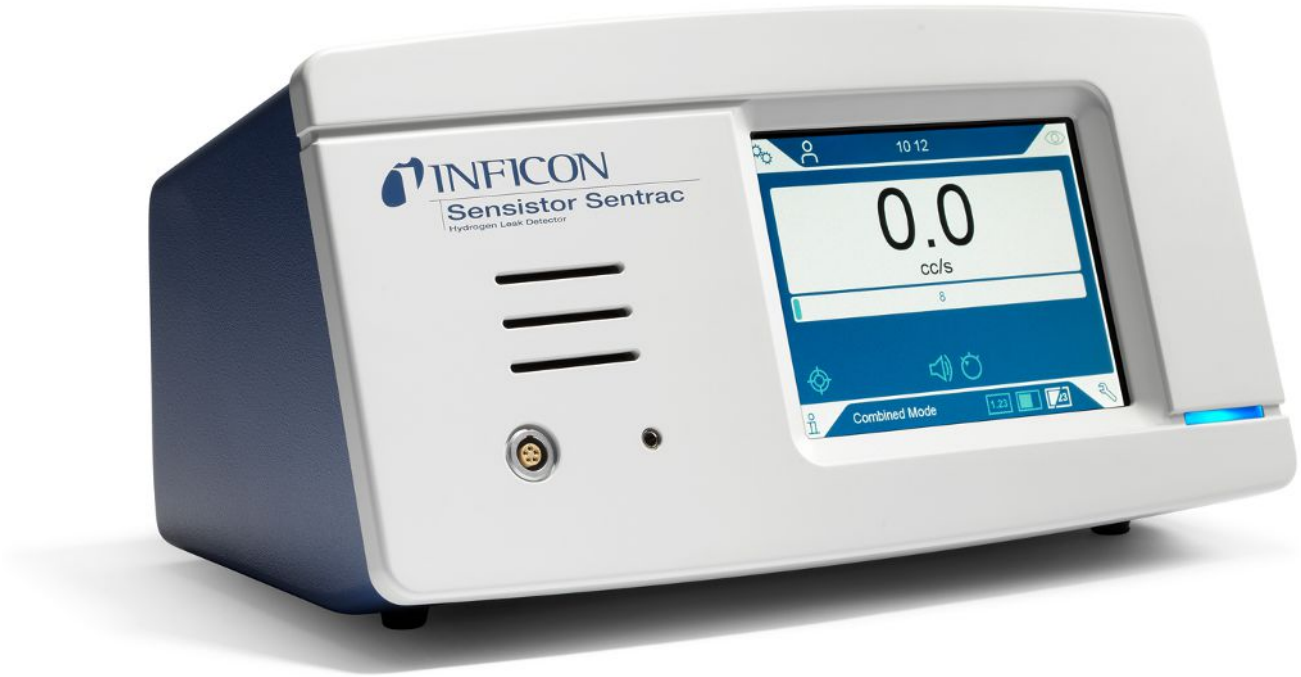

Operating Instructions

Sensistor® Sentrac®

Hydrogen Leak Detector

Catalog No.
Type number: SEN.122.164, SEN.122.165, SEN.122.166

From software version
3.01.01

nind65en1-01-(2305)

INFICON AB
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1 General Information

Read this Manual carefully before putting your instrument into service. When reading, pay particular attention to the WARNINGS, CAUTIONS and NOTICES found throughout the text.

⚠ DANGER

To prevent injury or death, use the product only as instructed and use only the accessories that have been supplied or recommended. Protection provided by the product may be impaired if used in a manner not specified by the manufacturer.

1.1 About this Document

The purpose of this manual is to:

- Describe the working principle of the instrument
- Teach the reader how to set up the instrument
- Show examples of different ways of testing and locating leaks

1.1.1 Document History

Revision	Date	Remark
01	05-2023	First public release

1.2 Introduction to the Instrument

The instrument can be used to detect the presence of a leak, where on the test object the leak is located and how much it is leaking.

1.2.1 Intended Use

- The instrument is designed for indoor use only.
- The instrument can be setup via the touchscreen or via PC.
- Different sets of parameters can be saved. Each set forming a specific recipe for a specific test object.

