Isolating Switching Amplifier
MK13-12Ex0-R
1 channel

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

The MK13-12Ex0-R type switching amplifiers are single channel devices featuring an intrinsically safe input circuit. They can be connected to sensors according to EN 50227 (NAMUR), variable resistors or potential-free contacts.

The output circuit is equipped with two relays operating in parallel, each with one SPDT contact.

Three front panel programming switches enable selection of the output function (normally open or normally closed mode) and separate activation and de-activation of wire-break (switch position DB) and short-circuit monitoring (switch position K). Switch positions A and R represent normally open mode (NO) and normally closed (NC) mode, respectively.

When using mechanical contacts as the input device, wire-break and short-circuit monitoring must be disabled or shunt resistors must be connected to the contacts. (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). When the input circuit monitoring feature is activated, red illuminates to indicate a fault condition in the input circuit and the output relays are de-energised.
## Isolating Switching Amplifiers

<table>
<thead>
<tr>
<th>Type</th>
<th>MK13-12Ex0-R/230VAC</th>
<th>MK13-12Ex0-R/24VDC</th>
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<tbody>
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<td>Ident-No.</td>
<td>75 41110</td>
<td>75 41117</td>
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### Supply Voltage $U_B$
- Line frequency/ripple $W_{PP}$: 48...62 Hz
- Power/current consumption: $\leq 30 \text{ mA}_{\text{rms}}$
- Galvanic isolation between input circuit, output circuit and supply voltage for 250 $V_{\text{rms}}$, test voltage 2.5 $kV_{\text{rms}}$
- Supply Voltage $U_B$: 196...253 VAC
- Line frequency/ripple: $\leq 10\%$
- Power/current consumption: $\leq 1.3\text{ W}$
- Test voltage: $\leq 250 \text{ V}_{\text{rms}}$

### Input Circuits
- Operating characteristics:
  - Voltage: 8 V
  - Current: 8 mA
  - Switching threshold: 1.55 mA
  - Hysteresis: typ. 0.2 mA
  - Wire-break threshold: $\leq 0.1\text{ mA}$
  - Short-circuit threshold: $\geq 6.0\text{ mA}$
- According to EN 50227 (NAMUR), intrinsically safe according to EN 50020

### Output Circuits
- 2 relay outputs (SPDT)
- Switching voltage: $\leq 250 \text{ V}_{\text{AC}}/120 \text{ V}_{\text{DC}}$
- Switching current per output: $\leq 2\text{ A}$
- Switching capacity per output: $\leq 500 \text{ VA}/60 \text{ W}$
- Switching frequency: $\leq 10 \text{ Hz}$
- Contact material: silver-alloy + 3 µm Au

### Contact Configuration
- Of mechanical switches with active input circuit monitoring function
- 1...2.2 kΩ
- 10...22 kΩ
- Resistor module WM1, ident-no. 09 121 01

### Ex-Approval acc. to Certificate of Conformity
- PTB 99 ATEX 2083
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- Maximum nominal values:
  - No load voltage $U_0$: $\leq 11.9\text{ V}$
  - Short-circuit current $I_0$: $\leq 36\text{ mA}$
- Maximum external inductances/capacitances:
  - $[EEx ia] IIB$: 87 mH/9.4 µF
  - $[EEx ia] IIC$: 23 mH/1.45 µF

### LED Indications
- Status indication/fault indication: yellow/red (2-colour LED)
- Power "ON": green
- Yellow/red (2-colour LED)
- 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)
- Connection:
  - 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): IP 20
- Operating temperature: -25...+60 °C