink	4	8	B	B	Signal wire
Yellow	5	4	Not connected	Z-	Signal wire
purple	6	3	Z	Z	Signal wire
blue	7	10	GND	GND	Ground connection of the encoder
Red	8	12	+Us	+Us	Supply voltage
-	-	9	Not connected	Not connected	Not connected
-	-	2	Not connected	Not connected	Not connected
-	-	11	Not connected	Not connected	Not connected
-	-	7	Not connected	Not connected	Not connected
Shield	Shield	Shield	Shield	Shield	Shield (connected with housing on the encoder side)

## Accessories

### Mounting systems


#### Mounting brackets and plates

##### Mounting bracket

Figure	Brief description	Type	Part no.
	Mounting bracket for encoder with centering hub 20 mm including mounting kit for face mount flange	BEF-WF-20	2066393


##### Flanges

##### Flange plate


Figure	Brief description	Type	Part no.
	Flange adapter, adaption of standard face mount flange type 0 with centering hub 20 mm to 33 mm servo flange, aluminum, does not fit to face mount flange type A	BEF-FA-020-033	2066312

##### Other mounting accessories


##### Measuring wheels and measuring wheel systems

Figure	Brief description	Type	Part no.
	Measuring wheel with O-ring (NBR70) for 6 mm solid shaft, circumference 200 mm	BEF-MR006020R	2055222
	Measuring wheel with O-ring (NBR70) for 6 mm solid shaft, circumference 300 mm	BEF-MR006030R	2055634
	O-ring for measuring wheels (circumference 200 mm)	BEF-OR-053-040	2064061
	O-ring for measuring wheels (circumference 300 mm)	BEF-OR-083-050	2064076
	O-ring for measuring wheels (circumference 500 mm)	BEF-OR-145-050	2064074

##### Servo clamps


Figure	Brief description	Type	Part no.
	Servo clamps, small, for servo flange (clamps, eccentric fastener), 3 pcs., without mounting material	BEF-WK-RESOL	2039082

##### Miscellaneous





Figure	Brief description	Type	Part no.
	Two-sided stator coupling, screw hole diameter 42 - 46 mm, slot width 3.2 mm	BEF-DS-DBS36	2066301

##### Shaft adaptation

##### Collets and clamping rings

Figure	Brief description	Type	Part no.
	Collet for blind hollow shaft, shaft diameter 5 mm, external diameter 8 mm	SPZ-005-AD-A	2066991
	Collet for blind hollow shaft, shaft diameter 6 mm, external diameter 8 mm	SPZ-006-DD36-A	2056390




Shaft couplings

Figure	Brief description	Type	Part no.
	Bellows coupling, shaft diameter 6 mm / 6 mm, maximum shaft offset: radial $\pm 0.25$ mm, axial $\pm 0.4$ mm, angular $\pm 4^\circ$ ; max. speed 10,000 rpm, $-30^\circ\text{C}$ to $+120^\circ\text{C}$ , max. torque 80 Ncm; material: stainless steel bellows, aluminum hub	KUP-0606-B	5312981
	Bellows coupling, shaft diameter 6 mm / 10 mm, maximum shaft offset: radial $\pm 0.25$ mm, axial $\pm 0.4$ mm, angular $\pm 4^\circ$ ; max. speed 10,000 rpm, $-30^\circ\text{C}$ to $+120^\circ\text{C}$ , max. torque 80 Ncm; material: stainless steel bellows, aluminum hub	KUP-0610-B	5312982
	Cross-slotted coupling, shaft diameter 6 mm / 6 mm, maximum shaft offset: radial $\pm 0.3$ mm, axial $\pm 0.2$ mm, angle $\pm 3^\circ$ ; max. speed 10,000 rpm, $-10^\circ$ to $+80^\circ\text{C}$ , max. torque 80 Ncm; material: fiber-glass reinforced polyamide, aluminum hub	KUP-0606-S	2056406
	Cross-slotted coupling, shaft diameter 6 mm / 8 mm, maximum shaft offset radial $\pm 0.3$ mm, axial $\pm 0.2$ mm, angle $\pm 3^\circ$ , max. speed 10,000 rpm, torsion spring rigidity 38 Nm/wheel; material: fiber-glass reinforced polyamide, aluminum hub	KUP-0608-S	5314179
	Double-loop coupling, shaft diameter 6 mm/10 mm, maximum shaft offset: radial $\pm 2.5$ mm, axial $\pm 3$ mm, angular $\pm 10^\circ$ ; max. speed 3,000 rpm, $-30^\circ\text{C}$ to $+80^\circ\text{C}$ , max. torque 1.5 Nm; material: polyurethane, galvanized steel flange	KUP-0610-D	5326697
	Spring washer coupling, shaft diameter 6 mm/10 mm, maximum shaft offset: radial $\pm 0.3$ mm, axial $\pm 0.4$ mm, angular $\pm 2.5^\circ$ ; max. speed 12,000 rpm, $-10^\circ\text{C}$ to $+80^\circ\text{C}$ , max. torque 60 Ncm; material: aluminum flange, fiber-glass reinforced polyamide membrane and tempered steel coupling pin	KUP-0610-F	5312985





