



AFS60I-BDPK262144

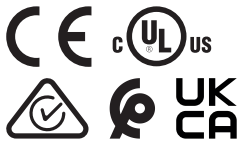
AFS/AFM60 SSI

ABSOLUTE ENCODERS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

| Type | part no. |
|-------------------|----------|
| AFS60I-BDPK262144 | 1137904 |

Other models and accessories → www.sick.com/AFS_AFM60_SSI

Detailed technical data

Safety-related parameters

| | |
|--|--|
| MTTF_D (mean time to dangerous failure) | 250 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) | 262,144 (18 bit) |
| Error limits G | 0.03° ¹⁾ |
| Repeatability standard deviation σ_r | 0.002° 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 | 50 ms ¹⁾ |
| Position forming time | < 1 μ s |
| Code type | Gray |
| Code sequence parameter adjustable | CW/CCW (V/R) |
| Interface signals | Clock +, Clock -, Data +, Data - |
| Clock frequency | 2 MHz ²⁾ |
| Set (electronic adjustment) | H-active (L = 0 - 3 V, H = 4,0 - U _s V) |

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

²⁾ SSI max. clock frequency 2 MHz, and min. LOW level (Clock+): 500 ns.

| | |
|--|--|
| CW/CCW (counting sequence when turning) | L-active (L = 0 - 1,5 V, H = 2,0 - Us V) |
|--|--|

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

²⁾ SSI max. clock frequency 2 MHz, and min. LOW level (Clock+): 500 ns.

Electronics

| | |
|------------------------------------|---|
| Connection type | Cable, 8-wire, universal, 1.5 m ¹⁾ |
| Supply voltage | 4.5 ... 32 V DC |
| Power consumption | ≤ 0.5 W (without load) |
| Reverse polarity protection | ✓ |

¹⁾ The universal cable connection is positioned so that it is possible to lay it without bends in a radial or axial direction.

Mechanics

| | |
|---------------------------------------|---------------------------------------|
| Mechanical design | Blind hollow shaft |
| Shaft diameter | 10 mm |
| Characteristics of the shaft | Front clamp |
| Weight | 0.5 kg ¹⁾ |
| Shaft material | Stainless steel V2A |
| Flange material | Stainless steel V2A |
| Housing material | Stainless steel V2A |
| Start up torque | 1 Ncm (+20 °C) |
| Operating torque | 0.5 Ncm (+20 °C) |
| Permissible movement static | ± 0.3 mm (radial) ± 0.5 mm (axial) |
| Permissible movement dynamic | ± 0.1 mm (radial) ± 0.1 mm (axial) |
| Operating speed | 6,000 min ⁻¹ ²⁾ |
| Moment of inertia of the rotor | 40 gcm ² |
| Bearing lifetime | 3.0 x 10 ⁹ revolutions |
| Angular acceleration | ≤ 500,000 rad/s ² |

¹⁾ Based on devices with male connector.

²⁾ Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

Ambient data

| | |
|--------------------------------------|--|
| EMC | According to EN 61000-6-2 and EN 61000-6-3 ¹⁾ |
| Enclosure rating | IP67, shaft side (IEC 60529) IP67, housing side, cable connection (IEC 60529) |
| Permissible relative humidity | 90 % (Condensation not permitted) |
| Operating temperature range | -40 °C ... +100 °C ²⁾ -30 °C ... +100 °C ³⁾ |
| Storage temperature range | -40 °C ... +100 °C, without package |
| Resistance to shocks | 100 g, 6 ms (EN 60068-2-27) |

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

²⁾ Stationary position of the cable.

³⁾ Flexible position of the cable.

| | |
|--------------------------------|---|
| Resistance to vibration | 10 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⁾ Stationary position of the cable.

³⁾ Flexible position of the cable.

