DFS20/DFS21/DFS22/DFS25

FACTORY-CONFIGURED AND USER-PROGRAMMABLE INCREMENTAL ENCODERS

Incremental encoders

SICK

Sensor Intelligence.

FACTORY-CONFIGURED AND USER-PROGRAMMABLE INCREMENTAL ENCODERS

Product description

The DFS2x family of products are high-resolution incremental encoders that provide industry standard 2 and 2.5-inch mechanical interfaces and are available as factory-configured or programmable devices. Factory-configured encoders can be ordered with TTL, HTL, or open-collector outputs as well as integer resolutions from 1 to 65,536 counts per revolution. Programmable encoders allow the user to select the integer resolution and either TTL or HTL outputs.

DFS2x encoders incorporate rugged internal technology that allows them to operate over a wide temperature range and tolerate twice the shock and vibration levels of comparable encoders. The flexibility and reliability of these encoders allows you to confidently standardize on a single encoder platform for position sensing across a wide variety of applications while simultaneously reducing your spare part requirements.

At a glance

- Compact 2-inch and 2.5-inch design
- Integer resolutions from 1 to 65,536 pulses per rev
- Compatible with PGT-08-S PC-based programming tool

- Programmable encoders allow selection of resolution, signal phase, zero pulse position, and output interface
- Flange, hollow shaft, and blind hollow shaft options
- M12 connector, MS connector, and flying lead cable connection options

Your benefits

- Wide operating temperature range and high tolerance of shock and vibration reduce machine downtime
- High resolution provides more precise positioning for applications that require high accuracy
- Programmable DFS2x encoders simplify machine designs by allowing the same model encoder to be used for different applications

- Spare parts inventory requirements are reduced because a single programmable DFS2x encoder can be used across a variety of applications
- Flexible electrical interface configurations reduces the risk that the selected encoder will be incompatible with input electronics

CE

Additional information

→ **www.sick.com/DFS2x**

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.

Detailed technical data

Performance

Pulses per revolution	0 ... 65,536
Measuring step	± 90° electric/pulses per revolution
Measuring step deviation	± 0.008° pulses 100 ... 10,000 ± 0.002° pulses > 10,000 ± 0.04° pulses 1 ... 99
Error limits	± 0.03°

Interfaces

Communication interface	Incremental
Communication Interface detail	TTL / RS-422 HTL / Push pull Open Collector TTL / HTL
Factory setting	Factory setting: output level TTL
Number of signal channels	6-channel
0-SET function	H-active, L = 0 - 3 V, H = 4,0 - U_s V [1]
Programmable/configurable	– / ✔
Initialization time	40 ms [2]
Output frequency	820 kHz / 150 kHz
4.5 V... 5.5 V, TTL/RS-422	
Load current	30 mA
Operating current	50 mA (without load)
4.5 V ... 5.5 V, Open Collector	
Load current	30 mA
Operating current	50 mA (without load)
TTL/RS-422	
Load current	30 mA
Power consumption	0.7 W (without load)
HTL/Push pull	
Load current	30 mA
Power consumption	0.7 W (without load)
TTL/HTL	
Load current	30 mA
Power consumption	0.7 W (without load)
Open Collector	
Load current	30 mA
Power consumption	0.7 W (without load)

[1] The Zero-Set function is not available with 6-pin MS connector or M12 connector options.

[2] Valid positional data can be read once this time has elapsed.

Electrical data

Connection type	Male connector, M12, 8-pin, radial [1]
	Male connector, MS, 10-pin, radial
	Male connector, MS, 7-pin, radial
	Male connector, MS, 6-pin, radial [1]
	Cable, 9-wire, radial, 3 m
	Cable, 9-wire, radial, 5 m
	Cable, 9-wire, radial, 10 m
	Cable, 9-wire, radial, 1.5 m
	Cable, 9-wire, radial, 1 m
	Male connector, M12, 8-pin, axial [1]
	Male connector, MS, 10-pin, axial
	Male connector, MS, 7-pin, axial
	Male connector, MS, 6-pin, axial [1]
	Cable, 9-wire, axial, 1.5 m
	Cable, 9-wire, axial, 5 m
	Cable, 9-wire, axial, 10 m
Supply voltage	4.5 ... 5.5 V
	8 ... 30 V
	4.75 ... 30 V
Reference signal, number	1
Reference signal, position	
Clockwise	180°, electric, gated with A
	90°, electric, logically gated with A and B
Counterclockwise	180°, Degree Marker Gated with BN2
	180°, electric, gated with A
	90°, electric, logically gated with A and B
Reverse polarity protection	✔
Short-circuit protection of the outputs	✔ [2]
MTTFd: mean time to dangerous failure	330 years (EN ISO 13849-1) [3]

[1] The Zero-Set function is not available with 6-pin MS connector or M12 connector options.

[2] Short-circuit opposite to another channel or GND permissable for maximum 30 s.

[3] 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	Through hollow shaft	Blind hollow shaft
Mechanical design	Solid shaft, Square flange Solid shaft, Servo flange Solid shaft, face mount flange	Through hollow shaft	Blind hollow shaft
Shaft diameter			
Square flange	1/4" 3/8" 6 mm 10 mm (depending on type)	–	
Servo flange	6 mm 1/4" 10 mm 3/8"	–	
Face mount flange	10 mm 1/4" 3/8"	–	

	Solid shaft	Through hollow shaft	Blind hollow shaft
2-point stator coupling	–	3/8" / 1/2"	
3-point stator coupling	–	3/8" / 1/2"	
Wavelength			
Solid shaft, Square flange	16 mm	–	
Solid shaft, Servo flange	16 mm	–	
Solid shaft, face mount flange	16 mm	–	
Flange type / stator coupling	–	2-point stator coupling / 3-point stator coupling	
Weight	+ 0.4 kg [1]	+ 0.3 kg [2]	
Shaft material	Stainless steel 1,4305		
Flange material	Aluminum		
Housing material	Aluminum		
Start up torque	0.5 Ncm (+20 °C)	0.8 Ncm (+20 °C)	
Operating torque	0.3 Ncm (+20 °C)	0.6 Ncm (+20 °C)	
Permissible shaft movement, axial static/ dynamic	–	± 0.5 mm / ± 0.1 mm	
Permissible shaft movement, radial static/ dynamic	–	± 0.3 mm / ± 0.05 mm	
Permissible shaft loading radial/axial	40 N (axial) 80 N (radial)	–	
Operating speed	≤ 9,000 min^{-1}	≤ 6,000 min^{-1}	
Moment of inertia of the rotor	15 gcm^2	40 gcm^2	
Bearing lifetime	3.6 x 10^9 revolutions		
Angular acceleration	≤ 500,000 rad/s^2		

[1] Relates to encoders with male connector MS.

