

Multiple light beam safety devices

Principle of operation of multiple light beam safety devices

Multiple light beam safety devices are electro-sensitive protective devices comprising a sender unit and a receiver unit or a sender/receiver unit on the active side and one or more deflector mirrors on the passive side. If one or more light beams are

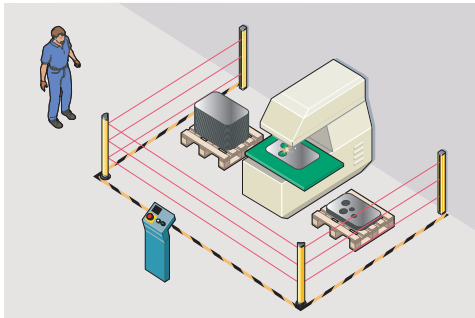
interrupted, the multiple light beam safety device provides a shutdown signal that is suitable for interrupting the dangerous state on a machine or system.

Applications for multiple light beam safety devices

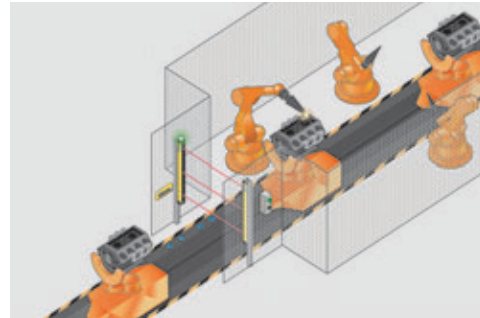
Multiple light beam safety devices are used wherever access to a hazardous area must be protected or the hazardous area itself must be monitored. In some applications, the protective

device must be able to unambiguously differentiate between man and material.

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Machine tool industry: M4000 Standard with mirror column for multi-sided access protection on a punching machine



Automotive industry: M4000 Advanced with UE403 for access protection with muting on a motor machining station

Advantages of the SICK multiple light beam safety device

SICK's range of multiple light beam safety devices provides a reliable, cost-effective solution for almost every hazardous area protection and access protection application. Customized solutions are produced using standard components that are flexible in use: from simple access protection to the complex muting application with direction monitoring, belt stop and override function.

The M4000 Standard and/or Advanced can be used for access protection and M4000 Area for hazardous area protection (horizontal use) if a type 4 multiple light beam safety device is required. M4000 Advanced, in combination with the UE403 switching amplifier, offers a comfortable, decentralized muting

solution where automatic material transport in and out of the hazardous area is required. In warehouse and conveyor systems, the M4000 Advanced with UE403 not only complies with safety requirements, but also provides highly efficient automatic material transport.

The M2000 is the right choice for applications where a type 2 multiple light beam safety device is desired. Product variants with differing functionalities are available for countless applications. The use of SICK interfaces also offers numerous advantages. The M2000 variants in IP69K housings were designed for environments in which very high demands are made of the enclosure rating (IP 69K) and the material strength.

Mounting and operation made easy

SICK provides a comprehensive range of accessories for multiple light beam safety devices. These accessories make it possible to integrate the devices in the machine control and also to

mount the devices rapidly, reliably and safely. Device and mirror columns offer an efficient solution to create multi-sided access protection with minimum assembly.

Services for productive safety

With services tailored specifically to your needs, SICK offers complete support for the safety of your machine or system.

Address productivity and cost-effectiveness from the start: from selection and planning, through commissioning and inspection, to maintenance and modernization.

→ For information about the services please refer to chapter B



Safety application	Type according to IEC 61496	Number of beams resp. resolution	Scanning range (m)	Ambient operating temperature (°C)	Functions						Product	Page	
					Sender/receiver system	Active/passive system	Muting	Beam coding	Restart interlock	External device monitoring			Safe device communication via EFI/SDL
	Type 4	2 ... 8	0.5 ... 70	-10 ... +55	✓	-	✓ ¹⁾	✓	✓	✓	✓	M4000 Advanced / UE403	G-2
		2 / 4 ²⁾	0.5 ... 7.5 / 4.5	-10 ... +55	-	✓	✓ ¹⁾	✓	✓	✓	✓	M4000 Advanced A/P / UE403	
		2 ... 8	0.5 ... 70	-10 ... +55	✓	-	-	✓	✓	✓	-	M4000 Standard	G-21
		2 / 4 ²⁾	0.5 ... 7.5 / 4.5	-10 ... +55	-	✓	-	✓	✓	✓	-	M4000 Standard A/P	
	Type 4	60 mm 80 mm	0.5 ... 19 0.5 ... 70	-10 ... +55	✓	-	-	✓	✓	✓	✓	M4000 Area	G-35
	Type 2			0 ... +55	✓	-	✓ ³⁾	✓	-	✓	-	M2000 Standard	G-46
		2 ... 9	0 ... 25	0 ... +55	✓	-	✓ ³⁾	✓	-	✓	-	M2000 Standard in IP69K Housing	G-57
		2 ... 4	0 ... 70	0 ... +55	✓	-	✓ ³⁾	✓	✓	✓	-	M2000 RES/EDM	G-63
		2 ... 9	0 ... 25	0 ... +55	✓	-	✓ ³⁾	✓	-	✓	-	M2000 Cascadable	G-74
				0 ... +55	-	✓	✓ ³⁾	-	-	✓	-	M2000 A/P Standard	G-85
		1 ²⁾	0 ... 6	0 ... +55	-	✓	✓ ³⁾	-	✓	✓	-	M2000 A/P RES/EDM	G-94

¹⁾ Muting with UE403 switching amplifier

²⁾ Passive side using deflector mirror/deflector unit

³⁾ Muting with Flexi Classic safety controller

→ Suitable mirror columns and device columns can be found in chapter I



- Restart interlock (RES)
- External device monitoring (EDM)
- Beam coding
- LED/7-segment display
- Application diagnostic output (ADO)
- Configuration and diagnostics via PC
- SDL interface
- Muting configurable in conjunction with UE403
- A/P (active/passive) variant
- Integrated laser alignment aid (optional)
- End cap with integrated LED (optional)



Technical data overview

Scanning range (depending on type)	0.5 m ... 70 m / 4.5 m / 7.5 m
Number of beams (depending on type)	2 ... 8
Beam separation (depending on type)	220 mm ... 600 mm
Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508), SILCL3 (IEC 62061)
Enclosure rating	IP 65

Product description

The M4000 Advanced multiple light beam safety device and the UE403 switching amplifier form the efficient solution for decentralized conventional muting applications involving automatic material transport.

Access protection with muting can be achieved with maximum availability, easily configured by PC via the RS-232 interface, and the simple in-situ connection of muting signals and control switches to the UE403. The integrated functions and status and diagnostic information permit rapid commissioning and prevent unnecessary machine downtime.

The modular concept provides a high level of machine safety that takes economic efficiency into account since device properties can be adapted to meet specific requirements. This is especially the case for the M4000 Advanced A/P (active/passive) variants, since only one requires electrical connection – considerably simplifying installation and cutting costs.

The integrated EFI interface allows the use of additional sensor functions (see A-8).

In-system added value

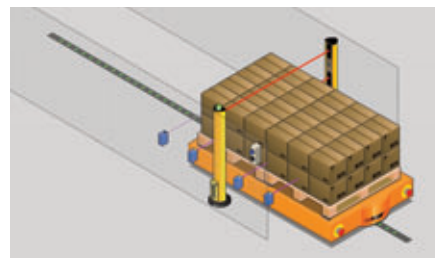
- Combined with safe control solutions by SICK
- Safe integration in network solutions
- M4000 Advanced with UE403 for the connection of:
 - 2 to 4 muting sensors
 - External muting lamp
 - Reset and override control switch
 - Conveyor belt stop signal
- Additional functions:
 - Concurrence monitoring
 - Total muting time monitoring
 - Sensor gap monitoring
 - Sensor test
 - Partial blanking
 - Muting end via ESPE
 - Integrated override
- Alternative to UE403: use of e.g., UE4155

→ For more combinations, see annex

Applications

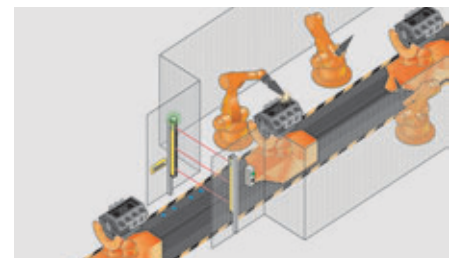
→ You can find more applications using the application finder at www.mysick.com

Provides access protection of hazardous areas on machining centers in mechanical engineering applications, robot systems



Access protection with partial blanking on a system with floor transporter

(such as welding lines in the automotive industry) and automated conveying, storage and transport systems.



Access protection with muting on a motor machining station

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Ordering information

M4000 Advanced

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025003AA0	1200060	M40E-025003RB0	1200065
	600 mm	M40S-026003AA0	1200070	M40E-026003RB0	1200096
3	220 mm	M40S-032203AA0	1200063	M40E-032203RB0	1200097
	400 mm	M40S-034003AA0	1200061	M40E-034003RB0	1200064
	450 mm	M40S-034503AA0	1200071	M40E-034503RB0	1200098
4	220 mm	M40S-042203AA0	1200072	M40E-042203RB0	1200099
	300 mm	M40S-043003AA0	1200073	M40E-043003RB0	1200100
5	220 mm	M40S-052203AA0	1200074	M40E-052203RB0	1200101
6	220 mm	M40S-062203AA0	1200075	M40E-062203RB0	1200102
7	220 mm	M40S-072203AA0	1200076	M40E-072203RB0	1200103
8	220 mm	M40S-082203AA0	1200077	M40E-082203RB0	1200104

M4000 Advanced, includes end cap with integrated LED

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025003AA0	1200060	M40E-025023RB0	1200062
	600 mm	M40S-026003AA0	1200070	M40E-026023RB0	1200079
3	220 mm	M40S-032203AA0	1200063	M40E-032223RB0	1200066
	400 mm	M40S-034003AA0	1200061	M40E-034023RB0	1200067
	450 mm	M40S-034503AA0	1200071	M40E-034523RB0	1200081
4	220 mm	M40S-042203AA0	1200072	M40E-042223RB0	_ 1)
	300 mm	M40S-043003AA0	1200073	M40E-043023RB0	1200109
5	220 mm	M40S-052203AA0	1200074	M40E-052223RB0	1208161
6	220 mm	M40S-062203AA0	1200075	M40E-062223RB0	1203850
7	220 mm	M40S-072203AA0	1200076	M40E-072223RB0	1201247
8	220 mm	M40S-082203AA0	1200077	M40E-082223RB0	1206683

¹⁾ When ordering for the first time, please use the information in the "Type" column instead of "Part no."

M4000 Advanced, with integrated alignment aid

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025013AA0	1200057	M40E-025013RB0	1200058
	600 mm	M40S-026013AA0	1200078	M40E-026013RB0	1200105
3	400 mm	M40S-034013AA0	1200069	M40E-034013RB0	1200106
	450 mm	M40S-034513AA0	1200082	M40E-034513RB0	1200107
4	300 mm	M40S-043013AA0	1200080	M40E-043013RB0	1200108

M4000 Advanced, with integrated alignment aid and end cap with integrated LED

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025013AA0	1200057	M40E-025033RB0	1200110
	600 mm	M40S-026013AA0	1200078	M40E-026033RB0	1200111
3	400 mm	M40S-034013AA0	1200069	M40E-034033RB0	1200068
	450 mm	M40S-034513AA0	1200082	M40E-034533RB0	1200112
4	300 mm	M40S-043013AA0	1200080	M40E-043033RB0	1200113

M4000 Advanced A/P

Number of beams	Beam separation	Scanning range	Sender/receiver in one housing		Deflector unit	
			Type	Part no.	Type	Part no.
2	500 mm	7.5 m	M40Z-025003RB0	1200115	PSD01-1501 ¹⁾	1027906
		4.5 m	M40Z-025003TB0	1200128	PSD01-2501 ²⁾	1027907
4	300 mm	4.5 m	M40Z-043003TB0	1200127	PSD02-2301 ²⁾	1027908

¹⁾ With mirror deflection (max. effective scanning range 7.5 m)

²⁾ With fiber-optic cable deflection (max. effective scanning range 4.5 m)



M4000 Advanced A/P, includes end cap with integrated LED

Number of beams	Beam separation	Scanning range	Sender/receiver in one housing		Deflector unit	
			Type	Part no.	Type	Part no.
2	500 mm	7.5 m	M40Z-025023RB0	1200126	PSD01-1501 ¹⁾	1027906
		4.5 m	M40Z-025023TB0	1200125	PSD01-2501 ²⁾	1027907
4	300 mm	4.5 m	M40Z-043023TB0	1200131	PSD02-2301 ²⁾	1027908

¹⁾ With mirror deflection (max. effective scanning range 7.5 m)

²⁾ With fiber-optic cable deflection (max. effective scanning range 4.5 m)

UE403 switching amplifier

Type	Part no.
UE403-A0930	1026287

Technical specifications

→ You can find more detailed data in the operating instructions. Download at www.mysick.com

M4000 Advanced

General data

System part	Sender	Receiver
Number of beams (depending on type)	2 ... 8	
Beam separation (depending on type)	220 mm ... 600 mm	
Scanning range		
Configurable	-	✓
	-	0.5 m ... 20 m 15 m ... 70 m
Response time (depending on type)	-	Max. 12 ms
Protection class	III (EN 50178:1998)	
Enclosure rating	IP 65 (EN 60529)	
Synchronization	Optical, without separate synchronization	
Safety related parameters		
Type	Type 4 (IEC 61496)	
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)	
Category	Category 4 (EN ISO 13849)	
Performance level	PL e (EN ISO 13849)	
PFHd (mean probability of a dangerous failure per hour)	6.6×10^{-9} (EN ISO 13849)	
T_M (Mission Time)	20 years (EN ISO 13849)	
Ambient operating temperature from ... to	-10 °C ... +55 °C	
Storage temperature from ... to	-25 °C ... +70 °C	
Air humidity from ... to	15 % ... 95 %, non-condensing	
Housing cross section	52 mm x 55.5 mm	
Vibration resistance	5 (10 ... 55), IEC 60068-2-6	
Shock resistance	10 g, 16 ms (IEC 60068-2-29)	
Housing material	Aluminum alloy ALMGSI 0.5, powder coated	
Front screen material	Polycarbonate, scratch-resistant coating	
Integrated laser alignment aid		
Laser class	-	≤ 1 mW 2 (IEC 60825-1:2007) ¹⁾
Light sender/type of light	-	Laser (visible red light)
Wave length	-	630 nm ... 680 nm

¹⁾ Do not stare into beam!



Functional data

System part	Sender	Receiver
Safe device communication via EFI/SDL		✓
Restart interlock	-	✓
Restart interlock (delivery status)	-	Internal
External device monitoring	-	✓
External device monitoring (delivery status)	-	Activated
Beam coding		✓
Beam coding (delivery status)		Non-coded
Configurable application diagnostic output	-	✓
Application diagnostic output (delivery status)	-	Contamination (OWS)
Sender test	✓	-
Sender test (delivery status)	Deactivated	-
Configurable scanning range	-	✓
Scanning range (delivery status)	-	20 m
Integrated laser alignment aid (optional) (depending on type)		- / ✓
End cap with integrated LED (optional) (depending on type)	-	- / ✓
SDL interface		✓
Configuration method	PC with CDS (configuration and diagnostic software)	
Concurrence monitoring (with UE403)	-	✓
Monitoring total muting time (with UE403)	-	✓
Sensor gap monitoring (with UE403)	-	✓
Sensor test (with UE403)	-	✓
Partial blanking (with UE403)	-	✓
End of muting by ESPE (with UE403)	-	✓
Belt stop (with UE403)	-	✓
Muting with override (with UE403)	-	✓

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Electrical data

System part	Sender	Receiver
System connection	M26 x 11 + FE Hirschmann plug	
Connecting cable length	Max. 50 m ¹⁾	
Connecting cable wire cross-section	0.75 mm ²	
Extension connection	-	Plug M12 x 5
Supply voltage V_s	24 V (19.2 V ... 28.8 V) ²⁾	
Residual ripple	± 10 %	
Power consumption	Max. 0.2 A	Max. 0.6 A
Display elements	LED/7-segment	
Safety outputs (OSSD)		
Type of output	-	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ³⁾
Switching voltage HIGH	-	24 V DC ($V_S - 2.25 V \dots V_S$)
Switching voltage LOW	-	2 V DC
Switching current	-	0 mA ... 500 mA
Application diagnostic output		
Switching voltage HIGH	-	24 V DC ($V_S - 4.2 V \dots V_S$)
Switching voltage LOW	-	High resistance
Switching current	-	0 mA ... 100 mA

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204.

³⁾ Applies to a voltage range between -30 V and +30 V.

M4000 Advanced A/P

General data

System part	Sender/receiver in one housing	Deflector unit
Number of beams (depending on type)	2 / 4	
Beam separation (depending on type)	300 mm / 500 mm	
Scanning range	✓	-
Configurable		
Beam separation 300 mm	0.5 m ... 4.5 m	4.5 m
Beam separation 500 mm (depending on type)	0.5 m ... 7.5 m / 0.5 m ... 4.5 m	7.5 m / 4.5 m
Response time	Max. 10 ms	-
Protection class	III (EN 50178:1998)	-
Enclosure rating	IP 65 (EN 60529)	-
Synchronization	Optical, without separate synchronization	-
Safety related parameters		
Type	Type 4 (IEC 61496)	-
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)	-
Category	Category 4 (EN ISO 13849)	-
Performance level	PL e (EN ISO 13849)	-
PFHd (mean probability of a dangerous failure per hour)	6.6×10^{-9} (EN ISO 13849)	-
T _M (Mission Time)	20 years (EN ISO 13849)	-
Ambient operating temperature from ... to	-10 °C ... +55 °C	-
Storage temperature from ... to	-25 °C ... +70 °C	-
Air humidity from ... to	15 % ... 95 %, non-condensing	-
Housing cross section	52 mm x 55.5 mm	
Vibration resistance	5 (10 ... 55), IEC 60068-2-6	-
Shock resistance	10 g, 16 ms (IEC 60068-2-29)	-
Housing material	Aluminum alloy ALMGSI 0.5, powder coated	-
Front screen material	Polycarbonate, scratch-resistant coating	-



Functional data

System part	Sender/receiver in one housing	Deflector unit
Safe device communication via EFI/SDL	✓	-
Restart interlock	✓	-
Restart interlock (delivery status)	Internal	-
External device monitoring	✓	-
External device monitoring (delivery status)	Activated	-
Beam coding	✓	-
Beam coding (delivery status)	Non-coded	-
Configurable application diagnostic output	✓	-
Application diagnostic output (delivery status)	Contamination (OWS)	-
Configurable scanning range	✓	-
Scanning range (delivery status) (depending on type)	7.5 m / 4.5 m	-
End cap with integrated LED (optional) (depending on type)	- / ✓	-
SDL interface	✓	-
Configuration method	PC with CDS (configuration and diagnostic software)	-
Concurrence monitoring (with UE403)	✓	-
Monitoring total muting time (with UE403)	✓	-
Sensor gap monitoring (with UE403)	✓	-
Sensor test (with UE403)	✓	-
End of muting by ESPE (with UE403)	✓	-
Belt stop (with UE403)	✓	-
Muting with override (with UE403)	✓	-

Electrical data

System part	Sender/receiver in one housing	Deflector unit
System connection	M26 x 11 + FE Hirschmann plug	-
Connecting cable wire cross-section	0.75 mm ²	-
Connecting cable length	Max. 50 m ¹⁾	-
Extension connection	Plug M12 x 5	-
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC)	-
Residual ripple	± 10 %	-
Power consumption	Max. 0.6 A	-
Safety outputs (OSSD)		
Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ²⁾	-
Switching voltage HIGH	24 V DC ($V_s - 2.25 V ... V_s$)	-
Switching voltage LOW	2 V DC	-
Switching current	0 mA ... 500 mA	-
Application diagnostic output		
Switching voltage HIGH	PNP semiconductor, short-circuit protected 24 V DC ($V_s - 4.2 V ... V_s$)	-
Switching voltage LOW	High resistance	-
Switching current	0 mA ... 100 mA	-
Display elements	LED/7-segment	-

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ Applies to a voltage range between -30 V and +30 V.

UE403 switching amplifier

General data

Type of muting sensors	Optical sensors, inductive sensors, mechanical switches, controller signals
Protection class	III (EN 50178:1998)
Enclosure rating	IP 65 (IEC 60529)
Safety related parameters	
Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508), SILCL3 (IEC 62061)
Category	Category 4 (EN ISO 13849)
Performance level	PL e (EN ISO 13849)
PFHd (mean probability of a dangerous failure per hour)	1.0×10^{-8} (EN ISO 13849) ¹⁾
T _M (Mission Time)	18 years (EN ISO 13849) ¹⁾
Ambient operating temperature from ... to	-10 °C ... +55 °C
Air humidity from ... to	15 % ... 95 %, non-condensing
Storage temperature from ... to	-25 °C ... +70 °C
Vibration resistance	5, 10 ... 55 (IEC 60068-2-6)
Shock resistance	10 g, 16 ms (IEC 60068-2-29)
Housing material	Die-cast aluminum powder coated
Material, connector strip	Polyamide
Assembly	Flexible mounting to the M4000 Advanced or directly in the system

¹⁾ Only in conjunction with M4000 Advanced or M4000 Advanced A/P

Electrical data

Supply voltage V _s	24 V DC (19.2 V DC ... 28.8 V DC), via connected ESPE
Power consumption	Max. 2 A
Inputs override, reset, C1, belt stop, muting sensors	
Switching voltage HIGH	24 V DC (11 V DC ... 30 V DC)
Input current HIGH	10 mA (6 mA ... 15 mA)
Switching voltage LOW	0 V DC (-30 V DC ... 5 V DC)
Input current LOW	0 mA (-0.5 mA ... 1.5 mA)
Outputs voltage supply for reset, override, C1, muting sensors	
Supply voltage	24 V DC (15 V DC ... 28.8 V DC)
Output current for muting sensors	Max. 500 mA ¹⁾
Output current for reset, override, C1	400 mA ¹⁾
Muting lamp	
Output current	Monitored 20 mA ... 400 mA at max. 5 W power consumption Not monitored 0 mA ... 400 mA at max. 5 W power consumption
Connection type	Socket M12 x 5
Cable length	Max. 10 m ²⁾
Wire cross-section	0.34 mm ²
Cable resistance	< 0.5 Ohm (per cable)

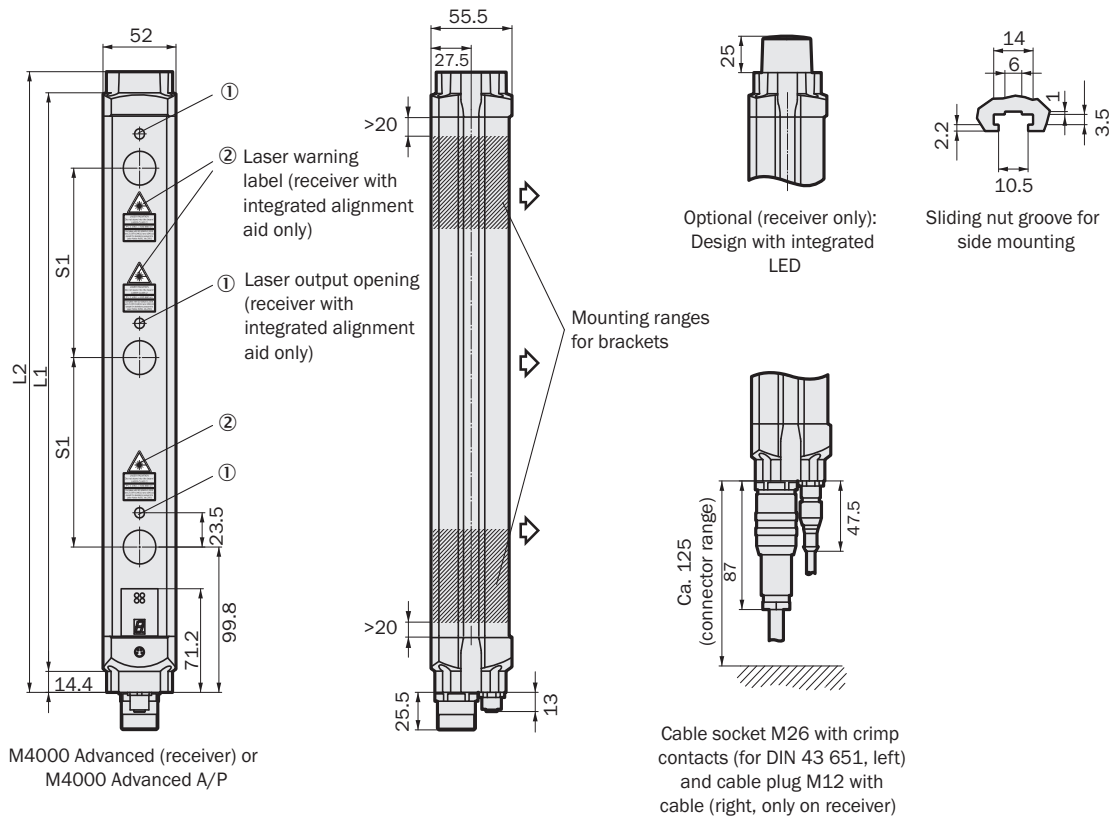
¹⁾ Total of all supply currents from the connections RES/OVR, A1, A2, B1 and B2 (pin 1 in each case): max. 1000 mA

²⁾ Between UE403 and M4000 Advanced / Advanced Curtain as well as between the muting sensors/control switches/muting lamp and UE403



Dimensional drawings

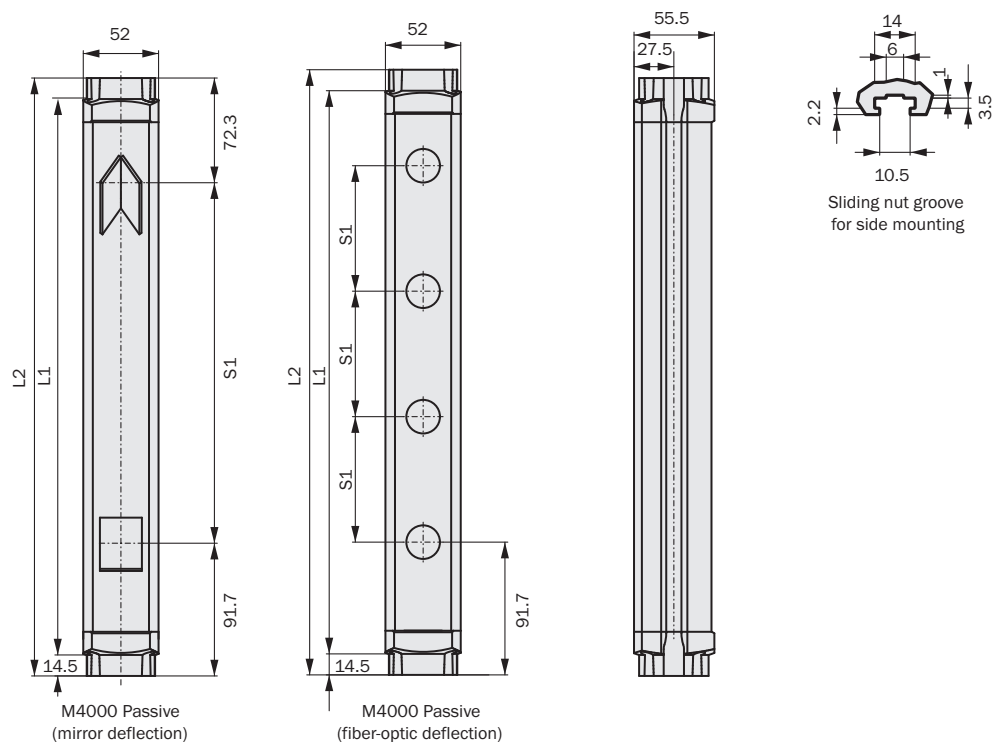
M4000 Advanced, M4000 Advanced A/P



Number of beams	Beam separation S1	L1	L2
2	500	643	672
2	600	743	772
3	220	583	612
3	400	943	972
3	450	1043	1072
4	220	803	832
4	300	1043	1072
5	220	1023	1052
6		1243	1272
7		1462	1491
8		1682	1711

