

BTF13-A1ZM30S01

HighLine

WIRE DRAW ENCODERS

SICK
Sensor Intelligence.

Ordering information

| Type | Part no. |
|-----------------|----------|
| BTF13-A1ZM30S01 | 1131639 |

Included in delivery: AHM36A-S3PZ000S20 (1), MRA-F130-130D1 (1)

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

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



Detailed technical data

Features

| | |
|----------------------------------|--|
| Special device | ✓ |
| Specialty | Integrated encoder: AHM36A-S3PZ000S20, 1131635 |
| Standard reference device | BTF13-A1AM3020, 1034303 |

Performance

| | |
|---|--------------------------|
| Measurement range | 0 m ... 30 m |
| Encoder | Absolute encoders |
| Resolution (wire draw + encoder) | 0.05 mm ^{1) 2)} |
| Repeatability | ≤ 2 mm ³⁾ |
| Linearity | ≤ ± 2 mm ³⁾ |
| Hysteresis | ≤ 5 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 | Cable, with male connector, M23, 12-pin, 0.1 m |
| Supply voltage | 4.5 V ... 32 V |
| Power consumption | ≤ 1.5 W (without load) |
| MTTFd: mean time to dangerous failure | 230 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

| | |
|---|---|
| Weight | 6.32 kg |
| Measuring wire material | Highly flexible stranded steel 1,4401 stainless steel V4A |
| Measuring wire diameter | 0.81 mm |
| Weight (measuring wire) | 2.6 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 | 30.2 m |
| Wire acceleration | 15 m/s ² |
| Operating speed | 6 m/s |
| Mounted encoder | AHM36 SSI, AHM36A-S3PZ000S20, 1131635 |
| Mounted mechanic | MRA-F130-130D1, 6028629 |

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

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.

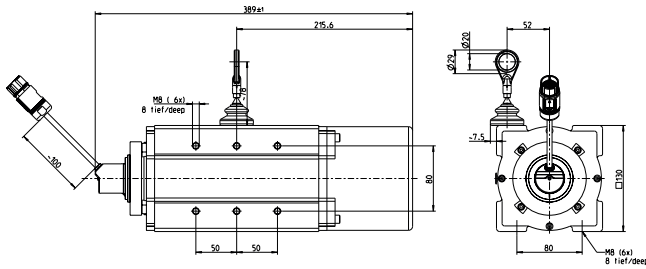
Ambient data

| | |
|------------------------------------|--|
| EMC | According to EN 61000-6-2 and EN 61000-6-3 |
| Enclosure rating | IP64, mounted mechanic IP66, Encoder (IEC 60529) IP67, Encoder (IEC 60529) |
| Operating temperature range | -20 °C ... +70 °C |

Classifications

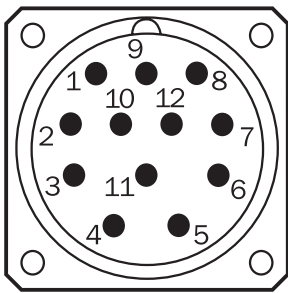
| | |
|-----------------------|----------|
| ECLASS 5.0 | 27270590 |
| ECLASS 5.1.4 | 27270590 |
| ECLASS 6.0 | 27270590 |
| ECLASS 6.2 | 27270590 |
| ECLASS 7.0 | 27270590 |
| ECLASS 8.0 | 27270590 |
| ECLASS 8.1 | 27270590 |
| ECLASS 9.0 | 27270590 |
| ECLASS 10.0 | 27270613 |
| ECLASS 11.0 | 27270503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

Dimensional drawing (Dimensions in mm (inch))



PIN assignment





View of M23 male device connector on encoder







View of M23 male device connector on encoder

Recommended accessories

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

| | Brief description | Type | Part no. |
|---|--|--|----------|
| Wire draw mechanism | | | |
|  | HighLine wire draw mechanism for servo flange with 6 mm shaft, measuring range 0 m ... 30 m | MRA-F130-130D1 | 6028629 |
| 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 mounting accessories | | | |
|  | 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 mechanism | MRA-F-P | 6073769 |

| | Brief description | Type | Part no. |
|---|--|------------------|----------|
|  | Additional brush attachment for wire draw mechanism MRA-F130 (5 m, 10 m, 20 m and 30 m from HighLine series) | MRA-F130-B | 6038562 |
|  | Wire draw deflection pulley for wire draw mechanism MRA-F130 (5m, 10m, 20m and 30m from HighLine series) | MRA-F130-R | 6028631 |
| Plug connectors and cables | | | |
|  | <ul style="list-style-type: none"> • 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-G03MMA1 | 2029201 |
| | <ul style="list-style-type: none"> • 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 |
| | <ul style="list-style-type: none"> • 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 |
| | <ul style="list-style-type: none"> • 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 |
| | <ul style="list-style-type: none"> • 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 |
| | <ul style="list-style-type: none"> • 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 |
|  | <ul style="list-style-type: none"> • 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 |
| | <ul style="list-style-type: none"> • 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 |
| | <ul style="list-style-type: none"> • 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: -40 °C ... +125 °C • Connection systems: Solder connection | DOS-2312-G02 | 2077057 |

| | Brief description | Type | Part no. |
|---|---|--------------|----------|
|  | <ul style="list-style-type: none"> • 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 |
|  | <ul style="list-style-type: none"> • 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 |
|  | <ul style="list-style-type: none"> • Connection type head A: Male connector, M23, 12-pin, straight • Signal type: HIPERFACE[®], SSI, Incremental • Description: HIPERFACE[®], SSI, Incremental, shielded, Head A: male connector, M23, 12-pin, straight, for cable diameter 5.5 mm ... 10.5 mm Head B: - Operating temperature: -40 °C ... +125 °C • Connection systems: Solder connection | STE-2312-G01 | 2077273 |
|  | <ul style="list-style-type: none"> • Connection type head A: Male connector, M23, 12-pin, straight • Signal type: HIPERFACE[®], SSI, Incremental • Description: HIPERFACE[®], SSI, Incremental, shielded, M23 female connector with central fixing (for cabinet bushing) • Connection systems: Solder connection | STE-2312-GX | 6028548 |

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