

# SICK

## BTF13-A1ZM10S01

HighLine

WIRE DRAW ENCODERS

**SICK**  
Sensor Intelligence.



## Ordering information

Type	part no.
BTF13-A1ZM10S01	1133391

Included in delivery: MRA-F130-110D2 (1), AHM36A-S3PZ000S10 (1)

Other models and accessories → [www.sick.com/HighLine](http://www.sick.com/HighLine)



## Detailed technical data

## Features

Special device	✓
Specialty	BTF13-A1AM1020 successor: Encoder AHM36A-S3PZ000S10, 1129703 pre-assembled
Standard reference device	BTF13-A1AM1020, 1034301

## Safety-related parameters

MTTF <sub>D</sub> (mean time to dangerous failure)	230 years (EN ISO 13849-1) <sup>1)</sup>
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<sup>1)</sup> 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

Measurement range	0 m ... 10 m
Encoder	Absolute encoders
Resolution (wire draw + encoder)	0.05 mm <sup>1) 2)</sup>
Repeatability	≤ 1.5 mm <sup>3)</sup>
Linearity	≤ ± 2 mm <sup>3)</sup>
Hysteresis	≤ 3 mm <sup>3)</sup>

<sup>1)</sup> The values shown have been rounded.

<sup>2)</sup> Example calculation based on the BTF08 with PROFINET: 200 mm (wire draw length per revolution - see Mechanical data): 262,144 (number of steps per revolution) = 0.001 mm (resolution of wire draw + encoder combination).

<sup>3)</sup> Value applies to wire draw mechanism.

## Interfaces

Communication interface	SSI
Programmable/configurable	✓

## Electronics

Connection type	Special version
Connection type Detail	Cable, 8-wire, with male connector, M23, 12-pin, universal, 0.1 m
Supply voltage	4.5 V DC ... 32 V DC

<b>Power consumption</b>	≤ 1.5 W (without load)
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## Mechanics

<b>Weight</b>	4 kg
<b>Measuring wire material</b>	Highly flexible stranded steel 1,4401 stainless steel V4A
<b>Measuring wire diameter</b>	1.35 mm
<b>Weight (measuring wire)</b>	7.1 g/m
<b>Housing material, wire draw mechanism</b>	Aluminum (anodised), plastic
<b>Spring return force</b>	10 N ... 20 N <sup>1)</sup>
<b>Length of wire pulled out per revolution</b>	332.4 mm
<b>Life of wire draw mechanism</b>	Typ. 1,000,000 cycles <sup>2)</sup> <sup>3)</sup>
<b>Actual wire draw length</b>	10.2 m
<b>Wire acceleration</b>	40 m/s <sup>2</sup>
<b>Operating speed</b>	8 m/s
<b>Mounted encoder</b>	AHM36 SSI, AHM36A-S3PZ000S10, 1129703
<b>Mounted mechanic</b>	MRA-F130-110D2, 6028627

<sup>1)</sup> These values were measured at an ambient temperature of 25 °C. There may be variations at other temperatures.

<sup>2)</sup> Average values, which depend on the application.

<sup>3)</sup> The service life depends on the type of load. This is influenced by environmental conditions, the installation location, the measuring range in use, the traversing speed, and acceleration.

## Ambient data

<b>EMC</b>	According to EN 61000-6-2 and EN 61000-6-3
<b>Enclosure rating</b>	IP64, mounted mechanic IP66, Encoder (IEC 60529) IP67, Encoder (IEC 60529)
<b>Operating temperature range</b>	-30 °C ... +70 °C

## Certificates

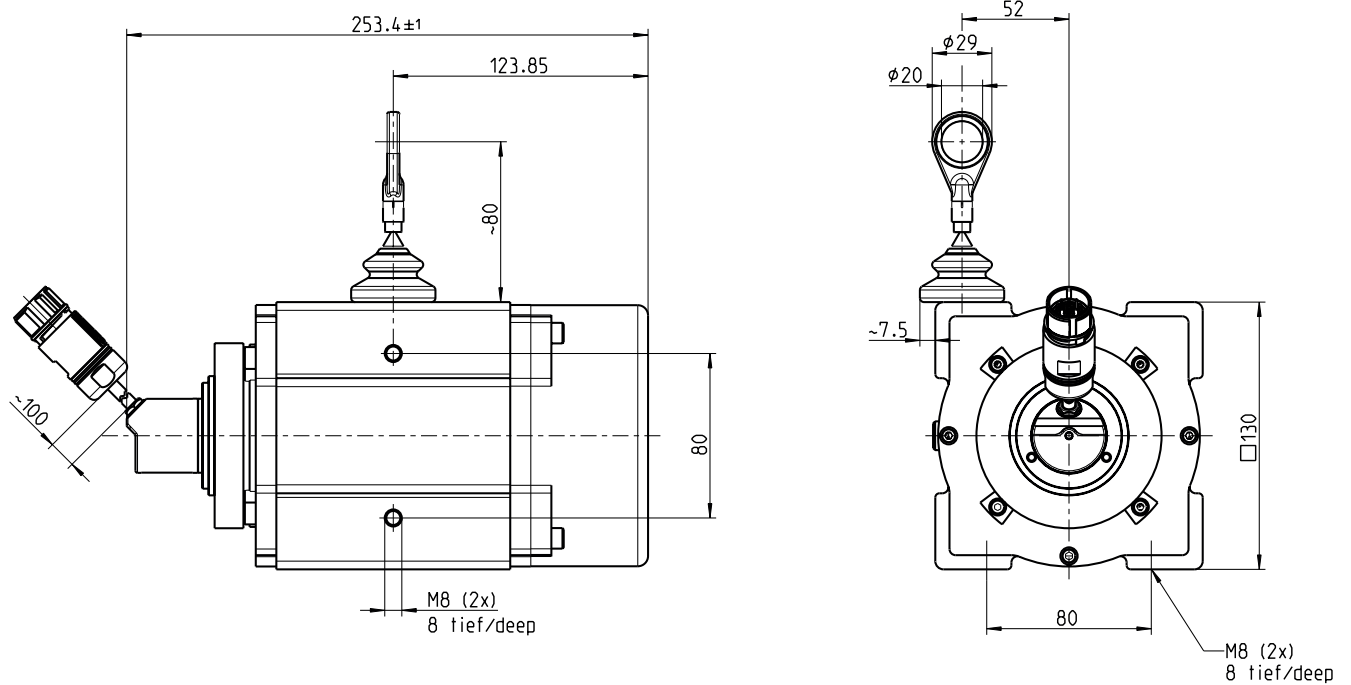
<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China RoHS</b>	✓

