

DBS36/DBS50 Incremental Encoders

EASIMA: The MultiFit Incremental Encoder

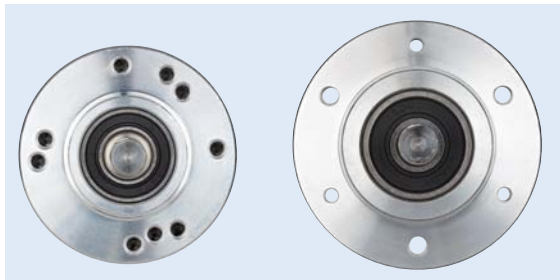
**EASIMA - easy mounting
in any application**

EASIMA

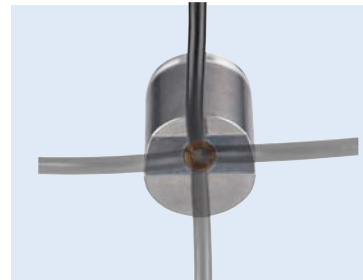
The multifit incremental encoders DBS36 and DBS50

The new EASIMA incremental encoders impress through the highest levels of quality, compact design and universal use – for a wide range of applications.

Even in harsh environments, the EASIMA series stands out thanks to its high mechanical and electrical stability. The extensive range of connection and mounting technology "accessories" offers the right solution for every application.



Drill holes for virtually all fitting guidelines in soli shaft models



Simple and easy to fit thanks to universal cable outlet. Perfect for confined spaces



**Universally applicable stator coupling
in the DBS36 with blind hollow shaft**



**Combined clamping and servo flange
in solid shaft models**

EASIMA: The MultiFit Incremental Encoder



Product description

The EASIMA incremental encoder DBS36 stands out due to its high mechanical flexibility, outstanding technical features and many possible variations. A blind hollow-shaft design with 8 mm shaft diameter and a face mount flange with 6 mm solid shaft are available. The design with face mount flange offers 3 different mounting hole patterns and a servo groove for mounting with servo clamps.

The hollow-shaft design has a universal stator coupling that can be used for many typical mounting hole patterns. All models have compact dimensions and a universal cable outlet that make it possible to run the cable in the axial or radial direction. The DBS36 incremental encoder is fully compatible with the DDS36 incremental encoder.

At a glance

- Connection with universal cable outlet
- Versions with blind hollow shaft or face mount flange with solid shaft
- Face mount flange with 3 mounting hole patterns and servo groove
- Hollow shaft with universal stator coupling
- Compact diameter of 37 mm
- Electrical interfaces: TTL/RS-422, HTL/push pull and Open Collector NPN
- Available PPR: 100 to 2,500
- Temperature range: -20 °C ... +85 °C
- Enclosure rating: IP 65

Your benefits

- The universal cable outlet allows use in tight spaces and makes flexible cable routing possible
- Face mount flange with various mounting hole patterns provides flexibility when mounting in new or existing applications
- Face mount flange with servo groove makes mounting with servo clamps possible
- The DBS36's universal stator coupling ensures easy device replacement without changing the application
- The high flexibility of the encoders' mechanical interface and the available accessories make it possible to use one design in many applications
- Compatibility with the DDS36 series makes it easy to replace this series in existing applications



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→ www.mysick.com/en/DBS36

For more information, just 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.



Detailed technical data

Performance

Pulses per revolution	100 ... 2,500 (depending on type)
Measuring step deviation	$\pm 18^\circ$ /pulses per revolution
Error limits	$\pm 54^\circ$ /pulses per revolution
Measuring step	90° electronically/pulses per revolution

Mechanical data

Mechanical interface	Solid shaft, face mount flange Blind hollow shaft (depending on type)
Shaft diameter	6 mm x 12 mm Solid shaft 8 mm Blind hollow shaft (depending on type)
Mass	150 g (with connecting cable 1.5 m)
Start up torque	0.5 Ncm (+20 °C)
Operating torque	0.4 Ncm (+20 °C)
Permissible movement axial static/dynamic	± 0.5 mm, ± 0.2 mm
Permissible movement radial static/dynamic	± 0.3 mm, ± 0.1 mm
Permissible shaft loading radial/axial	40 N (radial) (Solid shaft) 20 N (axial) (Solid shaft)
Maximum operating speed	6,000 /min, ^{1) 2)} (depending on type)
Moment of inertia of the rotor	6 gcm ² (Solid shaft) 8 gcm ² (Blind hollow shaft)
Bearing lifetime	2 x 10 ⁹ revolutions
Max. angular acceleration	$\leq 500,000$ rad/s ²

¹⁾ Self-warming 3.3 K per 1,000 1/min.

²⁾ Self-warming 4.7 K per 1,000 1/min.