Connectivity

Plug connectors and cables





Connecting cables with female connector

Figure	Brief description	Length of cable	Type	Part no.
	Head A: female connector, M12, 8-pin, straight Head B: cable Cable: suitable for drag chain, PVC, shielded, $4 \times 2 \times 0.25 \text{ mm}^2$ , $\varnothing 7.0 \text{ mm}$	2 m	DOL-1208-G02MAC1	6032866
		5 m	DOL-1208-G05MAC1	6032867
		10 m	DOL-1208-G10MAC1	6032868
		20 m	DOL-1208-G20MAC1	6032869
	Head A: female connector, M23, 12-pin, straight Head B: cable Cable: incremental, PUR, shielded, $4 \times 2 \times 0.25 \text{ mm}^2 + 2 \times 0.5 \text{ mm}^2 + 1 \times 0.14 \text{ mm}^2$ , $\varnothing 7.8 \text{ mm}$	2 m	DOL-2312-G02MLA3	2030682
		7 m	DOL-2312-G07MLA3	2030685
		10 m	DOL-2312-G10MLA3	2030688
		15 m	DOL-2312-G15MLA3	2030692
		20 m	DOL-2312-G20MLA3	2030695
		25 m	DOL-2312-G25MLA3	2030699
	Head A: female connector, M23, 12-pin, straight Head B: cable Cable: incremental, suitable for drag chain, PUR, shielded, $4 \times 2 \times 0.25 \text{ mm}^2 + 2 \times 0.5 \text{ mm}^2 + 1 \times 0.14 \text{ mm}^2$ , $\varnothing 7.8 \text{ mm}$	1.5 m	DOL-2312-G1M5MA3	2029212
		3 m	DOL-2312-G03MMA3	2029213
		5 m	DOL-2312-G05MMA3	2029214
		10 m	DOL-2312-G10MMA3	2029215
		20 m	DOL-2312-G20MMA3	2029216
		30 m	DOL-2312-G30MMA3	2029217



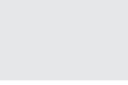
Female connectors (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: female connector, M12, 8-pin, straight, A encoded, shielded, for cable diameter 4 mm ... 8 mm Head B: - Operating temperature: -40 °C ... +85 °C	DOS-1208-GA01	6045001
	Head A: female connector, M23, 12-pin, straight, shielded, for cable diameter 5.5 mm ... 10.5 mm Head B: - Operating temperature: -20 °C ... +130 °C	DOS-2312-G	6027538
	Head A: female connector, M23, 12-pin, angled, shielded, for cable diameter 4.2 mm ... 6.6 mm Head B: - Operating temperature: -20 °C ... +130 °C	DOS-2312-W01	2072580
	Head A: female connector, M23, 12-pin, straight, shielded, for cable diameter 5.5 mm ... 10.5 mm Head B: - Operating temperature: -40 °C ... +125 °C	DOS-2312-G02	2077057

Cables (ready to assemble)

Figure	Brief description	Length of cable	Type	Part no.
	Head A: cable Head B: cable Cable: suitable for drag chain, PUR, halogen-free, shielded, 4 x 2 x 0.15 mm <sup>2</sup> , Ø 5.6 mm	By the meter	LTG-2308-MWENC	6027529
	Head A: cable Head B: cable Cable: PUR, shielded, 4 x 2 x 0.25 mm <sup>2</sup> + 2 x 0.5 mm <sup>2</sup> + 1 x 0.14 mm <sup>2</sup> , Ø 7.5 mm		LTG-2411-MW	6027530
	Head A: cable Head B: cable Cable: suitable for drag chain, PUR, halogen-free, shielded, 4 x 2 x 0.25 mm <sup>2</sup> + 2 x 0.5 mm <sup>2</sup> + 2 x 0.14 mm <sup>2</sup> , Ø 7.8 mm		LTG-2512-MW	6027531
	Head A: cable Head B: cable Cable: suitable for drag chain, PUR, halogen-free, shielded, UV and saltwater resistant, 4 x 2 x 0.25 mm <sup>2</sup> + 2 x 0.5 mm <sup>2</sup> + 2 x 0.14 mm <sup>2</sup> , Ø 7.8 mm		LTG-2612-MW	6028516

