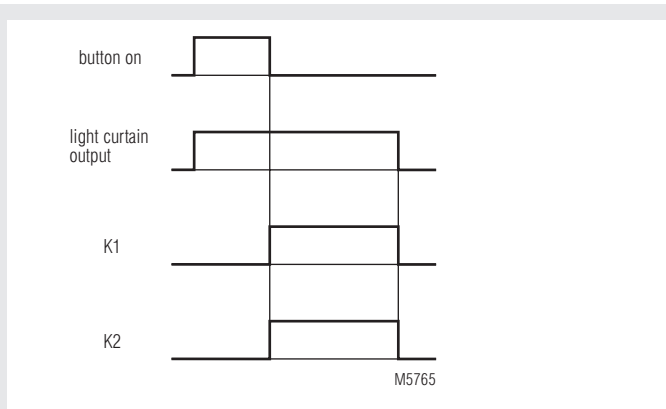


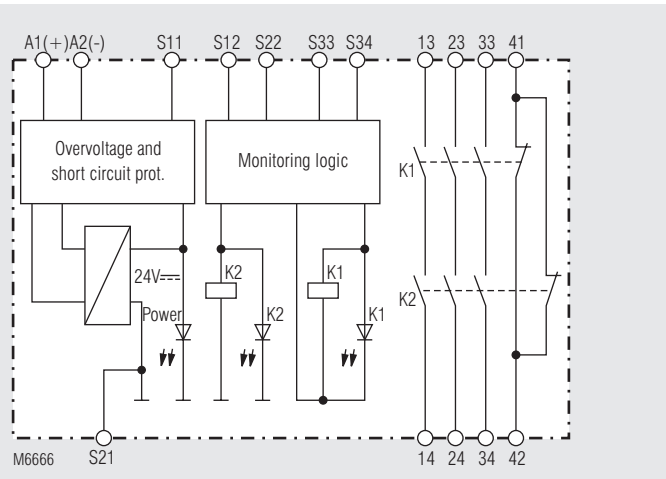
## SAFEMASTER Light Curtain Controller LG 5925/900



### Function Diagram



### Block Diagram



- According to
  - Performance Level (PL) e and category 4 to EN ISO 13849-1: 2008
  - SIL Claimed Level (SIL CL) 3 to IEC/EN 62061
  - Safety Integrity Level (SIL) 3 to IEC/EN 61508
  - Category 4 to EN 954-1
- For light curtains with symmetric or asymmetric outputs adjustment with switch S1
- Output: max. 4 NO contacts, see contacts
- Single and 2-channel operation
- Line fault detection on On-button
- Manual restart or automatic restart, switch S2
- LED indicator for state of operation
- LED indicator for channel 1 and 2 and power
- Removable terminal strips
- Wire connection: also 2 x 1.5 mm<sup>2</sup> stranded ferruled, or 2 x 2.5 mm<sup>2</sup> solid DIN 46 228-1/-2/-3/-4
- As option with pluggable terminal blocks for easy exchange of devices
  - with screw terminals
  - or with cage clamp terminals
- Width 22.5 mm

### Approvals and Markings



### Applications

- Protection of people and machines
- Light curtain controller for light curtains with selftesting (Type 4) according to IEC/EN 61 496-1

### Indicators

- upper LED: on when supply connected  
lower LEDs: on when relay K1 and K2 energized

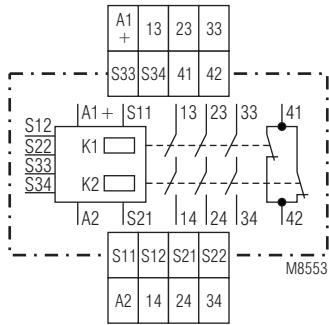
### Notes

Line fault detection on On-button:  
The line fault detection is only active when S12 and S22 are switched simultaneously. If The On-button is closed before S12, S22 is connected to voltage (also when line fault across On-Button), the output contacts will not close. A line fault across the On-button which occurred after activation of the relay, will be detected with the next activation and the output contacts will not close.

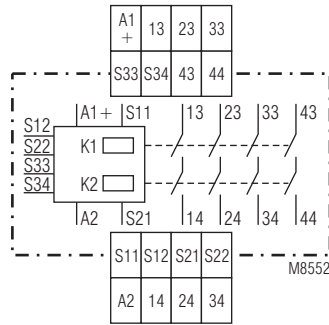
**ATTENTION ! If a line fault occurs after the voltage has been connected to S12, S22, the unit will be activated because this line fault is similar to the normal On-function.**

When using light curtains with asymmetric outputs (one output + switching, one output - switching) the MINUS switching output has to be connected to S22 and the Plus switching to S12.

