



sensorPRO

## SERIES **SLC4 + SLG4**

Light curtains and light grids for maximum safety.

# SERIES SLC4

## SAFETY LIGHT CURTAIN



### APPLICATIONS

- Access protection (finger and hand protection)
- Monitoring of access points and hazardous areas
- Vertical and horizontal protection

### SAFETY LEVEL

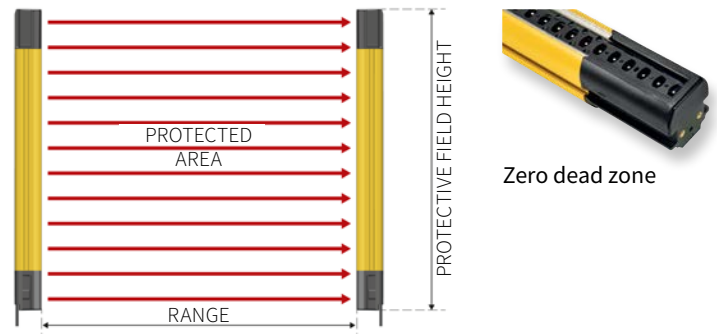
- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SIL<sub>CL</sub> 3 (EN 62061)

### FEATURES

- Safety light curtain AOPD type 4
- Beam resolution 14 and 30 mm
- Protection field heights from 300 up to 2100 mm
- Standardized connection technology (M12)
- Ranges up to 30 m can be implemented
- Base and Standard-Muting variants available
- One package: SLC4-Sets incl. brackets and pigtail (M12 connection)
- Accessories for installation, mounting and muting optional available

### MAXIMUM SAFETY AT HIGHEST EFFICIENCY

SLC4 is ideally suited for finger and hand protection to monitor safe access to machines, while ensuring high availability and reducing downtimes of the machines. The two different variants Base and Standard-Muting can solve standard as well as more complex applications, including muting-applications. Since all variants are based on the same platform, SLC4 can easily be replaced, e.g. for adaptations or retrofit at machines.



### BENEFITS

- Configuration without software
- Zero dead zone
- All models are based on the same platform
- Clearly visible LEDs for on-site diagnostic
- Protective field heights from 300 up to 2100 mm
- Easy and fast installation without programming (Plug&Play for Base models)
- Space saving installation and flexible integration in the machine
- Easy replacement without design changes + reduced number of required accessories
- Fast on-site diagnostic to reduce downtimes of the machine
- Suitable devices for almost every application