[2] Relates to encoders with male connector M12.

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP65, shaft side (according to IEC 60529) [1] IP67, housing side, male connector (according to IEC 60529) IP65, shaft side (according to IEC 60529) IP67, housing side, cable connection (according to IEC 60529)
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	–30 °C ... +85 °C
Storage temperature range	–40 °C ... +100 °C, without package
Resistance to shocks	100 g, 11 ms (according to EN 60068-2-27)
Resistance to vibration	30 g, 10 Hz ... 2,000 Hz (according to EN 60068-2-6)

[1] With mating connector fitted.

Type code

Hollow shaft

Shaft type

| 1 | Through hollow shaft, 2" |
| 2 | Blind hollow shaft, 2" |

Stator coupling

| K | Stator coupling, 2-point |
| L | Stator coupling, 3-point |

Shaft diameter

| C | 3/8" |
| F | 1/2" |

Communication interface

A	4.5 V ... 5.5 V, TTL/RS-422
B	8 V ... 30 V, HTL/push pull
C	8 V ... 30 V, TTL/RS-422
D	8 V ... 30 V, open collector
E	4.5 V ... 5.5 V, open collector
P	4.75 V ... 30 V, TTL/HTL programmable [1]

Code sequence

1	Clockwise, 180 degree mark, gated with A
2	Clockwise, 90 degree mark, gated with A and B
A	Counter-clockwise, 180 degree mark, gated with BN [2]
B	Counter-clockwise, 180 degree mark, gated with A
D	Counter-clockwise, 90 degree mark, gated with A and B

Connection type

C	Male connector, M12, 8-pin, radial [3]
K	Cable, 9-wire, radial, 1 m
L	Cable, 9-wire, radial, 1.5 m
N	Cable, 9-wire, radial, 5 m
O	Cable, 9-wire, radial, 10 m
S	Male connector, M12, 8-pin, radial

Pulses per revolution

| 1 ... 65536 | Pulses per revolution [4] |

| D | F | S | 2 | | A | - | | | | | | | | | | |

[1] The P electronic interface option offers an output type (5 V or 8 V ... 30 V line driver) which can be selected by the user, pulses per revolution and counting direction. The default setting set at the factory is 5 V line driver outputs, 0 pulse width.
[2] Direction of rotation / Marking position A (counter-clockwise, 180 degree mark with BN switching) is not available for the P communication interface (5 V ... 30 V DC power supply, 5 V or 8 V ... 30 V line driver outputs can be selected by the user).
[3] Zero set possible, not for programmable devices.
[4] The P electronic interface option offers an output type (5 V or 8 V ... 30 V line driver) which can be selected by the user, pulses per revolution and counting direction. The default setting set at the factory is 5 V line driver outputs, 0 pulse width.

The following features can be programmed using PGT-08 programming tool (only for programmable encoders):

Pulses per revolution of 1 ... 65536

Electrical zero pulse width 90°, 180°, 270°

Mechanical zero pulse width 1° ... 359°

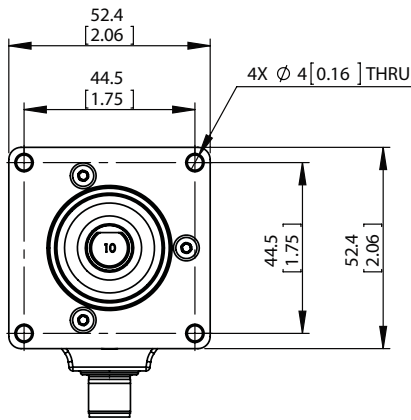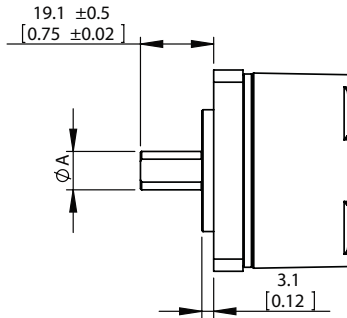Electric output current circuit 5 V (TTL) or 8 V ... 30 V (HTL) - line driver

Direction of rotation for A leads B (CW or CCW)

Solid shaft

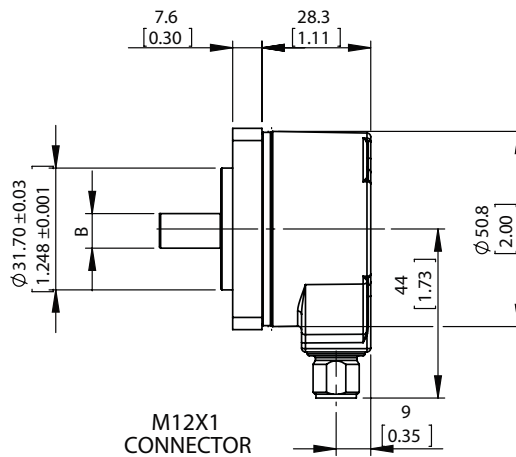**Shaft type**

| 5 | Solid shaft, 2,5" |
| 0 | Solid shaft, 2" |

Flange type / Stator coupling

A	Square flange
B	Servo flange, 2"
M	Servo flange, 58 mm [1]
N	Face mount flange, 60 mm [2]

