

# PUK

#### Leakage probe

*Leakage monitoring of electrical conductive filling materials* 

*Technical manual 05.15* 



#### **Main features**

Wide application range

- conductivities with a minimum of 1µS/cm resp. 1M $\Omega$
- process temperatures from -20 °C to +60 °C
- materials for aggressive filling materials

Useable for leakage protection

Integrated wire break monitoring



You have purchased a high-grade and modern measuring device of ACS-CONTROL-SYSTEM GmbH.

We want to give thanks for your purchase and for your confidence to us.

The actual technical manual includes instructions for installation, electrical connection and inauguration, as well as the technical data of the device.

Modifications, that answer the purpose of the technical progress, are reserved by ACS-CONTROL-SYSTEM GmbH without prior notice.

If a question occurs, that can't be answered by the listed informations, please call on our technicians team in Eggenfelden Tel: +49 8721/ 9668-0 or info@acs-controlsystem.de

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# **Application**

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

The device is constructed for a broad range of application possibilities like e.g. at aggressive process materials or also at very low conductivities.

# **Function**

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

Due to the use of an alternating voltage the corrosion at the electrodes resp. the electrolytic decomposition of the filling material is avoided.

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

In the device, an additional module (diode module LBM) for the wire break monitoring can be installed. 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 compatibility with the respective application requirements (contacting materials, process temperature). An unsuitable material can lead to damage, abnormal behavior or destruction of the device and to the resulting dangers.

The sensors may not be used as sole device for prevention of dangerous conditions in machines and plants.

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

# CE

Using the device in a manner that does not fall within the scope of its intended use, disregarding this instruction, using under-qualified personnel, or making unauthorized alterations releases the manufacturer from liability for any resulting damage. This renders the manufacturer's warranty null and void.

## Installation

The correct function of the device within the specific technical data can only be guaranteed, if the permitted environmental temperatures (see chapter "Technical data") will not be exceeded.

#### Installation notes

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.

# **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.

#### **Connection cable**

#### Electrical connection type K – terminal box

For opening the enclosure both screws of the cover must be loosened.

Only suitable cables with max. 25  $\Omega$  per wire, that fulfills the requirements e.g. regarding temperature, resistance or laying at the place of installation, may be used.

The cable gland is suitable for the use of cable diameters 4,5...10mm.

At presence of strong electromagnetic influences a shielded measurement wire should be used resp. installed separated from power leading wires. The cable shield of the connected cable must be connected to earth at the side of the evaluation device.

The connection of the cable to the electrode contacts is made by screw connections inside the enclosure. For connection isolated thimbles M4 must be used.

After the installation of the connection cable the cable gland must be fix screwed to ensure the tightness of the enclosure.

After the electrical connection both screws of the cover must be tightened firmly to ensure the tightness of the enclosure.

# Wire break monitoring

In the device, an additional module (diode module LBM) for wire break monitoring can be installed. This is connected between the two electrode contacts.

There is no need to pay attention to the connection polarity.

When using an evaluation device, that does not support a wire break monitoring, this module may not be installed.

### **Connection scheme**



Wire break monitoring type A – without wire break monitoring

The relay contacts shows the contact state at power off.





The relay contacts shows the contact state at power off.

# Operation

An operation provided by user is not designated.

# Maintenance

The device is free of maintenance.

Special substances can lead to solid coatings.

Seized depositions can lead to faulty measurement results.

In the case of coat forming liquids the probe must be regularly cleaned e.g. with clear water or a common vinegar cleaning agent (lime).

# 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.
- A short description of the occurred error.

# **Technical Data**

## Input

Conductivity	$\geq 1\mu$ S/cm resp. $\leq 1M\Omega$
	depends on connected evaluation

### **Process conditions**

Process temperature	-20°C+60°C				
Process pressure	pressureless				

### **Environmental conditions**

Environmental temperature	-20°C+60°C				
Protection	IP68 [≤ 1 mWs-1h] (EN/IEC 60529)				
Climatic classification	4K4H [-20+55°C / 4100%] (EN/IEC 60721-3-4)				
Shock classification	15g [11ms] (EN/IEC 60068-2-27)				
Vibration classification	4g [10500Hz] (EN/IEC 60068-2-6)				
EM compatibility	Operation device class B / Industrial range (EN/IEC 61326)				
Weight	0,15kg				

# Materials - process wetted

Electrodes	Steel 1.4404 (316L) / 1.4571 (316Ti) Hastelloy C4
Enclosure	POM – polyoxymethylene (Delrin <sup>®</sup> ) PP – polypropylene PTFE – polytetrafluorethylene (Teflon <sup>®</sup> )
Gaskets	<u>Material enclosure type D - POM / type P - PP</u> NBR –nitril-butadien-rubber <u>Material enclosure type T - PTFE</u> FFKM – perfluorelastomere (Kalrez□)

### Materials - not process wetted

Cable gand	<u>Electrical connection type K – terminal box</u> Cable gland PA			
	Electrical connection type V - cable			
	Cable gland DA			
	Potting PUR			
Gaskets	NBR –nitril-butadien-rubber			
Cable	Electrical connection type V - cable			
	Silicone			

# **Dimension drawings**





# **Order Code**

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		2	<b>N</b> 2.4	umb electr	er o odes	felectrodes			
			A D Y	Ma Ste Ha	Material electrodes (process wetted) Steel 1.4404 (316L) / 1.4571 (316Ti) Hastelloy C4 others				
				D P T	Ma PO PP PT	aterial enclosure (process wetted) M – polyoxymethylene (Delrin®) – polypropylene FE – polytetrafluorethylene (Teflon®)			
					K V Y	Electrical connection Terminal box Cable 5m - silicone Cable other length			
						Wire break monitoring without wire break monitoring with wire break monitoring (diode module LBM)			
PUK	0	2							

Installation material and connection cable are not enclosed in contents of delivery.

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