Data sheet



M4P-ZA02500D00

deTem

SAFETY MULTIBEAM SENSORS

SICK
Sensor Intelligence.



Ordering information

Type	part no.
M4P-ZA02500D00	1102635

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

Detailed technical data

Features

Product version	deTem4 A/P
Application	Normal industrial environment
Functional principle	Active/passive
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
End cap with integrated LED	✓
Items supplied	Active unit Safety instruction Mounting instructions Operating instructions for download

Safety-related parameters

Type	Type 4 (IEC 61496-1)
Safety integrity level	SIL 3 (IEC 61508)
Category	Category 4 (ISO 13849-1)
Performance level	PL e (ISO 13849-1)
PFH_D (mean probability of a dangerous failure per hour)	6.6×10^{-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

Note	The deTem4 A/P safety light-beam sensor can be used with different function packages. The function packages are determined by the equipment used.
Function package SP1	Protective operation Beam coding Restart interlock External device monitoring (EDM) Application diagnostic output (ADO) IO-Link Equipment: Active unit with SP1 system plug
Function package SP2	Function package SP1 included Muting (2-signal muting) Equipment: Active unit with SP2 system plug
Function package DMM4	Function package SP2 included Muting (4-signal muting) Operating mode selection Inputs for safety sensors (SDI) Equipment: Active unit with SP1 system connector and DMM4 extension module
Beam coding	✓
Restart interlock	✓
Differentiation between man and material (muting)	✓
Concurrence monitoring	✓
Monitoring of total muting time	✓
Sensor gap monitoring	✓
Muting with override	✓
Exit monitoring	✓
Entry and 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
End cap with integrated LED	✓
Application diagnostic output (ADO)	✓
IO-Link	✓
Near Field Communication (NFC)	✓

Electronics

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]

[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.

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
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.

Mechanics

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	+ 565 g (± 50 g)

Ambient data

Enclosure rating	IP65 (IEC 60529) 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 ... 150 Hz, 3,5 mm / 1 g (EN 60068-2-6)
Shock resistance	15 g / 6 ms (EN 60068-2-27)
Class	3M4 (IEC TR 60721-4-3)

Other information

Type of light	Near-infrared (NIR), invisible

Classifications

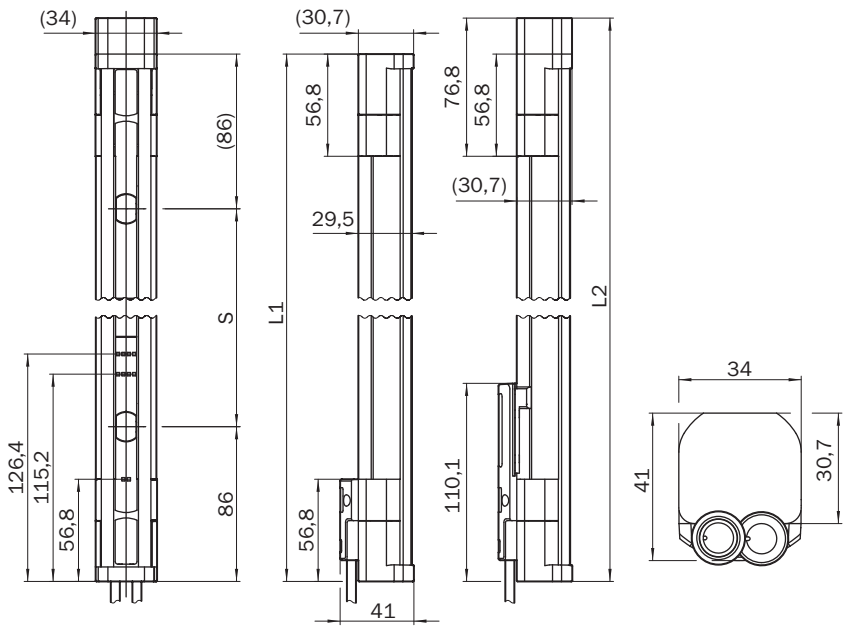
ECLASS 5.0	27272703
ECLASS 5.1.4	27272703
ECLASS 6.0	27272703
ECLASS 6.2	27272703
ECLASS 7.0	27272703
ECLASS 8.0	27272703
ECLASS 8.1	27272703
ECLASS 9.0	27272703
ECLASS 10.0	27272703

