



## DBS60 Inox

RUGGED INCREMENTAL ENCODER MADE OF STAINLESS STEEL FOR CHALLENGING APPLICATION CONDITIONS

Incremental encoder

**SICK**  
Sensor Intelligence.

# RUGGED INCREMENTAL ENCODER MADE OF STAINLESS STEEL FOR CHALLENGING APPLICATION CONDITIONS



## Product description

The stainless steel mechanical components as well as the high degree of tightness thanks to the shaft seal make the DBS60 Inox incremental encoder resistant to rough environmental influences. Its stainless-steel housing with IP67 enclosure rating has a diameter of 58 mm, thereby enabling use in challenging applications with limited installation space. The solid shaft models are avail-

able with face mount flange and square flange. The hollow shaft design provides optional shaft insulation against high operating temperatures and shaft flows. With various mechanical and electronic interfaces as well as a resolution of up to 5,000 pulses, the DBS60 Inox fulfills customer requirements from various fields of industry.

## At a glance

- Housing, flange, and shaft made from stainless steel
- Enclosure rating IP67 thanks to shaft sealing ring
- Designs with blind hollow shaft as well as face mount or square flange with solid shaft
- Number of lines of up to 5,000 pulses
- Radial cable connection or M12 male connector
- TTL/RS-422 and HTL Push Pull, universal TTL/HTL interface with 4.5 - 30 VDC

## Your benefits

- High resistance to environmental influences due to stainless-steel housing
- IP67 enclosure rating and shaft sealing ring for optimum tightness
- Compact housing dimensions save valuable space and facilitate mounting
- Wide range of mechanical interfaces for an optimal match between the encoder and the specific application installation situation
- Flanges and stator couplings with different mounting holes allow diverse mounting options
- The TTL/HTL combination interface reduces product variance and thereby storage costs



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→ [www.sick.com/DBS60\\_Inox](http://www.sick.com/DBS60_Inox)

For more information, simply enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples, and much more.



## Fields of application

- Applications with high requirements on resistance to aggressive media as well as cleaning agents or salt
- For use in the food and beverage industry, in medical technology, in packaging machines and in challenging outdoor applications in ports or offshore plants as well as in motors, to name a few examples

## Detailed technical data

### Performance

<b>Pulses per revolution</b>	4 ... 5000 <sup>1)</sup> (depending on type)
<b>Measuring step</b>	90° electric/pulses per revolution
<b>Measuring step deviation</b>	
< 3,600 pulses per revolution	± 18° / impulses per revolution
≥ 3,600 pulses per revolution	± 36° / impulses per revolution
<b>Error limits</b>	Measuring step deviation x 3
<b>Duty cycle</b>	
< 3,600 pulses per revolution	≤ 0.5 ± 5 %
≥ 3,600 pulses per revolution	≤ 0.5 ± 10 %
<b>Initialization time</b>	< 5 ms <sup>2)</sup>

<sup>1)</sup> Available pulses per revolution see type code.

<sup>2)</sup> Valid signals can be read once this time has elapsed.

### Electrical data

<b>Electrical interface</b>	4.5 V ... 5.5 V, TTL/RS422 <sup>1)</sup> 10 V ... 30 V, TTL/RS422 <sup>1)</sup> 10 V ... 27 V, HTL/Push pull <sup>1)</sup> 4.5 V ... 30 V, TTL/HTL universal <sup>1) 2)</sup> (depending on type)
<b>Connection type</b>	Male connector, M12, 8-pin, radial <sup>3)</sup> Cable, 8-wire, radial, 5 m <sup>3)</sup> (depending on type)
<b>Operating current</b>	≤ 50 mA (without load)
<b>Power consumption</b>	
10 V ... 30 V, TTL/RS422	≤ 0.5 W (without load)
10 V ... 27 V, HTL/Push pull	≤ 1 W (without load)
4.5 V ... 30 V, TTL/HTL universal	≤ 0.5 W (without load)
<b>Load current</b>	≤ 30 mA, per channel
<b>Output frequency</b>	≤ 300 kHz <sup>4)</sup>
<b>Reference signal, number</b>	1
<b>Reference signal, position</b>	90°, electric, logically gated with A and B
<b>Reverse polarity protection</b>	✓
<b>Short-circuit protection of the outputs</b>	
4.5 V ... 5.5 V, TTL/RS422	✓ <sup>5)</sup>
10 V ... 30 V, TTL/RS422	✓ <sup>6)</sup>
10 V ... 27 V, HTL/Push pull	✓ <sup>6)</sup>
4.5 V ... 30 V, TTL/HTL universal	✓ <sup>6)</sup>
<b>MTTFd: mean time to dangerous failure</b>	500 years (EN ISO 13849-1) <sup>7)</sup>

<sup>1)</sup> With 6-channels unless noted.

<sup>2)</sup> Output level depends on the supply voltage.

<sup>3)</sup> Others on request.

<sup>4)</sup> Up to 450 kHz on request.

<sup>5)</sup> Short-circuit opposite to another channel or GND permissible for max. 60 s. No protection signal against Us.

<sup>6)</sup> Short-circuit opposite to another channel, US or GND permissible for maximum 30 s.

<sup>7)</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 components, average ambient temperature 40°C, frequency of use 8760 h/a. All electronic failures are considered hazardous. For more information, see document no. 8015532.

## Mechanical data

	Solid shaft	Blind hollow shaft
<b>Mechanical feature</b>	Solid shaft, Square flange Solid shaft, face mount flange (depending on type)	Blind hollow shaft
<b>Shaft diameter</b>	10 mm x 19 mm <sup>1)</sup>	6 mm 8 mm 10 mm 12 mm 14 mm 15 mm (depending on type)
<b>Flange type / stator coupling</b>		
Solid shaft Square flange	Flange with 4 x hole 5.5 mm <sup>1)</sup>	-
Solid shaft face mount flange	Flange with 3 x M3 and 3 x M4 <sup>1)</sup>	-
Blind hollow shaft	-	Stator coupling 2-sided, slotted hole, screw hole circle 63 mm - 83 mm <sup>1)</sup>
<b>Weight</b>		
Solid shaft, Square flange	0.61 kg <sup>2)</sup>	-
Solid shaft, face mount flange	0.5 kg <sup>2)</sup>	-
Blind hollow shaft	-	0.44 kg <sup>2)</sup>
<b>Shaft material</b>	Stainless steel V2A	
<b>Flange material</b>	Stainless steel V2A	
<b>Housing material</b>	Stainless steel V2A	
<b>Material, cable</b>	PVC	
<b>Shaft sealing ring material</b>	FKM80	
<b>Cable gland material</b>	Stainless steel V2A / Nickel-plated brass	
<b>Start up torque</b>	1 Ncm (+20 °C)	2.1 Ncm (+20 °C)
<b>Operating torque</b>	0.9 Ncm (+20 °C)	2 Ncm (+20 °C)
<b>Permissible shaft movement, axial static/dynamic</b>	-	± 0.5 mm / ± 0.2 mm
<b>Permissible shaft movement, radial static/dynamic</b>	-	± 0.3 mm / ± 0.1 mm
<b>Permissible shaft loading radial/axial</b>	80 N (radial) <sup>3)</sup> 40 N (axial) <sup>3)</sup>	-
<b>Operating speed</b>	≤ 6,000 min <sup>-1</sup> <sup>4)</sup>	
<b>Moment of inertia of the rotor</b>	34 gcm <sup>2</sup>	52 gcm <sup>2</sup>
<b>Bearing lifetime</b>	3.6 x 10 <sup>9</sup> revolutions	
<b>Angular acceleration</b>	≤ 500,000 rad/s <sup>2</sup>	

