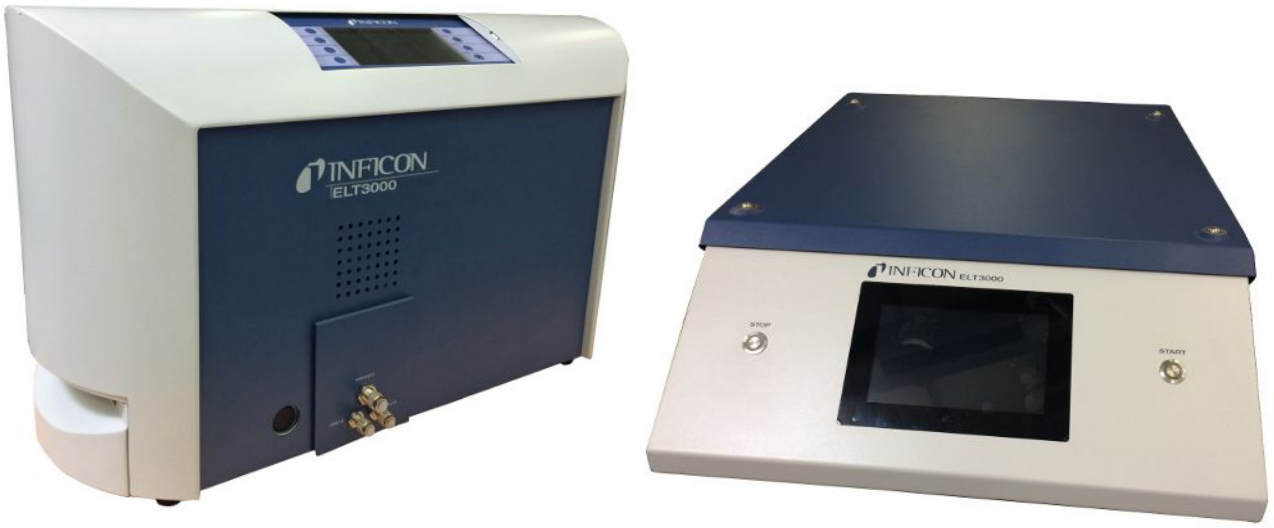


Translation of the original operating instructions

ELT3000

Battery Leak Detector

Catalog No.
600-001, 600-002

From software version
1.11.00 (Device operation)

mina95en1-10-(2007)

INFICON GmbH
Bonner Strasse 498
50968 Cologne, Germany

Table of contents

1 About this manual

This document applies to the software version stated on the title page.

Product names may occur in the document, which are added for identification purposes only and belong to the respective owner of the rights.

1.1 Target groups

This instruction manual is intended for operators and technically qualified personnel with experience in leak detection technology and the integration of leak detectors in leak detection systems. In addition, the installation and use of the device require knowledge of electronic interfaces.

1.2 Warnings

⚠ DANGER

Imminent hazard resulting in death or serious injuries

⚠ WARNING

Hazardous situation resulting in potential death or serious injuries

⚠ CAUTION

Hazardous situation resulting in minor injuries

NOTICE

Hazardous situation resulting in damage to property or the environment

1.3 Definition of terms

Minimum detectable leak rate

The minimum detectable leak rate that can be detected by the leak detector under ideal conditions (< 1 x 10^{-6} mbar l/s*).

* Helium equivalent leak rate at a pressure difference of 1000 mbar to 0 mbar.

GCU

Gas Control Unit (basic unit, operating unit)

GDU

Gas Detection Unit

DMC

Dimethyl carbonate, typical solvent in battery electrolyte. CAS Nr. 616-38-6

MSDS

Material Safety Data Sheet

2 Safety

2.1 Intended use

This device is designed for the leak testing of lithium-ion batteries in a vacuum and is used to detect electrolyte escaping from a test object and to display leaks.

The test objects must contain a solvent in the electrolyte, which can be detected by a quadrupole mass spectrometer.

For this purpose, the test object is placed in the test chamber and the chamber is closed.

After the chamber* is closed, the measuring process is automatically triggered by a proximity switch and the test chamber is evacuated.

In case of leakage of the test object, the escaping electrolyte evaporates through the evacuation process.

The evaporated solvent components of the escaping electrolyte are fed to the Gas Detection Unit and are analyzed for DMC.

* Optional accessories

2.1.1 Incorrect usage

- Pumping off solids
- Pumping off test specimens that are not vacuum-proof
- Placing the device in a location where strong electromagnetic fields from third-party equipment may affect the measuring results
- Operation without an exhaust line on the Gas Detection Unit
- Operation without an exhaust line on the Gas Control Unit
- Use in radioactive areas
- Suctioning of liquids into the device
- Testing of wet or damp test objects
- Use outside the technical specifications, see "Technical Specifications"
- Using the device with detectable defects or defective power switch
- Using the device in potentially explosive atmospheres

2.2 Duties of the operator

- Read, observe, and follow the information in this manual and in the work instructions provided by the owner. This concerns in particular the safety and warning instructions.
- Always observe the complete operating instructions for all work.
- If you have any questions about operation or maintenance that are not answered in this manual, contact customer service.

2.3 Owner requirements

The following notes are for companies or any person who is responsible for the safety and effective use of the product by the user, employees or third parties.

Safety-conscious operation

- Operate the device only if it is in perfect technical condition and has no damage.
- Only operate the device properly in accordance with this instruction manual, in a safety and risk conscious manner.
- Adhere to the following regulations and observe their compliance:
  - Intended use
  - Universally valid safety and accident prevention regulations
  - International, national and local standards and guidelines
  - Additional device-related provisions and regulations
- Only use original parts or parts approved by the manufacturer.
- Keep this instruction manual available on site.

Personnel qualifications

- Only instructed personnel should be permitted to work with and on the device. The instructed personnel must have received training on the device.
- Make sure that authorized personnel have read and understood the instruction manual and all other applicable documents.

2.4 Dangers1

The battery leak detector was built according to the state-of-the-art and the recognized safety regulations. Nevertheless, improper use may result in risk to life and limb on the part of the user or third parties, or damage to the unit or other property may occur.

Danger due to chemical substances

- Only use the battery leak detector outside of potentially explosive areas.

Dangers from electric power

There is a risk of fatal injury from contact with conductive parts inside the devices.

- Disconnect the battery leak detector from the power supply prior to any installation and maintenance work. Make sure that the electric power supply cannot reconnected without authorization.

The battery leak detector contains electrical components that can be damaged by high voltage.

- Before connecting to the power supply, make sure that the supply voltage specified on the battery leak detector matches the local power supply.

Risk of injury from slipping off or falling down

- Place the battery leak detector only on surfaces that are not tilted.
- Do not lift or carry the battery leak detector by yourself.

Escaping electrolyte can accumulate in the measuring chamber.

Danger due to escaping electrolyte during the measurement.

3 Scope of delivery, transport, storage

Scope of delivery package 1

GCU	Quantity
Gas Control Unit (GCU)	1
Operating manual	1
Unpacking instructions	1
Power cable for GCU	1
Connection hose Ø 6 mm, length 1.5 m (GDU A)	1
Connection hose Ø 6 mm, length 1.5 m (GDU B)	1
Hose Ø 6 mm, length 3 m (Purge)	1
Exhaust air hose Ø 8 mm, length 3 m (GDU, exhaust outlet for the exhaust system)	1
Exhaust air hose Ø 10 mm, length 3 m (GCU, exhaust outlet for the exhaust system)	1
RS232 connection cable	1
Angle clip OD 6 mm	20
Angle clip OD 8 mm	10
Exhaust connection nut (Exhaust)	1
Replacement air filter	1
Electrical fuses (GCU)	10
Electrical fuses (GDU)	30

► Check the scope of delivery for completeness using the following figure.

1	Hoses (5 pieces)	5	RS232 connection cable
2	Angle clips	6	Exhaust connection nut (Exhaust)
3	Operating instructions and unpacking instructions	7	Electrical fuses (GCU and GDU)
4	Power cable	8	Replacement air filter

Scope of delivery package 2

GDU	Quantity
Gas Detection Unit (GDU)	1
Power cable for GDU	1
Unpacking instructions	1

► Check the scope of delivery of the product for completeness after receipt.

Transport

NOTICE

Damage caused by transport

If packed in unsuitable packaging, the battery leak detector may be damaged during transport.

- Keep the original packaging.
- Only transport the battery leak detector in its original packaging.
- Remove the transport protection before startup Transport protection [▷ 23].

4 Description

4.1 Function

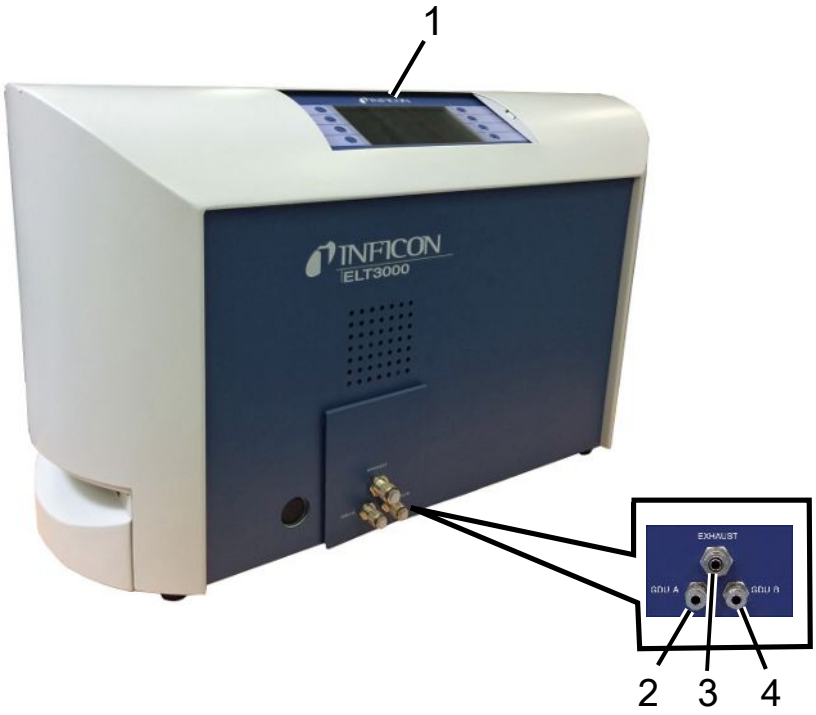
This device is a battery leak detector that allows you to non-destructively check for leaks, both on hard battery cells and pouch cells.

The battery leak detector consists of a Gas Detection Unit, a Gas Control Unit and an optionally available vacuum test chamber.

