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Operating instructions

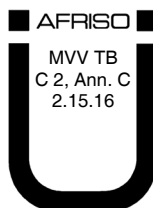


Leak detector

LAG-14 ER



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1 About these operating instructions

These operating instructions describe the leak detector LAG-14 ER (also referred to as "product" in these operating instructions). These operating instructions are part of the product.

- You may only use the product if you have fully read and understood these operating instructions.
- Verify that these operating instructions are always accessible for any type of work performed on or with the product.
- Pass these operating instructions as well as all other product-related documents on to all owners of the product.
- If you feel that these operating instructions contain errors, inconsistencies, ambiguities or other issues, contact the manufacturer prior to using the product.

These operating instructions are protected by copyright and may only be used as provided for by the corresponding copyright legislation. We reserve the right to modifications.

The manufacturer shall not be liable in any form whatsoever for direct or consequential damage resulting from failure to observe these operating instructions or from failure to comply with directives, regulations and standards and any other statutory requirements applicable at the installation site of the product.

Translations of these operating instructions into other languages can be found at www.afriso.com.

2 Information on safety

2.1 Safety messages and hazard categories

These operating instructions contain safety messages to alert you to potential hazards and risks. In addition to the instructions provided in these operating instructions, you must comply with all directives, standards and safety regulations applicable at the installation site of the product. Verify that you are familiar with all directives, standards and safety regulations and ensure compliance with them prior to using the product.

Safety messages in these operating instructions are highlighted with warning symbols and warning words. Depending on the severity of a hazard, the safety messages are classified according to different hazard categories.



DANGER

DANGER indicates a hazardous situation, which, if not avoided, will result in death or serious injury.



WARNING

WARNING indicates a potentially hazardous situation, which, if not avoided, can result in serious injury or equipment damage.

NOTICE

NOTICE indicates a hazardous situation, which, if not avoided, can result in equipment damage.

In addition, the following symbols are used in these operating instructions:



This is the general safety alert symbol. It alerts to injury hazards or equipment damage. Comply with all safety instructions in conjunction with this symbol to help avoid possible death, injury or equipment damage.



This symbol alerts to hazardous electrical voltage. If this symbol is used in a safety message, there is a hazard of electric shock.

2.2 Intended use

The product is a leak detector for liquid-based systems of class II as per EN 13160-1 and EN 13160-3.

The product consists of a leak detection fluid container, a probe and a control unit.

The leak detection fluid container and the probe are intrinsically safe pieces of equipment (apparatus) that may be operated in hazardous areas, zones 0, 1 and 2.

The control unit may only be used as a display unit for the probe. It is an associated apparatus that may only be operated outside of the hazardous area.

The product may only be used to monitor double-walled tanks containing leak detection fluid in the interstitial space and used for the aboveground storage liquids.

Since July 2003, the product may no longer be used for newly installed double-walled underground tanks. Systems installed prior to this date may continue to be monitored with the product.

Tanks

- Double-walled containers which are operated under atmospheric conditions and which are suitable for the connection of a liquid-based leak detection system.

If no retention facility for escaping leak detection fluid is available, the volume of the interstitial space of the system must not exceed 1 m³.

Only one tank may be monitored with the product.

Liquids

- Water-polluting liquids

Approved storage media

If the tanks are operated under atmospheric conditions and depending on the design of the tanks, water-polluting liquids with the following densities may be stored in the tanks:

- Tanks as per DIN 6616 type A, DIN 6623-2 and DIN 6624-2
≤ 2.5 m Ø permissible density ≤ 1.90 g/cm³
≤ 2.9 m Ø permissible density ≤ 1.85 g/cm³

Any use other than the application explicitly permitted in these operating instructions is not permitted and causes hazards.

Verify that the product is suitable for the application planned by you prior to using the product. In doing so, take into account at least the following:

- All directives, standards and safety regulations applicable at the installation site of the product
- All conditions and data specified for the product
- The conditions of the planned application

In addition, perform a risk assessment in view of the planned application, according to an approved risk assessment method, and implement the appropriate safety measures, based on the results of the risk assessment. Take into account the consequences of installing or integrating the product into a system or a plant.

When using the product, perform all work and all other activities in conjunction with the product in compliance with the conditions specified in the operating instructions and on the nameplate, as well as with all directives, standards and safety regulations applicable at the installation site of the product.

2.3 Predictable incorrect application

The product must never be used in the following cases and for the following purposes:

- Stored medium that is not compatible with the leak detection fluid
- Operation of the control unit in potentially explosive atmospheres/hazardous areas
 - If the product is operated in hazardous areas, sparks may cause deflagrations, fires or explosions.
- Electrical connection with switch or plug connection

2.4 Qualification of personnel

Any type of work whatsoever on this product may only be performed by a qualified, specialised company which has all required certifications and which meets the following requirements:

- Compliance with all directives, standards and safety regulations concerning handling of water-polluting substances as applicable at the installation site of the product.
- In Germany: Certification as per § 62 "Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen" (AwSV) (Ordinance on Installations for Handling Water-Polluting Substances).

Only qualified persons who meet the following requirements may work on containers containing liquids with a flash point of $\leq 55\text{ °C}$:

- All required qualifications and certifications in the area of fire and explosion protection applicable at the installation site of the product.

Only appropriately trained persons who are familiar with and understand the contents of these operating instructions and all other pertinent product documentation are authorized to work on and with this product.

These persons must have sufficient technical training, knowledge and experience and be able to foresee and detect potential hazards that may be caused by using the product.

All persons working on and with the product must be fully familiar with all directives, standards and safety regulations that must be observed for performing such work.

2.5 Personal protective equipment

Always wear the required personal protective equipment. When performing work on and with the product, take into account that hazards may be present at the installation site which do not directly result from the product itself.

2.6 Modifications to the product

Only perform work on and with the product which is explicitly described in these operating instructions. Do not make any modifications to the product which are not described in these operating instructions.

3 Transport and storage

The product may be damaged as a result of improper transport or storage.

NOTICE

INCORRECT HANDLING

- Verify compliance with the specified ambient conditions during transport or storage of the product.
- Use the original packaging when transporting the product.
- Store the product in a clean and dry environment.
- Verify that the product is protected against shocks and impact during transport and storage.

