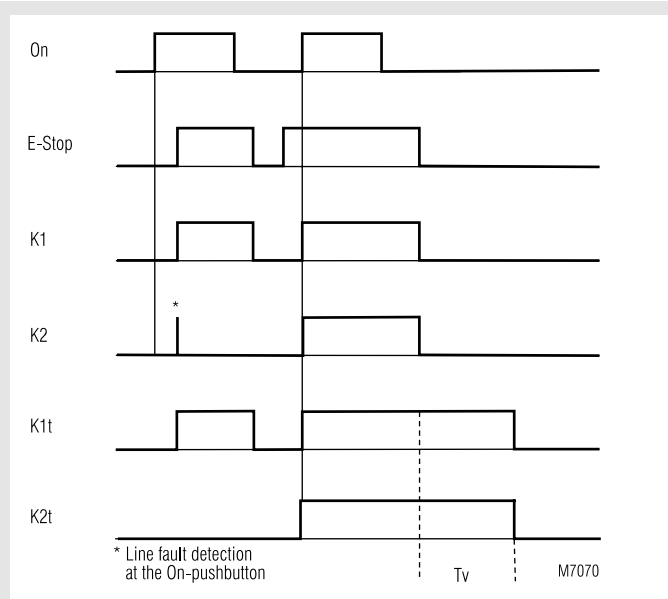


0226419



- According to EU directive for machines 98/37/EG
- According to IEC 204, EN 60204, DIN VDE 0113-1, EN 954-1
- Safety category 4 according to DIN EN 954-1
- Output: 3 NO or 2 NO, 1 NC instantaneous contacts and 3 NO release delayed contacts
- Single and 2-channel operation
- Line fault detection on On-button, when On-button is connected to S33-S34
- Manual restart with button on S33-S34 or automatic restart with bridge between S13-S14
- With or without cross fault monitoring in the E-stop loop
- LED indication for supply, channel 1/2 and release delayed contacts
- Removable terminal strips
- Wire connection: also 2 x 1,5 mm² stranded ferruled (isolated), DIN 46 228-4 or 2 x 2,5 mm² stranded ferruled DIN 46 228-1/-2/-3
- Width
BH 5928: 45 mm
BI 5928: 67,5 mm

Function diagram



Approvals and marking



* BH5928 approved
BI 5928 pending

Applications

Protection of people and machines

- Emergency stop circuits on machines
- Monitoring of safety gates
- Stop category 1 can be realised

Indication

upper LED: on, when supply connected
lower LEDs: on, when relay K1 and K2 resp. K1t and K2t energized

Notes

To select automatic restart terminals 13 - 14 must be bridged. Open terminals 13 - 14 select manual restart, the On-button must then be connected to S33 - S34.

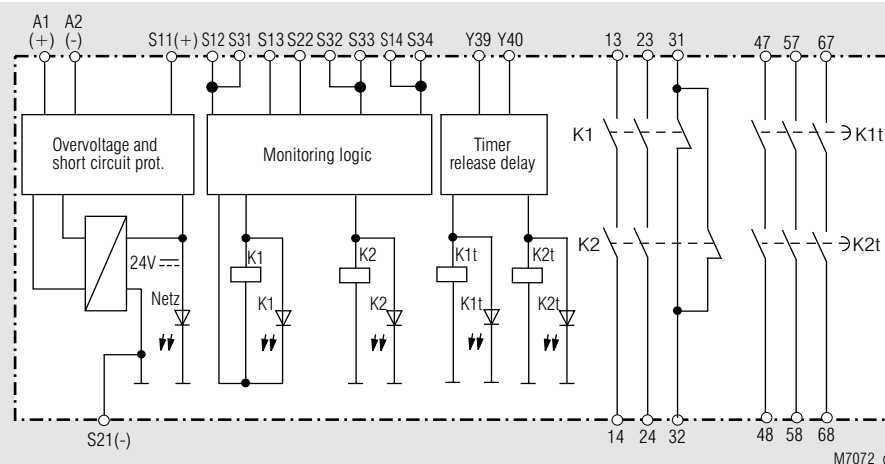
Line fault detection on On-button:

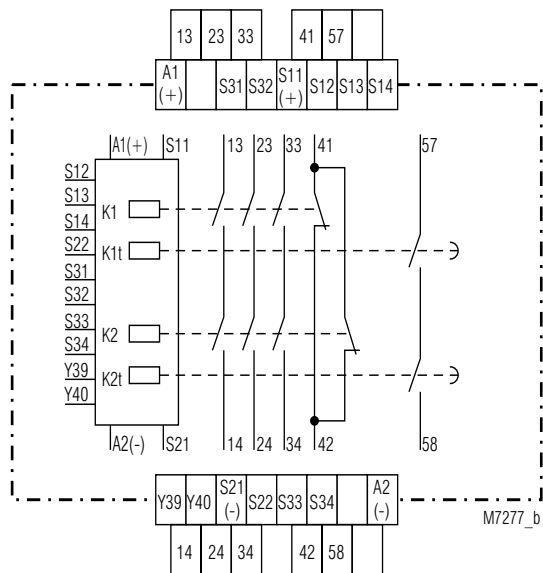
The line fault detection is only active when S12 and S22 are switched simultaneously. If the On-button is closed before S12, S31, S32 is connected to voltage (also when line fault across On-button), the output contacts will not close.

A line fault across the On-button which occurred after activation of the relay, will be detected with the next activation and the output contacts will not close. If a line fault occurs after the voltage has been connected to S12, S31, S32, the unit will be activated because this line fault is similar to the normal On-function.

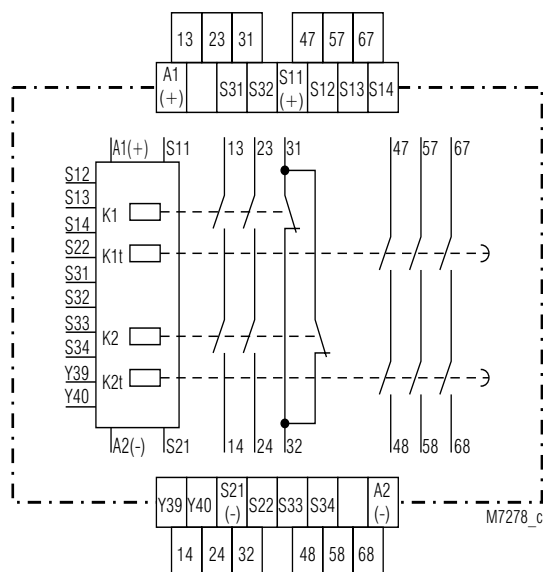
The unit can be operated with single channel and 2-channel operation with cross fault monitoring. For connection please refer to application examples.

