Documentation

Vacuum leak detector VLX-S 350 M

For 1 up to 6 tanks with a suction line for the leak detector to the lowest point of the interstitial space

Read the instructions before starting any work

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Table of contents

1. General

1.1. Information

These instructions provide important information on how to handle the VLX-S 350 M negative pressure leak detector.

The VLX-S 350 M leak detector is only suitable for tanks with a suction line for the leak detector that runs to the lowest point of the interstitial space.

A requirement for safety during work is the adherence to all stipulated safety and operating instructions.

Moreover, all the regulations for the prevention of accidents and general safety instructions which apply at the location of use of the leak detector must be adhered to.

1.2. Explanation of symbols

Warnings in these instructions are marked with the adjacent symbol.

The signal word expresses the extent of the hazard.

DANGER:
An immediate hazardous situation which will lead to serious or even fatal injuries if not avoided.

WARNING:
A possible hazardous situation which may lead to serious or even fatal injuries if not avoided.

CAUTION:
A possible hazardous situation which may lead to minor or light injuries if not avoided.

Information:
Indicates tips, recommendations and information.

1.3. Limitation of liability

All information and instructions in this documentation have been compiled while taking into account the applicable standards and regulations, state-of-the-art technology and our many years of experience.

SGB assumes no liability in case of:

- Failure to adhere to these instructions
- Improper use and the deployment of unqualified staff
- Unauthorised modifications
- Connection to systems which are not approved by SGB

1.4. Copyright

1.5. Warranty conditions

We provide a 24-month warranty for the VLX-S 350 M leak detector according to our Terms and Conditions, starting from the day of installation.

The warranty period ends 27 months after the date of sale at the latest.

Before a warranty claim can be made, the functional report/test report that details the first commissioning by trained staff must first be submitted.
The serial number of the leak detector must also be specified.

The warranty is rendered null and void in the event of:
- faulty or improper installation
- improper operation
- changes/repairs without the manufacturer's consent.

Our warranty does not include parts, which may be perished premature due to their consistence or category of usage (e.g. pumps, valves, gaskets, etc.). Furthermore, we are not liable for defects or corrosion damages caused by humid or inappropriate installation environments.

1.6. Customer service

Our customer service department is available to provide you with further information.

A list of contact persons can be found online at sgb.de or on the type plate on the indicator unit.

2. Safety

2.1. Intended use

WARNING:

Danger due to improper use

- Only use the VLX-S 350 M leak detector for interstitial spaces which are resistant to negative pressure up to at least 800 millibars, as part of double-walled tanks with a maximum constructed height of 3 metres or double floors of flat bottom tank constructions.
- Depending on its design, the VLX-S 350 M leak detector is suitable for the monitoring of between one and six tank interstitial spaces.
- The tank has a suction line to the lowest point of the interstitial space for evacuation / emptying the interstitial space.
- The signalling unit is mounted outside the Ex-zone (potentially explosive zone)
- Internally (pneumatic side), the sensor for the VLX-S 350 meets the requirements of category 1, thus connection to suitable interstitial spaces (Zone 0, 1, 2 or outside the Ex-zone)
- Classification of potential vapour-air mixtures emanating from stored goods into explosion groups II A up to II B and temperature classes T 1 up to T4.
- Earthing/equipotential bonding as per applicable regulations (e.g. EN 1127).
- Leak tightness of the interstitial spaces as per this documentation
- The total volume of every individual interstitial space does not exceed 8000 litres.
- Ambient temperature range for sensor: -20°C to +60°C
- Ambient temperature range for signalling unit: 0°C to +40°C
- Empty pipe for electrical connection cables in dome shafts and control shafts must be sealed and gas-tight
- Power connection cannot be shut off

Claims of any kind made as a result of improper use are not valid.

2.2. Obligations of the operating company

The VLX-S 350 M leak detector is for commercial use. The operating company is thus subject to the legal obligations of occupational health and safety regulations.

Alongside the safety instructions in this documentation, all the applicable regulations for safety, accident prevention and environmental protection must be adhered to. In particular:

- Compilation of a risk assessment report and implementation of its results in an operation manual
- Regular checks to make sure that the operation manual is in line with the current regulations
- Content of the operation manual includes responses to possible alarms
- Scheduling of an annual functional test

2.3. Qualifications

WARNING:

Risk to personnel and the environment due to insufficient qualifications

Staff must be sufficiently qualified so that they are able to recognise and prevent possible hazards independently.

Operating companies putting this leak detector into operation should have attended the appropriate training course provided by SGB or an authorized representative.

National regulations must be observed.

For Germany:

Certified company qualification for assembly/installation, commissioning and maintenance of leak detector systems

2.4. Personal protective equipment (PPE)

Personal protective equipment must be worn during work.

- Wear the safety clothing and equipment required for the respective work
- Adhere to and follow the signs relating to PPE

Keep a long in the “Safety Book”

Wear a high-visibility vest

Wear safety shoes

Wear a safety helmet

Wear safety gloves (where necessary)

Wear safety goggles (where necessary)

2.4.1 Personal protective equipment on systems that could present the risk of potentially explosive atmospheres

The information described here relates above all to the safety of work on systems that could present the risk of potentially explosive atmospheres.

If work is performed in areas where one must assume that atmospheres could potentially be explosive, then the following equipment is essential:

- Suitable clothing (risk of electrostatic charges)
- Suitable tools (as per EN 1127)
- Suitable gas warning device, calibrated for the respective vapour-air mixtures (work should only be performed at a concentration 50% below the lowest explosion limit)[1]
- Measuring device to establish the oxygen content of the air (Ex/O–meter)

2.5. Fundamental hazards

DANGER
from electrical current

When working on the electrics of the VLX-S 350 M, it must first be shut off and electrically isolated.

Adhere to the valid regulations relating to electrical installation, explosion protection (e.g. EN 60 079-17) and the regulations for the prevention of accidents.

DANGER
from potentially explosive vapour-air mixtures.

Potentially explosive vapour-air mixtures may be produced in tank interstitial spaces. In certain circumstances, potentially explosive vapours may escape when the connections to the interstitial space are opened.

There may be potentially explosive vapour-air mixtures in the connection lines if vapours penetrate the inner walls due to permeation or in case of a leak.

The leak detector system must be free of gas before carrying out work on it.

If there is a possibility of potentially explosive vapour-air mixtures, use pumps with explosion protection to evacuate the interstitial space.

Adhere to the explosion protection regulations, e.g. BetrSichV (Directive 1999/92/EC and the derived laws of the respective member states) and/or others.

DANGER
from working in shafts.

Leak detectors are mounted outside the manholes. The pneumatic connections to the interstitial spaces are usually installed in dome shafts or other shafts. Thus, the shaft is to enter for mounting.

Before entering shafts, the relevant safety measures must be taken, and shafts must be free of gas and have sufficient oxygen.

[1] Other percentage values may be stipulated by factory-specific or country-specific regulations.

3. Technical data

3.1. General data

Dimensions and drilling pattern		see Chap. 12.1, 12.2
Storage temperature range		-30°C to +60°C
Sensor application temperature range		-20°C to +60°C
Accuracy of sensor		2% FK ≙ 20 mbar
Signalling unit application temperature range		0°C to +40°C
Protection class of leak detector device		IP 30
Weight	Version with 1 display	1.2 kg
	Version with 4 displays	2.1 kg
	Version with 6 displays	5.6 kg

3.2. Electrical data

Voltage supply: optional	100 to 240 V AC 24 V DC
Terminals 5, 6, external signal: (only for devices with 1 display)	24 V DC, 2 A
Terminals 11 to 13 (floating): Terminals 17 to 19 (floating):	DC ≤ 25 W or AC ≤ 50 VA DC ≤ 25 W or AC ≤ 50 VA
Terminals 21, 22, pressure sensor	
Fuse protection:	max. 10 A
Overvoltage category	2

3.3. Switching values

For VLX-S 350 M	
(relative negative pressure)	
Alarm ON	> 350 mbar
Alarm OFF	< 400 mbar

Recommended negative pressure for operation: 700 mbar

3.4. Field of application

Monitoring of suitable double-walled tanks for storage of mineral oil products which are usually used at service stations

(Tanks suitable for leak monitoring are sufficiently leak-tight, have a suction line for the leak detector running to the lowest point of the interstitial space and are sufficiently resistant to negative pressure)

4. Design and function

4.1. System design

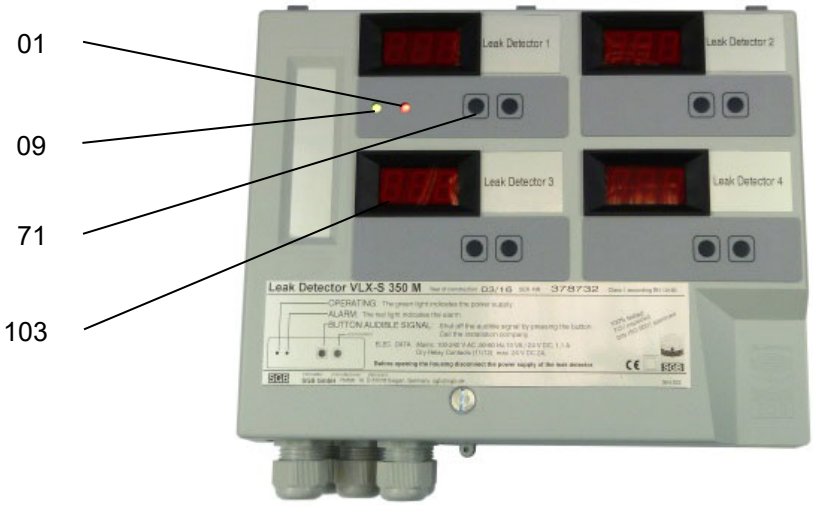
The VLX-S 350 M leak detector comprises a signalling unit and an installation kit for the tank. The signalling unit features either 1, or 2 – 4 or 5 – 6 display/control panels for the monitoring of 1 – 6 tanks.

A display/control panel for an individual tank comprises a display for the digital pressure display, an acknowledge button for the acoustic alarm signal, a green operating light and a red alarm lamp.

