Product data sheet



# M4P-ZA02500C00

deTem

MULTIPLE LIGHT BEAM SAFETY DEVICES

SICK
Sensor Intelligence.



## Ordering information

| Number of beams | Beam separation | Scanning range | System part | Type | Part no. |
|---|---|---|---|---|---|
| 2 | 500 mm | 8 m | Active unit | M4P-ZA02500C00 | 1102633 |

The system plug has to be ordered separately. For details, see “Accessories”.

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

## Detailed technical data

### Features

| | |
|---|---|
| **Application** | Normal industrial environment |
| **Functional principle** | Active/passive system |
| **System part** | Active unit |
| **Scanning range** | 8 m |
| **Dimension of the light path** | |
| Typical | 0.5 m ... 8 m |
| **Number of beams** | 2 |
| **Beam separation** | 500 mm |
| **Response time** | 20 ms |
| **Items supplied** | Active unit<br>Safety instruction<br>Mounting instructions<br>Operating instructions for download |

### Safety-related parameters

| | |
|---|---|
| **Type** | Type 4 (IEC 61496-1) |
| **Safety integrity level** | SIL3 (IEC 61508)<br>SILCL3 (IEC 62061) |
| **Category** | Category 4 (ISO 13849-1) |
| **Performance level** | PL e (ISO 13849-1) |
| **$PFH_D$ (mean probability of a dangerous failure per hour)** | $6.6 \times 10^{-9}$ |
| **$T_M$ (mission time)** | 20 years (ISO 13849-1) |
| **Safe state in the event of a fault** | At least one OSSD is in the OFF state. |

### Functions

| | |
|---|---|
| **Protective operation** | ✓ |
| **Beam coding** | ✓ |
| **Restart interlock** | ✓ |

| | |
|---|---|
| **External device monitoring (EDM)** | ✓ |
| **Differentiation between man and material (muting)** | ✓ |
| Concurrence monitoring | ✓ |
| Monitoring of total muting time | ✓ |
| Sensor gap monitoring | ✓ |
| Muting with override | ✓ |
| Exit monitoring | ✓ |
| End of muting by ESPE | ✓ |

## Interfaces

| | |
|---|---|
| **System connection** | Depending on system plug (M12 male connector, 5-pin or 8-pin) |
| **Extension connection** | Depending on system plug (without extension connection or with M12 female connector, 5-pin) |
| **Configuration method** | DIP switch on system plug |
| **Display elements** | LEDs |
| **Alignment aid** | Alignment quality via diagnostic LEDs |
| **Application diagnostic output (ADO)** | ✓ |
| **IO-Link** | ✓ |
| **Near Field Communication (NFC)** | ✓ |
| **Fieldbus, industrial network** | |
| Integration via Flexi Soft safety controller | CANopen [1)]<br>DeviceNet™<br>EtherCAT®<br>EtherNet/IP™<br>Modbus TCP<br>PROFIBUS DP<br>PROFINET |

[1)] For additional information on Flexi Soft -> www.sick.com/Flexi_Soft.

## Electrical data

| | |
|---|---|
| **Protection class** | III (IEC 61140) [1)] |
| **Supply voltage $V_S$** | 24 V DC (19.2 V DC ... 28.8 V DC) [2)] |
| **Residual ripple** | ≤ 10 % [3)] |
| **Power consumption typical** | 4 W (DC) |
| **Output signal switching devices (OSSDs)** | 2 PNP semiconductors, short-circuit protected, cross-circuit monitored [4)] |
| ON state, switching voltage HIGH | 24 V DC ($V_S$ – 2.25 V DC ... $V_S$) |
| OFF state, switching voltage LOW | ≤ 2 V DC |
| Current-carrying capacity per OSSD | ≤ 500 mA |
| **Application diagnostic output (ADO)** | PNP semiconductor, short-circuit protected [4)] |
| Output voltage HIGH (active) | ≥ $V_s$ – 3 V |
| Output voltage LOW (deactivated) | High resistance |

[1)] SELV/PELV safety/protective extra-low voltage.

[2)] The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

[3)] Within the limits of $V_S$.

[4)] Applies to the voltage range between –30 V and +30 V.

| | |
|---|---|
| Current loading | ≤ 100 mA |

[1] SELV/PELV safety/protective extra-low voltage.

[2] The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204-1. Suitable power supplies are available as accessories from SICK.

[3] Within the limits of $V_S$.

[4] Applies to the voltage range between –30 V and +30 V.