Access protection with the safety light curtain SLC4

# SERIES SLC4

## SAFETY LIGHT CURTAIN

TECHNICAL DATA		
Function	Safety Light Curtain	
Function display	LED	
Power supply circuit		
Power supply $U_N$	24 Vdc $\pm$ 20% <sup>a</sup>	
Current consumption (transmitter)	3.5 W max	
Current consumption, no load (receiver)	5.5 W max (without load)	
Operating voltage range $U_B$	0,8 - 1,2 x $U_N$	
Electrical isolation supply circuit-control circuit	no	
Protection field data	Resolution	Range / protective field height
	14 mm	0.2 - 10 m/ 300 - 2.100 mm
	30 mm	0.2 - 30 m/ 300 - 2.100 mm
Output circuit OSSD		
Number	2	
Type	PNP	
Short circuit and cross circuit monitoring	Yes	
Switching current (max., per output)	250 mA (500 mA total max current)	
Leakage current (max.)	< 1 mA	
Switching voltage, high active ( $U_B - 1V$ )	18.0 - 27.0 V	
Output voltage - ON min	Power supply value less 1 V	
Output voltage - OFF max	0.2 V	
Output capacitive load	1 $\mu$ F at 24 Vdc	
Line resistance / line length	< 4 $\Omega$ / $\leq$ 30 m	
Response time	from 7 to 16 ms (30 mm resolution uncoded) from 9 to 28 ms (14 mm resolution uncoded)	
Optical data		
Light source	Infrared LED (850 nm wavelength)	
EAA angle	< $\pm$ 2.5° at 3 meters	
Ambient light rejection	EN 61496-2-2020	
General data		
Protection degree according to EN 60529 (mechanical protection)	IP67, IP65	
Electrical protection	Class III	
Pollution degree	2	
Operating temperature	-30...+55 °C	
Storage temperature	-30...+60 °C	
Connection	M12 5; 8 poles (depending on the model)	
Cable length (max.)	30 m	
Weight	1.4 Kg/mt (single bar - without package)	
Vibrations	10 mm / 3g, 5 to 150 Hz frequency, (EN 60068-2-6 / Class 3M7 IEC TR 60721-4-3)	
Shock resistance	25g x 6 ms x 600 (EN 60068-2-27 / Class 3M7 IEC TR 60721-4-3)	
Housing material	Painted aluminum (yellow RAL 1003)	
Caps material	PBT Valox 553 black	
Caps cover material	PBT 1403g3 black	
Frontal cover material	MAKROLON AR 7099 Clear	
Standards	EN 61496, EN ISO 13849-1, EN 62061, EN 61508	
Approvals	CE, TÜV, UKCA, cULus Listed	
Safety related data		
PL (EN ISO 13849-1)	up to PL e (ref. EN ISO 13849-1: 2015)	
Category (EN ISO 13849-1)	up to Cat. 4 (ref. EN ISO 13849-1: 2015)	
SIL (IEC 61508)	up to SIL 3 (ref. EN 61508)	
SILCL (EN IEC 62061)	up to SIL CL 3 (ref. EN 62061:2005/A2: 2015)	
Type (EN IEC 61496)	Type 4 (ref. EN 61496-1: 2020)	
PFH <sub>b</sub>	2.62 x 10 <sup>-8</sup> [1/h] (ref. EN 61508)	
MTTF <sub>a</sub> [years]	43 (ref. EN ISO 13849-1 2015)	
T <sub>M</sub>	20 years	
DC <sub>avg</sub> (Average Diagnostic Coverage)	99%	
SFF (Safe Failure Fraction)	100%	
HTF (Hardware Fault Tolerance)	1	

# SERIES SLC4 | DEVICE OVERVIEW

## SAFETY LIGHT CURTAIN

	SLC4 Base	SLC4 Standard Muting
LED Display	●	●
Automatic Start	●	●
Manual start/ restart interlock		●
Muting		●
Cascading		●
External Device Monitoring (EDM)		●
Anti-interference coding		●
Configuration		By Dip-Switch

### TRANSMITTER + RECEIVER

Protective field height hhh [mm]	Resolution Type	Base		Standard Muting	
		14 mm	30 mm	14 mm	30 mm
		SLC4-B14-hhhh	SLC4-B30-hhhh	SLC4-SM14-hhhh	SLC4-SM30-hhhh
0300		R1.610.0300.0	R1.612.0300.0	R1.611.0300.0	R1.613.0300.0
0450		R1.610.0450.0	R1.612.0450.0	R1.611.0450.0	R1.613.0450.0
0600		R1.610.0600.0	R1.612.0600.0	R1.611.0600.0	R1.613.0600.0
0750		R1.610.0750.0	R1.612.0750.0	R1.611.0750.0	R1.613.0750.0
0900		R1.610.0900.0	R1.612.0900.0	R1.611.0900.0	R1.613.0900.0
1050		R1.610.1050.0	R1.612.1050.0	R1.611.1050.0	R1.613.1050.0
1200		R1.610.1200.0	R1.612.1200.0	R1.611.1200.0	R1.613.1200.0
1350		R1.610.1350.0	R1.612.1350.0	R1.611.1350.0	R1.613.1350.0
1500		R1.610.1500.0	R1.612.1500.0	R1.611.1500.0	R1.613.1500.0
1650		R1.610.1650.0	R1.612.1650.0	R1.611.1650.0	R1.613.1650.0
1800		R1.610.1800.0	R1.612.1800.0	R1.611.1800.0	R1.613.1800.0
1950		R1.610.1950.0	R1.612.1950.0	R1.611.1950.0	R1.613.1950.0
2100		R1.610.2100.0	R1.612.2100.0	R1.611.2100.0	R1.613.2100.0

Further information on the muting types and the associated product accessories can be found on page 8-11.