Electrical data

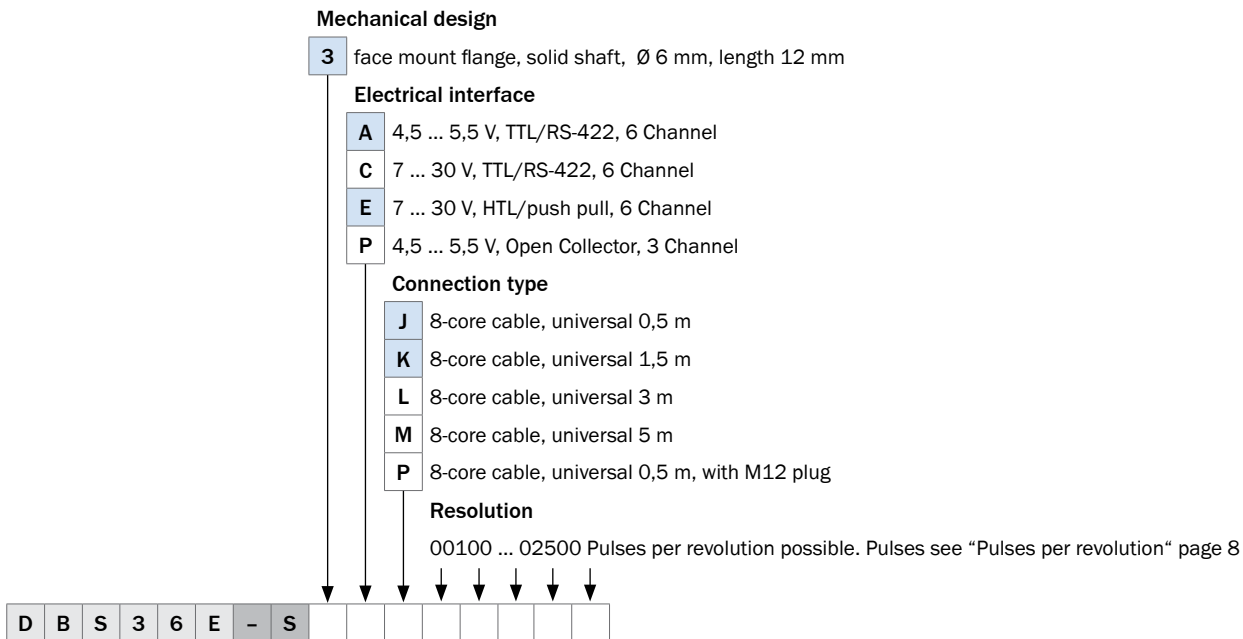
Electrical interface	4,5 V ... 5,5 V, Open Collector NPN, 4,5 V ... 5,5 V, TTL/RS-422, 7 V ... 30 V, TTL/RS-422, 7 V ... 30 V, HTL/push pull, (depending on type)
Connection type	Cable, 8-pin, universal, 0.5 m Cable, 8-pin, universal, 1.5 m Cable, 8-pin, universal, 3 m Cable, 8-pin, universal, 5 m Cable, 8-pin, universal, 0.5 m with plug M12 (depending on type)
Operating power consumption (no load) 4,5 V ... 5,5 V, Open Collector NPN 4,5 V ... 5,5 V, TTL/RS-422	50 mA 50 mA
Power consumption (no load) 7 V ... 30 V, TTL/RS-422 7 V ... 30 V, HTL/push pull	≤ 0,5 W ≤ 0,5 W
Reverse polarity protection 4,5 V ... 5,5 V, Open Collector NPN 4,5 V ... 5,5 V, TTL/RS-422 7 V ... 30 V, TTL/RS-422 7 V ... 30 V, HTL/push pull	no no yes yes
Load current max.	≤ 30 mA (TTL/HTL) ≤ 20 mA (Open Collector)
Maximum output frequency	≤ 300 kHz
Reference signal, number	1
Reference signal, position	90°, electronically, gated with A and B

Ambient data

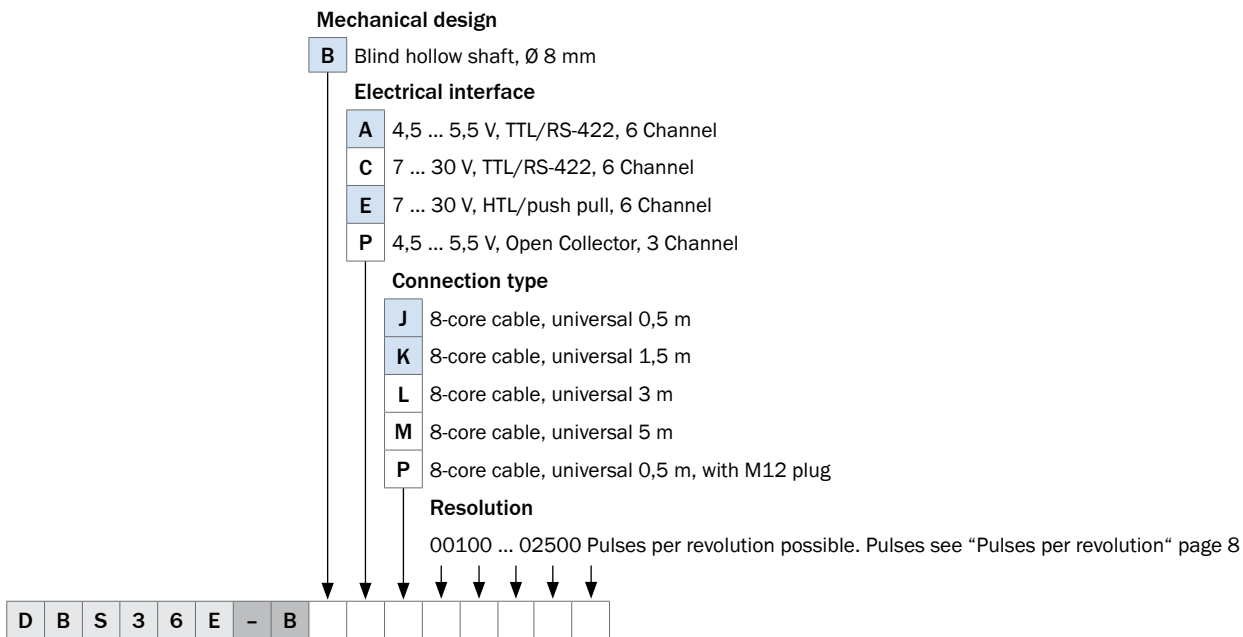
EMC	According to EN 61000-6-2 and EN 61000-6-4
Enclosure rating	IP 65
Permissible relative humidity	90 % (Condensation of the optical scanning not permitted)
Working temperature range	-20 °C ... +85 °C
Storage temperature range	-40 °C ... +100 °C, without package
Resistance to shocks	100 g (EN 60068-2-27)
Resistance to vibration	20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

Ordering information

DBS36, solid shaft (marked in blue = preferred types)



DBS36, blind hollow shaft (marked in blue = preferred types)



Pulses per revolution (marked in blue = preferred types)

	E
Number of lines per revolution	00100
	00120
	00125
	00200
	00256
	00300
	00360
	00400
	00500
	00512
	00600
	01000
	01024
	01200
	02000
	02048
	02500

