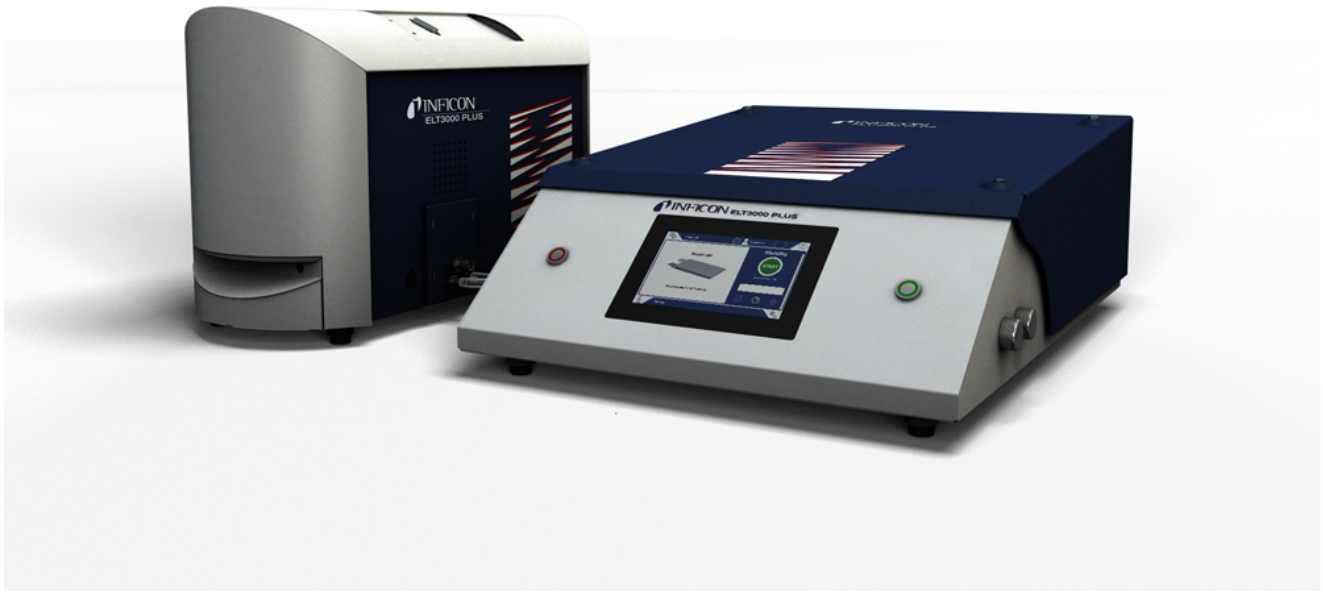


Translation of the original operating instructions

ELT3000 PLUS

Battery Leak Detector

Catalog No.
600-201, 600-202

minc95en1-02-(2410)

From software version
V1.41 (Gerätebedienung)

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 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

1.2 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.

1.3 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 leakage rate at a pressure difference of 1000 mbar versus 0 mbar for 100% DMC (dimethyl carbonate).

GCU

Gas Control Unit (basic unit, operating unit)

GDU

Gas Detection Unit

DMC

Dimethyl carbonate, typical solvent in battery electrolyte. CAS No. 616-38-6

MSDS

Material Safety Data Sheet

2 Safety

2.1 Intended use

The device can be operated in "Standalone mode" and "Inline mode".

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 closing the test chamber*, the measuring process is automatically triggered by the proximity switch and the test chamber is evacuated. In the case of customer-specific test chambers and / or when connecting several test chambers simultaneously, the customer activates the measuring process via an interface. .

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 or deviating solvents.

* Optional accessories

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 operating instructions, contact INFICON 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 Dangers

The measuring instrument 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 device away from areas with a risk of explosions.

Dangers from electric power

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

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

The device contains electric components that can be damaged from high electric voltage.

- Before connecting the device to the power supply, make sure that the supply voltage specified on the device is the same as the local power supply.

Risk of injury from slipping off or falling down

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

Escaping electrolyte can accumulate in the measuring test chamber.

Danger due to escaping electrolyte after the measurement.

3 Scope of delivery, transport, storage

Scope of delivery package 1

Gas Control Unit (GCU)	Quantity
Gas Control Unit (GCU)	1
Operating manual	1
Unpacking instructions	1
Protocol Descriptions	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 GCU)	1
Replacement air filter	1

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

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

Scope of delivery package 2

Gas Detection Unit (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

Transport in unsuitable packaging material can damage the device.

► Keep the original packaging.

► Only transport the device in its original packaging.

► Remove the transport protection before startup.

Storage

Always store the device in compliance with the technical data, see “Technical data [▷ 20]“.

See also

Transport protection [▷ 23]

4 Description

4.1 Function

The ELT3000 Plus can be operated in "standalone mode" or "inline mode" in a plant.

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 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.

Components of the device:

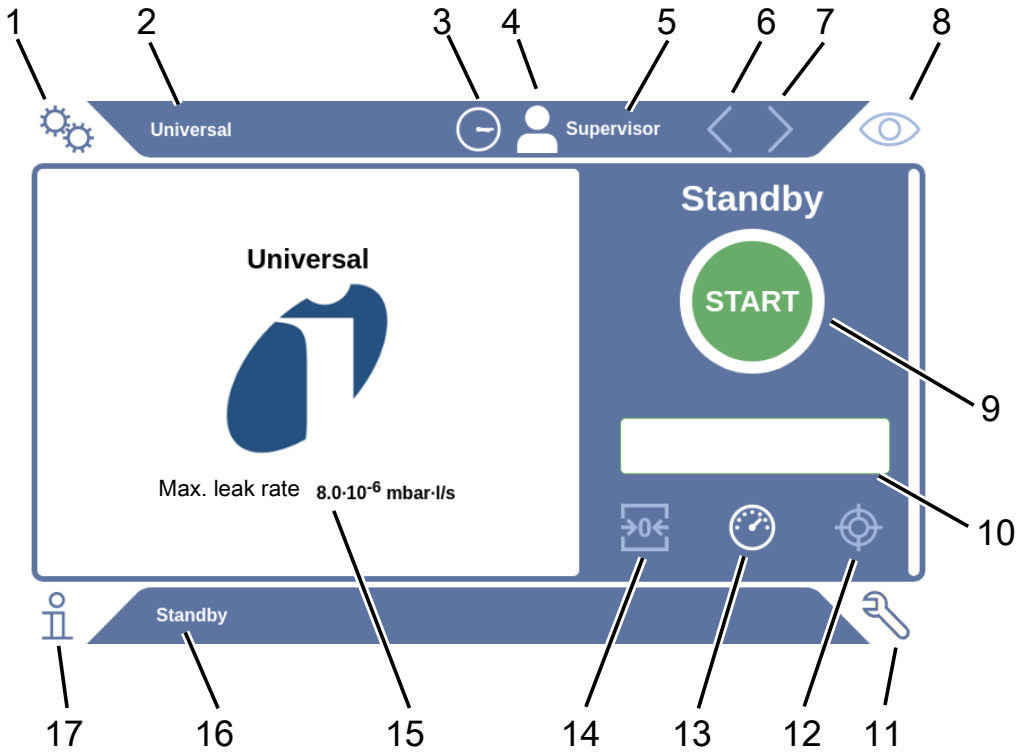
- High vacuum pump system
- Inlet system for the gas flow
- electrical and electronic sub-assemblies for electrical power supply and signal processing

Gas Control Unit

The Gas Control Unit (GCU) enables the operation of the battery leak detector with the integrated touch display. The integrated pump is used to evacuate the measuring test chamber to the desired target pressure. A valve control system adapted to the measurement sequence allows the analysis gas to be fed to the Gas Detection Unit.

