



ARS60-BDA02880

ARS60

ABSOLUTE ENCODERS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

Type	Part no.
ARS60-BDA02880	1032891

Other models and accessories → www.sick.com/ARS60

Detailed technical data

Performance

Number of steps per revolution (max. resolution)	2,880
Measuring step	360° / number of steps
Measuring step deviation	0.016° non-binary number of steps
Error limits G	0.046° (non-binary number of steps) ¹⁾
Repeatability standard deviation σ_r	0.005° ²⁾

¹⁾ In accordance with DIN ISO 1319-1, position of the upper and lower error limit depends on the installation situation, specified value refers to a symmetrical position, i.e. deviation in upper and lower direction is the same.

²⁾ In accordance with DIN ISO 55350-13; 68.3% of the measured values are inside the specified area.

Interfaces

Communication interface	SSI
Initialization time	80 ms ¹⁾
Code type	Gray, trimmed
Code sequence parameter adjustable	CW (clockwise) increasing when viewing the clockwise rotating shaft
Measured value backlash	0.005°
Response threshold	0.003°

¹⁾ Valid positional data can be read once this time has elapsed.

Electrical data

Connection type	Male connector, M23, 12-pin, radial
Supply voltage	10 ... 32 V
Operating current	Typ. 60 mA
MTTFd: mean time to dangerous failure	300 years (EN ISO 13849-1) ¹⁾
Switching level of control inputs	Logic H = 0.7 x U _S , Logic L = 0 V ... 0.3 x U _S
Actuation of set button	≥ 100 ms ²⁾

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.

²⁾ Only with shaft stationary (note initialisation time).

Mechanical data

Mechanical design	Through hollow shaft
Shaft diameter	12 mm ¹⁾
Weight	Approx. 0.3 kg ²⁾
Housing material	Aluminum die cast
Start up torque	Typ. 2.2 Ncm
Operating torque	Typ. 1.6 Ncm
Permissible movement static	± 0.3 mm (radial) ± 0.5 mm (axial)
Permissible movement dynamic	± 0.1 mm (radial) ± 0.2 mm (axial)
Operating speed	≤ 3,000 min ⁻¹
Moment of inertia of the rotor	See figure
Bearing lifetime	3.6 x 10 ⁹ revolutions
Angular acceleration	≤ 500,000 rad/s ²

¹⁾ 12 mm requires the corresponding collet, this and other collets for 6, 8, 10 mm as well as 1/4", 3/8" and 1/2" need to be ordered separately as accessories.

²⁾ Based on devices with male connector.

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3 ¹⁾
Enclosure rating	IP64, male connector (IEC 60529) ²⁾
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	-20 °C ... +85 °C
Storage temperature range	-40 °C ... +100 °C, without package
Resistance to shocks	50 g, 11 ms (EN 60068-2-27)
Resistance to vibration	20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

¹⁾ EMC according to the standards quoted is achieved if shielded cables are used.

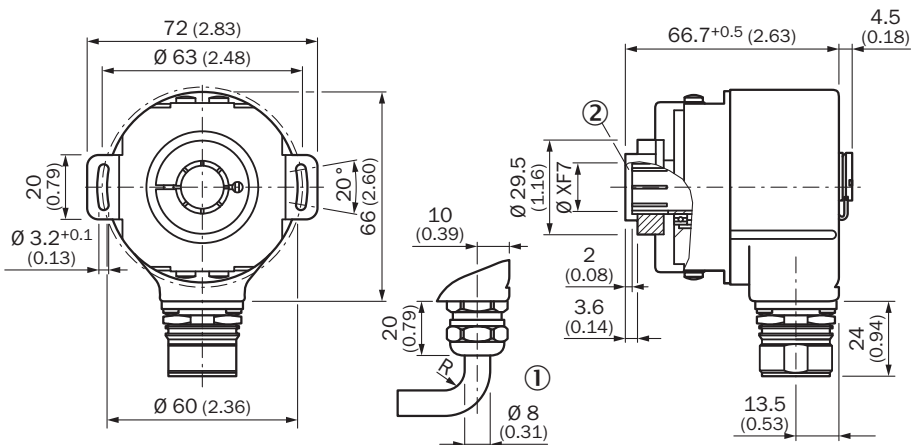
²⁾ With mating connector fitted.