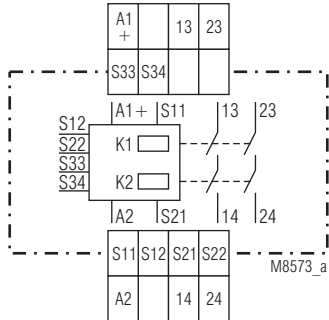
## Circuit Diagrams



LG 5925/900.48



LG 5925/900.04

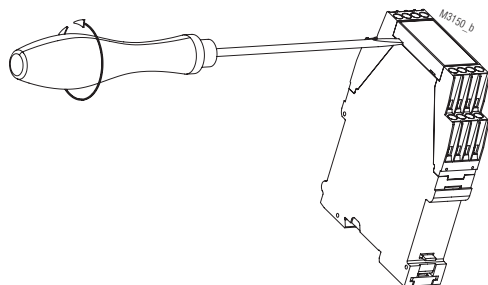
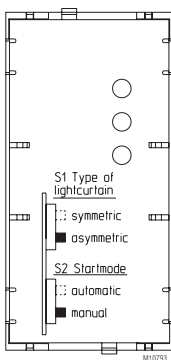


LG 5925/900.02

## Connection Terminals

Terminal designation	Signal designation
A1+	+ / L
A2	- / N
S12, S22, S33, S34	Inputs
S11, S21	Outputs
13, 14, 23, 24, 33, 34, 43, 44	Forcibly guided NO contacts for release circuit
41, 42	Forcibly guided indicator output

## Setting



Disconnect unit before setting of S1  
Drawing shows setting at the state of delivery

## Technical Data

### Input circuit

<b>Nominal Voltage <math>U_N</math>:</b>	DC 24 V
<b>Voltage range:</b>	0.9 ... 1.1 $U_N$
<b>Nominal consumption:</b>	DC approx. 1.7 W
<b>Min. Off-time:</b>	250 ms
<b>Control voltage on S11 at <math>U_N</math>:</b>	DC 22.5 V
<b>Control current typ. over S12, S22:</b>	35 mA at $U_N$
<b>Min. voltage on S12, S22 when relay activated:</b>	DC 21
<b>Short-circuit protection:</b>	Internal PTC
<b>Overvoltage protection:</b>	Internal VDR

### Output

#### Contacts

LG 5925.02:	2 NO contacts
LG 5925.04:	4 NO contact
LG 5925.48:	3 NO, 1 NC contact

The NO contacts are safety contacts.

**ATTENTION! The NC contacts 41-42 can only be used for monitoring**

#### Operate delay typ. at $U_N$ :

Manual start:	20 ms
automatic start:	350 ms

#### Release delay typ. at $U_N$ :

Disconnecting S12, S22:

forcibly guided

AC 250 V

DC: see limit curve for arc-free operation  
max. 8 A per contact  
see current limit curve

#### Thermal current $I_{th}$ :

#### Switching capacity

to AC 15:

NO contacts:	3 A / AC 230 V	IEC/EN 60 947-5-1
NC contacts:	2 A / AC 230 V	IEC/EN 60 947-5-1

to DC 13:

NO contacts:	2 A / DC 24 V	IEC/EN 60 947-5-1
NC contacts:	2 A / DC 24 V	IEC/EN 60 947-5-1

#### Electrical contact life

to 5 A, AC 230 V  $\cos \varphi = 1$ :

> 2.2 x 10<sup>5</sup> switching cycles

#### Permissible operating frequency:

max. 1 200 operating cycles / h

#### Short circuit strength

max. fuse rating:

10 A gL IEC/EN 60 947-5-1

line circuit breaker:

B 6 A

#### Mechanical life:

> 20 x 10<sup>6</sup> switching cycles

## General Data

#### Operating mode:

Continuous operation

#### Temperature range

operation:

- 15 ... + 55 °C

storage :

- 40 ... + 85 °C

#### altitude:

< 2.000 m

#### Clearance and creepage distances

Rated impuls voltage /

pollution degree:

4 kV / 2 (basis insulation) IEC 60 664-1

#### EMC

Interference suppression:

IEC/EN 62 061

Limit value class B

EN 55 011

#### Degree of protection

Housing:

IP 40

IEC/EN 60 529

Terminals:

