

# DUV60E-00KFHAAA

DUV60

MEASURING WHEEL ENCODERS

**SICK**  
Sensor Intelligence.

Illustration may differ

### Ordering information

Type	part no.
DUV60E-00KFHAAA	1096059

Other models and accessories → [www.sick.com/DUV60](http://www.sick.com/DUV60)



### Detailed technical data

#### Safety-related parameters

<b>MTTF<sub>D</sub> (mean time to dangerous failure)</b>	275 years (EN ISO 13849-1) <sup>1)</sup>
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<sup>1)</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.

#### Performance

<b>Pulses per revolution</b>	1 ... 2400 <sup>1)</sup>
<b>Resolution in pulses/mm</b>	0.125 mm/pulse to 304.8 mm/pulse (type-dependent)
<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 %
<b>Initialization time</b>	< 5 ms <sup>2)</sup>

<sup>1)</sup> Available pulses per revolution see type code.

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

#### Interfaces

<b>Communication interface</b>	Incremental
<b>Communication Interface detail</b>	TTL / HTL
<b>Parameterising data</b>	DIP switch, selectable output

#### Electronics

<b>Operating power consumption (no load)</b>	120 mA
<b>Connection type</b>	Male connector, M12, 4-pin, universal <sup>1)</sup>
<b>Pulses per revolution</b>	✓
<b>Output voltage</b>	✓
<b>Direction of rotation</b>	✓
<b>Power consumption max. without load</b>	≤ 1.25 W
<b>Supply voltage</b>	4.75 V ... 30 V
<b>Load current max.</b>	≤ 30 mA, per channel

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

<b>Maximum output frequency</b>	60 kHz
<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>	✓

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

## Mechanics

<b>Measuring wheel circumference</b>	Without measuring wheel
<b>Spring arm design</b>	Spring tension, under-belt flange mount
<b>Mass</b>	0.45 kg <sup>1)</sup>
<b>Encoder material</b>	
Shaft	Stainless steel
Flange	Aluminum
Housing	Aluminum
Cable	PVC
<b>Spring arm mechanism material</b>	
Spring element	Spring steel
Measuring wheel, spring arm	Aluminum
<b>Start up torque</b>	1.2 Ncm
<b>Operating torque</b>	1.1 Ncm
<b>Operating speed</b>	1,500 min <sup>-1</sup>
<b>Bearing lifetime</b>	3.6 x 10 <sup>9</sup> revolutions
<b>Maximum travel/deflection of spring arm</b>	14 mm <sup>2)</sup>
<b>Recommended pretension</b>	10 mm <sup>2)</sup>
<b>Max. permissible working area for the spring (continuous operation)</b>	± 3 mm
<b>Service life of spring element</b>	> 1.4 million cycles <sup>2)</sup>

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

<sup>2)</sup> Only applies to variants with spring arm mounting.

## 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 ... +70 °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.

## Certificates

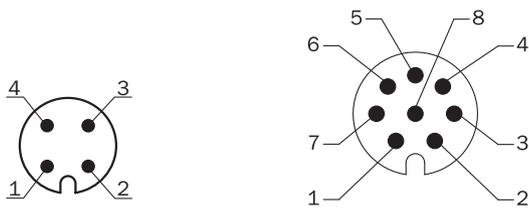
<b>EU declaration of conformity</b>	✓
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UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓
cULus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

### Classifications

<b>ECLASS 5.0</b>	27270501
<b>ECLASS 5.1.4</b>	27270501
<b>ECLASS 6.0</b>	27270590
<b>ECLASS 6.2</b>	27270590
<b>ECLASS 7.0</b>	27270501
<b>ECLASS 8.0</b>	27270501
<b>ECLASS 8.1</b>	27270501
<b>ECLASS 9.0</b>	27270501
<b>ECLASS 10.0</b>	27270790
<b>ECLASS 11.0</b>	27270707
<b>ECLASS 12.0</b>	27270504
<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

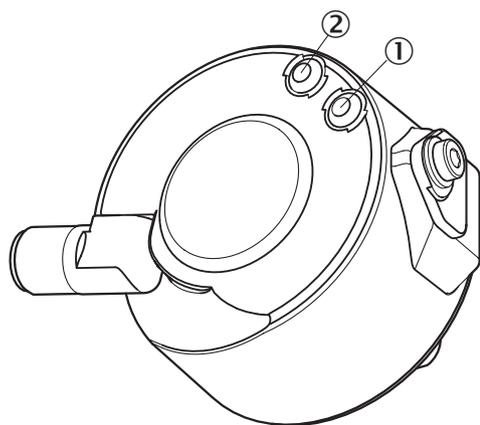
### Anschlussbelegung



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

Wire colors (cable connection)	Male connector M12, 4-pin	Male connector M12, 8-pin	Output function				Explanation
			A	B	C	D	
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 Status indicator LED



- ① Signal
- ② Fault/Power

### Recommended accessories

Other models and accessories → [www.sick.com/DUV60](http://www.sick.com/DUV60)

	Brief description	Type	part no.
measuring wheels and measuring wheel mechanics			
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li>• <b>Product family:</b> Measuring wheels</li> <li>• <b>Description:</b> Measuring wheel shaft kit for dual wheel DUV60, includes 10mm shaft and collet, for measuring wheels with 10 mm bore</li> </ul>	BEF-MK-DUV10	2088713
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li>• <b>Product family:</b> Measuring wheels</li> <li>• <b>Description:</b> Measuring wheel shaft kit for dual wheel DUV60, includes 3/8" shaft and collet, for measuring wheels with 3/8" bore</li> </ul>	BEF-MK-DUV38	2088715

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Flying leads</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> CANopen, DeviceNet™</li> <li>• <b>Items supplied:</b> By the meter</li> <li>• <b>Cable:</b> 4-wire, twisted pair</li> <li>• <b>Description:</b> CANopen, shielded, DeviceNet™</li> <li>• <b>Note:</b> Wire shield Al-Pt film, overall shield C-screen tin-plated</li> </ul>	LTG-2804-MW	6028328
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 20 m, 4-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> </ul>	DOL-1204-G20MAC	2088080
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Cable:</b> 10 m, 4-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Welding spark resistant, shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation</li> </ul>	DOL-1204-G10MAC	6041797
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Cable:</b> 5 m, 4-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation</li> </ul>	DOL-1204-G05MAC	6038621
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-pin, straight, A-coded</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Cable:</b> 2 m, 4-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> <li>• <b>Application:</b> Zones with oils and lubricants, Drag chain operation</li> </ul>	DOL-1204-G02MAC	2088079
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 5-pin, straight, A-coded</li> <li>• <b>Signal type:</b> CANopen, DeviceNet™</li> <li>• <b>Description:</b> CANopen, shielded DeviceNet™</li> <li>• <b>Connection systems:</b> Screw-type terminals</li> <li>• <b>Permitted cross-section:</b> ≤ 0.75 mm<sup>2</sup></li> </ul>	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)