DBS60E-TGFZZS168

DBS60

SICK
Sensor Intelligence.

INCREMENTAL ENCODERS

DBS60E-TGFZZS168 | DBS60
INCREMENTAL ENCODERS

Illustration may differ

Ordering information

Type	part no.
DBS60E-TGFZZS168	1128188

Other models and accessories ➔ www.sick.com/DBS60

Detailed technical data

Features

Special device	✔
Specialty	Connection cable 2 m Customer-specific pin assignment Customized stator coupling compained with anti-rotation pin Customized label Second label included in packaging
Standard reference device	DBS60E-TGFL01024, 1091620

Safety-related parameters

MTTF$_D$ (mean time to dangerous failure)	500 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	1,024
Measuring step	≤ 90°, electric/pulses per revolution
Measuring step deviation	± 18° / pulses per revolution
Error limits	Measuring step deviation x 3
Duty cycle	≤ 0.5 ± 5 %

Interfaces

Communication interface	Incremental
Communication Interface detail	TTL / HTL / HTL [1]
Number of signal channels	6-channel
Initialization time	< 5 ms [2]
Output frequency	+ 300 kHz [3]
Load current	≤ 30 mA, per channel
Power consumption	≤ 0.5 W (without load)

[1] Output level depends on the supply voltage.
[2] Valid signals can be read once this time has elapsed.
[3] Up to 450 kHz on request.

Electronics

Connection type	Special version
Connection type Detail	Connection cable 2 m
Supply voltage	4.5 ... 30 V
Reference signal, number	1
Reference signal, position	90°, electric, logically gated with A and B
Reverse polarity protection	✓
Short-circuit protection of the outputs	✓ [1]

[1] Short-circuit opposite to another channel, US or GND permissable for maximum 30 s.

Mechanics

Mechanical design	Through hollow shaft
Shaft diameter	14 mmFront clamp
Flange type / stator coupling	Special version
Weight	+ 0.25 kg [1]
Shaft material	Stainless steel
Flange material	Aluminum
Housing material	Aluminum
Material, cable	PVC
Start up torque	+ 0.5 Ncm (+20 °C)
Operating torque	0.4 Ncm (+20 °C)
Permissible movement static	± 0.3 mm (radial) ± 0.5 mm (axial) [2]
Permissible movement dynamic	± 0.1 mm (radial) ± 0.2 mm (axial) [2]
Operating speed	6,000 min⁻¹ [3]
Maximum operating speed	9,000 min⁻¹ [4]
Moment of inertia of the rotor	50 gcm²
Bearing lifetime	3.6×10^9 revolutions
Angular acceleration	≤ 500,000 rad/s²

[1] Based on encoder with male connector or cable with male connector.
[2] Not apllicable for stator coupling type C and K.
[3] Allow for self-heating of 2.6 K per 1,000 rpm when designing the operating temperature range.
[4] Maximum speed which does not cause mechanical damage to the encoder. Impact on the service life and signal quality is possible. Please note the maximum output frequency.

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP65, housing side (IEC 60529) IP65, shaft side (IEC 60529)
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	–30 °C ... +100 °C, at maximum 3,000 pulses per revolution [1]
Storage temperature range	–40 °C ... +100 °C, without package

[1] These values relate to all mechanical versions including recommended accessories unless otherwise noted.

Resistance to shocks	250 g, 3 ms (EN 60068-2-27)
Resistance to vibration	30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

[1] These values relate to all mechanical versions including recommended accessories unless otherwise noted.

Certificates

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China-RoHS	✓
cULus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

