



# IM12-02BDS-ZC1

IM Standard

**INDUCTIVE PROXIMITY SENSORS**

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

Type	part no.
IM12-02BDS-ZC1	6020312

Other models and accessories → [www.sick.com/IM\\_Standard](http://www.sick.com/IM_Standard)

### Detailed technical data

#### Features

<b>Housing</b>	Metric
<b>Housing</b>	Standard design
<b>Thread size</b>	M12 x 1
<b>Diameter</b>	Ø 12 mm
<b>Sensing range <math>S_n</math></b>	2 mm
<b>Safe sensing range <math>S_a</math></b>	1.62 mm
<b>Installation type</b>	Flush
<b>Switching frequency</b>	1,500 Hz
<b>Connection type</b>	Male connector M12, 4-pin
<b>Output function</b>	NO
<b>Electrical wiring</b>	DC 2-wire
<b>Enclosure rating</b>	IP67 <sup>1)</sup>

<sup>1)</sup> According to EN 60529.

#### Mechanics/electronics

<b>Supply voltage</b>	10 V DC ... 30 V DC
<b>Ripple</b>	≤ 10 %
<b>Voltage drop</b>	≤ 2.8 V <sup>1)</sup>
<b>Time delay before availability</b>	≤ 50 ms
<b>Hysteresis</b>	2 % ... 10 %
<b>Reproducibility</b>	≤ 5 % <sup>2)</sup> <sup>3)</sup>

<sup>1)</sup> At  $I_a$  max.

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

<sup>3)</sup> Of  $S_r$ .

<b>Temperature drift (of S<sub>r</sub>)</b>	± 10 %
<b>EMC</b>	According to EN 60947-5-2
<b>Continuous current I<sub>a</sub></b>	≤ 100 mA
<b>Off-state current</b>	≤ 0.8 mA
<b>Minimum load current</b>	≥ 3 mA
<b>Short-circuit protection</b>	✓
<b>Shock and vibration resistance</b>	30 g, 11 ms / 10 ... 55 Hz, 1 mm
<b>Ambient operating temperature</b>	-25 °C ... +70 °C
<b>Housing material</b>	Brass, Nickel-plated brass
<b>Sensing face material</b>	Plastic
<b>Housing length</b>	75 mm
<b>Thread length</b>	53 mm
<b>Tightening torque, max.</b>	10 Nm

1) At I<sub>a</sub> max.

2) Supply voltage U<sub>B</sub> and constant ambient temperature Ta.

3) Of S<sub>r</sub>.

### Safety-related parameters

<b>MTTF<sub>D</sub></b>	192 years
<b>DC<sub>avg</sub></b>	0 %

### Reduction factors

<b>Note</b>	The values are reference values which may vary
<b>Stainless steel (V2A, 304)</b>	Approx. 0.8
<b>Aluminum (Al)</b>	Approx. 0.35
<b>Copper (Cu)</b>	Approx. 0.3
<b>Brass (Br)</b>	Approx. 0.5

### Installation note

<b>Remark</b>	Associated graphic see "Installation"
<b>A</b>	6 mm
<b>B</b>	12 mm
<b>C</b>	12 mm
<b>D</b>	6 mm
<b>E</b>	2.4 mm
<b>F</b>	16 mm

### Certificates

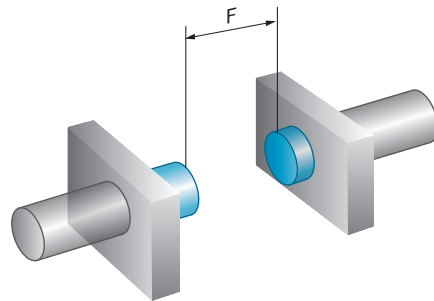
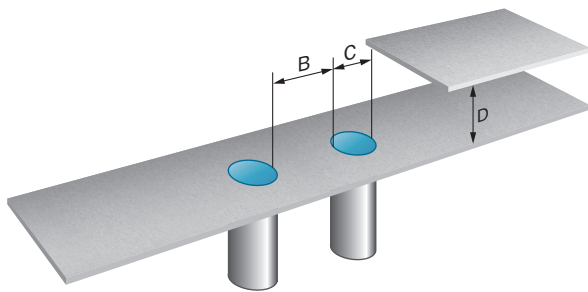
<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China RoHS</b>	✓

