



**MWS075-00D142C102400**

MWS075

**MEASURING WHEEL ENCODERS**

**SICK**  
Sensor Intelligence.



Illustration may differ



## Ordering information

Type	part no.
MWS075-00D142C102400	1146358

**Included in delivery:** DUS60E-S4KC0AAA (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>	2,400
<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

### Electronics

<b>Connection type</b>	Male connector, M12, 8-pin, universal <sup>1)</sup>
<b>Supply voltage</b>	4.75 V ... 30 V
<b>Reverse polarity protection</b>	✓
<b>Short-circuit protection of the outputs</b>	✓

<sup>1)</sup> The universal connection is rotatable so that it is possible to position the connector in the radial or axial direction.

### Mechanics

<b>Start up torque</b>	1.2 Ncm
<b>Operating torque</b>	1.1 Ncm
<b>Operating speed</b>	1,500 min <sup>-1</sup>
<b>Bearing lifetime</b>	3.6 x 10 <sup>9</sup> revolutions
<b>Maximum travel/deflection of spring arm</b>	14 mm at 14 N spring travel
<b>Recommended pretension</b>	15 N At 10 mm deflection
<b>Max. permissible working area for the spring (continuous operation)</b>	± 3 mm

<sup>1)</sup> One cycle corresponds to an upward and downward movement of ± 3 mm from the recommended pretension position.

<sup>2)</sup> When mounted from below, the encoder weight during spring pretensioning must be taken into account.

<b>Recommended spring deflection</b>	2 mm ... 13 mm
<b>Service life of spring element</b>	> 1.4 million cycles <sup>1)</sup>
<b>Mounting position relative to the measuring object</b>	Preferably from above, from below possible <sup>2)</sup>
<b>Moment of inertia of the rotor</b>	33 gcm <sup>2</sup>
<b>Mounted encoder</b>	DUS60, DUS60E-S4KC0AAA, 1084487
<b>Flange plates</b>	2145869
<b>Mounted mechanic</b>	BEF-MWS075-ARM, 2145180

<sup>1)</sup> One cycle corresponds to an upward and downward movement of  $\pm 3$  mm from the recommended pretension position.

<sup>2)</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>	IP65 <sup>1)</sup>
<b>Operating temperature range</b>	-30 °C ... +90 °C
<b>Storage temperature range</b>	-40 °C ... +75 °C, without package

<sup>1)</sup> When the mating connector is installed and the DIP switch door is sealed with the encoder housing.

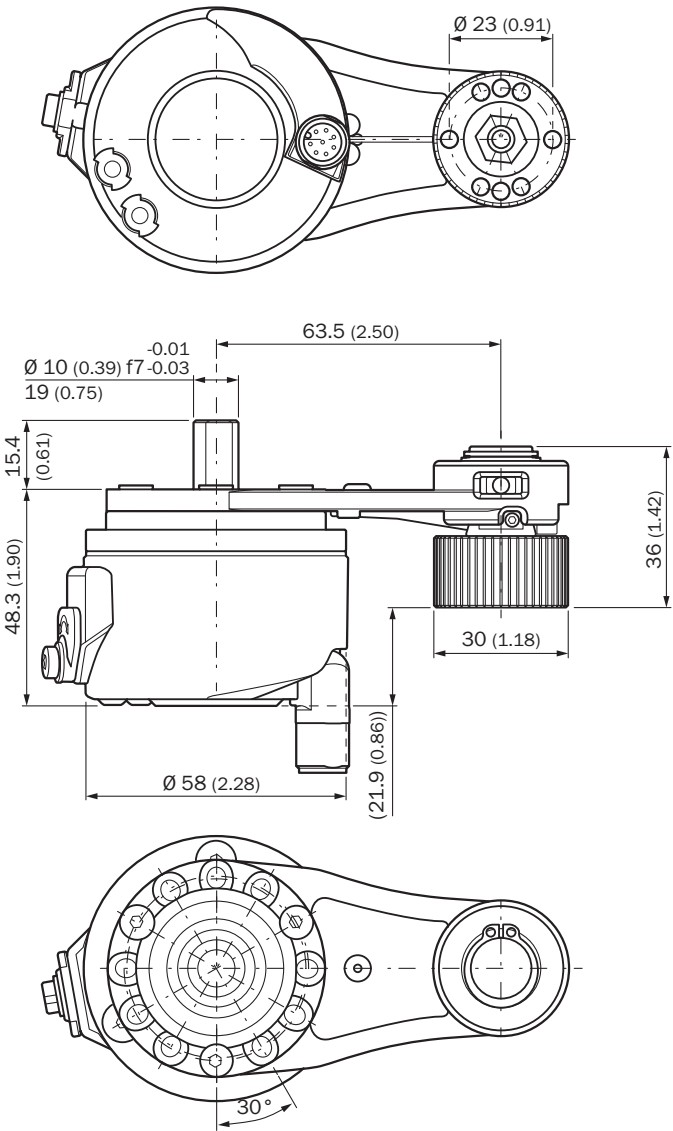
## Certificates

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

## Classifications

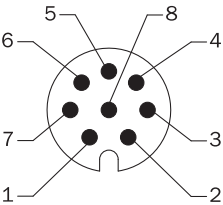
<b>ECLASS 5.0</b>	27270501
<b>ECLASS 5.1.4</b>	27270501
<b>ECLASS 6.0</b>	27270590
<b>ECLASS 6.2</b>	27270590
<b>ECLASS 7.0</b>	27270501
<b>ECLASS 8.0</b>	27270501
<b>ECLASS 8.1</b>	27270501
<b>ECLASS 9.0</b>	27270501
<b>ECLASS 10.0</b>	27270790
<b>ECLASS 11.0</b>	27270707
<b>ECLASS 12.0</b>	27270504
<b>ETIM 5.0</b>	EC001486
<b>ETIM 6.0</b>	EC001486
<b>ETIM 7.0</b>	EC001486
<b>ETIM 8.0</b>	EC001486
<b>UNSPSC 16.0901</b>	41112113

