



EN Operating instructions. pages 1 to 12
Translation of the original operating instructions

FR Vous trouverez la version actuelle du mode d'emploi dans votre langue nationale officielle sur l'Internet, www.schmersal.net.

ES Encontrará el manual de instrucciones actual en su idioma oficial de la UE en nuestra página de Internet www.schmersal.net.

NL U vindt de huidige versie van de gebruikshandleiding in uw officiële landstaal op het Internet, www.schmersal.net.

IT Il manuale d'istruzioni aggiornato nella vostra lingua (lingua ufficiale UE) è scaricabile in Internet all'indirizzo www.schmersal.net.

JP EU公用語で書かれた最新の取扱説明書は、インターネット (www.schmersal.net) からダウンロードできます。

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1. About this document

1.1 Function
This operating instructions manual provides all the information you need for the mounting, set-up and commissioning to ensure the safe operation and disassembly of the safety switchgear. The operating instructions must be available in a legible condition and a complete version in the vicinity of the device.

1.2 Target group: authorised qualified personnel
All operations described in this operating instructions manual must be carried out by trained specialist personnel, authorised by the plant operator only.
Please make sure that you have read and understood these operating instructions and that you know all applicable legislations regarding occupational safety and accident prevention prior to installation and putting the component into operation.
The machine builder must carefully select the harmonised standards to be complied with as well as other technical specifications for the selection, mounting and integration of the components.

1.3 Explanation of the symbols used

 **Information, hint, note:**
This symbol is used for identifying useful additional information.

 **Caution:** Failure to comply with this warning notice could lead to failures or malfunctions.
Warning: Failure to comply with this warning notice could lead to physical injury and/or damage to the machine.

1.4 Appropriate use
The products described in these operating instructions are developed to execute safety-related functions as part of an entire plant or machine. It is the responsibility of the manufacturer of a machine or plant to ensure the proper functionality of the entire machinery or plant.

The safety switchgear must exclusively be used in accordance with the versions listed below or for the applications authorised by the manufacturer. Detailed information regarding the range of applications can be found in the chapter "Product description".

1.5 General safety instructions

The user must observe the safety instructions in this operating instructions manual, the country-specific installation standards as well as all prevailing safety regulations and accident prevention rules.



Further technical information can be found in the Schmersal catalogues or in the online catalogue on the Internet: www.schmersal.net.

The information contained in this operating instructions manual is provided without liability and is subject to technical modifications.



The entire concept of the control system, in which the safety component is integrated, must be validated to EN ISO 13849-2.

There are no residual risks, provided that the safety instructions as well as the instructions regarding mounting, commissioning, operation and maintenance are observed.

Additional measures could be required to ensure that the electro-sensitive device does not present a dangerous breakdown, when other forms of light beams are available in a special application (e.g. use of wireless control devices on cranes, radiation of welding sparks or effects of stroboscopic lights).

1.6 Warning about misuse



In case of inadequate or improper use or manipulations of the safety switchgear, personal hazards or damage to machinery or plant components cannot be excluded. The relevant requirements of the standards EN ISO 13855 (successor of EN 999) and EN ISO 13857 must be observed.

1.7 Exclusion of liability

We shall accept no liability for damages and malfunctions resulting from defective mounting or failure to comply with this operating instructions manual. The manufacturer shall accept no liability for damages resulting from the use of unauthorised spare parts or accessories.

For safety reasons, invasive work on the device as well as arbitrary repairs, conversions and modifications to the device are strictly forbidden; the manufacturer shall accept no liability for damages resulting from such invasive work, arbitrary repairs, conversions and/or modifications to the device.

2. Product description

2.1 Ordering code

This operating instructions manual applies to the following types:

SLC 430-E/R□-30-RF-SYS

No.	Option	Description
①	xxxx	Protection field heights in mm available lengths: 0236, 0460, 0684, 0908, 1132, 1356, 1580, 1804



Only if the information described in this operating instructions manual are realised correctly, the safety function and therefore the compliance with the Machinery Directive is maintained.

2.2 Special versions

For special versions, which are not listed in the order code below 2.1, these specifications apply accordingly, provided that they correspond to the standard version.

2.3 Included in delivery and accessories

2.3.1 Accessories included in delivery

Sensor E and sensor R with mounting accessories,
Safety monitoring module NSR-0605,
Cable set KA-0610 (cable length 5 m)

2.3.2 Optional accessory

Connecting cable for emitter and receiver

Item num-	Description	Description	Length
1207718	KA-0610	Female connector M8, 4-pole 5 m	
1207719	KA-0611	Female connector M8, 4-pole 10 m	

Profile for emitter/receiver

Item num-	Description	Profile 40 x 40 mm	Length
1207720	MS-1501	SLC 430-E/R0236-30	467.5 mm
1207721	MS-1502	SLC 430-E/R0460-30	691.5 mm
1207722	MS-1503	SLC 430-E/R0684-30	915.5 mm
1207723	MS-1504	SLC 430-E/R0908-30	1139.5 mm
1207724	MS-1505	SLC 430-E/R1132-30	1363.5 mm
1207725	MS-1506	SLC 430-E/R1356-30	1587.5 mm
1207726	MS-1507	SLC 430-E/R1580-30	1811.5 mm
1207727	MS-1508	SLC 430-E/R1804-30	2035.5 mm

2.4 Destination and use

The SLC is a non-contact, self-testing safety guard, which is used for the protection of hazardous points, hazardous areas and machine access. If one or more light beams are interrupted, the hazardous movement must be stopped.



