



ARS60-F1A08192

ARS60

ABSOLUTE ENCODERS

SICK
Sensor Intelligence.



Ordering information

Type	part no.
ARS60-F1A08192	1031620

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

Illustration may differ



Detailed technical data

Safety-related parameters

MTTF_D (mean time to dangerous failure)	300 years (EN ISO 13849-1) ¹⁾
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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.

Performance

Number of steps per revolution (max. resolution)	8,192 (13 bit)
Measuring step	360° / number of steps
Measuring step deviation	0.005° binary number of steps
Error limits G	0.035° (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	Parallel data world
Initialization time	80 ms ¹⁾
Code type	Gray
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.

Electronics

Connection type	Male connector, M23, 21-pin, radial
Supply voltage	10 ... 32 V

¹⁾ Only with shaft stationary (note initialisation time).

Operating current	Typ. 90 mA
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 ¹⁾

¹⁾ Only with shaft stationary (note initialisation time).

Mechanics

Mechanical design	Solid shaft, Servo flange
Shaft diameter	6 mm
Shaft length	10 mm
Characteristics of the shaft	With flat
Weight	Approx. 0.3 kg ¹⁾
Housing material	Aluminum die cast
Start up torque	Typ. 0.25 Ncm
Operating torque	Typ. 0.2 Ncm
Permissible shaft loading	20 N (radial) 10 N (axial)
Operating speed	≤ 6,000 min ⁻¹ with shaft seal ≤ 10,000 min ⁻¹ without shaft seal ²⁾
Moment of inertia of the rotor	48 gcm ²
Bearing lifetime	3.6 x 10 ⁹ revolutions
Angular acceleration	≤ 500,000 rad/s ²

¹⁾ Based on devices with male connector.

²⁾ If the shaft seal has been removed by the customer.

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3 ¹⁾
Enclosure rating	IP65, 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.

Certificates

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

Anschlussbelegung



PIN	Wire colors (cable connection)	SignalBinary	SignalGray	SignalBCD	
1	Violet	2 ⁰	G ⁰	2 ⁰ v. 10 ⁰	-
2	White/brown	2 ¹	G ¹	2 ¹ v. 10 ⁰	-
3	White/green	2 ²	G ²	2 ² v. 10 ⁰	-
4	White/yellow	2 ³	G ³	2 ³ v. 10 ⁰	-
5	White/grey	2 ⁴	G ⁴	2 ⁰ v. 10 ¹	-
6	White/pink	2 ⁵	G ⁵	2 ¹ v. 10 ¹	-
7	White/blue	2 ⁶	G ⁶	2 ² v. 10 ¹	-
8	White/red	2 ⁷	G ⁷	2 ³ v. 10 ¹	-
9	White/black	2 ⁸	G ⁸	2 ⁰ v. 10 ²	-
10	Brown/green	2 ⁹	G ⁹	2 ¹ v. 10 ²	-
11	Brown/yellow	2 ¹⁰	G ¹⁰	2 ² v. 10 ²	-
12	Brown/gray	2 ¹¹	G ¹¹	2 ³ v. 10 ²	-
13	Brown/pink	2 ¹²	G ¹²	2 ⁰ v. 10 ³	-
14	Brown/blue	2 ¹³	G ¹³	2 ¹ v. 10 ³	-
15	Brown/red	2 ¹⁴	G ¹⁴	2 ² v. 10 ³	-
16	Green	Parity		Parity	
17	Pink		Store		-
18	Yellow		Enable		-
19	Brown		CW/CCW (V/R)		-
*	Gray		SET		-
20	Blue		GND		-
21	Red		U _S		-

Diagrams



Recommended accessories

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

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> Description: Parallel, shielded Connection type head A: Flying leads Connection type head B: Flying leads Signal type: Parallel Items supplied: By the meter Cable: 22-wire, PUR, halogen-free 	LTG-2622-MW	6027532
	<ul style="list-style-type: none"> Description: SSI, shielded Connection type head A: Female connector, M23, 21-pin, straight, A-coded Signal type: SSI Connection systems: Crimp contacts 	DOS-2321-G	6027539
	<ul style="list-style-type: none"> Description: Parallel, shielded Connection type head A: Female connector, M23, 21-pin, straight Connection type head B: Flying leads Signal type: Parallel Cable: 1.5 m, 22-wire, PUR, halogen-free Application: Zones with oils and lubricants 	DOL-2321-G1M5PA4	2029218
	<ul style="list-style-type: none"> Description: Parallel, shielded Connection type head A: Female connector, M23, 21-pin, straight Connection type head B: Flying leads Signal type: Parallel Cable: 3 m, 22-wire, PUR, halogen-free Application: Zones with oils and lubricants 	DOL-2321-G03MPA4	2029219
	<ul style="list-style-type: none"> Description: Parallel, shielded Connection type head A: Female connector, M23, 21-pin, straight Connection type head B: Flying leads Signal type: Parallel Cable: 5 m, 22-wire, PUR, halogen-free Application: Zones with oils and lubricants 	DOL-2321-G05MPA4	2029220
	<ul style="list-style-type: none"> Description: Parallel, shielded Connection type head A: Female connector, M23, 21-pin, straight Connection type head B: Flying leads Signal type: Parallel Cable: 10 m, 22-wire, PUR, halogen-free Application: Zones with oils and lubricants 	DOL-2321-G10MPA4	2029221
	<ul style="list-style-type: none"> Description: Parallel, shielded Connection type head A: Female connector, M23, 21-pin, straight Connection type head B: Flying leads Signal type: Parallel Cable: 20 m, 22-wire, PUR, halogen-free Application: Zones with oils and lubricants 	DOL-2321-G20MPA4	2029222

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"> Description: Mounting bell for encoder with servo flange, 50 mm spigot Items supplied: Mounting kit included 	BEF-MG-50	5312987
	<ul style="list-style-type: none"> Description: Half-shell servo clamps (2 pcs.) for servo flanges with a 50 mm centering hub 	BEF-WG-SF050	2029165
	<ul style="list-style-type: none"> Description: Servo clamps, large, for servo flange (clamps, eccentric fastener), 3 pcs, without mounting material Items supplied: Without mounting hardware 	BEF-WK-SF	2029166
shaft adaptation			
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Bellows coupling, shaft diameter 6 mm / 6 mm, maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular $\pm 4^\circ$; max. speed 10,000 rpm, -30°C to $+120^\circ\text{C}$, max. torque 120 Ncm; material: stainless steel bellows, aluminum hub 	KUP-0606-B	5312981
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Bellows coupling, shaft diameter 6 mm / 10 mm, maximum shaft offset: radial ± 0.25 mm, axial ± 0.4 mm, angular $\pm 4^\circ$; max. speed 10,000 rpm, -30°C to $+120^\circ\text{C}$, max. torque 120 Ncm; material: stainless steel bellows, aluminum hub 	KUP-0610-B	5312982
	<ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Shaft couplings Description: Spring washer coupling, shaft diameter 6 mm / 10 mm, Maximum shaft offset: radial ± 0.3 mm, axial ± 0.4 mm, angular $\pm 2.5^\circ$; max. speed 12,000 rpm, -10° to $+80^\circ\text{C}$, max. torque 60 Ncm; material: aluminum flange, glass fiber-reinforced polyamide membrane and hardened steel coupling pin 	KUP-0610-F	5312985

SICK AT A GLANCE

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