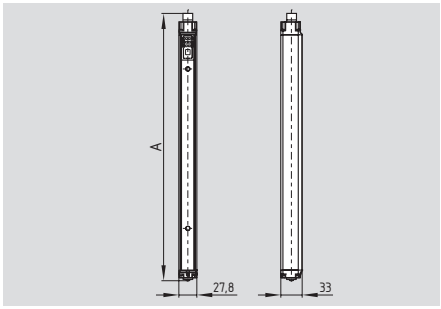
Safe switching and monitoring
Optoelectronic safety devices

Schmersal offers a comprehensive range of active optoelectronic devices (AOPD) to provide non-separating safeguarding of hazardous areas, ranging from point of operation to danger zone or perimeter guarding. These “virtual safety guards” are available as safety light barriers, safety light grids and safety light curtains. They are available with different functions such as blanking, muting, cascading, or cyclic operation. IP69K versions are also available. A large assortment of accessories such as deflecting mirrors and mounting brackets helps the user in installing and using AOPD in his specific application.

Our safety light curtains and grids feature one-piece extruded aluminum housings, in rectangular and circular profiles. This closed housing profile has proven to be less susceptible to mechanical damage, misalignment from torsion or bending, and relieves the stress normally put on the lens in other light curtains.

Further detailed information on this product group can be found in the Optoelectronics catalog

SLC 440



- **Safety light curtain**
- Type 4 to EN 61496-1, CLC/TS 61496-2
- Resolution 14 and 30 mm
- Protection field heights 170 mm ... 1770 mm
- Integrated start/restart interlock
- Integrated contactor control
- Integrated blanking function (fixed and mobile blanking)
- Diagnostic and parametrization interface
- Range 0,3 m ... 10 m
- Fail-safe transistor outputs
- Optical synchronisation
- LED Status display, 7-segment display
- Protection class IP67

Legend: A = Total length
A = 81 mm + Protection field height

Approvals

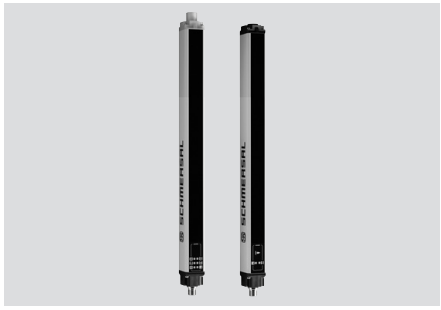
TÜV cULus CE

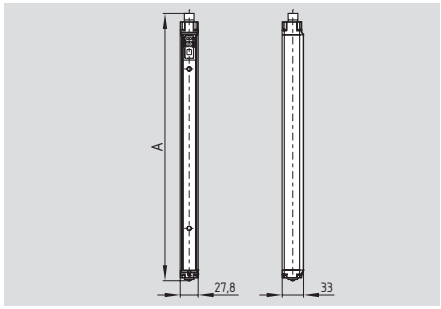
Ordering details

SLC 440-E/R①-②-01

No.	Option	Description
①	xxxx	Protected heights (mm) 0170, 0250, 0330, 0410, 0490, 0570, 0650, 0730, 0810, 0890, 0970, 1050, 1130, 1210, 1290*, 1370*, 1450*, 1530*, 1610*, 1690*, 1770*
②	14	Resolution 14 mm with a range of 0.3 m ... 7 m
	30	Resolution 30 mm with a range of 0.3 m ... 10 m

SLG 440





- **Safety light grid**
- 2-, 3- or 4-beam light grid
- Range 0,3 ... 12 m

Legend: A = Total length
2-beam A = 610 mm
3-beam A = 910 mm
4-beam A = 1010 mm

Approvals

TÜV cULus CE

Ordering details

SLG 440-E/R①-01

No.	Option	Description
①	Distance between outermost beams:	
	0500-02	500 mm, 2-beam
	0800-03	800 mm, 3-beam
	0900-04	900 mm, 4-beam
		Range 0.3 … 12 m

-01 = integrated status indication (option)
* only for resolution 30 mm

Technical data

Standards:	EN 61496-1; CLC/TS 61496-2
Category:	Type 4
Enclosure:	aluminum
Enclosure dimensions:	27.8 x 33 mm
Connection:	Connector plug
- Emitter:	M12, 4-pole,
- Receiver:	M12, 8-pole
Max. cable length:	100 m / 1 Ω
Protection class:	IP67 to EN 60529
Response time:	10 … 27 ms (depends on length and resolution)
Detection sensitivity (Resolution):	14 and 30 mm
Protection field height:	
- Resolution 14 mm	170 ... 1210 mm
- Resolution 30 mm	170 ... 1770 mm
- 2-, 3-, 4-beam	500, 800, 900 mm
Protection field width, Range:	
- Resolution 14 mm	0.3 m ... 7 m
- Resolution 30 mm	0.3 m ... 10 m
- 2-, 3-, 4-beam	0.3 m ... 12 m
Start/restart interlock:	Integrated
Contactor control:	Integrated
Blanking function:	Integrated
Light emission wavelength:	880 nm (infrared)
U_e:	24 VDC ± 10%
Safety outputs:	2 x PNP, 250 mA
Power consumption:	Emitter 1,8 W, Receiver 3,8 W
Status and diagnostics:	LED-, 7-segment display
Ambient temperature:	−10 °C … +50 °C
Storage and transport temperature:	−25 °C … +70 °C
Classification:	
Standards:	EN ISO 13849-1; EN 62061
PL:	up to e
Category:	up to 4
PFH-value:	
- SLC 440	11,4 x 10^{-9} /h
- SLG 440	8,14 x 10^{-9} /h
SIL:	up to 3
Service life:	20 years

Ordering details

Connector:
Female connector M12, 4-pole straight
for emitter

cable length 5 m	**KA-0804**
cable length 10 m	**KA-0805**
cable length 20 m	**KA-0808**

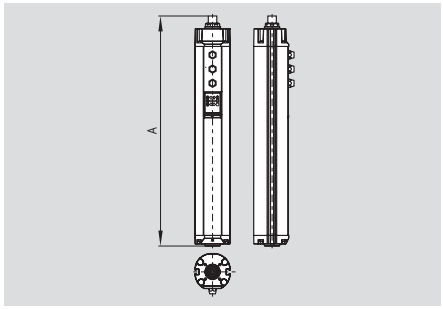
Female connector M12, 8-pole straight
for receiver

cable length 5 m	**KA-0904**
cable length 10 m	**KA-0905**
cable length 20 m	**KA-0908**

Cable for the parametrization

cable length 1 m	**KA-0974**

SLC 425I

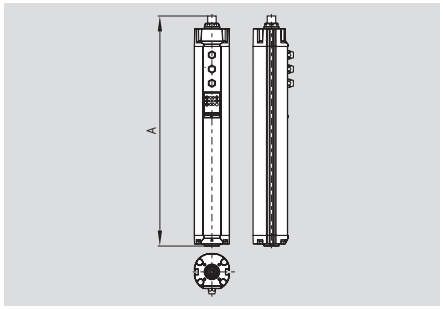


- **Safety light curtain**
- Type 4 to IEC/EN 61496-1, -2
- Resolution 14 and 30 mm
- Protection field heights 170 mm ... 1770 mm
- Integrated start/restart interlock
- Integrated contactor control
- Integrated muting and override function
- Integrated blanking function (fixed and mobile blanking)
- Cyclic operation (1 ... 8 Cycles)
- Range 0.3 ... 10 m
- Fail-safe transistor outputs
- Optical synchronisation
- Status display
- Different muting sequences can be parameterized
- Protection class IP67

Legend: A = Total length
Emitter:
A = 84.5 mm + Protection field height
Receiver:
A = 148.5 mm + Protection field height

Approvals

SLG 425I



- **Safety light grid**
- 2-, 3-, 4-beam light grid
- Protection field heights 500, 800 or 900 mm
- Range 0.3 ... 18 m

Legend: A = Total length
Emitter:
2-beam A = 804 mm
3 and 4-beam A = 1124 mm
Receiver:
2-beam A = 868 mm
3 and 4-beam A = 1188 mm

Approvals

Technical data

Standards:	IEC/EN 61496-1/-2
Category:	Type 4
Enclosure:	aluminum
Enclosure dimensions:	Ø 49 mm
Connection:	Connector plug
- Emitter:	M12, 4-pole,
- Receiver:	M12, 8-pole,
- Muting sensors:	2 x connector plugs M8, 3-pole
- Muting lamp:	M8, 3-pole
Max. cable length:	100 m / 1 Ω
Protection class:	IP67 to EN 60529
Response time:	7 … 28.5 ms (Depends on length and resolution)
Detection sensitivity (Resolution):	14 and 30 mm
Protection field height:	
- Resolution 14 mm	170 ... 1450 mm
- Resolution 30 mm	170 ... 1770 mm
- 2-, 3-, 4-beam	500, 800, 900 mm
Protection field width, Range:	
- Resolution 14 mm	0.3 m ... 7 m
- Resolution 30 mm	0.3 m … 10 m
- 2-, 3-. 4-beam	0.3 m ... 18 m
Start/restart interlock:	Integrated
Contactor control:	Integrated
Muting and override function:	Integrated
Muting sensors:	2 or 4 external sensors
Light emission wavelength:	880 nm (infrared)
U_e:	24 VDC ± 10%
Safety outputs:	2 x PNP, 500 mA
Power consumption:	Emitter 4 W, Receiver 8 W
Data interface:	RS 485
Status and diagnostics:	LED display
Ambient temperature:	−10 °C … +50 °C
Storage and transport temperature:	−20 °C … +70 °C
Classification:	
Standards:	EN ISO 13849-1; IEC 61508; IEC 60947-5-3
PL:	up to e
Category:	up to 4
PFH-value:	7.42 x 10^{-9}/h
SIL:	up to 3
Service life:	20 years

Ordering details

SLC 425I-E/R①-②-RFBC

No.	Option	Description
①	xxxx	Protected heights (mm) 0170, 0250, 0330, 0410, 0490, 0570, 0650, 0730, 0810, 0890, 0970, 1050, 1130, 1210, 1290, 1370, 1450, 1530*, 1610*, 1690*, 1770*
②	14, 30	Resolution 14 mm, 30 mm

Ordering details

SLG 425I-E/R①-RF

No.	Option	Description
①	Distance between outermost beams:	
	0500-02	500 mm, 2-beam
	0800-03	800 mm, 3-beam
	0900-04	900 mm, 4-beam

Mounting brackets are included in the delivery.