<sup>1)</sup> Others on request.

<sup>2)</sup> For an encoder with connector outlet.

<sup>3)</sup> Higher values are possible using limited bearing life.

<sup>4)</sup> Maximum speed which does not cause mechanical damage to the encoder. Impact on the service life and signal quality is possible. Please note the maximum output frequency.

Ambient data

	Solid shaft	Blind hollow shaft
<b>EMC</b>	According to EN 61000-6-2 and EN 61000-6-3	
<b>Enclosure rating</b>		
Connector outlet	IP67 (according to IEC 60529) <sup>1)</sup>	
Cable outlet	IP67 (according to IEC 60529)	
<b>Permissible relative humidity</b>	90 % (condensation of the optical scanning not permitted)	
<b>Operating temperature range</b>		
4.5 V ... 5.5 V, TTL/RS422	-20 °C ... +85 °C	
10 V ... 30 V, TTL/RS422	-30 °C ... +100 °C, at maximum 3,000 pulses per revolution -30 °C ... +85 °C, at more than 3,000 pulses per revolution (depending on type)	
10 V ... 27 V, HTL/Push pull	-20 °C ... +85 °C	
4.5 V ... 30 V, TTL/HTL universal	-30 °C ... +100 °C, at maximum 3,000 pulses per revolution -30 °C ... +85 °C, at more than 3,000 pulses per revolution (depending on type)	
<b>Storage temperature range</b>	-40 °C ... +100 °C, without package	
<b>Resistance to shocks</b>	100 g, 6 ms (according to EN 60068-2-27)	
<b>Resistance to vibration</b>	30 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)	10 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

<sup>1)</sup> With mating connector fitted.

Type code

Blind hollow shaft

**Mechanical design**

B	A	Blind hollow shaft, metal, Ø 6 mm
B	B	Blind hollow shaft, metal, Ø 8 mm
B	D	Blind hollow shaft, metal, Ø 10 mm
B	E	Blind hollow shaft, metal, Ø 12 mm
B	G	Blind hollow shaft, metal, Ø 14 mm
B	H	Blind hollow shaft, metal, Ø 15 mm

**Electrical Interface**

A	4,5 ... 5,5 V, TTL/RS-422, 6 channels
C	10 ... 30 V, TTL/RS-422, 6 channels
E	10 ... 27 V, HTL/Push pull, 6 channels
F	4,5 ... 30 V, TTL /HTL universal, 6 channels

**Connection type**

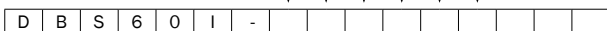
C	Male connector M12, 8-pin., radial
M	8-core cable, radial 5 m

**Stator coupling / flange design**

0	Two-sided stator coupling, slot, screw hole circle 63 mm - 83 mm
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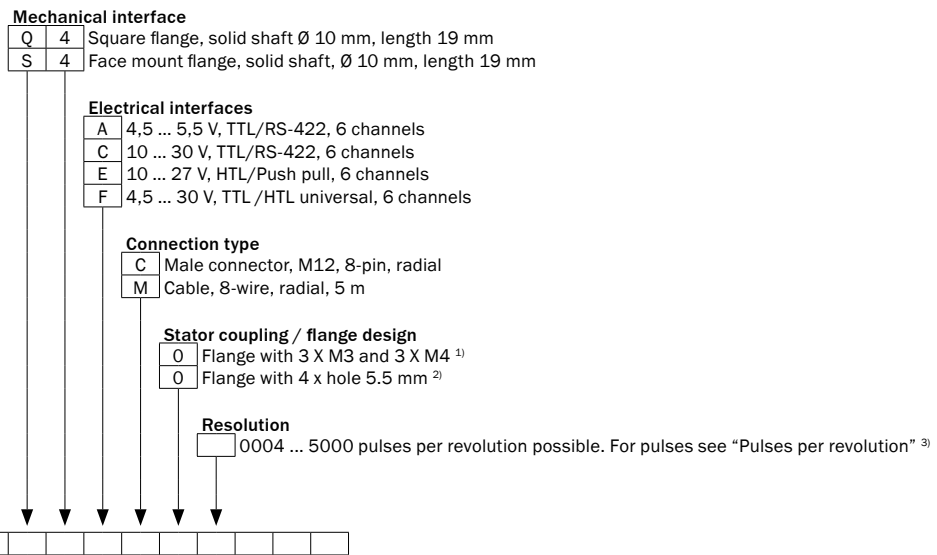
**Resolution**

0004 ... 5000 Pulses per revolution possible. For pulses see "Pulses per revolution" <sup>1)</sup>



<sup>1)</sup> Other pulses on request.

Solid shaft



<sup>1)</sup> With mechanical interface S4.

<sup>2)</sup> With mechanical interface Q4.

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

Pulses per revolution

Pulse per revolution	0010
	0020
	0050
	0100
	0128
	0160
	0200
	0256
	0360
	0512
	1000
	1024
	2000
	2048
	2500
	3000
	3600
4096	
5000	

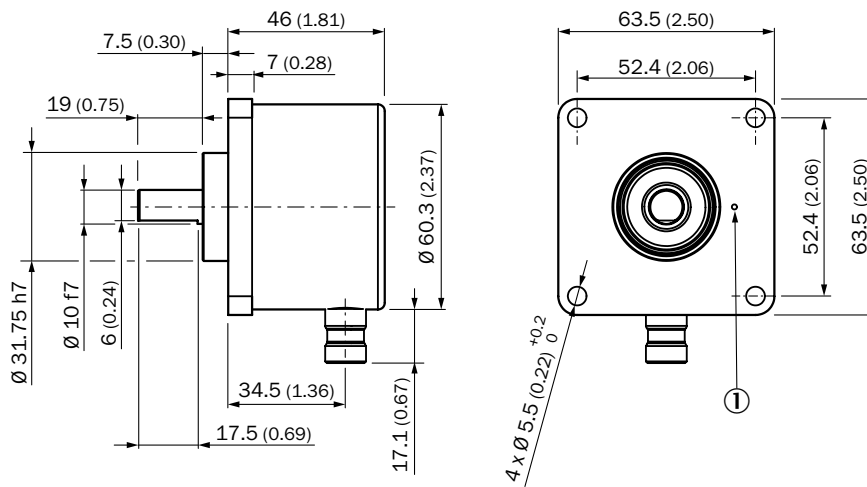
Ordering information

- **Electrical interface:** TTL/HTL universal
- **Voltage area:** 4.5 V ... 30 V
- **Connection type:** cable, 8-wire, radial, 5 m (Others on request.)