# SERIES SLG4

## SAFETY LIGHT GRID



### RELIABLE AND COST-EFFICIENT ACCESS PROTECTION AT HAZARDOUS AREAS

Whenever large areas at machine or on the production floor need reliable and safe access protection SLG4 series is the perfect choice. Ranges up to 70 m can be implemented with only one single system. The robust housing made of aluminum and the mechanical protection of IP67 in accordance with EN 60529 allow highest functional safety even under harsh environment conditions.

### BENEFITS

- Configuration without software
- Robust design, operating temperature -30°C up to +50°C and protection degree IP67
- Finger/hand/body models are based on the same platform
- Clearly visible LEDs for on-site diagnostic
- Emitter, receiver, brackets and pigtail (already connected) included in package

### APPLICATIONS

- Access and entry/exit protection (personal protection)
- Safeguarding of hazardous areas (long distances)

### SAFETY LEVEL

- Up to PL e / Category 4 (EN ISO 13849-1)
- Up to SILCL 3 (EN 62061)

### FEATURES

- Safety light grids AOPD type 4
- 2-, 3- and 4-beam systems
- Protection field heights from 500 up to 1200 mm
- Standardized connection technology (M12)
- Ranges up to 70 m can be implemented
- Base and Standard-Muting variants available
- One package: SLG4-Sets incl. brackets and pigtail (M12 connection)
- Accessories for installation, mounting and muting optional available

### Standard M12 Connector for easy installation



- Easy and fast installation without programming (Plug&Play for Base models)
- Reliable and safe use even under harsh environmental conditions
- Easy replacement without design changes + reduced number of required accessories
- Fast on-site diagnostic to reduce downtimes of the machine and easy alignment of safety light grid
- Reduced assembly work and fast commissioning

# SERIES SLG4

## SAFETY LIGHT GRID

TECHNICAL DATA		
Function	safety light curtain	
Function display	LED	
Power supply circuit		
Power supply $U_N$	24 Vdc $\pm$ 20%	
Current consumption (transmitter)	3.5 W max	
Current consumption, no load (receiver)	5.5 W max (without load)	
Operating voltage range $U_B$	0,8 - 1,2 x $U_N$	
Electrical isolation supply circuit-control circuit	no	
Protection field data	Resolution	Range / protective field height
	Body Short Range	0.5 - 15 m/ 500, 800, 900, 1.200 mm
	Body Long Range	5.0 - 70 m/ 500, 800, 900, 1.200 mm
Output circuit OSSD		
Number	2	
Type	PNP	
Short circuit and cross circuit monitoring	Yes	
Switching current (max., per output)	250 mA (500 mA total max current)	
Leakage current (max.)	< 1 mA	
Switching voltage, high active ( $U_B - 1V$ )	18.0 - 27.0 V	
Output voltage - ON min	Power supply value less 1 V	
Output voltage - OFF max	0.2 V	
Output capacitive load	1 $\mu$ F at 24 Vdc	
Line resistance / line length	< 4 $\Omega$ / $\leq$ 30 m	
Response time	from 12 to 15 ms (uncoded)	
Optical data		
Light source	Infrared LED (850 nm wavelength)	
EAA angle	< $\pm$ 2.5° at 3 meters	
Ambient light rejection	EN 61496-2-2020	
General data		
Protection degree according to EN 60529 (mechanical protection)	IP67, IP65	
Electrical protection	Class III	
Pollution degree	2	
Operating temperature	-30...+55 °C	
Storage temperature	-30...+60 °C	
Connection	M12.5; 8 poles (depending on the model)	
Cable length (max.)	30 m	
Weight	1.4 Kg/mt (single bar - without package)	
Vibrations	10 mm / 3g, 5 to 150 Hz frequency, (EN 60068-2-6 / Class 3M7 IEC TR 60721-4-3)	
Shock resistance	25g x 6 ms x 600 (EN 60068-2-27 / Class 3M7 IEC TR 60721-4-3)	
Housing material	Painted aluminum (yellow RAL 1003)	
Caps material	PBT Valox 553 black	
Caps cover material	PBT 1403g3 black	
Frontal cover material	MAKROLON AR 7099 Clear	
Standards	EN 61496, EN ISO 13849-1, EN 62061, EN 61508	
Approvals	CE, TÜV, UKCA, cULus Listed	
Safety related data		
PL (EN ISO 13849-1)	up to PL e (ref. EN ISO 13849-1: 2015)	
Category (EN ISO 13849-1)	up to Cat. 4 (ref. EN ISO 13849-1: 2015)	
SIL (IEC 61508)	up to SIL 3 (ref. EN 61508)	
SILCL (EN IEC 62061)	up to SIL CL 3 (ref. EN 62061:2005/A2: 2015)	
Type (EN IEC 61496)	Type 4 (ref. EN 61496-1: 2020)	
$B_{10D}$	NA	
$PFH_b$	2.62 x 10 <sup>-8</sup> [1/h] (ref. EN 61508)	
$MTTF_d$ [years]	43 (ref. EN ISO 13849-1 2015)	
$T_M$	20 years	
$DC_{avg}$ (Average Diagnostic Coverage)	99%	
SFF (Safe Failure Fraction)	100%	
HTF (Hardware Fault Tolerance)	1	