Note:
* only for resolution 30 mm

Converter for the parametrization NSR 0801

Ordering details

Connector:
Female connector M12, 4-pole straight
for emitter

cable length 5 m	**KA-0804**
cable length 10 m	**KA-0805**
cable length 20 m	**KA-0808**

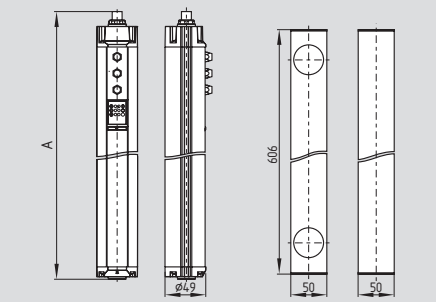
Female connector M12, 8-pole straight
for receiver

cable length 5 m	**KA-0904**
cable length 10 m	**KA-0905**
cable length 20 m	**KA-0908**

Connecting cable for the muting sensors

M8, 3-pole to M12, 4-pole, 2 m	**KA-0965**

SLG 425-IP



- **Safety light grid**
- Emitter and receiver in one enclosure (retro reflector)
- Type 4 to IEC/EN 61496-1, -2
- Protection field heights 500 mm
- 2-beam light grid
- Integrated start/restart interlock
- Integrated muting and override function
- Range 0.3 m ... 7 m
- Fail-safe transistor outputs
- Status display
- Protection class IP67

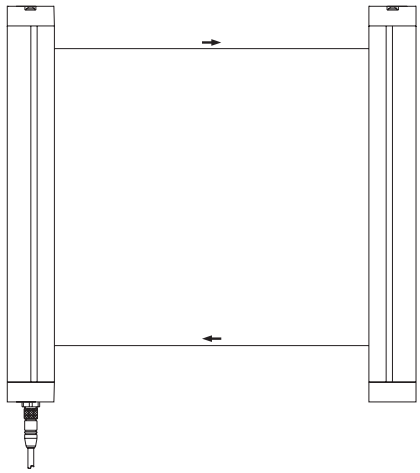
Technical data

Standards:	IEC/EN 61496-1/-2
Category:	Type 4
Enclosure:	aluminum
Enclosure dimensions:	Ø 49 mm
Deflecting mirror:	50 x 50 x 606 mm
Connection:	Connector plug
- emitter/receiver:	M12, 8-pole
Max. cable length:	100 m / 1 Ω
Protection class:	IP67 to EN 60529
Response time:	15 ms
Detection sensitivity (Resolution):	500 mm
Protection field height:	500 mm
Protection field width, Range:	0.3 m ... 7 m
Start/restart interlock:	Integrated
Light emission wavelength:	880 nm (infrared)
U_e:	24 VDC ± 10%
Safety outputs:	2 x PNP, 500 mA
Power consumption:	10 W
Data interface:	RS 485
Status and diagnostics:	LED display
Ambient temperature:	−10 °C … +50 °C
Storage and transport temperature:	−20 °C … +70 °C

Classification:

Standards:	EN ISO 13849-1; IEC 61508; IEC 60947-5-3
PL:	up to e
Category:	up to 4
PFH-value:	7.42 x 10^{-9}/h
SIL:	up to 3
Service life:	20 years

Technical data



Approvals

TÜV cULus CE

Ordering details

SLG 425IP-E/R0500-02-RF	Light grid
ULS-P-0501	Deflecting mirror

Note

Mounting brackets are included in the delivery.

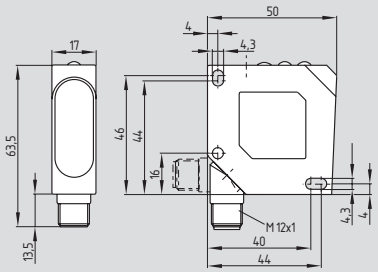
Note
Converter for the parametrization NSR 0801

Ordering details

Connector:
Female connector M12, 8-pole straight

cable length 5 m	**KA-0904**
cable length 10 m	**KA-0905**
cable length 20 m	**KA-0908**

LF 50-11P



- Range up to 5.5 m
- Connector plug can be rotated
- LED status display
- Protection class IP67
- Infrared light 660 nm
- Laser protection class 1
- Polarisation filter
- Antivalent switching outputs

Approvals

CE

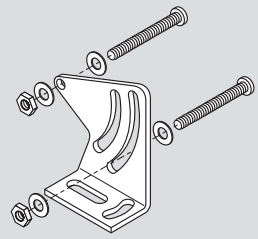
Technical data

Standards:	EN 60974-5-2
Laser protection class 1	EN 60825-1-10/03
Enclosure:	ABS
Enclosure dimensions:	50 x 50 x 17 mm
Connection:	Connector plug M12, 4-pole, can be rotated
Max. cable length:	100 m
Protection class:	IP67
Switching frequency:	2500 Hz
Range:	0 ... 5.5 m
Infrared laser light:	660 nm
U_e:	10 ... 30 VDC
Switching output:	2 x PNP 200 mA
Beam diameter:	5 ... 24 mm
LED status display:	soiling, switching condition and power on
Ambient temperature:	−20 °C ... +60 °C
Storage and transport temperature:	−20 °C … +80 °C

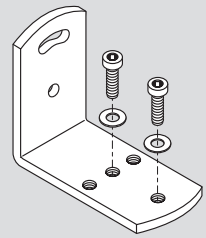
System components

Reflector R 51 x 61-L

Reflector R D83



Mounting angle BF 50



Mounting angle BF UNI 1

Ordering details

LF 50-11P

Note:
System components (cables, mounting angles, etc.) not included in the delivery.

Ordering details

Connector M12, 4-pole straight	
without cable	**KD M12-4**
with cable 2 m	**KD M12-4-2M**
with cable 5 m	**KD M12-4-5M**

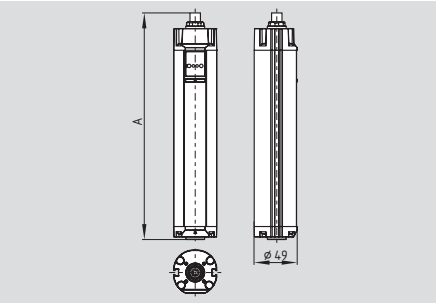
Connecting cable to connect SLG 425I

M12, 4-pole to M8, 3-pole, 2 m	**KA-0965**

Ordering details

Reflector	**R 51 x 61-L**
Reflector	**R D83**
Mounting angle	**BF 50**
Mounting angle universal	**BF UNI 1**

SLC 420 standard



- **Safety light curtain**
- Type 4 to IEC/EN 61496-1, -2
- Resolution 14, 30 and 50 mm
- Protection field heights 170 mm ... 1770 mm
- Integrated start/restart interlock
- Integrated contactor control
- Integrated blanking function (fixed and mobile blanking)
- Diagnostic and parametrization interface
- Range 0.3 m ... 18 m
- Fail-safe transistor outputs
- Optical synchronisation
- Status display
- Protection class IP67

Legend: A = Total length
A = 84.5 mm + Protection field height

Approvals

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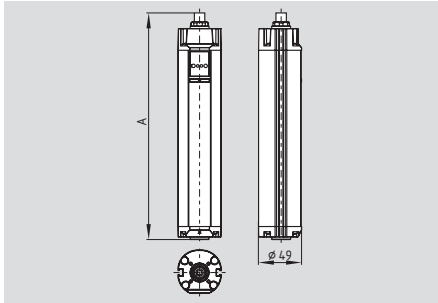
SLG 420 standard



- **Safety light grid**
- 2-, 3- or 4-beam light grid
- Range 0.3 ... 40 m

Legend: A = Total length
2-beam A = 734.5 mm
3 and 4-beam A = 1054.5 mm

Technical data

Standards:	IEC/EN 61496-1/-2
Category:	Type 4
Enclosure:	aluminum
Enclosure dimensions:	Ø 49 mm
Connection:	Connector plug
- Emitter:	M12, 4-pole,
- Receiver:	M12, 8-pole
Max. cable length:	100 m / 1 Ω
Protection class:	IP67 to EN 60529
Response time:	10 … 27 ms (depends on length and resolution)
Detection sensitivity (Resolution):	14, 30 and 50 mm
Protection field height:	
- Resolution 14 mm	170 ... 1450 mm
- Resolution 30, 50 mm	170 ... 1770 mm
- 2-, 3-, 4-beam	500, 800, 900 mm
Protection field width, Range:	
- Resolution 14 mm	0.3 m ... 7 m
- Resolution 30, 50 mm	0.3 m ... 10 m
- High Range/Resolution 30 mm	0.3 m ... 18 m
- 2-, 3-, 4-beam	0.3 m ... 18 m
- High Range 2-, 3-, 4-beam	8 m ... 40 m
Start/restart interlock:	Integrated
Contactor control:	Integrated
Blanking function:	Integrated
Cascading: (Master/Slave)	-
Light emission wavelength:	880 nm (infrared)
U_e:	24 VDC ± 10%
Safety outputs:	2 x PNP, 500 mA
Power consumption:	Emitter 4 W, Receiver 8 W
Data interface:	RS 485
Status and diagnostics:	LED display
Ambient temperature:	−10 °C … +50 °C
Storage and transport temperature:	−20 °C … +70 °C
Classification:	
Standards:	EN ISO 13849-1; IEC 61508; IEC 60947-5-3
PL:	up to e
Category:	up to 4
PFH-value:	7.42 x 10^{-9}/h
SIL:	up to 3
Service life:	20 years

