

# DUV60E-00KFWADA

DUV60

MEASURING WHEEL ENCODERS

**SICK**  
Sensor Intelligence.

Illustration may differ

### Ordering information

Type	Part no.
DUV60E-00KFWADA	1101409

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



### Detailed technical data

#### Performance

<b>Pulses per revolution</b>	1 ... 1500 <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

#### Electrical data

<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
<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>	✓

<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.

<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>

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### Mechanical data

<b>Measuring wheel circumference</b>	Without measuring wheel
<b>Spring arm design</b>	Without mount
<b>Mass</b>	0.45 kg <sup>1)</sup>
<b>Shaft</b>	Stainless steel
<b>Flange</b>	Aluminum
<b>Housing</b>	Aluminum
<b>Cable</b>	PVC
<b>Spring element</b>	Spring steel
<b>Measuring wheel, spring arm</b>	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> Relates to encoders 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 of the optical scanning not permitted)
<b>Operating temperature range</b>	-30 °C ... +70 °C
<b>Storage temperature range</b>	-40 °C ... +75 °C

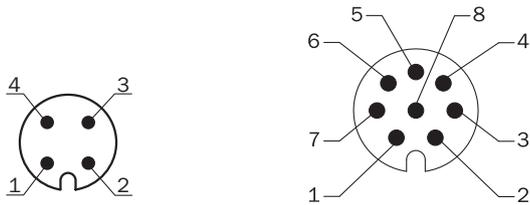
<sup>1)</sup> When the mating connector is installed and the DIP switch door is sealed with the encoder housing.

### 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>	27270790
<b>ECl@ss 11.0</b>	27270707
<b>ETIM 5.0</b>	EC001486
<b>ETIM 6.0</b>	EC001486
<b>ETIM 7.0</b>	EC001486
<b>UNSPSC 16.0901</b>	41112113

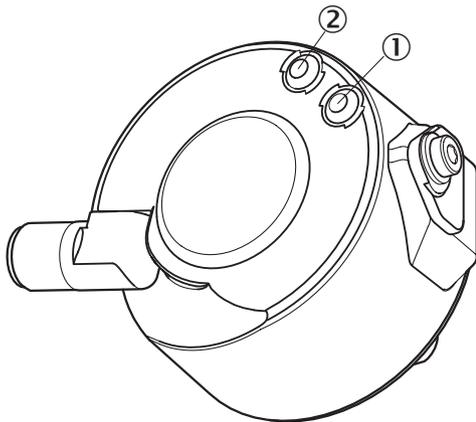
### PIN assignment



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 <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

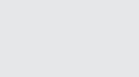
Status indicator LED



- 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.
<b>Other mounting accessories</b>			
	Measuring wheel shaft kit for dual wheel DUV60, includes 10mm shaft and collet, for measuring wheels with 10 mm bore	BEF-MK-DUV10	2088713
	Measuring wheel shaft kit for dual wheel DUV60, includes 3/8" shaft and collet, for measuring wheels with 3/8" bore	BEF-MK-DUV38	2088715
<b>Plug connectors and cables</b>			
	Head A: Flying leads Head B: Flying leads Cable: CANopen, DeviceNet™, shielded Wire shield Al-Pt film, overall shield C-screen tin-plated	LTG-2804-MW	6028328
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: PUR, halogen-free, shielded, 2 m	DOL-1204-G02MAC	2088079
	Head A: female connector, M12, 4-pin, straight Head B: Flying leads Cable: PUR, halogen-free, shielded, 5 m	DOL-1204-G05MAC	6038621
	Head A: female connector, M12, 4-pin, straight Head B: Flying leads Cable: Welding spark resistant, PUR, halogen-free, shielded, 10 m	DOL-1204-G10MAC	6041797
	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PUR, halogen-free, shielded, 20 m	DOL-1204-G20MAC	2088080
	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)