Mechanical feature	Shaft diameter	Range of pulses per revolution	Type	Part no.
Solid shaft, Square flange	10 mm	1,000	DBS60I-Q4FM01000	1089712
		2,000	DBS60I-Q4FM02000	1089713
		5,000	DBS60I-Q4FM05000	1089714
Solid shaft, face mount flange	10 mm	1,000	DBS60I-S4FM01000	1089705
		2,000	DBS60I-S4FM02000	1089707
		5,000	DBS60I-S4FM05000	1089710
Blind hollow shaft	10 mm	1,024	DBS60I-BDFM01024	1089715
		2,048	DBS60I-BDFM02048	1089716
	12 mm	1,024	DBS60I-BEFM01024	1089717
		2,048	DBS60I-BEFM02048	1089718
	15 mm	1,024	DBS60I-BHFM01024	1089719
		2,048	DBS60I-BHFM02048	1089720

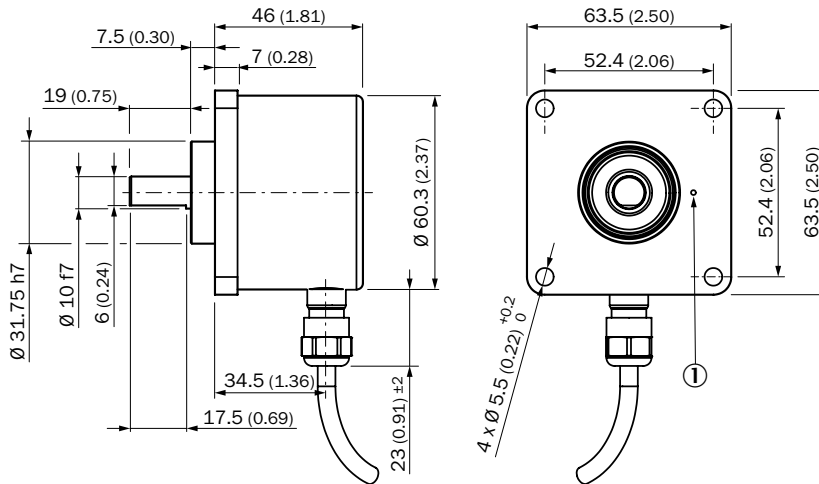
Dimensional drawings (Dimensions in mm (inch))

