Data sheet

MWS075-00B352C110000

MWS075

MEASURING WHEEL ENCODERS

SICK
Sensor Intelligence.

Illustration may differ

Ordering information

Type	part no.
MWS075-00B352C110000	1146359

Included in delivery: DFS60B-S4PC10000 (1), BEF-FA-36-49-MWS075 (1), BEF-MWS075-ARM (1)

Other models and accessories ➜ www.sick.com/MWS075

Detailed technical data

Performance

Pulses per revolution	10,000
Measuring increment (resolution in mm/pulse)	[1]
Repeatability	< 0.1 mm [2]

[1] 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.
[2] 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	TTL / HTL
Programmable/configurable	✓

Electronics

Connection type	Male connector, M12, 8-pin, radial
Supply voltage	4.5 V ... 32 V
Reverse polarity protection	✓
Short-circuit protection of the outputs	✓ [1] [2]

[1] Programming TTL with ≥ 5.5 V: short-circuit opposite to another channel or GND permissable for maximum 30 s.
[2] Programming HTL or TTL with < 5.5 V: short-circuit opposite to another channel, US or GND permissable for maximum 30 s.

Mechanics

Start up torque	0.5 Ncm
Operating torque	0.3 Ncm
Operating speed	≤ 9,000 min^{-1} [1]
Bearing lifetime	3.6 x 10^10 revolutions
Maximum travel/deflection of spring arm	14 N with 14 mm spring travel

[1] Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.
[2] One cycle corresponds to an upward and downward movement of ± 3 mm from the recommended pretension position.
[3] When mounted from below, the encoder weight during spring pretensioning must be taken into account.

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 [2]
Mounting position relative to the measuring object	Preferably from above, from below possible [3]
Moment of inertia of the rotor	6.2 gcm²
Mounted encoder	DFS60, DFS60B-S4PC10000, 1036721
Flange plates	BEF-FA-36-49-MWS075, 2145869
Mounted mechanic	BEF-MWS075-ARM, 2145180

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

EMC	According to EN 61000-6-2 and EN 61000-6-3
Enclosure rating	IP67, Housing side, male connector (IEC 60529) [1] IP65, shaft side (IEC 60529)
Operating temperature range	–40 °C ... +100 °C [2] –30 °C ... +100 °C [3]
Storage temperature range	–40 °C ... +100 °C, without package

[1] With mating connector fitted.
[2] Stationary position of the cable.
[3] Flexible position of the cable.

Certificates

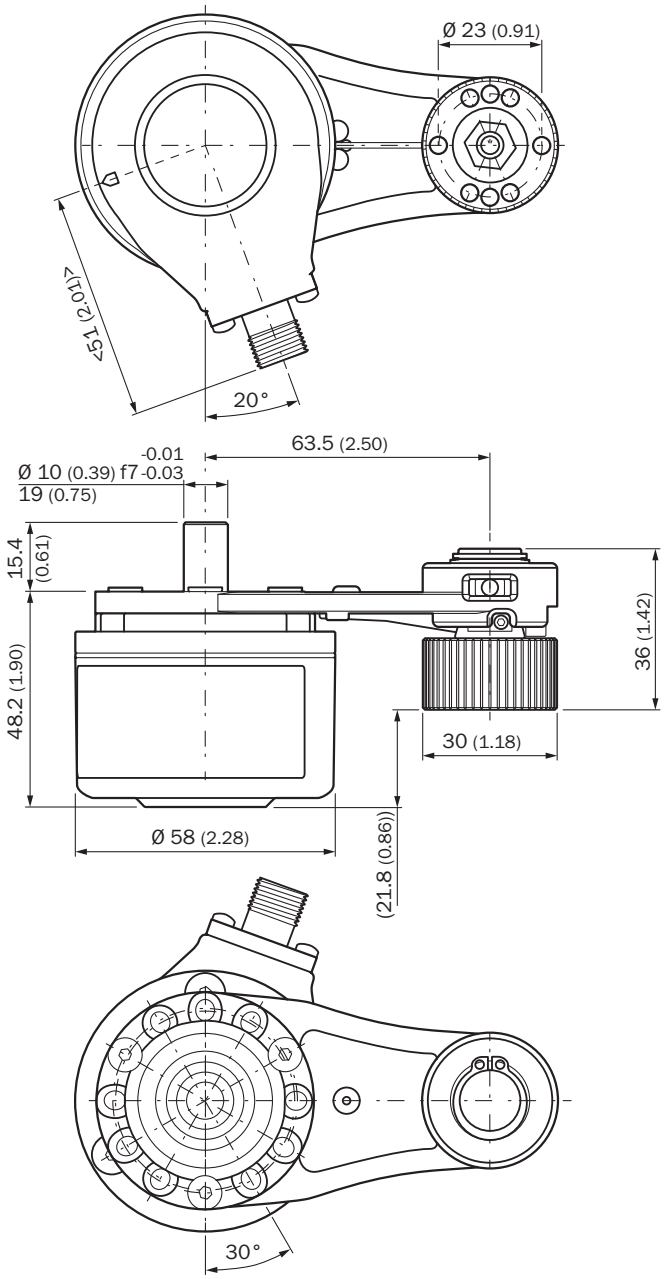
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
China RoHS	✓