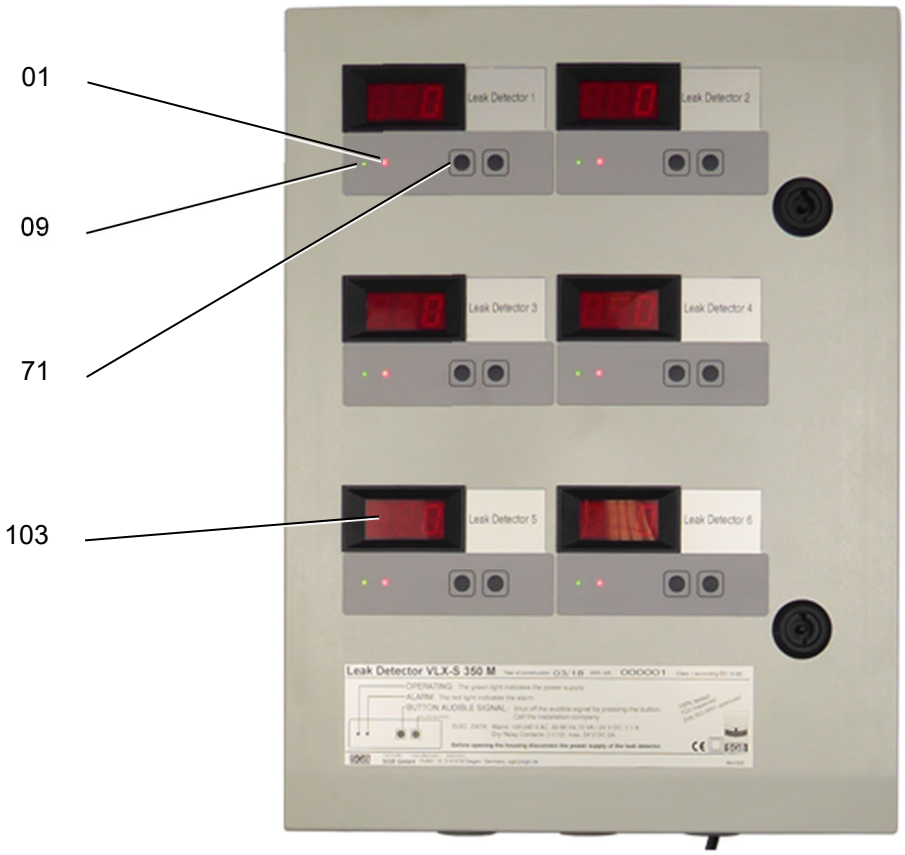
The installation kit comprises a pressure sensor with explosion protection and a shut-off valve for the suction connection.

Signalling unit with 1 display/control panel:

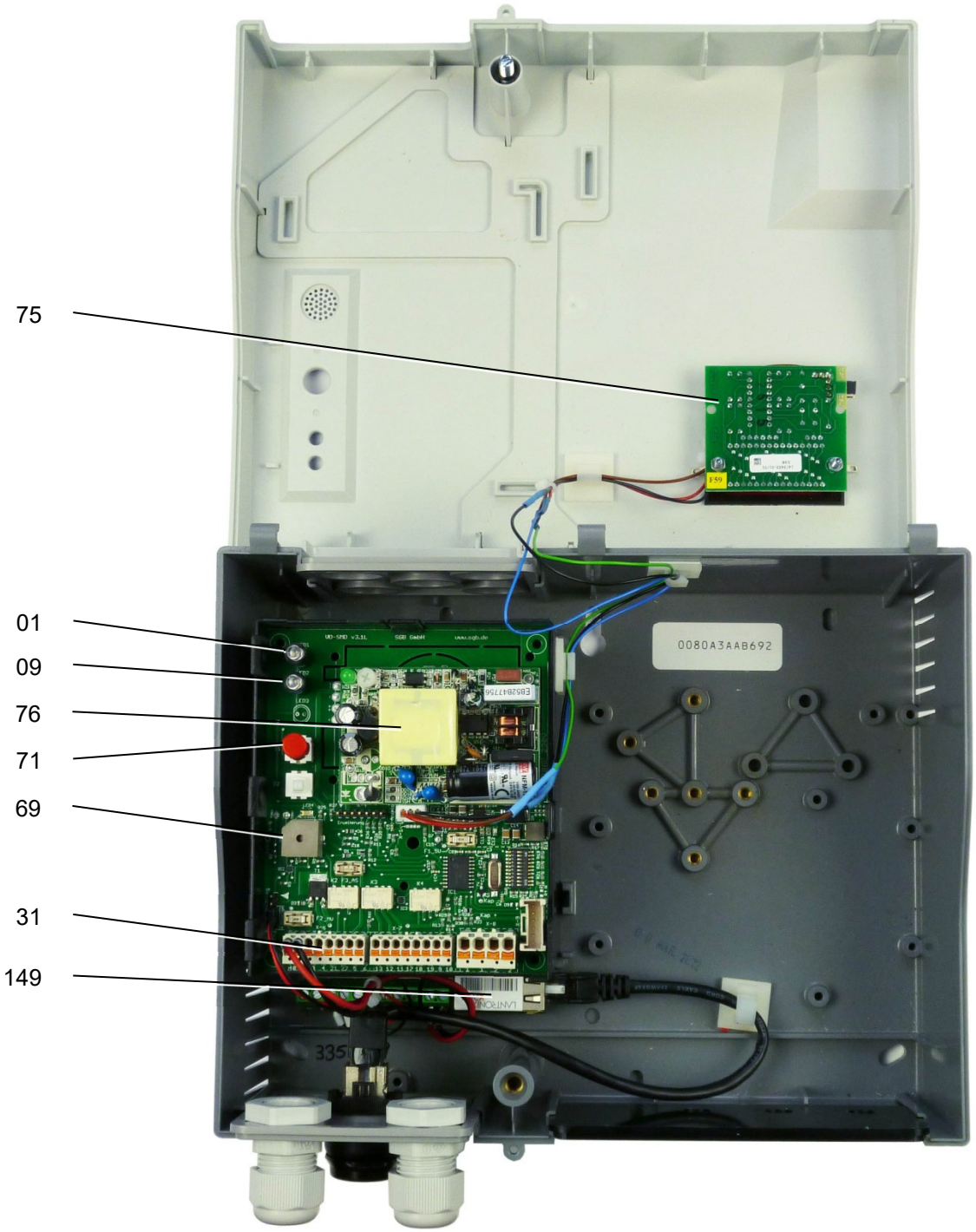
01	“Alarm” signal lamp, red
09	“Operation” signal lamp, green
71	“Mute” button
103	Display with digital pressure reading



Signalling unit of this device version with 4 display/control panels
01 “Alarm” signal lamp, red
09 “Operation” signal lamp, green
71 “Mute” button
103 Display with digital pressure reading

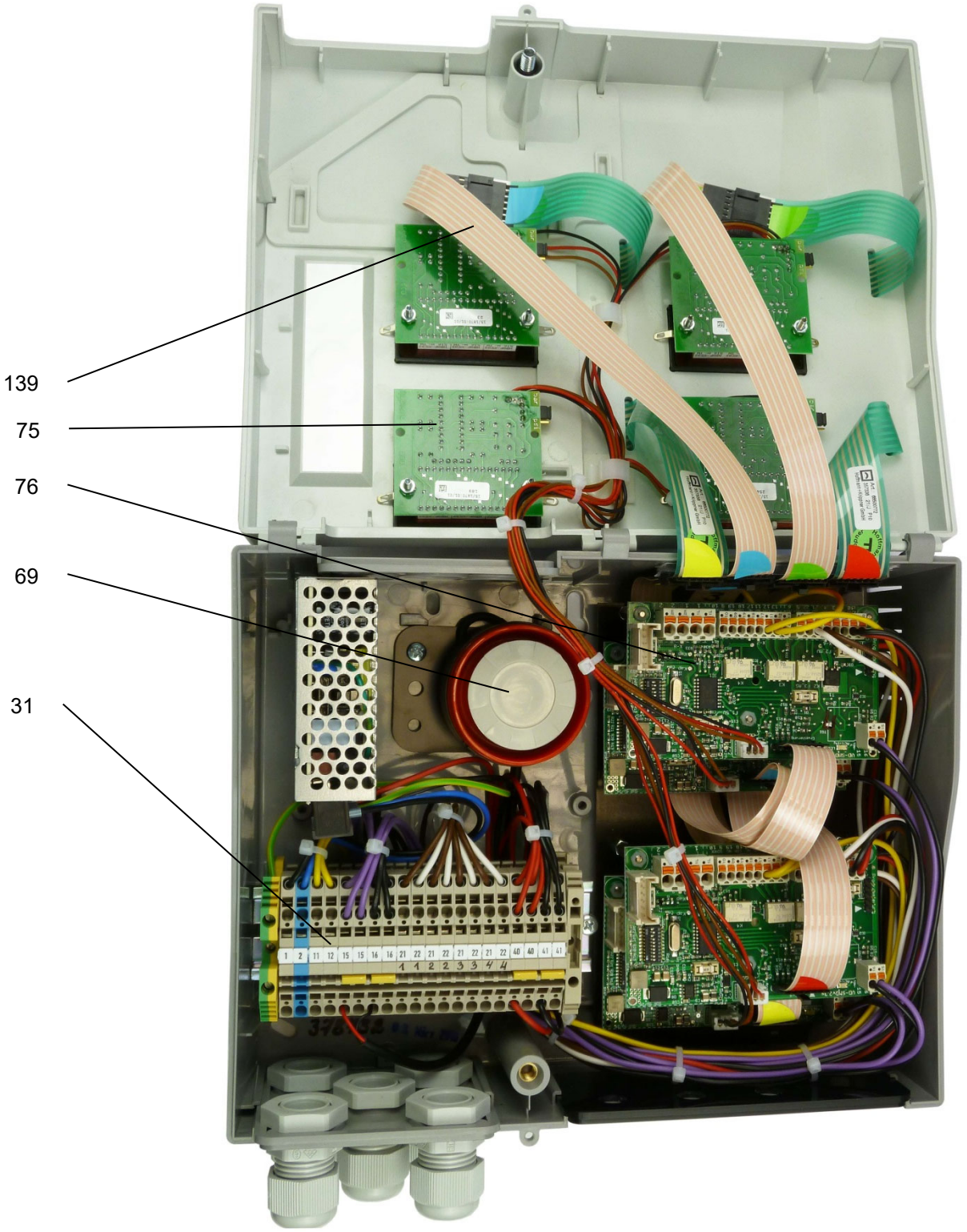


Signalling unit of this device version with 6 displays/control panels
01 “Alarm” signal lamp, red
09 “Operation” signal lamp, green
71 “Mute” button
103 Display with digital pressure reading