Block diagram

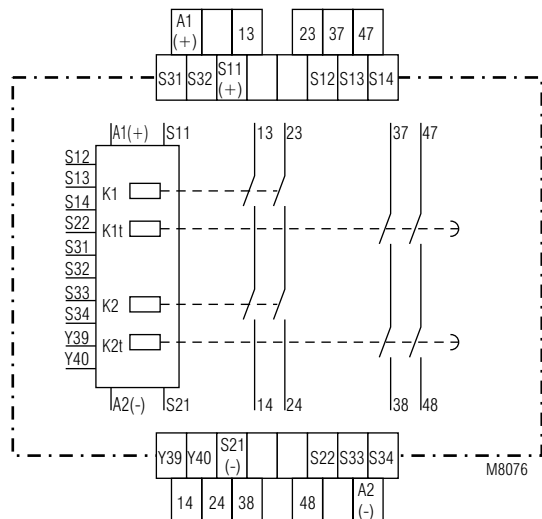




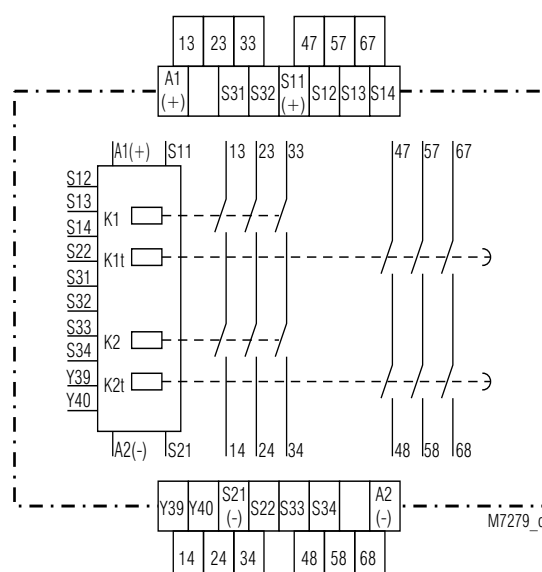
BH 5928.47



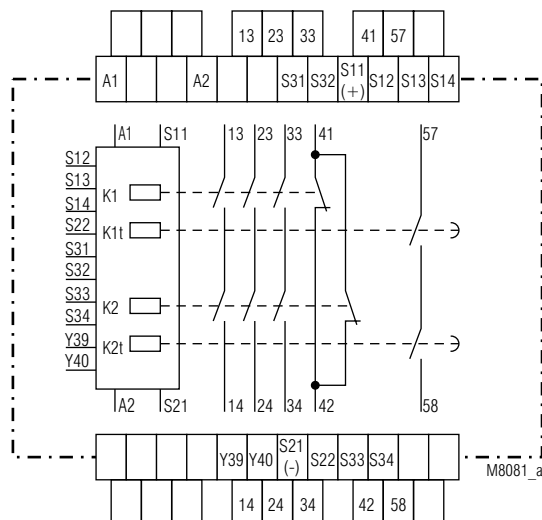
BH 5928.92



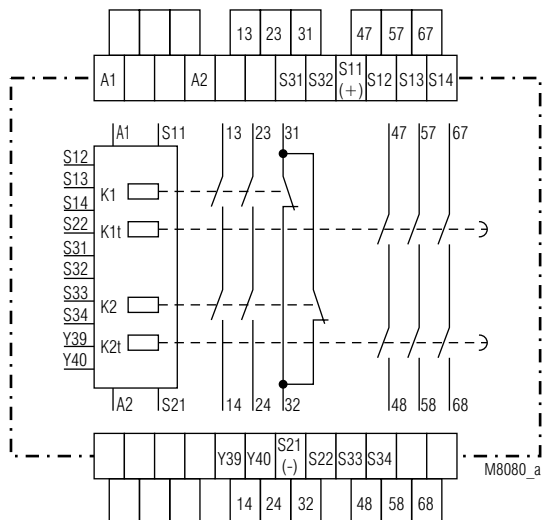
BH 5928.91



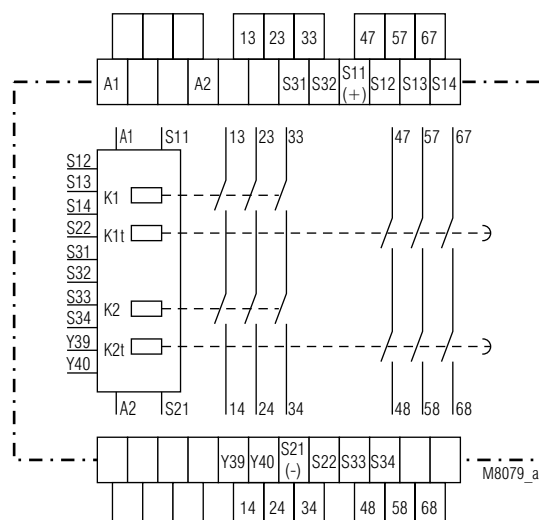
BH 5928.93



BI 5928.47



BI 5928.92



BI 5928.93

Notes

The gold plated contacts of the BH 5928 mean that this module is also suitable for switching small loads of 1 mA - 7 VA, 1 mW - 7 W in the range 0,1 - 60 V, 1 - 300 mA. The contacts also permit the maximum switching current. However since the gold plating will be burnt off at this current level, the device is no longer suitable for switching small loads after this. The terminal S21 permits the operation of the device in IT-systems with insulation monitoring, serves as a reference point for testing the control voltage and is used to connect the E-stop loop when cross fault monitoring is selected.

Connecting the terminal S21 to the protective ground bridges the internal short-circuit protection of Line A2(-). The short-circuit protection of line A1(+) remains active.

Y39 - Y40 must be closed to have timed outputs. By opening the bridge between Y39 and Y40 the time delay can be interrupted immediately. Without bridge the contacts switch without delay.

The time setting has to be sealed by the user after test.

Technical data

Input

Nominal voltage U_N :

BH 5928:

DC 24 V, AC/DC 24 V

BI 5928:

AC 110 V, 230 V

Voltage range:

AC

0,85 ... 1,1 U_N

DC

AC/DC

at 10% residual ripple:

0,9 ... 1,1 U_N 0,95 ... 1,1 U_N

at 48% residual ripple:

0,8 ... 1,1 U_N 0,8 ... 1,1 U_N

Nominal consumption:

AC approx. 6,0 VA

DC approx. 3,5 W

Nominal frequency:

50 / 60 Hz

Min. Off-time:

1 s

Control voltage on S11:

DC 23 V at U_N

Control current over

S12, S32:

40 mA at U_N each

Min. voltage on

S12, S32:

DC 21 V when relay activated

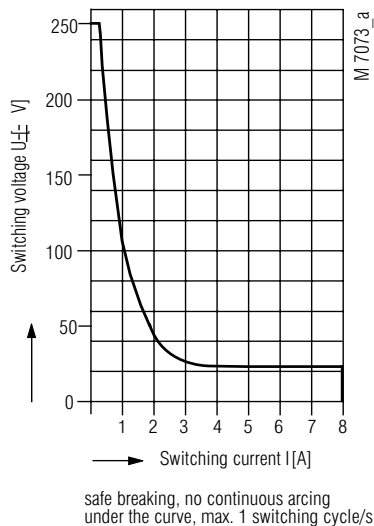
Short-circuit protection:

Internal PTC

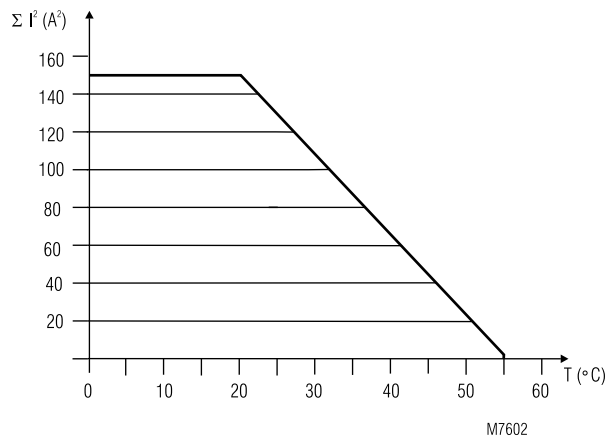
Overvoltage protection:

Internal VDR

Characteristics



Arc limit curve for resistive load



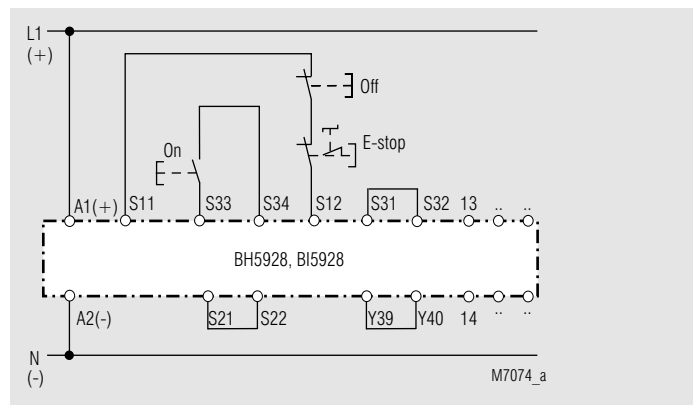
$$\Sigma I^2 = I_1^2 + I_2^2 + \dots + I_6^2$$

$I_1 \div I_6$ - Current in contact paths

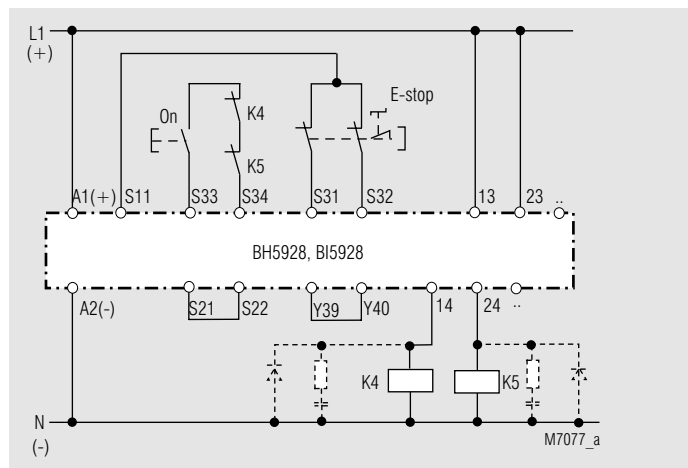
Max. current at 55°C over 3 contact paths = 0,5 A $\hat{=}$ 0,5² x 6 = 1,5 A²