Shaft diameter

1	1/4" with face
2	3/8" with face
3	6 mm with face [1]
4	10 mm with face

Communication interface

A	4.5 V ... 5.5 V, TTL/RS-422
B	8 V ... 30 V, HTL/push pull
C	8 V ... 30 V, TTL/RS-422
D	8 V ... 30 V, open collector
E	4.5 V ... 5.5 V, open collector
P	4.75 V ... 30 V, TTL/HTL programmable [3]

Code sequence

1	Clockwise, 180 degree mark, gated with A
2	Clockwise, 90 degree mark, gated with A and B
A	Counter-clockwise, 180 degree mark, gated with BN [4]
B	Counter-clockwise, 180 degree mark, gated with A
D	Counter-clockwise, 90 degree mark, gated with A and B

Connection type

C	Male connector, M12, 8-pin, radial [5]
D	Male connector, MS, 10-pin, radial
E	Male connector, MS, 7-pin, radial
F	Male connector, MS, 6-pin, radial [6]
K	Cable, 9-wire, radial, 1 m
L	Cable, 9-wire, radial, 1.5 m
N	Cable, 9-wire, radial, 5 m
O	Cable, 9-wire, radial, 10 m
1	Male connector, M12, 8-pin, axial [2] [5]
2	Male connector, MS, 10-pin, axial [2]
3	Male connector, MS, 7-pin, axial [2]
4	Male connector, MS, 6-pin, axial [2] [6]
5	Cable, 9-wire, axial, 1.5 m [2]
7	Cable, 9-wire, axial, 5 m [2]
8	Cable, 9-wire, axial, 10 m [2]

Pulses per revolution

| 1 ... 65536 | Pulses per revolution [7] |

| D | F | S | 2 | A | - | | | | | | | | | |

[1] Only for mechanical version 0.
[2] Only for mechanical version 5.
[3] The P electronic interface option offers an output type (5 V or 8 V ... 30 V line driver) which can be selected by the user, pulses per revolution and counting direction. The default setting set at the factory is 5 V line driver outputs, 0 pulse width.
[4] Direction of rotation / Marking position A (counter-clockwise, 180 degree mark with BN switching) is not available for the P communication interface (5 V ... 30 V DC power supply, 5 V or 8 V ... 30 V line driver outputs can be selected by the user).
[5] Zero set possible, not for programmable devices.
[6] Zero set possible.
[7] The P electronic interface option offers an output type (5 V or 8 V ... 30 V line driver) which can be selected by the user, pulses per revolution and counting direction. The default setting set at the factory is 5 V line driver outputs, 0 pulse width.

The following features can be programmed using PGT-08 programming tool (only for programmable encoders):

Pulses per revolution of 1 ... 65536

Electrical zero pulse width 90°, 180°, 270°

Mechanical zero pulse width 1° ... 359°

Electric output current circuit 5 V (TTL) or 8 V ... 30 V (HTL) - line driver

Direction of rotation for A leads B (CW or CCW)

Ordering information

Dimensional drawings (Dimensions in mm (inch))

DFS20 square flange mount, radial connector outlet M12 and MS, cable outlet

SHAFT OPTIONS		
NOMINAL	SHAFTØ "A"	FLAT DIM "B"
1/4"	6.327/6.312[.2491/.2485]	5.5[.22]
3/8"	9.507/9.492[.3743/.3737]	8.5[.33]
10MM	9.977/9.962[.3928/.3922]	9[.35]

19.1 ±0.5
[0.75 ±0.02]

ØA

3.1
[0.12]

52.4
[2.06]

44.5
[1.75]

4X Ø 4[0.16] THRU

44.5
[1.75]

52.4
[2.06]

SQUARE FLANGE

7.6
[0.30]

28.3
[1.11]

Ø 31.70 ±0.03
1.248 ±0.001

B

Ø 50.8
[2.00]

44
[1.73]

9
[0.35]

M12X1
CONNECTOR

38.5
[1.52]

C

MIL CONNECTOR OPTIONS	
TYPE	DIM "C"
6 PIN	63.9[2.52]
7 PIN	63.9[2.52]
10 PIN	69.4[2.73]

18
[0.71]

MIL CONNECTOR

28.3
[1.11]

49.7
[1.96]

PER PART NUMBER

50
[1.97]
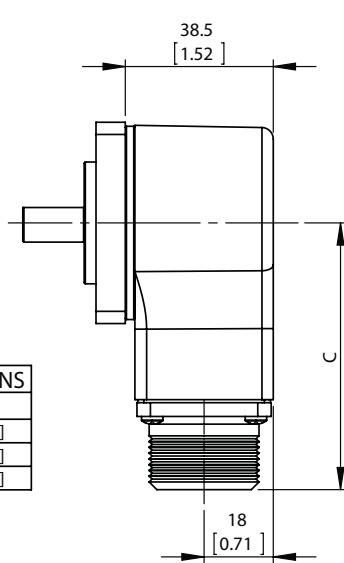
CABLE

Dimensional drawings and models for exact configurations can be downloaded from the website.

DFS20 servo flange mount, radial connector outlet M12 and MS, cable outlet

19.05 ±0.51
[0.75 ±0.02]

⌀A

3.08
[0.12]

SHAFT OPTIONS		
NOMINAL	SHAFT⌀ "A"	FLAT DIM "B"
1/4"	6.327/6.312[.2491/.2485]	5.5[.22]
3/8"	9.507/9.492[.3743/.3737]	8.5[.33]
10MM	9.977/9.962[.3928/.3922]	9[.35]

29.19
[1.15]

4X 10-32 UNF ⍗ 5.59 [0.22]

⌀ 42
[1.65]

29.19
[1.15]

3X M4x0.7 - 6H ⍗ 5.59 [0.22]
EQUALLY SPACED

⌀ 38.10
[1.50]

3X 4-40 UNC ⍗ 5.59 [0.22]
EQUALLY SPACED

SERVO FLANGE

28.30
[1.11]

