

WIRE DRAW ENCODERS



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Ordering information

Туре	Part no.
BTF13-A1AM1020	1034301

Included in delivery: ATM60-A1A0-K19 (1), MRA-F130-110D2 (1)

Product is supplied fully assembled. See individual components for further technical data

A succession solution with the same wire draw mechanism and a functionally largely compatible encoder can be found at the link below. our sales department will be happy to assist if you have any further questions about selecting a suitable succession solution.

Other models and accessories → www.sick.com/HighLine

CE

Detailed technical data

Performance

Measurement range	0 m 10 m
Encoder	Absolute encoders
Resolution (wire draw + encoder)	0.05 mm ^{1) 2)}
Repeatability	≤ 1.5 mm ³⁾
Linearity	$\leq \pm 2 \text{ mm}^{3)}$
Hysteresis	≤ 3 mm ³⁾

¹⁾ The values shown have been rounded.

²⁾ 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).

³⁾ Value applies to wire draw mechanism.

Interfaces

Communication interface	SSI
Programmable/configurable	✓

Electrical data

Connection type	Male connector, M23, 12-pin, radial
Supply voltage	10 V 32 V
Power consumption	\leq 0.8 W (without load)
MTTFd: 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.

Mechanical data

We

eight			

 $^{(1)}$ These values were measred at an ambient temperature of 25 °C. There may be variations at other temperatures.

4 kg

 $^{\mbox{2})}$ Average values, which depend on the application.

3) 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.

WIRE DRAW ENCODERS

Measuring wire material	Highly flexible stranded steel 1,4401 stainless steel V4A
Measuring wire diameter	1.35 mm
Weight (measuring wire)	7.1 g/m
Housing material, wire draw mechanism	Aluminum (anodised), plastic
Spring return force	10 N 20 N ¹⁾
Length of wire pulled out per revolution	332.4 mm
Life of wire draw mechanism	Typ. 1,000,000 cycles ^{2) 3)}
Actual wire draw length	10.2 m
Wire acceleration	40 m/s ²
Operating speed	8 m/s
Mounted encoder	ATM60 SSI, ATM60-A1A0-K19, 1034294
Mounted mechanic	MRA-F130-110D2, 6028627

 $^{(1)}$ These values were measred at an ambient temperature of 25 $\,^{\circ}\text{C}.$ There may be variations at other temperatures.

 $^{2)}\ensuremath{\,\text{Average}}\xspace$ values, which depend on the application.

³⁾ 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

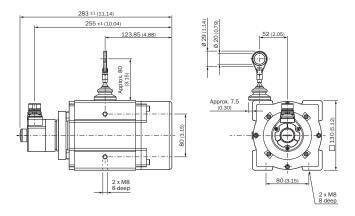
EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP64, mounted mechanic
Operating temperature range	-20 °C +70 °C

Classifications

ECLASS 5.0	27270590
ECLASS 5.1.4	27270590
ECLASS 6.0	27270590
ECLASS 6.2	27270590
ECLASS 7.0	27270590
ECLASS 8.0	27270590
ECLASS 8.1	27270590
ECLASS 9.0	27270590
ECLASS 10.0	27270613
ECLASS 11.0	27270503
ECLASS 12.0	27270503
ETIM 5.0	EC001486
ETIM 6.0	EC001486
ETIM 7.0	EC001486
ETIM 8.0	EC001486
UNSPSC 16.0901	41112113

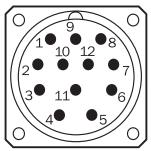
WIRE DRAW ENCODERS

Dimensional drawing (Dimensions in mm (inch))



PIN assignment

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 RS-422 programming lines	
6	T x D +	Pink	RS-422 programming lines	
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	
CET - This insult activates the electronic serve set of the CET apple is get to U. for your them				

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 0 value, i.e., the predetermined SET value.

WIRE DRAW ENCODERS

PIN	Signal	Wire colors (cable connection)	Explanation
, , ,	is input programs the counting directic I clockwise (to the right) as viewed whe		· · · · ·
cending order when the sha	ft is rotated counterclock-wise (to the le	eft), then this connection must be perr	manently set to LOW level (GND).

