Isolating Switching Amplifier
MS13-22Ex0-R
2 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
- 2 relay outputs, each with one SPDT contact
- Selectable NO/NC output function

The MS13-22Ex0-R is a dual channel device with intrinsically safe input circuits. Each output circuit has one relay output with an SPDT contact.

The output of each channel is programmable for normally open mode (with jumper) or normally closed mode (without jumper). Program channel 1 for NO/A mode with a jumper between terminals 11 and 12. Leave terminals 11 and 12 open for NC/R mode. Terminals 13 and 14 perform the same functions for channel 2.

The input circuits are monitored for wire-break and short-circuit conditions. The respective output de-energises during an input fault condition and its corresponding green LED turns off.

If mechanical contacts are used as inputs, resistors must be added (II) to the contacts. This will prevent the monitoring circuit from recognising the mechanical contacts as a wire-break or short-circuit.
### Isolating Switching Amplifiers

<table>
<thead>
<tr>
<th>Type</th>
<th>MS13-22Ex0-R/230VAC</th>
<th>MS13-22Ex0-R/24VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ident-No.</td>
<td>53 222</td>
<td>53 228</td>
</tr>
<tr>
<td><strong>Supply Voltage</strong> $U_b$</td>
<td>184...250 VAC</td>
<td>20...28 VDC</td>
</tr>
<tr>
<td>Line frequency/ripple $W_{pp}$</td>
<td>48...62 Hz</td>
<td>≤ 10 %</td>
</tr>
<tr>
<td>Power/current consumption</td>
<td>≤ 3.5 VA between input circuit, output circuit and supply voltage for 250 $V_{rms}$, test voltage 2.5 $V_{rms}$</td>
<td>≤ 3.6 W between input circuit, output circuit and supply voltage for 250 $V_{rms}$, test voltage 2.5 $V_{rms}$</td>
</tr>
<tr>
<td>Galvanic isolation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Input Circuits
- acc. to EN 50227 (NAMUR), intrinsically safe according to EN 50020

#### Operating characteristics
- Voltage: 8 V
- Current: 8 mA
- Switching threshold: 1.55 mA
- Hysteresis: 0.2 mA
- Wire-break threshold: ≤ 0.1 mA
- Short-circuit threshold: $R_s$ approx. 200 Ω

#### Contact Configuration
- Of mechanical switches with active input circuit monitoring function

#### Output Circuits
- 2 relay outputs
- Contacts: 1 SPDT contact, AgCdO
- Switching voltage: ≤ 250 VAC/60 VDC
- Switching current: ≤ 4 A
- Switching capacity: ≤ 1000 VA/60 W
- Switching frequency: ≤ 10 Hz

#### Ex-Approval acc. to Certificate of Conformity
- BVS 94.C.2006 X

#### Maximum nominal values
- No load voltage $U_0$: 11.0 V
- Short-circuit current $I_k$: 27.0 mA

#### Maximum external inductances/capacitances
- $[\text{EEx} \text{ ia}]$ IIC: 1 mH/550 nF
- $[\text{EEx} \text{ ib}]$ IIC: -

#### LED Indications
- Power "ON": green
- Status indication: yellow

#### Housing
- 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: ≤ 2 x 2.5 mm² or 2 x 1.5 mm² with wire sleeves
- Degree of protection (IEC 60529/EN 60529): IP20
- Operating temperature: -25... +60 °C