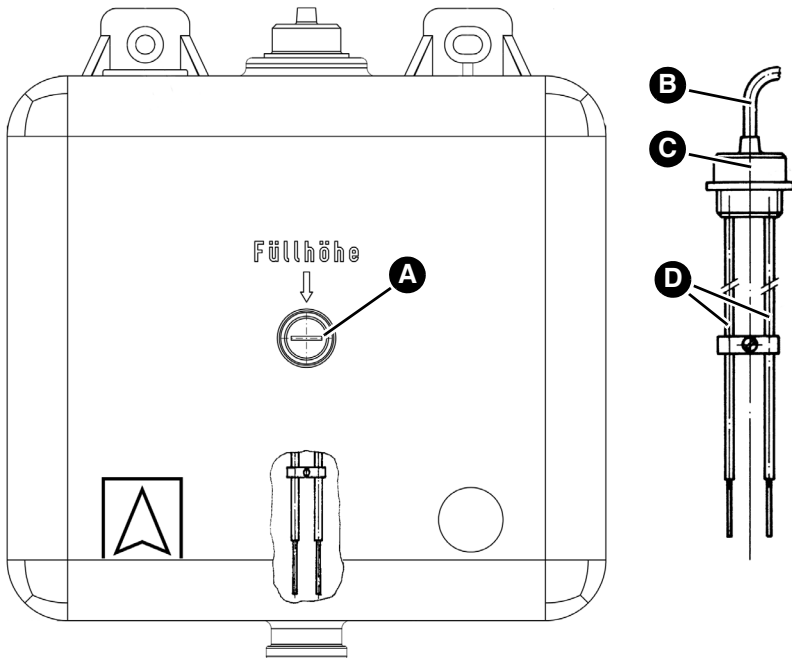
Failure to follow these instructions can result in equipment damage.

4 Product description

The product consists of a control unit, a leak detection fluid container and a probe with two electrode rods.

4.1 Overview

4.1.1 Container for leak detection fluid



A. Liquid level

B. Probe cable

C. Probe housing

D. Electrode rods

Fig. 1: Container for leak detection fluid (black) with probe

The control unit and the probe are connected by means of a two-wire probe cable.

4.1.2 Probe

The probe consists of two metallic electrode rods.

4.1.3 Control unit

The control unit contains the following elements in an impact-resistant plastic housing: display elements and controls as well as all electronic components for evaluation and conversion of the probe signal into a digital output signal. The output signal is available via a voltage-free changeover contact (relay output).



Fig. 2: Control unit

4.1.4 Pictograms

Symbol	Meaning/function
	Indication When power is supplied to the product, the green LED next to the symbol indicates that the product is ready for operation.
	Key The Test key allows you to perform the function test of the product and verify correct operation.
	Indication The red LED to the right of the symbol indicates an alarm or an error.
	Key This key allows you to mute the audible alarm.

4.2 Dimensions

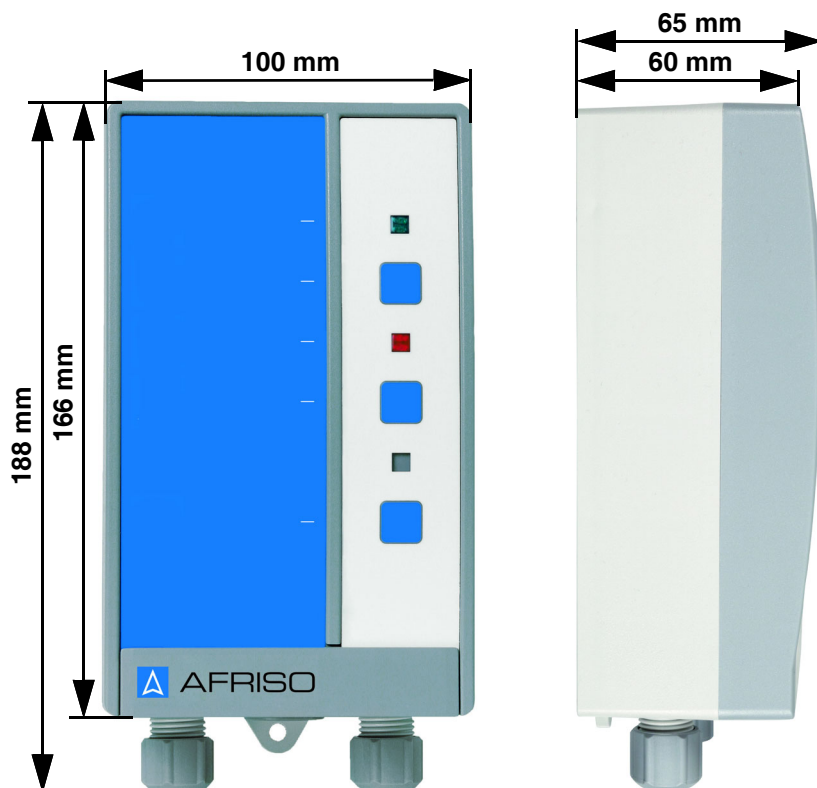


Fig. 3: Dimensions

4.3 Scope of delivery

The scope of delivery includes:

- Control unit
- Probe
- Container for leak detection fluid (black)
- Mounting accessories

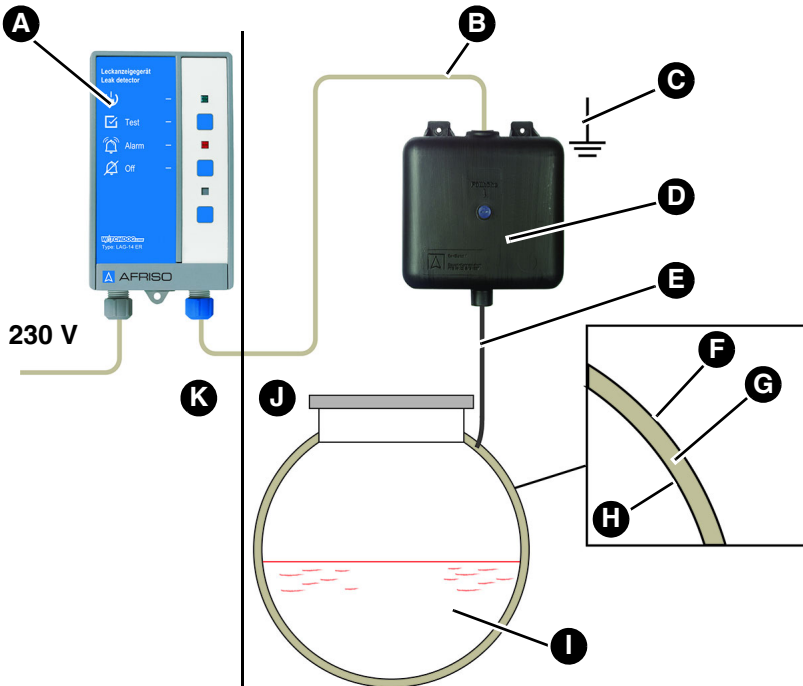
4.4 Function

The product monitors the interstitial space of double-walled tanks filled with leak detection fluid.

The probe is plugged into the top of the container for the leak detection fluid. A small current flows between the electrodes through the conductive leak detection fluid. In the case of a leak in the inner or outer wall of the tank, above or below the levels of the stored liquid or the ground water, the leak detection fluid escapes. This causes the level of the liquid in the leak detection fluid container to drop and the electrode rods of the probe are no longer submerged.

The control unit detects the interruption of the flow of the current (switching point for the alarm) and the product triggers an alarm.

4.5 Application example(s)



- | | |
|---|-----------------------|
| A. Control unit | F. Outer wall |
| B. Probe cable | G. Interstitial space |
| C. Equipotential bonding | H. Inner wall |
| D. Container for leak detection fluid (black) | I. Stored liquids |
| E. Connection line | J. Hazardous area |
| | K. Non-hazardous area |

4.6 Voltage-free changeover contact (relay output)

The control unit features a voltage-free changeover contact for transmission of the alarm condition to additional equipment.

