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DATA SHEET

DUS60E-THKKAAAA

DUS60
Incremental encoders

SICK Sensor Intelligence



Illustration may differ

INCREMENTAL ENCODERS

DUS60E-THKKAAAA

ORDERING INFORMATION

Type	part no.
DUS60E-THKKAAAA	1098615

Further device versions and accessories at www.sick.com/DUS60

DETAILED TECHNICAL DATA

SAFETY-RELATED PARAMETERS

$MTTF_D$ (mean time to dangerous failure)	275 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

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 [1]
Number of signal channels	6-channel
Programmable/configurable	✓
Parameterising data	DIP switch, selectable output
Output function	A and B output
Initialization time	< 5 ms [2]
Output frequency	+ 60 kHz
Load current	≤ 30 mA, per channel
Operating current	≤ 120 mA (without load)

[1] The output is not selectable for DIP switch configurations E, F, and G. The output voltage value is dependent on the supply voltage.

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

Power consumption	≤ 1.25 W (without load)
DIP switch parameters	
Pulses per revolution	✓
Output voltage	✓
Direction of rotation	✓
Configuration switches	2400 PPR values, direction selection, TTL/HTL selectable

[1] The output is not selectable for DIP switch configurations E, F, and G. The output voltage value is dependent on the supply voltage.

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

ELECTRONICS

Connection type	Cable, 8-wire, universal, 1.5 m [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	✓

[1] The universal cable connection is positioned so that it is possible to lay it without bends in a radial or axial direction.

MECHANICS

Mechanical design	Through hollow shaft
Shaft diameter	15 mm Front clamp
Flange type / stator coupling	Without stator coupling, flange with 4 x M2,5
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)
Permissible movement dynamic	± 0.1 mm (radial) ± 0.2 mm (axial)
Operating speed	1,500 min^{-1}
Moment of inertia of the rotor	50 gcm^2
Bearing lifetime	3.6 x 10^9 revolutions
Angular acceleration	≤ 500,000 rad/s^2

[1] Based on encoder with male connector.

AMBIENT DATA

EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP65 [1]
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	–30 °C ... +90 °C
Storage temperature range	–40 °C ... +75 °C
Resistance to shocks	100 g (EN 60068-2-27)

[1] When the mating connector is installed and the DIP switch door is sealed with the encoder housing.

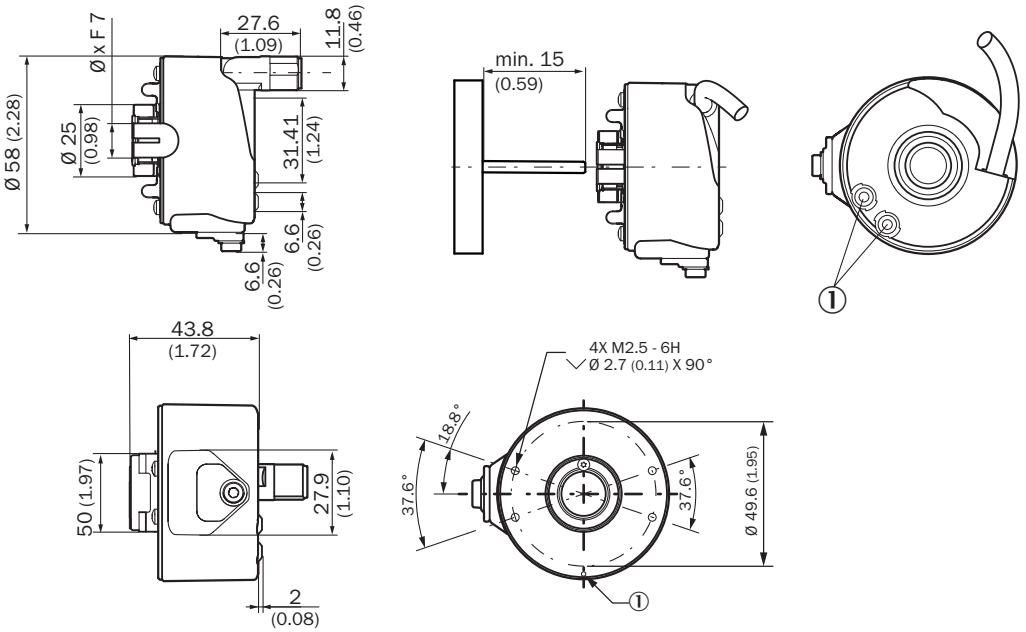
Resistance to vibration	30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

[1] When the mating connector is installed and the DIP switch door is sealed with the encoder housing.

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)	✓

DIMENSIONAL DRAWING THROUGH HOLLOW SHAFT WITH FRONT CLAMPING

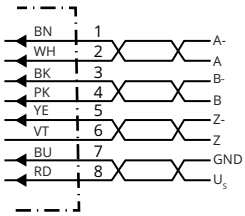


Dimensions in mm (inch)

① Status indicators

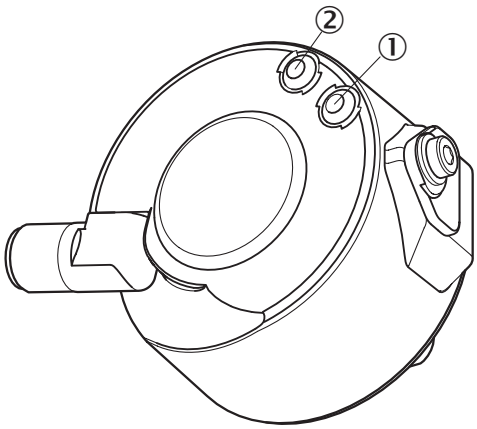
TypeThrough hollow shaft with front clamping	Shaft diameter XF7
DUS60x-TAxxxxxxxx	6 mm
DUS60x-TBxxxxxxxx	8 mm
DUS60x-TCxxxxxxxx	3/8″
DUS60x-TDxxxxxxxx	10 mm
DUS60x-TExxxxxxxx	12 mm
DuS60x-TFxxxxxxxx	1/2″
DUS60x-TGxxxxxxxx	14 mm
DUS60x-THxxxxxxxx	15 mm
DUS60x-TJxxxxxxxx	5/8″

PIN ASSIGNMENT



Wire colors (cable connection)	Male connector M12, 4-pin	Male connector M12, 8-pin	Output function				Explanation
			A	B	C	D	
Brown	-	1	A-	CW-	A-	A-	Signal
White	4	2	A	CW	A	A	Signal
Black	-	3	B-	CCW-	Direction-	B-	Signal
Pink	2	4	B	CCW	Direction	Fault (M12, 4-pin)B (M12, 8-pin and cable connection)	Signal
Yellow	-	5	Z-	Fault-	Fault-	Fault-	Signal
Violet	-	6	Z	Fault	Fault	Fault	Signal
Blue	3	7	GND	GND	GND	GND	Ground connection
Red	1	8	U_s	U_s	U_s	U_s	Supply voltage
-	-	-	Case	Case	Case	Case	Earth fault protection
Shielding	-	-	Shielding	Shielding	Shielding	Shielding	Shielding

ADJUSTMENTS STATUS INDICATOR LED



① Signal
② Fault/Power

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1098615

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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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