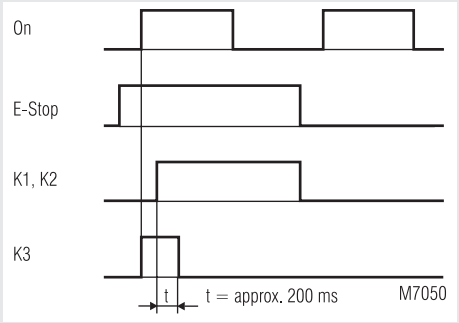
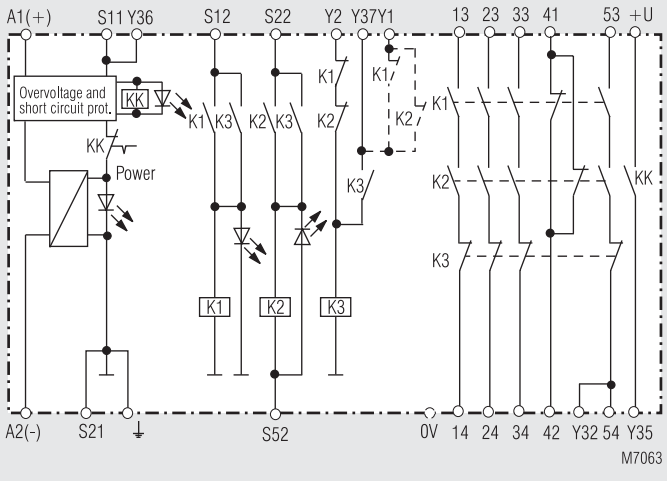
Emergency Stop Module BL 5927
safemaster

0226391

Function diagram



Block diagram



BL 5927.45

- According to EU directive for machines 98/37/EG
- According to IEC/EN 60204
- Safety category 4 according to EN 954-1
- Output: 4 NO, 1 NC contacts for AC 250 V,
  1 NO indication contact
- Contact Y32, Y35 goldplated to switch low loads (input of PLC)
- 1- or 2-channel connection
- Automatic restart
- Line fault detection on On push-button at bridge Y37/Y2
- Cross fault detection in emergency stop circuit
- Integrated short circuit and overvoltage protection
- With resettable overload protection
- LED indicators for channel 1 and 2 power supply, and overload protection
- Feedback circuit to monitor external contactors
- Removable terminal strips
- Wire connection: also 2 x 1,5 mm² stranded ferruled (isolated), DIN 46 2281-/-2/-3/-4 or
  2 x 2,5 mm² stranded ferruled DIN 46 228-1/-2/-3
- Width 90 mm

Approvals and marking

CE

Applications

Protection of people and machines
- Emergency stop circuits on machines
- Monitoring of sliding guards

Indication

green LED S12 / K1:	on, when relay K1 energized
green LED S22 / K2:	on, when relay K2 energized
green LED Netz:	on, when operating voltage applied

BL 5927.45/0_0:

red LED overload:	on, when short circuit or cross fault in the emergency-stop-circuit

Notes

The terminals Y1 and 0 V have no connection to the internal circuit. The NO contacts 13/14 ... 53/54 are positively guided safety contacts and are gold plated to switch low loads in the range of 0,1 to 60 V and 1 to 300 mA (input to PLC). These contacts can also be used to switch the max. switching current. However, since the goldplating is burnt off at this current level, the device is not longer suitable for switching small loads after this. The contact +U/Y35 can only be used as monitoring contact. The terminal "Ground" permits the operation of the device in IT-systems with insulation monitoring and also serves as a reference point for testing the control voltage.

