



## Industrial Safety Systems

C4000 Fusion  
Compact muting alternative and reliable access  
and hazardous area protection





- Reliable hand protection
- Area protection in dirty environments
- Customized access protection with differentiation between man and material
- Reduced resolution
- Fixed blanking
- 2 virtual photoelectric switches
- Multiple sampling
- Integrated laser alignment



## Overview of technical specifications

Protective field height (depending on type)	300 mm ... 1800 mm
Scanning range	1.5 m ... 19 m
Resolution	20 mm
Type	Type 4 (IEC 61496)
Safety integrity level	SIL3 (IEC 61508) SILCL3 (IEC 62061)
Enclosure rating	IP 65

## Product description

The C4000 Fusion safety light curtain bundles functions and expands the field of applications for safety light curtains. It is qualified for compact muting alternative without additional sensors as well as for highly available hazardous point and area protection. In harsh ambient conditions, the Fusion provides maximum uptime while virtually eliminating false trips.

- Reliable: flying wood chips or small debris are filtered, preventing annoying false trips
- Simple: for the access protection with automated material transport C4000 Fusion differentiates between man and material
- Available: skids are being detected, sporadic objects like dangling shrink-

wrap or pallet wood splinters are automatically suppressed

- Cost-effective: only one sender / receiver pair, ensures cost savings during mounting, wiring and service
- Easily integrated: no secondary muting sensors necessary, only the OSSDs are implemented
- Safe: also provides protection in areas in which there is no object, unlike conventional muting solutions
- Flexible: individually adjustable to local conditions: sequence monitoring of defined objects of almost any size
- Position monitoring: using two single beams out of the curtain
- The integrated EFI interface allows the use of additional sensor functions.

## Applications

→ You can find more applications using the application finder at [www.mysick.com](http://www.mysick.com)

- Machine tools
- Automotive and other vehicles
- Storage and conveyor technology
- Woodworking machines



Hazardous point protection available in spite of dirt or chips



Horizontal safety light curtain. No additional muting sensors required.

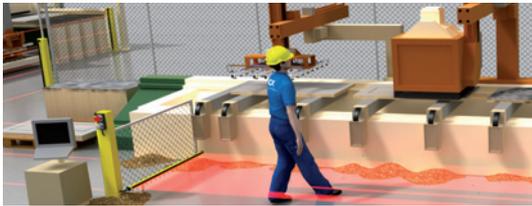
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## Further Applications

### Wood machining: Hazardous area protection



Falling chips do not trip the safety light curtain.



Due to multiscan and reduced resolution C4000 Fusion offers high availability.

### Wood machining: Shelf sorting plant

The worker can manually adjust shelves.



Reduced resolution: With C4000 Fusion machinery does not stop before the upper part of the body is detected.



### Automotive industry: Access protection without muting



Object pattern recognition for individual settings of a defined object like complex skid constructions of a car.



Access protection without muting initially saves muting sensors and hinged doors. The easy assembly enhances process safety.

## Ordering information

### C4000 Fusion without extension connection

- Resolution: 20 mm
- Scanning range: 1.5 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part number	Type	Part number
300 mm	C40S-0302FY010	1043224	C40E-0302FY010	1043225
450 mm	C40S-0402FY010	1043226	C40E-0402FY010	1043227
600 mm	C40S-0602FY010	1043228	C40E-0602FY010	1043229
750 mm	C40S-0702FY010	1043183	C40E-0702FY010	1043184
900 mm	C40S-0902FY010	1043185	C40E-0902FY010	1043186
1050 mm	C40S-1002FY010	1043187	C40E-1002FY010	1043189
1200 mm	C40S-1202FY010	1043190	C40E-1202FY010	1043191
1350 mm	C40S-1302FY010	1043192	C40E-1302FY010	1043193
1500 mm	C40S-1502FY010	1043194	C40E-1502FY010	1043195
1650 mm	C40S-1602FY010	1043196	C40E-1602FY010	1043197
1800 mm	C40S-1802FY010	1043198	C40E-1802FY010	1043199

### C4000 Fusion with extension connection<sup>1)</sup> on the receiver

- Resolution: 20 mm
- Scanning range: 1.5 m ... 19 m

Protective field height	Sender		Receiver	
	Type	Part number	Type	Part number
300 mm	C40S-0302FY010	1043224	C40E-0302GY010	1043239
450 mm	C40S-0402FY010	1043226	C40E-0402GY010	1043240
600 mm	C40S-0602FY010	1043228	C40E-0602GY010	1043241
750 mm	C40S-0702FY010	1043183	C40E-0702GY010	1043242
900 mm	C40S-0902FY010	1043185	C40E-0902GY010	1043243
1050 mm	C40S-1002FY010	1043187	C40E-1002GY010	1043244
1200 mm	C40S-1202FY010	1043190	C40E-1202GY010	1043245
1350 mm	C40S-1302FY010	1043192	C40E-1302GY010	1043246
1500 mm	C40S-1502FY010	1043194	C40E-1502GY010	1043247
1650 mm	C40S-1602FY010	1043196	C40E-1602GY010	1043248
1800 mm	C40S-1802FY010	1043198	C40E-1802GY010	1043249

### Switching amplifier UE402

Description	Type	Part number
Expands C4000 Standard, Advanced, Palletizer, Entry/Exit and Fusion with the functions described in the technical data, e.g., bypass, operating mode switching or in addition PSDI mode on C4000 Standard, Advanced.	UE402	1023577