Gas detection unit

The display of the gas detection unit can fail due to electrostatic charge.

- You can continue operating the ELT3000 without limitation.
- The display can be reactivated by restarting the unit.



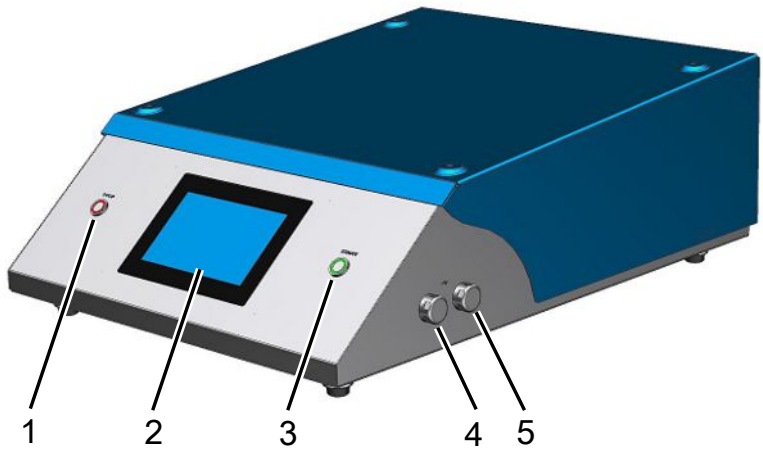
1	Display	3	EXHAUST
2	GDU A	4	GDU B

The gas detection unit works under high vacuum, i.e., the pressure in the quadrupole mass spectrometer must always be less than 5 x 10^{-4} mbar. This vacuum is created by the turbo molecular pump with the help of a diaphragm pump.

In addition, the following are installed in this device:

- a high-vacuum pump system
- an inlet system for the gas flow
- electrical and electronic sub-assemblies for the electrical power supply and signal processing.

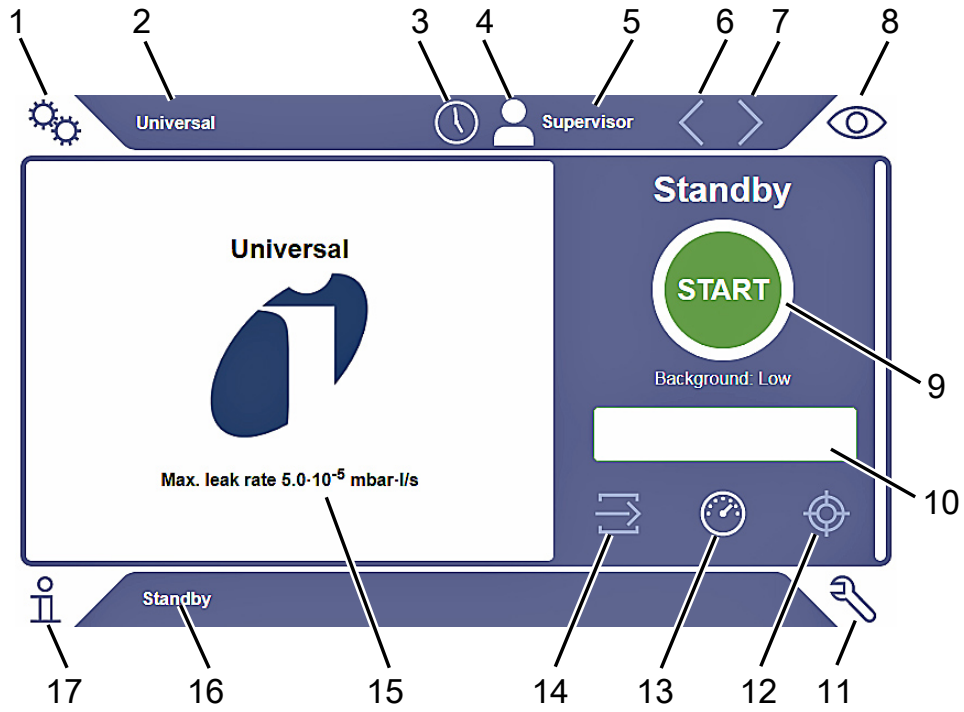
Gas Control Unit



1	"STOP" button Button for stopping the measurement
2	Touchscreen
3	"START" button Button for starting the measurement
4	USB 2.0 interface
5	USB 2.0 interface

4.2 Display

4.2.1 Design of touchscreen



1	Settings	10	Optional input field
2	Product name	11	Diagnosis
3	Time	12	Calibration
4	Access control	13	Measure
5	User name	14	Purge
6	Page back	15	Setpoint
7	Page forward	16	Name of current window
8	Operation	17	Information
9	Start button		

Navigation buttons

The buttons can appear in three different colors: • Gray: Function is disabled • Light blue: Function selectable • White: Function is active
Settings
Operation
Information
Diagnosis

Function buttons

Different colors indicate the status of the function buttons.

The buttons can appear in three different colors: • Gray: Function is disabled, • Light blue: Function selectable • White: Function is active.
General function symbols
Cancel ongoing function
Call up help for the current function
Confirm entry or selection
Load
Analysis
Save
Edit
Copy
Delete
Page forward
Page back

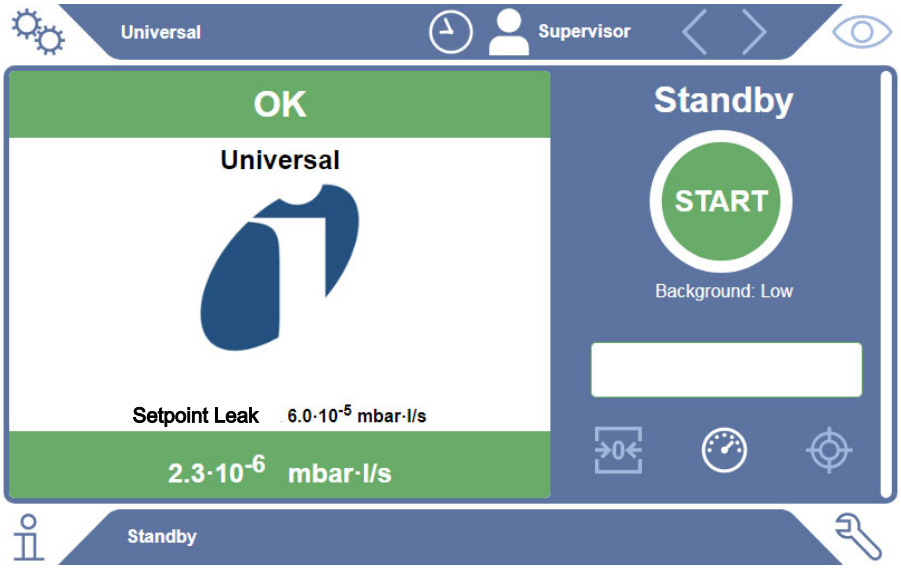
The measurement result is displayed in the measurement window on the left. For more information, see Result display [▶ 18].

4.2.2 Result display

The measured leak rate is highlighted in color and numerically in the "Standby" window on the left side.

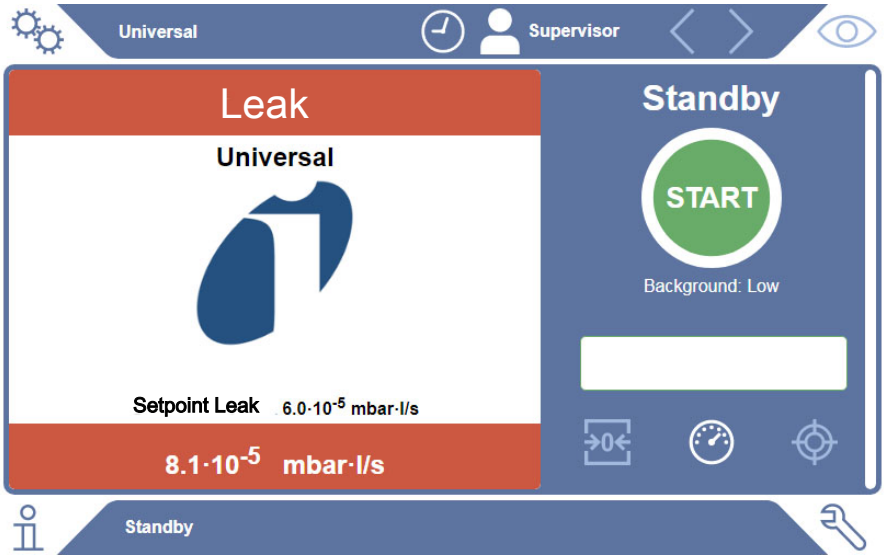
Measurement result: Leaktight

If the leak rate is below the setpoint, the measurement result is shown on a green background.



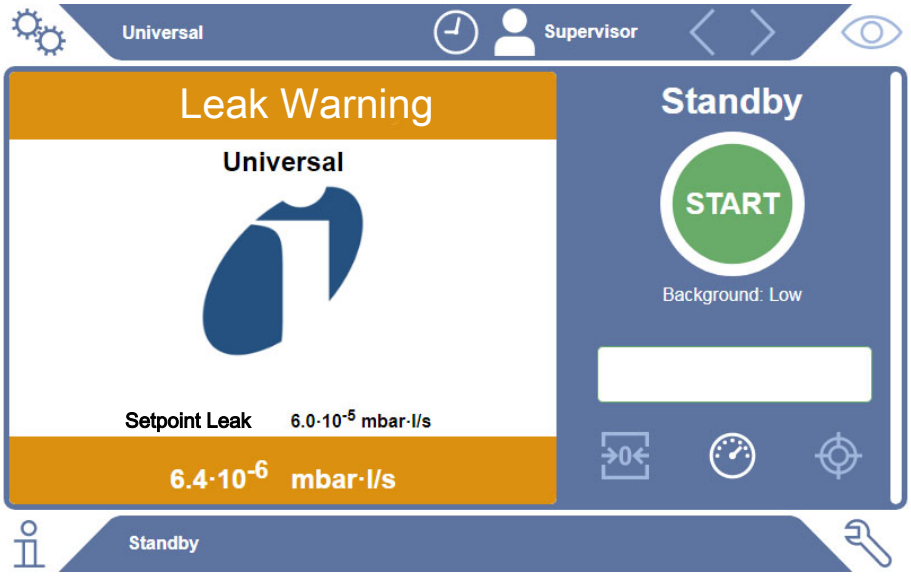
Measurement result: Leaking

If the leak rate is above the setpoint for leaks, the measurement result is shown on a red background.



Measurement result: Warning

If the leak rate is above the setpoint for warning but still below the setpoint for leaks, the measurement result is shown on an orange background.