1.2.2 Available Models

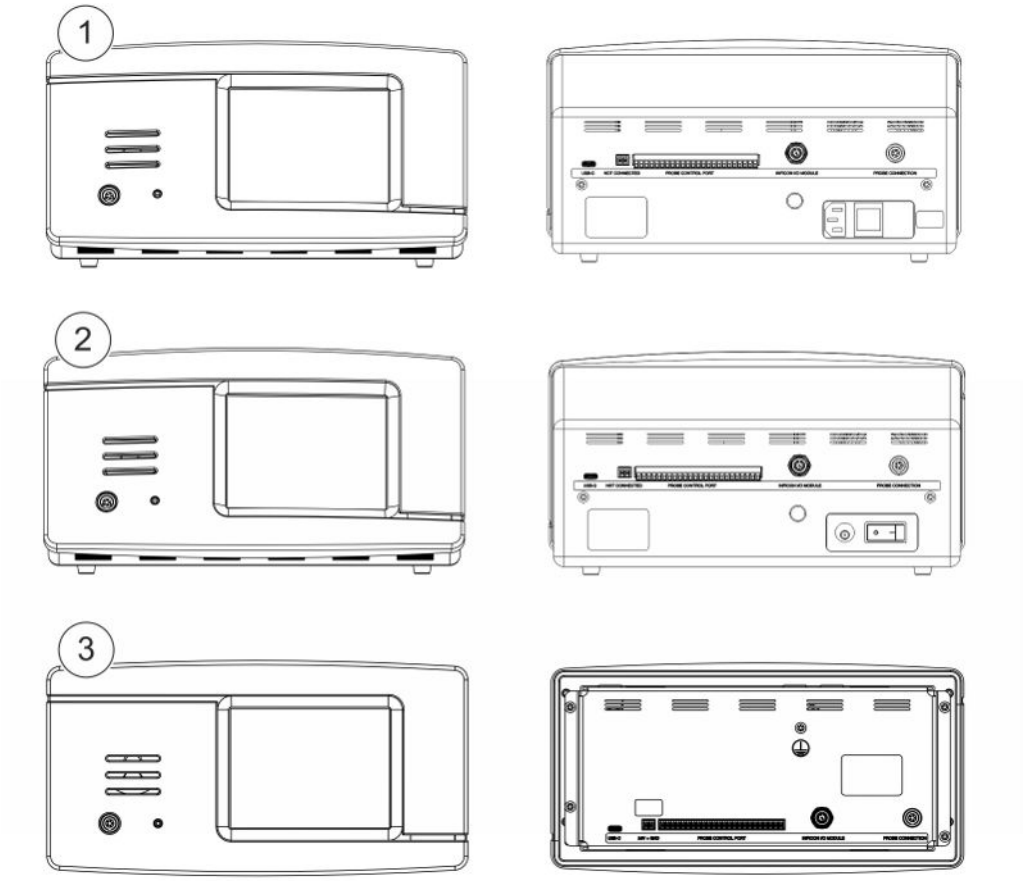


Fig. 1: Available Models

Sensistor Sentrac			Part no.
1	Sensistor Sentrac, desktop model	For stationary use	590-970
2	Sensistor Sentrac, portable model	12 hours operating time on batteries	590-971
3	Sensistor Sentrac, panel model	For panel mounting	590-972