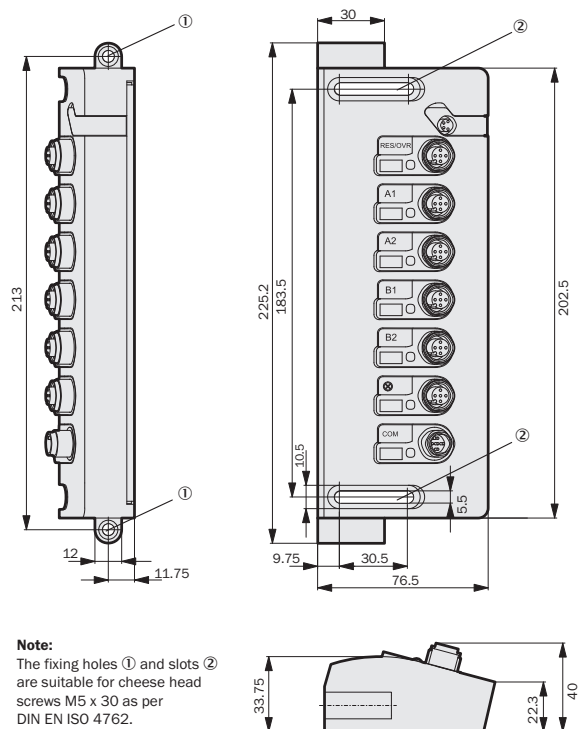
Dimensions in mm

Deflector units for M4000 Advanced A/P



Number of beams	Beam separation S1	L1	L2
2	500	643	672
4	300	1043	1072

UE403 switching amplifier



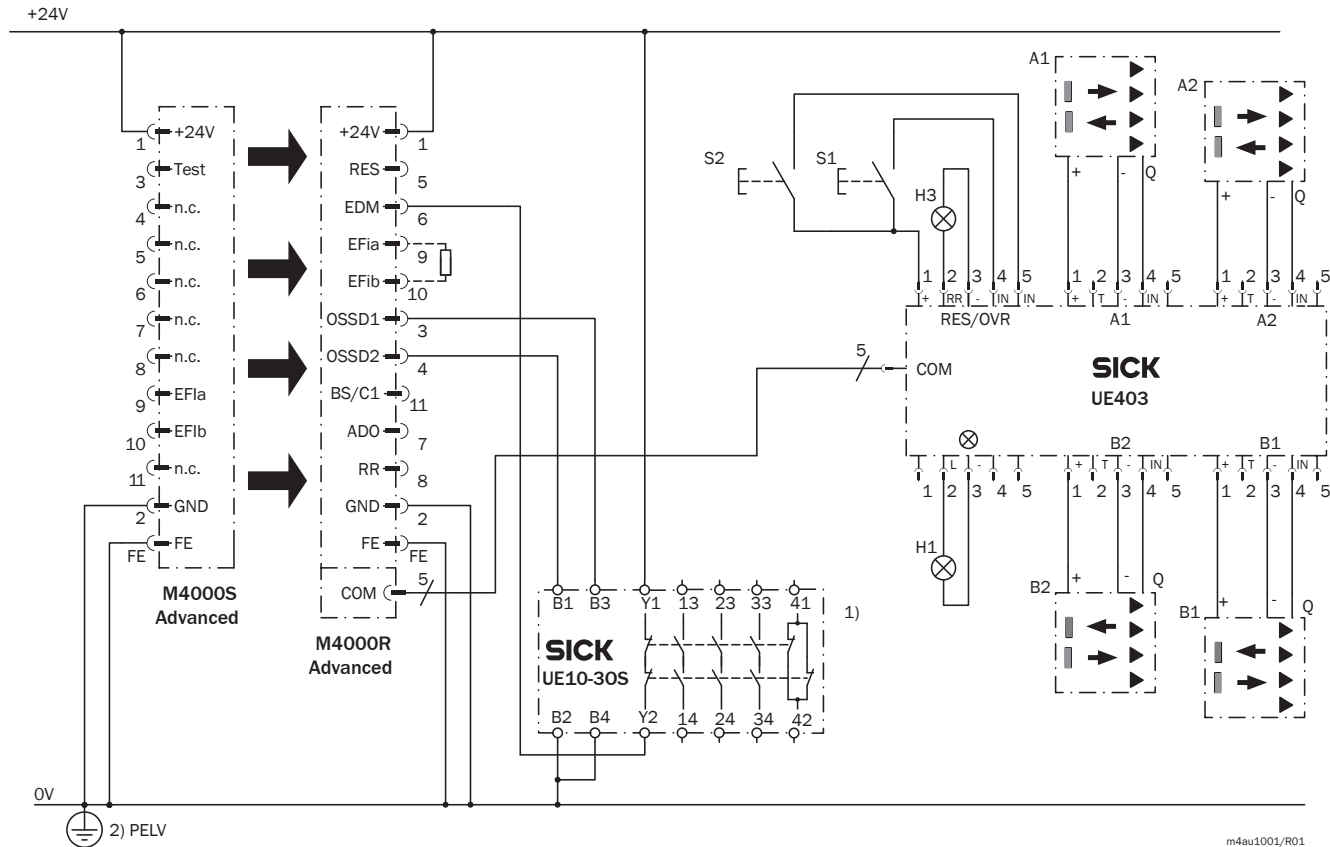
Note:
The fixing holes ① and slots ② are suitable for cheese head screws M5 x 30 as per DIN EN ISO 4762.

Dimensions in mm

Connection diagrams

→ You can find more connection diagrams at www.mysick.com

M4000 Advanced with UE403 switching amplifier connected to UE10-30S safety relay



Task

Connection of an M4000 Advanced multiple light beam safety device with UE403 switching amplifier to a UE10-30S safety relay.

Muting with 4 photoelectric reflex switches (dark-switching, PNP).

Operating mode: with restart interlock and external device monitoring.

Operating characteristics

When the light path is clear and the UE10-30S is de-energized and functioning correctly, the yellow LED on the receiver and the H3 lamp flash. The system is ready for switch-on and waits for an input signal/switch-on signal. The system is enabled by pressing and releasing the S1 button. The OSSD1 and OSSD2 outputs are live, the UE10-30S is switched on. On interruption of one or several of the light beams, the UE10-30S is de-energized by the OSSD1 and OSSD2 outputs.

Muting and override

When the light path is clear and the muting input conditions are valid, muting starts. The H1 muting lamp illuminates. Different time and monitoring functions can be configured.

When the light path is interrupted and muting sensors are active, e.g., because of muting errors or a new power on, override is enabled by pressing and releasing the S2 button.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The erroneous behavior of the UE10-30S will be detected. The shutdown function is retained. On manipulation (e.g., jamming) of the S1 button, the system does not enable the output current circuits.

The failure of one muting sensor will be detected by the muting sequence and prohibit a new muting cycle. On manipulation (e.g., jamming) of the S2 button, the system does not enable override. A permanent use of the override function will be inhibited through the device.

Comments

1) Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

2) PELV in accordance with the requirements in EN 60204-1 / 6.4

Take note of the operating instructions of the integrated devices. This applies particularly to the use of configurable functions.

sens:Control – safe control solutions








Optimal integration of all safety components leads to a complete solution with sens:Control – safe control solutions: Safety relays (from page N-0), safety controllers (from page O-0) and network solutions (from page P-0).


Accessories

M4000 Advanced


Mounting systems

Figure	Property	Packing unit	Type	Part no.
	Mounting kit 1, rigid	4	BEF-3WNGBAST4	7021352
	Mounting kit 6, swivel function, side bracket	4	BEF-1SHABAZN4	2019506
	Mounting kit 3, adjustable, vibration-absorbing	4	BEF-1SHADAAL4	2017752
	Mounting kit 2, adjustable	4	BEF-1SHABAAL4	2017751
	Mounting kit 12, swivel mount	4	BEF-2SMGEAKU4	2030510
	Omega bracket, flexible and quick installation with only one screw	4	BEF-2SMGEAAL4	2044846



Sliding nuts

Figure	Description	Remark	Packing unit	Part no.
	Sliding nuts	Included with delivery	4	2017550
	Sliding nuts for deflector mirror	Suitable for PNS75 and PNS125	6	2030600


Connecting cables

Figure	Connection type	Direction of cable outlet	Cable length	Type	Part no.
	Hirschmann cable socket M26 x 11 + FE	Straight	2.5 m	DOL-0612G2M5075KM0	2022544
			5 m	DOL-0612G05M075KM0	2022545
			7.5 m	DOL-0612G7M5075KM0	2022546
			10 m	DOL-0612G10M075KM0	2022547
			15 m	DOL-0612G15M075KM0	2022548
			20 m	DOL-0612G20M075KM0	2022549
			30 m	DOL-0612G30M075KM0	2022550


Cable receptacles

Figure	Connection type	Direction of cable outlet	Type	Part no.
	Hirschmann cable socket M26 x 11 + FE	Straight	DOS-0612G000GA3KM0	6020757
		Angled	DOS-0612W000GA3KM0	6020758

Extension connection cables

Figure	Connection type	Direction of cable outlet	Cable length	Remark	Type	Part no.
	Plug M12 x 5, socket M12 x 5	Plug straight/ socket straight	0.6 m	Connection cable for M4000 Advanced with M12, 5-pin connector and UE403	DSL-1205-G0M6C	6025930
			1 m		DSL-1205G01MC	6029280
			1.5 m		DSL-1205G1M5C	6029281
			2 m		DSL-1205-G02MC	6025931
			5 m		DSL-1205G05MC	6029282


Configuration connection cables

Figure	Description	Connection type	Cable length	Type	Part no.
	For connecting the configuration connection to the PC	M8 x 4, SUB-D 9-pin	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649


Terminators

Description	Remark	Type	Part no.
Terminal with 182 Ω resistance for pin 9 and 10 on the system connection	For improving the EMC behavior if EFI device communication is not used	Terminal with 182 Ω resistance	2027227


Power supply units

Figure	Input voltage	Output voltage	Maximum output current	Part no.
	100 V AC ... 240 V AC	24 V DC	3.9 A	7028790
			2.1 A	7028789


Device columns with external grooves

Figure	Description	Max. installation length	Number of beams	Beam separation	Type	Part no.
	Robust device columns with two external mounting grooves	965 mm	2	500 mm	PU3H96-00000000	2045490
		1165 mm	3	400 mm	PU3H11-00000000	2045641
		1265 mm	4	300 mm	PU3H13-00000000	2045642
		1720 mm	-	-	PU3H17-00000000	2045643
		2020 mm	-	-	PU3H21-00000000	2045644
		2250 mm	-	-	PU3H22-00000000	2045645
		2400 mm	-	-	PU3H24-00000000	2045646

Device columns for outdoor use

Figure	Description	Number of beams	Beam separation	Suitable for	Type	Part no.
	With front screen heating, 220 V, including brackets and cable socket (without multiple light beam safety device)	2	500 mm	M40x-0250x0xx0, M40Z-025000xR0, M40x-0250x3xx0, M40Z-025003xx0	PUM12-S02	2019654
		3	400 mm	M40x-0340x0xx0, M40x-0340x3xx0	PUM12-S01	2020800

Mirror columns with separate mirrors





Figure	Column height	Suitable for	Remark	Type	Part no.
 <small>Product may differ from illustration</small>	985 mm	M40x-0250xxxx, M20x-02x05xxxx	Completely mounted, including mirrors	PM3S96-00240020	1040619
		M40x-0260xxxx		PM3S96-00230060	1040620
	1185 mm	M40x-0340xxxx, M20x-03x40x1xx		PM3S11-00330030	1040625
	1285 mm	M40x-0345xxxx		PM3S13-00330050	1040624
		M40x-0430xxxx, M20x-04x30xxxx		PM3S13-00430040	1040626

Mirror columns with protective field height mirror


Figure	Column height	Mirror length	Type	Part no.
	1285 mm	900 mm	PM3C13-00030000	1043453
	1720 mm	1350 mm	PM3C17-00030000	1043454
	2000 mm	1650 mm	PM3C19-00030000	1043455
	2200 mm	1800 mm	PM3C20-00030000	1043456

→ For more detailed data on mirror columns and device columns, see page I-0


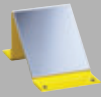
Column parts and accessories

Figure	Description	Packing unit	Type	Part no.
	For floor fastening	1	Adjusting plate	4031053
			Steel plug	5308961
	Omega bracket, mounting kit for device columns	2	BEF-2SMGEAAL2	2045736
	Suitable for all mirror columns PM3Sxx-xxxxxxx and PM3Cxx-xxxxxxx, including spacer bolt	1	Mirror kit for back area monitoring	2034938



Additional front screen

Figure	Suitable for	Remark	Packing unit	Part no.
 Example of use	M40x-0250xxxx	Including sliding nuts and fixing screws	2	2033225
	M40x-0260xxxx			2033226
	M40x-0322xxxx			2033227
	M40x-0340xxxx			2033228
	M40x-0345xxxx			2033229
	M40x-0422xxxx			2033230
	M40x-0522xxxx			2033231
	M40x-0622xxxx			2033232
	M40x-0722xxxx			2033233
	M40x-0822xxxx			2033234

Deflector mirrors

Figure	Mirror surface	Remark	Type	Part no.
	75 mm x 80 mm	Including mounting adapter (two swivel mounts)	PNS75-008	1026647
	80 mm x 97 mm	For 90° deflection, incl. mounting set, not suitable for column mounting	PSK45	5306053


Laser alignment aid

Figure	Description	Scanning range	Voltage supply	Type of light	Part no.
	Laser alignment aid AR60	Max. 60 m	2 batteries, 1.5 V Micro/AAA	Visible red light, laser class 2 (IEC 60825): Do not stare into beam!	1015741
	Adapter AR60 for M4000	-	-	-	4040006
	Alignment template, for M4000 with integrated laser	-	-	-	4040263



Configuration software

Figure	Description	Type	Part no.
	CDS (Configuration & Diagnostic Software)	CDS	2032314

Configuration tools

Figure	Description	Type	Part no.
	For saving and transferring configurations. For C4000 Standard, Advanced, Palletizer, Entry/Exit, Fusion and M4000 Advanced, Advanced Curtain, Area	Clone plug for C4000 and M4000	1029665
	-	Wall mount	5318443


Muting mechanic kits

Figure	Description	Suitable for	Type	Part no.
	Cross muting (2 sensors), muting sensor brackets for mounting on M4000 housing profile or device columns with external mounting grooves	Muting with two crossed-muting sensors for M4000 Advanced A/P and PU3Hxx device columns	M4000 muting arm-kit with two crossed-muting sensors	2046171
	Parallel muting (4 sensors), muting sensor brackets for mounting on M4000 housing profile or device columns with external mounting grooves	Muting with four parallel-muting sensors for M4000 Advanced A/P and PU3Hxx device columns	M4000 muting arm-kit with four parallel-muting sensors	2046170



UE403 switching amplifier**Mounting systems**

Description	Remark	Packing unit	Type	Part no.
Fixing screws with sliding nuts	Included in the delivery	2	Fixing screws	2033250


Connecting cables

Figure	Connection type	Direction of cable outlet	Cable length	Part no.
	Plug M12 x 5	Straight	2 m	6026133
			5 m	6026134
			10 m	6026135


Connectors

Figure	Connection type	Direction of cable outlet	Type	Part no.
	Plug M12 x 4	Straight	STE-1204-G	6009932
	Socket M12 x 4	Angled	DOS-1204-W	6007303

Extension connection cables

Figure	Connection type	Direction of cable outlet	Cable length	Remark	Type	Part no.
	Plug M12 x 5, socket M12 x 5	Plug straight/ socket straight	0.6 m	Connection cable for M4000 Advanced with M12, 5-pin connector and UE403	DSL-1205-G0M6C	6025930
			1 m		DSL-1205G01MC	6029280
			1.5 m		DSL-1205G1M5C	6029281
			2 m		DSL-1205-G02MC	6025931
			5 m		DSL-1205G05MC	6029282

Configuration connection cables

Figure	Description	Connection type	Cable length	Type	Part no.
	For connecting the configuration connection to the PC	M8 x 4, SUB-D 9-pin	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649

Muting sensor connecting cables



Connection type	Direction of cable outlet	Cable length	Description	Type	Part no.
Plug M12 x 3	Plug straight/ socket angled	1 m	Suitable for WT27, WL260, WT260 muting sensors; pin 2 (plug) not connected	DSL-1203B01MC34KM1	6026106
		2 m		DSL-1203B02MC34KM1	6026107
		5 m		DSL-1203B05MC34KM2	6025118
Plug M12 x 4	Plug straight/ socket angled	1 m	Suitable for WL24 and WT24 muting sensors	DSL-1204B01MC34KM0	6025974
				Suitable for WL12, WL14, WL18, WL23, WL27 muting sensors; pin 4 (plug) rotated to pin 2 (socket), pin 2 (plug) not connected	DSL-1204B01MC34KM2
		2 m	Suitable for WL24 and WT24 muting sensors	DSL-1204B02MC34KM0	6025975
				Suitable for WL12, WL14, WL18, WL23, WL27 muting sensors; pin 4 (plug) rotated to pin 2 (socket), pin 2 (plug) not connected	DSL-1204B02MC34KM2
		5 m	Suitable for WL24 and WT24 muting sensors	DSL-1204B05MC34KM1	6025087
				Suitable for WL12, WL14, WL18, WL23, WL27 muting sensors; pin 4 (plug) rotated to pin 2 (socket), pin 2 (plug) not connected	DSL-1204B05MC34KM2

G


Configuration software

Figure	Description	Type	Part no.
	CDS (Configuration & Diagnostic Software)	CDS	2032314

Muting indicator lamps

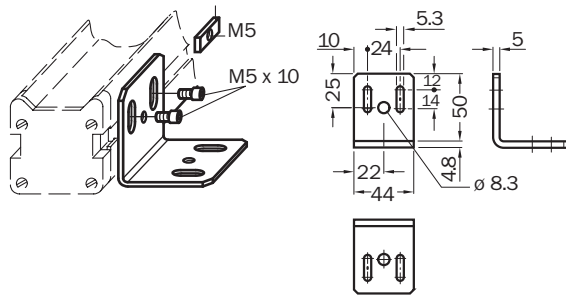
Figure	Type of muting indicator	Connection type	Cable length	Remark	Part no.
 Product may differ from illustration	LED	Connector	2 m	Incl. mounting bracket and mounting kit	2033118
			10 m	Incl. mounting bracket	2033119
 Product may differ from illustration	Incandescent lamp	Connector	2 m	Incl. mounting bracket and mounting kit	2033116
			10 m	Incl. mounting bracket	2033117

Muting accessories, other

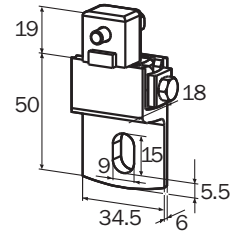
Figure	Type	Part no.
	Protective cap for device socket	6011170

Dimensional drawings mounting systems

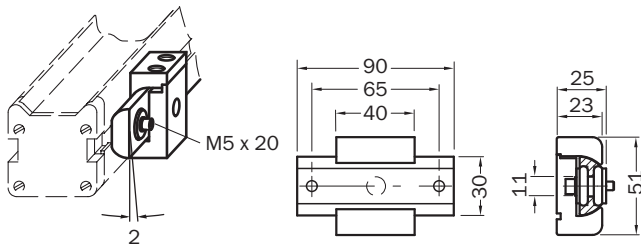
BEF-3WNGBAST4
Mounting kit 1, rigid



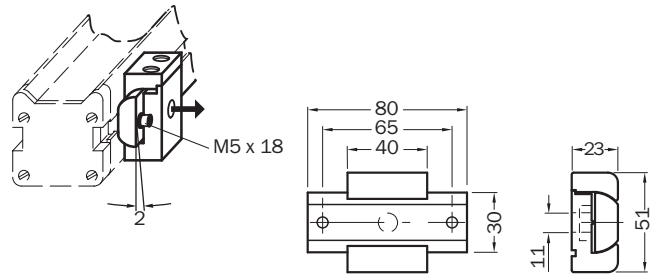
BEF-1SHABAZN4
Mounting kit 6, swivel function, side bracket



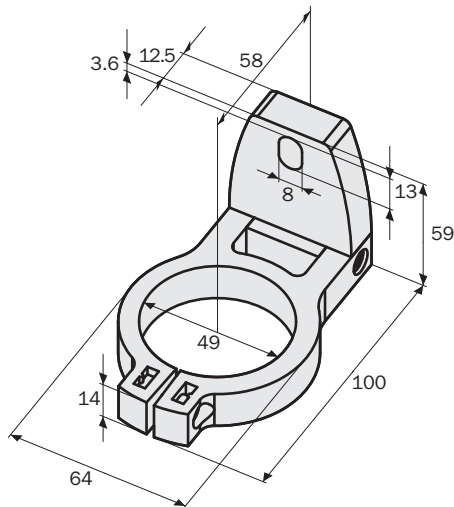
BEF-1SHADAAL4
Mounting kit 3, adjustable, vibration-absorbing



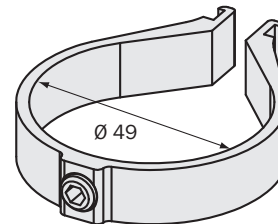
BEF-1SHABAAL4
Mounting kit 2, adjustable



BEF-2SMGEAKU4
Mounting kit 12, swivel mount



BEF-2SMGEAAL4
Omega bracket, flexible and quick installation with only one screw



Dimensions in mm

G

Technical data overview

Scanning range (depending on type)	0.5 m ... 70 m / 4.5 m / 7.5 m
Number of beams (depending on type)	2 ... 8
Beam separation (depending on type)	220 mm ... 600 mm
Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508), SILCL3 (IEC 62061)
Enclosure rating	IP 65

Product description

The M4000 Standard multiple light beam safety device is the solution for one-sided or multi-sided access protection. Efficient perimeter guarding solutions with maximum availability are created due to the M4000's high optical range and comprehensive functions, which are easily configured via buttons. The integrated functions and status information ensure rapid com-

missioning and help to minimize machine downtime. The modular concept cost-effectively achieves maximum machine safety by coordinating the characteristics of the device precisely to the users' requirements. Interfaces and service concepts complete the product range to give an ideal industrial solution.

In-system added value

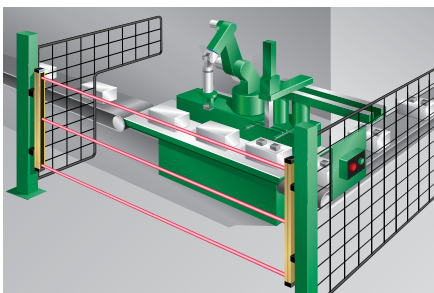
- Combined with SICK safe control solutions
- Safe integration in network solutions
- Direct integration in AS-Interface Safety at Work bus systems

→ For more combinations; see annex

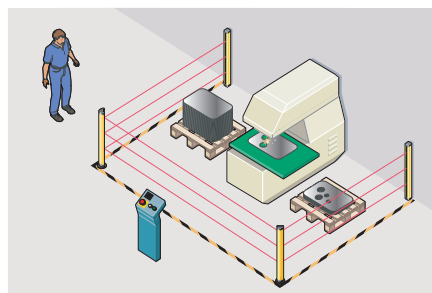
Applications

→ You can find more applications using the application finder at www.mysick.com

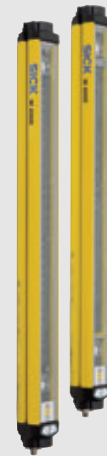
- Machine tool industry
- Storage and conveyor
- Packaging industry
- Stone production
- Automotive industry



M4000 Standard on a packaging machine



M4000 Standard with mirror columns on a punching machine



- Housing with 3 nut grooves
- Configuration buttons
- Restart interlock (RES)
- External device monitoring (EDM)
- Beam coding
- LED/7-segment display
- Application diagnostic output (ADO)
- Integrated laser alignment aid (optional)
- End cap with integrated LED (optional)
- Separate reset connection for receiver (optional)



Further information	Page
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→ Technical specifications	G-24
→ Dimensional drawings	G-11
→ Connection diagrams	G-30
→ Accessories	G-31
→ Systematic safety	A-0
→ Services	B-0

Ordering information

M4000 Standard

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025000ARO	1200000	M40E-025000RRO	1200017
	600 mm	M40S-026000ARO	1200001	M40E-026000RRO	1200018
3	220 mm	M40S-032200ARO	1200002	M40E-032200RRO	1200019
	400 mm	M40S-034000ARO	1200003	M40E-034000RRO	1200020
	450 mm	M40S-034500ARO	1200004	M40E-034500RRO	1200021
4	220 mm	M40S-042200ARO	1200005	M40E-042200RRO	1200022
	300 mm	M40S-043000ARO	1200006	M40E-043000RRO	1200023
5	220 mm	M40S-052200ARO	1200007	M40E-052200RRO	1200024
6	220 mm	M40S-062200ARO	1200008	M40E-062200RRO	1200025
7	220 mm	M40S-072200ARO	1200009	M40E-072200RRO	1200026
8	220 mm	M40S-082200ARO	1200010	M40E-082200RRO	1200027

M4000 Standard, includes end cap with integrated LED

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025000ARO	1200000	M40E-025020RRO	1200033
	600 mm	M40S-026000ARO	1200001	M40E-026020RRO	1200034
3	220 mm	M40S-032200ARO	1200002	M40E-032220RRO	1207020
	400 mm	M40S-034000ARO	1200003	M40E-034020RRO	1200035
	450 mm	M40S-034500ARO	1200004	M40E-034520RRO	1200036
4	220 mm	M40S-042200ARO	1200005	M40E-042220RRO	1207019
	300 mm	M40S-043000ARO	1200006	M40E-043020RRO	1200037
5	220 mm	M40S-052200ARO	1200007	M40E-052220RRO	_ 1)
6	220 mm	M40S-062200ARO	1200008	M40E-062220RRO	1200121
7	220 mm	M40S-072200ARO	1200009	M40E-072220RRO	1203892
8	220 mm	M40S-082200ARO	1200010	M40E-082200RRO	_ 1)

¹⁾ When ordering for the first time, please use the information in the "Type" column instead of "Part no."

M4000 Standard, with integrated alignment aid

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025010ARO	1200011	M40E-025010RRO	1200028
	600 mm	M40S-026010ARO	1200012	M40E-026010RRO	1200029
3	400 mm	M40S-034010ARO	1200013	M40E-034010RRO	1200030
	450 mm	M40S-034510ARO	1200014	M40E-034510RRO	1200031
4	300 mm	M40S-043010ARO	1200015	M40E-043010RRO	1200032

M4000 Standard, with integrated alignment aid and end cap with integrated LED

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M40S-025010ARO	1200011	M40E-025030RR0	1200038
	600 mm	M40S-026010ARO	1200012	M40E-026030RR0	1200039
3	400 mm	M40S-034010ARO	1200013	M40E-034030RR0	1200040
	450 mm	M40S-034510ARO	1200014	M40E-034530RR0	1200041
4	300 mm	M40S-043010ARO	1200015	M40E-043030RR0	1200042

M4000 Standard A/P

Number of beams	Beam separation	Scanning range	Sender/receiver in one housing		Deflector unit	
			Type	Part no.	Type	Part no.
2	500 mm	7.5 m	M40Z-025000RR0	1200120	PSD01-1501 ¹⁾	1027906
		4.5 m	M40Z-025000TRO	1200122	PSD01-2501 ²⁾	1027907
4	300 mm	4.5 m	M40Z-043000TRO	1200123	PSD02-2301 ²⁾	1027908

¹⁾ With mirror deflection (max. effective scanning range 7.5 m)

²⁾ With fiber-optic cable deflection (max. effective scanning range 4.5 m)

M4000 Standard A/P, includes end cap with integrated LED

Number of beams	Beam separation	Scanning range	Sender/receiver in one housing		Deflector unit	
			Type	Part no.	Type	Part no.
2	500 mm	7.5 m	M40Z-025020RR0	1200124	PSD01-1501 ¹⁾	1027906
		4.5 m	M40Z-025020TRO	1200129	PSD01-2501 ²⁾	1027907
4	300 mm	4.5 m	M40Z-043020TRO	1200130	PSD02-2301 ²⁾	1027908

¹⁾ With mirror deflection (max. effective scanning range 7.5 m)

²⁾ With fiber-optic cable deflection (max. effective scanning range 4.5 m)

Options

Description
Integrated interface AS-interface Safety at Work ¹⁾
Separate connection reset M12 x 5 ¹⁾

¹⁾ Options not combinable. Type and part number available upon request or via product finder at www.mysick.com



Technical specifications

→ You can find more detailed data in the operating instructions. Download at www.mysick.com

M4000 Standard

General data

System part	Sender	Receiver
Number of beams (depending on type)	2 ... 8	
Beam separation (depending on type)	220 mm ... 600 mm	
Scanning range	Configurable	– ✓ 0.5 m ... 20 m 15 m ... 70 m
Response time (depending on type)	–	Max. 12 ms
Protection class	III (EN 50178:1998)	
Enclosure rating	IP 65 (EN 60529)	
Synchronization	Optical, without separate synchronization	
Safety related parameters	Type	Type 4 (IEC 61496)
	Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
	Category	Category 4 (EN ISO 13849)
	Performance level	PL e (EN ISO 13849)
	PFHd (mean probability of a dangerous failure per hour)	6.6×10^{-9} (EN ISO 13849)
	T _M (Mission Time)	20 years (EN ISO 13849)
Ambient operating temperature from ... to	–10 °C ... +55 °C	
Storage temperature from ... to	–25 °C ... +70 °C	
Air humidity from ... to	15 % ... 95 %, non-condensing	
Housing cross section	52 mm x 55.5 mm	
Vibration resistance	5 (10 ... 55), IEC 60068-2-6	
Shock resistance	10 g, 16 ms (IEC 60068-2-29)	
Housing material	Aluminum alloy ALMGS1 0.5, powder coated	
Front screen material	Polycarbonate, scratch-resistant coating	
Integrated laser alignment aid (depending on type)		≤ 1 mW
	Laser class	2 (IEC 60825-1:2007) ¹⁾
	Light sender/type of light	Laser (visible red light)
	Wave length	630 nm ... 680 nm

¹⁾ Do not stare into beam!

