Isolating Switching Amplifier
MK13-231Ex0-T
2 channels

- Dual channel switching amplifier
- Intrinsically safe input circuits
  [Ex 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 isolated transistor outputs, short-circuit and reverse polarity protected
- Selectable NO/NC output function

The isolating switching amplifiers type MK13-231Ex0-T 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. Each channel is equipped with an isolated, short-circuit and reverse polarity protected transistor output. 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 transistor output and common alarm output are disabled.
## Isolating Switching Amplifiers

<table>
<thead>
<tr>
<th>Type</th>
<th>MK13-231Ex0-T/230VAC</th>
<th>MK13-231Ex0-T/24VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ident-No.</td>
<td>75 421 30</td>
<td>75 421 37</td>
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</tbody>
</table>

### Supply Voltage \( U_{b} \)
- Line frequency/ripple \( W_{PP} \)
- Power/current consumption
- Galvanic isolation

<table>
<thead>
<tr>
<th>( U_{b} )</th>
<th>( W_{PP} )</th>
<th>(~ )</th>
<th>( W_{PP} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>196...253 VAC</td>
<td>48...62 Hz</td>
<td>( \leq 3 \text{ VA} )</td>
<td>( \leq 2 \text{ VA} )</td>
</tr>
</tbody>
</table>

### Input Circuits
- according to EN 50227 (NAMUR), intrinsically safe according to EN 50020
- Operating characteristics
  - Voltage
  - Current
  - Switching threshold
  - Hysteresis
  - Wire-break threshold
  - Short-circuit threshold

### Output Circuits
- 3 transistor outputs, potential-free, short-circuit protected
- Switching voltage
- Switching current per output
- Switching frequency
- Voltage drop

### Ex-Approval acc. to Certificate of Conformity
- PTB 99 ATEX 2084
- Maximum nominal values
  - No load voltage \( U_{0} \)
  - Short-circuit current \( I_{0} \)
- Maximum external inductances/capacitances
  - \( \text{[EEx ia] IIB} \)
  - \( \text{[EEx ia] IIC} \)

### LED Indications
- Status indication/fault indication
- Power "ON"

### 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)
- or screw terminals for panel mounting
- via flat terminals with self-lifting pressure plates
- \( \leq 2 \times 2.5 \text{ mm}^2 \) or \( 2 \times 1.5 \text{ mm}^2 \) with wire sleeves
- Degree of protection (IEC 60529/EN 60529)
- Operating temperature

<table>
<thead>
<tr>
<th>( U_{0} )</th>
<th>( I_{0} )</th>
<th>( \text{[EEx ia] IIB} )</th>
<th>( \text{[EEx ia] IIC} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \leq 14 \text{ V} )</td>
<td>( \leq 22 \text{ mA} )</td>
<td>( 55 \text{ mH}/11.2 \mu \text{F} )</td>
<td>( 14 \text{ mH}/1.64 \mu \text{F} )</td>
</tr>
</tbody>
</table>

- 2 x yellow/red (2-colour LED)
- green

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

![Contact Configuration Diagram]

### Connection profile
- 2 x 2.5 mm² or 2 x 1.5 mm² with wire sleeves

### Degree of protection
- IP20
- -25...+60 °C

### Mounting
- snap-on clamps for top-hat rail (DIN 50022)
- or screw terminals for panel mounting

### Connection
- via flat terminals with self-lifting pressure plates
- \( \leq 2 \times 2.5 \text{ mm}^2 \) or \( 2 \times 1.5 \text{ mm}^2 \) with wire sleeves

### Degree of protection
- IP20
- -25...+60 °C