Product data sheet

DFV60A-22PZ00S13

DFV60

MEASURING WHEEL ENCODERS

SICK
Sensor Intelligence.

Illustration may differ

Ordering information

Type	Part no.
DFV60A-22PZ00S13	1123858

Included in delivery: DFV60 spring arm (1)

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	Pre-programmed to 13,107 pulses per revolution Counting direction CW Communication interface HTL/Push pull DKV60 spring arm (Part no. 2056155) premounted
Standard reference device	DFV60A-22PM65536, 1051337

Performance

Pulses per revolution	13,107
Resolution in pulses/mm	65.54 Pulses/mm [1]
Measuring increment (resolution in mm/pulse)	0.015 mm/pulse [2]
Measuring step deviation	± 0.002° [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	HTL / Push pull
Programmable/configurable	✓

Electrical data

Connection type	Cable, 8-wire, universal, 5 m
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	4.5 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

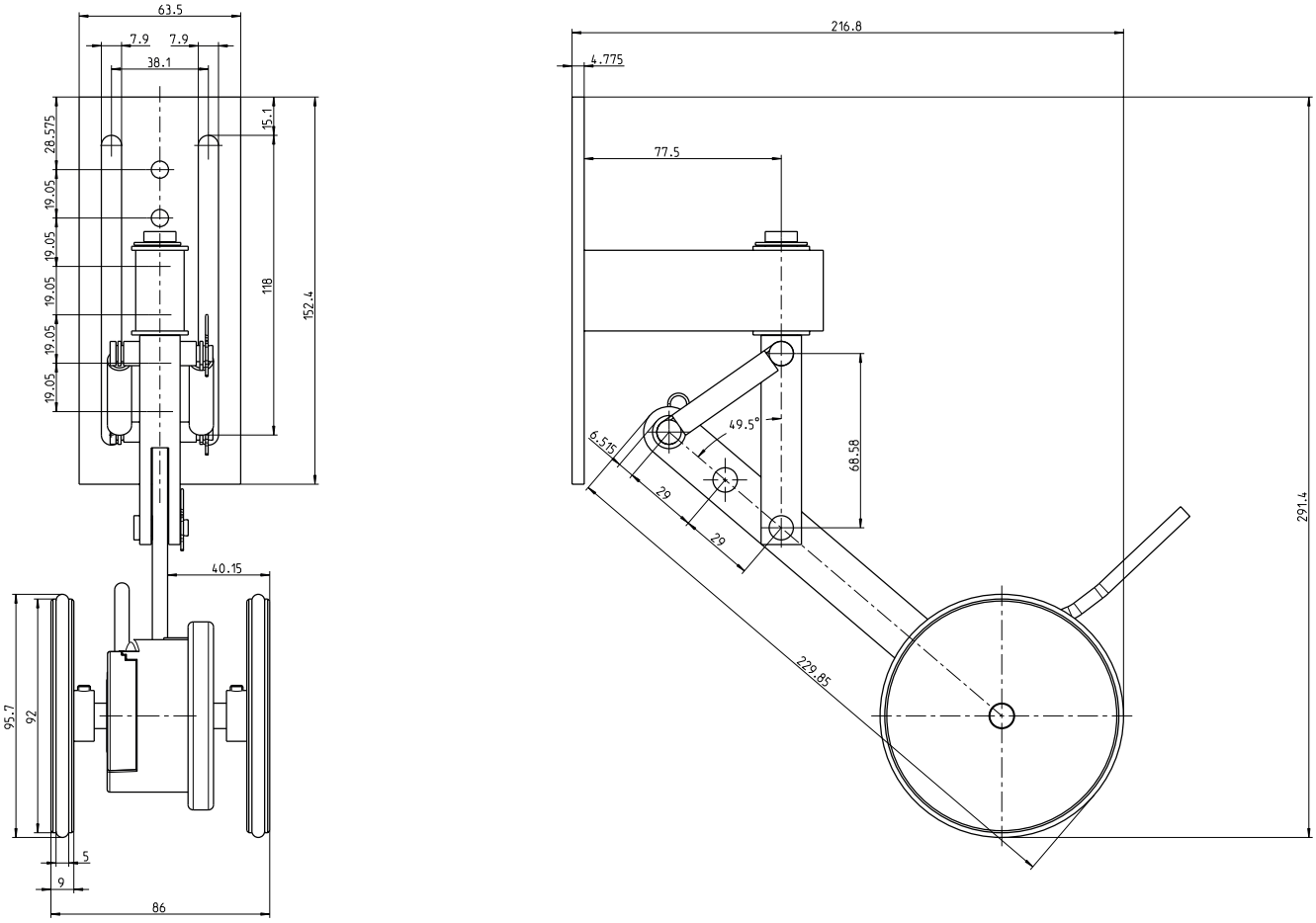
EMC	According to EN 61000-6-2 and EN 61000-6-4
Enclosure rating	IP65
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	–20 °C ... +100 °C

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

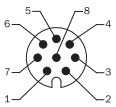
Dimensional drawing (Dimensions in mm (inch))



PIN assignment

Cable 8-core

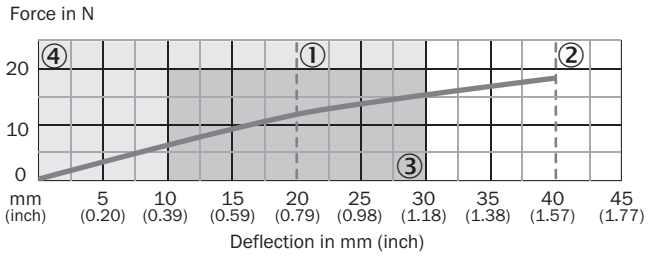
View to the connector M12 fitted to the encoder body



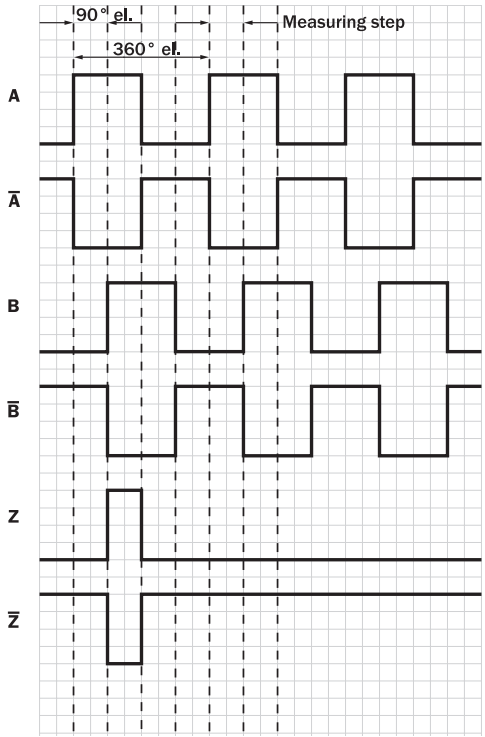
PIN, 8-pin, connector M12	Color of wires for encoders with cable outlet	Signal TTL, HTL	Explanation
1	Brown	$\overline{A}$	Signal line
2	White	A	Signal line
3	Black	$\overline{B}$	Signal line
4	Pink	B	Signal line
5	Yellow	$\overline{Z}$	Signal line
6	Lilac	Z	Signal line
7	Blue	GND	Ground connection of 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)



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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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