## Technical specifications

→ You can find more detailed data in the operating instructions. Download at [www.mysick.com](http://www.mysick.com)

### C4000 Fusion

#### General data

System part	Sender	Receiver
Resolution	20 mm	
Scanning range	1.5 m ... 19 m	
Protective field height (depending on type)	300 mm ... 1800 mm	
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 (probability of a dangerous failure/hour)	$1,5 \times 10^{-8}$	
T <sub>M</sub> (Mission Time)	20 a	
Response time (depending on type)	-	12 ms ... 62 ms <sup>1)</sup>
Protection class	3	
Enclosure rating	IP 65	
Ambient operating temperature from ... to	0 °C ... +55 °C	
Storage temperature from ... to	-25 °C ... +70 °C	
Air humidity from ... to	15 % ... 95 %, Non-condensing	
Housing cross section	48 mm x 40 mm	
Vibration resistance	5 g (10 Hz ... 55 Hz), IEC 60068-2-6	
Shock resistance	10 g, 16 ms (IEC 60068-2-29)	
Integrated laser alignment aid		
Laser class	1 (IEC 60825), eye-safe	
Light sender/type of light	LED (visible red light)	
Wave length	650 nm	

<sup>1)</sup> Without multiple sampling. Other response times see operating instructions.

## Functional data: basic functions

	C4000 Fusion without extension connection	C4000 Fusion with extension connection on the receiver
Restart interlock		✓
Restart interlock (delivery status)		External
External device monitoring		✓
External device monitoring (delivery status)		Deactivated
Beam coding		✓
Beam coding (delivery status)		Code 1
Multiple sampling		✓
Multiple sampling (delivery status)		2 x sampling
Direction monitoring		✓
Reduced resolution		✓
Extension connection	-	✓
Emergency stop / bypass at extension connection		✓
Bypass (with UE402)		✓
Operating mode switching (with UE402)		✓
PSDI mode (with UE402)		-
Virtual photoelectric switches	-	✓
Safe integration to bus system		✓
SDL interface		✓ <sup>1)</sup>
Configuration method	PC with CDS (configuration and diagnosis software)	
ATEX II 3G/3D (with ATEX Package)		✓

<sup>1)</sup> For remote maintenance with devices sens:Control - safe control solutions from SICK

## Functional data: blanking

	C4000 Fusion without extension connection	C4000 Fusion with extension connection on the receiver
Object entry monitoring		✓
Goods detection		✓
Object size monitoring		✓ <sup>1)</sup>
Teach-in of Individual objects		✓
Object gap suppression		✓ <sup>1)</sup>
Palett detection		✓
Object pattern recognition		✓
Detection of geometrically even objects		✓
Fixed blanking		✓

<sup>1)</sup> Only in case when blanking of a single object is configured

## Electrical data

System part	Sender	Receiver
System connection	Hirschmann plug M26 x 11 + FE	
Cable length	Max. 50 m	
Conductor cross-section	0.75 mm <sup>2</sup>	
Extension connection (depending on type)	-	Hirschmann socket M26 x 11 + FE
Configuration connection	M8 x 4	
Supply voltage	24 V DC (19.2 V DC ... 28.8 V DC) <sup>1)</sup>	
Ripple	≤ 10 % <sup>2)</sup>	
Power consumption	Max. 1 A	Max. 1.8 A
Safety outputs (OSSD)	2 PNP semiconductors, short-circuit protected, cross-circuit monitored	
Type of output	-	3.5 V DC
Switching voltage LOW	-	Max. 500 mA
Switching current	-	
Display elements	7-segment	

<sup>1)</sup> The external voltage supply must be capable of buffering brief mains failures of 20 ms as specified in EN 60 204-1. Suitable power supplies are available as accessories from SICK.

<sup>2)</sup> Within the limits of  $U_V$ .

## Switching amplifier UE402

## General data

Protection class	III (IEC 536:1976)
Enclosure rating	IP 20 (IEC 60529)
Safety related parameters	
Type	Type 4 (IEC 61496)
Ambient operating temperature from ... to	0 °C ... +55 °C
Air humidity from ... to	15 % ... 95 %, Non-condensing
Storage temperature from ... to	-25 °C ... +70 °C
Weight	120 g
Housing material	Plastic