Ordering example

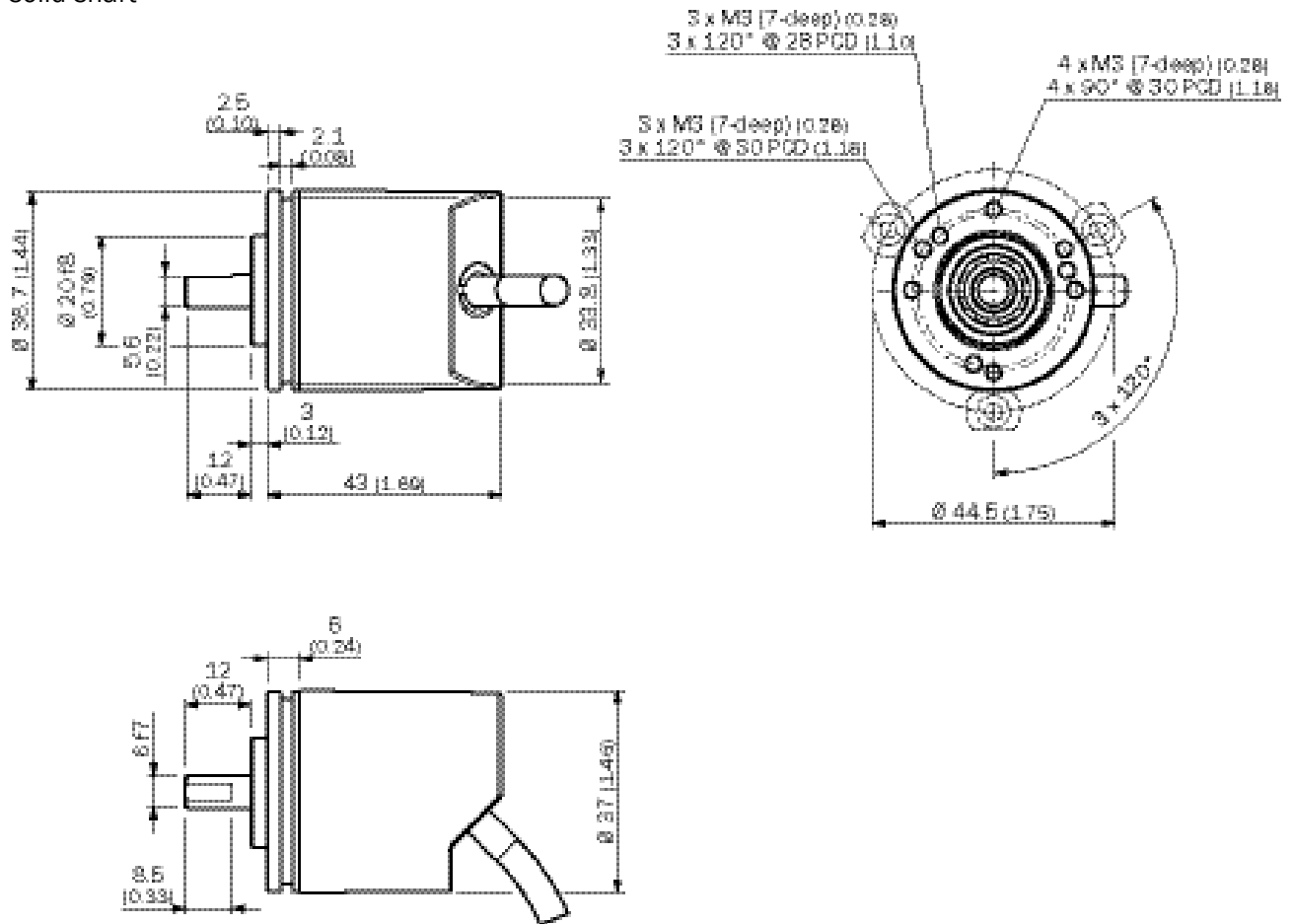
Mechanical interface	Shaft diameter	Electrical interface	Connection type	Pulses per revolution	Model name	Part no.
Solid shaft, face mount flange	6 mm	TTL/RS422	Cable, 8-pin, universal, 1.5 m	100	DBS36E-S3AK00100	1060535
				360	DBS36E-S3AK00360	1060536
				400	DBS36E-S3AK00400	1060537
				500	DBS36E-S3AK00500	1060538
				1,000	DBS36E-S3AK01000	1060539
				1,024	DBS36E-S3AK01024	1060144
				2,048	DBS36E-S3AK02048	1058602
		HTL/push pull	Cable, 8-pin, universal, 1.5 m	100	DBS36E-S3EK00100	1060540
				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

Mechanical interface	Shaft diameter	Electrical interface	Connection type	Pulses per revolution	Model name	Part no.	
Blind hollow shaft	8 mm	TTL/RS422	Cable, 8-pin, universal, 1.5 m	100	DBS36E-BBAK00100	1060524	
				360	DBS36E-BBAK00360	1060525	
				400	DBS36E-BBAK00400	1060526	
				1,000	DBS36E-BBAK01000	1060528	
				1,024	DBS36E-BBAK01024	1060147	
				2,048	DBS36E-BBAK02048	1058603	
		HTL/push pull	Cable, 8-pin, universal, 1.5 m		100	DBS36E-BBEK00100	1060529
					360	DBS36E-BBEK00360	1060530
					400	DBS36E-BBEK00400	1060531
					500	DBS36E-BBEK00500	1060532
					1,000	DBS36E-BBEK01000	1060533
					1,024	DBS36E-BBEK01024	1060534
					2,048	DBS36E-BBEK02048	1059910

