



# MZC1-4V3NS-KP0

MZC1

CYLINDER SENSORS

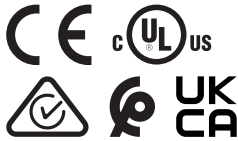
**SICK**  
Sensor Intelligence.



### Ordering information

| Type           | part no. |
|----------------|----------|
| MZC1-4V3NS-KP0 | 1059757  |

Other models and accessories → [www.sick.com/MZC1](http://www.sick.com/MZC1)



### Detailed technical data

#### Features

|                                    |                                                                                                   |
|------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>Cylinder type</b>               | C-slot                                                                                            |
| <b>Cylinder types with adapter</b> | SMC rail CDQ2<br>SMC rail ECDQ2<br>Round body cylinder<br>Profile cylinders and tie-rod cylinders |
| <b>Housing length</b>              | 23.7 mm                                                                                           |
| <b>Switching output</b>            | NPN                                                                                               |
| <b>Switching frequency</b>         | 1,000 Hz                                                                                          |
| <b>Output function</b>             | NO                                                                                                |
| <b>Electrical wiring</b>           | DC 3-wire                                                                                         |
| <b>Enclosure rating</b>            | IP68                                                                                              |

#### Mechanics/electronics

|                                         |                        |
|-----------------------------------------|------------------------|
| <b>Supply voltage</b>                   | 10 V DC ... 30 V DC    |
| <b>Power consumption</b>                | 8 mA, without load     |
| <b>Voltage drop</b>                     | ≤ 2.5 V                |
| <b>Continuous current I<sub>a</sub></b> | ≤ 100 mA               |
| <b>Protection class</b>                 | III                    |
| <b>Response sensitivity, typ.</b>       | 4.25 mT                |
| <b>Overrun distance, typ.</b>           | 7 mm <sup>1)</sup>     |
| <b>Hysteresis, typ.</b>                 | ≤ 0.8 mT               |
| <b>Reproducibility</b>                  | ≤ 0.1 mT <sup>2)</sup> |
| <b>Reverse polarity protection</b>      | Yes                    |
| <b>Short-circuit protection</b>         | Yes                    |
| <b>Status indicator LED</b>             | Yes                    |
| <b>Teach-in</b>                         | No                     |

<sup>1)</sup> Distance covered by the encoder magnet while the sensor outputs a switching signal.

<sup>2)</sup> Supply voltage U<sub>B</sub> and constant ambient temperature T<sub>a</sub>.

|                                       |                                                                                                                         |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Power-up pulse protection</b>      | Yes                                                                                                                     |
| <b>Ambient operating temperature</b>  | -30 °C ... +80 °C                                                                                                       |
| <b>Shock and vibration resistance</b> | 30 g, 11 ms / 10 ... 55 Hz, 1 mm                                                                                        |
| <b>EMC</b>                            | According to EN 60947-5-2                                                                                               |
| <b>Connection type</b>                | Cable with connector M8, 3-pin, drag chain use, 0.3 m                                                                   |
| <b>Connection type Detail</b>         |                                                                                                                         |
| Conductor cross section               | 0.09 mm <sup>2</sup>                                                                                                    |
| Cable diameter                        | Ø 2.2 mm                                                                                                                |
| Bending radius                        | With fixed installation > 2 x cable diameter<br>For flexible use > 5 x cable diameter                                   |
| Torsion force                         | ± 270° / 0.1 m                                                                                                          |
| Torsion cycles                        | 300,000                                                                                                                 |
| Drag chain cycles                     | 5,000,000                                                                                                               |
| Drag chain parameters                 | Traversing speed max. 3 m/s<br>Acceleration max. 10 m/s <sup>2</sup><br>Bending cycles in the drag chain min. 5 million |
| Cable outlet                          | Axial                                                                                                                   |
| <b>Material</b>                       |                                                                                                                         |
| Housing                               | Plastic                                                                                                                 |
| Cable                                 | PUR                                                                                                                     |
| <b>UL File No.</b>                    | NRKH.E181493 & NRKH7.E181493                                                                                            |

<sup>1)</sup> Distance covered by the encoder magnet while the sensor outputs a switching signal.

<sup>2)</sup> Supply voltage  $U_B$  and constant ambient temperature  $T_a$ .

## Safety-related parameters

|                                     |             |
|-------------------------------------|-------------|
| <b>MTTF<sub>D</sub></b>             | 1,428 years |
| <b>DC<sub>avg</sub></b>             | 0 %         |
| <b>T<sub>M</sub> (mission time)</b> | 20 years    |

## Certificates

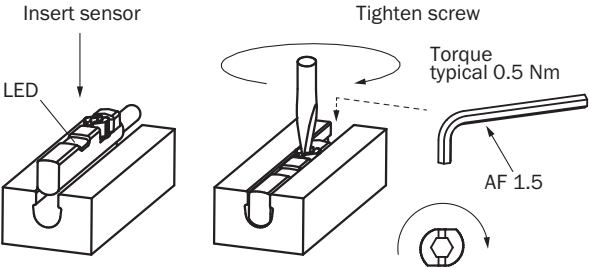
|                                           |   |
|-------------------------------------------|---|
| <b>EU declaration of conformity</b>       | ✓ |
| <b>UK declaration of conformity</b>       | ✓ |
| <b>ACMA declaration of conformity</b>     | ✓ |
| <b>Moroccan declaration of conformity</b> | ✓ |
| <b>China RoHS</b>                         | ✓ |
| <b>cULus certificate</b>                  | ✓ |

