



**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](http://www.sick.com/MWS075)

## Detailed technical data

### Performance

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

<sup>1)</sup> 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.

<sup>2)</sup> 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

<b>Communication interface</b>	Incremental
<b>Communication Interface detail</b>	TTL / HTL
<b>Programmable/configurable</b>	✓

### Electronics

<b>Connection type</b>	Male connector, M12, 8-pin, radial
<b>Supply voltage</b>	4.5 V ... 32 V
<b>Reverse polarity protection</b>	✓
<b>Short-circuit protection of the outputs</b>	✓ <sup>1)</sup> <sup>2)</sup>

<sup>1)</sup> Programming TTL with ≥ 5.5 V: short-circuit opposite to another channel or GND permissible for maximum 30 s.

<sup>2)</sup> Programming HTL or TTL with < 5.5 V: short-circuit opposite to another channel, US or GND permissible for maximum 30 s.

### Mechanics

<b>Start up torque</b>	0.5 Ncm
<b>Operating torque</b>	0.3 Ncm
<b>Operating speed</b>	≤ 9,000 min <sup>-1</sup> <sup>1)</sup>
<b>Bearing lifetime</b>	3.6 x 10 <sup>10</sup> revolutions
<b>Maximum travel/deflection of spring arm</b>	14 mm at 14 N spring travel

<sup>1)</sup> Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

<sup>2)</sup> One cycle corresponds to an upward and downward movement of ± 3 mm from the recommended pretension position.

<sup>3)</sup> When mounted from below, the encoder weight during spring pretensioning must be taken into account.

<b>Recommended pretension</b>	15 N At 10 mm deflection
<b>Max. permissible working area for the spring (continuous operation)</b>	± 3 mm
<b>Recommended spring deflection</b>	2 mm ... 13 mm
<b>Service life of spring element</b>	> 1.4 million cycles <sup>2)</sup>
<b>Mounting position relative to the measuring object</b>	Preferably from above, from below possible <sup>3)</sup>
<b>Moment of inertia of the rotor</b>	6.2 gcm <sup>2</sup>
<b>Mounted encoder</b>	DFS60, DFS60B-S4PC10000, 1036721
<b>Flange plates</b>	2145869
<b>Mounted mechanic</b>	BEF-MWS075-ARM, 2145180

<sup>1)</sup> Allow for self-heating of 3.3 K per 1,000 rpm when designing the operating temperature range.

<sup>2)</sup> One cycle corresponds to an upward and downward movement of ± 3 mm from the recommended pretension position.

<sup>3)</sup> When mounted from below, the encoder weight during spring pretensioning must be taken into account.

## Ambient data

<b>EMC</b>	According to EN 61000-6-2 and EN 61000-6-3
<b>Enclosure rating</b>	IP67 (IEC 60529) <sup>1)</sup> IP65 (IEC 60529)
<b>Operating temperature range</b>	-40 °C ... +100 °C <sup>2)</sup> -30 °C ... +100 °C <sup>3)</sup>
<b>Storage temperature range</b>	-40 °C ... +100 °C, without package

<sup>1)</sup> With mating connector fitted.

<sup>2)</sup> Stationary position of the cable.

<sup>3)</sup> Flexible position of the cable.