IP 20

IEC/EN 60 529

#### Housing:

Thermoplastic with V0 behaviour

according to UL subject 94

#### Vibration resistance:

Amplitude 0.35 mm IEC/EN 60 068-2-6

frequency 10 ... 55 Hz

#### Climate resistance:

15 / 055 / 04

IEC/EN 60 068-1

#### Terminal designation:

EN 50 005

#### Wire connection

DIN 46 228-1/-2/-3/-4

## Technical Data

### Screw terminals (integrated):

1 x 4 mm<sup>2</sup> solid or  
1 x 2.5 mm<sup>2</sup> stranded ferruled (isolated) or  
2 x 1.5 mm<sup>2</sup> stranded ferruled (isolated) or  
2 x 2.5 mm<sup>2</sup> solid

Wire stripping length: 8 mm

### Plug in with screw terminals

max. cross section

for connection: 1 x 2.5 mm<sup>2</sup> solid or  
1 x 2.5 mm<sup>2</sup> stranded ferruled (isolated)

Wire stripping length: 8 mm

### Plug in with cage clamp terminals

max. cross section

for connection: 1 x 4 mm<sup>2</sup> solid or  
1 x 2.5 mm<sup>2</sup> stranded ferruled (isolated)

min. cross section

for connection: 0.5 mm<sup>2</sup>

Wire stripping length: 12 ±0.5 mm

### Wire fixing:

Plus-minus terminal screws M 3.5  
box terminals with wire protection or  
cage clamp terminals

Mounting: DIN rail IEC/EN 60 715

Weight: 220 g (DC unit)

## Dimensions

### Width x height x depth

LG 5925: 22.5 x 90 x 121 mm

LG 5925 PC: 22.5 x 111 x 121 mm

LG 5925 PS: 22.5 x 104 x 121 mm

## Safety Related Data

### Values according to EN ISO 13849-1:

Category:	4	
PL:	e	
MTTF <sub>g</sub> :	584.5	a (year)
DC <sub>avg</sub> :	99.0	%
d <sub>op</sub> :	220	d/a (days/year)
h <sub>op</sub> :	12	h/d (hours/day)
t <sub>Zyklus</sub> :	3600	s/Zyklus
	≥ 1	/h (hour)

### Values according to IEC/EN 62061 / IEC/EN 61508:

SIL CL:	3	IEC/EN 62061
SIL	3	IEC/EN 61508
HFT <sup>1)</sup> :	1	
DC <sub>avg</sub> :	99.0	%
SFF	99.7	%
PFH <sub>D</sub> :	2,66E-10	h <sup>-1</sup>
T <sub>1</sub> :	20	a (year)

<sup>1)</sup> HFT = Hardware-Failure Tolerance



The values stated above are valid for the standard type.

Safety data for other variants are available on request.

The safety relevant data of the complete system has to be determined by the manufacturer of the system.

## UL-Data

The safety functions were not evaluated by UL. Listing is accomplished according to requirements of Standard UL 508, "general use applications"

Nominal voltage U<sub>N</sub>: DC 24 V

Ambient temperature: -15 ... +55°C

### Switching capacity

#### LG 5925.04/900

Ambient temperature 35°C: Pilot duty B300  
8A 250Vac Resistive  
8A 24Vdc Resistive or G.P.

Ambient temperature 55°C: Pilot duty B300  
4A 250Vac Resistive  
4A 24Vdc Resistive or G.P.

#### LG 5925.02/900, LG 5925.48/900

Ambient temperature 45°C: Pilot duty B300  
8A 250Vac Resistive  
8A 24Vdc Resistive or G.P.

Ambient temperature 55°C: Pilot duty B300  
6A 250Vac Resistive  
6A 24Vdc Resistive or G.P.

### Wire connection:

60°C / 75°C copper conductors only

Screw terminals fixed: AWG 20 - 12 Sol/Str Torque 0.8 Nm

Plug in screw: AWG 20 - 14 Sol Torque 0.8 Nm

AWG 20 - 16 Str Torque 0.8 Nm

Plug in cage clamp: AWG 20 - 12 Sol/Str



Technical data that is not stated in the UL-Data, can be found in the technical data section.

