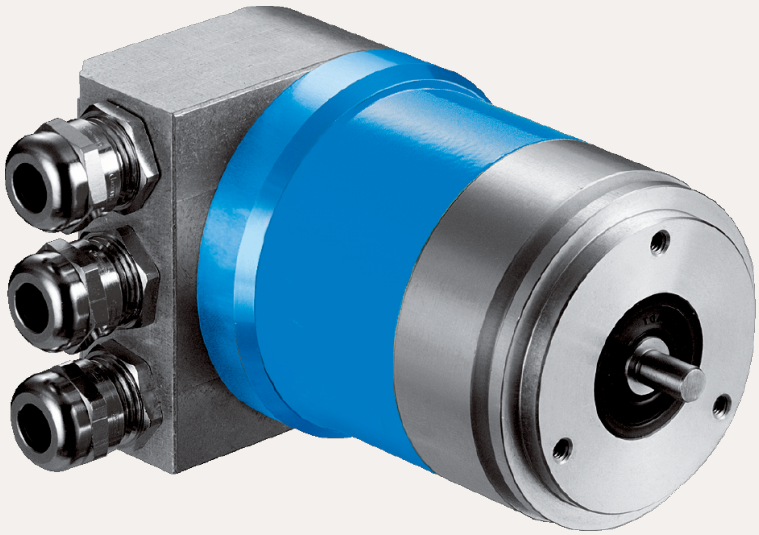
SICK.COM



DATA SHEET

ATM60-C1H13x13

ATM60
Absolute encoders

SICK Sensor Intelligence



Illustration may differ

ABSOLUTE ENCODERS

ATM60-C1H13x13

ORDERING INFORMATION

Type	part no.
ATM60-C1H13x13	1030025

Further device versions and accessories at www.sick.com/ATM60

DETAILED TECHNICAL DATA

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)
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	CANopen
Data protocol	Communication Profile DS 301 V4.0, Device Profile DSP 406 V 2.0
Address setting	0 ... 63, DIP switches or protocol
Data transmission rate (baud rate)	10 kBaud, 20 kBaud, 50 kBaud, 125 kBaud, 250 kBaud, 500 kBaud, 1 MBaud, DIP switches or protocol
Initialization time	1,250 ms [1]
Position forming time	0.25 ms

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

[2] Should only be connected in the final device.

Status information	2-colours LED for CAN controller status
Bus termination	DIP switch [2]
Set (electronic adjustment)	Via PRESET push button or protocol

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

[2] Should only be connected in the final device.

ELECTRONICS

Connection type	Bus adapter [1]
Supply voltage	10 ... 32 V
Power consumption	≤ 2 W (without load)
Reverse polarity protection	✓

[1] Order bus adapter separately.

MECHANICS

Mechanical design	Solid shaft, Servo flange
Shaft diameter	6 mm
Shaft length	10 mm
Weight	0.59 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 gcm^2
Bearing lifetime	3.6 x 10^9 revolutions
Angular acceleration	≤ 500,000 rad/s^2

[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

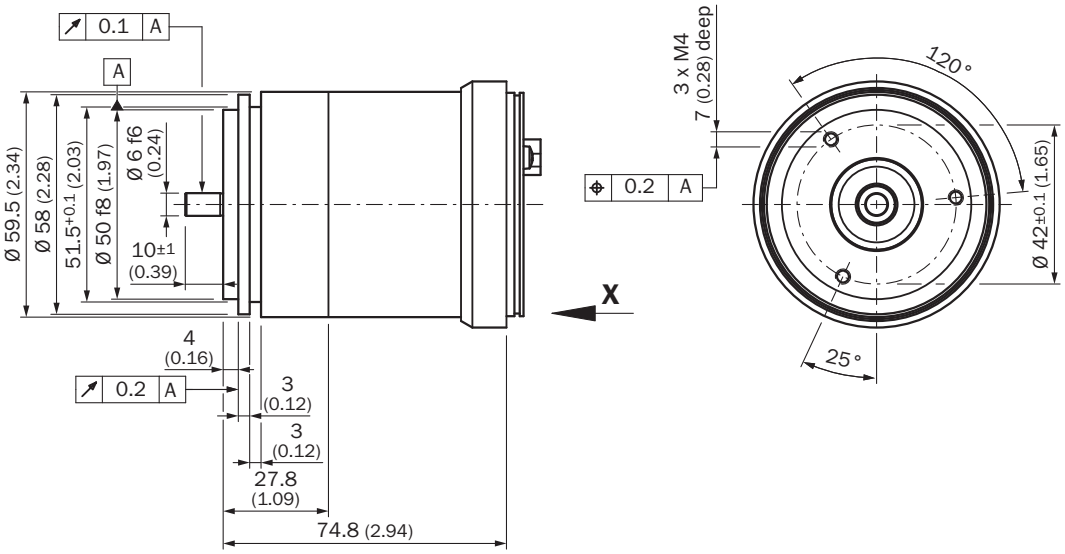
EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP67, with shaft seal (IEC 60529) [1] IP43, without shaft seal, on encoder flange not sealed (IEC 60529) [1] IP66, without shaft seal, on encoder flange sealed (IEC 60529) [1]
Permissible relative humidity	98 %
Operating temperature range	–20 °C ... +85 °C
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.