Classifications

ECLASS 5.0	27270501
ECLASS 5.1.4	27270501
ECLASS 6.0	27270590
ECLASS 6.2	27270590
ECLASS 7.0	27270501
ECLASS 8.0	27270501
ECLASS 8.1	27270501
ECLASS 9.0	27270501
ECLASS 10.0	27270790
ECLASS 11.0	27270707
ECLASS 12.0	27270504
ETIM 5.0	EC001486

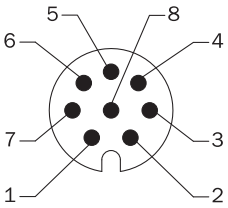
ETIM 6.0	EC001486
ETIM 7.0	EC001486
ETIM 8.0	EC001486
UNSPSC 16.0901	41112113

Dimensional drawing



Dimensions in mm (inch)

Anschlussbelegung

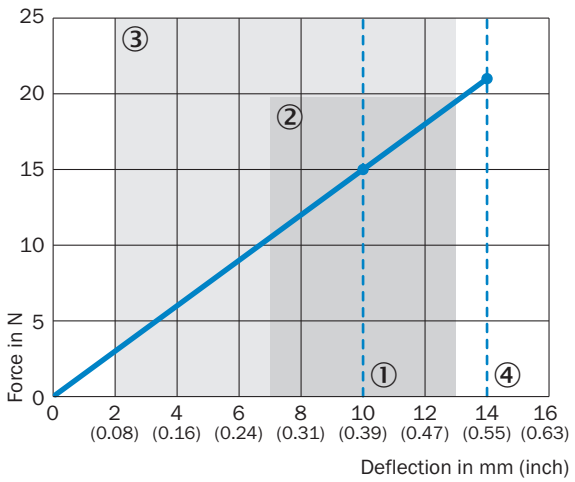


view of M12 male device connector on encoder

PINMale connector M12, 8-pin	PINMale connector M23, 12-pin	Wire colors (cable connection)	TTL/HTL signal	Sin/Cos 1.0 V_{PP}	Explanation
1	6	Brown	$\overline{A}$	COS-	Signal wire
2	5	White	A	COS+	Signal wire
3	1	Black	$\overline{B}$	SIN-	Signal wire
4	8	Pink	B	SIN+	Signal wire
5	4	Yellow	$\overline{Z}$	$\overline{Z}$	Signal wire
6	3	Purple	Z	Z	Signal wire
7	10	Blue	GND	GND	Ground connection
8	12	Red	$+U_S$	$+U_S$	Supply voltage
-	9	-	N.c.	N.c.	Not assigned
-	2	-	N.c.	N.c.	Not assigned
-	11	-	N.c.	N.c.	Not assigned
-	7 [1)]	Orange	0-SET [1)]	N.c.	Set zero pulse[1)]
Shielding	Shielding	Shielding	Shielding	Shielding	Shielding connected to housing on encoder side. Connected to ground on control side.

[1)]For electrical interfaces only: M, U, V, W with 0-SET function on PIN 7 on M23 plug. The 0-SET input is used to set the zero pulse to the current shaft position. If the 0-SET input is applied to US for longer than 250 ms after it has previously been open or applied to GND for at least 1,000 ms, the current shaft position is assigned zero pulse signal “Z”.

