Isolating Switching Amplifier
MK13-UPN-Ex0/24VDC
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)
- 1 npn and 1 pnp short-circuit protected transistor output
- Selectable NO/NC output function

The MK13-UPN-Ex0 is a single channel switching amplifier with an intrinsically safe input circuit. It can be used in conjunction with sensors conforming to EN 50227 (NAMUR), variable resistors or potential-free contacts.

The device is equipped with one short-circuit protected pnp transistor output and one short-circuit protected npn transistor output. The output function is selected by a switch located on the front cover. Positions A and R represent normally open (NO) and normally closed (NC) modes, respectively. Both outputs are either activated or de-activated at the same time.

The input is monitored for short-circuit and wire-break. The input circuit monitoring function can be disabled by jumpering terminals 3 and 4.

When using mechanical contacts as the input device, the input circuit monitoring function must be disabled (III), or shunt resistors must be connected to the contacts (II).

Should an input circuit error occur, both outputs will be disabled and the green LED (operational readiness) will turn off.
Isolating Switching Amplifiers

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Supply Voltage $U_0$
- $U_0 = 10...30$ VDC
- Ripple $W_{pp} \leq 10\%$
- Current consumption approx. 20 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
- Voltage $8.5 \, \text{V}$
- Current $5 \, \text{mA}$
- Switching threshold $1.55 \, \text{mA}$
- Hysteresis typ. $0.4 \, \text{mA}$
- Wire-break threshold $\leq 0.1 \, \text{mA}$
- Short-circuit threshold $\geq 6 \, \text{mA}$

Contact Configuration
- Of mechanical switches with active input circuit monitoring function
- Voltage $10...22 \, \text{k}\Omega$
- Hysteresis $1...2.2 \, \text{k}\Omega$

Output Circuits
- 2 pnp transistor outputs
- Voltage drop $\leq 2.5 \, \text{V}$
- Switching current output (5) $\leq 100 \, \text{mA}$, short-circuit protected, pnp
- Switching current output (6) $\leq 100 \, \text{mA}$, short-circuit protected, npn
- Switching frequency $\leq 3 \, \text{kHz}$

Ex-Aproval acc. to Certificate of Conformity BVS Ex-89.C.2010
- No load voltage $U_0 = 10.5 \, \text{V}$
- Short-circuit current $I_k = 31.3 \, \text{mA}$
- Maximum external inductances/capacitances $EEx\, ia)$ $IIC = 5 \, \text{mH}/510 \, \text{nF}$
  - $EEx\, ib)$ $IIC = 36 \, \text{mH}/3 \, \mu\text{F}$

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

Terminal Housing
- 8-pole, 18 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
- 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 $-25...+60 \, ^\circ\text{C}$