Solid shaft, square flange, connector outlet



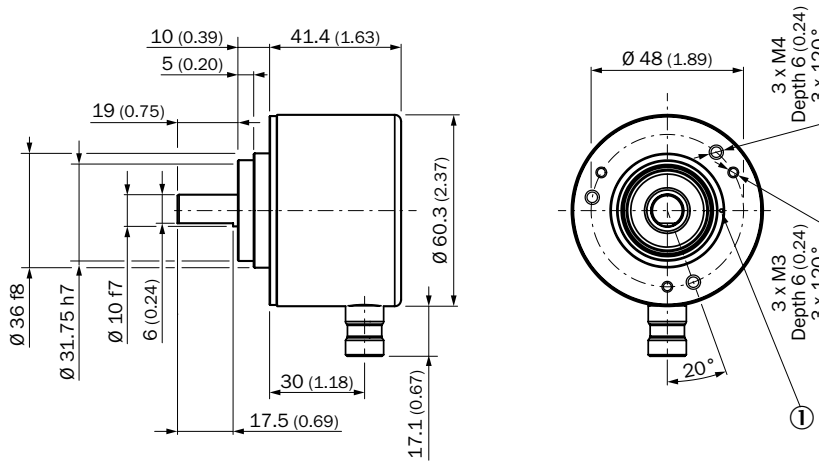
① Zero pulse mark on flange

Solid shaft, square flange, cable outlet



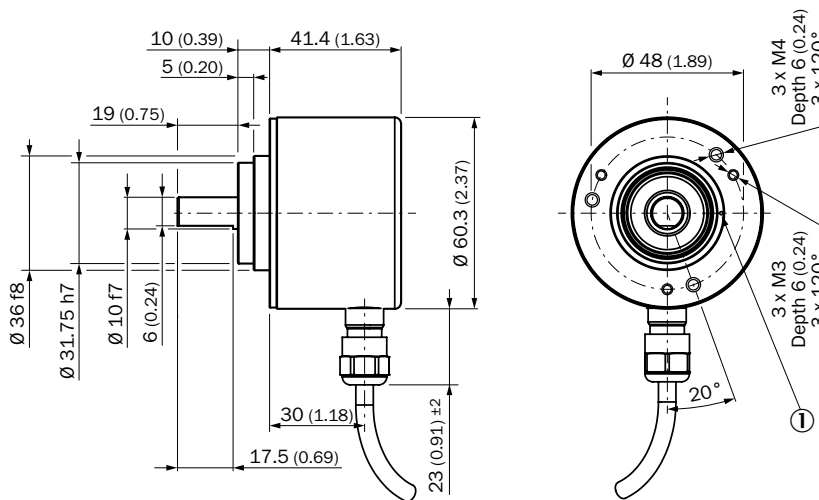
① Zero pulse mark on flange

Solid shaft, face mount flange, connector outlet



① Zero pulse mark on flange

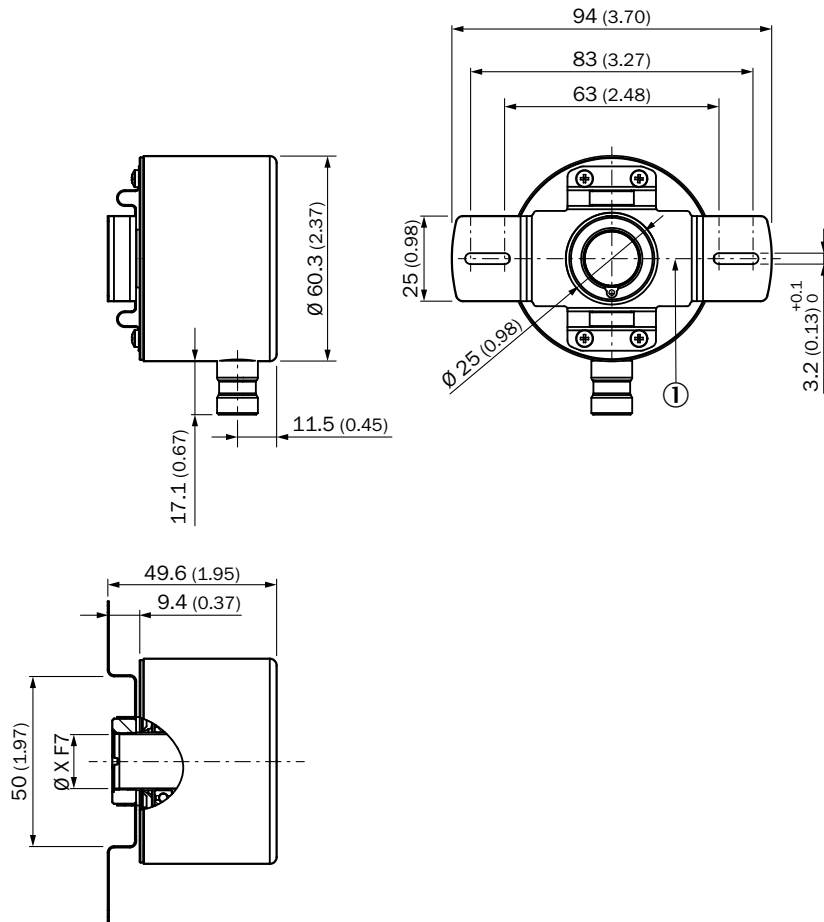
Solid shaft, face mount flange, cable outlet



① Zero pulse mark on flange



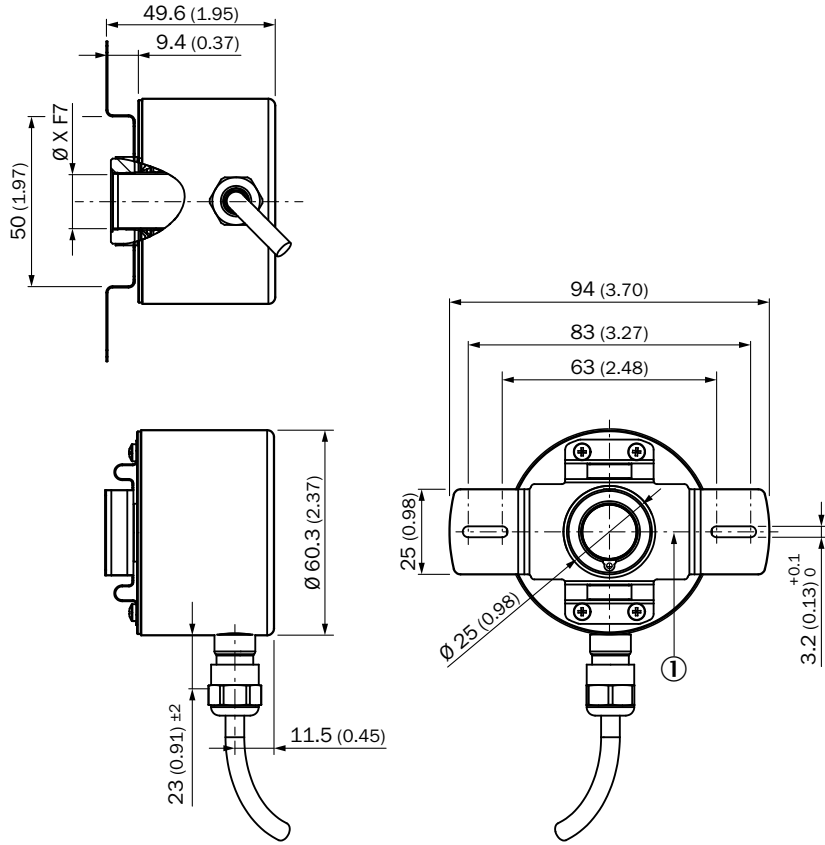
Blind hollow shaft, connector outlet, stator coupling 2-sided, slotted hole, screw hole circle 63 mm - 83 mm



① Zero pulse mark on flange

Type	Shaft diameter XF7
<b>Blind hollow shaft</b>	
DBS60I-BAxxxxxxx	6 mm
DBS60I-BBxxxxxxx	8 mm
DBS60I-BDxxxxxxx	10 mm
DBS60I-BExxxxxxx	12 mm
DBS60I-BGxxxxxxx	14 mm
DBS60I-BHxxxxxxx	15 mm

Blind hollow shaft, cable connection, stator coupling 2-sided, slotted hole, screw hole circle 63 mm - 83 mm

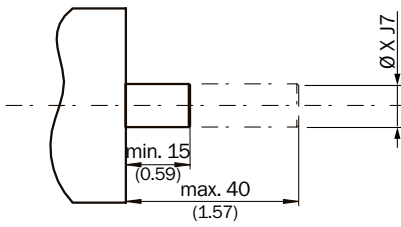


① Zero pulse mark on flange

Type	Shaft diameter XF7
<b>Blind hollow shaft</b>	
DBS60I-BAxxxxxxxx	6 mm
DBS60I-BBxxxxxxxx	8 mm
DBS60I-BDxxxxxxxx	10 mm
DBS60I-BExxxxxxxx	12 mm
DBS60I-BGxxxxxxxx	14 mm
DBS60I-BHxxxxxxxx	15 mm

### Proposed fitting

Blind hollow shaft

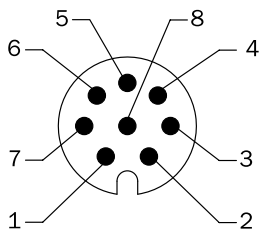


Customer side

Type Blind hollow shaft	Shaft diameter xj7
DBS60I-BAxxxxxxx	6 mm
DBS60I-BBxxxxxxx	8 mm
DBS60I-BDxxxxxxx	10 mm
DBS60I-BExxxxxxx	12 mm
DBS60I-BGxxxxxxx	14 mm
DBS60I-BHxxxxxxx	15 mm