The product can be operated with or without additional equipment for transmission of the alarm condition, for example:

- Visual and audible alarm units
- Remote alarm equipment
- Building control systems
- Other

Operating mode Eco

The product is factory-set to the operating mode "Eco". If no alarm is present, the relay is de-energised. In case of an alarm, the relay is energised.

Operating mode Failsafe

You can also operate the product in the operating mode "FailSafe" (see "Setting the operating mode"). If no alarm is present, the relay is energised. In the case of an alarm, of a failure of the control unit, or of power outage, the relay is de-energised.

4.7 Approvals, conformities, certifications

The product complies with:

- EMC Directive (2014/30/EU)
- Low Voltage Directive (2014/35/EU)
- Construction Products Directive (EU) Nr. 305/2011 and no. 574/2014 (EN 13160-1:2003 and EN 13160-3:2003)
- RoHS Directive (2011/65/EU)
- ATEX Equipment Directive (2014/34/EU)

The markings of the component of this product are:



- Control unit: II 1 G [Ex ia Ga] IIC
- Container for leak detection fluid and probe: Ex ia IIB T6 Ga

4.8 Technical specifications

Control unit

Parameter	Value
General specifications	
Dimensions housing (W x H x D)	100 x 188 x 65 mm
Weight	0.4 kg
Response delay	< 1 second
Emissions alarm sound	At least 70 dB(A) A-weighted sound level of the audible alarm at a distance of one metre
Outputs	1 voltage-free changeover contact
Ambient conditions	
Ambient temperature operation	-20 ... 50 °C
Ambient temperature storage	-25 ... 60 °C
Relative humidity	< 80 % (non-condensing)
Electrical data	
Supply voltage	AC 230 V, 50 ... 60 Hz
Nominal power	5 VA
Relay output: breaking capacity	250 V maximum, 2 A, resistive load
Mains fuse	100 mA (must not be replaced)
Relay fuse	T 2 A
Protection class (EN 60730)	II
Degree of protection (EN 60529)	IP 30
Pollution degree	2
Data with reference to EU directive 2014/34/EU	
Equipment group (aboveground)	II
Equipment category	(1) G
Type of protection	Intrinsic safety
Marking as per standard	[Ex ia Ga] IIC
Safety-related maximum voltage U_m	253 V

Parameter	Value
Probe circuit	ia
Maximum values (intrinsic safety parameters)	U _o = 16.8 V, I _o = 57 mA, P _o = 240 mW, linear characteristic
Maximum external capacitance gas group IIC	180 nF
Maximum external inductance gas group IIC	1 mH
Maximum external capacitance gas group IIB	675 nF
Maximum external inductance gas group IIB	8 mH
Effective internal capacitances and inductance (C _i , L _i)	Negligible

Probe and container for leak detection fluid

Parameter	Value
General specifications probe	
Dimensions electrode (Ø x L)	3 mm x 280 mm
Material probe housing	Plastic
Material electrode	Stainless steel
Resistance	Leak detection fluid
Electrical specifications probe	
Probe voltage	Maximum AC 17 V
Degree of protection (EN 60529)	IP 20
Connection cable:	H05VV-F, 2 x 1 mm ²
Standard length	10 m
Maximum length	50 m (shielded)
General specifications container for leak detection fluid	
Dimensions with mounting aids	300 x 325 x 145 mm
Dimensions container	300 x 273 x 138 mm
Weight	1 kg

Parameter	Value
Material container housing	Hostalen / Vestolen
Active volume	4.5 litres (electrode tip to liquid level)
Total volume	10 litres
Connecting hose	EPDM hose 14 x 3 (ID 14)
Surface resistance	$< 10^9$ Ohm as per DIN 53486
Ambient conditions	
Ambient temperature operation	-20 ... 50 °C, depending on mixing ratio
Ambient temperature storage	-20 ... 50 °C, depending on mixing ratio

5 Mounting

5.1 Preparing mounting

5.1.1 Calculation base for tanks

The active volume of the leak detection fluid container is 4.5 litres. The volume is limited by the liquid level screw in the centre of the container.

Refer to the nameplate at the tank for the interstitial space volume of the tank.

The product can also be used for tanks with large interstitial space volume. For this purpose, additional containers with an active volume of 4.5 litres each must be used.

The additional containers are connected to the container for leak detection fluid by means of connection lines (EPDM).

The following applies to underground tanks:

- One litre of leak detection fluid is required in the container for leak detection fluid per 100 litres of interstitial space volume.

The container for leak detection fluid is sufficient for 450 litres of interstitial space volume.

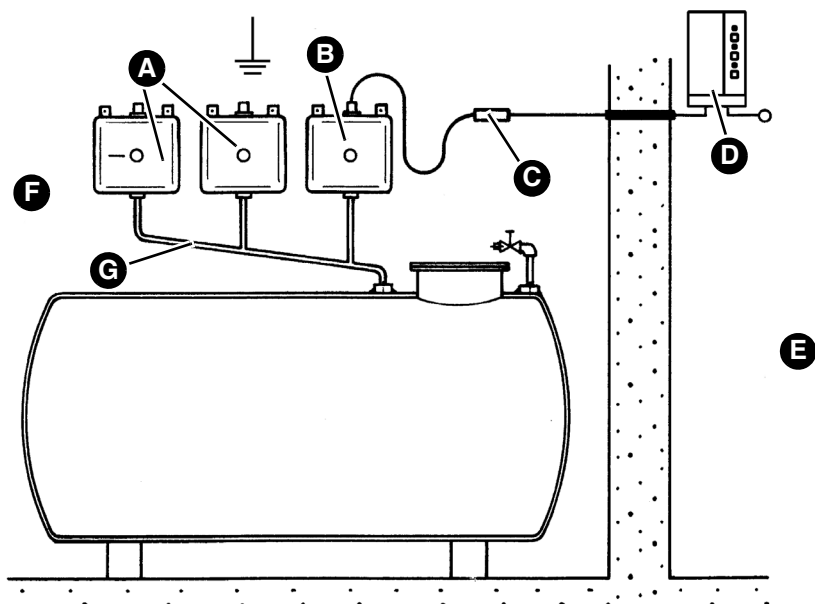
Volume of leak detection fluid [litres]	Container for leak detection fluid (with probe)	Required additional containers (without probe)
0 - 450	1	0
450 - 900	1	1
900 - 1350	1	2
1350-1800	1	3
1800 - 2250	1	4

The following applies to aboveground tanks:

- One litre of leak detection fluid is required in the container for leak detection fluid per 35 litres of interstitial space volume.

The container for leak detection fluid is sufficient for 157.5 litres of interstitial space volume.

