



IQC12-04BPPKQ8SA70

IMC

INDUCTIVE PROXIMITY SENSORS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

| Type | Part no. |
|--------------------|----------|
| IQC12-04BPPKQ8SA70 | 1083797 |

Other models and accessories → www.sick.com/IMC

Detailed technical data

Features

| | |
|--|--|
| Housing | Rectangular |
| Dimensions (W x H x D) | 12 mm x 40 mm x 26 mm |
| Sensing range S_n | 0 mm ... 4 mm ¹⁾ |
| Safe sensing range S_a | 3.24 mm |
| Number of switching points | Up to 4 adjustable switching points or windows |
| Switching modes | Single point, Window mode, Two point mode, Visual adjustment indicator |
| Switching frequency Qint.1 / Qint.2 on Pin2 | 1,000 Hz |
| Installation type | Flush |
| Connection type | Cable with M12 male connector, 4-pin, 0.2 m ²⁾ |
| Switching output | PNP |
| Output Q/C | Switching output or IO-Link mode |
| Output MFC | Switching output or input |
| Output function | NC / NO |
| Output characteristic | Programmable |
| Electrical wiring | DC 4-wire |
| Enclosure rating | IP68 ³⁾ |
| Special features | Smart Task, IO-Link |

¹⁾ Adjustable.

²⁾ With gold plated contact pins.

³⁾ According to EN 60529.

| | |
|----------------------------|--|
| Pin 2 configuration | External input, Teach-in, switching signal |
|----------------------------|--|

- 1) Adjustable.
2) With gold plated contact pins.
3) According to EN 60529.

Mechanics/electronics

| | |
|---|-----------------------------------|
| Supply voltage | 10 V DC ... 30 V DC ¹⁾ |
| Ripple | ≤ 10 % |
| Voltage drop | ≤ 2 V ²⁾ |
| Hysteresis | Programmable ³⁾ |
| Reproducibility | ≤ 5 % ^{4) 5)} |
| Temperature drift (of S_r) | ± 10 % |
| EMC | According to EN 60947-5-2 |
| Continuous current I_a | ≤ 200 mA ⁶⁾ |
| No load current | 35 mA |
| Short-circuit protection | ✓ |
| Reverse polarity protection | ✓ |
| Power-up pulse protection | ✓ |
| Shock and vibration resistance | 30 g, 11 ms / 10 ... 55 Hz, 1 mm |
| Ambient operating temperature | -25 °C ... +75 °C |
| Housing material | Plastic, VISTAL® |
| Sensing face material | Plastic, VISTAL® |
| Tightening torque, max. | < 1 Nm |
| Teach-in accuracy | +/- 3% of S _r |
| Resolution, typical (range) | 20 µm (0 mm ... 4 mm) |
| Resolution, maximum (area) | 40 µm (0 mm ... 4 mm) |

- 1) IO-Link mode: 18 VDC ... 30 VDC.
2) At I_a max.
3) To comply with EN 60947-5-2, a hysteresis of approx. 10% must be set.
4) Supply voltage U_b and constant ambient temperature T_a.
5) Of S_r.
6) 200 mA total for both switching outputs.

Safety-related parameters

| | |
|-------------------------------------|-----------|
| MTTF_D | 688 years |
| DC_{avg} | 0 % |
| T_M (mission time) | 20 years |

Communication interface

| | |
|---------------------------------------|--|
| Communication interface | IO-Link V1.1 |
| Communication Interface detail | COM2 (38,4 kBaud) |
| Cycle time | 5 ms |
| Process data length | 32 Bit |
| Process data structure | Bit 0 = switching signal Q _{L1} Bit 1 = switching signal Q _{L2} |

| | |
|------------------------|--|
| | Bit 2 = switching signal Q_{Int3} Bit 3 = switching signal Q_{Int4} Bit 18 ... 31 = time value |
| Factory setting | Switching Point 1: reference value 1 Output: normally open Pin 2 configuration: input |

Reference values

| | |
|--------------------------|--|
| Note | Reference value in Digits for switching point in mm stored in the sensor |
| Reference value 1 | 4 mm |
| Reference value 2 | 3 mm |
| Reference value 3 | 2 mm |
| Reference value 4 | 1 mm |

Reduction factors

| | |
|-----------------------------------|-------------|
| Stainless steel (V2A, 304) | Approx. 0.7 |
| Aluminum (Al) | Approx. 0.4 |
| Copper (Cu) | Approx. 0.3 |
| Brass (Br) | Approx. 0.4 |

Installation note

| | |
|---------------|---------------------------------------|
| Remark | Associated graphic see "Installation" |
| A | 0 mm |
| B | 12 mm |
| C | 12 mm |
| D | 12 mm |
| E | 0 mm |
| F | 32 mm |
| G | 0 mm |