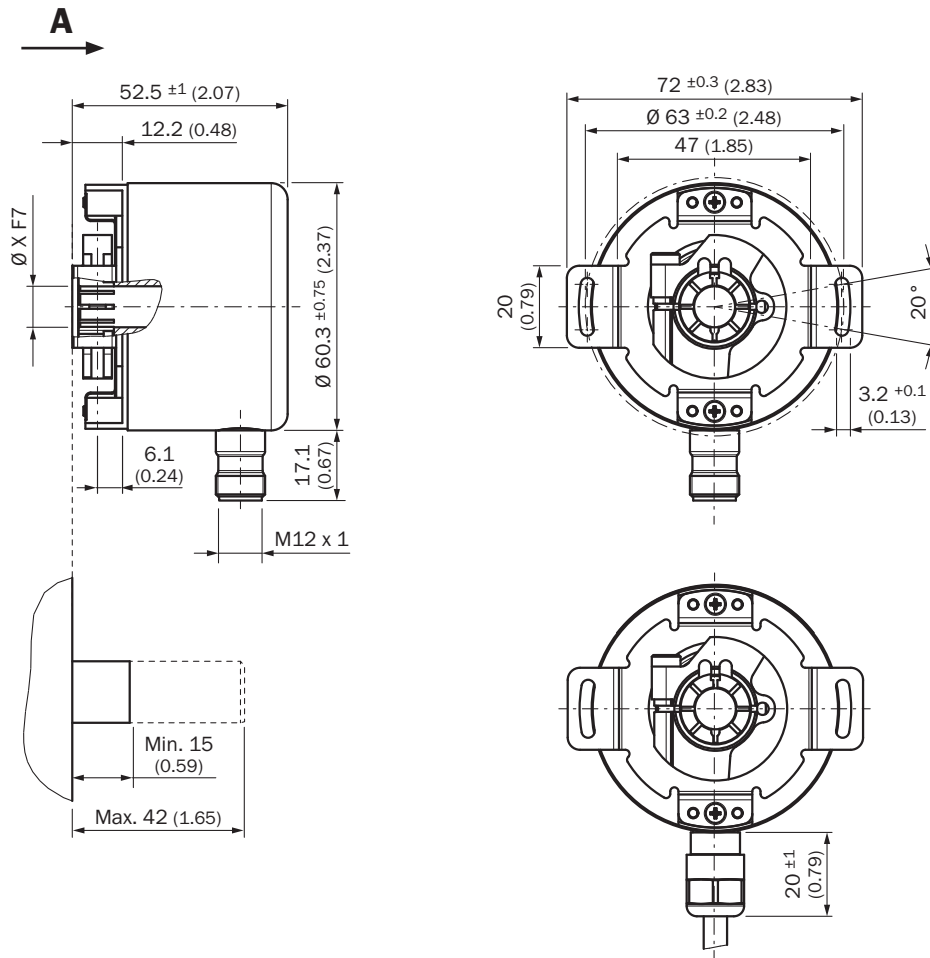
Certificates

| | |
|--|---|
| 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

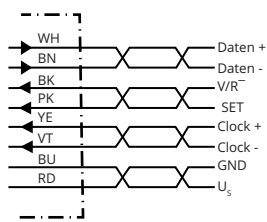
| | |
|-----------------------|----------|
| ECLASS 5.0 | 27270502 |
| ECLASS 5.1.4 | 27270502 |
| ECLASS 6.0 | 27270590 |
| ECLASS 6.2 | 27270590 |
| ECLASS 7.0 | 27270502 |
| ECLASS 8.0 | 27270502 |
| ECLASS 8.1 | 27270502 |
| ECLASS 9.0 | 27270502 |
| ECLASS 10.0 | 27270502 |
| ECLASS 11.0 | 27270502 |
| 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)