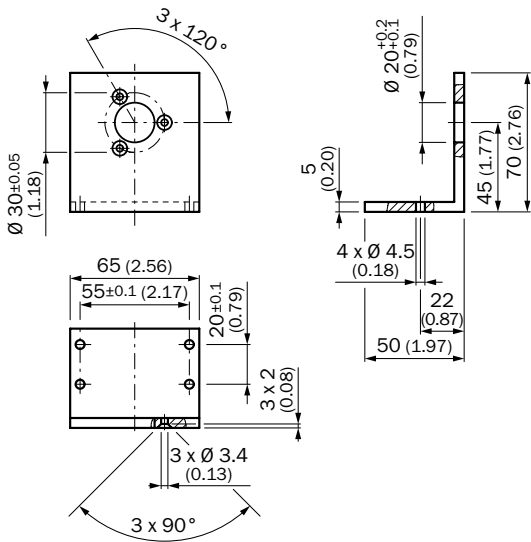
Male connector (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: male connector, M12, 8-pin, straight, A encoded, shielded, for cable diameter 4 mm ... 8 mm Head B: - Operating temperature: -40 °C ... +85 °C	STE-1208-GA01	6044892
	Head A: male connector, M23, 12-pin, straight, shielded, for cable diameter 5.5 mm ... 10.5 mm Head B: - Operating temperature: -20 °C ... +130 °C	STE-2312-G	6027537
	Head A: male connector, M23, 12-pin, straight, for cable diameter 5.5 mm ... 10.5 mm Head B: - Operating temperature: -40 °C ... +125 °C	STE-2312-G01	2077273

Dimensional drawings for accessories (dimensions in mm)

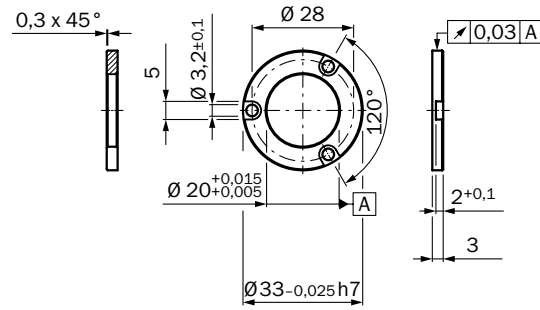
Mounting brackets and plates

BEF-WF-20



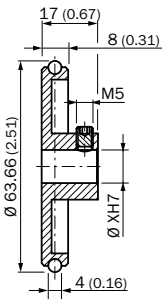
Flanges

BEF-FA-020-033

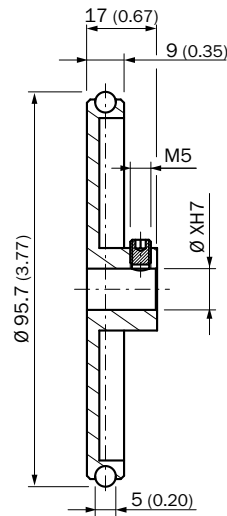


Other mounting accessories

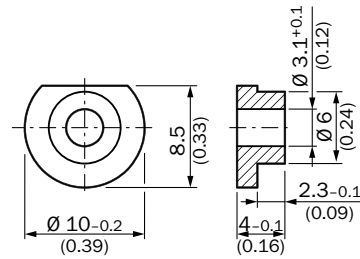
BEF-MR006020R



BEF-MR006030R



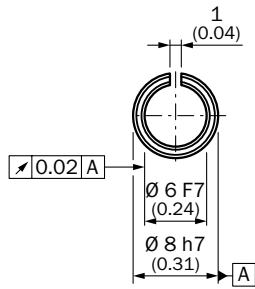
BEF-WK-RESOL



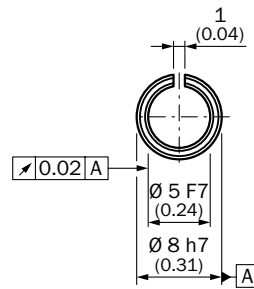


Shaft adaptation

SPZ-006-DD36-A

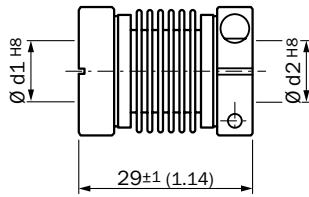
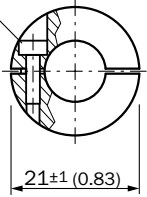