ECLASS 11.0	27272703
ECLASS 12.0	27272703
ETIM 5.0	EC001832
ETIM 6.0	EC001832
ETIM 7.0	EC001832
ETIM 8.0	EC001832
UNSPSC 16.0901	46171620

Certificates

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China-RoHS	✓
ULus approval	✓
cUL approval	✓
EC-Type-Examination approval	✓

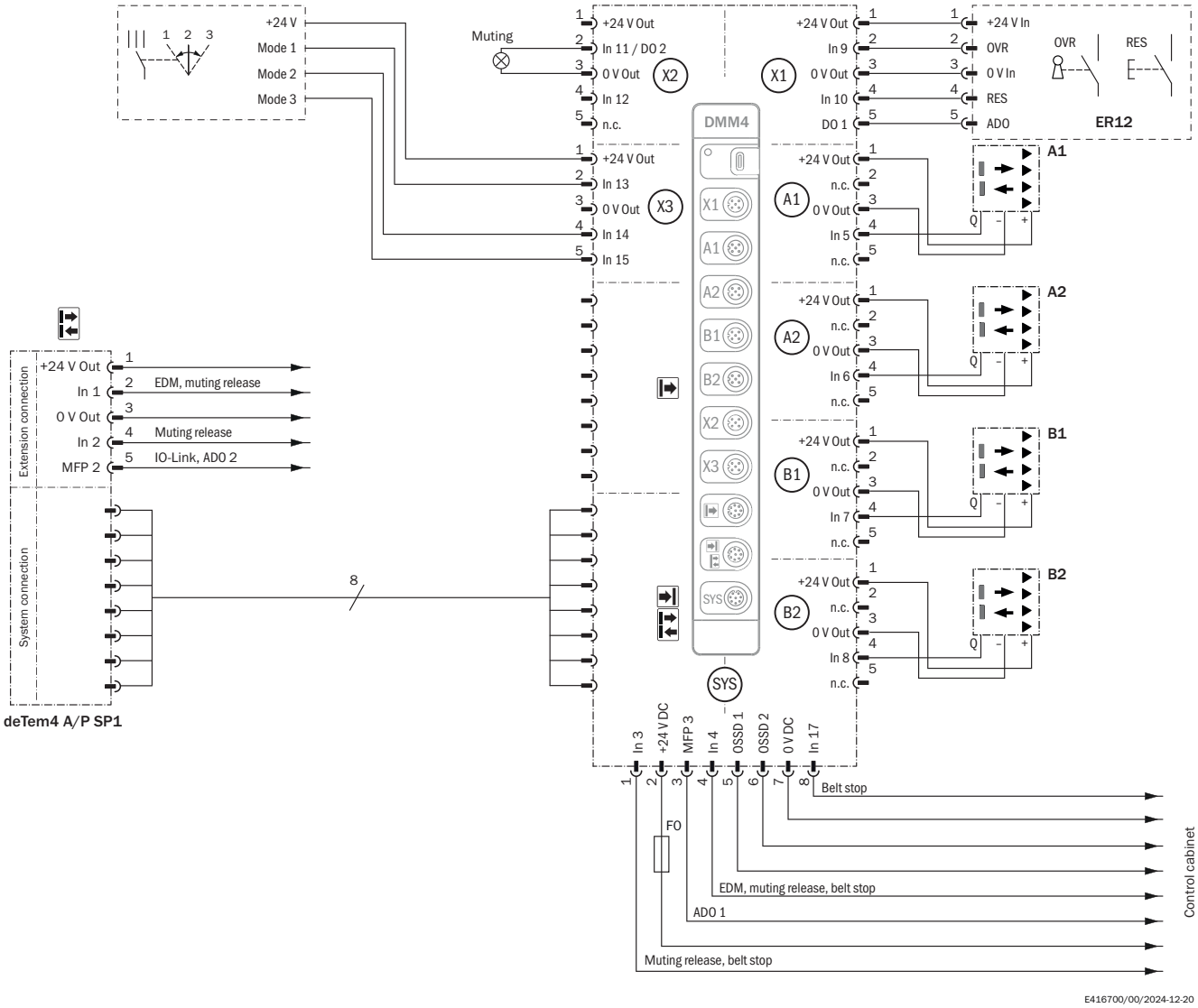
Dimensional drawing Active unit



Dimensions in mm (inch)