## Functional data

PSDI mode	✓
Bypass	✓
Operating mode switching	✓

## Electrical data

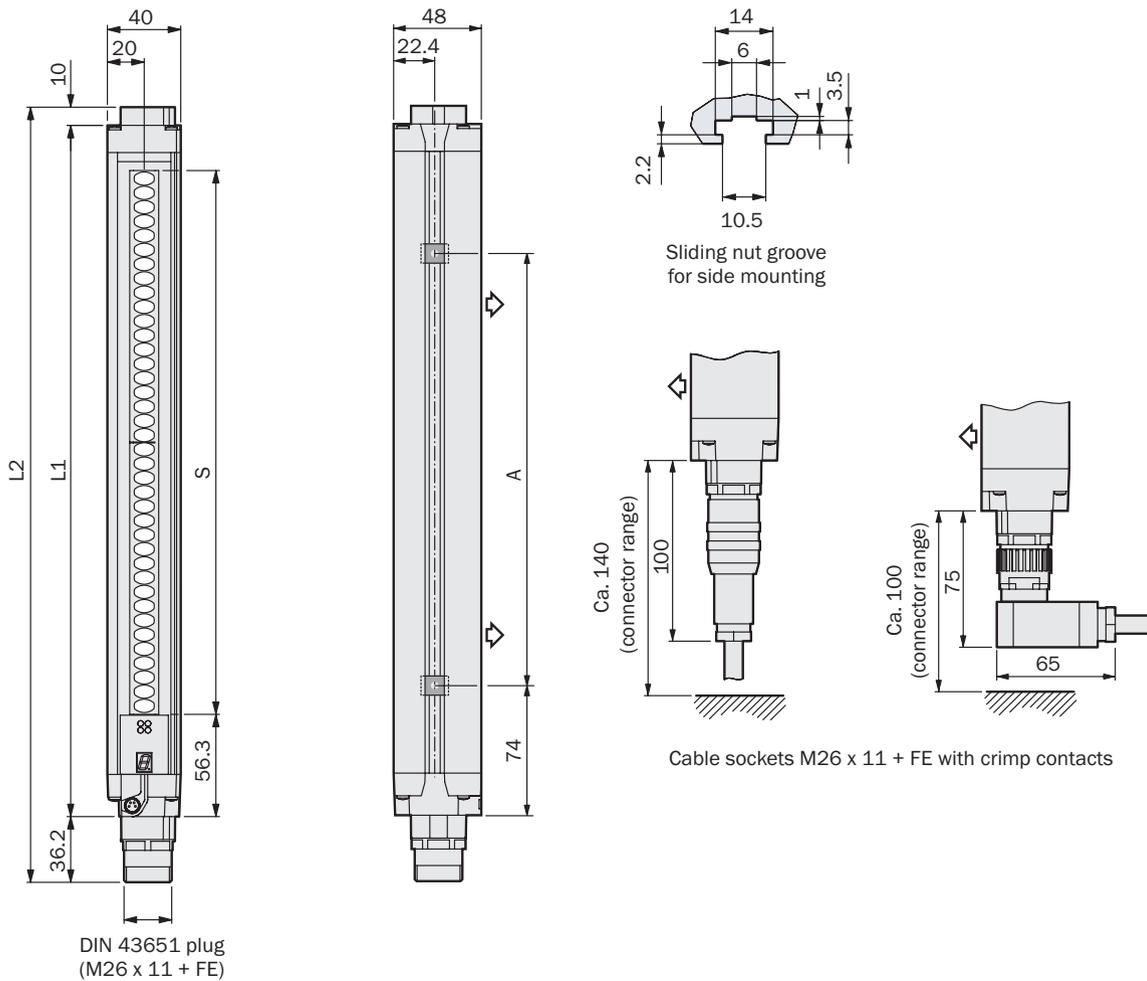
Supply voltage $V_s$	24 V DC (19.2 V DC ... 28.8 V DC)
Ripple	10 %
Power consumption	Max. 110 mA
Switch-on time	Max. 4 s
IN A1 ... A6, MCC-BDC, MCC-TDC	
Switching voltage HIGH	24 V DC (11 V DC ... 30 V DC)
Switching voltage LOW	-30 V DC ... 5 V DC
Switching current HIGH	6 mA ... 20 mA
Switching current LOW	-3 mA ... 0.5 mA
Change over time operating mode selection	Max. 2 s
IN B1, IN B2, OUT B1, OUT B2	
Change over time bypass	Max. 2 s
Synchronous time monitoring	200 ms

## Safety outputs

Connection type	Screw-terminal connector
Conductor cross-section	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>