4.3 Technical specifications

4.3.1 Mechanical data

Gas Control Unit

Mechanical data	
Dimensions (W x H x D)	700 mm x 540 mm x 250 mm
Weight	32 kg

Gas detection unit

Mechanical data	
Dimensions (W x H x D)	610 mm x 300 mm x 380 mm
Weight	33 kg

4.3.2 Ambient conditions

Ambient conditions	
Permissible ambient temperature (during operation)	10 °C to 40 °C
Permissible storage temperature	-20 °C to 60 °C
Max. relative humidity up to 31 °C	80%
Max. relative humidity from 31 °C to 40 °C	Decreasing on linear basis from 80% to 50%
Max. relative humidity above 40 °C	50%
Degree of contamination	2
Max. altitude above sea level	2000 m

4.3.3 Electrical data

Electrical data		
Power supplies and frequencies	600-001	230 V ±10%, 50 / 60 Hz
	600-002	100 - 120 V ±10%, 50 / 60 Hz
Power consumption (total)		440 VA
Gas detection unit		200 VA
Gas Control Unit		240 VA
Protection class		IP 20
Overvoltage category		II
Fuses		
Gas detection unit		2 × 4 A slow-acting 250 V
Gas Control Unit		2 × 3.15 A slow-acting 250 V
Power connection lines		2.5 m each

4.3.4 Physical data

Physical data	
Detection limit	
Minimum detectable leak rate	1 x 10^{-6} mbar l/s (helium equivalent leak rate, at a pressure difference of 1000 mbar to 0 mbar)
Measurement range	3 decades
Detectable masses	2 to 200 amu
Mass spectrometer	Quadrupole mass spectrometer
Ion source	2 cathodes
Time until ready for operation	< 3 min

4.4 Factory settings

Parameter	Factory setting
Auto login	On
Default user	Supervisor
Supervisor PIN (default)	1111
Pre-set product	Universal
Measuring time	4 seconds
Measuring mass	59
Calibration mass	59
Leak threshold value	1.00E-5 mbar*l/s
Warning threshold value	8.00E-6 mbar*l/s
Automatic start of measurement	On
Volume	2
Optional input field	Off
Pre-ZERO	2 seconds
ZERO	4 seconds
Pre-LD	2 seconds
LD	2 seconds
Chamber purging time	5 seconds
Chamber vent time	4 seconds
Chamber vacuum limit	4.5 mbar
Evacuation timeout	120 seconds

5 Installation

5.1 Transport protection

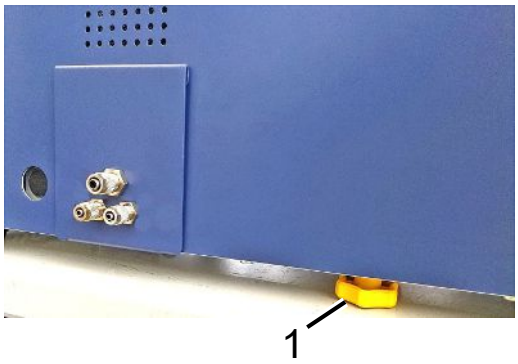
NOTICE

Property damage due to transport protection that has not been removed

The transport protection blocks the mechanical system in the Gas Detection Unit.

- Remove the transport protection before startup.

The transport protection is on the bottom of the Gas Detection Unit and consists of a yellow star screw.



1	Transport protection

5.2 Setup

⚠ WARNING

Danger from moisture and electricity

Moisture entering the battery leak detector can lead to personal injury due to electric shocks, as well as damage to property due to short circuiting.

- Only operate the battery leak detector in a dry environment.
- Operate the battery leak detector away from sources of liquid and moisture.

⚠ CAUTION

Danger due to dropping heavy loads

The battery leak detector is heavy and can injure persons and property through tipping over or dropping.

- ► Only place the battery leak detector on a sufficiently stable and level surface.

NOTICE

Property damage due to vibration

Parts of the measurement technology rotate and must not be shaken. The parts continue to rotate for several minutes after the Gas Detection Unit is shut down.

- ► Place the Gas Detection Unit, the Gas Control Unit and the optional vacuum chamber only on a non-slip, stable, vibration and shock-free surface.
- ► Make sure that the gas detection unit is not exposed to shocks during operation for at least five minutes after being switched off.

The battery leak detector consists of the following subcomponents: a Gas Detection Unit, a Gas Control Unit and an optional vacuum chamber. The installation, connection and startup of the battery leak detector must only be carried out by INFICON employees.

- In order not to distort the measurement results, select a location where the room temperature for the battery leak detector is as constant as possible.
- In order to avoid blocking the exhaust openings on the underside of the device, place the feet of the unit on a firm, even surface.
- To easily reach the power switch on the back of the Gas Detection Unit, ensure that there is sufficient free space behind the device.
- Make sure that the transport protection has been removed, see "Transport protection [▶ 23]".
- Do not expose the device to direct sunlight.

5.3 Design of device

⚠ DANGER

Health risk due to gases and vapors

Operation of the battery leak detector may produce hazardous vapors.

- ► Connect the Gas Detection Unit and the Gas Control Unit to an exhaust line.
- ► Do not inhale harmful gases or vapors.
- ► Ensure sufficient ventilation at the installation location.

⚠ CAUTION

Risk of injury due to improper installation

Failure to place the battery leak detector on a flat, non-slip surface may result in subcomponents of the battery leak detector falling down, causing physical injury or property damage.

► Place all components of the battery leak detector on a level, non-slip location.

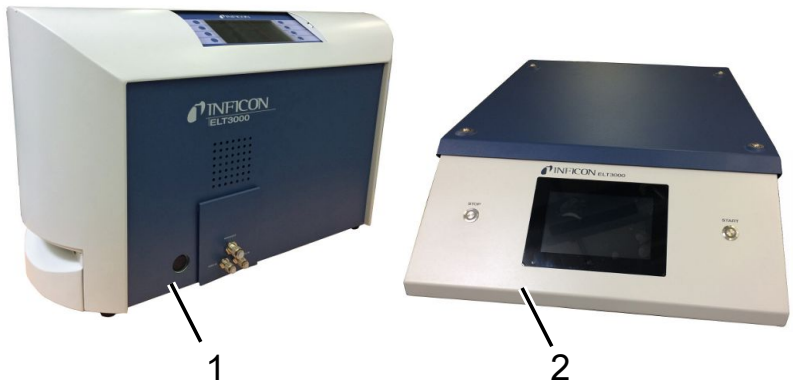
⚠ CAUTION

Risk of injury from lifting the heavy device

The Gas Detection Unit and Gas Control Unit subcomponents of the battery leak detector are heavy and can slip from the hands.

► Only lift and transport the Gas Detection Unit and the Gas Control Unit using two people.

Overview



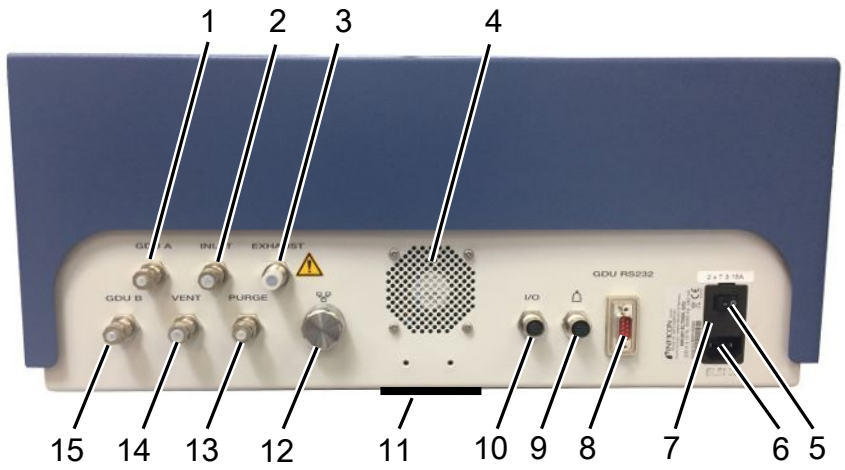
1	Gas detection unit	2	Gas Control Unit

5.3.1 Connect devices

1. Place the vacuum control unit (GCU) and the gas detection system (GDU) on a non-slip, stable, shock and vibration-free surface.
2. Connect the GDU A connection of the gas control unit (GCU) to the GDU A connection of the gas detection unit (GDU) with a Ø 6 mm connecting hose, also see the following illustrations.
3. Connect the GDU B connection of the vacuum control unit (GCU) to the GDU B connection of the gas detection system (GDU) with a Ø 6 mm connecting hose.
4. Connect the purge connection of the vacuum control unit (GCU) to the fresh air system using a Ø 6 mm connecting hose.

   ⇨ Use the supplied exhaust connection nut.
5. Connect the Exhaust connection of the GCU to the exhaust system via the Ø 10 mm connecting hose.
6. Connect the Exhaust connection of the GDU to the exhaust system via the Ø 8 mm connecting hose.
7. Connect the vacuum control unit (GCU) to the gas detection system (GDU) using the RS232 signal cable.
8. Use the enclosed angle clips to lay the hoses without kinks.

Gas Control Unit

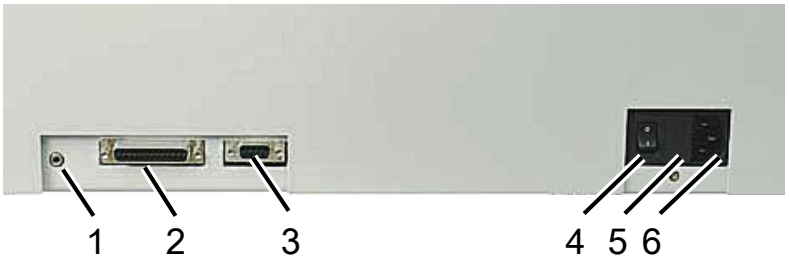


1	GDU A, Ø 6 mm	9	Connection for vacuum chamber
2	INLET (test chamber connection)	10	I/O port connection
3	Exhaust, exhaust hose, Ø 10 mm	11	Fresh air
4	Exhaust air	12	Network connection RJ45
5	Power switch	13	PURGE, fresh air connection, Ø 6 mm
6	Power cable connection	14	VENT (chamber connection ventilation)
7	Fuses behind cover	15	GDU B, Ø 6 mm
8	RS232 signal connection to the gas detection system		

Gas detection unit

1	Display
2	GDU A, Ø 6 mm
3	Exhaust, Ø 8 mm
4	GDU B, Ø 6 mm

Back view



1	Headphone port	4	Power switch
2	I/O port, inputs/outputs	5	Fuses behind cover
3	RS232 interface	6	Power supply

1. Headphone port:

   Not used in this case.