Ordering details

SLC 420-E/R①-②-RFB-③

No.	Option	Description
①	xxxx	Protected heights (mm) available lengths: 0170, 0250, 0330, 0410, 0490, 0570, 0650, 0730, 0810, 0890, 0970, 1050,1130, 1210, 1290, 1370, 1450, 1530*, 1610*, 1690*,1770*
②	14, 30, 50	Resolution 14, 30, 50 mm
③		Range 0.3 m ... 7 m**
		Range 0.3 m ... 10 m *
	H***	High Range 0.3 m ... 18 m

Ordering details

SLG 420-E/R①-RF-②

No.	Option	Description
①	Distance between outermost beams:	
	0500-02	500 mm, 2-beam
	0800-03	800 mm, 3-beam
	0900-04	900 mm, 4-beam
②		Range 0.3 m ... 18 m
	H	Range 8 m ... 40 m

Mounting brackets are included in the delivery.
Note:
* only for resolution 30 mm, 50 mm
** only for resolution 14 mm
*** only for resolution 30 mm
Converter for the parametrization NSR 0801

Ordering details

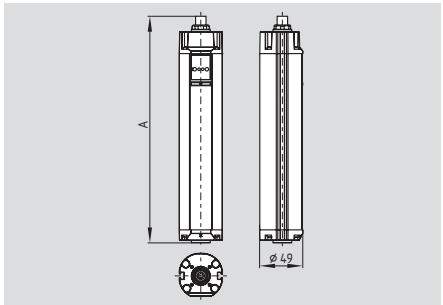
Connector:
Female connector M12, 4-pole straight
for emitter

cable length 5 m	**KA-0804**
cable length 10 m	**KA-0805**
cable length 20 m	**KA-0808**

Female connector M12, 8-pole straight
for receiver

cable length 5 m	**KA-0904**
cable length 10 m	**KA-0905**
cable length 20 m	**KA-0908**

SLC 420 Master / Slave



- **Safety light curtain**
- Type 4 to IEC/EN 61496-1, -2
- Resolution 14, 30 and 50 mm
- Protection field height:
  Master 170 mm ... 1770 mm
  Slave 170 mm ... 650 mm
- Integrated start/restart interlock
- Integrated contactor control
- Integrated blanking function
- Diagnostic and parametrization interface
- Cascading of Master and Slave devices
- Range 0.3 m ... 18 m
- Fail-safe transistor outputs
- Optical synchronisation
- Status display

Legend: A = Total length
A = 84.5 mm + Protection field height

Approvals

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Technical data

Standards:	IEC/EN 61496-1/-2
Category:	Type 4
Enclosure:	aluminum
Enclosure dimensions:	Ø 49 mm
Connection:	Connector plug
- Master emitter:	M12, 4-pole
- Master receiver:	M12, 8-pole
- Slave emitter:	M12, 4-pole
- Slave receiver:	M12, 8-pole
Max. cable length:	100 m / 1 Ω
Max. cable length: (Master/Slave)	0.8 m
Protection class:	IP67 to EN 60529
Response time:	10 … 37 ms (Depends on length and resolution)
Detection sensitivity (Resolution):	14, 30 and 50 mm
Protection field height:	
- Resolution 14 mm	170 ... 2100 mm
- Resolution 30, 50 mm	170 ... 2420 mm
Protection field width, Range:	
- Resolution 14 mm	0.3 m ... 7 m
- Resolution 30, 50 mm	0.3 m ... 10 m
- High Range	0.3 m ... 18 m
Start/restart interlock:	Integrated
Contactor control:	Integrated
Blanking function:	Integrated
Cascading: (Master/Slave)	Possible
Light emission wavelength:	880 nm (infrared)
U_e:	24 VDC ± 10%
Safety outputs:	2 x PNP, 500 mA
Power consumption:	Emitter 4 W, Receiver 8 W
Data interface:	RS 485
Status and diagnostics:	LED display
Ambient temperature:	−10 °C … +50 °C
Storage and transport temperature:	−20 °C … +70 °C

Classification:

Standards:	EN ISO 13849-1; IEC 61508; IEC 60947-5-3
PL:	up to e
Category:	up to 4
PFH-value:	7.42 x 10^{-9}/h
SIL:	up to 3
Service life:	20 years

System components

Connector

Ordering details

SLC 420-E/R①-②-RFB-③④

No.	Option	Description
①	xxxx	Protected heights (mm) available lengths: 0170, 0250, 0330, 0410, 0490, 0570, 0650, 0730, 0810, 0890, 0970, 1050, 1130, 1210, 1290, 1370, 1450, 1530*, 1610*, 1690*, 1770*
②	14, 30, 50	Resolution 14, 30, 50 mm
③		Range 0.3 m ... 7 m**
		Range 0.3 m ... 10 m*
	H*	High Range 0.3 m ... 18 m

Ordering details

SLC 420-E/R①-②-RFB-③④

No.	Option	Description
④	M	Master function
	S***	Slave function

Mounting brackets are included in the delivery.
Note:
* only for resolution 30 and 50 mm
** only for resolution 14 mm
*** Protection field heights 170 ... 650 mm

Converter for the parametrization NSR 0801

Ordering details

Connector:
Female connector M12, 4-pole straight
for emitter

cable length 5 m	**KA-0804**
cable length 10 m	**KA-0805**
cable length 20 m	**KA-0808**

Female connector M12, 8-pole straight
for receiver

cable length 5 m	**KA-0904**
cable length 10 m	**KA-0905**
cable length 20 m	**KA-0908**

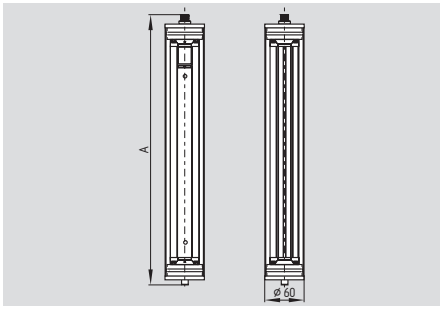
for Master/Slave connection:

for emitter cable length 0.8 m	**KA-0810**

Female connector M12, 8-pole straight

for receiver cable length 0.8 m	**KA-0901**

SLC 420 IP69K



- **Safety light curtain**
- Type 4 to IEC/EN 61496-1, -2
- Resolution 14 mm, 30 mm
- Protection field heights 170 mm ... 1450 mm
- Protection class IP69K
- Integrated start/restart interlock
- Integrated contactor control
- Integrated blanking function (fixed and mobile blanking)
- Diagnostic and parametrization interface
- Range 0.3 m ... 10 m
- Fail-safe transistor outputs
- Optical synchronisation
- Status display

Legend: A = Total length
A = 97 mm + Protection field height

Approvals

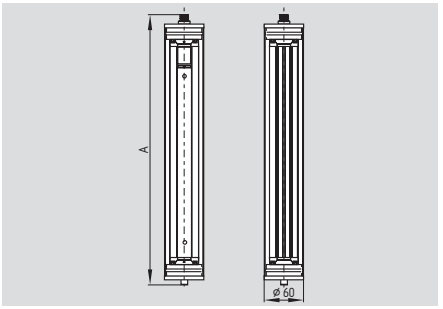
TÜV cULus CE

Ordering details

SLC 420-E/R①-②-69-RFB

No.	Option	Description
①	xxxx	Protected heights (mm) available lengths: 0170, 0250, 0330, 0410, 0490, 0570, 0650, 0730, 0810, 0890, 0970, 1050, 1130, 1210, 1290, 1370, 1450
②	14	Resolution 14 mm with a range of 0.3 m ... 7 m
	30	Resolution 30 mm with a range of 0.3 m ... 10 m

SLG 420 IP69K



- **Safety light grid**
- 2-, 3- or 4-beam light grid
- Range 0.3 ... 18 m

Legend: A = Total length
2-beam A = 747 mm
3 and 4-beam A = 1067 mm

Approvals

TÜV cULus CE

Ordering details

SLG 420-E/R①-69-RF

No.	Option	Description
①	Distance between outermost beams:	
	0500-02	500 mm, 2-beam
	0800-03	800 mm, 3-beam
	0900-04	900 mm, 4-beam

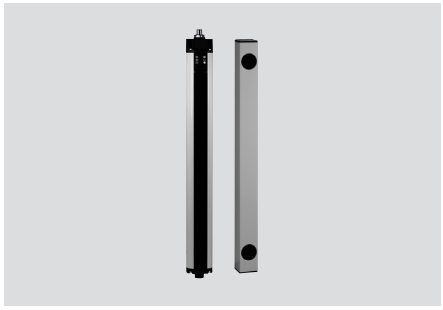
Mounting brackets (**V4A**) are included in the delivery.