SPZ-005-AD-A

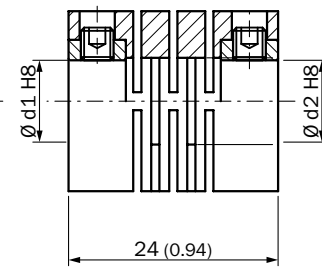
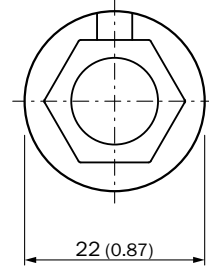


KUP-0606-B  
KUP-0610-B

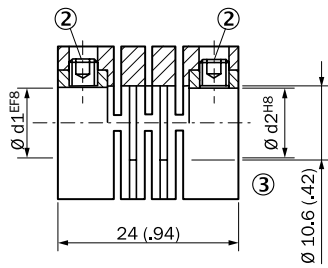
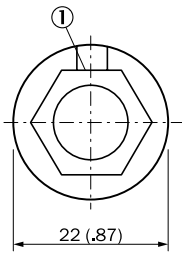
Cheese-head screw  
M2.5 x 8, DIN 912 A2



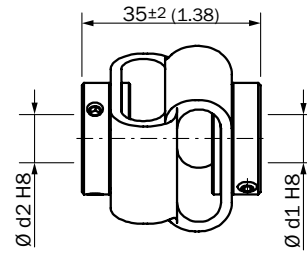
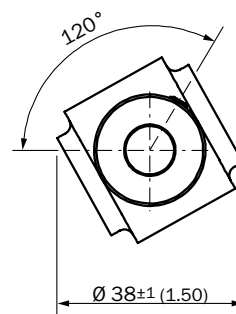
KUP-0606-S  
KUP-0610-MS



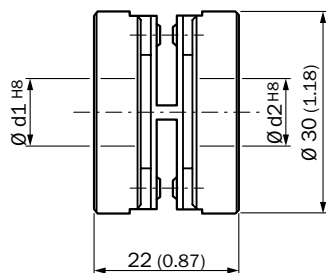
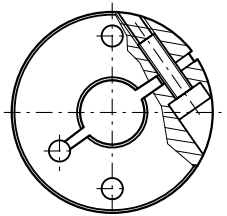
KUP-0608-S



KUP-0610-D

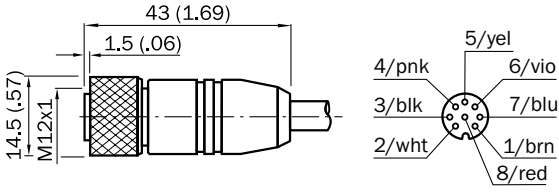


KUP-0610-F



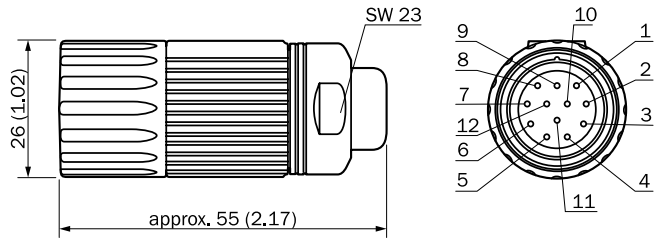
Plug connectors and cables

- DOL-1208-G02MAC1
- DOL-1208-G05MAC1
- DOL-1208-G10MAC1
- DOL-1208-G20MAC1



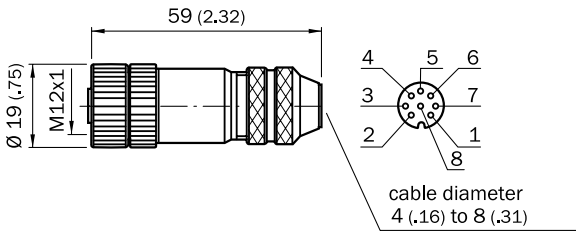
All dimensions in mm (inch)