2.54
[0.10]

2.54
[0.10]

⌀50.80
[2.00]

⌀46.99
[1.85]

⌀ 31.70 ±0.03
[1.248 ±0.001]

B

44
[1.73]

⌀ 50.80
[2.00]

2.54
[0.10]

9
[0.35]

M12X1
CONNECTOR

38.50
[1.52]

C

18
[0.71]
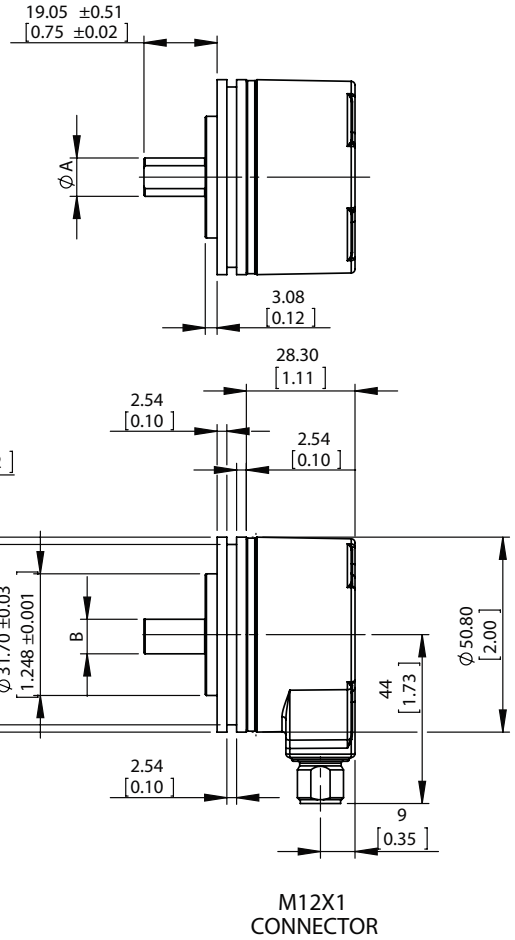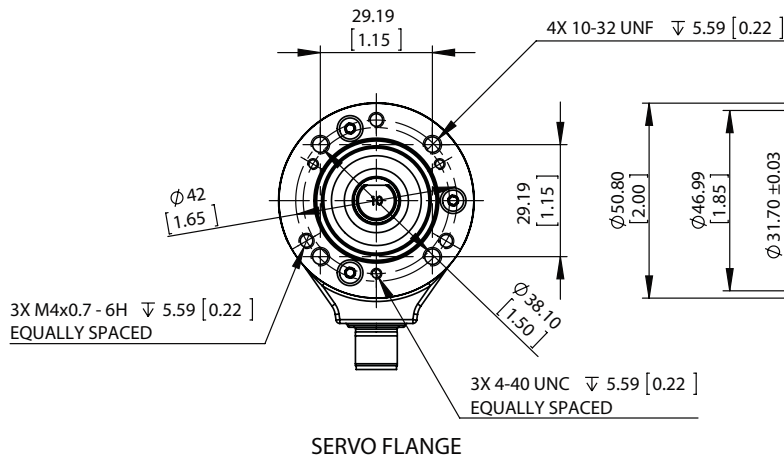
MIL CONNECTOR OPTIONS	
TYPE	DIM "C"
6 PIN	63.9[2.52]
7 PIN	63.9[2.52]
10 PIN	69.4[2.73]

MIL CONNECTOR
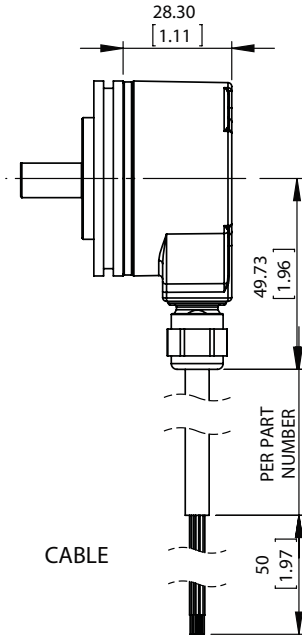
28.30
[1.11]

49.73
[1.96]

PER PART
NUMBER

50
[1.97]

CABLE

Dimensional drawings and models for exact configurations can be downloaded from the website.

DFS25 square flange mount, radial connector outlet M12 and MS, cable outlet

SHAFT OPTIONS

NOMINAL	SHAFT∅ "A"	FLAT DIM "B"
1/4"	6.327/6.312[.2491/.2485]	5.5[.22]
3/8"	9.507/9.492[.3743/.3737]	8.5[.33]
10MM	9.977/9.962[.3928/.3922]	9[.35]

29.84 ±0.64 [1.17 ±0.03]

∅ A

4.35 [0.17]

66.68 [2.63]

52.39 [2.06]

4X ∅ 5.60 [0.22] THRU

66.68 [2.63]

52.39 [2.06]

∅ 47.63 [1.875]

3X 8-32 UNC ∇ 4.83 [0.19]
EQUALLY SPACED

SQUARE FLANGE

28.30 [1.11]

6.35 [0.25]

19.05 [0.75]

∅ 31.70 ±0.03 [1.248 ±0.001]

B

∅ 63.50 [2.50]

50 [1.97]

9 [0.35]

M12X1 CONNECTOR

38.50 [1.52]

C

MIL CONNECTOR OPTIONS

TYPE	DIM "C"
6 PIN	63.9[2.52]
7 PIN	63.9[2.52]
10 PIN	69.5[2.74]

MIL CONNECTOR

28.30 [1.11]

55.73 [2.19]

PER PART NUMBER

50 [1.97]

CABLE

Dimensional drawings and models for exact configurations can be downloaded from the website.

