

Conductive leakage detectors of the L-Pointer range

for extra low voltage SELV or PELV,
for connection to NAMUR isolation amplifier
or NAMUR fieldbus terminal



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The units described in this documentation may only be installed, connected and started up by suitably qualified personnel!

Subject to deviations from the diagrams and technical data.

The details in this brochure are product specification descriptions and do not constitute assured properties in the legal sense.

“L-Pointer” - general information

Conductive leakage detectors for extra low voltage SELV or PELV

- **Initiators for NAMUR circuits in line with EN 50 227 (formerly known as DIN 19234) with the option of detecting cable break, standby status, alarm status and short circuit**
- **For connection to:
NAMUR isolation amplifier or
NAMUR fieldbus terminal**
- **With integrated galvanic separation between electrode circuit and supply current circuit with impressed signal current**

Standard 2-wire quiescent current version:

Direct voltage supply and switching signal via a two-wire cable.

For NAMUR circuit with inverted signal evaluation.

The power consumption of the detector serves as a switching signal for the following switching statuses:

No power consumption	= cable break
Low power consumption	= alarm status (leakage)
High power consumption	= standby status
Maximum power consumption	= short circuit or false polarity

If the signal current is only to be evaluated between two switching statuses, low power consumption means alarm status and high power consumption means standby status.

On request:

2-wire working current version:

Direct voltage supply and switching signal via a two-wire cable.

For NAMUR circuit with non-inverted signal evaluation.

The power consumption of the detector serves as a switching signal for the following switching statuses:

No power consumption	= cable break
Low power consumption	= standby status
High power consumption	= alarm status (leakage)
Maximum power consumption	= short circuit or false polarity

If the signal current is only to be evaluated between two switching statuses, low power consumption means standby status and high power consumption means alarm status.

The integrated galvanic separation avoids interconnection of the electrode circuits and the formation of ground loops if more than one detector is connected to a single supply current circuit.

The compatibility of the detector and the peripheral equipment must be reviewed on case-to-case basis with regard to the extra low voltage SELV or PELV and the conformity of their signal parameters.



Conductive “L-Pointer” in standard 2-wire quiescent current design

The conductive leakage detectors can only be used for the detection of leakage of conductive liquids.

Connection: **Only for connection to extra low voltage SELV or PELV!**
2 wires for the supply of direct voltage; functional with correct polarity;
short circuit with false polarity

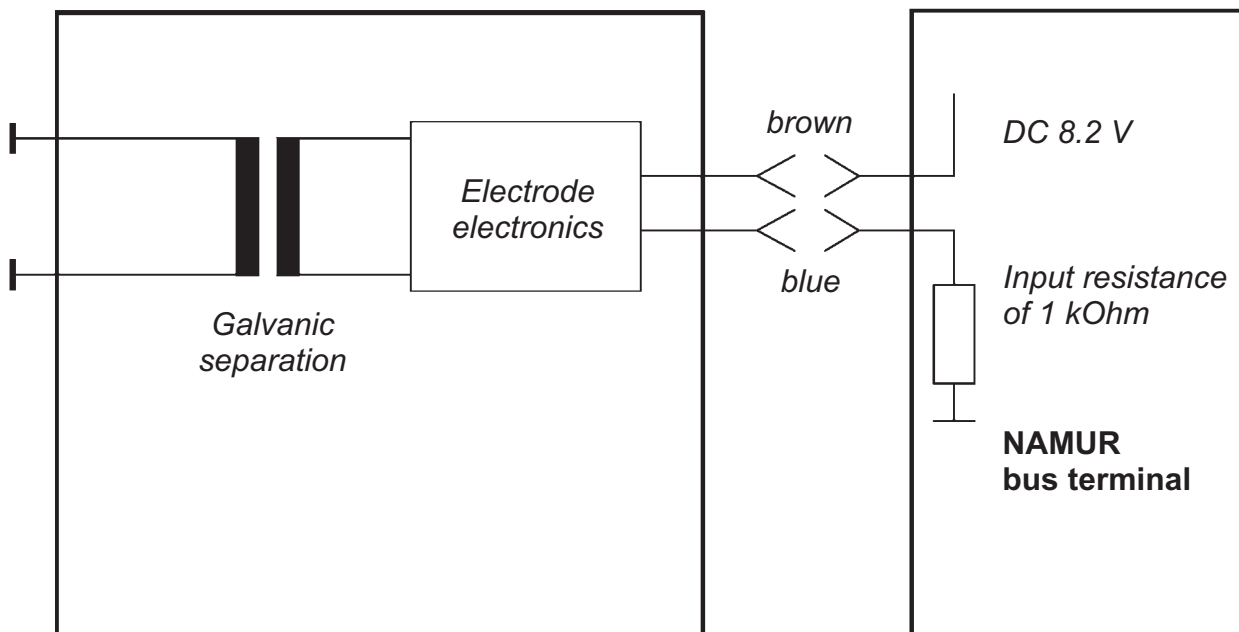
For connection to a NAMUR isolation amplifier or a fieldbus connection with NAMUR bus terminal.			
With integrated galvanic separation between electrode circuit and supply current circuit with impressed signal current.			
Only for extra low voltage	SELV/PELV	Cable break	$I < 0.2 \text{ mA}$
Supply voltage	DC 7 V to 12 V	Sensor in contact	$I \leq 1 \text{ mA}$
Preferably in line with NAMUR	DC 8.2 V	Sensor not in contact	$I \geq 3 \text{ mA}$
Internal resistance	$R_i = 1 \text{ k}\Omega$	Short circuit or false polarity	$I > 6 \text{ mA}$
The compatibility of the detector and the peripheral equipment must be reviewed on case-to-case basis with regard to the extra low voltage SELV or PELV and the conformity of their signal parameters.			