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)
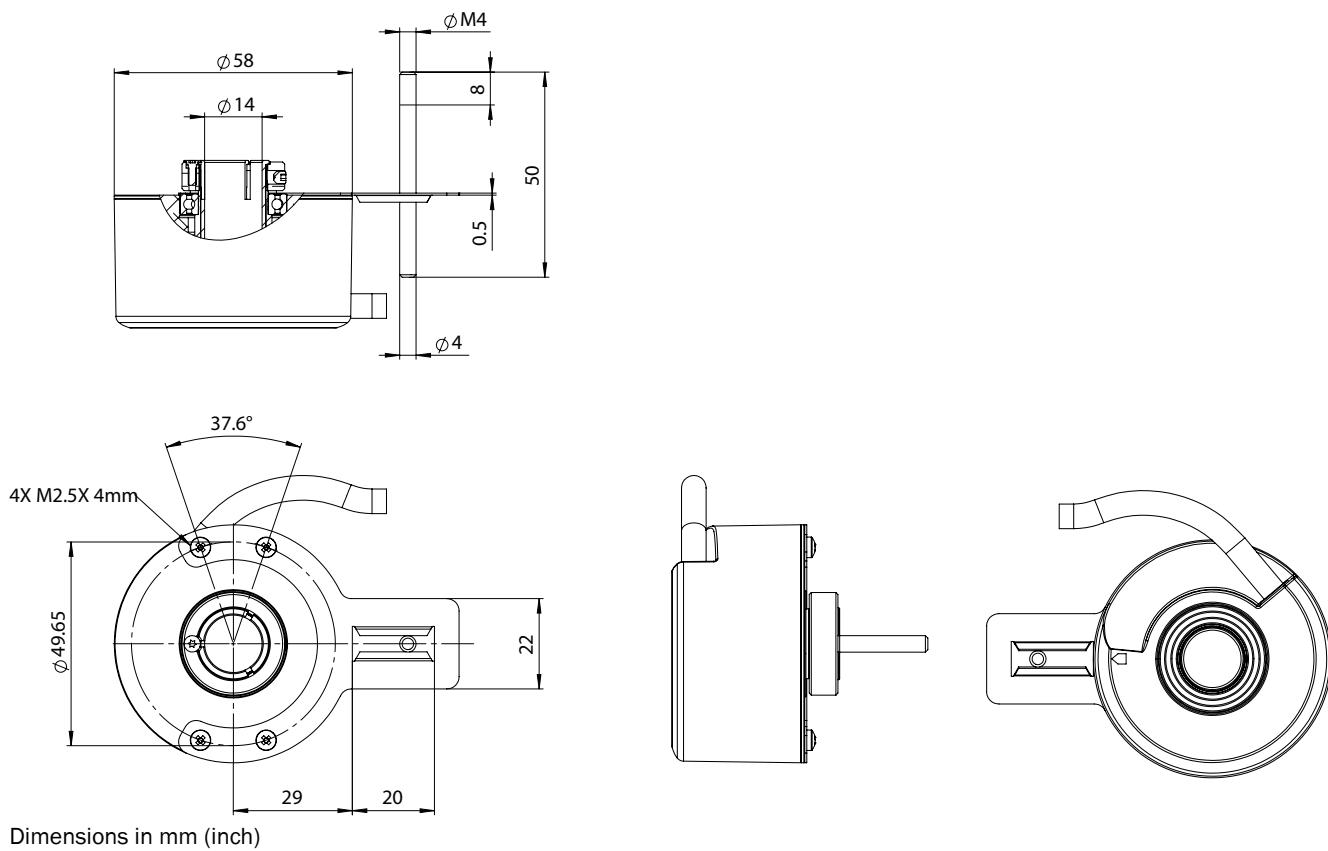
Attachment specifications Through hollow shaft with front clamping

customer side
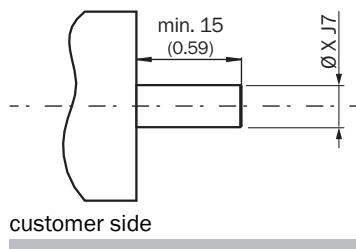
TypeThrough hollow shaft with front clamping	Shaft diameter xj7
DBS60x-TAxxxxxxxxDBS60x-T1xxxxxxxx	6 mm
DBS60x-TBxxxxxxxxDBS60x-T2xxxxxxxx	8 mm
DBS60x-TCxxxxxxxxDBS60x-T3xxxxxxxx	3/8″
DBS60x-TDxxxxxxxxDBS60x-T4xxxxxxxx	10 mm
DBS60x-TExxxxxxxxDBS60x-T5xxxxxxxx	12 mm
DBS60x-TFxxxxxxxxDBS60x-T6xxxxxxxx	1/2″
DBS60x-TGxxxxxxxxDBS60x-T7xxxxxxxx	14 mm
DBS60x-THxxxxxxxxDBS60x-T8xxxxxxxx	15 mm
DBS60x-TJxxxxxxxx	5/8″
–	

PIN assignment

Signal	Color
Gnd (-)	Blue
Vs (+)	Red
A	White
B	Pink
Z	Lilac
A-	Brown
B-	Black
Z-	Yellow
Shield	NA