## Certificates

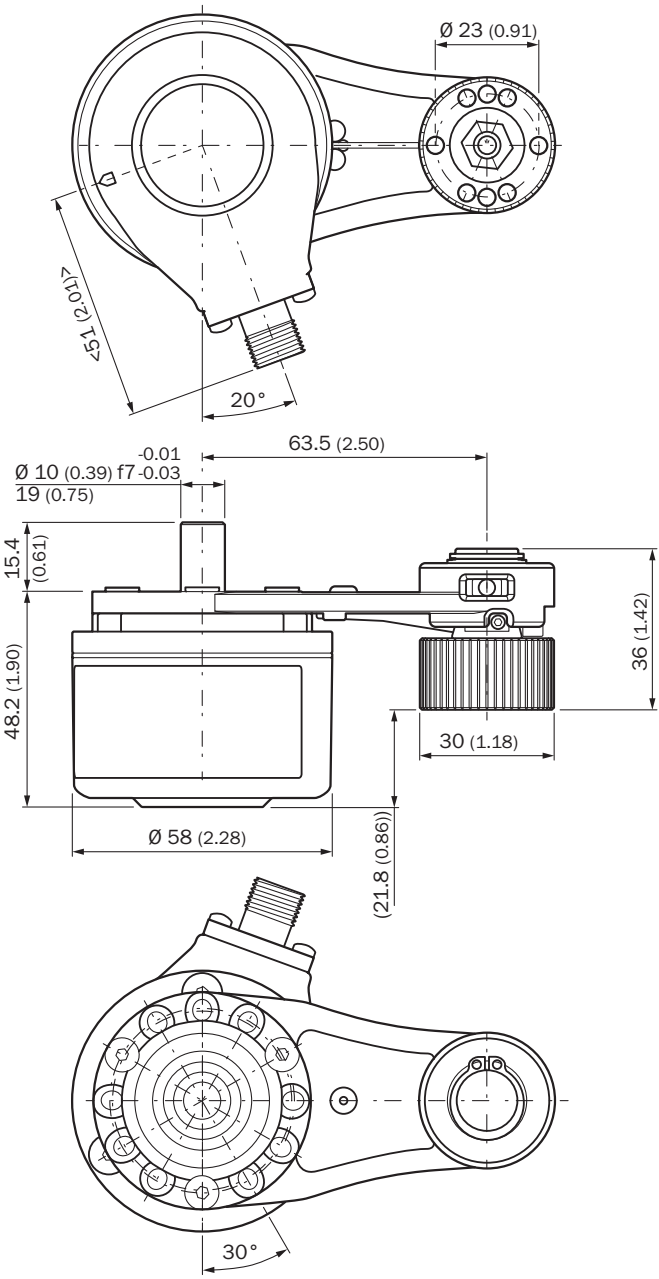
<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>China-RoHS</b>	✓

## Classifications

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

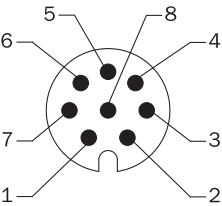
ETIM 6.0	EC001486
ETIM 7.0	EC001486
ETIM 8.0	EC001486
UNSPSC 16.0901	41112113

Dimensional drawing



Dimensions in mm (inch)

PIN assignment



view of M12 male device connector on encoder

PINMale connec- tor M12, 8-pin	PINMale connec- tor M23, 12-pin	Wire colors (ca- ble connection)	TTL/HTL signal	Sin/Cos 1.0 V <sub>PP</sub>	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 <sub>S</sub>	+U <sub>S</sub>	Supply voltage
-	9	-	N.c.	N.c.	Not assigned
-	2	-	N.c.	N.c.	Not assigned
-	11	-	N.c.	N.c.	Not assigned
-	7 <sup>1)</sup>	Orange	O-SET <sup>1)</sup>	N.c.	Set zero pulse <sup>1)</sup>
Screen	Screen	Screen	Screen	Screen	Screen connect- ed to housing on encoder side. Con- nected to ground on control side.

<sup>1)</sup>For electrical interfaces only: M, U, V, W with O-SET function on PIN 7 on M23 plug. The O-SET input is used to set the zero pulse to the current shaft position. If the O-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”.






Recommended accessories

Other models and accessories → [www.sick.com/MWS075](http://www.sick.com/MWS075)

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"><li>• <b>Description:</b> Mounting bracket for MWS075</li><li>• <b>Suitable for:</b> MWS075</li></ul>	BEF-WF-MWS075	2145906

	Brief description	Type	part no.
measuring wheels and measuring wheel mechanics			
	<ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Aluminium measuring wheel with O-ring (NBR70) for 10 mm solid shaft, circumference 200 mm</li> </ul>	BEF-MR010020R	2055224
	<ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Aluminium measuring wheel with O-ring (NBR70) for 10 mm solid shaft, circumference 300 mm</li> </ul>	BEF-MR010030R	2049278
	<ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Measuring wheel with O-ring (NBR70) for 10 mm solid shaft, circumference 500 mm</li> </ul>	BEF-MR010050R	2055227
	<ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Aluminium measuring wheel with cross-knurled surface for 10 mm solid shaft, circumference 200 mm</li> </ul>	BEF-MR10200AK	4084737
	<ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Aluminum measuring wheel with smooth polyurethane surface for 10 mm solid shaft, circumference 200 mm</li> </ul>	BEF-MR10200AP	4084738
	<ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> <li><b>Description:</b> Aluminum measuring wheel with ridged polyurethane surface for 10 mm solid shaft, circumference 200 mm</li> </ul>	BEF-MR10200APG	4084740
	<ul style="list-style-type: none"> <li><b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li> <li><b>Product family:</b> Measuring wheels</li> </ul>	BEF-MR10200APN	4084739