4.2 Display

4.2.1 Design of touchscreen



1	Navigation button settings	10	Optional input field
2	Product name	11	Navigation diagnostic button
3	Time	12	Calibrate
4	Access control	13	Measure
5	User name	14	ZERO
6	Previous page	15	Setpoint
7	Next page	16	Name of current window
8	Navigation operation button	17	Information navigation button
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

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

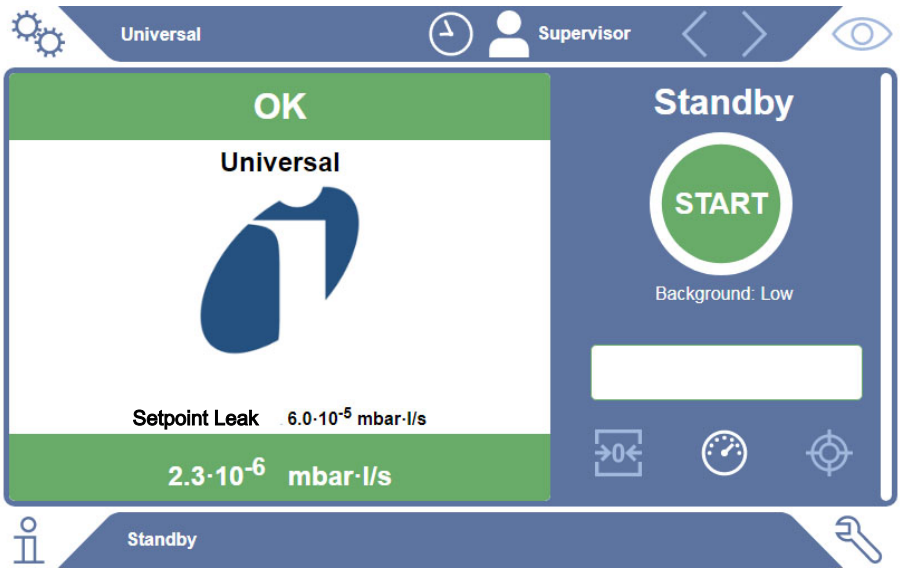
The measurement result is displayed in the measurement window on the left. For more information, see Result display [▷ 18].

4.2.2 Result display

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

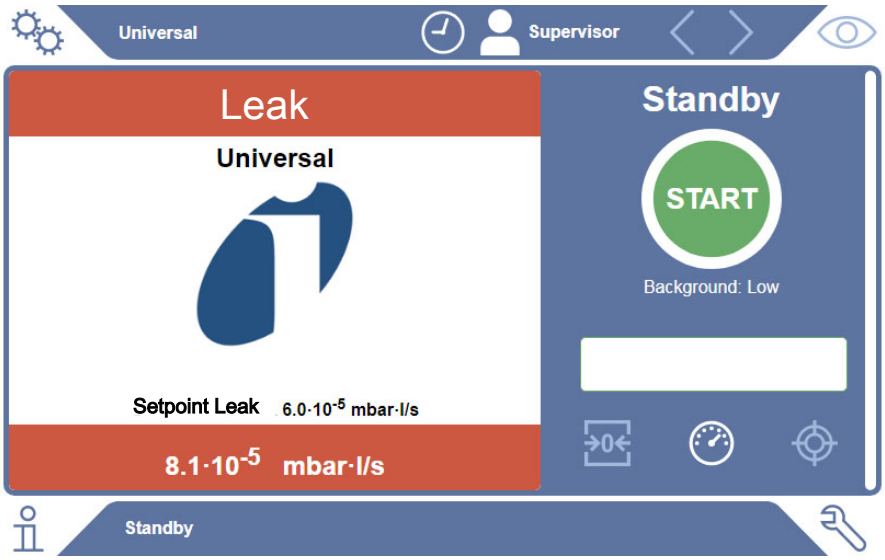
Measurement result: Leaktight

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



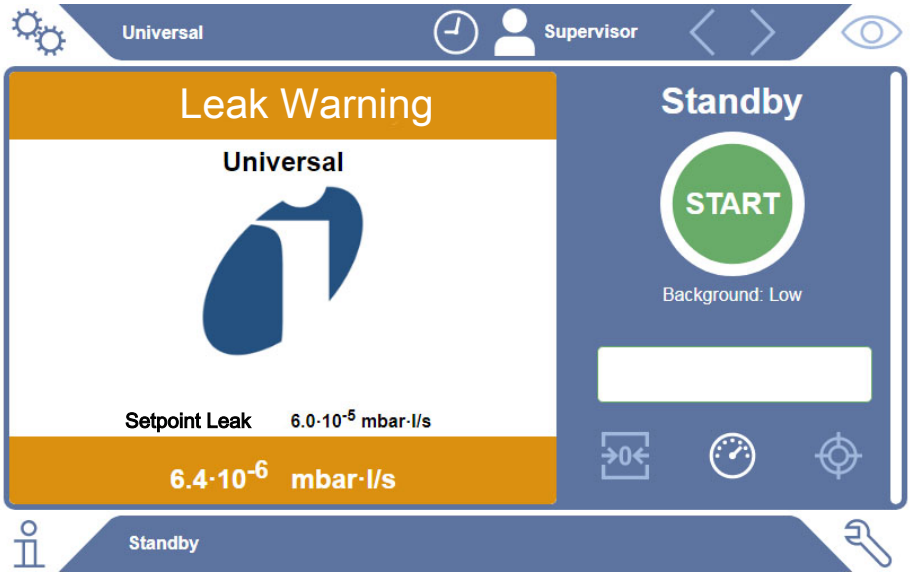
Measurement result: Leaking

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. The specification of a setpoint for a warning is optional.



4.3 Technical data

4.3.1 Mechanical data

Mechanical data	
Dimensions (W x H x D)	730mm x 400mm x 570mm
Weight	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
Minimum humidity (in operation)	> 30% without special requirements
Minimum humidity (in operation)	< 30% without special requirements*
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 %
Relative humidity during storage and transport	Minimum 10% Maximum 90%
Degree of contamination	2
Max. altitude above sea level	2000 m

* Use of the ELT3000 PLUS only after consultation with INFICON GmbH.

4.3.3 Physical data

Physical data	
Detection limit	
Minimum detectable leak rate	5 x 10^{-7} mbar l/s (helium equivalent leak rate, at a pressure difference of 1000 mbar versus 0 mbar for 100% DMC (dimethyl carbonate))
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-LD	2 seconds
LD	4 seconds
Purge time test chamber	5 seconds
Ventilation time test chamber	4 seconds
Test chamber pressure limit	4.5 mbar
Evacuation timeout	120 seconds

5 Installation

5.1 Transport protection

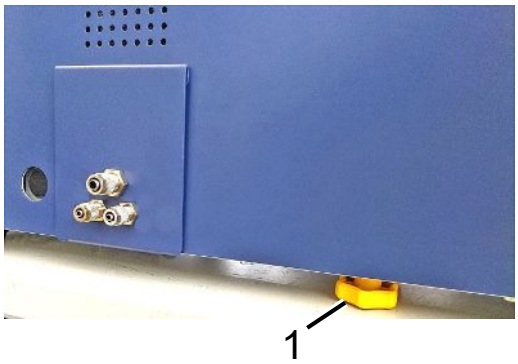
NOTICE

Property damage due to transport protection that has not been removed

Damage to the gas detection system.

► Remove the transport restraint before start-up.

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

⚠ DANGER

Danger due to electric shock

Improperly grounded or fused products may be dangerous to life in case of a fault.

be life threatening. The use of the device is not permitted without a connected protective conductor.

not allowed.

► Only use the included 3-wire power cable.

► Replace defective power cables.

► If the power cord is damaged, it must be replaced with an original spare part.

► Ensure that the appliance coupler (socket on the power switch) is always easily accessible.

► Immediately disconnect the device from the mains in case of visible defects. This also applies to the development of smoke.

⚠ WARNING

Danger due to overheating

Overheating can lead to personal injury or property damage

► Observe the environmental conditions for the device.

