

# Measuring Transducer TK-101

## Mounting- and Operating Instructions

### Ex-Zone 0 Category 1

### Important safety instructions please read and note

If the transducer is to operate smoothly and safely, it is vital that it is transported, stored and assembled appropriately, installed and commissioned correctly, used only as intended and repaired as required. These actions should only be performed by individuals with the required specialist knowledge and corresponding qualifications.

The applicable safety regulations for the erection and operation of electrical systems in explosion risk areas shall be observed. Your particular attention is drawn to the erection provisions in accordance with **EN 60079-0**, **EN 60079-11**, **EN 60079-26**, for electrical plants in areas subject to explosion hazards. The attached EC-type examination certificate **TÜV 02 ATEX 1795 X** respectively **IECEX TUN 17.0036X** must also be observed.

Should the information contained in the instructions below prove to be inadequate in any way, please contact the manufacturer.

### Application

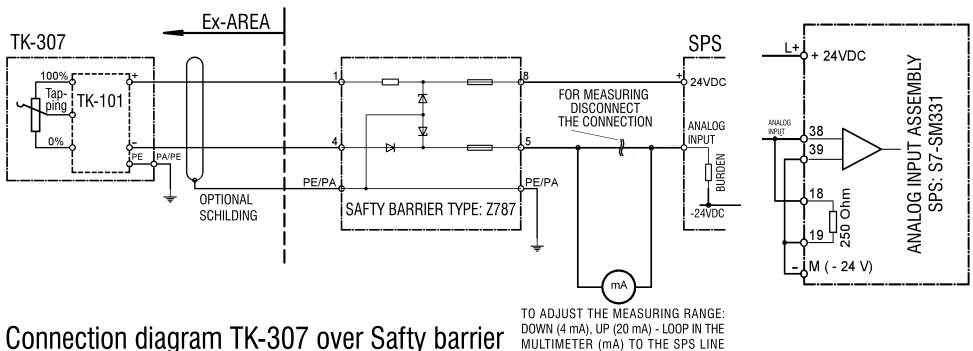
The TK-101 transducer is integrated directly into the connection socket of our continuous filling level probes of the type series TK-30... It converts the resistance signal of the continuous level measuring sensors into a unit current signal (4..20 mA) proportional to the filling level height. installed in the float. The TK-101 has a potentiometer for zero adjustment (MIN), an for 100% setting (MAX).

### Mounting

The TK-101 is intended for the installation into a housing, which offers suitable protection against the respective ambient conditions during operation. At the factory, the TK-101 is integrated into the respective TK-30\_ housing.

### Electrical connection

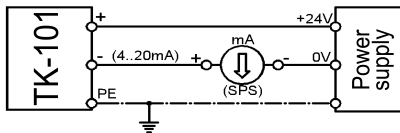
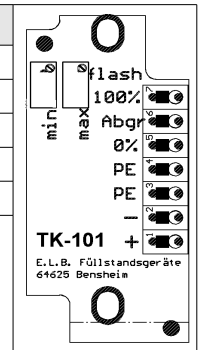
If the probe is used in hazardous areas, it may only be operated via a Zener barrier or an approved Ex-supply device. The electrical connection must be made without power.



Connection diagram TK-307 over Safty barrier

The sensor line should not be installed in close proximity of power currents. If this cannot be avoided, the use of a shielded cable can reduce interferences through coupling.

TK-101	Pin assignment
+	Supply voltage $U_i$ : +28 VDC; $I_i$ : 93 mA; $P_i$ : 660 mW
-	Output 4 ... 20 mA (for input of display, SPS ect. )
<b>ABOVE</b>	Upper start of the resistor chain (wire color yellow) <b>(internal connection)</b>
<b>BELOW</b>	Bottom start of the resistor chain (wire color red) <b>(internal connection)</b>
<b>TAPPING</b>	Pickup of the current resistance value (wire color black) <b>(internal connection)</b>



## Function

After the electrical connection has been completed, the TK-101 is operational and provides the current value in accordance with the input signal to the output loop.

When ordering, the TK-101 is aligned with the output current range (4...20 mA).

In case the connection to the transmitter chain is defective, the signal is displayed with a current value of  $I > 22$  mA (except 100% connection). The supply voltage in the electric circuit of the unit depends on the burden resistance. For more information, refer to the supply voltage range specified in the technical data.

The TK-101 transducer always saves the most current measured value.

Function diagram				
No	Function/designation	Device TK-101	Comments	
1	0 % indication	Float, bottom position (4 mA)	Device provides an output current of approx. 4 mA	
2	50 % indication	Float, center position (12 mA)	Device provides an output current of approx. 12 mA	
3	100 % indication	Float, top position (20 mA)	Device provides an output current of approx. 20 mA	
Errorlimit = $\pm 1\%$ ; FSO= $\pm 0,2$ mA; burden resistance 500 $\Omega$ For an inverse display (100% indication = float, bottom position), the connection wires 0% and 100% have to be exchanged For an inverse display (100% indication = float, bottom position), the connection wires 0% (RED) and 100% (Yellow) have to be exchanged.				

## Functional check / adjustment


Potentiometer adjustment	
If this setting is to be changed, the "cover" of the housing needs to be removed. A current measuring device with a measuring range of 30 mA is required and must be connected to the current loop.	
Zero offset „0 %“	Max offset „100%“
For this purpose, the resistance sensor must provide a signal, which shall be used as zero position. On the "Zero" potentiometer, the output current can now be set to the required value.	For this purpose, the resistance sensor must provide a signal, which shall be used as the maximum signal value. On the "Max" potentiometer, the output current can now be set to the required value.

## Mounting/Handling/Maintenance

Transducers are measuring instruments and be handled carefully. Generally, external forces such as impact, shock, bending, etc. should be avoided. The TK-101 does not require special maintenance beyond the general inspection/function check of the electrical equipment. Due to its installation in a housing, cleaning of the TK-101 is not required. If cleaning is necessary, however, cleaning of the device is only allowed while no voltage is applied; use a dry cloth or a fine brush for the cleaning process.

## Technical Data See datasheet heading 14, 14-01-01 ( [www.elb-bensheim.de](http://www.elb-bensheim.de) )

Input	
Resistance range in three-wire circuit	4...10 kΩ
Measured current	0.8 mA at $R_E = 4 \text{ k}\Omega$ , 0.33 mA at $R_E = 10 \text{ k}\Omega$
Measured voltage	3.3 V
Supply/output	
2-wire	4...20 mA
Voltage	11...28 VDC
Burden/load	0...800 Ω ( $R_{\text{burden max}} = [(U_m - U_{m \text{ min}}) / 0,02] \Omega$ )
Output signal if fault is detected	Max. 24 mA
Environment	
Operating temperature	-20...+60 °C
Storage temperature	-40...+80 °C
Influence of errors	
Max. accumulated errors	± 1%
Influence of temperature	-0.015% / °C
Effect of variation of supply voltage	0.025% / V
Offset (optional)	
Full-scale amplitude	Approx. 60...105 %
Zero-offset elevation	Approx. 0...25 %

EMC standards	
	See conformity declaration
 Characteristic labeling	
	See EC-type examination certificate <b>TÜV 02 ATEX 1795 X</b> respectively <b>IECEx TUN 17.0036X</b>