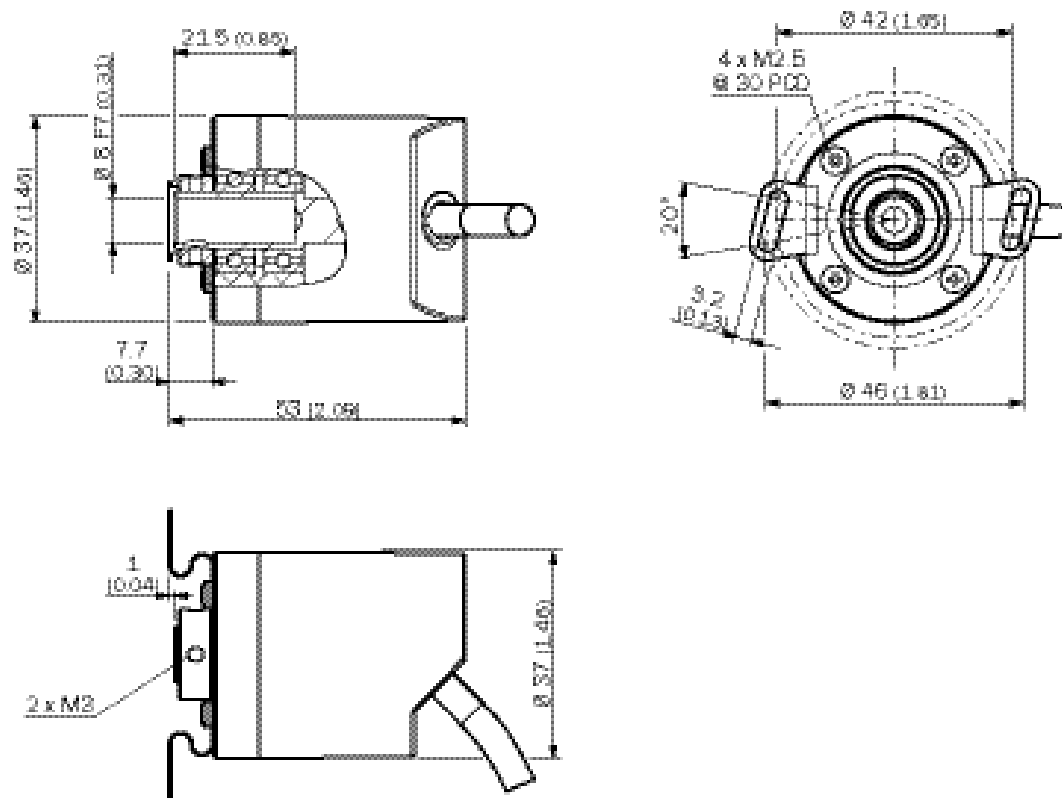
Dimensional drawings

dimensions in mm

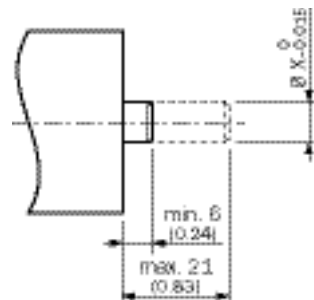
solid shaft



blind hollow shaft



Proposed fitting

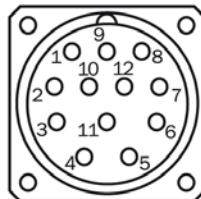
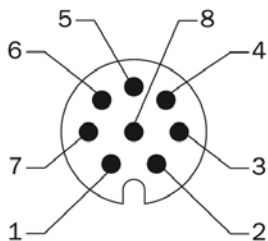


PIN assignment

8-core cable

View of M12 device connector on encoder




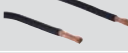



View of M23 device connector on encoder



Colour of wires	Pin 12-pole in M12	Pin 12-pole in M23	Signal OC	Signal TTL; HTL	Explanation
Brown	1	6	Not connected	A-	Signal line
White	2	5	A	A	Signal line
Black	3	1	Not connected	B-	Signal line
Pink	4	8	B	B	Signal line
Yellow	5	4	Not connected	Z-	Signal line
Lilac	6	3	Z	Z	Signal line
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
Screen	Screen	Screen	Screen	Screen	Screen (Screen connected to Encoder housing).

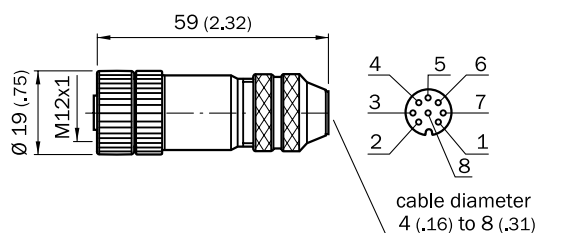
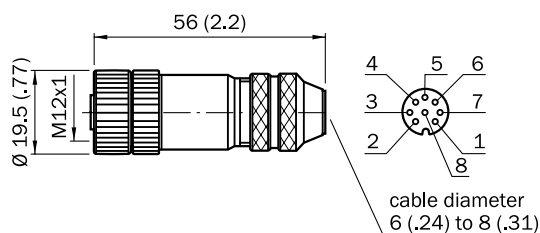
Accessories

Plug connectors and cables

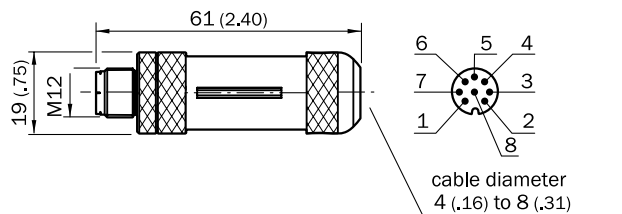
	Short description	Model name	Part no.
	Female connector M12, 8-pin, straight, cable 4 x 2 x 0,25 mm ² , shielded, drag chain capable, ø 7,0 mm, cable lengths available 2, 5, 10 and 20 m	DOL-1208-G02MAC1	6032866
		DOL-1208-G05MAC1	6032867
		DOL-1208-G10MAC1	6032868
		DOL-1208-G20MAC1	6032869
	Female connector M12, 8-pin, straight, shielded	DOS-1208-GA01	6045001
	Cable, by the meter 4 x 2 x 0,15 mm ² , shielded, ø 5,6 mm	LTG-2308-MWENC	6027529
	Cable, by the meter 4 x 2 x 0,25 + 2 x 0,5 + 1 x 0,14 mm ² , shielded, ø 7,5 mm	LTG-2411-MW	6027530
	Cable, by the meter 4 x 2 x 0,25 + 2 x 0,5 + 2 x 0,14 mm ² , shielded, drag chain capable, ø 7,8 mm	LTG-2512-MW	6027531
	Cable, by the meter 4 x 2 x 0,25 + 2 x 0,5 + 2 x 0,14 mm ² , shielded, drag chain capable, UV- and salt water resistant, ø 7,8 mm	LTG-2612-MW	6028516
	Male connector, M12, 8-pin, straight, shielded	STE-1208-GA01	6044892