# SERIES SLG4

## SAFETY LIGHT GRID

	SLG4 Base	SLG4 Standard Muting
LED Display	●	●
Automatic Start	●	●
Range reduction	●	●
Manual start/ restart interlock		●
Muting		●
External Device Monitoring (EDM)		●
Anti-interference coding		●
Configuration		By Dip-Switch

### BASE

Type	Protective Field Height [mm]	Description	Part. no.	P.U.
SLG4-B2-0500	0500	Safety Light Grid Transmitter + Receiver, 2 beams, range up to 70 m	R1.620.0500.0	1
SLG4-B3-0800	0800	Safety Light Grid Transmitter + Receiver, 3 beams, range up to 70 m	R1.620.0800.0	1
SLG4-B4-0900	0900	Safety Light Grid Transmitter + Receiver, 4 beams, range up to 70 m	R1.620.0900.0	1
SLG4-B4-1200	1200	Safety Light Grid Transmitter + Receiver, 4 beams, range up to 70 m	R1.620.1200.0	1

### STANDARD MUTING

Type	Protective Field Height [mm]	Description	Part. no.	P.U.
SLG4-SM2-0500	0500	Safety Light Grid Transmitter + Receiver, 2 beams, range up to 70 m	R1.621.0500.0	1
SLG4-SM3-0800	0800	Safety Light Grid Transmitter + Receiver, 3 beams, range up to 70 m	R1.621.0800.0	1
SLG4-SM4-0900	0900	Safety Light Grid Transmitter + Receiver, 2 beams, range up to 70 m	R1.621.0900.0	1
SLG4-SM4-1200	1200	Safety Light Grid Transmitter + Receiver, 2 beams, range up to 70 m	R1.621.1200.0	1

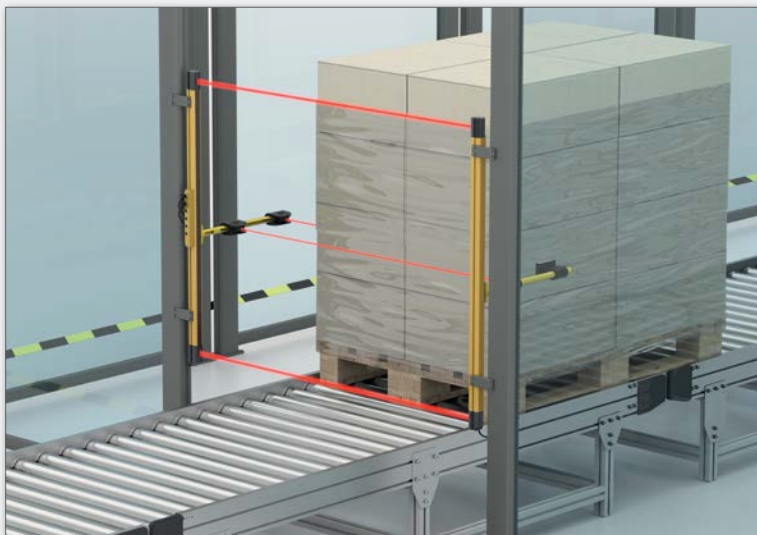
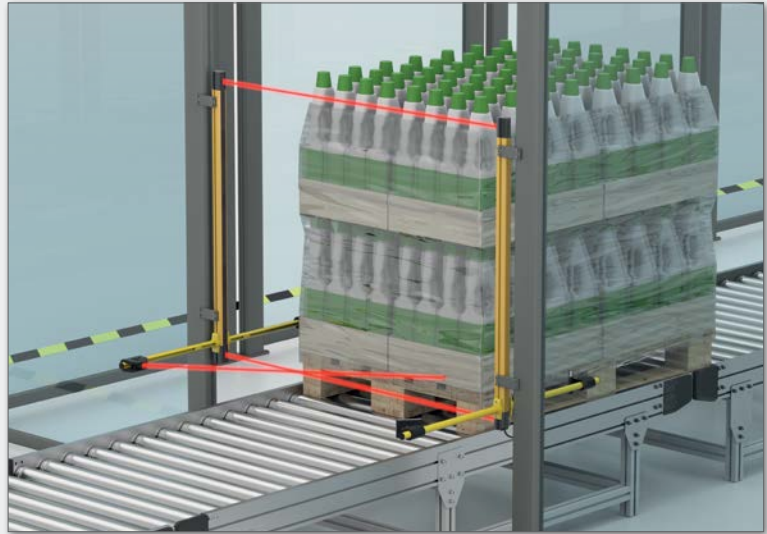
Further information on the muting types and the associated product accessories can be found on page 8-11.