Functional data

System part	Sender	Receiver
Integrated Interface AS-interface Safety at Work (optional)		✓
Restart interlock	-	✓
Restart interlock (delivery status)	-	Activated
External device monitoring	-	✓
External device monitoring (delivery status)	-	Activated
Beam coding		✓
Beam coding (delivery status)		Non-coded
Configurable application diagnostic output	-	✓
Application diagnostic output (delivery status)	-	Contamination (OWS)
Sender test	✓	-
Sender test (delivery status)	Deactivated	-
Configurable scanning range	-	✓
Scanning range (delivery status)	-	20 m
Integrated laser alignment aid (optional) (depending on type)		- / ✓
End cap with integrated LED (optional) (depending on type)	-	- / ✓
Configuration method	Configuration buttons	

Electrical data

System part	Sender	Receiver
System connection	M12 x 8 plug	
Connecting cable length	Max. 15 m ¹⁾	
Connecting cable wire cross-section	0.25 mm ²	
Supply voltage V_s	24 V DC (19.2 V DC ... 28.8 V DC)	
Residual ripple	± 10 %	
Power consumption	Max. 0.2 A	Max. 0.6 A
Safety outputs (OSSD)		
Type of output	-	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ²⁾
Switching voltage HIGH	-	24 V DC ($V_S - 2.25 V \dots V_S$)
Switching voltage LOW	-	2 V DC
Switching current	-	0 mA ... 500 mA
Application diagnostic output		
Switching voltage HIGH	-	PNP semiconductor, short-circuit protected 24 V DC ($V_S - 4.2 V \dots V_S$)
Switching voltage LOW	-	High resistance
Switching current	-	0 mA ... 100 mA
Display elements	LED/7-segment	

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ Applies to a voltage range between -30 V and +30 V.

M4000 Standard A/P

General data

System part	Sender/receiver in one housing	Deflector unit
Number of beams (depending on type)	2 / 4	
Beam separation (depending on type)	300 mm / 500 mm	
Scanning range		
Configurable	✓	-
Beam separation 300 mm	0.5 m ... 4.5 m	4.5 m
Beam separation 500 mm (depending on type)	0.5 m ... 7.5 m / 0.5 m ... 4.5 m	7.5 m / 4.5 m
Response time	Max. 10 ms	-
Protection class	III (EN 50178:1998)	-
Enclosure rating	IP 65 (EN 60529)	-
Synchronization	Optical, without separate synchronization	-
Safety related parameters		
Type	Type 4 (IEC 61496)	-
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)	-
Category	Category 4 (EN ISO 13849)	-
Performance level	PL e (EN ISO 13849)	-
PFHd (mean probability of a dangerous failure per hour)	6.6×10^{-9} (EN ISO 13849)	-
T_M (Mission Time)	20 years (EN ISO 13849)	-
Ambient operating temperature from ... to	-10 °C ... +55 °C	-
Storage temperature from ... to	-25 °C ... +70 °C	-
Air humidity from ... to	15 % ... 95 %, non-condensing	-
Housing cross section	52 mm x 55.5 mm	
Vibration resistance	5 (10 ... 55), IEC 60068-2-6	-
Shock resistance	10 g, 16 ms (IEC 60068-2-29)	-
Housing material	Aluminum alloy ALMGSI 0.5, powder coated	-
Front screen material	Polycarbonate, scratch-resistant coating	-

Functional data

System part	Sender/receiver in one housing	Deflector unit
Integrated interface AS-interface Safety at Work (optional)	✓	-
Restart interlock	✓	-
Restart interlock (delivery status)	Internal	-
External device monitoring	✓	-
External device monitoring (delivery status)	Activated	-
Beam coding	✓	-
Beam coding (delivery status)	Non-coded	-
Configurable application diagnostic output	✓	-
Application diagnostic output (delivery status)	Contamination (OWS)	-
Configurable scanning range	✓	-
Scanning range (delivery status) (depending on type)	7.5 m / 4.5 m	-
End cap with integrated LED (optional) (depending on type)	- / ✓	-
Configuration method	Configuration buttons	-

Electrical data

System part	Sender/receiver in one housing	Deflector unit
System connection	M12 x 8 plug	-
Connecting cable length	Max. 15 m ¹⁾	-
Connecting cable wire cross-section	0.25 mm ²	-
Supply voltage V_S	24 V DC (19.2 V DC ... 28.8 V DC)	-
Residual ripple	± 10 %	-
Power consumption	Max. 0.6 A	-
Safety outputs (OSSD)		
Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ²⁾	-
Switching voltage HIGH	24 V DC ($V_S - 2.25 \text{ V} \dots V_S$)	-
Switching voltage LOW	2 V DC	-
Switching current	0 mA ... 500 mA	-
Application diagnostic output	PNP semiconductor, short-circuit protected	
Switching voltage HIGH	24 V DC ($V_S - 4.2 \text{ V} \dots V_S$)	-
Switching voltage LOW	High resistance	-
Switching current	0 mA ... 100 mA	-
Display elements	LED/7-segment	-

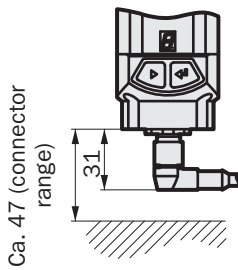
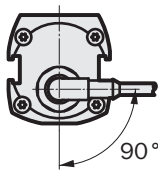
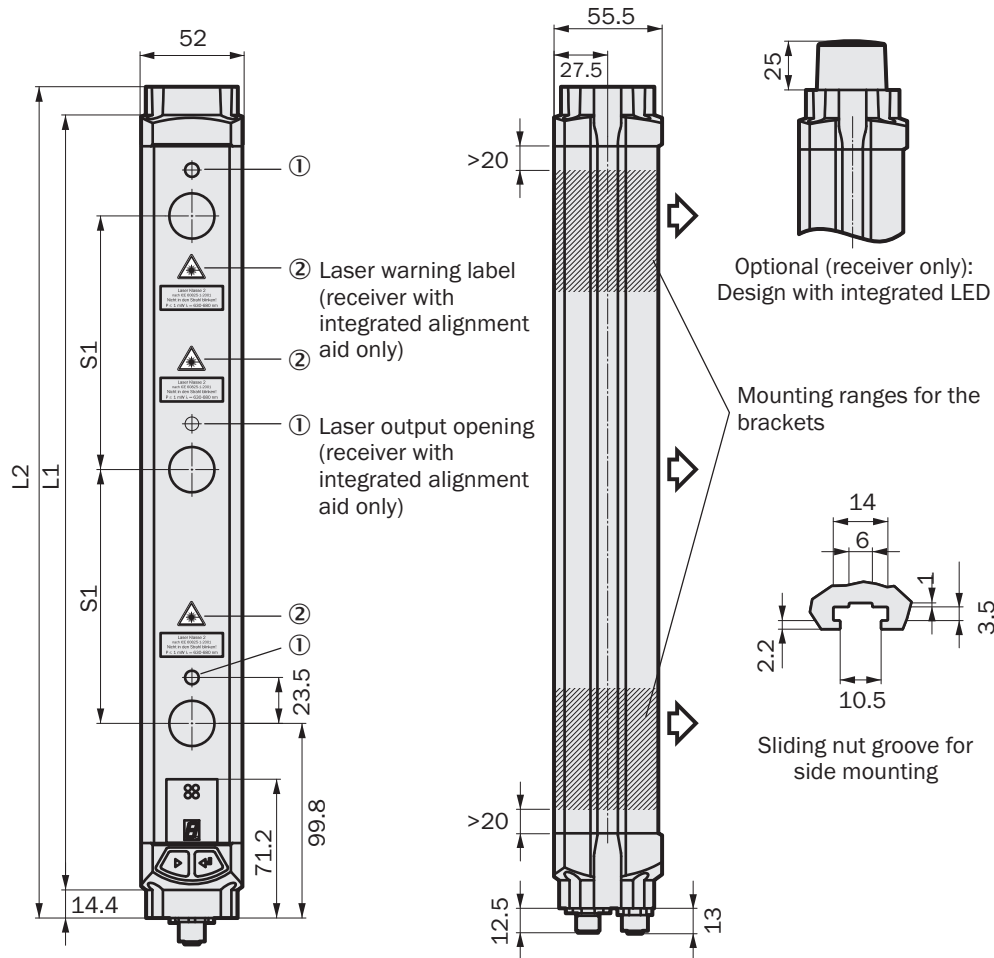
¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

²⁾ Applies to a voltage range between -30 V and +30 V.

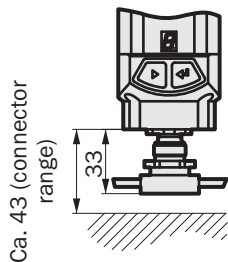


Dimensional drawings

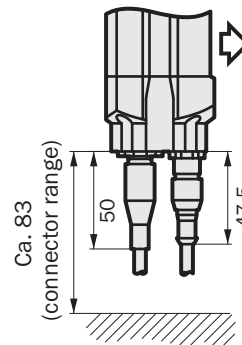
M4000 Standard, M4000 Standard A/P



Cable socket M12 angled (only with AS-Interface: aligned)



AS-Interface clip M12 (aligned)

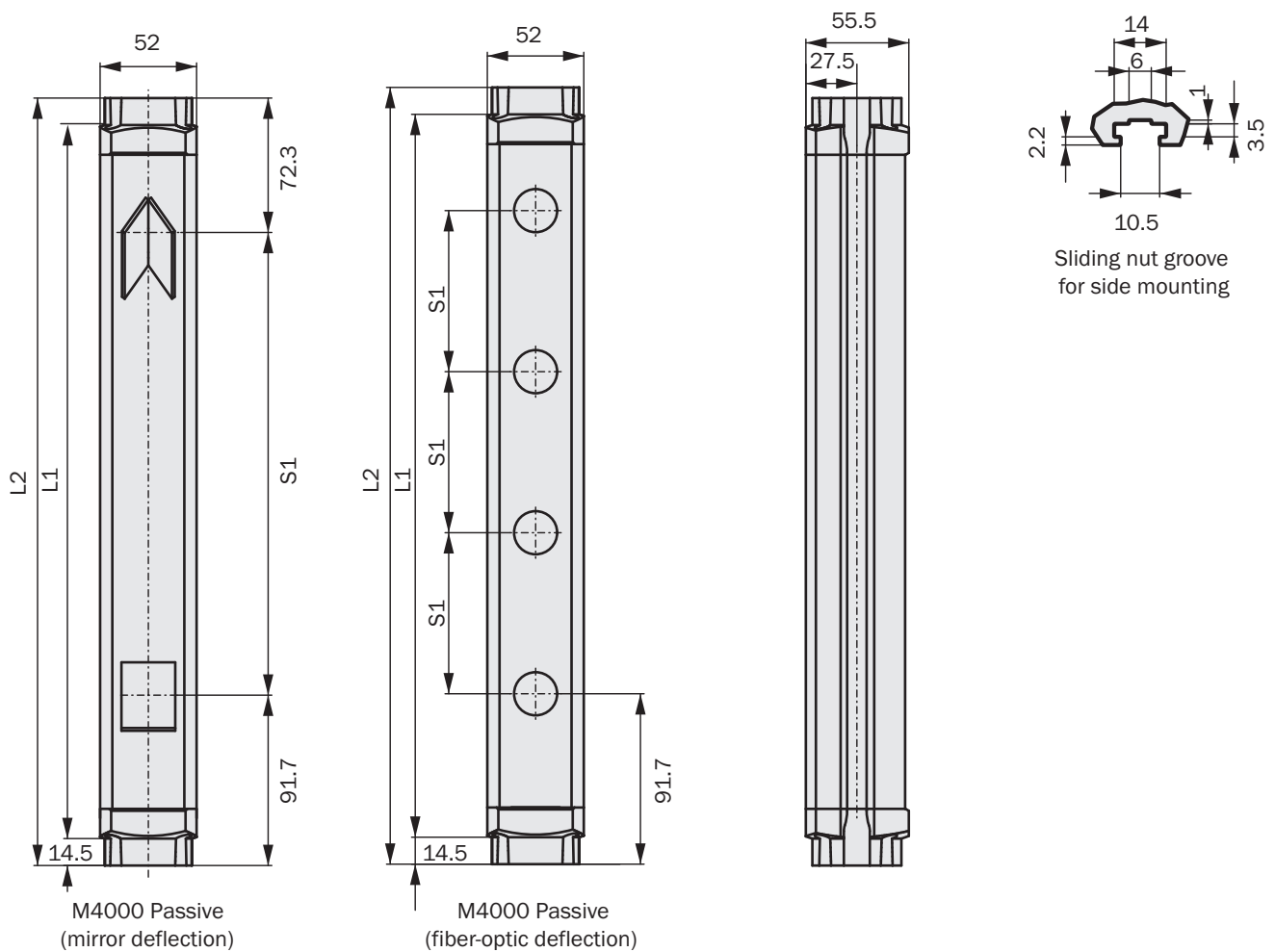


Cable socket M12 with cable (left) and cable plug M12 with cable (right, optional, only on receiver)

Dimensions in mm

Number of beams	Beam separation S1	L1	L2
2	500	643	672
2	600	743	772
3	220	583	612
3	400	943	972
3	450	1043	1072
4	220	803	832
4	300	1043	1072
5	220	1023	1052
6		1243	1272
7		1462	1491
8		1682	1711

Deflector units for M4000 Standard A/P



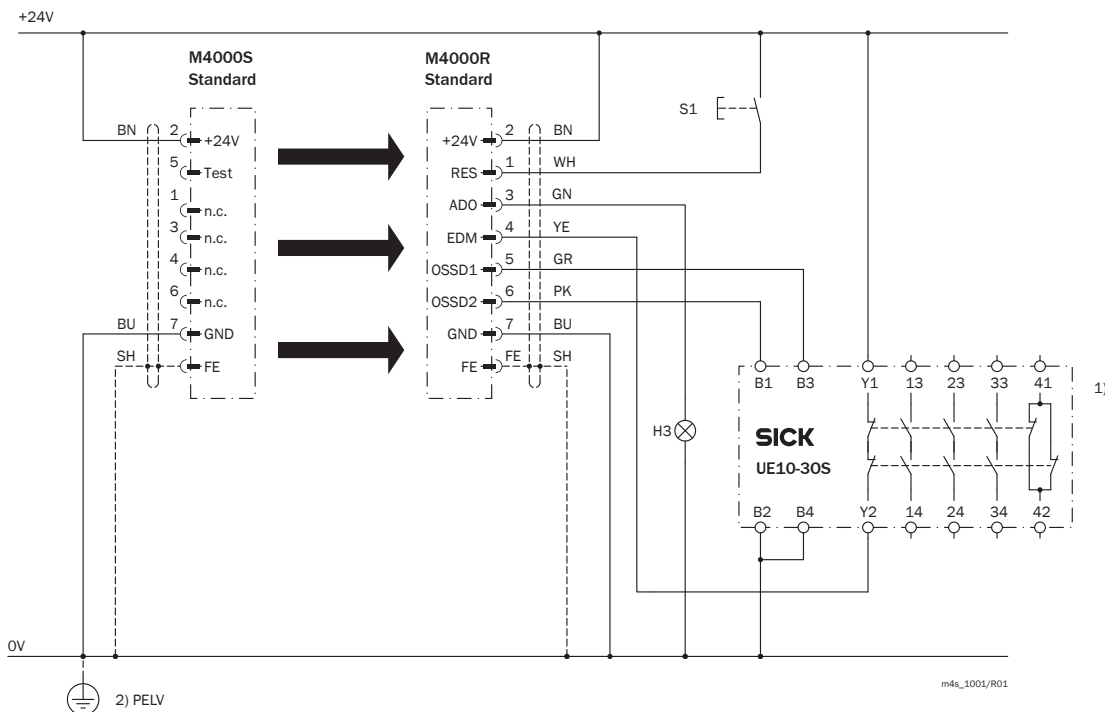
Number of beams	Beam separation S1	L1	L2
2	500	643	672
4	300	1043	1072

Dimensions in mm

Connection diagrams

→ You can find more connection diagrams at www.mysick.com

M4000 Standard connected to UE10-30S safety relay



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Task

Connection of an M4000 Standard multiple light beam safety device to a UE10-30S safety relay.
Operating mode: with restart interlock and external device monitoring.

Operating characteristics

When the light path is clear and the UE10-30S is de-energized and functioning correctly, the yellow LED on the receiver and the H3 lamp flash. The system is ready for switch-on and waits for an input signal/switch-on signal. The system is enabled by pressing and releasing the S1 button. The OSSD1 and OSSD2 outputs are live, the UE10-30S is switched on. On interruption of one or several of the light beams, the UE10-30S is de-energized by the OSSD1 and OSSD2 outputs.

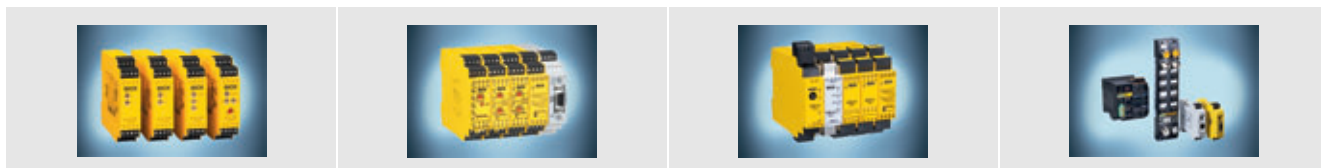
Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The erroneous behavior of the UE10-30S will be detected. The shutdown function is retained. On manipulation (e.g., jamming) of the S1 button, the system does not enable the output current circuits.

Comments

- 1) Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.
- 2) PELV in accordance with the requirements in EN 60204-1 / 6.4
Take note of the operating instructions of the integrated devices.


sens:Control – safe control solutions




Optimal integration of all safety components leads to a complete solution with sens:Control – safe control solutions: Safety relays (from page N-0), safety controllers (from page O-0) and network solutions (from page P-0).

Accessories


Mounting systems

Figure	Property	Packing unit	Type	Part no.
	Mounting kit 1, rigid	4	BEF-3WNGBAST4	7021352
	Mounting kit 6, swivel function, side bracket	4	BEF-1SHABAZN4	2019506
	Mounting kit 3, adjustable, vibration-absorbing	4	BEF-1SHADAAL4	2017752
	Mounting kit 2, adjustable	4	BEF-1SHABAAL4	2017751
	Mounting kit 12, swivel mount	4	BEF-2SMGEAKU4	2030510
	Omega bracket, flexible and quick installation with only one screw	4	BEF-2SMGEAAL4	2044846


Sliding nuts

Figure	Description	Remark	Packing unit	Part no.
	Sliding nuts	Included with delivery	4	2017550
	Sliding nuts for deflector mirror	Suitable for PNS75 and PNS125	6	2030600


Connecting cables

Figure	Connection type	Direction of cable outlet	Cable length	Type	Part no.
	Socket M12 x 7 + FE	Straight	2.5 m	DOL-127SG2M5E25KM0	6020537
			5 m	DOL-127SG05ME25KM0	6020354
			7.5 m	DOL-127SG7M5E25KM0	6020353
			10 m	DOL-127SG10ME25KM0	6020352
			15 m	DOL-127SG15ME25KM0	6020872


Cable receptacles

Figure	Connection type	Direction of cable outlet	Type	Part no.
	M12 x 8	Straight	DOS-1208-G	6028422


Power supply units

Figure	Input voltage	Output voltage	Maximum output current	Part no.
	100 V AC ... 240 V AC	24 V DC	2.1 A	7028789
			3.9 A	7028790


Device columns with external grooves

Figure	Description	Max. installation length	Number of beams	Beam separation	Type	Part no.
	Robust device columns with two external mounting grooves	965 mm	2	500 mm	PU3H96-00000000	2045490
		1165 mm	3	400 mm	PU3H11-00000000	2045641
		1265 mm	4	300 mm	PU3H13-00000000	2045642
		1720 mm	-	-	PU3H17-00000000	2045643
		2020 mm	-	-	PU3H21-00000000	2045644
		2250 mm	-	-	PU3H22-00000000	2045645
		2400 mm	-	-	PU3H24-00000000	2045646

Device columns for outdoor use

Figure	Description	Number of beams	Beam separation	Suitable for	Type	Part no.
	With front screen heating, 220 V, including brackets and cable socket (without multiple light beam safety device)	2	500 mm	M40x-0250x0xx0, M40Z-025000xR0, M40x-0250x3xx0, M40Z-025003xx0	PUM12-S02	2019654
		3	400 mm	M40x-0340x0xx0, M40x-0340x3xx0	PUM12-S01	2020800

Mirror columns with separate mirrors





Figure	Column height	Suitable for	Remark	Type	Part no.
 <small>Product may differ from illustration</small>	985 mm	M40x-0250xxxx, M20x-02x05xxxx	Completely mounted, including mirrors	PM3S96-00240020	1040619
		M40x-0260xxxx		PM3S96-00230060	1040620
	1185 mm	M40x-0340xxxx, M20x-03x40x1xx		PM3S11-00330030	1040625
	1285 mm	M40x-0345xxxx		PM3S13-00330050	1040624
		M40x-0430xxxx, M20x-04x30xxxx		PM3S13-00430040	1040626

Mirror columns with protective field height mirror


Figure	Column height	Mirror length	Type	Part no.
	1285 mm	900 mm	PM3C13-00030000	1043453
	1720 mm	1350 mm	PM3C17-00030000	1043454
	2000 mm	1650 mm	PM3C19-00030000	1043455
	2200 mm	1800 mm	PM3C20-00030000	1043456

→ For more detailed data on mirror columns and device columns, see page I-0


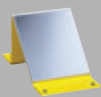
Column parts and accessories

Figure	Description	Packing unit	Type	Part no.
	For floor fastening	1	Adjusting plate	4031053
			Steel plug	5308961
	Omega bracket, mounting kit for device columns	2	BEF-2SMGEAAL2	2045736
	Suitable for all mirror columns PM3Sxx-xxxxxxx and PM3Cxx-xxxxxxx, including spacer bolt	1	Mirror kit for back area monitoring	2034938



Additional front screen

Figure	Suitable for	Remark	Packing unit	Part no.
 Example of use	M40x-0250xxxx	Including sliding nuts and fixing screws	2	2033225
	M40x-0260xxxx			2033226
	M40x-0322xxxx			2033227
	M40x-0340xxxx			2033228
	M40x-0345xxxx			2033229
	M40x-0422xxxx			2033230
	M40x-0522xxxx			2033231
	M40x-0622xxxx			2033232
	M40x-0722xxxx			2033233
	M40x-0822xxxx			2033234

Deflector mirrors

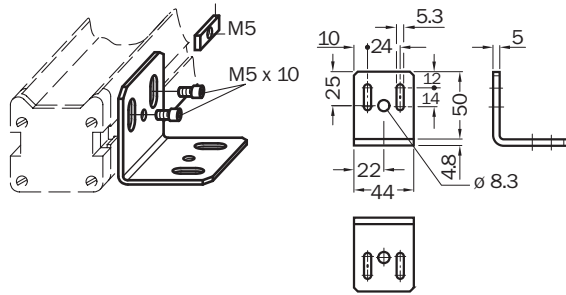
Figure	Mirror surface	Remark	Type	Part no.
	75 mm x 80 mm	Including mounting adapter (two swivel mounts)	PNS75-008	1026647
	80 mm x 97 mm	For 90° deflection, incl. mounting set; not suitable for column mounting	PSK45	5306053

Laser alignment aid

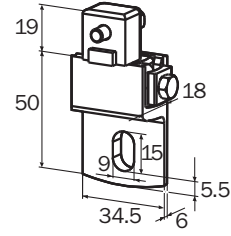
Figure	Description	Scanning range	Voltage supply	Type of light	Part no.
	Laser alignment aid AR60	Max. 60 m	2 batteries, 1.5 V Micro/AAA	Visible red light, laser class 2 (IEC 60825): Do not stare into beam!	1015741
	Adapter AR60 for M4000	-	-	-	4040006
	Alignment template, for M4000 with integrated laser	-	-	-	4040263

Dimensional drawings mounting systems

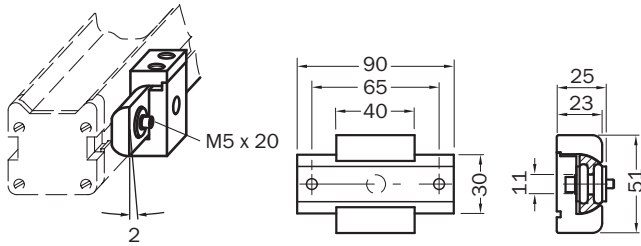
BEF-3WNGBAST4
Mounting kit 1, rigid



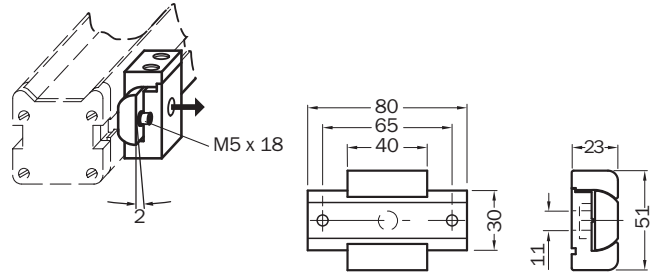
BEF-1SHABAZN4
Mounting kit 6, swivel function, side bracket



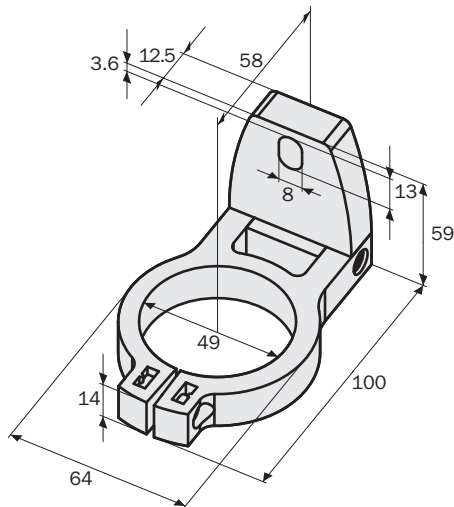
BEF-1SHADAAL4
Mounting kit 3, adjustable, vibration-absorbing



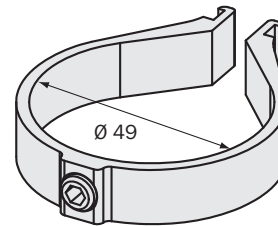
BEF-1SHABAAL4
Mounting kit 2, adjustable



BEF-2SMGEAKU4
Mounting kit 12, swivel mount



BEF-2SMGEAAL4
Omega bracket, flexible and quick installation with only one screw



Dimensions in mm

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Technical data overview

Scanning range (depending on type)	0.5 m ... 19 m / 0.5 m ... 70 m
Length of the monitored area (depending on type)	300 mm ... 1800 mm
Resolution (depending on type)	60 mm / 80 mm
Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508), SILCL3 (IEC 62061)
Enclosure rating	IP 65

Product description

The M4000 Area multiple light beam safety device is the efficient solution for area protection or for preventing employees standing behind the point-of-operation protection. Area protection can be achieved with maximum availability thanks to its long range and integrated functions, easily con-

figured by PC via the RS-232 interface. The integrated functions, status and diagnostic information permit rapid commissioning and prevent unnecessary machine downtime.

The integrated EFI interface allows the use of additional sensor functions (see A-8).

In-system added value

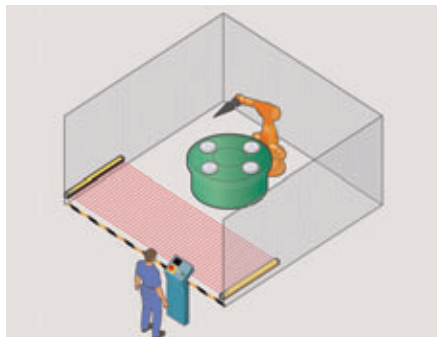
Combined with SICK safe control solutions

→ For more combinations, see annex

Applications

→ You can find more applications using the application finder at www.mysick.com

Provides area protection or point-of-operation guarding of a hazardous point, e.g., on robots, machining centers in mechanical



Hazardous area protection with M4000 Area on a robot

engineering applications or on paper roll machines.