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






DOS-1208-GA01



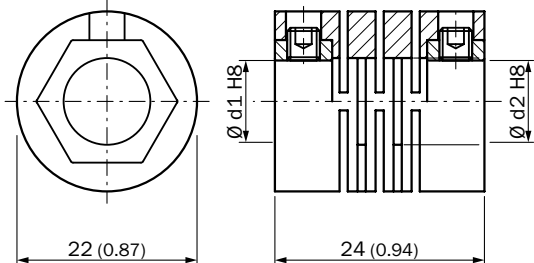
STE-1208-GA01



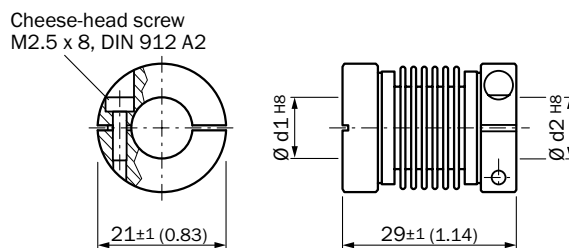
Shaft adaptation

	Short description	Technical data	Model name	Part no.
	Bellows coupling, shaft diameter 6 mm / 6 mm	max. shaft offset: radially +/- 0,25 mm, axially +/-0,4 mm, angle +/- 4 degrees, max. speed 10.000 rpm, -30 to +120 degrees Celsius, torsional spring stiffness of 150 Nm/rad	KUP-0606-B	5312981
	Bellows coupling, shaft diameter 6 mm / 10 mm		KUP-0610-B	5312982
	Beam coupling, shaft diameter 6 mm / 6 mm	max. shaft offset: radially +/- 0,3 mm, axially +/- 0,3 mm, angle +/- 3 degrees;max. speed 10.000 rpm, -10 to +80 degrees Celsius, torsional spring stiffness of 38 Nm/rad	KUP-0606-MS	2066285
	Beam coupling, shaft diameter 6 mm / 8 mm		KUP-0608-MS	2066130
	Beam coupling, shaft diameter 6 mm / 10 mm		KUP-0610-MS	2066298
	Spring washer clutch, shaft diameter 6 mm / 10 mm	max. shaft offset: radially +/- 0,3 mm, axially +/-0,4 mm, angle +/- 2,5 degrees;max. speed 12.000 rpm, -10 to +80 degrees Celsius, torsional spring stiffness of 30 Nm/rad	KUP-0610-F	5312985
	Double loop coupling, shaft diameter 6 mm / 10 mm	max. shaft offset: radially +/- 2,5 mm, axially +/- 3 mm, angle +/- 10 degrees, max. speed 3.000 rpm, -30 to +80 degrees Celsius, torsional spring stiffness of 25 Nm/rad	KUP-0610-D	5326697
	Collet 5 mm for Blind hollow shaft, outer diameter 8 mm	-	SPZ-005-AD-A	2066991
	Collet 6 mm for Blind hollow shaft, outer diameter 8 mm	-	SPZ-006-DD36-A	2056390

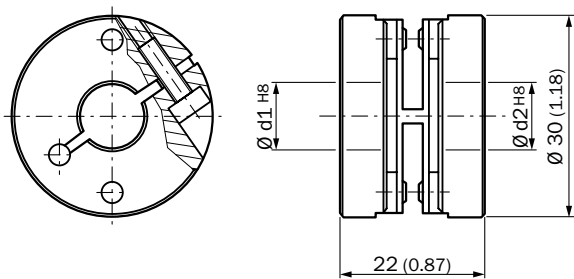
KUP-0606-MS
KUP-0608-MS
KUP-0610-MS



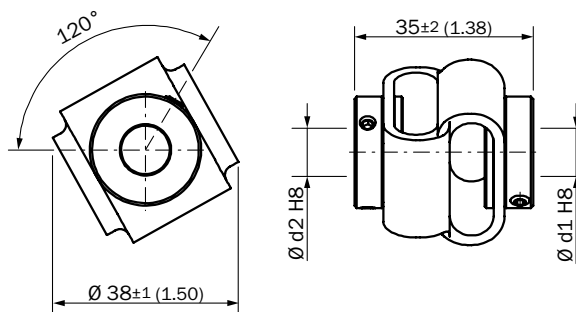
KUP-0606-B
KUP-0610-B



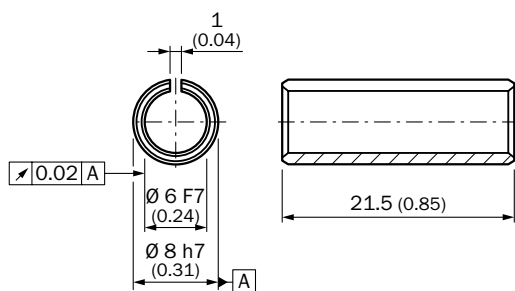
KUP-0610-F




KUP-0610-D



SPZ-006-DD36-A



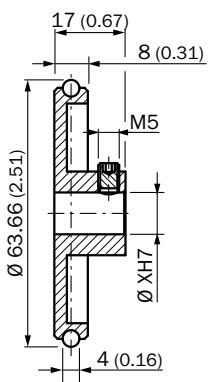
Mounting brackets/plates

	Short description	Model name	Part no.
	Angle bracket	BEF-WF-20	2066393

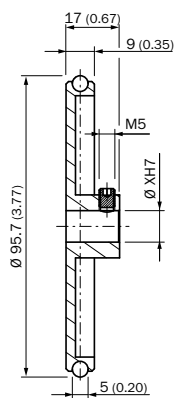
Other mounting accessories

	Short description	Model name	Part no.
	Stator coupling	BEF-DS-DBS36	2066301
	Adaptor flange	BEF-FA-020-033	2066312
	Measuring wheel, circumference 0.2 m, hole \varnothing 6 mm, NBR70 O-ring surface	BEF-MR006020R	2055222
	Measuring wheel, circumference 0.3 m, hole \varnothing 6 mm, NBR70 O-ring surface	BEF-MR006030R	2055634
	O-ring for measuring wheels, circumference 200 mm, 2 pieces	BEF-OR-053-040	2064061
	O-ring for measuring wheels, circumference 300 mm, 2 pieces	BEF-OR-083-050	2064076
	Servo clamps (3 pieces)	BEF-WK-RESOL	2039082

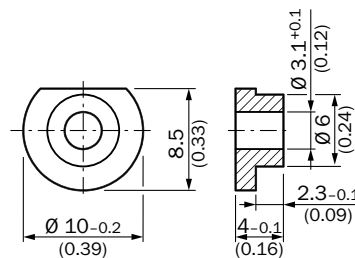
BEF-MR006020R



BEF-MR006030R



BEF-WK-RESOL



EASIMA: The MultiFit Incremental Encoder



Product description

The EASIMA incremental encoder DBS50 stands out due to its high mechanical flexibility, outstanding technical features and many possible variations. The DBS50 has a face mount flange with 50 mm diameter and a solid shaft with 8 mm diameter. At 37 mm, the housing diameter is extremely compact, saving valuable space. The face mount flange

offers 2 different mounting hole patterns and a servo groove for mounting with servo clamps. The encoder has compact dimensions and a universal cable outlet that makes it possible to run the cable in the axial or radial direction. The DBS50 incremental encoder is fully compatible with the DDS50 incremental encoder.