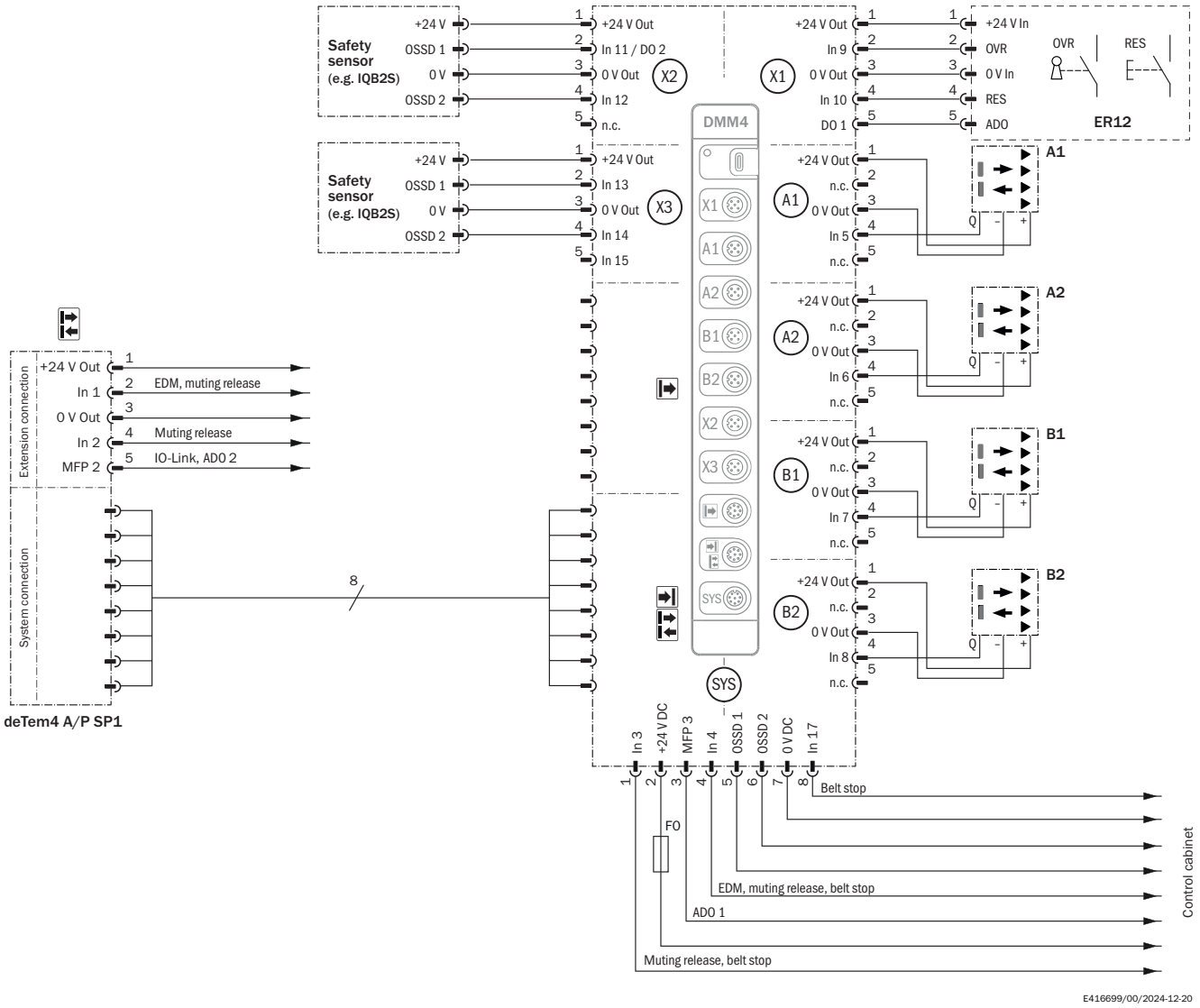
Number of beams	Beam separation S	L1	L2
2	500	672	692
4	300	1.072	1.092

Connection diagram deTem4 A/P on DMM4, connection example, muting, reset, override, operating mode selection



The requirements in the operating instructions of the devices used must be adhered to.

