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DATA SHEET

MWS075-12C111P100400

MWS075
Measuring wheel encoders

SICK
Sensor Intelligence



Illustration may differ

MEASURING WHEEL ENCODERS

MWS075-12C111P100400

ORDERING INFORMATION

Type	part no.
MWS075-12C111P100400	1146295

Further device versions and accessories at www.sick.com/MWS075

DETAILED TECHNICAL DATA

PERFORMANCE

Pulses per revolution	400
Resolution in pulses/mm	2
Measuring increment (resolution in mm/pulse)	0.5 [1] [2]
Repeatability	< 0.1 mm [3]

[1] Calculation example: Circumference of wheel / pulses per revolution = 200 mm / 16384 pulses per revolution = 0,012mm/pulse.

[2] Value based on measuring wheel circumference. The measuring wheel circumference depends on manufacturing tolerances, wear and tear, the selected spring tensioning force, and the behavior of the measurement wheel surface at different temperatures and on different measurement surfaces. To obtain the most accurate measurement results, we recommend performing a reference run for positioning tasks so that application-specific measuring wheel characteristics can be taken into account.

[3] Value is based on the mechanics. Backlash of the measuring wheel mechanics, is at a minimum. This enables a precise and repeatable measurement results.

INTERFACES

Communication interface	Incremental
Communication Interface detail	HTL / Push pull

ELECTRONICS

Connection type	Cable, 8-wire, with male connector, M12, 8-pin, universal, 0.5 m
Supply voltage	7 V ... 30 V
Reverse polarity protection	✓
Short-circuit protection of the outputs	✓ [1]

[1] The short-circuit rating is only given if Us and GND are connected correctly.

MECHANICS

Measuring wheel circumference	200 mm
Measuring wheel surface	O-ring NBR70 [1]
Mounting	Measuring wheel mounted at the front
Encoder material Cable	 PVC
Spring arm mechanism material Measuring wheel core	 Aluminum
Start up torque	+ 0.9 Ncm
Operating torque	0.6 Ncm
Operating speed	6,000 min^{-1} [2]
Maximum operating speed	8,000 min^{-1} [3]
Bearing lifetime	2.0 x 10^9 revolutions
Maximum travel/deflection of spring arm	14 N with 14 mm spring travel
Recommended pretension	15 N At 10 mm deflection
Max. permissible working area for the spring (continuous operation)	± 3 mm
Recommended spring deflection	2 mm ... 13 mm
Service life of spring element	> 1.4 million cycles [4]
Mounting position relative to the measuring object	Preferably from above, from below possible [5]
Moment of inertia of the rotor	0.65 gcm^2
Mounted encoder	DBS36/50, DBS50E-S5EP00400, 1146271
Mounted mechanic	BEF-MWS075-ARM, 2145180
Attached measuring wheel	BEF-MR008020R, 2055223

[1] The surface of a measuring wheel is subject to wear. This depends on contact pressure, acceleration behavior in the application, traversing speed, measurement surface, mechanical alignment of the measuring wheel, temperature, and ambient conditions. We recommend you regularly check the condition of the measuring wheel and replace as required.

[2] Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

[3] No permanent operation. Decreasing signal quality.

[4] One cycle corresponds to an upward and downward movement of ± 3 mm from the recommended pretension position.

[5] When mounted from below, the encoder weight during spring pretensioning must be taken into account.

