



MWS075-00B352C110000

MWS075

MEASURING WHEEL ENCODERS

SICK
Sensor Intelligence.



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

Illustration may differ



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 permissible for maximum 30 s.

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

Mechanics

| | |
|--|---|
| Start up torque | 0.5 Ncm |
| Operating torque | 0.3 Ncm |
| Operating speed | $\leq 9,000 \text{ min}^{-1}$ ¹⁾ |
| Bearing lifetime | 3.6×10^{10} revolutions |
| Maximum travel/deflection of spring arm | 14 mm at 14 N 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 gcm ² |
| Mounted encoder | DFS60, DFS60B-S4PC10000, 1036721 |
| Flange plates | 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.

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.

Ambient data

| | |
|------------------------------------|--|
| EMC | According to EN 61000-6-2 and EN 61000-6-3 |
| Enclosure rating | IP67 (IEC 60529) ¹⁾ IP65 (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.

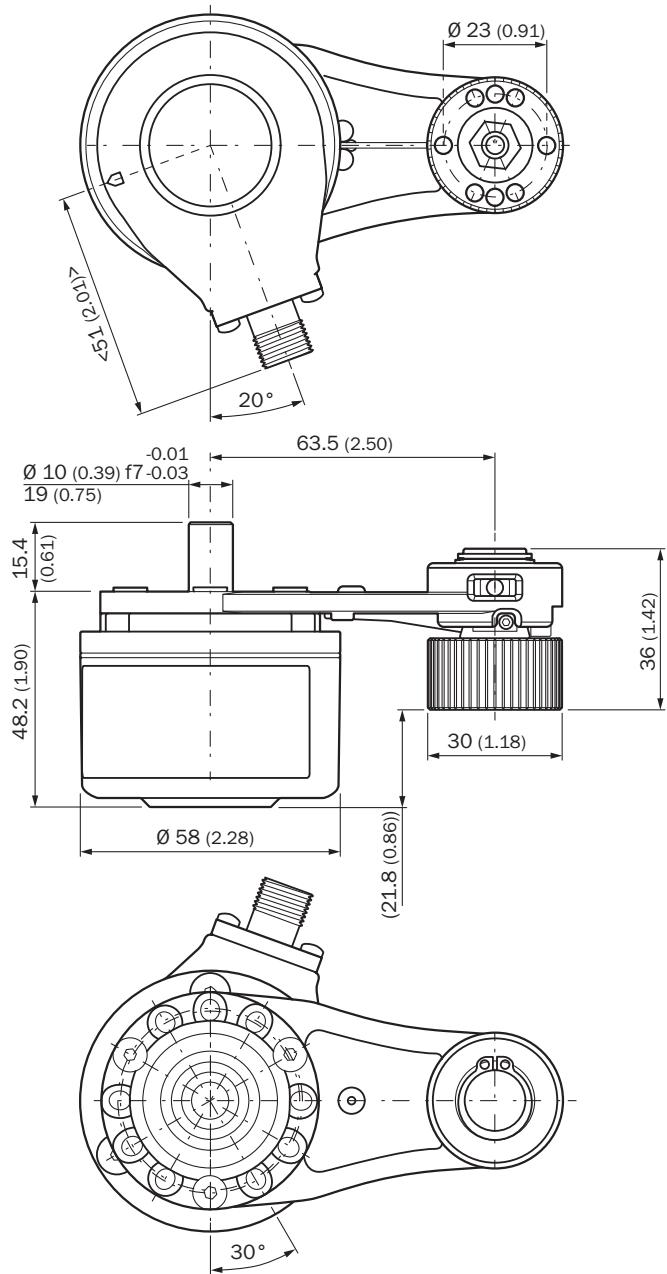
Certificates

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

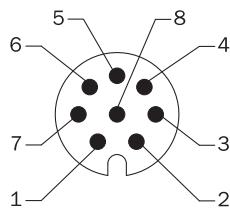
Classifications

| | |
|---------------------|----------|
| 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