Point-of-operation guarding with M4000 Area at an output conveyor in the automotive industry



- 60 or 80 mm resolution
- Restart interlock (RES)
- External device monitoring (EDM)
- Beam coding
- LED/7-segment display
- Application diagnostic output (ADO)
- Configuration and diagnostics via PC
- SDL interface



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Further information	Page
→ Ordering information	G-36
→ Technical specifications	G-37
→ Dimensional drawings	G-11
→ Connection diagrams	G-40
→ Accessories	G-41
→ Systematic safety	A-0
→ Services	B-0

Ordering information

M4000 Area

Resolution	Length of the monitored area	Sender		Receiver	
		Type	Part no.	Type	Part no.
60 mm	300 mm	M40S-60A005AA0	1200915	M40E-60A005RA0	1200916
	450 mm	M40S-61A005AA0	1200138	M40E-61A005RA0	1200137
	600 mm	M40S-60A005AA0	1201067	M40E-62A005RA0	1201068
	750 mm	M40S-63A005AA0	1200674	M40E-63A005RA0	1200914
	900 mm	M40S-64A005AA0	1200506	M40E-64A005RA0	1200508
	1050 mm	M40S-65A005AA0	1200507	M40E-65A005RA0	1200509
	1200 mm	M40S-66A005AA0	1200805	M40E-66A005RA0	1200806
	1350 mm	M40S-67A005AA0	1200837	M40E-67A005RA0	1200838
	1500 mm	M40S-68A005AA0	1200850	M40E-68A005RA0	1200849
	1650 mm	M40S-60A005AA0	1200912	M40E-69A005RA0	1200913
	1800 mm	M40S-70A005AA0	1200147	M40E-70A005RA0	1200146
80 mm	300 mm	M40S-60A105AA0	1207202	M40E-60A105RA0	1207203
	450 mm	M40S-61A105AA0	1207205	M40E-61A105RA0	1207204
	600 mm	M40S-62A105AA0	1200139	M40E-62A105RA0	1200140
	750 mm	M40S-63A105AA0	1200134	M40E-63A105RA0	1200685
	900 mm	M40S-64A105AA0	1201655	M40E-64A105RA0	1201656
	1050 mm	M40S-65A105AA0	1200586	M40E-65A105RA0	1200587
	1200 mm	M40S-66A105AA0	1201046	M40E-66A105RA0	1201045
	1350 mm	M40S-67A105AA0	1200604	M40E-67A105RA0	1200605
	1500 mm	M40S-68A105AA0	1200588	M40E-68A105RA0	1200589
	1650 mm	M40S-69A105AA0	1200686	M40E-69A105RA0	1200687
	1800 mm	M40S-70A105AA0	1200149	M40E-70A105RA0	1200148

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Technical specifications

→ You can find more detailed data in the operating instructions. Download at www.mysick.com

General data

System part	Sender	Receiver
Resolution (depending on type)	60 mm / 80 mm	
Length of the monitored area (depending on type)	300 mm ... 1800 mm	
Scanning range		
Configurable	-	✓
Resolution 60 mm	-	0.5 m ... 6 m / 5 m ... 19 m
Resolution 80 mm	-	0.5 m ... 20 m / 15 m ... 70 m
Response time	-	Max. 17 ms
Protection class	III (EN 50178:1998)	
Enclosure rating	IP 65 (EN 60529)	
Synchronization	Optical, without separate synchronization	
Safety related parameters		
Type	Type 4 (IEC 61496)	
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)	
Category	Category 4 (EN ISO 13849)	
Performance level	PL e (EN ISO 13849)	
PFHd (mean probability of a dangerous failure per hour)	1.4×10^{-8} (EN ISO 13849)	
T _M (Mission Time)	20 years (EN ISO 13849)	
Ambient operating temperature from ... to	-10 °C ... +55 °C	
Storage temperature from ... to	-25 °C ... +70 °C	
Air humidity from ... to	15 % ... 95 %, non-condensing	
Housing cross section	52 mm x 55.5 mm	
Vibration resistance	5 (10 ... 55), IEC 60068-2-6	
Shock resistance	10 g, 16 ms (IEC 60068-2-29)	
Housing material	Aluminum alloy ALMGSI 0.5, powder coated	
Front screen material	Polycarbonate, scratch-resistant coating	



Functional data

System part	Sender	Receiver
Safe device communication via EFI/SDL		✓
Restart interlock	-	✓
Restart interlock (delivery status)	-	Internal
External device monitoring	-	✓
External device monitoring (delivery status)	-	Activated
Beam coding		✓
Beam coding (delivery status)		Non-coded
Configurable application diagnostic output	-	✓
Application diagnostic output (delivery status)	-	Contamination (OWS)
Sender test	✓	-
Sender test (delivery status)	Deactivated	-
Configurable scanning range	-	✓
Scanning range (delivery status) (depending on type)	-	6 m / 20 m
SDL interface		✓
Configuration method	PC with CDS (configuration and diagnostic software)	

Electrical data

System part	Sender	Receiver
System connection	M26 x 11 + FE Hirschmann plug	
Connecting cable length	Max. 50 m ¹⁾	
Connecting cable wire cross-section	0.75 mm ²	
Supply voltage V _S	24 V (19.2 V ... 28.8 V) ²⁾	
Residual ripple	± 10 %	
Power consumption	Max. 0.2 A	Max. 0.6 A
Safety outputs (OSSD)		
Type of output	-	2 PNP semiconductors, short-circuit protected, cross-circuit monitored ³⁾
Switching voltage HIGH	-	24 V DC (V _S - 2.25 V ... V _S)
Switching voltage LOW	-	2 V DC
Switching current	-	0 mA ... 500 mA
Application diagnostic output		PNP semiconductor, short-circuit protected
Switching voltage HIGH	-	24 V DC (V _S - 4.2 V ... V _S)
Switching voltage LOW	-	High resistance
Switching current	-	0 mA ... 100 mA
Display elements	LED/7-segment	

¹⁾ Depending on load, power supply and wire cross-section. The technical specifications must be observed.

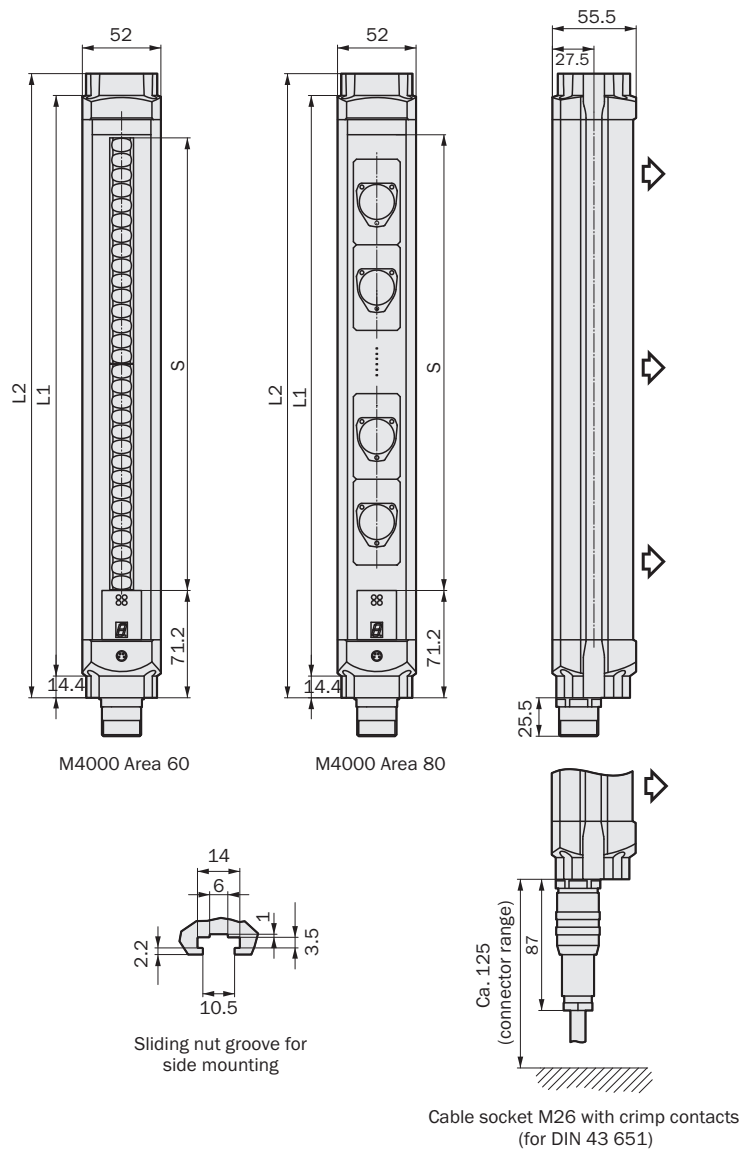
²⁾ The external voltage supply must be capable of buffering brief mains voltage failures of 20 ms as specified in EN 60204.

³⁾ Applies to a voltage range between -30 V and +30 V.



Dimensional drawings

M4000 Area



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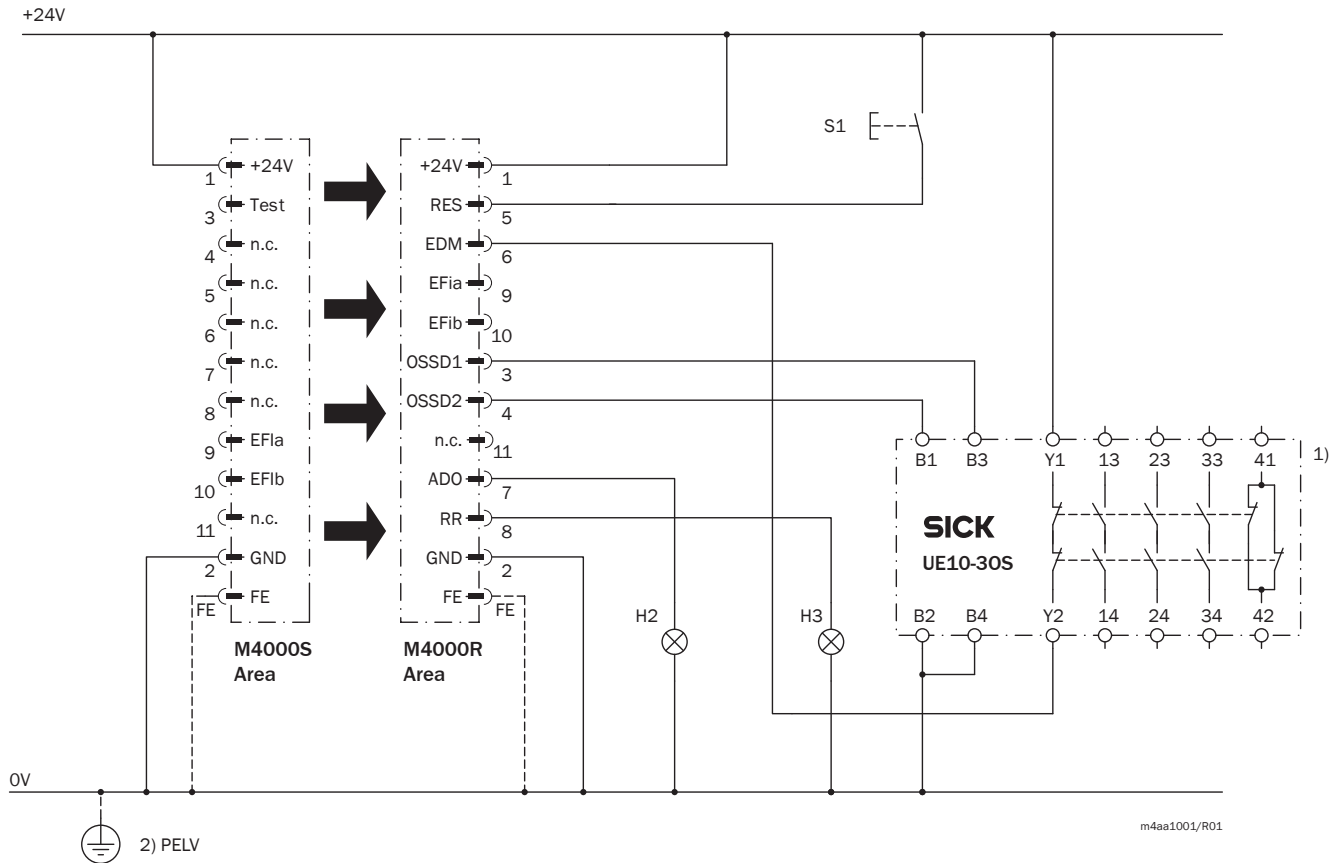
Length of the monitored area S	L1	L2
300	387	416
450	537	566
600	687	716
750	837	866
900	987	1016
1050	1137	1166
1200	1287	1316
1350	1437	1466
1500	1587	1616
1650	1737	1766
1800	1887	1916

Dimensions in mm

Connection diagrams

→ You can find more connection diagrams at www.mysick.com

M4000 Area connected to UE10-30S safety relay



Task

Connection of an M4000 Area multiple light beam safety device to a UE10-30S safety relay.

Operating mode: with restart interlock and external device monitoring.

Operating characteristics

When the light path is clear and the UE10-30S is de-energized and functioning correctly, the yellow LED on the receiver and the H3 lamp flash. The system is ready for switch-on and waits for an input signal/switch-on signal. The system is enabled by pressing and releasing the S1 button. The OSSD1 and OSSD2 outputs are live, the UE10-30S is switched on. On interruption of one or several of the light beams, the UE10-30S is de-energized by the OSSD1 and OSSD2 outputs.

If the optics are dirty, H2 indicator illuminates.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The erroneous behavior of the UE10-30S will be detected. The shutdown function is retained. On manipulation (e.g., jamming) of the S1 button, the system does not enable the output current circuits.

Comments

1) Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, this integration must be dual-channel (x/y paths). Single-channel insertion in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

2) PELV in accordance with the requirements in EN 60204-1 / 6.4

Take note of the operating instructions of the integrated devices. This applies particularly to the use of configurable functions.



sens:Control – safe control solutions




Optimal integration of all safety components leads to a complete solution with sens:Control – safe control solutions: Safety relays (from page N-0), safety controllers (from page O-0) and network solutions (from page P-0).

Accessories


Mounting systems

Figure	Property	Packing unit	Type	Part no.
	Mounting kit 1, rigid	4	BEF-3WNGBAST4	7021352
	Mounting kit 6, swivel function, side bracket	4	BEF-1SHABAZN4	2019506
	Mounting kit 3, adjustable, vibration-absorbing	4	BEF-1SHADAAL4	2017752
	Mounting kit 2, adjustable	4	BEF-1SHABAAL4	2017751
	Mounting kit 12, swivel mount	4	BEF-2SMGEAKU4	2030510
	Omega bracket, flexible and quick installation with only one screw	4	BEF-2SMGEAAL4	2044846
	Stand, for horizontal mounting of C4000 Fusion, Entry/Exit, and Palletizer safety light curtains and M4000 Area multiple light beam safety devices, for mounting heights from 70 mm to 780 mm	2	BEF-3HHOCAST2	2041661



Sliding nuts

Figure	Description	Remark	Packing unit	Part no.
	Sliding nuts	Included with delivery	4	2017550

Connecting cable


Figure	Connection type	Direction of cable outlet	Cable length	Type	Part no.
	Hirschmann cable socket M26 x 11 + FE	Straight	2.5 m	DOL-0612G2M5075KM0	2022544
			5 m	DOL-0612G05M075KM0	2022545
			7.5 m	DOL-0612G7M5075KM0	2022546
			10 m	DOL-0612G10M075KM0	2022547
			15 m	DOL-0612G15M075KM0	2022548
			20 m	DOL-0612G20M075KM0	2022549
			30 m	DOL-0612G30M075KM0	2022550

Cable receptacles


Figure	Connection type	Direction of cable outlet	Type	Part no.
	Hirschmann cable socket M26 x 11 + FE	Straight	DOS-0612G000GA3KM0	6020757
		Angled	DOS-0612W000GA3KM0	6020758

G



Power supply units

Figure	Input voltage	Output voltage	Maximum output current	Part no.
	100 V AC ... 240 V AC	24 V DC	3.9 A	7028790
			2.1 A	7028789

Additional front screen

Figure	Suitable for	Remark	Packing unit	Part no.
 Example of use	M40x-60xxxxxx	Including sliding nuts and fixing screws	2	2033235
	M40x-61xxxxxx			2033236
	M40x-62xxxxxx			2033237
	M40x-63xxxxxx			2033238
	M40x-64xxxxxx			2033239
	M40x-65xxxxxx			2033240
	M40x-66xxxxxx			2033241
	M40x-67xxxxxx			2033242
	M40x-68xxxxxx			2033243
	M40x-69xxxxxx			2033244
	M40x-70xxxxxx			2033245


Laser alignment aid

Figure	Description	Scanning range	Voltage supply	Type of light	Part no.
	Laser alignment aid AR60	Max. 60 m	2 batteries, 1.5 V Micro/AAA	Visible red light, laser class 2 (IEC 60825): Do not stare into beam!	1015741
	Adapter AR60 for M4000	-	-	-	4040006
	Alignment aid, for M4000 with integrated laser	-	-	-	4040263

Configuration software

Figure	Description	Type	Part no.
	CDS (Configuration & Diagnostic Software)	CDS	2032314

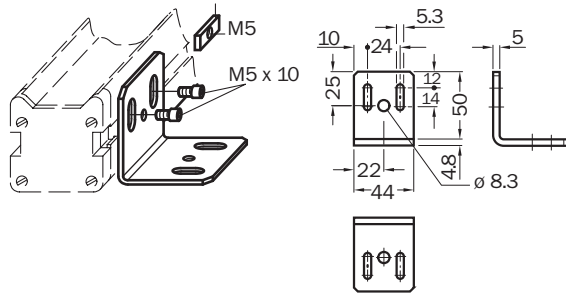
Configuration tools

Figure	Description	Type	Part no.
	For saving and transferring configurations. For C4000 Standard, Advanced, Palletizer, Entry/Exit, Fusion and M4000 Advanced, Advanced Curtain, Area	Clone plug for C4000 and M4000	1029665
		Wall mount	5318443

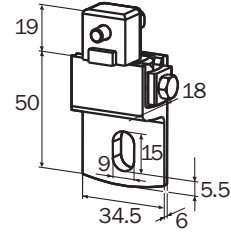
G

Dimensional drawings mounting systems

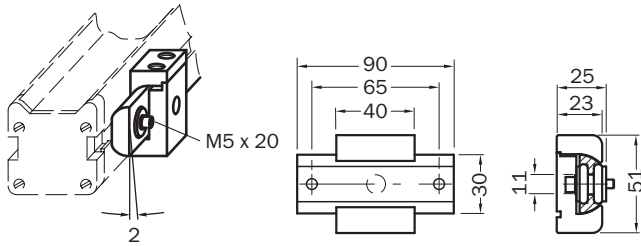
BEF-3WNGBAST4
Mounting kit 1, rigid



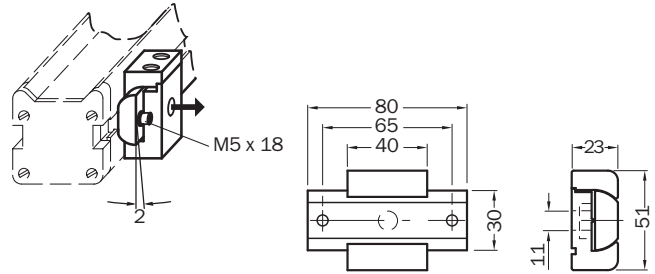
BEF-1SHABAZN4
Mounting kit 6, swivel function, side bracket



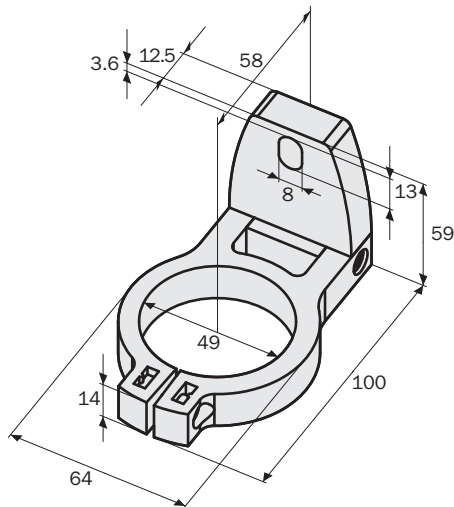
BEF-1SHADAAL4
Mounting kit 3, adjustable, vibration-absorbing



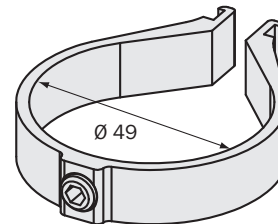
BEF-1SHABAAL4
Mounting kit 2, adjustable



BEF-2SMGEAKU4
Mounting kit 12, swivel mount



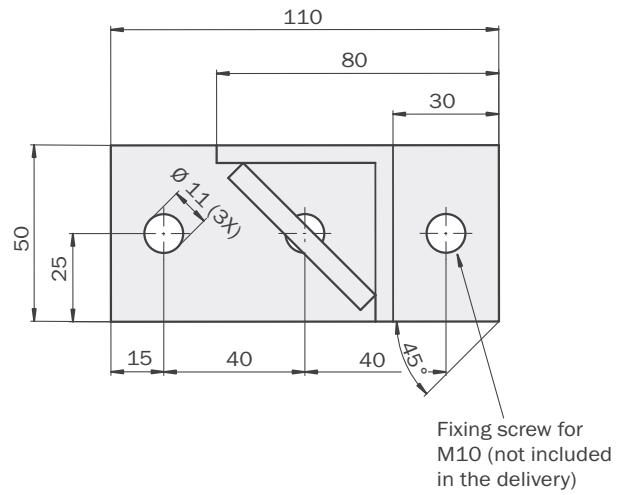
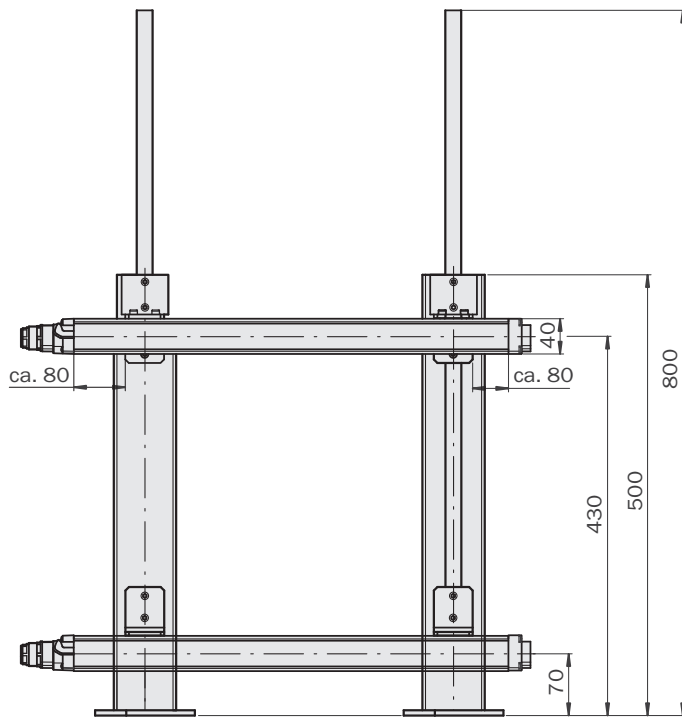
BEF-2SMGEAAL4
Omega bracket, flexible and quick installation with only one screw



Dimensions in mm

G

BEF-3HHOCAST2
Stand for horizontal mounting



Dimensions in mm

G



- External device monitoring (EDM)
- Self-testing
- 7-segment display
- Diagnostics
- Alignment aid
- Beam coding



G

Technical data overview

Scanning range (depending on type)	0 m ... 25 m / 0 m ... 70 m
Number of beams (depending on type)	2 ... 9
Beam separation or resolution (depending on type)	116 mm ... 500 mm
Type	Type 2 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508), SILCL2 (EN 62061)
Enclosure rating	IP 65

Product description

With its high signal reserve, the M2000 Standard multi-beam photoelectric safety switch is also reliable under harsh industrial conditions. Functions and status information integrated in the device allow rapid commissioning and prevent unnecessary machine downtime. The modular concept

cost-effectively achieves maximum machine safety by precisely coordinating the characteristics of the device to the users' requirements. Interfaces and service concepts complete the product range to provide an ideal solution for the application.

In-system added value

Combined with SICK safe control solutions

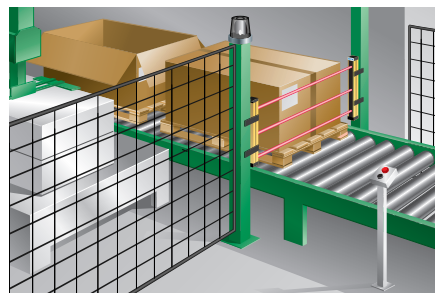
Combination with	Restart interlock	External device monitoring	Muting	Further information
Flexi Classic	✓	✓	✓	O-2
Flexi Soft	✓	✓	✓	O-25
UE48-20S	✓	✓	-	N-46
UE48-30S	✓	✓	-	N-52

→ For more combinations, see annex

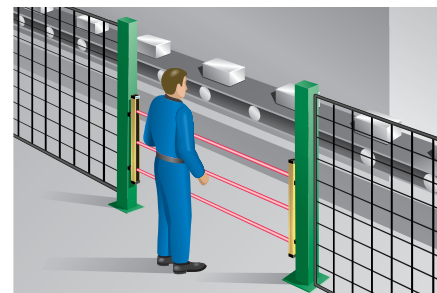
Applications

→ You can find more applications using the application finder at www.mysick.com

- Storage and conveyor
- Wood industry
- Textile industry
- Stone production
- Electronics industry
- Packaging industry



Packaging industry: M2000 Standard with Flexi Classic on a packaging machine



Storage and conveyor: M2000 on a conveyor belt system

Further information	Page
→ Technical specifications	G-48
→ Dimensional drawings	G-50
→ Connection diagrams	G-51
→ Accessories	G-52
→ Systematic safety	A-0
→ Services	B-0

Ordering information

M2000 Standard

Usage	As a standalone system
-------	------------------------

Scanning range 0 m ... 25 m

Number of beams	Beam separation or resolution	System connection	External device monitoring	Sender		Receiver	
				Type	Part no.	Type	Part no.
2	500 mm	6-pin + PE Hirschmann plug	–	M20S-02150A120	1016405	M20E-02150A120	1016421
		M12 x 8 plug	✓	M20S-02150A122	1018186	M20E-02150A122	1018187
3	400 mm	6-pin + PE Hirschmann plug	–	M20S-03140A120	1016428	M20E-03140A120	1016429
		M12 x 8 plug	✓	M20S-03140A122	1018188	M20E-03140A122	1018189
4	300 mm	6-pin + PE Hirschmann plug	–	M20S-04130A120	1016509	M20E-04130A120	1016510
		M12 x 8 plug	✓	M20S-04130A122	1018190	M20E-04130A122	1018191
6	170 mm	6-pin + PE Hirschmann plug	–	M20S-061A3A120	1016446	M20E-061A3A120	1016447
		M12 x 8 plug	✓	M20S-061A3A122	1018192	M20E-061A3A122	1018193
7	170 mm	6-pin + PE Hirschmann plug	–	M20S-071A3A120	1016434	M20E-071A3A120	1016435
		M12 x 8 plug	✓	M20S-071A3A122	1018194	M20E-071A3A122	1018195
8	116 mm	6-pin + PE Hirschmann plug	–	M20S-081A2A120	1016438	M20E-081A2A120	1016439
		M12 x 8 plug	✓	M20S-081A2A122	1018196	M20E-081A2A122	1018197
	170 mm	6-pin + PE Hirschmann plug	–	M20S-081A3A120	1016440	M20E-081A3A120	1016441
		M12 x 8 plug	✓	M20S-081A3A122	1018198	M20E-081A3A122	1018199
9	170 mm	6-pin + PE Hirschmann plug	–	M20S-091A3A120	1016442	M20E-091A3A120	1016443
		M12 x 8 plug	✓	M20S-091A3A122	1018200	M20E-091A3A122	1018201



Scanning range 0 m ... 70 m

Number of beams	Beam separation or resolution	System connection	External device monitoring	Sender		Receiver	
				Type	Part no.	Type	Part no.
2	500 mm	6-pin + PE Hirschmann plug	–	M20S-02250A120	1018172	M20E-02250A120	1018173
		M12 x 8 plug	✓	M20S-02250A122	1018174	M20E-02250A122	1018175
3	400 mm	6-pin + PE Hirschmann plug	–	M20S-03240A120	1018176	M20E-03240A120	1018177
		M12 x 8 plug	✓	M20S-03240A122	1018178	M20E-03240A122	1018179
4	300 mm	6-pin + PE Hirschmann plug	–	M20S-04230A120	1018180	M20E-04230A120	1018181
		M12 x 8 plug	✓	M20S-04230A122	1018182	M20E-04230A122	1018183

Technical specifications

→ You can find more detailed data in the operating instructions. Download at www.mysick.com

General data

System part	Sender	Receiver
Number of beams (depending on type)	2 ... 9	
Beam separation or resolution (depending on type)	116 mm ... 500 mm	
Scanning range (depending on type)	0 m ... 25 m / 0 m ... 70 m	
Response time	–	Max. 8 ms
Protection class	III	
Enclosure rating	IP 65 (EN 60529)	
Synchronization	Optical, without separate synchronization	
Safety related parameters		
Type	Type 2 (IEC 61496)	
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)	
Category	Category 2 (EN ISO 13849)	
Test rate (internal test)	13/s (EN ISO 13849)	
Maximum demand rate	8/min (EN ISO 13849) ¹⁾	
Performance level	PL d (EN ISO 13849), pay attention to optical characteristics! ²⁾	
PFHd (mean probability of a dangerous failure per hour)	2.2 x 10 ⁻⁸ (EN ISO 13849)	
T _M (Mission Time)	20 years (EN ISO 13849)	
Ambient operating temperature from ... to	0 °C ... +55 °C	
Storage temperature from ... to	–25 °C ... +70 °C	
Air humidity from ... to	15 % ... 95 %	
Housing cross section	48 mm x 40 mm	
Vibration resistance	5 g (10 Hz ... 55 Hz), IEC 68-2-6	
Shock resistance	10 g, 16 ms (according to IEC 68-2-29)	

¹⁾ Between two demands on a safety-related response of the device, at least 100 internal or external tests must be carried out.