► Ensure sufficient distance to the ventilation openings (at least 10 cm distance).

► Keep the device away from heat sources.

► Make sure that the mains plug / mains switch is easily accessible; if smoke is generated, disconnect the device from the mains immediately.

⚠ 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.

⚠ CAUTION

Risk of injury from falling

Physical injury due to falling

Always use the units as table-top units, do not operate units standing freely on the floor.

Always lay lines and cables in such a way that they do not stop or fall.

NOTICE

Property damage due to vibration

Damage to the measuring equipment, parts of the measuring equipment rotate and must not be shaken. The parts continue to rotate for several minutes after the Gas Detection Unit is shut down.

► Place the device only on a sturdy, vibration-free surface.

► The GDU must not be shaken during operation and 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 commissioning of the battery leak detector may only be carried out by INFICON trained and instructed employees.

- In order not to distort the measurement results, select a location where the possible room temperature for the device is constant.
- In order not to block the exhaust opening on the lower part 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.

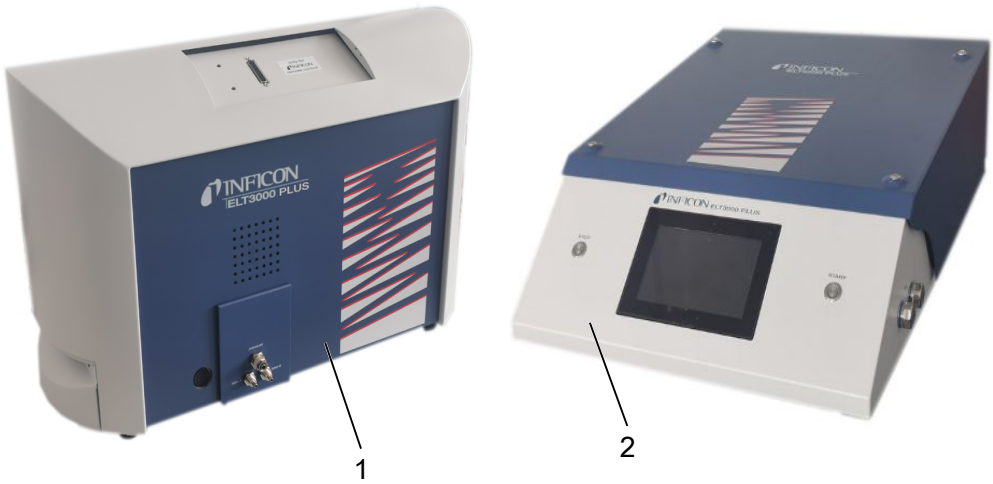
⚠ CAUTION

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 (GDU)	2	Gas Control Unit (GCU)

5.3.1 Connect devices

1 Place the Gas Control Unit (GCU) and the Gas Detection Unit (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.

3 Connect the GDU B connection of the Gas Control Unit (GCU) to the GDU B connection of the Gas Detection Unit (GDU) with a Ø 6 mm connecting hose.

4 Connect the purge connection of the Gas Control Unit (GCU) to the fresh air system using a Ø 6 mm connecting hose.

5 Connect the Exhaust connection of the GCU to the exhaust system via the Ø 10 mm connecting hose.

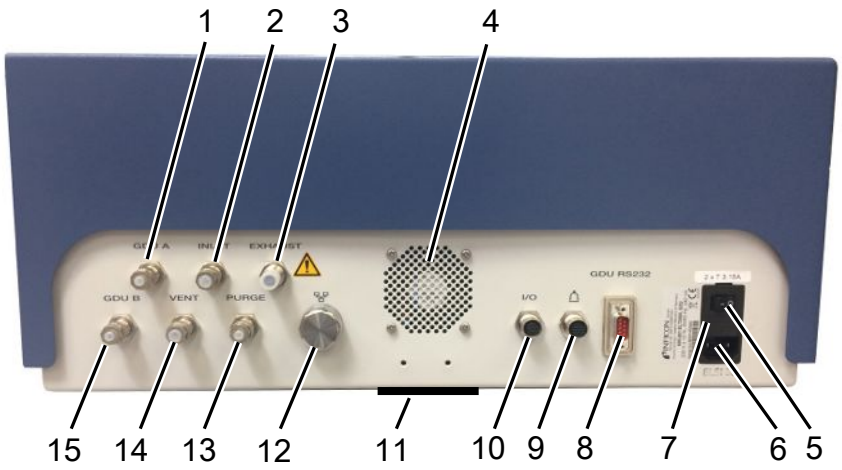
⇨ Use the supplied exhaust connection nut.

6 Connect the Exhaust connection of the GDU to the exhaust system via the Ø 8 mm connecting hose.

7 Connect the Gas Control Unit (GCU) to the Gas Detection Unit (GDU) using the RS232 signal cable.

8 Use the enclosed angle clips to lay the hoses without kinks.

Gas Control Unit

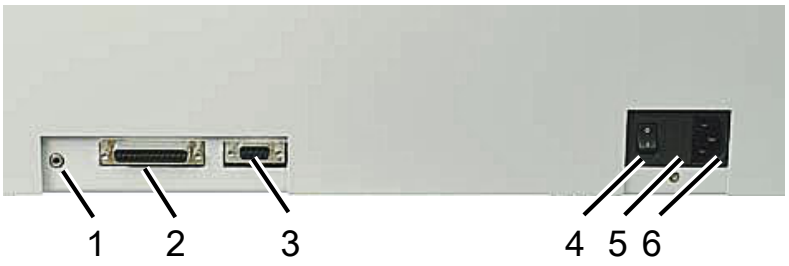


1	GDU A, Ø 6 mm	9	Connection for the test chamber
2	INLET (test chamber air connection, Ø 8 mm)	10	I/O port connection
3	Exhaust, exhaust hose, Ø 10 mm	11	Fresh air
4	Exhaust air	12	Network connection RJ45
5	Power switch	13	PURGE, fresh air connection, Ø 6 mm
6	Power cable connection	14	VENT (test Test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

Gas detection unit

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

Back view



1	Headphone jack (not used)	4	Power switch
2	I/O port, inputs/outputs (not used)	5	Electrical fuses behind cover
3	RS232 interface (connection of Gas Detection Unit to Gas Control Unit.)	6	Power supply

5.3.1.1 Requirements of a test chamber

⚠ DANGER

Implosion hazard due to strong forces

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.

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	
Gasket 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) Connection for external pump (optional)	Place in the upper third of the chamber to prevent liquid electrolyte from entering the tubing in the event of severe leakage.	X	X

Designation	Recommendation	Comment	Required	Optional
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 1/4 in.	Prevents heavy contamination of the Gas Control Unit in case of gross leaks.		X
Proximity switch	It is possible for the measurement to be started immediately once the test 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. Ideally: Fill test chamber with test objects to maximum capacity.	X	
Insulation	Butyl, ceramic, glass or deep-drawn polypropylene to cover the walls	Insulate the test 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 crushing and cutting hazards.		X
Equipment feet	Rubber feet	Use anti-slip rubber feet!		

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 conductor.

► Only use the 3-wire power cord provided.

► Make sure that the power supply plug is always accessible.

NOTICE

Danger due to incorrect supply voltage

Incorrect mains voltage can damage the device.

► Observe the mains voltage on the type plate.

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.

► Malfunctions and undesired operating states of the device are possible.

⚠ DANGER

Danger for wearers of implants such as pacemakers

There is a magnet in the device. Strong electric or magnetic fields can interfere with the function of the implant. Metal parts of the implant can trigger an alarm.

► As a wearer of such devices, keep at least 10 cm distance between the leak detector and the implant.

► Furthermore, take into account distances specified by the manufacturer of the implant.

5.5 Interfaces

Operating system can be hacked via USB or Ethernet

The Linux operating system used in the leak testing is not updated automatically and can therefore contain security gaps. 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 testing 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

5.5.1 Configure barcode scanner

Configure your barcode scanner as follows:

1 Interface selection: "Keyboard"

⇨ The USB barcode scanner should behave like a keyboard connected to a PC.