The user must evaluate and design the safety chain in accordance with the relevant standards and the required safety level.

2.5 Technical data

Standards: EN 61496-1; CLC/TS 61496-2;
EN ISO 13849; EN 62061

Material of the enclosure:	Aluminium
Number of beams:	8 ... 64 beams
Protection field heights:	236 mm - 1804 mm
Detection ability for test bodies:	30 mm
Range of the protection field:	0.2 ... 3.5 m
Response time:	50 ms
Rated operating voltage:	22-30 VDC or 18-25 VAC
Operating current:	< 300 mA
Wave length of the sensor:	880 nm
Extraneous light insensitivity:	50,000 Lux
Safety outputs (OSSD1, OSSD2):	Relay contact positive action
Switching voltage:	250 V
Switching current:	4 A

Signalling output:

Switching voltage:	42 V
Switching current:	4 A
Load capacity:	2 µF
Load inductance:	2 H
Admissible conduction resistance between OSSD and load:	10 Ω

Test input:

Input voltage HIGH:	30 VDC
Input voltage LOW:	18 VDC
Signal length:	> 100 ms

Input restart interlock (manual reset)

Input voltage HIGH:	30 VDC
Input voltage LOW:	18 VDC
Signal length:	> 200 ms

Function SLC 430: Protective mode, restart interlock (manual reset),
contactor control
LED indications Sensor E: Sensor E active

LED indications sensor R:	OSSD ON, OSSD OFF, restart interlock (manual reset) enabling
Sensor connection:	M8 x 1, 4-pole shielded female connector; cable length 5m
Safety-monitoring module connection:	Removable screw terminal block
Ambient temperature:	0° C ... +50° C
Storage temperature:	-10° C ... +70° C
Synchronisation:	RS 485 BUS
Protection class:	IP65 (IEC 60529)
Resistance to vibrations:	10 ... 55 Hz to IEC 60068-2-6
Resistance to shock:	10 g; 16 ms; to IEC 60068-2-29
Fuses:	
Power supply:	F1: 1.6 A / 250 V T
Output contacts:	F5, F6: 4.0 A / 250 V T
Signalling output:	F7: 4.0 A / 250 V T
Year of construction:	as of 2010 version 1.0

2.6 Safety classification

Standards:	EN ISO 13849-1, EN 62061
PL:	up to e
Control category:	up to 4
PFH value:	1.26×10^{-8} /h
SIL:	up to 3
Service life:	20 years

2.7 Functions

The system consists of 2 components, the E/R sensors and the NSR-0605 safety-monitoring module.

The connection between these components is realised through a 4-pole female connector for the sensor connection. The transmitter and receiver units are supplied with direct-current voltage through the NSR-0605 safety-monitoring module. All system components are connected to the safety-monitoring module.

The protection field is generated between both sensors E and R, which each represent a transmitter and a receiver unit. The safety-monitoring module obtains the signals of the transmitter and receiver units through a RS-485 BUS connection and makes the corresponding status available at the output through two safety relays. To trigger a switch-off command, covering just one light beam will suffice.

The safety light curtain is self-monitoring, i.e. for every fault occurring in the system either during the self-test or covered by an external test, the OSSD outputs are disabled. As long as the fault remains active, the system will remain locked in OFF condition. This locked situation is not cancelled by switching-off and back on the supply voltage either.

The system has the following features:

- Protective mode
- Restart interlock (manual reset)
- Contactor check

2.7.1 Protective mode / standard operation

The protective mode switches the OSSD outputs to ON state (protection field not interrupted), without external release of a switching device. This type of protection generates an automatic restart of the machine if the protection field is not interrupted.



This operating mode may only be chosen in conjunction with the restart interlock (manual reset) of the machine. This operating mode must not be chosen, when persons can step behind the protection field.

2.7.2 Restart interlock (manual reset) / hold function

In this way, the system is kept in a locked condition after a protection field interruption, after switch-on or after power off (OSSD's OFF state). The locking condition will only be cancelled after the protection field is enabled and an external command device has been actuated. To switch between normal and hold operation (restart interlock), a slide switch on the control unit is used.



The command devices (enabling button) must be installed outside of the hazardous area. The operator must have a clear view on the hazardous area when actuating the enabling button.

2.7.3 Contactor control (EDM)

The contactor control monitors the controlled switching elements (auxiliary contacts of the contactors) of both outputs. This monitoring is realised after each interruption of the protection field and prior to the restart (enabling) of the outputs. In this way, malfunctions of the relays are detected, e.g. contact welding or contact spring breakage. If the light curtain detects a malfunction of the switching elements, the outputs are locked. (s. Electrical connection)

2.7.4 Testing / external test

The system can trigger a test cycle by means of the external test input. By applying a signal (+ 24 VDC) at the test output, a complete self-test is executed. The outputs change to OFF state and are re-enabled after 1.5 s if no fault is detected.

Regardless of the activation of the external test input, a self-test is cyclically executed within the permissible triggering time of the system. The condition at the output relays does not change. The system is only switched off when a fault is detected.