Volume of leak detection fluid [litres]	Container for leak detection fluid (with probe)	Required additional containers (without probe)
0 - 157.5	1	0
157.5 - 315	1	1
315 - 472.5	1	2
472.5 - 630	1	3
630 - 787.5	1	4



- A. Additional container (with probe)
- B. Container for leak detection fluid (with probe)
- C. Cable extension fitting (KVA)
- D. Control unit
- E. Non-hazardous area
- F. Hazardous area
- G. Communicating connection

5.2 Installing the container for the leak detection fluid



DANGER

ELECTRICAL VOLTAGE DIFFERENCES

The containers for leak detection fluid consist of conductive plastic.

- The containers for leak detection fluid must be included in the equipotential bonding system.

Failure to follow these instructions will result in death or serious injury.

NOTICE

INOPERABLE PRODUCT

- Verify that the product is protected from external influences.

Failure to follow these instructions can result in equipment damage.

- ⇒ Verify that you use only the black container for leak detection fluid with the product.
- ⇒ Verify that the container for leak detection fluid and the cable extension fitting are protected against water, splash water and dirt.
- ⇒ Verify compliance with the permissible ambient conditions for the container for leak detection fluid.
- ⇒ Verify that you have correctly determined the required volume of leak detection fluid and the required number of containers for leak detection (see chapter "Calculation base for tanks").
- ⇒ Verify correct equipotential bonding (for example, as per TRGS 727).

The container for leak detection fluid may be installed next to the control unit or in hazardous areas zones 0, 1 or 2 (for example, in the manhole).

The leak detection fluid container is mounted above the interstitial space so that it becomes the highest point of the interstitial space.

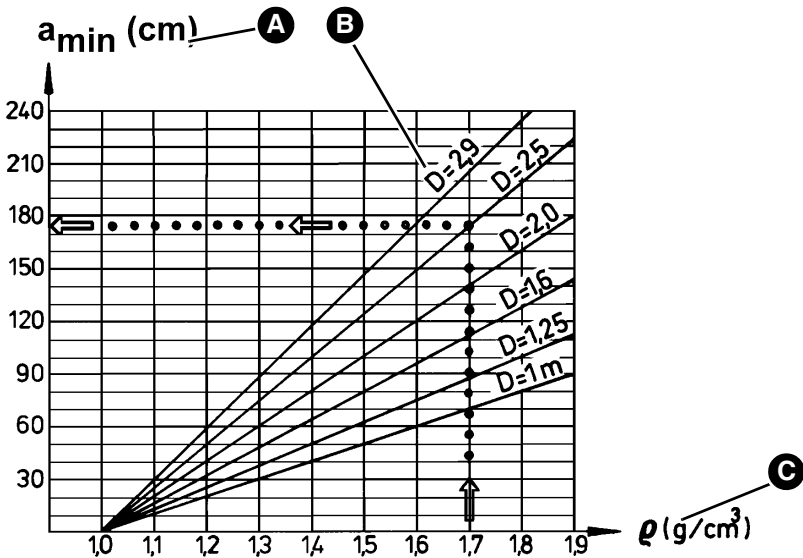
The static pressure of the leak detection fluid must be at least 3 kPa higher than the maximum static pressure of the stored liquid. The maximum mounting height of the container for leak detection fluid must be such that the static pressure of the leak detection fluid does not exceed a maximum of 92 % of the test pressure for the interstitial space.

The container for leak detection fluid is filled to the centre with leak detection fluid and is connected to the interstitial space via a connecting line. The tips of the probe electrodes reach into the leak detection fluid.

Distance

The distance between the container for leak detection fluid and the tank top depends on the density of the stored liquid as illustrated in the following diagram.

$$a_{\min} = D(\rho - 1) + 30 \text{ (cm)}; a_{\max} = 550 - c - D \text{ (cm)}$$



A. Minimum distance

C. Density

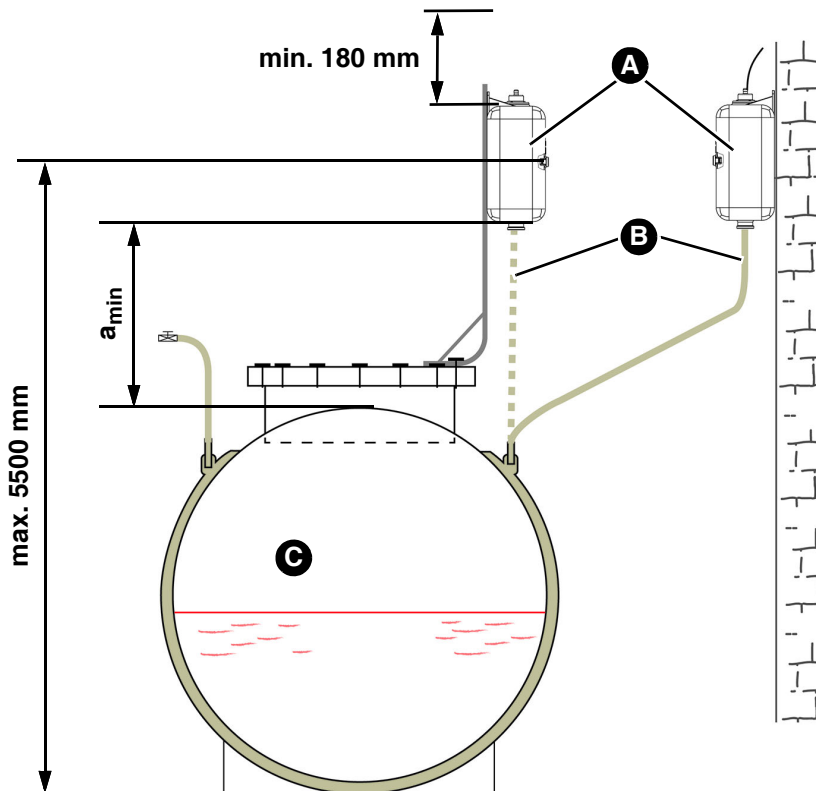
B. Tank diameter

Fig. 4: Overview diagram

Example:

DIN 6624-2, 60 x 2500; $\rho = 1.7$; $a_{\min} = 175 \text{ cm}$

- Tank diameter (D) $\leq 2.5 \text{ m}$: Permissible density ≤ 1.9
- Tank diameter (D) $\leq 2.9 \text{ m}$: Permissible density ≤ 1.85



- | | |
|---------------------------------------|------------------------------------|
| A. Container for leak detection fluid | C. Double-walled tank (DIN 6624-2) |
| B. Connection line | |

Ensure a distance of at least 180 mm between the container for leak detection fluid and the room ceiling so that the probe can be removed for testing.

5.3 Mounting connection line(s)

NOTICE

UNSUITABLE CONNECTION LINES AND FITTINGS

Zinc can react with leak detections fluids.

- Verify that the leak detection fluid cannot come into contact with zinc.

Failure to follow these instructions can result in equipment damage.