### Classifications

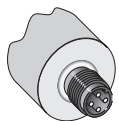
<b>ECLASS 5.0</b>	27270101
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<b>ECLASS 5.1.4</b>	27270101
<b>ECLASS 6.0</b>	27270101
<b>ECLASS 6.2</b>	27270101
<b>ECLASS 7.0</b>	27270101
<b>ECLASS 8.0</b>	27270101
<b>ECLASS 8.1</b>	27270101
<b>ECLASS 9.0</b>	27270101
<b>ECLASS 10.0</b>	27270101
<b>ECLASS 11.0</b>	27270101
<b>ECLASS 12.0</b>	27274001
<b>ETIM 5.0</b>	EC002714
<b>ETIM 6.0</b>	EC002714
<b>ETIM 7.0</b>	EC002714
<b>ETIM 8.0</b>	EC002714
<b>UNSPSC 16.0901</b>	39122230

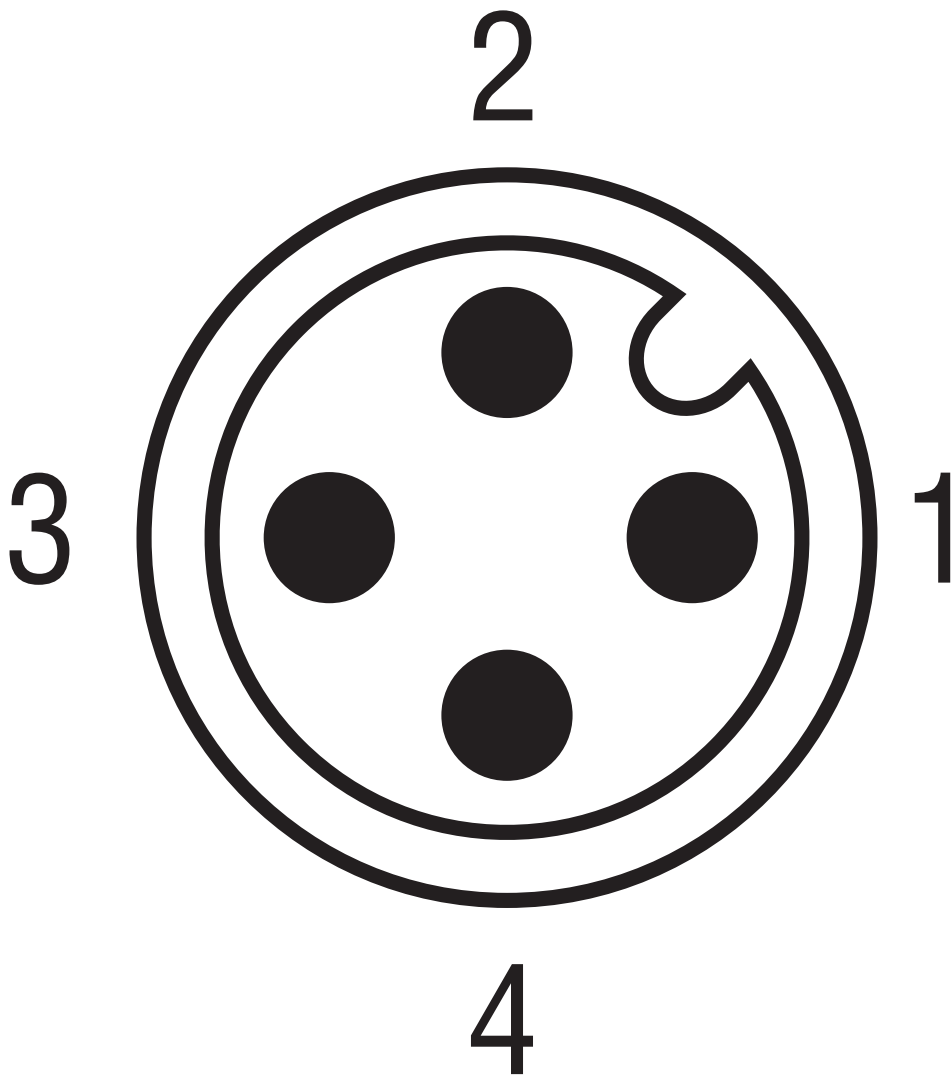
### Installation note Flush installation