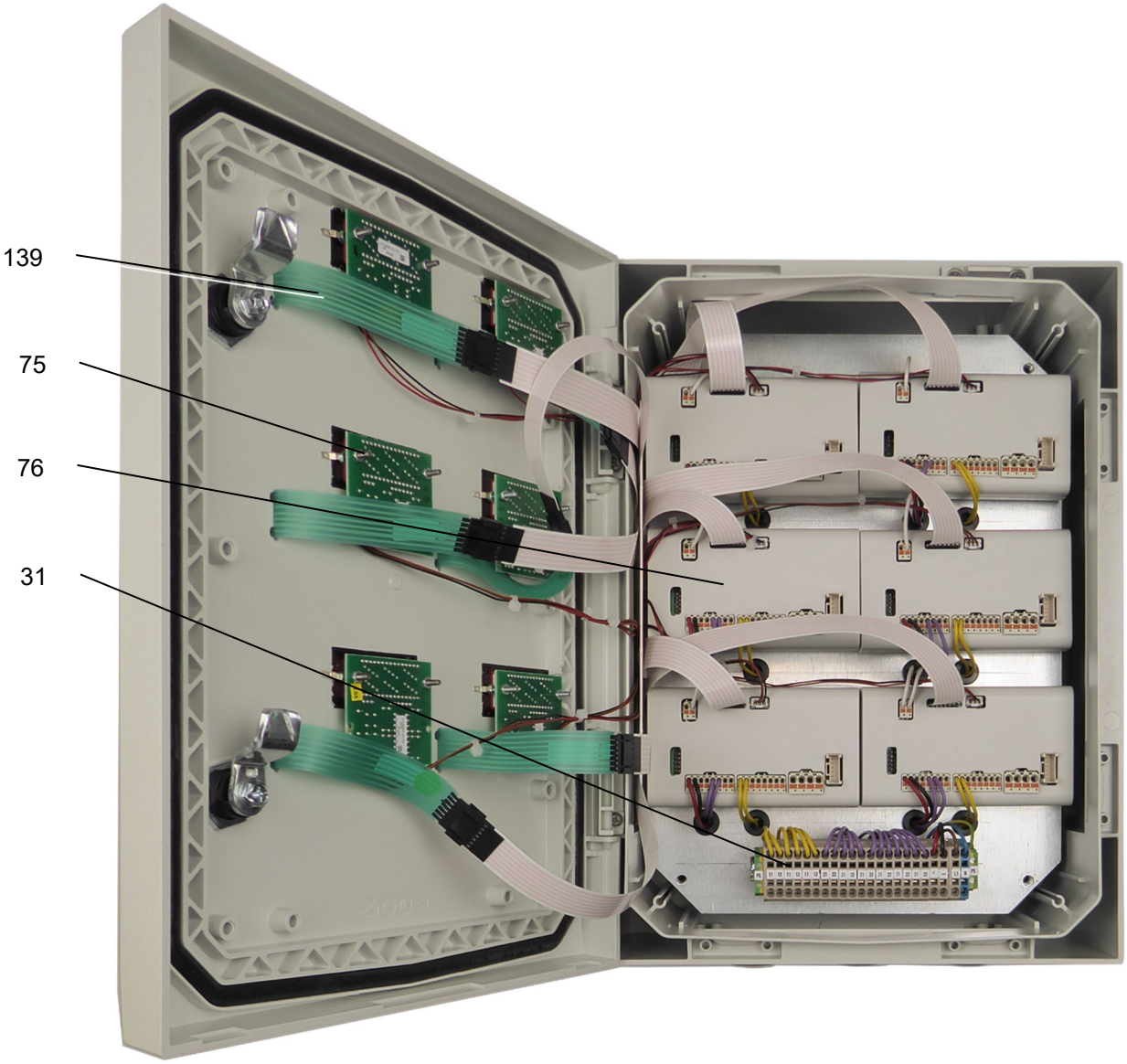
Interior view of this device version with one display/control panel and a DTM that is only available for this variant, as used for the LOD (Leak Online Diagnosis Service), with:

01	“Alarm” signal lamp, red
09	“Operation” signal lamp, green
31	Terminal strip
69	Buzzer
71	“Mute” button
75	Display circuit board
76	Main circuit board
149	Data transfer module (DTM)



Interior view of this device version with four display/control panels, featuring:

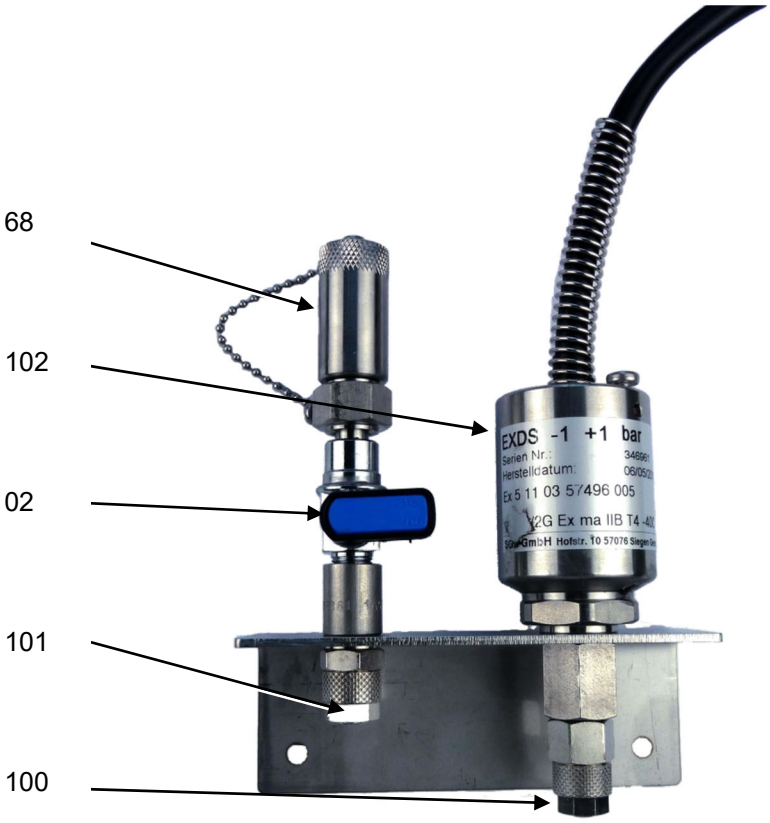
31	Terminal strip
69	Buzzer
75	Display circuit board
76	Main circuit board (yellow: 1, red: 2, blue: 3, green: 4)
139	Membrane keypad (yellow: 1, red: 2, blue: 3, green: 4)



Interior view of this device version with six display/control panels, featuring:

31	Terminal strip
69	Buzzer
75	Display circuit board
76	Main circuit board (yellow: 1, red: 2, blue: 3, green: 4)
139	Membrane keypad (yellow: 1, red: 2, blue: 3, green: 4)

Installation kit:



Installation kit with:

02	Shut-off valve
68	Suction connection (with protective cap)
100	Measurement connection to interstitial space
101	Suction connection to interstitial space
102	Pressure sensor (designed as explosion-proof)

4.2. Normal mode

Normal mode status is established during commissioning for each tank interstitial space by generating negative operating pressure using an external installation pump.

The negative pressure in the interstitial space is measured by the sensor and displayed on the digital display of the signalling unit (for devices with several displays, several interstitial spaces can be connected and their negative pressure levels showed on the corresponding displays.)

Any leaks will result in a drop in negative pressure.

Very high demands are placed on the leak tightness of the interstitial space(s) and the connecting line in order to ensure fault-free operation.

If the operating lamp goes out, it means there is an interruption in the voltage supply and the alarm relay is de-activated.

4.3. Air leak

If there is a leak in the outer wall (above the ground water) or in the inner wall above the liquid level, air is sucked into the interstitial space due to the prevailing negative pressure. The negative pressure drops. In cases where the negative pressure drops to the set alarm level, an alarm is triggered.

4.4. Liquid leak

In the event of a liquid leak, liquid enters the interstitial space and collects at the lowest point of the interstitial space.

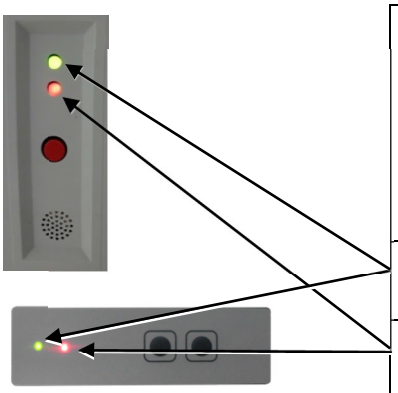
The ingress of liquid causes the negative pressure to drop. If leaking liquid continues to enter the interstitial space (due to the negative pressure therein), there is a further drop in negative pressure. If the ingress of liquid into the interstitial space is large enough to cause the negative pressure limit to be undershot, an alarm is triggered immediately.

Note:
after a leak has occurred, there is a risk that liquid will be sucked in when evacuating the interstitial space again.

Before re-commissioning the leak detector, any liquid that has seeped in must be fully channelled off via the suction line.

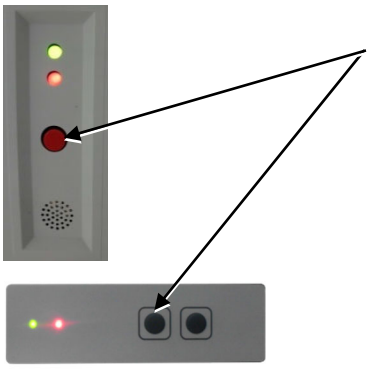
4.5. Displays and controls

4.5.1 Display



Signal lamp	Operating status	Alarm status	Alarm, acoustic alarm acknowledged	Device malfunction
OPERATION: green	ON	ON	ON	ON
ALARM: red	OFF	ON	FLASHES	ON

4.5.2 “Switch off acoustic alarm” function

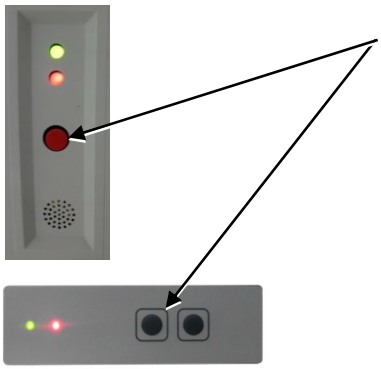


Press the “mute” button once. The acoustic signal is switched off and the red LED flashes.

Press the button again to switch on the acoustic signal.

This function is not available in normal mode or in case of faults.

4.5.3 “Test the optical and acoustic alarm” function



Press and hold (for approx. 10 seconds) the “mute” button. The alarm is triggered until you release the button.

Press the button again to switch on the acoustic signal.
This function is not available in normal mode or in case of faults.

5. Installing the system

5.1. Basic instructions

- Before starting work, this documentation must be read and understood. In case of any doubts, contact the manufacturer.
- The safety instructions in this documentation must be adhered to.
- Installation work may only be performed by qualified companies.
- Observe the applicable accident prevention regulations.
- Adhere to the applicable regulations relating to electrical installation and explosion protection.

- Feedthroughs for pneumatic and electrical connection lines, which could create a potentially explosive atmosphere, must be sealed gas-tight.
- Before entering the control shafts, oxygen levels must be checked and the inspection shaft must be purged.
- If metal connection lines are used, it must be ensured that the mains earth is at the same electric potential as the tank/pipe that is to be monitored.
- A number of relevant points relating to personal protective clothing and equipment are listed in Chapter 2.4.

5.2. Signalling unit

(1) Wall-mounting is generally performed using dowels and screws. (housing dimensions and drilling profiles are illustrated in Appendix 10.2)

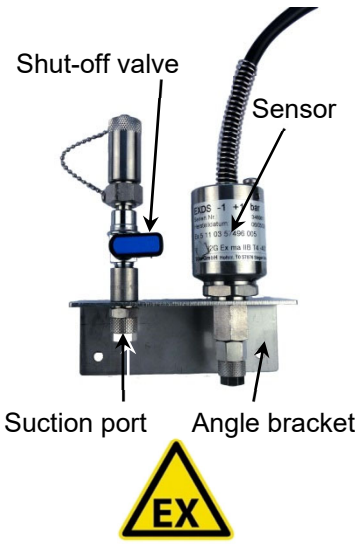
(2) **DO NOT install in potentially explosive zones.**

(3) The housing is installed at a suitable position in the building or in a weather-proof protective cabinet outdoors.

(4) The distance between the leak detector and interstitial space must be kept as small as possible.

(5) Empty pipes must be laid for feeding the electrical connection line to the tank.
Empty pipes must be sealed gas-tight on the tank side in order to prevent the spread of potentially-explosive atmospheres.