# Dimensional drawings

## C4000 Fusion without extension connection

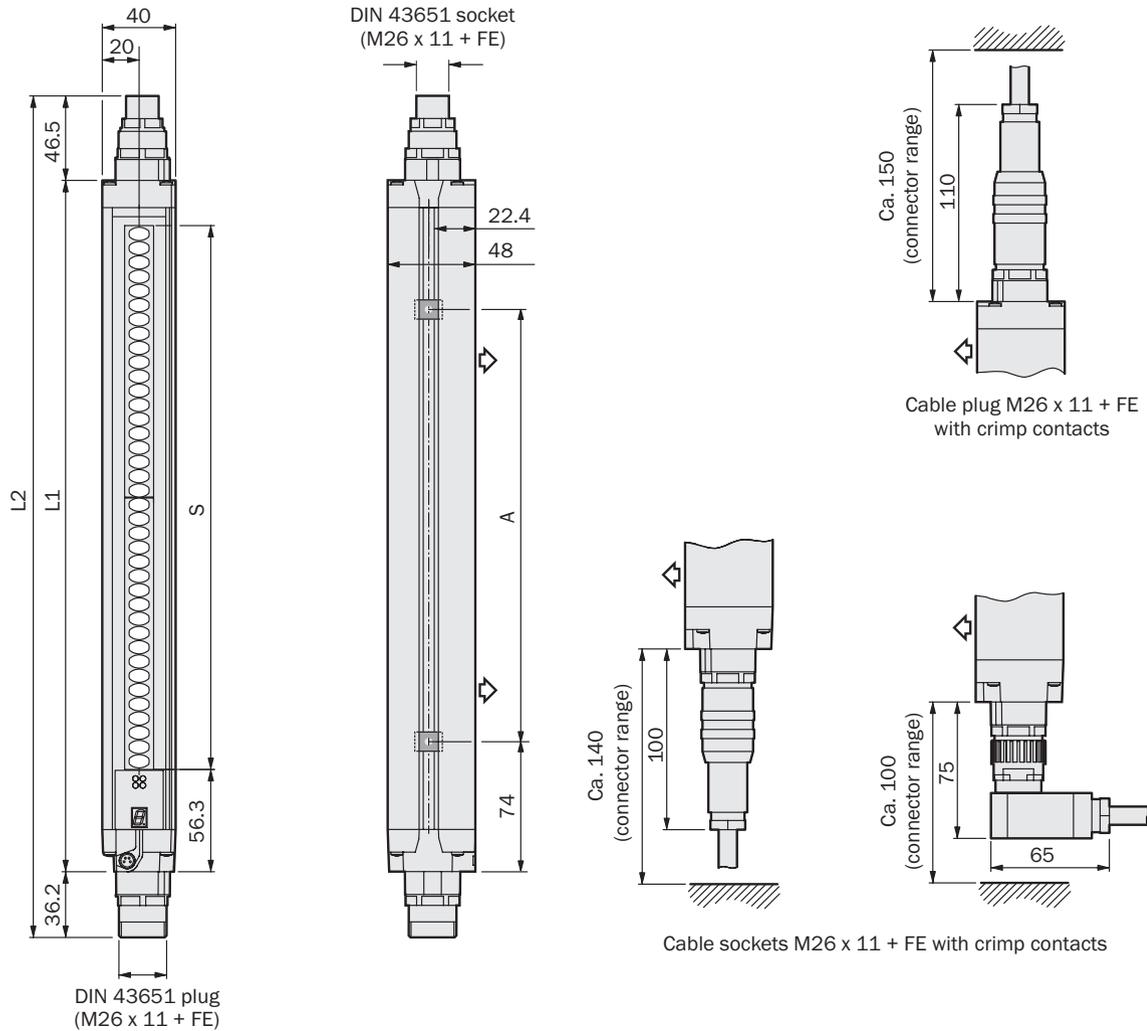


Dimensional drawing C4000 without extension connection, sender (receiver, mirror image)

Protective field height S	L1	L2	A
300	381	427	224
450	532	578	374
600	682	728	524
750	833	879	674
900	984	1030	824
1050	1134	1180	974
1200	1283	1329	1124
1350	1435	1481	1274
1500	1586	1632	1424
1650	1736	1782	1574
1800	1887	1933	1724

Dimensions in mm

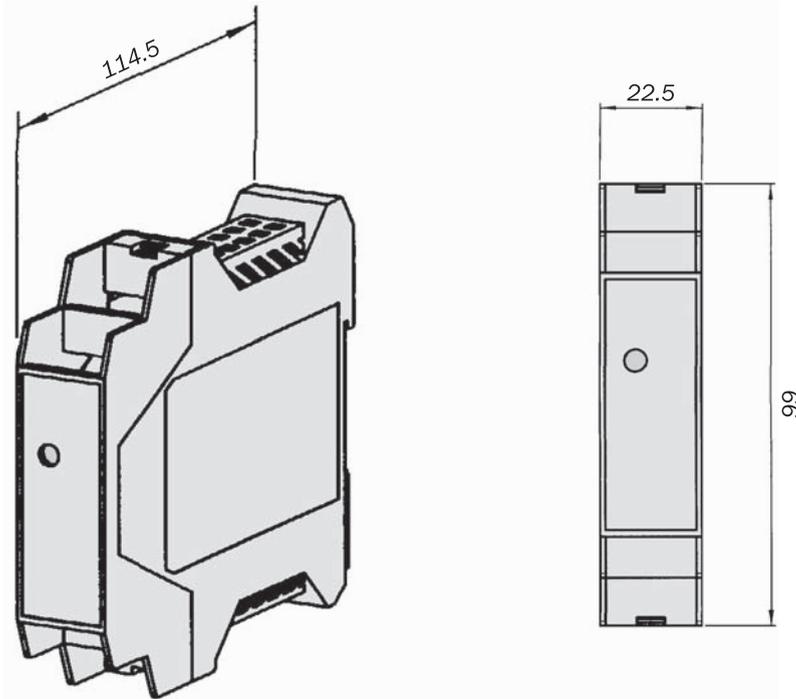
**C4000 Fusion with extension connection on the receiver**



Dimensional drawing C4000 with extension connection, sender (receiver, mirror image)

Protective field height S	L1	L2	A
300	381	464	224
450	532	614	374
600	682	765	524
750	833	915	674
900	984	1066	824
1050	1134	1216	974
1200	1283	1366	1124
1350	1435	1517	1274
1500	1586	1669	1424
1650	1736	1818	1574
1800	1887	1969	1724