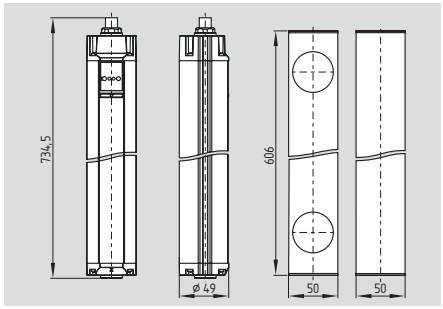
Note:
Converter for the parametrization NSR 0801

Technical data

Standards:	IEC/EN 61496-1/-2
Category:	Type 4
Enclosure:	aluminum protective tube housing PMMA
Enclosure dimensions:	Ø 60 mm
Connection:	Cable (5 m) with
- Receiver	connector M12, 8-pole
- Emitter	connector M12, 4-pole
Max. cable length:	100 m / 1 Ω
Protection class:	IP69K to EN 60529
Response time:	10 … 27 ms (depends on length and resolution)
Detection sensitivity (Resolution):	14, 30 mm
Protection field height:	
- Resolution 14, 30 mm	170 ... 1450 mm
- 2-, 3-, 4-beam	500, 800, 900 mm
Protection field width, Range:	
- Resolution 14 mm	0.3 m ... 7 m
- Resolution 30 mm	0.3 m ... 10 m
- 2-, 3-, 4-beam	0.3 m ... 18 m
Start/restart interlock:	Integrated
Contactor control:	Integrated
Blanking function:	Integrated
Cascading: (Master/Slave)	-
Light emission wavelength:	880 nm (infrared)
U_e:	24 VDC ± 10%
Safety outputs:	2 x PNP, 500 mA
Power consumption:	Emitter 4 W, Receiver 8 W
Data interface:	RS 485
Status and diagnostics:	LED display
Ambient temperature:	−10 °C … +50 °C
Storage and transport temperature:	−20 °C … +70 °C
Classification:	
Standards:	EN ISO 13849-1; IEC 61508; IEC 60947-5-3
PL:	up to e
Category:	up to 4
PFH-value:	7.42 x 10^{-9}/h
SIL:	up to 3
Service life:	20 years

SLG 422-P





- **Safety light grid**
- Emitter and receiver in one enclosure (retro reflector)
- Type 4 to IEC/EN 61496-1, -2
- Protection field heights 500 mm
- 2-beam light grid
- Integrated start/restart interlock
- Integrated contactor control
- Range 0.3 m ... 7 m
- Fail-safe transistor outputs
- Status display
- Protection class IP67

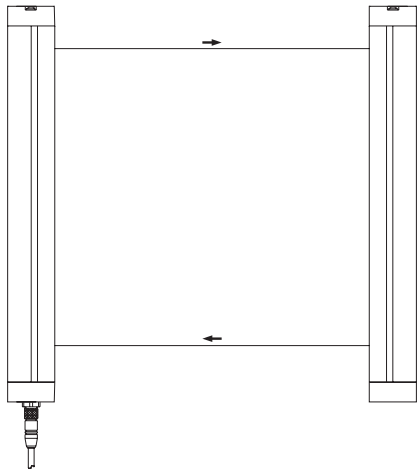
Technical data

Standards:	IEC/EN 61496-1/-2
Category:	Type 4
Enclosure:	aluminum
Enclosure dimensions:	Ø 49 mm
Deflecting mirror:	50 x 50 x 606 mm
Connection:	Connector plug M12, 8-pole
Max. cable length:	100 m / 1 Ω
Protection class:	IP67 to EN 60529
Response time:	10 ms
Detection sensitivity (Resolution):	500 mm
Protection field height:	500 mm
Protection field width, Range:	0.3 m ... 7 m
Start/restart interlock:	Integrated
Contactor control:	Integrated
Light emission wavelength:	880 nm (infrared)
U_e:	24 VDC ± 10%
Safety outputs:	2 x PNP, 500 mA
Power consumption:	10 W
Data interface:	-
Status and diagnostics:	LED display
Ambient temperature:	−10 °C … +50 °C
Storage and transport temperature:	−20 °C … +70 °C

Classification:

Standards:	EN ISO 13849-1; IEC 61508; IEC 60947-5-3
PL:	up to e
Category:	up to 4
PFH-value:	7.42 x 10^{-9}/h
SIL:	up to 3
Service life:	20 years

Technical data



Approvals

TÜV cULus CE

Ordering details

SLG 422-P-E/R0500-02-RF	Light grid
ULS-P-0501	Deflecting mirror

Note

Mounting brackets are included in the delivery.

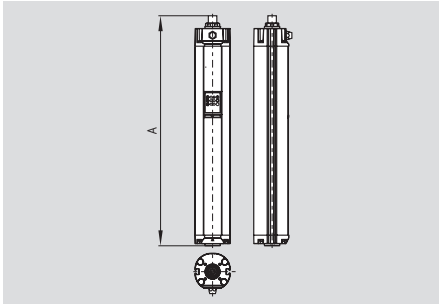
Note:
Converter for the parametrization NSR 0801

Ordering details

Connector:
Female connector M12, 8-pole straight

cable length 5 m	**KA-0904**
cable length 10 m	**KA-0905**
cable length 20 m	**KA-0908**

SLC 421



- **Safety light curtain**
- Category Type 4 to IEC/EN 61496-1, -2
- Resolution 14 and 30 mm
- Protection field heights from 170 ... 1770 mm
- **Smooth parameter assignment using external command devices, no PC software required**
- Integrated start/restart interlock
- Integrated contactor control
- Integrated blanking function (fixed and floating blanking)
- Integrated cyclic function 1 or 2-cycle operation
- Diagnostic and parametrization interface
- Range 0.3 ... 10 m
- Fail-safe transistor outputs
- Optical synchronisation
- Status display
- Protection class IP67

Legend:
A: Total length
Transmitter A = 84.5 mm + protected field height
Receiver A = 148.5 mm + protection field height

Approvals

TÜV cULus CE

Technical data

Standards:	IEC/EN 61496-1/-2
Category:	Type 4
Enclosure:	aluminum
Enclosure dimensions:	Ø 49 mm
Connection:	Connector plug
- Transmitter:	M12, 4-pole,
- Receiver:	M12, 12-pole and M8, 6-pole
Max. cable length:	100 m / 1 Ω
Protection class:	IP67 to EN 60529
Response time:	15 … 32 ms (depends on length and resolution)
Detection sensitivity (resolution):	14 and 30 mm
Protected height:	
- Resolution 14 mm	170 ... 1450 mm
- Resolution 30 mm	170 ... 1770 mm
Protection field width, range:	
- Resolution 14 mm	0.3 m ... 7 m
- Resolution 30 mm	0.3 m … 10 m
Start/restart interlock:	Integrated
Contactor control:	Integrated
Blanking function:	Integrated
Cyclic operation:	1 cycle or 2 cycles
Light emission wavelength:	880 nm (infrared)
U_e:	24 VDC ± 10%
Safety outputs:	2 x PNP, 500 mA
Power consumption:	Emitter 4 W, Receiver 8 W
Data interface:	RS 485
Status and diagnostics:	LED display
Ambient temperature:	−10 °C … +50 °C
Storage and transport temperature:	−20 °C … +70 °C
Classification:	
Standards:	EN ISO 13849-1; IEC 61508
PL:	up to e
Category:	up to 4
PFH-value:	7.42 x 10^{-9}/h
SIL:	up to 3
Service life:	20 years

System components

Connector

Ordering details

SLC 421-E/R①-②-RFBC-③

No.	Option	Description
①	xxxx	Protected heights (mm) Available lengths: 0170, 0250, 0330, 0410, 0490, 0570, 0650, 0730, 0810, 0890, 0970, 1050, 1130, 1210, 1290, 1370, 1450, 1530*, 1610*, 1690*, 1770*

Note

②	14	Resolution 14 mm
	30	Resolution 30 mm
③	01	Integrated status indication (rt/gn) (optional)

* only 30 mm

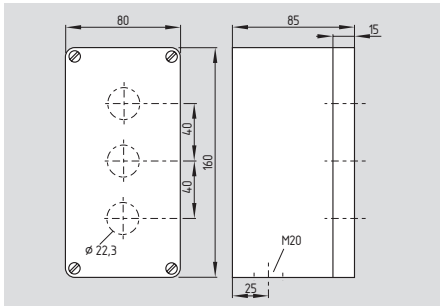
Control units ordered separately, see next page

Ordering details

Connector:

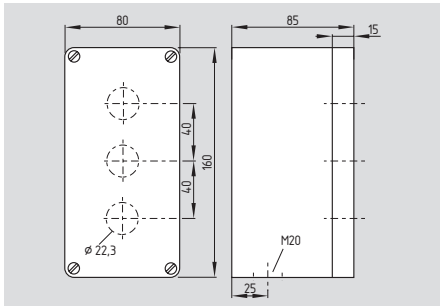
Female connector **for emitter**	
M12, 4-pole, straight	
cable length 5 m	**KA-0804**
cable length 10 m	**KA-0805**
cable length 20 m	**KA-0808**
Female connector **for receiver**	
M12, 12-pole, straight	
cable length 5 m	**KA-0980**
cable length 10 m	**KA-0981**
Female connector **for receiver/control unit**	
M8, 6-pole, angled	
cable length 2 m	**KA-0053**
cable length 5 m	**KA-0054**

BDB 01



- **Blanking control unit**
- Smooth parameter assignment using external command devices, no PC software required
- Modular enclosure in ABS version
- 3 Command devices:
  1 key-operated switch (Pos. 0, 1)
  1 selector switch, latching
  1 restart button

BDT 01



- **Control unit cyclic operation**
- Smooth parameter assignment using external command devices, no PC software required
- Modular enclosure in ABS version
- 3 Command devices:
  1 key-operated switch (Pos. 0, 1, 2)
  1 teach-in button
  1 restart button