Smart Task

| | |
|--|--|
| Smart Task name | Time measurement + debouncing |
| Logic function | Window Direct |
| Timer function | Deactivated On delay Off delay ON and OFF delay Impulse (one shot) |
| Inverter | Adjustable |
| Time measurement accuracy | SIO Logic: $(-1,2 \dots 0) \times \text{time base} \pm 1\%$ of time measurement value ¹⁾ IOL: $(-1,2 \dots 0) \times \text{time base} \pm 1\%$ of time measurement value ²⁾ |
| Time measurement accuracy (e.g. accuracy for time measurement value = 1 s) | Time base 1 ms: -11,2 ms ... 10 ms |
| Resolution time measuring value | 1 ms |
| Debounce time max. | SIO Logic: 30 s ¹⁾ IOL: 30 s ²⁾ |

¹⁾ SIO Logic: Sensor operation in standard I/O mode without IO-Link communication. Sensor-internal logic or timing parameters plus Automation Functions used.

²⁾ IOL: Sensor operation with full IO-Link communication and usage of logic, timing and Automation Function parameters.

| | | |
|-------------------------|----------------------------------|---|
| Switching signal | Switching signal Q _{L1} | Output type (dependant on the adjusted threshold) |
| | Switching signal Q _{L2} | Output type (dependant on the adjusted threshold) |
| Measuring value | Time measurement value | |

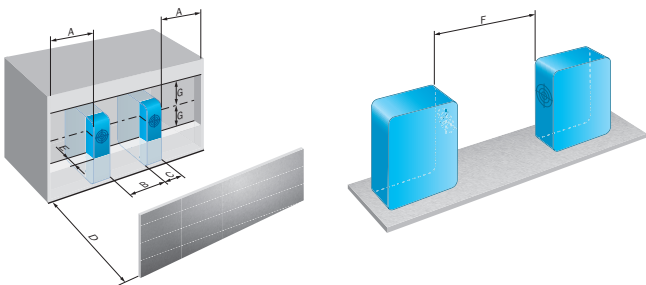
¹⁾ SIO Logic: Sensor operation in standard I/O mode without IO-Link communication. Sensor-internal logic or timing parameters plus Automation Functions used.

²⁾ IOL: Sensor operation with full IO-Link communication and usage of logic, timing and Automation Function parameters.

Classifications

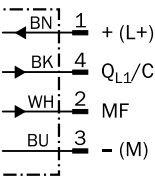
| | |
|-----------------------|----------|
| eCI@ss 5.0 | 27270101 |
| eCI@ss 5.1.4 | 27270101 |
| eCI@ss 6.0 | 27270101 |
| eCI@ss 6.2 | 27270101 |
| eCI@ss 7.0 | 27270101 |
| eCI@ss 8.0 | 27270101 |
| eCI@ss 8.1 | 27270101 |
| eCI@ss 9.0 | 27270101 |
| eCI@ss 10.0 | 27270101 |
| eCI@ss 11.0 | 27270101 |
| eCI@ss 12.0 | 27274001 |
| ETIM 5.0 | EC002714 |
| ETIM 6.0 | EC002714 |
| ETIM 7.0 | EC002714 |
| ETIM 8.0 | EC002714 |
| UNSPSC 16.0901 | 39122230 |

Installation note



Connection diagram

Cd-526

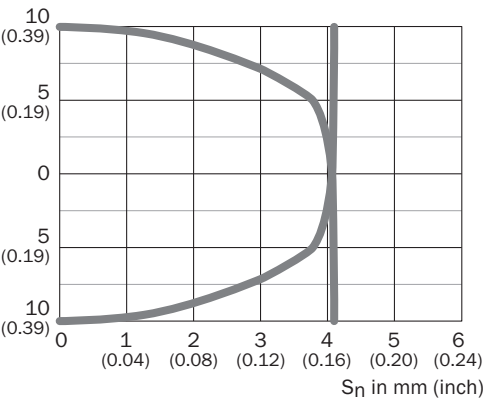


Q_{L1}/C = Switching output,
IO-Link communication
MF = Multifunction

Response diagram

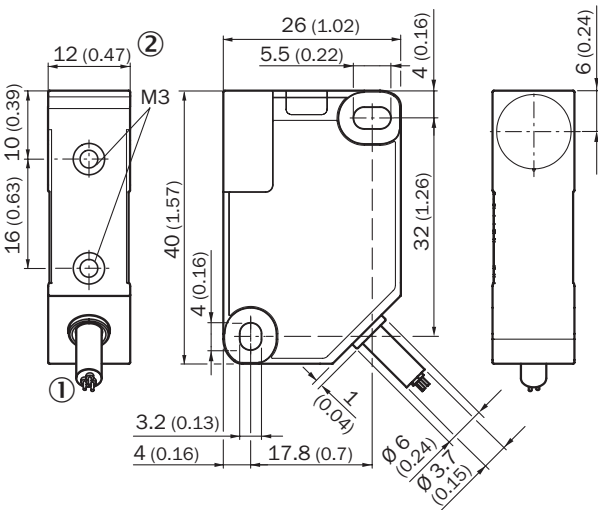
Response diagram

Distance in mm (inch)



