

# AHM36I-BBQZ000S03

AHS/AHM36

**ABSOLUTE ENCODERS**

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

Type	part no.
AHM36I-BBQZ000S03	1115924

Other models and accessories → [www.sick.com/AHS\\_AHM36](http://www.sick.com/AHS_AHM36)

### Detailed technical data

#### Features

<b>Special device</b>	✓
<b>Specialty</b>	Cable, 4-wire, with male connector, M12, universal, 1.5 m Advanced firmware including Round Axis Functionality
<b>Standard reference device</b>	AHM36I-BBQK014x12, 1093774

#### Safety-related parameters

<b>MTTF<sub>D</sub> (mean time to dangerous failure)</b>	240 years (EN ISO 13849-1)
--	----------------------------

#### Performance

<b>Number of steps per revolution (max. resolution)</b>	16,384 (14 bit)
<b>Number of revolutions</b>	4,096 (12 bit)
<b>Max. resolution (number of steps per revolution x number of revolutions)</b>	14 bit x 12 bit (16,384 x 4,096)
<b>Error limits G</b>	0.35° (at 20 °C) <sup>1)</sup>
<b>Repeatability standard deviation <math>\sigma_r</math></b>	0.2° (at 20 °C) <sup>2)</sup>

<sup>1)</sup> 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.

<sup>2)</sup> In accordance with DIN ISO 55350-13; 68.3% of the measured values are inside the specified area.

#### Interfaces

<b>Communication interface</b>	IO-Link
<b>Communication Interface detail</b>	IO-Link V1.1
<b>Initialization time</b>	2 s <sup>1)</sup>
<b>Cycle time</b>	≤ 3.2 ms
<b>Smart Sensor</b>	Efficient communication, Enhanced Sensing, diagnosis

<sup>1)</sup> Valid positional data can be read once this time has elapsed.

<b>Process data</b>	Position, speed, electronic cams, limit values, linear position, linear speed, errors and warnings, switching signals on pin 2
<b>Parameterising data</b>	Number of steps per revolution Number of revolutions PRESET Counting direction Sampling rate for speed calculation Unit for output of the speed value Round axis functionality Electronic cams(2 channels x 8 cams) Limit values Linear measuring length per 360° Pin 2 configuration
<b>Available diagnostics data</b>	Minimum and maximum temperature Maximum speed Power-on counter Operating hours counter power-on/motion Counter of direction changes/number of movements cw/number of movements ccw Minimum and maximum operating voltage Distance covered
<b>Status information</b>	Via status LED
<b>Switching input/Switching output</b>	✓
<b>Pin 2 input frequency</b>	≤ 100 Hz
<b>Output frequency pin 2</b>	≤ 100 Hz

<sup>1)</sup> Valid positional data can be read once this time has elapsed.

## Electronics

<b>Connection type</b>	Special version
<b>Connection type Detail</b>	Cable, 4-wire, with male connector, M12, universal, 1.5 m
<b>Supply voltage</b>	18 ... 30 V
<b>Power consumption</b>	≤ 1.5 W
<b>Reverse polarity protection</b>	✓

## Mechanics

<b>Mechanical design</b>	Blind hollow shaft
<b>Shaft diameter</b>	8 mm
<b>Characteristics of the shaft</b>	Front clamp
<b>Weight</b>	0.2 kg, Based on devices with male connector
<b>Shaft material</b>	Stainless steel 1,4305
<b>Flange material</b>	Stainless steel 1,4305
<b>Material, stator coupling</b>	Stainless steel 1,4305
<b>Housing material</b>	Stainless steel 1,4305
<b>Material, cable</b>	PUR
<b>Start up torque</b>	≤ 1 Ncm <sup>1)</sup>
<b>Operating torque</b>	≤ 1 Ncm <sup>1)</sup>
<b>Permissible movement static</b>	± 0.3 mm, ± 0.3 mm (radial, axial)
<b>Permissible movement dynamic</b>	± 0.1 mm (radial) ± 0.1 mm (axial)

<sup>1)</sup> At 20 °C.

<b>Operating speed</b>	≤ 6,000 min <sup>-1</sup>
<b>Moment of inertia of the rotor</b>	23 gcm <sup>2</sup>
<b>Bearing lifetime</b>	2.0 x 10 <sup>9</sup> revolutions
<b>Angular acceleration</b>	≤ 500,000 rad/s <sup>2</sup>

<sup>1)</sup> At 20 °C.