²⁾ The performance level does not contain any specific requirements on aspects such as the optical characteristics. For more detailed information on this topic, see page (A-10).

Functional data

System part	Sender	Receiver
External device monitoring (depending on type)	–	– / ✓
Beam coding		✓
Self-testing		✓

G

Electrical data

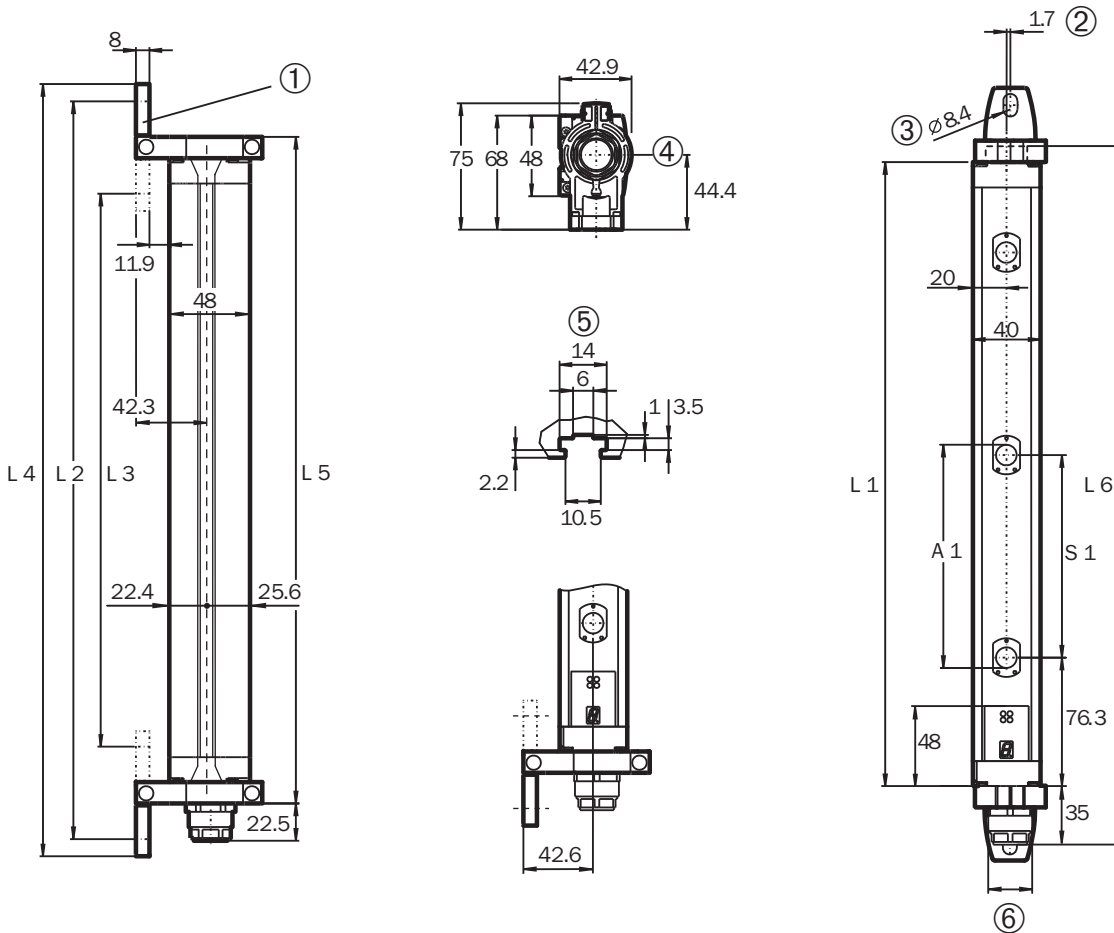
System part	Sender	Receiver
System connection (depending on type)	6-pin + PE Hirschmann plug / M12 x 8 plug	
Connecting cable wire cross-section		
Hirschmann plug	Max. 1 mm ²	
M12 plug	Max. 0.25 mm ²	
Connecting cable length		
Wire cross-section 1 mm ²	Max. 60 m	
Wire cross-section 0.25 mm ²	Max. 15 m	
Supply voltage V _s	24 V (19.2 V ... 28.8 V)	
Power consumption	3.7 W	5 W
Safety outputs (OSSD)		
Type of output	-	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
Switching voltage HIGH	-	Min. V _S - 2.25 V
Switching current	-	Max. 500 mA



Dimensional drawings

→ You can find more dimensional drawings in the operating instructions. Download at www.mysick.com

M2000 Standard



Sender unit with swivel mount (receiver unit mirror image)

- ① Mounting clamp
- ② Center of light beam offset
- ③ Hexagon screw M8, DIN 933 with washer DIN 9021 (not supplied with delivery)
- ④ Adjustment
- ⑤ Sliding nut groove for side mounting
- ⑥ Plug PG13.5 according to DIN 43651

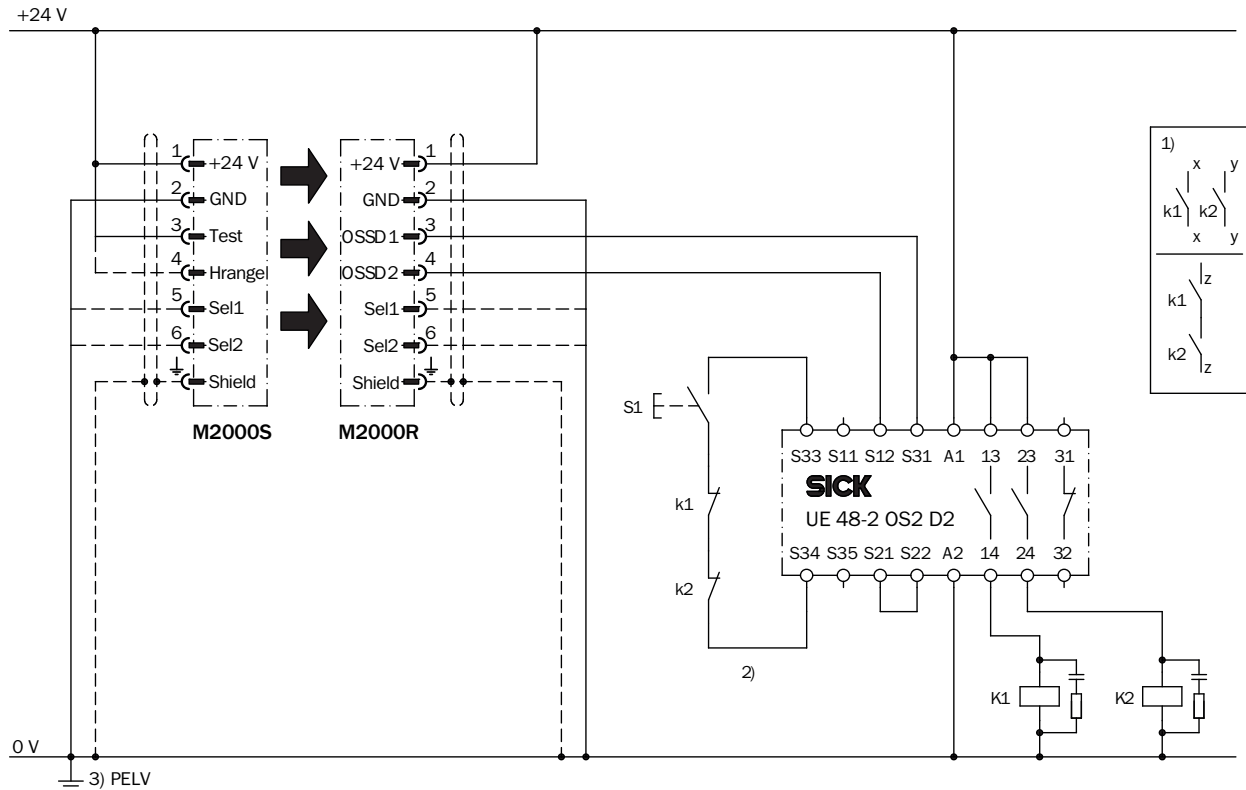
Number of beams	Beam separation	Resolution	L1	L2	L3	L4	L5	L6
2	500	-	630	697	588	718	655	675
3	400	-	931	998	888	1019	956	976
4	300	-	1031	1098	989	1119	1056	1076
8	-	116	851	919	809	939	877	896
6	-	170	916	983	874	1004	941	960
7	-	170	1073	1140	1031	1161	1098	1118
8	-	170	1231	1298	1189	1319	1256	1275
9	-	170	1388	1455	1346	1476	1413	1433

Dimensions in mm

Connection diagrams

→ You can find more connection diagrams at www.mysick.com

M2000 Standard on UE48-20S safety relay



Task

Connection of an M2000 Standard multi-beam photoelectric safety switch to UE48-20S.
Operating mode: with restart interlock and external device monitoring.

Function

When the light path is clear, the OSSD1 and OSSD2 outputs are live. The system is ready to switch on if K1 and K2 are de-energized. By pressing S1 (button is pressed and released), the UE48-20S is energized and its 13 - 14 and 23 - 24 contacts activate K1 and K2. On interruption of one of the light beams, the UE48-20S is de-energized by the OSSD1 and OSSD2 outputs and K1 and K2 are deactivated.

Fault analysis

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The incorrect functioning of one of the K1 or K2 contactors will be detected and does not result in the loss of the shutdown function. Jamming of the S1 button will prevent the UE48-20S from enabling.

Comments

- 1) Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.
- 2) The external device monitoring is only static.
- 3) PELV as required in EN 60204-1 / 6.4

The related operating instructions for the integrated devices must be observed.









sens:Control – safe control solutions



Optimal integration of all safety components leads to a complete solution with sens:Control – safe control solutions: Safety relays (from page N-0), safety controllers (from page O-0) and network solutions (from page P-0).



Accessories

Mounting systems



Figure	Property	Packing unit	Type	Part no.
	Mounting kit 1, rigid	4	BEF-3WNGBAST4	7021352
	Mounting kit 6, swivel function, side bracket	4	BEF-1SHABAZN4	2019506
	Mounting kit 3, adjustable, vibration-absorbing	4	BEF-1SHADAAL4	2017752
	Mounting kit 2, adjustable	4	BEF-1SHABAAL4	2017751
	Mounting kit 2, swivel mount	4	BEF-2SMMEAKU4	2019659
	Stainless steel bracket, adjustable	4	BEF-2SMMEAES4	2023708
	Reinforced stainless steel bracket, adjustable	4	BEF-2SMMVAES4	2026850
	Mounting kit, swivel mount, extendable	2	BEF-0SMMEA002	2046172
	Omega bracket, flexible and quick installation with only one screw	4	BEF-2SMMEAAL4	2044847

G


Connecting cables

Figure	Connection type	Direction of cable outlet	Cable length	Type	Part no.
	M12 x 7 + FE	Straight	2.5 m	DOL-127SG2M5E25KM0	6020537
			5 m	DOL-127SG05ME25KM0	6020354
			7.5 m	DOL-127SG7M5E25KM0	6020353
			10 m	DOL-127SG10ME25KM0	6020352
			15 m	DOL-127SG15ME25KM0	6020872
		Angled	5 m	DOL-127SW05ME25KM0	6021342
			15 m	DOL-127SW15ME25KM0	6021343

Cable receptacles


Figure	Connection type	Direction of cable outlet	Type	Part no.
	Hirschmann cable socket M26 x 6 + FE	Straight	DOS-0607G000GA3KM0	6006612
		Angled	DOS-0607W000IA3KU0	6007363

Power supply units


Figure	Input voltage	Output voltage	Maximum output current	Part no.
	100 V AC ... 240 V AC	24 V DC	3.9 A	7028790
			2.1 A	7028789

G


Device columns with external grooves

Figure	Description	Max. installation length	Number of beams	Beam separation	Type	Part no.
	Robust device columns with two external mounting grooves	965 mm	2	500 mm	PU3H96-00000000	2045490
		1165 mm	3	400 mm	PU3H11-00000000	2045641
		1265 mm	4	300 mm	PU3H13-00000000	2045642
		1720 mm	-	-	PU3H17-00000000	2045643
		2020 mm	-	-	PU3H21-00000000	2045644
		2250 mm	-	-	PU3H22-00000000	2045645
		2400 mm	-	-	PU3H24-00000000	2045646

Device columns for outdoor use

Figure	Description	Number of beams	Beam separation	Suitable for	Type	Part no.
	With front screen heating, 220 V, including brackets and cable socket (without multiple light beam safety device)	2	500 mm	M20x-02x50Axxx	PUG12-S02	2023707
		3	400 mm	M20x-03x40Axxx	PUG12-S01	2025441

Mirror columns with separate mirrors





Figure	Column height	Suitable for	Remark	Type	Part no.
 <small>Product may differ from illustration</small>	985 mm	M40x-0250xxxxx, M20x-02x05xxxx	Completely mounted, including mirrors	PM3S96-00240020	1040619
	1185 mm	M40x-0340xxxxx, M20x-03x40x1xx		PM3S11-00330030	1040625
	1285 mm	M40x-0430xxxxx, M20x-04x30xxxx		PM3S13-00430040	1040626

Mirror columns with protective field height mirror



Figure	Column height	Mirror length	Type	Part no.
	1285 mm	900 mm	PM3C13-00030000	1043453
	1720 mm	1350 mm	PM3C17-00030000	1043454
	2000 mm	1650 mm	PM3C19-00030000	1043455
	2200 mm	1800 mm	PM3C20-00030000	1043456

→ For more detailed data on mirror columns and device columns, see page I-0


Column parts and accessories

Figure	Description	Packing unit	Type	Part no.
	For floor fastening	1	Adjusting plate	4031053
			Steel plug	5308961
	Omega bracket, mounting kit for device columns	2	BEF-2SMMEAAL2	2045883
	Suitable for all mirror columns PM3Sxx-xxxxxxx and PM3Cxx-xxxxxxx, including spacer bolt	1	Mirror kit for back area monitoring	2034938

Laser alignment aid

Figure	Description	Scanning range	Voltage supply	Type of light	Part no.
	Laser alignment aid AR60	Max. 60 m	2 batteries, 1.5 V Micro/AAA	Visible red light, laser class 2 (IEC 60825): Do not stare into beam!	1015741
	Adapter for AR60, for large housing profile	-	-	-	4032461
	Adapter for AR60, for large housing profile in PU3Hxx-xxxxxxx device column	-	-	-	4056731

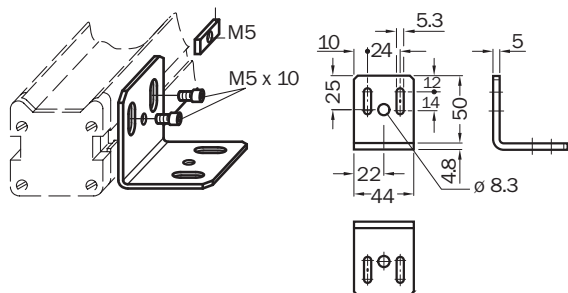
Configuration tools

Figure	Description	Suitable for	Type	Part no.
	For deactivation of the external device monitoring and integrated restart interlock	C2000, M2000: deactivation of the external device monitoring; C4000 Micro, C4000 Basic Plus: deactivation of the external device monitoring and integrated restart interlock	Reset tool	6022103

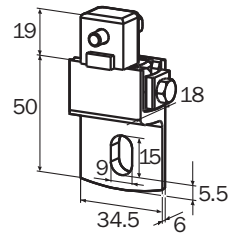
G

Dimensional drawings mounting systems

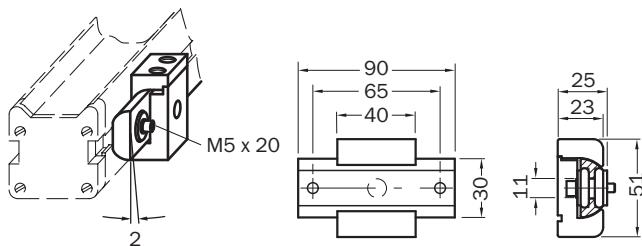
BEF-3WNGBAST4
Mounting kit 1, rigid



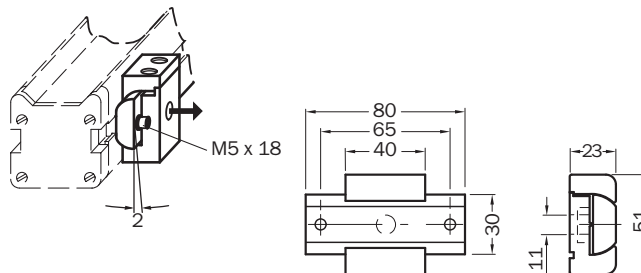
BEF-1SHABAZN4
Mounting kit 6, swivel function, side bracket



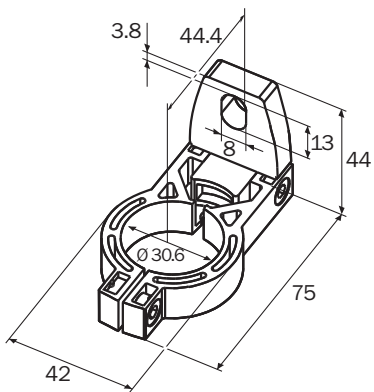
BEF-1SHADAAL4
Mounting kit 3, adjustable, vibration-absorbing



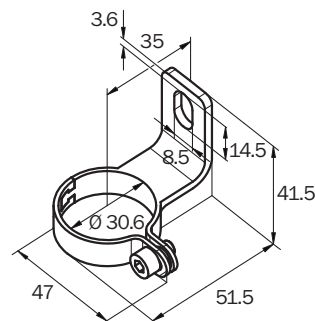
BEF-1SHABAAL4
Mounting kit 2, adjustable



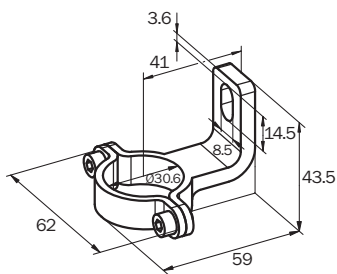
BEF-2SMMEAKU4
Mounting kit 2, swivel mount



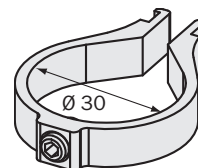
BEF-2SMMEAES4
Stainless steel bracket, adjustable



BEF-2SMMVAES4
Reinforced stainless steel bracket, adjustable



BEF-2SMMEAAL2
Omega bracket, mounting kit for device columns



Dimensions in mm

Technical data overview

Resistant materials	Stainless steel, PMMA, PA 6
Scanning range	0 m ... 19 m
Number of beams (depending on type)	2 / 3 / 4
Beam separation (depending on type)	300 mm / 400 mm / 500 mm
Type	Type 2 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508), SILCL2 (EN 62061)
Enclosure rating	IP 69K, IP 67, IP 66, IP 65

Product description

The IP69K housing, in conjunction with the M2000 multi-beam photoelectric safety switch, achieves an IP 69K enclosure rating. The materials used (V4A, PMMA, PA, PVC) have a high level of resistance against

common cleaning agents. A compensating element (membrane) prevents condensation on the plastic tubes and the entry of liquids. The cable is fed into the device through the proven PG connector.

In-system added value

Combined with SICK safe control solutions

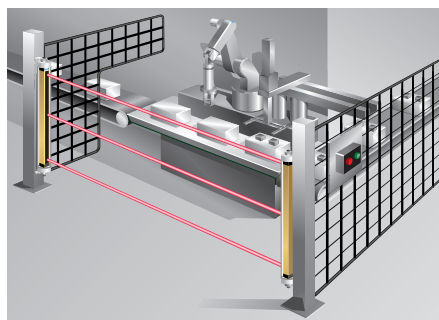
Combination with	Restart interlock	External device monitoring	Muting	Further information
Flexi Classic	✓	✓	✓	0-2
Flexi Soft	✓	✓	✓	0-25
UE48-20S	✓	✓	-	N-46
UE48-30S	✓	✓	-	N-52

→ For more combinations, see annex

Applications

→ You can find more applications using the application finder at www.mysick.com

- Packaging industry
- Food industry
- Chemical industry
- Pharmaceutical industry
- Clean-room systems



Access protection on a processing center in the hygiene area



- IP 69K, IP 67 and IP 66 enclosure ratings
- Withstands wash down pressure up to 100 bar
- Water temperature resistant up to 80 °C
- ECOLAB and Diversey cleaning certificates
- Chemical-resistant materials: stainless steel end caps and brackets, PMMA tube, PA membrane



Further information	Page
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→ Technical specifications	G-58
→ Dimensional drawings	G-60
→ Connection diagrams	G-61
→ Accessories	G-61
→ Systematic safety	A-0
→ Services	B-0

Ordering information

IP69K Housing with integrated sender or receiver unit M2000, incl. PVC cable

Usage	As a standalone system
-------	------------------------

Scanning range 0 m ... 19 m

Number of beams	Beam separation	Sender		Receiver	
		Type	Part no.	Type	Part no.
2	500 mm	M25S-02150C112	1024208	M25E-02150C112	1024209
3	400 mm	M25S-03140C112	1024210	M25E-03140C112	1024211
4	300 mm	M25S-04130C112	1024212	M25E-04130C112	1024213

Technical specifications

→ You can find more detailed data in the operating instructions. Download at www.mysick.com

General data

System part	Sender	Receiver
Number of beams (depending on type)	2 / 3 / 4	
Beam separation (depending on type)	500 mm / 400 mm / 300 mm	
Scanning range	0 m ... 19 m	
Response time	-	Max. 8 ms
Protection class	III	
Enclosure rating	IP 69K IP 66	
Synchronization	Optical, without separate synchronization	
Safety related parameters		
Type	Type 2 (IEC 61496)	
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)	
Category	Category 2 (EN ISO 13849)	
Test rate (internal test)	13/s (EN ISO 13849)	
Maximum demand rate	8/min (EN ISO 13849) ¹⁾	
Performance level	PL d (EN ISO 13849), pay attention to optical characteristics! ²⁾	
PFHd (mean probability of a dangerous failure per hour)	2.2 x 10 ⁻⁸ (EN ISO 13849)	
T _M (Mission Time)	20 years (EN ISO 13849)	
Materials		
End caps	Stainless steel	
Plastic tube	PMMA	
Compensating element (membrane)	PA 6	
PG connector	PA 6	
Ambient operating temperature from ... to	0 °C ... +55 °C	
Storage temperature from ... to	-25 °C ... +70 °C	

¹⁾ Between two demands on a safety-related response of the device, at least 100 internal or external tests must be carried out.

²⁾ The performance level does not contain any specific requirements on aspects such as the optical characteristics. For more detailed information on this topic, see page (A-10).

Functional data

System part	Sender	Receiver
External device monitoring (depending on type)	-	- / ✓
Beam coding		✓
Self-testing		✓

Electrical data

System part	Sender	Receiver
System connection	PVC cable, 15 m	
Supply voltage V_S	24 V (19.2 V ... 28.8 V)	
Power consumption	3.7 W	5 W
Safety outputs (OSSD)		
Type of output	-	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
Switching voltage HIGH	-	Min. $V_S - 2.25$ V
Switching current	-	Max. 500 mA



Dimensional drawings

M2000 Standard in IP69K Housing

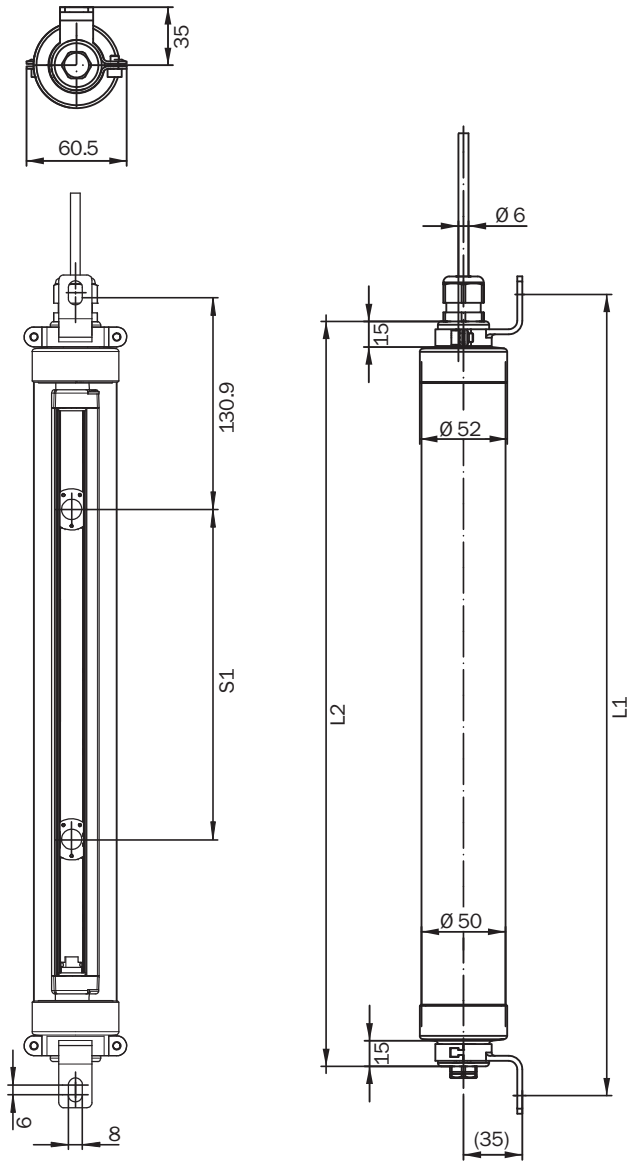


Illustration with stainless steel bracket (not supplied with delivery)

Number of beams	Beam separation	L1	L2
2	500	777	744
3	400	1078	1045
4	300	1228	1195

Dimensions in mm

Connection diagrams

→ You can find connection diagrams at www.mysick.com






sens:Control – safe control solutions




Optimal integration of all safety components leads to a complete solution with sens:Control – safe control solutions: Safety relays (from page N-0), safety controllers (from page O-0) and network solutions (from page P-0).

Accessories

Mounting systems

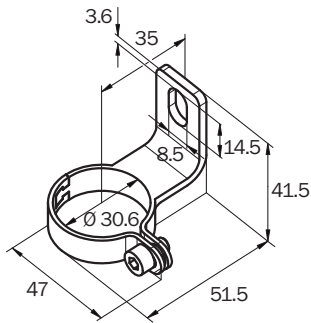
Figure	Property	Packing unit	Type	Part no.
	Stainless steel bracket, adjustable	4	BEF-2SMMEAES4	2023708
	Reinforced stainless steel bracket, adjustable	4	BEF-2SMMVAES4	2026850
	Stainless steel support bracket	2	BEF-2AAAADES2	2026849
	For M12 cable socket	–	Assembly key	4034690
	–	–	Venting membrane	5309082

Power supply units

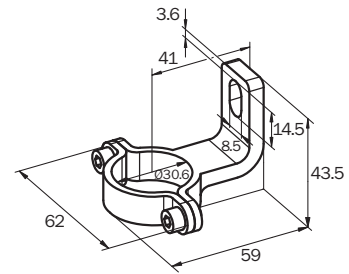
Figure	Input voltage	Output voltage	Maximum output current	Part no.
	100 V AC ... 240 V AC	24 V DC	2.1 A	7028789
			3.9 A	7028790

Dimensional drawings mounting systems

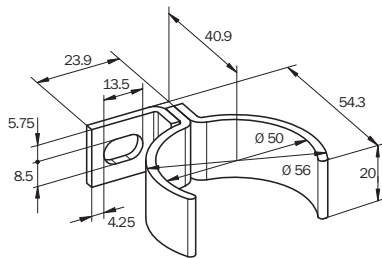
BEF-2SMMEAES4
Stainless steel bracket, adjustable



BEF-2SMMVAES4
Reinforced stainless steel bracket, adjustable



BEF-2AAAADES2
Stainless steel support bracket



Dimensions in mm



Technical data overview

Scanning range (depending on type)	0 m ... 25 m / 0 m ... 70 m
Number of beams (depending on type)	2 ... 9
Beam separation or resolution (depending on type)	116 mm ... 500 mm
Type	Type 2 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508), SILCL2 (EN 62061)
Enclosure rating	IP 65

Product description

With its high signal reserve, the M2000 RES/EDM multi-beam photoelectric safety switch is reliable under harsh industrial conditions. Functions and status information integrated in the device allow rapid commissioning and prevent unnecessary machine downtime. The modular concept cost-effectively achieves maximum machine safety by precisely coordinating

the characteristics of the device to the users' requirements. Interfaces and service concepts complete the product range to provide an ideal solution for the application.