1.3 Warnings

⚠ DANGER

Imminent threat resulting in death or serious injuries

⚠ WARNING

Hazardous situation resulting in potential death or serious injuries

⚠ CAUTION

Hazardous situation resulting in minor injuries

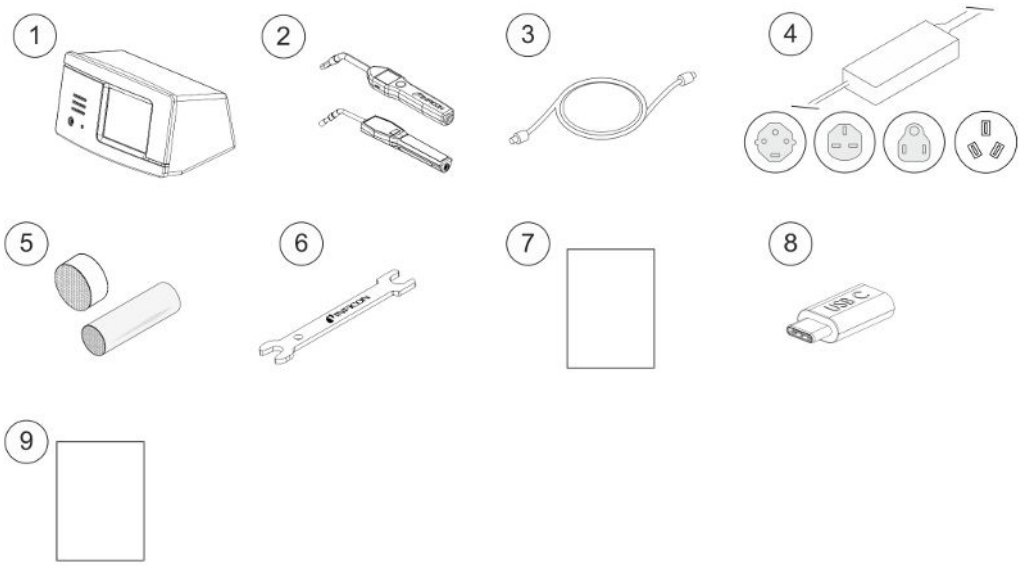
NOTICE

Hazardous situation resulting in damage to property or the environment

2 Equipment and Storage

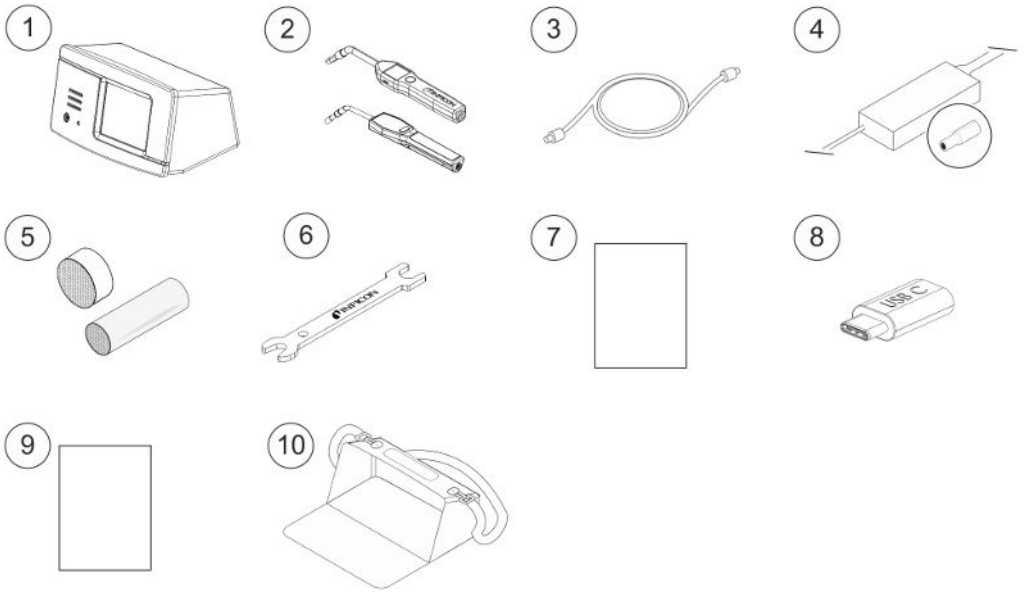
When receiving the equipment, check that it has not been damaged during transport.

2.1 Desktop Model Setup



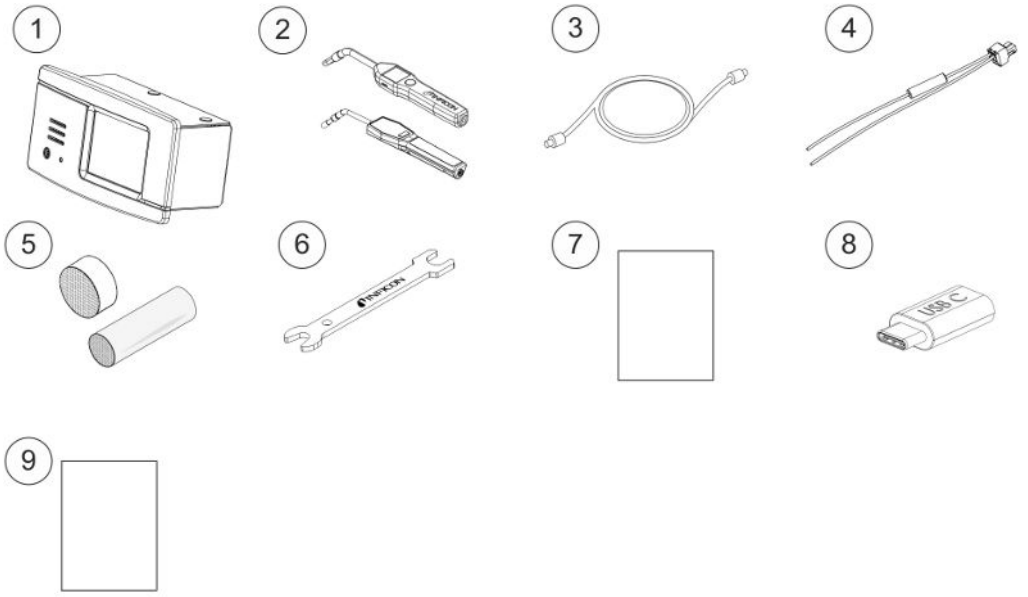
Pos.	Part	Part no.
1	Instrument Unit Desktop Model	590-970
2	Hand Probe P60 or Strix	590-890, 590-730
3	Probe Cable (3, 6 or 9 m)	590-161, 590-175, 590-165
4	Mains cord (Desktop Model)	
	EU	591-146
	UK	591-147
	US	591-853
	CN	592-155
5	Sample Kit Probe Tip	591-799
6	Sensor Key	598-461
7	Operating Manual instrument (this manual)	592-186
8	Translations of the manual (USB)	592-179
9	Instrument Test Record	

