



DFS20A-A2PBD065536

DFS2x

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

Type	Part no.
DFS20A-A2PBD065536	1074804

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

Detailed technical data

Performance

Pulses per revolution	65,536
Measuring step	± 90° electric/pulses per revolution
Measuring step deviation	± 0.002° pulses > 10,000
Error limits	± 0.03°

Interfaces

Communication interface	Incremental
Communication Interface detail	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
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, MS, 10-pin, radial
Supply voltage	4.75 ... 30 V
Reference signal, number	1
Reference signal, position	180°, electric, gated with A

¹⁾ Short-circuit opposite to another channel or GND permissible 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.

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

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Mechanical data

Mechanical design	Solid shaft, Square flange
Shaft diameter	3/8"
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 radial/axial	40 N (axial) 80 N (radial)
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	≤ 500,000 rad/s ²

¹⁾ Relates to encoders with male connector outlet MS.

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 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.

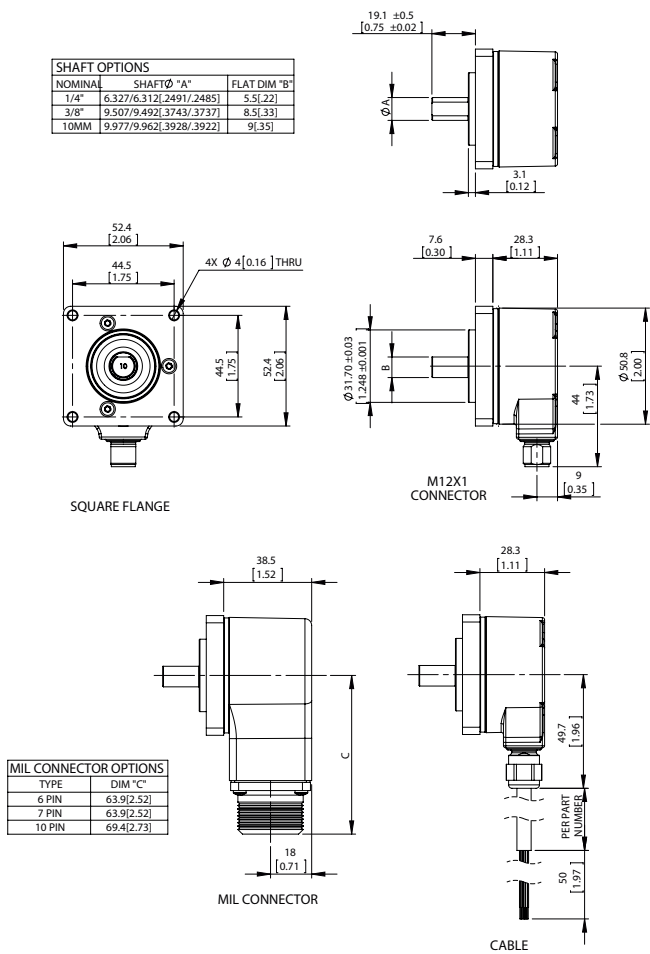
Classifications

ECl@ss 5.0	27270501
ECl@ss 5.1.4	27270501
ECl@ss 6.0	27270590
ECl@ss 6.2	27270590
ECl@ss 7.0	27270501
ECl@ss 8.0	27270501

ECl@ss 8.1	27270501
ECl@ss 9.0	27270501
ECl@ss 10.0	27270501
ECl@ss 11.0	27270501
ETIM 5.0	EC001486
ETIM 6.0	EC001486
ETIM 7.0	EC001486
UNSPSC 16.0901	41112113

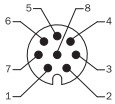
Dimensional drawing (Dimensions in mm (inch))

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

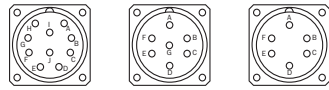


Dimensional drawings and models for exact configurations can be downloaded from the website.