Type label

Signal	+US	GND	Z	Z-	A	A-	B	B-
Wire Color	RD	BU	VT	YE	WH	BN	PK	BK

LINE Lines   DC VL   VT

Class2

IND.CONT.EQ.
E362533

MADE IN MALAYSIA

SICK
MODEL NUMBER
Incremental Encoder
Product ID
pid.sick.com/
P/N   1234567/
S/N   SERIALNO
DE-79183 WALDKIRCH
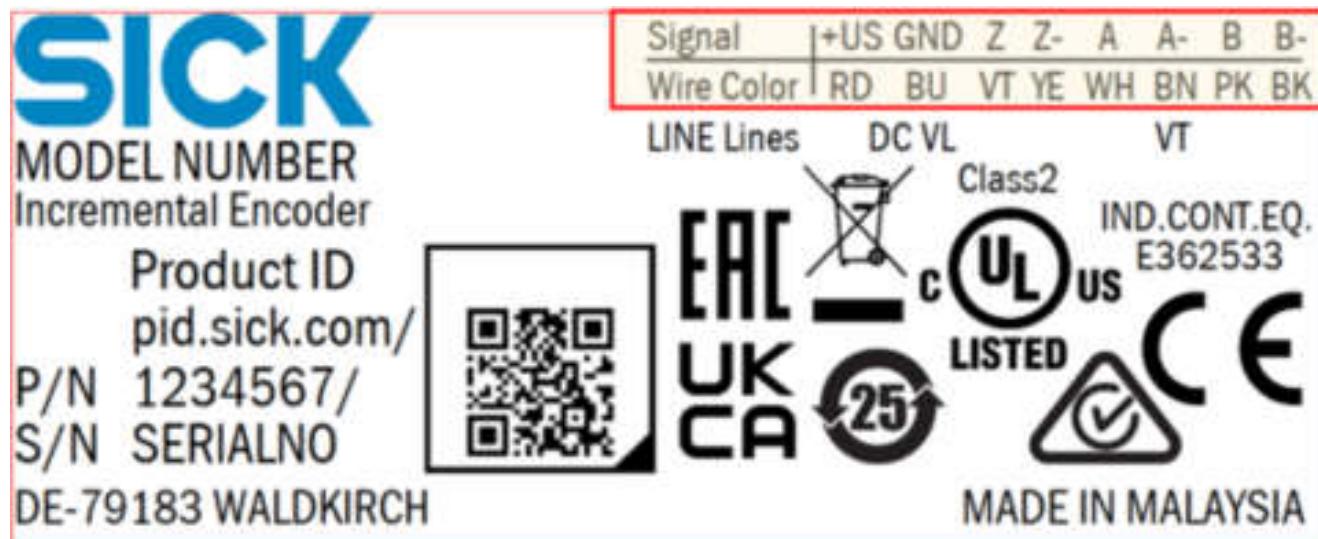
## Diagrams

Pulses per revolution
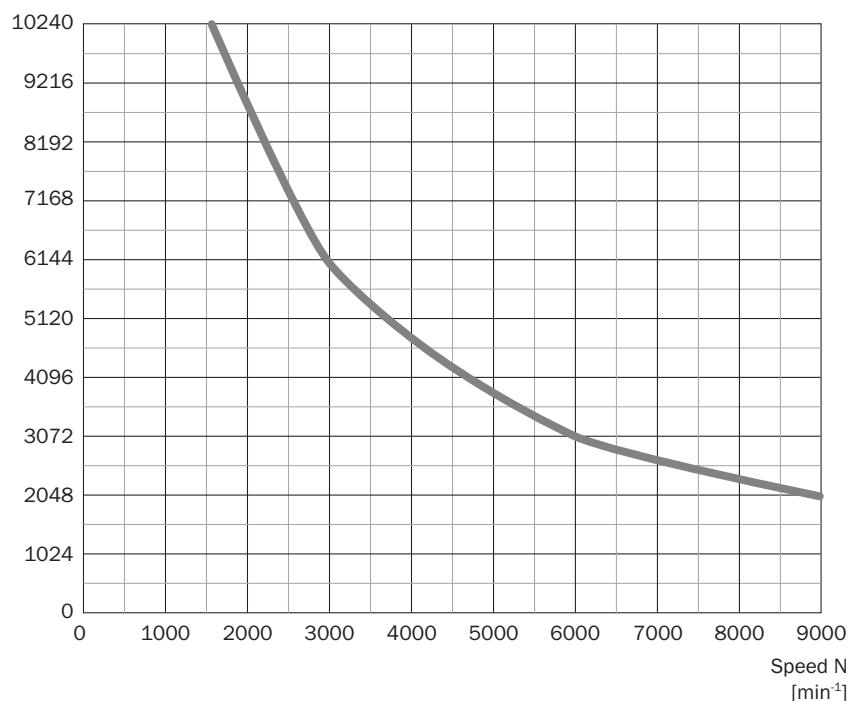
Diagrams Signal outputs for electrical interfaces TTL and HTL
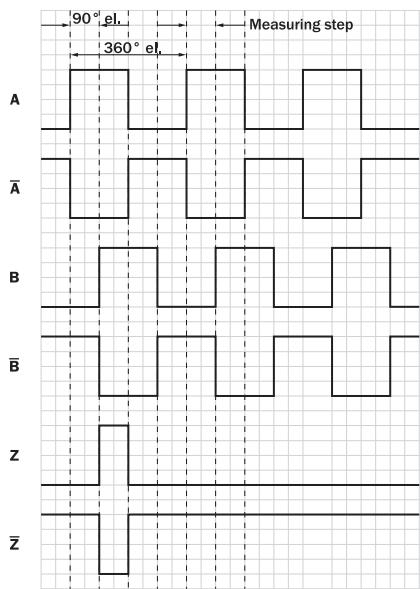
Cw with view on the encoder shaft in direction "A", compare dimensional drawing.

Supply voltage	Output
4,5 V ... 5,5 V	TTL
10 V ... 30 V	TTL
10 V ... 27 V	HTL
4,5 V ... 30 V	TTL/HTL universal
4,5 V ... 30 V	TTL

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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