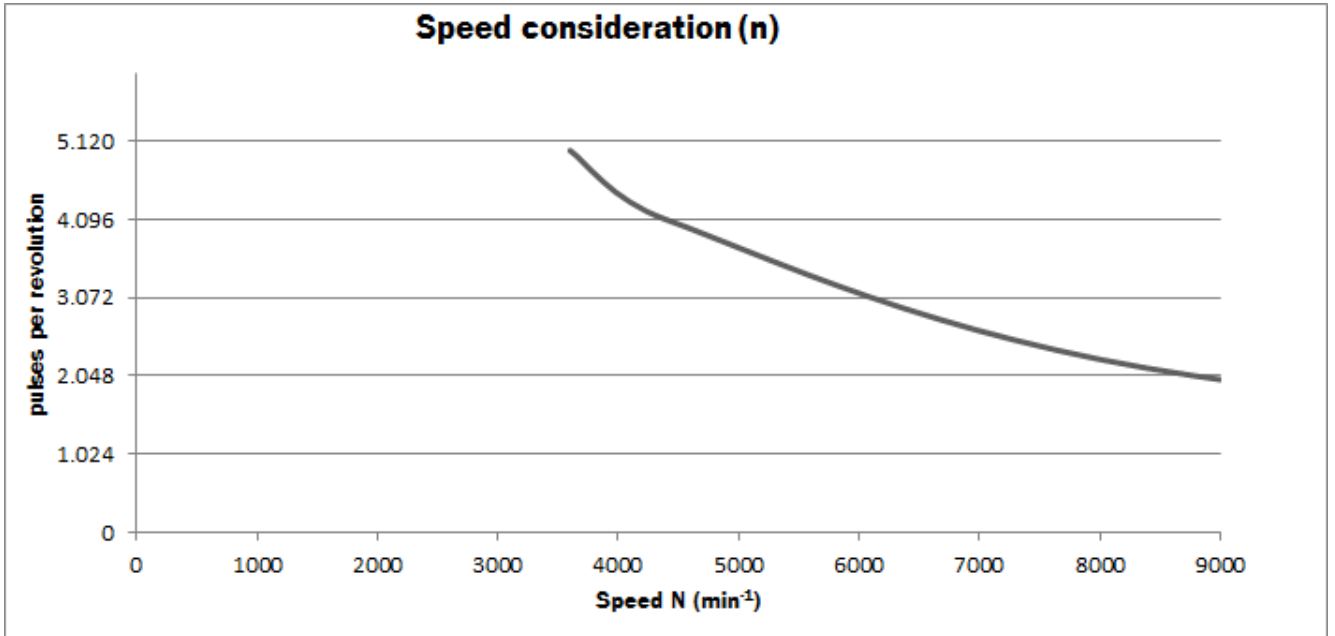
### PIN assignment

View of M12 device connector on cable/housing



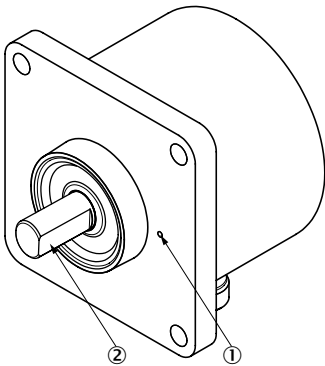
Colour of wires	Pin 8-pole in M12	Signal TTL; HTL	Explanation
Brown	1	A-	Signal line
White	2	A	Signal line
Black	3	B-	Signal line
Pink	4	B	Signal line
Yellow	5	Z-	Signal line
Lilac	6	Z	Signal line
Blue	7	GND	Ground connection of the Encoder
Red	8	+Us	Supply voltage
Screen	Screen	Screen	Screen (Screen connected to Encoder housing).

Maximum revolution range



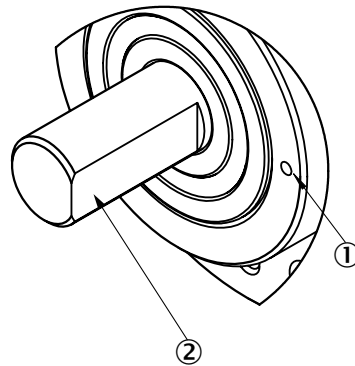
Zero pulse explanation

Solid shaft, square flange



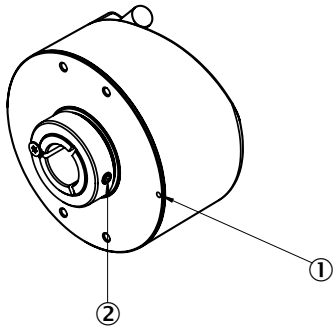
- ① Zero pulse mark on flange
- ② Use shaft flat for zero mark alignment with zero mark on flange or housing

Solid shaft



- ① Zero pulse mark on flange
- ② Use shaft flat for zero mark alignment with zero mark on flange or housing

Hollow shaft

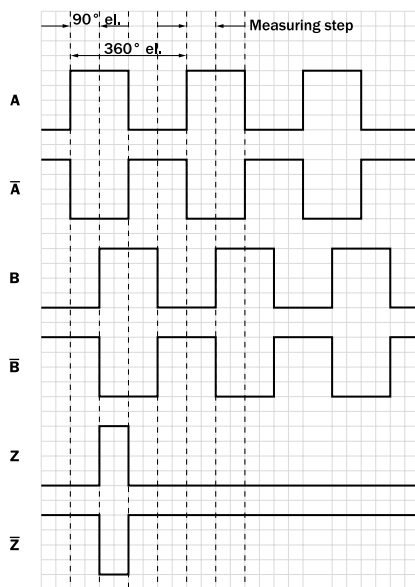


Attention! If stator coupling is mounted, the zero pulse mark can be hidden by the stator coupling

- ① Zero pulse mark on flange
- ② Zero pulse is active when screw of clamping is inline with zero pulse mark on flange or housing mark

Signal outputs

Signal outputs for electrical interfaces TTL and HTL



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







Supply voltage	Output
4,5 V ... 5,5 V	TTL
10 V ... 30 V	TTL
10 V ... 27 V	HTL
4,5 V ... 30 V	TTL/HTL universal

Accessories

Mounting systems

Flanges

Flange plates

Figure	Brief description	Type	Part no.
	Two-sided stator coupling, screw hole circle diameter 63 mm, slot width 3.2 mm	BEF-DS-09	2076214
	Two-sided stator coupling, slot, slot radius 63 mm - 83 mm, slot width 3.2 mm	BEF-DS-10	2076215
	One-sided stator coupling, slots, slot radius 32.75 mm - 142.65 mm, slot width 4.5 mm	BEF-DS-11	2076216
	Torque support, 1-sided, slotted hole, screw hole radius 33 mm - 48.5 mm, hole width 5.1 mm	BEF-DS-12	2076217
	One-sided stator coupling, slot, slot radius 32.1 mm - 37.6 mm, slot width 4.5 mm	BEF-DS-14	2076678
	Flange adapter, adaptation of face mount flange with 36 mm centering hub to 50 mm servo flange, stainless steel, Including 3 countersunk screws with Precote 85-8 coating; M4*12	BEF-FA-036-050-I	2094778