Series or parallel connection of detectors of this type is not permitted.

Application example

Conductive “L-Pointer” leakage detector in standard 2-wire quiescent current design

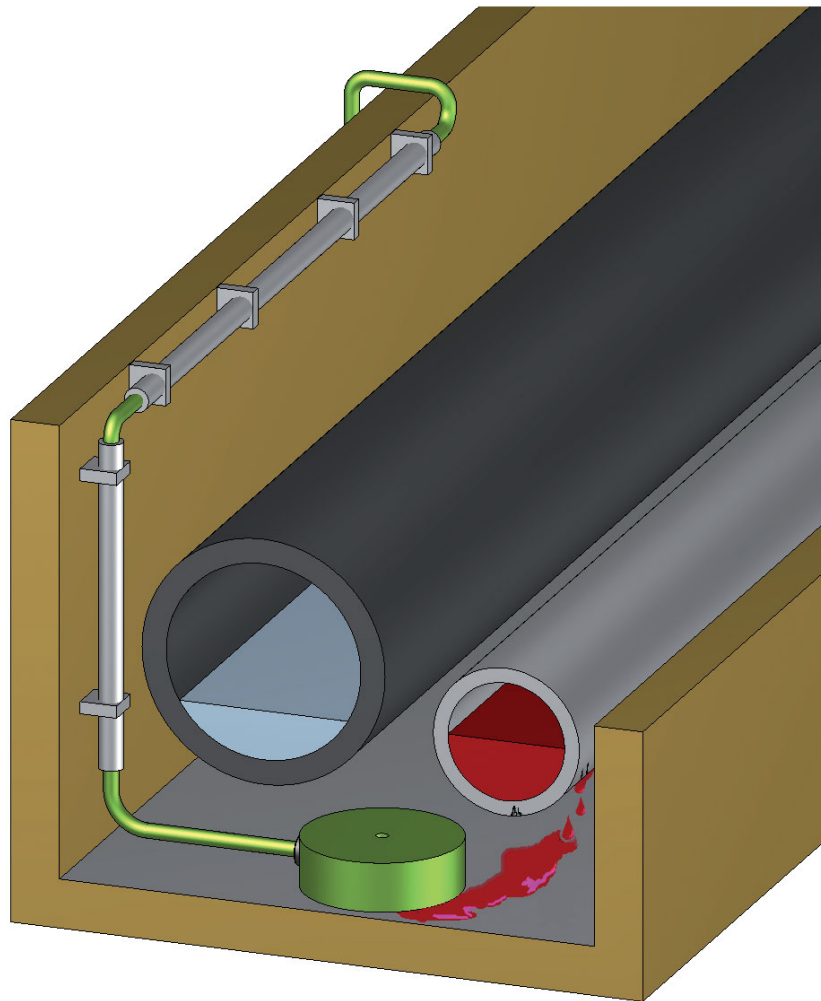
Follow-up circuit





Leakage detection with “L-Pointer” - conductive electrodes

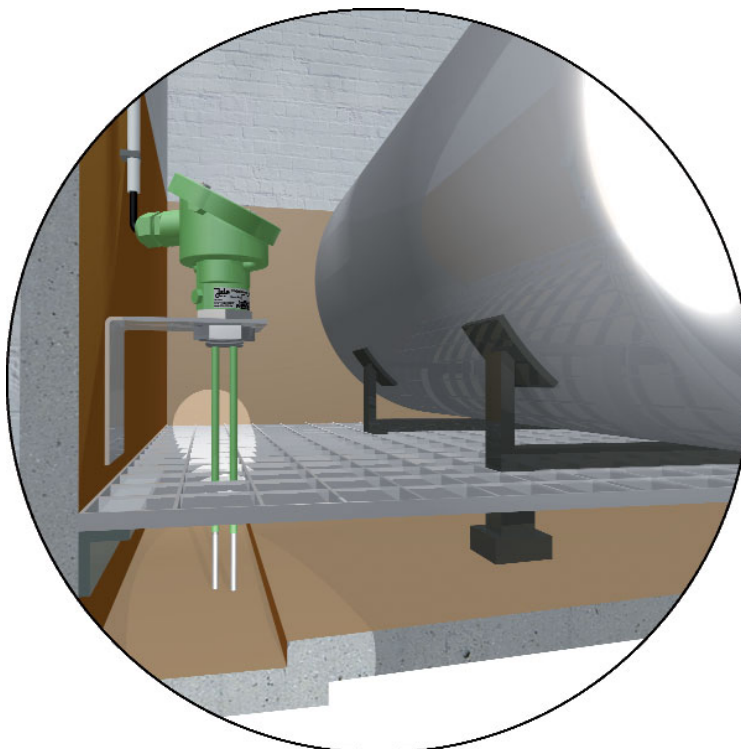
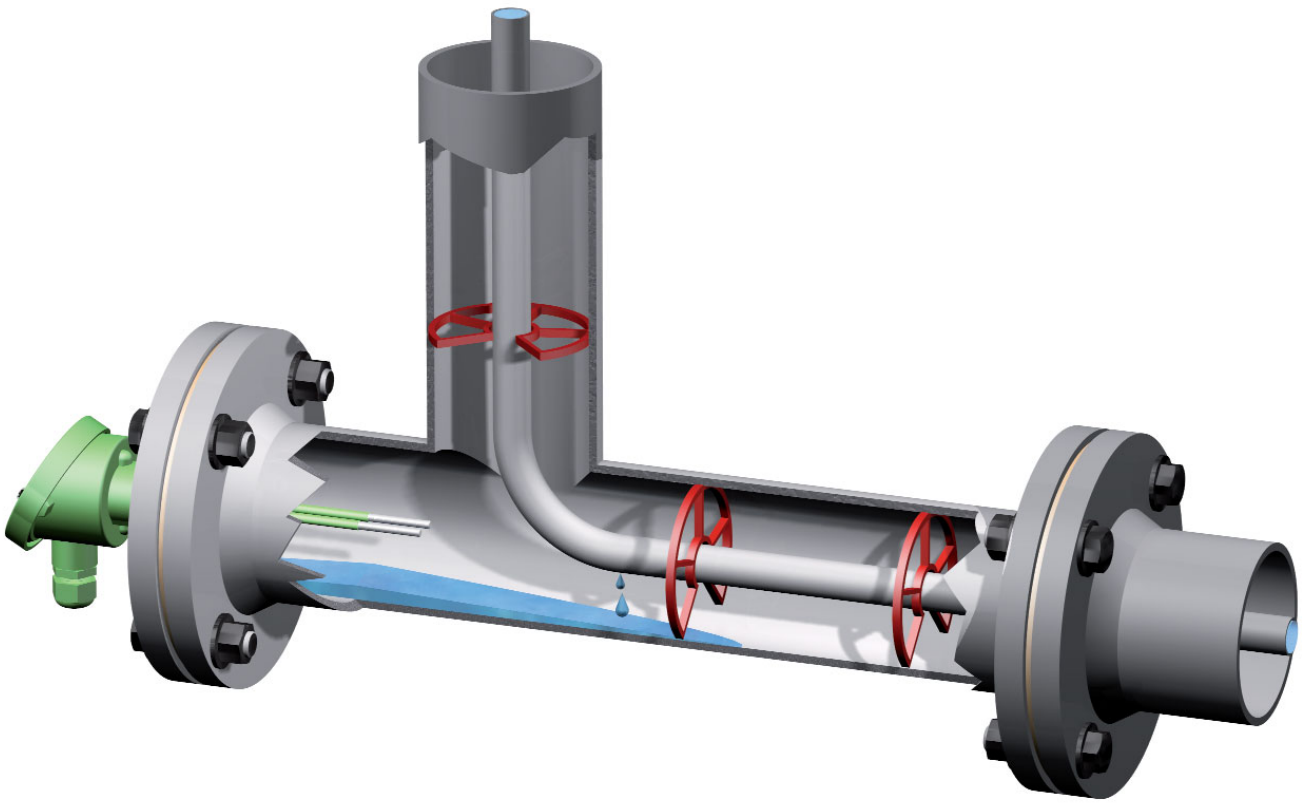
Application example for plate electrodes