## Classifications

<b>ECLASS 5.0</b>	27270590
<b>ECLASS 5.1.4</b>	27270590
<b>ECLASS 6.0</b>	27270590
<b>ECLASS 6.2</b>	27270590
<b>ECLASS 7.0</b>	27270590
<b>ECLASS 8.0</b>	27270590
<b>ECLASS 8.1</b>	27270590
<b>ECLASS 9.0</b>	27270590
<b>ECLASS 10.0</b>	27270613

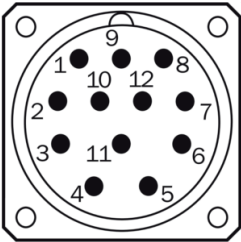
<b>ECLASS 11.0</b>	27270503
<b>ECLASS 12.0</b>	27270503
<b>ETIM 5.0</b>	EC001486
<b>ETIM 6.0</b>	EC001486
<b>ETIM 7.0</b>	EC001486
<b>ETIM 8.0</b>	EC001486
<b>UNSPSC 16.0901</b>	41112113

### Dimensional drawing



Dimensions in mm (inch)

Anschlussbelegung



PIN	Signal	Explanation
1	GND	Ground connection
2	Data+	Interface signal
3	Clock+	Interface signal
4	n/c	Not connected
5	n/c	Not connected
6	n/c	Not connected
7	n/c	Not connected
8	Us	Operating voltage
9	SET	Electronic adjustment
10	Data-	Interface signal
11	Clock-	Interface signal
12	V/R	Sequence in direction of rotation
-	Screen	Housing potential

### Recommended accessories

Other models and accessories → [www.sick.com/HighLine](http://www.sick.com/HighLine)

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> SSI, RS-422, TTL, HTL</li> <li>• <b>Cable:</b> 1.5 m, 12-wire, PUR, halogen-free</li> <li>• <b>Description:</b> SSI, shielded, RS-422, TTL, HTL</li> <li>• <b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-2312-G1M5MA1	2029200
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> SSI, RS-422, TTL, HTL</li> <li>• <b>Cable:</b> 3 m, 12-wire, PUR, halogen-free</li> <li>• <b>Description:</b> SSI, shielded, RS-422, TTL, HTL</li> <li>• <b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-2312-G03MMA1	2029201
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> SSI, RS-422, TTL, HTL</li> <li>• <b>Cable:</b> 5 m, 12-wire, PUR, halogen-free</li> <li>• <b>Description:</b> SSI, shielded, RS-422, TTL, HTL</li> <li>• <b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-2312-G05MMA1	2029202
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> SSI, RS-422, TTL, HTL</li> <li>• <b>Cable:</b> 10 m, 12-wire, PUR, halogen-free</li> <li>• <b>Description:</b> SSI, shielded, RS-422, TTL, HTL</li> <li>• <b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-2312-G10MMA1	2029203
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> SSI, RS-422</li> <li>• <b>Cable:</b> 20 m, 12-wire, PUR, halogen-free</li> <li>• <b>Description:</b> SSI, shielded, RS-422</li> <li>• <b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-2312-G20MMA1	2029204
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> SSI, RS-422</li> <li>• <b>Cable:</b> 30 m, 12-wire, PUR, halogen-free</li> <li>• <b>Description:</b> SSI, shielded, RS-422</li> <li>• <b>Application:</b> Zones with oils and lubricants</li> </ul>	DOL-2312-G30MMA1	2029205
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M23, 12-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> SSI, RS-422, TTL, HTL</li> <li>• <b>Cable:</b> 5 m, 12-wire, PUR, halogen-free</li> <li>• <b>Description:</b> SSI, shielded, RS-422, TTL, HTL</li> </ul>	DOL-2312-G05MHA1	2059786

## 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)