2.2 Portable Model Setup



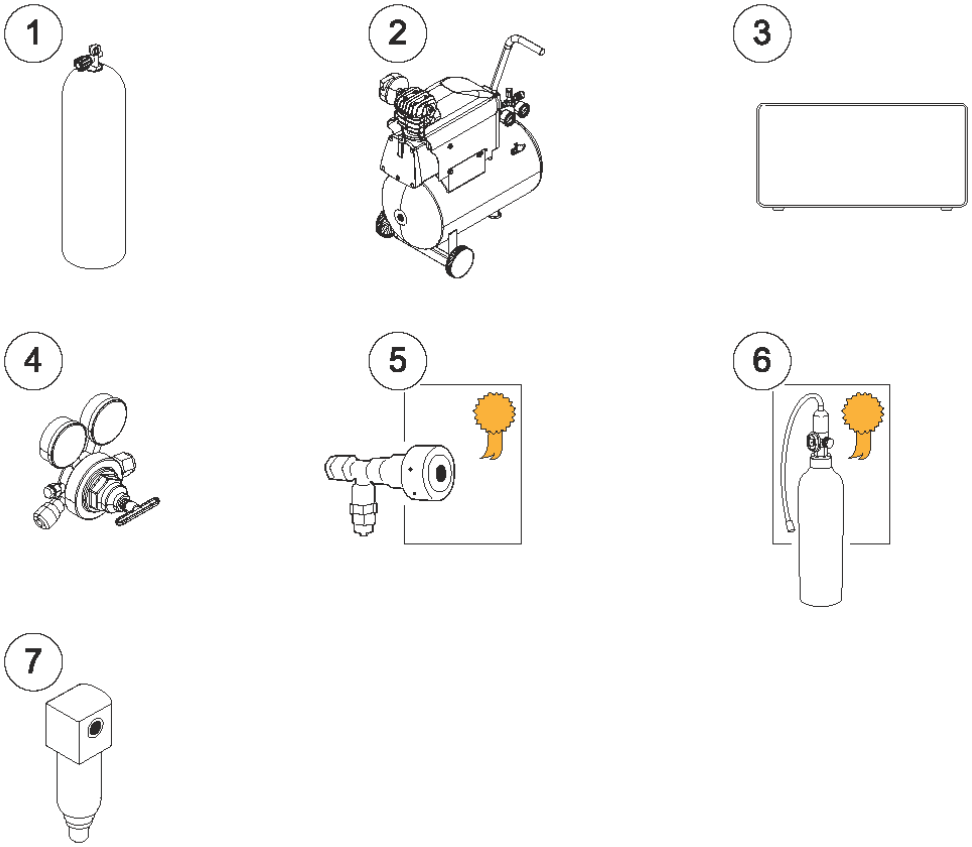
Pos.	Part	Part no.
1	Instrument Unit Portable Model	590-971
2	Hand Probe P60 or Strix	590-890, 590-730
3	Probe Cable (3, 6 or 9 m)	590-161, 590-175, 590-165
4	Battery Charger	591-795
5	Sample Kit Probe Tip	591-799
6	Sensor Key	598-461
7	Operating Manual instrument (this manual)	592-186
8	Translations of the manual (USB)	592-179
9	Instrument Test Record	
10	Carrying Case	592-184

2.3 Panel Model Setup



Pos.	Part	Part no.
1	Instrument Unit Panel Model	590-972
2	Hand Probe P60 or Strix	590-890, 590-730
3	Probe Cable (3, 6 or 9 m)	590-161, 590-175, 590-165
4	External DC Power Cable Assembly	598-469
5	Sample Kit Probe Tip	591-799
6	Sensor Key	598-461
7	Operating Manual instrument (this manual)	592-186
8	Translations of the manual (USB)	592-179
9	Instrument Test Record	

2.4 Peripheral Equipment



Pos.	Part
1	Tracer gas
2	Compressed Air
3	Tracer Gas Filler
4	Two-Step Gas Regulator
5	Calibration Leak with Certificate
6	Calibration Gas with Certificate
7	Compressed Air Filter

For more information, see “Spare Parts [▸ 58]”.

