

Technical manual BA 0509



Filling level



PUK Leakage probe

for conductive leakage monitoring
in electrical conductive filling materials

Wide application range

- for conductivities with a minimum of 1 $\mu\text{S}/\text{cm}$
- for process temperatures from -20 °C to +60 °C
- materials for aggressive filling materials

Useable for leakage protection

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know how mit system



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Application field

The leakage probe series **PUK** in combination with a suitable evaluation device is used for conductive leakage monitoring of electrically conductive filling materials.

The leakage probe is conceived for a wide application range. The conductivity, also of aggressive filling materials, with a minimum of 1 µS/cm can be detected, at process temperatures from -20 °C to +60 °C.

Function

The alternating voltage, that is generated by a suitable evaluation device is applied between the two electrode contacts of the leakage probe **PUK**.

As soon as the electrically conductive filling material makes a connection between the electrodes, an measurable current flows, that causes a reaction of the connected evaluation device.

Due to the use of a alternating voltage the corrosion at the electrode and the electrolytic decomposition of the filling material is avoided.

In the device, an additional module (diode module LBM) for the wire monitoring can be installed inside the housing. In the case of a wire break between the leakage probe and a suitable evaluation device, the evaluation device can output a corresponding warning signal.

Safety notes

Each person that is engaged with inauguration and operation of this device, must have read and understood this technical manual and especially the safety notes.



Installation, electrical connection, inauguration and operation of the device must be made by a qualified employee according to the informations in this technical manual and the relevant standards and rules.

The device may only be used within the permitted operation limits that are listed in this technical manual. Every use besides these limits as agreed can lead to serious dangers.

The materials of the device must be chosen resp. checked for suitability to the respective application requirements (contacting substances, process temperature). An unsuitable material can lead to damage, abnormal behavior or destruction of the device and to the resulting dangers.

The device meets the legal requirements of all relevant EC directives. **CE**

Installation

The device is intended for floor installation. The device can be fixed at the required installation position by two drill holes.

Install the device at a position or a deepening, where enough filling material can build up in the case of leakage. The filling material height at the installation place must be minimum 2mm.

Maintenance

The devices is free of maintenance.

Possible coating at the electrode rods should be removed regularly.

A non-conductive coating at the metallic electrode plane can effect error behaviour because no current can flow although the electrically conductive filling material makes a connection.

Repair

A repair may only be carried out by the manufacturer.

If the device must be sent back for repair, the following informations must be enclosed:

- An exact description of the application.
- The chemical and physical characteristics of the product.
- A short description of the occurred error.

Before returning the device for repair, the following measures must be proceeded:

- All stick product residues must be removed. This is especially important, if the product is unhealthy, e.g. caustic, toxic, carcinogenic, radioactive etc.
- A returning must be refrained, if it is not possible by 100% to remove the unhealthy product completely, because e.g. it is penetrate into cracks or is diffused through plastic.

Electrical connection

The electrical connection of the device must be carried out according to the respective country specific standards. Incorrect installation or adjustment could cause applicationally conditioned risks.

Use only suitable cables with max. 25 Ω per wire, that fulfills the requirements e.g. regarding temperature, resistance or laying at the place of installation.

The cable gland is suitable for cable diameters from 4,5 to 10 mm. After installation of the cable the cable gland must be fix screwed to ensure the tightness of the connection housing.

Use only shielded signal and measurement wires and install these wires separated from power leading wires. Principally use a shielded cable at strong electromagnetically irradiation. Connect the cable shield at one side to earth.

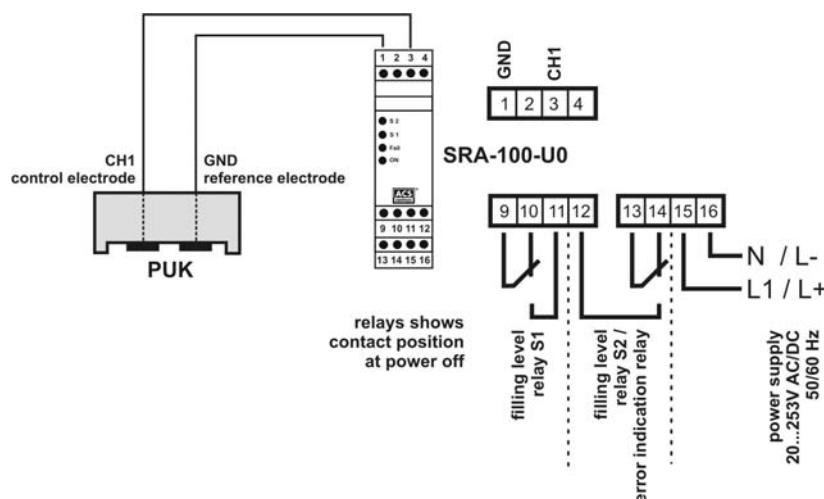
A suitable evaluation device must be connected by the connection cable with the electrode contacts inside the connection housing. The connection of the cable to the electrode contacts is made by screw connections inside the housing. Use only isolated thimbles for the connection.