CERTIFICATES

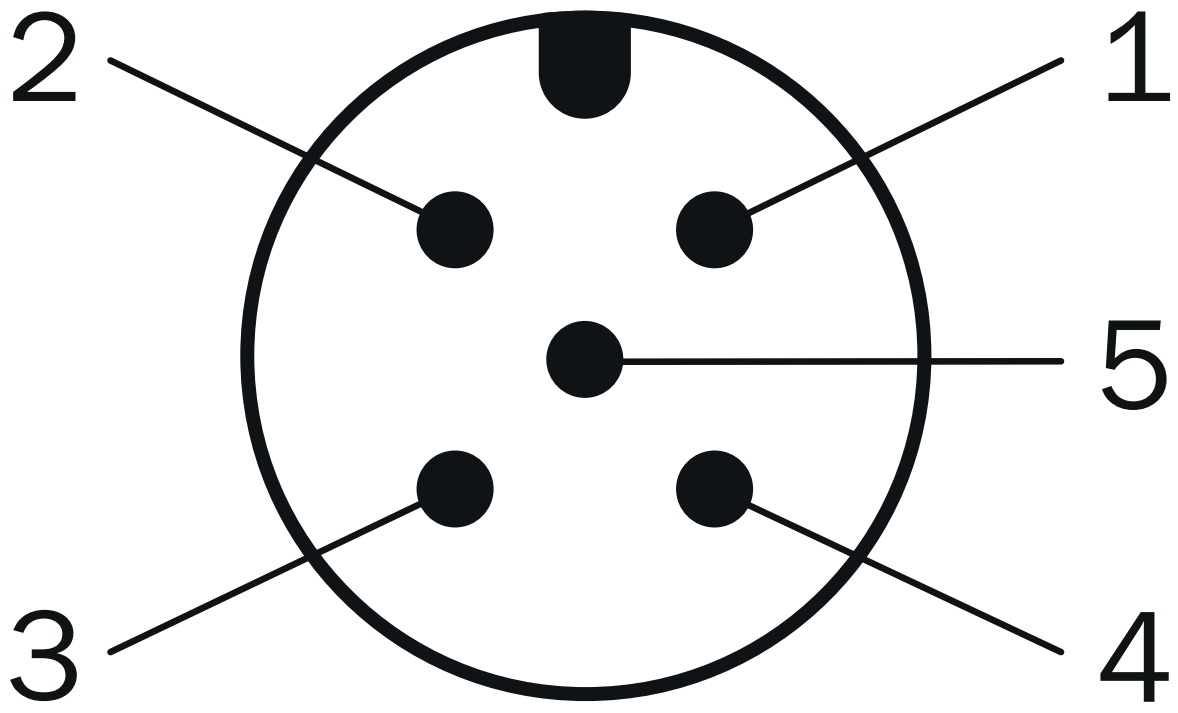
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
cULus certificate	✓

DIMENSIONAL DRAWING



Dimensions in mm (inch)

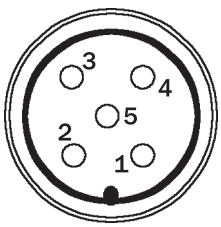
M12 MALE CONNECTOR (BUS ADAPTER)



IN/US

Terminal strip	Male device connector	Signal	Explanation
1	1	shield	Screen
2	2	U_S (24 V)	Operating voltage 10 ... 32 V
3	3	GND (COM)	0 V (GND)
4	4	CAN_H	CAN Bus Signal high
5	5	CAN_L	CAN Bus Signal low
6	-	CAN_H	CAN Bus Signal high
7	-	CAN_L	CAN Bus Signal low
8	-	GND (COM)	0 V (GND)
9	-	U_S (24 V)	Operating voltage 10 ... 32 V

M12 FEMALE CONNECTOR (BUS ADAPTER)

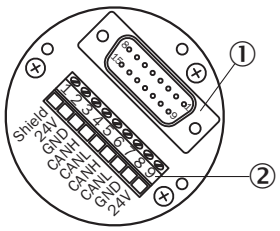


OUT/US (female contact)

Terminal strip	Male device connector	Signal	Explanation
1	1	shield	Screen
2	2	U_S (24 V)	Operating voltage 10 ... 32 V

Terminal strip	Male device connector	Signal	Explanation
3	3	GND (COM)	0 V (GND)
4	4	CAN_H	CAN Bus Signal high
5	5	CAN_L	CAN Bus Signal low
6	-	CAN_H	CAN Bus Signal high
7	-	CAN_L	CAN Bus Signal low
8	-	GND (COM)	0 V (GND)
9	-	U_S (24 V)	Operating voltage 10 ... 32 V

PIN ASSIGNMENT



① Internal plug connector to encoder
② external connection to the bus

Terminal strip	Male device connector	Signal	Explanation
1	1	shield	Screen
2	2	U_S (24 V)	Operating voltage 10 ... 32 V
3	3	GND (COM)	0 V (GND)
4	4	CAN_H	CAN Bus Signal high
5	5	CAN_L	CAN Bus Signal low
6	-	CAN_H	CAN Bus Signal high
7	-	CAN_L	CAN Bus Signal low
8	-	GND (COM)	0 V (GND)
9	-	U_S (24 V)	Operating voltage 10 ... 32 V

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1030025

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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

SICK

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