ATM60-A4A00S07

ATM60

ABSOLUTE ENCODERS

SICK
Sensor Intelligence.

Ordering information

Illustration may differ

Type	part no.
ATM60-A4A00S07	1082941

Other models and accessories ➜ www.sick.com/ATM60

Detailed technical data

Features

Special device	✔
Specialty	Replaces item 1034234 CHI-81B001002048 with adapter kit. Technical data below refers to the encoder Without mechanical adapters Dimensional drawing shows the complete device with premounted mechanical adapter
Standard reference device	ATM60-A4A12X12, 1030001

Safety-related parameters

MTTF$_D$ (mean time to dangerous failure)	150 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)	8,192 (13 bit)
Number of revolutions	8,192 (13 bit)
Max. resolution (number of steps per revolution x number of revolutions)	13 bit x 13 bit (8,192 x 8,192)
Resolution	Maximum permissible resolution: 25 bit (12 bit singleturn x 13 bit multiturn or 13 bit singleturn x 12 bit multiturn).
Measuring step	0.043°
Error limits G	± 0.25° [1]
Repeatability standard deviation σ$_r$	0.1° [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	1,050 ms [1]
Position forming time	0.15 ms
Parameterising data	Number of steps per revolution Number of revolutions

[1] Valid positional data can be read once this time has elapsed.
[2] Minimum, LOW level (Clock +): 500 ns.

	Code type Electronic adjustment
Code type	Gray, binary
Code sequence parameter adjustable	CW/CCW (V/R)
Clock frequency	1 MHz [2]
Set (electronic adjustment)	H-active (L = 0 - 4,7 V, H = 10 - Us 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] Minimum, LOW level (Clock +): 500 ns.

Electronics

Connection type	Male connector, M23, 12-pin, radial
Supply voltage	10 ... 32 V
Power consumption	≤ 0.8 W (without load)
Reverse polarity protection	✓

Mechanics

Mechanical design	Solid shaft, face mount flange
Shaft diameter	10 mm
Shaft length	19 mm
Weight	0.5 kg [1]
Shaft material	Stainless steel
Flange material	Aluminum
Start up torque	2.5 Ncm (+20 °C), with shaft seal 0.5 Ncm (+20 °C), without shaft seal [2]
Operating torque	1.8 Ncm (+20 °C), with shaft seal 0.3 Ncm (+20 °C), without shaft seal [2]
Permissible shaft loading	300 N (radial) 50 N (axial)
Operating speed	≤ 6,000 min^{-1} [3]
Moment of inertia of the rotor	35 gcm²
Bearing lifetime	3.6 x 10^9 revolutions
Angular acceleration	≤ 500,000 rad/s²

[1] Based on encoder with male connector.

[2] If the shaft seal has been removed by the customer.

[3] 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
Enclosure rating	IP67, with shaft seal (IEC 60529) [1] IP43, without shaft seal, on encoder flange not sealed (IEC 60529) [1] IP65, without shaft seal, on encoder flange sealed (IEC 60529) [1]
Permissible relative humidity	98 %
Operating temperature range	–20 °C ... +85 °C

[1] With mating connector fitted.

| Storage temperature range	−40 °C ... +100 °C, without package
Resistance to shocks	100 g, 6 ms (EN 60068-2-27)
Resistance to vibration	20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6)

[1] With mating connector fitted.

