



BTF13-P1BM2025

HighLine

WIRE DRAW ENCODERS

SICK
Sensor Intelligence.



Ordering information

Type	part no.
BTF13-P1BM2025	1060997

Included in delivery: A3M60B-S1PB013x13 (1), MRA-F130-120D1 (1)

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



Detailed technical data

Safety-related parameters

MTTF_D (mean time to dangerous failure)	60 years (EN ISO 13849-1) ¹⁾
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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.

Performance

Measurement range	0 m ... 20 m
Encoder	Absolute encoders
Resolution (wire draw + encoder)	0.04 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	PROFIBUS DP
Programmable/configurable	✓

Electronics

Connection type	Male connector, 2x, M12, 5-pin, axial Female connector, 1x, M12, 5-pin, axial
Supply voltage	10 V ... 32 V
Power consumption	≤ 1.5 W (without load)

Mechanics

Weight	5.28 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	20.2 m
Wire acceleration	30 m/s ²
Operating speed	6 m/s
Mounted encoder	A3M60, A3M60B-S1PB013X13, 1051018
Mounted mechanic	MRA-F130-120D1, 6028628

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 IP67, Encoder (IEC 60529) ¹⁾
Operating temperature range	-10 °C ... +70 °C

¹⁾ With mating connector fitted.

Certificates

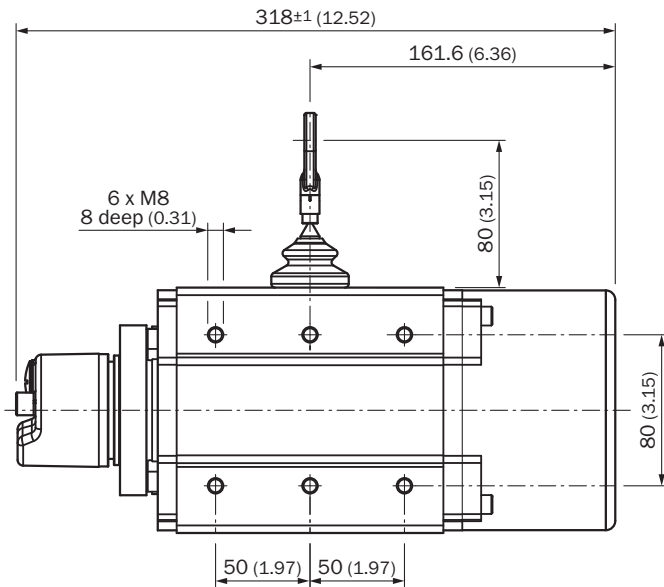
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China-RoHS	✓

Classifications

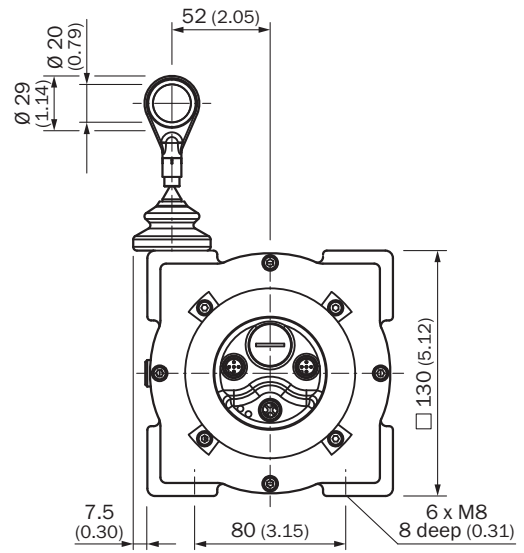
ECLASS 5.0	27270590
ECLASS 5.1.4	27270590
ECLASS 6.0	27270590
ECLASS 6.2	27270590
ECLASS 7.0	27270590
ECLASS 8.0	27270590
ECLASS 8.1	27270590
ECLASS 9.0	27270590
ECLASS 10.0	27270613
ECLASS 11.0	27270503

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)