### Ambient data

<b>EMC</b>	According to EN 61000-6-2, EN 61000-6-3 and EN 61131-9
<b>Enclosure rating</b>	IP67 (IEC 60529) IP69K (IEC 60529)
<b>Permissible relative humidity</b>	90 % (Condensation not permitted)
<b>Operating temperature range</b>	-40 °C ... +85 °C
<b>Storage temperature range</b>	-40 °C ... +100 °C, Without packaging
<b>Resistance to shocks</b>	100 g, 6 ms (EN 60068-2-27) <sup>1)</sup> <sup>2)</sup>
<b>Resistance to vibration</b>	20 g, 10 Hz ... 2,000 Hz (EN 60068-2-6) <sup>1) 3)</sup>

<sup>1)</sup> With additional mechanical cable mounting.

<sup>2)</sup> The cable must also be fastened with the shortest possible distance to the encoder.

<sup>3)</sup> For side-mounted encoders (horizontal encoder shaft, vertical stator coupling), additional damping measures may be required in some cases as resonances can arise. Furthermore, the cable must be fastened with the shortest possible distance to the encoder.

### Certificates

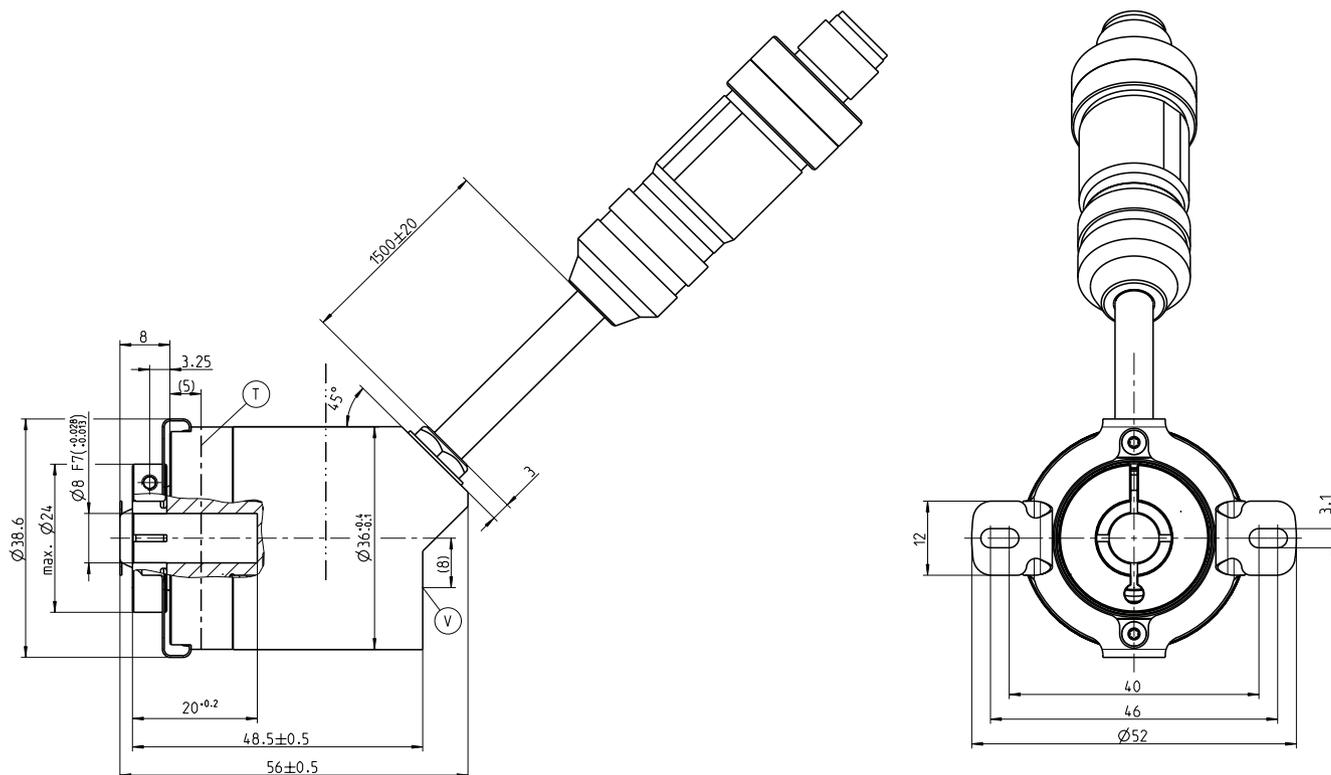
<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China RoHS</b>	✓
<b>cTUVus certificate</b>	✓
<b>Information according to Art. 3 of Data Act (Regulation EU 2023/2854)</b>	✓

