Isolating Switching Amplifier
MK13-231Ex0-R
2 channels

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

The isolating switching amplifiers type MK13-231Ex0-R are dual channel devices featuring intrinsically safe input circuits. They can be connected to sensors according to EN 50227 (NAMUR), variable resistors or potential-free contacts.

Six front panel programming switches select the output function of each channel (normally open mode = switch position A, or normally closed mode = switch position R). The input circuit monitoring function can be activated for all channels (switch position N). In this position it is possible to enable and disable wire-break (switch D) and short-circuit (switch K) monitoring separately.

When using mechanical contacts as the input device, input circuit monitoring must be disabled (switch position K), or shunt resistors must be connected to the contacts (II). (See next page for contact configuration).

The green LED indicates that the device is powered. The dual colour LED indicates the switching status (yellow) as well as fault conditions (red). If the input circuit monitoring feature is activated, red illuminates to indicate a fault condition in the input circuit and the corresponding output relay and alarm relay de-energise.
## Isolating Switching Amplifiers

**Type**

<table>
<thead>
<tr>
<th>MK13-231Ex0-R/230VAC</th>
<th>MK13-231Ex0-R/24VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ident-No.</td>
<td>75 411 30</td>
</tr>
<tr>
<td></td>
<td>75 411 37</td>
</tr>
</tbody>
</table>

**Supply Voltage $U_B$**

|                      | 195.5...253 VAC     |
|                      | 10...30 VDC         |
| Line frequency/ripple $W_{PP}$ | 48...62 Hz          |
| Power/current consumption | $\leq 3$ VA          |
| Galvanic isolation     | between input circuit, output circuit and supply voltage for 250 $V_{rms}$, test voltage 2.5 $kV_{rms}$ |

**Input Circuits**

- Voltage: 8 V
- Current: 8 mA
- Switching threshold: 1.55 mA
- Hysteresis: typ. 0.2 mA
- Wire-break threshold: $\leq 0.1$ mA
- Short-circuit threshold: $\geq 6$ mA

**Contact Configuration**

- 1...2.2 k$\Omega$
- 10...22 k$\Omega$
- 2 x yellow/red (2-colour LED)

**Output Circuits**

- 3 relay outputs (NO)
- Switching voltage: $\leq 250$ V
- Switching current per output: $\leq 2$ A
- Switching capacity per output: $\leq 500$ VA/60 W
- Switching frequency: $\leq 10$ Hz
- Contact material: silver-alloy + 3 $\mu$m Au

**Ex-Approval acc. to Certificate of Conformity**

- Ex-approval: PTB 99 ATEX 2084
- Ex-approval: PTB 99 ATEX 2084

**Ex-Approval acc. to Certificate of Conformity**

- Maximum nominal values
  - No load voltage $U_0$: $\leq 11.5$ V
  - Short-circuit current $I_0$: $\leq 51.2$ mA
- Maximum external inductances/capacitances
  - IIB: 55 mH/11.2 $\mu$F
  - [Ex ia] IIC: 14 mH/1.64 $\mu$F

**LED Indications**

- Status indication/fault indication: 2 x yellow/red (2-colour LED), green
- Power "ON": green

**Terminal Housing**

- 16-pole, 36 mm wide, Polycarbonate/ABS, flammability class V-0 per UL 94
- Snap-on clamps for top-hat rail (DIN 50022)
- Screw terminals for panel mounting
- Via flat terminals with self-lifting pressure plates
- Degree of protection (IEC 60529/EN 60529): IP20
- Operating temperature: -25...+60 °C

---

*Hans Turck GmbH & Co. KG • D-45466 Mülheim an der Ruhr • Tel. 02 08/49 52-0 • Fax 02 08/49 52-264 • E-Mail: turckmh@mail.turck-globe.de*