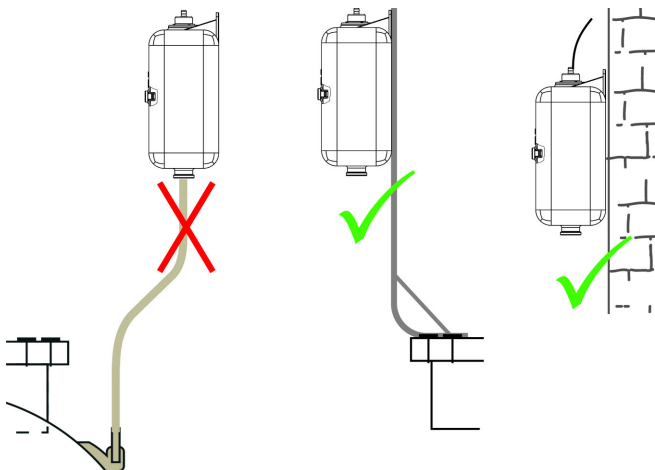
NOTICE

INCORRECT FASTENING

The leak detection fluid container must not be fastened to the connection line.

- Ensure that the container for leak detection fluid is fastened to a wall or other support.

Failure to follow these instructions can result in equipment damage.



The connection line must have a steady gradient towards the tank; it must not be possible to shut it off.

5.4 Mounting kit

The mounting kit for leak detectors contains a test valve with 1" female thread and a hose connection piece for 12 x 2 mm hoses as well as all other connection material required for mounting the product.

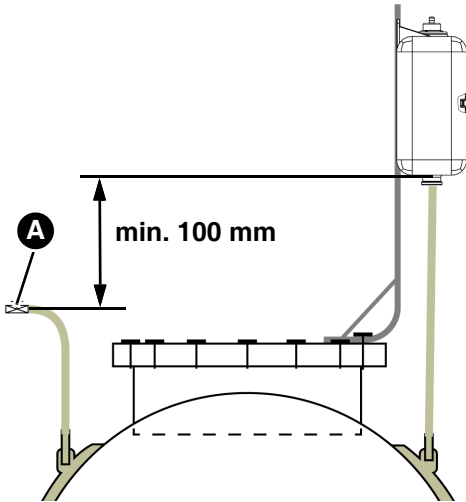


Fig. 5: Mounting of test valve

1. Mount the test valve (A) at least 100 mm below the bottom edge of the container for leak detection fluid.
2. Mount the test valve (A) in such a way that a container can collect the leak detection fluid that escapes during the function test.

5.5 Mounting the control unit



DANGER

OPERATION IN HAZARDOUS AREA

- Verify that the control unit is only operated non-hazardous areas.

Failure to follow these instructions will result in death or serious injury.

Mount the control unit to the wall (use a mounting type A or B according to the following description).

- ⇒ Verify that the control unit is mounted to an even, rigid and dry wall in the non-hazardous area.
- ⇒ Verify that the control unit is accessible and easy to oversee at all times.
- ⇒ Verify that the control unit is protected against water and splash water.
- ⇒ Verify that the control unit is protected from direct atmospheric influences, frost and sunlight if it is installed outdoors.
 - Use a suitable protective housing protective housing.
- ⇒ Verify compliance with the permissible ambient conditions for the control unit.

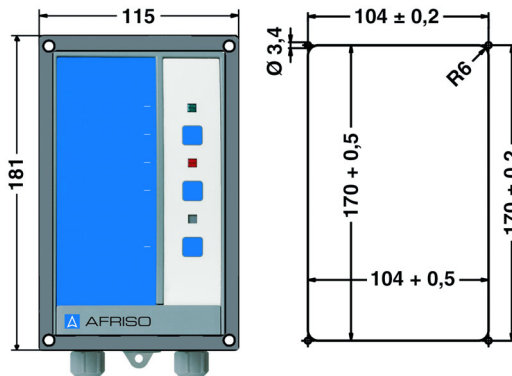
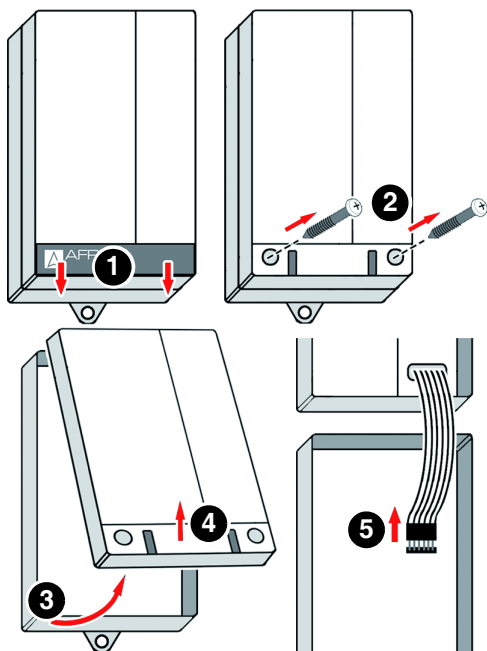
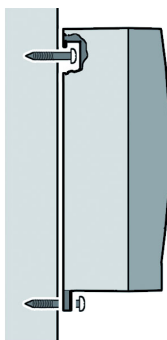
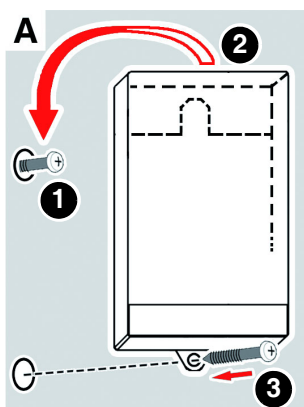


Fig. 6: Control unit with mounting frame for panel mounting; right: control panel cut out



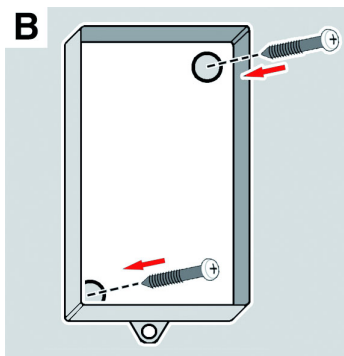
1. Open the control unit.



2. Mount the housing to the wall using mounting type A or B.

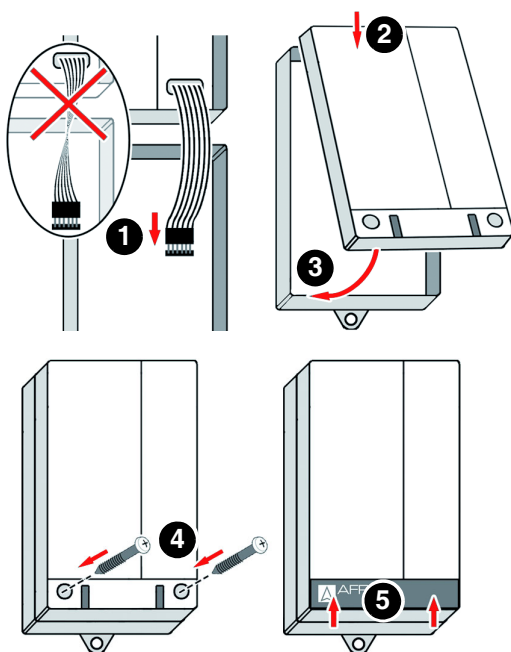
Mounting type A

1. Mount the screw to the wall.
2. Fit the control unit.
3. Fasten the control unit by screwing the bottom lug to the wall.