PIN assignment

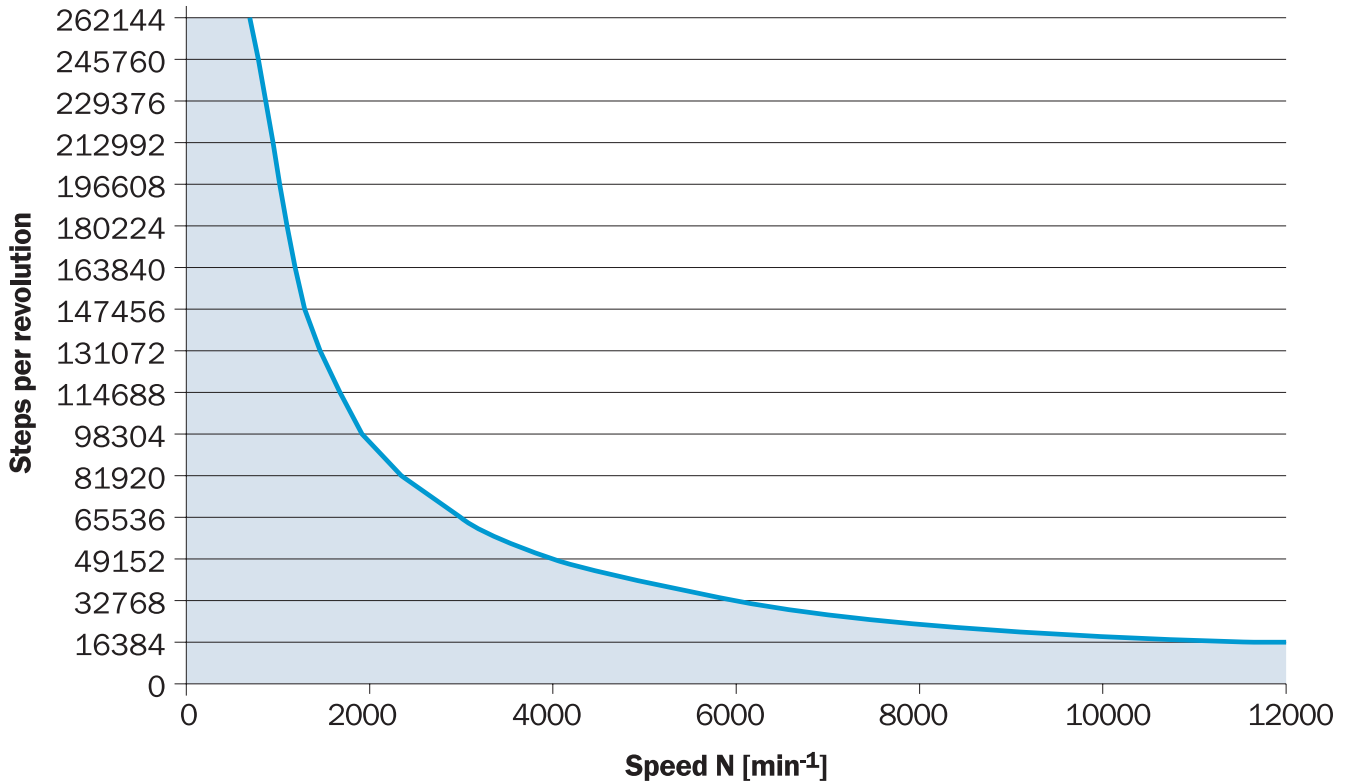


| PIN | Wire colors (cable connection) | Signal | Explanation |
|-----|--------------------------------|---------|---|
| 1 | Brown | Data - | Interface signals |
| 2 | White | Data + | Interface signals |
| 3 | Black | V/R | Sequence in direction of rotation |
| 4 | Pink | SET | Electronic adjustment-Interface signals |
| 5 | Yellow | Clock + | Interface signals |
| 6 | Purple | Clock - | Interface signals |

| PIN | Wire colors (cable connection) | Signal | Explanation |
|-----|--------------------------------|----------------|---|
| 7 | Blue | GND | Ground connection |
| 8 | Red | U _S | Operating voltage |
| - | - | Screen | Screen connected to housing on encoder side. Connected to ground on control side. |

Diagrams

Speed consideration (n)



The maximum speed is also dependent on the shaft type.

SICK AT A GLANCE

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