2 Selection of the final delimiter: “Carriage Return” or “CR”.

⇨ This configures the character that is sent after the barcode is output.

3 Language selection: “English US“

⇨ The leak detector requires an English (US) keyboard layout.

To test the configuration of the scanner, connect it to a PC and use a text editor to check the output of the scanner.

6 Operation

⚠ CAUTION

Health risk due to gases and vapors

Operation of the battery leak detector may produce hazardous vapors.

► Connect the battery leak detector to an exhaust line.

► Avoid inhaling harmful gases or vapors.

► 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 battery leak detector becomes 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.

You can operate the ELT3000 PLUS as follows:

- Operating unit of the ELT3000 PLUS
- Bus module BM1000 in different variants
- I/O module IO1000

Further information on operation can be found in the documents:

- Operating instructions I/O module IO1000
- Operating instructions bus module BM1000
- Protocol descriptions ELT3000 PLUS

The paths given in the following sections refer to the operation of the ELT3000 PLUS. If the bus module or the I/O module is used, the actions must be implemented within the scope of the protocol that is used.

The path information for the control unit always starts in the main menu.

NOTICE

For operation in inline mode, please contact INFICON Service.

NOTICE

Possible impairment due to longer downtime

► To ensure the proper functioning of the leak tester including the built-in pumps, you should switch on the device at least once for about 15 minutes after 6 months of standstill.

6.1 Switch on and login

Device setting only via Gas Control Unit (GCU)

You can only make settings on the Gas Control Unit (GCU).

► 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

6.2.1 Setting the language

You can set the language in the user settings, see "Select, modify, create user profile [▷ 36]".

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.

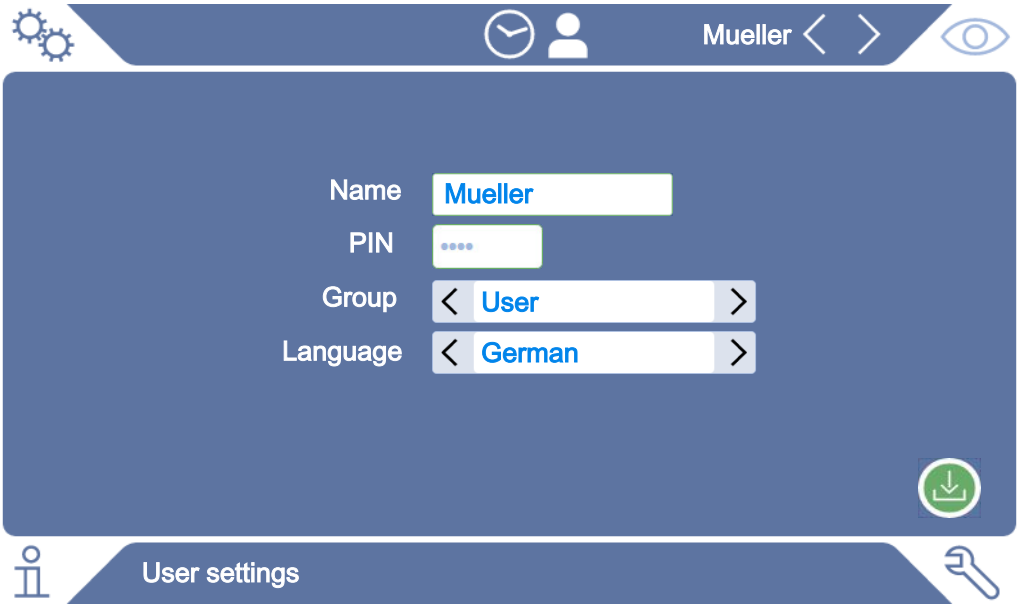
, to modify a user profile.

⇨ The window "User settings" will open.

, to delete a user profile.

⇨ A confirmation prompt appears.

3 After selecting the settings, 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 [▶ 36].

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

7 Save .

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 username, 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 [▶ 36]".

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.

⚠ CAUTION

Damage to hearing due to loud audio

The alarm level of the device can exceed 100 dB(A).

► 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 test 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.

6.2.8 Select test chamber (optionally available)

INFICON offers different measuring test chambers:

- TC3000S (small rigid test chamber)
- TC3000L (large rigid test chamber)
- FTC3000 (flexible test chamber)

6.2.8.1 Select test chamber

✓ **Supervisor** rights

► > Chambers

► Make selection.

► Load .

6.2.9 Configure test chamber

Customer-specific test chambers only

These settings are only made for customer-specific test chambers.

If you have any questions about possible settings, please contact INFICON Service.

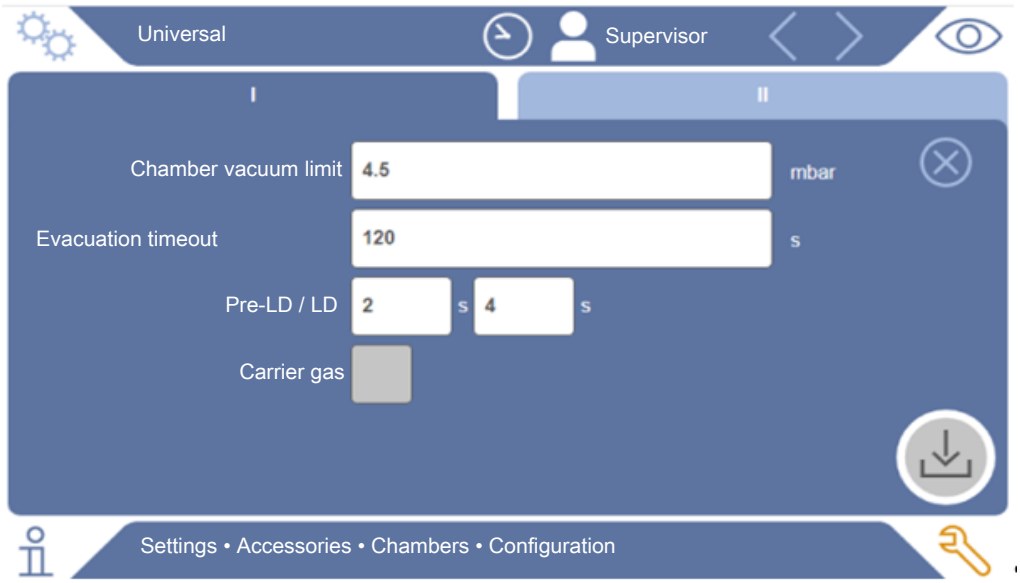


Fig. 1: Configure test chamber

1. > Configuration
2. Adjust.
3. Save .

6.3 Operating mode

Select operating mode

Settings > Operating mode > select > store

Operating mode "Standalone mode”

In the "Standalone mode" operating mode, the ELT3000 PLUS controls the entire measuring cycle, including purging of the test specimens, evacuation of the test chamber, the measuring phase and the final ventilation.

The additional integration of an external pump into the measuring sequence is possible here.

Operating mode "Inline mode”

⚠ DANGER

Severe injuries due to burns or explosion in case of leaking electrolyte

Escaping electrolyte can cause burns or explosion if the potential equalization system at the test chambers is missing.

► Connect all test chambers with suitable potential equalization system.

Note

The integrator must ensure that the system is stopped via an emergency stop in an emergency.

The "Inline mode" operating mode is aimed in particular at the integration of the ELT3000 PLUS into a (semi-) automated test system with the aim of reducing the test time.

In this operating mode, the test chamber is evacuated by the system to the target pressure and ventilated after the measurement is completed.

After the target pressure has been reached, the test chamber and ELT3000 PLUS are connected to measure the analysis gas.