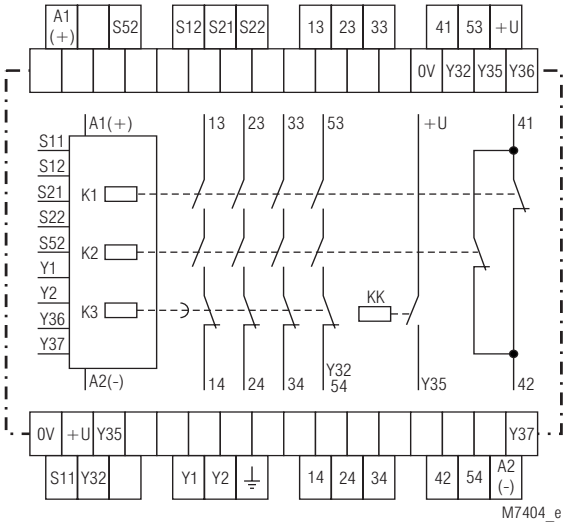
Concerning DC-devices the internal short-circuit protection will be bridged in the A2(-)-circuit through connection of the protection circuit to terminal ⏚ or S12. The short circuit protection in the A1(+)-circuit remains active.

One or more extension modules BN 3081 or external with positively driven contacts may be used to multiply the number of contacts.

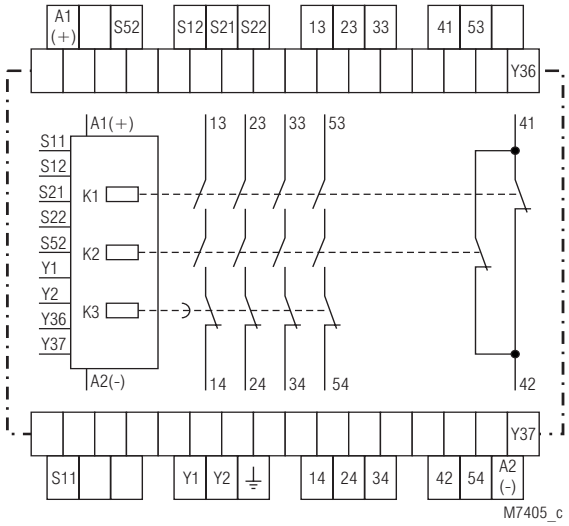
ATTENTION - AUTOMATIC START!

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

Circuit diagram



BL 5927.45/0_0



BL 5927.45/0_1

Technical data

Input

Nominal voltage U_N:	AC 24, 48, 110, 127, 230, 240 V DC 24 V
Voltage range:	AC 0,85 ... 1,1 U_N
at 10 % residual ripple:	DC 0,9 ... 1,2 U_N
at 48 % residual ripple:	DC 0,8 ... 1,1 U_N
Nominal consumption:	AC approx. 4,5 VA ± 30 % DC approx. 2 W
Nominal frequency:	50 / 60 Hz
Control voltage on Y1, Y2, S11, S12, S52:	DC 23 V
Control current U_N:	approx. 35 mA in S12 or S22
Minimum voltage required on terminals Y1, Y2, S11, S12, S52:	DC 21 V when relay active

Output

Contacts	
BL 5927.45:	4 NO, 1 NC, 1 NO indication contact The NO contacts 13...53 / 14...54 are safety contacts. **ATTENTION! The NC contact 41/42 and the NO contact +U / Y35 can only be used for monitoring.**
Operate delay typ.:	approx. 150 ms
Release delay switching	
second circuit (S12-S22) typ.:	20 ms
supply voltage typ.:	70 ms
Release delay of K3 typ.:	150 ms

Technical data

Contact type:	positive guided
Nominal output voltage:	AC 250 V
Thermal current I_{th}:	max. 5 A in one contact path
Switching capacity	IEC/EN 60 947-5-1
to AC 15:	13-14, 23-24, 33-34, 41-42 2 A / AC 230 V
BL 5927.45/0_1:	additionally contact 53-54 2 A / AC 230 V
Monitoring contact typ.	0,1 ... 60 V, 1 ... 300 mA
+ U - Y35, 53-Y3/54:	max. 125 V, 2 A at overvoltage category / contamination level: 1,5 kV / 2 IEC 60 664-1
Electrical life	IEC/EN 60 947-5-1
to AC 15 at 2 A, AC 230 V:	10^5 switching cycles
Permissible operating frequency:	6 000 switching cycles / h
Short circuit strength	IEC/EN 60 947-5-1
max. fuse rating:	6 A gL, line circuit breaker C 10 A
Mechanical life:	10 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	IEC/EN 61 000-4-5
between wire and ground:	2 kV	IEC/EN 61 000-4-5
HF-wire guided:	10 V	IEC/EN 61 000-4-6
Interference suppression:	Limit value class B	EN 55011
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 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:	1 x 4 mm² solid or 1 x 2,5 mm² stranded ferruled (isolated) or 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	
Wire fixing:	Terminal screws M3,5 Box terminal with wire protection, removable terminal strips	
Mounting:	DIN rail	IEC/EN 60 715
Weight:	850 g	