Mounting type B

1. Drill two fixing holes with a $\varnothing 5$ mm into the base.
2. Mount the control unit to the wall with the enclosed screws.
3. Connect the control unit as described in chapter "Electrical connection".



4. Close the control unit.

5.6 Setting the operating mode

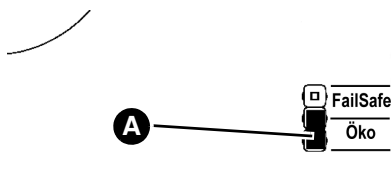
The product is factory-set to the operating mode "Eco".

If you want to operate the product in the operating mode "FailSafe", you must change the position of the jumper on the PCB.

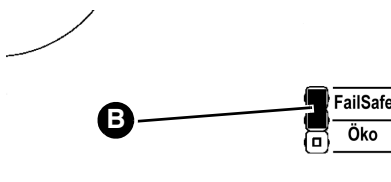
⇒ Verify that the mains voltage is interrupted and cannot be switched on.

1. Open the control unit.

2. Plug the jumper onto the contacts for the operating mode to be set.



A. Operating mode "Eco"



B. Operating mode "Failsafe"

3. Close the control unit.

5.7 Electrical connection



DANGER

ELECTRIC SHOCK

- Verify that the degree of protection against electric shock (protection class, double insulation) is not reduced by the type of electrical installation.
- Verify that the product is connected by means of a permanently installed cable connection.

Failure to follow these instructions will result in death or serious injury.



DANGER

ELECTRIC SHOCK CAUSED BY LIVE PARTS

- Disconnect the mains voltage supply before performing the work and ensure that it cannot be switched on.
- Verify that no hazards can be caused by electrically conductive objects or media.

Failure to follow these instructions will result in death or serious injury.

NOTICE

UNAVAILABLE MONITORING FUNCTION

- Do not install mains plugs or switches in the supply line to the product.
- Only power on/power off the product via the on-site mains fuse.

Failure to follow these instructions can result in equipment damage.

5.8 Supply voltage

- ⇒ Verify that the product is connected to mains by means of a suitable, permanently installed cable (for example, NYM-J 3 x 1.5 mm²).
- ⇒ Verify that the power supply to the control unit is separately fused (16 A maximum).
- 1. Open the control unit.
- 2. Route the mains cable through the left cable gland into the control unit.
- 3. Connect the phase to terminal L and the neutral conductor to terminal N.
- The protective ground conductor (PE) does not have to be connected.

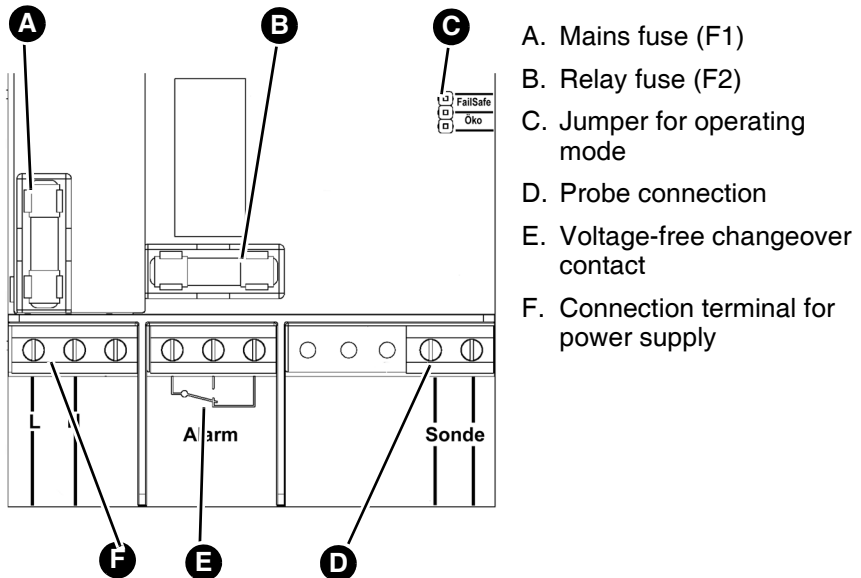


Fig. 7: Electrical connection

5.8.1 Connect probe

To extend the probe cable, use a cable ($\varnothing$ 5 ... 9 mm) for intrinsically safe circuits (2 x 1 mm²). Use shielded cables for lengths of more than 5 m. The maximum length of the probe cable is 50 m.

⇒ Verify that the probe cable is sufficiently protected from damage (for example, by installing it in a metal pipe).

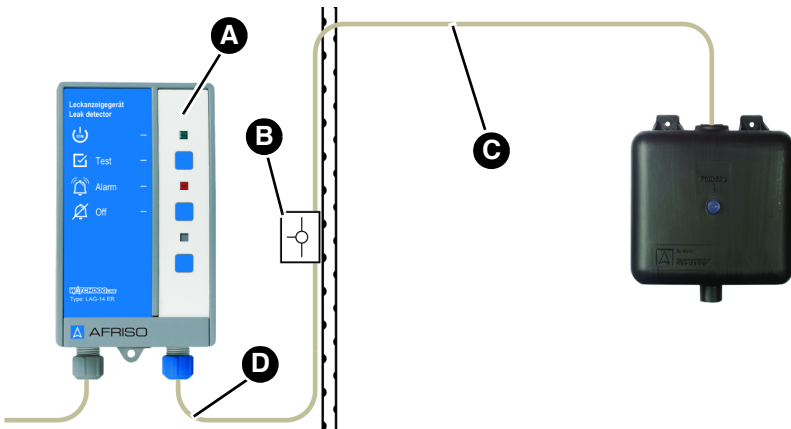
⇒ Verify that the probe cable is not routed immediately next to or together with cables carrying mains voltage.

⇒ Verify that the probe cable used is marked (for example, light blue as per EN 60079-14).

1. Route the probe cable through the blue cable gland at the right.
2. Connect the wires of the probe cable to the terminal with the designation "Sonde".

Route the probe cable in such a way that the probe can be removed from the container for leak detection fluid for function tests. Do not shorten the probe cable.

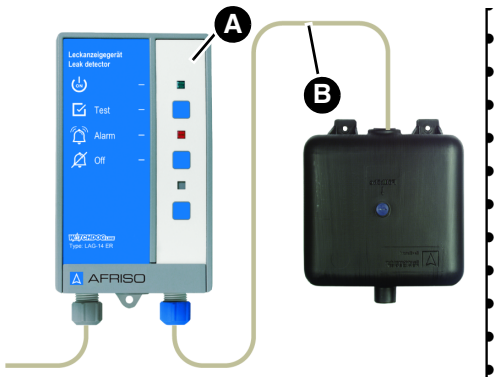
If the control unit and the container for leak detection fluid are in separate rooms, the probe may only be connected to the control unit by means of a suitable fitting (see Figure 8 on page 33).



