

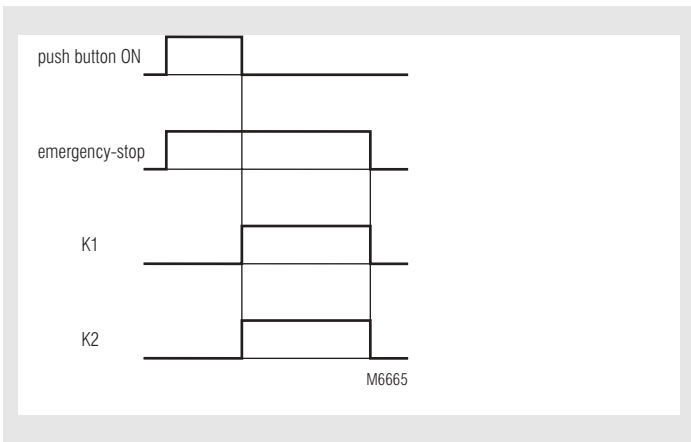
Emergency Stop Module LG 5925
safemaster

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- 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. 4 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 (isolated), DIN 46 228-1/-2/-3/-4 or 2 x 2,5 mm² stranded ferruled DIN 46 228-1/-2/-3/-4
- Width 22,5 mm

Function diagram



Approvals and marking



* see variants

Applications

- Protection of people and machines
- Emergency stop circuits on machines
 - Monitoring of safety gates
 - Control unit for lightbars

Indicators

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

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. For devices of safety category 4 (DIN EN 954-1) with contact outputs, the safety function has to be operated at least once a month.

Line fault detection on On-button:

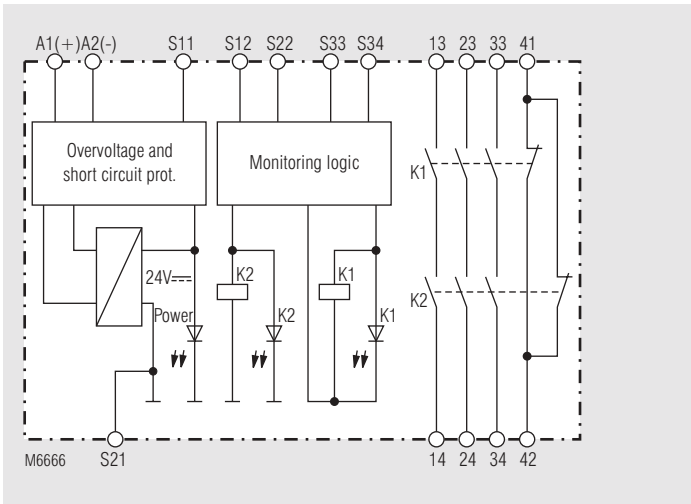
The line fault detection is only active when S12 and S22 are switched simultaneously. If The On-button is closed before S12, S22 is connected to voltage (also when line fault across On-Button), the output contacts will not close. A line fault across the On-button which occurred after activation of the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

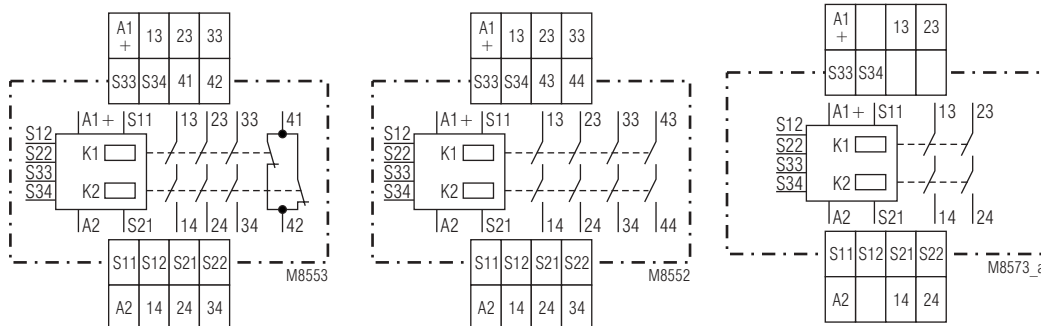
The gold plated contacts of the LG 5925 mean that this module is also suitable for switching small loads of 1 mVA - 7 VA, 1 mW - 7 W in the range 0,1 - 60 V, 1 - 300 mA. The contacts also permit the maximum switching current. However since the gold plating will be burnt off at this current level, the 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.