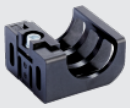
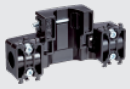
Connection diagram deTem4 A/P on DMM4, connection diagram, muting, reset, override, SDI



The requirements in the operating instructions of the devices used must be adhered to.

Recommended accessories

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

	Brief description	Type	part no.
Mounting systems			
	• **Description:** QuickFix bracket for 2 devices (e.g. sender and receiver) • **Material:** Plastic • **Details:** Plastic • **Packing unit:** 4 pieces	BEF-3SHABPKU4	2098710
	• **Description:** FlexFix bracket for 2 devices (e.g. sender and receiver), can be aligned ± 15°, including M5 screw • **Material:** Plastic • **Details:** Plastic • **Packing unit:** 4 pieces	BEF-1SHABPKU4	2066614
	• **Description:** Muting arm bracket for deTec safety light curtain or deTem safety multibeam sensor • **Packing unit:** 1 piece • **Suitable for:** deTec, deTem	Muting arm bracket	2106455
	• **Description:** Muting arm, short • **Suitable for:** deTec, deTem	Muting arm, short	2111924
	• **Description:** Muting arm, long • **Suitable for:** deTec, deTem	Muting arm, long	2111923
	• **Description:** Sensor bracket G6 and P250	BEF-2KHAAAKU1	2113145
	• **Description:** Universal holder for round steel arms and muting arms, for mounting sensors or reflectors	BEF-KHS-N01	2044953

	Brief description	Type	part no.
connectors and cables			
		IO-Link connector	2092757
		Muting connector	2092758
	• **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 2 m, 5-wire, PUR, halogen-free • **Description:** Sensor/actuator cable, unshielded • **Application:** Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A15-020UB5XLEAX	2095617
	• **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 5 m, 5-wire, PUR, halogen-free • **Description:** Sensor/actuator cable, unshielded • **Application:** Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A15-050UB5XLEAX	2095618
	• **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 10 m, 5-wire, PUR, halogen-free • **Description:** Sensor/actuator cable, unshielded • **Application:** Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A15-100UB5XLEAX	2095619
	• **Connection type head A:** Female connector, M12, 8-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 5 m, 8-wire, PUR, halogen-free • **Description:** Sensor/actuator cable, unshielded • **Application:** Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A18-050UA5XLEAX	2095653
	• **Connection type head A:** Female connector, M12, 8-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 10 m, 8-wire, PUR, halogen-free • **Description:** Sensor/actuator cable, unshielded • **Application:** Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A18-100UA5XLEAX	2095654
	• **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Male connector, M12, 5-pin, straight, A-coded • **Signal type:** Sensor/actuator cable • **Cable:** 2 m, 5-wire, PUR, halogen-free • **Description:** Sensor/actuator cable, unshielded • **Application:** Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A15-020UB5M2A15	2096009
	• **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Male connector, M12, 5-pin, straight, A-coded • **Signal type:** Sensor/actuator cable • **Cable:** 5 m, 5-wire, PUR, halogen-free • **Description:** Sensor/actuator cable, unshielded • **Application:** Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A15-050UB5M2A15	2096010
	• **Connection type head A:** Female connector, M12, 5-pin, straight, A-coded • **Connection type head B:** Male connector, M12, 5-pin, straight, A-coded • **Signal type:** Sensor/actuator cable • **Cable:** 10 m, 5-wire, PUR, halogen-free • **Description:** Sensor/actuator cable, unshielded • **Application:** Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A15-100UB5M2A15	2096011
	• **Connection type head A:** Female connector, M12, 8-pin, straight, A-coded • **Connection type head B:** Flying leads • **Signal type:** Sensor/actuator cable • **Cable:** 2 m, 8-wire, PUR, halogen-free • **Description:** Sensor/actuator cable, unshielded • **Application:** Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation	YF2A18-020UA5XLEAX	2095652