- DOL-2312-G02MLA3
- DOL-2312-G03MMA3
- DOL-2312-G07MLA3
- DOL-2312-G10MLA3
- DOL-2312-G15MLA3
- DOL-2312-G20MLA3
- DOL-2312-G25MLA3
- DOL-2312-G30MLA3
- DOL-2312-G05MMA3
- DOL-2312-G10MMA3
- DOL-2312-G20MMA3
- DOL-2312-G30MMA3
- DOL-2312-G1M5MA3

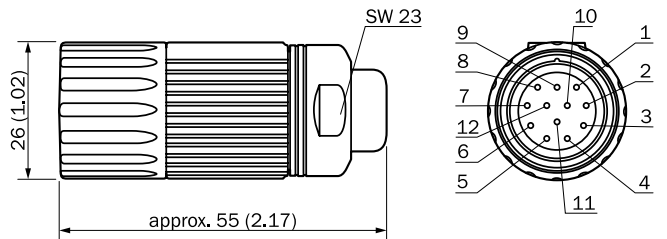


- ① Black
- ② Gray
- ③ Purple
- ④ Yellow
- ⑤ White
- ⑥ Brown
- ⑧ Pink
- ⑨ Shield
- ⑩ Blue
- ⑪ Green
- ⑫ Red

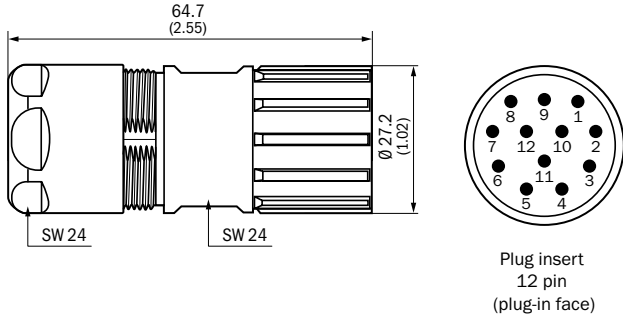
DOS-1208-GA01



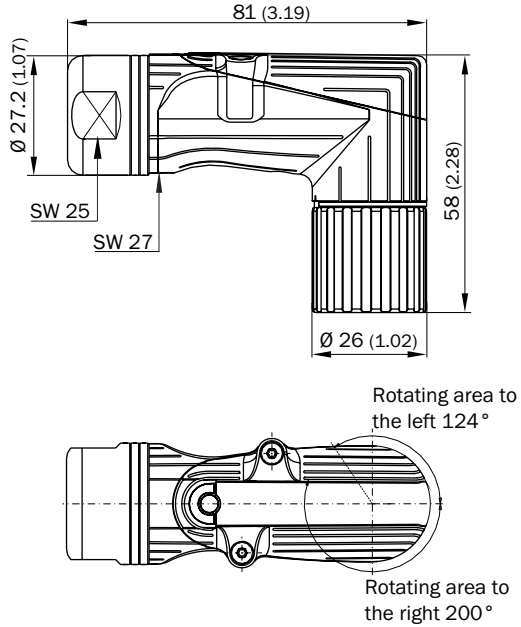
DOS-2312-G



DOS-2312-G02

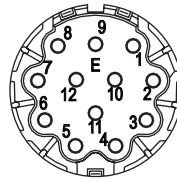


DOS-2312-W01



**Main dimensions**

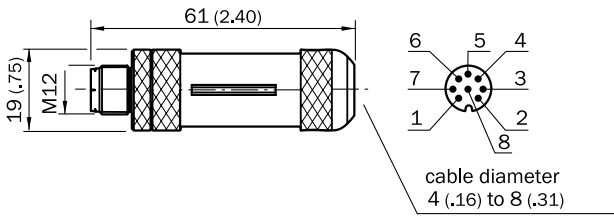
Plug



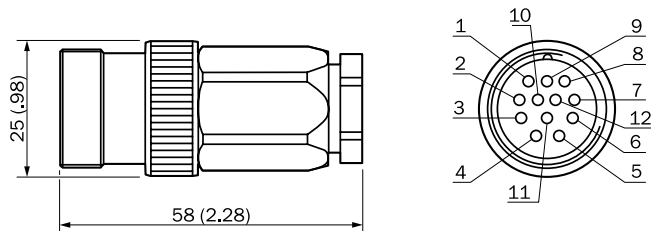
**Contact arrangement**

Mating view

STE-1208-GA01



STE-2312-G



STE-2312-G01