DFS25 servo flange mount, radial connector outlet M12 and MS, cable outlet

SHAFT OPTIONS

NOMINAL	SHAFT⌀ "A"	FLAT DIM "B"
1/4"	6.327/6.312[.2491/.2485]	5.5[.22]
3/8"	9.507/9.492[.3743/.3737]	8.5[.33]
10MM	9.977/9.962[.3928/.3922]	9[.35]

29.84 ±0.64
[1.17 ±0.03]

⌀ A

4.35
[0.17]

3X 8-32 UNC ⛛ 4.8 [0.19]
EQUALLY SPACED

⌀47.63
[1.875]

SERVO FLANGE

28.30
[1.11]

2.54
[0.10]

19.05
[0.75]

1.27
[0.05]

⌀63.50
[2.50]

⌀58.67
[2.31]

⌀ 31.70 ±0.03
[1.248 ±0.001]

B

50
[1.97]

⌀63.50
[2.50]

2.54
[0.10]

9
[0.35]

**M12X1
CONNECTOR**

38.50
[1.52]

MIL CONNECTOR OPTIONS

TYPE	DIM "C"
6 PIN	63.9[2.52]
7 PIN	63.9[2.52]
10 PIN	69.4[2.73]

C

MIL CONNECTOR

28.30
[1.11]

55.73
[2.19]

PER PART
NUMBER

50
[1.97]

CABLE
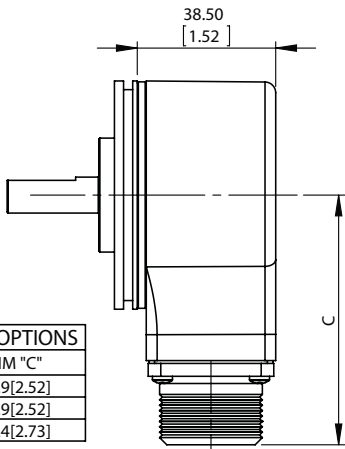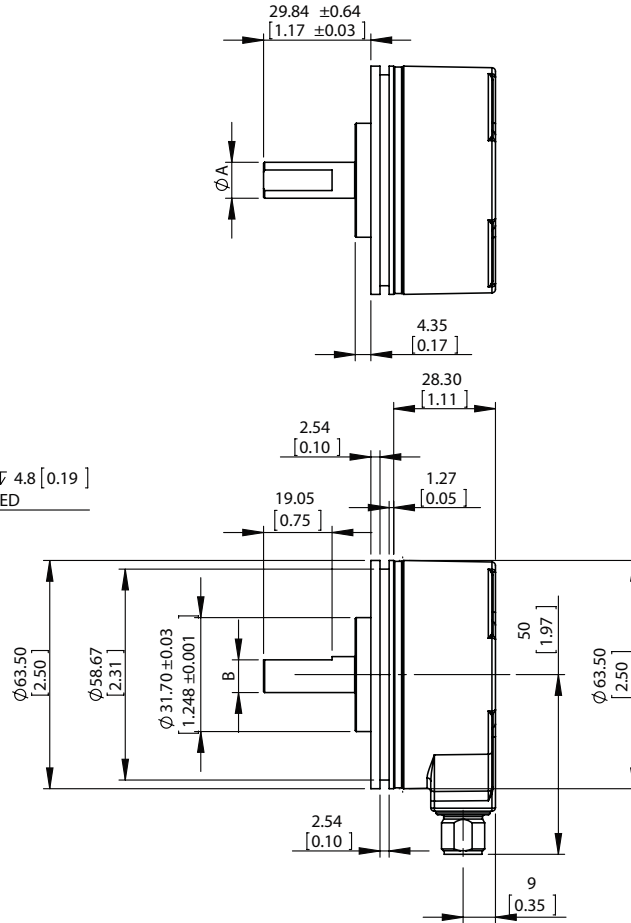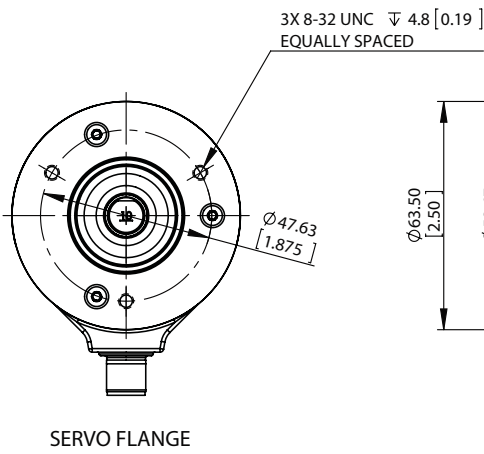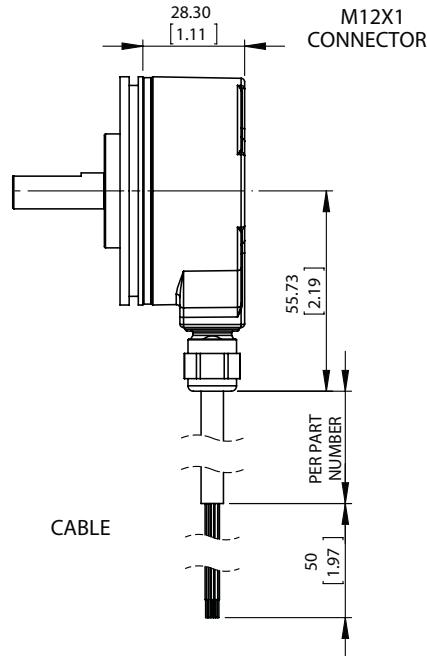
Dimensional drawings and models for exact configurations can be downloaded from the website.