Leakage detection with “L-Pointer”- conductive electrodes

Application examples for rod electrodes





Leakage detection with “L-Pointer”- conductive electrodes

Application example for suspension electrodes



Jola Plate electrode PEK-KNI

Conductive leakage detector for extra low voltage SELV or PELV

- Initiator for NAMUR circuits in line with EN 50 227 (formerly known as DIN 19234) with the option of detecting cable break, standby status, alarm status and short circuit
- For connection to:
NAMUR isolation amplifier or
NAMUR fieldbus terminal
- With integrated galvanic separation between electrode circuit and supply current circuit with impressed signal current

Designed to signal the presence of a conductive liquid caused, for example, by burst pipes.

Plate electrodes should only be used in normally dry environments. They must be installed on the floor in such a way that the sensor side faces downwards and the label side upwards.

The plate electrode PEK-KNI is fitted with two separate electrodes in the form of two electrode plates: 1 control electrode and 1 earth electrode. As soon as a conductive liquid creates a conductive path between the two electrode plates, the switching status of the leakage detector changes.

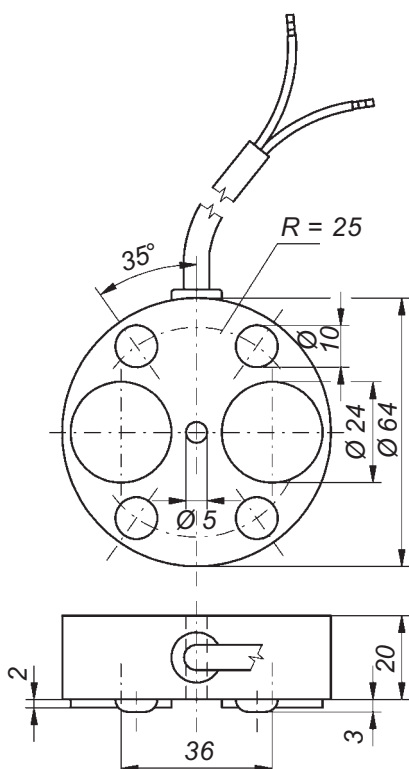



Plate electrode
PEK-KNI,
sensor side



Plate electrode
PEK-KNI,
label side

Technical data	PEK-KNI								
Design	leakage detector with evaluation electronics as an initiator for a NAMUR circuit in quiescent current design; power consumption high in standby status and low in alarm status								
Electrode plates	2 plates made of stainless steel 316 Ti, each with 24 mm dia.								
Housing	PP and cast resin								
Electrical connection	two-wire connection via connecting cable 2 x 0.75; length 2 metres, longer connecting cable on request; fitted with halogen-free connecting cable on request								
Supply voltage	only for connection to extra low voltage SELV or PELV! DC 7 V ... 12 V via input resistance of 500 Ω to 1,200 Ω, preferably in line with NAMUR DC 8.2 V with internal resistance of 1 kΩ								
Output signal	impressed current signal in the supply circuit								
Mode of operation	quiescent current principle								