# SERIES SLC4 + SLG4

## MUTING TYPES

### CROSS MUTING (2-SENSOR-MUTING)

Material movement possible in both directions.  
Simultaneous activation of the muting sensors.

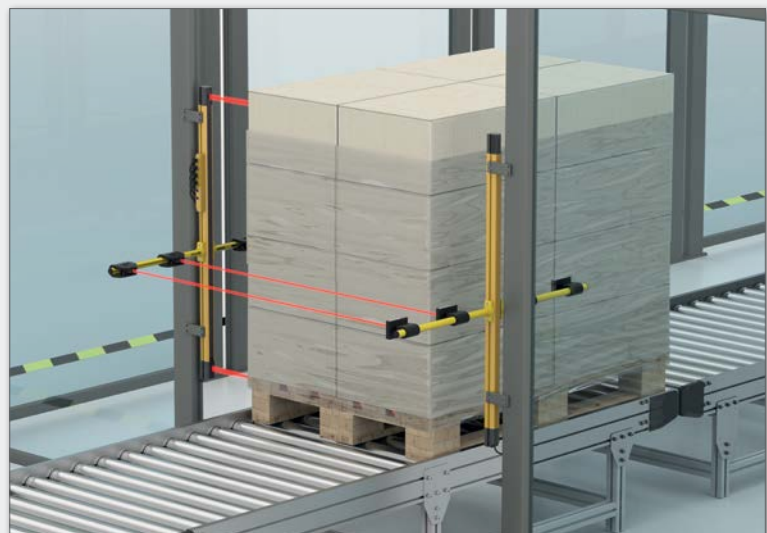


### L-MUTING (2-SENSOR-MUTING)

Material movements only possible  
from hazardous area.  
Successive activation of the muting  
sensors.  
Well suited for space saving applications.

### T-MUTING (4-SENSOR-MUTING)

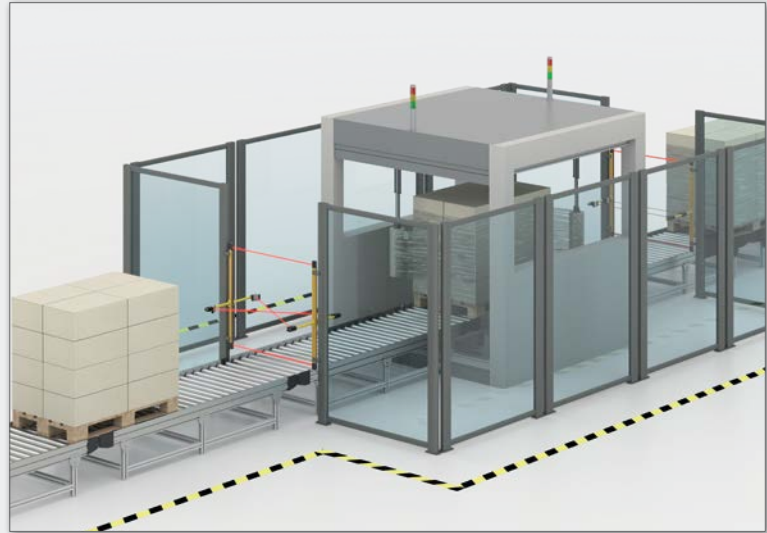
Material movement possible in both directions.  
Successive activation of the muting sensors.  
If the beams of the muting sensors cannot cross,  
e.g. with highly reflective material surfaces.





