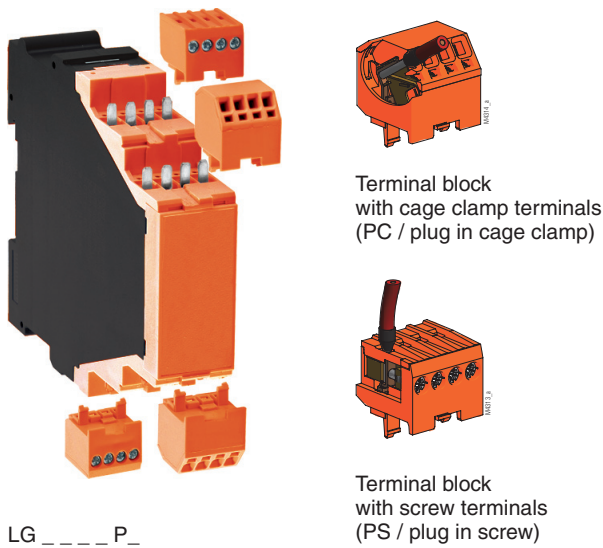




- According to
 - Performance Level (PL) e and category 4 to EN ISO 13849-1: 2008
 - SIL Claimed Level (SIL CL) 3 to IEC/EN 62061
 - Safety Integrity Level (SIL) 3 to IEC/EN 61508
 - Category 4 to EN 954-1
- when connected to a suitable safety module
- Control from semiconductor safety outputs (light curtains, e-stop, etc.) is also possible
- Redundant and forcibly guided contacts
- Output: max. 5 NO contacts or 4 NO contacts / 1 NC contact
- 1-channel or 2-channel connection
- LED indication for operation
- Removeable terminal strips
- Wire connection: also 2 x 1.5 mm² stranded ferruled, or 2 x 2.5 mm² 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

Options with Pluggable Terminal Blocks



Approvals and Marking



Applications

Contact multiplication of emergency-stop modules and safety door monitors.

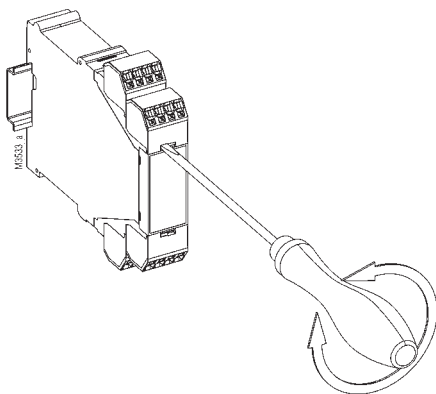
Indication

LG 5929	
LED K1/K2:	on, when operating voltage applied
LG 5929/100	
LED K1:	on, when relay K1 energized
LED K2:	on, when relay K2 energized

Notes

Removing the terminal blocks with cage clamp terminals

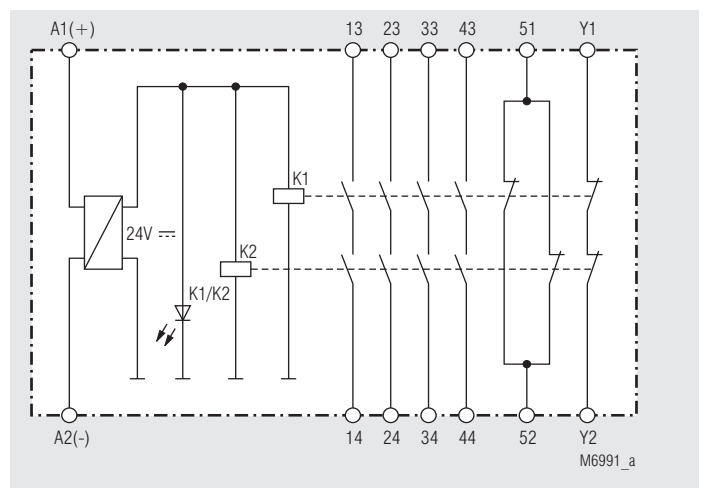
1. The unit has to be disconnected.
2. Insert a screwdriver in the side recess of the front plate.
3. Turn the screwdriver to the right and left.
4. Please note that the terminal blocks have to be mounted on the belonging plug in terminations.



