

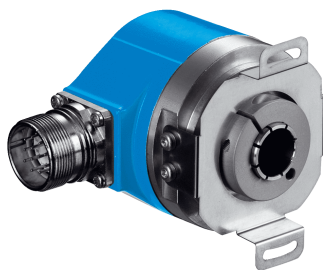


ARS60-AAA03600

ARS60

ABSOLUTE ENCODERS

SICK
Sensor Intelligence.



Ordering information

| Type | part no. |
|----------------|----------|
| ARS60-AAA03600 | 1031421 |

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⁾ |
|--|--|

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) | 3,600 |
| 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 |
| 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, 12-pin, radial |
| Supply voltage | 10 ... 32 V |

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

| | |
|--|---|
| Operating current | Typ. 60 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 | Blind hollow shaft |
| Shaft diameter | 15 mm ¹⁾ |
| Characteristics of the shaft | Front clamp |
| Weight | Approx. 0.3 kg ²⁾ |
| Housing material | Aluminum die cast |
| Start up torque | Typ. 0.6 Ncm |
| Operating torque | Typ. 0.4 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⁾ Collets for 6, 8, 10, 12, 14 mm and 1/4", 3/8" and 1/2" as accessories, separate order item. For 15 mm shaft diameter collet is not needed.

²⁾ Based on devices with male connector.

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) | ✓ |

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

Anschlussbelegung



| PIN12-pin | Wire colors (cable connection)11-wire | Signal |
|-----------|---------------------------------------|----------------|
| 1 | Blue | GND |
| 2 | White | Data + |
| 3 | Yellow | Clock + |
| 4 | N.c. | N.c. |
| 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













blind hollow shaft

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: SSI, shielded, Incremental 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 | LTG-2411-MW | 6027530 |
|  | <ul style="list-style-type: none"> Description: SSI, shielded, Incremental 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 | LTG-2512-MW | 6027531 |
|  | <ul style="list-style-type: none"> Description: SSI, shielded, TTL, HTL, Incremental 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 | LTG-2612-MW | 6028516 |
|  | <ul style="list-style-type: none"> Description: SSI, shielded, Incremental, HIPERFACE® 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 | LTG-2308-MWENC | 6027529 |
|  | <ul style="list-style-type: none"> Description: HIPERFACE®, shielded, SSI, Incremental Connection type head A: Female connector, M23, 12-pin, straight, A-coded Signal type: HIPERFACE®, SSI, Incremental Connection systems: Solder connection | DOS-2312-G | 6027538 |
|  | <ul style="list-style-type: none"> Description: HIPERFACE®, shielded, SSI, Incremental, RS-422 Connection type head A: Male connector, M23, 12-pin, straight, A-coded Signal type: HIPERFACE®, SSI, Incremental, RS-422 Connection systems: Solder connection | STE-2312-G | 6027537 |
|  | <ul style="list-style-type: none"> Description: SSI, shielded 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 Application: Zones with oils and lubricants | DOL-2312-G03MMA2 | 2029207 |
|  | <ul style="list-style-type: none"> Description: SSI, shielded 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 Application: Zones with oils and lubricants | DOL-2312-G1M5MA2 | 2029206 |
|  | <ul style="list-style-type: none"> Description: SSI, shielded 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 Application: Zones with oils and lubricants | DOL-2312-G05MMA2 | 2029208 |
|  | <ul style="list-style-type: none"> Description: SSI, shielded 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 Application: Zones with oils and lubricants | DOL-2312-G10MMA2 | 2029209 |
|  | <ul style="list-style-type: none"> Description: SSI, shielded 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 | DOL-2312-G20MMA2 | 2029210 |

| | Brief description | Type | part no. |
|---|---|------------------|----------|
|  | <ul style="list-style-type: none"> Application: Zones with oils and lubricants Description: SSI, shielded 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 Application: Zones with oils and lubricants | DOL-2312-G30MMA2 | 2029211 |
|  | <ul style="list-style-type: none"> Description: HIPERFACE[®], shielded, SSI, Incremental Connection type head A: Female connector, M23, 9-pin, straight, A-coded Signal type: HIPERFACE[®], SSI, Incremental Connection systems: Solder connection | DOS-2309-G | 6028533 |
|  | <ul style="list-style-type: none"> Description: HIPERFACE[®], shielded, SSI, Incremental Connection type head A: Female connector, M23, 12-pin, angled, A-coded Signal type: HIPERFACE[®], SSI, Incremental Connection systems: Solder connection | DOS-2312-W01 | 2072580 |
| shaft adaptation | | | |
|  | <ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Collets Description: Collet for blind hollow shaft, shaft diameter 6 mm, outer diameter 15 mm | SPZ-006-AD-A | 2029174 |
|  | <ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Collets Description: Collet for blind hollow shaft, shaft diameter 1/4" (6.35 mm), outer diameter 15 mm | SPZ-1E4-AD-A | 2029175 |
|  | <ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Collets Description: Collet for blind hollow shaft, shaft diameter 8 mm, outer diameter 15 mm | SPZ-008-AD-A | 2029176 |
|  | <ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Collets Description: Collet for blind hollow shaft, shaft diameter 3/8" (9.525 mm), outer diameter 15 mm | SPZ-3E8-AD-A | 2029177 |
|  | <ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Collets Description: Collet for blind hollow shaft, shaft diameter 10 mm, outer diameter 15 mm | SPZ-010-AD-A | 2029178 |
|  | <ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Collets Description: Collet for blind hollow shaft, shaft diameter 12 mm, outer diameter 15 mm | SPZ-012-AD-A | 2029179 |
|  | <ul style="list-style-type: none"> Product segment: Shaft adaptation Product: Collets Description: Collet for blind hollow shaft, shaft diameter 1/2" (12.7 mm), outer diameter 15 mm | SPZ-1E2-AD-A | 2029180 |

SICK AT A GLANCE

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