

# Dold Safety Relay Mat and Edge



- Safety-mat switch gear with manual or automatic restart
- Can also be used for safety edges
- Output: 2 N.O. contacts
- Line fault detection at the ON pushbutton
- LED indicator for state of operation
- LED indicator for channel 1 and 2
- Wire connection: also 2 x 1.5 mm<sup>2</sup> stranded ferruled (isolated), DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm<sup>2</sup> stranded



Safety Data – Values per EN ISO 13849-1	
Category	4
Performance level	PLe
MTTF <sub>d</sub>	236.3 years
DC <sub>avg</sub>	99%
Safety Data – Values per IEC/EN 62061 /IEC/EN 61508	
SIL CL	3
SIL	3
HFT (Hardware Failure Tolerance)	1
DC <sub>avg</sub>	99%
SFF	99.7%
PFH <sub>D</sub>	2.09E-10 h <sup>-1</sup>

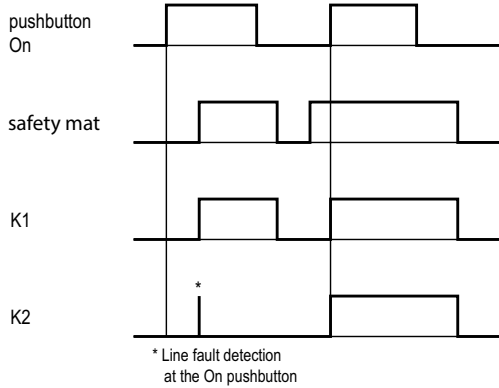
Safety Relays Selection Chart				
Part Number	Price	Marking Type	Voltage	Outputs
<b>BG5925-22-910-24</b>	\$125.00	Dold safety relay module, safety mat/edges, dual channel, manual or automatic restart	24VDC coil voltage	2 N.O. positive guided safety contact(s), 1 N.C. monitoring contact(s)

Relay Mat and Edge Specification Table	
<b>General Specifications</b>	
<b>Temperature</b>	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)
<b>Altitude</b>	< 2,000 meters
<b>Vibration Resistance</b>	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
<b>Degree of Protection</b>	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
<b>Housing</b>	UL 94V-0 Thermoplastic; DIN mount 35 mm x 7.5 mm
<b>Weight</b>	220 g (7.76 oz.)
<b>Terminal Designation per EN 50 005 Wire Connections</b>	1x4 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) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm <sup>2</sup> stranded ferruled DIN 46 228-1/-2/-3
<b>Wire Fixing</b>	Box terminal with wire protection, removable terminal strips
<b>Wire Connection</b>	60degC/75degC Copper conductors only AWG20-12 Sol Torque 0.8NM AWG 20 - 14 STR Torque 0.8 NM
<b>Input Specifications</b>	
<b>Nominal Voltage</b>	24VDC
<b>Voltage Range</b>	At 10% residual ripple: 0.9 to 1.1 U <sub>N</sub>
<b>Maximum Consumption</b>	DC approx. 2 W
<b>Control Voltage - S11</b>	U <sub>N</sub> : 23V DC
<b>Control Current on S12, S22</b>	40 mA at U <sub>N</sub>
<b>Minimum Voltage on Terminals S12, S22(when relay activated)</b>	21VDC
<b>Short Circuit Protection</b>	Internal fuse rating
<b>Overvoltage Protection</b>	Internal VDR (Voltage Dependent Resistor)
<b>Output Specifications</b>	
<b>Electrical Contact Life</b>	To 2A, AC 230V: > 10 <sup>5</sup> switching cycles IEC/EN 60 947-5-1
<b>Mechanical Life</b>	10 x 10 <sup>6</sup> switching cycles
<b>Contact Type</b>	forcibly guided
<b>Operate Delay</b>	Operate delay typ at U <sub>N</sub> : manual start 40 ms; automatic start: 200 ms.
<b>Release Delay</b>	Release delay typ. at U <sub>N</sub> : Disconnecting the supply: 50 ms.; Disconnecting S12, S22: 15 ms.
<b>Nominal Output Voltage</b>	AC: 250V; DC: See continuous current limit curve in installation manual.
<b>Thermal Current (I<sub>th</sub>)</b>	Max. 5A per contact. See continuous current limit curve in installation manual.
<b>Switching of Low Loads</b>	≥100 mV; (contacts with 5μ Au) ≥ 1 mA
<b>Short Circuit Strength</b>	Max fuse rating: 6A gl (IEC/EN 60 947-5-1); Line circuit breaker: C 8A
<b>Switching Capacity</b>	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230V AC DC 13: N.O. contacts: 1A/24V DC, 0.5A/110V AC; N.O. contacts: 1A/24V DC
<b>Switching Frequency</b>	Max. 1,200 switching cycles/hr
<b>Agency Approvals</b>	cULus file E107778, CE, RoHS, TUV