2. I/O port, inputs/outputs:

   Not used in this case.

3. RS232 interface:

   Gas Detection Unit connection to Gas Control Unit.

4. Power switch:

The power switch is used to switch the device on and off.

5. Electrical fuses behind cover
6. Power cable connection

5.3.1.1 Connection scheme for a test chamber

⚠ DANGER

Risk of implosion

The evacuated test chamber must be able to withstand strong forces from the outside due to the atmospheric pressure.

Even a very full test chamber must have small channels that allow gas from potential leaks to be transported to the evacuation connection.

Example of an individually manufactured test chamber

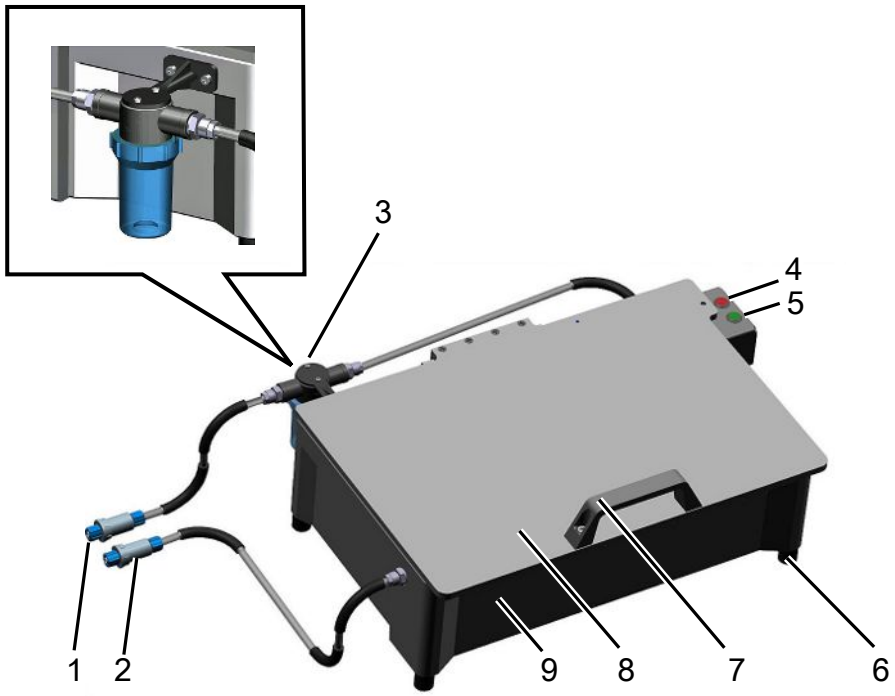


Fig. 1: Example of test chamber

1	Venting test chamber connection	6	Rubber feet (4x)
2	Exhaust air test chamber connection	7	Cover handle
3	Liquid separator	8	Lid
4	Red LED indicator	9	Test chamber housing
5	Green LED indicator		

Requirements

The net chamber volume should be kept as small as possible to allow fast and accurate detection of leaks. This can be achieved either through test objects that fill up the majority of the volume or by adding fillers to the chamber.

Observe the following table when constructing an individually manufactured test chamber.

If you have any questions about constructing or using an individually manufactured test chamber, please contact INFICON Service.

Table of requirements

Designation	Recommendation	Comment	Required	Optional
Housing	Aluminum or stainless steel	AlMg4.5Mn0.7 (AA 5083)	X	
Pressure	1-5 mbar absolute	Reaching the target pressure is a prerequisite for the measuring principle.	X	
Sealing material	FKM or FFKM material	Resistant to the most commonly used chemicals. EPDM and silicone have a negative effect on measuring accuracy.	X	
Leaktightness of test chamber	~10-5 mbar l/s		X	
Connections	2 connector hoses with 6 mm inside diameter and 8 mm outside diameter (supply air and exhaust air)	Optional: ½ inch connection with adapter to ¼ inch; place in the upper third of chamber so that, in the event of major leaks, no liquid electrolyte can enter the hoses.	X	X
Air filter	Use of air filters with 40 µm opening. Optional: Coarse particle filter	e.g. Festo VAF PK, porosity 40 µm	X	
Liquid separator	e.g. Festo VAF-DB ¼ inch	Prevents the Gas Control Unit from being heavily contaminated in the event of major leaks.	X	

Designation	Recommendation	Comment	Required	Optional
Proximity switch	It is possible for the measurement to be started immediately once the chamber is closed by means of a proximity switch.	There is a M12 plug on the back of the Gas Control Unit.		X
Filler	No conductive material; ceramic, glass, polypropylene blocks	Fill up a large net volume with filler in order to shorten the measuring time and increase sensitivity.	X	
		Ideally: Fill test chamber with test objects to maximum capacity.		
Insulation	Butyl, ceramic, glass or deep-drawn polypropylene to cover the walls	Insulate the chamber walls to prevent short circuits of battery cells. Do not use any adhesive!		X
Opening angle	Cover opening angle 100-110°			X
Opening aid	For heavy covers	e.g. with gas-operated springs		X
Lock for cover	For heavy covers	Avoid risk of crushing and cutting injuries through design!		X
Equipment feet	Rubber feet	Use anti-slip rubber feet!		

Example

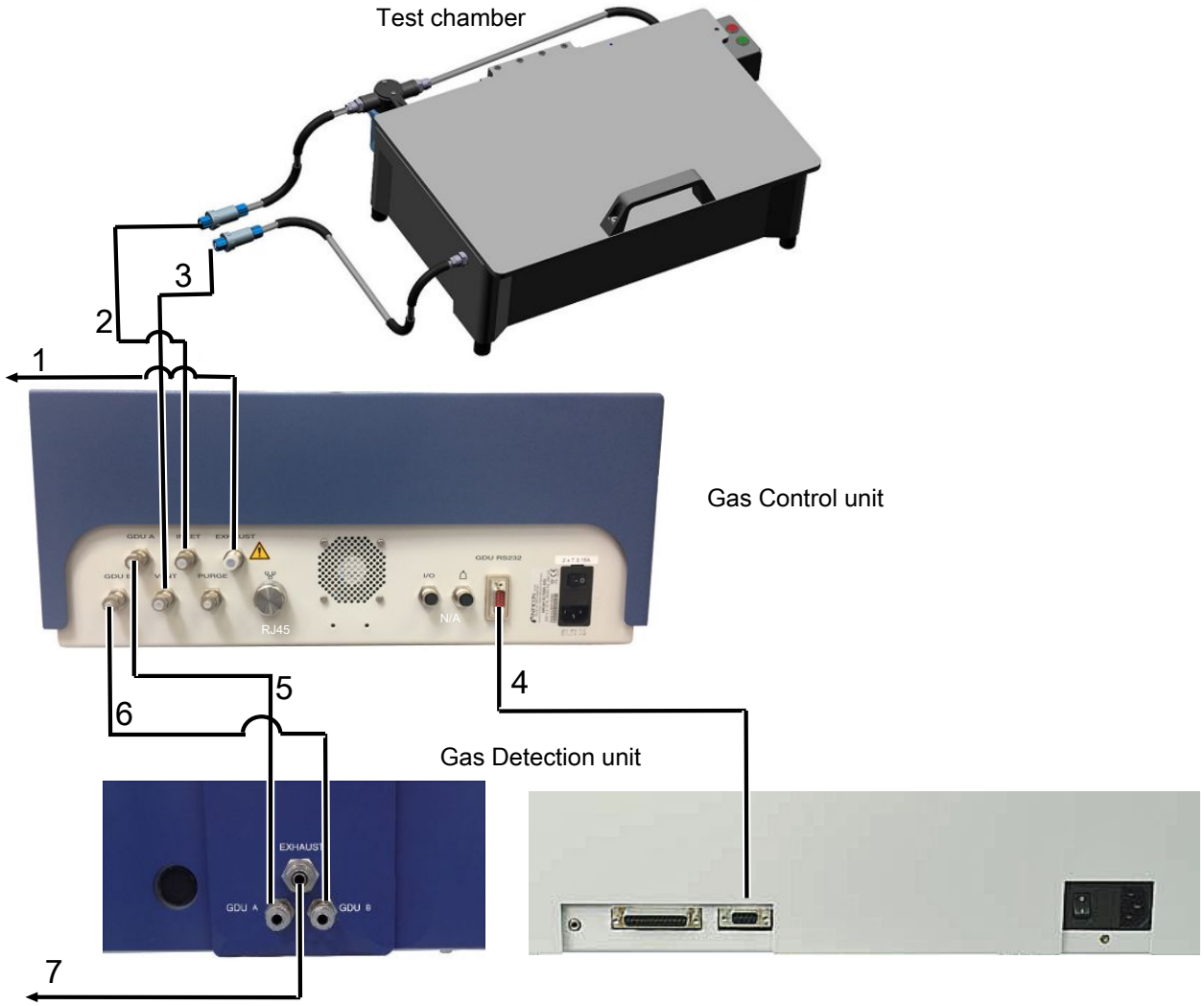


Fig. 2: ELT3000 connection

1	Exhaust GCU	Ø 10 mm
2	INLET (test chamber connection fresh air)	Ø 8 mm
3	VENT (test chamber connection exhaust air)	Ø 8 mm
4	Connection cable GCU-GDU	--
5	GDU A	Ø 6 mm
6	GDU B	Ø 6 mm
7	Exhaust GDU	Ø 10 mm

5.4 Connecting to the power supply system

⚠ WARNING

Danger from electric shock

Improperly grounded or fused products may be dangerous to life in case of a fault. The use of the device is not permitted without a connected protective ground conductor.

- When connecting the Gas Detection Unit, make sure that the voltage specified on the model plate is supplied.
- Only use the 3-wire power cord provided.

NOTICE

Different power supply networks

If the individual devices are connected to different power supply networks, current flows may occur in the RS232 data line.

Malfunctions and undesired operating states of the device are possible.

- Always connect the individual devices to the same supply network.

5.5 Interfaces

NOTICE

Operating system can be hacked via USB or Ethernet

The Linux operating system used in the leak detector is not updated automatically and can therefore contain security vulnerabilities. This vulnerability may be exploited through the Ethernet and USB interfaces of the leak detector to provide unauthorized access to the system.

- Ensure that no unauthorized person has access to these interfaces, for example by using a USB port / Ethernet port lock.
- In order not to jeopardize the security of your company network, never connect the leak detector directly to the public Internet. This is applies to connections over WLAN as well as over Ethernet.
- However, if you want to access the web interface of the leak detector remotely, we recommend an encrypted Virtual Private Network (VPN) connection. However, we cannot assume any guarantee for the security of VPN connections, which are provided by third parties.