Technical data

Standards:	IEC/EN 60947-5-1
Enclosure:	ABS
Protection class:	IP40
Contact type BDB 01	
- Key-operated switch:	2 NC / 2 NO
- Selector switch:	2 NC / 4 NO
- Restart button:	1 NO
Contact type BDT 01:	
- Key-operated switch:	2 NC / 4 NO
- Teach-in button:	1 NO
- Restart button:	1 NO
Switching principle:	IEC 60947-5-1
Connection:	PVC cable, 5 m long
Cable section:	8 x 0.25 mm²
Cable entry:	M20
U_{imp}:	4 kV
I_{the}:	3 A
Utilization category:	DC-13
I_e/U_e:	1 A / 24 VDC
Max. fuse rating:	6 A gL D-fuse
Ambient temperature:	−10 °C … +50 °C
Mechanical life:	
- Key-operated switch:	1 million operations
- Selector switch:	1 million operations
- Button:	1 million operations
Switching frequency:	max. 50/h
Dimensions (L x W x H):	160 x 80 x 85mm

Approvals

CE

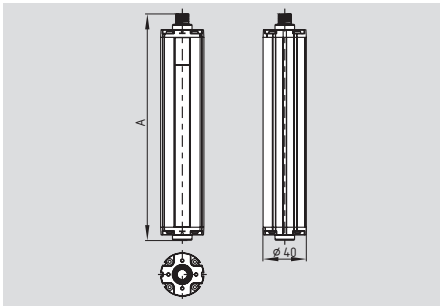
Ordering details

BDB 01 **101213356**

Ordering details

BDT 01 **101213358**

SLC 220 standard

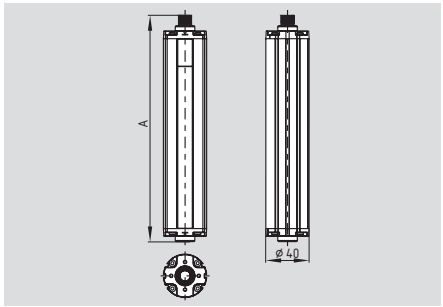


- **Safety light curtain**
- Type 2 to IEC/EN 61496-1, -2
- Resolution 30 and 80 mm
- Protection field heights 175 mm ... 1675 mm
- Integrated start/restart interlock
- Integrated contactor control
- Integrated blanking function
- Diagnostic and parametrization interface
- Range 0.3 m ... 14 m
- Integrated self-test
- Fail-safe transistor outputs
- Status display
- Protection class IP65
- Signaling output

Legend: A = Total length
Protection field height 175 mm
A = 216 mm
Protection field height 250 ... 1675 mm
A = 28.5 mm + Protection field height

Approvals

SLG 220 standard



- **Safety light grid**
- 2-, 3- or 4-beam light grid
- Range 0.3 ... 30 m

Legend: A = Total length
A = 78.5 mm + Distance between outermost beams

Approvals

Technical data

Standards:	IEC/EN 61496-1/-2
Category:	Type 2
Enclosure:	aluminum
Enclosure dimensions:	Ø 40 mm
Connection:	Connector plug M12, 8-pole
Max. cable length:	100 m / 1Ω
Protection class:	IP65 to EN 60529
Response time:	9 … 45 ms (depends on length and resolution)
Detection sensitivity (Resolution):	30 and 80 mm
Protection field height:	
- Resolution 30 mm	175 ... 1675 mm
- Resolution 80 mm	325 ... 1675 mm
- 2-, 3-, 4-beam	500, 800, 900 mm
Protection field width, Range:	0.3 ... 6 m (Standard),
- SLC	4 ... 14 m (High range)
- SLG	5 ... 30 m (High range)
Start/restart interlock:	Integrated
Contactor control:	Integrated
Blanking function:	Integrated
Light emission wavelength:	880 nm (infrared)
U_e:	24 VDC ± 10%
Safety outputs:	2 x PNP, 200 mA
Signaling output:	PNP 100 mA
Power consumption:	Emitter 4 W, Receiver 8 W
Data interface:	RS 485
Status and diagnostics:	LED display
Ambient temperature:	−10 °C … +50 °C
Storage and transport temperature:	−20 °C … +70 °C
Classification:	
Standards:	EN ISO 13849-1; IEC 61508; IEC 60947-5-3
PL:	up to d
Category:	up to 2
PFH-value:	3.59 x 10^{-8}/h
SIL:	up to 2
Service life:	20 years

Ordering details

SLC 220-E/R①-②RFB-③

No.	Option	Description
①	xxxx	Protected heights (mm), available lengths: 0175*, 0250*, 0325, 0475, 0625, 0775, 0925, 1075, 1225, 1375, 1525, 1675
②	30, 80	Resolution 30, 80 mm
③		Range 0.3 m ... 6 m
	H	High Range 4 m ... 14 m

Note:
* only for resolution 30 mm

Ordering details

SLG 220-E/R①RF-②

No.	Option	Description
①		Distance between outermost beams:
	0500-02	500 mm, 2-beam
	0800-03	800 mm, 3-beam
	0900-04	900 mm, 4-beam
②		Range 0.3 m ... 6 m
	H	High Range 5 m ... 30 m

Mounting brackets are included in the delivery.

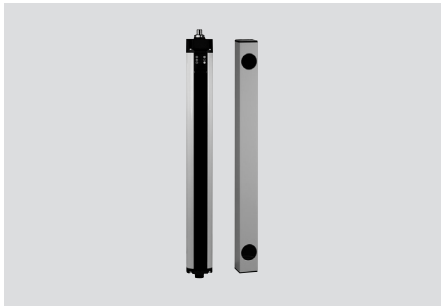
Note:
Converter for the parametrization NSR 0700

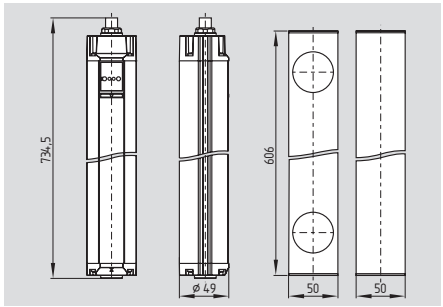
Ordering details

Connector:
Female connector M12, 8-pole straight
for emitter/receiver

cable length 5 m	**KA-0904**
cable length 10 m	**KA-0905**
cable length 20 m	**KA-0908**

SLG 220-P





- **Safety light grid**
- Emitter and receiver in one enclosure (retro reflector)
- Type 2 to IEC/EN 61496-1, -2
- Protection field heights 500 mm
- 2-beam light grid
- Range 0.3 m ... 6 m
- Fail-safe transistor outputs
- Status display
- Protection class IP65

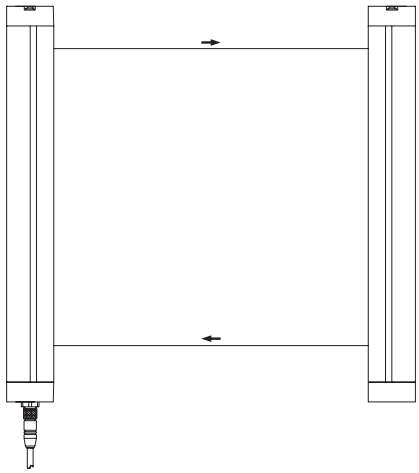
Technical data

Standards:	IEC/EN 61496-1/-2
Category:	Type 2
Enclosure:	aluminum
Enclosure dimensions:	Ø 40 mm
Deflecting mirror:	50 x 50 x 606 mm
Connection:	Connector plug M12, 8-pole
Max. cable length:	100 m / 1 Ω
Protection class:	IP65 to EN 60529
Response time:	12 ms
Detection sensitivity (Resolution):	500 mm
Protection field height:	500 mm
Protection field width, Range:	0.3 m ... 6 m
Light emission wavelength:	880 nm (infrared)
U_e:	24 VDC ± 10%
Safety outputs:	2 x PNP, 200 mA
Signaling output:	PNP, 100 mA
Power consumption:	10 W
Data interface:	-
Status and diagnostics:	LED display
Ambient temperature:	−10 °C … +50 °C
Storage and transport temperature:	−20 °C … +70 °C

Classification:

Standards:	EN ISO 13849-1; IEC 61508; IEC 60947-5-3
PL:	up to d
Category:	up to 2
PFH-value:	3.59 x 10^{-7}/h
SIL:	up to 2
Service life:	20 years

Technical data



Approvals

TÜV cULus CE

Ordering details

SLG 220-P-E/R0500-02RF	Light grid
ULS-P-0500	Deflecting mirror

Note

Mounting brackets are included in the delivery.