### Classifications

<b>ECLASS 5.0</b>	27270502
<b>ECLASS 5.1.4</b>	27270502
<b>ECLASS 6.0</b>	27270590
<b>ECLASS 6.2</b>	27270590
<b>ECLASS 7.0</b>	27270502
<b>ECLASS 8.0</b>	27270502
<b>ECLASS 8.1</b>	27270502
<b>ECLASS 9.0</b>	27270502
<b>ECLASS 10.0</b>	27270502
<b>ECLASS 11.0</b>	27270502
<b>ECLASS 12.0</b>	27270502
<b>ETIM 5.0</b>	EC001486
<b>ETIM 6.0</b>	EC001486

<b>ETIM 7.0</b>	EC001486
<b>ETIM 8.0</b>	EC001486
<b>UNSPSC 16.0901</b>	41112113

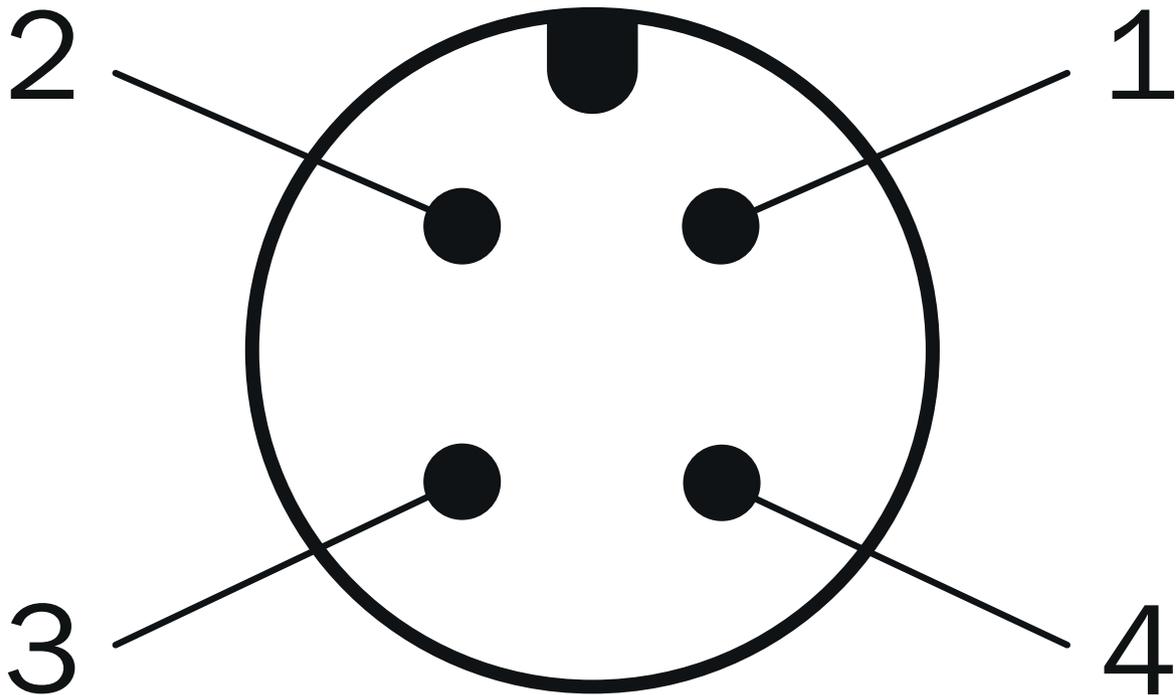
Dimensional drawing



- (T) Meßpunkt Arbeitstemperatur  
(frei wählbar, jeweils umlaufend  
an der Flansch-Mantelfläche)  
measuring point working temperature  
(freely selectable, respectively circumferential  
at the flange coat surface)
- (V) Meßpunkt Vibration auf der Symmetrielinie der Gehäusestirnfläche  
measuring point vibration on the symetric axis of the housing end face

Dimensions in mm (inch)

Anschlussbelegung



PIN	Wire color	Signal	Function		
			Basic	Advanced	Advanced Smart Task
-	-	-	Encoder supply voltage 18-30 V (+Us)		
1	Brown	L+	Encoder supply voltage 18-30 V (+Us)		
2	White	I/Q	Not connected - no function	Multifunctional pin (configurable as switching input or switching output)	
3	Blue	L-	Encoder supply voltage 0 V (GND)		
4	Black	C/Q	IO-Link communication		
		-			Switching output (SIO mode)

## 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.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)