The integrated restart interlock in the M2000 RES/EDM offers the advantages of shorter cable runs and quicker commissioning compared to traditional solutions.

In-system added value

Combined with SICK safe control solutions

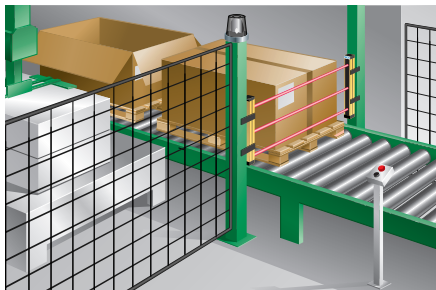
Combination with	Restart interlock	External device monitoring	Muting	Further information
Flexi Classic	✓	✓	✓	0-2
Flexi Soft	✓	✓	✓	0-25
UE48-20S	✓	✓	-	N-46
UE48-30S	✓	✓	-	N-52
UE10-30S	Contact expansion module			N-63

→ For more combinations, see annex

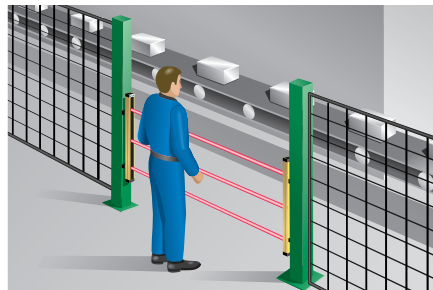
Applications

→ You can find more applications using the application finder at www.mysick.com

- Storage and conveyor
- Wood industry
- Textile industry
- Stone production
- Electronics industry
- Packaging industry



Packaging industry: M2000 RES/EDM with Flexi Classic on a packaging machine



Storage and conveyor: M2000 RES/EDM on a conveyor belt system



- Restart interlock (RES)
- External device monitoring (EDM)
- Self-testing
- 7-segment display
- Diagnostics
- Alignment aid
- Beam coding



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→ Dimensional drawings	G-67
→ Connection diagrams	G-68
→ Accessories	G-69
→ Systematic safety	A-0
→ Services	B-0

Ordering information

M2000 RES/EDM

Usage	As a standalone system
-------	------------------------

Scanning range 0 m ... 25 m

Number of beams	Beam separation or resolution	System connection	Sender		Receiver	
			Type	Part no.	Type	Part no.
2	500 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-02150A120	1016405	M20S-02150A221	1018032
		M12 x 8 plug	M20S-02150A122	1018186	M20E-02150A222	1018213
3	400 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-03140A120	1016428	M20E-03140A221	1018034
		M12 x 8 plug	M20S-03140A122	1018188	M20E-03140A222	1018215
4	300 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-04130A120	1016509	M20E-04130A221	1018217
		M12 x 8 plug	M20S-04130A122	1018190	M20E-04130A222	1018219
6	170 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-061A3A120	1016446	M20E-061A3A221	1018221
		M12 x 8 plug	M20S-061A3A122	1018192	M20E-061A3A222	1018223
7	170 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-071A3A120	1016434	M20E-071A3A221	1018225
		M12 x 8 plug	M20S-071A3A122	1018194	M20E-071A3A222	1018227
8	116 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-081A2A120	1016438	M20E-081A2A221	1018229
		M12 x 8 plug	M20S-081A2A122	1018196	M20E-081A2A222	1018231
	170 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-081A3A120	1016440	M20E-081A3A221	1018233
		M12 x 8 plug	M20S-081A3A122	1018198	M20E-081A3A222	1018235
9	170 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-091A3A120	1016442	M20E-091A3A221	1018036
		M12 x 8 plug	M20S-091A3A122	1018200	M20E-091A3A222	1018237

Scanning range 0 m ... 70 m

Number of beams	Beam separation or resolution	System connection	Sender		Receiver	
			Type	Part no.	Type	Part no.
2	500 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-02250A120	1018172	M20E-02250A221	1018206
		M12 x 8 plug	M20S-02250A122	1018174	M20E-02250A222	1018207
3	400 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-03240A120	1018176	M20E-03240A221	1018208
		M12 x 8 plug	M20S-03240A122	1018178	M20E-03240A222	1018209
4	300 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-04230A120	1018180	M20E-04230A221	1018210
		M12 x 8 plug	M20S-04230A122	1018182	M20E-04230A222	1018211

Technical specifications

→ You can find more detailed data in the operating instructions. Download at www.mysick.com

General data

System part	Sender	Receiver
Number of beams (depending on type)	2 ... 9	
Beam separation or resolution (depending on type)	116 mm ... 500 mm	
Scanning range (depending on type)	0 m ... 25 m / 0 m ... 70 m	
Response time	-	Max. 8 ms
Protection class	III	
Enclosure rating	IP 65 (EN 60529)	
Synchronization	Optical, without separate synchronization	
Safety related parameters		
Type	Type 2 (IEC 61496)	
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)	
Category	Category 2 (EN ISO 13849)	
Test rate (internal test)	13/s (EN ISO 13849)	
Maximum demand rate	8/min (EN ISO 13849) ¹⁾	
Performance level	PL d (EN ISO 13849), pay attention to optical characteristics! ²⁾	
PFHd (mean probability of a dangerous failure per hour)	2.2 x 10 ⁻⁸ (EN ISO 13849)	
T _M (Mission Time)	20 years (EN ISO 13849)	
Ambient operating temperature from ... to	0 °C ... +55 °C	
Storage temperature from ... to	-25 °C ... +70 °C	
Air humidity from ... to	15 % ... 95 %	
Housing cross section	48 mm x 40 mm	
Vibration resistance	5 g (10 Hz ... 55 Hz), IEC 68-2-6	
Shock resistance	10 g, 16 ms (according to IEC 68-2-29)	

¹⁾ Between two demands on a safety-related response of the device, at least 100 internal or external tests must be carried out.

²⁾ The performance level does not contain any specific requirements on aspects such as the optical characteristics. For more detailed information on this topic, see page (A-10).



Functional data

System part	Sender	Receiver
Restart interlock (RES)	-	✓
External device monitoring	-	✓
Beam coding		✓
Self-testing		✓
Configurable scanning range	✓	-

Electrical data

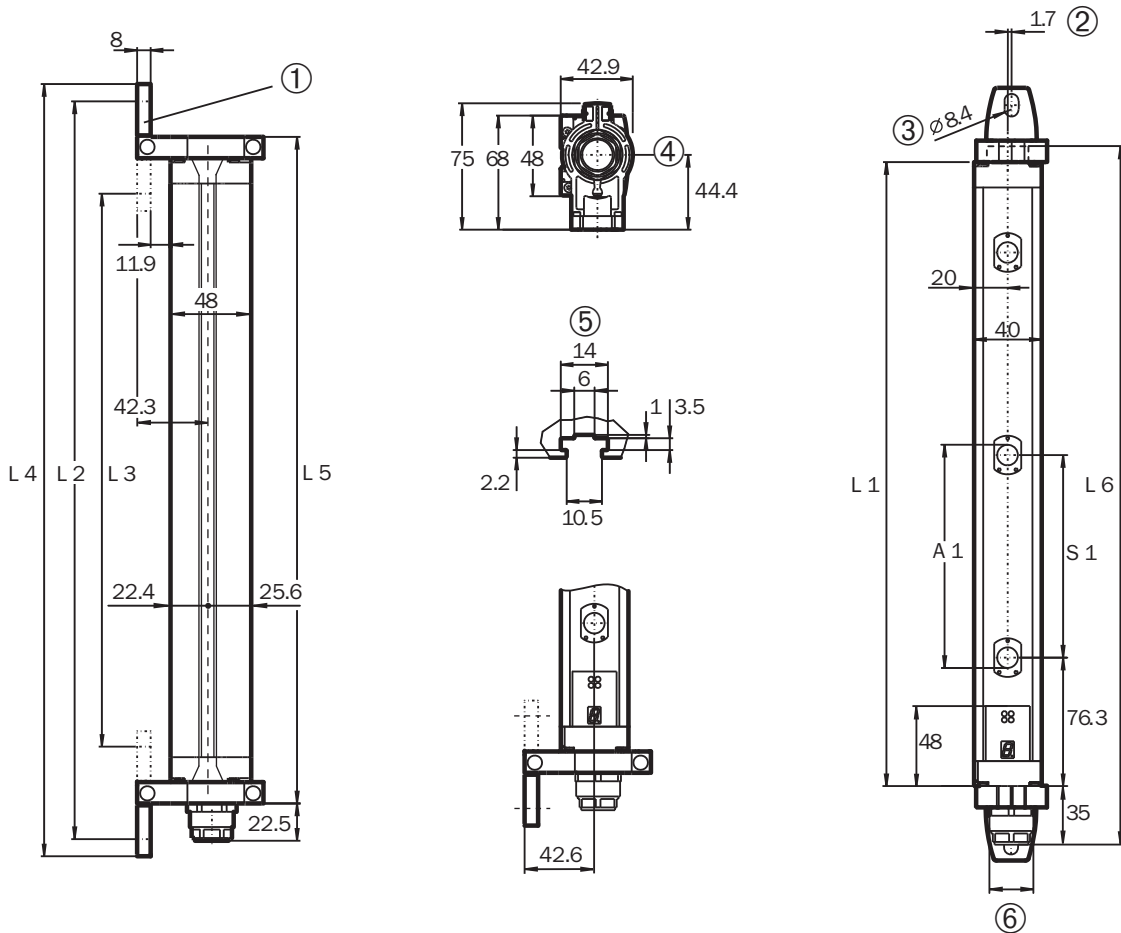
System part	Sender	Receiver
System connection (depending on type)	6-pin + PE Hirschmann plug / M12 x 8 plug	11-pin + PE Hirschmann plug / M12 x 8 plug
Connecting cable wire cross-section		
Hirschmann plug		Max. 1 mm ²
M12 plug		Max. 0.25 mm ²
Connecting cable length		
Conductor cross-section 1 mm ²		Max. 60 m
Conductor cross-section 0.25 mm ²		Max. 15 m
Supply voltage V _s	24 V (19.2 V ... 28.8 V)	
Power consumption	3.7 W	5 W
Safety outputs (OSSD)		
Type of output	-	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
Switching voltage HIGH	-	Min. V _S - 2.25 V
Switching current	-	Max. 500 mA



Dimensional drawings

→ You can find more dimensional drawings in the operating instructions. Download at www.mysick.com

M2000 RES/EDM



Sender unit with swivel mount (receiver unit not mirror image. Dimensions as M2000 Cascadable)

- ① Mounting clamp
- ② Center of light beam offset
- ③ Hexagon screw M8, DIN 933 with washer DIN 9021 (not supplied with delivery)
- ④ Adjustment
- ⑤ Sliding nut groove for side mounting
- ⑥ Plug PG13.5 according to DIN 43651

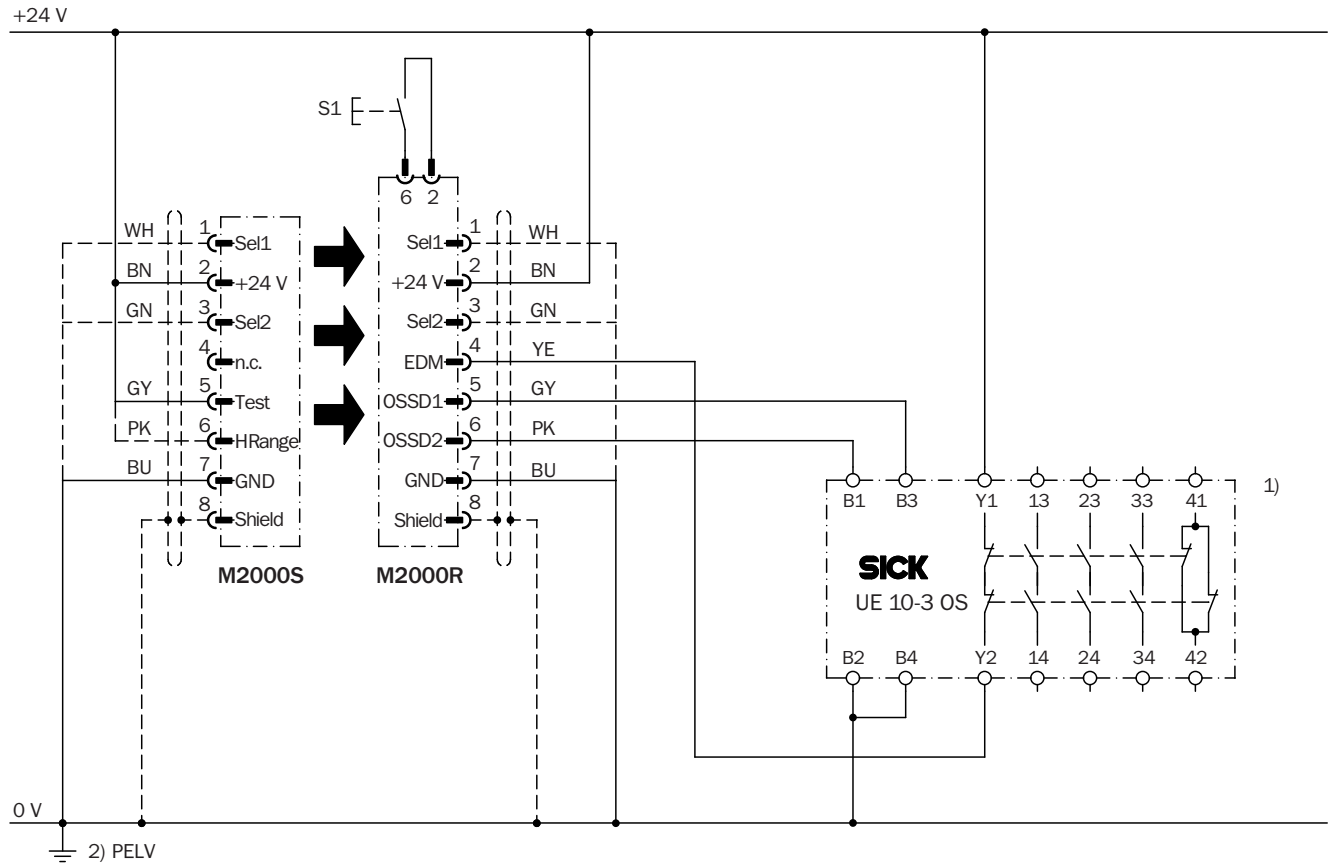
Number of beams	Beam separation	Resolution	L1	L2	L3	L4	L5	L6
2	500	-	630	697	588	718	655	675
3	400	-	931	998	888	1019	956	976
4	300	-	1031	1098	989	1119	1056	1076
8	-	116	851	919	809	939	877	896
6	-	170	916	983	874	1004	941	960
7	-	170	1073	1140	1031	1161	1098	1118
8	-	170	1231	1298	1189	1319	1256	1275
9	-	170	1388	1455	1346	1476	1413	1433

Dimensions in mm

Connection diagrams

→ You can find more connection diagrams at www.mysick.com

M2000 RES/EDM on UE10-30S safety relay



Task

Interfacing an M2000 RES/EDM multi-beam photoelectric safety switch to UE10-30S.

Operating mode: with restart interlock and external device monitoring.

Function

The yellow LED on the receiver flashes when the light path is clear and the UE10-30S is de-energized and functioning correctly. The system is ready to be switched on. The system is enabled by pressing S1 (button is pressed and released). When the OSSD1 and OSSD2 outputs are live, the UE10-30S is switched on. On the interruption of one of the light beams, the UE10-30S is deactivated by the OSSD1 and OSSD2 outputs.

Possible faults

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The incorrect functioning of the UE10-30S will be detected and will not result in the loss of the shutdown function. Jamming of the S1 button prevents output circuit to enable.

Comments

1) Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

2) PELV as required in EN 60204-1 / 6.4

The related operating instructions for the integrated devices must be observed.









sens:Control – safe control solutions



Optimal integration of all safety components leads to a complete solution with sens:Control – safe control solutions: Safety relays (from page N-0), safety controllers (from page O-0) and network solutions (from page P-0).



Accessories

Mounting systems

Figure	Property	Packing unit	Type	Part no.
	Mounting kit 1, rigid	4	BEF-3WNGBAST4	7021352
	Mounting kit 6, swivel function, side bracket	4	BEF-1SHABAZN4	2019506
	Mounting kit 3, adjustable, vibration-absorbing	4	BEF-1SHADAAL4	2017752
	Mounting kit 2, adjustable	4	BEF-1SHABAAL4	2017751
	Mounting kit 2, swivel mount	4	BEF-2SMMEAKU4	2019659
	Stainless steel bracket, adjustable	4	BEF-2SMMEAES4	2023708
	Reinforced stainless steel bracket, adjustable	4	BEF-2SMMVAES4	2026850
	Mounting kit, swivel mount, extendable	2	BEF-0SMMEA002	2046172
	Omega bracket, flexible and quick installation with only one screw	4	BEF-2SMMEAAL4	2044847

G





Connecting cables

Figure	Connection type	Direction of cable outlet	Cable length	Type	Part no.
	M12 x 7 + FE	Straight	2.5 m	DOL-127SG2M5E25KM0	6020537
			5 m	DOL-127SG05ME25KM0	6020354
			7.5 m	DOL-127SG7M5E25KM0	6020353
			10 m	DOL-127SG10ME25KM0	6020352
			15 m	DOL-127SG15ME25KM0	6020872
	M12 x 7 + FE	Angled	5 m	DOL-127SW05ME25KM0	6021342
			15 m	DOL-127SW15ME25KM0	6021343

Connector

Connection type	Remark	Type	Part no.
Pre-assembled	For deactivation of the integrated restart interlock	STE-1208G000025KM1	6021238


Cable receptacles

Figure	Connection type	Direction of cable outlet	Type	Part no.
	Hirschmann cable socket M26 x 11 + FE	Straight	DOS-0612G000GA3KM0	6020757
		Angled	DOS-0612W000GA3KM0	6020758
	Hirschmann cable socket M26 x 6 + FE	Straight	DOS-0607G000GA3KM0	6006612
		Angled	DOS-0607W000IA3KU0	6007363


Control switch connection cables

Connection type	Direction of cable outlet	Cable length	Type	Part no.
Connector	Straight	5 m	STL-127SG05ME25KM0	6021204
		15 m	STL-127SG15ME25KM0	6021205
	Angled	5 m	STL-127SW05ME25KM0	6021830
		15 m	STL-127SW15ME25KM0	6021831


Power supply units

Figure	Input voltage	Output voltage	Maximum output current	Part no.
	100 V AC ... 240 V AC	24 V DC	3.9 A	7028790
			2.1 A	7028789


Device columns with external grooves

Figure	Description	Max. installation length	Number of beams	Beam separation	Type	Part no.
	Robust device columns with two external mounting grooves	965 mm	2	500 mm	PU3H96-00000000	2045490
		1165 mm	3	400 mm	PU3H11-00000000	2045641
		1265 mm	4	300 mm	PU3H13-00000000	2045642
		1720 mm	-	-	PU3H17-00000000	2045643
		2020 mm	-	-	PU3H21-00000000	2045644
		2250 mm	-	-	PU3H22-00000000	2045645
		2400 mm	-	-	PU3H24-00000000	2045646

Device columns for outdoor use

Figure	Description	Number of beams	Beam separation	Suitable for	Type	Part no.
	With front screen heating, 220 V, including brackets and cable socket (without multiple light beam safety device)	2	500 mm	M20x-02x50Axxx	PUG12-S02	2023707
		3	400 mm	M20x-03x40Axxx	PUG12-S01	2025441

Mirror columns with separate mirrors





Figure	Column height	Suitable for	Remark	Type	Part no.
 <small>Product may differ from illustration</small>	985 mm	M40x-0250xxxxx, M20x-02x05xxxx	Completely mounted, including mirrors	PM3S96-00240020	1040619
	1185 mm	M40x-0340xxxxx, M20x-03x40x1xx		PM3S11-00330030	1040625
	1285 mm	M40x-0430xxxxx, M20x-04x30xxxx		PM3S13-00430040	1040626

Mirror columns with protective field height mirror



Figure	Column height	Mirror length	Type	Part no.
	1285 mm	900 mm	PM3C13-00030000	1043453
	1720 mm	1350 mm	PM3C17-00030000	1043454
	2000 mm	1650 mm	PM3C19-00030000	1043455
	2200 mm	1800 mm	PM3C20-00030000	1043456

→ For more detailed data on mirror columns and device columns, see page I-0


Column parts and accessories

Figure	Description	Packing unit	Type	Part no.
	For floor fastening	1	Adjusting plate	4031053
			Steel plug	5308961
	Omega bracket, mounting kit for device columns	2	BEF-2SMMEAL2	2045883
	Suitable for all mirror columns PM3Sxx-xxxxxxx and PM3Cxx-xxxxxxx, including spacer bolt	1	Mirror kit for back area monitoring	2034938

Laser alignment aid

Figure	Description	Scanning range	Voltage supply	Type of light	Part no.
	Laser alignment aid AR60	Max. 60 m	2 batteries, 1.5 V Micro/AAA	Visible red light, laser class 2 (IEC 60825): Do not stare into beam!	1015741
	Adapter for AR60, for large housing profile	-	-	-	4032461
	Adapter for AR60, for large housing profile in PU3Hxx-xxxxxxx device column	-	-	-	4056731

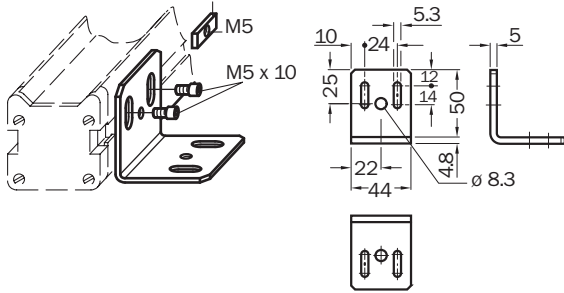
Configuration tools

Figure	Description	Suitable for	Type	Part no.
	For deactivation of the external device monitoring and integrated restart interlock	C2000, M2000: deactivation of the external device monitoring; C4000 Micro, C4000 Basic Plus: deactivation of the external device monitoring and integrated restart interlock	Reset tool	6022103

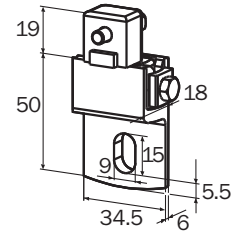
G

Dimensional drawings mounting systems

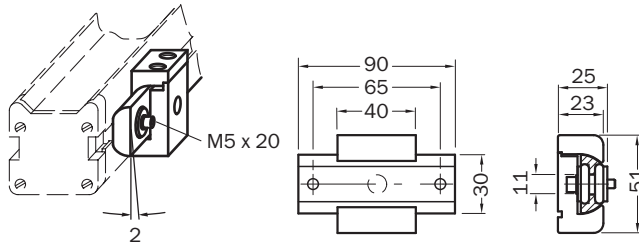
BEF-3WNGBAST4
Mounting kit 1, rigid



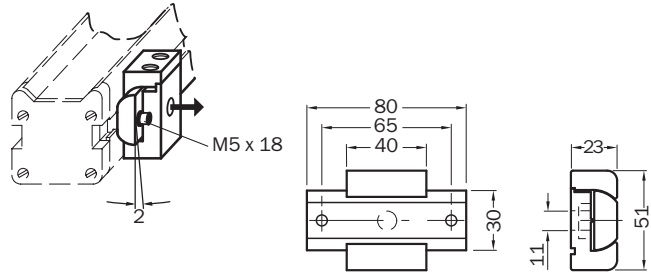
BEF-1SHABAZN4
Mounting kit 6, swivel function, side bracket



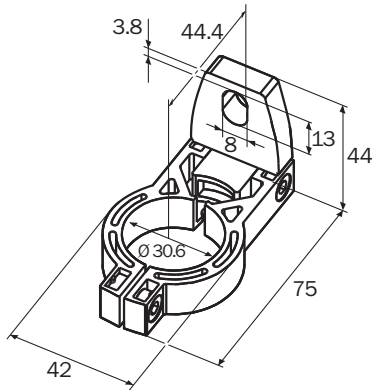
BEF-1SHADAAL4
Mounting kit 3, adjustable, vibration-absorbing



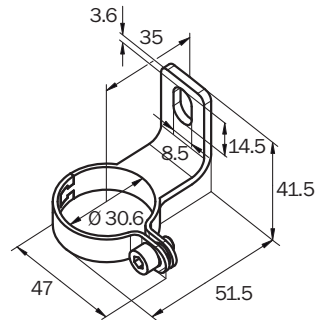
BEF-1SHABAAL4
Mounting kit 2, adjustable



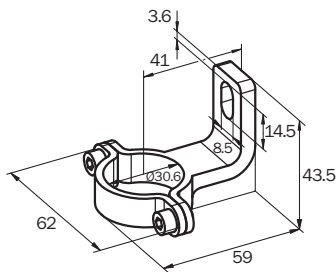
BEF-2SMMEAKU4
Mounting kit 2, swivel mount



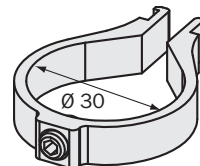
BEF-2SMMEAES4
Stainless steel bracket, adjustable



BEF-2SMMVAES4
Reinforced stainless steel bracket, adjustable



BEF-2SMMEAAL2
Omega bracket, mounting kit for device columns



Dimensions in mm





- Cascade
 - Max. 3 devices
 - Max. 3 m cable length
- External device monitoring (EDM)
- Self-testing
- 7-segment display
- Diagnostics
- Alignment aid
- Beam coding



G

Technical data overview

Scanning range	0 m ... 25 m
Number of beams (depending on type)	2 ... 9
Beam separation or resolution (depending on type)	116 mm ... 500 mm
Type	Type 2 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508), SILCL2 (EN 62061)
Enclosure rating	IP 65

Product description

With its high signal reserve, the M2000 Cascadable multi-beam photoelectric safety switch is reliable under harsh industrial conditions. Functions and status information integrated in the device allow rapid commissioning and prevent unnecessary machine downtime. The modular concept cost-effectively achieves maximum machine safety by precisely coordinating

the characteristics of the device to the users' requirements. Interfaces and service concepts complete the product range to provide an ideal solution for the application.

With the cascadable variants, photoelectric safety switches can be flexibly adapted to the existing installation.