## Classifications

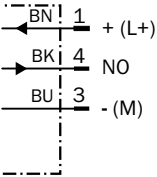
|                     |          |
|---------------------|----------|
| <b>ECLASS 5.0</b>   | 27270104 |
| <b>ECLASS 5.1.4</b> | 27270104 |
| <b>ECLASS 6.0</b>   | 27270104 |
| <b>ECLASS 6.2</b>   | 27270104 |
| <b>ECLASS 7.0</b>   | 27270104 |
| <b>ECLASS 8.0</b>   | 27270104 |

|                |          |
|----------------|----------|
| ECLASS 8.1     | 27270104 |
| ECLASS 9.0     | 27270104 |
| ECLASS 10.0    | 27270104 |
| ECLASS 11.0    | 27270104 |
| ECLASS 12.0    | 27274301 |
| ETIM 5.0       | EC002544 |
| ETIM 6.0       | EC002544 |
| ETIM 7.0       | EC002544 |
| ETIM 8.0       | EC002544 |
| UNSPSC 16.0901 | 39122230 |

Installation note



Connection diagram Cd-002



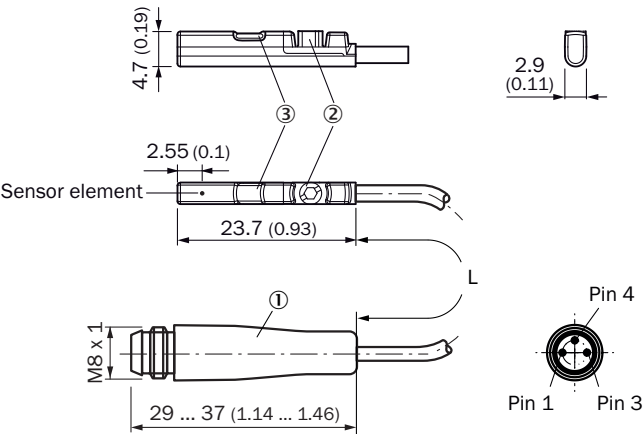
## Functional principle Overrun distance



Note: Sensor housing may differ; representation corresponds to “NO contact” output function; overrun distance = switching point width + hysteresis

- ① Position sensor element
- ② Width of the switching point
- ③ Hysteresis
- ④ Direction of movement of the magnet

Dimensional drawing Cable with connector M8



Dimensions in mm (inch)

- ① Connection
- ② Fixing screw SW 1.5
- ③ Display LED

| Part no. | Type           | L     | Number of cores |
|----------|----------------|-------|-----------------|
| 1059735  | MZC1-2V2PS-KP0 | 0.3 m | 3               |
| 1059744  | MZC1-2V2NS-KP0 | 0.3 m | 3               |
| 1059752  | MZC1-4V3PS-KP0 | 0.3 m | 3               |
| 1059757  | MZC1-4V3NS-KP0 | 0.3 m | 3               |
| 1087247  | MZC1-2V2DS-KP0 | 0.3 m | 2               |

## Recommended accessories

Other models and accessories → [www.sick.com/MZC1](http://www.sick.com/MZC1)

