

# BTF08-A1ZM03S02

HighLine

WIRE DRAW ENCODERS

**SICK**  
Sensor Intelligence.

## Ordering information

Type	part no.
BTFO8-A1ZM03S02	1133024

**Included in delivery:** MRA-F080-103D2 (1), AHM36A-S3PZ000S21 (1)

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



## Detailed technical data

## Features

<b>Special device</b>	✓
<b>Specialty</b>	BTFO8-A1AM0340 successor: Encoder AHM36A-S3PZ000S21, 1132998 pre-assembled
<b>Standard reference device</b>	BTFO8-A1AM0340, 1034892

## Safety-related parameters

<b>MTTF<sub>D</sub> (mean time to dangerous failure)</b>	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

<b>Measurement range</b>	0 m ... 3 m
<b>Encoder</b>	Absolute encoders
<b>Resolution (wire draw + encoder)</b>	0.03 mm <sup>1)</sup> <sup>2)</sup>
<b>Repeatability</b>	≤ 1 mm <sup>3)</sup>
<b>Linearity</b>	≤ ± 2 mm <sup>3)</sup>
<b>Hysteresis</b>	≤ 2 mm <sup>3)</sup>

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

<sup>2)</sup> Example calculation based on the BTFO8 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

<b>Communication interface</b>	SSI
<b>Programmable/configurable</b>	✓

## Electronics

<b>Connection type</b>	Cable, 8-wire, with male connector, M23, universal, 0.1 m
<b>Supply voltage</b>	4.5 V DC ... 32 V DC
<b>Power consumption</b>	≤ 1.5 W (without load)

## Mechanics

<b>Weight</b>	1.62 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 (anodized), aluminum die cast (nickel-plated)
<b>Spring return force</b>	6 N ... 14 N <sup>1)</sup>
<b>Length of wire pulled out per revolution</b>	200 mm
<b>Life of wire draw mechanism</b>	Typ. 1,000,000 cycles <sup>2) 3)</sup>
<b>Actual wire draw length</b>	3.2 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-S3PZ000S21, 1132998
<b>Mounted mechanic</b>	MRA-F080-103D2, 6030125

<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

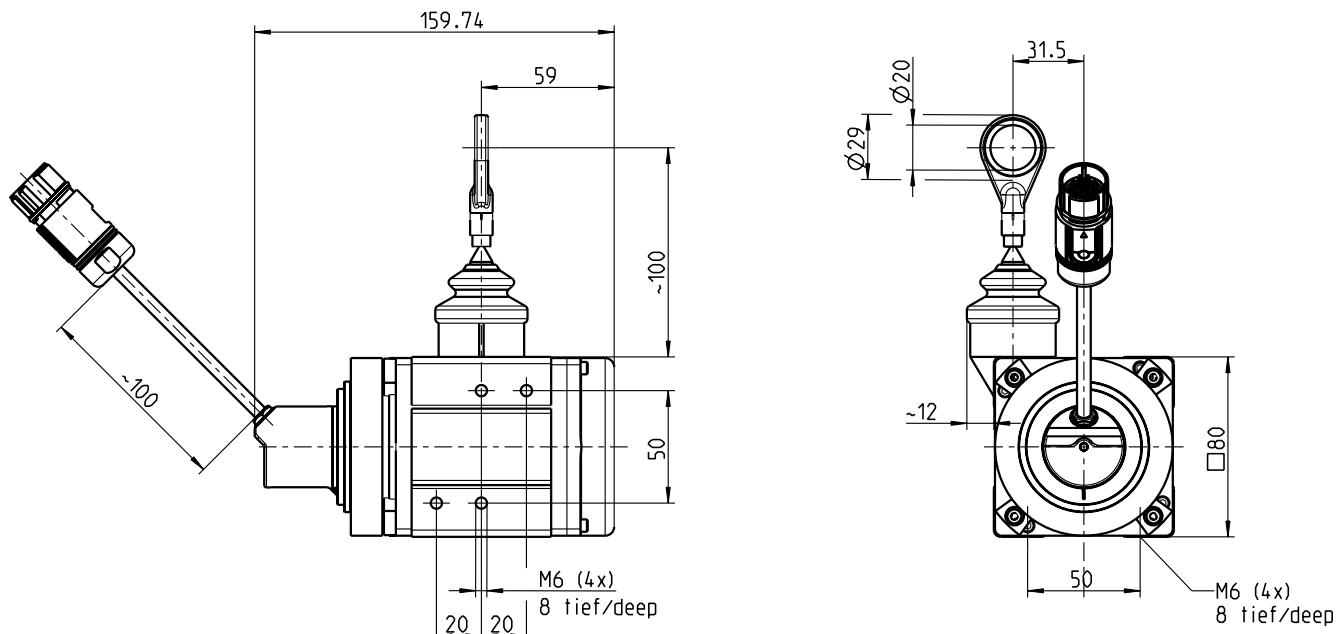
<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China-RoHS</b>	✓