DFS21, DFS22 Blind Hollow Shaft and Through Hollow Shaft
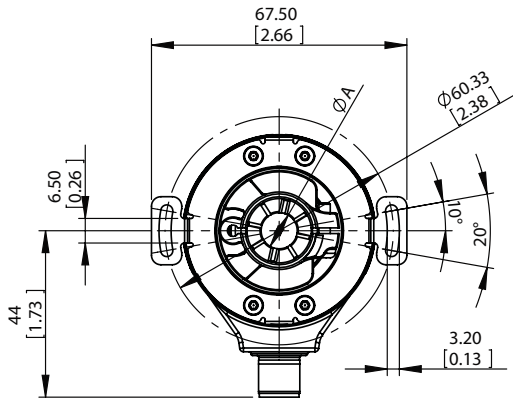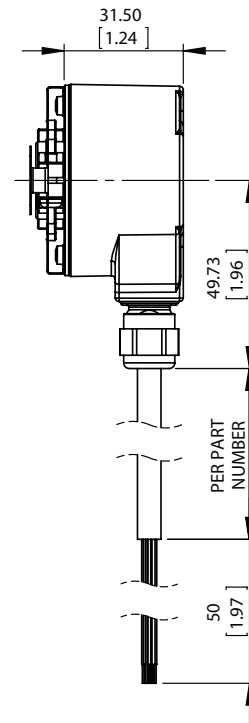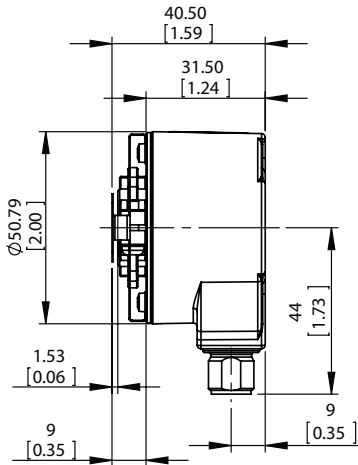
BLIND HOLLOW SHAFT

SHAFT OPTIONS	
NOMINAL	SHAFT∅ "A"
3/8"	9.543/9.558[.3757/.3763]
1/2"	12.716/12.734[.5006/.5013]
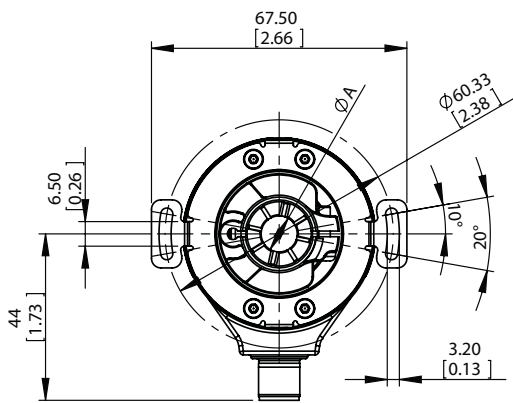
THROUGH HOLLOW SHAFT
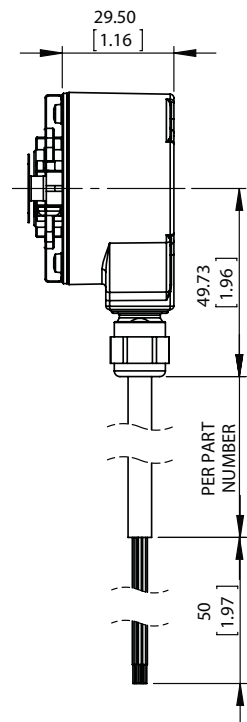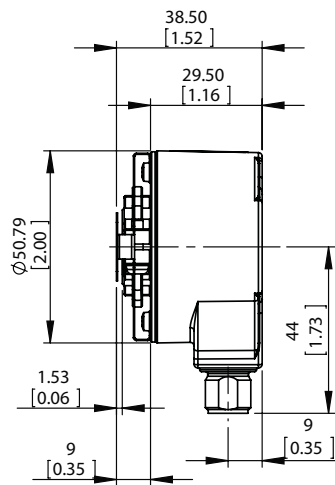
Dimensional drawings and models for exact configurations can be downloaded from the website.

PIN assignment
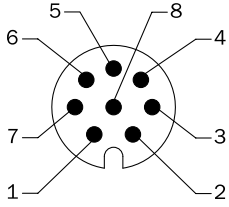
View of the M12 connector on the encoder
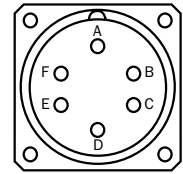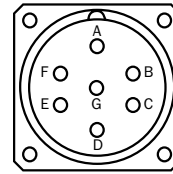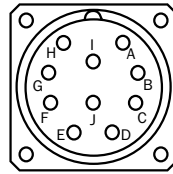
View of the MS connector on the encoder

M12, 8-pin	MS, 10-pin	MS, 7-pin	MS, 6-pin	Cable, 9-wire	Signal	Description
1	H	-	-	Brown	$\overline{A}$	Signal wire
2	A	A	E	White	A	Signal wire
3	I	-	-	Black	$\overline{B}$	Signal wire
4	B	B	D	Pink	B	Signal wire
5	J	-	-	Yellow	$\overline{Z}$	Signal wire
6	C	C	C	Purple	Z	Signal wire
7	F	F	A	Blue	GND	GND
8	D	D	B	Red	U_S	Supply voltage
-	E	E	-	Orange	0-SET	Input signal
-	G	G	F	-	Case	Electrically connected to the housing potential
-	-	-	-	Bare	Drain	Bare wire parallel to the braided screen
-	-	-	-	Screen	Screen	Screen connected to housing on encoder side

