



AFM60A-BEAA262144

AFS/AFM60 SSI

ABSOLUTE ENCODERS





Ordering information

Туре	part no.
AFM60A-BEAA262144	1054355

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

Illustration may differ



Detailed technical data

Safety-related parameters

MTTF _D (mean time to dangerous failure)	250 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)	262,144 (18 bit)
Number of revolutions	4,096 (12 bit)
Max. resolution (number of steps per revolution x number of revolutions)	18 bit x 12 bit (262,144 x 4,096)
Error limits G	0.03° ¹⁾
Repeatability standard deviation $\boldsymbol{\sigma_{r}}$	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.

Interfaces

Communication interface	SSI
Initialization time	50 ms ¹⁾
Position forming time	< 1 µs
Code type	Gray
Code sequence parameter adjustable	CW/CCW (V/R) parameter adjustable
Clock frequency	≤ 2 MHz ²⁾
Set (electronic adjustment)	H-active (L = $0 - 3 \text{ V}$, H = $4,0 - U_s \text{ V}$)
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.

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

²⁾ Minimum, LOW level (Clock +): 250 ns.

Electronics

Connection type	Male connector, M23, 12-pin, radial
Supply voltage	4.5 32 V
Power consumption	≤ 0.7 W (without load)
Reverse polarity protection	✓

Mechanics

Mechanical design	Blind hollow shaft
-	
Shaft diameter	12 mm
Characteristics of the shaft	Front clamp
Weight	0.2 kg ¹⁾
Shaft material	Stainless steel
Flange material	Aluminum
Housing material	Aluminum die cast
Start up torque	< 0.8 Ncm (+20 °C)
Operating torque	< 0.6 Ncm (+20 °C)
Permissible movement static	± 0.3 mm (radial) ± 0.5 mm (axial)
Permissible movement dynamic	± 0.05 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	$\leq 500,000 \text{ rad/s}^2$

 $^{^{1)}}$ Based on devices with male connector.

Ambient data

EMC	According to EN 61000-6-2 and EN 61000-6-3 1)
Enclosure rating	IP65, shaft side (IEC 60529) IP67, housing side (IEC 60529) ²⁾
Permissible relative humidity	90 % (Condensation not permitted)
Operating temperature range	-40 °C +100 °C ³⁾
Storage temperature range	-40 °C +100 °C, without package
Resistance to shocks	60 g, 6 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.

Certificates

EU declaration of conformity	1
UK declaration of conformity	✓
ACMA declaration of conformity	1
Moroccan declaration of conformity	✓

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

²⁾ For devices with male connector: with mounted mating connector.

³⁾ Stationary position of the cable.

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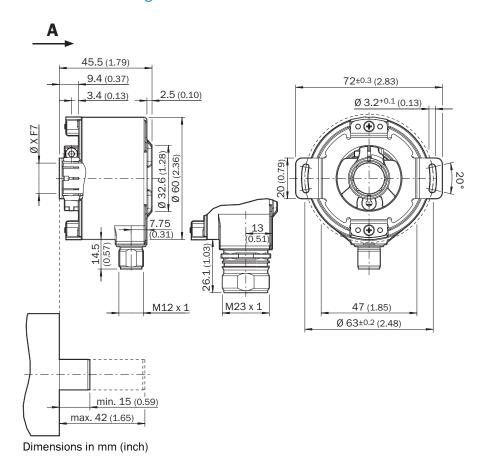
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China-RoHS	✓
cULus certificate	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

Classifications

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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



Anschlussbelegung M23 male connector, 12-pin, SSI/Gray

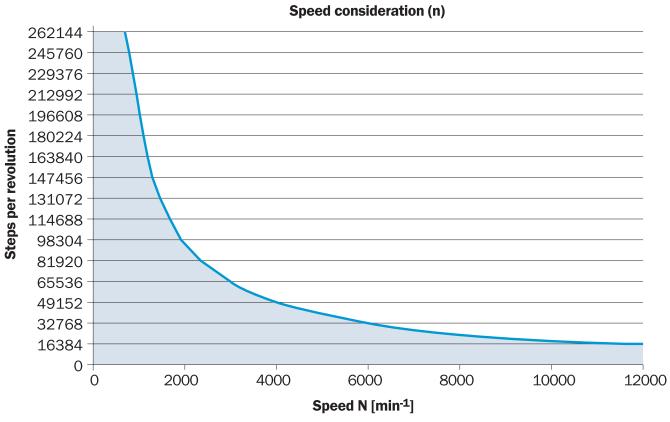


view of M23 male device connector on encoder

PIN	Signal	Explanation
1	GND	Ground connection
2	Data +	Interface signals
3	Clock +	Interface signals
4	N.C.	Not assigned
5	N.C.	Not assigned
6	N.C.	Not assigned
7	N.C.	Not assigned
8	U _S	Operating voltage
9	SET	Electronic adjustment
10	Data -	Interface signals

PIN	Signal	Explanation
11	Clock -	Interface signals
12	V/R	Sequence in direction of rotation
-	Shielding	Screen connected to housing on encoder side. Connected to ground on control side.

Diagrams



The maximum speed is also dependent on the shaft type.

Recommended accessories

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

	Brief description	Туре	part no.
connectors and cables			
	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 Description: SSI, shielded, Incremental, HIPERFACE®	LTG-2308-MWENC	6027529
(FIE)	Connection type head A: Female connector, M23, 12-pin, angled, A-coded Signal type: HIPERFACE [®] , SSI, Incremental Description: HIPERFACE [®] , shieldedSSIIncremental Connection systems: Solder connection	DOS-2312-W01	2072580
	Connection type head A: Female connector, M23, 12-pin, straight, A-coded Signal type: HIPERFACE [®] , SSI, Incremental Description: HIPERFACE [®] , shieldedSSIIncremental Connection systems: Solder connection	DOS-2312-G02	2077057
	Connection type head A: Female connector, M23, 12-pin, straight, A-coded Signal type: HIPERFACE [®] , SSI, Incremental Description: HIPERFACE [®] , shieldedSSIIncremental Connection systems: Solder connection	DOS-2312-G	6027538
	 Connection type head A: Female connector, M23, 12-pin, straight Connection type head B: Flying leads Signal type: SSI Cable: 0.5 m, 8-wire, PUR, halogen-free Description: SSI, shielded 	DOL-2308-GOM5AA6	2048595
	 Connection type head A: Female connector, M23, 12-pin, straight Connection type head B: Flying leads Signal type: SSI Cable: 3 m, 8-wire, PUR, halogen-free Description: SSI, shielded 	DOL-2308-G03MAA6	2048597
	 Connection type head A: Female connector, M23, 12-pin, straight Connection type head B: Flying leads Signal type: SSI Cable: 5 m, 8-wire, PUR, halogen-free Description: SSI, shielded 	DOL-2308-G05MAA6	2048598
	 Connection type head A: Female connector, M23, 12-pin, straight Connection type head B: Flying leads Signal type: SSI Cable: 1.5 m, 8-wire, PUR, halogen-free Description: SSI, shielded 	DOL-2308-G1M5AA6	2048596
	 Connection type head A: Female connector, M23, 12-pin, straight Connection type head B: Flying leads Signal type: SSI Cable: 10 m, 8-wire, PUR, halogen-free Description: SSI, shielded 	DOL-2308-G10MAA6	2048599
	 Connection type head A: Female connector, M23, 9-pin, straight, A-coded Signal type: HIPERFACE[®], SSI, Incremental Description: HIPERFACE[®], shieldedSSIIncremental Connection systems: Solder connection 	DOS-2309-G	6028533

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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."

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