## Standard type

LG 5925.48/900/61 DC 24 V

Article number: 0063278

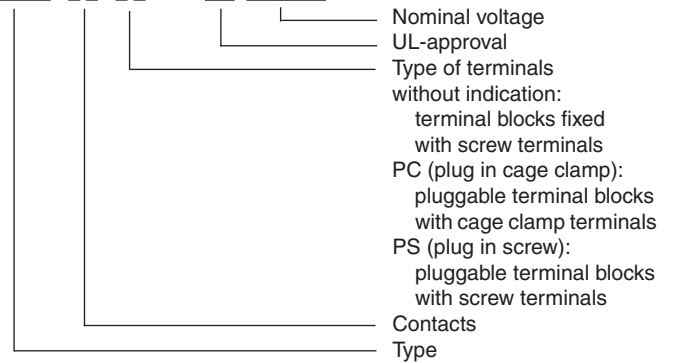
• Output: 3 NO contacts, 1 NC contact

• Nominal voltage U<sub>N</sub>: DC 24 V

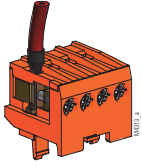
• Width: 22.5 mm

## Ordering Example

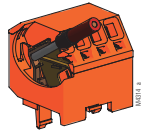
LG 5925 . . . . . /900 /61 DC 24 V



## Options with Pluggable Terminal Blocks



Screw terminal  
(PS/plugin screw)

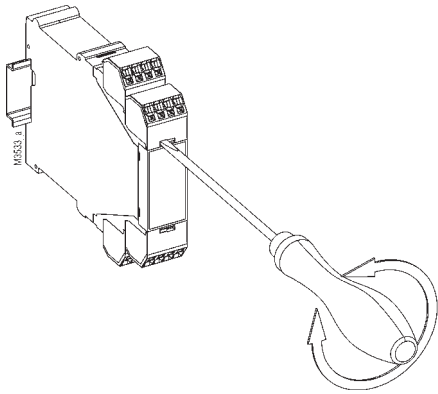


Cage clamp terminal  
(PC/plugin cage clamp)

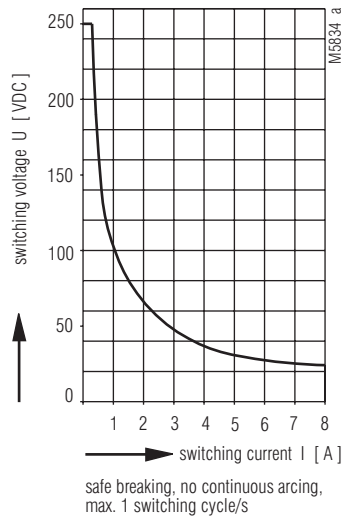
### Notes

Removing the terminal blocks with cage clamp terminals

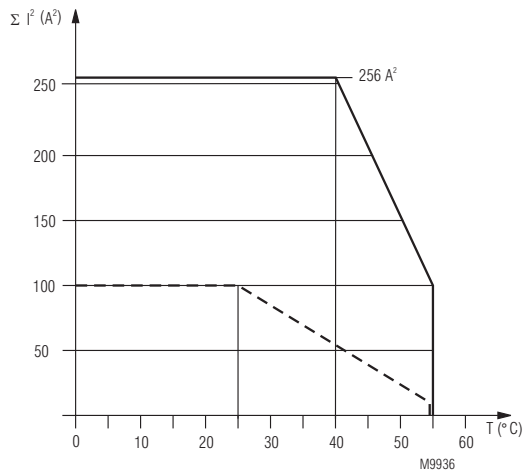
1. The unit has to be disconnected.
2. Insert a screwdriver in the side recess of the front plate.
3. Turn the screwdriver to the right and left.
4. Please note that the terminal blocks have to be mounted on the belonging plug in terminations.



## Characteristics



Arc limit curve under resistive load



— device mounted on distance with air circulation.  
max. current at 55°C over  
4 contactrows =  $5A \hat{=} 4 \times 5^2 A^2 = 100A^2$

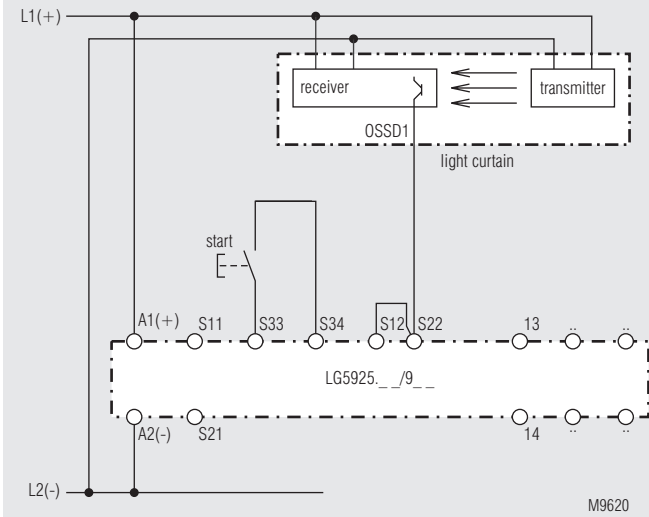
- - - device mounted without distance heated by  
devices with same load,  
max current at 55°C over  
4 contactrows =  $1A \hat{=} 4 \times 1^2 A^2 = 4A^2$