Switching statuses based on power consumption	<table border="0"> <tr> <td data-bbox="711 1055 895 1088">cable break</td> <td data-bbox="1254 1055 1414 1088">I < 0.2 mA</td> </tr> <tr> <td data-bbox="711 1088 903 1122">alarm status</td> <td data-bbox="1254 1088 1390 1122">I ≤ 1 mA</td> </tr> <tr> <td data-bbox="711 1122 943 1155">standby status</td> <td data-bbox="1254 1122 1390 1155">I ≥ 3 mA</td> </tr> <tr> <td data-bbox="711 1155 1158 1189">short circuit or false polarity</td> <td data-bbox="1254 1155 1390 1189">I > 6 mA</td> </tr> </table>	cable break	I < 0.2 mA	alarm status	I ≤ 1 mA	standby status	I ≥ 3 mA	short circuit or false polarity	I > 6 mA
cable break	I < 0.2 mA								
alarm status	I ≤ 1 mA								
standby status	I ≥ 3 mA								
short circuit or false polarity	I > 6 mA								
Galvanic separation	only for connection to extra low voltage SELV or PELV! voltage resistance > 500 V between electrode circuit and supply circuit with impressed signal current								
Max. no-load voltage at the electrode plates	5 V _{eff}  15 kHz (extra low voltage SELV)								
Max. short-circuit current at the electrode plates	0.2 mA								
Response sensitivity	approx. 30 kΩ or approx. 33 μS (conductance)								
Temperature range	from – 20°C to + 60°C								
Max. length of connecting cable between leakage detector and follow-up circuit	depends on the technical data of the follow-up circuit								
EMC	for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies.								

Jola Plate electrode WDX-KNI

Conductive leakage detector for extra low voltage SELV or PELV

- Initiator for NAMUR circuits in line with EN 50 227 (formerly known as DIN 19234) with the option of detecting cable break, standby status, alarm status and short circuit
- For connection to:
NAMUR isolation amplifier or
NAMUR fieldbus terminal
- With integrated galvanic separation between electrode circuit and supply current circuit with impressed signal current

Designed to signal the presence of a conductive liquid caused, for example, by burst pipes.

Plate electrodes should only be used in normally dry environments. They must be installed on the floor in such a way that the sensor side faces downwards and the connection side upwards.

The plate electrode WDX-KNI is fitted with two separate electrodes in the form of two electrode plates: 1 control electrode and 1 earth electrode. As soon as a conductive liquid creates a conductive path between the two electrode plates, the switching status of the leakage detector changes.

Optional: mounting stand
(diagrams with smaller scale compared to below drawings)

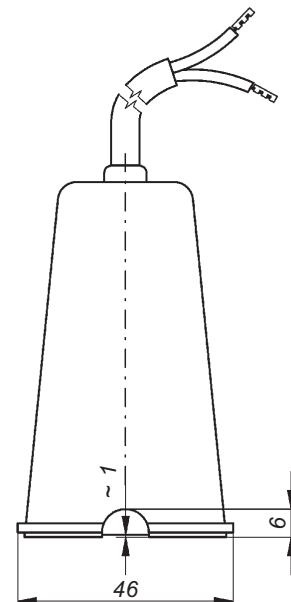
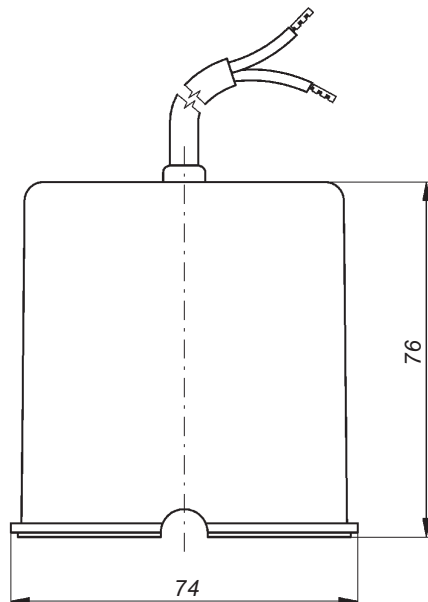
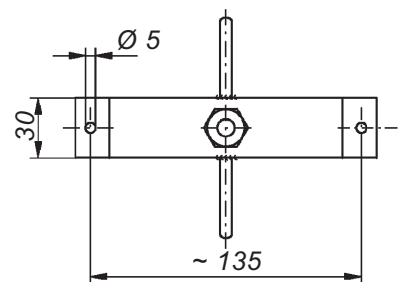
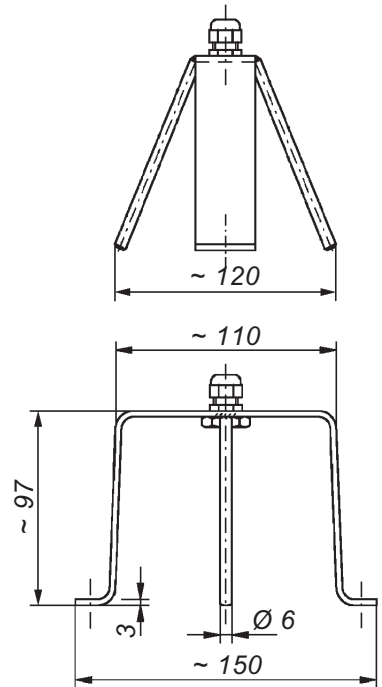
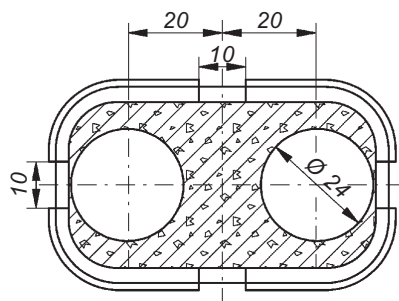