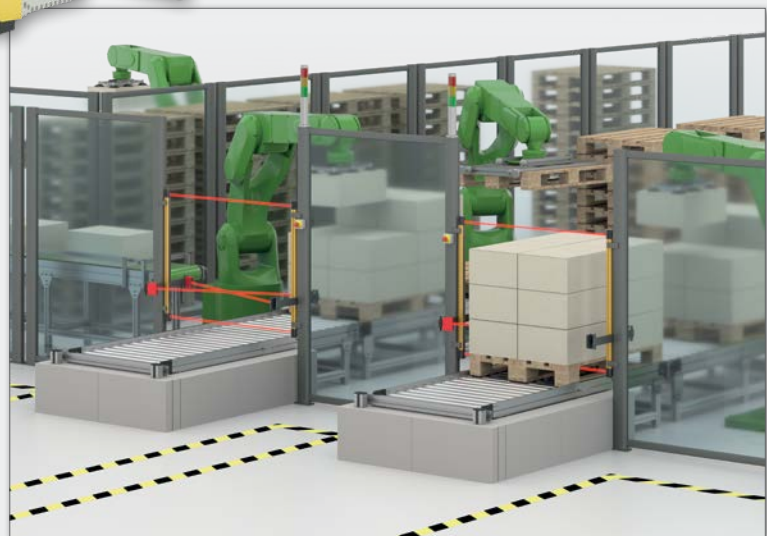
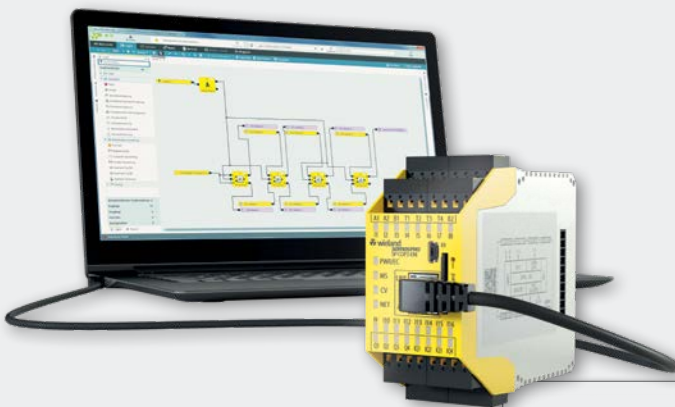
# SERIES SLC4 + SLG4

## APPLICATION EXAMPLES



### MUTING WITH SLG4

Safety light grids SLG4 Standard Muting with 2-sensor-muting at a packaging machine.

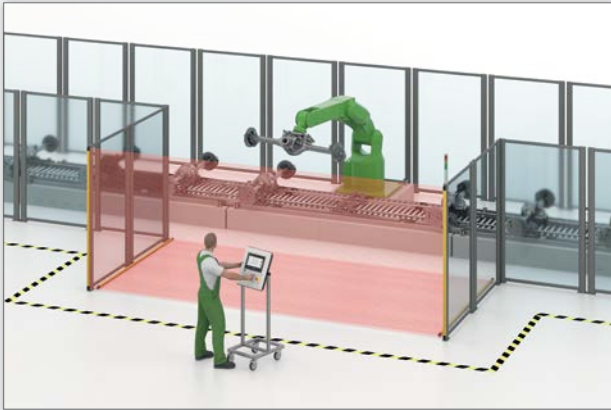


### SLG4 – MUTING FUNCTIONS WITH SAMOS® PRO COMPACT

Safety Light Grids SLG4 and Safety Light Curtains SLC4 are ideally suited for monitoring material locks, such as in the packaging industry, in combination with the freely configurable muting function blocks of samos® PRO.

