

DFS20A-A4AAD003000

DFS2x

INCREMENTAL ENCODERS





Ordering information

Туре	Part no.
DFS20A-A4AAD003000	1122776

Other models and accessories → www.sick.com/DFS2x

Illustration may differ



Detailed technical data

Performance

Pulses per revolution	3,000
Measuring step	± 90°, electric/pulses per revolution
Measuring step deviation	± 0.008° pulses 100 10,000
Error limits	± 0.03°

Interfaces

Communication interface	Incremental
Communication Interface detail	TTL / RS-422
Number of signal channels	6-channel
0-set function via hardware pin	✓
0-SET function	H-active, $L = 0 - 3 \text{ V}$, $H = 4.0 - U_s \text{ V}$
Initialization time	40 ms ¹⁾
Output frequency	820 kHz
Load current	30 mA
Operating current	50 mA (without load)

 $^{^{1)}}$ Valid positional data can be read once this time has elapsed.

Electrical data

Connection type	Male connector, MS, 10-pin, radial
Supply voltage	4.5 5.5 V
Reference signal, number	1
Reference signal, position	180°, Degree Marker Gated with BN2
Reverse polarity protection	√

 $^{^{1)}\,\}mbox{Short-circuit}$ opposite to another channel or GND permissable for maximum 30 s.

²⁾ 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.

Short-circuit protection of the outputs	√ ¹)
MTTFd: mean time to dangerous failure	330 years (EN ISO 13849-1) ²⁾

 $^{^{1)}\,\}mbox{Short-circuit}$ opposite to another channel or GND permissable for maximum 30 s.

Mechanical data

Mechanical design	Solid shaft, Square flange
Shaft diameter	10 mm
Shaft length	16 mm
Weight	+ 0.4 kg ¹⁾
Shaft material	Stainless steel 1,4305
Flange material	Aluminum
Housing material	Aluminum
Start up torque	0.5 Ncm (+20 °C)
Operating torque	0.3 Ncm (+20 °C)
Permissible shaft loading	80 N (radial) 40 N (axial)
Operating speed	≤ 9,000 min ⁻¹
Moment of inertia of the rotor	15 gcm ²
Bearing lifetime	3.6 x 10 ⁹ revolutions
Angular acceleration	$\leq 500,000 \text{ rad/s}^2$

 $^{^{1)}}$ Based on encoder with MS male connector.

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP65, shaft side (IEC 60529) IP67, housing side (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 (EN 60068-2-27)
Resistance to vibration	30 g, 10 Hz 2,000 Hz (EN 60068-2-6)

Classifications

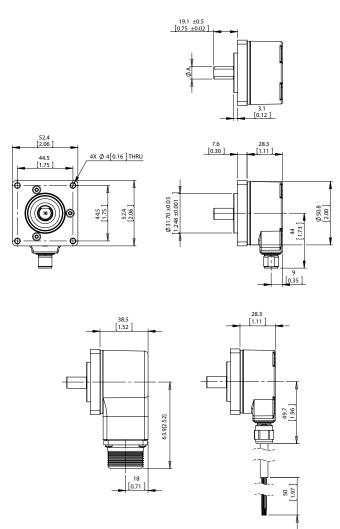
ECLASS 5.0	27270501
ECLASS 5.1.4	27270501
ECLASS 6.0	27270590
ECLASS 6.2	27270590
ECLASS 7.0	27270501
ECLASS 8.0	27270501
ECLASS 8.1	27270501
ECLASS 9.0	27270501
ECLASS 10.0	27270501

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ECLASS 11.0	27270501
ECLASS 12.0	27270501
ETIM 5.0	EC001486
ETIM 6.0	EC001486
ETIM 7.0	EC001486
ETIM 8.0	EC001486
UNSPSC 16.0901	41112113

Dimensional drawing (Dimensions in mm (inch))

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

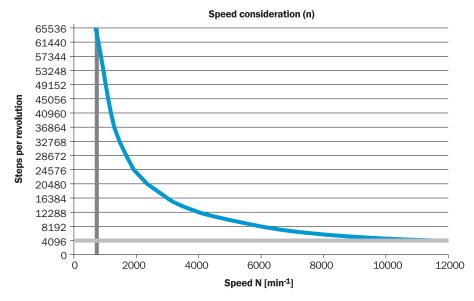


Туре	Shaft diameter A
DFS2x-x1xxxxxxxxx	1/4"
DFS2x-x2xxxxxxxx DFS2x-xCxxxxxxxxx	3/8"
DFS2x-xFxxxxxxxxx	1/2"

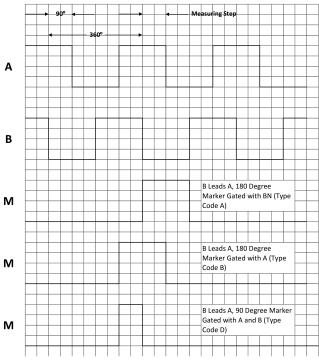
Туре	Shaft diameter A
DFS2x-x3xxxxxxxx	6 mm
DFS2x-x4xxxxxxxx	10 mm

Diagrams

Maximum revolution range

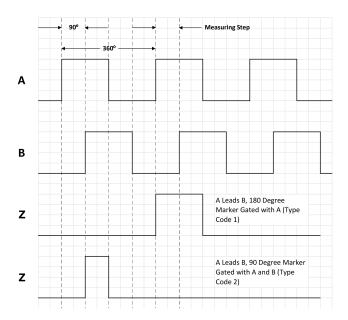


Signal Outputs with Counter Clock-wise Counting Direction Option Selected (B leads A for clock-wise rotation). Complement signals AN, BN and ZN are not shown.



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

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.

Recommended accessories

Other models and accessories → www.sick.com/DFS2x

	Brief description	Туре	Part no.
Others			
	 Connection type head A: Female connector, MS/10, 10-pin, straight Connection type head B: Flying leads Cable: 3 m, 11-wire Description: Shielded 	DOL-MS10- GO3MMA2	7102131
	 Connection type head A: Female connector, MS/10, 10-pin, straight Connection type head B: Flying leads Cable: 5 m, 11-wire Description: Shielded 	DOL-MS10- G05MMA2	7102132
	 Connection type head A: Female connector, MS/10, 10-pin, straight Connection type head B: Flying leads Cable: 1.5 m, 11-wire Description: Shielded 	DOL-MS10- G1M5MA2	7102130
	 Connection type head A: Female connector, MS/10, 10-pin, straight Connection type head B: Flying leads Cable: 10 m, 11-wire Description: Shielded 	DOL-MS10- G10MMA2	7102133
	 Connection type head A: Female connector, MS/10, 10-pin, straight Connection type head B: Flying leads Cable: 20 m, 11-wire Description: Shielded 	DOL-MS10- G20MMA2	7102134

DFS20A-A4AAD003000 | DFS2x

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Brief description	Туре	Part no.
 Connection type head A: Female connector, MS/10, 10-pin, straight Connection type head B: Flying leads Cable: 30 m, 11-wire Description: Shielded 	DOL-MS10- G30MMA2	7102135
 Connection type head A: Female connector, MS/10, 10-pin, straight, A-coded Description: Unshielded 	DOS-MS10-G	7102129

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