Block diagram



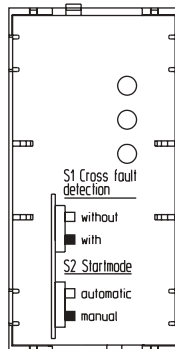
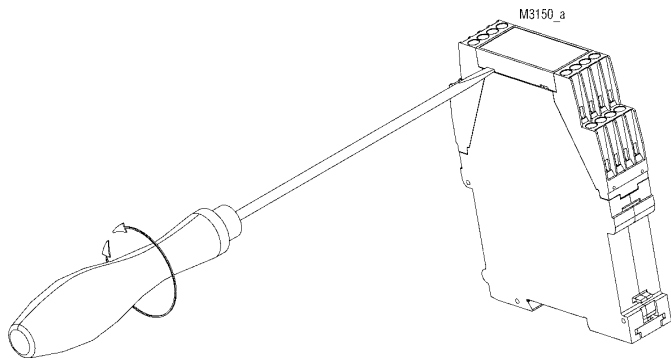
Circuit diagrams



LG5925.48

LG5925.04

LG5925.02



M8892

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

Notes

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:	DC approx. 1,5 W AC approx. 3,7 VA
Min. Off-time:	250 ms
Control voltage on S11 at U_N:	DC 22 V at AC/DC units DC 19 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 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:	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

Technical data

Switching of low loads: (contact 5 μ Au)	≥ 100 mV ≥ 1 mA
Thermal current I_{th}:	max. 5 A per contact see current limit curve
Switching capacity	
to AC 15:	3 A / AC 230 V IEC/EN 60 947-5-1 for NO contacts 2 A / AC 230 V IEC/EN 60 947-5-1 for NC contacts
to DC 13:	4 A / DC 24 V IEC/EN 60 947-5-1 0,5 A / 110 V IEC/EN 60 947-5-1 for NO contacts 4 A / 24 V IEC/EN 60 947-5-1 for NC contacts
Electrical contact life	
to 5 A, AC 230 V $\cos \varphi = 1$:	$> 1,5 \times 10^5$ switching cycles
to DC 13	
NO contacts	
2 contacts in series:	8 A / 24 V $> 25 \times 10^3$ ON: 0,4 s, OFF: 9,6 s
Permissible operating frequency:	
	max. 1 200 operating cycles / h
Short circuit strength	
max. fuse rating:	6 A gL IEC/EN 60 947-5-1
line circuit breaker:	C 8 A
Mechanical life:	$> 20 \times 10^6$ 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 IEC/EN 61 000-4-5 24 V at AC/DC units
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 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:	1 x 4 mm ² solid or 1 x 2,5 mm ² stranded ferruled (isolated) or 2 x 1,5 mm ² stranded ferruled (isolated) DIN 46 228-1/-2/-3/-4 or 2 x 2,5 mm ² solid DIN 46 228-1/-2/-3/-4

Technical data

Wire fixing: Plus-minus terminal screws M 3,5 box terminals with self-lifting clamping piece

Mounting: DIN rail IEC/EN 60 715

Weight: 220 g (DC unit)

Dimensions

Width x height x depth: 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 : DC 24 V
- Width: 22,5 mm