# SERIES SLC4 + SLG4

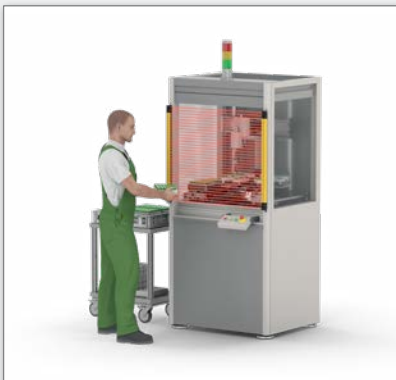
## APPLICATION EXAMPLES



### PRESENCE DETECTION VIA CASCADING OF SLC4

A vertically Safety Light Curtain SLC4 is used to protect the operator from the hazardous movement of the machine. In addition, presence detection is enabled with a horizontally mounted second SLC4. Both SLC4 Safety Light Curtains are connected via cascading function.

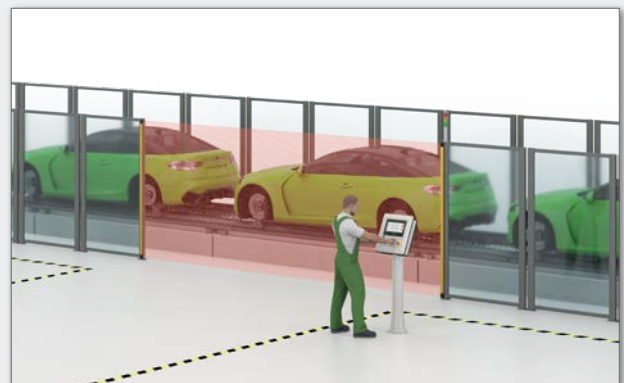
### POINT OF OPERATION CONTROL (POC)



Point of operation control for hand and finger protection is typically the most common application for SLC4 series Base and Standard Muting.

### PERIMETER ACCESS CONTROL (PAC) ON A PRODUCTION LINE

Safety Light Curtains SLC4 with up to 30 mm resolution can be used for access guarding into danger zones. SLC4 detect people upon entry into the danger zone.



# SERIES SLC4 + SLG4

## ACCESSORIES

### MOUNTING

Type	Description	Part. no.	P.U.
SLX4-AC-LP	Laser alignment aid (external), battery-powered	R1.690.0001.0	1
SLX4-MO-RB	Rotative Bracket Set, 4 pcs	R1.690.0005.0	1
SLX4-AC-TB14	Test Bar Finger Protection, 14 mm Resolution	R1.690.0032.0	1
SLX4-AC-TB30	Test Bar Hand Protection, 30 mm Resolution	R1.690.0033.0	1
SLX4-MO-AVK	Shock absorber for Mounting L-Bracket Set, 4 pcs	R1.690.0040.0	1
SLX4-MO-LB	Mounting L-Bracket Set, 4 pcs	R1.690.0041.0	1

### INSTALLATION CABLES

Type	Description	Part. no.	P.U.
SLX4-AC-CC1	Cascade Cable 1m	R1.690.0002.0	1
SLX4-AC-CC3	Cascade Cable 3m	R1.690.0003.0	1
SLX4-AC-CC10	Cascade Cable 10m	R1.690.0004.0	1
SLX4-AC-RP-5	Replacement Plug Base, Connector M12 5-poles	R1.690.0014.0	1
SLX4-AC-RP-5-5	Replacement Plug Standard Muting, Female and Male Connector M12 5-poles	R1.690.0017.0	1
SLX4-AC-RP-8-5	Replacement Plug Standard Muting, Female Connector M12 5-poles and Male Connector M12 8-poles	R1.690.0018.0	1
SLX4-AC-SP	Screw Plug	R1.690.0039.0	1