Recommended accessories

Other models and accessories -> www.sick.com/HighLine

	Brief description	Туре	Part no.	
Programming and configuration tools				
	Programming tool for ATM60, ATM90, and KH53	PGT-01-S	1030111	
Wire draw me	chanism			
	HighLine wire draw mechanism for servo flange with 6 mm shaft, measuring range 0 m \dots 10 m	MRA-F130-110D2	6028627	
Flanges				
	Flange adapter for HighLine wire draw mechanisms, adaption of face mount flange with centering hub 20 mm to 50 mm servo flange, Aluminum, including 3 countersunk screws M3 x 10	BEF-FA-020-050WDE	2073776	
Other mountir	accessories			
Ø	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.	Joint protection for wire rope BTF/PRF/MRA	5318683	
	Compressed air attachment for MRA-F080 and MRA-F130 HighLine wire draw mech- anism	MRA-F-P	6073769	
5	Additional brush attachment for wire draw mechanism MRA-F130 (5 m, 10 m, 20 m and 30 m from $^{\circ}\text{HighLine}$ series)	MRA-F130-B	6038562	
Ţ.	Wire draw deflection pulley for wire draw mechanism MRA-F130 (5m, 10m, 20m and 30m from HighLine series)	MRA-F130-R	6028631	
Plug connecto	rs and cables			
->-	 Connection type head A: Female connector, M23, 12-pin, straight Connection type head B: Flying leads Signal type: SSI, RS-422, TTL, HTL Cable: 3 m, 12-wire, PUR, halogen-free Description: SSI, RS-422, TTL, HTL, shielded 	DOL-2312- GO3MMA1	2029201	
	 Connection type head A: Female connector, M23, 12-pin, straight Connection type head B: Flying leads Signal type: SSI, RS-422, TTL, HTL Cable: 5 m, 12-wire, PUR, halogen-free Description: SSI, RS-422, TTL, HTL, shielded 	DOL-2312- G05MMA1	2029202	
	 Connection type head A: Female connector, M23, 12-pin, straight Connection type head B: Flying leads Signal type: SSI, RS-422, TTL, HTL Cable: 10 m, 12-wire, PUR, halogen-free Description: SSI, RS-422, TTL, HTL, shielded 	DOL-2312- G10MMA1	2029203	

BTF13-A1AM1020 | HighLine WIRE DRAW ENCODERS

	Brief description	Туре	Part no.
	 Connection type head A: Female connector, M23, 12-pin, straight Connection type head B: Flying leads Signal type: SSI, RS-422, TTL, HTL Cable: 1.5 m, 12-wire, PUR, halogen-free Description: SSI, RS-422, TTL, HTL, shielded 	DOL-2312- G1M5MA1	2029200
	 Connection type head A: Female connector, M23, 12-pin, straight Connection type head B: Flying leads Signal type: SSI, RS-422 Cable: 20 m, 12-wire, PUR, halogen-free Description: SSI, RS-422, shielded 	DOL-2312- G20MMA1	2029204
	 Connection type head A: Female connector, M23, 12-pin, straight Connection type head B: Flying leads Signal type: SSI, RS-422 Cable: 30 m, 12-wire, PUR, halogen-free Description: SSI, RS-422, shielded 	DOL-2312- G30MMA1	2029205
	 Connection type head A: Female connector, M23, 9-pin, straight Signal type: HIPERFACE[®], SSI, Incremental Description: HIPERFACE[®], SSI, Incremental, shielded, Head A: female connector, M23, 9-pin, straight, shielded, for cable diameter 5.5 mm 10.5 mm Head B: Operating temperature: -20 °C +130 °C Connection systems: Solder connection 	DOS-2309-G	6028533
	 Connection type head A: Female connector, M23, 12-pin, straight Signal type: HIPERFACE[®], SSI, Incremental Description: HIPERFACE[®], SSI, Incremental, shielded, Head A: female connector, M23, 12-pin, straight, shielded, for cable diameter 5.5 mm 10.5 mm Head B: Operating temperature: -20 °C +130 °C Connection systems: Solder connection 	DOS-2312-G	6027538
(170)	 Connection type head A: Female connector, M23, 12-pin, angled Signal type: HIPERFACE[®], SSI, Incremental Description: HIPERFACE[®], SSI, Incremental, shielded, Head A: female connector, M23, 12-pin, angled, shielded, for cable diameter 4.2 mm 6.6 mm Head B: - Operating temperature: -20 °C +130 °C Connection systems: Solder connection 	DOS-2312-W01	2072580
	 Connection type head A: Male connector, M23, 12-pin, straight Signal type: HIPERFACE[®], SSI, Incremental, RS-422 Description: HIPERFACE[®], SSI, Incremental, RS-422, shielded, M23 male connector Connection systems: Solder connection 	STE-2312-G	6027537

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.

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For us, that is "Sensor Intelligence."

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