Safety technique

Emergency Stop Module BG 5924, IP 5924

• 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
• Single channel operation
• Output: max. 4 NO contacts
• AC 230 V model with galvanic separation
• For thermal currents to 7 A
• LED indicator for channel 1 / 2 and state of operation
• Short circuit detection between terminal Y1 and common
• BG 5924 with:
  – 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
• BG 5924: width 22.5 mm
• IP 5924: width 70 mm

Function diagram

- Pushbutton On
- Emergency stop (Off)
- K1
- K2

Indicators

- LED Netz: on, when supply connected
- LED K1/K2: on, when relay K1 and K2 energized

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.

Block diagrams

BG 5924.48, BG 5924.48/207, IP 5924.48

BG 5924.02, BG 5924.02/207, BG 5924.04, BG 5924.04/207, IP 5924.02, IP 5924.04
**Technical data**

**Input**

Nominal voltage $U_N$:
- BG 5924: DC 24 V
- AC/DC 24 V
- AC 230 V
- AC/DC 24, 48 V
- AC 110, 230 V

Nominal frequency: 50 / 60 Hz

Voltage range:
- AC: 0.8 ... 1.1 $U_N$
- DC: 0.9 ... 1.1 $U_N$

Nominal consumption:
- AC/DC 24 V: DC 1.2 W, AC 2 VA
- AC 230 V: 3.5 VA

Control voltage on Y1:
- AC/DC 24 V: typ. DC 23 V
- AC 230 V: max. 45 V short pulse

Control current:
- typ. DC 45 mA
- Recovery time: 0.5 s

**Output**

Contacts:
- BG 5924.02, IP 5924.02: 2 NO contacts
- BG 5924.04, IP 5924.04: 4 NO contacts
- BG 5924.48, IP 5924.48: 3 NO, 1 NC contacts

ATTENTION! The NC contacts 41-42 can only be used for monitoring.

**Operate delay:** max. 100 ms

**Release delay:** max. 35 ms

Contact type: positive guided

Thermal current $I_{th}$:
- max. 5 A / 7 A**

Switching capacity:
- to AC 15:
  - NO contact: 3 A / AC 230 V
  - NC contact: 2 A / AC 230 V
- to DC 13:
  - NO contact: max. 5 A / 7 A** / DC 24 V

Electrical life:
- to AC 15 at 2 A, AC 230 V: 10⁶ switching cycles

Permissible operating frequency:
- Short circuit strength:
  - max. fuse rating: 4 A gL / IEC/EN 60 947-5-1
  - C 8 A
- line circuit breaker: 600 switching cycles / h

Mechanical life:
- 10 x 10⁶ switching cycles

**General data**

Operating mode: Continuous operation

Temperature range: -15 ... +55 °C
### Characteristics

#### Total current limit curve

<table>
<thead>
<tr>
<th>T (°C)</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
<th>60</th>
</tr>
</thead>
<tbody>
<tr>
<td>I (A)</td>
<td>120</td>
<td>100</td>
<td>80</td>
<td>60</td>
<td>40</td>
<td>20</td>
<td>0</td>
</tr>
</tbody>
</table>

Sigma: $\Sigma I_i^2 (A^2) = I_1^2 + I_2^2 + I_3^2 + I_4^2$

- AC / DC 24 V: device mounted on distance with aircondition
- AC 230 V: device mounted on distance with aircondition
- AC / DC 24 V and AC 230 V: device mounted without distances heated by devices with same braze

#### Technical data

**Clearance and creepage distances**
- Overvoltage category: IEC 60 664-1
- Contamination level: 4 kV / 2 (IEC/EN 60 664-1)

**EMC**
- Electrostatic discharge: 8 kV (air) IEC/EN 61 000-4-2
- HF irradiation: 10 V / m IEC/EN 60 664-3
- Fast transients: 2 kV IEC/EN 60 664-4
- Surge voltages: 1 kV IEC/EN 60 664-5
- Power supply: 2 kV IEC/EN 60 664-5
- HF wire guided: 2 kV IEC/EN 60 664-6

**Degree of protection**
- Housing: IP 40 EN 60 529
- Terminals: IP 20 EN 60 529

**Housing**
- Thermoplastic with V0 behaviour according to UL subject 94
- Limit value class: B EN 55011

**Vibration resistance**
- Frequency: 10 ... 55 Hz, IEC/EN 60 068-2-6
- EN 60 068-1

**Climate resistance**
- EN 60 068-1

**Wire connection**
- Standard type:
  - BG 5924: 1 x 4 mm² solid or 1 x 2.5 mm² stranded ferruled (isolated)
  - IP 5924: 2 x 2.5 mm² solid or 2 x 1.5 mm² stranded ferruled
- Application examples:
  - BG 5924: 1 x 4 mm² solid or 1 x 2.5 mm² stranded ferruled (isolated)
  - IP 5924: 2 x 2.5 mm² solid or 2 x 1.5 mm² stranded ferruled

**Mounting**
- DIN rail IEC/EN 60 715

**Weight**
- BG 5924: 210 g, IP 5924: 206 g

**Dimensions**
- Width x height x depth:
  - BG 5924: 22.5 x 84 x 121 mm
  - IP 5924: 70 x 90 x 59 mm

### Application examples

- BG 5924, IP 5924
- Single channel emergency-stop circuit without feedback loop, with or without automatic restart.
- For automatic restart terminals Y1-Y2 must be linked. No ON-pushbutton necessary.

### Ordering example for Variant

- BG 5924: 48 AC/DC 24 V
  - Nominal voltage
  - Variant, if required
  - Contact
  - Type

- IP 5924: 48 AC 230 V
  - Nominal voltage
  - Contact
  - Type

Contact reinforcement by external contactors, 2-channel controlled. For currents > 7 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 (Y1-Y2).