Notes

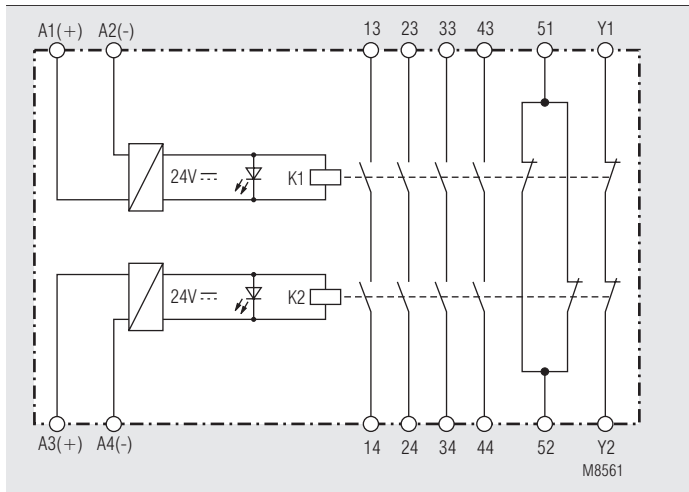
The extension module LG 5929 must only be used together with a safety unit e.g. LG 5925) that monitors the feedback circuit Y1/Y2 to achieve (SIL CL) 3 acc. to IEC/EN 62061, SIL 3 to IEC/EN 61508, Performance Level (PL) e, Category 4 to EN ISO 13849-1: 2008 and Category 4 to EN 954-1. Performance level (PL) e and category 4 to EN ISO 13849-1:2008 and Category 4 to EN 954-1.