Dimensional drawings → [page 16](#)

Shaft adaptation

Collets and clamping rings
















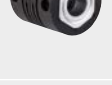






Figure	Brief description	Type	Part no.
	Collet plastic insulated for hollow shaft, shaft diameter 6 mm, outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-006-P	2076228
	Collet metal for hollow shaft, shaft diameter 8 mm, outer diameter 5/8" (15.875 mm), metal	SPZ-58Z-008-M	2076219
	Collet plastic insulated for hollow shaft, shaft diameter 8 mm, outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-008-P	2076229
	Collet metal for hollow shaft, shaft diameter 10 mm, outer diameter 5/8" (15.875 mm), metal	SPZ-58Z-010-M	2076220
	Collet plastic insulated for hollow shaft, shaft diameter 10 mm, outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-010-P	2076230
	Collet metal for hollow shaft, shaft diameter 11 mm, outer diameter 5/8" (15.875 mm), metal	SPZ-58Z-011-M	2094671
	Collet metal for hollow shaft, shaft diameter 12 mm, outer diameter 5/8" (15.875 mm), metal	SPZ-58Z-012-M	2076221
	Collet plastic insulated for hollow shaft, shaft diameter 12 mm, outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-012-P	2076231
	Collet metal for hollow shaft, shaft diameter 14 mm, outer diameter 5/8" (15.875 mm), metal	SPZ-58Z-014-M	2076222
	Collet plastic insulated for hollow shaft, shaft diameter 14 mm, outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-014-P	2076232

Figure	Brief description	Type	Part no.
	Collet metal for hollow shaft, shaft diameter 15 mm, outer diameter 5/8" (15.875 mm), metal	SPZ-58Z-015-M	2076223
	Collet plastic insulated for hollow shaft, shaft diameter 15 mm, outer diameter 5/8" (15.875 mm), plastic	SPZ-58Z-015-P	2076233

Dimensional drawings → [page 17](#)

### Shaft couplings

Figure	Brief description	Type	Part no.
	Bellows coupling, shaft diameter 6 mm / 10 mm, maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular +/- 4°; max. speed 10,000 rpm, -30 °C to +120 °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum hub	KUP-0610-B	5312982
	Spring washer coupling, shaft diameter 6 mm / 10 mm, Maximum shaft offset: radial +/- 0.3 mm, axial +/- 0.4 mm, angular +/- 2.5°; max. speed 12,000 rpm, -10° to +80 °C, max. torque 60 Ncm; material: aluminum flange, glass fiber-reinforced polyamide membrane and hardened steel coupling pin	KUP-0610-F	5312985
	Bar coupling, shaft diameter 6 mm / 10 mm, max. shaft offset: radial ± 0,3 mm, axial ± 0,3 mm, angular ± 3°; max. speed 10.000 rpm, -10° to +80 °C, max. torque: 80 Ncm, material: fiber-glass reinforced polyamide, aluminum hub	KUP-0610-S	2056407
	Bar coupling, shaft diameter 8 mm / 10 mm, max. shaft offset: radial ± 0,3 mm, axial ± 0,3 mm, angular ± 3°; max. speed 10.000 rpm, -10° to +80 °C, max. torque: 80 Ncm, material: fiber-glass reinforced polyamide, aluminum hub	KUP-0810-S	5314178
	Bellows coupling, shaft diameter 10 mm/10 mm; maximum shaft offset: radial +/- 0.25 mm, axial +/- 0.4 mm, angular +/- 4°; max. revolutions 10,000 rpm, -30° to +120 °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum clamping hubs	KUP-1010-B	5312983
	Double loop coupling, shaft diameter 10 mm / 10 mm, Maximum shaft offset: radial +/- 2.5 mm, axial +/- 3 mm, angular +/- 10°; max. speed 3,000 rpm, -30° to +80 °C, max. torque 1.5 Nm; material: polyurethane, galvanized steel flange	KUP-1010-D	5326703
	Spring washer coupling, shaft diameter 10 mm / 10 mm, maximum shaft offset, radial ± 0.3 mm, axial ± 0.4 mm, angle ± 2.5°, torsion spring stiffness 30 Nm/rad; material: aluminum flange, glass-fiber reinforced polyamide membrane and hardened steel coupling pin	KUP-1010-F	5312986
	Bar coupling, shaft diameter 10 mm / 10 mm; maximum shaft offset: radial ± 0.3 mm, axial ± 0.2 mm, angular ± 3°; speed 10,000 rpm, -10° to +80° Celsius, max. torque 80 Ncm; material: glass fiber-reinforced polyamide, aluminum hub	KUP-1010-S	2056408
	Spring washer coupling, shaft diameter 10 mm / 10 mm, maximum shaft offset, radial ± 0.3 mm, axial ± 0.4 mm, angle ± 2.5°, torsion spring stiffness 30 Nm/rad; material: aluminum flange, glass-fiber reinforced polyamide membrane and hardened steel coupling pin	KUP-1010-W	5319914
	10 mm / 12 mm; maximum shaft offset: radial +/- 0.25 mm, axial +/- 0.4 mm, angular +/- 4°; max. revolutions 10,000 rpm, -30° to +120 °C, max. torque 80 Ncm; material: stainless steel bellows, aluminum clamping hubs	KUP-1012-B	5312984

Dimensional drawings → [page 17](#)

### Connection systems

#### Plug connectors and cables

#### Cables (ready to assemble)





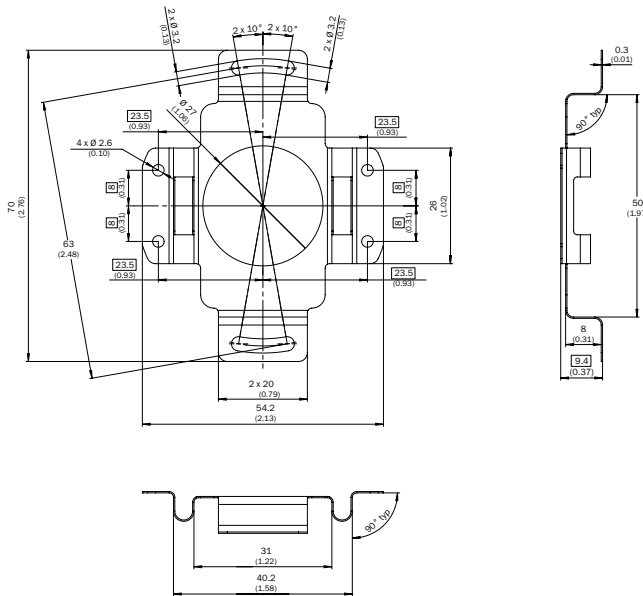
Figure	Brief description	Type	Part no.
	Head A: cable Head B: open cable ends Cable: SSI, PUR, halogen-free, shielded, 4 x 2 x 0.15 mm <sup>2</sup> , 7.8 mm	LTG-2308-MWENC	6027529
	Head A: cable Head B: open cable ends Cable: SSI, PUR, shielded, 4 x 2 x 0.15 mm <sup>2</sup> + 2 x 0.5mm <sup>2</sup> + 1 x 0.14mm <sup>2</sup> , 7.5 mm	LTG-2411-MW	6027530