2.5 Storage Environment Sensistor Sentrac

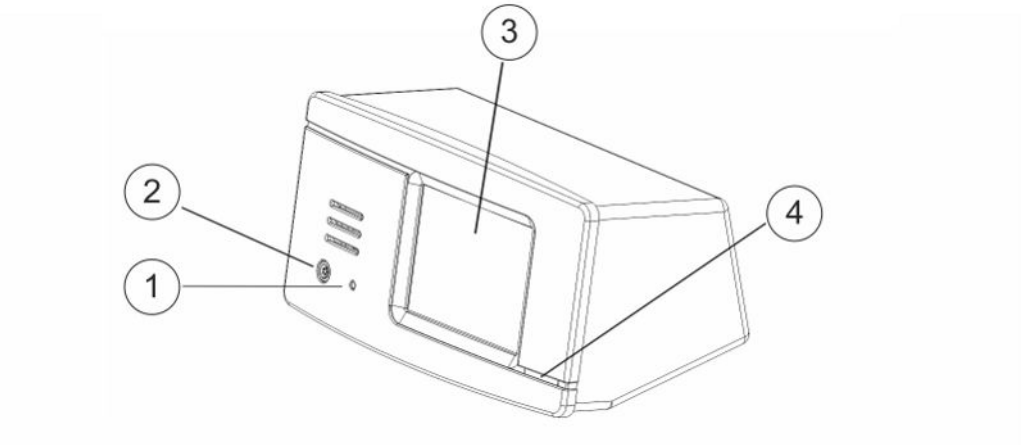
Desktop Model	(590-970)
Temperature:	0°C - 45°C (32°F - 113°F)
Humidity Range:	10% to 75% RH (non-condensing)
Portable Model	(590-971)
Temperature:	0°C - 45°C (32°F - 113°F)
Humidity Range:	10% to 75% RH (non-condensing)
Panel Model	(590-972)
Temperature:	0°C - 45°C (32°F - 113°F)
Humidity Range:	10% to 75% RH (non-condensing)

For long storage period we strongly recommend that the power supply battery is charged only to 50% of full charge to keep high charging capacity level for long time.

3 Instrument Description

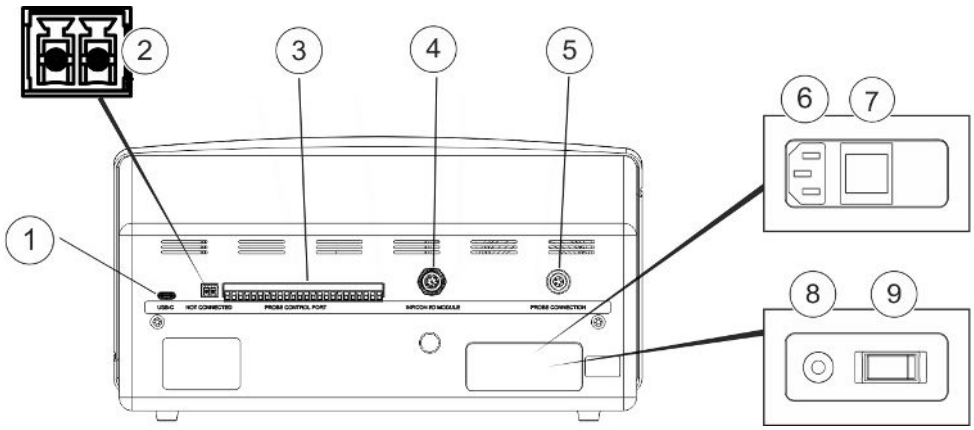
The instrument is manually controlled by the touchscreen menu system. The screen also shows results and sequence graphically and in plain text.

3.1 Front View



Pos.	Port/Interface
1	Port Earphone Jack
2	Probe Connector
3	Touchscreen
4	LED Lamp