- A. Control unit
- B. Junction box
- C. Probe cable, not shortened
- D. Probe cable extension

Fig. 8: Probe connection in the case of mounting the container for leak detection fluid in the hazardous area

If the control unit and the container for the leak detection fluid are mounted next to each other outside of the hazardous area, the probe can be directly connected to the control unit.



- A. Control unit
- B. Probe cable, not shortened

Fig. 9: the control unit and the container for the leak detection fluid are mounted next to each other outside of the hazardous area

5.8.2 Voltage-free changeover contact (relay output)

NOTICE

VOLTAGE PEAKS WHEN INDUCTIVE CONSUMERS ARE SWITCHED OFF

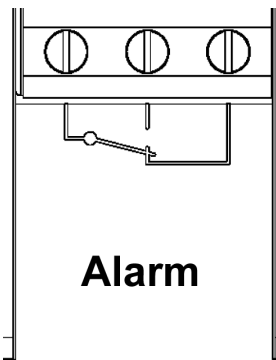
When inductive consumers are switched off, this can cause voltage peaks and can lead to adverse effects on electrical systems and may destroy the switching contact.

- Use commercially available standard RC combinations such as 0.1 μF /100 Ohm for inductive consumers.

Failure to follow these instructions can result in equipment damage.

The output signal of the control unit is made available via a voltage-free changeover contact (relay contact). The output signal of the product can be transmitted to an additional alarm unit (for example, ZAG 01).

1. Replace the blind plug by a suitable cable gland.
 - You can use, for example, the "Sealing kit IP 54" for cables with a diameter of 5 ... 10 mm.
 - The cable for the output signal must be routed separately.
2. Connect the additional equipment to the terminals "Alarm".
 - Refer to the operating instructions of the manufacturer of the additional equipment for further information.



6 Commissioning

6.1 Filling the container for leak detection fluid

NOTICE

INCORRECT LEAK DETECTION FLUID

The leak detection fluid in the interstitial space of the tank must be compatible with the leak detection fluid filled or must be able to be mixed with it.

- Verify that the specified leak detection fluid is used with the specified mixing ratio (with water).

Failure to follow these instructions can result in equipment damage.

Double-walled tanks are often delivered with leak detection fluid already filled into the interstitial space. Refer to the nameplate at the tank for the interstitial space volume.

1. Place a collection receptacle below the test valve.
2. Open the test valve.
3. Remove the probe from the container for leak detection fluid.
4. Remove the liquid level screw at the container for leak detection fluid.
5. Fill the container for leak detection fluid.
6. Close the test valve as soon as leak detection fluid escapes.
7. Fill leak detection fluid up to the overflow opening of the liquid level mark.
8. Screw the liquid level screw back into the container for leak detection fluid.
9. Fit the probe into the container for leak detection fluid.

The vent hole at the neck of the container for leak detection fluid must remain open.

6.2 Commissioning the product

- ⇒ Verify that the product has been properly mounted and electrically connected.
1. Apply voltage via the on-site mains fuse.
 - The green LED at the control unit lights.

The specialised company certifies the installation, commissioning and test of the product (see "Certification of specialised company (as per AwSV)").

6.3 Performing the function test

Perform the function test at the following occasions:

- After each commissioning
- After each alarm
- Once per year during maintenance

Have the function test performed and documented by a specialised company. A test report on the function test must be created and kept with the system documentation.

Basic function

Collect the escaping leak detection fluid using a suitable collection receptacle.

1. Place a collection receptacle below the test valve.
2. Open the test valve.
 - The leak detection fluid must escape at a flow rate of at least 0.5 l/min.
3. Close the test valve.
4. Refill the collected leak detection fluid into the container for leak detection fluid.

Probe

1. Remove the probe from the container for leak detection fluid.
 - The red LED lights.
 - The audible alarm sounds.
2. Refit the probe into the container for leak detection fluid.
 - The audible alarm and the visual alarm must switch off automatically.

Control unit

1. Press the Test key.
 - The red LED lights up and the audible alarm sounds.

Release the Test key to terminate the function test at the control unit.

Container for leak detection fluid

Check the level of the leak detection fluid and refill leak detection fluid up to the test opening, if required.

6.4 Commissioning the product

- ⇒ Verify that the product has been properly mounted and electrically connected.
1. Apply voltage via the on-site mains fuse.
 - The green LED is on.
 2. Perform the function test.

7 Operation

Operating the product is limited to its regular monitoring:

- The green LED is on.
- The red LED is off.
- The audible alarm is off.

7.1 Alarm

If the probe is no longer in the leak detection fluid, the electrical output signal of the probe changes and the control unit triggers an alarm.

- The red LED lights.
- The audible alarm sounds.

In the case of an alarm, the voltage-free changeover contact switches (for example, for additional equipment).

7.1.1 Acknowledging an alarm

1. Press the mute key to mute the audible alarm.
 - The red LED remains lit.
2. Notify a specialised company (as per AwSV).

7.1.2 In the case of an alarm condition

1. Refill leak detection fluid, mixed with water in the specified mixing ratio, up to the indicated level.
 - If the alarm repeats, there is a leak.
2. Notify a specialised company (as per AwSV).

The specialised company must remove the cause before the product is recommissioned.

8 Maintenance

The product is safety-related equipment; maintenance may only be performed by a specialised company.

8.1 Maintenance intervals and maintenance activities

When	Activity
Once per year and after an alarm	Replace damaged parts. Perform a function test (see "Performing the function test").
If required	Clean the product with a slightly damp cloth. Use mild soap suds.

9 Troubleshooting

Problem	Possible reason	Repair
Green LED is not on	No supply voltage	Apply supply voltage
	Flat cable not connected to printed circuit board	Connect the flat cable to the printed circuit board
The red LED flashes and the audible alarm sounds	Leak exists	Notify a specialised company Refill leak detection fluid
	Line interruption	Check the probe cable
Red LED is on and the audible alarm sounds, even though the probe is in leak detection fluid	Probe cable not properly connected or probe cable defective	Check the probe cable and the connections to the product
Red LED is off and the audible alarm does not sound, even though the probe is not in leak detection fluid	Control unit defective	Contact the AFRISO service hotline
Other malfunctions	-	Contact the AFRISO service hotline

9.1 Replacing the relay fuse F2



DANGER

ELECTRIC SHOCK CAUSED BY LIVE PARTS

- Disconnect the mains voltage supply before performing the work and ensure that it cannot be switched on.

Failure to follow these instructions will result in death or serious injury.

- ⇒ Verify that the supply voltage of the device and the relay contact is interrupted and cannot be switched on.
1. Open the control unit, see "Mounting the control unit".
 2. Remove the transparent cover from the relay fuse F2.
 3. Fit a new relay fuse F2.
 4. Refit the transparent cover.
 5. Connect the flat cable to the connector.
 6. Close the control unit.

Apply mains voltage.

Any malfunctions that cannot be removed by means of the measures described in this chapter may only be repaired by the manufacturer.

10 Decommissioning, disposal

Dispose of the product in compliance with all applicable directives, standards and safety regulations.

Electronic components must not be disposed of together with the normal household waste.



