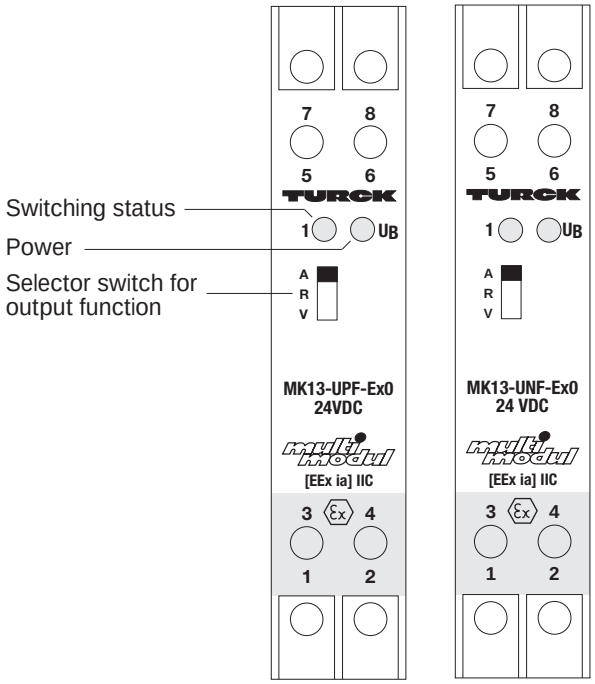


Isolating Switching Amplifier MK13-UPF-Ex0/24VDC MK13-UNF-Ex0/24VDC 1 channel

- **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)**
- **2 short-circuit protected transistor outputs, function programmable:**
  - **pnp (MK13-UPF-Ex0)**
  - **npn (MK13-UNF-Ex0)**
- **Optional separate output for error indications**
- **Selectable NO/NC output function**

The MK13-UPF-Ex0 and MK13-UNF-Ex0 switching amplifiers are single channel devices with intrinsically safe input circuit. They can be used in conjunction with sensors conforming to EN 50227 (NAMUR), variable resistors or potential-free contacts.

The devices have two short-circuit protected transistor outputs. The output function is selected by a switch located on the front cover. Switch positions A, R and V represent normally open mode (NO), normally closed (NC) mode and complementary mode, respectively.

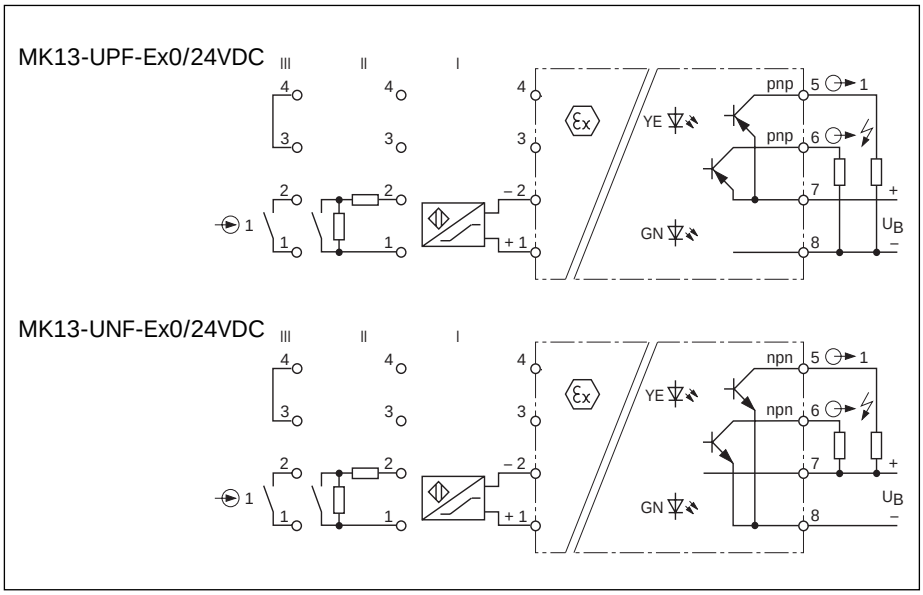
The input circuit is monitored for short-circuit and wire-break. The input circuit monitoring function can be disabled by jumpering terminals 3 and 4.

In switch positions A and R the switching signal is provided by output 5. If the input monitoring function is active, error indications are provided by output 6.

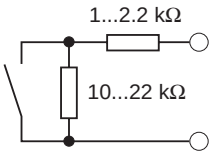
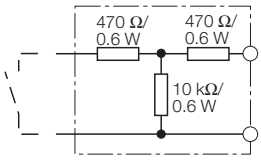
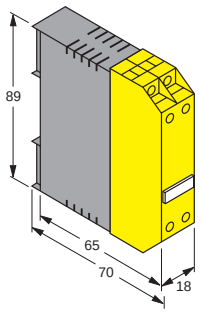
Switch position V represents complementary outputs. An external exclusive OR circuit monitoring may be used to evaluate faults in the input circuit.

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

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).



Isolating Switching Amplifiers

Type	MK13-UPF-Ex0/24VDC	MK13-UNF-Ex0/24VDC
Ident-No.	75 052	75 05 210
Supply Voltage U_B	10...30 VDC	10...30 VDC
Ripple W_{PP}	≤ 10 %	≤ 10 %
Current consumption	approx. 20 mA	approx. 20 mA
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}
Input Circuits	according to EN 50227 (NAMUR), intrinsically safe according to EN 50020	according to EN 50227 (NAMUR), intrinsically safe according to EN 50020
Operating characteristics		
– Voltage	8.5 V	8.5 V
– Current	5 mA	5 mA
Switching threshold	1.55 mA	1.55 mA
Hysteresis	typ. 0.4 mA	typ. 0.4 mA
Wire-break threshold	≤ 0.1 mA	≤ 0.1 mA
Short-circuit threshold	≥ 6 mA	≥ 6 mA
Contact Configuration Of mechanical switches with active input circuit monitoring function		 resistor module WM1, ident-no. 09 121 01
Output Circuits	2 pnp transistor outputs	2 npn transistor outputs
Voltage drop	≤ 2.5 V	≤ 2.5 V
Switching current per output	≤ 100 mA, short-circuit protected	≤ 100 mA, short-circuit protected
Switching frequency	≤ 3 kHz	≤ 3 kHz
Ex-Approval acc. to Certificate of Conformity	BVS 89.C.2010	BVS 89.C.2010
Maximum nominal values		
– No load voltage U_0	10.5 V	10.5 V
– Short-circuit current I_k	31.3 mA	31.3 mA
Maximum external inductances/capacitances		
– [EEx ia] IIC	5 mH/510 nF	5 mH/510 nF
– [EEx ib] IIC	36 mH/3 µF	36 mH/3 µF
LED Indications		
– Status indication	yellow	yellow
– fault indication	red	red
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	≤ 2 x 2.5 mm^2 or 2 x 1.5 mm^2 with wire sleeves	
Degree of protection (IEC 60529/EN 60529)	IP20	
Operating temperature	-25…+60 °C	

Hans Turck GmbH & Co. KG • D–45466 Mülheim an der Ruhr • Tel. 02 08/49 52-0 • Fax 02 08/49 52-264 • E-Mail: turckmh@mail.turck-globe.de