5.3. Sensor



- The sensor is installed as close as possible to the tank in combination with the angle bracket and shut-off valve (installation kit).
- The sensor cable can be extended using suitable extension technology.
- The maximum cable length (for 2 x 0.75 mm shielded cable) between the explosion sensor and the VLX-S 350 M leak detector is 500 m.
- The sensor cable is shielded. The shielding is not connected to the pressure sensor. In general, shielding is not necessary. In case it is required, extend the shielding along every cable extension and apply it from the signalling unit to an external connection point.
- Terminal boxes for potentially explosive atmospheres must be used within an Ex-zone. e.g. SGB item no.: 220480 “EX “e” junction box with three screw-type cable ducts (M 20)”

5.4. Requirements for pneumatic connection lines

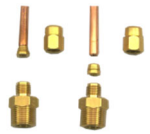
- Underground metal or plastic pipes or aboveground, outdoor plastic pipes must be routed in protective piping.
- Clear width of 6 mm or 8 mm.
- Hose/pipe thickness: 1 mm
- Resistant to the stored product
- At least PN 10 across the entire temperature range.
- A distance of 50 m between the sensor and the interstitial space may only be exceeded slightly, and if this is the case: Use pipe/hose with a greater clear width, using suitable adapter pieces.
- Colour designation: measuring line: red
- Prevent build-up of electrostatic charges (e.g. when pulling cables).

5.5. Establishing pneumatic connections (between leak detector and interstitial space)

- Select and route a suitable polyamide hose or suitable pipe.
- When routing, ensure that the pipes/hoses are protected from damage that could be caused by people entering the dome shaft.
- The full cross section must remain intact; dents and kinks[2] are impermissible.
- Observe earthing / equipotential bonding of metallic parts in non-conductive connection lines.
- Seal the protective pipes so that they are gas-tight in order to prevent the spread of potentially explosive atmospheres through the pipes into buildings and to prevent ingress of liquids.
- Establish the respective connection (as per the illustrations in the following images).

[2] If necessary, use standard commercial moulded fittings (with the specified bending radii).

5.5.1 Compression fitting for metal and plastic pipes



(1) Insert a support sleeve (only plastic pipe) into the pipe end

(2) Insert the pipe (with support sleeve) as far as it will go

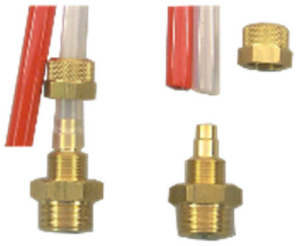
(3) Tighten the screw connection by hand until there is a resistance, then turn 1 ¾ turn further with the wrench

(4) Unfasten the nut

(5) Tighten the nut by hand until it touches noticeably

(6) Final assembly of the screw connection by tightening ¼ turn

5.5.2 Quick screw connection for polyamide hose:



(1) Cut the PA hose to length at a right angle

(2) Unscrew the union nut and push it over the pipe

(3) Push the hose onto the nipple up to the start of the thread

(4) Tighten the union nut by hand

(5) Tighten the union nut with a screw wrench until there is a noticeable increase in resistance (approximately 1 to 2 turns).

5.6. Electrical cables

Mains connection:

Suggested cable: Ölflex Classic 100

- 2.5 mm^2 without cable-end sleeve
- 1.5 mm^2 with cable-end sleeve and plastic collar

Floating contacts and external signal

Suggested cable: Ölflex Truck 1700

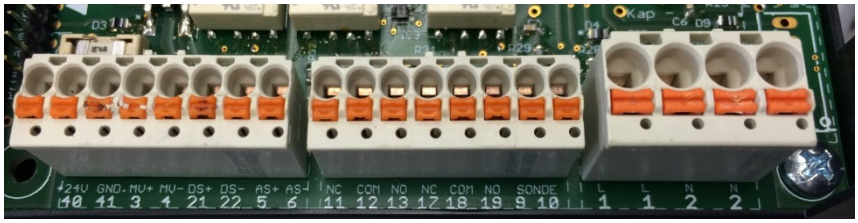
- 1.5 mm^2 without cable-end sleeve
- 0.75 mm^2 with cable-end sleeve and plastic collar

5.7. Electrical wiring diagram

(1) Lay firmly, i.e. no plug connections or switch connections.

(2) Observe the regulations of the electricity supplier[3].

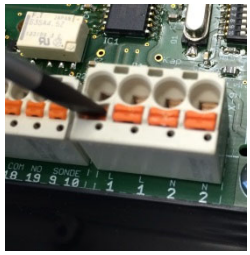
(3) Terminal assignment: (see also 5.9 block diagram)



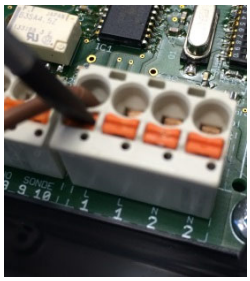
[3]For Germany: VDE regulations also apply

1/2	Mains connection (100 to 240 V AC)
5/6	External signal (24 V DC in event of alarm, switched off by pressing “mute button”; only available for device versions with one display)
11/12	Floating contacts (open in event of alarm and power failure)
12/13	Same as previous, but with closed contacts
17/18/19	Floating contacts in case of “refilling required” (open for approx. 430 to 700 mbar negative pressure): 17/18 open 18/19 closed; Floating contacts in case of “refilling off” or in currentless state: 17/18 closed 18/19 open.
21/22	Pressure sensor (21 = + / 22 = -)
40/41	24 V DC, as permanent voltage supply to additional assemblies, or a device with 24 V DC supply voltage: the voltage supply is connected here.

5.7.1 Connection of wires

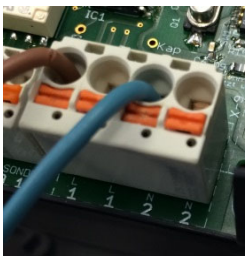


(1) Push in the orange point using a screwdriver This opens the tension spring of the terminal



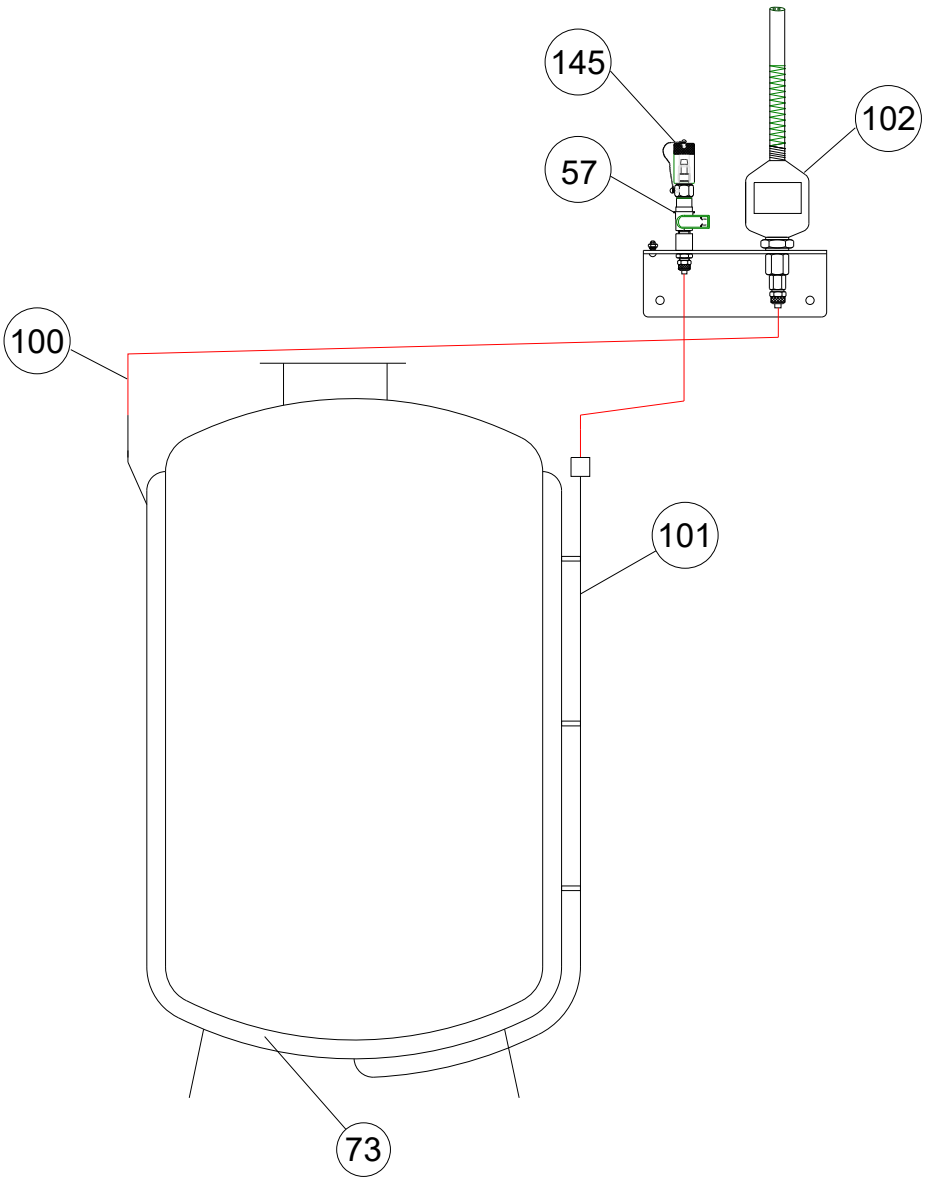
(2) Insert the cable into the open terminal.

(3) Hold the cable tight and remove the screwdriver.



