

Manufacturer's declaration



For functional safety to IEC 61508 / IEC 61511

march 2023

We declare under our sole responsibility that the resistance thermometers of the series

TFE without transmitter

(Model code see operating instructions)

If the operating instructions are observed, they are suitable for use in a safety-related application in accordance with IEC 61511-1 according to 1b or 11.5 "Application of tried-and-tested hardware" and meet the classification in SIL 2 with the minimum hardware fault tolerance MHF = 0. Previous use is documented in Safety Report SB 0901. The main type of failure is a line break and leads to failure of the measurement or a resistance $\gg 100$ ohms. No parameters can be set on the device and therefore cannot be adjusted. The specification can be found in the operating instructions.

Regular exam:

OK if $R \gg 110 \Omega$ (with Pt100),
Risol $> 100 M\Omega$.

Required instruments:

- Millivolt meter
- Resistance meter or resistance bridge
- Insulation measuring device with a voltage of 60 ... 100 V (all measurements at room temperature)

The heating of the thermocouples or resistance thermometers to approx. 200 °C ... 400 °C (without temperature control) allows further conclusions to be drawn about interruptions, reverse polarity (with thermocouples) or insufficient insulation resistance.

The following checks (when removed) can be carried out:

- Check continuity and isolation at room temperature
- Establish wire jumper by "knocking".
- A thermocouple is considered OK if $R < 20 \Omega$ (wire > 0.5 mm \varnothing).
- The value depends on the wire cross-section and length. Risol = 110 M Ω (with insulated thermocouple).

Recommended cycle: annually

Metrics

HTF = 0
SFF¹ = 100
PFD = 0,0015
 λ_{du} ¹ = 0

A resistance thermometer can be considered

¹ The main type of failure is a line break, which is a recognizable safe state for the connected electronics.

Tobias Frey
- Dipl.-Ing. -

Remo Kamber
- CEO - Albert Balzer AG -