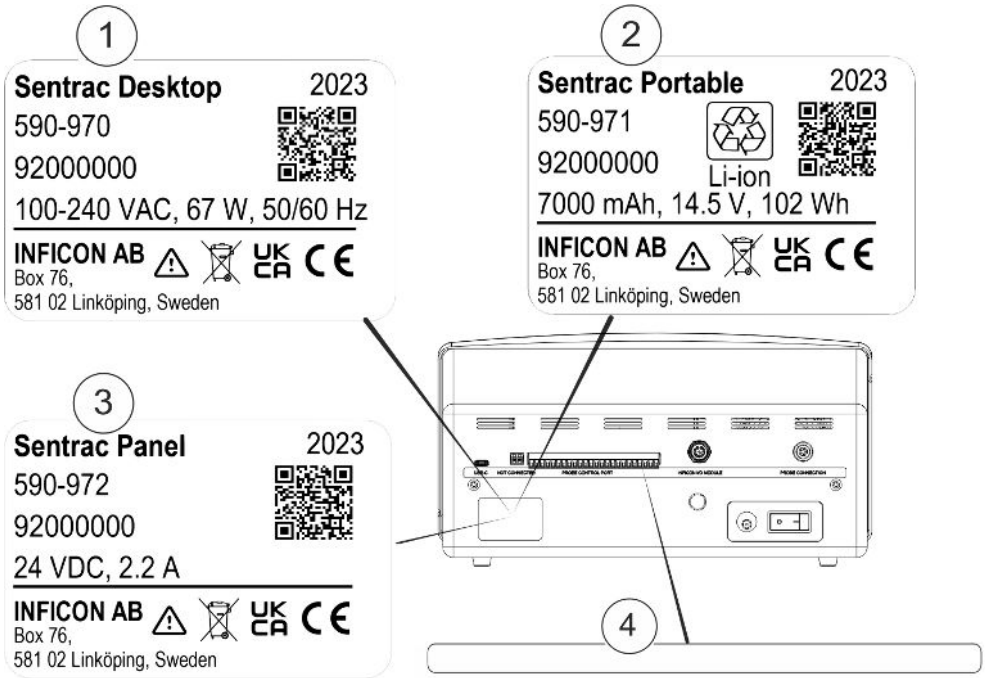
3.2 Rear View



Pos.	Port/Interface	Connect
1	USB-C Port	To a host (for example PC)
2	Power Input (active only with Panel Model)	External 24 V DC power supply
3	Probe Control Port	PLC I/O, e.g. AP29ECO. Note: The Probe Control Port is not active on the Portable model
4	INFICON I/O Module Port	INFICON I/O Module
5	Probe Connector Port	Probe
6	Power Input (Desktop Model)	Power Cable
7	Power Switch (Desktop Model)	-
8	Power Input (Portable Model)	Battery Charger
9	Power Switch (Portable Model)	-

3.3 Labels

At the rear side of the instrument, a label indicates the electrical specifications of the instrument and its serial number.



Pos.	Labels
1	Label Desktop Model
2	Label Portable Model
3	Label Panel Model
4	Connections Label
SEN. 122.164	Type number Desktop Model
SEN. 122.165	Type number Portable Model
SEN. 122.166	Type number Panel Model
	Caution
	WEEE symbol. See “Disposing of the Instrument [▸ 66]”.
	UKCA marking. Conformity with the essential health and safety requirements.
	CE marking. Conformity with the essential health and safety requirements.

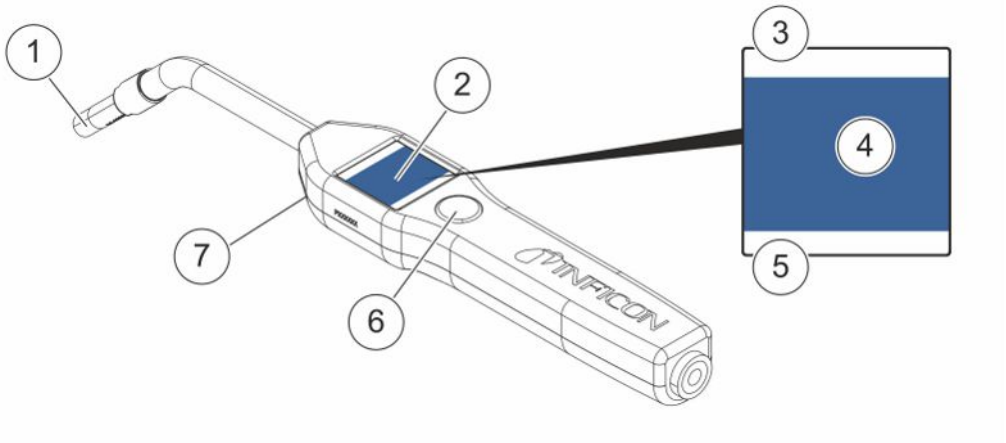
4 Hand Probe

NOTICE

Connection and disconnection of the sensor cable must be done with power off. Sensor can be damaged if power is on.

The Hand Probe is a no-flow probe. Gas sensing takes place in the replaceable sensor located in the tip of the probe.

4.1 Description of P60 Hand Probe



Pos.	Part	Description
1	Hydrogen Sensor	Detects and measures leaks.
2	Display	Displays results, information and warnings.
3	Current Leak Detection Mode	Shows which mode the leak detection is performed in.
4	Measuring and locating information	Shows by value and graphics.
5	Function Button function	Shows available function.
6	Function Button	Performs available function.
7	Lamp	Lights up the measuring surface.

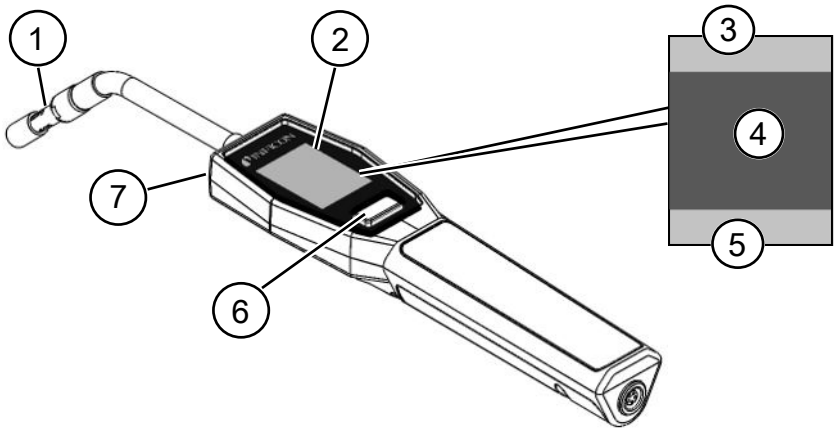
The probe can be ordered with a flexible neck.