At a glance

- Connection with universal cable outlet
- Face mount flange with 8 mm solid shaft
- Face mount flange with 2 mounting hole patterns and servo groove
- Compact housing diameter of 37 mm, flange diameter: 50 mm
- Various electrical interfaces: TTL/RS-422, HTL/push pull and Open Collector NPN
- Available PPR from 100 up to 2,500
- Working temperature range: -20 °C ... +85 °C
- Enclosure rating: IP 65

Your benefits

- The universal cable outlet allows use in tight spaces and makes flexible cable routing possible
- Face mount flange with various mounting hole patterns for easy device replacement without changing the application
- Face mount flange with servo groove makes mounting with servo clamps possible
- The high flexibility of the encoders' mechanical interface and the available accessories make it possible to use one design in many applications
- The compact housing diameter saves valuable space
- Compatibility with the DDS50 series makes it easy to replace this series in existing applications



Additional information

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Accessories	25

→ www.mysick.com/en/DBS50

For more information, just 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.



Detailed technical data

Performance

Pulses per revolution	100 ...2500 (depending on type)
Measuring step deviation	$\pm 18^\circ$ /pulses per revolution
Error limits	$\pm 54^\circ$ /pulses per revolution
Measuring step	90° electronically/pulses per revolution

Mechanical data

Mechanical interface	Solid shaft, face mount flange
Shaft diameter	8 mm x 15,5 mm
Mass	180 g (with connecting cable 1.5 m)
Start up torque	0.9 Ncm (+20 °C)
Operating torque	0.6 Ncm (+20 °C)
Permissible shaft loading radial/axial	30 N (radial) 50 N (axial)
Maximum operating speed	6,000 /min, ¹⁾
Moment of inertia of the rotor	6.5 gcm ²
Bearing lifetime	2 x 10 ⁹ revolutions
Max. angular acceleration	$\leq 500,000$ rad/s ²

¹⁾ Self-warming 6.2 K per 1,000 1/min.

Electrical data

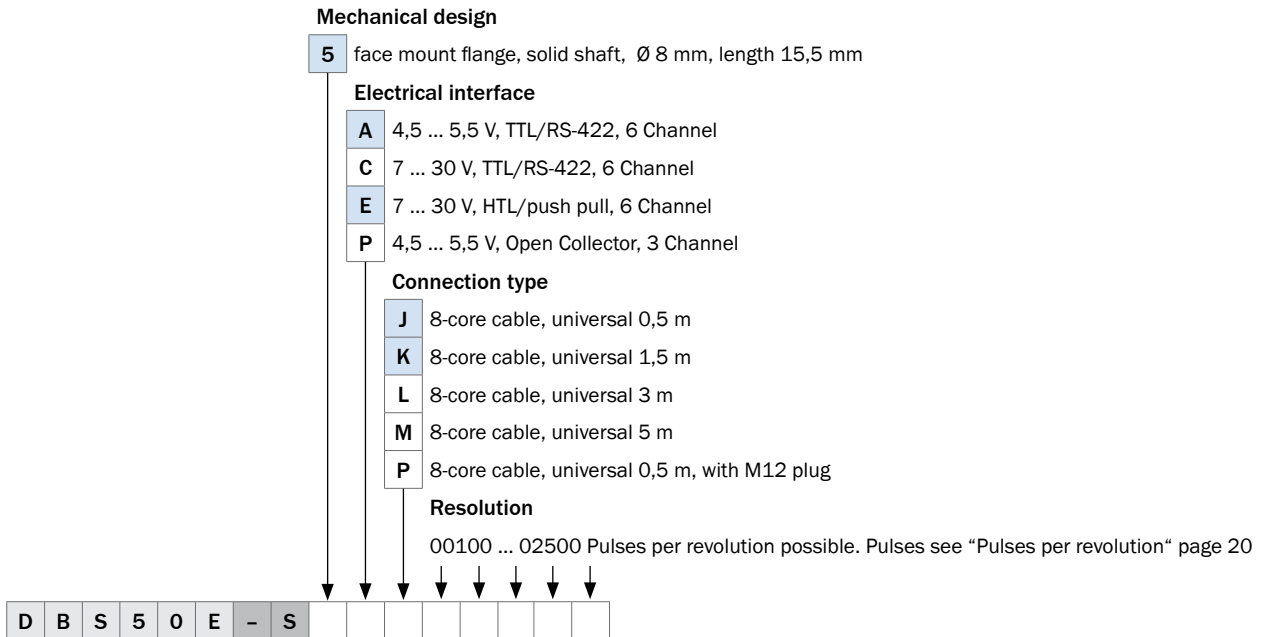
Electrical interface	4,5 V ... 5,5 V, Open Collector NPN, 4,5 V ... 5,5 V, TTL/RS-422, 7 V ... 30 V, TTL/RS-422, 7 V ... 30 V, HTL/push pull, (depending on type)
Connection type	Cable, 8-pin, universal, 0.5 m Cable, 8-pin, universal, 1.5 m Cable, 8-pin, universal, 3 m Cable, 8-pin, universal, 5 m Cable, 8-pin, universal, 0.5 m with plug M12 (depending on type)
Operating power consumption (no load) 4,5 V ... 5,5 V, Open Collector NPN 4,5 V ... 5,5 V, TTL/RS-422	50 mA 50 mA
Power consumption (no load) 7 V ... 30 V, TTL/RS-422 7 V ... 30 V, HTL/push pull	≤ 0,5 W ≤ 0,5 W
Reverse polarity protection 4,5 V ... 5,5 V, Open Collector NPN 4,5 V ... 5,5 V, TTL/RS-422 7 V ... 30 V, TTL/RS-422 7 V ... 30 V, HTL/push pull	no no yes yes
Load current max.	≤ 30 mA (TTL/HTL) ≤ 20 mA (Open Collector)
Maximum output frequency	≤ 300 kHz
Reference signal, number	1
Reference signal, position	90°, electronically, gated with A and B

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP 65
Permissible relative humidity	90 % (Condensation of the optical scanning not permitted)
Working temperature range	-20 °C ... +85 °C
Storage temperature range	-40 °C ... +100 °C, without package
Resistance to shocks	100 g (EN 60068-2-27)
Resistance to vibration	20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

Ordering information

DBS50, solid shaft (marked in blue = preferred types)



Pulses per revolution (marked in blue = preferred types)

	E
Number of lines per revolution	00100
	00120
	00125
	00200
	00256
	00300
	00360
	00400
	00500
	00512
	00600
	01000
	01024
	01200
	02000
	02048
02500	