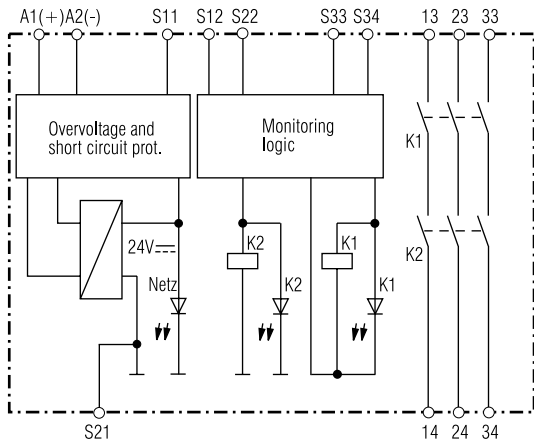
To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at [www.automationdirect.com](http://www.automationdirect.com)

# Dold Safety Relay Mat and Edge

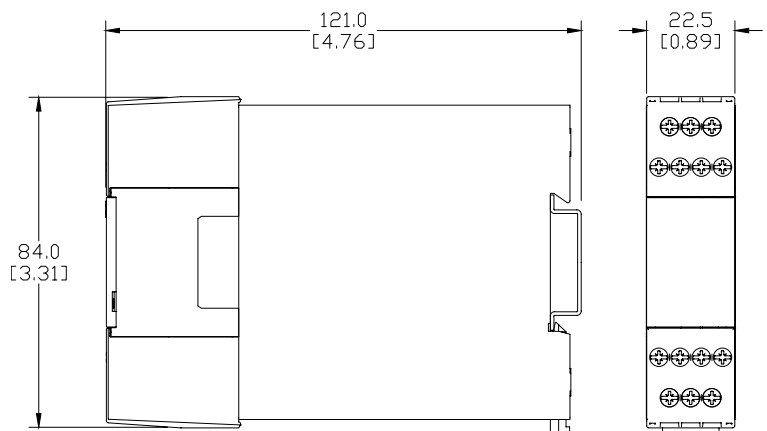
## Function Diagram



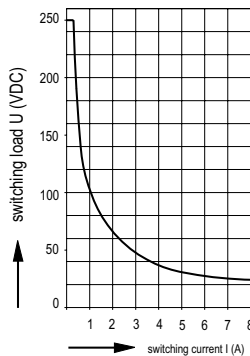
## Block Diagram



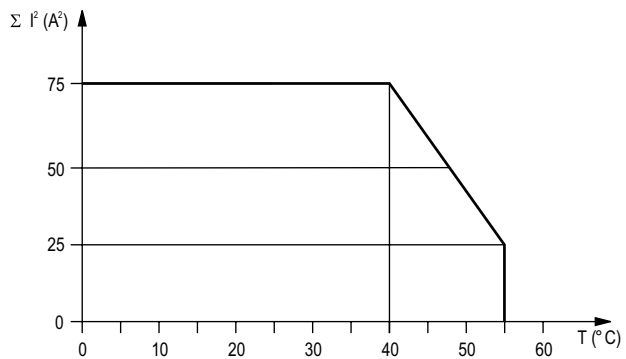
## Dimensions mm [in]



## Characteristic Curves



Safe breaking, no continuous arcing,  
max. 1 switching cycle/s  
Arc limit curve under resistive load



Quadratic total current

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

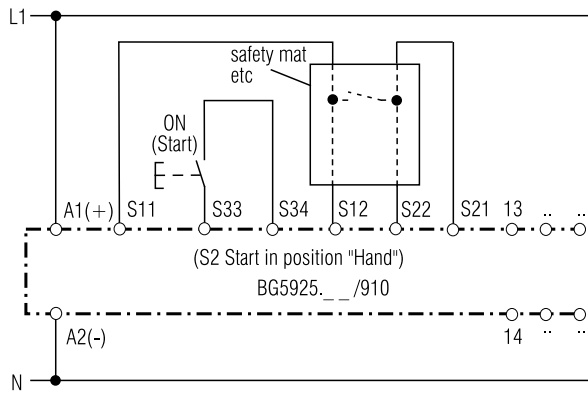
$I_1, I_2, I_3$  - current in contact paths