PIN assignment



view of M12 male device connector on encoder

| PIN Male connector M12, 8-pin | PIN Male connector M23, 12-pin | Wire colors (cable connection) | TTL/HTL signal | sin/cos 1.0 V _{PP} | Explanation |
|-------------------------------|--------------------------------|--------------------------------|---------------------|-----------------------------|---|
| 1 | 6 | Brown | \bar{A} | COS- | Signal wire |
| 2 | 5 | White | A | COS+ | Signal wire |
| 3 | 1 | Black | \bar{B} | SIN- | Signal wire |
| 4 | 8 | Pink | B | SIN+ | Signal wire |
| 5 | 4 | Yellow | \bar{z} | \bar{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 | O-SET ¹⁾ | N.c. | Set zero pulse ¹⁾ |
| Screen | Screen | Screen | Screen | Screen | Screen connected to housing on encoder side. Connected to ground on control side. |

¹⁾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 U_S 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

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

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

| | Brief description | Type | part no. |
|---|---|-----------------|-----------------|
| | <ul style="list-style-type: none">Description: Aluminum measuring wheel with studded polyurethane surface for 10 mm solid shaft, circumference 200 mm | | |
|  | <ul style="list-style-type: none">Product segment: Measuring wheels and measuring wheel mechanicsProduct family: Measuring wheelsDescription: Aluminum measuring wheel with cross-knurled surface for 10 mm solid shaft, circumference 300 mm | BEF-MR10300AK | 2115703 |
|  | <ul style="list-style-type: none">Product segment: Measuring wheels and measuring wheel mechanicsProduct family: Measuring wheelsDescription: Aluminum measuring wheel with smooth polyurethane surface for 10 mm solid shaft, circumference 300 mm | BEF-MR10300AP | 2118512 |
|  | <ul style="list-style-type: none">Product segment: Measuring wheels and measuring wheel mechanicsProduct family: Measuring wheelsDescription: Aluminum measuring wheel with ridged polyurethane surface for 10 mm solid shaft, circumference 300 mm | BEF-MR10300APG | 2118496 |
|  | <ul style="list-style-type: none">Product segment: Measuring wheels and measuring wheel mechanicsProduct family: Measuring wheelsDescription: Aluminum measuring wheel with studded polyurethane surface for 10 mm solid shaft, circumference 300 mm | BEF-MR10300APN | 2118494 |
|  | <ul style="list-style-type: none">Product segment: Measuring wheels and measuring wheel mechanicsProduct family: Measuring wheelsDescription: Aluminum measuring wheel with cross-knurled surface for 10 mm solid shaft, circumference 500 mm | BEF-MR10500AK | 4084733 |
|  | <ul style="list-style-type: none">Product segment: Measuring wheels and measuring wheel mechanicsProduct family: Measuring wheelsDescription: 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) | BEF-MR10500AK-A | 2125732 |
|  | <ul style="list-style-type: none">Product segment: Measuring wheels and measuring wheel mechanicsProduct family: Measuring wheelsDescription: Aluminum measuring wheel with smooth polyurethane surface for 10 mm solid shaft, circumference 500 mm | BEF-MR10500AP | 4084734 |
|  | <ul style="list-style-type: none">Product segment: Measuring wheels and measuring wheel mechanicsProduct family: Measuring wheelsDescription: Aluminum measuring wheel with ridged polyurethane surface for 10 mm solid shaft, circumference 500 mm | BEF-MR10500APG | 4084736 |
|  | <ul style="list-style-type: none">Product segment: Measuring wheels and measuring wheel mechanicsProduct family: Measuring wheelsDescription: Aluminum measuring wheel with studded polyurethane surface for 10 mm solid shaft, circumference 500 mm | BEF-MR10500APN | 4084735 |

| | Brief description | Type | part no. |
|---|---|------------------|-----------------|
| connectors and cables | | | |
|  | <ul style="list-style-type: none"> 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 Description: Incremental, shieldedSSI Connection systems: Flying leads | DOL-1208-G02MAC1 | 6032866 |
|  | <ul style="list-style-type: none"> 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 Description: Incremental, shieldedSSI Connection systems: Flying leads | DOL-1208-G05MAC1 | 6032867 |
|  | <ul style="list-style-type: none"> 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 Description: Incremental, shieldedSSI Connection systems: Flying leads | DOL-1208-G10MAC1 | 6032868 |
|  | <ul style="list-style-type: none"> 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 Description: Incremental, shieldedSSI Connection systems: Flying leads | DOL-1208-G20MAC1 | 6032869 |
|  | <ul style="list-style-type: none"> Connection type head A: Female connector, M12, 8-pin, straight, A-coded Signal type: Incremental, SSI Cable: CAT5, CAT5e Description: Incremental, shieldedSSI 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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For us, that is "Sensor Intelligence."

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