Communication

The desired operating mode is selected via the HMI or via the interface to the ELT3000 PLUS.
You can communicate with the ELT3000 PLUS either via a serial protocol or via a field bus. Please refer to the document "ELT3000-Protocol-Descriptions-iira95en1".

6.4 Settings for the measurements

6.4.1 Select, modify or create product (measurement settings)

For setting measurement specifications you need a product that has been created.

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

1 > Products

⇨ Existing products are displayed as a list.

2 Press a product name and choose from the displayed tool-bar or from the display:

, to load a product.

, to modify product settings.

⇨ The window "Product Settings" will open.

, to copy product settings.

⇨ The "Product Settings" window opens with the entries of the copy source.

, to delete a product.

⇨ A confirmation screen appears.

, to create a new product.

⇨ The window "Product Settings" opens.

3 Click on "Settings" / "Product" to open the "Product settings" window. In this case, enter under "Product Name" a product name as required, change it or keep it.

1 Under "Max. Leak Rate", enter the value at which the product is to be reported as "leaking". The default setting is 1 x 10^{-5} mbar l/s.

2 Optionally, you can activate a setpoint warning.

3 To enter a barcode, use the touchscreen to enter or scan the bar code in the activated input field.

4 Via "Select Image" load a product image that will be displayed on the screen during the measurement.
If your image is not stored on the device, expand the image database. After pressing + you can transfer images (JPG, PNG; max. 400 x 400 px) from a USB flash drive (FAT32 format) to the image database.

5 Save .

6.4.2 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 .

6.4.3 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 test 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.

6.4.4 Set coarse leakage detection (optional)

Settings > Operating mode > select > store

The coarse leak detection serves in particular to protect the ELT3000 PLUS from contamination with the test gas.

1. Set the threshold value for the coarse leak detection To do this, select a factor to the default threshold from the offered factors.
2. Start the coarse leak detection by activating the option.

The factors refer to the set leak rate. Factor 10 means coarse leak detection at ten times the normal threshold. If the threshold value for the coarse leakage detection is exceeded, the current measurement is aborted immediately. The leakage value detected up to the time of the measurement interruption is output, as well as a warning for coarse leakage detection.

6.4.5 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 serial number or batch number.

This text is not only displayed in the measurement window, but also saved 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.

⇨ The input field is automatically cleared after completion of the next measurement

► Alternatively, you can also use a barcode scanner. To do this, scan the barcode of your test object with a commercially available barcode scanner. This is automatically transferred to the input field. When scanning several barcodes, they are separated from each other by a |.

Reading a barcode with a barcode scanner is possible in this window.

6.5 Measure

Only for "Standalone mode" operation.

for operation in"Inline mode", contact the INFICON service

⚠ 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

Leaking liquids entering the tubing, can interfere with the function of the device. Sharp objects, fats or oils may damage the diaphragm, chamber ring and sealing lips.

► Avoid contamination of the measuring test 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 gaskets of the test chamber halves are not covered or contacted!

► Avoid measuring test objects with significant differences in temperature to the surroundings.

► Keep the gaskets 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 test 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 [▷ 35]".

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

✓ You have selected the desired product, see "Select product [▷ 44]".

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 test chamber and start the measurement. Regarding the start options, also see the descriptions in "Switching automatic measurement start on or off [▷ 39]".

4 If you want to cancel the measurement, press the "STOP" button on the front side of the device, see Design of device.

⇨ 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 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.

6.6 Purge device

In case of contamination, use this function to purge the device to reduce the background value. If the value falls below the target value, the result is displayed in green.

1. Navigate to the page "Diagnosis → Purge
2. Select different target values for the purging process:

- With the ∞ sign, purge until the purging process is canceled by the user.
- Purge until the setpoint is reached
- Purge until 3 times the setpoint is reached

The battery leak detector performs an automatic purging process after the 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.

6.7 Measurement data and device information

6.7.1 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.

6.7.2 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.

6.7.2.1 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.

6.7.3 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.

6.7.4 Bringing up device information

► > Device information

⇨ The stored information is displayed.

6.7.5 Bringing up log

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

► > Protocol

6.8 Updating the software

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

The third software program is the software of the Gas Detection Unit (GDU).

6.8.1 Updating the software of the operating unit

Import the software updates using a USB memory stick.

Loss of data due to disconnection

Software wird nicht aktualisiert.

► 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 operating unit 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.

6.8.2 Updating the software of the basic unit

Install software updates using a USB flash drive.

Loss of data due to disconnection

Software wird nicht aktualisiert.

► 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.

6.8.3 Updating the software of the Gas Detection Unit

Install software updates using a USB flash drive.

Loss of data due to disconnection

Software wird nicht aktualisiert.

► 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.

6.9 Calibrate device

Only for "Standalone mode" operation

for"Inline mode", contact INFICON Service.

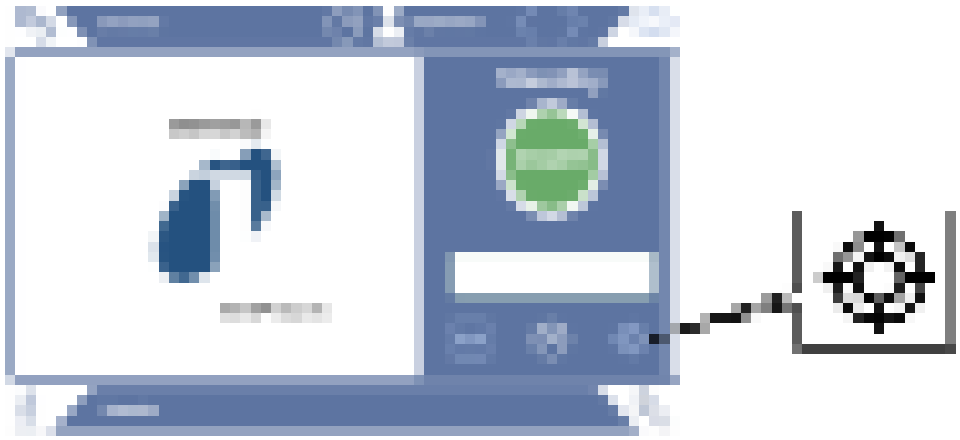
6.9.1 Calibration

General calibration

Calibration is required in the following cases,:

- Operational needs require a daily calibration.
- The measuring test chamber or measuring parameters have been changed.
- The ambient conditions require it.

Start calibration



✓ You have the required rights.

✓ You have an E-Check.

► In standby mode, tap 

⇨ The calibration interface opens.

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

✓ The test chamber is not filled.

✓ The test chamber is closed.

► Start an empty measurement.

⇨ The empty measurement is finished.

✓ The E-Check is located in the vacuum Test chamber.

✓ The test chamber is closed.

► Start the measurement.

⇨ The second measurement, with ELT check, is finished.

At the end of the measurement of the ELT check, the new calibration factor is determined and displayed by the device.

6.9.2 Calibration equipment

The following calibration equipment is available for the device:

- E-Check (Catalog number 600-105).
  You can calibrate the device to the leak rate using the calibration agent.

6.10 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.

► Save important measurement data on a USB stick beforehand. See Transferring measurement data.

✓ **Supervisor** rights

► > Reset device

6.11 Advanced settings

► > Measurement

Improper changes can result in faulty measurements.

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

6.12 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 as long as 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 [▷ 57]".

6.13 Logging off from the device

1. Press on your username, 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.

6.14 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".