PIN assignment



View of the M12 connector on the encoder

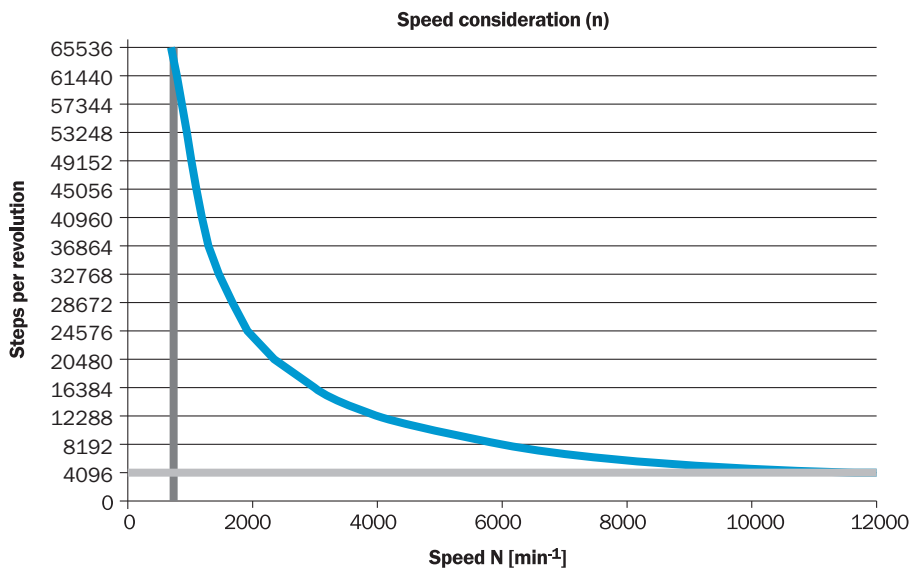


View of the MS connector on the encoder

M12, 8-pin	MS, 10-pin	MS, 7-pin	MS, 6-pin	Cable, 9-wire	Signal	Description
1	H	-	-	Brown	AN	Signal wire
2	A	A	E	White	A	Signal wire
3	I	-	-	Black	BN	Signal wire
4	B	B	D	Pink	B	Signal wire
5	J	-	-	Yellow	ZN	Signal wire
6	C	C	C	Purple	Z	Signal wire
7	F	F	A	Blue	GND	Us Return
8	D	D	B	Red	Us	Supply voltage
-	E	E	-	Orange	0-SET	Input signal
-	G	G	F	-	Case	Housing potential
-	-	-	-	Bare	Drain	Drain wire
-	-	-	-	Braid	Screen	Cable shield

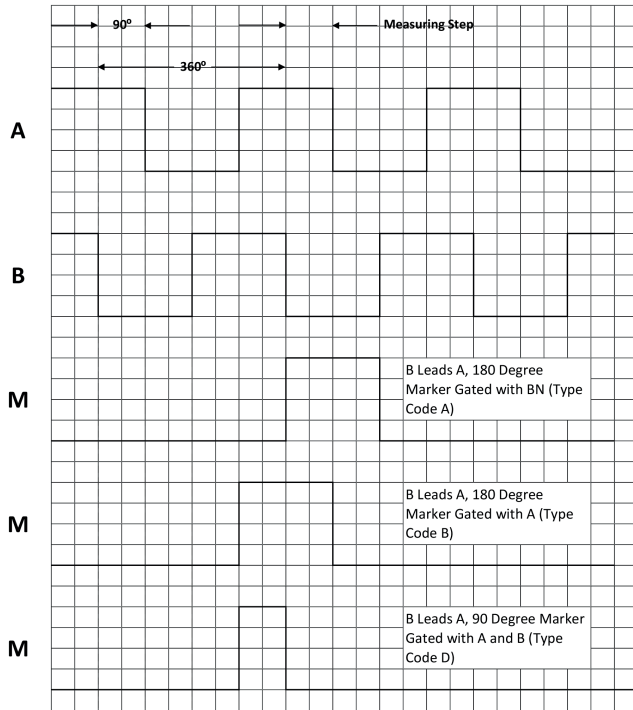
Maximum revolution range

Maximum revolution range



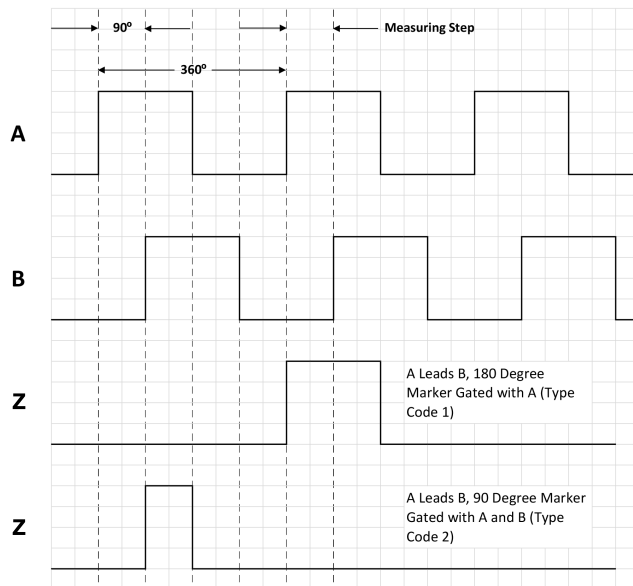
Signal outputs

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.



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	Type	Part no.
Programming and configuration tools			
	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	1072254

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