## 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

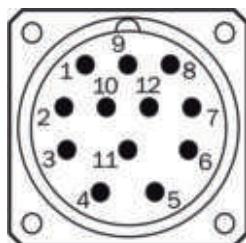
<b>ETIM 5.0</b>	EC001486
<b>ETIM 6.0</b>	EC001486
<b>ETIM 7.0</b>	EC001486
<b>ETIM 8.0</b>	EC001486
<b>UNSPSC 16.0901</b>	41112113

## Dimensional drawing



Dimensions in mm (inch)

## PIN assignment



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.
Wire draw mechanism			
	<ul style="list-style-type: none"><li><b>Product segment:</b> Wire draw mechanism</li><li><b>Product family:</b> Wire draw mechanism for wire draw encoders</li><li><b>Description:</b> HighLine wire draw mechanism for servo flange with 6 mm shaft, measuring range 0 m ... 2 m</li><li><b>Items supplied:</b> Without encoder</li></ul>	MRA-F080-102D2	6028625
programming devices			
	<ul style="list-style-type: none"><li><b>Product segment:</b> Programming devices</li><li><b>Product family:</b> PGT-01-S</li><li><b>Description:</b> Programming tool for ATM60, ATM90, and KH53</li><li><b>Items supplied:</b> Power supply, interface, link cable, encoder cable, and software</li></ul>	PGT-01-S	1030111

	<b>Brief description</b>	<b>Type</b>	<b>part no.</b>
connectors and cables			
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M23, 12-pin, straight, A-coded</li> <li><b>Signal type:</b> HIPERFACE®, SSI, Incremental</li> <li><b>Description:</b> HIPERFACE®, shieldedSSIIncremental</li> <li><b>Connection systems:</b> Solder connection</li> </ul>	DOS-2312-G	6027538
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Male connector, M23, 12-pin, straight, A-coded</li> <li><b>Signal type:</b> HIPERFACE®, SSI, Incremental, RS-422</li> <li><b>Description:</b> HIPERFACE®, shieldedSSIIncrementalRS-422</li> <li><b>Connection systems:</b> Solder connection</li> </ul>	STE-2312-G	6027537
	<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, shieldedRS-422TTLHTL</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, shieldedRS-422TTLHTL</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, shieldedRS-422TTLHTL</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, shieldedRS-422TTLHTL</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, shieldedRS-422</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, shieldedRS-422</li> </ul>	DOL-2312-G30MMA1	2029205
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M23, 9-pin, straight, A-coded</li> <li><b>Signal type:</b> HIPERFACE®, SSI, Incremental</li> <li><b>Description:</b> HIPERFACE®, shieldedSSIIncremental</li> <li><b>Connection systems:</b> Solder connection</li> </ul>	DOS-2309-G	6028533
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M23, 12-pin, angled, A-coded</li> <li><b>Signal type:</b> HIPERFACE®, SSI, Incremental</li> <li><b>Description:</b> HIPERFACE®, shieldedSSIIncremental</li> <li><b>Connection systems:</b> Solder connection</li> </ul>	DOS-2312-W01	2072580
	<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, shieldedRS-422TTLHTL</li> </ul>	DOL-2312-G05MHA1	2059786

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"><li><b>Description:</b> Flange adapter for HighLine wire draw mechanisms, adaption of face mount flange with centering hub 20 mm to 50 mm servo flange</li><li><b>Material:</b> Aluminum</li><li><b>Details:</b> Aluminum</li><li><b>Items supplied:</b> Including 3 countersunk screws M3 x 10</li></ul>	BEF-FA-020-050WDE	2073776
	<ul style="list-style-type: none"><li><b>Description:</b> Joint ball for later insertion in wire end ring with 20 mm diameter. The use of this joint ball enables movement in multiple levels of freedom.</li></ul>	Joint protection for wire rope BTF/PRF/MRA	5318683
	<ul style="list-style-type: none"><li><b>Description:</b> Compressed air attachment for MRA-F080... and MRA-F130... HighLine wire draw mechanism</li></ul>	MRA-F-P	6073769
	<ul style="list-style-type: none"><li><b>Description:</b> Additional brush attachment for wire draw mechanism MRA-F080 (2 m and 3 m from HighLine series)</li></ul>	MRA-F080-B	6045341
	<ul style="list-style-type: none"><li><b>Description:</b> Wire draw deflection pulley for wire draw mechanism MRA-F080 (2m and 3m from HighLine series)</li></ul>	MRA-F080-R	6028632

## 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.

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