Block Diagram

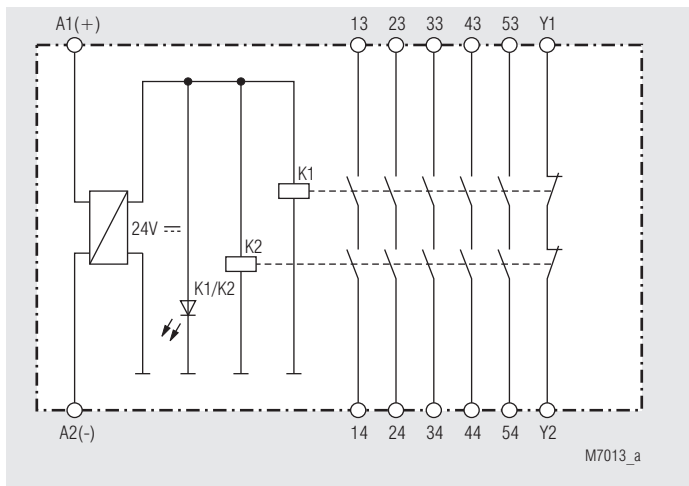


LG 5929.54

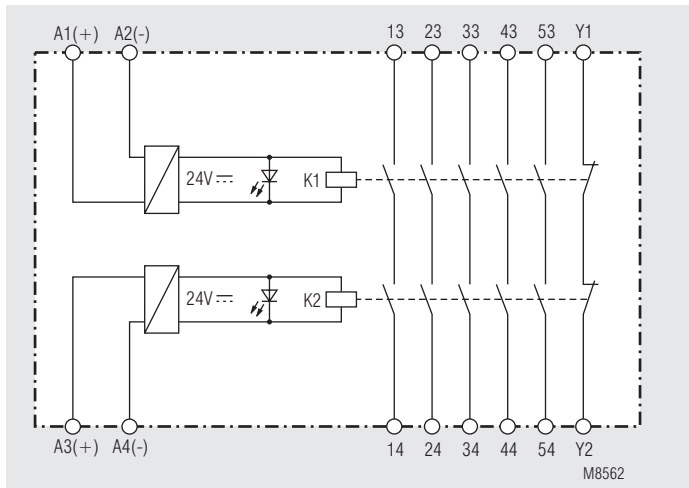
Block Diagrams



LG 5929.54/100

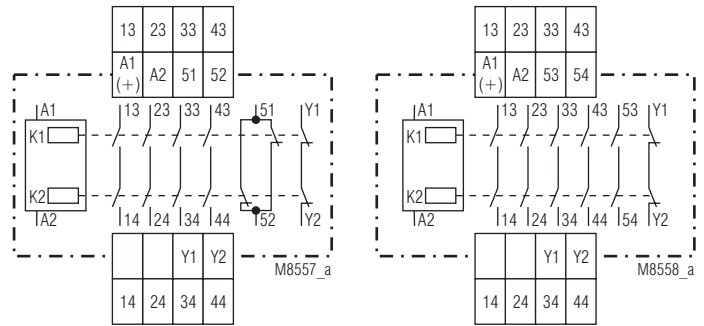


LG 5929.60



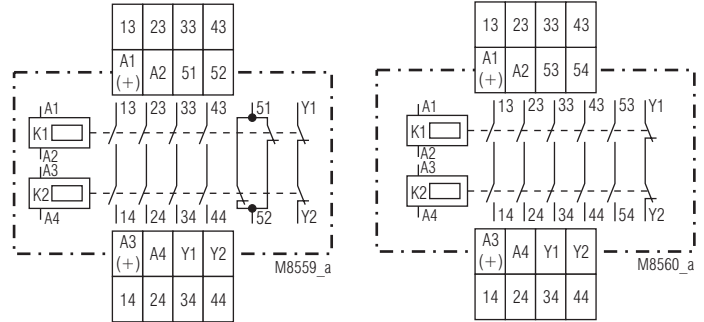
LG 5929.60/100

Circuit Diagrams



LG 5929.54

LG 5929.60



LG 5929.54/100

LG 5929.60/100

Technical Data

Input

Nominal voltage U_N : AC / DC 24 V, AC / DC 110 / 115 V, AC 110 / 115 V, AC 230 / 240 V

Voltage range: AC 0.85 ... 1.1 U_N

at 10% residual ripple:

at 48% residual ripple:

Nominal consumption at U_N DC 0.9 ... 1.1 U_N

AC / DC 24 V: 1.8 VA

AC / DC 110/115 V: 2.0 VA

AC 110/115 V, 230/240 V: 3.0 VA

Nominal frequency: 50 / 60 Hz

Control current:

at 24 V over 2 relays: 75 mA

Output

Contacts

LG 5929.60, LG 5929.60/100: 5 NO contacts, 1 NC contact for feed back circuit

LG 5929.54, LG 5929.54/100: 4 NO contacts, 1 NC contact

1 NC contact for feed back circuit

Operate time: max. 20 ms

Release time: max. 35 ms

Contact type: forcibly guided

Nominal output voltage: AC 250 V

Thermal current I_{th} : see total current limit curve max. 5 A

Switching capacity

to AC 15:

NO contact: 3 A / AC 230 V IEC/EN 60 947-5-1

NC contact: 2 A / AC 230 V IEC/EN 60 947-5-1

to DC 13:

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

NC contact: 2 A / DC 24 V IEC/EN 60 947-5-1

to DC 13:

NO contact: 4 A / 24 V at 0.1 Hz IEC/EN 60 947-5-1

NC contact: 4 A / 24 V at 0.1 Hz IEC/EN 60 947-5-1

Electrical life

to AC 15 at 2 A, AC 230 V: 10⁵ switching cycles IEC/EN 60 947-5-1

Permissible switching capacity:

1200 switching cycles / h

Short circuit strength

max. fuse rating: 10 A gL IEC/EN 60 947-5-1

max. line circuit breaker: B 6 A

Mechanical life:

20 x 10⁶ switching cycles

Technical Data

General Data

Operating mode: Continuous operation

Temperature range

operation: - 15 ... + 55 °C

storage : - 25 ... + 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

Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2

HF-irradiation: 10 V / m IEC/EN 61 000-4-3

HF-wire guided: 10 V IEC/EN 61 000-4-6

Fast transients: 4 kV IEC/EN 61 000-4-4

Surge voltages between

wires for power supply: 1 kV IEC/EN 61 000-4-5

0.5 kV IEC/EN 61 000-4-5

at AC/DC 24 V

between wire and ground: 4 kV IEC/EN 61 000-4-5

Interference suppression: 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:

Thermoplast 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

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

Wire connection

Screw terminals

(integrated):

1 x 4 mm² solid or

1 x 2.5 mm² stranded ferruled (isolated)

or

2 x 1.5 mm² stranded ferruled (isolated)

or 2 x 2.5 mm² solid

Insulation of wires

or sleeve length: 8 mm

Plug in with screw terminals

max. cross section

for connection:

1 x 2.5 mm² solid or

1 x 2.5 mm² stranded ferruled (isolated)

Insulation of wires

or sleeve length:

8 mm

Plug in with cage clamp terminals

max. cross section

for connection:

1 x 4 mm² solid or

1 x 2.5 mm² stranded ferruled

min. cross section

for connection:

0.5 mm²

Insulation of wires

or sleeve 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:

205 g

Dimensions

Width x height x depth

LG 5929: 22.5 x 90 x 121 mm

LG 5929 PC: 22.5 x 111 x 121 mm

LG 5929 PS: 22.5 x 104 x 121 mm

Safety Related Data

Values according to EN ISO 13849-1:

Category: 4

PL: e

MTTF_d: > 100 a (year)

DC_{avg}: 99.0 %

d_{op}: 365 d/a (days/year)

h_{op}: 24 h/d (hours/day)

t_{cycle}: 3.60E+03 s/cycle

≥ 1 /h (hour)

Technical Data

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

SIL CL: 3 IEC/EN 62061

SIL 3 IEC/EN 61508

HFT¹⁾: 1

DC_{avg}: 99.0 %

SFF: 99.7 %

PFH_D: 3.27E-10 h⁻¹

T_i: 20 a (year)

¹⁾ 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"

Switching capacity:

Ambient temperature 45°C: Pilot duty B300
5A 250Vac Resistive
5A 24Vdc Resistive or G.P.

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

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 5929.60/61 AC/DC 24 V 50/60 Hz

Article number: 0064092

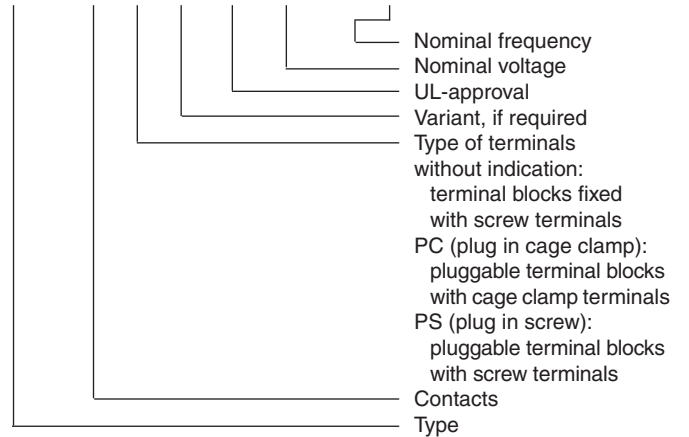
- Output: 5 NO contacts,
1 NC contact for feed back circuit
- Nominal voltage U_N: AC/DC 24 V
- Width: 22.5 mm

Variant

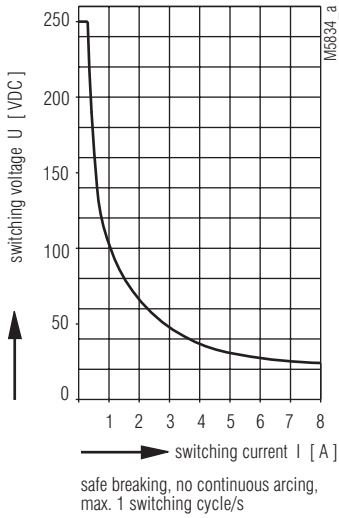
LG 5929.___/100: for 2-channel connection, with 2 LEDs