	Brief description	Type	part no.
	<ul style="list-style-type: none"><li>• <b>Description:</b> Aluminum measuring wheel with studded polyurethane surface for 10 mm solid shaft, circumference 200 mm</li></ul>		
	<ul style="list-style-type: none"><li>• <b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li><li>• <b>Product family:</b> Measuring wheels</li><li>• <b>Description:</b> Aluminum measuring wheel with cross-knurled surface for 10 mm solid shaft, circumference 300 mm</li></ul>	BEF-MR10300AK	2115703
	<ul style="list-style-type: none"><li>• <b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li><li>• <b>Product family:</b> Measuring wheels</li><li>• <b>Description:</b> Aluminum measuring wheel with smooth polyurethane surface for 10 mm solid shaft, circumference 300 mm</li></ul>	BEF-MR10300AP	2118512
	<ul style="list-style-type: none"><li>• <b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li><li>• <b>Product family:</b> Measuring wheels</li><li>• <b>Description:</b> Aluminum measuring wheel with ridged polyurethane surface for 10 mm solid shaft, circumference 300 mm</li></ul>	BEF-MR10300APG	2118496
	<ul style="list-style-type: none"><li>• <b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li><li>• <b>Product family:</b> Measuring wheels</li><li>• <b>Description:</b> Aluminum measuring wheel with studded polyurethane surface for 10 mm solid shaft, circumference 300 mm</li></ul>	BEF-MR10300APN	2118494
	<ul style="list-style-type: none"><li>• <b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li><li>• <b>Product family:</b> Measuring wheels</li><li>• <b>Description:</b> Aluminum measuring wheel with cross-knurled surface for 10 mm solid shaft, circumference 500 mm</li></ul>	BEF-MR10500AK	4084733
	<ul style="list-style-type: none"><li>• <b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li><li>• <b>Product family:</b> Measuring wheels</li><li>• <b>Description:</b> Aluminum measuring wheel with cross knurled surface for solid shaft 10 mm, circumference 500 mm +/-0,2 mm (circumferential tolerance at 20 °C. Circumferential tolerance depends on the temperature coefficient of the material)</li></ul>	BEF-MR10500AK-A	2125732
	<ul style="list-style-type: none"><li>• <b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li><li>• <b>Product family:</b> Measuring wheels</li><li>• <b>Description:</b> Aluminum measuring wheel with smooth polyurethane surface for 10 mm solid shaft, circumference 500 mm</li></ul>	BEF-MR10500AP	4084734
	<ul style="list-style-type: none"><li>• <b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li><li>• <b>Product family:</b> Measuring wheels</li><li>• <b>Description:</b> Aluminum measuring wheel with ridged polyurethane surface for 10 mm solid shaft, circumference 500 mm</li></ul>	BEF-MR10500APG	4084736
	<ul style="list-style-type: none"><li>• <b>Product segment:</b> Measuring wheels and measuring wheel mechanics</li><li>• <b>Product family:</b> Measuring wheels</li><li>• <b>Description:</b> Aluminum measuring wheel with studded polyurethane surface for 10 mm solid shaft, circumference 500 mm</li></ul>	BEF-MR10500APN	4084735

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Incremental, SSI</li> <li>• <b>Cable:</b> 2 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Incremental, shieldedSSI</li> <li>• <b>Connection systems:</b> Flying leads</li> </ul>	DOL-1208-G02MAC1	6032866
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Incremental, SSI</li> <li>• <b>Cable:</b> 5 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Incremental, shieldedSSI</li> <li>• <b>Connection systems:</b> Flying leads</li> </ul>	DOL-1208-G05MAC1	6032867
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Incremental, SSI</li> <li>• <b>Cable:</b> 10 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Incremental, shieldedSSI</li> <li>• <b>Connection systems:</b> Flying leads</li> </ul>	DOL-1208-G10MAC1	6032868
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, straight</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Incremental, SSI</li> <li>• <b>Cable:</b> 20 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Incremental, shieldedSSI</li> <li>• <b>Connection systems:</b> Flying leads</li> </ul>	DOL-1208-G20MAC1	6032869
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, straight, A-coded</li> <li>• <b>Signal type:</b> Incremental, SSI</li> <li>• <b>Cable:</b> CAT5, CAT5e</li> <li>• <b>Description:</b> Incremental, shieldedSSI</li> <li>• <b>Connection systems:</b> IDC quick connection</li> <li>• <b>Permitted cross-section:</b> 0.14 mm² ... 0.34 mm²</li> </ul>	DOS-1208-GA01	6045001



## 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.

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.”

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)