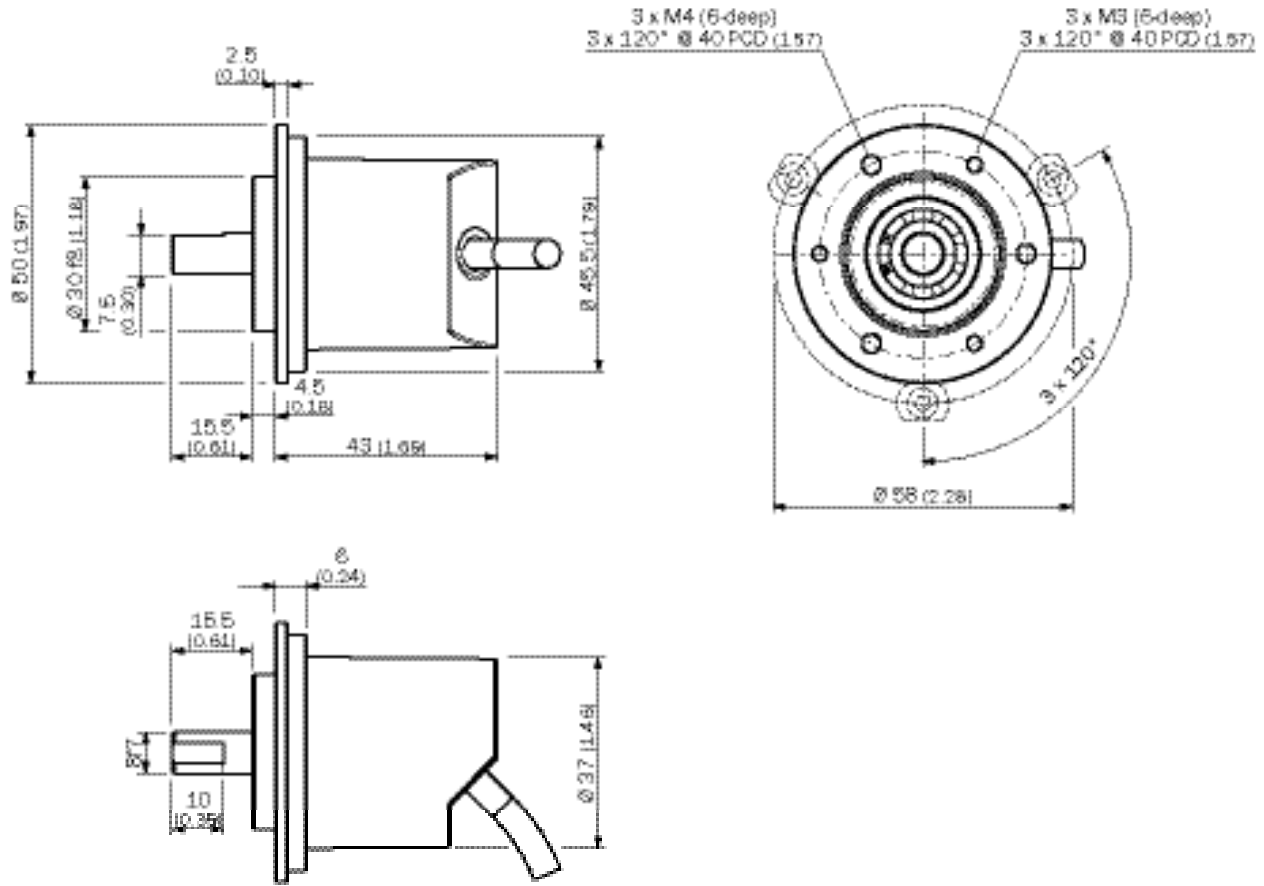
Ordering example

- **Mechanical interface:** Solid shaft, face mount flange
- **Shaft diameter:** 8 mm

Electrical interface	Connection type	Pulses per revolution	Model name	Part no.
TTL/RS422	Cable, 8-pin, universal, 1.5 m	100	DBS50E-S5AK00100	1060685
		360	DBS50E-S5AK00360	1060686
		400	DBS50E-S5AK00400	1060687
		500	DBS50E-S5AK00500	1060688
		1,000	DBS50E-S5AK01000	1060145
		1,024	DBS50E-S5AK01024	1060689
		2,048	DBS50E-S5AK02048	1057446
HTL/push pull	Cable, 8-pin, universal, 1.5 m	100	DBS50E-S5EK00100	1060690
		360	DBS50E-S5EK00360	1060691
		400	DBS50E-S5EK00400	1060692
		500	DBS50E-S5EK00500	1060693
		1,000	DBS50E-S5EK01000	1060694
		1,024	DBS50E-S5EK01024	1060695
		2,048	DBS50E-S5EK02048	1059903

Dimensional drawings

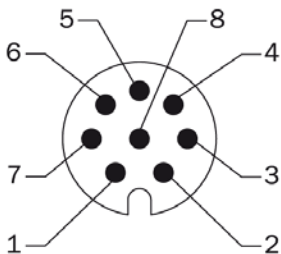
dimensions in mm



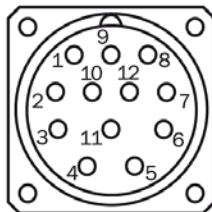
PIN assignment

8-core cable

View of M12 device connector on encoder



View of M23 device connector on encoder



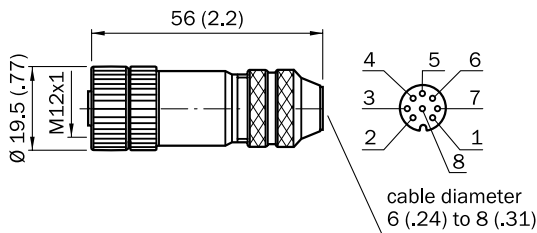
Colour of wires	Pin 12-pole in M12	Pin 12-pole in M23	Signal OC	Signal TTL; HTL	Explanation
Brown	1	6	Not connected	A-	Signal line
White	2	5	A	A	Signal line
Black	3	1	Not connected	B-	Signal line
Pink	4	8	B	B	Signal line
Yellow	5	4	Not connected	Z-	Signal line
Lilac	6	3	Z	Z	Signal line
Blue	7	10	GND	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
Screen	Screen	Screen	Screen	Screen	Screen (Screen connected to Encoder housing).