USB interface usage	You can connect a barcode scanner or a USB flash drive via the two USB 2.0 interfaces.
RS232 interface	Communications between the Gas Detection Unit and the Gas Control Unit
RJ45 network interface	Interface for connection to an internal company network

6 Operation

⚠ WARNING

Risk of injury from flammable solvents

The solvent in the calibration leak is highly flammable.

Overheating can damage the membrane, solvent can leak and ignite from an ignition source.

- Observe the manufacturer's safety data sheets and follow the applicable work instructions.
- Avoid heating the calibration leak to high temperatures.

NOTICE

Health risk due to gases and vapors

Operation of the leak detector may produce hazardous vapors.

- Connect the Gas Detection Unit and the Gas Control Unit to an exhaust line.
- Avoid inhaling harmful gases or vapors.
- Ensure sufficient ventilation at the installation location.
- Observe the safety instructions in the safety data sheets for the test objects.
- Provide an installation location where blockage of the exhaust lines is not possible or can be detected.
- Provide an installation location with adequate ventilation or alternatively an installation location where air quality is tested and monitored for harmful substances.

NOTICE

Property damage due to overheated device

The Gas Detection Unit as well as the Gas Control Unit will become warm during operation and may overheat without adequate ventilation.

- Keep the underside of the gas control unit unobstructed.
- Do not block the ventilation opening for the filter.
- Make sure that there is adequate ventilation at the Gas Detection Unit: Free space at least 20 cm on the sides, at least 10 cm at the front and rear.
- Keep heat sources away from the battery leak detector.
- Do not expose the battery leak detector to direct sunlight.
- Please note the technical specifications.

6.1 Switch on and login

- To turn on the unit, press the power switch for both the Gas Detection Unit and the Gas Control Unit.
  - ⇨ In the delivery state, the device displays the measurement screen after a startup phase.

6.2 Basic settings

⚠ WARNING

Risk of injury from flammable solvents

The solvent in the calibration leak is highly flammable.

Overheating can damage the membrane, solvent can leak and ignite from an ignition source.

- Observe the manufacturer's safety data sheets and follow the applicable work instructions.
- Avoid heating the calibration leak to high temperatures.

6.2.1 Setting the language

You can set the language in the user settings, see Select, modify, create user profile [37].

6.2.2 Setting date, time and time zone

✓ **Supervisor** rights

1. > Date and time
2. Adjust.
3. Save .

6.2.3 User profile settings

6.2.3.1 Overview of rights groups

The rights of a user depend upon which group they belong to.

User

Members of the group **User** can

- Select between saved products,
- Perform measurements,
- View history of the measurement results,
- View device information,
- View error logs.

Operator

Members of the group **Operator** have all the rights of the group **User**. In addition, they can

- Create/modify/delete products,
- Create/modify/delete users,
- Create/modify/delete images,
- Export/delete measurement data,
- Modify measurement settings.

Supervisor

Members of the group **Supervisor** have all the rights of groups **User** and **Operator**. In addition, they can

- Create/modify/delete operators,
- Create/modify/delete supervisors,
- Perform software updates
- Modify date/time.

6.2.3.2 Select, modify, create user profile

✓ **Operator** or **Supervisor** rights

1 > User accounts > Manage user accounts

⇨ Existing users and associated groups are displayed in list form.

2 You have the following options:
To create a new user profile, select + at the bottom of the window.

⇨ The window "User settings" will open.

Otherwise, press a previously created user name and choose the following from the displayed tool bar:

, to load a user profile.

⇨ The login window opens.

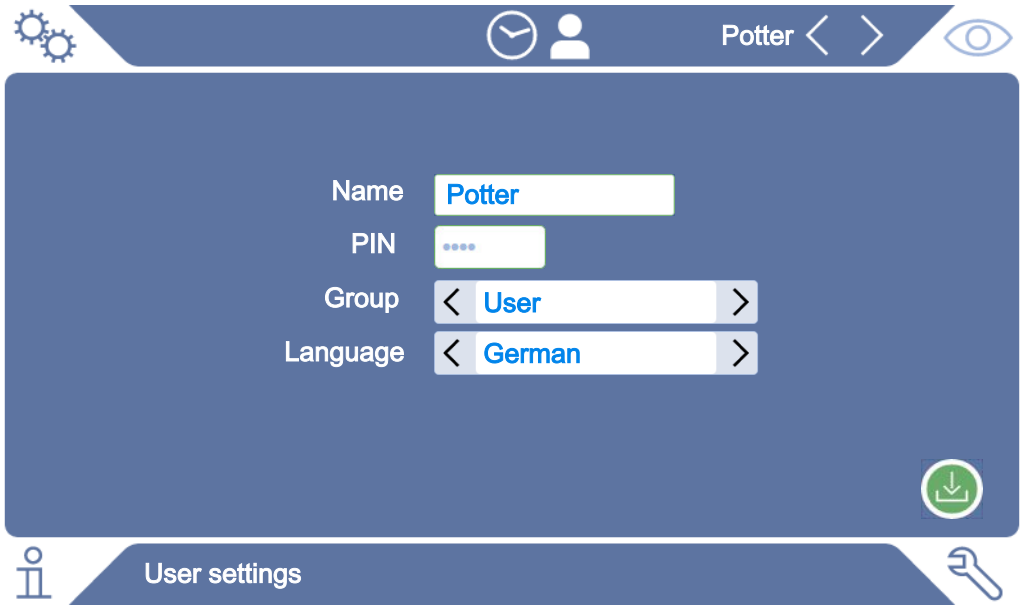
, to modify a user profile.

⇨ The window "User settings" will open.

, to delete a user profile.

⇨ A confirmation prompt appears.

3 After selecting certain tools, the "User settings" window opens. In this case, enter a user name, change it or keep it as required.



4 If the "PIN" field is not filled in or you want to change the content, enter a 4-digit PIN.

5 To assign the required rights to the user, select a group. Via < and > select between the groups "User", "Operator" and "Supervisor". See Overview of rights groups [▶ 37].

6 In the field "Language" assign a language to the user via < and >.

7 Save .

See also

Modify personal settings [▶ 38]

6.2.3.3 Modify personal settings

Even as a user with limited rights (**User**), you can modify your language or PIN. The associated user profile is then changed accordingly. Access to the entire user profile is not necessary.

1 Press on your name, which appears on the top right of the display.

⇨ The "User options" window opens.

2 Select either the button "Change PIN" or "Change language" as required.

6.2.4 Switch off Automatic Login

Factory setting

As per factory settings, after switching on the device the user "Supervisor" automatically logs in and the measurement screen is brought up. This default user also has the permissions of the group "Supervisor". Without changing this setting, any user can operate all functions without restriction.

You can specify that the login window appears after you turn on the device instead of automatic login.
The login window allows all users who have been already registered on the device to log in, see "Select, modify or create product (measurement settings)".

✓ **Supervisor** rights

1. > User accounts > Manage Automatic Login
2. Deactivate the option "Active" in the window "Auto Login".
3. Save .

⇨ After restarting the device, the current settings are applied.

6.2.5 Switch on Automatic Login

You can specify whether a user of your choice is automatically logged in after the device is switched on without the login window.

✓ **Supervisor** rights

✓ The requested user has already been created. See "Select, modify, create user profile [▷ 37]".

1. > User accounts > Manage Automatic Login
2. Enter the name of the user in the "Name" window. The input is case-sensitive.
3. Enter the current PIN of the user profile in the "PIN" window.
4. Activate the option "Active" in the window "Auto Login".
5. Save .

6.2.6 Changing the volume

In addition to the visual display of the measurement result, a beep is sounded. You can change the volume of the beep.

⚠ WARNING

Risk of injury due to loud noise emissions

The device can emit sounds up to a level of 100 dB (A) at the highest volume setting.

- Set the volume up to a maximum of "10".
- Use suitable hearing protection at volume settings above "5".

✓ **Operator** or **Supervisor** rights

1. > Audio
2. Adjust.
3. Save .

6.2.7 Switching automatic measurement start on or off

The option "Autostart" is activated in the factory settings. If you select the function "Measurement" and then close the measuring chamber, the selected process is started automatically. The signal from a proximity switch is used for this purpose. You can switch the "Autostart" option on or off.

✓ Operator or Supervisor rights

1. > Device
2. Adjust.
3. Save .

⇨ If the automatic measurement start is OFF, press the "START" button on the touchscreen or on the housing to start the measurement.

6.3 Settings for the measurements

6.3.1 Select product

1. > Products

   ⇨ Existing products are displayed. If you cannot find the desired product, you can create it, see "Select, modify or create product (measurement settings)". Click the desired product name.

2. Load .

6.3.2 Perform ZERO measurement

Use this function for low levels of contamination. The current background value is then set to zero. If there are high background values, first use the "Purge" function.

The result is displayed in green and the values are applied. A warning or an error is displayed in the event of a problem.

1. Select > .
2. Empty the measuring chamber.
3. Start the ZERO measurement.

⇨ The result is displayed in green and the values are applied. In the event of an error, the result is displayed in red.

6.3.3 Using the input field in the measurement window

If required, you can set up an input field in the measurement window to enter an additional information text there. For example, a batch number.

This text is not only displayed in the measurement window, but is also logged during data recording. The text is assigned to the measurement performed.

1. Setting up the input field for the measurement window

1 ⚙ > Device

2 Activate the "Optional input field".

3 Save 🖫.

2. Filling or changing the input field in the measurement window

✓ You have activated the optional input field.

1 Touch the input field in the measurement window.

2 Enter the desired text using the keyboard that appears.

⇨ After restarting the device, the input field is empty.

6.4 Measure

⚠ WARNING

Warning about short circuit of installed battery

Damaged batteries can have a short circuit in the battery.

Short circuit currents of the battery can cause heat development and arcing.

Heat development and arcing can lead to life-threatening burn injuries.

- Before carrying out any work on the battery, remove watches, rings and other metallic objects.
- Use insulated tools for all work on the battery.
- Do not place tools or metal parts on the battery.
- Comply with all safety instructions from the battery manufacturer.

⚠ CAUTION

Warning about hand injuries

- Only open and close the test chamber when your fingers are outside the test chamber halves and outside the pivoting range of the test chamber.

NOTICE

Property damage due to improper filling of the test chamber

Escaping liquids entering the hoses can interfere with the function of the device . Sharp objects, fats or oils may damage the textile mesh, membrane, chamber ring and sealing lips.

- Avoid contamination of the measuring chamber by oils, fats, or hydrocarbons.
- Do not use sharp-edged objects without a protective frame in the test chamber.