Dimensional drawing (Dimensions in mm (inch))










IQ12, cable

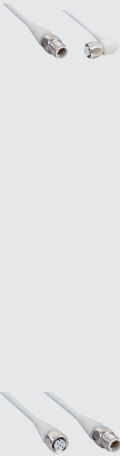


- ① Connection
- ② LED indicator 270°

Recommended accessories

Other models and accessories → www.sick.com/IMC

| | Brief description | Type | Part no. |
|---|---|--------------------------------------|----------|
| Connection modules | | | |
|  | IO-Link V1.1 Class A port, USB2.0 port, optional external power supply 24V / 1A | IOLA2US-01101 (SiLink2 Master) | 1061790 |
|  | EtherCAT IO-Link Master, IO-Link V1.1, Port Class A, power supply via 7/8" cable 24 V / 8 A, fieldbus connection via M12 cable | IOLG2EC-03208R01 (IO-Link Master) | 6053254 |
|  | EtherNet/IP IO-Link Master, IO-Link V1.1, Port Class A, power supply via 7/8" cable 24 V / 8 A, fieldbus connection via M12-cable | IOLG2EI-03208R01 (IO-Link Master) | 6053255 |
|  | PROFINET IO-Link Master, IO-Link V1.1, Port Class A, power supply via 7/8" cable 24 V / 8 A, fieldbus connection via M12 cable | IOLG2PN-03208R01 (IO-Link Master) | 6053253 |
| Plug connectors and cables | | | |
|  | Head A: female connector, M12, 4-pin, straight Head B: Flying leads Cable: Sensor/actuator cable, PP, unshielded, 2 m 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 & hydrogen peroxide (H2O2) | DOL-1204-G02MRN | 6058291 |
|  | Head A: female connector, M12, 4-pin, straight Head B: Flying leads Cable: Sensor/actuator cable, PP, unshielded, 5 m 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 & hydrogen peroxide (H2O2) | DOL-1204-G05MRN | 6058476 |
|  | Head A: female connector, M12, 4-pin, angled Head B: Flying leads Cable: Sensor/actuator cable, PP, unshielded, 2 m 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 & hydrogen peroxide (H2O2), only suitable for PNP sensors | DOL-1204-L02MRN | 6058482 |
|  | Head A: female connector, M12, 4-pin, angled Head B: Flying leads Cable: Sensor/actuator cable, PP, unshielded, 5 m 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 & hydrogen peroxide (H2O2), only suitable for PNP sensors | DOL-1204-L05MRN | 6058483 |
|  | Head A: female connector, M12, 4-pin, angled Head B: Flying leads Cable: Sensor/actuator cable, PP, unshielded, 2 m 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 & hydrogen peroxide (H2O2) | DOL-1204-W02MRN | 6058474 |

| | Brief description | Type | Part no. |
|---|--|-----------------|----------|
|  | Head A: female connector, M12, 4-pin, angled Head B: Flying leads Cable: Sensor/actuator cable, PP, unshielded, 5 m 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 & hydrogen peroxide (H2O2) | DOL-1204-W05MRN | 6058477 |
| | Head A: female connector, M12, 4-pin, angled Head B: male connector, M12, 4-pin, straight Cable: Sensor/actuator cable, PP, unshielded, 2 m 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 & hydrogen peroxide (H2O2) | DSL-1204-B02MRN | 6058502 |
| | Head A: female connector, M12, 4-pin, angled Head B: male connector, M12, 4-pin, straight Cable: Sensor/actuator cable, PP, unshielded, 5 m 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 & hydrogen peroxide (H2O2) | DSL-1204-B05MRN | 6058503 |
| | Head A: female connector, M12, 4-pin, straight Head B: male connector, M12, 4-pin, straight Cable: Sensor/actuator cable, PP, unshielded, 2 m 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 & hydrogen peroxide (H2O2) | DSL-1204-G02MRN | 6058499 |
| | Head A: female connector, M12, 4-pin, straight Head B: male connector, M12, 4-pin, straight Cable: Sensor/actuator cable, PP, unshielded, 5 m 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 & hydrogen peroxide (H2O2) | DSL-1204-G05MRN | 6058500 |

Recommended services

Additional services → www.sick.com/IMC

| | Type | Part no. |
|---|------------------------|------------|
| Function Block Factory | | |
| <ul style="list-style-type: none"> Description: The Function Block Factory supports common programmable logic controllers (PLCs) from various manufacturers, such as Siemens, Beckhoff, Rockwell Automation and B&R. More information on the FBF can be found here. | Function Block Factory | On request |

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:

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