Maximum revolution range

Maximum revolution range
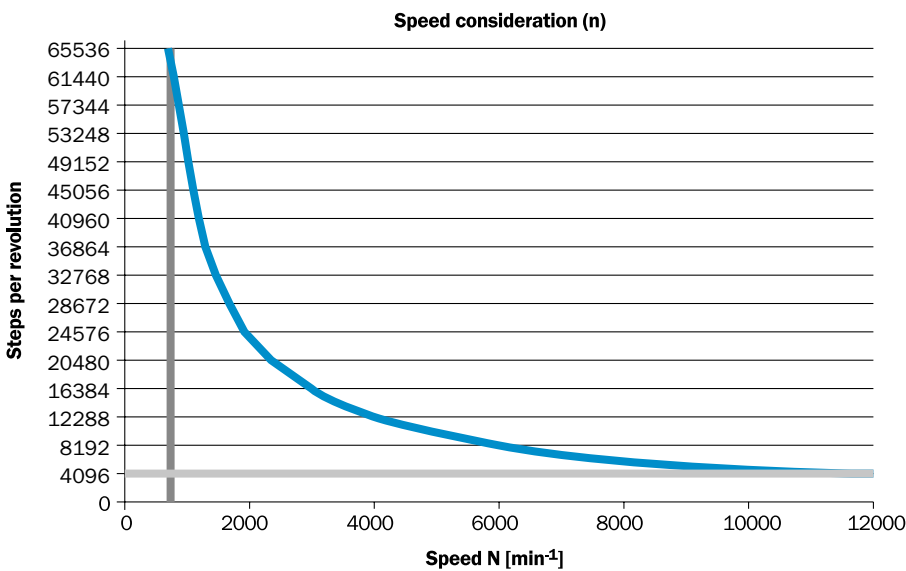
Signal outputs

Signal Outputs with Counter Clock-wise Counting Direction Option Selected (B leads A for clock-wise rotation). Complement signals AN, BN and ZN are not shown.
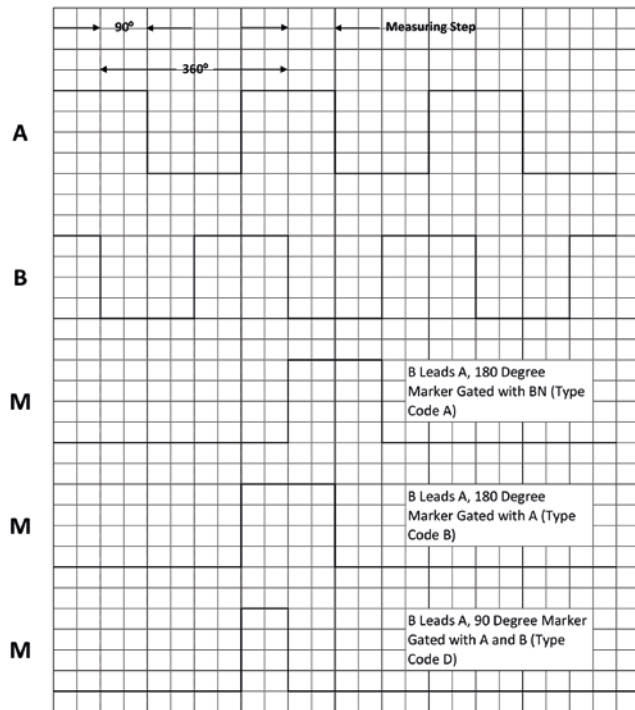
Signal Outputs with Clock-wise Counting Direction Option Selected (A leads B for clock-wise rotation). Complement signals AN, BN and ZN are not shown.

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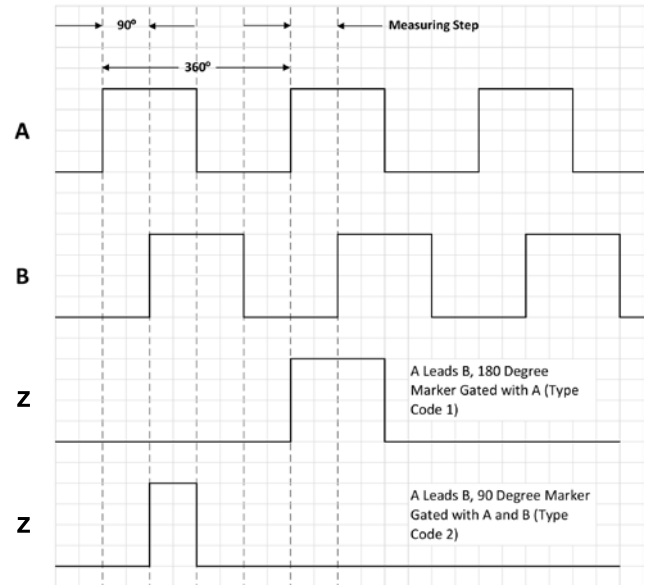
Cw with view on the encoder shaft in direction "A", compare dimensional drawing.

Accessories

Mounting systems

Shaft adaptation

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
	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
	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
		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

Further accessories

Programming and configuration tools

Figure	Brief description	Type	Part no.
	USB programming unit, for programmable SICK encoders AFS60, AFM60, DFS60, VFS60, DFV60 and wire draw encoders with programmable encoders	PGT-08-S	1036616
	Programming unit display for programmable SICK DFS60, DFV60, AFS/AFM60, AHS/AHM36 encoders, and wire draw encoder with DFS60, AFS/AFM60 and AHS/AHM36. Compact dimensions, low weight, and intuitive operation.	PGT-10-PRO-S01	1087462
		PGT-10-Pro	1072254

Plug connectors and cables

Plug connectors and cables

Cables (ready to assemble)

Figure	Brief description	Type	Part no.
	Head A: cable Head B: Flying leads Cable: SSI, Incremental, HIPERFACE®, PUR, halogen-free, shielded, 4 x 2 x 0.15 mm², 5.6 mm	LTG-2308-MWENC	6027529
	Head A: cable Head B: Flying leads Cable: SSI, Incremental, PUR, shielded, 4 x 2 x 0.25 mm2 + 2 x 0.5 mm2 + 1 x 0.14 mm², 7.5 mm	LTG-2411-MW	6027530
	Head A: cable Head B: Flying leads Cable: SSI, Incremental, PUR, halogen-free, shielded, 4 x 2 x 0.25 mm² + 2 x 0.5 mm² + 2 x 0.14 mm², 7.8 mm	LTG-2512-MW	6027531
	Head A: cable Head B: Flying leads Cable: SSI, TTL, HTL, Incremental, PUR, halogen-free, shielded, 4 x 2 x 0.25 mm² + 2 x 0.5 mm² + 2 x 0.14 mm², 7.8 mm, UV and saltwater-resistant	LTG-2612-MW	6028516