## Mechanical data

| | |
|---|---|
| **Dimensions** | See dimensional drawing |
| **Housing cross-section** | 30.7 mm x 34 mm |
| **Material** | |
| Housing | Aluminum extruded profile |
| Front screen | Polycarbonate, scratch-resistant coating |
| **Weight** | 550 g (± 50 g) |

## Ambient data

| | |
|---|---|
| **Enclosure rating** | IP65 (IEC 60529)<br>IP67 (IEC 60529) |
| **Ambient operating temperature** | –30 °C ... +55 °C |
| **Storage temperature** | –30 °C ... +70 °C |
| **Air humidity** | 15 % ... 95 %, Non-condensing |
| **Vibration resistance** | 5 g, 10 Hz ... 55 Hz (IEC 60068-2-6) |
| **Shock resistance** | 10 g, 16 ms (IEC 60068-2-27) |

## Other information

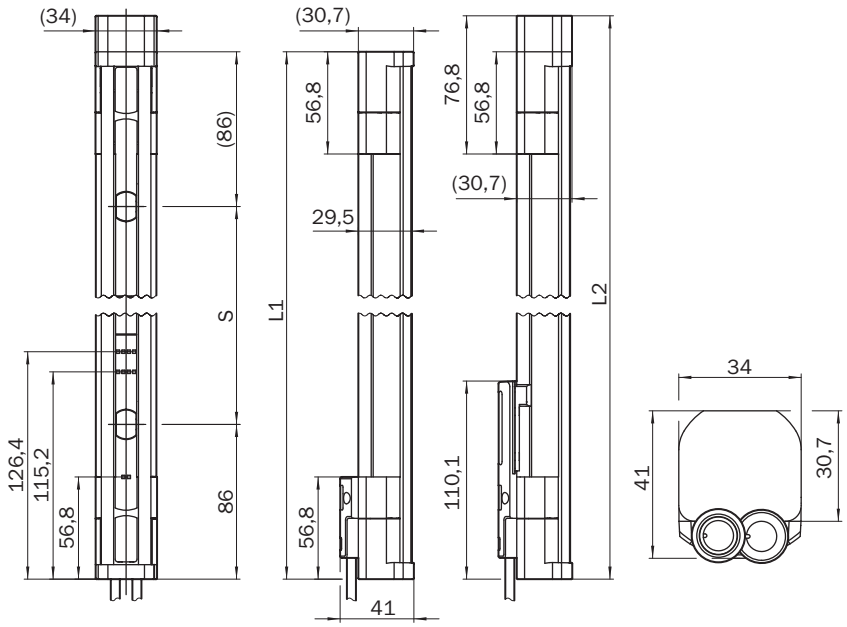
| | |
|---|---|
| **Type of light** | Near-infrared (NIR), invisible |

## Classifications

| | |
|---|---|
| **ECl@ss 5.0** | 27272703 |
| **ECl@ss 5.1.4** | 27272703 |
| **ECl@ss 6.0** | 27272703 |
| **ECl@ss 6.2** | 27272703 |
| **ECl@ss 7.0** | 27272703 |
| **ECl@ss 8.0** | 27272703 |
| **ECl@ss 8.1** | 27272703 |
| **ECl@ss 9.0** | 27272703 |
| **ECl@ss 10.0** | 27272703 |
| **ECl@ss 11.0** | 27272703 |
| **ETIM 5.0** | EC001832 |
| **ETIM 6.0** | EC001832 |
| **ETIM 7.0** | EC001832 |
| **UNSPSC 16.0901** | 46171620 |

## Dimensional drawing (Dimensions in mm (inch))

Active unit

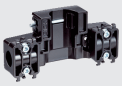


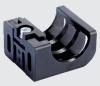

| Number of beams | Beam separation S | L1 | L2 |
|---|---|---|---|
| 2 | 500 | 672 | 692 |
| 4 | 300 | 1.072 | 1.092 |

