Isolating Switching Amplifier
MS13-33Ex0-R
3 channels

- Intrinsically safe input circuits [EEx ia] IIC
- Galvanic isolation between input circuit, output circuit and power supply
- Input circuit monitoring for short-circuit and wire-break
- 3 relay outputs, each with one NO contact
- Selectable NO/NC output function

The MS13-33Ex0-R switching amplifier is a 3-channel device with intrinsically safe input circuits. Each output circuit features a relay with one NO contact.

The selected output mode applies to all three channels. Program for normally closed mode (NC/R) by leaving terminals 15/16 open or for normally open mode (NO/A) by linking terminals 15/16.

The input circuits are individually monitored for wire-break and short-circuit. The respective output turns off in a fault condition (green LED off).

When using mechanical contacts as input devices, resistors (II) must be added to the contacts. This will prevent the input monitoring circuit from recognising the mechanical contacts as a wire-break or short-circuit.
## Isolating Switching Amplifiers

<table>
<thead>
<tr>
<th>Type</th>
<th>MS13-33Ex0-R/230VAC</th>
<th>MS13-33Ex0-R/24VDC</th>
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<td>Ident-No.</td>
<td>53 332</td>
<td>53 338</td>
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### Supply Voltage $U_b$
- **Line frequency/ripple** $W_{pp}$: 48...62 Hz
- **Power/current consumption** $\leq 3.5$ VA
- **Galvanic isolation**
  - between input circuit, output circuit and supply voltage for $250 \, V_{rms}$, test voltage $2.5 \, kV_{rms}$

### Input Circuits
- **Supply Voltage** $UB$: 196...250 VAC, 20...28 VDC
- **Line frequency/ripple** $W_{pp}$: $\leq 10 \%$
- **Power/current consumption** $\leq 3.6$ W
- **Galvanic isolation**
  - between input circuit, output circuit and supply voltage for $250 \, V_{rms}$, test voltage $2.5 \, kV_{rms}$

### Operating characteristics
- **Voltage** $8 \, V$
- **Current** $4.5 \, mA$
- **Switching threshold** $1.55 \, mA$
- **Hysteresis** $0.2 \, mA$
- **Wire-break threshold** $\leq 0.1 \, mA$
- **Short-circuit threshold** $R_s \, \approx \, 200 \, \Omega$

### Output Circuits
- **Switching capacity** $1000 \, VA/60 \, W$
- **Switching frequency** $\leq 10 \, Hz$
- **Switching voltage** $250 \, VAC/60 \, VDC$
- **Switching current** $4 \, A$
- **Contacts** 1 NO contact, AgCdO
- **Contacts** 1 NO contact, AgCdO
- **Switching capacity** $1000 \, VA/60 \, W$
- **Switching frequency** $\leq 10 \, Hz$
- **Switching voltage** $250 \, VAC/60 \, VDC$
- **Switching current** $4 \, A$
- **Contacts** 3 relay outputs
- **Contacts** 3 relay outputs
- **Switching capacity** $1000 \, VA/60 \, W$
- **Switching frequency** $\leq 10 \, Hz$

### Ex-Approval acc. to Certificate of Conformity
- **Maximum nominal values**
  - **No load voltage** $U_0$: 11.0 V
  - **Short-circuit current** $I_k$: 41.0 mA
- **Maximum external inductances/capacitances**
  - $[EEx \, ia] \, IIC$: 1 mH/500 nF
  - $[EEx \, ib] \, IIC$: -

### Housing
- **Mounting** 50 mm wide, Polycarbonate/ABS panel mounting or snap-on clamps for top-hat rail (DIN 50022)
- **Connection** 2 x 8 self-lifting pressure plates
- **Connection profile** $\leq 2 \times 2.5 \, mm^2$ or $2 \times 1.5 \, mm^2$
- **Degree of protection** (IEC 60529/EN 60529) IP20
- **Operating temperature** -25...+60 °C

### Contact Configuration
- **Contact Configuration** Of mechanical switches with active input circuit monitoring function
  - $1...2.2 \, k\Omega$
  - $10...22 \, k\Omega$
  - $\approx 5 \, \Omega$
  - $\approx 0.6 \, W$

### Resistor Module
- **Resistor module** WM1, ident-no. 09 121 01