Recommended accessories

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

	Brief description	Type	part no.
Mounting systems			
	Description: 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
	Description: Compressed air attachment for MRA-F080... and MRA-F130... HighLine wire draw mechanism	MRA-F-P	6073769
	Description: Flange adapter for HighLine wire draw mechanisms, adaption of face mount flange with centering hub 20 mm to 50 mm servo flange Material: Aluminum Details: Aluminum Items supplied: Including 3 countersunk screws M3 x 10	BEF-FA-020-050WDE	2073776
	Description: 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
	Description: Wire draw deflection pulley for wire draw mechanism MRA-F130 (5m, 10m, 20m and 30m from HighLine series)	MRA-F130-R	6028631

	Brief description	Type	part no.
connectors and cables			
	Connection type head A: Female connector, M12, 4-pin, straight, A-coded Description: Unshielded Connection systems: Screw-type terminals Permitted cross-section: $\leq 0.75 \text{ mm}^2$	DOS-1204-G	6007302
	Connection type head A: Female connector, M12, 5-pin, straight, B-coded Connection type head B: Male connector, M12, 5-pin, straight, B-coded Signal type: Fieldbus, PROFIBUS DP Cable: 10 m, 2-wire, PUR, halogen-free Description: Fieldbus, twisted pair, shielded PROFIBUS DP Note: Wire shield Al-Pt film, overall shield C-screen tin-plated Application: Zones with oils and lubricants, Drag chain operation	DSL-1205-G10MQ	6032640
	Connection type head A: Flying leads Connection type head B: Flying leads Signal type: PROFIBUS DP Items supplied: By the meter Cable: 2-wire, PUR Description: PROFIBUS DP, shielded	LTG-2102-MW	6021355
	Connection type head A: Male connector, M12, 4-pin, straight, B-coded Signal type: PROFIBUS DP Description: PROFIBUS DP, terminal resistor	STE-END-Q	6021156
	Connection type head A: Female connector, M12, 4-pin, angled, A-coded Description: Unshielded Connection systems: Screw-type terminals Permitted cross-section: $\leq 0.75 \text{ mm}^2$	DOS-1204-W	6007303
	Connection type head A: Male connector, M12, 5-pin, straight, B-coded Signal type: PROFIBUS DP Description: PROFIBUS DP, shielded Connection systems: Screw-type terminals Permitted cross-section: $\leq 0.75 \text{ mm}^2$	STE-1205-GQ	6021354
	Connection type head A: Female connector, M12, 5-pin, straight, B-coded Signal type: PROFIBUS DP Description: PROFIBUS DP, shielded Connection systems: Screw-type terminals Permitted cross-section: $\leq 0.75 \text{ mm}^2$	DOS-1205-GQ	6021353
	Connection type head A: Female connector, M12, 5-pin, angled, B-coded Signal type: PROFIBUS DP Description: PROFIBUS DP, shielded Connection systems: Spring-cage connection Permitted cross-section: $0.14 \text{ mm}^2 \dots 0.5 \text{ mm}^2$	DOS-1205-WQ	6041429
	Connection type head A: Male connector, M12, 5-pin, angled, B-coded Signal type: PROFIBUS DP Description: PROFIBUS DP, shielded Connection systems: Spring-cage connection Permitted cross-section: $0.14 \text{ mm}^2 \dots 0.5 \text{ mm}^2$	STE-1205-WQ	6041428
	Connection type head A: Female connector, M12, 5-pin, angled, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 2-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Note: Voltage supply Application: Zones with oils and lubricants	DOL-1202-W05MC	6042067
	Connection type head A: Female connector, M12, 5-pin, angled, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 10 m, 2-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Note: Voltage supply Application: Zones with oils and lubricants	DOL-1202-W10MC	6042068
	Items supplied: 1 x female connector M12, 4-pin, angled, 1 x female connector M12, 5-pin, angled, male connector M12, 5-pin, angled, cable? Description: Unshielded	DOS-3XM12-W	2058177