$$\Sigma I^2 = I_1^2 + I_2^2 + I_3^2 + I_4^2$$

$I_1, I_2, I_3, I_4$  - current in contactrows

Total current limit curve

## Application Examples

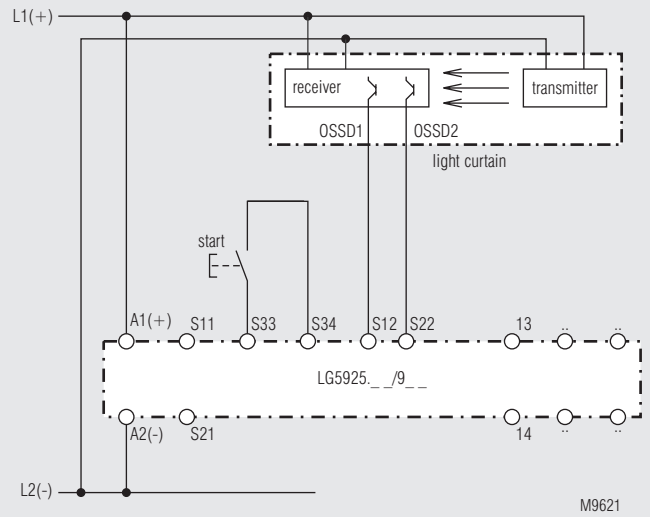


Single channel connection of light curtains with selftest according to EN 61 496-1.

**Note: Refer to "Unit programming"!**

Switches in pos.: S1 "symmetrical"  
S2 "manual"

With autostart link S33 - S34 set to "automatic".  
Suited up to SIL2, Performance Level d, Cat. 2



2channel connection of light curtains with selftest according to EN 61 496-1.

Cross fault detection in the light curtain.

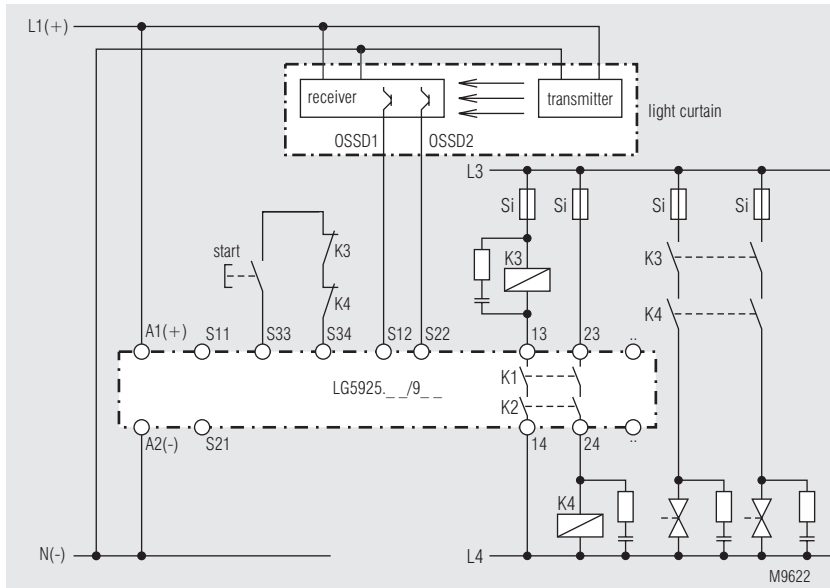
**Note: Refer to "Unit programming"!**

Switches in pos.:

S1: With symmetric outputs on light curtain switch S1 in position "symmetrical" with asymmetric outputs on light curtains switch S1 in position "asymmetric".

S2: "manual"

Suited up to SIL3, Performance Level e, Cat. 4



Contact reinforcement and contact receiver extension by external contactors

**Note: Refer to "Unit programming"!**

Switches in pos.:

Switches in pos.:

S1: With symmetric outputs on light curtain switch S1 in position "symmetrical" with asymmetric outputs on light curtains switch S1 in position "asymmetric".

S2: "manual"

Suited up to SIL3, Performance Level e, Cat. 4

