Safety technique

Emergency Stop Module LG 5925, LH 5925 safemaster

Now with selectable Plugin technology

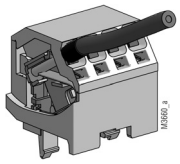
DOLD

0243372

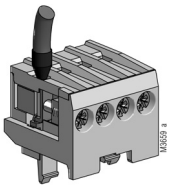
LG 5925 LH 5925

Options with plugable terminal blocks

LG _ _ _ _ P_



Terminal block
with cage clamp terminals
(PC / plugin cageclamp)

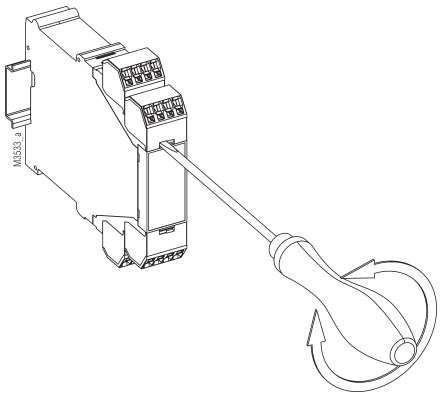


Terminal block
with screw terminals
(PS / plugin screw)

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 can only be mounted on the belonging plug in terminations.



- According to EU directive for machines 98/37/EG
- According to IEC/EN 60 204-1, VDE 0113 part 1 (1998-11)
- Safety category 4 according to EN 954-1
- Output: max. 8 NO contacts, see contacts
- Single and 2-channel operation
- Line fault detection on On-button
- Manual restart or automatic restart when connecting the supply voltage, switch S2
- With or without cross fault monitoring in the E-stop loop, switch S1
- LED indicator for state of operation
- LED indicator for channel 1 and 2
- Removable 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 plugable terminal blocks for easy exchange of devices
  - with screw terminals
  - or with cage clamp terminals
- LG 5925: 22,5 mm width
  LH 5925: 45 mm width

Approvals and marking

BG * ET | SA * C US Canada/USA | CE

* LH 5925 is a combination module consisting of 2 approved devices: LG 5925 and LG 5929

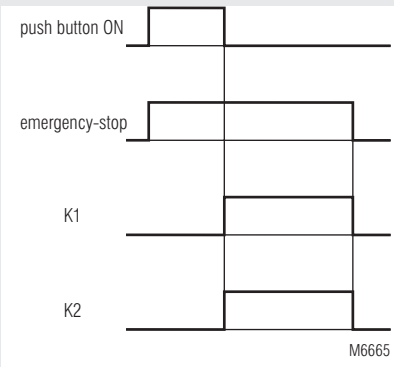
Applications

Protection of people and machines
- Emergency stop circuits on machines
- Monitoring of safety gates

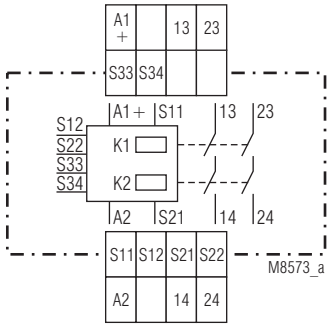
Indicators

upper LED:	on when supply connected
LG 5925 lower LEDs:	on when relay K1 and K2 energized
LH 5925 lower LEDs:	on when relay K1/K2 and K2/K4 energized