	Brief description	Type	part no.
system plugs and extension modules			
	• **Function range:** SP1 • **System connection:** Plug, M12, 5-pin • **Extension connection:** Without extension connection	SP1-1000	2076832
	• **Function range:** SP1 • **System connection:** Plug, M12, 5-pin • **Extension connection:** Female connector M12, 5-pin	SP1-1100	2076833
	• **Function range:** SP1 • **System connection:** Male connector M12, 8-pin • **Extension connection:** Without extension connection	SP1-1200	2076834
	• **Function range:** SP1 • **System connection:** Male connector M12, 8-pin • **Extension connection:** Female connector M12, 5-pin	SP1-1300	2076835
	• **Function range:** SP2 • **System connection:** Plug, M12, 5-pin • **Extension connection:** Female connector M12, 5-pin	SP2-2100	2093098
	• **Function range:** SP2 • **System connection:** Male connector M12, 8-pin • **Extension connection:** Female connector M12, 5-pin	SP2-2300	2093100
Photoelectric sensors			
	• **Sensing range max.:** 0.15 m ... 12 m0.15 m ... 10 m • **Functional principle:** Photoelectric retro-reflective sensor • **Functional principle detail:** With minimum distance to reflector (dual lens system) • **Switching output:** PNP • **Switching mode:** Light/dark switching • **Connection type:** Male connector M12, 4-pin • **Light source:** PinPoint LED • **Adjustment:** None	GL10-P4151	1069860
	• **Sensing range max.:** 0.03 m ... 6 m • **Functional principle:** Photoelectric retro-reflective sensor • **Connection type:** Cable with M12 male connector, 4-pin • **Type of light:** Visible red light • **Adjustment:** Potentiometer • **Housing:** Rectangular	GL6-P0211S49	1070568
	• **Sensing range max.:** 20 mm ... 950 mm • **Functional principle:** Photoelectric proximity sensor • **Functional principle detail:** Background suppression • **Switching output:** PNP • **Switching mode:** Light switching • **Connection type:** Male connector M12, 4-pin • **Light source:** PinPoint LED • **Adjustment:** Potentiometer	GTB10-P4411S01	1066852
	• **Sensing range max.:** 5 mm ... 500 mm • **Functional principle:** Photoelectric proximity sensor • **Connection type:** Cable with M12 male connector, 4-pin, 300 mm • **Type of light:** Infrared light • **Adjustment:** Potentiometer • **Housing:** Rectangular	GTB6-P7441S56	1077541

	Brief description	Type	part no.
network devices			
		IOLA2US-01101 (SiLink2 Master)	1061790
		SIG200-0A0G12200	1102605
		SIG200-0A0412200	1089794
		SIG200-0A0512200	1089796
reflectors and optics			
	• **Description:** Rectangular, screw connection • **Dimensions:** 51 mm 61 mm • **Ambient operating temperature:** –30 °C ... +65 °C	P250	5304812

	Brief description	Type	part no.
Safety relays			
	• **Applications:** Output expansion module for OSSDs • **Compatible sensor types:** Safety sensors with OSSDs • **Connection type:** Front connector with spring terminals • **Restart interlock:** no • **External device monitoring (EDM):** Via path • **Outputs:** 2 enabling current paths (safe), 1 feedback current path (for use as external device monitoring, not safe) • **Housing width:** 18 mm	RLY3-OSSD100	1085343
	• **Applications:** Output expansion module for OSSDs • **Compatible sensor types:** Safety sensors with OSSDs • **Connection type:** Front connector with spring terminals • **Restart interlock:** no • **External device monitoring (EDM):** Via path • **Outputs:** 4 enabling current paths (safe), 1 feedback current path (for use as external device monitoring, not safe), 1 signaling current path (not safe) • **Housing width:** 28 mm	RLY3-OSSD400	1099971

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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Contacts and other locations –www.sick.com