Quadratic total current limit curve

Application examples

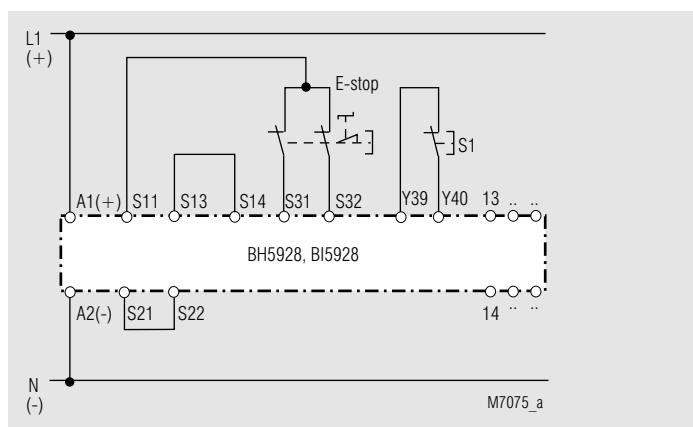


Single channel emergency stop circuit. This circuit does not have any redundancy in the emergency-stop control circuit

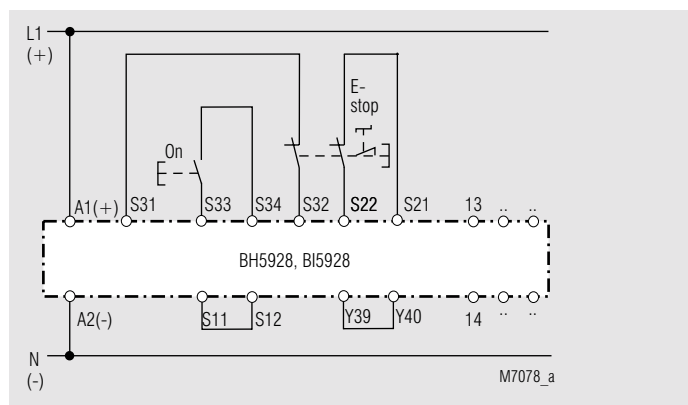


Contact reinforcement by external contactors, 2-channel controlled. The output contacts can be reinforced by external contactors with positive guided contacts for switching currents > 5 A.

Functioning of the external contactors is monitored by looping the NC contacts into the closing circuit (terminals S13-S14 or S33-S34)

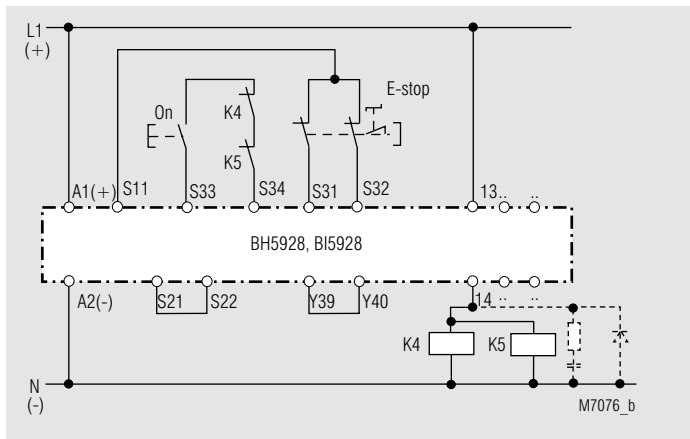


2-channel emergency stop circuit without cross fault monitoring autostart and interruption of time by S1

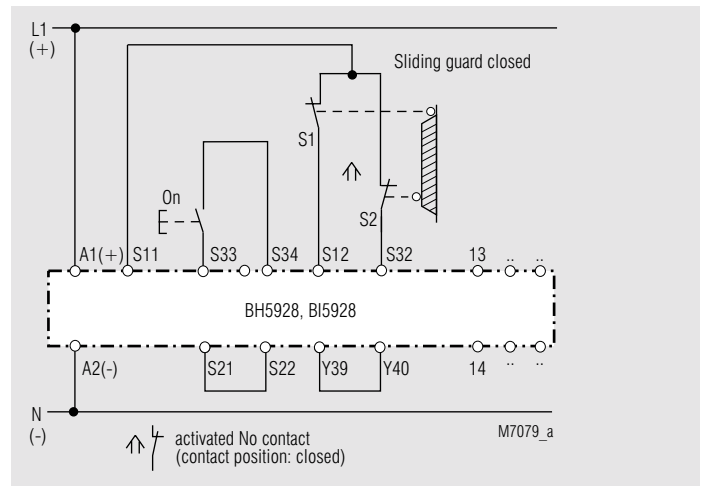


2-channel emergency stop circuit with cross fault detection

Application examples



Contact reinforcement by external contactors controlled by one contact path.



2-channel safety gate monitoring