## Recommended accessories

Other models and accessories ➜ www.sick.com/deTem

| | Brief description | Type | Part no. |
|---|---|---|---|
| Connection modules | | | |
|  | • **Accessory family:** Connection modules<br>• **Description:** IO-Link V1.1 Class A port, USB2.0 port, optional external power supply 24V / 1A | IOLA2US-01101 (SiLink2 Master) | 1061790 |
|  | • **Accessory family:** Other adapters<br>• **Description:** Connector for connecting an IO-Link master and up to 2 muting sensors to a safety light curtain or a multiple light beam safety device | IO-Link connector | 2092757 |
|  | • **Accessory family:** Other adapters<br>• **Description:** Connector for connecting 2 muting sensors and a muting lamp to a safety light curtain or a multiple light beam safety device | Muting connector | 2092758 |
| Muting accessories | | | |
|  | • **Description:** Sensor bracket G6 and P250 | BEF-2KHAAAKU1 | 2113145 |

| | Brief description | Type | Part no. |
|---|---|---|---|
|  | • **Description:** Universal bracket for round steel arm 400 mm, for mounting sensors or reflectors | BEF-KHS-N01 | 2044953 |
|  | • **Description:** Muting arm bracket | Muting arm bracket | 2106455 |
|  | • **Description:** Muting arm, long | Muting arm, long | 2111923 |
|  | • **Description:** Muting arm, short | Muting arm, short | 2111924 |
| Plug connectors and cables | | | |
|  | • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Authorizations:** CE, UL<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 2 m, 5-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with oils and lubricants, Drag chain operation | YF2A15-020UB5XLEAX | 2095617 |
| | • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Authorizations:** CE, UL<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 5 m, 5-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with oils and lubricants, Drag chain operation | YF2A15-050UB5XLEAX | 2095618 |
| | • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Authorizations:** CE, UL<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 10 m, 5-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with oils and lubricants, Drag chain operation | YF2A15-100UB5XLEAX | 2095619 |
|  | • **Connection type head A:** Female connector, M12, 8-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Authorizations:** UL<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 2 m, 8-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with oils and lubricants, Drag chain operation | YF2A18-020UA5XLEAX | 2095652 |
| | • **Connection type head A:** Female connector, M12, 8-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Authorizations:** UL<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 5 m, 8-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with oils and lubricants, Drag chain operation | YF2A18-050UA5XLEAX | 2095653 |
| | • **Connection type head A:** Female connector, M12, 8-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Authorizations:** UL<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 10 m, 8-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with oils and lubricants, Drag chain operation | YF2A18-100UA5XLEAX | 2095654 |
|  | • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded<br>• **Connection type head B:** Male connector, M12, 5-pin, straight, A-coded<br>• **Authorizations:** CE, UL<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 2 m, 5-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with oils and lubricants, Drag chain operation | YF2A15-020UB5M2A15 | 2096009 |

| | Brief description | Type | Part no. |
|---|---|---|---|
| | • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded<br>• **Connection type head B:** Male connector, M12, 5-pin, straight, A-coded<br>• **Authorizations:** CE, UL<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 5 m, 5-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with oils and lubricants, Drag chain operation | YF2A15-050UB5M2A15 | 2096010 |
| | • **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded<br>• **Connection type head B:** Male connector, M12, 5-pin, straight, A-coded<br>• **Authorizations:** CE, UL<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 10 m, 5-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with oils and lubricants, Drag chain operation | YF2A15-100UB5M2A15 | 2096011 |
|  | • **Connection type head A:** Female connector, M12, 8-pin, straight, A-coded<br>• **Connection type head B:** Male connector, M12, 8-pin, straight, A-coded<br>• **Authorizations:** UL<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 2 m, 8-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with oils and lubricants, Drag chain operation | YF2A18-020UA5M2A18 | 2096033 |
| | • **Connection type head A:** Female connector, M12, 8-pin, straight, A-coded<br>• **Connection type head B:** Male connector, M12, 8-pin, straight, A-coded<br>• **Authorizations:** UL<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 5 m, 8-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with oils and lubricants, Drag chain operation | YF2A18-050UA5M2A18 | 2096034 |
| | • **Connection type head A:** Female connector, M12, 8-pin, straight, A-coded<br>• **Connection type head B:** Male connector, M12, 8-pin, straight, A-coded<br>• **Authorizations:** UL<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 10 m, 8-wire, PUR, halogen-free<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with oils and lubricants, Drag chain operation | YF2A18-100UA5M2A18 | 2096035 |
| Reflectors | | | |
|  | • **Description:** Rectangular, screw connection<br>• **Dimensions:** 51 mm 61 mm<br>• **Ambient operating temperature:** –20 °C ... +65 °C | P250 | 5304812 |
| Terminal and alignment brackets | | | |
|  | • **Description:** FlexFix bracket for 2 devices (e.g. sender and receiver), can be aligned ± 15°, including M5 screw<br>• **Material:** Plastic<br>• **Packing unit:** 4 pieces | BEF-1SHABPKU4 | 2066614 |
|  | • **Description:** QuickFix bracket for 2 devices (e.g. sender and receiver)<br>• **Material:** Plastic<br>• **Packing unit:** 4 pieces | BEF-3SHABPKU4 | 2098710 |
| Photoelectric sensors | | | |
| | • **Sensing range max.:** 0.15 m ... 12 m, 0.15 m ... 10 m<br>• **Sensor principle:** Photoelectric retro-reflective sensor<br>• **Detection principle:** Dual lens<br>• **Switching output:** PNP<br>• **Switching mode:** Light/dark switching<br>• **Connection type:** Male connector M12, 4-pin<br>• **Light source:** PinPoint LED<br>• **Adjustment:** None | GL10-P4151 | 1069860 |