Ordering example

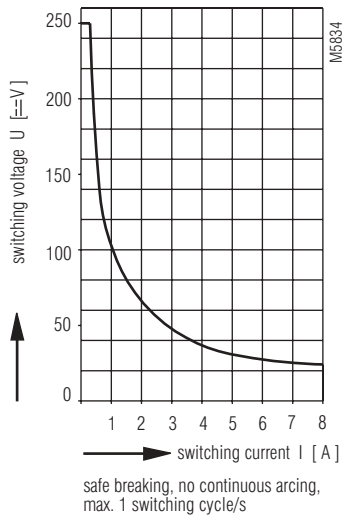
LG 5925 AC / DC 24 V

Nominal voltage

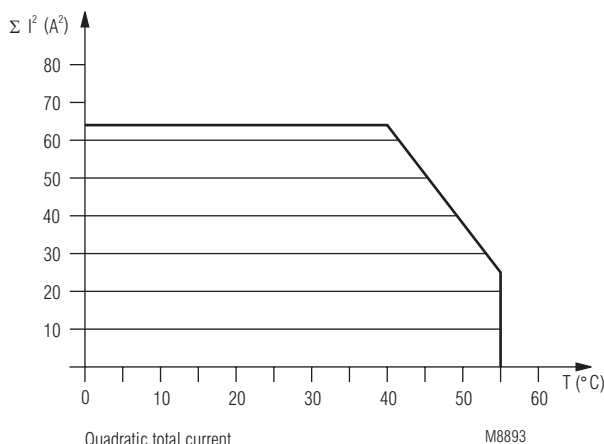
Contacts

Type

Characteristics



Arc limit curve under resistive load



Quadratic total current

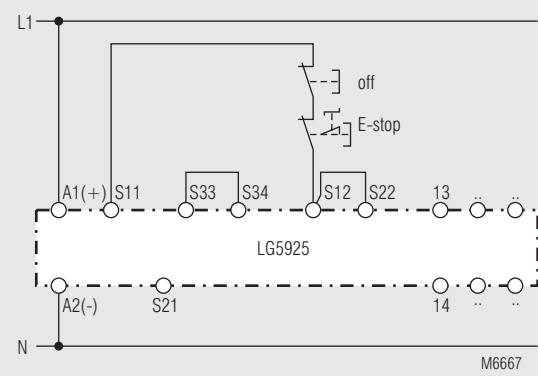
$$\Sigma = I_1^2 + I_2^2 + I_3^2 + I_4^2$$

I_1, I_2, I_3, I_4 - current in contact paths

Max. current at 55°C over 4 contact paths = 2,5A

Total current limit curve

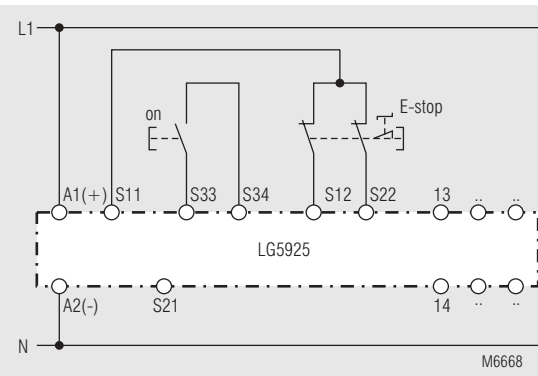
Application examples



Single channel emergency stop circuit. This circuit does not have any redundancy in the emergency-stop control circuit.

Note: Refer to "Unit programming"!