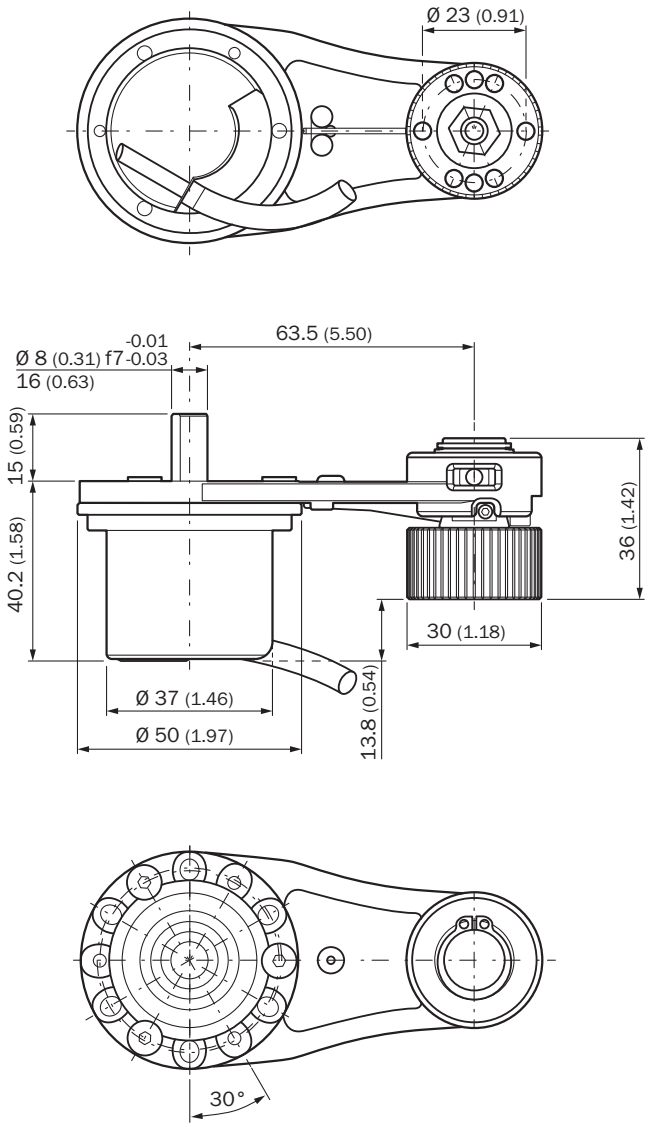
AMBIENT DATA

EMC	According to EN 61000-6-2 and EN 61000-6-3 (class A)
Enclosure rating	IP65
Operating temperature range	–20 °C ... +85 °C
Storage temperature range	–40 °C ... +100 °C, without package

CERTIFICATES

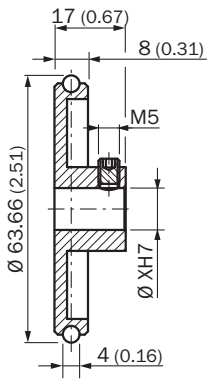
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓

DIMENSIONAL DRAWING



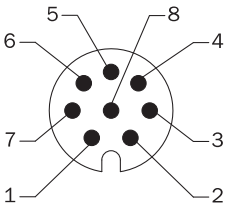
Dimensions in mm (inch)
Please refer to the dimensional drawings in the respective data sheet for the installed encoder.

DIMENSIONAL DRAWING



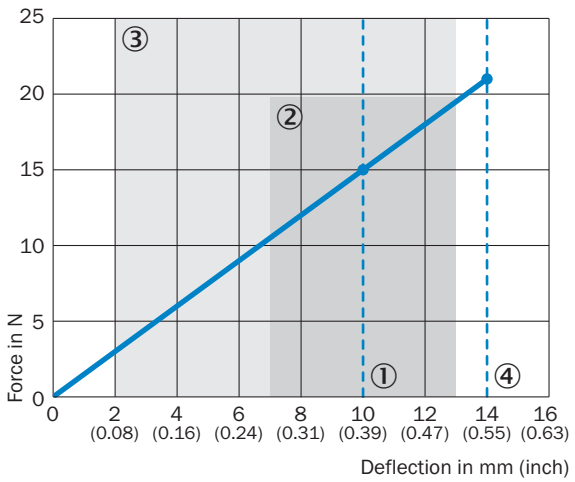
Dimensions in mm (inch)

ANSCHLUSSBELEGUNG



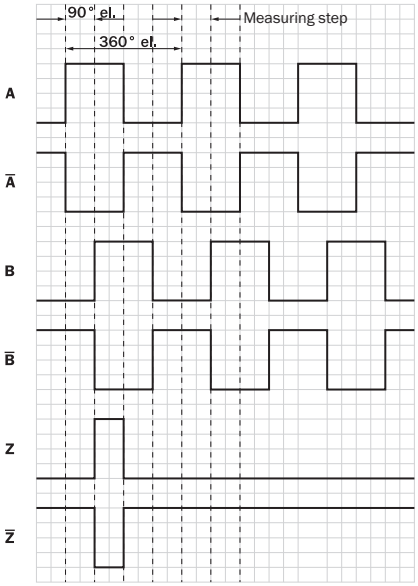
Wire colors (cable connection)	Male connector M12, 8-pin	Male connector M23, 12-pin	TTL/HTL 6-channel signal	Explanation
Brown	1	6	A-	Signal wire
White	2	5	A	Signal wire
Black	3	1	B-	Signal wire
Pink	4	8	B	Signal wire
Yellow	5	4	Z-	Signal wire
Purple	6	3	Z	Signal wire
Blue	7	10	GND	Ground connection
Red	8	12	$+U_s$	Supply voltage
-	-	9	Not assigned	Not assigned
-	-	2	Not assigned	Not assigned
-	-	11	Not assigned	Not assigned
-	-	7	Not assigned	Not assigned

DIAGRAMS FORCE DEFLECTION CHART WITH WORKING RANGE



① Proposed Pre-tension: 10 mm
② Allowed operating travel (continuous operation) +/- 3 mm
③ Proposed spring deflection: 2 - 13 mm
④ Maximum spring travel: 14 mm

DIAGRAMS SIGNAL OUTPUTS FOR ELECTRICAL INTERFACES TTL AND HTL



Cw with view on the encoder shaft in direction "A", compare dimensional drawing.
① Interfaces G, P, R only for channels A, B, Z.

Supply voltage	Output
4.5 V...5.5 V	TTL/RS422
7 V...30 V	TTL/RS422
7 V...30 V	HTL/Push Pull
7 V...27 V	HTL/push pull, 3 channel
4.5 V...5.5 V	Open Collector NPN, 3 channel
7 V...30 V	Open Collector NPN, 3 channel

Further information as well as suitable accessories, example applications and downloads such as CAD dimensional models, operating instructions and software can be found at www.sick.com/1146295

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SICK AT A GLANCE

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SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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