DBV50E-22EKA0S05

DBV50

MEASURING WHEEL ENCODERS

SICK
Sensor Intelligence.

DBV50E-22EKA0S05 | DBV50
MEASURING WHEEL ENCODERS

Ordering information

Type	Part no.
DBV50E-22EKA0S05	1109001

Other models and accessories ➜ www.sick.com/DBV50

Illustration may differ

CE c℮US

Detailed technical data

Features

Special device	✓
Specialty	Customized type code
Standard reference device	DBV50E-22EKA1000, 1081979

Safety-related parameters

MTTF$_D$ (mean time to dangerous failure)	600 years (EN ISO 13849-1) [1]

[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.

Performance

Pulses per revolution	1,000
Resolution in pulses/mm	5
Measuring increment (resolution in mm/pulse)	0.2
Measuring step deviation	± 18° / pulses per revolution
Error limits	± 4 mm/m, subject to the measuring wheel (wheel + surface)
Duty cycle	≤ 0.5 ± 5 %
Initialization time	< 3 ms

Interfaces

Communication interface	Incremental
Communication Interface detail	HTL / Push pull
Number of signal channels	6-channel

Electrical data

Operating power consumption (no load)	50 mA
Connection type	Cable, 8-wire, universal, 1.5 m [1]
Power consumption max. without load	≤ 0.5 W
Supply voltage	7 V ... 30 V
Load current max.	30 mA

[1] Number of wires depending on electrical interface: Interface A, C, E: 8-wire; Interface G, P, R: 5-wire.

[2] The short-circuit rating is only given if Us and GND are connected correctly.

Maximum output frequency	≤ 300 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	✓ [2]

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Mechanical data

Measuring wheel circumference	200 mm
Measuring wheel surface	O-ring NBR70 [1]
Spring arm design	63.5 mm spring arm, encoder on mounting side (left), single wheel
Mass	+ 300 g
Encoder material	
Shaft	Stainless steel
Flange	Aluminum
Housing	Aluminum
Cable	PVC
Spring arm mechanism material	
Spring element	Spring steel, anti-corrosive
Measuring wheel, spring arm	Aluminum
Start up torque	0.9 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	2.0×10^9 revolutions
Maximum travel/deflection of spring arm	14 mm at 14 N spring travel
Recommended pretension	15 N At 10 mm deflection [3]
Max. permissible working area for the spring (continuous operation)	± 3 mm
Recommended spring deflection	2 mm ... 13 mm
Service life of spring element	> 1.4 million cycles [4]
Mounting position relative to the measuring object	Preferably from above, from below possible [5]

[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] No permanent operation. Decreasing signal quality.

[3] When measured from the top of the measuring surface.

[4] One cycle corresponds to an upward and downward movement of ± 3 mm from the recommended pretension position.

[5] When mounted from below, the encoder weight during spring pretensioning must be taken into account.

Ambient data

| EMC	According to EN 61000-6-2 and EN 61000-6-3 (class A)
Enclosure rating	IP65

Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	−20 °C ... +85 °C −35 °C ... +95 °C (on request)
Storage temperature range	−40 °C ... +100 °C, without package

## 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	27270790
ECLASS 11.0	27270707
ECLASS 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))