Connecting cables

Figure	Brief description	Length of cable	Type	Part no.
	Head A: female connector, M12, 8-pin, straight Head B: Flying leads Cable: Incremental, SSI, PUR, halogen-free, shielded, 4 x 2 x 0.25 mm², 7 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
		25 m	DOL-1208-G25MAC1	6067859

Connection cables

Figure	Brief description	Length of cable	Type	Part no.
	Head A: female connector, M12, 8-pin, straight Head B: male connector, D-Sub, 9-pin, straight Cable: Incremental, shielded, 4 x 2 x 0.08 mm² Details: programming adapter cable for programming tool PGT-10-Pro and PGT-08-S	0.5 m	DSL-2D08-G0M5AC3	2046579

Figure	Brief description	Length of cable	Type	Part no.
	Head A: female connector, MS/10, 10-pin, straight Head B: male connector, D-Sub, 9-pin, straight Cable: Incremental, PUR, halogen-free, shielded, 4 x 2 x 0.08 mm² Details: programming adapter cable for programming tool PGT-10-Pro and PGT-08-S	0.5 m	DSL-4D08-G0M5AC5	2067176

Field-attachable connectors

Figure	Brief description	Type	Part no.
	Head A: female connector, M12, 8-pin, straight, A-coded Head B: - Cable: Incremental, SSI, shielded, CAT5, CAT5e	DOS-1208-GA01	6045001
	Head A: male connector, M12, 8-pin, straight, A-coded Head B: - Cable: Incremental, shielded, CAT5, CAT5e	STE-1208-GA01	6044892
	Head A: male connector, M23, 12-pin, straight Head B: - Cable: HIPERFACE®, SSI, Incremental, shielded	STE-2312-G01	2077273

Dimensional drawings ➜ **page 17**

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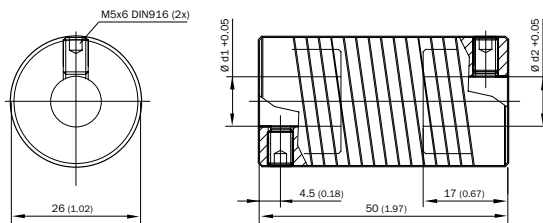
Shaft adaptation

KUP-xx1x-B
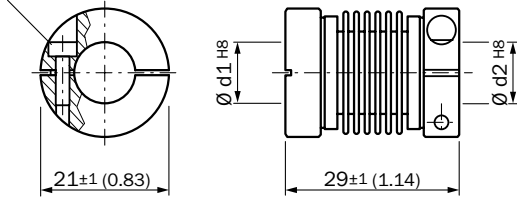
KUP-xx10-F
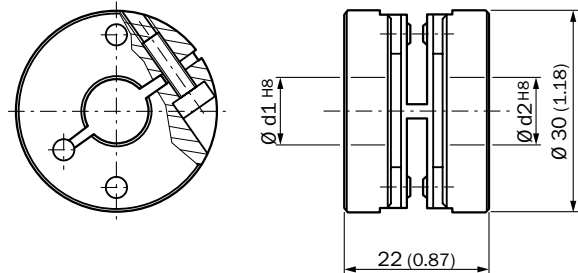
KUP-1010-W

Plug connectors and cables

DOL-1208-GxxMAC1

43 (1.69)
1.5 (.06)
14.5 (.57)
M12x1

5/yel
4/pnk   6/vio
3/blk   7/blu
2/wht   1/brn
8/red
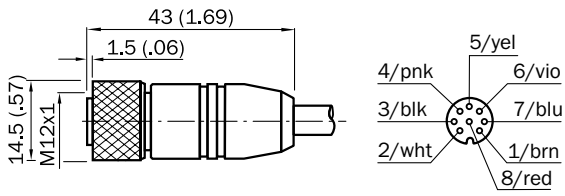
All dimensions in mm (inch)

DOS-1208-GA01

59 (2.32)
Ø 19 (.75)
M12x1

4   5   6
3   7
2   1
8

cable diameter
4 (.16) to 8 (.31)

STE-1208-GA01

61 (2.40)
19 (.75)
M12

6   5   4
7   3
1   2
8

cable diameter
4 (.16) to 8 (.31)

STE-2312-G01

66.7
(2.63)
Ø 26.5
(1.04)
M23 x 1

SW 24   SW 24

1   9   8
2   10 12   7
3   11   6
4   5

Pin insert
12 pin
(plug-in face)
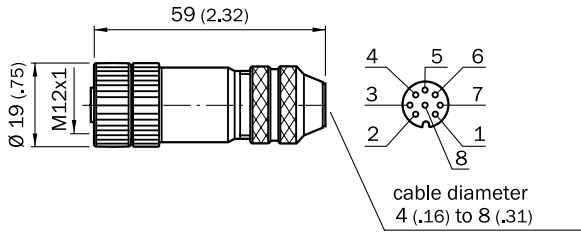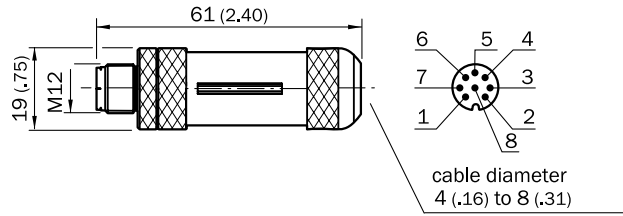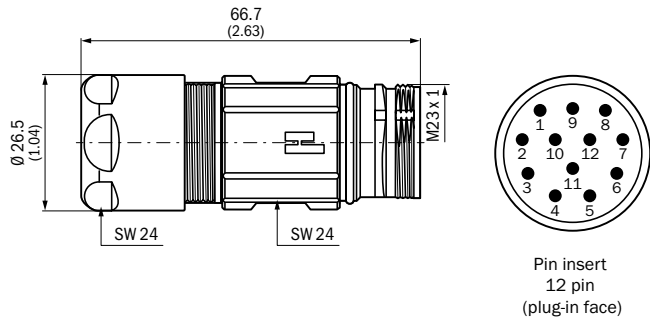
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