2.7.5 Signalling output / low-voltage safety output

The safety-monitoring module has a potential-free changeover contact for the connection of a signal lamp. In this way, the signal conditions OSSD ON and OSSD OFF can be visualised on the machine by means of an indicator light. The signal lamp can be operated with 12V, 24V or 42V.

3. Mounting

3.1 General conditions

The following guidelines are provided as a preventive warning notice to ensure safe and appropriate handling. These guidelines are an essential part of the safety instructions and therefore must always be observed and respected.



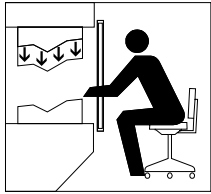
- The SLC must not be used on machines, which can be stopped electrically in case of emergency.
- The safety distance between the SLC and a hazardous machine movement must always be observed and respected.
- Additional mechanical safety guards must be installed so that the operator has to pass by the protection field to reach the hazardous machine parts.
- The SLC must be installed so that the personnel always must be within the detection zone when operating the machine. An incorrect installation can lead to serious injuries.
- Never connect the outputs to +24VDC. If the outputs are wired to +24VDC, they are in ON state, as a result of which they are unable to stop a hazardous situation occurring on the application/machine.
- The safety inspections must be conducted regularly.
- The SLC must not be exposed to inflammable or explosive gasses.
- The connecting cables must be connected in accordance with the installation instructions.
- The fixing screws of the end caps of the mounting angle must be firmly tightened.

3.2 Protection field and approach

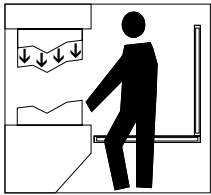
The protection field of the SLC consists of the entire range located between the protection field markings of sensor E and R. Additional protective devices must ensure that the operator has to pass by the protection field to reach the hazardous machine parts.

The SLC must be installed so that personnel are always located within the detection zone of the safety device when operating the hazardous machine parts to be secure.

Correct installation

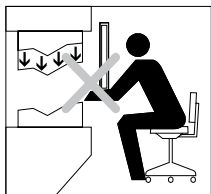


Hazardous machine parts can only be reached after passing through the protection field.

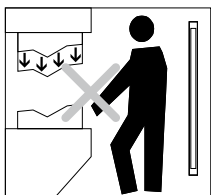


The presence of staff members between the protection field and hazardous machine parts must be prevented/avoided (protection against stepping over).

Unauthorised installation



Hazardous machine parts can be reached without passing through the protection field.



The presence of staff members between the protection field and hazardous machine parts is enabled.



When fitting a sensor pair, please check that the E and R sensors have identical series numbers! The sensors are optically adjusted to each other, thus guaranteeing the max. setting range.

3.3 Fixing of the sensors

The sensors are fitted at the required positions by means of mounting rails.

B90 mounting rail, angled (refer to chapter 3.6 Dimensions)

B180 mounting rail, straight (refer to chapter 3.6 Dimensions)

By means of two executions, various mounting types can be realised. The angles are screwed to the base. The base must be flat and level to avoid distortion of the sensors. The sensors must slide with the notch at the rear of the guide slot of the mounting rail and fixed by means of an adjusting screw. To prevent the fixing screw from loosening due to possible vibrations, it must be secured by means of a suitable adhesive.

Please make sure that the sensors are installed correctly and not with the head and foot positions of both edges swapped. The connector plugs are located at the head end of both sensors and therefore must point in the same direction; the common direction however is not important. The edges must be fitted at the same height, with the translucent (light-transmissive) surfaces oriented towards each other.

One of both sensors must be turned in both directions around its longitudinal axis to determine the point for the protection field interruption (plant switch-off). The optimal alignment is obtained when the sensors are adjusted in the middle between both points of the protection field interruption.

3.4 Fixation of the NSR-0605 safety-monitoring module

The safety-monitoring module can be wall-mounted by means of 4 mounting holes in its enclosure (refer to chapter Dimensions).

3.5 Safety distance

The safety distance is the minimum distance between the protection field of the safety light curtain and the hazardous area. The safety distance must be observed to ensure that the hazardous area cannot be reached before the hazardous movement has come to standstill.

Calculation of the safety distance to EN ISO 13855 (successor of EN 999) and EN ISO 13857

The safety distance depends on the following elements:

Run-on time of the machine (calculation by run-on time measurement)

Response time of the machine and the safety light curtain and the downstream relay (entire safety guard)

Approach speed

Resolution of the safety light curtain

Safety light curtain SLC 430

The safety distance for resolutions 14 mm up to 40 mm is calculated by means of the following formula:

$$S = 2000 \text{ mm/s} * T + 8 (d - 14) \text{ [mm]}$$

S = Safety distance [mm]

T = Total reaction time (machine run-on time, reaction time of the safety guard, relays, etc.)

d = Resolution of the safety light curtain

The approach speed is covered with a value of 2000 mm/s

If value $S \leq 500$ mm after the calculation of the safety distance, then use this value.

If value $S \geq 500$ mm, recalculate the distance:

$$S = 1600 \text{ mm/s} * T + 8 (d - 14) \text{ [mm]}$$

If the new value $S > 500$ mm, use this value as safety distance.