NOTICE

Do not expose the probe to a hydrogen concentration as large as 5% when the instrument is not powered on, as this could damage or destroy the probe gas sensor.

For more information see “Spare Parts [▶ 58]”.

4.2 Description of Strix Hand Probe



Pos.	Part	Description
1	Hydrogen Sensor	Detects and measures leaks.
2	Display	Displays results, information and warnings.
3	General information	Information depends on customer settings and applications.
4	Measuring and locating information	Shows by value and graphics.
5	Function Button function	Shows available function.
6	Function Button	Performs available function.
7	Lamp	Lights up the measuring surface.

The probe can be ordered with a flexible neck.

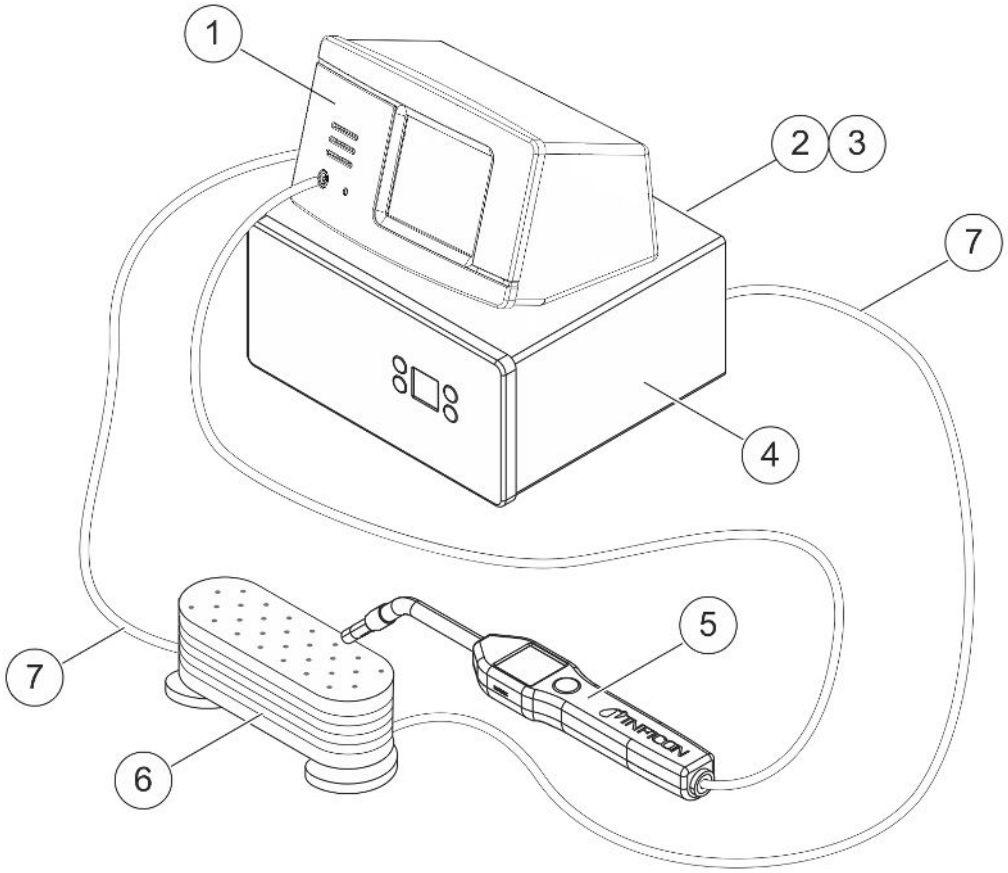
For more information see ”Spare Parts [▶ 58]”.

4.3 Calibration

The probe must be calibrated for optimal accuracy. Make sure it is calibrated before using it to measure gas concentration or leak rate value. For more information see “Calibration [▶ 38]”.