Dimensions in mm

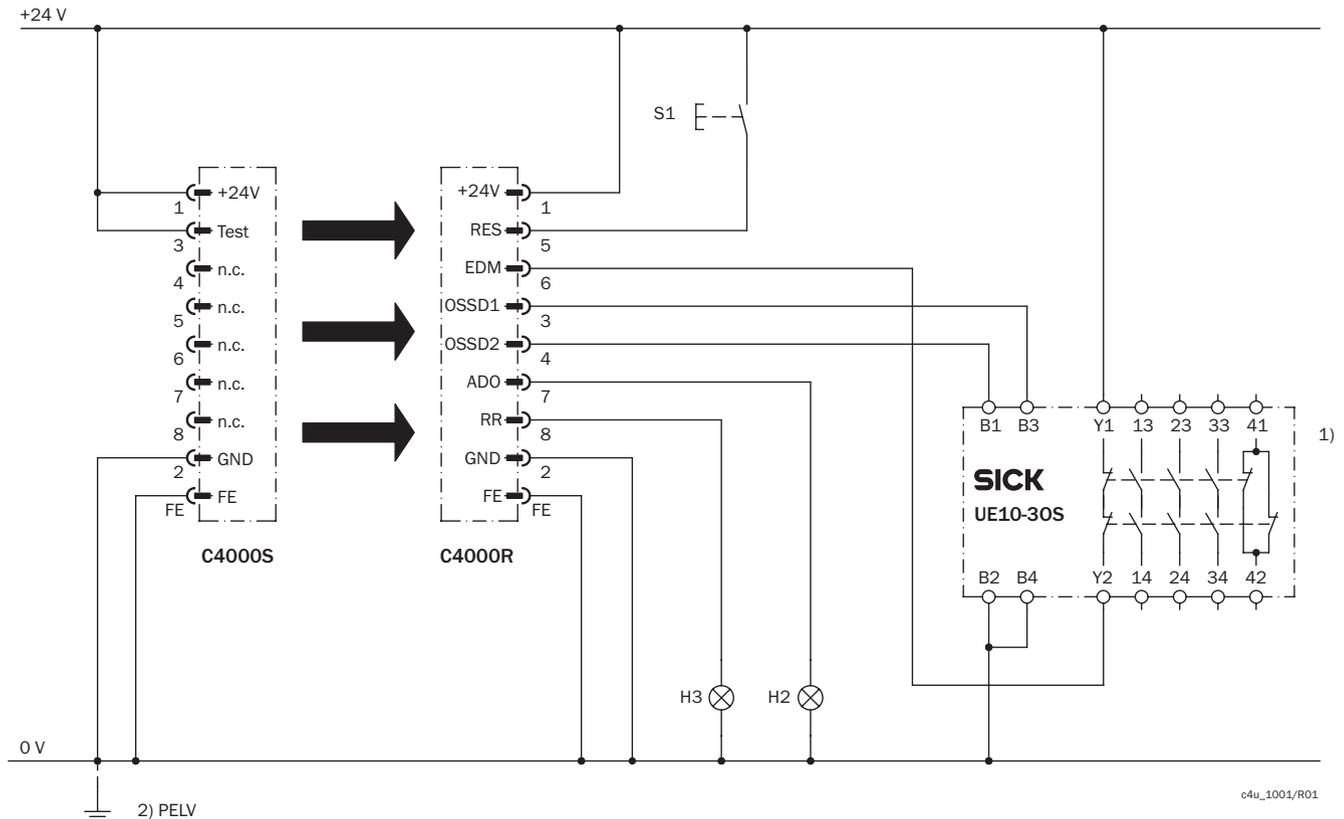
**Switching amplifier UE402**

Dimensions in mm

## Connection diagrams

→ You can find more connection diagrams at [www.mysick.com](http://www.mysick.com)

### C4000 Fusion on safety relays UE10-30S



#### Task

Connection of a safety light curtain C4000 Standard/Advanced/Palletizer/Fusion to UE10-30S. Operating mode with restart interlock and external device monitoring.

#### Function

When the light path is clear and the UE10-30S is de-energised and functioning correctly, the yellow LED on the receiver and the lamp H3 are flashing. The system is ready to be switched on. The system is enabled by pressing S1 (button is pressed and released). 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

Cross-circuits and short-circuits of the OSSDs are being 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. Lamp H2 is illuminated if there is contamination (adjustable parameter).

#### 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 integration in the control (z path) is only possible with a single-channel control and 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.

## Accessories

### Mounting systems

Figure	Property	Remark	Packing unit	Type	Part number
	Mounting kit 1, rigid	-	4	BEF-3WNGBAST4	7021352
	Mounting kit 6, swivel function, side bracket	For all protective field heights	4	BEF-1SHABAZN4	2019506
	Mounting kit 3, adjustable, vibration-absorbing	-	4	BEF-1SHADAAL4	2017752
	Mounting kit 2, swivel mount	For all protective field heights of C4000, C2000 and M2000 in big housing	4	BEF-2SMMEAKU4	2019659
	Stainless steel bracket, adjustable	For all protective field heights of C4000, C2000 and M2000 in big housing	4	BEF-2SMMEAES4	2023708
	Reinforced stainless steel bracket, adjustable	For all protective field heights of C4000, C2000 and M2000 in big housing	4	BEF-2SMMVAES4	2026850
	Omega bracket, flexible and fast fixable with only one screw	For all protective field heights of C4000, C2000 and M2000 in big housing	4	BEF-2SMMEAAL4	2044847
	Stand, for horizontal mounting	For safety light curtains and multiple light beam safety devices, for mounting heights from 70 mm to 780 mm	2	BEF-3HHOCAST2	2041661