Avoid measuring inaccuracies:

- Place the batteries so that the seals of the test chamber halves are not covered or contacted!
- Avoid measuring test objects with significant differences in temperature to the surroundings!
- Keep the seals for the test chamber halves clean. If you do not remove contaminants, measuring results may be distorted.
- Do not damage the sealing surfaces. Mechanical damage, such as scratches, can cause the chamber to leak.
- Do not clean the test chamber with solvents/alcohols. These can also falsify measurement results.

✓ You have made general settings, see "Basic settings [▷ 36]".

✓ You have saved the settings for the desired product in the device.

✓ You have selected the desired product, see "Select product [▷ 41]".

1. Call up the measurement screen.
   ⇨ The measurement screen appears automatically after a user logs in. Alternatively, press  .
2. Place the test object in the test chamber.
3. Close the measuring chamber and start the measurement. Regarding the start options, also see the descriptions in "Switching automatic measurement start on or off [▷ 41]".
4. If you want to cancel the measurement, press the "STOP" button on the front side of the device, see Design of device [▷ 24].

⇨ The measured leak rate is highlighted in color and numerically in the "Measurement" window on the left side. In addition, the word "OK", "Leak Warning" or "Leak" is displayed, see "Result display [▷ 18]". After completion of the measurement you can remove the test object and measure additional test objects.

If you repeat the measurements with the same test object, the measurement results may differ. This is usually due to a reduced amount of solvent caused by the previous measurement.

6.5 Purge device

► Navigate to the page "Diagnosis → Purge

The device automatically runs a purge process after this function is started. Here, the test chamber and vacuum system are cyclically pumped out and ventilated so that the background is reduced in the device following contamination.

The duration of the purge process can be adjusted.

6.6 Measurement data and device information

6.6.1 Bringing up measurement data

1 > Measurements

⇨ The measurements performed are displayed in short form line by line.

2 To display the detailed view of a measurement, tap on an entry and then on the displayed symbol.

⇨ All information stored for this measurement is displayed.

6.6.2 Transferring measurement data

Measurement results are automatically saved in the device. The last 500,000 measurements are saved. You can transfer measurement data from the internal memory to a connected USB flash drive.

✓ **Operator** or **Supervisor** rights

1 To transfer data from the internal memory, connect a USB flash drive with FAT32 formatting to any of the USB ports of the device.

2 > Measurements

3 Save.

⇨ All measurement data are transferred. There is an indication when the export is completed. The measurement data remain saved on the device.

6.6.2.1 Transferring analysis data

The device records data in the internal memory for every measurement and in the event of error.

You can either send this file to INFICON via email or request an upload link from support.

How to provide INFICON with this data

1. Connect a FAT32 formatted USB flash drive to the control unit
2. Navigate to the "Diagnosis → Service Export" page in the operating unit
3. Press the "Export Service Data" button
   - ⇨ The progress of the export is displayed in the operating unit and can take several minutes (< 25 minutes) after a longer period of use.
   - ⇨ The USB flash drive should now contain the data export. The file name consists of the parts "ServiceExport" - "Serial number" - "Date and time".

The data export can be several megabytes (MB) in size after a longer period of use.

This is a password protected archive.

6.6.3 Delete measurement data

You can delete measurement data from the internal memory of the device.

✓ **Operator** or **Supervisor** rights

1. > Measurements
2. Press .

⇨ All recorded measurement data is deleted.

6.6.4 Bringing up device information

► > Device information

⇨ The stored information is displayed.

6.6.5 Bringing up log

Button to display device messages in list form. This information is useful when you contact the manufacturer's service department.

► > Log

6.7 Updating the software

The device has two different software versions: One for the operating unit and one for the basic unit. Each has its own independent version number.

6.7.1 Updating the software of the operating unit

Install software updates using a USB flash drive.

NOTICE

Loss of data due to disconnection

► Do not switch off the device and do not remove the USB flash drive while the software is being updated.

1. Copy the file into the main directory of a FAT32 formatted USB flash drive.
2. Connect the USB flash drive to a USB port on the device.
3. > Update > Update operating unit

   ⇨ The active software version of the user interface is shown at the top of the window.
   If one or more versions of the software are on the USB flash drive the most recent version is shown on the line below. If this is the same as the version already installed the background is green, otherwise it is red.
4. In order to load the new software version, press on the button "Update".

⇨ After completion there is an automatic restart of the operating unit.

6.7.2 Updating the software of the basic unit

Install software updates using a USB flash drive.

NOTICE

Loss of data due to disconnection

► Do not switch off the device and do not remove the USB flash drive while the software is being updated.

1. Copy the file into the main directory of a FAT32 formatted USB flash drive.
2. Connect the USB flash drive to the USB port on the device.
3. > Update > Update Basic Unit
   ⇨ At the top in the window, the active software version of the basic unit is shown.
   If one or more versions of the software are on the USB flash drive the most recent version is shown on the line below. If this is the same as the version already installed the background is green, otherwise it is red.
4. In order to load the new software version, press on the button "Update".

⇨ After completion there is an automatic restart of the system.

6.7.3 Updating the software of the Gas Detection Unit

Install software updates using a USB flash drive.

NOTICE

Loss of data due to disconnection

- Do not switch off the device and do not remove the USB flash drive while the software is being updated.

1. Copy the file into the main directory of a FAT32 formatted USB flash drive.
2. Connect the USB flash drive to the USB port on the device.
3. > Update > Gas detection unit
   ⇨ At the top in the window, the active software version of the basic unit is shown.
   If one or more versions of the software are on the USB flash drive the most recent version is shown on the line below. If this is the same as the version already installed the background is green, otherwise it is red.
4. In order to load the new software version, press on the button "Update".

⇨ After completion there is an automatic restart of the system.

6.8 Calibrate device

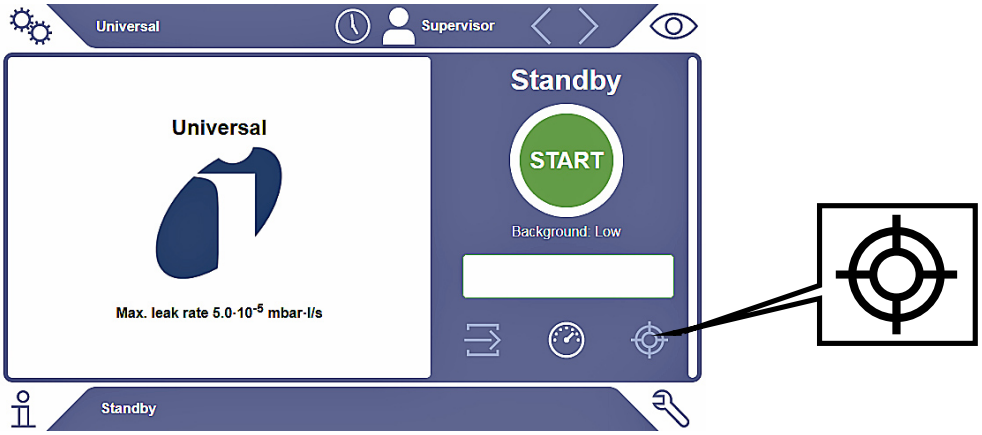
6.8.1 Calibration

General calibration

Calibration is required, if:

- Operational needs require a daily calibration.
- The measuring chamber was changed.
- The ambient conditions require it.

Start calibration



✓ You have the required rights.

✓ You have an E-Check (DMC)

► In standby mode, tap the calibration icon.

⇨ The calibration interface opens.

✓ The leak rate matches that of the E-Check (DMC).

✓ The vacuum chamber is not filled.

✓ The vacuum chamber is closed.

► Start an empty measurement.

⇨ The empty measurement is finished

✓ The E-Check (DMC) is located in the vacuum chamber.

✓ The vacuum chamber is closed.

► Start the measurement.

⇨ The second measurement, with E-Check (DMC), is completed.

At the end of the measurement of the E-Check (DMC), the new calibration factor is determined and displayed by the device.

6.8.2 Calibration equipment

The following calibration equipment is available for the device:

- (Catalog Number 600-105).
  The leak rate can be calibrated with the calibration equipment.

6.9 Restoring factory defaults

You can restore the device to factory settings.

Loss of settings and measurement data

After resetting to factory defaults, only the manufacturer factory settings are stored in the memory of the device.

► Back up important settings and measurement data beforehand on a USB flash drive. See Save user and product data and Transferring measurement data.

✓ **Supervisor** rights

► > Reset device

6.10 Advanced settings

► > Measurement

Improper changes can result in faulty measurements.

► Only make changes to the settings on this page after consultation with INFICON.

6.11 Bringing up active errors and warnings

Active errors

Errors or warnings are displayed on the active user interface. In addition, the diagnosis symbol changes color .

1. > Errors and warnings
   ⇨ The "Errors and warnings" button is only available while errors or warnings are active. Errors and warnings are displayed in list form.
2. To perform measurements, confirm active errors or warnings with the "Clear" button.
   ⇨ The information displayed is closed.

See also "Warning and error messages [▷ 52]".

6.12 Logging off from the device

1. Press on your name, which appears on the top right of the display.
   ⇨ The "User options" window opens.
2. You log off from the device via the button "Log off".
   ⇨ The login window opens.

6.13 Switching off the device

You can turn off the Gas Detection Unit and Gas Control Unit at any time with the corresponding power switch. The parameters set in the device remain saved.

7 Warning and error messages

During operation, the display shows information that helps you operate the device. Measurement values are displayed along with current device modes, operating instructions as well as warnings and error messages. The device is equipped with extensive self-diagnostic functions. If the electronics detect a faulty state, the device will show this as far as possible on the display and will interrupt operation.

Warnings Warnings warn of device states that can impair the accuracy of measurements. To perform measurements, confirm active warnings with the "Clear" button.

Error messages Errors are events that force the interruption of the operation. The error message consists of a number and a descriptive text. Once you have rectified the cause of the error, continue operation by pressing the button "Clear".