63.5 mm spring arm, encoder on mounting side (left), single wheel

View without the wheel

3 x M4 x 10 (0.39) countersunk screw 120° spacing
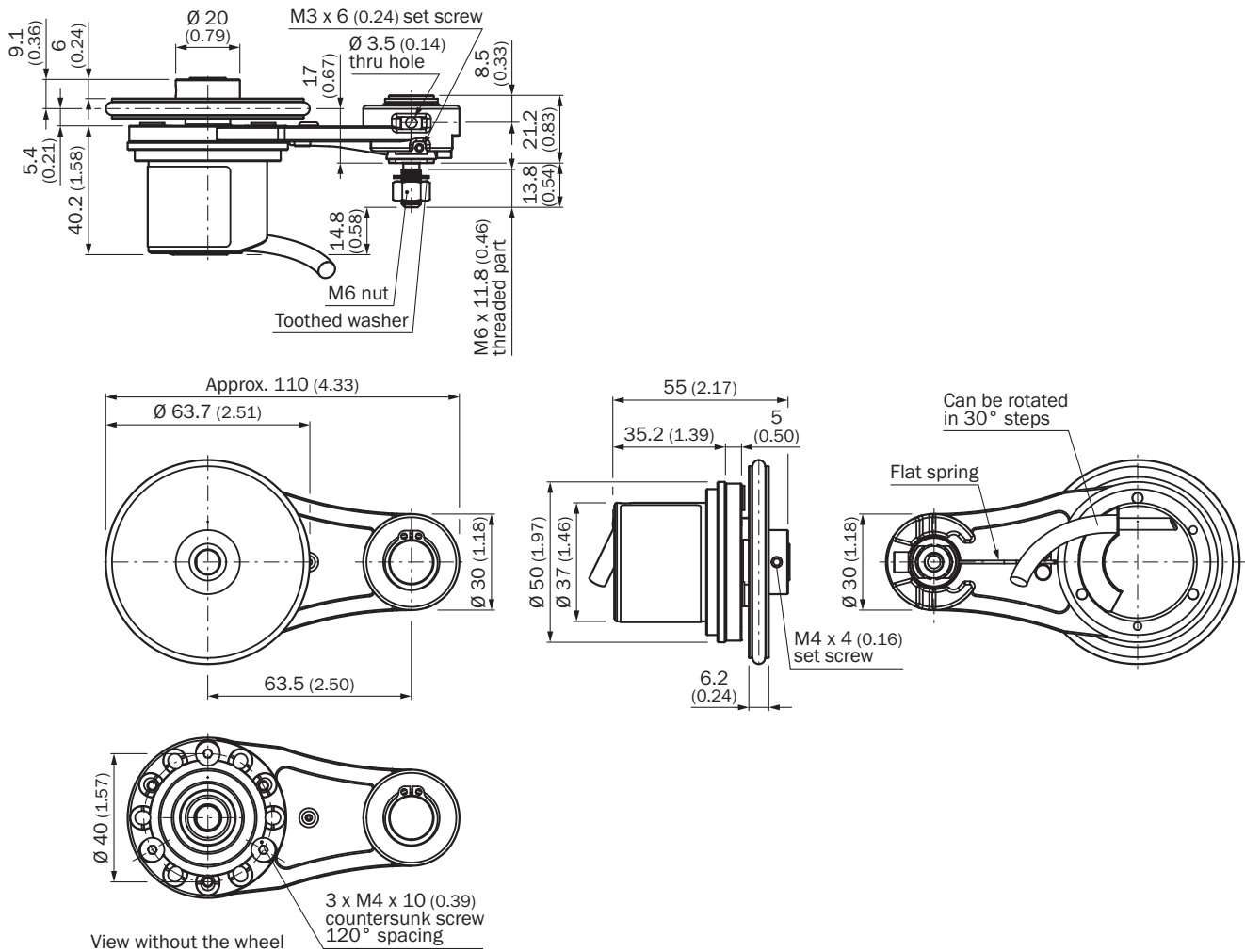
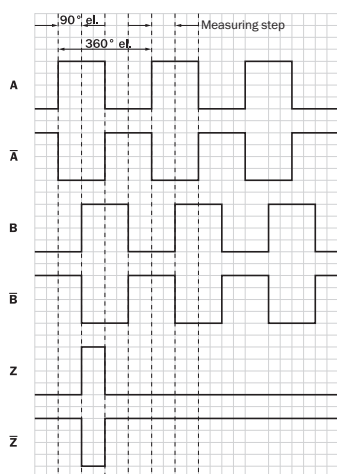## Attachment specifications
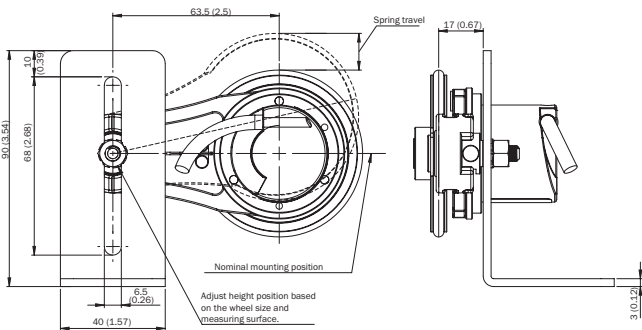
PIN assignment
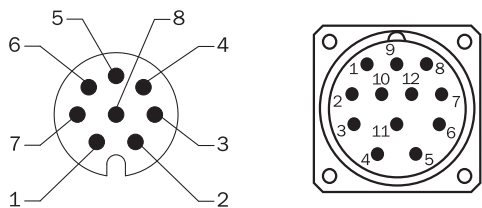
View of M12 male device connector on cable / housing

Diagrams

Signal outputs for electrical interfaces TTL and HTL

CW with view on the encoder shaft, compare dimensional drawing.Interfaces G, P, R perform only the channels A, B, Z.

SICK AT A GLANCE

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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.

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