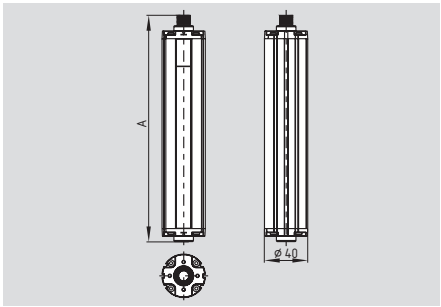
Note:
Converter for the parametrization NSR 0700

Ordering details

Connector:
Female connector M12, 8-pole straight

cable length 5 m	**KA-0904**
cable length 10 m	**KA-0905**
cable length 20 m	**KA-0908**

SLC 220 Master / Slave



- **Safety light curtain**
- Type 2 to IEC/EN 61496-1, -2
- Resolution 30 and 80 mm
- Protection field height:
  Master 175 mm ... 1675 mm
  Slave 325 mm ... 775 mm
- Integrated start/restart interlock
- Integrated contactor control
- Diagnostic and parametrization interface
- Cascading of Master and Slave devices
- Range 0.3 m ... 6 m
- Fail-safe transistor outputs
- Status display
- Protection class IP65
- Signaling output
- Integrated self-test

Legend: A = Total length
Protection field height 175 mm
A = 216 mm
Protection field height 250 ... 1675 mm
A = 28.5 mm + Protection field height

Approvals

TÜV cULus CE

Technical data

Standards:	IEC/EN 61496-1/-2
Category:	Type 2
Enclosure:	aluminum
Enclosure dimensions:	Ø 40 mm
Connection:	Connector plug
- Master emitter:	M12, 8-pole
- Master receiver:	M12, 8-pole
- Slave emitter:	M12, 6-pole
- Slave receiver:	M12, 6-pole
Max. cable length:	100 m / 1Ω
Max. cable length: (Master/Slave)	0.3 m
Protection class:	IP65 to EN 60529
Response time:	12 … 65 ms (depends on length and resolution)
Detection sensitivity (Resolution):	30 and 80 mm
Protection field height:	
- Resolution 30 mm	175 ... 2450 mm
- Resolution 80 mm	325 ... 2450 mm
Protection field width, Range:	0.3 ... 6 m
Start/restart interlock:	Integrated
Contactor control:	Integrated
Cascading: (Master/Slave)	Possible
Light emission wavelength:	880 nm (infrared)
U_e:	24 VDC ± 10%
Safety outputs:	2 x PNP, 200 mA
Signaling output:	PNP, 100 mA
Power consumption:	Emitter 4 W, Receiver 8 W
Data interface:	RS 485
Status and diagnostics:	LED display
Ambient temperature:	−10 °C … +50 °C
Storage and transport temperature:	−20 °C … +70 °C
Classification:	
Standards:	EN ISO 13849-1; IEC 61508; IEC 60947-5-3
PL:	up to d
Category:	up to 2
PFH-value:	3.59 x 10^{-8}/h
SIL:	up to 2
Service life:	20 years

System components

Connector

Ordering details

SLC 220-E/R①-②-RFB③

No.	Option	Description
①	xxxx	Protected heights (mm), available lengths: 0175*, 0250*, 0325, 0475, 0625, 0775, 0925, 1075, 1225, 1375, 1525, 1675
②	30	Resolution 30mm
	80	Resolution 80mm
③	M	Master function
	S	Slave function**

Ordering details

Note:
* only for resolution 30 mm
** only protected heights 325 mm ... 775 mm

Converter for the parametrization NSR 0700

Different lengths and resolutions can be combined for Master/Slave.

Mounting brackets are included in the delivery.

Ordering details

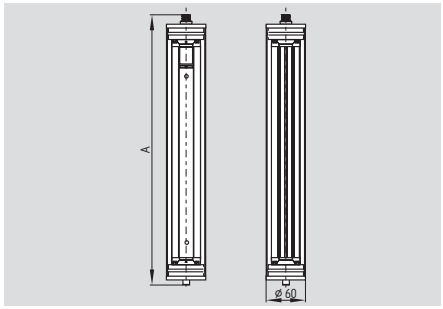
Connector:
Female connector M12, 8-pole straight
for emitter/receiver

cable length 5 m	**KA-0904**
cable length 10 m	**KA-0905**
cable length 20 m	**KA-0908**

for Master/Slave connection
Female connector 2 x M12, 6-pole straight

cable length 0.3 m	**KA-0907**

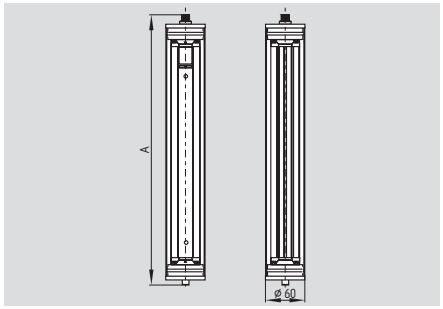
SLC 220 IP69K



- **Safety light curtain**
- Type 2 to IEC/EN 61496-1, -2
- Resolution 30 and 80 mm
- Protection field heights 175 mm ... 1675 mm
- Protection class IP69K
- Integrated start/restart interlock
- Integrated contactor control
- Integrated blanking function
- Diagnostic and parametrization interface
- Range 0.3 m ... 14 m
- Integrated self-test
- Fail-safe transistor outputs
- Status display
- Signaling output

Legend: A = Total length
A = 54 mm + Protection field height

SLG 220 IP69K



- **Safety light grid**
- 2-, 3- or 4-beam light grid
- Range 0.3 ... 30 m

Legend: A = Total length
A = 104 mm + Distance between outermost beams

Technical data

Standards:	IEC/EN 61496-1/-2
Category:	Type 2
Enclosure:	aluminum protective tube housing PMMA
Enclosure dimensions:	Ø 60 mm
Connection:	Cable (5 m) with connector M12, 8-pole
Max. cable length:	100 m / 1Ω
Protection class:	IP69K
Response time:	9 … 45 ms (depends on length and resolution)
Detection sensitivity (Resolution):	30 and 80 mm
Protection field height:	
- Resolution 30 mm	175 ... 1675 mm
- Resolution 80 mm	325 ... 1675 mm
- 2-, 3-, 4-beam	500, 800, 900 mm
Protection field width, Range:	0.3 ... 6 m (Standard),
- SLC	4 ... 14 m (High range)
- SLG	5 ... 30 m (High range)
Start/restart interlock:	Integrated
Contactor control:	Integrated
Blanking function:	Integrated
Light emission wavelength:	880 nm (infrared)
U_e:	24 VDC ± 10%
Safety outputs:	2 x PNP, 200 mA
Signaling output:	PNP, 100 mA
Power consumption:	Emitter 4 W, Receiver 8 W
Data interface:	RS 485
Status and diagnostics:	LED display
Ambient temperature:	−10 °C … +50 °C
Storage and transport temperature:	−20 °C … +70 °C

Classification:

Standards:	EN ISO 13849-1; IEC 61508; IEC 60947-5-3
PL:	up to d
Category:	up to 2
PFH-value:	3.59 x 10^{-8}/h
SIL:	up to 2
Service life:	20 years

Approvals

TÜV cULus CE

Ordering details

SLC 220-E/R①-②-69-RFB-③

No.	Option	Description
①	xxxx	Protected heights (mm), available lengths: 0175*, 0250*, 0325, 0475, 0625, 0775, 0925, 1075, 1225, 1375, 1525, 1675
②	30	Resolution 30 mm
	80	Resolution 80 mm
③		Range 0.3 m ... 6 m
	H	High Range 4 m ... 14

* only for resolution 30 mm

Approvals

TÜV cULus CE

Ordering details

SLG 220-E/R①-69-RF-②

No.	Option	Description
①		Distance between outermost beams:
	0500-02	500 mm, 2-beam
	0800-03	800 mm, 3-beam
	0900-04	900 mm, 4-beam
②		Range 0.3 m ... 6 m
	H	High Range 5 m ... 30 m

Ordering details

Connector:

Female connector M12, 8-pole straight	
cable length 5 m	**KA-0904**
cable length 10 m	**KA-0905**
cable length 20 m	**KA-0908**

Mounting brackets (**V4A**) are included in the delivery.

Note:
Converter for the parametrization NSR 0700

System components

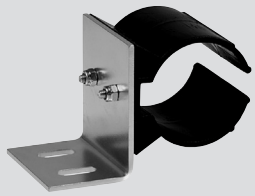
Programming cable KA-0974

Alignment kit EA-5

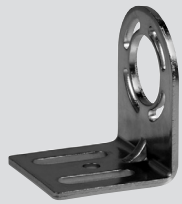
Muting lamp with wall bracket MK2

Mounting kit MS-1000 / MS 1072

System components



Mounting kit MS-1010

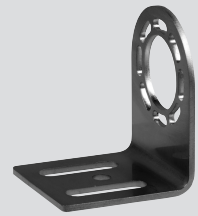


Mounting kit MS-1031 for ULS-A4

Mounting kit MS-1038

Mounting kit MS-1051

System components



Mounting kit MS-1073

Vibration damper MSD-2 / MSD-4

Test rod PLS-01, PLS-02

Ordering details

Programming cable
for SLC/SLG 440 **KA-0974**
Laser alignment tool
for SLC / SLG **EA5**
Lighting element
Muting lamp with LED block **MK2**
Operating conditions indication
Mounting kit for SLC /SLG 220
4 x angle incl. screws **MS-1000**
2 x angle incl. screws **MS-1072**

Ordering details

Mounting kit for central fixation for SLC /SLG 220
2 x angle **MS-1010**
Mounting kit for ULS-A4
2 x angle incl. screws **MS-1031**
Mounting kit for SLC/SLG 420-425 (V4A)
4 x angle incl. screws **MS-1038**
Mounting kit for lateral fixation for SLC/SLG 420-425
Consisting of 2 steel angles,
4 screws and 4 T-slot nuts **MS-1051**

Ordering details

Mounting kit for deflecting mirror ULS-M
2 x angle **MS-1073**
Mounting kit for SLC 420
4 x angle incl. screws **MS-1030**
Vibration damper
8 x vibration damper
for SLC/SLG 220 **MSD-2**
for SLC/SLG 420-425 **MSD-4**
for SLC/SLG 440 **MSD-5**
Test rod
for resolution 30 mm **PLS-01**
for resolution 14 mm **PLS-02**

System components

Bus converter NSR-0801

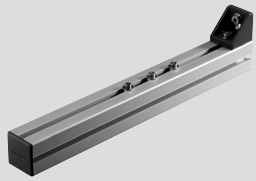
Bus converter NSR-0700

Deflecting mirror ULS-M

System components

Deflecting mirror ULS-A4, Ø 49 mm

Mounting stands MST



Muting Carrier Set

System components

Protective enclosure with deflecting mirror

Protective enclosure

Deflection Mirror Application Notes

ULS-M: Must be used when range is greater than 6m. With 1 mirror, range reduced by 10%, with 2 or more mirrors range reduced by 15% for each mirror.