### Sliding nuts/sliding blocks

Figure	Remark	Packing unit	Type	Part number
	Suitable for PNS75 and PNS125	6	Sliding nuts for deflector mirror	2030600
	Included with delivery	4	Sliding block (sliding nuts)	2017550

### Connection cables

Figure	Connection type	Flying leads	Cable length	Type	Part number
	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
			50 m	DOL-0612G50MD75KM0	2033548

**Connectors**

Figure	Connection type	Flying leads	Type	Part number
	Hirschmann cable plug M26 x 11 + FE	Angled	STE-0612W000GA3KM0	6021192
	Hirschmann cable plug M26 x 11 + FE	Straight	STE-0612G000GA3KM0	6021191

**Cable receptacles**

Figure	Connection type	Flying leads	Type	Part number
	Hirschmann cable socket M26 x 11 + FE	Straight	DOS-0612G000GA3KM0	6020757
	Hirschmann cable socket M26 x 11 + FE	Angled	DOS-0612W000GA3KM0	6020758

**Configuration connection cable**

Figure	Connection type	Remark	Cable length	Type	Part number
	M8 x 4, SUB-D 9-pol	For connecting the configuration connection to the PC	2 m	DSL-8D04G02M025KM1	6021195
			10 m	DSL-8D04G10M025KM1	2027649

**Power supply units**

Figure	Input voltage	Output voltage	Maximum output current	Part number
	100 V AC ... 240 V AC	24 V DC	2.1 A	7028789
			3.9 A	7028790

**Device columns**

Figure	Description	Max. installation length	Suitable for	Suitable for protective field height	Type	Part number
	Robuste device columns with two external assembling grooves	965 mm	C4000, M4000 Advanced Curtain, C2000, M4000, M2000	300 ... 750 mm	PU3H96-00000000	2045490
		1165 mm		300 ... 1050 mm	PU3H11-00000000	2045641
		1265 mm		300 ... 1200 mm	PU3H13-00000000	2045642
		1720 mm		300 ... 1350 mm	PU3H17-00000000	2045643
		2020 mm		300 ... 1650 mm	PU3H21-00000000	2045644
		2250 mm		300 ... 1800 mm	PU3H22-00000000	2045645
		2400 mm		300 ... 1800 mm	PU3H24-00000000	2045646

## Additional front screens

Figure	Suitable for protective field height	Part number
 Example of use	300 mm	2022412
	450 mm	2022413
	600 mm	2022414
	750 mm	2022415
	900 mm	2022416
	1050 mm	2022417
	1200 mm	2022418
	1350 mm	2022419
	1500 mm	2022420
	1650 mm	2022421
	1800 mm	2022422

## Additional front screens heavy duty

Figure	Suitable for protective field height	Part number
 Example of use	300 mm	2026853
	450 mm	2026854
	600 mm	2026855
	750 mm	2026856
	900 mm	2026857
	1050 mm	2026858
	1200 mm	2026859
	1350 mm	2026860
	1500 mm	2026861
	1650 mm	2026862
	1800 mm	2026863

## Deflector mirrors

Figure	Suitable for protective field height	Type	Part number
	300 mm	PNS75-034	1019414
	450 mm	PNS75-049	1019415
	600 mm	PNS75-064	1019416
	750 mm	PNS75-079	1019417
	900 mm	PNS75-094	1019418
	1050 mm	PNS75-109	1019419
	1200 mm	PNS75-124	1019420
	1350 mm	PNS75-139	1019421
	1500 mm	PNS75-154	1019422
	1650 mm	PNS75-169	1019423
	1800 mm	PNS75-184	1019424
	300 mm	PNS125-034	1019425
	450 mm	PNS125-049	1019426
	600 mm	PNS125-064	1019427
	750 mm	PNS125-079	1019428
	900 mm	PNS125-094	1019429
	1050 mm	PNS125-109	1019430
	1200 mm	PNS125-124	1019431
	1350 mm	PNS125-139	1019432
	1500 mm	PNS125-154	1019433
1650 mm	PNS125-169	1019434	
1800 mm	PNS125-184	1019435	

**Explosion protection**

Figure	Remark	Type	Part number
	Zone 2/22, 3G/3D	ATEX packet	2029961

**Configuration software**

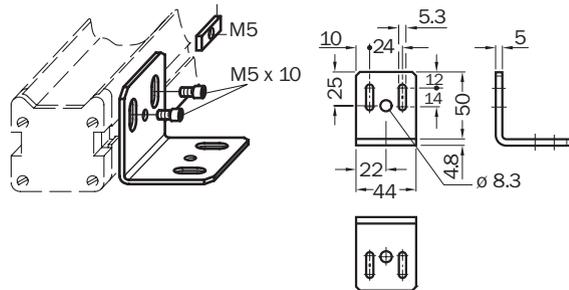
Figure	Description	Type	Part number
	CDS (Configuration & Diagnostic Software)	CDS	2032314

**Configuration tools**

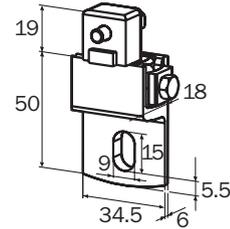
Figure	Remark	Type	Part number
	For C4000 Standard, Advanced, Palletizer, Entry/Exit, Fusion and M4000 Advanced	Clone Plug for C4000 and M4000	1029665