### CONNECTION CABLES

Type	Description	Part. no.	P.U.
SLX-CAB-M12-S0505	Connection cable M12, 5-pole, length 5m, shielded	R1.600.0505.0	1
SLX-CAB-M12-S0510	Connection cable M12, 5-pole, length 10m, shielded	R1.600.0510.0	1
SLX-CAB-M12-S0515	Connection cable M12, 5-pole, length 15m, shielded	R1.600.0515.0	1
SLX-CAB-M12-S0525	Connection cable M12, 5-pole, length 25m, shielded	R1.600.0525.0	1
SLX-CAB-M12-S0550	Connection cable M12, 5-pole, length 50m, shielded	R1.600.0550.0	1
SLX-CAB-M12-S0805	Connection cable M12, 8-pole, length 5m, shielded	R1.600.0805.0	1
SLX-CAB-M12-S0810	Connection cable M12, 8-pole, length 10m, shielded	R1.600.0810.0	1
SLX-CAB-M12-S0815	Connection cable M12, 8-pole, length 15m, shielded	R1.600.0815.0	1
SLX-CAB-M12-S0825	Connection cable M12, 8-pole, length 25m, shielded	R1.600.0825.0	1
SLX-CAB-M12-S0850	Connection cable M12, 8-pole, length 50m, shielded	R1.600.0850.0	1
SLX-CAB-M12-0505	Connection cable M12, 5-pole, length 5m, unshielded	R1.500.0505.0	1
SLX-CAB-M12-0510	Connection cable M12, 5-pole, length 10m, unshielded	R1.500.0510.0	1
SLX-CAB-M12-0515	Connection cable M12, 5-pole, length 15m, unshielded	R1.500.0515.0	1
SLX-CAB-M12-0525	Connection cable M12, 5-pole, length 25m, unshielded	R1.500.0525.0	1
SLX-CAB-M12-0550	Connection cable M12, 5-pole, length 50m, unshielded	R1.500.0550.0	1
SLX-CAB-M12-0805	Connection cable M12, 8-pole, length 5m, unshielded	R1.500.0805.0	1
SLX-CAB-M12-0810	Connection cable M12, 8-pole, length 10m, unshielded	R1.500.0810.0	1
SLX-CAB-M12-0815	Connection cable M12, 8-pole, length 15m, unshielded	R1.500.0815.0	1
SLX-CAB-M12-0825	Connection cable M12, 8-pole, length 25m, unshielded	R1.500.0825.0	1
SLX-CAB-M12-0850	Connection cable M12, 8-pole, length 50m, unshielded	R1.500.0850.0	1

### MUTING

Type	Description	Part. no.	P.U.
SLX4-MUT-TMC	Muting Cable for T-Muting, M12 4-poles	R1.690.0006.0	1
SLX4-MUT-LMC	Muting Cable for L-Muting, M12 4-poles	R1.690.0007.0	1
SLX4-MUT-SETCAT	Muting-Sensor-Set T-Muting, incl. 4 Active and Passive Arms with pre-assembled Sensors and Reflectors	R1.690.0008.0	1
SLX4-MUT-SETCAL	Muting-Sensor-Set L-Muting, incl. 4 Active and Passive Arms with pre-assembled Sensors and Reflectors	R1.690.0009.0	1
SLX4-MUT-CONBOX	Muting Connection Box for Muting-Sensors, 4 Connection Sockets	R1.690.0010.0	1
SLX4-MUT-MOUNTKIT	Mounting Set for Muting Connection Box	R1.690.0011.0	1
SLX4-MUT-SET2P	Muting-Sensor-Set for Cross-Muting including 2 Passive and 2 Active Arms, adjustable, pre-assembled	R1.690.0034.0	1
SLX4-MUT-SET4S	Muting-Sensor-Set for Cross-Muting including 2 Passive and 2 Active Arms, adjustable, pre-assembled	R1.690.0035.0	1
SLX4-MUT-SET2BL	Muting-Sensor-Set for L-Muting including 1 Passive and 1 Active Arms, adjustable, pre-assembled, left sided	R1.690.0036.0	1
SLX4-MUT-SET2BR	Muting-Sensor-Set for L-Muting including 1 Passive and 1 Active Arms, adjustable, pre-assembled, right sided	R1.690.0037.0	1
SLX4-MUT-REFLEX	Replacement Reflector for Muting-Sensor-Sets	R1.690.0038.0	1



# wieland

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0895.1 S 03/24 A

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