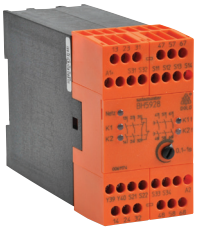
Dold BH5928 Series – 2-Channel Emergency Stop and Safety Gates with Delay



BH5928-92-61-24-1

Designed to protect people and machines in applications with E-stop buttons and safety gates. One or two channels can be monitored with time-delay function.

- Three time-delay options with potentiometer adjustment
- Single and 2-channel operation
- Output: 3 N.O. contacts with delay, 2 N.O. instantaneous contacts, 1 N.C. instantaneous contact
- Line fault detection for ON button, when connected to S33-S34
- Manual restart with button on S33-S34 or automatic restart with jumper between S13-S14
- Can be wired with or without cross-fault monitoring in the E-stop loop
- LED indicators for power and state of operation

Safety Data – Values per EN ISO 13849-1	
Category	4 according to EN 954-1
Performance level	PLe according to EN 13849-1
$MTTF_d$	>240.5 years
DC_{avg}	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_{avg}	99%
SFF	99.9%
PFH_D	$1.94E^{-10}$ h^{-1}

Safety Relays

Part Number	*Price*	*Marking Type*	*Voltage*	*Outputs*	*Time Delay*
BH5928-92-61-24-1	$332.00	2-channel E-STOP / GATE	24 VDC	3 N.O. time delay positive guided safety contacts, 2 N.O. instantaneous positive guided safety contacts and 1 N.C. instantaneous monitoring contact	0.1 to 1 s
BH5928-92-61-24-5	$332.00	2-channel E-STOP / GATE	24 VDC		0.5 to 5 s
BH5928-92-61-24-30	$332.00	2-channel E-STOP / GATE	24 VDC		3 to 30 s

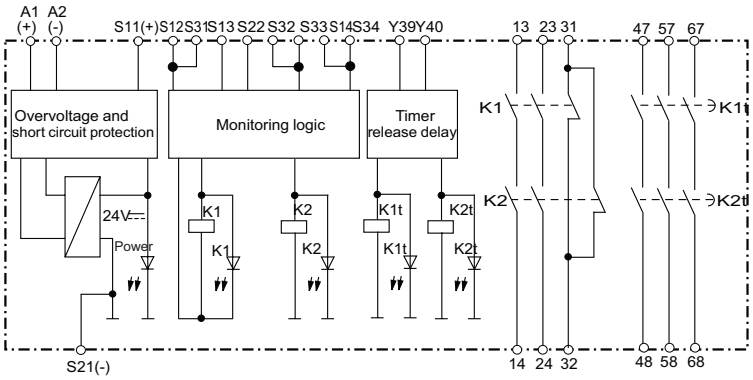
Two-Hand Controllers Safety Relay Specification Table

General Specifications	
Temperature	Storage: -25 to +85 °C [-13 to +185 °F] Operating: -15 to +55 °C [+5 to +131 °F]
Altitude	< 2000m [6562ft]
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
Housing	UL 94V-0 Thermoplastic; Din mount 35 x 7.5mm
Weight	400g (14.11 oz.)
Agency Approvals and Standards	cULus file E107778, CE, RoHS
Terminal Designation per EN 50 005 Wire Connections	1x4 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 stranded ferrruled DIN 46 228-1/-2/-3
Wire Fixing	Box terminal with wire protection
Input Specifications	
Nominal Voltage	24 VDC
Voltage Range	At 10% residual ripple: DC: 0.9 to 1.1 UN At 48% residual ripple: DC: 0.8 to 1.1 UN
Maximum Consumption	DC approx. 3.5W
Minimum Off-time	1.0s
Short Circuit Protection	Internal with PTC (Positive Temperature Coefficient resistor)
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)
Output Specifications	
Electrical Contact Life	To DC 13 at 2A, DC 2 4V: >1.5 x 10^5 switching cycles To AC 15 at 2A, 230 VAC: 10^5 switching cycles IEC/EN 60 947-5-1
Mechanical Life	10 x 10^6 switching cycles
Contact Type	2 N.O. positively driven and 1 N.C relay contacts, and 3 N.O. positively driven relay contacts with delay. (N.O. contacts are safety contacts)
Operate Delay	Operate delay typ at UN: manual start: 40 ms; automatic start: 500 ms
Release Delay	Release delay typ at UN: Disconnecting supply: 40 ms; Disconnecting S12, S22, S31 and S32: 15 ms
Repeat Accuracy	±1% of setting value
Nominal Output Voltage	AC: 250 V; DC: See continuous current limit curve in manual.
Thermal Current (I_{th})	Max. 5A, See continuous current limit curve in manual.
Switching of Low Loads	M 100 mV; (contacts with 5µ Au)m1 mA
Short Circuit Strength	Max. fuse rating: 6A gL (IEC/EN 60 947-5-1); Line circuit breaker C 8A
Switching Capacity	AC 15: N.O. contacts: 3A /2 30 V; N.C. contacts: 2A / 230 VAC; DC 13: N.O. contacts: 5A / 24 VDC; ON: 0.4s, OFF: 9.6s
Switching Frequency	Max. 1200 switching cycles/hr, with manual restart and short release delay time
Indicator Contact	DC 13: N.C. contact: 2A / 24 VDC