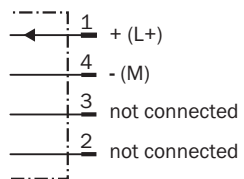
### Connection type



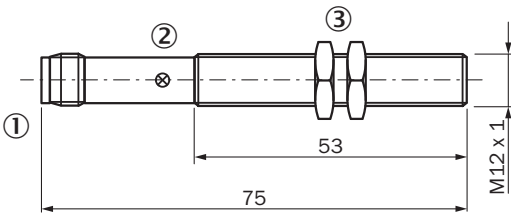
Connection diagram



Connection diagram Cd-015



Dimensional drawing IM12, DC, male connector, flush







Dimensions in mm (inch)




- ① Connection
- ② Display LED
- ③ Fastening nuts (2x); width across 17, metal

Recommended accessories

Other models and accessories → [www.sick.com/IM\\_Standard](http://www.sick.com/IM_Standard)

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"><li>• <b>Description:</b> Clamping block for round sensors M12, with fixed stop</li><li>• <b>Material:</b> Plastic</li><li>• <b>Details:</b> Plastic (PA12), glass-fiber reinforced</li><li>• <b>Items supplied:</b> Mounting hardware included</li></ul>	BEF-KHF-M12	2051480
	<ul style="list-style-type: none"><li>• <b>Description:</b> Clamping block for round sensors M12, without fixed stop</li><li>• <b>Material:</b> Plastic</li><li>• <b>Details:</b> Plastic (PA12), glass-fiber reinforced</li><li>• <b>Items supplied:</b> Mounting hardware included</li></ul>	BEF-KH-M12	2051479
	<ul style="list-style-type: none"><li>• <b>Description:</b> Mounting plate for M12 sensors</li><li>• <b>Material:</b> Steel</li><li>• <b>Details:</b> Steel, zinc coated</li><li>• <b>Items supplied:</b> Without mounting hardware</li></ul>	BEF-WG-M12	5321869
	<ul style="list-style-type: none"><li>• <b>Description:</b> Mounting bracket for M12 sensors</li><li>• <b>Material:</b> Steel</li><li>• <b>Details:</b> Steel, zinc coated</li><li>• <b>Items supplied:</b> Without mounting hardware</li></ul>	BEF-WN-M12	5308447

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, angled, A-coded</li> <li><b>Description:</b> Unshielded</li> <li><b>Connection systems:</b> Screw-type terminals</li> <li><b>Permitted cross-section:</b> <math>\leq 0.75 \text{ mm}^2</math></li> </ul>	DOS-1204-W	6007303
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-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> <math>\leq 0.75 \text{ mm}^2</math></li> </ul>	DOS-1204-G	6007302
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight</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, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Connection systems:</b> Flying leads</li> <li><b>Note:</b> This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid &amp; hydrogen peroxide (H2O2)</li> <li><b>Application:</b> Hygienic and washdown zones</li> </ul>	DOL-1204-G05MNI	6052615
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-pin, straight</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, 4-wire, PP</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Connection systems:</b> Flying leads</li> <li><b>Note:</b> This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid &amp; hydrogen peroxide (H2O2)</li> <li><b>Application:</b> Hygienic and washdown zones, Drag chain operation</li> </ul>	DOL-1204-G05MRN	6058476
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-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, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF2A14-050VB3XLEAX	2096235
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-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, 4-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>	YF2A14-050UB3XLEAX	2095608
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-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, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YG2A14-C60VB3XLEAX	2145709
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-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> 1 m, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YG2A14-010VB3XLEAX	2145710
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-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, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Note:</b> Only suitable for PNP sensors</li> <li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YI2A14-C60VB3XLEAX	2145719
	<ul style="list-style-type: none"> <li><b>Connection type head A:</b> Female connector, M12, 4-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> 1 m, 4-wire, PVC</li> <li><b>Description:</b> Sensor/actuator cable, unshielded</li> <li><b>Note:</b> Only suitable for PNP sensors</li> </ul>	YI2A14-010VB3XLEAX	2145720

	Brief description	Type	part no.
	<ul style="list-style-type: none"> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> <li>• <b>Connection type head A:</b> Female connector, M12, 4-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, 4-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Note:</b> Only suitable for PNP sensors</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YI2A14-030VB3XLEAX	2145721
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-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, 4-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF2A14-C60VB3XLEAX	2145707
	<ul style="list-style-type: none"> <li>• <b>Connection type head A:</b> Female connector, M12, 4-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> 1 m, 4-wire, PVC</li> <li>• <b>Description:</b> Sensor/actuator cable, unshielded</li> <li>• <b>Application:</b> Zones with chemicals, Uncontaminated zones</li> </ul>	YF2A14-010VB3XLEAX	2145708



## 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)