Touchscreen You will find an overview of possible errors and warnings on the touchscreen:

► > Help > Errors and warnings

7.1 List of warning and error messages

Type	Notification	Possible sources of error	Remedy
W102	Timeout during communication with EEPROM in internal IO module	The EEPROM in the internal IO module is defective or not present	• Contact customer service
W104	One EEPROM parameter has been initialized	A new parameter was introduced by a software update	• Confirm the warning message • Check that the message does not appear when you restart the device • Check whether the factory setting of the new parameter corresponds to your application
		The EEPROM in the internal IO module is defective	• Confirm the warning message • Check if the message occurs each time when you restart the device • Contact customer service

Type	Notification	Possible sources of error	Remedy
W106	Several EEPROM parameters have been initialized	A software update introduced new parameters	• Confirm the warning message • Check that the message does not appear when you restart the device • Check whether the factory setting of the new parameters corresponds to your application
		The EEPROM has been replaced in the IO module	• Confirm the warning message • Check that the message does not appear when you restart the device • Check whether the factory setting of the new parameters corresponds to your application
		The EEPROM in the internal IO module is defective	• Confirm the warning message • Check if the message occurs each time when you restart the device • Contact customer service
E107	Internal IIC communication error	Internal IIC communication error	• Contact customer service
W110	Real-time clock was reset! Enter date and time	The real-time clock has not been set	• Enter the correct date and time • Check that the message does not appear when you restart the device
		Battery is discharged or defective in internal IO module	• Contact customer service
		Real-time clock defective	• Contact customer service
W122	No response from bus module	Connection to BUS module interrupted	• Check the connection to the bus module • Replace the connection cable to the bus module
		Bus module defective	• Replace the bus module
		Bus module connection on the device defective	• Contact customer service

Type	Notification	Possible sources of error	Remedy
W125	I/O module no longer connected	Connection to I/O module interrupted	• Check the connection to the I/O module • Replace the connection cable to the I/O module
		I/O module defective	• Replace the I/O module
		I/O module connection on the device defective	• Contact customer service
W127	Wrong bootloader version	The bootloader is not compatible with application	• Contact customer service
E129	EEPROM contains data from wrong device class	The software of the basic unit does not match the EEPROM	• Contact customer service
		The EEPROM does not match this device class	• Contact customer service
W151	No communication with operating unit	A software update or a parameter reset has been executed	• Confirm the warning message • Check that the message does not appear when you restart the device
		Internal connection problem between the basic unit and the operating unit	• Contact customer service
W153	Operating unit software version is obsolete	A more up-to-date operating unit software is available. For trouble-free operation, it is recommended to update the operating unit software.	• Contact the customer service for the latest operating unit software
W171	CU1000 not supported	A CU1000 cannot be used with this device	• Disconnect the CU1000 from this device
E173	Incorrect ID in GDU	Problem in GDU	• Contact customer service
E174	GDU software is obsolete	Problem in GDU	• Contact customer service
E175	No communication with GDU	Problem in GDU	• Contact customer service
E176	GDU not in measuring mode	Problem in GDU	• Contact customer service
W190	Detector contaminated	Problem in GDU	• Contact customer service

Type	Notification	Possible sources of error	Remedy
W201	24 V power supply too low	Malfunction of 24V power supply unit	• Contact customer service
		Short circuit or overload in the 24V supply	• Contact customer service
W202	24 V power supply too high	Malfunction of 24V power supply unit	• Contact customer service
W206	24V operating unit supply voltage out of range	Malfunction of operating unit	• Contact customer service
		Short circuit or overload in the 24V operating unit supply	• Contact customer service
W211	5V internal supply voltage out of range	Short circuit or overload in the internal 5V supply	• Contact customer service
W222	Internal voltage 24V_A voltage out of range	A module connected to the I/O or chamber connections is defective.	• Use another module, if possible
		A cable connected to the I/O or chamber connections is defective	• Use another cable, if possible
		Short circuit or overload in the 24V_A supply	• Contact customer service
W240	Voltage +15V out of range	Internal IO module defective	• Contact customer service
W250	REF5V voltage out of range	Internal IO module defective	• Contact customer service
E301	GDU - Input voltage 24V on the MC50 is too low	Problem in GDU	• Contact customer service
E302	GDU - Input voltage 24V on the Transpector is too low	Problem in GDU	• Contact customer service
E303	GDU - Input voltage 24V on the frequency converter is too low	Problem in GDU	• Contact customer service

Type	Notification	Possible sources of error	Remedy
W304	GDU - Voltage 24V on OPTION output is too low	Problem in GDU	• Contact customer service
W305	GDU - Voltage U5_I_Sniffer is too low	Problem in GDU	• Contact customer service
W306	GDU - Voltage U5_II_Leak is too low	Problem in GDU	• Contact customer service
E307	GDU - Input voltage -15V on the MC50 is too low	Problem in GDU	• Contact customer service
E308	GDU - Input voltage 15V on the MC50 is too low	Problem in GDU	• Contact customer service
W310	GDU - Forevacuum pressure too high	Problem in GDU	• Contact customer service
W312	GDU - Turbo pump frequency during run-up not reached or TMP current too high	Problem in GDU	• Contact customer service
W314	GDU - Maintenance: Filter	Problem in GDU	• Contact customer service
W316	GDU - Maintenance: TMP	Problem in GDU	• Contact customer service
W317	GDU - Maintenance: Diaphragm pump	Problem in GDU	• Contact customer service
W318	GDU - Maintenance: Main air filter	Problem in GDU	• Contact customer service
E319	GDU - Temperature on CPU board MC50 too low (< -21 °C)	Problem in GDU	• Contact customer service
E320	GDU - Temperature on CPU board MC50 too high! (>60 °C)	Problem in GDU	• Contact customer service
E322	GDU - Turbo pump frequency too low	Problem in GDU	• Contact customer service
E323	GDU - Turbo pump frequency too high	Problem in GDU	• Contact customer service
W324	GDU - Voltage U24_GB_EXT is too low	Problem in GDU	• Contact customer service
E325	GDU - Internal photoelectric barrier	Problem in GDU	• Contact customer service

Type	Notification	Possible sources of error	Remedy
W328	GDU - Real-time clock was reset. Enter date and time	Problem in GDU	• Contact customer service
W329	GDU - Voltage 24V on the audio output is too low	Problem in GDU	• Contact customer service
E330	GDU - Sensitivity too low	Problem in GDU	• Contact customer service
W331	GDU - K1 factor out of range	Problem in GDU	• Contact customer service
W334	GDU - Changed flow	Problem in GDU	• Contact customer service
W335	GDU - Flow too low	Problem in GDU	• Contact customer service
E336	GDU - Flow too high	Problem in GDU	• Contact customer service
E339	GDU - Emission failed	Problem in GDU	• Contact customer service
E340	GDU - Emission failed	Problem in GDU	• Contact customer service
E341	GDU - No communication with Transpector	Problem in GDU	• Contact customer service
E342	GDU - Transpector temperature > 70 °C or < 0 °C	Problem in GDU	• Contact customer service
W343	GDU - Transpector limit value exceeded	Problem in GDU	• Contact customer service
W344	GDU - No communication with Transpector	Problem in GDU	• Contact customer service
W345	GDU - Transpector hardware fault	Problem in GDU	• Contact customer service
W346	GDU - Transpector hardware warning	Problem in GDU	• Contact customer service
E347	GDU - Transpector overpressure	Problem in GDU	• Contact customer service
E348	GDU - Transpector emission failed	Problem in GDU	• Contact customer service
W349	GDU - No emission with cathode 1	Problem in GDU	• Contact customer service
E350	GDU - Turbo pump or electronics fault	Problem in GDU	• Contact customer service
E351	GDU - No communication with the turbo controller	Problem in GDU	• Contact customer service

Type	Notification	Possible sources of error	Remedy
W358	GDU - Measuring parameters inconsistent. Please check	Problem in GDU	• Contact customer service
W359	GDU - Overflow of EEPROM parameter queue	Problem in GDU	• Contact customer service
W360	GDU - All EEPROM parameters lost	Problem in GDU	• Contact customer service
W361	GDU - EEPROM parameters initializing	Problem in GDU	• Contact customer service
W362	GDU - EEPROM parameters lost	Problem in GDU	• Contact customer service
W363	GDU - TSP parameters inconsistent	Problem in GDU	• Contact customer service
W364	GDU - There are warnings pending	Problem in GDU	• Contact customer service
W365	GDU - TSP serial number inconsistent	Problem in GDU	• Contact customer service
W366	GDU - Calibration leak factory new	Problem in GDU	• Contact customer service
W367	GDU - Calibration leak expires soon	Problem in GDU	• Contact customer service
W368	GDU - Calibration leak expired	Problem in GDU	• Contact customer service
W370	GDU - All EEPROM parameters of calibration leak lost	Problem in GDU	• Contact customer service
W371	GDU - No communication with calibration leak	Problem in GDU	• Contact customer service
W372	GDU - No communication with SN	Problem in GDU	• Contact customer service
E373	GDU - Unsuitable SN	Problem in GDU	• Contact customer service
W377	GDU - Changed calibration factor	Problem in GDU	• Contact customer service
W378	GDU - Signal difference between test leak and air too small	Problem in GDU	• Contact customer service
W379	GDU - Factor out of range	Problem in GDU	• Contact customer service

Type	Notification	Possible sources of error	Remedy
W380	GDU - Cathode switched over	Problem in GDU	• Contact customer service
W381	GDU - Calibration factor too low	Problem in GDU	• Contact customer service
W382	GDU - Calibration factor too high	Problem in GDU	• Contact customer service
W383	GDU - Baseline offset out of range	Problem in GDU	• Contact customer service
W384	GDU - Calibration leak signal too small	Problem in GDU	• Contact customer service
W385	GDU - Problem during peak finding	Problem in GDU	• Contact customer service
W386	GDU - Internal calibration impossible	Problem in GDU	• Contact customer service
W387	GDU - CAL INT TL NOT KNOWN	Problem in GDU	• Contact customer service
E390	GDU - TMP error 001 Overspeed	Problem in GDU	• Contact customer service
E391	GDU - TMP error 002 Overvoltage	Problem in GDU	• Contact customer service
E392	GDU - TMP error 006 Run-up time error	Problem in GDU	• Contact customer service
E393	GDU - TMP error 008 Electronics - Pump connection	Problem in GDU	• Contact customer service
E394	GDU - TMP error 015 Error in TC controller	Problem in GDU	• Contact customer service
E395	GDU - TMP error 021 Incorrect pump characteristic impedance	Problem in GDU	• Contact customer service
E396	GDU - TMP error 025 Error in TC temperature monitoring	Problem in GDU	• Contact customer service
E397	GDU - TMP error 026 Error in temperature sensor in TC	Problem in GDU	• Contact customer service
E398	GDU - TMP error 037 power failure	Problem in GDU	• Contact customer service