If the new value $S < 500$ mm, use a minimum distance of 500 mm.

Example:

Reaction time of the safety light curtain = 50 ms
 Resolution of the safety light curtain = 30 mm
 Run-on time of the machine = 330 ms

$S = 2000 \text{ mm/s} * (330 \text{ ms} + 50 \text{ ms}) + 8 (30 \text{ mm} - 14 \text{ mm})$
 $S = 888 \text{ mm}$
 $S = > 500 \text{ mm}$, therefore new calculation with $V = 1600 \text{ mm/s}$

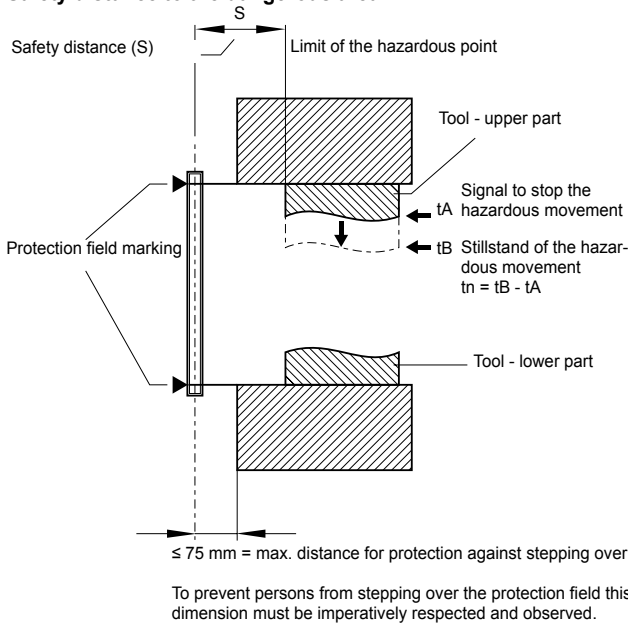
$S = 736 \text{ mm}$

S = Safety distance [mm]
 T = Run-on time of the machine + reaction time of the safety light curtain
 K = Approach speed of the body or the body part 1600 mm/s



The safety distance between the safety light curtain and the hazardous point must always be respected and observed. If a person reaches the hazardous point before the hazardous movement has come to standstill, he/she is exposed to serious injuries.

Safety distance to the dangerous area



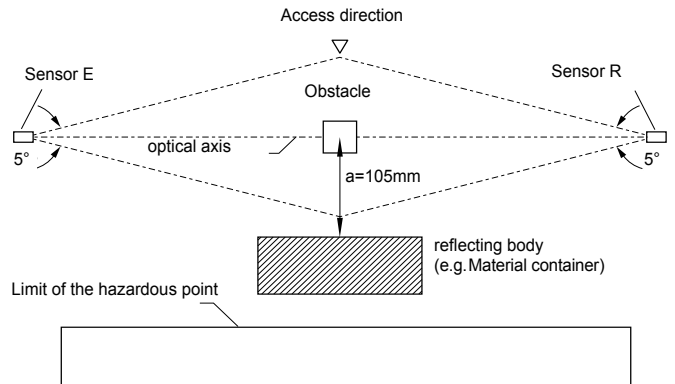
The formulae and calculation examples are related to the vertical set-up (refer to drawing) of the light curtain with regard to the hazardous point. Please observe the applicable harmonised EN standards and possible applicable national regulations.



The successor standards of the EN 999 for calculating the minimum distances of the safety guards with regard to the hazardous point are EN ISO 13855 and EN ISO 13857.

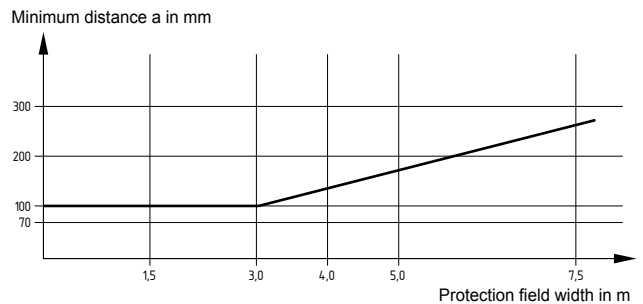
3.5.1 Minimum distance to reflecting surfaces

During the installation, the effects of reflecting surfaces must be taken into account. In case of an incorrect installation, interruptions of the protection field could possibly not be detected, which could lead to serious injuries. The hereafter-specified minimum distances with regard to reflecting surfaces (metal walls, floors, ceilings or parts) must be imperatively observed.



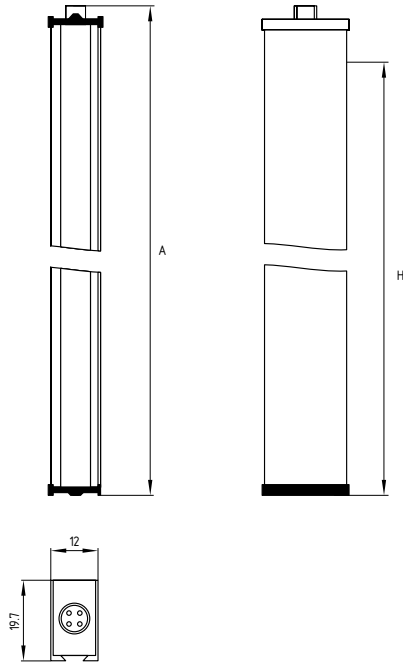
The minimum distance a is measured from the optical axis of both sensors to the reflecting body and depends on the protection field width (refer to table and diagram).