Dold BH5928 Series – 2-Channel Emergency Stop and Safety Gates with Delay

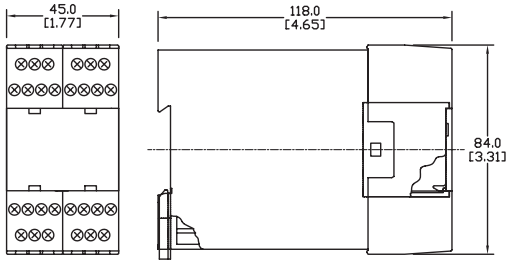
Wiring

BH5928 Block Diagram

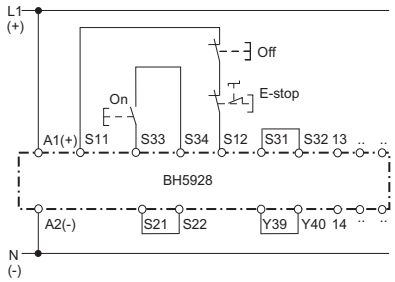


Dimensions

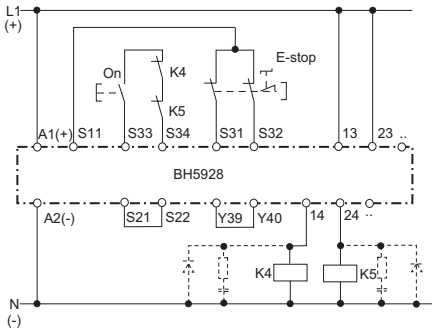
mm [in]



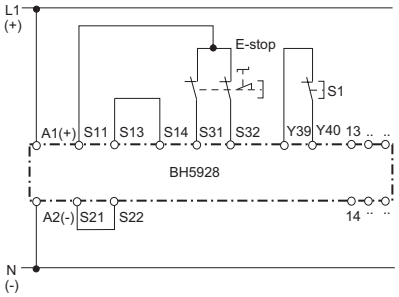
Applications



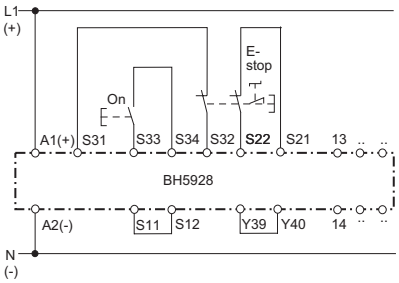
Single channel emergency stop circuit. This circuit does not have any redundancy in the emergency-stop control circuit.



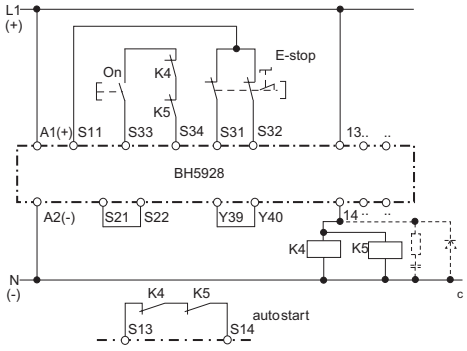
Contact reinforcement by external contactors, 2-channel controlled. The output contacts can be reinforced by external contactors with positive guided contacts for switching currents > 5 A.
Functioning of the external contactors is monitored by looping the N.C. contacts into the closing circuit (terminals S13-S14 or S33-S34)



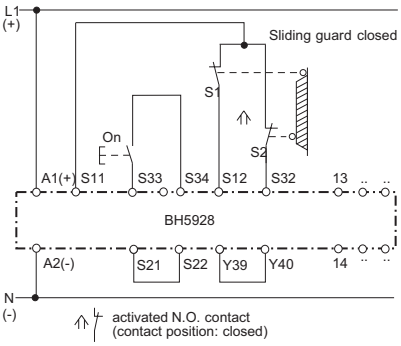
2-channel emergency stop circuit without cross fault monitoring autostart and interruption of time by S1



2-channel emergency stop circuit with cross fault detection



Contact reinforcement by external contactors controlled by one contact path. S33 - S34 must be opened.



2-channel safety gate monitoring

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

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 Relays Selection Chart

Part Number	Price	Marking Type	Voltage	Outputs
LG5929-60-100-61	$146.00	Safety relay extension module	24 VAC/VDC	5 N.O./1 N.C.