Plate electrode WDX-KNI

Technical data	WDX-KNI								
Design	leakage detector with evaluation electronics as an initiator for a NAMUR circuit in quiescent current design; power consumption high in standby status and low in alarm status								
Electrode plates	2 plates made of stainless steel 316 Ti, each with 24 mm dia.								
Housing	PP and cast resin								
Electrical connection	two-wire connection via connecting cable 2 x 0.75; length 2 metres, longer connecting cable on request; fitted with halogen-free connecting cable on request								
Supply voltage	only for connection to extra low voltage SELV or PELV! DC 7 V ... 12 V via input resistance of 500 Ω to 1,200 Ω, preferably in line with NAMUR DC 8.2 V with internal resistance of 1 kΩ								
Output signal	impressed current signal in the supply circuit								
Mode of operation	quiescent current principle								
Switching statuses based on power consumption	<table border="0"> <tr> <td>cable break</td> <td>I < 0.2 mA</td> </tr> <tr> <td>alarm status</td> <td>I ≤ 1 mA</td> </tr> <tr> <td>standby status</td> <td>I ≥ 3 mA</td> </tr> <tr> <td>short circuit or false polarity</td> <td>I > 6 mA</td> </tr> </table>	cable break	I < 0.2 mA	alarm status	I ≤ 1 mA	standby status	I ≥ 3 mA	short circuit or false polarity	I > 6 mA
cable break	I < 0.2 mA								
alarm status	I ≤ 1 mA								
standby status	I ≥ 3 mA								
short circuit or false polarity	I > 6 mA								
Galvanic separation	only for connection to extra low voltage SELV or PELV! voltage resistance > 500 V between electrode circuit and supply circuit with impressed signal current								
Max. no-load voltage at the electrode plates	5 V _{eff}  15 kHz (extra low voltage SELV)								
Max. short-circuit current at the electrode plates	0.2 mA								
Response sensitivity	approx. 30 kΩ or approx. 33 μS (conductance)								
Temperature range	from – 20°C to + 60°C								
Max. length of connecting cable between leakage detector and follow-up circuit	depends on the technical data of the follow-up circuit								
EMC	for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies.								

Jola Wall-mounted electrode WAE1-KNI

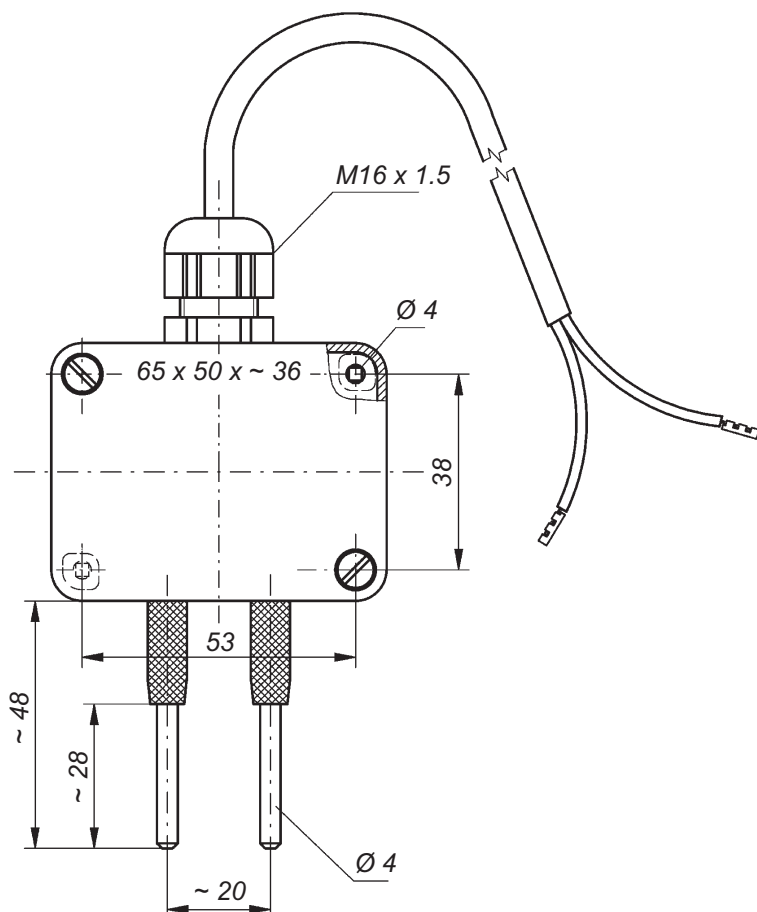
Conductive leakage detector for extra low voltage SELV or PELV


- Initiator for NAMUR circuits in line with EN 50 227 (formerly known as DIN 19234) with the option of detecting cable break, standby status, alarm status and short circuit
- For connection to:
NAMUR isolation amplifier or
NAMUR fieldbus terminal
- With integrated galvanic separation between electrode circuit and supply current circuit with impressed signal current

Designed to signal the presence of a conductive liquid caused, for example, by burst pipes.

Wall-mounted electrodes should only be used in normally dry environments. They must be mounted on the wall in such a way that the electrode rod tips are just slightly above the floor to be monitored.

The wall-mounted electrode WAE1-KNI is fitted with two separate electrodes in the form of two electrode rods: 1 control electrode and 1 earth electrode. As soon as a conductive liquid creates a conductive path between the two electrode rods, the switching status of the leakage detector changes.