ULS-A4: Must be used when range is less than 6m. With a loss of 20% at each mirror, only 1 mirror per emitter/receiver pair is recommended.

Ordering details

Bus converter	
Converter for the parametrization of SLC/SLG 420-425 USB 2.0 interface	**NSR 0801**
Converter for the parametrization of SLC / SLG 220 RS232 interface	**NSR 0700**
Deflecting mirror ULS-MLC	
Mirror height 200 mm	**ULS-MLC-0200**
Mirror height 350 mm	**ULS-MLC-0350**
Mirror height 500 mm	**ULS-MLC-0500**
Mirror height 650 mm	**ULS-MLC-0650**
Mirror height 800 mm	**ULS-MLC-0800**
Mirror height 950 mm	**ULS-MLC-0950**
Mirror height 1250 mm	**ULS-MLC-1250**
Mirror height 1550 mm	**ULS-MLC-1550**
Mirror height 1700 mm	**ULS-MLC-1700**

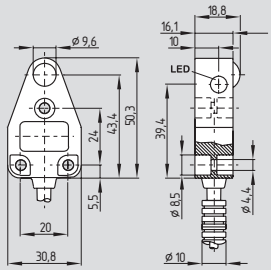
Ordering details

Deflecting mirror ULS-A4 incl. mounting angle	
Mirror height 200 mm	**ULS-A4-0200**
Mirror height 400 mm	**ULS-A4-0400**
Mirror height 550 mm	**ULS-A4-0550**
Mirror height 700 mm	**ULS-A4-0700**
Mirror height 850 mm	**ULS-A4-0850**
Mirror height 1000 mm	**ULS-A4-1000**
Mounting stands	
Height including plinth 500 mm	**MST-0500**
Height including plinth 750 mm	**MST-0750**
Height including plinth 1000 mm	**MST-1000**
Height including plinth 1250 mm	**MST-1250**
Height including plinth 1500 mm	**MST-1500**
Height including plinth 1750 mm	**MST-1750**
Height including plinth 2000 mm	**MST-2000**
Muting Carrier Set	
2 x aluminum profile	**MT-0400**

Ordering details

Protective enclosure with deflecting mirror	
Version for 2-beam light grid	**ULS-ST2**
Version for 3-beam light grid	**ULS-ST3**
Version for 4-beam light grid	**ULS-ST4**
Protective enclosure for light grids/curtains	
Powder coated steel	
Height 1334 mm	**SG5**
Height 2134 mm	**SG6**
Safety screen for protective enclosures (PMMA)	
for SG5: height 1310 mm	**SGS5**
for SG6: height 2110 mm	**SGS6**
Deflecting mirror for protective enclosures	
mirror height 1000 mm includes mounting hardware	**ULS-SG-1000**

SLB 200



- Range to 4 m
- LEDs visible from both sides
- Protection class IP67

Approvals

TÜV CE

Technical data

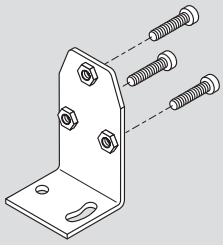
Standards:	IEC/EN 61496
Control Category:	2
Enclosure:	ABS 10 % GF
Enclosure dimensions:	31 x 50.5 x 19 mm
Connection:	
- emitter:	10 cm cable with male connector M8, 3-pole
- receiver:	10 cm cable with male connectorM8, 4-pole
Max. cable length:	50 m
Protection class:	IP67
Response time:	30 ms *
Range:	4 m
Start/Restart interlock:	*
Contactor control:	*
Light emission wavelength:	880 nm
U_e:	24 VDC ± 20%
Safety outputs:	*
Angle of radiation:	± 4°
Min. size of object:	9 mm Ø
LED status indication:	soiling, switching condition and power on
Ambient temperature:	−10 °C … +55 °C
Storage and transport temperature:	−20 °C … +80 °C

* only in combination with safety monitoring module SLB 200-C04-1R

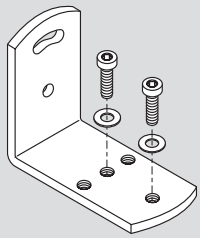
System components

SLB 200-C04-1R

Connector plug



Mounting angle BF 31



Mounting angle BF UNI 1

Ordering details

SLB 200-①31-21

Nr.	Option	Description
①	E	Emitter
	R	Receiver

Note

The system components (safety monitoring module, cable, etc.) are not included in delivery.

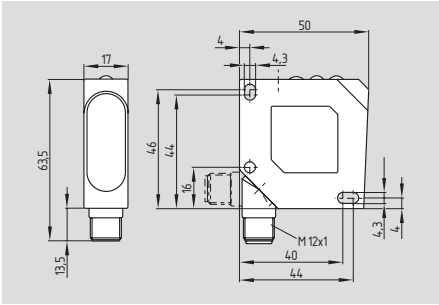
Ordering details

Monitoring of safety light barriers
SLB 200-C04-1R **refer to page 4-22**

Connector plug (female)
for emitter: 3-pole straight
without cable **KDE M8-3**
with cable 2 m **KDE M8-3-2M**
with cable 5 m **KDE M8-3-5M**
for receiver: M8, 4-pole straight
without cable **KDR M8-4**
with cable 2 m **KDR M8-4-2M**
with cable 5 m **KDR M8-4-5M**

Mounting angles **BF 31**
Mounting angles universal **BF UNI 1**

SLB 400



- Range to 15 m
- Connecting plug can be rotated
- LED switching conditions display
- Protection class IP67

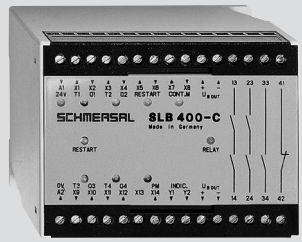
Approvals

Technical data

Standards:	IEC/EN 61496
Control Category:	4*
Enclosure:	ABS
Enclosure dimensions:	50 x 50 x 17 mm
Connection:	M12, 4-pole coupler socket, can be rotated
Max. cable length:	100 m
Protection class:	IP67
Response time:	25 ms*
Range:	15 m
Start/Restart interlock:	*
Contactor control:	*
Light emission wavelength:	880 nm
U_e:	24 VDC ± 20%
Safety outputs:	*
Angle of radiation:	± 2°
Min. size of object:	13 mm Ø
LED status indication:	soiling, switching condition and power on
Ambient temperature:	0 °C … +60 °C
Storage and transport temperature:	−20 °C … +80 °C

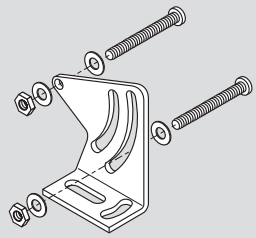
* only in combination with safety monitoring module SLB 400-C10-1R

System components

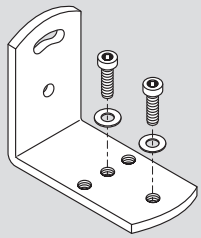


SLB 400-C10-1R

Connector plug



Mounting angle BF 50



Mounting angle BF UNI 1

Ordering details

SLB 400-①50-21P

Nr.	Option	Description
①	E	Emitter
	R	Receiver

Note

The system components (safety monitoring module, cable, etc.) are not included in delivery.

Ordering details

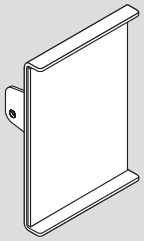
Monitoring of safety light barriers
SLB 400-C10-1R **refer to page 4-24**

Connector plug (female) for emitter/receiver: M12, 4-pole straight

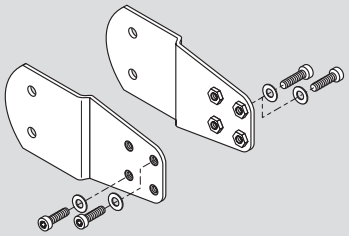
without cable	**KD M12-4**
with cable 2 m	**KD M12-4-2M**
with cable 5 m	**KD M12-4-5M**

Mounting angles	**BF 50**
Mounting angles universal	**BF UNI 1**

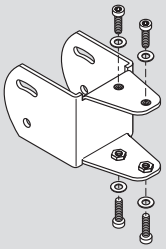
System components



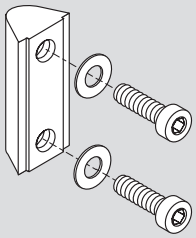
Mirror SLB 200/400 SMA 80



Mounting angle BF SMA 80-1



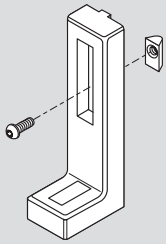
Mounting angle BF SMA 80-2



T-slot nut NST 20-8

System components

Mounting post ST 1250



Floor-stand base STB 1

Ordering details

Mirror	**SMA 80**
Mounting angles for mirror	**BF SMA 80-1**
Mounting angles for mirror	**BF SMA 80-2**
T-slot nut	**NST 20-8**

Ordering details

Mounting post	**ST 1250**
Floor-stand base	**STB 1**

SLB 200-C

- Up to two pairs of light barrier devices can be connected
- Co-ordinated for use with SLB 200 R/E safety light barriers
- 1 safety contact, STOP 0
- 1 signaling output
- Operating voltage 24 VDC
- Test input
- LED display of switching conditions
- Response time ≤ 30 ms
- Start/Restart interlock can be switched active or inactive
- Contactor monitoring can be switched active or inactive
- Additional cyclic testing

