



DUS60E-S7KF0ACA

DUS60

INCREMENTAL ENCODERS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

Type	Part no.
DUS60E-S7KF0ACA	1084497

Other models and accessories → www.sick.com/DUS60

Detailed technical data

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⁾
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)
Power consumption	≤ 1.25 W (without load)
4.5 V... 5.5 V, TTL/RS-422	
Load current	≤ 30 mA, per channel
Operating current	≤ 120 mA (without load)
4.5 V ... 5.5 V, Open Collector	
Load current	≤ 30 mA, per channel
Operating current	≤ 120 mA (without load)
TTL/RS-422	
Load current	≤ 30 mA, per channel
Power consumption	≤ 1.25 W (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.

HTL/Push pull	Load current	≤ 30 mA, per channel
	Power consumption	≤ 1.25 W (without load)
TTL/HTL	Load current	≤ 30 mA, per channel
	Power consumption	≤ 1.25 W (without load)
Open Collector	Load current	≤ 30 mA, per channel
	Power consumption	≤ 1.25 W (without load)
DIP switch parameters	Pulses per revolution	✓
	Output voltage	✓
	Direction of rotation	✓
Configuration switches	1800 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.

Electrical data

Connection type	Male connector, M12, 4-pin, universal 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	✓
MTTFd: mean time to dangerous failure	275 years (EN ISO 13849-1) ²⁾

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

²⁾ 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

Mechanical design	Solid shaft, face mount flange
Shaft diameter	3/8"
Shaft length	19 mm
Weight	0.3 kg ¹⁾
Shaft material	Stainless steel
Flange material	Aluminum
Housing material	Aluminum
Material, cable	PVC
Start up torque	1.2 Ncm (+20 °C)
Operating torque	1.1 Ncm (+20 °C)
Permissible shaft loading radial/axial	100 N (radial) 50 N (axial)

¹⁾ Based on encoder with male connector.

Operating speed	1,500 min ⁻¹
Moment of inertia of the rotor	33 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 of the optical scanning 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)
Resistance to vibration	30 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

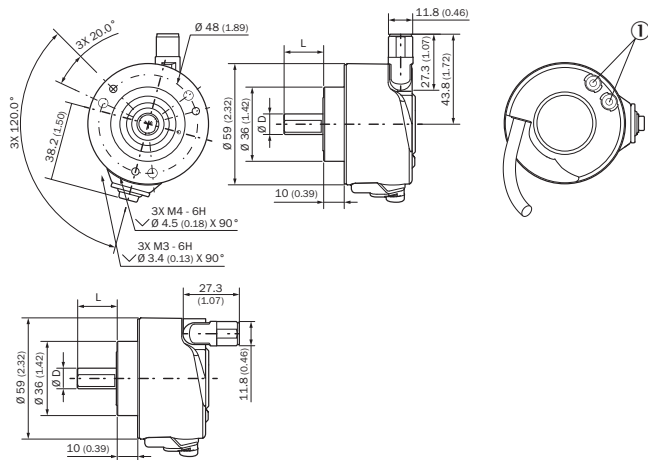
¹⁾ When the mating connector is installed and the DIP switch door is sealed with the encoder housing.

Classifications

ECl@ss 5.0	27270501
ECl@ss 5.1.4	27270501
ECl@ss 6.0	27270590
ECl@ss 6.2	27270590
ECl@ss 7.0	27270501
ECl@ss 8.0	27270501
ECl@ss 8.1	27270501
ECl@ss 9.0	27270501
ECl@ss 10.0	27270501
ECl@ss 11.0	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))

Solid shaft

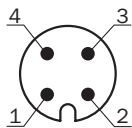


① Status indicators

Type Solid shaft	Shaft Diameter D	Shaft length L
DUS60x-S3xxxxxxxx	6 mm	10 mm
DUS60x-S4xxxxxxxx	10 mm	19 mm
DUS60x-S7xxxxxxxx	3/8"	19 mm
DUS60x-S8xxxxxxxx	1/4"	10 mm

PIN assignment

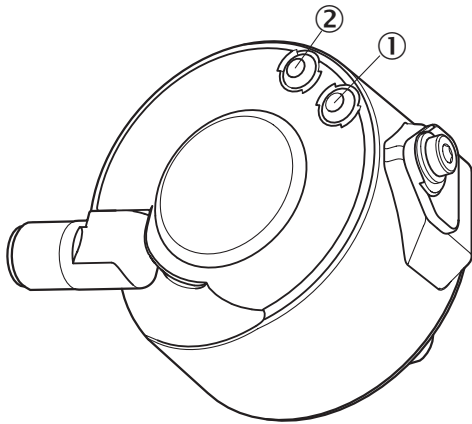
View of M12 male device connector on encoder



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 _S	U _S	U _S	U _S	Supply voltage

Wire colors (cable connection)	Male connector M12, 4-pin	Male connector M12, 8-pin	Output function				Explanation
			A	B	C	D	
-	-	-	Case	Case	Case	Case	Earth fault protection
Shielding	-	-	Shielding	Shielding	Shielding	Shielding	Shielding

Adjustments




DIP switch configuration C – 1800 pulses						
Pulses per revolution	1	9	30	120	600	
	2	10	36	150	900	
	3	12	40	180	1800	
	4	15	60	200		
	5	18	72	300		
	6	20	75	360		
	8	24	100	450		

Recommended accessories

Other models and accessories → www.sick.com/DUS60

	Brief description	Type	Part no.
Plug connectors and cables			
	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

	Brief description	Type	Part no.
	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

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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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