DFV60A-22PC00S08

DFV60

MEASURING WHEEL ENCODERS

SICK
Sensor Intelligence.

DFV60A-22PC00S08 | DFV60
MEASURING WHEEL ENCODERS

Illustration may differ

CE

Ordering information

Type	Part no.
DFV60A-22PC00S08	1106601

DFV60 spring arm (part number: 2056155) not included with delivery

Other models and accessories ➜ www.sick.com/DFV60

Detailed technical data

Features

Special device	✔
Specialty	Programmable resolution up to 65,536 lines, preprogrammed to 8,192 lines
Standard reference device	DFV60A-22PC65536, 1051309
Items supplied	DFV60 spring arm (part number: 2056155) not included with delivery

Performance

Pulses per revolution	8,192
Resolution in pulses/mm	27.306 Pulses/mm [1]
Measuring increment (resolution in mm/pulse)	0.036 mm/pulse [2]
Measuring step deviation	± 0.008° [3]
Error limits	± 4 mm/m, subject to measuring wheel (measuring wheel surface + measuring surface + ambient conditions)
Initialization time	30 ms

[1] Calculation example: Pulses per revolution / measuring wheel circumference = 16,384 pulses per revolution / 200 mm = 81.92 pulses/mm.

[2] Calculation example: Circumference of wheel / pulses per revolution = 200 mm / 16384 pulses per revolution = 0,012mm/pulse.

[3] Value refers to the mounted encoder.

Interfaces

Communication interface	Incremental
Communication Interface detail	TTL / HTL
Programmable/configurable	✔

Electrical data

Connection type	Male connector, M12, 8-pin, radial
Power consumption max. without load	≤ 30 mA

[1] 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.

Supply voltage	10 V … 32 V
Load current max.	30 mA
Maximum output frequency	820 kHz
Reference signal, number	1
Reference signal, position	90°, electric, logically gated with A and B
Reverse polarity protection	✓
Short-circuit protection of the outputs	✓
MTTFd: mean time to dangerous failure	300 years (EN ISO 13849-1) [1]

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Mechanical data

Measuring wheel circumference		300 mm
Measuring wheel surface		O-ring NBR70 [1]
Mass		+ 500 g
Encoder material		
	Shaft	Stainless steel
	Flange	Aluminum
	Housing	Aluminum
	Cable	PUR
Spring arm mechanism material		
	Spring element	Not contained in the scope of delivery of the system
	Measuring wheel, spring arm	Aluminum
Start up torque		0.8 Ncm (at 20 °C)
Operating torque		0.6 Ncm (at 20 °C)
Operating speed		1,500 min^{-1}
Maximum operating speed		3,000 min^{-1} [2]
Bearing lifetime		3 x 10^9 revolutions
Maximum travel/deflection of spring arm		40 mm
Max. permissible working area for the spring (continuous operation)		± 10 mm
Recommended spring deflection		20 mm … 40 mm
Mounting position relative to the measuring object		Preferably from above, from below possible

[1] The surface of a measuring wheel is subject to wear. This depends on contact pressure, acceleration behavior in the application, traversing speed, measurement surface, mechanical alignment of the measuring wheel, temperature, and ambient conditions. We recommend you regularly check the condition of the measuring wheel and replace as required.

[2] Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-4
Enclosure rating	IP65
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	–20 °C … +100 °C

Storage temperature range	−40 °C ... +100 °C, without package

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	27270790
eCl@ss 11.0	27270707
eCl@ss 12.0	27270504
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))

DFV60 spring arm (part number: 2056155) not included with delivery
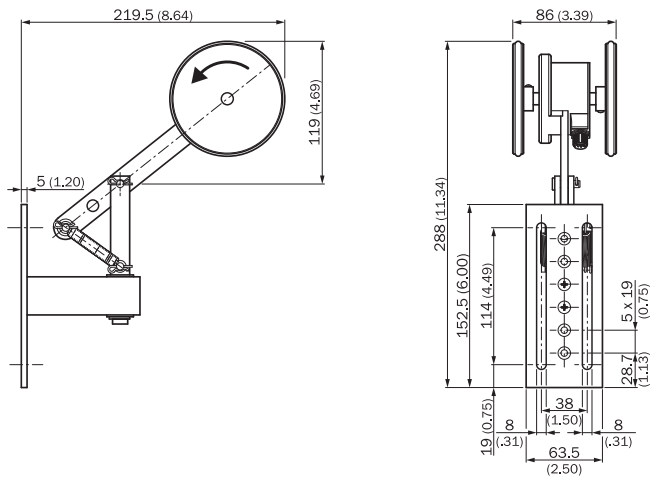
PIN assignment

Cable 8-core
View to the connector M12 fitted to the encoder body
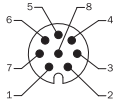
| PIN, 8-pin, connector M12	Color of wires for encoders with cable outlet	Signal TTL, HTL	Explanation
1	Brown	$\bar{A}$	Signal line
2	White	A	Signal line
3	Black	$\bar{B}$	Signal line
4	Pink	B	Signal line
5	Yellow	$\bar{Z}$	Signal line
6	Lilac	Z	Signal line
7	Blue	GND	Ground connection of the encoder
8	Red	$+U_s$	Supply voltage (potential free to housing)
Screen	Screen	Screen	Screen connected to encoder housing. On the control side connected to earth.

Diagrams

Dual wheel, spring tension, yoke mount
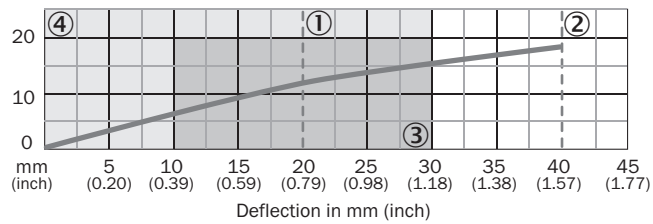
① Recommended pre-tension (20 mm)
② Maximum deflection (40 mm)
③ Recommended deflection range (10 – 30 mm)
④ Permissible working area (0 – 30 mm)
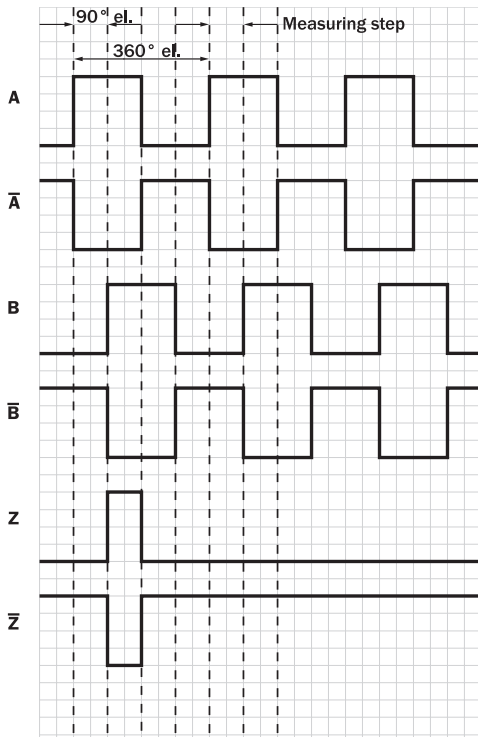
SICK AT A GLANCE

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.

For us, that is "Sensor Intelligence."

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