SF width	Minimum distance a
0.2 m ... 3.0 m	105 mm
3.5 m	123 mm
4.0 m	140 mm
4.5 m	158 mm
5.0 m	175 mm
6.0 m	210 mm



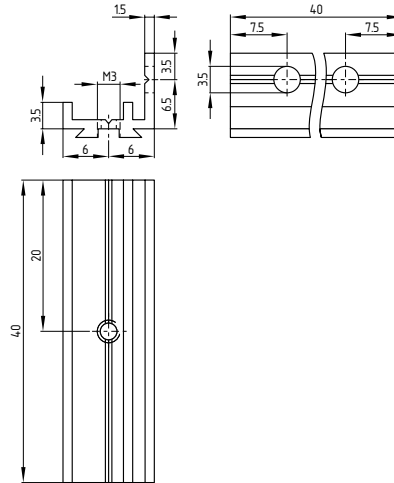
3.6 Dimensions

All measurements in mm.

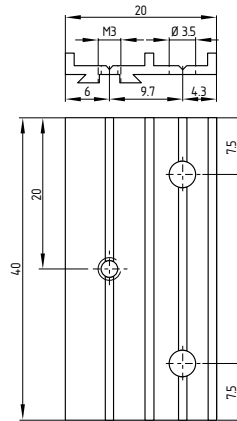


Type	H Protected height	A Sensor length with connector plug	Weight of the sensors E/R [kg]
SLC 430-E/R0236-30-RF	236	467.5	0.3
SLC 430-E/R0460-30-RF	460	691.5	0.4
SLC 430-E/R0684-30-RF	684	915.5	0.55
SLC 430-E/R0908-30-RF	908	1139.5	0.65
SLC 430-E/R1132-30-RF	1132	1363.5	0.8
SLC 430-E/R1356-30-RF	1356	1587.5	0.9
SLC 430-E/R1580-30-RF	1580	1811.5	1.0
SLC 430-E/R1804-30-RF	1804	2035.5	1.2