Technical data	WAE1-KNI								
Design	leakage detector with evaluation electronics as an initiator for a NAMUR circuit in quiescent current design; power consumption high in standby status and low in alarm status								
Electrode rods	2 rods made of stainless steel 316 Ti, each with 4 mm dia.								
Housing	PC or PP								
Electrical connection	two-wire connection via connecting cable 2 x 0.75; length 2 metres, longer connecting cable on request; fitted with halogen-free connecting cable on request								
Supply voltage	only for connection to extra low voltage SELV or PELV! DC 7 V ... 12 V via input resistance of 500 Ω to 1,200 Ω, preferably in line with NAMUR DC 8.2 V with internal resistance of 1 kΩ								
Output signal	impressed current signal in the supply circuit								
Mode of operation	quiescent current principle								
Switching statuses based on power consumption	<table border="0"> <tr> <td>cable break</td> <td>I < 0.2 mA</td> </tr> <tr> <td>alarm status</td> <td>I ≤ 1 mA</td> </tr> <tr> <td>standby status</td> <td>I ≥ 3 mA</td> </tr> <tr> <td>short circuit or false polarity</td> <td>I > 6 mA</td> </tr> </table>	cable break	I < 0.2 mA	alarm status	I ≤ 1 mA	standby status	I ≥ 3 mA	short circuit or false polarity	I > 6 mA
cable break	I < 0.2 mA								
alarm status	I ≤ 1 mA								
standby status	I ≥ 3 mA								
short circuit or false polarity	I > 6 mA								
Galvanic separation	only for connection to extra low voltage SELV or PELV! voltage resistance > 500 V between electrode circuit and supply circuit with impressed signal current								
Max. no-load voltage at the electrode rods	5 V _{eff}  15 kHz (extra low voltage SELV)								
Max. short-circuit current at the electrode rods	0.2 mA								
Response sensitivity	approx. 30 kΩ or approx. 33 μS (conductance)								
Temperature range	from – 20°C to + 60°C								
Max. length of connecting cable between leakage detector and follow-up circuit	depends on the technical data of the follow-up circuit								
EMC	for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies.								



Rod electrodes S 2 M/PP-KNI, S 2 M/PVDF-KNI and S 2 AM-KNI

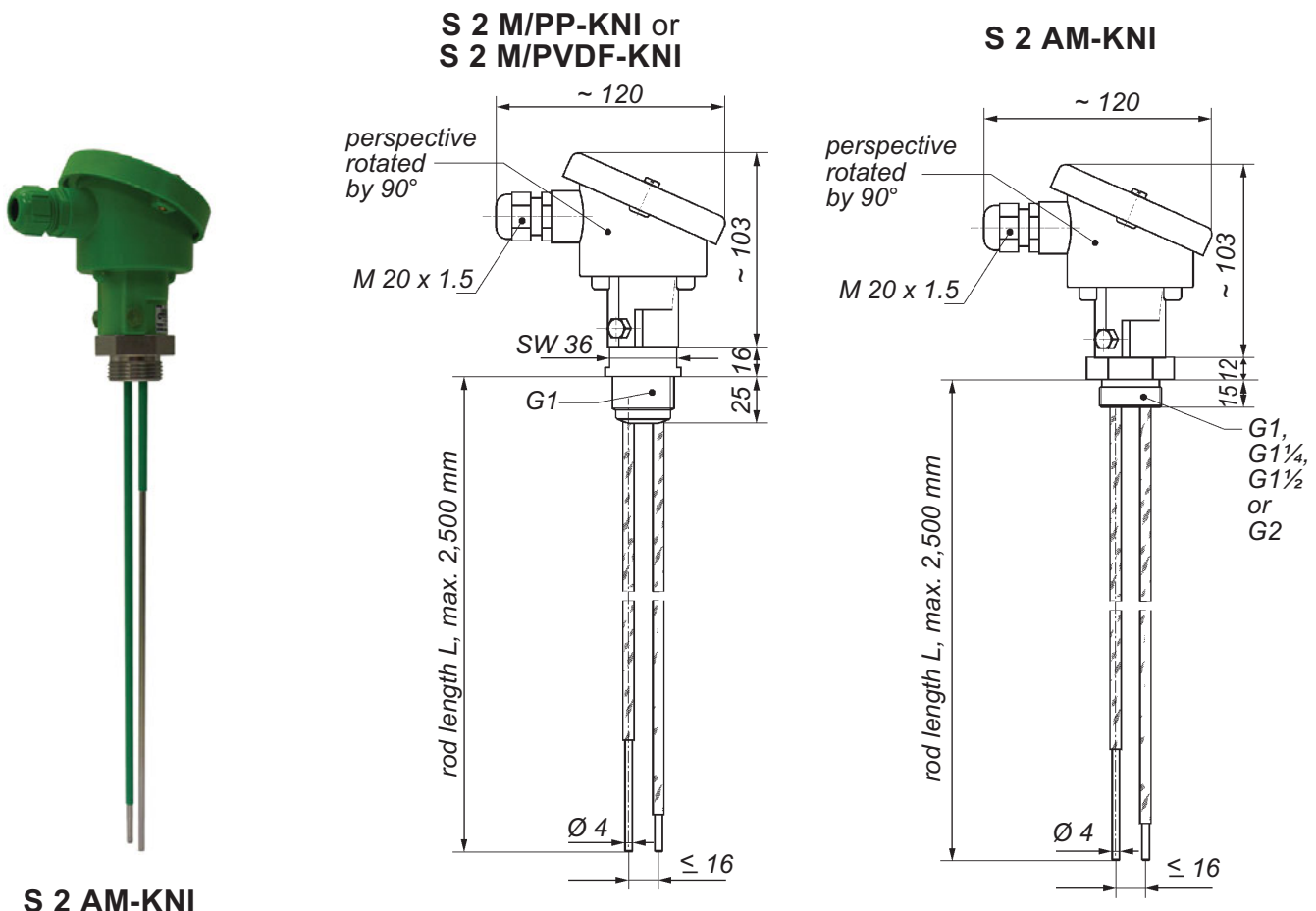
Conductive leakage detectors for extra low voltage SELV or PELV

- Initiators for NAMUR circuits in line with EN 50 227 (formerly known as DIN 19234) with the option of detecting cable break, standby status, alarm status and short circuit
- For connection to:
NAMUR isolation amplifier or
NAMUR fieldbus terminal
- With integrated galvanic separation between electrode circuit and supply current circuit with impressed signal current


Designed to signal the presence of a conductive liquid caused, for example, by burst pipes.