	Brief description	Type	part no.
	Note: Set of connectors Connection type head A: Female connector, M12, 5-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 5-wire, PUR, halogen-free Description: Sensor/actuator cable, shielded Application: Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A25-050UB6XLEAX	2095733
	Connection type head A: Female connector, M12, 5-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 10 m, 5-wire, PUR, halogen-free Description: Sensor/actuator cable, shielded Application: Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A25-100UB6XLEAX	2095734
	Connection type head A: Female connector, M12, 5-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 20 m, 5-wire, PUR, halogen-free Description: Sensor/actuator cable, shielded Application: Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A25-200UB6XLEAX	2095738
	Connection type head A: Male connector, M12, 2-pin, straight, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 15 m, 2-wire, PUR, halogen-free Description: Fieldbus, shieldedPROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YM2B22-150P-B1XLEAX	2106276
	Connection type head A: Male connector, M12, 2-pin, angled, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 5 m, 2-wire, PUR, halogen-free Description: Fieldbus, shieldedPROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YN2B22-050P-B1XLEAX	2106277
	Connection type head A: Female connector, M12, 2-pin, angled, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 5 m, 2-wire, PUR, halogen-free Description: Fieldbus, shieldedPROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YG2B22-050P-B1XLEAX	2106274
	Connection type head A: Female connector, M12, 2-pin, angled, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 10 m, 2-wire, PUR, halogen-free Description: Fieldbus, shieldedPROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YG2B22-100P-B1XLEAX	2106275
	Connection type head A: Male connector, M12, 2-pin, angled, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 10 m, 2-wire, PUR, halogen-free Description: Fieldbus, shieldedPROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YN2B22-100P-B1XLEAX	2106278
	Connection type head A: Male connector, M12, 2-pin, straight, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 10 m, 2-wire, PUR, halogen-free Description: Fieldbus, shieldedPROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YM2B22-100P-B1XLEAX	2106271
	Connection type head A: Female connector, M12, 2-pin, straight, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 10 m, 2-wire, PUR, halogen-free Description: Fieldbus, shieldedPROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YF2B22-100P-B1XLEAX	2106269
	Connection type head A: Female connector, M12, 2-pin, straight, B-coded Connection type head B: Flying leads Signal type: Fieldbus, PROFIBUS DP Cable: 15 m, 2-wire, PUR, halogen-free Description: Fieldbus, shieldedPROFIBUS DP Application: Drag chain operation, Zones with oils and lubricants	YF2B22-150P-B1XLEAX	2106272
	Connection type head A: Female connector, M12, 2-pin, straight, B-coded Connection type head B: Flying leads	YF2B22-200P-B1XLEAX	2106273

	Brief description	Type	part no.
	• Signal type: Fieldbus, PROFIBUS DP • Cable: 20 m, 2-wire, PUR, halogen-free • Description: Fieldbus, shielded PROFIBUS DP • Application: Drag chain operation, Zones with oils and lubricants	YF2B22-050P-B1XLEAX	2121936
	• Connection type head A: Female connector, M12, 2-pin, straight, B-coded • Connection type head B: Flying leads • Signal type: Fieldbus, PROFIBUS DP • Cable: 5 m, 2-wire, PUR, halogen-free • Description: Fieldbus, shielded PROFIBUS DP • Application: Drag chain operation, Zones with oils and lubricants	YF2A25-020UB6XLEAX	2145583
	• Connection type head A: Female connector, M12, 5-pin, straight, A-coded • Connection type head B: Flying leads • Signal type: Sensor/actuator cable • Cable: 2 m, 5-wire, PUR, halogen-free • Description: Sensor/actuator cable, shielded • Application: Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A25-010UB6XLEAX	2145582
	• Connection type head A: Female connector, M12, 5-pin, straight, A-coded • Connection type head B: Flying leads • Signal type: Sensor/actuator cable • Cable: 0.6 m, 5-wire, PUR, halogen-free • Description: Sensor/actuator cable, shielded • Application: Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A25-C60UB6XLEAX	2145581
Wire draw mechanism			
	• Product segment: Wire draw mechanism • Product family: Wire draw mechanism for wire draw encoders • Description: HighLine wire draw mechanism for servo flange with 6 mm shaft, measuring range 0 m ... 20 m • Items supplied: Without encoder	MRA-F130-120D1	6028628

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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.”

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