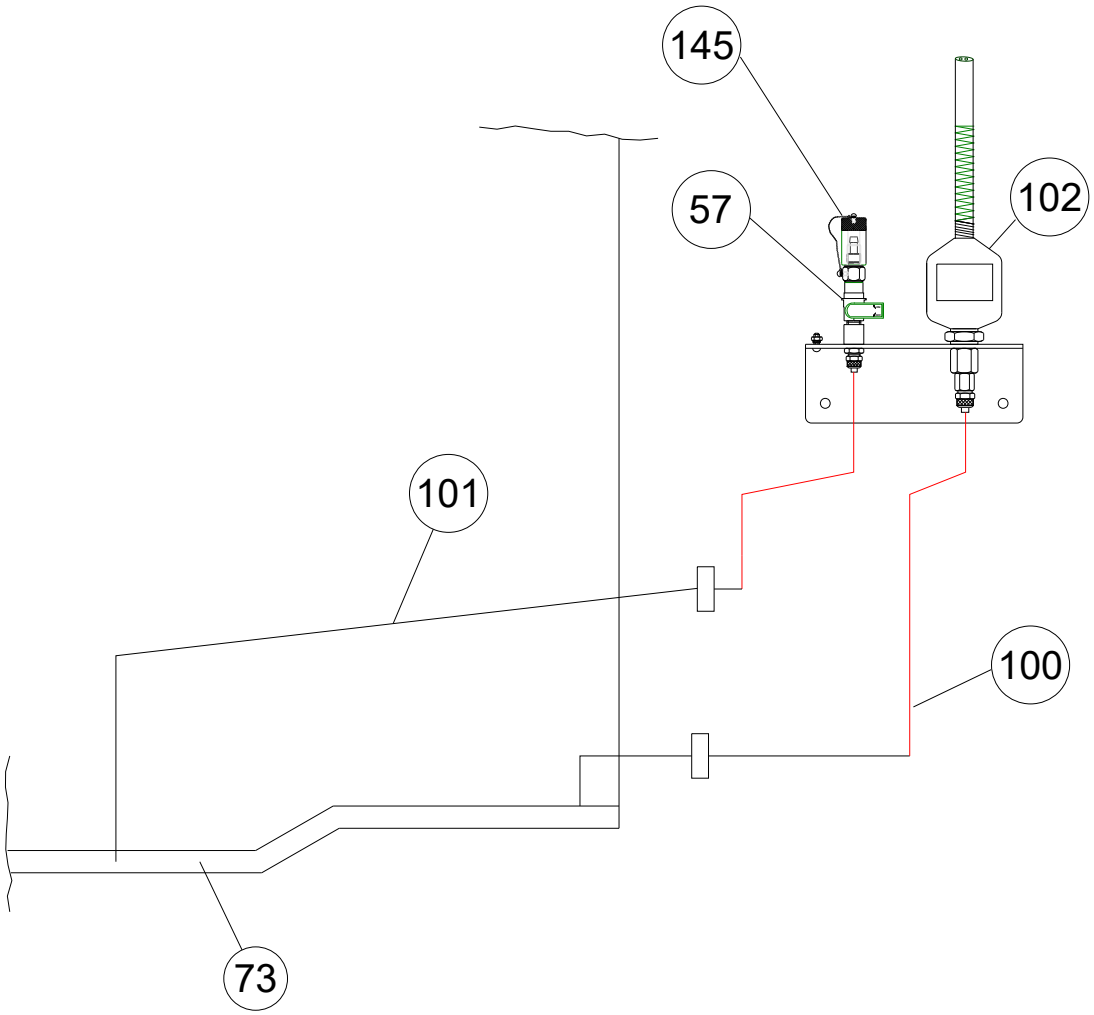
(4) Check the seating of the cable and attach the remaining cables using the same principle.

5.8. Installation examples



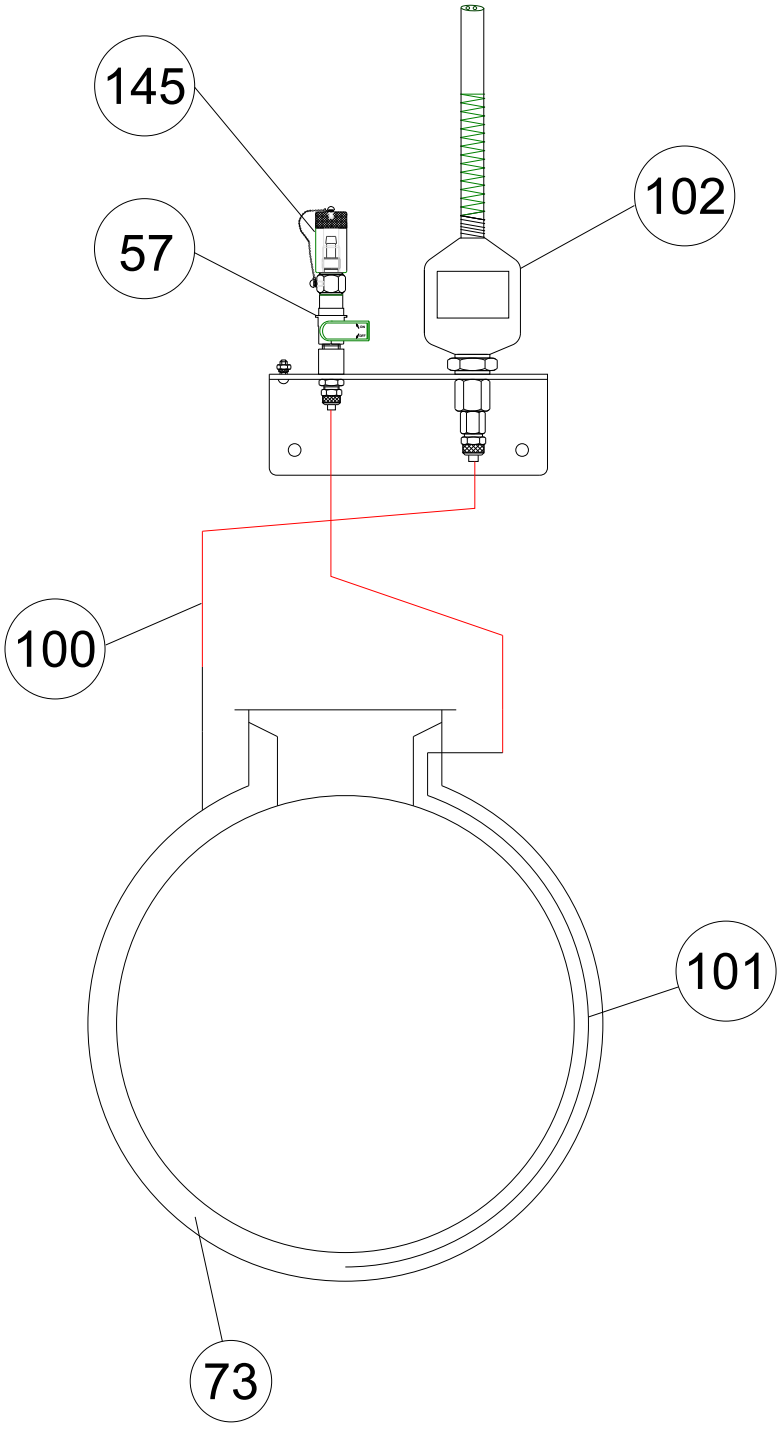
DIN 6618/2 tank with suction line routed to lowest point:

57	Test valve
73	Interstitial space
100	Measuring connection
101	Suction line to lowest point
102	Pressure sensor
145	Hose nipple with screw cap



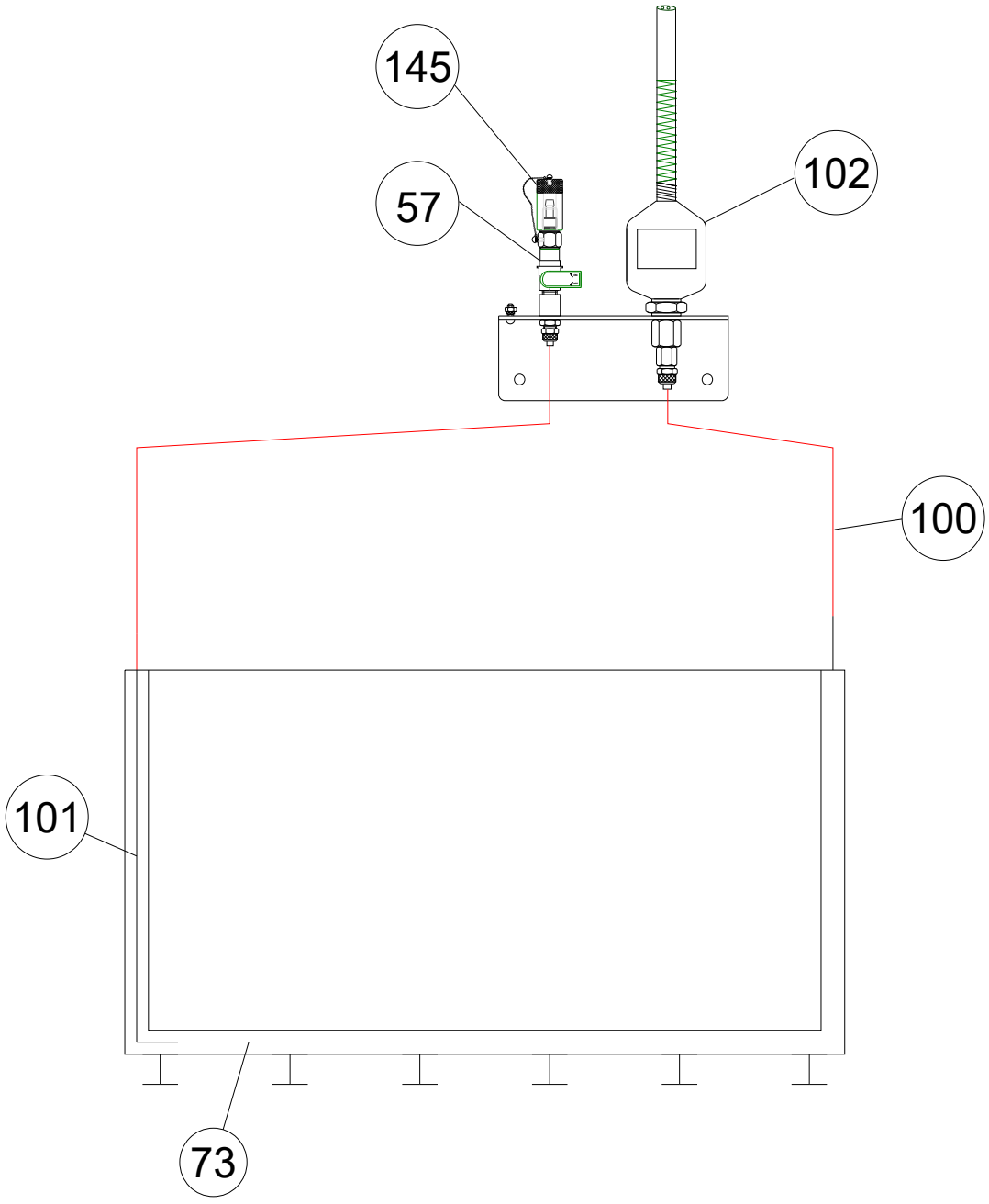
Flat-floored tank structures as per DIN 4119 with double floor:

57	Test valve
73	Interstitial space
100	Measuring connection
101	Suction line to lowest point
102	Pressure sensor
145	Hose nipple with screw cap



Tank as per 66ff with leak protection lining and suction line routed to lowest point:

57	Test valve
73	Interstitial space
100	Measuring connection
101	Suction line to lowest point
102	Pressure sensor
145	Hose nipple with screw cap