Rod electrodes should only be used in normally dry environments. They can be installed from the top or from the side. In both cases, it must be ensured that the electrode rod tips are just slightly above the floor to be monitored.

The rod electrodes S 2 M/PP-KNI, S 2 M/PVDF-KNI and S 2 AM-KNI are fitted with two separate electrodes in the form of two electrode rods: 1 control electrode and 1 earth electrode. As soon as a conductive liquid creates a conductive path between the two electrode rods, the switching status of the leakage detector changes.



S 2 AM-KNI

Technical data	S 2 M/PP-KNI	S 2 M/PVDF-KNI	S 2 AM-KNI
Design	leakage detector with evaluation electronics as an initiator for a NAMUR circuit in quiescent current design; power consumption high in standby status and low in alarm status		
Electrode rods	2 rods made of stainless steel 316 Ti; other materials (e.g. titanium, Hastelloy, Monel or tantalum) on request; each with 4 mm dia., covered with polyolefin PVDF polyolefin shrinkdown tubing (made of PVDF or PTFE on request)		
Lengths	on request (measured from nipple sealing surface)		
Max. lengths	2,500 mm		
Screw-in nipple	S 2 M/PP-KNI: PP, G1; S 2 M/PVDF-KNI: PVDF, G1; S 2 AM-KNI: stainless steel 316 Ti, other materials on request, G1		
Electrical connection	two-wire connection via 2-pole terminal block for max. 2.5 mm ² in the PP connection head with cable entry M 20 x 1.5, protection class IP 54		
Supply voltage	only for connection to extra low voltage SELV or PELV! DC 7 V ... 12 V via input resistance of 500 Ω to 1,200 Ω, preferably in line with NAMUR DC 8.2 V with internal resistance of 1 kΩ		
Output signal	impressed current signal in the supply circuit		
Mode of operation	quiescent current principle		
Switching statuses based on power consumption	cable break	I < 0.2 mA	
	alarm status	I ≤ 1 mA	
	standby status	I ≥ 3 mA	
	short circuit or false polarity	I > 6 mA	
Galvanic separation	only for connection to extra low voltage SELV or PELV! voltage resistance > 500 V between electrode circuit and supply circuit with impressed signal current		
Max. no-load voltage at the electrode rods	5 V _{eff}  15 kHz (extra low voltage SELV)		
Max. short-circuit current at the electrode rods	0.2 mA		
Response sensitivity	approx. 30 kΩ or approx. 33 μS (conductance)		
Temperature range	from – 20°C to + 60°C		
Max. length of connecting cable between leakage detector and follow-up circuit	depends on the technical data of the follow-up circuit		
EMC	for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies.		



Suspension electrodes EHE-KNI and EHW3-KNI

Conductive leakage detectors for extra low voltage SELV or PELV


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- For connection to:
NAMUR isolation amplifier or
NAMUR fieldbus terminal
- With integrated galvanic separation between electrode circuit and supply current circuit with impressed signal current

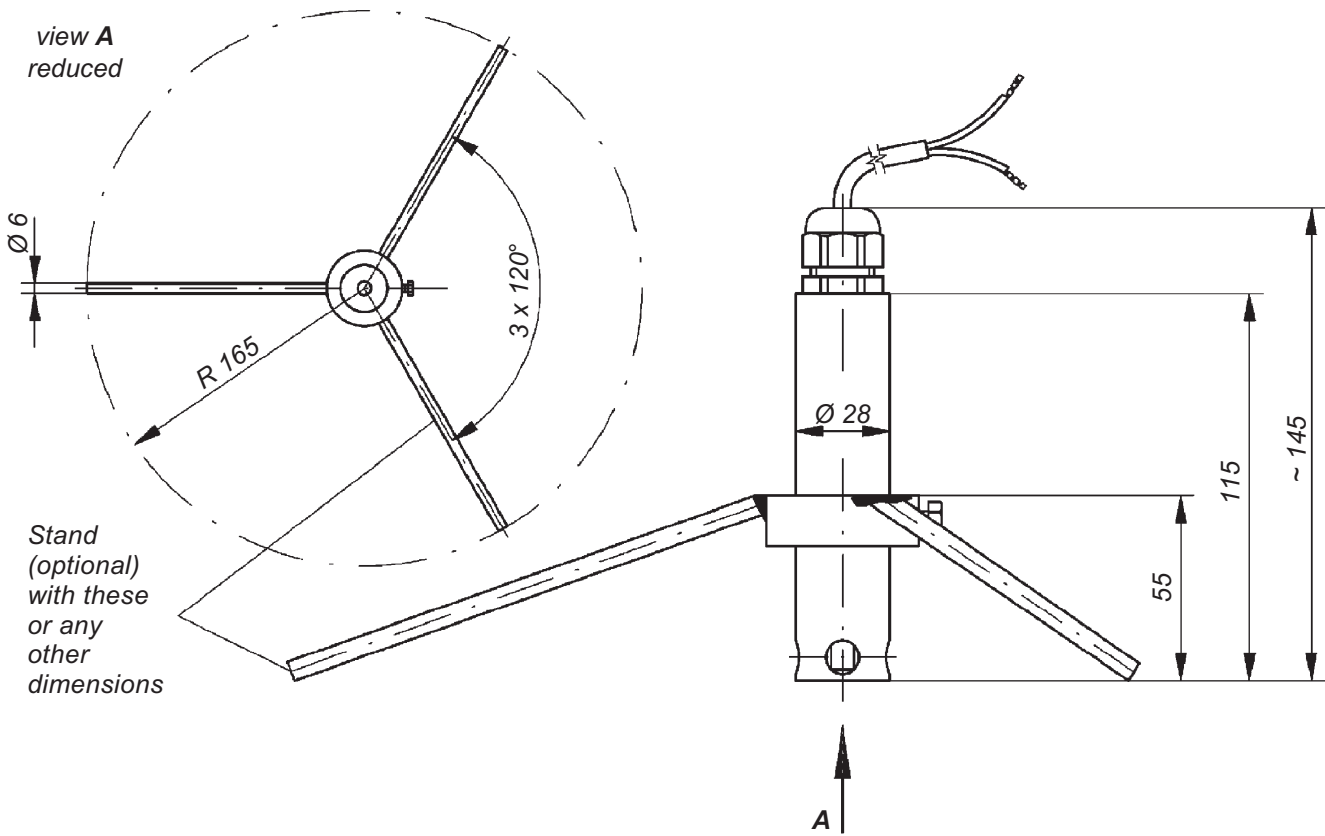
Designed to signal the presence of a conductive liquid caused, for example, by burst pipes.

