The MC13-451Ex0-T/24VDC is a four-channel switching amplifier with intrinsically safe input circuits. Each channel has one non-polarised transistor output with thermally activated short-circuit protection. The output function of each channel is programmable for direct mode (N.O.) or inverse mode (N.C.) via plug-in links on the card.

If a fault in one of the input circuits occurs, the common alarm relay de-energises and the red LED illuminates. For fault indications, either the N.C. or N.O. mode of the alarm output relay can be used (programmable via a plug-in link on the card).

The alarm output relay is energised, when operating voltage is applied and there are no fault conditions in the input circuits.
Switching Amplifiers

**Type**

- **Ident-No.**
  - MC13-4S1Ex0-TR/24VDC
  - 90 280 01

**Supply Voltage $U_B$**

- Ripple $W_{pp}$: $\leq 10\%$
- Overvoltage release: $33\, \text{V} \pm 1.5\, \text{V}$
- Reverse polarity protection: $\leq 120\, \text{V}$
- Power/Current consumption: $\leq 170\, \text{mA}$
- Galvanic isolation: between input circuit, output circuit and supply voltage for $250\, V_{\text{ms}}$, test voltage $2.5\, kV_{\text{rms}}$

**Input Circuits**

- Operating characteristics: DIN 19234 (NAMUR), intrinsically safe
- Voltage: 8 V
- Current: 8 mA
- Switching threshold: 1.55 mA
- Hysteresis: 0.2 mA
- Wire-break threshold: $\leq 0.1\, \text{mA}$
- Short-circuit threshold: $\geq 6\, \text{mA}$

**Output Circuits**

- Switching voltage: $\leq 30\, \text{VDC}$
- Switching current: $\leq 200\, \text{mA}$
- Voltage drop: approx. 4 V/200 mA, approx. 2.7 V/50 mA
- Switching frequency: $\leq 1\, \text{kHz}$
- Common alarm output: 1 relay (N.O/N.C. programmable)
- Contacts: silver-alloy + 3 $\mu\text{m} \, \text{Au}$
- Switching voltage: $\leq 36\, \text{V}$
- Switching current: $\leq 1\, \text{A}$
- Switching capacity: $\leq 36\, \text{VA/30 W}$

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

- PTB No. Ex-84/2110X
- Maximum nominal values:
  - No-load current $U_0$: 9.6 V
  - Short-circuit current $I_k$: 42.3 mA
  - [EEx ia] IIC: 1 mH/720 nF (alternatively: 5 mH/560 nF)
  - [EEx ib] IIC: 19 mH/4 $\mu\text{F}$

**LED Indications**

- Power “ON”: green
- Status indication: yellow
- Fault: red

**Eurocard**

- Material: glass-fiber reinforced epoxy resin, quality class FR4
- Front panel: plastic, 4TE = 20.32 mm
- Connection: connector PER DIN 41612, type F, 32-pole (series z+d)
- Operating temperature: -25...+60 °C
- Coding No. 17

**Dimensions**

- Width: 120.5 mm
- Height: 49.6 mm
- Depth: 20.12 mm
- [Figure]

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