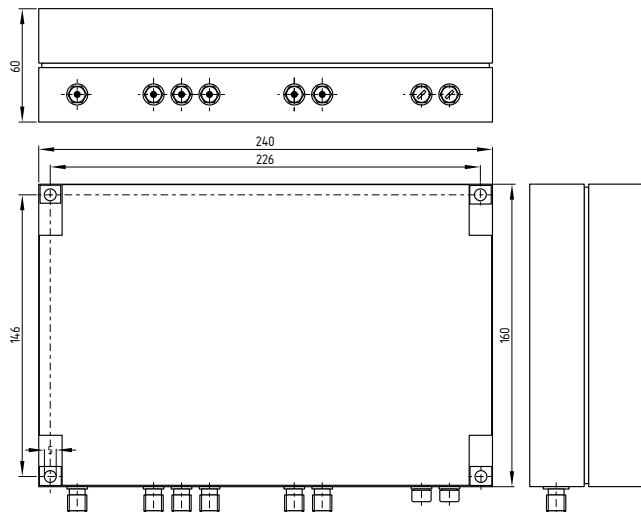
Mounting angle B90, angled



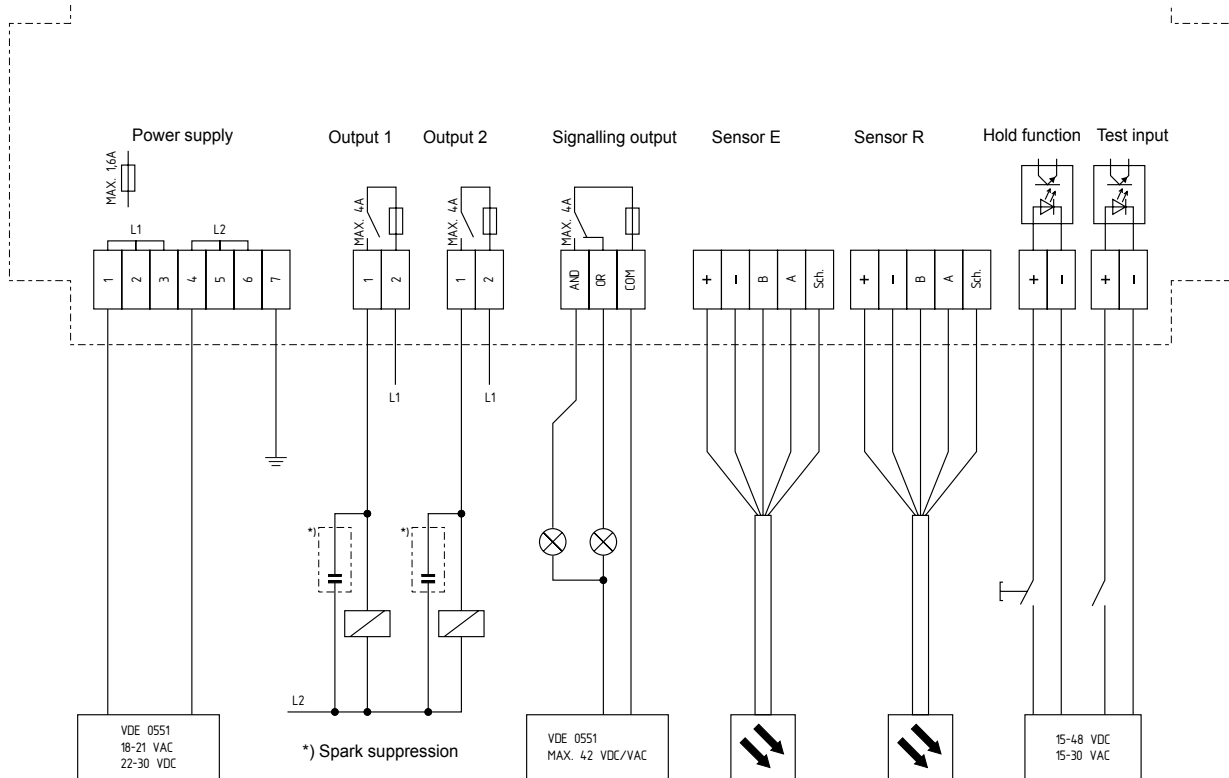
Mounting angle B180, straight



Safety monitoring module NSR-0605/08...64



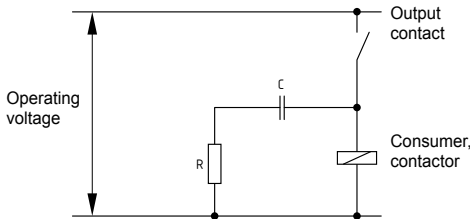
4. Electrical connection



Spark suppressors are imperatively required in case of inductive loads! They must be switched parallel to the inductance. A circuit parallel to the output contact is not permissible! When diodes are used as spark suppressors, switch-off will be delayed.

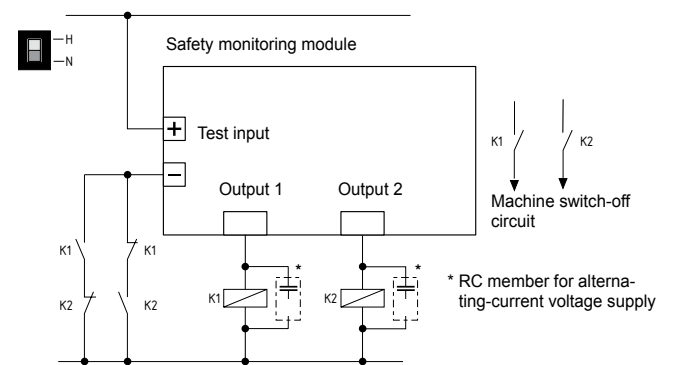
Approximate values for spark suppressors

Operating voltage	R	C
110 up to 230 V	220 Ω	0.22 μF
24 up to 48 V	100 Ω	2.2 μF



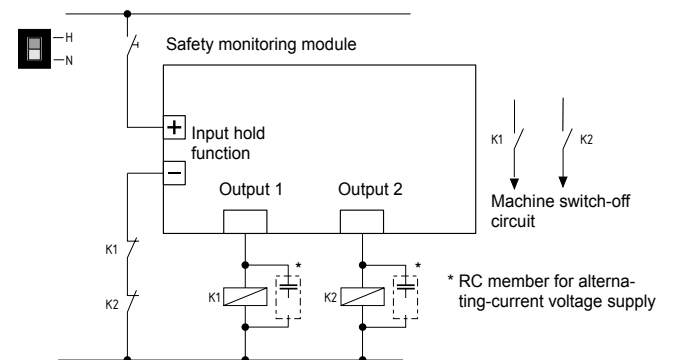
To avoid contact overload, the output circuits (output 1 / output 2) are individually fused. The maximum current-carrying capacity is 4 A, 250 VAC. Both safety outputs must not be wired in series! They must be wired 2-channel to the machine control. In addition to both main outputs output 1 / output 2, a signalling output is available. This is a potential-free switching output, which can be switched as power-to-lock either as power-to-unlock contact. In this way, the signalling output is used for the logical query of the protection field status. The current-carrying capacity is 4 A / 42 V.

4.1 Standard operation (protective mode) with contactor control



When the test input is wired, the restart time is approx. 1.5 s after enabling of the protection field.

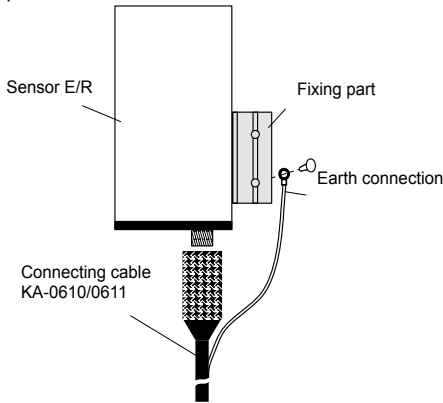
4.2 Restart interlock (manual reset) (hold function) with contactor control



The downstream relays K1 and K2 must have positive-action contacts.

