DFS25A-A2PBF008192
DFS2x

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.

Illustration may differ

CE

Ordering information

Type	Part no.
DFS25A-A2PBF008192	1078599

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

Detailed technical data

Performance

Pulses per revolution	8,192
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 / HTL
Factory setting	Factory setting: output level TTL
Number of signal channels	6-channel
Initialization time	40 ms [1]
Output frequency	820 kHz
Load current	30 mA
Power consumption	0.7 W (without load)

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

Electrical data

Connection type	Male connector, MS, 6-pin, radial [1]
Supply voltage	4.75 ... 30 V
Reference signal, number	1
Reference signal, position	180°, electric, gated with A
Reverse polarity protection	✓
Short-circuit protection of the outputs	✓ [2]

[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.

MTTFd: mean time to dangerous failure	330 years (EN ISO 13849-1) [3]

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Mechanical data

Mechanical design	Solid shaft, Square flange
Shaft diameter	3/8″
Shaft length	19 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 gcm²
Bearing lifetime	3.6×10^9 revolutions
Angular acceleration	≤ 500,000 rad/s²

[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

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))

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

Type	Shaft diameter A
DFS2x-x1xxxxxxxx	1/4″
DFS2x-x2xxxxxxxx DFS2x-xCxxxxxxxx	3/8″
DFS2x-xFxxxxxxxx	1/2″
DFS2x-x3xxxxxxxx	6 mm
DFS2x-x4xxxxxxxx	10 mm

PIN assignment

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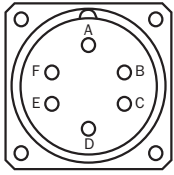
M12, 8-pin	MS, 10-pin	MS, 7-pin	MS, 6-pin	Cable, 9-wire	Signal	Description
1	H	-	-	Brown	$\overline{A}$	Signal wire
2	A	A	E	White	A	Signal wire
3	I	-	-	Black	$\overline{B}$	Signal wire
4	B	B	D	Pink	B	Signal wire
5	J	-	-	Yellow	$\overline{Z}$	Signal wire
6	C	C	C	Purple	Z	Signal wire
7	F	F	A	Blue	GND	GND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

Diagrams

Maximum revolution range

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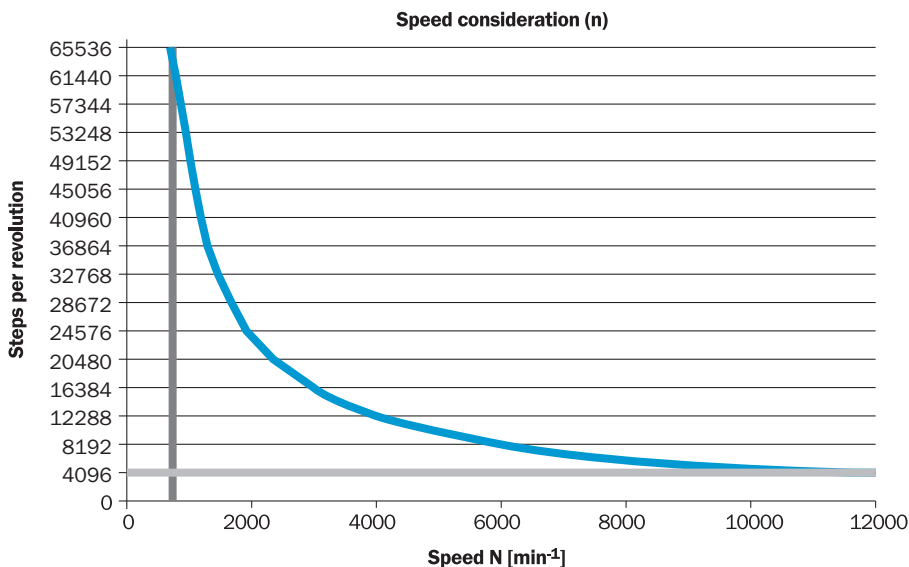
Signal Outputs with Counter Clock-wise Counting Direction Option Selected (B leads A for clock-wise rotation). Complement signals AN, BN and ZN are not shown.

A

B

M — B Leads A, 180 Degree Marker Gated with BN (Type Code A)

M — B Leads A, 180 Degree Marker Gated with A (Type Code B)

M — B Leads A, 90 Degree Marker Gated with A and B (Type Code D)
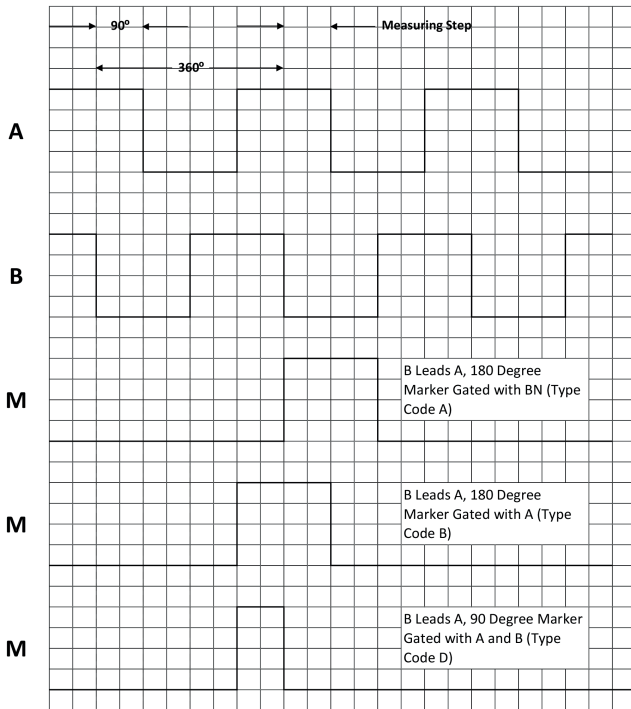
Cw with view on the encoder shaft in direction "A", compare dimensional drawing.

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.

A

B

Z — A Leads B, 180 Degree Marker Gated with A (Type Code 1)

Z — A Leads B, 90 Degree Marker Gated with A and B (Type Code 2)

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			
	USB programming unit, for programmable SICK encoders AFS60, AFM60, DFS60, VFS60, DFV60 and wire draw encoders with programmable encoders	PGT-08-S	1036616
Plug connectors and cables			
	DOS-MS06-G	DOS-MS06-G	7102136
Others			
	DOL-MS06-G03MMA2	DOL-MS06-G03MMA2	7102138
	DOL-MS06-G05MMA2	DOL-MS06-G05MMA2	7102139
	DOL-MS06-G1M5MA2	DOL-MS06-G1M5MA2	7102137
	DOL-MS06-G10MMA2	DOL-MS06-G10MMA2	7102140
	DOL-MS06-G20MMA2	DOL-MS06-G20MMA2	7102141
	DOL-MS06-G30MMA2	DOL-MS06-G30MMA2	7102142

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

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