



# ARS60-FDA00360

ARS60

**ABSOLUTE ENCODERS**

**SICK**  
Sensor Intelligence.



## Ordering information

Type	part no.
ARS60-FDA00360	1034349

Other models and accessories → [www.sick.com/ARS60](http://www.sick.com/ARS60)

Illustration may differ



## Detailed technical data

## Safety-related parameters

<b>MTTF<sub>D</sub> (mean time to dangerous failure)</b>	300 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>Number of steps per revolution (max. resolution)</b>	360
<b>Measuring step</b>	360° / number of steps
<b>Measuring step deviation</b>	0.016° non-binary number of steps
<b>Error limits G</b>	0.046° (non-binary number of steps) <sup>1)</sup>
<b>Repeatability standard deviation <math>\sigma_r</math></b>	0.005° <sup>2)</sup>

<sup>1)</sup> 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.

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

## Interfaces

<b>Communication interface</b>	Parallel data world
<b>Initialization time</b>	80 ms <sup>1)</sup>
<b>Code type</b>	Gray
<b>Code sequence parameter adjustable</b>	CW (clockwise) increasing when viewing the clockwise rotating shaft
<b>Measured value backlash</b>	0.005°
<b>Response threshold</b>	0.003°

<sup>1)</sup> Valid positional data can be read once this time has elapsed.

## Electronics

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

<sup>1)</sup> Only with shaft stationary (note initialisation time).

<b>Operating current</b>	Typ. 90 mA
<b>Switching level of control inputs</b>	Logic H = 0.7 x U <sub>S</sub> , Logic L = 0 V ... 0.3 x U <sub>S</sub>
<b>Actuation of set button</b>	≥ 100 ms <sup>1)</sup>

<sup>1)</sup> Only with shaft stationary (note initialisation time).

## Mechanics

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

<sup>1)</sup> 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.

<sup>2)</sup> Based on devices with male connector.

## Ambient data

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

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

<sup>2)</sup> With mating connector fitted.

## Certificates

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



Anschlussbelegung



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

### Diagrams




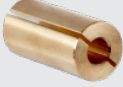
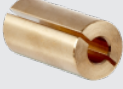




### Diagrams Moment of inertia of the rotor



## Recommended accessories

Other models and accessories → [www.sick.com/ARS60](http://www.sick.com/ARS60)

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

	Brief description	Type	part no.
shaft adaptation			
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 6 mm, outer diameter 14 mm</li> </ul>	SPZ-006-AD-D	2029192
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 1/4" (6.35 mm), outer diameter 14 mm</li> </ul>	SPZ-1E4-AD-D	2029193
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 8 mm, outer diameter 14 mm</li> </ul>	SPZ-008-AD-D	2029194
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 3/8" (9.525 mm), outer diameter 14 mm</li> </ul>	SPZ-3E8-AD-D	2029195
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 10 mm, outer diameter 14 mm</li> </ul>	SPZ-010-AD-D	2029196
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 12 mm, outer diameter 14 mm</li> </ul>	SPZ-012-AD-D	2029197
	<ul style="list-style-type: none"> <li>• <b>Product segment:</b> Shaft adaptation</li> <li>• <b>Product:</b> Collets</li> <li>• <b>Description:</b> Collet for through hollow shaft, shaft diameter 1/2" (12.7 mm), outer diameter 14 mm</li> </ul>	SPZ-1E2-AD-D	2029198

## 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.

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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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