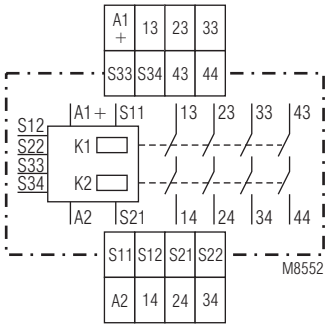
Function diagram



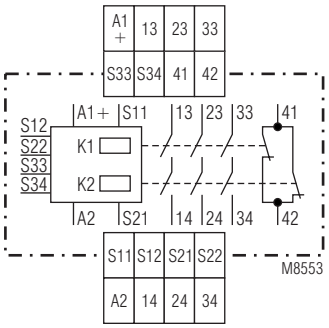
Circuit diagrams



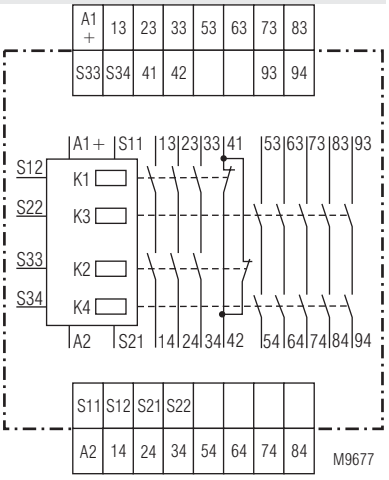
LG 5925.02



LG5925.04

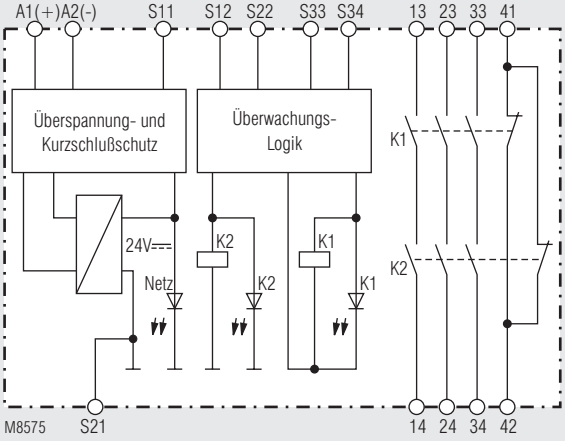


LG5925.48

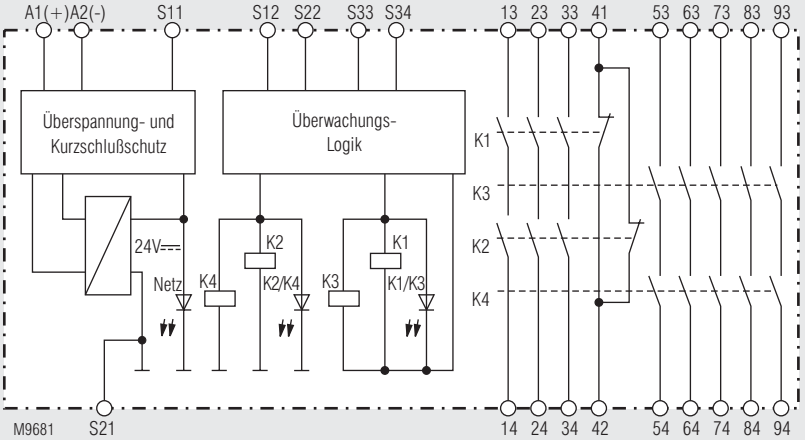


LH 5925.69

Block diagram

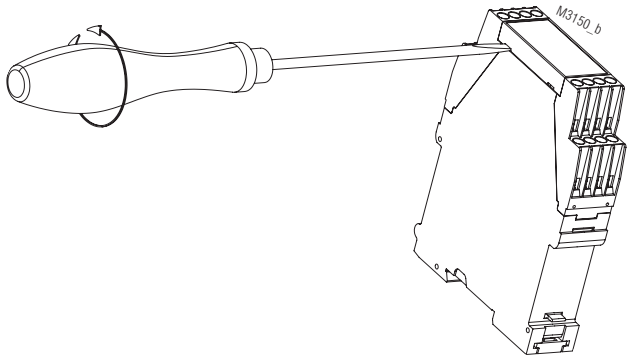


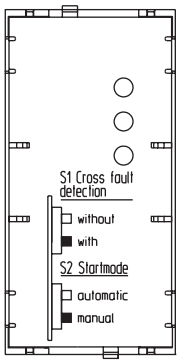
LG 5925



LH 5925

Geräteprogrammierung





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

Notes

The category of a safety relevant part of a control circuit according to EN 954-1 can be different to the category 4 of the E-stop module LG 5925 depending on the external connections.
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.

The gold plated contacts of the LG 5925 mean that this module is also suitable for switching small loads of 1 mVA - 7 VA, 1 mW - 7 W in the range 0.1 - 60 V, 1 - 300 mA. The contacts also permit the maximum switching current. However since the gold plating will be burnt off at this current level, the device is no longer suitable for switching small loads after this.
The terminal S21 permits the operation of the device in IT-systems with insulation monitoring, serves as a reference point for testing the control voltage and is used to connect the E-stop loop when cross fault monitoring is selected.
Connecting the terminal S21 to the protective ground bridges the internal short-circuit protection of Line A2 (-). The short-circuit protection of line A1 (+) remains active.
To alter the functions automatic start - manual start and with or without cross fault monitoring, the switches S1 and S2 are used. These are located behind the front cover (see unit programming).
The setting with or without cross fault monitoring on E-stop buttons is made with S1. S2 is used to change between automatic an manual restart. On automatic start also the terminals S33 - S34 have to be linked. For connection please see application examples.