Type	Notification	Possible sources of error	Remedy
E399	GDU - TMP error 007 Error in motor stage or actuation	Problem in GDU	• Contact customer service
E500	Pressure sensor p1 not connected	Pressure sensor not connected or cable defective	• Contact customer service
		Internal IO module defective	• Contact customer service
E502	Pressure sensor p2 not connected	Pressure sensor not connected or cable defective	• Contact customer service
		Internal IO module defective	• Contact customer service
E504	Pressure sensor p3 not connected	Pressure sensor not connected or cable defective	• Contact customer service
		Internal IO module defective	• Contact customer service
W580	Maximum evacuation time exceeded	Gross leak at test object or the connection to the test object	• Check the tightness of the connection between the leak detector and the test object • Use another test object, if possible
		The settings value for the max. gross leak evacuation time is too low	• Check and change the max. gross leak evacuation time if necessary
W581	Maximum evacuation time until measurement exceeded	Gross leak at test object or the connection to the test object	• Check the tightness of the connection between the leak detector and the test object • Use another test object, if possible
		The settings value for the max. evacuation time until measurement is too low	• Check and change the max. evacuation time until measurement if necessary

Type	Notification	Possible sources of error	Remedy
W600	Calibration factor too low	Incorrect value entered at calibration	• Repeat the calibration
		Incorrect specimen inserted	• Repeat the calibration
		ZERO measurement error	• Repeat the calibration
W601	Calibration factor too high	Incorrect value entered at calibration	• Repeat the calibration
		Incorrect specimen inserted	• Repeat the calibration
		ZERO measurement error	• Repeat the calibration
W605	Signal of calibration leak too low	Incorrect value entered at calibration	• Repeat the calibration
		Incorrect specimen inserted	• Repeat the calibration
		ZERO measurement error	• Repeat the calibration
W630	Calibration request	Operation mode or mass has changed	• Perform a calibration
W660	Calibration - Offset too high	Calibration leak during zero measurement in chamber	• Repeat the calibration
		Background too high	• Use the purge function to reduce the background
E661	Calibration - Signal too low or offset too high	Calibration leak during zero measurement in chamber	• Repeat the calibration
		Signal of calibration leak too small	• Use a different calibration leak
E709	Temperature of basic unit too low	Ambient temperature is too low	• Increase the temperature in the environment where the device is located
W710	Temperature of basic unit too high	The ambient temperature is too high	• Reduce the temperature in the environment where the device is located
E711	Maximum temperature of basic unit exceeded	The ambient temperature is too high	• Reduce the temperature in the environment where the device is located

Type	Notification	Possible sources of error	Remedy
W910	Maintenance: Backing pump	Maintenance interval for backing pump exceeded	• Contact customer service
W920	Maintenance: Exhaust filter	Maintenance interval for exhaust filter exceeded	• Contact customer service
W925	Maintenance: Air filter	Maintenance interval for air filter exceeded	• Contact customer service

8 Cleaning and maintenance

All cleaning and maintenance work described here must be carried out without opening the device cover!

⚠ DANGER

Risk of death from electric shock

There are high voltages inside the device. Touching parts where electrical voltage is present can result in death.

- Disconnect the device from the power supply prior to any cleaning and maintenance work. Ensure that the electrical supply cannot be switched back on unintentionally.
- Do not open the device covers!

8.1 Gas Control Unit: Cleaning the housing

The housing for the device consists of a painted metal housing and an optional measuring chamber made of aluminum.

1. Only use water for moistening.
2. Avoid cleaning agents that contain alcohol, fat or oil.
3. Make sure that the device is disconnected from the power supply by disconnecting the power supply plug.
4. Wipe the housing with a soft damp cloth.
5. When cleaning the measuring chamber, use an agent that is suitable for aluminum surfaces (for example, a gentle household cleaner). Do not use solvents that can attack the painted metal housing.

8.2 Gas Control Unit: Replace hoses

⚠ DANGER

Electrolyte or battery acid is corrosive.

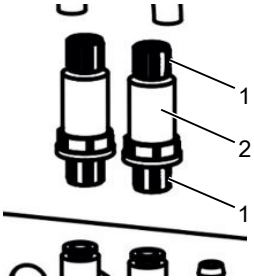
- Avoid contact with skin, eyes, or clothing.
- Wear suitable protective clothing, especially gloves, apron and face protection.
- Observe the information in the respective MSDS.
- Rinse off electrolyte or acid splashes immediately with clean water.
- Consult a physician if necessary.

During leak testing, air is extracted from the measuring chamber via two hoses, and there are filter cartridges on the end of each. If a small amount of liquid or condensation has entered the hoses, they can be dismantled by a specialist with technical training.

1. To dismantle the hoses, press the release rings toward the housing or measuring chamber and disconnect each hose along with the filter cartridge.
   ⇨ If a larger amount of liquid has reached the bottom of the hoses, contact the service department.
2. If dirty, replace the filter cartridges.
3. Refit the hoses.

8.3 Gas Control Unit: Checking inline filter

The function and measuring accuracy of the leak detector can be impaired by contaminated filters. Check the transparent filter elements (inline filter) regularly for the ingress of dust.



1	Union nuts (blue)	2	Filter element (transparent)

► Replace the filter elements if they are clearly dirty.

8.4 Gas Control Unit: Replacing filter mat on bottom of device

Filter set CS4	Order number 200006373
Required tools	None

In production rooms with increased dust load, the filter mat on the bottom of the unit can become contaminated. Replace the filter mats if there is significant contamination.

✓ You have a new filter mat.

1. Make sure that the device is disconnected from the power supply by disconnecting the power supply plug.
2. To reach the air filter at the bottom of the device, gently tilt the device 90 degrees to the left when viewed from the front.
3. Remove the plastic grille. It is only attached by catch tabs.
4. Remove the used air filter from the plastic grille and insert a new one.
5. Refit the plastic grille together with the new air filter.

8.5 Gas Detection Unit: Replacing the air filter of the basic unit

The air filter is located inside a slot that is accessible from the bottom of the device. The slot is closed with a cover plate. The cover plate is held in place with a 3mm Allen screw.

⚠ DANGER

Risk of death from electric shock

There are high voltages inside the device. Touching parts where electrical voltage is present can result in death.

- Disconnect the device from the power supply prior to any maintenance work.
- Ensure that the electrical supply cannot be switched back on unintentionally.

NOTICE

Property damage from rotating parts

The turbo molecular pump requires 5 minutes to power down.

- Allow the turbo molecular pump to power down before any maintenance work is performed or before moving the device.

1. Place the basic unit with the front panel on a soft surface.
2. Loosen the screw of the cover plate until you can rotate the cover plate to the side.

Fig. 3: Loosening the air filter cover

3. Pull out the air filter and replace it with a new one.

9 Decommissioning

Disposal

The device can contain substances that are hazardous to health and the environment after use.

Observe the local regulations on disposal and on recycling documentation obligations. If you are not familiar with how to properly dispose of hazardous substances, consult a professional disposal company.

Our service employees are also available to answer any questions you may have.

9.1 Return shipment of battery leak tester

⚠ WARNING

Danger due to harmful substances

Contaminated devices could endanger health. The contamination declaration serves to protect all persons who come into contact with the device.

► Fill in the declaration of contamination completely.

1. Contact the manufacturer and send in a completed declaration of contamination before return shipment.

   ⇨ You will then receive a return number.

2. Use the original packaging when returning.
3. Always include a copy of the completed contamination declaration before shipping the battery leak tester. See below.

Declaration of Contamination

The service, repair, and/or disposal of vacuum equipment and components will only be carried out if a correctly completed declaration has been submitted. Non-completion will result in delay.
This declaration may only be completed (in block letters) and signed by authorized and qualified staff.

1 Description of product

Type _____
Article Number _____
Serial Number _____

2 Reason for return

_____
_____
_____

3 Operating fluid(s) used (Must be drained before shipping.)

_____
_____

4 Process related contamination of product:

toxic	no ❑ 1)	yes ❑
caustic	no ❑ 1)	yes ❑
biological hazard	no ❑	yes ❑ 2)
explosive	no ❑	yes ❑ 2)
radioactive	no ❑	yes ❑ 2)
other harmful substances	no ❑ 1)	yes ❑

The product is free of any substances which are damaging to health yes ❑

1) or not containing any amount of hazardous residues that exceed the permissible exposure limits

2) Products thus contaminated will not be accepted without written evidence of decontamination!

5 Harmful substances, gases and/or by-products

Please list all substances, gases, and by-products which the product may have come into contact with:

Trade/product name	Chemical name (or symbol)	Precautions associated with substance	Action if human contact

6 Legally binding declaration:

I/we hereby declare that the information on this form is complete and accurate and that I/we will assume any further costs that may arise. The contaminated product will be dispatched in accordance with the applicable regulations.

Organization/company _____
Address _____ Post code, place _____
Phone _____ Fax _____
Email _____
Name _____

Date and legally binding signature _____

Company stamp

Copies:
Original for addressee - 1 copy for accompanying documents - 1 copy for file of sender

10 CE Declaration of Conformity

EU Declaration of Conformity

We – INFICON GmbH - herewith declare that the products defined below meet the basic requirements regarding safety and health and relevant provisions of the relevant EU Directives by design, type and the versions which are brought into circulation by us. This declaration of conformity is issued under the sole responsibility of INFICON GmbH.

In case of any products changes made without our approval, this declaration will be void

Designation of the product:

Battery leak detector

Models: **ELT3000**

Catalogue numbers:

600-001

600-002

The products meet the requirements of the following Directives:

- ***Directive 2014/30/EU (Electromagnetic Compatibility)***
- ***Directive 2006/42/EC (Machinery)***
- ***Directive 2011/65/EC (RoHS)***

Applied harmonized standards:

- ***EN 61010-1:2010***
- ***EN 61326-1:2013***
  Class A according to EN 55011
- ***EN ISO 12100:2010***
- ***EN IEC 63000:2018***

Authorised person to compile the relevant technical files:
René Bausch, INFICON GmbH, Bonner Strasse 498, D-50968 Cologne

Cologne, July 08th, 2020

Dr. Döbler, President LDT

Cologne, July 08th 2020

i.A.

Bausch, Research and Development

INFICON GmbH
Bonner Strasse 498
D-50968 Cologne
Tel.: +49 (0)221 56788-0
Fax: +49 (0)221 56788-90
www.inficon.com
E-mail: leakdetection@inficon.com

11 Accessories

Name	Catalog number
Leak detectors	
ELT3000 (Gas Detection Unit+Control Unit) 230V, 50Hz	600-001
ELT3000 (Gas Detection Unit+Control Unit) 110V, 60Hz	600-002
Test chambers	
TC3000S (Rigid chamber 180 mm × 180 mm × 27 mm)	600-100
TC3000L (Rigid chamber 400 mm × 210 mm × 120 mm)	600-101
FTC3000 (Flexible chamber 400 mm × 350 mm)	600-102
Calibration leak	
E-Check (DMC)	600-105
I/O1000 module	560-310
Data cable I/O1000 2m	560-332
Data cable I/O1000 5m	560-335
Data cable I/O1000 10m	560-340

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www.inficon.com reachus@inficon.com