1. Disconnect the product from mains.
2. Dismount the product (see chapter "Mounting the control unit", reverse sequence of steps).
3. Dispose of the product.

11 Returning the device

Get in touch with us before returning your product (service@afriSO.de).

12 Warranty

See our terms and conditions at www.afriSO.com or your purchase contract for information on warranty.

13 Spare parts and accessories

NOTICE

UNSUITABLE PARTS

- Only use genuine spare parts and accessories provided by the manufacturer.

Failure to follow these instructions can result in equipment damage.

Product

Product designation	Part no.	Figure
Leak detector LAG-14 ER with container for leak detection fluid and probe	43410	

Spare parts and accessories

Product designation	Part no.
Control unit LAG-14 ER	40642
black container for leak detection fluid	40731
Probe	40510
Mounting kit between LAG and additional container	40539
Mounting kit for leak detectors	40540
Hose nipple G $\frac{3}{4}$ (container for leak detection fluid)	40558
Hose connection piece 1"	40557
Test valve KST	40555
EPDM hose 14 x 3 mm	40544
Leak detection fluid, concentrate	43645
Cable extension fitting KVA	40041
Mounting frame for control unit	43521
Sealing kit IP 54	43416

14 Leak detection fluids for leak detector

The product is suitable for the following leak detection fluids:

Manufacturer	Product	BAM reference
Clariant SE Am Unisys Park 1 65843 Sulzbach	ANTIFROGEN N Leak detection fluid Leckanzeige-Clariant	22017570

The leak detector LAG-14 ER can continue to be used as a spare device in existing systems with already approved leak detection fluids.

A list of approved leak detection fluids and their approved miscibility can be found on the website of the Deutsches Institut für Bautechnik (DIBt, German Institute for Building Technology).

15 Appendix

15.1 Certification of specialised company (as per AwSV)

This is to certify that the product was installed, commissioned and function-tested in accordance with the operating instructions:

Tank manufacturer: _____

Tank as per standard: _____

Year of manufacture: _____

Tank capacity in litres: _____

Factory no.: _____

Leak detection fluid

Designation: _____

Volume in litres (in interstitial space)

Volume in litres: _____

Specialised company:

Owner/operator:

Location of system:

Date, signature (specialised company)

15.2 Approval documents

Approval documents and the EU declaration of conformity can be found in the German operating instructions.

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ CERTIFICADO ◆ CERTIFICAT

(1) **EU-Baumusterprüfbescheinigung**

(2) Geräte und Schutzsysteme zur bestimmungsmäßigen Verwendung in explosionsgefährdeten Bereichen – **Richtlinie 2014/34/EU**

(3) Nummer der EU-Baumusterprüfbescheinigung:

TPS 22 ATEX 015639 0019 X

(4) Gerät: Anzeigergerät
Typen: AG 10 Ex und LAG-14 ER

(5) Hersteller: AFRISO-EURO-INDEX GmbH

(6) Anschrift: Lindenstr. 20
74363 Güglingen
Deutschland

(7) Die Bauart dieses Produktes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage und den darin aufgeführten Unterlagen zu dieser EU-Baumusterprüfbescheinigung festgelegt.

(8) Die TÜV SÜD Product Service GmbH bescheinigt als notifizierte Stelle Nr. 0123 nach Artikel 17 der Richtlinie 2014/34/EU des Europäischen Parlaments und des Rates der Europäischen Union vom 26. Februar 2014 die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie. Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht 713228986 festgelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit:

EN IEC 60079-0:2018 EN 60079-11:2012

(10) Falls das Zeichen „X“ hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.

(11) Diese EU-Baumusterprüfung bezieht sich nur auf Konzeption und Bau des festgelegten Gerätes gemäß Richtlinie 2014/34/EU. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.

(12) Die Kennzeichnung des Gerätes muss die folgenden Angaben enthalten:



Product Service



Ausgabe 00



II (1)G [Ex ia Ga] IIC

Zertifizierstelle Explosionsschutz
Ridlerstraße 65, 80339 München

München, 08.05.2023



.....
Dipl.-Ing. Ulrich Jacobs
QM-TC CRT-MUC

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Auszüge oder Änderungen bedürfen der Genehmigung von TÜV SÜD Product Service GmbH
Das Dokument wird intern unter der folgenden Nummer verwaltet: EX5A 015639 0019 Rev. 00

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Product Service

- (13) **Anlage**
- (14) **EU-Baumusterprüfbescheinigung TPS 22 ATEX 015639 0019 X** Ausgabe 00
- (15) Beschreibung des Gerätes

Bei dem Prüfobjekt handelt es sich um ein Anzeigergerät, das in der Zündschutzart Eigensicherheit „Ex ia“ als zugehöriges Betriebsmittel ausgeführt ist. Der Montageort muss außerhalb von Bereichen mit explosionsfähiger Gas- oder Staubatmosphäre erfolgen.

Das Auswertegerät wird mit einer eigensicheren Sonde verbunden, die sich in einer explosionsfähigen Gasatmosphäre befindet und detektiert die Widerstandsänderung. Das Gerät verfügt über einen potentialfreien Relaisausgang (Wechsler) zur Weitermeldung des Alarmsignals an zusätzliche Geräte im sicheren Bereich.

Gerätevarianten:

AG 10 Ex	Anzeigergerät
LAG-14 ER	Leckanzeigergerät für Flüssigkeitssysteme der Klasse II gemäß EN 13160-1 und EN 13160-3 in Kombination mit einem LAG Behälter und einer LAG Sonde

Technische Daten :

Elektrische Kenngröße		
Bemessungsspannung	230	V (AC)
Sicherheitstechnische Maximalspannung U_m	253	V (AC)
Bemessungsfrequenz	50	Hz
Relaiskontakte		
Bemessungsspannung	240	V (AC)
Sicherheitstechnische Maximalspannung U_m	265	V (AC)
Bemessungsstromstärke	3	A
$\cos \varphi$	$\geq 0,7$	
Eigensichere Kennwerte		
U_o	16,8	V
I_o	57	mA
P_o	240	mW
	IIB	IIC
C_o	675	180 nF
L_o	8	1 mH
Isolationsspannung		
Zwischen L und N (gebrückt) zu PE	1500	V (AC)
Zwischen eigensicherem Stromkreis und Versorgung	1500	V (AC)
Zwischen Gehäuse und eigensicherem Stromkreis ist keine spezielle Isolation erforderlich, da ein Kunststoffgehäuse ohne berührbare Metallteile verwendet wird		
Zulässiger Umgebungstemperaturbereich		$-20\text{ }^{\circ}\text{C} \leq T_a \leq +50\text{ }^{\circ}\text{C}$

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Product Service

- (16) Prüfbericht 713228986
- (17) Besondere Bedingungen für die Verwendung
 - 1. Umgebungtemperaturbereich (siehe technische Daten)
 - 2. Eigensichere Kennwerte (siehe technische Daten)
- (18) Grundlegende Sicherheits- und Gesundheitsanforderungen:
Durch die unter (9) aufgeführten Normen abgedeckt.

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