

# ARS60-FDK32767

ARS60

**ABSOLUTE ENCODERS** 





## Ordering information

Туре	Part no.
ARS60-FDK32767	1031638

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

Illustration may differ



#### Detailed technical data

#### Performance

Number of steps per revolution (max. resolution)	32,767
Measuring step	360° /number of steps
Measuring step deviation	0.005° binary number of steps 0.016° non-binary number of steps
Error limits G	0.035° (binary number of steps) 1) 0.046° (non-binary number of steps) 1)
Repeatability standard deviation $\boldsymbol{\sigma_r}$	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.

#### Interfaces

Communication interface	Parallel data world
Initialization time	80 ms <sup>1)</sup>
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°

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

#### Electrical data

Connection type	Cable, 22-wire, radial, 1.5 m
Supply voltage	10 32 V
Operating current	Typ. 90 mA
MTTFd: mean time to dangerous failure	300 years (EN ISO 13849-1) <sup>1)</sup>

<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.

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

 $<sup>^{2)}</sup>$  Only with shaft stationary (note initialisation time).

Switching level of control inputs	Logic H = $0.7 \times U_S$ , Logic L = $0 \times \times 0.3 \times U_S$
Actuation of set button	≥ 100 ms <sup>2)</sup>

<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.

#### Mechanical data

Mechanical design	Through hollow shaft
Shaft diameter	12 mm <sup>1)</sup>
Weight	Approx. 0.3 kg <sup>2)</sup>
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 <sup>-1</sup>
Moment of inertia of the rotor	See figure
Bearing lifetime	3.6 x 10 <sup>9</sup> revolutions
Angular acceleration	≤ 500,000 rad/s²

 $<sup>^{1)}</sup>$  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.

#### Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3 1)
Enclosure rating	IP64, male connector (IEC 60529) <sup>2)</sup> IP64, cable (IEC 60529)
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)

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

#### 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

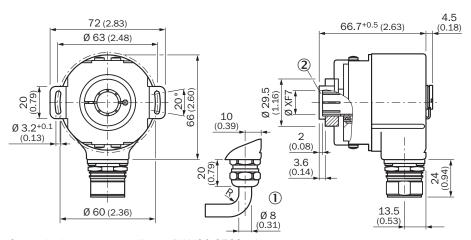
 $<sup>^{2)}</sup>$  Only with shaft stationary (note initialisation time).

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

<sup>&</sup>lt;sup>2)</sup> With mating connector fitted.

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

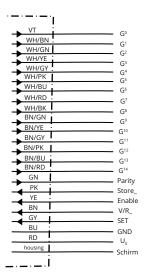
## Dimensional drawing (Dimensions in mm (inch))



General tolerances according to DIN ISO 2768-mk

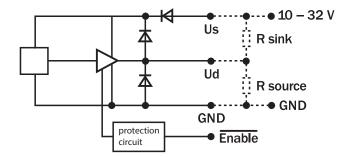
- ① R = min. bending radius 40 mm
- ② Inseration depth of mounting shaft min. 15 mm

## PIN assignment

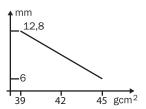


PIN	Wire colors (ca- ble connection)	Signal Binary	Signal Gray	Signal BCD
1	Violet	2 <sup>0</sup>	G <sup>0</sup>	2 <sup>0</sup> v. 10 <sup>0</sup>
2	White/brown	2 <sup>1</sup>	G <sup>1</sup>	2 <sup>1</sup> v. 10 <sup>0</sup>
3	White/green	2 <sup>2</sup>	$G^2$	2 <sup>2</sup> v. 10 <sup>0</sup>
4	White/yellow	2 <sup>3</sup>	G <sup>3</sup>	2 <sup>3</sup> v. 10 <sup>0</sup>
5	White/grey	24	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



#### Moment of inertia of the rotor



Through hollow shaft

### Recommended accessories

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

	Brief description	Туре	Part no.
Plug connecto	ors and cables		
<b>\</b>	Head A: cable Head B: Flying leads Cable: parallel, PUR, halogen-free, shielded	LTG-2622-MW	6027532
Shaft adaptat	ion		
	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

# 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:**

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