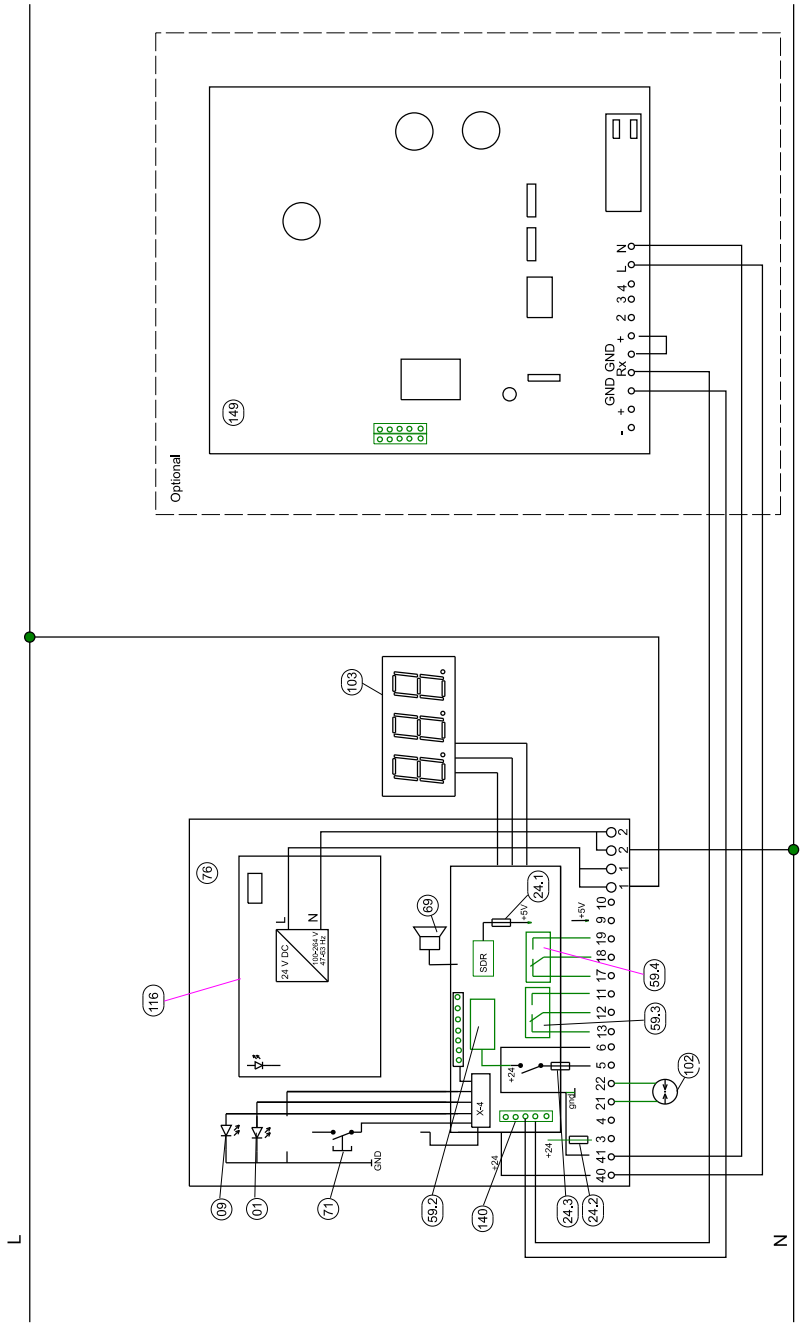


Cellar-welded tank with leak protection lining and suction line routed to lowest point:

57	Test valve
73	Interstitial space
100	Measuring connection
101	Suction line to lowest point
102	Pressure sensor
145	Hose nipple with screw cap

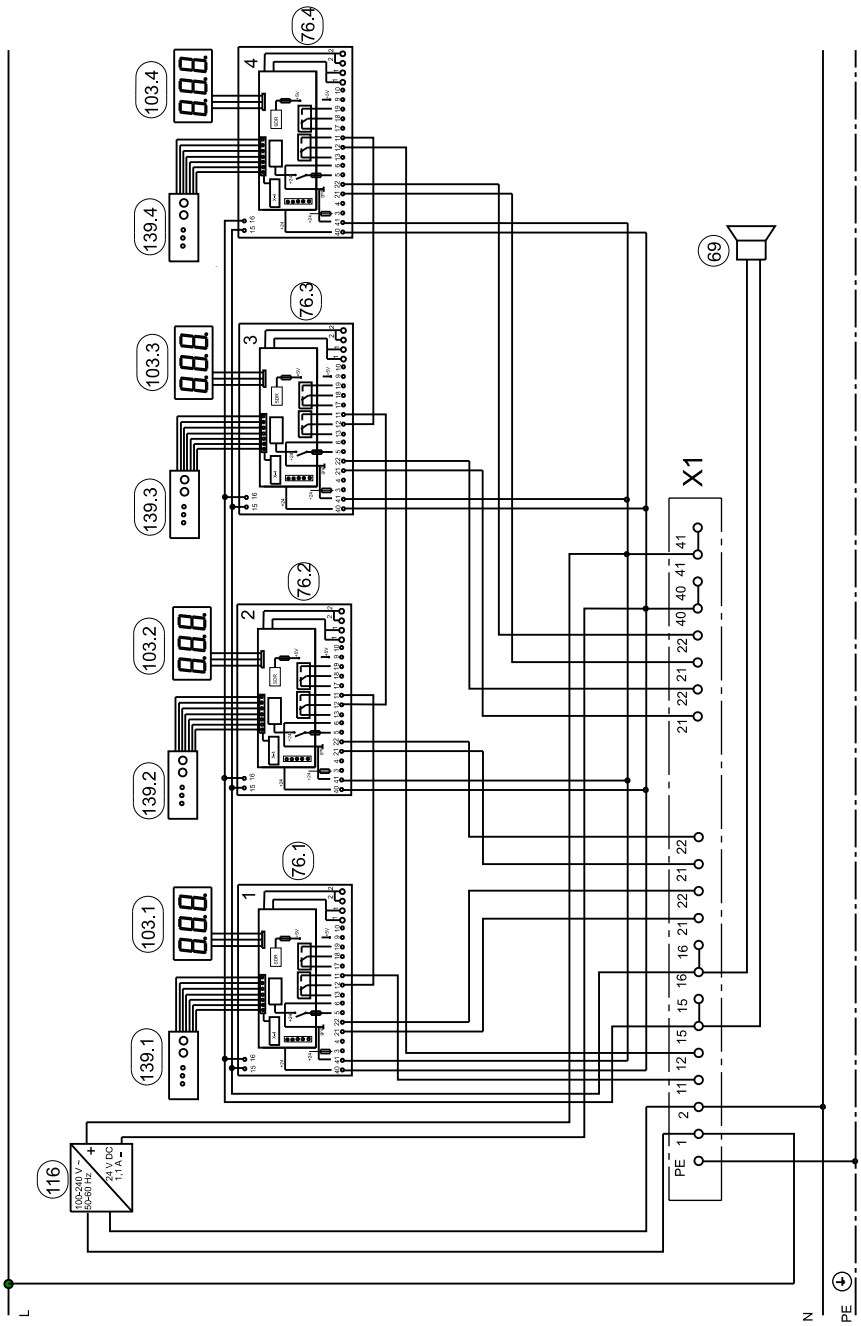
5.9. Block diagram

5.9.1 VLX-S 350 M block diagram with one display and optionally available DTM



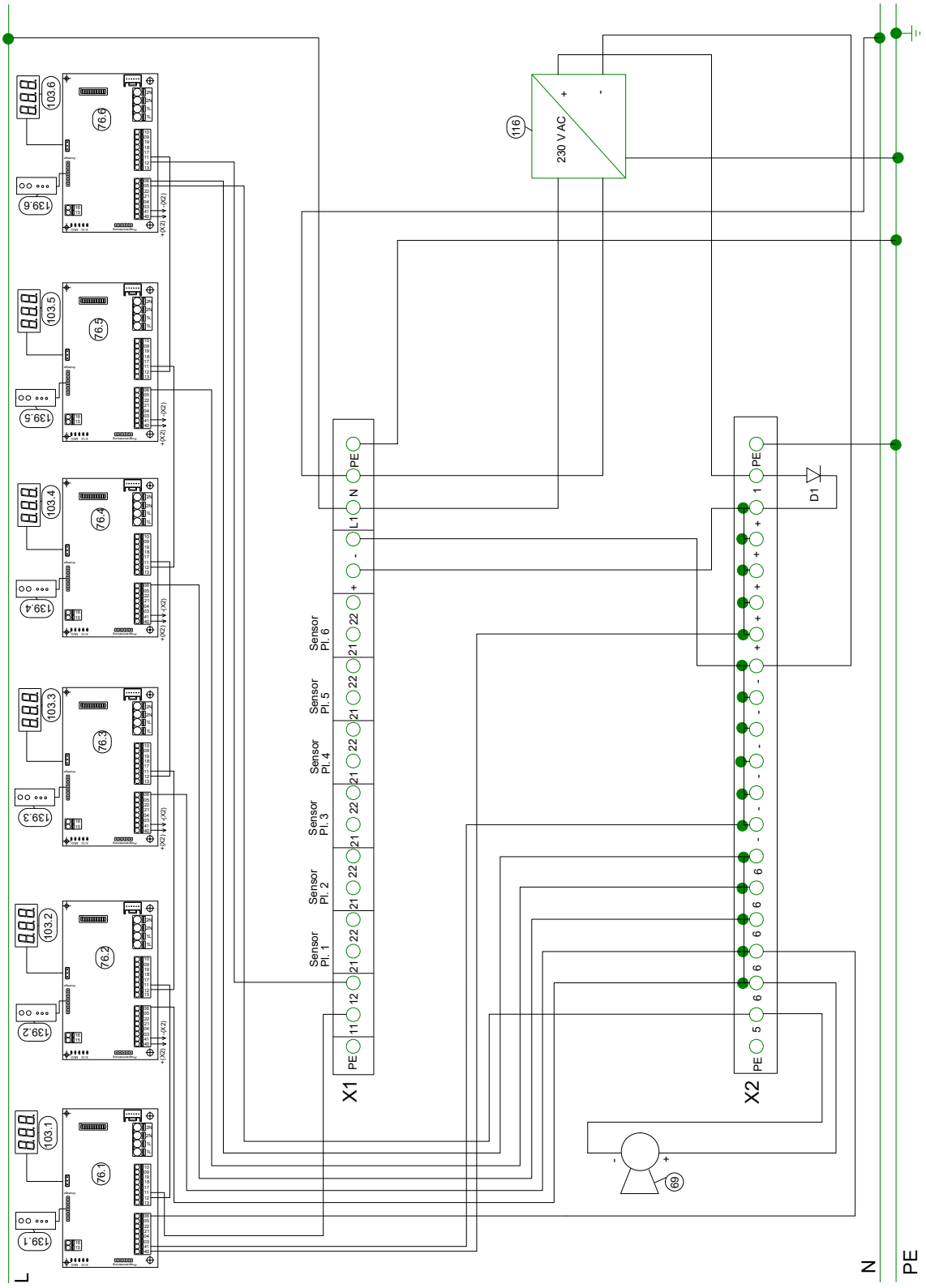
01	“Alarm” signal lamp, red	102	Pressure sensor
09	“Operation” signal lamp, green	103	Display
24	Micro fuse	116	Power supply unit (24 V DC)
59	Relay	139	Membrane keypad
69	Buzzer	140	Contacts for serial data transfer
71	“Mute” button	149	Data transfer module (DTM)
76	Main circuit board		

5.9.2 Block diagram with VLX-S 350 M with 4 displays



69 Buzzer
76 Main circuit board
103 Display
116 Power supply unit (24 V DC)
139 Membrane keypad

5.9.3 Block diagram with VLX-S 350 M with 6 displays



69 Buzzer
76 Main circuit board
103 Display
116 Power supply unit (24 V DC)
139 Membrane keypad

6. Commissioning

- Only begin commissioning once the requirements in Chapter 5 “Installing the system” have been fulfilled.
- If a leak detector is to be put into operation in a tank that is already filled, special safety measures must be taken (e.g. no gas in the leak detector and/or interstitial space). Further measures may be necessary depending on the local conditions and must be assessed by the staff.