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
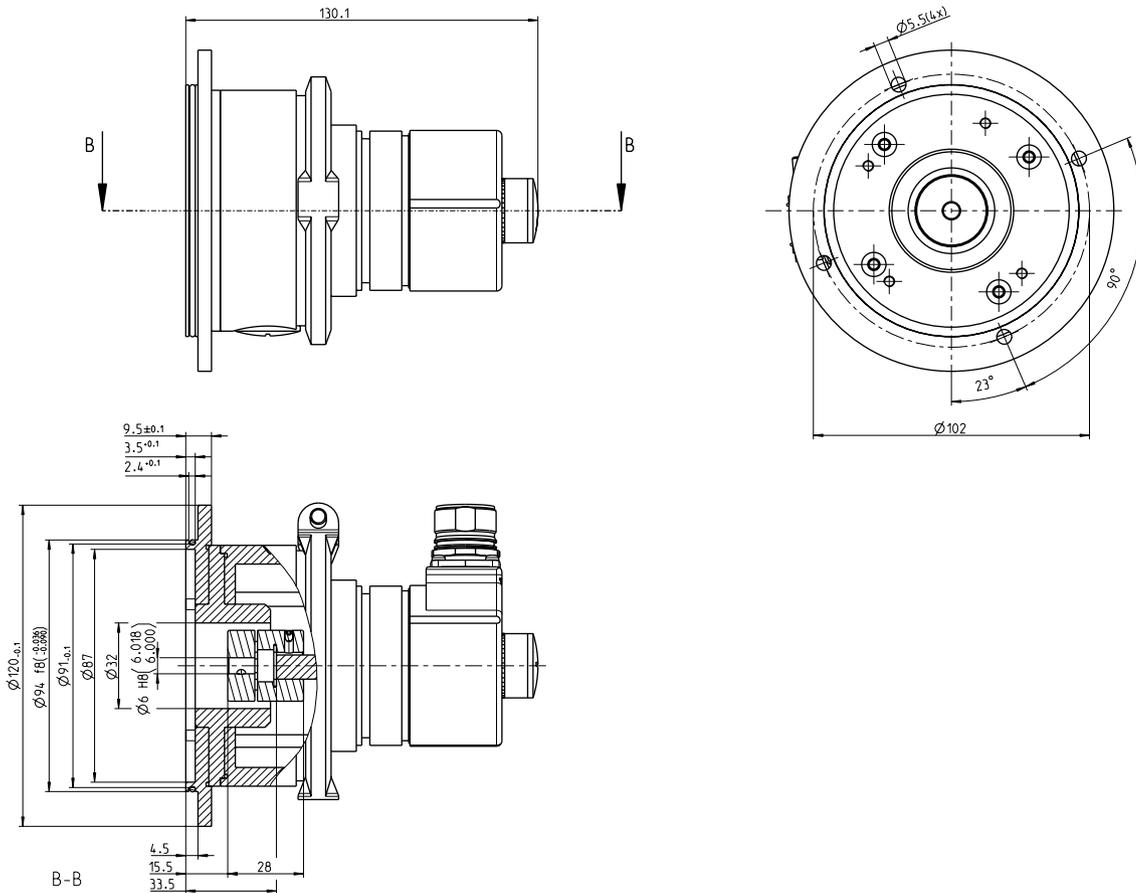
Dimensions in mm (inch)

view of M23 male device connector on encoder
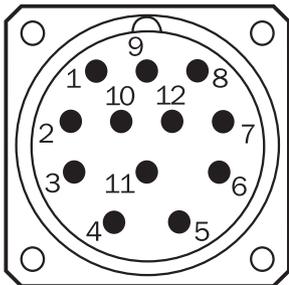
view of M23 male device connector on encoder

PIN	Signal	Wire colors (cable connection)	Explanation
1	GND	Blue	Ground connection
2	Data +	White	Interface signals
3	Clock +	Yellow	Interface signals
4	R x D +	Gray	RS-422 programming lines
5	R x D -	Green	RS-422 programming lines
6	T x D +	Pink	RS-422 programming lines

PIN	Signal	Wire colors (cable connection)	Explanation
7	T x D -	Black	RS-422 programming lines
8	U_S	Red	Operating voltage
9	SET[1]	Orange	Electronic adjustment
10	Data -	Brown	Interface signals
11	Clock -	Purple	Interface signals
12	V/R[2]	Orange-black	Sequence in direction of rotation
–	Screen	–	Housing potential

SET = This input activates the electronic zero set. If the SET cable is set to U_S for more than 100 ms, the mechanical position corresponds to the O value, i.e., the predetermined SET value.

V/R = Forwards/Reverse: This input programs the counting direction for the encoder. When it is not connected, this input is set to HIGH. If the encoder shaft is rotat-ed clockwise (to the right) as viewed when facing the shaft, it counts in ascending order. If it should count in as-cending order when the shaft is rotated counterclock-wise (to the left), then this connection must be permanently set to LOW level (GND).

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."

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