Dimensions

Width x height x depth:	90 x 86 x 121 mm

Standard type

BL 5927.45 DC 24 V	
Article number:	0048558
• Output:	4 NO, 1 NC for AC 250 V 1 NO indication contact
• Nominal voltage U_N:	DC 24 V
• Width:	90 mm

Variants

BL 5927.45/010: The terminal Y1 has an electrical connection to the internal circuit. Thus the contact 41 - 42 is not used.
(see application examples: "2-channel supervision of a sliding protection grating")

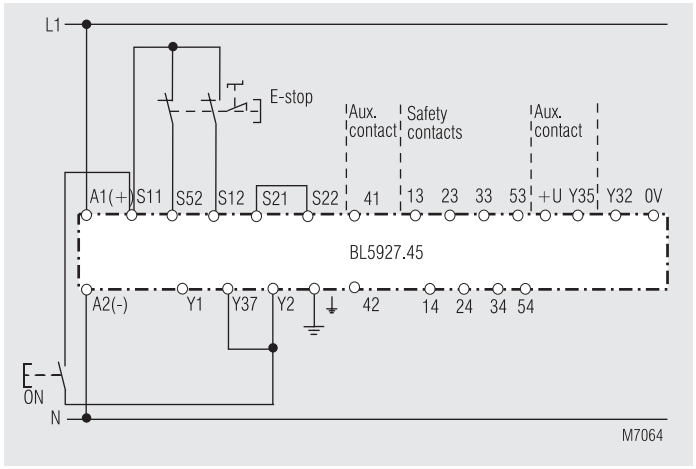
BL 5927.45/0_1: Device without resettable overload protection and higher voltage via contact 53 - 54.

Ordering example for Variants

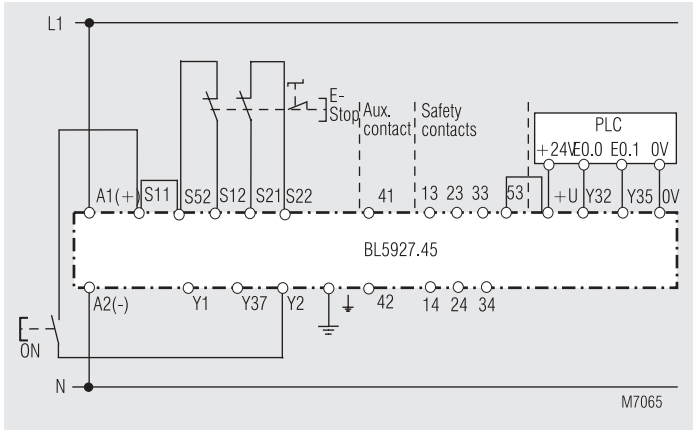
BL 5927 .45 /_ _ _ AC 230 V 50/60 Hz

- Nominal frequency
- Nominal voltage
- Variant, if required
- Contact
- Type

Application examples

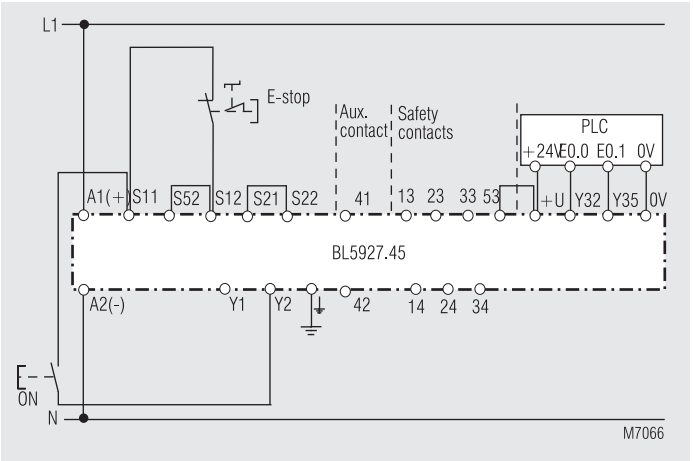


2-channel emergency-stop circuit without cross fault monitoring, with line fault detection on ON-pushbutton.