6.1. Interstitial space leak tests

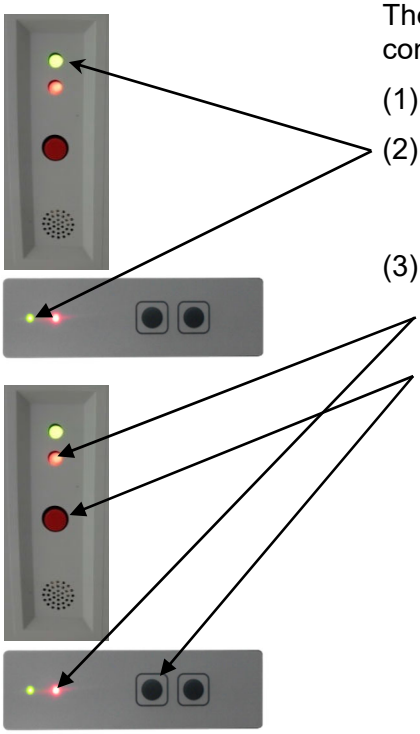
(1) Before commissioning the VLX-S 350 M, you must ensure that the connected interstitial spaces are leak-tight.

(2) The negative pressure should be built up to 700 mbar using an external pump.

(3) **WARNING: when generating this pressure, do not under any circumstances exceed the maximum permitted pressure in the interstitial space.**

(4) There is sufficient leak-tightness for one year of fault-free operation if the pressure does not fall by any more than 0.8 mbar per day, starting with a negative operating pressure of 700 mbar.

6.2. Commissioning of the leak detector



The interstitial spaces must be leak-tight before commissioning can commence.

(1) Apply the voltage.

(2) Make sure that the “Operation” signal lamp on the circuit board lights up. For devices with several displays, make sure that all connected “Operation” signal lamps light up.

(3) If the pressure in the respective interstitial space is below the alarm pressure level, the corresponding “alarm” signal lamp and the acoustic alarm are activated.
Press the corresponding “Mute” button to deactivate the acoustic signal.
If several “Alarm” signal lamps are active, all corresponding “Mute” buttons must be pressed in order to acknowledge the acoustic signal.

Note:
Signals that have already been acknowledged can be recognised by a flashing red LED.

(4) Using an external vacuum pump, generate negative operating pressure of 700 mbar in each interstitial space. If the maximum permissible negative pressure in the respective interstitial space is less than 700 mbar, then the maximum permissible negative pressure must be generated. (Note: false alarms become increasingly likely where there are temperature-related pressure changes. A higher level of leak-tightness is required for 1 year of fault-free operation)

(5) If potentially explosive vapours could arise, it is imperative to take suitable measures for explosion protection.

(6) Carry out the functional check as per chapter 7.

6.3. Build-up of negative pressure up to operating pressure

The build-up of negative pressure (with certified leak test) is performed using an external pump. Connect the external pump to the suction port and open the shut-off valve.

If the respective tank is already filled with stored goods, you must expect the stored goods to be expelled at the pump outlet. Suitable precautionary measures must be taken. A buffer vessel for separating liquid should be installed upstream of the pump.

If the vapours are potentially explosive, the appropriate explosion protection equipment must be used.

A maximum negative pressure of 700 mbar is generated. The shut-off valve is then closed and the pump is disconnected. Fit the sealing plug/protective cap.

The procedures described in this chapter (6.3) must be repeated for all connected interstitial spaces.

6.4. Optional data transfer (only available for devices with one display/control panel)

If a DTM (data transfer module, via either Ethernet or mobile radio) is included in the scope of delivery and you have arranged for a leak detector online diagnosis service (LOD service), contact our LOD service hotline (+49 271 48964-0) after commissioning of the leak detector to set the LOD service up.

7. Functional check and maintenance

7.1. General

(1) If the leak detector system is installed correctly and leak-tight, it can be assumed that malfunctions will not arise.

(2) In the event of an alarm, determine and rectify the cause as quickly as possible.

(3) For potential maintenance work on the leak detector (performed on the leak display terminal), render the leak detector voltage-free.

(4) The “Operation” signal lamp goes out to indicate any interruptions in the voltage supply. The alarm signal is triggered via the floating relay contacts (if used for relaying alarms), where contacts 11 and 12 have been used. If the voltage supply is interrupted, the green signal lamp lights up again and the alarm signal sent via the floating contacts is deleted (unless the pressure has risen above the alarm pressure limit during the power failure).

(5) The user must check that the operating lamp is working at regular intervals.

7.2. Maintenance

- Maintenance work and functional checks to be performed by qualified personnel only[4].
- Once annually to ensure functional and operational safety.
- Test scope as per Chap. 7.3.
- It must also be ensured that the conditions in Chap. 5 and 6 are complied with.

7.3. Functional check

A test of functional and operational stability must be performed

- After each commissioning
- At the intervals specified in Chapter 7.4.3[5]
- After rectification of each and every fault

7.4. Test scope

(1) Coordination of the work to be performed with the person with on-site responsibility

(2) Adherence to the safety instructions on handling the stored goods.

(3) Continuity test of interstitial space (Chap. 7.4.1)

(4) Test of switching values

(5) Leak test after commissioning or fault rectification (Chap.7.4.3)

[4] For Germany: Specialist company, in accordance with German water laws, specialising in leak detector systems
For Europe: Authorisation by the manufacturer

[5] For Germany: In addition, federal state provisions must be observed (e.g. AwSV)

(6) Leak test as part of the annual functional check (Chap. 7.3.7)

(7) Establishing operational readiness (Chap. 7.4.4)

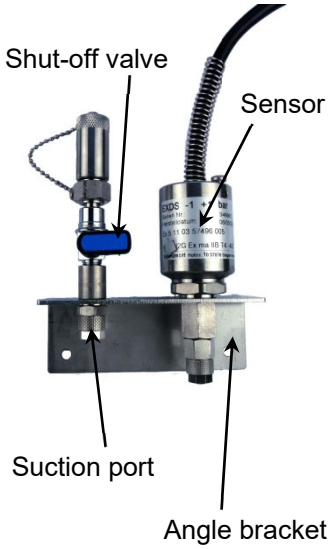
(8) Completion of a test report with confirmation of the functional and operational stability, as performed by a qualified person.

7.4.1 Interstitial space continuity test

The shut-off valve of the respective interstitial space should be opened briefly. If there is passage through the interstitial space, a pressure drop is shown in the respective digital pressure display.

If there is no drop in pressure, you must localise and rectify the fault.

7.4.2 Test of switching values



Connect a suitable measuring instrument to the suction port and open the shut-off valve. Read the pressure from the measuring instrument and compare it with the pressure reading in the digital display. Factor in the pressure difference in the displays as you continue your work. Close the shut-off valve and disconnect the measuring instrument from the suction port.

To test the alarm threshold value, the shut-off valve is vented until the alarm is triggered. Make sure that the optical and acoustic alarms are triggered and record the alarm pressure shown in the digital display.

Compare with the external measuring device again in order to determine whether the VLX-S 350 M has triggered an alarm at a higher negative pressure level than 350 mbar.

To generate the negative pressure, connect an external pump (with buffer vessel) to the suction port and generate negative pressure until the alarm is deactivated and continue until a negative operating pressure of 700 mbar has been reached.

Note: if your device features several interstitial spaces and signalling units with several displays, then the steps described here must be carried out for every interstitial space and every display.

7.4.3 Leak test

For the leak test, a measuring instrument is connected to the suction port of the corresponding tank and the corresponding shut-off valve is opened. At the start of the leak test, the negative pressure should be approximately 700 mbar. If necessary, generate the negative pressure level beforehand.

Before starting the measurement, wait for the pressure to equalise.

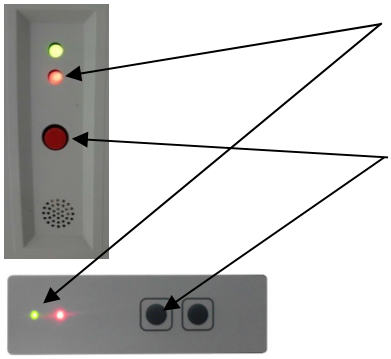
There is sufficient leak-tightness to provide one year of fault-free operation if the pressure does not fall by more than 0.8 mbar per day (0.033 mbar per hour), starting at a generated negative pressure of 700 mbar.

7.4.4 Establishing operational readiness

(1) Correctly close the shut-off valve on the suction port and fit the sealing plug.
(2) Close the housing and, if necessary, seal it.

8. Alarm

8.1. Alarm



An alarm is signalled optically and acoustically by the red alarm lamp and an intermittent sound.

The floating relay contact opens.

The acoustic alarm can be deactivated by pressing the alarm button.

The alarm signal sent via the relay contact persists until the cause of the alarm has been rectified.

Inform the installation company in order to localise and clear the fault.

A functional check has to be carried out after maintenance.

8.2. How to behave

(1) Immediately inform the installation company and inform staff of the information you see in the display, as stated in the previous section.

(2) Establish the cause of the alarm, rectify it and then subject the leak detector system to a functional check in accordance with Section 7.3.

9. Disassembly and disposal

9.1. Disassembly

Prior to and during work, ensure that components are free of gas.

Seal (leak tight) any openings which could generate an explosive atmosphere.

Wherever possible, perform disassembly work without using spark-generating tools (saws, grinders etc.). However, if the use of such tools is unavoidable, you must adhere to EN 1127 and the area must not constitute a potentially explosive atmosphere.

Prevent build-up of electrostatic charges (e.g. from friction).

9.2. Disposal

Dispose of contaminated components (possible outgassing) appropriately.

Dispose of electronic components in the appropriate manner.