Quadratic total current limit curve

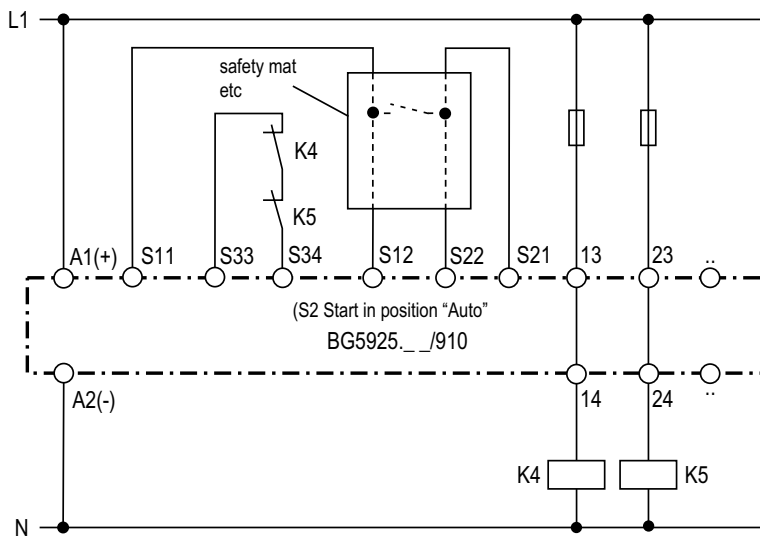
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# Dold Safety Relay Mat and Edge

## Application Examples



Switch gear for safety mats and edges  
 switch S2 position: Manual start  
 (For automatic restart S2 in position Autostart and link on S33-S34)  
 Suited up to SIL3, Performance Level e, Cat. 4



Switch gear for safety mats and edges  
 Contact reinforcement by external contactors, 2-channel.  
 switch S2 position: Auto start  
 Suited up to SIL3, Performance Level e, Cat. 4

# Dold LG5929 Extension Module



Additional contacts for emergency-stop modules and safety gate monitors.

- 1-channel or 2-channel connection
- LED indication for operation
- Output: 5 N.O. and 1 N.C. contacts

Safety Data – Values per EN ISO 13849-1	
Category	4 according to EN 954-1
Performance level	PLe according to EN 13849-1
MTTF <sub>d</sub>	>100 years
DC <sub>avg</sub>	99%
Safety Data – Values per IEC/EN 62061 /IEC/EN 61508	
SIL CL	3 per IEC/EN 62061
SIL	3 per IEC/EN 61508
HFT (Hardware Failure Tolerance)	1
DC <sub>avg</sub>	99%
SFF	99.7%
PFFH <sub>D</sub>	4.68E-10 h <sup>-1</sup>

## Safety Relays Selection Chart

Part Number	Price	Marking Type	Voltage	Outputs
LG5929-60-100-61	\$95.00	Safety relay extension module	24 VAC/VDC	5 N.O./1 N.C.

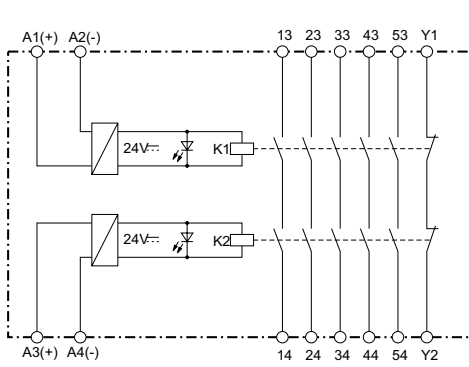
## Safety Relay Extension Module Specification Table