Classifications

ECLASS 5.0	27270502
ECLASS 5.1.4	27270502
ECLASS 6.0	27270590
ECLASS 6.2	27270590
ECLASS 7.0	27270502
ECLASS 8.0	27270502
ECLASS 8.1	27270502
ECLASS 9.0	27270502
ECLASS 10.0	27270502
ECLASS 11.0	27270502
ECLASS 12.0	27270502
ETIM 5.0	EC001486
ETIM 6.0	EC001486

ETIM 7.0	EC001486
ETIM 8.0	EC001486
UNSPSC 16.0901	41112113

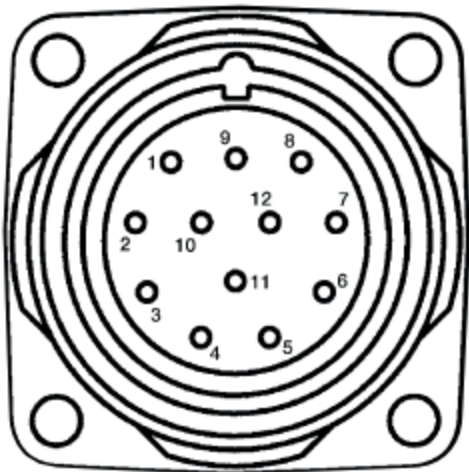
Dimensional drawing (Dimensions in mm (inch))



General tolerances according to DIN ISO 2768-mk

- ① R = min. bending radius 40 mm
- ② Insertion depth of mounting shaft min. 15 mm

PIN assignment

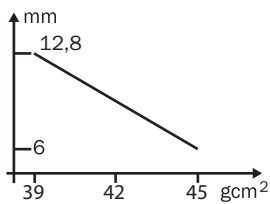


PIN 12-pin	Wire colors (cable connection) 11-wire	Signal
1	Blue	GND
2	White	Data +
3	Yellow	Clock +
4	N.c.	N.c.

PIN 12-pin	Wire colors (cable connection) 11-wire	Signal
5	Pink	CW/CCW (V/R)
6	N.c.	N.c.
7	N.c.	N.c.
8	Red	U _S
9	Orange	SET
10	Brown	Data -
11	Violet	Clock -
12	N.c.	N.c.

Diagrams

Moment of inertia of the rotor



Through hollow shaft

Recommended accessories

Other models and accessories → www.sick.com/ARS60

	Brief description	Type	Part no.
Shaft adaptation			
	Collet for through hollow shaft, shaft diameter 6 mm, outer diameter 14 mm	SPZ-006-AD-D	2029192
	Collet for through hollow shaft, shaft diameter 8 mm, outer diameter 14 mm	SPZ-008-AD-D	2029194
	Collet for through hollow shaft, shaft diameter 10 mm, outer diameter 14 mm	SPZ-010-AD-D	2029196
	Collet for through hollow shaft, shaft diameter 12 mm, outer diameter 14 mm	SPZ-012-AD-D	2029197
	Collet for through hollow shaft, shaft diameter 1/2" (12.7 mm), outer diameter 14 mm	SPZ-1E2-AD-D	2029198
	Collet for through hollow shaft, shaft diameter 1/4" (6.35 mm), outer diameter 14 mm	SPZ-1E4-AD-D	2029193
	Collet for through hollow shaft, shaft diameter 3/8" (9.525 mm), outer diameter 14 mm	SPZ-3E8-AD-D	2029195
Others			
	<ul style="list-style-type: none"> • Connection type head A: Flying leads • Connection type head B: Flying leads • Signal type: SSI, Incremental • Items supplied: By the meter • Cable: 11-wire, PUR • Description: SSI, Incremental, shielded 	LTG-2411-MW	6027530