ATTENTION - AUTOMATIC START!

According to IEC/EN 60 204-1 part 9.2.5.4.2 and 10.8.3 it is not allowed to restart automatically after emergency stop. Therefore the machine control has to disable the automatic start after emergency stop.

Technical data

Input circuit

Nominal Voltage U_N:	AC / DC 24 V, AC 230 V other voltages on request
Voltage range	
AC / DC	
at 10% residual ripple:	0.9 ... 1.1 U_N
AC:	0.85 ... 1.1 U_N
Nominal consumption at U_N:	
LG 5925:	DC approx. 1.5 W AC approx. 3.7 VA
LH 5925:	DC approx. 3 W AC approx. 4 VA
Min. Off-time:	250 ms
Control voltage on S11 at U_N:	DC 22 V at AC/DC units DC 24 V at AC units
Control current typ. over S12, S22:	25 mA at U_N
Min. voltage on S12, S22 when relay activated:	DC 20 V at DC units DC 19 V at AC units
Short-circuit protection:	Internal PTC
Overvoltage protection:	Internal VDR

Output

Contacts	
LG 5925.02:	2 NO contacts
LG 5925.04:	4 NO contact
LG 5925.48:	3 NO, 1 NC contact
LH 5925.69:	8 NO, 1 NC contact
	The NO contacts are safety contacts. **ATTENTION! The NC contacts 41-42 can only be used for monitoring.**

Technical data

Operate delay typ. at U_N:		
Manual start:	30 ms	
automatic start:	350 ms	
Release delay typ. at U_N:		
Disconnecting the supply:	150 ms at AC units 50 ms at DC units	
Disconnecting S12, S22:	130 ms at AC units 50 ms at DC units	
Contact type:	Relay positive guided	
Nominal output voltage:	AC 250 V DC: see limit curve for arc-free operation	
Switching of low loads:	≥ 100 mV	
(contact 5 µ Au)	≥ 1 mA	
Thermal current I_{th}:	max. 8 A per contact see current limit curve	
Switching capacity		
to AC 15:	3 A / AC 230 V for NO contacts	IEC/EN 60 947-5-1
	2 A / AC 230 V for NC contacts	IEC/EN 60 947-5-1
to DC 13:	4 A / DC 24 V	IEC/EN 60 947-5-1
	0,5 A / 110 V for NO contacts	IEC/EN 60 947-5-1
	4 A / 24 V for NC contacts	IEC/EN 60 947-5-1
to DC 13 NC contacts:	8 A / 24 V > 25 x 10^3 ON: 0.4 s, OFF: 9.6 s	
Electrical contact life		
to 5 A, AC 230 V cos φ = 1:	> 1.5 x 10^5 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 10^6 switching cycles	

General data

Operating mode:	Continuous operation	
Temperature range:	- 15 ... + 55 °C	
Clearance and creepage distances		
Overvoltage category / contamination level:	4 kV / 2	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
Fast transients:	2 kV	IEC/EN 61 000-4-4
Surge voltages between		
wires for power supply:	1 kV, 0.5 kV 24 V at AC/DC units	IEC/EN 61 000-4-5
between wire and ground:	2 kV	IEC/EN 61 000-4-5
Interference suppression:	Limit value class B	EN 55 011
Degree of protection:	Housing: IP 40 Terminals: IP 20	IEC/EN 60 529 IEC/EN 60 529
Housing:	Thermoplastic with V0 behaviour according to UL subject 94	
Vibration resistance:	Amplitude 0.35 mm frequency 10 ... 55 Hz	IEC/EN 60 068-2-6
Climate resistance:	15 / 055 / 04	IEC/EN 60 068-1
Terminal designation:		EN 50 005
Wire connection		DIN 46 228-1/-2/-3/-4
Screw terminals (integrated):	1 x 4 mm² solid or 1 x 2.5 mm² stranded ferruled or 2 x 1.5 mm² stranded ferruled or 2 x 2.5 mm² solid	
Insulation of wires or sleeve length:	8 mm	
Plugin with screw terminals		
max. cross section for connection:	1 x 2.5 mm² solid or 1 x 2.5 mm² stranded ferruled	
Insulation of wires or sleeve length:	8 mm	

Technical data

Plugin 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:	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
LH 5925:	22.5 x 90 x 121 mm

Standard type

LG 5925.48 AC/DC 24 V

Article number:	0056025
• Output:	3 NO contacts, 1 NC contact
• Nominal voltage U_N:	AC/DC 24 V
• Width:	22.5 mm