Cable screen at mounting angle

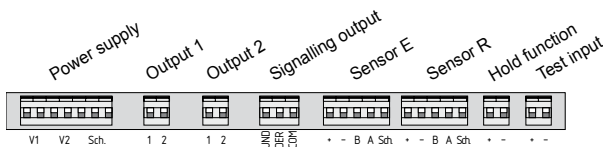
The ground connection laid together with the connecting cables must be connected as shown to the E and R sensors through the fixation part.



4.3 Connector configuration

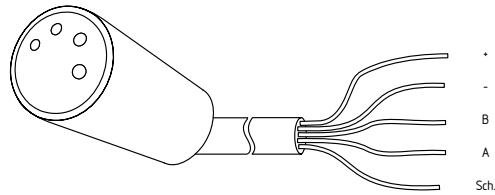
Safety monitoring module NSR-0605

Description	PIN	Meaning
Power supply	V 1	Connections 1, 2, 3 (connected)
	V 2	Connections 4, 5, 6 (connected)
	Sch.	GROUND
Sensors E / R	+	Supply voltage for sensor (brown)
	-	0V for sensor (green)
	B	Data signal for RS-485 bus (yellow)
	A	Data signal for RS-485 bus (white)
Signalling output	Sch.	Cable sheathing (black)
	AND	Switching signal ON - no interruption of the beams, no system failure
	OR	Switching signal OFF - beams interrupted or system failure
Input hold function	COM	common switching contact
	+	Connection for command device to suppress the holding function
	-	Connection for command device to suppress the holding function
Test input	+	Input signal to trigger the system test
	-	Input signal to trigger the system test
Output 1	1	Safety output OSSD 1, potential-free
	2	NO contact
Output 2	1	Safety output OSSD 2, potential-free
	2	NO contact



Connection for the E / R sensors:

Description	PIN	Color of the cable
Sensors E / R	+	BN (brown)
	-	GR (green)
	B	YE (yellow)
	A	WH (white)
	Sch.	BK (black)



5. Set-up and maintenance

5.1 Check before start-up

Prior to start-up, the following items must be checked by the responsible person.

1. Starting hazardous machine parts must be impossible as long as a body part of a person is inside of the protection field of the BWS.
2. The actuation of the BWS (protection field interruption) during the hazardous stage of the machine operation must cause the hazardous parts to be stopped or, where appropriate, to change to a different safe state before they can be reached by a body part of a person. It must be impossible to restart the hazardous parts before the BWS has completely returned to its normal state and the machine control elements have been reactivated.
3. Check the machine to ensure that there are no other mechanical or structural aspects preventing the machine from being stopped or from switching to a different, safe state through a switching command of the BWS.
4. Examine and check the machine control and the connections to the BWS to make sure that no changes have been made, which have a negative impact on the system and that suitable and appropriate changes have been adequately registered.

Switch the SLC on and check the operation in the following way:

The component performs a system test after the operating voltage has been switched on. After that, the outputs are enabled (if the protection field is not interrupted). The LED "OSSD ON" of the receiver is on.



In case of incorrect functioning, please follow the instructions listed in the chapter Fault diagnostic.

5.2 Maintenance



Do not use the SLC before the next inspection is terminated. An incorrect inspection can lead to serious and mortal injuries.

Conditions

For safety reasons, all inspection results must be archived. The operating principle of the SLC and the machine must be known in order to be able conducting an inspection. If the fitter, the planning technician and the operator are different persons, please make sure that the user has the necessary information at his disposal to be able conducting the maintenance.

5.3 Regular check

A regular visual inspection and functional test, including the following steps, is recommended:

1. The component does not have any visible damages.
2. The optics cover is not scratched or soiled.
3. Hazardous machinery parts can only be accessed by passing through the protection field of the SLC.
4. The staff remains within the detection area, when works are conducted on hazardous machinery parts.
5. The safety distance of the application exceed the mathematically calculated one.

Operate the machine and check whether the hazardous movement stops under the hereafter-mentioned circumstances.

6. Hazardous machine parts do not move when the protection field is interrupted.

7. The hazardous machine movement is immediately stopped, when the protection field is interrupted with the test rod immediately before the sensor E, immediately before the sensor R and in the middle between the sensor E and R.
8. No hazardous machine movement when the test rod is within the protection field.
9. Gefährliche Maschinenbewegung kommt zum Stillstand, wenn die Spannungsversorgung des SLC ausgeschaltet wird.

5.4 Half-yearly inspection

The following items must be checked every six months or when a machine setting is changed.

1. Machine stops or does not inhibit any safety function.
2. No machine modification or connection change, which affects the safety system, has taken place.
3. The outputs of the SLC are correctly connected to the machine.
4. The total response time of the machine does not exceed the response time calculated during the first putting into operation.
5. The cables, the connectors, the caps and the mounting angles are in perfect condition.

5.5 Cleaning

If the optics cover of the sensors is extremely soiled, the OSSD outputs can be disabled. Clean with a clean, soft cloth with exercising pressure.



The use of aggressive, abrasive or scratching cleaning agents, which could attack the surface, is prohibited.