10. Spare parts

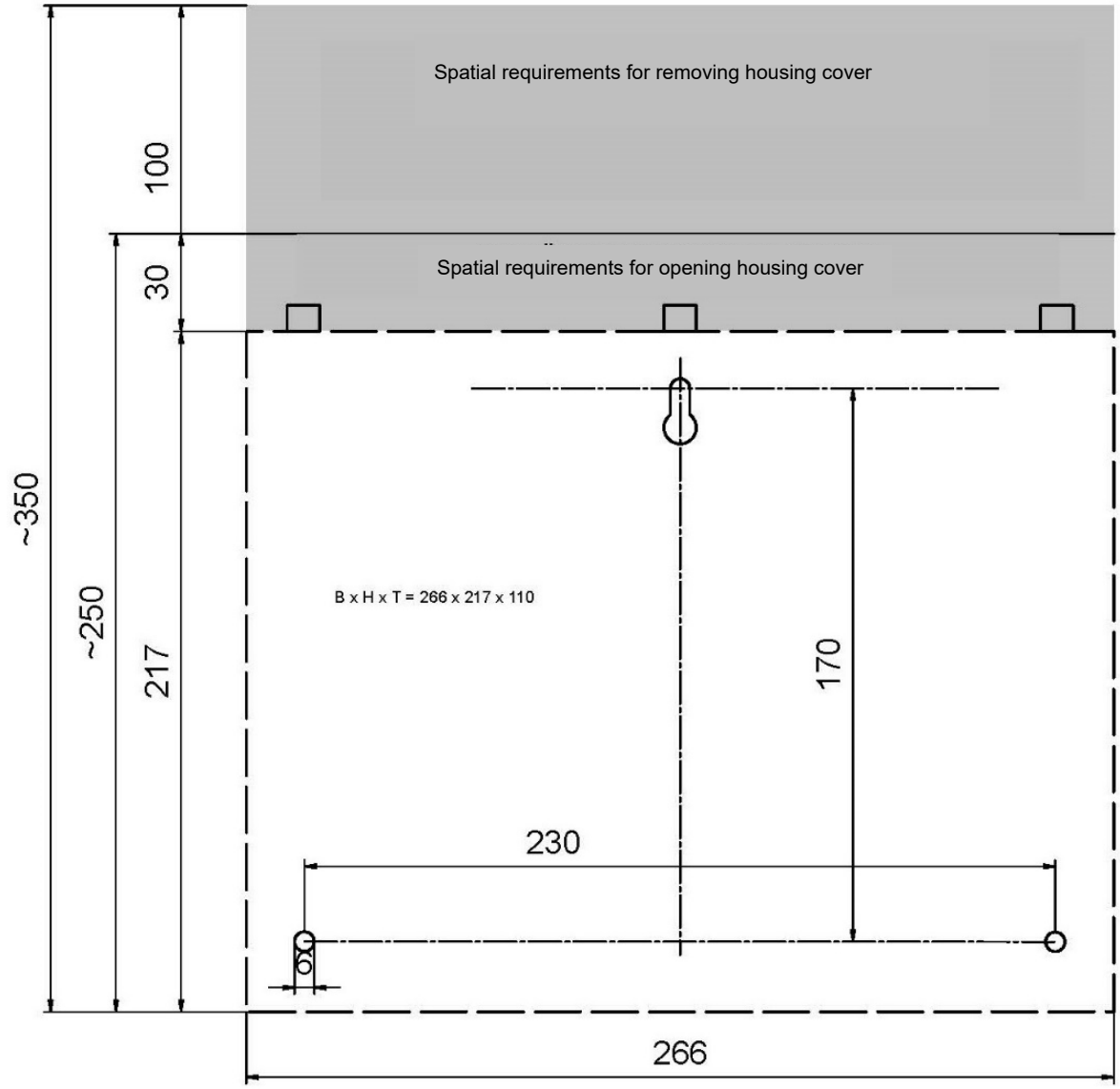
For spare parts, please refer to our online shop at shop.sgb.de

11. Accessories

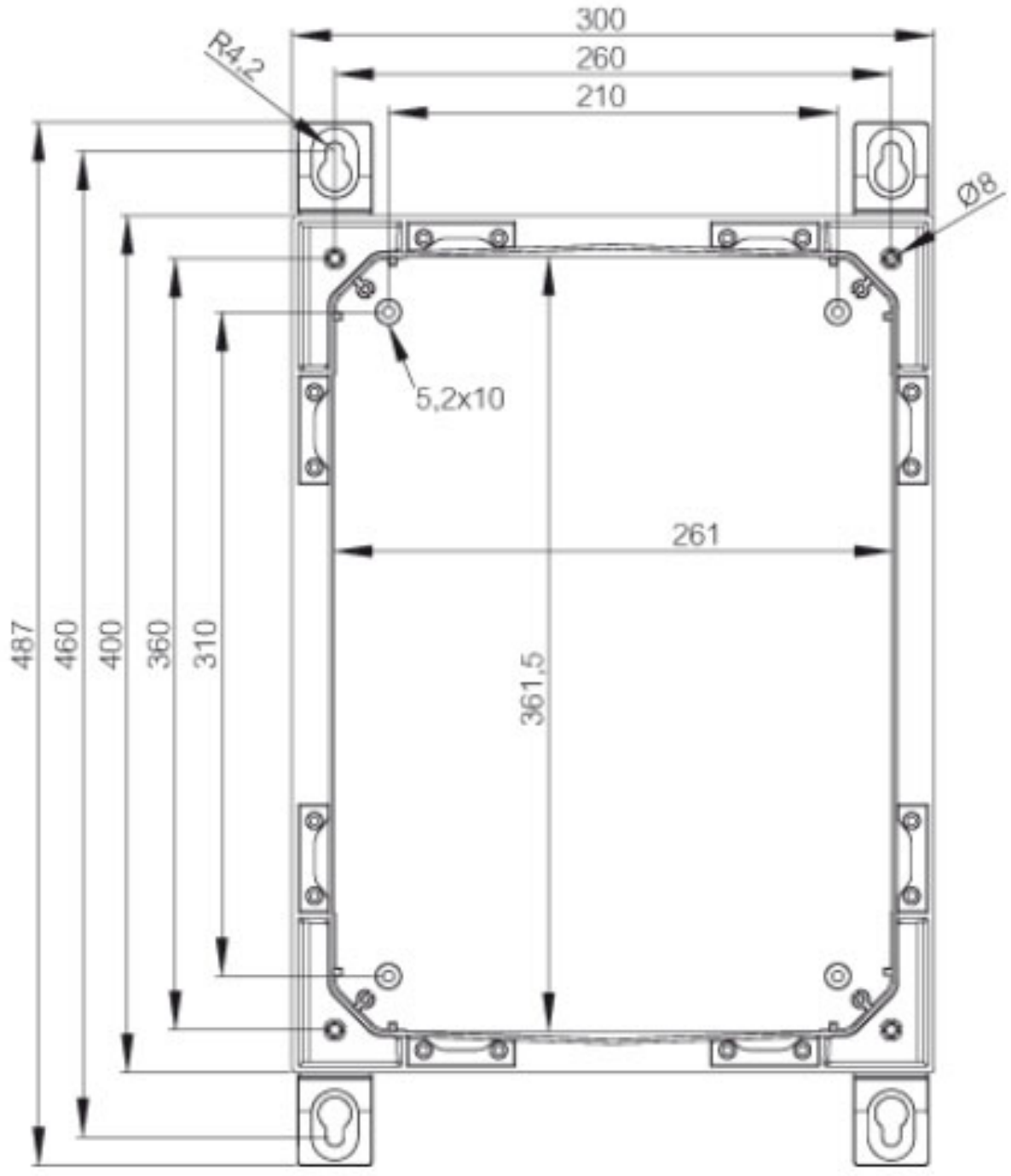
For accessories, please refer to our online shop at shop.sgb.de

12. Appendix

12.1. Dimensions and drilling pattern (device version 1 up to 4 displays)



12.2. Dimensions and drilling pattern (device version 5 up to 6 displays)



Depth = 80 mm

12.3. EU Declaration of conformity

We hereby declare,

SGB GmbH
Hofstraße 10
57076 Siegen, Germany

under sole responsibility, that the leak detector

VLX-S 350 M / VLX-S … M AZ

complies with the basic requirements of the EU directives listed below.

This declaration will become null and void in case of any change to the device not approved by us.

Number / short title	**Applied regulations**
2014/30/EU EMC Directive	EN 61000-6-3: 2012 EN 61000-6-2: 2006 EN 61000-3-2: 2015 EN 61000-3-3: 2014
2014/35/EU Low-voltage Directive	EN 60335-1: 2012 EN 61010-1: 2011 EN 60730-1: 2017
2014/34/EU Devices in Potentially Explosive Atmospheres	The pressure sensor can be connected by its pneumatic parts to chambers (interstitial spaces of tanks / fittings) for which devices of category 1 are required and can be mounted in areas where devices of category 2 are required. The following documents were consulted: TÜV-A 18 ATEX 0051 x EN 60079-0:2012/corr. 2013; EN 60079-18:2015 The assessment of ignition hazards revealed no further hazards.

Compliance is declared by

ppa. Martin Hücking
(Technical Director)

Issue: February 2019

12.4 Declaration of performance (DoP)

Number: **005 EU-BauPVO 2014**

1. Distinct identification code of the product type:

   Vacuum leak detector type VLX-S 350 M

2. Intended purpose:

   Class I vacuum leak detector for monitoring double-walled, underground or above-ground, unpressurised tanks

3. Manufacturer:

   SGB GmbH, Hofstraße 10, 57076 Siegen, Germany
   Tel.: +49 271 48964-0, e-mail: sgb@sgb.de

4. Authorised person:

   n/a

5. System for the evaluation and inspection of the reliability of performance:

   System 3

6. In the case of the declaration of performance, which applies to a building product, which is covered by a harmonised standard:

   Harmonised standard: EN 13160-1-2:2003

   Notified body: TÜV Nord Systems GmbH & Co.KG, CC Tankanlagen, Große Bahnstraße 31, 22525 Hamburg, Germany

   ID number of the notified test laboratory: 0045

7. Declared performance:

Essential features	Performance	Harmonised norm
Pressure switch point	Passed	EN 13160-2: 2003
Reliability	10,000 Cycles	
Pressure test	Passed	
Volume flow rate test in the alarm switch point	Passed	
Function and leak tightness of the leak detection system	Passed	
Temperature resistance	-20°C ... +60°C	

8. Signed for the manufacturer and in the name of the manufacturer by:

   Dipl.-Ing. M. Hücking, Director of Operations

   Siegen, 30-06-2014

12.5. Manufacturer's declaration of conformity

SGB
MVV TB
Anhang C 2.15.15
TÜV-NORD

This declares conformity of the leak detector with the "Muster-Verwaltungsvorschrift Technische Baubestimmungen" (sample administrative regulation technical building regulations).

12.6. Certification (TÜV Nord)

Note:
By TÜV not certified translation of the German original version

TÜV NORD Systems

TÜV NORD Systems GmbH & Co. KG
PÜZ — Site for containers, pipes and equipment parts
for plants with water-polluting substances

Reference code: HHA02
Reference number: 0045

Große Bahnstraße 31.22525
Hamburg
Tel.: 040 8557-0
Fax: 040 8557-2995
hamburg@tuev.de
www.tuev-nord.de

Certificate

Subject of the examination: **Leak detector and leak measurement indicator according to DIN EN 13160-1:2003/EN 13160-1:2010 and DIN EN 13160-2:2003**
Category I Pressure control system

Manufacturer: SGB GmbH
Hofstr. 10
57076 Siegen

Examination type: **First assessment (System 3)**

Examination time range: 10.08. — 14.11.2012

Place of examination: PÜZ testing laboratory TÜV NORD Systems GmbH & Co. KG

Results of the examination: The first assessment of the pressure leak detector with pressure leak measurement indicator type VLX-S 350 M according to DIN EN 13160-1:2003/EM 13160-1 :2010 and DIN EN 13160-2:2003 gave no cause for complaint. This confirms the compliance of the leak measurement indicator type VLX-S 350 M with the guidelines of DIN EN 13160:1. 2003/EN 13160-1:2010 and DIN EN 13160-2:2003. The requirements of the approval policy for safety equipment for containers and pipes/leak measurement devices (ZG-LAGB/R) have been fulfilled. With regard to the area of application and installation the specification of technical description VLX-S 350 M of 05.11.2012 applies.

Details of the examination are available in the inspection report ETI 8109 340 886 of 03.12.2012.

Hamburg, 03.12.2012

Head of testing laboratory
(Stamp)
(Signature)
J. Straube

Imprint

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57076 Siegen
Germany

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