Variant

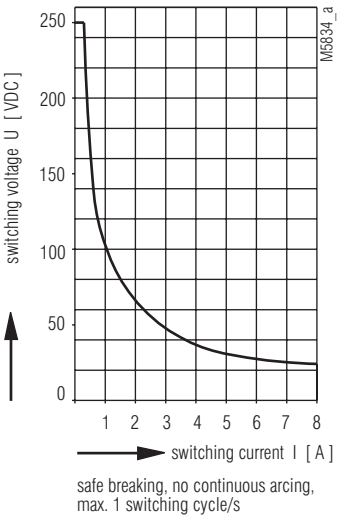
LG 5925. _ _ / 60: with CSA-approval

Ordering example for variants

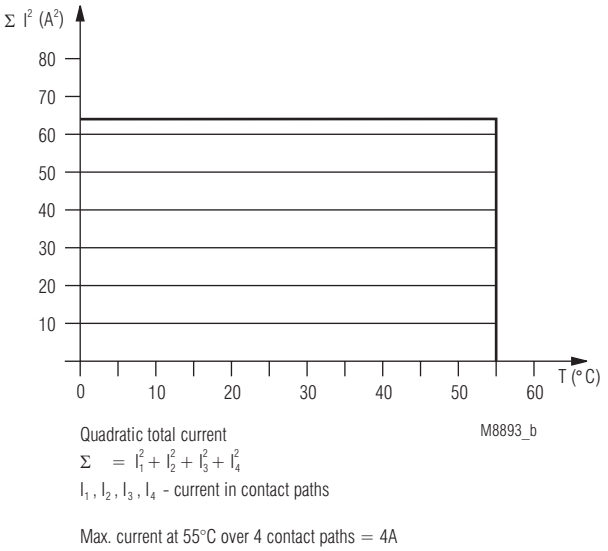
L_ 5925 ._ _ /60 PS DC 24 V

- DC 24 V: Nominal voltage
- PS: Type of terminals
  without indication: terminal blocks fixed, with screw terminals
  PC (plugin cage clamp): plugable terminal blocks with cage clamp terminals
  PS (plugin screw): plugable terminal blocks with screw terminals
- /60: Variant, if required
- _ _: Contacts
- L_: G: Width 22,5 mm
  H: Width 45 mm