In-system added value

Combined with SICK safe control solutions

Combination with	Restart interlock	External device monitoring	Muting	Further information
Flexi Classic	✓	✓	✓	O-2
Flexi Soft	✓	✓	✓	O-25
UE48-20S	✓	✓	-	N-46
UE48-30S	✓	✓	-	N-52
UE10-30S	Contact expansion module			N-63

→ For more combinations, see annex

Applications

→ You can find more applications using the application finder at www.mysick.com

- Storage and conveyor
- Wood industry
- Textile industry
- Stone production
- Electronics industry
- Packaging industry

Further information	Page
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→ Accessories	G-80
→ Systematic safety	A-0
→ Services	B-0

Ordering information

M2000 Cascadable

Usage	As first, middle or last system in a cascade
-------	--

Scanning range 0 m ... 25 m

■ External device monitoring: ✓

Number of beams	Beam separation or resolution	System connection	Sender		Receiver	
			Type	Part no.	Type	Part no.
2	500 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-02150A220	1018031	M20S-02150A221	1018032
		M12 x 8 plug	M20S-02150A222	1018212	M20E-02150A222	1018213
3	400 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-03140A220	1018033	M20E-03140A221	1018034
		M12 x 8 plug	M20S-03140A222	1018214	M20E-03140A222	1018215
4	300 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-04130A220	1018216	M20E-04130A221	1018217
		M12 x 8 plug	M20S-04130A222	1018218	M20E-04130A222	1018219
6	170 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-061A3A220	1018220	M20E-061A3A221	1018221
		M12 x 8 plug	M20S-061A3A222	1018222	M20E-061A3A222	1018223
7	170 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-071A3A220	1018224	M20E-071A3A221	1018225
		M12 x 8 plug	M20S-071A3A222	1018226	M20E-071A3A222	1018227
8	116 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-081A2A220	1018228	M20E-081A2A221	1018229
		M12 x 8 plug	M20S-081A2A222	1018230	M20E-081A2A222	1018231
	170 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-081A3A220	1018232	M20E-081A3A221	1018233
		M12 x 8 plug	M20S-081A3A222	1018234	M20E-081A3A222	1018235
9	170 mm	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug	M20S-091A3A220	1018035	M20E-091A3A221	1018036
		M12 x 8 plug	M20S-091A3A222	1018236	M20E-091A3A222	1018237



Technical specifications

→ You can find more detailed data in the operating instructions. Download at www.mysick.com

General data

System part	Sender	Receiver
Number of beams (depending on type)	2 ... 9	
Beam separation or resolution (depending on type)	116 mm ... 500 mm	
Scanning range	0 m ... 25 m	
Response time	–	Max. 8 ms
Protection class	III	
Enclosure rating	IP 65 (EN 60529)	
Synchronization	Optical, without separate synchronization	
Safety related parameters		
Type	Type 2 (IEC 61496)	
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)	
Category	Category 2 (EN ISO 13849)	
Test rate (internal test)	13/s (EN ISO 13849)	
Maximum demand rate	8/min (EN ISO 13849) ¹⁾	
Performance level	PL d (EN ISO 13849), pay attention to optical characteristics! ²⁾	
PFHd (mean probability of a dangerous failure per hour)	2.2 x 10 ⁻⁸ (EN ISO 13849)	
T _M (Mission Time)	20 years (EN ISO 13849)	
Ambient operating temperature from ... to	0 °C ... +55 °C	
Storage temperature from ... to	–25 °C ... +70 °C	
Air humidity from ... to	15 % ... 95 %	
Housing cross section	48 mm x 40 mm	
Vibration resistance	5 g (10 Hz ... 55 Hz), IEC 68-2-6	
Shock resistance	10 g, 16 ms (according to IEC 68-2-29)	

¹⁾ Between two demands on a safety-related response of the device, at least 100 internal or external tests must be carried out.

²⁾ The performance level does not contain any specific requirements on aspects such as the optical characteristics. For more detailed information on this topic, see page (A-10).

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Functional data

System part	Sender	Receiver
External device monitoring	-	✓
Beam coding		✓
Self-testing		✓

Electrical data

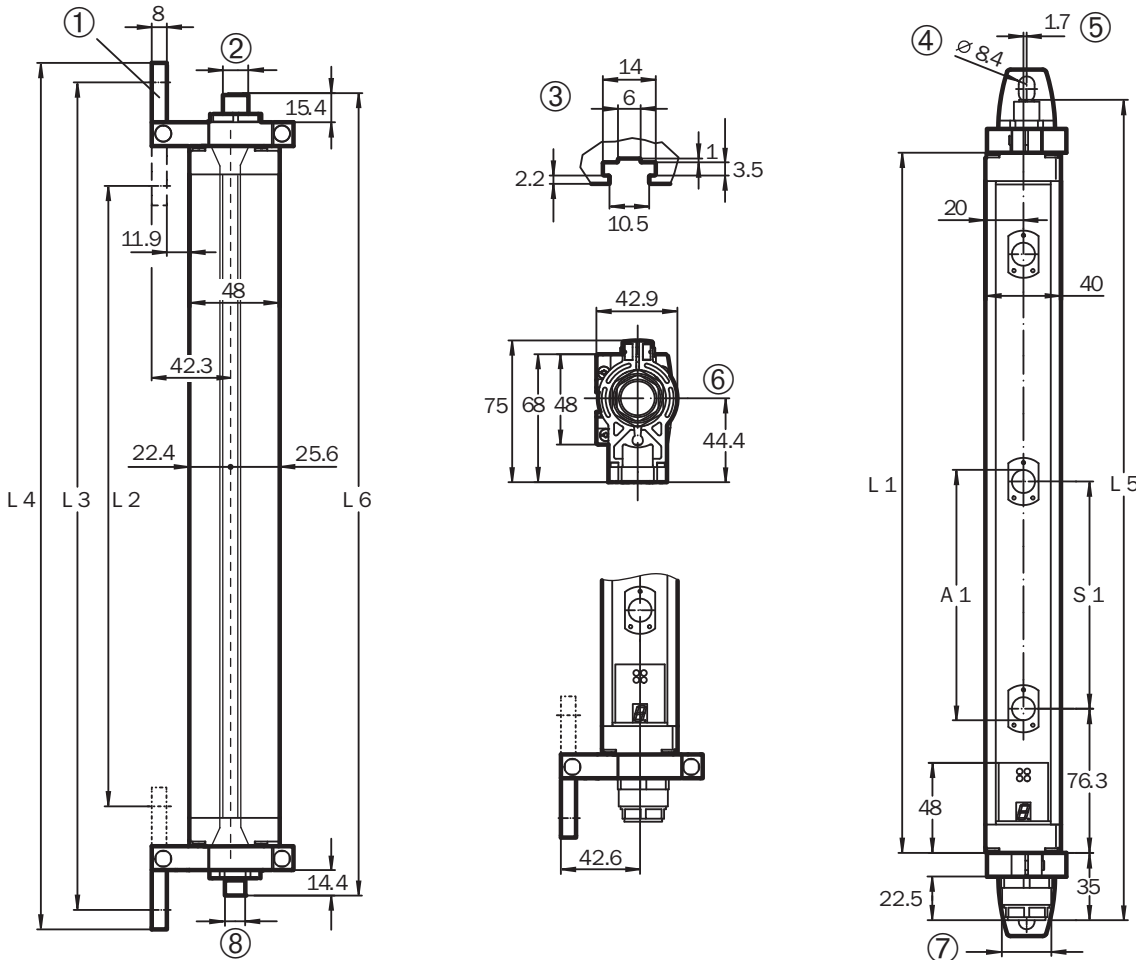
System part	Sender	Receiver
System connection (depending on type)	6-pin + PE Hirschmann plug / M12 x 8 plug	11-pin + PE Hirschmann plug / M12 x 8 plug
Connecting cable wire cross-section	Hirschmann plug M12 plug Max. 1 mm ² Max. 0.25 mm ²	
Connecting cable length	Conductor cross-section 1 mm ² Max. 60 m Conductor cross-section 0.25 mm ² Max. 15 m	
Supply voltage V_s	24 V (19.2 V ... 28.8 V)	
Power consumption	3.7 W	5 W
Safety outputs (OSSD)	Type of output - 2 PNP semiconductors, short-circuit protected, cross-circuit monitored Switching voltage HIGH - Min. V_S - 2.25 V Switching current - Max. 500 mA	



Dimensional drawings

→ You can find more dimensional drawings in the operating instructions. Download at www.mysick.com

M2000 Cascadable



Sender unit with swivel mount (receiver unit mirror image)

- ① Mounting clamp
- ② M12 x 8 socket (standard)
- ③ Sliding nut groove for slide mounting
- ④ Hexagon screw M8, DIN 933 with washer DIN 9021 (not supplied with delivery)
- ⑤ Center of light beam offset
- ⑥ Adjustment
- ⑦ Plug PG13.5 according to DIN 43651
- ⑧ Plug M12 x 8

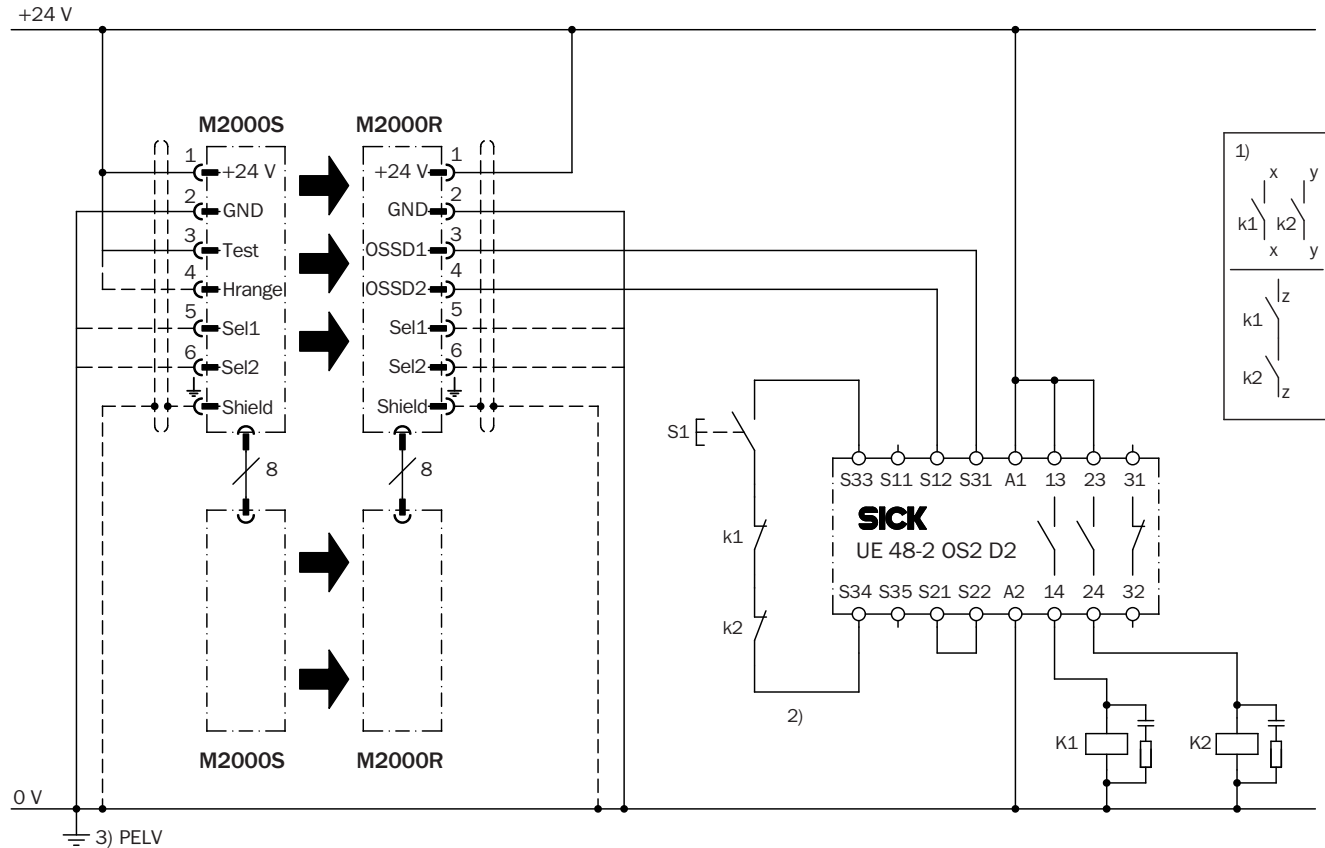
Number of beams	Beam separation	Resolution	L1	L2	L3	L4	L5	L6
2	500	-	630	588	697	718	694	686
3	400	-	931	888	998	1019	995	987
4	300	-	1031	989	1098	1119	1095	1087
8	-	116	851	809	919	939	915	907
6	-	170	916	874	983	1004	979	971
7	-	170	1073	1031	1140	1161	1137	1129
8	-	170	1231	1189	1298	1319	1294	1286
9	-	170	1388	1346	1455	1476	1452	1444

Dimensions in mm

Connection diagrams

→ You can find more connection diagrams at www.mysick.com

M2000 Cascadable on UE48-20S safety relay



Task

Interfacing two M2000 Cascadable multi-beam photoelectric safety switches to UE48-20S.
Operating mode: with restart interlock and external device monitoring.

Function

If the light path is clear, the OSSD1 and OSSD2 outputs are live. The system is ready to switch on if K1 and K2 are de-energized. By pressing S1 (button is pressed and released), the UE48-20S is energized and its 13 - 14 and 23 - 24 contacts activate K1 and K2. On interruption of one of the light beams, the UE48-20S is de-energized by the OSSD1 and OSSD2 outputs and K1 and K2 are deactivated.

Possible faults

OSSD cross-circuits and short-circuits are detected and lead to the inhibited state (lock-out). The incorrect functioning of one of the K1 or K2 contactors will be detected and does not result in the loss of the shutdown function. Jamming of the S1 button will prevent the UE48-20S from enabling.

Comments

1) Output circuits: These contacts are to be connected to the controller such that, with the output circuit open, the dangerous state is disabled. For categories 4 and 3, the integration must be dual-channel (x/y paths). Single-channel integration in the control (z path) is only possible with a single-channel control and by taking the risk analysis into account.

2) The external device monitoring is only static.

3) PELV as required in EN 60204-1 / 6.4

The related operating instructions for the integrated devices must be observed.









sens:Control – safe control solutions



Optimal integration of all safety components leads to a complete solution with sens:Control – safe control solutions: Safety relays (from page N-0), safety controllers (from page O-0) and network solutions (from page P-0).



Accessories

Mounting systems





Figure	Property	Packing unit	Type	Part no.
	Mounting kit 1, rigid	4	BEF-3WNGBAST4	7021352
	Mounting kit 6, swivel function, side bracket	4	BEF-1SHABAZN4	2019506
	Mounting kit 3, adjustable, vibration-absorbing	4	BEF-1SHADAAL4	2017752
	Mounting kit 2, adjustable	4	BEF-1SHABAAL4	2017751
	Mounting kit 2, swivel mount	4	BEF-2SMMEAKU4	2019659
	Stainless steel bracket, adjustable	4	BEF-2SMMEAES4	2023708
	Reinforced stainless steel bracket, adjustable	4	BEF-2SMMVAES4	2026850
	Mounting kit, swivel mount, extendable	2	BEF-0SMMEA002	2046172
	Omega bracket, flexible and quick installation with only one screw	4	BEF-2SMMEAAL4	2044847

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Connecting cables

Figure	Connection type	Direction of cable outlet	Cable length	Type	Part no.
	M12 x 7 + FE	Straight	2.5 m	DOL-127SG2M5E25KM0	6020537
			5 m	DOL-127SG05ME25KM0	6020354
			7.5 m	DOL-127SG7M5E25KM0	6020353
			10 m	DOL-127SG10ME25KM0	6020352
			15 m	DOL-127SG15ME25KM0	6020872
	M12 x 7 + FE	Angled	5 m	DOL-127SW05ME25KM0	6021342
			15 m	DOL-127SW15ME25KM0	6021343


Cable receptacles

Figure	Connection type	Direction of cable outlet	Type	Part no.
	Hirschmann cable socket M26 x 11 + FE	Straight	DOS-0612G000GA3KM0	6020757
		Angled	DOS-0612W000GA3KM0	6020758
	Hirschmann cable socket M26 x 6 + FE	Straight	DOS-0607G000GA3KM0	6006612
		Angled	DOS-0607W000IA3KU0	6007363


Cascade connection cables

Connection type	Direction of cable outlet	Cable length	Type	Part no.
M12 x 8	Plug straight/ socket straight	0.25 m	DSL-127SGM25E25KM0	6021000
		0.5 m	DSL-127SG0M5E25KM0	6021001
		1 m	DSL-127SG01ME25KM0	6021002
		1.5 m	DSL-127SG1M5E25KM0	6021003
		2 m	DSL-127SG02ME25KM0	6021004
		2.5 m	DSL-127SG2M5E25KM0	6021005
		3 m	DSL-127SG03ME25KM0	6021006


Power supply units

Figure	Input voltage	Output voltage	Maximum output current	Part no.
	100 V AC ... 240 V AC	24 V DC	3.9 A	7028790
			2.1 A	7028789


Device columns with external grooves

Figure	Description	Max. installation length	Number of beams	Beam separation	Type	Part no.
	Robust device columns with two external mounting grooves	965 mm	2	500 mm	PU3H96-00000000	2045490
		1165 mm	3	400 mm	PU3H11-00000000	2045641
		1265 mm	4	300 mm	PU3H13-00000000	2045642
		1720 mm	-	-	PU3H17-00000000	2045643
		2020 mm	-	-	PU3H21-00000000	2045644
		2250 mm	-	-	PU3H22-00000000	2045645
		2400 mm	-	-	PU3H24-00000000	2045646

Device columns for outdoor use

Figure	Description	Number of beams	Beam separation	Suitable for	Type	Part no.
	With front screen heating, 220 V, including brackets and cable socket (without multiple light beam safety device)	2	500 mm	M20x-02x50Axxx	PUG12-S02	2023707
		3	400 mm	M20x-03x40Axxx	PUG12-S01	2025441

Mirror columns with separate mirrors





Figure	Column height	Suitable for	Remark	Type	Part no.
 <small>Product may differ from illustration</small>	985 mm	M40x-0250xxxxx, M20x-02x05xxxx	Completely mounted, including mirrors	PM3S96-00240020	1040619
	1185 mm	M40x-0340xxxxx, M20x-03x40x1xx		PM3S11-00330030	1040625
	1285 mm	M40x-0430xxxxx, M20x-04x30xxxx		PM3S13-00430040	1040626

Mirror columns with protective field height mirror


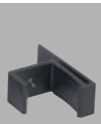
Figure	Column height	Mirror length	Type	Part no.
	1285 mm	900 mm	PM3C13-00030000	1043453
	1720 mm	1350 mm	PM3C17-00030000	1043454
	2000 mm	1650 mm	PM3C19-00030000	1043455
	2200 mm	1800 mm	PM3C20-00030000	1043456

→ For more detailed data on mirror columns and device columns, see page I-0


Column parts and accessories

Figure	Description	Packing unit	Type	Part no.
	For floor fastening	1	Adjusting plate	4031053
			Steel plug	5308961
	Omega bracket, mounting kit for device columns	2	BEF-2SMMEAAL2	2045883
	Suitable for all mirror columns PM3Sxx-xxxxxxx and PM3Cxx-xxxxxxx, including spacer bolt	1	Mirror kit for back area monitoring	2034938

Laser alignment aid

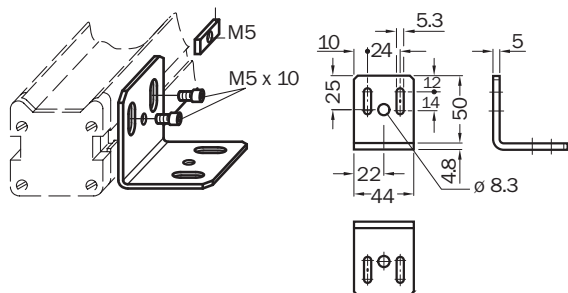
Figure	Description	Scanning range	Voltage supply	Type of light	Part no.
	Laser alignment aid AR60	Max. 60 m	2 batteries, 1.5 V Micro/AAA	Visible red light, laser class 2 (IEC 60825): Do not stare into beam!	1015741
	Adapter for AR60, for large housing profile	-	-	-	4032461
	Adapter for AR60, for large housing profile in PU3Hxx-xxxxxxx device column	-	-	-	4056731

Configuration tools

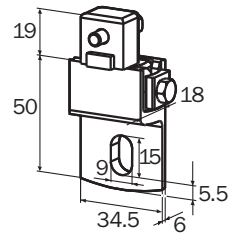
Figure	Description	Suitable for	Type	Part no.
	For deactivation of the external device monitoring and integrated restart interlock	C2000, M2000: deactivation of the external device monitoring; C4000 Micro, C4000 Basic Plus: deactivation of the external device monitoring and integrated restart interlock	Reset tool	6022103

Dimensional drawings mounting systems

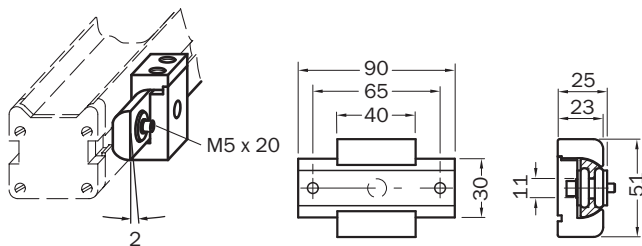
BEF-3WNGBAST4
Mounting kit 1, rigid



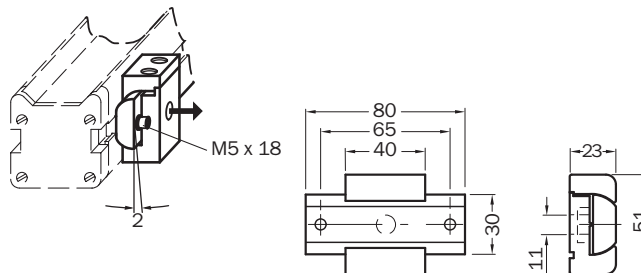
BEF-1SHABAZN4
Mounting kit 6, swivel function, side bracket



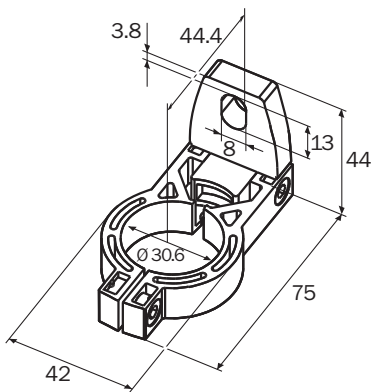
BEF-1SHADAAL4
Mounting kit 3, adjustable, vibration-absorbing



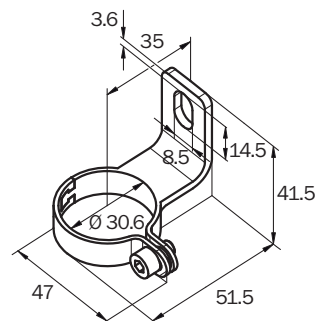
BEF-1SHABAAL4
Mounting kit 2, adjustable



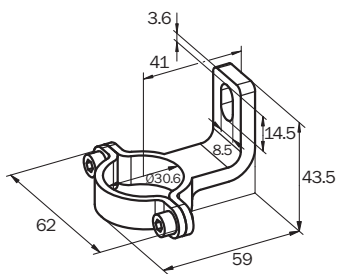
BEF-2SMMEAKU4
Mounting kit 2, swivel mount



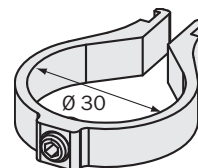
BEF-2SMMEAES4
Stainless steel bracket, adjustable



BEF-2SMMVAES4
Reinforced stainless steel bracket, adjustable



BEF-2SMMEAAL2
Omega bracket, mounting kit for device columns



Dimensions in mm

Technical data overview

Scanning range	0 m ... 6 m
Number of beams	1
Beam separation	500 mm
Type	Type 2 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508), SILCL2 (EN 62061)
Enclosure rating	IP 65

Product description

The M2000 A/P Standard multi-beam photoelectric safety switch comprises a sender/receiver unit on the active side (A) and one or more deflector mirrors on the passive side (P). With their high signal reserve, they are reliable under harsh industrial condi-

tions. Functions and status information integrated in the device allow rapid commissioning and prevent unnecessary machine downtime. Interfaces and service concepts complete the product range to provide an ideal solution for the application.

In-system added value

Combined with SICK safe control solutions

Combination with	Restart interlock	External device monitoring	Muting	Further information
Flexi Classic	✓	✓	✓	0-2
Flexi Soft	✓	✓	✓	0-25
UE48-20S	✓	✓	-	N-46
UE48-30S	✓	✓	-	N-52

→ For more combinations, see annex

Applications

→ You can find more applications using the application finder at www.mysick.com

- Storage and conveyor
- Wood industry
- Textile industry
- Stone production
- Electronics industry
- Packaging industry



- External device monitoring (EDM)
- Self-testing
- 7-segment display
- Diagnostics
- Alignment aid



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→ Dimensional drawings	G-88
→ Connection diagrams	G-88
→ Accessories	G-89
→ Systematic safety	A-0
→ Services	B-0

Ordering information

M2000 A/P Standard

Usage	As a standalone system
-------	------------------------

Scanning range 0 m ... 6 m

- Number of beams: 1
- Beam separation: 500 mm

System connection	External device monitoring	Sender/receiver in one housing		Mirror	
		Type	Part no.	Type	Part no.
11-pin + PE Hirschmann plug	-	M20Z-02550A121	1016513	PSR01-1501	1016677
6-pin + PE Hirschmann plug	-	M20Z-02550A120	1026510		1016677
M12 x 8 plug	✓	M20Z-02550A122	1018361		1016677

Technical specifications

→ You can find more detailed data in the operating instructions. Download at www.mysick.com

General data

System part	Sender/receiver in one housing	Mirror
Number of beams	1	-
Beam separation	500 mm	
Scanning range	0 m ... 6 m	-
Response time	Max. 7 ms	-
Protection class	III	-
Enclosure rating	IP 65 (EN 60529)	-
Synchronization	Optical, without separate synchronization	-
Safety related parameters		
Type	Type 2 (IEC 61496)	-
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)	-
Category	Category 2 (EN ISO 13849)	-
Test rate (internal test)	13/s (EN ISO 13849)	-
Maximum demand rate	8/min (EN ISO 13849) ¹⁾	-
Performance level	PL d (EN ISO 13849), pay attention to optical characteristics! ²⁾	-
PFHd (mean probability of a dangerous failure per hour)	2.2×10^{-8} (EN ISO 13849)	-
T _M (Mission Time)	20 years (EN ISO 13849)	-
Ambient operating temperature from ... to	0 °C ... +55 °C	-
Storage temperature from ... to	-25 °C ... +70 °C	-
Air humidity from ... to	15 % ... 95 %	-
Housing cross section	48 mm x 40 mm	55 mm x 52 mm
Vibration resistance	5 g (10 Hz ... 55 Hz), IEC 68-2-6	-
Shock resistance	10 g, 16 ms (according to IEC 68-2-29)	-

¹⁾ Between two demands on a safety-related response of the device, at least 100 internal or external tests must be carried out.

²⁾ The performance level does not contain any specific requirements on aspects such as the optical characteristics. For more detailed information on this topic, see page (A-10).

Functional data

System part	Sender/receiver in one housing	Mirror
External device monitoring (depending on type)	✓	-
Self-testing	✓	-

Electrical data

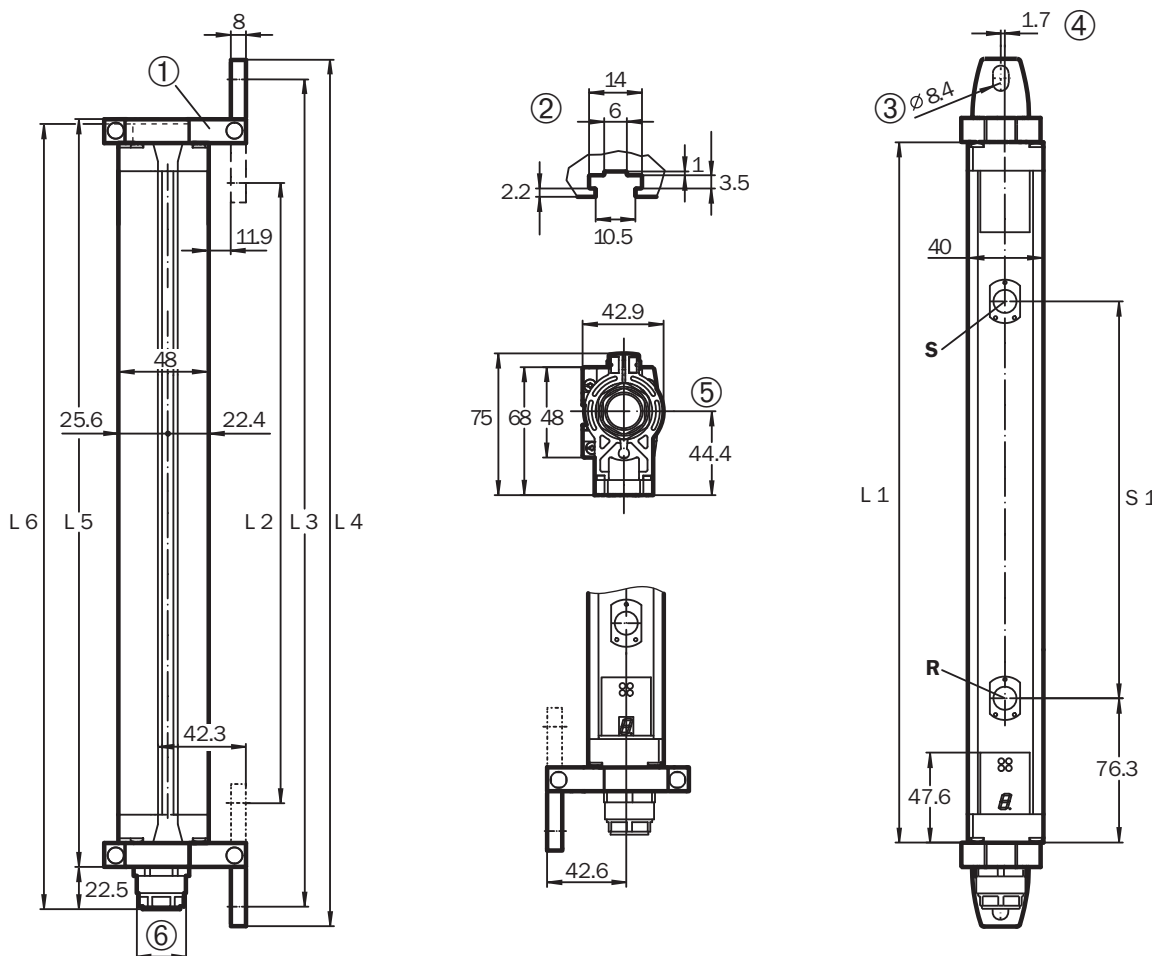
System part	Sender/receiver in one housing	Mirror
System connection (depending on type)	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug / M12 x 8 plug	-
Connecting cable wire cross-section	Hirschmann plug	Max. 1 mm ²
	M12 plug	Max. 0.25 mm ²
Connecting cable length	Conductor cross-section 1 mm ²	Max. 60 m
	Conductor cross-section 0.25 mm ²	Max. 15 m
Supply voltage V_S	24 V (19.2 V ... 28.8 V)	-
Power consumption	7.5 W	-
Safety outputs (OSSD)	Type of output	2 PNP semiconductors, short-circuit protected, cross-circuit monitored
	Switching voltage HIGH	Min. $V_S - 2.25 V$
	Switching current	Max. 500 mA

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Dimensional drawings

→ You can find more dimensional drawings in the operating instructions. Download at www.mysick.com

M2000 A/P Standard



Sender/receiver unit with swivel mount

- ① Mounting clamp
- ② Sliding nut groove for side mounting
- ③ Hexagon screw M8, DIN 933 with washer DIN 9021 (not supplied with delivery)
- ④ Adjustment
- ⑤ Center of light beam offset
- ⑥ Hirschmann plug DIN 43651

Number of beams	S1	L1	L2	L3	L4	L5	L6
2	500	653	611	720	741	678	700

Dimensions in mm

Connection diagrams

→ You can find connection diagrams at www.mysick.com

sens:Control – safe control solutions



Optimal integration of all safety components leads to a complete solution with sens:Control – safe control solutions: Safety relays (from page N-0), safety controllers (from page O-0) and network solutions (from page P-0).