Ordering example for variant

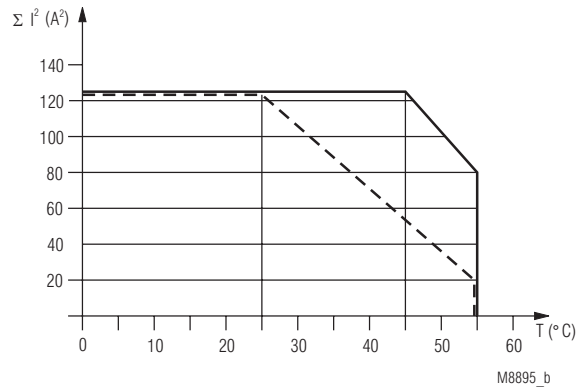
LG 5929. ___ /100 /61 AC/DC 24 V 50/60 Hz



Characteristics



Arc limit curve under resistive load

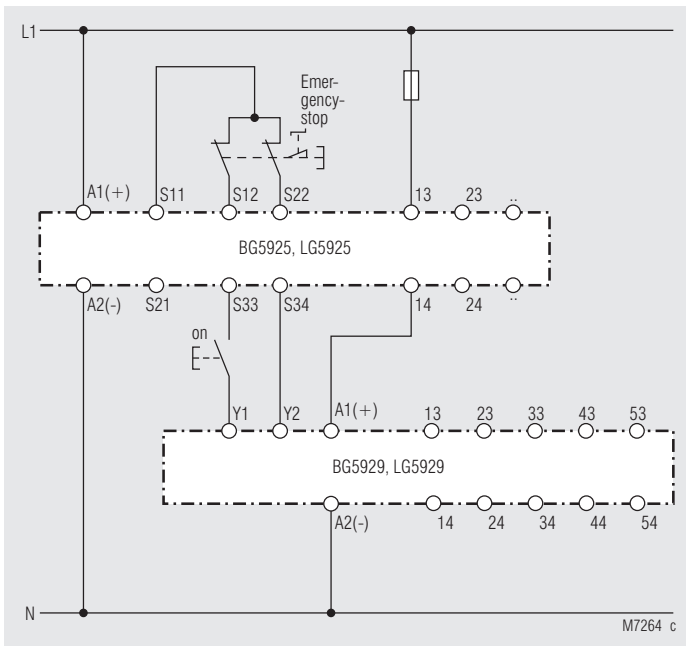


quadratic total current

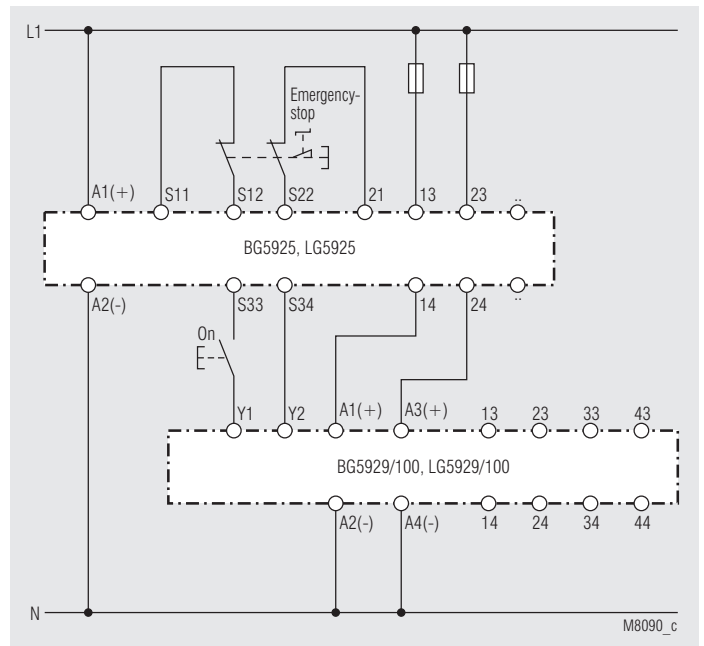
$$\Sigma I_{th}^2 = I_{th1}^2 + I_{th2}^2 + I_{th3}^2 + I_{th4}^2 + I_{th5}^2$$

$I_{th1}, I_{th2}, I_{th3}, I_{th4}, I_{th5}$: thermal current I_{th} on contact rows

Application Examples



LG 5929, suited up to SIL3, Performance Level e, Cat. 4



Contact multiplication with LG 5929/100, suited up to SIL3, Performance Level e, Cat. 4