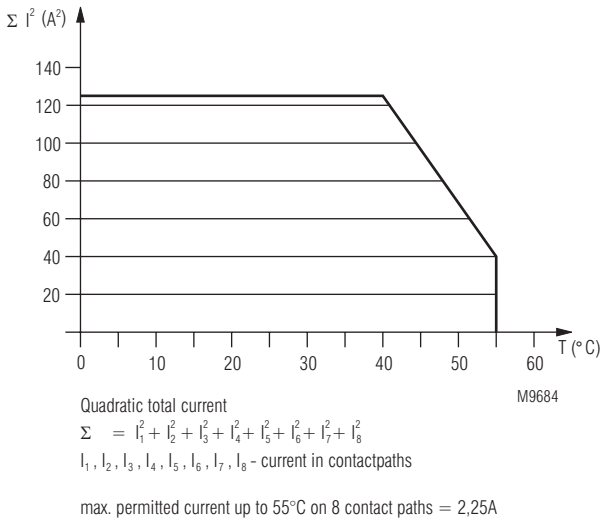
Characteristics



Arc limit curve under resistive load

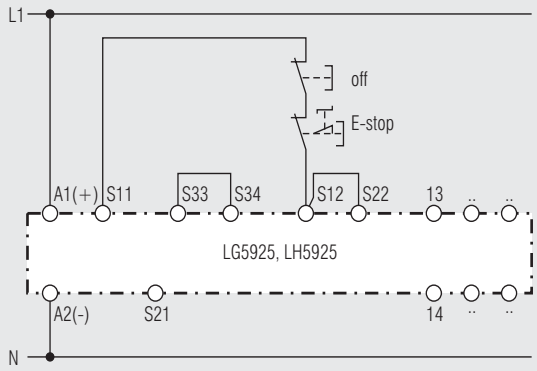


Total current limit curve LG 5925

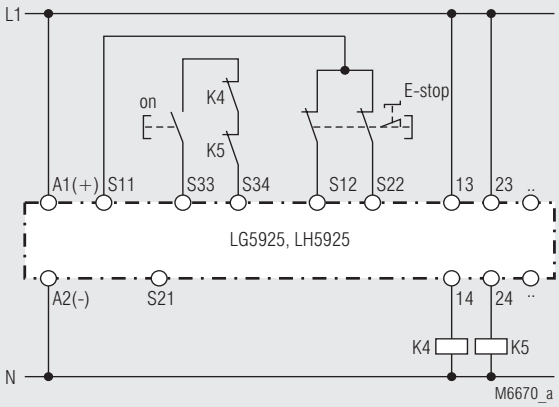


Total current limit curve LH 5925

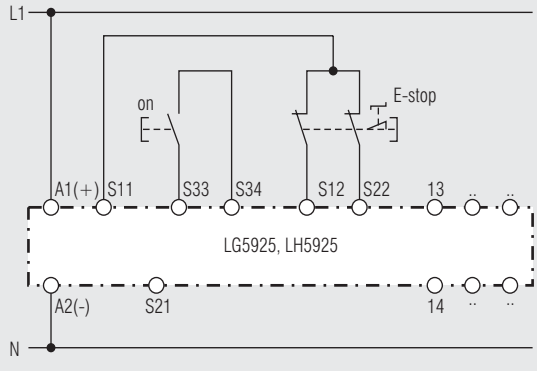
Application examples



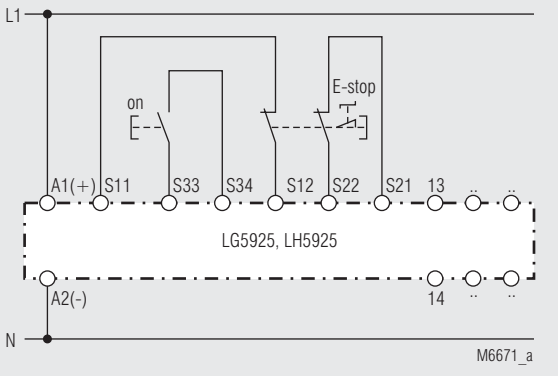
Single channel emergency stop circuit. This circuit does not have any redundancy in the emergency-stop control circuit.
Note: Refer to "Unit programming"!
Switches in pos.: S1 no cross fault detection
S2 automatic start



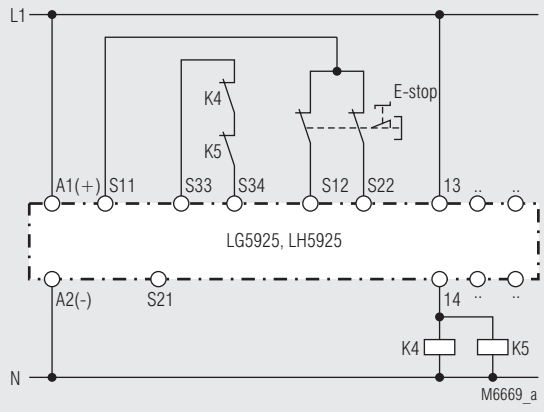
Contact reinforcement by external contactors, 2-channel controlled.
The output contacts can be reinforced by external contactors with positive guided contacts for switching currents > 8 A.
Functioning of the external contactors is monitored by looping the NC contacts into the closing circuit (terminals S33-S34).
Note: Refer to "Unit programming"!
Switches in pos.: S1 no cross fault detection
S2 manual start



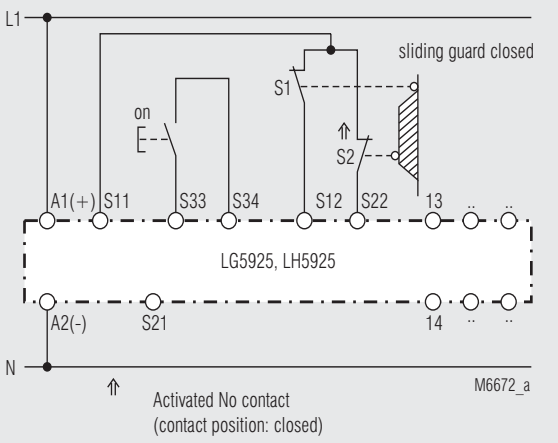
2-channel emergency stop circuit without cross fault monitoring.
Note: Refer to "Unit programming"!
Switches in pos.: S1 no cross fault detection
S2 manual start



2-channel emergency stop circuit with cross fault detection
Note: Refer to "Unit programming"!
Switches in pos.: S1 cross fault detection
S2 manual start



Contact reinforcement by external contactors controlled by one contact path.
Note: Refer to "Unit programming"!
Switches in pos.: S1 no cross fault detection
S2 automatic start



2-channel safety gate monitoring.
Note: Refer to "Unit programming"!
Switches in pos.: S1 no cross fault detection
S2 manual start