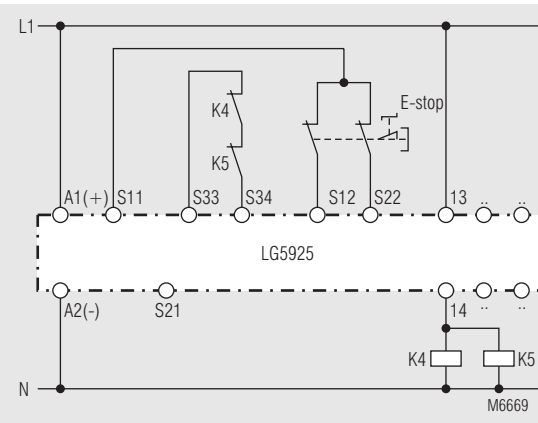
Switches in pos.: S1 no cross fault detection
S2 manual start



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

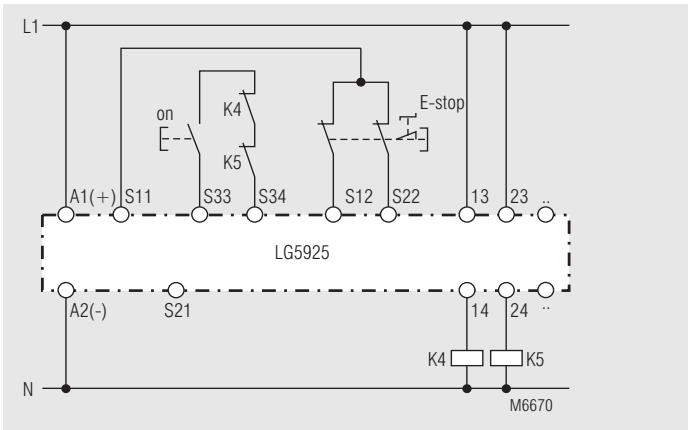


Contact reinforcement by external contactors controlled by one contact path.

Note: Refer to "Unit programming"!

Switches in pos.: S1 no cross fault detection
S2 manual start

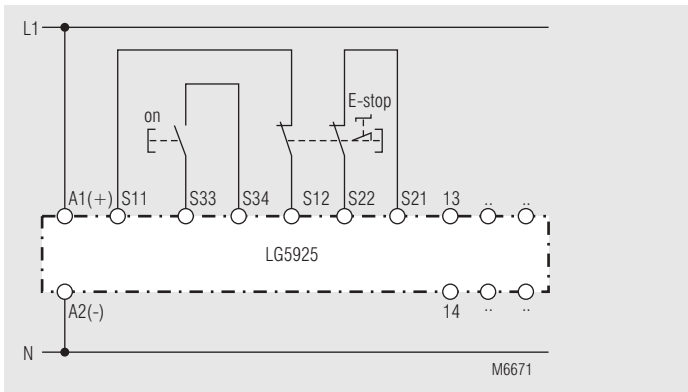
Application examples



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"!

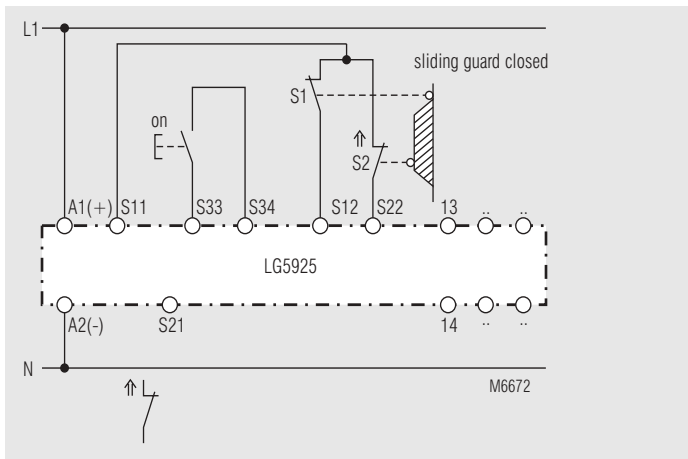
Switches in pos.: S1 no cross fault detection
S2 manual start



2-channel emergency stop circuit with cross fault detection

Note: Refer to "Unit programming"!

Switches in pos.: S1 cross fault detection
S2 manual start



2-channel safety gate monitoring.

Note: Refer to "Unit programming"!

Switches in pos.: S1 no cross fault detection
S2 manual start