Suspension electrodes should only be used in normally dry environments. They must be mounted in suspended mode from above (or in the case of the types EHE-KNI in an upright position using a mounting stand) in such a way that the sensor electrodes are just slightly above the floor to be monitored.

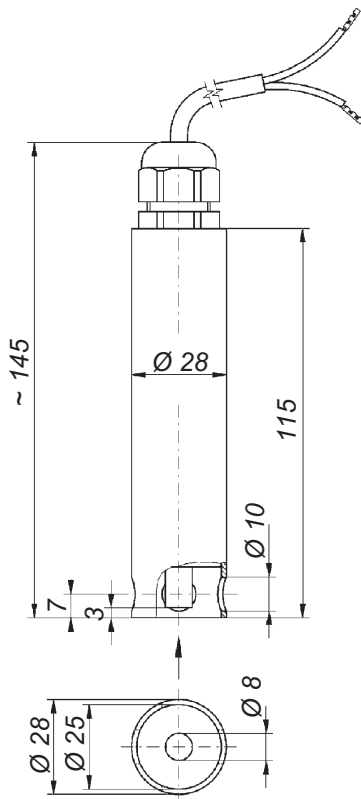
In the suspension electrode EHE-KNI, the metal housing and a concentrically positioned electrode rod in the housing form an electrode pair; the suspension electrode EHW3-KNI is fitted with two separate electrodes in the form of two electrode rods: 1 control electrode and 1 earth electrode. As soon as a conductive liquid creates a conductive path between the control electrode and the earth electrode, the switching status of the leakage detector changes.



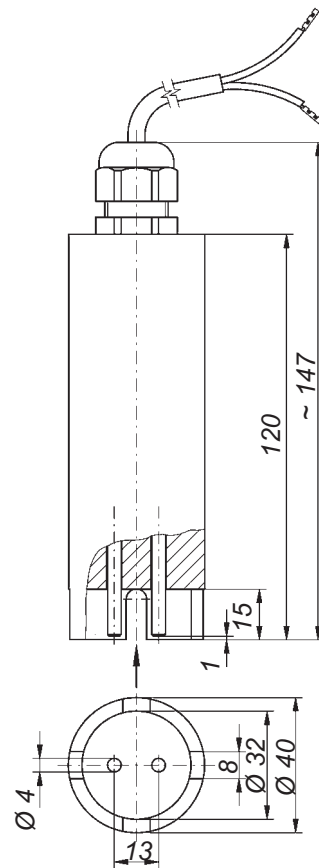
Technical data	EHE-KNI	EHW3-KNI
Design	leakage detector with evaluation electronics as an initiator for a NAMUR circuit in quiescent current design; power consumption high in standby status and low in alarm status	
Electrodes	1 rod made of stainless steel 316 Ti, with 8 mm dia. and the housing made of stainless steel 316 Ti	2 rods made of stainless steel 316 Ti, each with 4 mm dia., other materials (e.g. titanium, Hastelloy, Monel or tantalum) on request
Housing	stainless steel 316 Ti and PTFE	PP, other materials (e.g. PVDF or PTFE) on request
Electrical connection	two-wire connection via connecting cable 2 x 0.75; length 2 metres, longer connecting cable on request; fitted with halogen-free connecting cable on request	
Supply voltage	only for connection to extra low voltage SELV or PELV! DC 7 V ... 12 V via input resistance of 500 Ω to 1,200 Ω, preferably in line with NAMUR DC 8.2 V with internal resistance of 1 kΩ	
Output signal	impressed current signal in the supply circuit	
Mode of operation	quiescent current principle	
Switching statuses based on power consumption	cable break alarm status standby status short circuit or false polarity	I < 0.2 mA I ≤ 1 mA I ≥ 3 mA I > 6 mA
Galvanic separation	only for connection to extra low voltage SELV or PELV! voltage resistance > 500 V between electrode circuit and supply circuit with impressed signal current	
Max. no-load voltage at the electrodes	5 V _{eff}  15 kHz (extra low voltage SELV)	
Max. short-circuit current at the electrodes	0.2 mA	
Response sensitivity	approx. 30 kΩ or approx. 33 μS (conductance)	
Temperature range	from – 20°C to + 60°C	
Max. length of connecting cable between leakage detector and follow-up circuit	depends on the technical data of the follow-up circuit	
EMC	for interference emission in accordance with the appliance-specific requirements for households, business and commerce as well as small companies, and for interference immunity in accordance with the appliance-specific requirements for industrial companies.	



EHE-KNI with mounting stand



EHE-KNI



EHW3-KNI