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                 | Type            | part no. |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------|
| Mounting systems                                                                    |                                                                                                                                                                                                                                                                                                                                                                                   |                 |          |
|    | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket on round body cylinder with piston diameter of 12 mm, ambient temperature min 0 °C max 50 °C</li> <li><b>Material:</b> Plastic, Aluminum</li> <li><b>Details:</b> Plastic, Aluminum</li> <li><b>Packing unit:</b> 1 piece</li> <li><b>Suitable for:</b> C-slot</li> </ul>                             | BEF-KHZ-RC-12   | 2077673  |
|    | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket on round body cylinder with piston diameter of 16 mm, ambient temperature min 0 °C max 50 °C</li> <li><b>Material:</b> Plastic, Aluminum</li> <li><b>Details:</b> Plastic, Aluminum</li> <li><b>Packing unit:</b> 1 piece</li> <li><b>Suitable for:</b> C-slot</li> </ul>                             | BEF-KHZ-RC-16   | 2077672  |
|    | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket on round body cylinder with piston diameter of 20 mm, ambient temperature min 0 °C max 50 °C</li> <li><b>Material:</b> Plastic, Aluminum</li> <li><b>Details:</b> Plastic, Aluminum</li> <li><b>Packing unit:</b> 1 piece</li> <li><b>Suitable for:</b> C-slot</li> </ul>                             | BEF-KHZ-RC-20   | 2077671  |
|    | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket on round body cylinder with piston diameter of 25 mm, ambient temperature min 0 °C max 50 °C</li> <li><b>Material:</b> Plastic, Aluminum</li> <li><b>Details:</b> Plastic, Aluminum</li> <li><b>Packing unit:</b> 1 piece</li> <li><b>Suitable for:</b> C-slot</li> </ul>                             | BEF-KHZ-RC-25   | 2077670  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket on round body cylinder with piston diameter of 32 mm, ambient temperature min 0 °C max 50 °C</li> <li><b>Material:</b> Plastic, Aluminum</li> <li><b>Details:</b> Plastic, Aluminum</li> <li><b>Packing unit:</b> 1 piece</li> <li><b>Suitable for:</b> C-slot</li> </ul>                             | BEF-KHZ-RC-32   | 2077669  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket on round body cylinder with piston diameter of 40 mm, ambient temperature min 0 °C max 50 °C</li> <li><b>Material:</b> Plastic, Aluminum</li> <li><b>Details:</b> Plastic, Aluminum</li> <li><b>Packing unit:</b> 1 piece</li> <li><b>Suitable for:</b> C-slot</li> </ul>                             | BEF-KHZ-RC-40   | 2077668  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket on round body cylinder with piston diameter of 50 mm, ambient temperature min 0 °C max 50 °C</li> <li><b>Material:</b> Plastic, Aluminum</li> <li><b>Details:</b> Plastic, Aluminum</li> <li><b>Packing unit:</b> 1 piece</li> <li><b>Suitable for:</b> C-slot</li> </ul>                             | BEF-KHZ-RC-50   | 2077667  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket on round body cylinder with piston diameter of 63 mm, ambient temperature min 0 °C max 50 °C</li> <li><b>Material:</b> Plastic, Aluminum</li> <li><b>Details:</b> Plastic, Aluminum</li> <li><b>Packing unit:</b> 1 piece</li> <li><b>Suitable for:</b> C-slot</li> </ul>                             | BEF-KHZ-RC-63   | 2077666  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket on round body cylinder with piston diameter of 1 mm ... 25 mm, ambient temperature min -30 °C max 80 °C</li> <li><b>Material:</b> Stainless steel, Aluminum</li> <li><b>Details:</b> Stainless steel, Aluminum</li> <li><b>Packing unit:</b> 1 piece</li> <li><b>Suitable for:</b> C-slot</li> </ul>  | BEF-KHZ-RC1-25  | 2077685  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket on round body cylinder with piston diameter of 1 mm ... 130 mm, ambient temperature min -30 °C max 80 °C</li> <li><b>Material:</b> Stainless steel, Aluminum</li> <li><b>Details:</b> Stainless steel, Aluminum</li> <li><b>Packing unit:</b> 1 piece</li> <li><b>Suitable for:</b> C-slot</li> </ul> | BEF-KHZ-RC1-130 | 2077686  |
|  | <ul style="list-style-type: none"> <li><b>Description:</b> Mounting bracket for integrated profile cylinder/tie-rod cylinder</li> <li><b>Material:</b> Zinc diecast</li> <li><b>Details:</b> Zinc diecast</li> <li><b>Items supplied:</b> Mounting hardware included</li> </ul>                                                                                                   | BEF-KHZ-PC1     | 2076170  |

|                                                                                     | Brief description                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Type               | part no. |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------|
| connectors and cables                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |          |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 3-pin, straight, A-coded</li> <li><b>Description:</b> Unshielded</li> <li><b>Connection systems:</b> Screw-type terminals</li> <li><b>Permitted cross-section:</b> 0.14 mm² ... 0.5 mm²</li> </ul>                                                                                                                                                                              | DOS-0803-G         | 7902077  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 3-pin, angled, A-coded</li> <li><b>Description:</b> Unshielded</li> <li><b>Connection systems:</b> Solder connection</li> <li><b>Permitted cross-section:</b> ≤ 0.25 mm²</li> </ul>                                                                                                                                                                                             | DOS-0803-W         | 7902078  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 3-pin, straight, A-coded</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, 3-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>                                                      | YF8U13-020VA1XLEAX | 2095860  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 3-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 3-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>                                                      | YF8U13-050VA1XLEAX | 2095884  |
|    | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 3-pin, angled, A-coded</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, 3-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>                                                        | YG8U13-020VA1XLEAX | 2096165  |
|   | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 3-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 3-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>                                                        | YG8U13-050VA1XLEAX | 2096166  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 3-pin, angled, A-coded</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, 3-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>   | YG8U13-020UA1XLEAX | 2094794  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 3-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 5 m, 3-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>   | YG8U13-050UA1XLEAX | 2095586  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 3-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 0.6 m, 3-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul> | YG8U13-C60UA1XLEAX | 2145889  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 3-pin, angled, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 3 m, 3-wire, PUR, halogen-free</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation</li> </ul>   | YG8U13-030UA1XLEAX | 2145891  |
|  | <ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M8, 3-pin, straight, A-coded</li> <li><b>Connection type head B:</b> Flying leads</li> <li><b>Signal type:</b> Sensor/actuator cable</li> <li><b>Cable:</b> 0.6 m, 3-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>                                                    | YF8U13-C60VA1XLEAX | 2146368  |

## 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)