

## Isolating Switching Amplifier MK13-451Ex0-T/24VDC MK13-451Ex0-T/230VAC 4-channel

1



- **4-channel isolating switching amplifier with common alarm output**
- **Intrinsically safe input circuits EEx ia**
- **Area of application according to ATEX: II (1) GD**
- **Galvanic isolation between input circuits, output circuits and supply voltage**
- **Input circuit monitoring for wire-break and short-circuit (can be disabled)**
- **5 isolated, short-circuit and reverse polarity protected transistor outputs**
- **Selectable NO/NC output function**

The transistor outputs are short-circuit and reverse polarity protected. A positive voltage can be applied to the outputs via their common connection. The device also avails of a common alarm output.

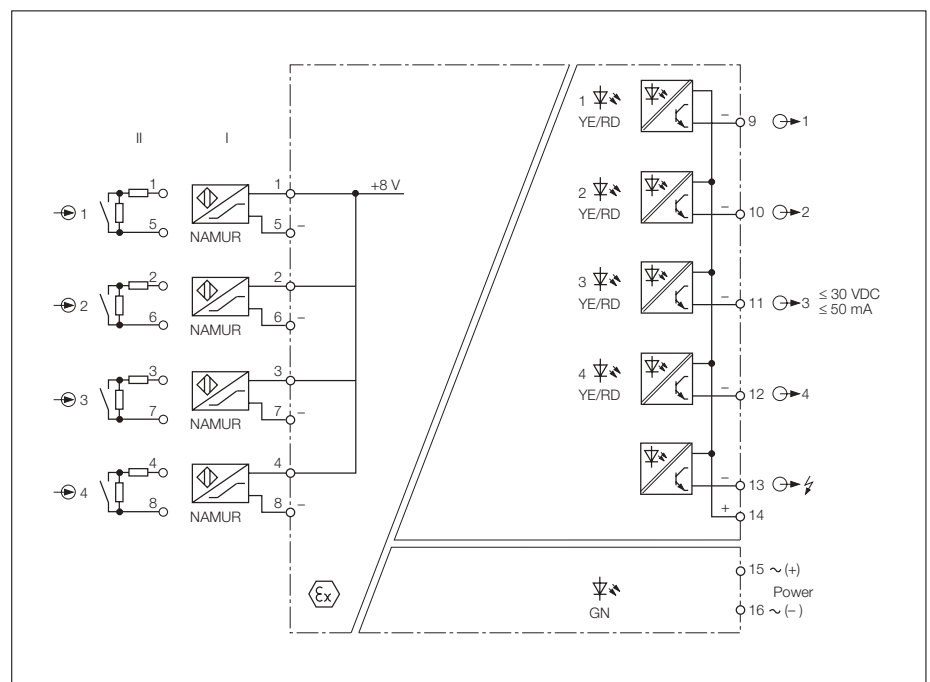
Ten front panel programming switches select the output function of each channel (switch positions A and R represent normally open mode (NO) and normally closed (NC) mode, respectively) and enable input circuit monitoring.

Switches D (wire-break) and K (short-circuit) determine which of their conditions should be monitored for all channels with activated input circuit monitoring (switch

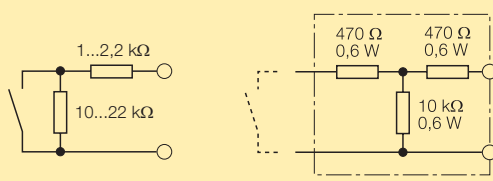
position N). When using potential-free contacts as the input device, input circuit monitoring must be disabled (switch position K) or shunt resistors must be connected to the contacts (II). (See next page for contact configuration).

The green LED on the front cover indicates that the devices are powered. The four dual colour LEDs indicate 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 respective transistor output and alarm output are disabled.

The MK13-451Ex0-T type switching amplifiers are 4-channel devices featuring intrinsically safe input circuits. They can be connected to sensors according to EN 60947-5-6 (NAMUR), variable resistors or potential-free contacts.



## Isolating Switching Amplifier MK13-451Ex0-T

Type	MK13-451Ex0-T/230VAC	MK13-451Ex0-T/24VDC
Ident-no.	7542180	7542187
<b>Supply voltage</b> $U_B$	196...253 VAC	10...30 VDC
Line frequency/ripple $W_{PP}$	48...62 Hz	$\leq 10\%$
Power/current consumption	$\leq 3$ VA	$\leq 2$ W
Galvanic isolation	between input circuit, output circuit and supply voltage for 250 $V_{rms}$ , test voltage 2.5 $kV_{rms}$	between input circuit, output circuit and supply voltage for 250 $V_{rms}$ , test voltage 2.5 $kV_{rms}$
<b>Input circuits</b>	according to EN 60947-5-6 (NAMUR), intrinsically safe according to EN 50020	according to EN 60947-5-6 (NAMUR), intrinsically safe according to EN 50020
Operating characteristics		
– Voltage	8 V	8 V
– Current	8 mA	8 mA
Switching threshold	1.55 mA	1.55 mA
Hysteresis	typ. 0.2 mA	typ. 0.2 mA
Wire-break threshold	$\leq 0.1$ mA	$\leq 0.1$ mA
Short-circuit threshold	$\geq 6.0$ mA	$\geq 6.0$ mA
<b>Contact configuration</b>	 <p>resistor module WM1, ident-no. 0912101</p>	
Of mechanical switches with active input circuit monitoring function		
<b>Output circuits</b>	5 transistor outputs, potential-free, short-circuit protected	5 transistor outputs, potential-free, short-circuit protected
Switching voltage	$\leq 30$ VDC	$\leq 30$ VDC
Switching current per output	$\leq 50$ mA	$\leq 50$ mA
Switching frequency	$\leq 3$ kHz	$\leq 3$ kHz
Voltage drop	$\leq 2.5$ V	$\leq 2.5$ V
<b>Ex-approval acc. to certificate of conformity</b>	PTB 99 ATEX 2084	PTB 99 ATEX 2084
Maximum nominal values		
– No load voltage $U_0$	$\leq 11.5$ V	$\leq 11.5$ V
– Short-circuit current $I_0$	$\leq 51.2$ mA	$\leq 51.2$ mA
Max. external inductances/capacitances $L_0/C_0$		
– [EEx ia/ib] IIC	1.64 $\mu$ F/14 mH	1.64 $\mu$ F/14 mH
– [EEx ia/ib] IIB	11.2 $\mu$ F/55 mH	11.2 $\mu$ F/55 mH
Marking of devices	II (1) G [EEx ia] IIC	II (1) G [EEx ia] IIC
<b>LED indications</b>		
– Power	green	green
– Switching status/fault indication	4 x yellow/red (2-colour LED)	4 x yellow/red (2-colour LED)
<b>Housing</b>	16-pole, 36 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	$\leq 2 \times 2.5$ mm <sup>2</sup> or $2 \times 1.5$ mm <sup>2</sup> with wire sleeves	
Degree of protection (IEC 60529/EN 60529)	IP20	
Operating temperature	-25...+60 °C	