6. Diagnostic

6.1 LED status information

Sensor R

Function	LED	Description
Restart interlock (manual reset)	yellow	Signal request by external command device (pushbutton)
OSSD OFF	red	Safety outputs OFF state
OSSD ON	green	Safety outputs ON state

Sensor E

Function	LED	Description
Transmitter ON	orange	Sensor E active

YE
RD
GN

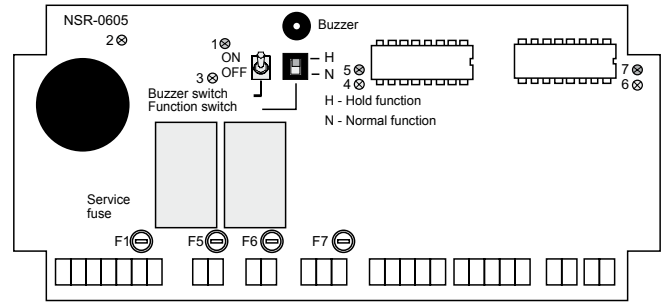
OR

6.2 Optical and acoustic signals in the control unit

The control unit includes an acoustic signal generator (buzzer) as well as multiple LED's.

The LED's n° 1, 2 and 3 (green) are permanently on when the operating voltage is present. The LED's 4 and 6 (yellow) and the LED's 5 and 7 (red) show the respective system condition. The acoustic signal is activated or deactivated by means of the buzzer switch.

The following tables show the different indication types for the system conditions. The acoustic signal however is only emitted, when the buzzer is switched on.



6.2.1 Protective mode / standard operation

Status of the protection field		
	no interruption	continuous interruption
red LED's (5; 7)	flashing	flashing
yellow LED's (4; 6)	continuously on	off
acoustic signal	none	short interval

6.2.2 Mode of operation restart interlock (manual reset) / hold function

A) Everytime the operating voltage is switched on

	Start interlock active	
red LED's (5; 7)	continuously on	
yellow LED's (4; 6)	off	
acoustic signal	constant	



The system waits for the command device to be actuated. For the system condition OSSD's ON, the protection field must be permanently clear after the actuation of the command device (hold function input) for 300 ms. If the protection field is clear (no IR beam interrupted), the system is enabled. If not, the LED's 4, 6 (yellow) will be off, the LED's 5, 7 (red) will be permanently on and a constant acoustic signal is emitted.

B) In operation

Status of the protection field		
	no interruption	continuous or previous interruption
red LED's (5; 7)	flashing	continuously on
yellow LED's (4; 6)	continuously on	off
acoustic signal	none	constant

6.3 Fault diagnostic

Failure/malfunction	Possible causes	Check and elimination
Although being clear, the protection field is not enabled after the actuation of the command device, indicator lamp green	No contact of the wiring from the output relay to the machine control	Check terminals and re-wire if necessary
	Defective fuse in output relay	Check fuse F5/F6
Although being clear, the protection field is not enabled after the actuation of the command device, indicator lamp red	Both or one of the sensors incorrectly wired to the safety-monitoring module	Check polarity and bus connection of the terminals
	Translucent surface of the sensors highly soiled	Clean surface
	Malfunction of one or more beams	Contact the customer service department
Although being clear, the protection field is not enabled after the actuation of the command device, no indication from indicator lamp	Safety-monitoring module's supply voltage missing	Check terminals and re-wire if necessary
	Malfunction of the fuse of the supply voltage input	Check fuse F1

Protection field clear, but no enabling

Normal operation - LED 5 (red) emits every 3 seconds the following flash impulses

Permanent flashing	Synchronisation error	Exchange safety-monitoring module
1 flash	Error self-test	Exchange safety-monitoring module
2 flashes	Communication error	Exchange sensor pair, check cable pair
3 flashes	Communication Sensor E	Check cable E, exchange sensor pair
4 flashes	Communication Sensor R	Check cable R, exchange sensor pair
5 flashes	False plant parameters	Check plant components assignment

7. Disassembly and disposal

7.1 Disassembly

The safety switchgear must be disassembled in a de-energised condition only.

7.2 Disposal

The safety switchgear must be disposed of in an appropriate manner in accordance with the national prescriptions and legislations.

8. Appendix

8.1 Contact


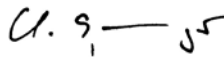

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8.2 EC Declaration of conformity

	
EC Declaration of conformity	
Translation of the original declaration of conformity	Safety Control GmbH Am Industriepark 33 84453 Mühldorf / Inn Germany
We hereby certify that the hereafter described safety components both in its basic design and construction conform to the applicable European Directives.	
Name of the safety component / type:	SLC 430
Description of the safety component:	Safety light curtain
Harmonised EC-Directives:	2006/42/EC EC-Machinery Directive 2004/108/EC EMC-Directive
Applied standards:	EN 61496-1:2004 + A1 2008 CLC/TS 61496-2:2006 EN ISO 13849-1:2008; PL e EN 62061:2005; SIL 3
Person authorised for the compilation of the technical documentation:	Ulrich Loss Möddinghofe 30 42279 Wuppertal
Notified body for the prototype test:	TÜV Nord Cert GmbH Langemarckstr.20 45141 Essen ID n°: 0044
EC- test certificate:	n° 44 205 10 555867 006
Place and date of issue:	Wuppertal, February 1, 2010
	
SLC 430-B-EN Authorised signature Christian Spranger Managing Director	Authorised signature Klaus Schuster Managing Director



The currently valid declaration of conformity can be downloaded from the internet at www.schmersal.net.



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