In the device, an additional module (diode module LBM) for wire monitoring can be installed inside the housing. This is connected between the two electrode contacts. There is no need to pay attention to the connection polarity. When using an evaluation devices resp. transmitter, that do not support a wire monitoring, the module may not be installed.

For inauguration it is suggested to switch off all connected control devices to avoid unintended control actions.

Connection example

Leakage probe PUK
connected to
filling level limit switch
SRA-100-U0



Technical data

Materials

Electrode contact: steel 1.4404 (AISI316L) resp. 1.4571 (AISI316Ti) / hastelloy C4
 (medium contact)
 Connection housing: POM – polyoxymethylene (Delrin®) / PP – polypropylene /
 (medium contact) PTFE – polytetrafluorethylene (Teflon®)
 Cable gland: housing PA – polyamide / gasket CR / NBR
 Cable sheath: silicone
 Gaskets: medium contact

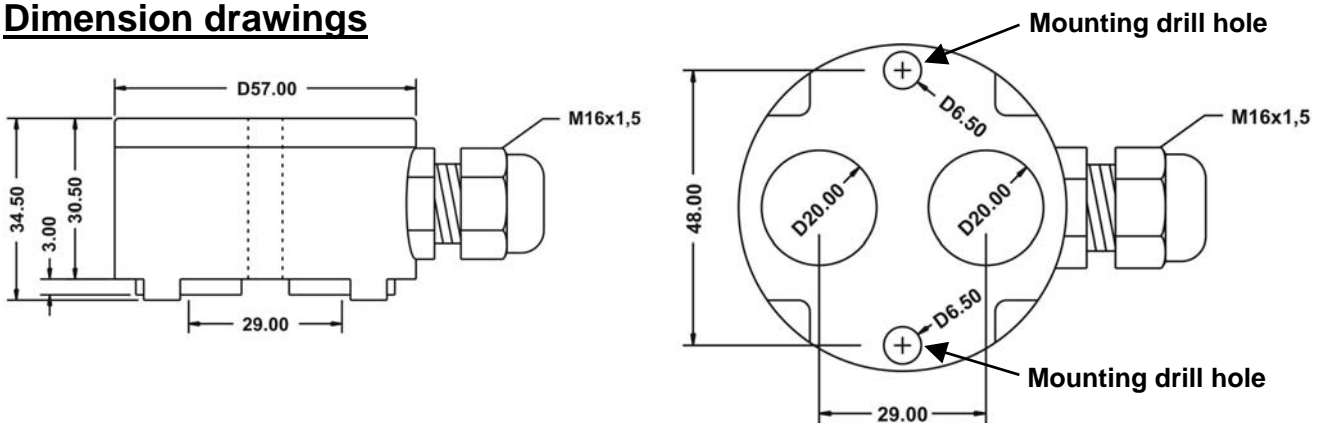
connection housing material POM	NBR – nitril-butadien-rubber
connection housing material PP	NBR – nitril-butadien-rubber
connection housing material PTFE	FFKM – perfluorelastomere (Kalrez®)

other → NBR – nitril-butadien-rubber

Environmental conditions

Environmental / process temperature: maximum – 20°C...+60°C
 Process pressure: pressure less
 Conductivity: ≤ 1 MΩ resp.. ≥ 1 μS/cm, depends on connected evaluation device
 Protection classification: IP68 DIN EN 60529
 Weight: 150 g

Dimension drawings



Order code overview

Type:

- Standard

Electrode number:

2 2 Electrode contacts

Material electrode contact (medium contact):

A Steel 1.4404 (AISI 316L) / 1.4571 (AISI 316Ti)
 D Hastelloy C4
 Y others on request

Material connection housing (medium contact):

D POM – polyoxymethylene (Delrin®)
 P PP – polypropylene
 T PTFE – polytetrafluorethylene (Teflon®)

Electrical connection:

K Terminal box
 V Cable 5m silicone
 Y Cable, other cable length – separate specification necessary

PUK – 2 _ _ _

Diode module LBM for wire breaking monitoring is not enclosed in the delivery contents.