Figure	Brief description	Type	Part no.
	Head A: cable Head B: open cable ends Cable: SSI, 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> , 7.8 mm	LTG-2512-MW	6027531
	Head A: cable Head B: open cable ends Cable: SSI, 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> , 7.8 mm, UV and saltwater-resistant	LTG-2612-MW	6028516

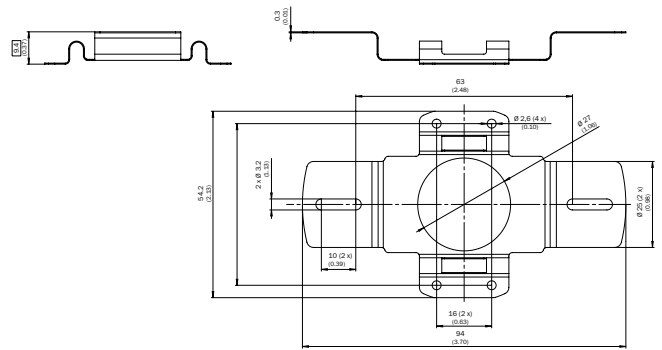
Dimensional drawings for accessories (Dimensions in mm (inch))

Flanges

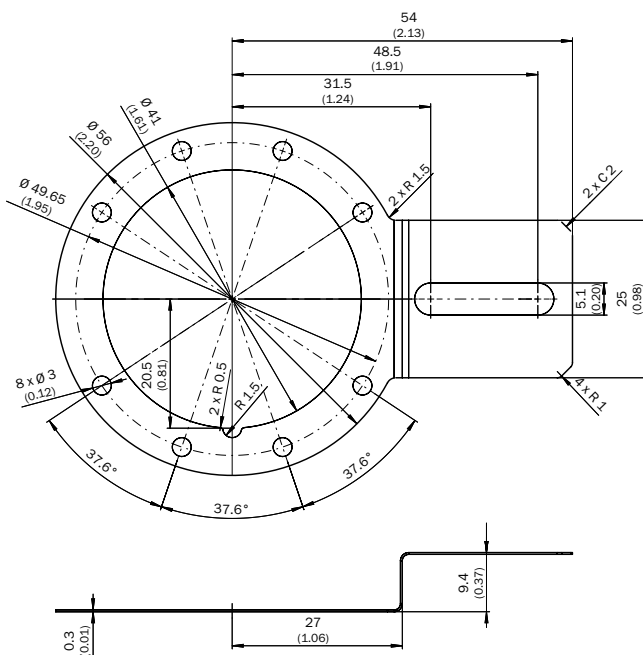
BEF-DS-09



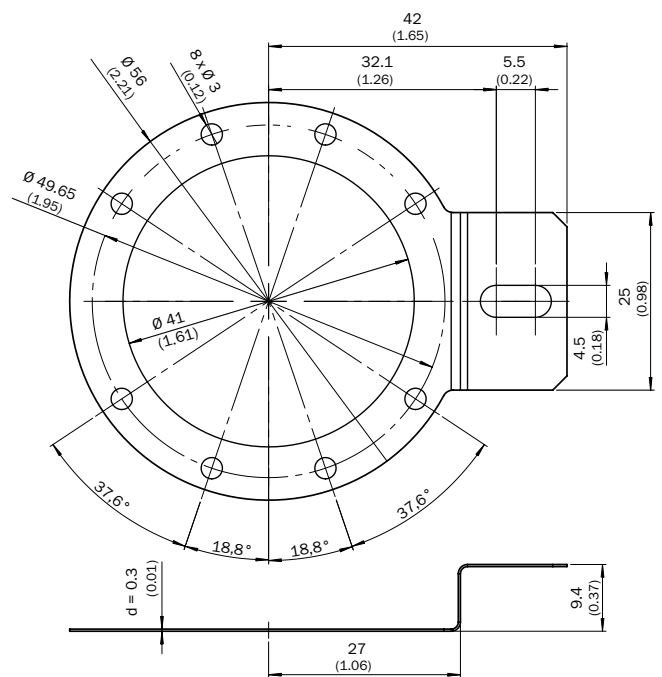
BEF-DS-10



BEF-DS-12

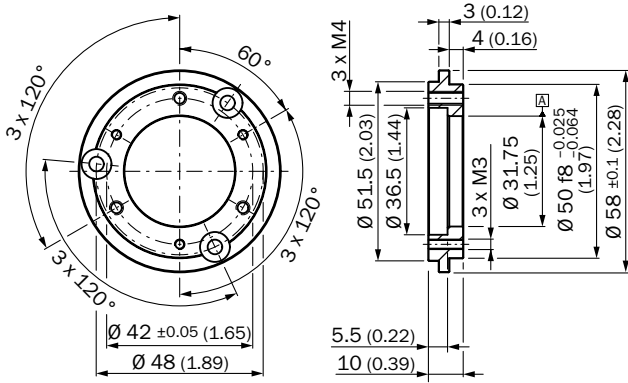


BEF-DS-14



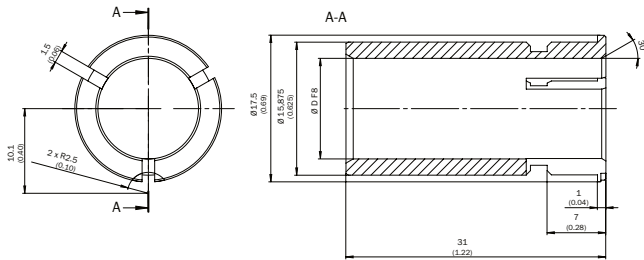


BEF-FA-036-050-I



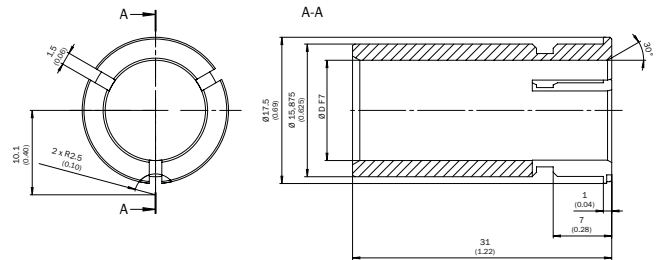
Shaft adaptation

SPZ-58Z-0xx-P



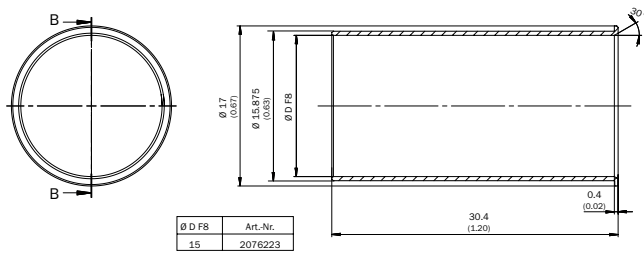
$\varnothing$ D F8	Art.-No.
6	2076228