7.1 List of warning and error messages

Type	Notification	Possible sources of error	Remedy
W102	Timeout during communication with EEPROM in internal I/O module	The EEPROM in the internal I/O 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 I/O 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 in the IO module was empty	• 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 I/O 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 in internal I/O module is discharged or defective	• 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 identification in GDU	Problem in GDU	• Contact customer service
E174	GDU software is obsolete	A more up-to-date GDU software exists. For trouble-free operation, it is recommended to update the GDU software.	• Contact customer service to get an updated GDU software

Type	Notification	Possible sources of error	Remedy
E175	No communication with GDU	Signal cable between GDU and GCU is not plugged in	• Check the electrical connection between GDU and GCU
		Signal cable between GDU and GCU is defective	• Replace the signal cable between GDU and GCU
		No communication possible between GDU and GCU	• Make sure that the GDU is switched on • Contact customer service
E176	GDU not in measuring mode	System was contaminated with liquid	• Check if there is liquid in the hoses or liquid separator and remove it • Confirm the error
		Leak between GCU and GDU	• Check the hose connections between the GDU and GCU • Contact customer service
W190	Detector contaminated	Background too high	• Use the purge function to reduce the background
		Leak between GCU and GDU	• Check the hose connections between the GDU and GCU • Contact customer service
		Error of the mass spectrometer of the GDU	• Check the settings for the desired measurement mass and correct if necessary • Contact customer service
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

Type	Notification	Possible sources of error	Remedy
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' ports is defective.	• Use another module
		A cable connected to the 'I/O' or 'Chamber' terminals is defective	• Use a different cable
		Short circuit or overload in the 24V_A supply	• Contact customer service
W240	Voltage +15V out of range	Internal I/O module defective	• Contact customer service
W250	REF5V voltage out of range	Internal I/O 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
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

Type	Notification	Possible sources of error	Remedy
W312	GDU - Turbo pump frequency during run-up not reached or TMP current too high	Leak between GCU and GDU	• Check the hose connections between the GDU and GCU • Contact customer service
		Diaphragm pump defective	• Contact customer service
		Turbo pump or electrical control defective	• 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)	Ambient temperature too high	• Reduce the ambient temperature or ensure that there is sufficient distance to other objects around the housing
		Air filter blocked	• Change or clean the air filters
		One fan of the GDU defective	• Check whether a fan current is noticeable from the outside • Contact customer service
E322	GDU - Turbo pump frequency too low	Leak between GCU and GDU	• Contact customer service • Check the hose connections between the GDU and GCU
		Diaphragm pump defective	• Contact customer service
		Turbo pump defective	• 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	Air filter blocked	• Change or clean the air filters
		One fan of the GDU defective	• Check whether a fan current is noticeable from the outside • 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	System was contaminated with liquid	• Check if there is liquid in the hoses or liquid separator and remove it • Confirm the error
		System was turned on again after a long time	• Let the device warm up for a few hours
		Leak between GCU and GDU	• Check the hose connections between the GDU and GCU • Contact customer service
E348	GDU - Transpector emission failed	Problem in GDU	• Contact customer service

Type	Notification	Possible sources of error	Remedy
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
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

Type	Notification	Possible sources of error	Remedy
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
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 - Leak rate of internal test leak unknown	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

Type	Notification	Possible sources of error	Remedy
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
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	• Restart the device and check the function • Contact customer service
		Internal I/O module defective	• Contact customer service
		Pressure sensor p1 defective	• Contact customer service
E502	Pressure sensor p2 not connected	Pressure sensor not connected or cable defective	• Restart the device and check the function • Contact customer service
		Internal I/O module defective	• Contact customer service
		Pressure sensor p2 defective	• Restart the device and check the function • Contact customer service
E504	Pressure sensor p3 not connected	Pressure sensor not connected or cable defective	• Restart the device and check the function • Contact customer service
		Internal I/O module defective	• Contact customer service
		Pressure sensor p3 defective	• Restart the device and check the function • Contact customer service

Type	Notification	Possible sources of error	Remedy
W580	Maximum evacuation time exceeded	Gross leak at the test object or at the connection to the test chamber	• Check the tightness of the connection between the leak detector and the test chamber • Perform the measurement without test object in the test chamber
		The setting value for the max. evacuation time is too low	• Check and, if necessary, increase the maximum evacuation time
		Test chamber not closed properly	• Check if the chamber closes properly and if the sealing surface is free from objects or damages
W581	Maximum evacuation time until measurement exceeded	Gross leak at the test object or at the connection to the test chamber	• Check the tightness of the connection between the leak detector and the test chamber • Perform the measurement without test object in the test chamber
		Device was not switched on for a long time	• Let the device warm up for a few hours
		The settings value for the max. evacuation time until measurement is too low	• Check and, if necessary, increase the maximum evacuation time
W600	Calibration factor too low	Incorrect value entered at calibration	• Repeat the calibration
		Wrong calibration leak inserted	• Repeat the calibration
		ZERO measurement error	• Repeat the calibration
W601	Calibration factor too high	Incorrect value entered at calibration	• Repeat the calibration
		Wrong calibration leak inserted	• Repeat the calibration
		ZERO measurement error	• Repeat the calibration
		Background too high	• Use the purge function to reduce the background • Repeat the calibration

Type	Notification	Possible sources of error	Remedy
W605	Signal of calibration leak too low	Incorrect value entered at calibration	• Repeat the calibration
		Wrong calibration leak inserted	• Repeat the calibration
		ZERO measurement error	• Repeat the calibration
		Signal of calibration leak too small	• Use another calibration leakContact customer service
W630	Calibration request	Operating parameters or the measuring mass have been changed	• Perform a calibration
W660	Calibration - Offset too high	Calibration leak during Zero measurement in the test chamber	• Repeat the calibration
		Background too high	• Use another calibration leak • Use the purge function to reduce the background
W661	Calibration - Signal too low or offset too high	Calibration leak during Zero measurement in the test chamber	• Repeat the calibration
		Signal of calibration leak too small	• Use a different calibration leak
		Background too high	• Use the purge function to reduce the background • Repeat the calibration
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
W711	Maximum temperature of basic unit exceeded	The ambient temperature is too high	• Reduce the temperature in the environment where the device is located
W903	Maintenance: Calibration leak expired	Maintenance interval for calibration leak exceeded	• Contact customer service
W910	Maintenance: Backing pump	Maintenance interval for backing pump exceeded	• Contact customer service

Type	Notification	Possible sources of error	Remedy
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.

⚠ DANGER

Risk of injury due to electrolyte

Chemical burn due to electrolyte

► Avoid contact with skin, eyes, or clothing.

► Wear appropriate protective clothing, especially gloves, gowns, and face shields.

► Observe the information on the relevant safety data sheet and follow the applicable work instructions.

► Rinse off electrolyte or acid splashes immediately with clean water.

► Consult a physician if necessary.

⚠ CAUTION

Danger due to dropping heavy loads

The equipment is heavy and can injure people and damage property if it tips over or falls down.

► Only place the devices on a sufficiently stable and level surface.

8.1 Maintenance operations of Gas Control Unit (GCU)

8.1.1 Gas Control Unit (GCU): Cleaning the housing

The housing of the Gas Control Unit (GCU) consists of a painted metal housing and an optional aluminum measuring chamber.

1 Only use water for moistening.

2 Avoid cleaning agents that contain alcohol, fat or oil.

3 Make sure that the Gas Control Unit 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 test 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.

8.1.2 Gas Control Unit (GCU): Replace hoses

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

1 To dismantle the hoses, loosen the threaded connections and pull off the hoses including the filter cartridge.

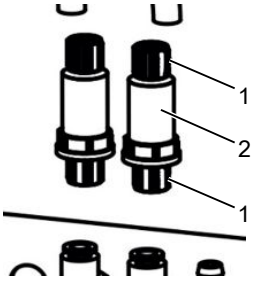
⇨ If a larger amount of liquid has reached the bottom of the hoses, contact the service department.

2 If dirty, replace the filter cartridges.

3 Insert new hoses.

8.1.3 Gas Control Unit (GCU): 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 (metal)	2	Filter element (transparent)

► Replace the filter elements if they are clearly dirty.

8.1.4 Gas Control Unit (GCU): 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 device 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.

8.2 Maintenance operations of Gas Detection Unit (GDU)

Failure to perform the maintenance work specified in the maintenance schedule will void the warranty.

⚠ 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 installation and maintenance work.