Accessories

Mounting systems





Figure	Property	Packing unit	Type	Part no.
	Mounting kit 1, rigid	4	BEF-3WNGBAST4	7021352
	Mounting kit 6, swivel function, side bracket	4	BEF-1SHABAZN4	2019506
	Mounting kit 3, adjustable, vibration-absorbing	4	BEF-1SHADAAL4	2017752
	Mounting kit 2, adjustable	4	BEF-1SHABAAL4	2017751
	Mounting kit 2, swivel mount	4	BEF-2SMMEAKU4	2019659
	Stainless steel bracket, adjustable	4	BEF-2SMMEAES4	2023708
	Reinforced stainless steel bracket, adjustable	4	BEF-2SMMVAES4	2026850
	Mounting kit, swivel mount, extendable	2	BEF-0SMMEA002	2046172
	Mounting kit 9, swivel function, two swivel mounts, for M2000-A/P/active and two side brackets for deflector mirror PSR01-1501	4	BEF-0AAAA0004S01	2021569
	Omega bracket, flexible and quick installation with only one screw	4	BEF-2SMMEAAL4	2044847

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Connecting cables

Figure	Connection type	Direction of cable outlet	Cable length	Type	Part no.
	M12 x 7 + FE	Straight	2.5 m	DOL-127SG2M5E25KM0	6020537
			5 m	DOL-127SG05ME25KM0	6020354
			7.5 m	DOL-127SG7M5E25KM0	6020353
			10 m	DOL-127SG10ME25KM0	6020352
			15 m	DOL-127SG15ME25KM0	6020872
	M12 x 7 + FE	Angled	5 m	DOL-127SW05ME25KM0	6021342
			15 m	DOL-127SW15ME25KM0	6021343

Cable receptacles

Figure	Connection type	Direction of cable outlet	Type	Part no.
	Hirschmann cable socket M26 x 11 + FE	Straight	DOS-0612G000GA3KM0	6020757
		Angled	DOS-0612W000GA3KM0	6020758
	Hirschmann cable socket M26 x 6 + FE	Straight	DOS-0607G000GA3KM0	6006612
		Angled	DOS-0607W000IA3KU0	6007363

Power supply units


Figure	Input voltage	Output voltage	Maximum output current	Part no.
	100 V AC ... 240 V AC	24 V DC	2.1 A	7028789
			3.9 A	7028790

G

Device columns with external grooves


Figure	Description	Max. installation length	Number of beams	Beam separation	Type	Part no.
	Robust device columns with two external mounting grooves	965 mm	2	500 mm	PU3H96-00000000	2045490
		1165 mm	3	400 mm	PU3H11-00000000	2045641
		1265 mm	4	300 mm	PU3H13-00000000	2045642
		1720 mm	-	-	PU3H17-00000000	2045643
		2020 mm	-	-	PU3H21-00000000	2045644
		2250 mm	-	-	PU3H22-00000000	2045645
		2400 mm	-	-	PU3H24-00000000	2045646

Device columns for outdoor use

Figure	Description	Number of beams	Beam separation	Suitable for	Type	Part no.
	With front screen heating, 220 V, including brackets and cable socket (without multiple light beam safety device)	2	500 mm	M20x-02x50Axxx, M20Z-02x50Axxx	PUG12-S02	2023707




G

Mirror columns with separate mirrors

Figure	Column height	Suitable for	Remark	Type	Part no.
 <small>Product may differ from illustration</small>	985 mm	M40Z-0250xxxx M20Z-02x05xxxx	Vertical deflection	PM2Z96-30240020	1027265

→ For more detailed data on mirror columns and device columns, see page I-0




Column parts and accessories

Figure	Description	Packing unit	Type	Part no.
	For floor fastening	1	Adjusting plate	4031053
			Steel plug	5308961
	Omega bracket, mounting kit for device columns	2	BEF-2SMMEAL2	2045883


Deflector mirrors

Mirror material	Remark	Type	Part no.
Glass	With end caps for swivel mount bracket (large housing) and front screen	PSR01-S04	1025227

Laser alignment aid

Figure	Description	Scanning range	Voltage supply	Type of light	Part no.
	Laser alignment aid AR60	Max. 60 m	2 batteries, 1.5 V Micro/AAA	Visible red light, laser class 2 (IEC 60825): Do not stare into beam!	1015741
	Adapter for AR60, for large housing profile	-	-	-	4032461
	Adapter for AR60, for large housing profile in PU3Hxx-xxxxxxx device column	-	-	-	4056731

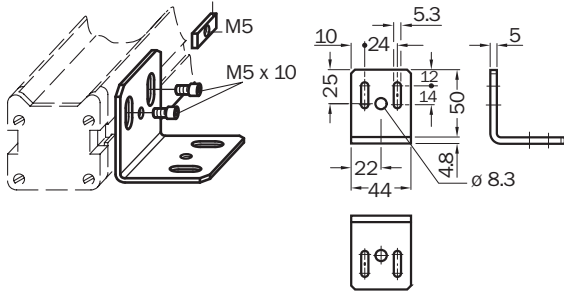
Configuration tools

Figure	Description	Suitable for	Type	Part no.
	For deactivation of the external device monitoring and integrated restart interlock	C2000, M2000: deactivation of the external device monitoring; C4000 Micro, C4000 Basic Plus: deactivation of the external device monitoring and integrated restart interlock	Reset tool	6022103

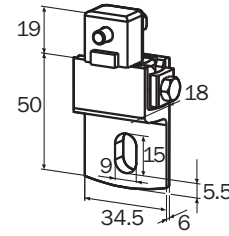
G

Dimensional drawings mounting systems

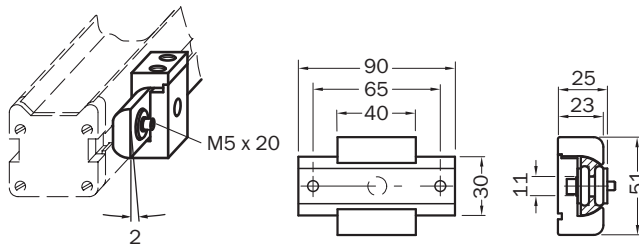
BEF-3WNGBAST4
Mounting kit 1, rigid



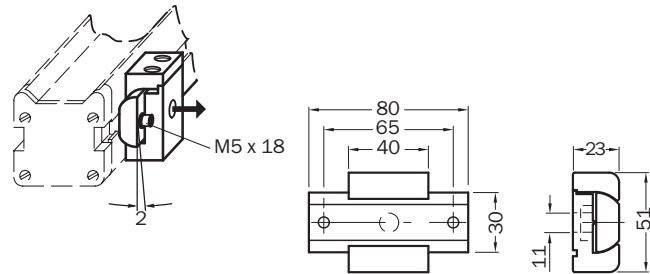
BEF-1SHABAZN4
Mounting kit 6, swivel function, side bracket



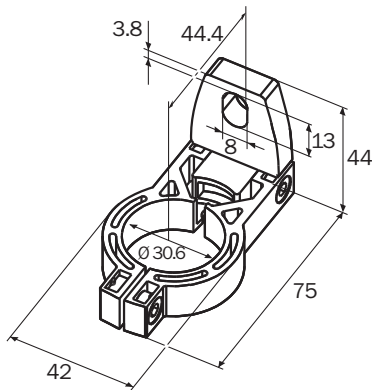
BEF-1SHADAAL4
Mounting kit 3, adjustable, vibration-absorbing



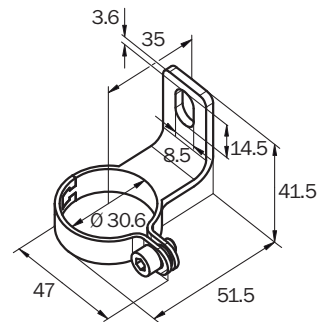
BEF-1SHABAAL4
Mounting kit 2, adjustable



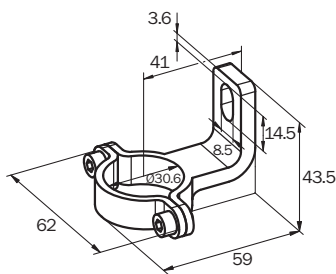
BEF-2SMMEAKU4
Mounting kit 2, swivel mount



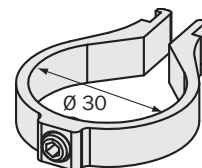
BEF-2SMMEAES4
Stainless steel bracket, adjustable



BEF-2SMMVAES4
Reinforced stainless steel bracket, adjustable



BEF-2SMMEAAL2
Omega bracket, mounting kit for device columns



Dimensions in mm





- Restart interlock (RES)
- External device monitoring (EDM)
- Self-testing
- 7-segment display
- Diagnostics
- Alignment aid



G

Technical data overview

Scanning range	0 m ... 6 m
Number of beams	1
Beam separation	500 mm
Type	Type 2 (IEC 61496)
Safety integrity level	SIL2 (IEC 61508), SILCL2 (EN 62061)
Enclosure rating	IP 65

Product description

The M2000 A/P RES/EDM multi-beam photoelectric safety switch comprises a sender/receiver unit on the active side (A) and one or more deflector mirrors on the passive side (P). With their high signal reserve, they are reliable under harsh industrial conditions. Functions and status information integrated in the device allow rapid commissioning and prevent unne-

sary machine downtime. Interfaces and service concepts complete the product range to provide an ideal solution for the application. The integrated restart interlock in the M2000 A/P RES/EDM offers the advantages of shorter cable runs and quicker commissioning compared to traditional solutions.

In-system added value

Combined with SICK safe control solutions

Combination with	Restart interlock	External device monitoring	Muting	Further information
Flexi Classic	✓	✓	✓	0-2
Flexi Soft	✓	✓	✓	0-25
UE48-20S	✓	✓	-	N-46
UE48-30S	✓	✓	-	N-52
UE10-30S	Contact expansion module			N-63

→ For more combinations, see annex

Applications

→ You can find more applications using the application finder at www.mysick.com

- Storage and conveyor
- Wood industry
- Textile industry
- Stone production
- Electronics industry
- Packaging industry

Further information	Page
→ Dimensional drawings	G-97
→ Connection diagrams	G-97
→ Accessories	G-98
→ Systematic safety	A-0
→ Services	B-0

Ordering information

M2000 A/P RES/EDM

Usage	As a standalone system
-------	------------------------

Scanning range 0 m ... 6 m

- Number of beams: 1
- Beam separation: 500 mm

System connection	Sender/receiver in one housing		Mirror	
	Type	Part no.	Type	Part no.
11-pin + PE Hirschmann plug	M20Z-02550A221	1018239	PSR01-1501	1016677
6-pin + PE Hirschmann plug	M20Z-02550A220	1026511		1016677
M12 x 8 plug	M20Z-02550A222	1018362		1016677

Technical specifications

→ You can find more detailed data in the operating instructions. Download at www.mysick.com

General data

System part	Sender/receiver in one housing	Mirror
Number of beams	1	-
Beam separation	500 mm	
Scanning range	0 m ... 6 m	-
Response time	Max. 7 ms	-
Protection class	III	-
Enclosure rating	IP 65 (EN 60529)	-
Safety related parameters		
Type	Type 2 (IEC 61496)	-
Safety integrity level	SIL2 (IEC 61508) SILCL2 (EN 62061)	-
Category	Category 2 (EN ISO 13849)	-
Test rate (internal test)	13/s (EN ISO 13849)	-
Maximum demand rate	8/min (EN ISO 13849) ¹⁾	-
Performance level	PL d (EN ISO 13849), pay attention to optical characteristics! ²⁾	-
PFHd (mean probability of a dangerous failure per hour)	2.2 x 10 ⁻⁸ (EN ISO 13849)	-
T _M (Mission Time)	20 years (EN ISO 13849)	-
Ambient operating temperature from ... to	0 °C ... +55 °C	-
Storage temperature from ... to	-25 °C ... +70 °C	-
Air humidity from ... to	15 % ... 95 %	-
Housing cross section	48 mm x 40 mm	55 mm x 52 mm
Vibration resistance	5 g (10 Hz ... 55 Hz), IEC 68-2-6	-
Shock resistance	10 g, 16 ms (according to IEC 68-2-29)	-

¹⁾ Between two demands on a safety-related response of the device, at least 100 internal or external tests must be carried out.

²⁾ The performance level does not contain any specific requirements on aspects such as the optical characteristics. For more detailed information on this topic, see page (A-10).

Functional data

System part	Sender/receiver in one housing	Mirror
Restart interlock (depending on type)	✓	-
External device monitoring	✓	-
Self-testing	✓	-

Electrical data

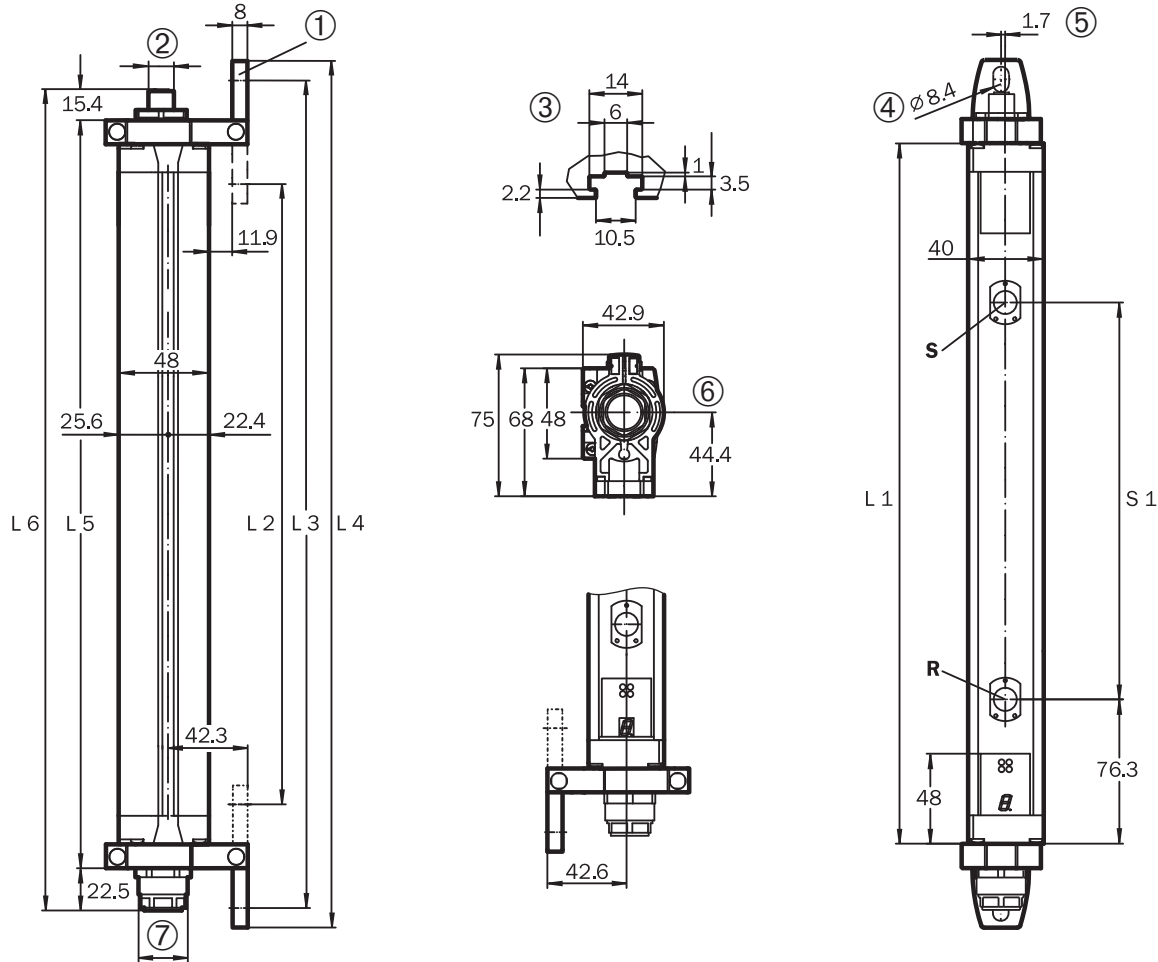
System part	Sender/receiver in one housing	Mirror
System connection (depending on type)	6-pin + PE Hirschmann plug / 11-pin + PE Hirschmann plug / M12 x 8 plug	-
Connecting cable wire cross-section	Hirschmann plug	-
	M12 plug	-
Connecting cable length	Conductor cross-section 1 mm ²	-
	Conductor cross-section 0.25 mm ²	-
Supply voltage V _S	24 V (19.2 V ... 28.8 V)	-
Power consumption	7.5 W	-
Safety outputs (OSSD)	Type of output	-
	Switching voltage HIGH	-
	Switching current	-

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Dimensional drawings

→ You can find more dimensional drawings in the operating instructions. Download at www.mysick.com

M2000 A/P RES/EDM



Sender/receiver unit with swivel mount

- ① Mounting clamp
- ② M12 x 8 socket (standard)
- ③ Sliding nut groove for slide mounting
- ④ Hexagon screw M8, DIN 933 with washer DIN 9021 (not supplied with delivery)
- ⑤ Center of light beam offset
- ⑥ Adjustment
- ⑦ Plug PG13.5 according to DIN 43651
- S Sender
- R Receiver

N	S1	L1	L2	L3	L4	L5	L6
2	500	653	611	720	741	678	716

Dimensions in mm

Connection diagrams

→ You can find connection diagrams at www.mysick.com







sens:Control – safe control solutions



Optimal integration of all safety components leads to a complete solution with sens:Control – safe control solutions: Safety relays (from page N-0), safety controllers (from page O-0) and network solutions (from page P-0).



Accessories

Mounting systems

Figure	Property	Packing unit	Type	Part no.
	Mounting kit 1, rigid	4	BEF-3WNGBAST4	7021352
	Mounting kit 6, swivel function, side bracket	4	BEF-1SHABAZN4	2019506
	Mounting kit 3, adjustable, vibration-absorbing	4	BEF-1SHADAAL4	2017752
	Mounting kit 2, adjustable	4	BEF-1SHABAAL4	2017751
	Mounting kit 2, swivel mount	4	BEF-2SMMEAKU4	2019659
	Stainless steel bracket, adjustable	4	BEF-2SMMEAES4	2023708
	Reinforced stainless steel bracket, adjustable	4	BEF-2SMMVAES4	2026850
	Mounting kit, swivel mount, extendable	2	BEF-0SMMEA002	2046172
	Mounting kit 9, swivel function, two swivel mounts, for M2000-A/P/active and two side brackets for deflector mirror PSR01-1501	4	BEF-0AAAA0004S01	2021569
	Omega bracket, flexible and quick installation with only one screw	4	BEF-2SMMEAAL4	2044847

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Connecting cables

Figure	Connection type	Direction of cable outlet	Cable length	Type	Part no.
	M12 x 7 + FE	Straight	2.5 m	DOL-127SG2M5E25KM0	6020537
			5 m	DOL-127SG05ME25KM0	6020354
			7.5 m	DOL-127SG7M5E25KM0	6020353
			10 m	DOL-127SG10ME25KM0	6020352
			15 m	DOL-127SG15ME25KM0	6020872
	M12 x 7 + FE	Angled	5 m	DOL-127SW05ME25KM0	6021342
			15 m	DOL-127SW15ME25KM0	6021343

Connector

Connection type	Remark	Type	Part no.
Pre-assembled	For deactivation of the integrated restart interlock	STE-1208G000025KM1	6021238


Cable receptacles

Figure	Connection type	Direction of cable outlet	Type	Part no.
	Hirschmann cable socket M26 x 11 + FE	Straight	DOS-0612G000GA3KM0	6020757
		Angled	DOS-0612W000GA3KM0	6020758
	Hirschmann cable socket M26 x 6 + FE	Straight	DOS-0607G000GA3KM0	6006612
		Angled	DOS-0607W000IA3KU0	6007363


Control switch connection cables

Connection type	Direction of cable outlet	Cable length	Type	Part no.
Connector	Straight	5 m	STL-127SG05ME25KM0	6021204
		15 m	STL-127SG15ME25KM0	6021205
	Angled	5 m	STL-127SW05ME25KM0	6021830
		15 m	STL-127SW15ME25KM0	6021831


Power supply units

Figure	Input voltage	Output voltage	Maximum output current	Part no.
	100 V AC ... 240 V AC	24 V DC	2.1 A	7028789
			3.9 A	7028790


Device columns with external grooves

Figure	Description	Max. installation length	Number of beams	Beam separation	Type	Part no.
	Robust device columns with two external mounting grooves	965 mm	2	500 mm	PU3H96-00000000	2045490
		1165 mm	3	400 mm	PU3H11-00000000	2045641
		1265 mm	4	300 mm	PU3H13-00000000	2045642
		1720 mm	-	-	PU3H17-00000000	2045643
		2020 mm	-	-	PU3H21-00000000	2045644
		2250 mm	-	-	PU3H22-00000000	2045645
		2400 mm	-	-	PU3H24-00000000	2045646

Device columns for outdoor use

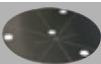


Figure	Description	Number of beams	Beam separation	Suitable for	Type	Part no.
	With front screen heating, 220 V, including brackets and cable socket (without multiple light beam safety device)	2	500 mm	M20x-02x50Axxx, M20Z-02x50Axxx	PUG12-S02	2023707

Mirror columns with separate mirrors

Figure	Column height	Suitable for	Remark	Type	Part no.
 <small>Product may differ from illustration</small>	985 mm	M40Z-0250xxxx M20Z-02x05xxxx	Vertical deflection	PM2Z96-30240020	1027265

→ For more detailed data on mirror columns and device columns, see page I-0



Column parts and accessories

Figure	Description	Packing unit	Type	Part no.
	For floor fastening	1	Adjusting plate	4031053
			Steel plug	5308961
	Omega bracket, mounting kit for device columns	2	BEF-2SMMEAAL2	2045883


Deflector mirrors

Mirror material	Remark	Type	Part no.
Glass	With end caps for swivel mount bracket (large housing) and front screen	PSR01-S04	1025227

Laser alignment aid

Figure	Description	Scanning range	Voltage supply	Type of light	Part no.
	Laser alignment aid AR60	Max. 60 m	2 batteries, 1.5 V Micro/AAA	Visible red light, laser class 2 (IEC 60825): Do not stare into beam!	1015741
	Adapter for AR60, for large housing profile	-	-	-	4032461
	Adapter for AR60, for large housing profile in PU3Hxx-xxxxxxx device column	-	-	-	4056731

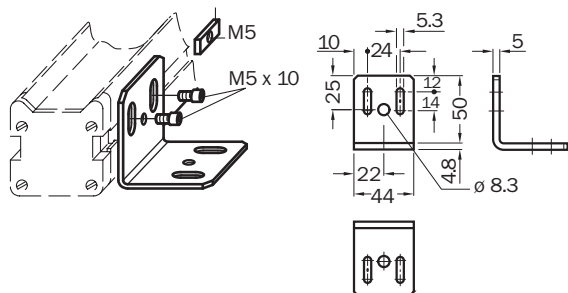
Configuration tools

Figure	Description	Suitable for	Type	Part no.
	For deactivation of the external device monitoring and integrated restart interlock	C2000, M2000: deactivation of the external device monitoring; C4000 Micro, C4000 Basic Plus: deactivation of the external device monitoring and integrated restart interlock	Reset tool	6022103

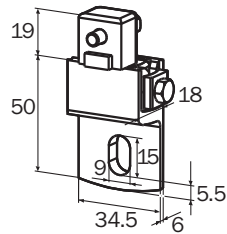
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Dimensional drawings mounting systems

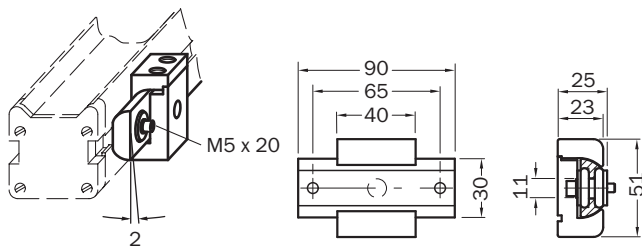
BEF-3WNGBAST4
Mounting kit 1, rigid



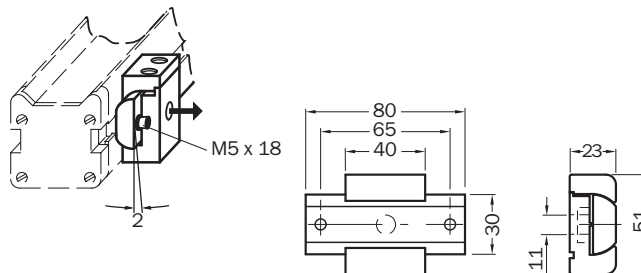
BEF-1SHABAZN4
Mounting kit 6, swivel function, side bracket



BEF-1SHADAAL4
Mounting kit 3, adjustable, vibration-absorbing



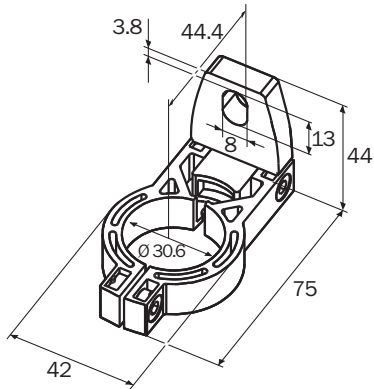
BEF-1SHABAAL4
Mounting kit 2, adjustable



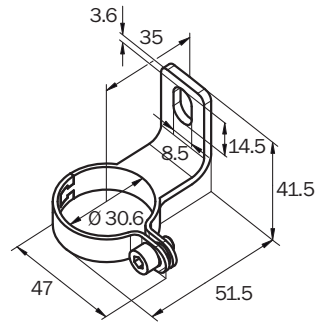
Dimensions in mm



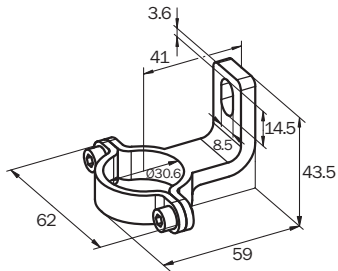
BEF-2SMMEAKU4
Mounting kit 2, swivel mount



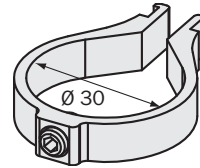
BEF-2SMMEAES4
Stainless steel bracket, adjustable



BEF-2SMMVAES4
Reinforced stainless steel bracket, adjustable



BEF-2SMMEAAL2
Omega bracket, mounting kit for device columns



Dimensions in mm