General Specifications	
<b>Temperature</b>	Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)
<b>Altitude</b>	< 2,000 meters
<b>Vibration Resistance</b>	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
<b>Degree of Protection</b>	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
<b>Housing</b>	UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm
<b>Weight</b>	205g (7.23 oz.)
<b>Agency Approvals and Standards</b>	CSA, cULus file E107778, CE, RoHS, TUV
<b>Terminal Designation per EN 50 005 Wire Connections</b>	1x4 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) DIN 46 228-1/-2/-3/-4 or 2 x 2.5 mm <sup>2</sup> solid per DIN 46 228-1/-2/-3 /-4
<b>Wire Fixing</b>	Plus-minus terminal screws M3.5 box terminals with wire protection or cage clamp terminals.
Input Specifications	
<b>Nominal Voltage</b>	24V AC/DC
<b>Voltage Range</b>	AC: 0.85 to 1.1 U <sub>N</sub> At 10% residual ripple: 0.9 to 1.1 U <sub>N</sub> ; At 48% residual ripple: 0.85 to 1.1 U <sub>N</sub>
<b>Maximum Consumption</b>	24VAC/DC: 1.8VA
<b>Nominal Frequency</b>	50 to 60 Hz
<b>Control Current</b>	Control current typ. at 24V over 2 relays: 75 mA
<b>Overvoltage Protection</b>	Internal VDR (Voltage Dependent Resistor)
Output Specifications	
<b>Electrical Contact Life</b>	To AC15 at 2 A,230V: 10 <sup>5</sup> switching cycles IEC/EN 60 947-5-1
<b>Mechanical Life</b>	20 x 10 <sup>6</sup> switching cycles
<b>Contact Type</b>	5 N.O. positively driven and 1 N.C. relay contacts (N.O. contacts are safety contacts)
<b>Operate/Release Time</b>	Operate typ at U <sub>N</sub> : 20 ms.; Release typ at U <sub>N</sub> : 35 ms.
<b>Nominal Output Voltage</b>	250VAC
<b>Thermal Current (I<sub>th</sub>)</b>	Max. 5A per contact. See continuous current limit curve in installation manual.
<b>Short Circuit Strength</b>	Max fuse rating:10A gl (IEC/EN 60 9470-5-1); Line circuit breaker: B6A
<b>Switching Capacity IEC/EN 60 947-5-1</b>	AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230VAC DC 13: N.O. contacts: 4A/24V; N.C. contacts: 4A/24VDC; N.O. contact: 8A/24V >25x10 <sup>3</sup> ON: 0.4s, OFF: 9.6s
<b>Switching Frequency</b>	Max. 1,200 switching cycles/hr

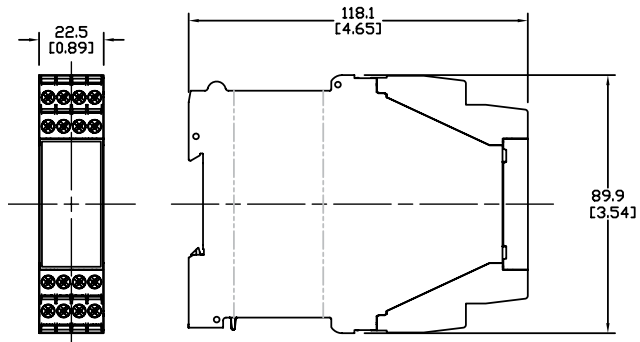
# Dold LG5929 Extension Module

## Wiring

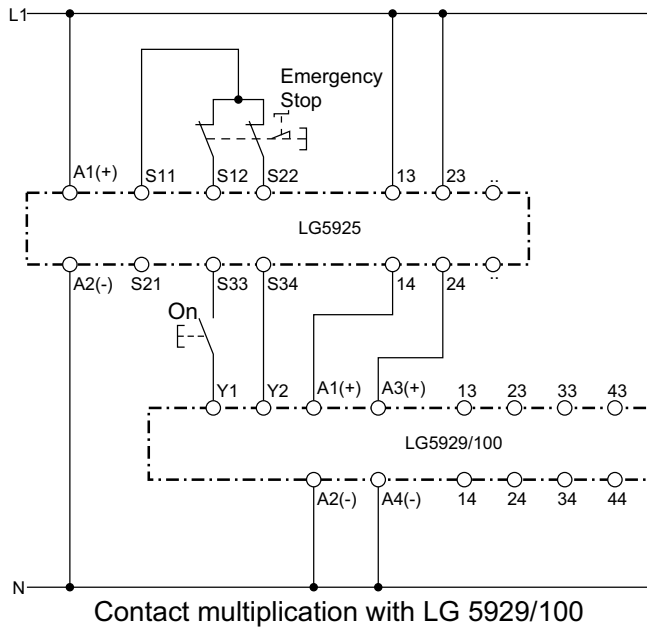
### LG5929 Block Diagram



## Dimensions mm [in]



## Applications



**Note:** This is a representative drawing. Depending on the LG5925 safety relay you select, different voltage sources may be required.

**\*Note:** When switching inductive loads, surge suppressors are recommended.

# Safety Products



***Warning: Safety products sold by AutomationDirect are Safety components only. The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products, used solely or in conjunction with other AutomationDirect or other vendors' products, will assure safety for any application. Any person using or applying any products sold by AutomationDirect is responsible for learning the safety requirements for their individual application and applying them, and therefore assumes all risks, and accepts full and complete responsibility, for the selection and suitability of the product for their respective application. AutomationDirect does not provide design or consulting services, and cannot advise whether any specific application or use of our products would ensure compliance with the safety requirements for any application.***