Dold BG5933 and BH5933 Series – Two-Hand Controllers

Designed to protect people and machines in applications with two-hand buttons or production machinery with dangerous closing movements.

- Inputs for 2 pushbuttons, each with 1 N.C. and 1 N.O. contact.
- Output options: 2 N.O. contacts and 1 N.C. contact, or 3 N.O. contacts and 1 N.C. contact
- Feedback circuit Y1 - Y2 to monitor external contactors used for reinforcement of contacts
- Overvoltage and short-circuit protection
- LED indicators for power and state of operation

### Two-Hand Controllers Selection Chart

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Price</th>
<th>Marking Type</th>
<th>Voltage</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>BG5933-22-61-24</td>
<td>$141.00</td>
<td>Two-hand controller</td>
<td>24 VDC</td>
<td>2 N.O. and 1 N.C.</td>
</tr>
<tr>
<td>BH5933-48-61-110</td>
<td>$192.00</td>
<td>Two-hand controller</td>
<td>110 VAC</td>
<td>3 N.O. and 1 N.C.</td>
</tr>
<tr>
<td>BH5933-48-61-230</td>
<td>$192.00</td>
<td>Two-hand controller</td>
<td>230 VAC</td>
<td>3 N.O. and 1 N.C.</td>
</tr>
</tbody>
</table>

Note: Output contacts will be switched if both pushbuttons are operated within < 0.5 s. If both buttons are pressed while switching on the operating voltage (e.g., after voltage functions), the output contacts do not energize.

### Two-Hand Controllers Safety Relay Specification Table

<table>
<thead>
<tr>
<th>Part Numbers</th>
<th>BG5933-22-61-24</th>
<th>BH5933-48-61-110</th>
<th>BH5933-48-61-230</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General Specifications</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>Storage: -25°C to 85°C (-13°F to 185°F) Operating: -15°C to 55°C (5°F to 131°F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Altitude</td>
<td>&lt; 2,000 meters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vibration Resistance</td>
<td>Amplitude: 0.35mm; Frequency: 10 to 55 Hz (IEC/EN 60-068-2-6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of Protection</td>
<td>Per IEC/EN 60 529; Housing: IP40; Terminals IP20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td>UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>200 g (7.05 oz.) 400 g (14.11 oz.) 400 g (14.11 oz.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agency Approvals and Standards</td>
<td>cULus file E10778, CE, RoHS, TUV</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Input Specifications

| | BG5933-22-61-24 | BH5933-48-61-110 | BH5933-48-61-230 |
| | | | |
| **Nominal Voltage** | 24 DC | 110V AC, 230V AC |
| **Voltage Range** | At 10% residual ripple: DC: 0.9 to 1.1 UN At 10% residual ripple: AC: 0.85 to 1.1 UN |
| **Maximum Consumption** | DC approx. 2.3W AC approx. 4 VA |
| **Nominal Frequency** | 50 to 60 Hz |
| **Time Delay for Simultaneous Demand** | 0.5 sec max |
| **Recovery time** | 1 second |

### Output Specifications

| | BG5933-22-61-24 | BH5933-48-61-110 | BH5933-48-61-230 |
| | | | |
| **Electrical Contact Life** | To DC 13 at 2A, DC 24V: >1 x 10⁵ switching cycles |
| **Mechanical Life** | To AC 15 at 2A, 230 VAC : 10⁵ switching cycles IEC/EN 60 947-5-1 |
| **Contact Type (N.O. are safety contacts)** | N.O. contact: typ. 50 mA; N.C. contact: typ. 20 mA |
| **Operate Time** | 2 N.O. positively driven and 1 N.C. relay contacts 3 positively driven N.O. and 1 N.C. relay contacts |
| **Release Time** | Operate time: typ. 40 ms Release time: typ. 15 ms |
| **Nominal Output Voltage** | AC: 250V; DC: See continuous current limit curve in manual. |
| **Switching of Low Loads** | Max. 5A See continuous current limit curve in manual. |
| **Switching Capacity** | DC 13: N.C. contacts: 2A/24VDC 2 N. O. contacts in series; 8 A/24V >10⁵ ON: 0.4s, OFF: 9.6 s |

For the latest prices, please check AutomationDirect.com.
Dold BG5933 and BH5933 Series – Two-Hand Controllers

**Wiring**

### BG5933 Block Diagram

![BG5933 Block Diagram](image1.png)

### BH5933 Block Diagram

![BH5933 Block Diagram](image2.png)

**Dimensions mm (in)**

### BG5933

- **L1 (+)**
- **N (-)**

![BG5933 Dimensions](image3.png)

### BH5933

- **L1 (+)**
- **N (-)**

![BH5933 Dimensions](image4.png)

**Applications**

### Two-hand control

![Two-hand control](image5.png)

### Two-hand control with contact reinforcement via external positively-driven contactors

![Two-hand control with contact reinforcement](image6.png)

*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

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Price</th>
<th>Marking Type</th>
<th>Voltage</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG5929-60-100-61</td>
<td>$96.00</td>
<td>Safety relay extension module</td>
<td>24 VAC/VDC</td>
<td>5 N.O./1 N.C.</td>
</tr>
</tbody>
</table>

### Safety Relay Extension Module Specification Table

#### General Specifications

- **Temperature**
  - Storage: -25°C to 85°C (-13°F to 185°F)
  - Operating: -15°C to 55°C (5°F to 131°F)
- **Altitude**: < 2,000 meters
- **Vibration Resistance**
  - Amplitude: 0.35mm, Frequency: 10 to 55 Hz (IEC/EN 60068-2-6)
- **Degree of Protection**
  - UL 94V-0 Thermoplastic; Din mount 35 mm x 7.5 mm
- **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 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
  - 2 x 2.5 mm² 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**: 24V AC/DC
- **Voltage Range**
  - AC: 0.85 to 1.1 U₉
  - At 10% residual ripple: 0.9 to 1.1 U₉
  - At 48% residual ripple: 0.85 to 1.1 U₉
- **Maximum Consumption**
  - 24VAC/DC: 1.8VA
- **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 2 A, 230V: 10⁶ switching cycles IEC/EN 60 947-5-1
- **Mechanical Life**: 20 x 10⁶ 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 U₉: 20 ms, Release typ at U₉: 35 ms
- **Nominal Output Voltage**: 250VAC
- **Thermal Current (Iₜₜₜ)**
  - 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: B6A
  - AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230VAC
  - ON: 0.4s, OFF: 9.6s
- **Switching Capacity IEC/EN 60 947-5-1**
  - AC 15: N.O. contacts: 3A/230V; N.C. contacts: 2A/230VAC
- **Switching Frequency**: Max. 1,200 switching cycles/hr

For the latest prices, please check AutomationDirect.com.
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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