Safety technique

Emergency stop module BD 5934 safemaster

- According to EC Machines Directive 98/37/EG
- According to IEC/EN 60 204-1
- Safety category 4 according to EN 954-1
- Output: optionally 2 NO, 1 NO / 1 NC or 3 NO / 1 NC contacts for AC 250 V
- Single-channel connection
- Optionally automatic on feature when operating voltage applied or activation via the on button
- LED indicators for channels 1 and 2, and operating state
- Short circuit protection
- BD 5934.02 with gold-plated contacts to switch low loads
- 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
- Width 45 mm

Function diagram

Block diagram

Approvals and marking

Applications
- Protection of persons and machines
- Emergency stop circuits of machines

Indication

LED power supply: on when operating voltage present
LED K1/K2: on when current flows through relay K1/K2

Notes

Because of the gold-plated contacts the BD 5934.02 can be used to switch small loads 1 mVA ... 7 VA, 1 mW ... 7 W in the range of 0,1 ... 60V, 1 ... 300 mA. The gold-plated contacts allow also to switch the maximum current but the gold plating will be burnt off. After that the contacts cannot be used any more to switch the small loads.

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.

Technical data

Input

Nominal voltage $U_N$: AC 24, 48, 110, 127, 230, 240 V
DC 24 V

Voltage range
at 10 % residual ripple: DC 0,9 ... 1,1 $U_N$

Voltage range
at 48 % residual ripple: AC 0,8 ... 1,1 $U_N$
Nominal consumption: DC 24 V approx. 1,6 W
Control voltage at X1: DC 24 V
Control current: typ. DC 45 mA
Recovery time: 0,5 s

Circuit diagrams

BD 5934.02
BD 5934.48
BD 5934.16, BD 5934.16/61
Technical data

Output

Contacts
BD 5934.02: 2 NO contacts
BD 5934.16: 1 NO / 1 NC contacts
BD 5934.48: 3 NO / 1 NC contacts
The NO contacts are safety contacts. ATTENTION! The NC contacts 21-22 or 41-42 can only be used for monitoring.

Response time
Start with On-button: max. 100 ms
Automatic start: max. 100 ms
Release time: max. 35 ms
Contact type: relay, positively driven
Thermal current Iₜₚ: 6 A
Output voltage:
AC: 250 V
Switching capacity to AC 15:
AC 5 A / 230 V IEC/EN 60 947-5-1
for the NO contact
AC 2 A / 230 V IEC/EN 60 947-5-1
for the NC contact

Electrical life
to AC 15 at 2 A, AC 230 V:
10⁶ switching cycles IEC/EN 60 947-5-1
Permissible switching frequency:
600 switching cycles / h
Short-circuit strength
max. fuse rating: 6 A gL IEC/EN 60 947-5-1
Mechanical life:
10 x 10⁶ 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: 6 kV (air) IEC/EN 61 000-4-2
HF irradiation: 10 V / m IEC/EN 61 000-4-3
Fast transients: 4 kV IEC/EN 61 000-4-4
Surge voltages between wires for power supply:
2 kV IEC/EN 61 000-4-5
between wire and ground: 4 kV IEC/EN 61 000-4-5
Interference suppression:
Limit value class B EN 55 011
Housing: Housing: IP 40 IEC/EN 60 529
Terminals: IP 20 IEC/EN 60 529
Thermoplastic with V0 behaviour according to UL subject 94
Vibration resistance:
Amplitude 0.35 mm IEC/EN 60 068-2-6
frequency 10 ... 55 Hz.
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:
Plus-minus terminal screws
M 3.5 box terminal with wire protection
Mounting:
DIN rail IEC/EN 60 715
Weight: 450 g

Dimensions
Width x height x depth: 45 x 74 x 121 mm

Standard type
BD 5934.48 DC 24 V
Article number: 0045577 stock item
- Output: 3 NO / 1 NC contacts
- Nominal voltage Uₚ: DC 24 V
- Width: 45 mm

Variant
BD 5934. _ _ /61: with UL-approval

Ordering example for Variant
BD 5934 02 / _ DC 24 V
Nominal voltage
Variant, if required
Contacts
Type

Characteristics

Applications

Contact reinforcement by means of external contactors.
With switching currents greater than 5 A, the output contacts can be reinforced with external contactors with positively driven contacts.
The functioning of the external contactors is monitored by looping the NC contacts into the feedback circuit (terminals X1-X2).