Technical data

Standards:	IEC/EN 61496-1/-2, IEC 60947-5-3, IEC 61508
Start conditions:	Test button, start-reset button, ON/OFF coding
Feedback circuit (Y/N):	yes
Max. switching frequency:	10 Hz
Rated operating voltage U_e:	24 VDC ± 20%
Rated operating current I_e:	180 mA
Outputs:	
Stop category 0:	1
Stop category 1:	0
Number of safety contacts:	1
Number of auxiliary contacts:	0
Number of signaling outputs:	1
Max. switching capacity of the safety contacts:	8 A
Switching capacity of the signaling outputs:	500 mA
Max. fuse rating of the safety contacts:	4 A gG D-fuse
Utilization category to EN 60947-5-1:	AC-15: 250 V / 2 A DC-13: 24 V / 2 A
Ambient conditions:	
Environmental temperature:	0 °C … +50 °C
Storage and transport temperature:	−20 °C … +80 °C
Protection class:	Enclosure: IP40, Terminals: IP20, Clearance: IP54
Mounting:	Snaps onto standard DIN rail to EN 60715
Connection type:	Screw connection
max. cable section:	4.0 mm² (incl. conductor ferrules)
Dimensions (Height/Width/Depth):	84 x 45 x 118 mm

Approvals

TÜV CE

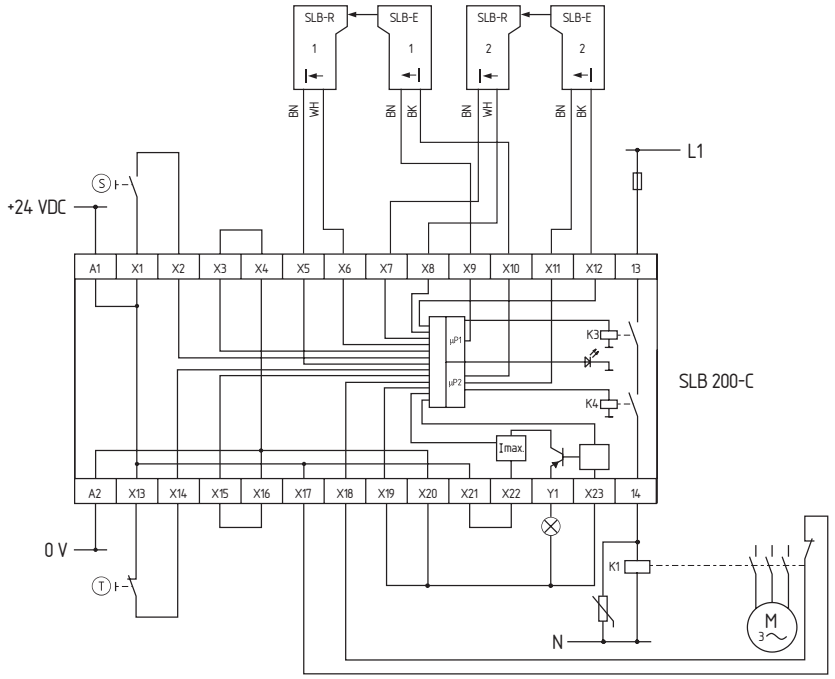
Ordering details

SLB 200-C04-1R

Note

- Monitoring two pairs of light barrier devices and the power contactor using the SLB 200-C safety monitoring module
- Test push button Ⓣ
  The test push button is connected to X13 and X14 in order to carry out a check of the light barrier monitoring function. The terminals X15 and X16 must be bridged.
- The wiring diagram is shown for the de-energized condition.
- Contactor check
  To monitor an external contactor, the feedback circuit is connected to X17 and X18. The terminals X19 and X20 must be bridged.
- Start push button Ⓢ
  The start push button can be used to start the monitoring of the light barriers for a new start or after an interruption. The terminals X3 and X4 must be bridged.
- It is also possible to connect only one pair of light barrier devices.

Wiring diagram



Note

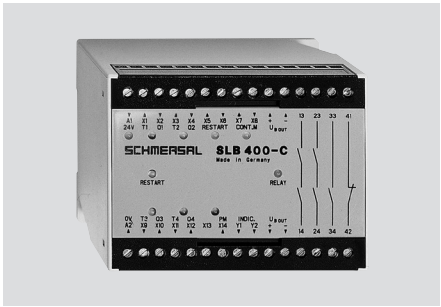
In order to set for the desired mode of operation and number of light barriers connected, remove the front cover of the safety monitoring module. As supplied all switches are in Position 1.

The required functions can be selected by means of the internal DIPswitches.

	DIPswitch 1	DIPswitch 2	DIPswitch 3
Position 1	With contactor check	With start/restart interlock	Connection of two light barriers
Position 2	Without contactor check	Without start/restart interlock	Connection of one light barrier

Inductive loads (e.g. contactors, relays, etc.) are to be suppressed by means of a suitable circuit.

SLB 400-C



- Up to 4 light barrier pairs SLB 400 can be connected
- Co-ordinated for use with SLB 400 R/E safety light barriers
- 2 safety contacts, STOP 0
- 2 signaling outputs
- Cross-wire monitoring
- ISD Integral System Diagnostics
- Operating voltage 24 VDC
- Feedback circuit to monitor external contactors
- Two short-circuit proof additional transistor outputs
- Response time ≤ 30 ms
- Start/Restart interlock can be switched active or inactive
- Contactor monitoring can be switched active or inactive
- Can be coded

Technical data

Standards:	IEC/EN 61496-1/-2, IEC 60947-5-3, IEC 61508
Start conditions:	Start-reset button, ON/OFF coding
Feedback circuit (Y/N):	yes
Max. switching frequency:	10 Hz
Rated operating voltage U_e:	24 VDC ± 15%
Rated operating current I_e:	0.3 A without additional transistor outputs and safety light barriers
Max. fuse rating of the operating voltage:	1 A
Outputs:	
Stop category 0:	2
Stop category 1:	0
Number of safety contacts:	2
Number of auxiliary contacts:	2
Number of signaling outputs:	2
Max. switching capacity of the safety contacts:	2 A
Switching capacity of the auxiliary contacts:	2 A
Switching capacity of the signaling outputs:	100 mA
Max. fuse rating of the safety contacts:	2 A gG D-fuse
Utilization category to EN 60947-5-1:	AC-15: 250 V / 2 A DC-13: 24 V / 2 A
LED display:	ISD
Ambient conditions:	
Environmental temperature:	0 °C … +55 °C
Storage and transport temperature:	−25 °C … +70 °C
Protection class:	Enclosure: IP40, Terminals: IP20, Clearance: IP54
Mounting:	Snaps onto standard DIN rail to EN 60715
Connection type:	Screw connection
max. cable section:	4.0 mm² (incl. conductor ferrules)
Dimensions (Height/Width/Depth):	75 x 99.7 x 110 mm

Approvals

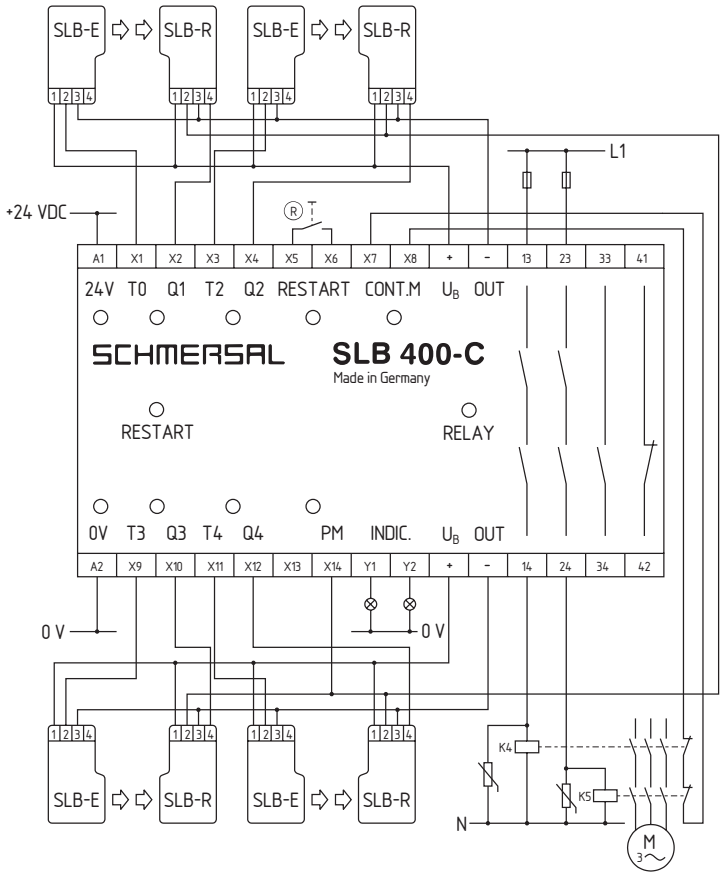
Ordering details

SLB 400-C10-1R

Note

- Monitoring up to four pairs of light barrier devices and the power contactors using the SLB 400-C safety monitoring module
- The wiring diagram is shown for the de-energized condition.
- Connection of two pairs of safety light barrier devices
  When two pairs of safety light barriers are connected, the terminals X9-X10 and X11-X12 must be bridged.
- Restart push button Ⓡ
  The restart function can be selected by means of the DIPswitches. When a start push button is connected to X5 and X6, it must be operated for min. 250 ms and max. 5 s after an interruption of the safety light barriers.

Wiring diagram



ISD

The following faults are registered by the safety monitoring modules and indicated by ISD

- Short-circuit on the connecting leads
- Interruption of the connecting leads
- Failure of the safety relay to pull-in or drop-out
- Fault on the input circuits or the relay control circuits of the safety monitoring module
- Mutual influence between the connected pairs of light barrier device and others on neighbouring systems

Note

The ISD tables (Intergral System Diagnostics) for analysis of the fault indications and their causes are shown in the manual.

Inductive loads (e.g. contactors, relays, etc.) are to be suppressed by means of a suitable circuit.