| | Brief description | Type | Part no. |
|---|---|---|---|
|  | • **Sensing range max.:** ≤ 6 m<br>• **Sensor principle:** Photoelectric retro-reflective sensor<br>• **Connection type:** Cable with M12 male connector, 4-pin<br>• **Light source:** PinPoint LED<br>• **Type of light:** Visible red light<br>• **Adjustment:** Potentiometer | GL6-P0211S49 | 1070568 |
| | • **Sensing range max.:** 20 mm ... 950 mm<br>• **Sensor principle:** Photoelectric proximity sensor<br>• **Detection principle:** Background suppression<br>• **Switching output:** PNP<br>• **Switching mode:** Light switching<br>• **Connection type:** Male connector M12, 4-pin<br>• **Light source:** PinPoint LED<br>• **Adjustment:** Potentiometer | GTB10-P4411S01 | 1066852 |
|  | • **Sensing range max.:** 5 mm ... 500 mm<br>• **Sensor principle:** Photoelectric proximity sensor<br>• **Connection type:** Cable with M12 male connector, 4-pin, 300 mm<br>• **Light source:** LED<br>• **Type of light:** Infrared light<br>• **Adjustment:** Potentiometer | GTB6-P7441S56 | 1077541 |
| SP1 system plug | | | |
|  | • **Function range:** SP1<br>• **System connection:** Male connector M12, 5-pin<br>• **Extension connection:** No | 1000 | 2076832 |
|  | • **Function range:** SP1<br>• **System connection:** Male connector M12, 5-pin<br>• **Extension connection:** Female connector M12, 5-pin | 1100 | 2076833 |
|  | • **Function range:** SP1<br>• **System connection:** Male connector M12, 8-pin<br>• **Extension connection:** No | 1200 | 2076834 |
|  | • **Function range:** SP1<br>• **System connection:** Male connector M12, 8-pin<br>• **Extension connection:** Female connector M12, 5-pin | 1300 | 2076835 |
| SP2 system plug | | | |
|  | • **Function range:** SP2<br>• **System connection:** Male connector M12, 5-pin<br>• **Extension connection:** Female connector M12, 5-pin | 2100 | 2093098 |
|  | • **Function range:** SP2<br>• **System connection:** Male connector M12, 8-pin<br>• **Extension connection:** Female connector M12, 5-pin | 2300 | 2093100 |
| Sensor Integration Gateway | | | |
|  | • **Further functions:** Web server available, USB connection for easy configuration of the SIG200 Sensor Integration Gateway with SOPAS ET, the engineering tool from SICK, logic editor is available for easy configuration of logic functions<br>• **I/O connection:** 4 x M12, 5-pin female connector, A-coded<br>• **Connection CONFIG:** 1 x M8, 4-pin female connector, USB 2.0 (USB-A)<br>• **Logic editor:** yes<br>• **Communication interface:** IO-Link, USB, Ethernet, PROFINET, REST API<br>• **Product category:** IO-Link Master | SIG200-0A0412200 | 1089794 |
|  | • **Further functions:** Web server available, USB connection for easy configuration of the SIG200 Sensor Integration Gateway with SOPAS ET, the engineering tool from SICK, logic editor is available for easy configuration of logic functions<br>• **I/O connection:** 4 x M12, 5-pin female connector, A-coded<br>• **Connection CONFIG:** 1 x M8, 4-pin female connector, USB 2.0 (USB-A)<br>• **Logic editor:** yes<br>• **Communication interface:** IO-Link, USB, Ethernet, REST API<br>• **Product category:** IO-Link Master | SIG200-0A0G12200 | 1102605 |

# 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.”**

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