



# DUS60E-S7KF0DEB

DUS60

INCREMENTAL ENCODERS

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

Type	Part no.
DUS60E-S7KF0DEB	1087429

Other models and accessories → [www.sick.com/DUS60](http://www.sick.com/DUS60)

### Detailed technical data

#### Performance

<b>Measuring step</b>	90°, electric/pulses per revolution
<b>Measuring step deviation</b>	± 18° / pulses per revolution
<b>Error limits</b>	Measuring step deviation x 3
<b>Duty cycle</b>	≤ 0.5 ± 5 %

#### Interfaces

<b>Communication interface</b>	Incremental
<b>Communication Interface detail</b>	TTL / HTL <sup>1)</sup>
<b>Parameterising data</b>	DIP switch, selectable output
<b>Output function</b>	Channel A, error
<b>Initialization time</b>	< 5 ms <sup>2)</sup>
<b>Output frequency</b>	+ 60 kHz
<b>Load current</b>	≤ 30 mA, per channel
<b>Operating current</b>	≤ 120 mA (without load)
<b>Power consumption</b>	≤ 1.25 W (without load)
<b>DIP switch parameters</b>	
Pulses per revolution	✓
Output voltage	✓
Direction of rotation	✓
Configuration switches	240 PPR values

<sup>1)</sup> The output is not selectable for DIP switch configurations E, F, and G. The output voltage value is dependent on the supply voltage.

<sup>2)</sup> Valid positional data can be read once this time has elapsed.

## Electrical data

<b>Connection type</b>	Male connector, M12, 4-pin, universal <sup>1)</sup>
<b>Supply voltage</b>	4.75 ... 30 V
<b>Anti-dither</b>	✓
<b>Reference signal, number</b>	1
<b>Reference signal, position</b>	180°, electric, gated with A
<b>Reverse polarity protection</b>	✓
<b>Short-circuit protection of the outputs</b>	✓
<b>MTTFd: mean time to dangerous failure</b>	275 years (EN ISO 13849-1) <sup>2)</sup>

<sup>1)</sup> The universal connection is rotatable so that it is possible to position the connector in the radial or axial direction.

<sup>2)</sup> 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.

## Mechanical data

<b>Mechanical design</b>	Solid shaft, face mount flange
<b>Shaft diameter</b>	3/8"
<b>Shaft length</b>	19 mm
<b>Flange type / stator coupling</b>	Face mount flange with 3 x M3 3 x M4
<b>Weight</b>	0.3 kg <sup>1)</sup>
<b>Shaft material</b>	Stainless steel
<b>Flange material</b>	Aluminum
<b>Housing material</b>	Aluminum
<b>Material, cable</b>	PVC
<b>Start up torque</b>	1.2 Ncm (+20 °C)
<b>Operating torque</b>	1.1 Ncm (+20 °C)
<b>Permissible shaft loading</b>	100 N (radial) 50 N (axial)
<b>Operating speed</b>	1,500 min <sup>-1</sup>
<b>Moment of inertia of the rotor</b>	33 gcm <sup>2</sup>
<b>Bearing lifetime</b>	3.6 x 10 <sup>9</sup> revolutions
<b>Angular acceleration</b>	≤ 500,000 rad/s <sup>2</sup>

<sup>1)</sup> Based on encoder with male connector.

## Ambient data

<b>EMC</b>	According to EN 61000-6-2 and EN 61000-6-3
<b>Enclosure rating</b>	IP65 <sup>1)</sup>
<b>Permissible relative humidity</b>	90 % (Condensation not permitted)
<b>Operating temperature range</b>	-30 °C ... +90 °C
<b>Storage temperature range</b>	-40 °C ... +75 °C
<b>Resistance to shocks</b>	100 g (EN 60068-2-27)
<b>Resistance to vibration</b>	30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

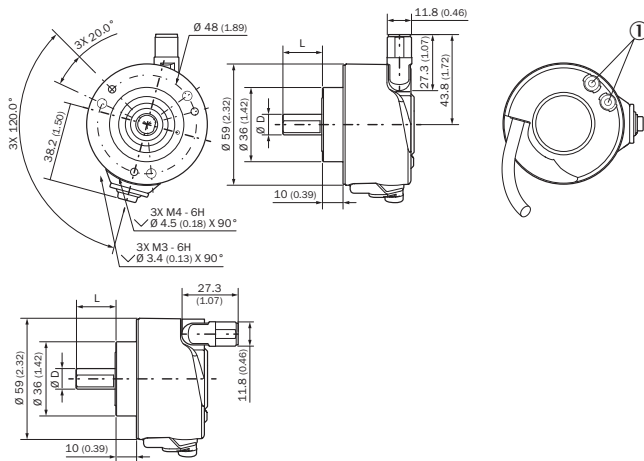
<sup>1)</sup> When the mating connector is installed and the DIP switch door is sealed with the encoder housing.