**Dimensional drawings mounting systems**

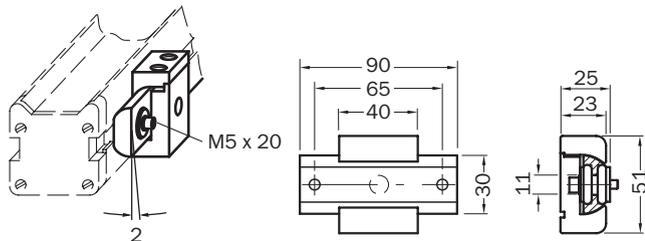
**BEF-3WNGBAST4**  
Mounting kit 1, rigid



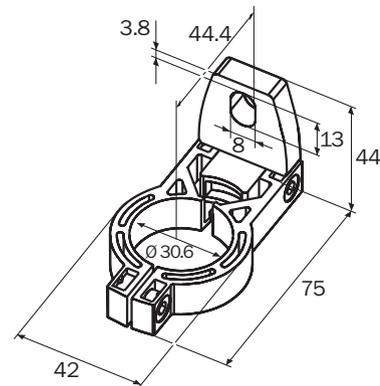
**BEF-1SHABAZN4**  
Mounting kit 6, swivel function, side bracket



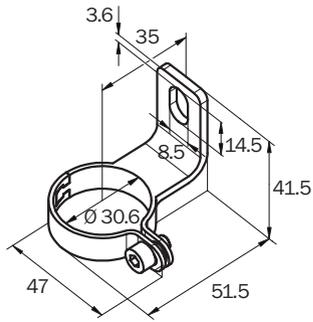
**BEF-1SHADAAL4**  
Mounting kit 3, adjustable, vibration-absorbing



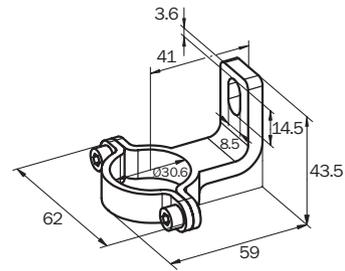
**BEF-2SMMEAKU4**  
Mounting kit 2, swivel mount



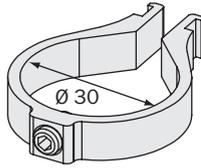
**BEF-2SMMEAES4**  
Stainless steel bracket, adjustable



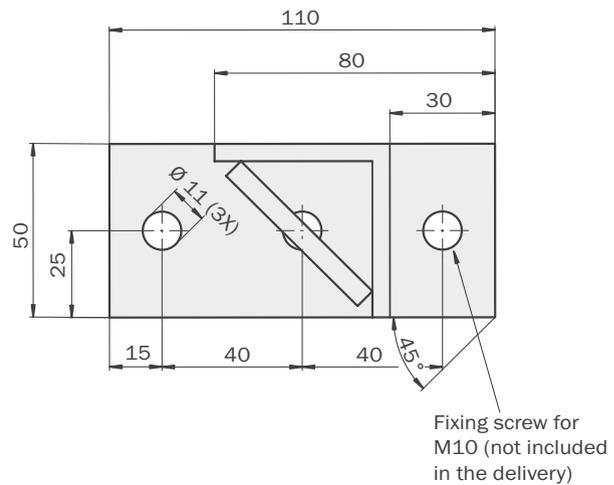
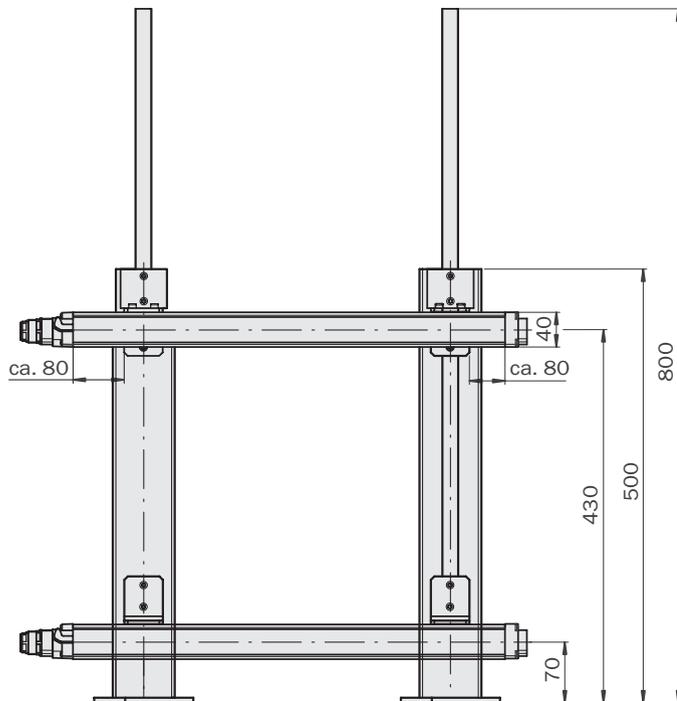
**BEF-2SMMVAES4**  
Reinforced stainless steel bracket, adjustable