Accessories

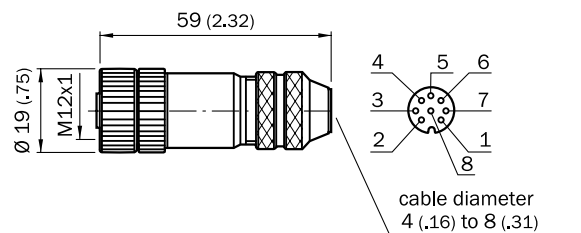
Plug connectors and cables

	Short description	Model name	Part no.
	Female connector M12, 8-pin, straight, cable 4 x 2 x 0,25 mm ² , shielded, drag chain capable, ø 7,0 mm, cable lengths available 2, 5, 10 and 20 m	DOL-1208-G02MAC1	6032866
		DOL-1208-G05MAC1	6032867
		DOL-1208-G10MAC1	6032868
		DOL-1208-G20MAC1	6032869
	Female connector M12, 8-pin, straight, shielded	DOS-1208-GA01	6045001
	Cable, by the meter 4 x 2 x 0,15 mm ² , shielded, ø 5,6 mm	LTG-2308-MWENC	6027529
	Cable, by the meter 4 x 2 x 0,25 + 2 x 0,5 + 1 x 0,14 mm ² , shielded, ø 7,5 mm	LTG-2411-MW	6027530
	Cable, by the meter 4 x 2 x 0,25 + 2 x 0,5 + 2 x 0,14 mm ² , shielded, drag chain capable, ø 7,8 mm	LTG-2512-MW	6027531
	Cable, by the meter 4 x 2 x 0,25 + 2 x 0,5 + 2 x 0,14 mm ² , shielded, drag chain capable, UV- and salt water resistant, ø 7,8 mm	LTG-2612-MW	6028516
	Male connector, M12, 8-pin, straight, shielded	STE-1208-GA01	6044892

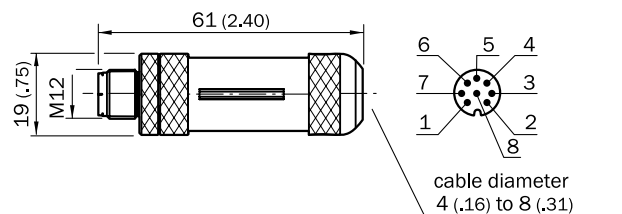
DOL-1208-G02MAC1
DOL-1208-G05MAC1
DOL-1208-G10MAC1
DOL-1208-G20MAC1





DOS-1208-GA01



STE-1208-GA01

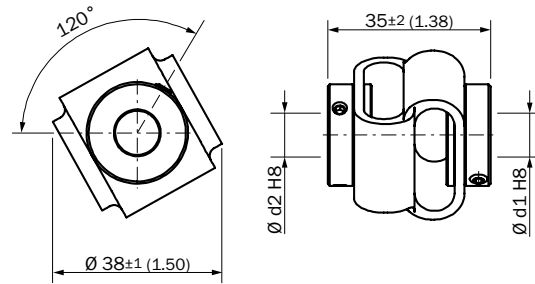
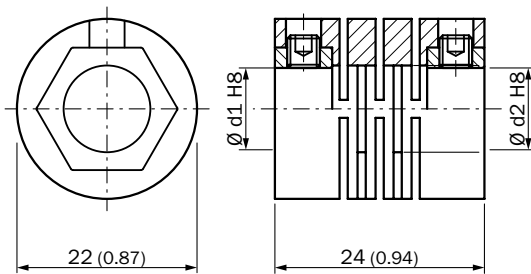


Shaft adaptation


	Short description	Technical data	Model name	Part no.
	Beam coupling, shaft diameter 6 mm / 8 mm	max. shaft offset: radially +/- 0,3 mm, axially +/- 0,3 mm, angle +/- 3 degrees; max. speed 10.000 rpm, -10 to +80 degrees Celsius, torsional spring stiffness of 38 Nm/rad	KUP-0608-MS	2066130
	Beam coupling, shaft diameter 8 mm / 8 mm		KUP-0808-MS	2066286
	Beam coupling, shaft diameter 8 mm / 10 mm		KUP-0810-MS	2066299
	Double loop coupling, shaft diameter 8 mm / 10 mm	max. shaft offset: radially +/- 2,5 mm, axially +/- 3 mm, angle +/- 10 degrees max. speed 3.000 rpm, -30 to +80 degrees Celsius, torsional spring stiffness of 25 Nm/rad	KUP-0810-D	5326704

KUP-0608-MS
KUP-0808-MS
KUP-0810-MS


KUP-0810-D



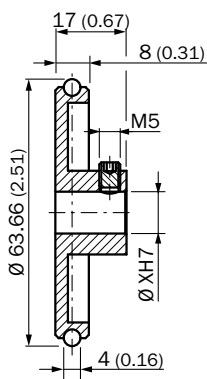
Mounting brackets/plates

	Short description	Model name	Part no.
	Angle bracket	BEF-WF-30	2066391

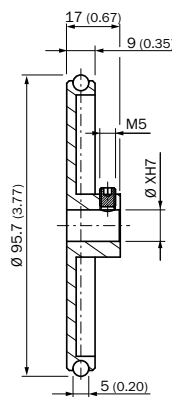
Other mounting accessories

	Short description	Model name	Part no.
	Measuring wheel, circumference 0.2 m, hole \varnothing 8 mm, NBR70 O-ring surface	BEF-MR008020R	2055223
	Measuring wheel, circumference 0.3 m, hole \varnothing 8 mm, NBR70 O-ring surface	BEF-MR008030R	2055635
	O-ring for measuring wheels, circumference 200 mm, 2 pieces	BEF-OR-053-040	2064061
	O-ring for measuring wheels, circumference 300 mm, 2 pieces	BEF-OR-083-050	2064076
	Servo clamps (3 pieces)	BEF-WK-RESOL	2039082

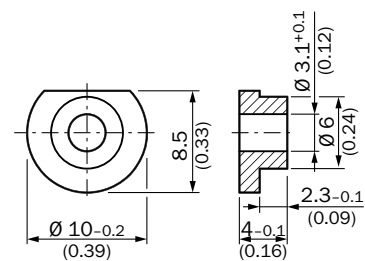
BEF-MR008020R



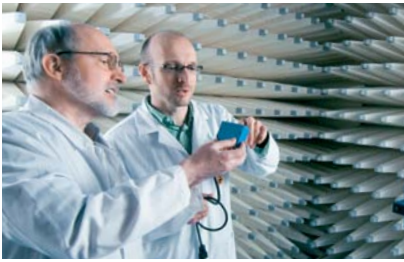
BEF-MR008030R



BEF-WK-RESOL



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