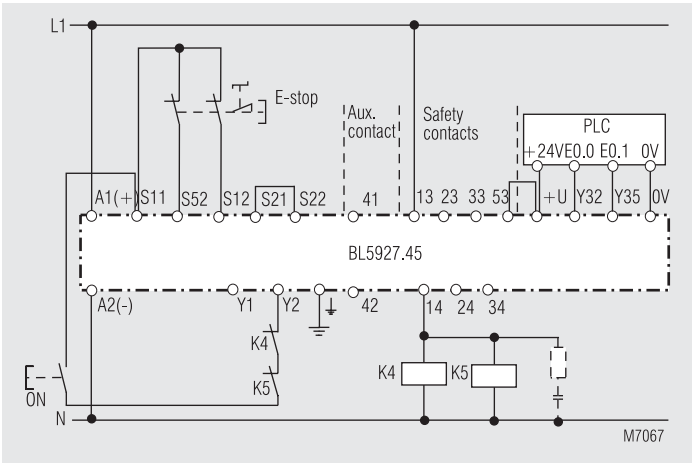


2-channel emergency-stop circuit with cross fault monitoring, without line fault detection on ON-pushbutton

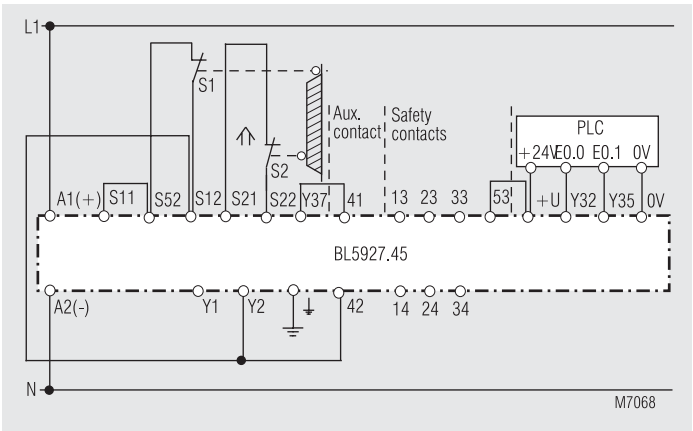
Application examples



Single channel emergency-stop circuit. This circuit has no redundancy in the emergency-stop loop.

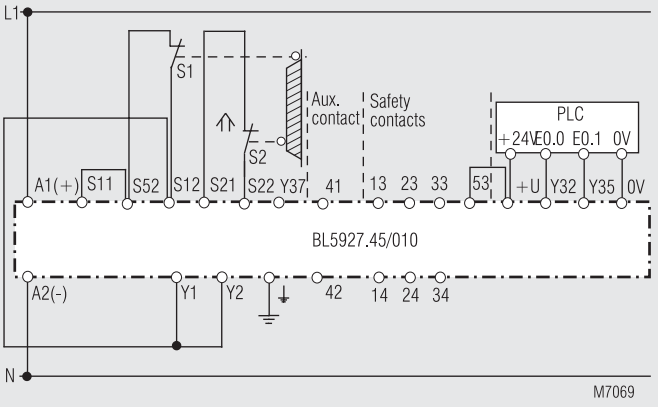


Contact reinforcement by external contactors, 2-channel controlled. For currents > 5 A the output contacts can be reinforced by external contactors. Functioning of the external contactors is monitored by looping the NC contacts into the start circuit.



2-channel monitoring of a sliding guard with cross fault detection. The limit switches S1 and S2 can be operated at different times.

Application examples



2-channel monitoring of a sliding guard with cross fault detection for model BL 5927/010. The limit switches S1 and S2 can be operated at different times.