Diagrams Force deflection chart with working range

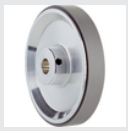
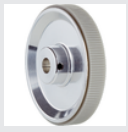
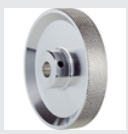


① Proposed Pre-tension: 10 mm
② Allowed operating travel (continuous operation) +/- 3 mm
③ Proposed spring deflection: 2 - 13 mm
④ Maximum spring travel: 14 mm

Recommended accessories

Other models and accessories ➜ www.sick.com/MWS075

	Brief description	Type	part no.
Mounting systems			
	• **Description:** Mounting bracket for MWS075 • **Suitable for:** MWS075	BEF-WF-MWS075	2145906
	• **Description:** Mounting bracket for encoder with spigot 36 mm	BEF-WF-MRS	2084709

	Brief description	Type	part no.
measuring wheels and measuring wheel mechanics			
	• **Product segment:** Measuring wheels and measuring wheel mechanics • **Product:** Measuring wheels • **Description:** Aluminium measuring wheel with O-ring (NBR70) for 10 mm solid shaft, circumference 200 mm	BEF-MR010020R	2055224
	• **Product segment:** Measuring wheels and measuring wheel mechanics • **Product:** Measuring wheels • **Description:** Aluminium measuring wheel with O-ring (NBR70) for 10 mm solid shaft, circumference 300 mm	BEF-MR010030R	2049278
	• **Product segment:** Measuring wheels and measuring wheel mechanics • **Product:** Measuring wheels • **Description:** Measuring wheel with O-ring (NBR70) for 10 mm solid shaft, circumference 500 mm	BEF-MR010050R	2055227
	• **Product segment:** Measuring wheels and measuring wheel mechanics • **Product:** Measuring wheels • **Description:** Aluminum measuring wheel with cross-knurled surface for 10 mm solid shaft, circumference 200 mm	BEF-MR10200AK	4084737
	• **Product segment:** Measuring wheels and measuring wheel mechanics • **Product:** Measuring wheels • **Description:** Aluminum measuring wheel with smooth polyurethane surface for 10 mm solid shaft, circumference 200 mm	BEF-MR10200AP	4084738
	• **Product segment:** Measuring wheels and measuring wheel mechanics • **Product:** Measuring wheels • **Description:** Aluminum measuring wheel with ridged polyurethane surface for 10 mm solid shaft, circumference 200 mm	BEF-MR10200APG	4084740
	• **Product segment:** Measuring wheels and measuring wheel mechanics • **Product:** Measuring wheels • **Description:** Aluminum measuring wheel with studded polyurethane surface for 10 mm solid shaft, circumference 200 mm	BEF-MR10200APN	4084739
	• **Product segment:** Measuring wheels and measuring wheel mechanics • **Product:** Measuring wheels • **Description:** Aluminum measuring wheel with cross-knurled surface for 10 mm solid shaft, circumference 300 mm	BEF-MR10300AK	2115703
	• **Product segment:** Measuring wheels and measuring wheel mechanics • **Product:** Measuring wheels • **Description:** Aluminum measuring wheel with smooth polyurethane surface for 10 mm solid shaft, circumference 300 mm	BEF-MR10300AP	2118512

	Brief description	Type	part no.
connectors and cables			
	• **Description:** Incremental, shielded, SSI • **Connection type head A:** Female connector, M12, 8-pin, straight • **Connection type head B:** Flying leads • **Signal type:** Incremental, SSI • **Cable:** 2 m, 8-wire, PUR, halogen-free • **Connection systems:** Flying leads • **Application:** Drag chain operation, Zones with oils and lubricants	DOL-1208-G02MAC1	6032866
	• **Description:** Incremental, shielded, SSI • **Connection type head A:** Female connector, M12, 8-pin, straight • **Connection type head B:** Flying leads • **Signal type:** Incremental, SSI • **Cable:** 5 m, 8-wire, PUR, halogen-free • **Connection systems:** Flying leads • **Application:** Drag chain operation, Zones with oils and lubricants	DOL-1208-G05MAC1	6032867
	• **Description:** Incremental, shielded, SSI • **Connection type head A:** Female connector, M12, 8-pin, straight • **Connection type head B:** Flying leads • **Signal type:** Incremental, SSI • **Cable:** 10 m, 8-wire, PUR, halogen-free • **Connection systems:** Flying leads • **Application:** Drag chain operation, Zones with oils and lubricants	DOL-1208-G10MAC1	6032868
	• **Description:** Incremental, shielded, SSI • **Connection type head A:** Female connector, M12, 8-pin, straight • **Connection type head B:** Flying leads • **Signal type:** Incremental, SSI • **Cable:** 20 m, 8-wire, PUR, halogen-free • **Connection systems:** Flying leads • **Application:** Drag chain operation, Zones with oils and lubricants	DOL-1208-G20MAC1	6032869
	• **Description:** Incremental, shielded, SSI • **Connection type head A:** Female connector, M12, 8-pin, straight, A-coded • **Signal type:** Incremental, SSI • **Cable:** CAT5, CAT5e • **Connection systems:** IDC quick connection • **Permitted cross-section:** 0.14 mm² ... 0.34 mm²	DOS-1208-GA01	6045001

SICK AT A GLANCE

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