The MK13-22UP-Ex0 and the MK13-22UN-Ex0 are dual channel devices featuring intrinsically safe input circuits. They can be connected to sensors conforming to EN 50227 (NAMUR), variable resistors or potential-free contacts.

Both transistor outputs are short-circuit protected and available in either pnp (MK13-22UP-Ex0) or npn (MK13-22UN-Ex0) versions.

The output function (normally open mode = switch position A / or normally closed mode = switch position R) of both channels is selected by a selector switch located on the front cover.

The input circuits are monitored for short-circuit and wire-break. The input circuit monitoring function cannot be disabled. If input circuit monitoring is not required, the switching amplifiers MK1-22UP-Ex0 or MK1-22UN-Ex0 should be used alternatively.

When using mechanical contacts as input devices, shunt resistors must be connected to the contacts (see next page for contact configuration).

Should an input circuit error occur, the respective output will be disabled and the dual colour LED will illuminate (red).
### Isolating Switching Amplifiers

<table>
<thead>
<tr>
<th>Type</th>
<th>MK13-22UP-Ex0/24VDC</th>
<th>MK13-22UN-Ex0/24VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ident-No.</td>
<td>75 056 14</td>
<td>75 056 12</td>
</tr>
</tbody>
</table>

#### Supply Voltage $U_{\text{in}}$
- Ripple $W_{\text{pp}}$: $\leq 10\%$
- Current consumption: approx. $50\,\text{mA}$
- Galvanic isolation: between input circuit, output circuit and supply voltage for $250\,\text{V}_{\text{rms}}$
- Test voltage: $2.5\,\text{kV}_{\text{rms}}$

#### Input Circuits
- According to EN 50227 (NAMUR), intrinsically safe according to EN 50020
- Operating characteristics:
  - Voltage: $8\,\text{V}$
  - Current: $5\,\text{mA}$
  - Switching threshold: $1.55\,\text{mA}$
  - Hysteresis: typ. $0.2\,\text{mA}$
  - Wire-break threshold: $\leq 0.1\,\text{mA}$
  - Short-circuit threshold: $\geq 6\,\text{mA}$

#### Output Circuits
- $\text{npn transistor outputs}$
- Voltage drop: $\leq 2.5\,\text{V}$
- Switching current output: $\leq 50\,\text{mA}$, short-circuit protected
- Switching frequency: $\leq 3\,\text{kHz}$

#### Ex-Approval acc. to Certificate of Conformity
- PTB Ex-93.C.4091
- PTB Ex-93.C.4091

#### Maximum nominal values
- No load voltage $U_0$: $12\,\text{V}$
- Short-circuit current $I_k$: $36\,\text{mA}$
- Maximum external inductances/capacitances:
  - $[\text{EEx ia}]\,\text{IIC}$: $1\,\text{mH}/470\,\text{nF}$
  - $[\text{EEx ib}]\,\text{IIC}$: $23\,\text{mH}/1.7\,\mu\text{F}$

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

#### Terminal Housing
- 8-pole, 18 mm wide, Polycarbonate/ABS, flammability class V-0 per UL 94
- 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
- Connection profile: $\leq 2\times 2.5\,\text{mm}^2$ or $2\times 1.5\,\text{mm}^2$ with wire sleeves
- Degree of protection (IEC 60529/EN 60529): IP20
- Operating temperature: $-25\ldots+60\,\text{°C}$

![Isolating Switching Amplifiers](image-url)