### Classifications

<b>eCl@ss 5.0</b>	27270501
<b>eCl@ss 5.1.4</b>	27270501
<b>eCl@ss 6.0</b>	27270590
<b>eCl@ss 6.2</b>	27270590
<b>eCl@ss 7.0</b>	27270501
<b>eCl@ss 8.0</b>	27270501
<b>eCl@ss 8.1</b>	27270501
<b>eCl@ss 9.0</b>	27270501
<b>eCl@ss 10.0</b>	27270501
<b>eCl@ss 11.0</b>	27270501
<b>eCl@ss 12.0</b>	27270501
<b>ETIM 5.0</b>	EC001486
<b>ETIM 6.0</b>	EC001486
<b>ETIM 7.0</b>	EC001486
<b>ETIM 8.0</b>	EC001486
<b>UNSPSC 16.0901</b>	41112113

### Dimensional drawing (Dimensions in mm (inch))

Solid shaft

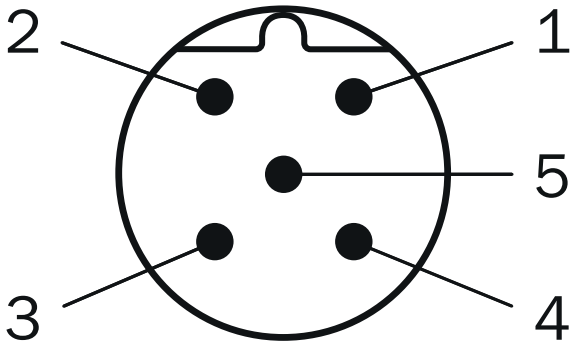


① Status indicators

Type	Shaft Diameter D	Shaft length L
<b>Solid shaft</b>		
DUS60x-S3xxxxxxx	6 mm	10 mm
DUS60x-S4xxxxxxx	10 mm	19 mm
DUS60x-S7xxxxxxx	3/8"	19 mm
DUS60x-S8xxxxxxx	1/4"	10 mm

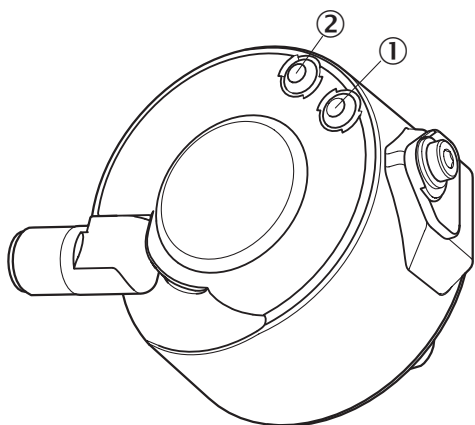
**PIN assignment**

View of M12 male device connector on encoder



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 <sub>S</sub>	U <sub>S</sub>	U <sub>S</sub>	U <sub>S</sub>	Supply voltage
-	-	-	Case	Case	Case	Case	Earth fault protection
Shielding	-	-	Shielding	Shielding	Shielding	Shielding	Shielding



### Adjustments



DIP switch configuration E - 240 pulses					
Pulses per revolution	1	5	12	30	80
	2	6	15	40	120
	3	8	16	48	240
	4	10	20	60	

### Recommended accessories

Other models and accessories → [www.sick.com/DUS60](http://www.sick.com/DUS60)

	Brief description	Type	Part no.
<b>Plug connectors and cables</b>			
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, shielded, 2 m	YF2A24-020UB4XLEAX	2105499
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, shielded, 5 m	YF2A24-050UB4XLEAX	2095729
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, shielded, 10 m	YF2A24-100UB4XLEAX	2095730
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, shielded, 20 m	YF2A24-200UB4XLEAX	2105497
	Head A: female connector, M12, 5-pin, straight Cable: CANopen, DeviceNet™, shielded	DOS-1205-GA	6027534

## 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.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)