8	2076229
3/8" (9.525)	2076228
10	2076230
12	2076231
1/2" (12.7)	2076227

SPZ-58Z-0xx-M



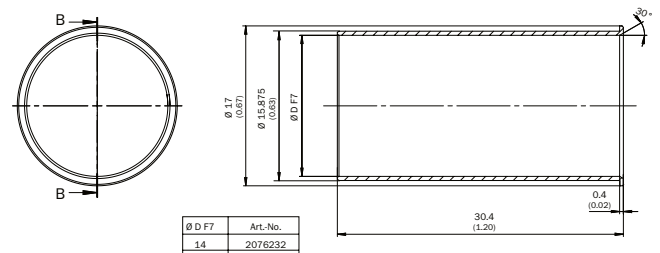
$\varnothing$ D F7	Art.-No.
8	2076219
3/8" (9.525)	2076224
10	2076220
11	2094671
12	2076221
1/2" (12.7)	2076225
14	2076222

SPZ-58Z-01x-P



$\varnothing$ D F8	Art.-Nr.
15	2076223

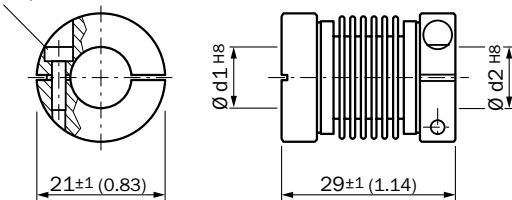
SPZ-58Z-015-M



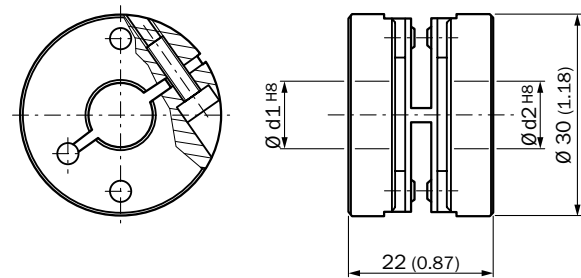
$\varnothing$ D F7	Art.-No.
14	2076232
15	2076233

KUP-xx1x-B

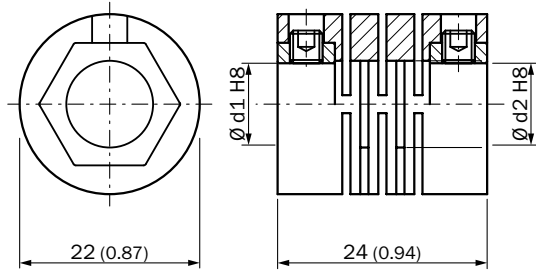
Cheese-head screw  
M2.5 x 8, DIN 912 A2



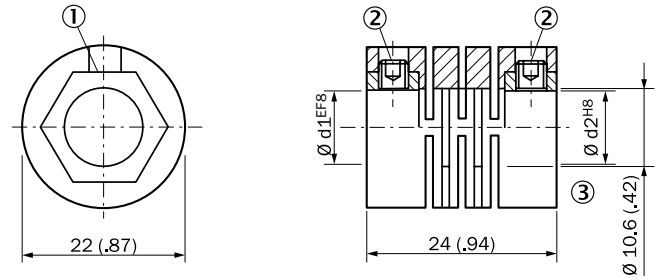
KUP-xx10-F



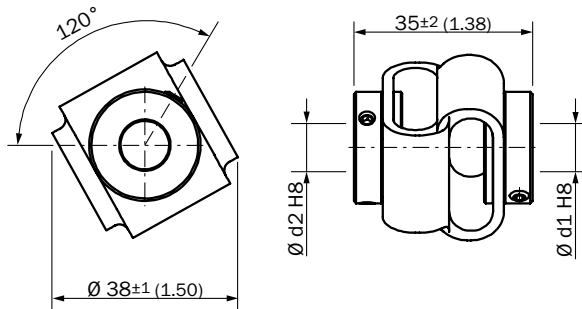
KUP-xx10-S



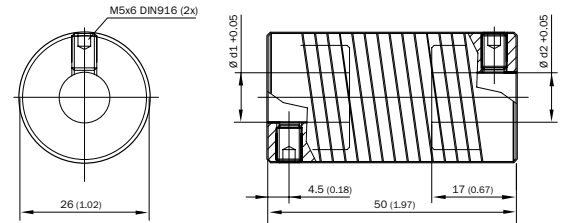
KUP-0810-S



KUP-1010-D

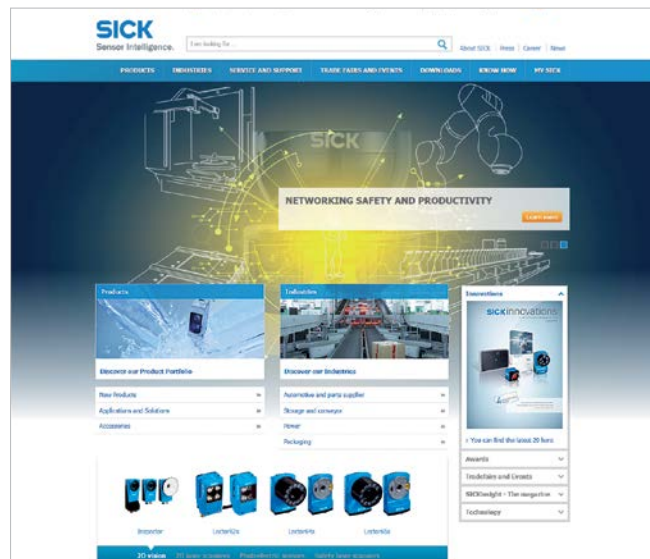


KUP-1010-W



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