**BEF-2SMMEAAL4**  
Omega bracket, flexible and fast fixable with only one screw

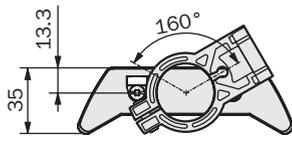


**BEF-3HHOCAST2**  
Stand, for horizontal mounting

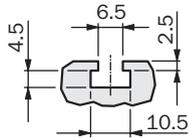


Dimensions in mm

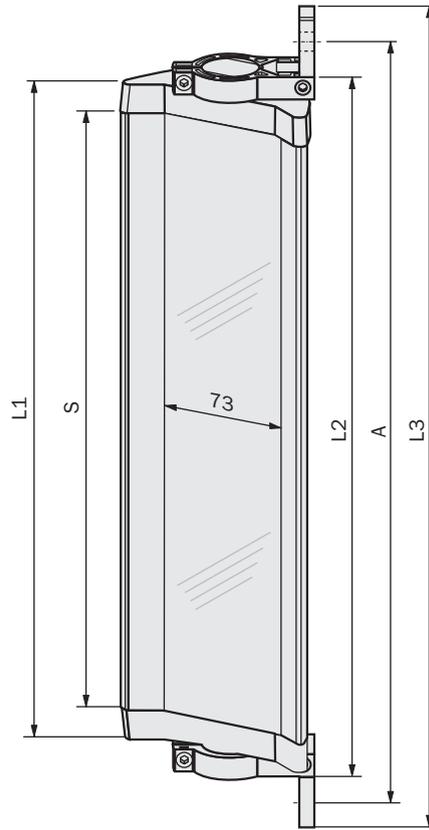
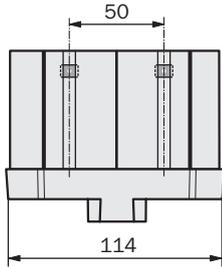
Dimensional drawings deflector mirror PNS75



Mounting with swivel mount bracket (Part No. 2019659)

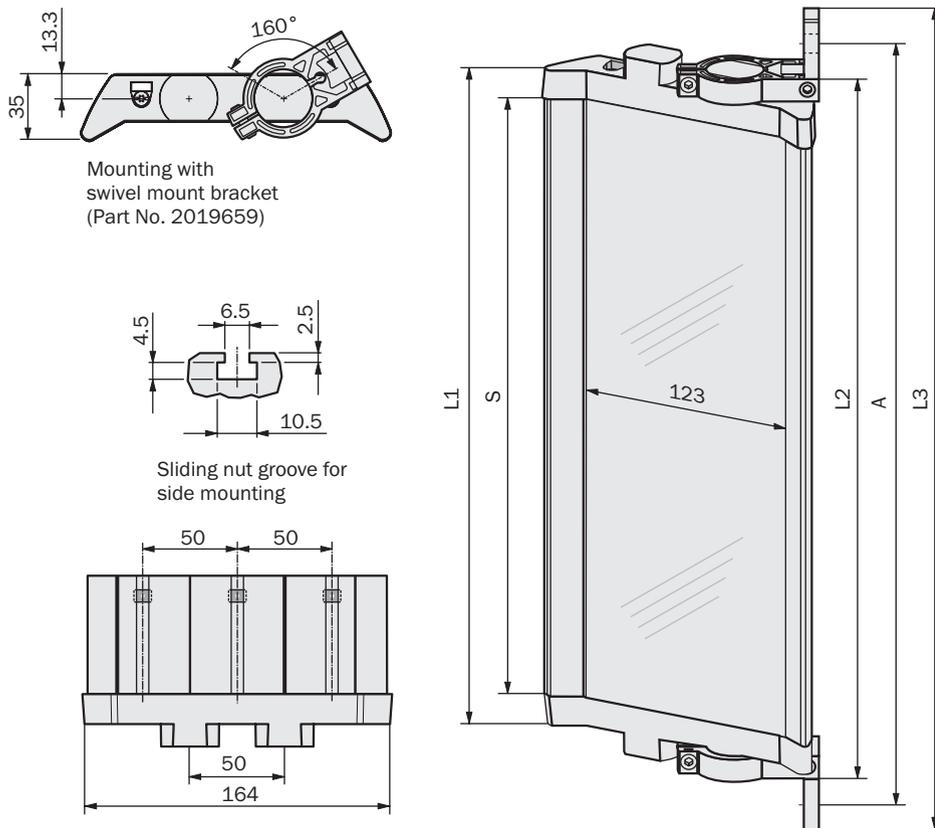


Sliding nut groove for side mounting



Mirror height S [mm]	Dimension L1 [mm]	Dimension L2 [mm]	Dimension L3 [mm]	Dimension A [mm]
340	372	396	460	440
490	522	546	610	590
640	672	696	760	740
790	822	846	910	890
940	972	996	1060	1040
1090	1122	1146	1210	1190
1240	1272	1296	1360	1340
1390	1422	1446	1510	1490
1540	1572	1596	1660	1640
1690	1722	1746	1810	1790
1840	1872	1896	1960	1940

Dimensional drawings deflector mirror PNS125



Mirror height S [mm]	Dimension L1 [mm]	Dimension L2 [mm]	Dimension L3 [mm]	Dimension A [mm]
340	372	396	460	440
490	522	546	610	590
640	672	696	760	740
790	822	846	910	890
940	972	996	1060	1040
1090	1122	1146	1210	1190
1240	1272	1296	1360	1340
1390	1422	1446	1510	1490
1540	1572	1596	1660	1640
1690	1722	1746	1810	1790
1840	1872	1896	1960	1940

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