► Ensure that the electrical supply cannot be switched back on unintentionally.

⚠ CAUTION

Danger due to dropping heavy loads

The equipment is heavy and can injure people and damage property if it tips over or falls down.

► Only place the devices on a sufficiently stable and level surface.

Required tools

- 2 screwdrivers, size 2
- Ring wrench 19mm
- Allen wrench 8 mm
- Allen wrench 3 mm
- Tweezers

8.2.1 Replace air filter of Gas Detection Unit (GDU)

The air filter is inside a duct 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.

NOTICE

Property damage from rotating parts

Damage to the turbo molecular pump.

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

- Place the Gas Detection Unit (GDU) with the front panel on a soft surface

- Loosen the screw of the cover plate until you can rotate the cover plate to the side.
- Pull out the air filter and replace it with a new one.
- Retighten the cover plate in front of the duct.
- Put the Gas Detection Unit (GDU) back on its feet.
- Confirm the work via the touchscreen.

8.2.2 Replace oil wick cartridge

⚠ CAUTION

Danger of poisoning from toxic substances

The operating fluid reservoir can contain toxic substances from the pumped medium.

► The operating fluid reservoir can contain toxic substances from the pumped medium.

► Wear appropriate protective clothing, when needed.

► Dispose of the operating fluid reservoir as stipulated by local regulations.

The oil wick cartridge supplies the turbo molecular pump with lubricant. It consists of a plastic container with a soaked liner and 8 soaked sticks (Porex rods). The plastic tank and porex rods are located under the turbo molecular pump and are accessible from the underside of the GDU.

The bore for the oil wick cartridge is closed with an aluminum plug and a plastic screw.

The oil wick cartridge has a limited service life and storage period; see the maintenance schedule.

Procedure

- Place the Gas Detection Unit with the front panel on a soft surface. Pay attention to the connections on the front panel.

- Unscrew the plastic screw with a 19 mm box wrench.
- Lever out the aluminum plug with one or two narrow screw drivers.

- Hook something into the center bore of the plastic container and pull out the plastic container.

- Pull the eight Porex rods out of the front side of the bore with tweezers.
- Insert the new Porex rods with tweezers.
- Place the plastic container in the bore with the soaked liner first and close it with the aluminum plug.
- Tighten the plastic screw again. Ensure that the o-ring is placed correctly in the groove of the plastic screw and that the bore is lined up properly.
- Confirm the work via the touchscreen.

8.2.3 Replace mains fuses

⚠ DANGER

Risk of death from electric shock

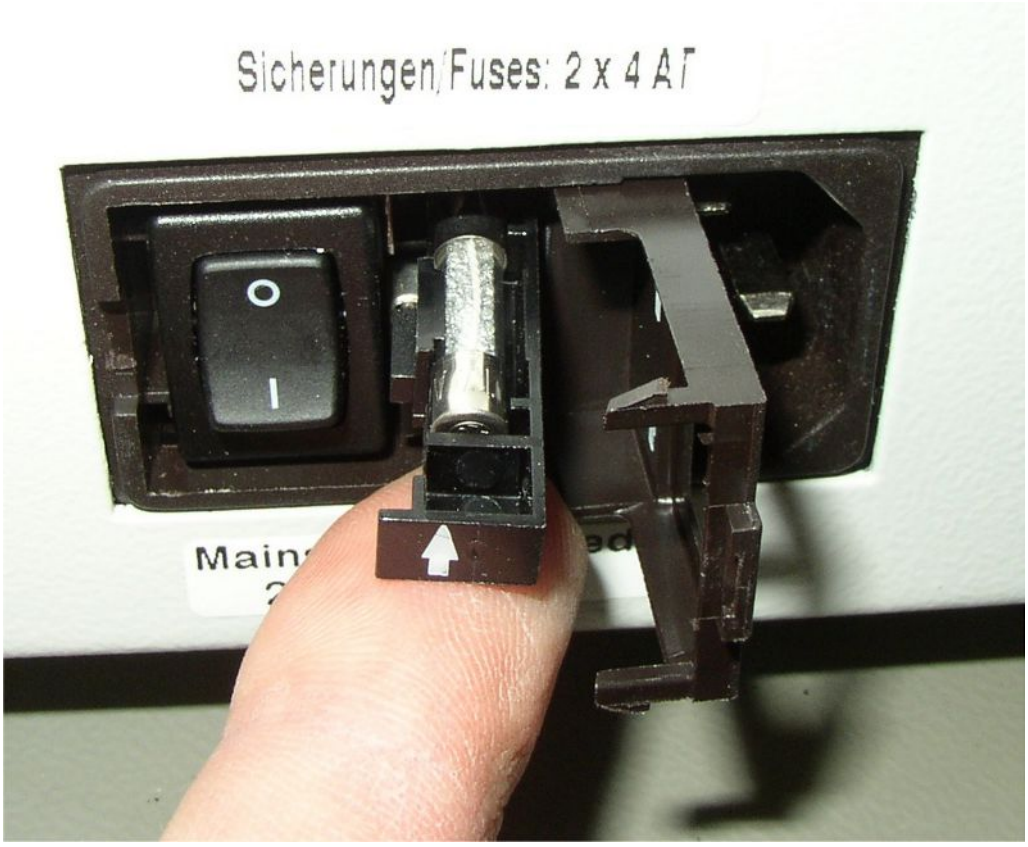
There are high voltages inside the device. Touching parts where electrical voltage is present can result in death.

► Disconnect the device from the power supply prior to any installation and maintenance work.

► Ensure that the electrical supply cannot be switched back on unintentionally.

The fuses are located behind a flap near the mains switch. They are in two slots. The mains fuses are available with order no. 200 000 914. Two identical fuses must be used at all times.

- Lever out the cover of the mains plug to the right with a screwdriver.



- Pull out the two slots and replace the fuses.
- Push the slots back in. Ensure that the arrows point up.
- Close the flap.

8.3 Maintenance plan

Maintenance	Description	Part number	Operating hours			Period	Maintenance level
			500	2000	10000		
Clean or replace the main air filter in the floor of the housing	GDU air filter (104 x 154 mm; 5 pcs.)	200 001 552			X		I
Check internal filters and replace if necessary (three pieces)	Internal filter	200 03 679			X		II
Replacing the operating fluid reservoir of the turbo molecular pump	Operating fluid reservoir The date on the packaging is the last possible installation date.	200 003 801				3 years	II
Replacing the diaphragms of the diaphragm pump	Wear parts set for diaphragm pump	200 03 504			X		III

Explanation of maintenance levels:

Maintenance level I: Customer without any technical training

Maintenance level II: Customer with technical and INFICON training

Maintenance level III: INFICON Service

8.4 Creating screenshots

You can save the current screen contents of the device to an image file. You can use such a file for service communication, for example.

1. Create a directory named "Screenshots" on a USB stick (FAT 32 formatted).
2. To take a screenshot, connect the USB stick to one of the USB ports of the leak detector
   ⇨ A screenshot is automatically taken and stored in the directory on the USB stick. The date and time are also saved.
3. To take another screenshot, disconnect the USB stick from the USB port and then reconnect it to the leak detector.
   ⇨ A screenshot saved earlier will not be overwritten when another screenshot is taken.

8.5 Have the device serviced or repaired

⚠ 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.

Maintenance inside the device should only be performed by the manufacturer.

You can send in your device to INFICON so it can be maintained or repaired. For further details see "Send in battery leak detector for maintenance, repair or disposal [▷ 81]".

9 Decommissioning

9.1 Dispose of battery leak detector

The battery leak detector can be disposed of by the operator or sent to INFICON.

The battery leak detector consists of materials that can be recycled. This option should be exercised to prevent waste and also to protect the environment.

► For disposal, always comply with local and regional environmental and safety regulations.

9.2 Send in battery leak detector for maintenance, repair or disposal

⚠ 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. Devices sent in without a return number and completed contamination declaration will be returned to the sender by the manufacturer.