Dimensional drawing



Dimensions in mm (inch)

PIN assignment View of M12 male device connector on encoder



Wire colors (cable connection)	Male connector M12, 4-pin	Male connector M12, 8-pin	Output function				Explanation
			A	B	C	D	
Brown	-	1	A-	CW-	A-	A-	Signal
White	4	2	A	CW	A	A	Signal

Wire col- ors (cable connection)	Male connec- tor M12, 4-pin	Male connec- tor M12, 8-pin	Output function				Explanation
			A	B	C	D	
Black	-	3	B-	CCW-	Direction-	B-	Signal
Pink	2	4	B	CCW	Direction	Fault (M12, 4- pin)B (M12, 8- pin and cable connection)	Signal
Yellow	-	5	Z-	Fault-	Fault-	Fault-	Signal
Violet	-	6	Z	Fault	Fault	Fault	Signal
Blue	3	7	GND	GND	GND	GND	Ground con- nection
Red	1	8	U <sub>S</sub>	U <sub>S</sub>	U <sub>S</sub>	U <sub>S</sub>	Supply voltage
-	-	-	Case	Case	Case	Case	Earth fault protection
Shielding	-	-	Shielding	Shielding	Shielding	Shielding	Shielding

Recommended accessories

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



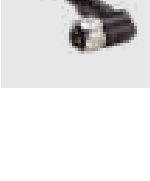
	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"><li>• <b>Description:</b> Mounting bracket for MWS075</li><li>• <b>Suitable for:</b> MWS075</li></ul>	BEF-WF-MWS075	2145906

	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, angled</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Cable:</b> 2 m, 8-wire, PVC</li> <li>• <b>Description:</b> Shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> </ul>	DOL-1208-W02MA	6020992
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, angled</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> Sensor/actuator cable</li> <li>• <b>Cable:</b> 2 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Sensor/actuator cable, shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> </ul>	DOL-1208-W02MAS01	6029224
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, angled</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Cable:</b> 2 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Unshielded</li> </ul>	DOL-1208-W02MC	6035623
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, angled</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Cable:</b> 5 m, 8-wire, PVC</li> <li>• <b>Description:</b> Shielded</li> <li>• <b>Connection systems:</b> Flying leads</li> </ul>	DOL-1208-W05MA	6021033
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, angled</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Cable:</b> 5 m, 8-wire, PUR</li> <li>• <b>Description:</b> Unshielded</li> </ul>	DOL-1208-W05MC	6035624
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, angled</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Cable:</b> 10 m, 8-wire, PUR, halogen-free</li> <li>• <b>Description:</b> Unshielded</li> </ul>	DOL-1208-W10MC	6035625
	<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
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, angled</li> <li>• <b>Connection type head B:</b> Flying leads</li> <li>• <b>Signal type:</b> HIPERFACE®, Incremental</li> <li>• <b>Cable:</b> 2 m, 8-wire, PUR, halogen-free</li> </ul>	DOL-1208-W02MAC1	6037724



	Brief description	Type	part no.
	<ul style="list-style-type: none"><li>• <b>Description:</b> HIPERFACE<sup>®</sup>, shieldedIncremental</li><li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, angled</li><li>• <b>Connection type head B:</b> Flying leads</li><li>• <b>Signal type:</b> HIPERFACE<sup>®</sup>, Incremental</li><li>• <b>Cable:</b> 5 m, 8-wire, PUR, halogen-free</li><li>• <b>Description:</b> HIPERFACE<sup>®</sup>, shieldedIncremental</li></ul>	DOL-1208-W05MAC1	6037725
	<ul style="list-style-type: none"><li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, angled</li><li>• <b>Connection type head B:</b> Flying leads</li><li>• <b>Signal type:</b> HIPERFACE<sup>®</sup>, Incremental</li><li>• <b>Cable:</b> 10 m, 8-wire, PUR, halogen-free</li><li>• <b>Description:</b> HIPERFACE<sup>®</sup>, shieldedIncremental</li></ul>	DOL-1208-W10MAC1	6037726
	<ul style="list-style-type: none"><li>• <b>Connection type head A:</b> Female connector, M12, 8-pin, angled</li><li>• <b>Connection type head B:</b> Flying leads</li><li>• <b>Signal type:</b> HIPERFACE<sup>®</sup>, Incremental</li><li>• <b>Cable:</b> 20 m, 8-wire, PUR</li><li>• <b>Description:</b> HIPERFACE<sup>®</sup>, shieldedIncremental</li></ul>	DOL-1208-W20MAC1	6037727

## 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)