Safety Data – Values per EN ISO 13849-1

Category	***4 according to EN 954-1***
Performance level	PLe according to EN 13849-1
$MTTF_d$	>100 years
DC_{avg}	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_{avg}	99%
SFF	99.7%
PFH_D	$4.68E^{-10}$ h^{-1}

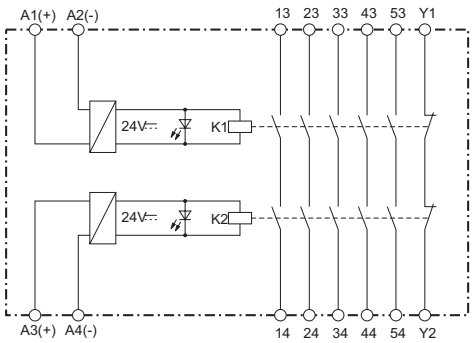
Safety Relay Extenson Module Specification Table

General Specifications	
Temperature	Storage: -25 to +85 °C [-13 to +185 °F] – Operating: -15 to +55 °C [+5 to +131 °F]
Altitude	< 2000m [6562ft]
Vibration Resistance	Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)
Degree of Protection	Per IEC/EN 60 529. Housing: IP40; Terminals IP20
Housing	UL 94V-0 Thermoplastic; Din mount 35 x 7.5mm
Weight	205g (7.23 oz.)
Agency Approvals and Standards	CSA, cULus file E107778, CE, RoHS, TUV
Terminal Designation per EN 50 005 Wire Connections	1x4 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 per DIN 46 228-1/-2/-3 /-4
Wire Fixing	Plus-minus terminal screws M3.5 box terminals with wire protection or cage clamp terminals.
Input Specifications	
Nominal Voltage	24 VAC/VDC
Voltage Range	AC: 0.85 to 1.1 U_N At 10% residual ripple: 0.9 to 1.1 U_N; At 48% residual ripple: 0.85 to 1.1 U_N
Maximum Consumption	24 VAC/VDC: 1.8 VA
Nominal Frequency	50 to 60 Hz
Control Current	Control current typ. at 24V over 2 relays: 75 mA
Overvoltage Protection	Internal VDR (Voltage Dependent Resistor)
Output Specifications	
Electrical Contact Life	To AC15 at 2A, 230 V: 10^5 switching cycles IEC/EN 60 947-5-1
Mechanical Life	20 x 10^6 switching cycles
Contact Type	5 N.O. positively driven and 1 N.C. relay contacts (N.O. contacts are safety contacts)
Operate/Release Time	Operate typ at U_N: 20 ms.; Release typ at U_N: 35 ms.
Nominal Output Voltage	250 VAC
Thermal Current (I_{th})	Max. 5A per contact. See continuous current limit curve in installation manual.
Short Circuit Strength	Max fuse rating:10A gl (IEC/EN 60 9470-5-1); Line circuit breaker: B 6A
Switching Capacity IEC/EN 60 947-5-1	AC 15: N.O. contacts: 3A / 230 V; N.C. contacts: 2A / 230 VAC DC 13: N.O. contacts: 4A / 24 V; N.C. contacts: 4A / 24 VDC; N.O. contact: 8A / 24V > 25x10^3 ON: 0.4 s, OFF: 9.6 s
Switching Frequency	Max. 1,200 switching cycles/hr

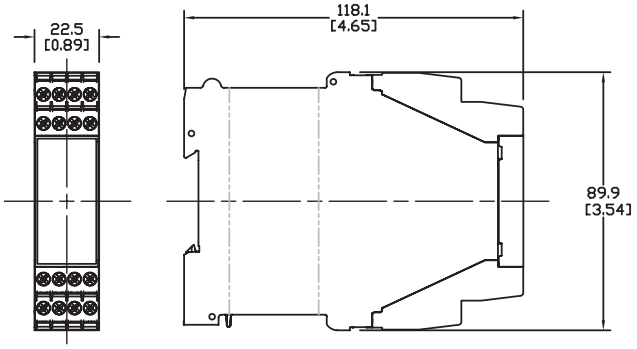
Dold LG5929 Extension Module

Wiring

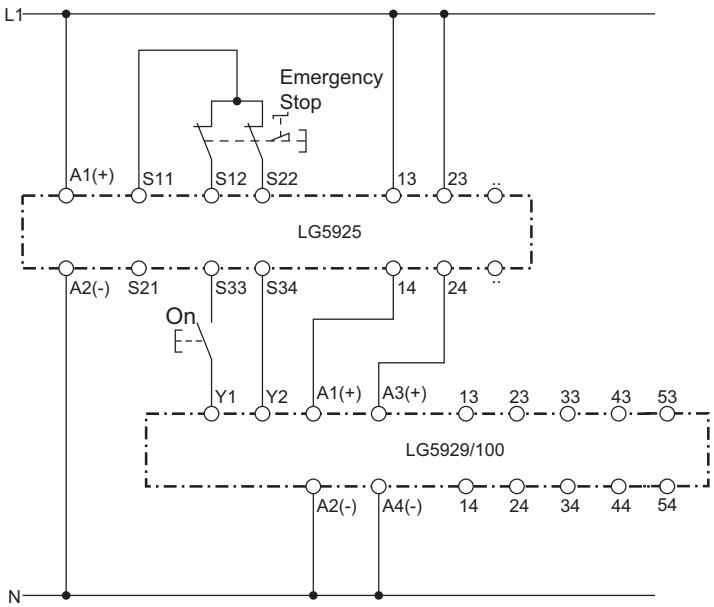
LG5929 Block Diagram



Dimensions (mm [in])



Applications



Contact multiplication with LG 5929/100

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.

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