	Brief description	Type	Part no.
	<ul style="list-style-type: none"> • Connection type head A: Flying leads • Connection type head B: Flying leads • Signal type: SSI, Incremental • Items supplied: By the meter • Cable: 12-wire, PUR, halogen-free • Description: SSI, Incremental, shielded 	LTG-2512-MW	6027531
	<ul style="list-style-type: none"> • Connection type head A: Flying leads • Connection type head B: Flying leads • Signal type: SSI, TTL, HTL, Incremental • Items supplied: By the meter • Cable: 12-wire, UV and saltwater-resistant, PUR, halogen-free • Description: SSI, TTL, HTL, Incremental, shielded, Head A: cable Head B: cable Cable: suitable for drag chain, PUR, halogen-free, shielded, UV and saltwater resistant, 4 x 2 x 0.25 mm² + 2 x 0.5 mm² + 2 x 0.14 mm², Ø 7.8 mm 	LTG-2612-MW	6028516
	<ul style="list-style-type: none"> • Connection type head A: Flying leads • Connection type head B: Flying leads • Signal type: SSI, Incremental, HIPERFACE® • Items supplied: By the meter • Cable: 8-wire, PUR, halogen-free • Description: SSI, Incremental, HIPERFACE®, shielded 	LTG-2308-MWENC	6027529
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 12-pin, straight, A-coded • Signal type: HIPERFACE®, SSI, Incremental • Description: HIPERFACE®, SSI, Incremental, shielded, Head A: female connector, M23, 12-pin, straight, shielded, for cable diameter 5.5 mm ... 10.5 mm Head B: Operating temperature: -20 °C ... +130 °C • Connection systems: Solder connection 	DOS-2312-G	6027538
	<ul style="list-style-type: none"> • Connection type head A: Male connector, M23, 12-pin, straight, A-coded • Signal type: HIPERFACE®, SSI, Incremental, RS-422 • Description: HIPERFACE®, SSI, Incremental, RS-422, shielded, M23 male connector • Connection systems: Solder connection 	STE-2312-G	6027537
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 12-pin, straight • Connection type head B: Flying leads • Signal type: SSI • Cable: 3 m, 12-wire, PUR, halogen-free • Description: SSI, shielded 	DOL-2312-G03MMA2	2029207
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 12-pin, straight • Connection type head B: Flying leads • Signal type: SSI • Cable: 1.5 m, 12-wire, PUR, halogen-free • Description: SSI, shielded 	DOL-2312-G1M5MA2	2029206
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 12-pin, straight • Connection type head B: Flying leads • Signal type: SSI • Cable: 5 m, 12-wire, PUR, halogen-free • Description: SSI, shielded 	DOL-2312-G05MMA2	2029208
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 12-pin, straight • Connection type head B: Flying leads • Signal type: SSI • Cable: 10 m, 12-wire, PUR, halogen-free • Description: SSI, shielded 	DOL-2312-G10MMA2	2029209
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 12-pin, straight • Connection type head B: Flying leads • Signal type: SSI • Cable: 20 m, 12-wire, PUR, halogen-free • Description: SSI, shielded 	DOL-2312-G20MMA2	2029210

	Brief description	Type	Part no.
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 12-pin, straight • Connection type head B: Flying leads • Signal type: SSI • Cable: 30 m, 12-wire, PUR, halogen-free • Description: SSI, shielded 	DOL-2312-G30MMA2	2029211
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 9-pin, straight, A-coded • Signal type: HIPERFACE[®], SSI, Incremental • Description: HIPERFACE[®], SSI, Incremental, shielded, Head A: female connector, M23, 9-pin, straight, shielded, for cable diameter 5.5 mm ... 10.5 mm Head B: Operating temperature: -20 °C ... +130 °C • Connection systems: Solder connection 	DOS-2309-G	6028533
	<ul style="list-style-type: none"> • Connection type head A: Female connector, M23, 12-pin, angled, A-coded • Signal type: HIPERFACE[®], SSI, Incremental • Description: HIPERFACE[®], SSI, Incremental, shielded, Head A: female connector, M23, 12-pin, angled, shielded, for cable diameter 4.2 mm ... 6.6 mm Head B: - Operating temperature: -20 °C ... +130 °C • Connection systems: Solder connection 	DOS-2312-W01	2072580

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