► 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 and the shipping address.
2. Use the original packaging when returning.
3. Before shipping the instrument, attach a copy of the completed contamination declaration to the outside of the package.

For contamination declaration 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 Appendix

10.1 Accessories

Name	Catalog number
Leak detectors	
ELT3000PLUS (Gas Detection Unit+Control Unit) 230V, 50Hz	600-201
ELT3000PLUS (Gas Detection Unit+Control Unit) 110V, 60Hz	600-202
Test chambers	
TC3000S (Rigid test chamber 180 mm × 180 mm × 27 mm)	600-100
TC3000L (Rigid test chamber 400 mm × 210 mm × 120 mm)	600-101
FTC3000 (Flexible test chamber 400 mm × 350 mm)	600-102
Calibration leak	
E-Check	600-105
Connection-KIT E_Check	600-106
Bus module	
BM1000 PROFIBUS	560-315
BM1000 ProfiNet	560-316
BM1000 DeviceNet	560-317
BM1000 EtherNet/IP	560-318
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

10.2 Operate leak detector via web browser (LAN)

Operating system can be hacked via USB or Ethernet

The Linux operating system used in the leak testing is not updated automatically and can therefore contain security gaps. This vulnerability may be exploited through the Ethernet and USB interfaces of the leak testing 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 testing 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 testing 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.

10.2.1 Configure the LAN connection of the leak detector

✓ **Supervisor** rights

✓ The network cable is connected to the RJ45 network interface on the back of the leak detector.

1 > Network > LAN settings

2 In the "Method" field, select your LAN setting:

⇨ Disabled: Even when the network cable (RJ45 socket) is connected, no network connection is established.

⇨ DHCP: The leak detector automatically obtains an IP address through the network into which it is integrated.

⇨ Static: The IP address, as well as the network mask and gateway have to be configured manually, so that the leak detector can be reached in the network. If necessary, contact a network administrator.

3 Save .

See also

Setting the LAN connection in the PC or Tablet [▶ 85]

10.2.2 Setting the LAN connection in the PC or Tablet

LAN connection - quick-start

If you have performed the steps described here once, it is sufficient to enter the IP address for many devices in case of repetition.

✓ The PC is connected to the same network as the leak detector.

✓ A LAN setting has been set up in the configuration of the leak detector, see also “Configure the LAN connection of the leak detector [▷ 84]“.

✓ You have noted down the IP address of the leak detector. It can be found in the leak detector under "Information > Device > Network".

✓ Java Script is enabled in the web browser. We recommend using a current version of the web browser Chrome™, Firefox® or Safari®.

► To access the leak tester from the PC or tablet web browser, enter the IP address of the leak detector as follows:
http://<IP address>

⇨ The current active user interface of the leak detector is called.

⇨ The same functionality is available on the PC or Tablet as on the touchscreen of the leak detector.

10.2.3 Allow client access

✓ **Supervisor** rights

1 > Network > Client access

2 To allow the leak detector to be operated by PC or Tablet, activate the "Client Access" option.

⇨ If the option "Client Access" is not activated, the leak detector cannot be operated via PC or Tablet. No settings can then be changed.

3 Save .

Display of all connected clients

✓ The network connection between the leak detector and one or more PCs or Tablets has been established, see “Setting the LAN connection in the PC or Tablet [▷ 85]”.

► > Network > Connected clients

10.3 Data request or control via network

In addition to access to the graphical user interface, you also have the option of retrieving specific measurement data from your leak detector, making settings and sending control commands.

A data interface was implemented for this purpose (REST interface). This interface responds to requests on port 3000 when valid parameters are transmitted with data in the requested format.

10.3.1 Export measurement data

✓ A network connection has been established between the leak detector on one side and the PC or Tablet on the other side. See also "Interfaces [▷ 33]".

► In order to export the desired measurement data, you have the option of entering your query with the desired parameters as a URL in your browser. With this procedure, you not only set the desired time period, but you can also choose the file format and data scope.

Example 1: http://192.168.11.124:3000/measurement?f=json&pid=4

Returns all measurements of the product with ID 4 in “json” format.

Example 2: http://192.168.11.124:3000/measurement?dts=2018-05-03T07:00:00&dte=2018-05-04T09:00:00&f=csv_de

Returns all measurements between 2018-05-03 07:00:00 and 2018-05-04 09:00:00 in “csv_de” format.

Parameter	Name	Description	Options	Example
dts	START	Start time of the time period from which the data is to be exported	Date in ISO format	dts=2018-05-03T07:15:00
dte	End	End time of the time period from which the data is to be exported	Date in ISO format	dte=2018-05-04T11:34:12
limit	limit	Limits the number of exported measurements	Number between 1 and 400000	limit =100 limit = 16
f	Format	Data format of the export	csv_en, csv_de, json Standard: csv_en	f=json f=csv_de
pid	Product	Query measurements of one or more products	ID's of the products. Separated by comma for several	pid=2 pid=4,6,7
MID	Messung ID	Messungen nach ID abfragen	ID's der Messungen	mid=2, mid=4,6,7
datetime	Time zone	Lokale- oder UTC-Zeit wählen	local, utc Standard: local	datetime=local, mid=utc

10.4 CE Declaration of Conformity

CE

INFICON

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, this declaration will be void.

Designation of the product:

Battery leak detector

Models: **ELT3000 PLUS**

Catalogue numbers:

600-201

600-202

The products meet the requirements of the following Directives:

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

Applied harmonized standards:

- ***EN ISO 12100:2010***
- ***EN 61326-1:2013***
  Class A according to EN 55011
- ***EN 61010-1:2010+A1:2019***
- ***EN IEC 63000:2018***

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

Cologne, April 27th, 2023

p.p.
Dr. H. Bruhns, Vice President LDT

Cologne, April 27th, 2023

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www.inficon.com
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UK 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 legislation 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, this declaration will be void.

Designation of the product:

Battery leak detector

Models: **ELT3000 PLUS**

Catalogue numbers:

600-201

600-202

The products meet the requirements of the following Directives:

- ***S.I. 2008 No. 1597 (Machinery)***
- ***S.I. 2016 No. 1091 (EMC)***
- ***S.I. 2012 No. 3032 (RoHS)***

Applied harmonized standards:

- ***EN ISO 12100:2010***
- ***EN 61326-1:2013***
  Class A according to EN 55011
- ***EN 61010-1:2010+A1:2019***
- ***EN IEC 63000:2018***

Authorised person to compile the relevant technical files:
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Cologne, April 27th, 2023

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10.5 RoHS

Restriction of Hazardous Substances (China RoHS)

有害物质限制条例（中国 RoHS）

	ELT3000 PLUS: Hazardous Substance ELT3000 PLUS: 有害物质					
Part Name 部件名称	Lead (Pb) 铅	Mercury (Hg) 汞	Cadmium (Cd) 镉	Hexavalent Chromium (Cr(VI)) 六价铬	Polybrominated biphenyls (PBB) 多溴联苯	Polybrominated diphenyl ethers (PBDE) 多溴联苯醚
Assembled printed circuit boards 组装印刷电路板	X	O	O	O	O	O
Cooling Fan 磁系统	X	O	O	O	O	O
Diaphragm pump 真空接线板	X	O	O	O	O	O

This table is prepared in accordance with the provisions of SJ/T 11364.
本表是根据 SJ/T 11364 的规定编制的。

O: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.
O：表示该部件所有均质材料中所含的上述有害物质都在 GB/T 26572 的限制要求范围内。

X: Indicates that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.
X：表示该部件所使用的均质材料中，至少有一种材料所含的上述有害物质超出了 GB/T 26572 的限制要求。

(Enterprises may further provide in this box technical explanation for marking “X” based on their actual circumstances.)
（企业可以根据实际情况，针对含“X”标识的部件，在此栏中提供更多技术说明。）

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