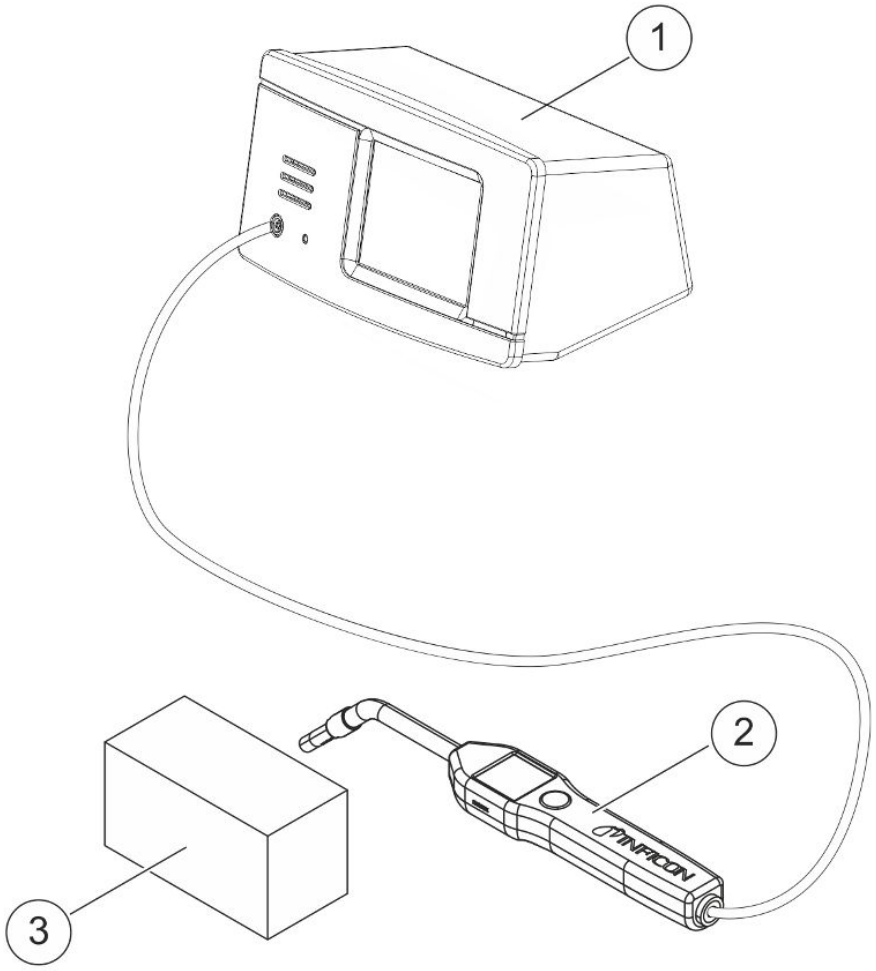
5 System Examples

5.1 Desktop Model



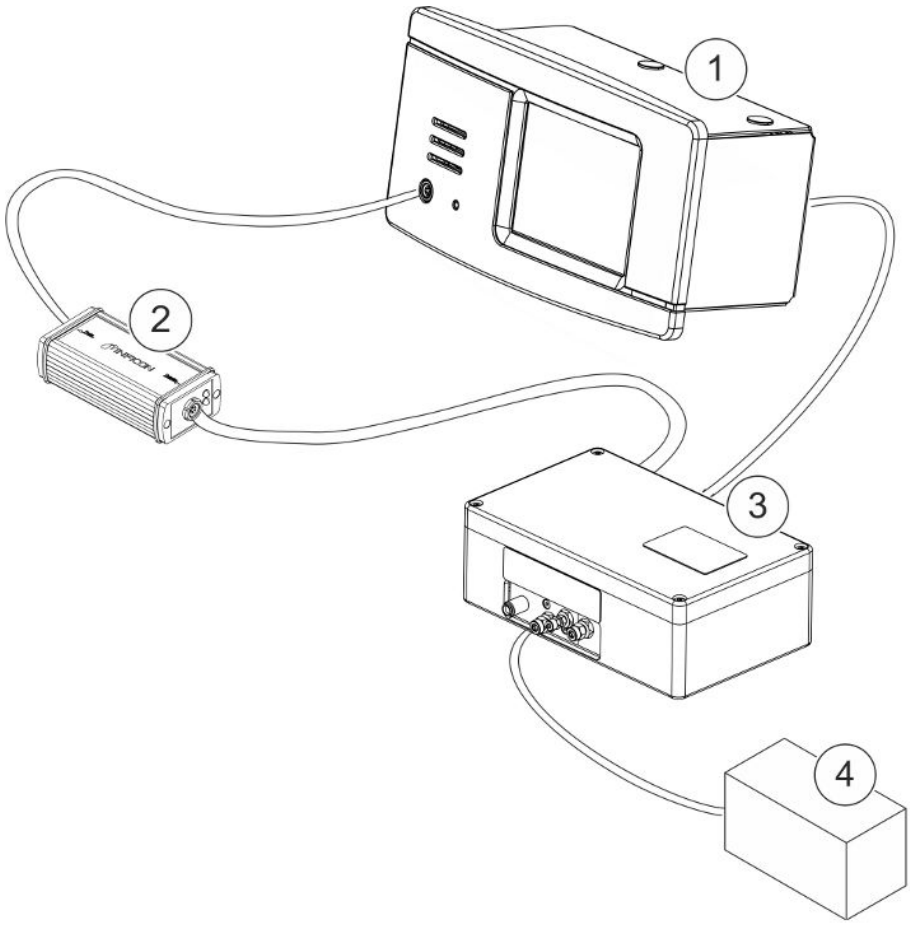
Pos.	Description
1	Sensistor Sentrac Desktop Model
2	Compressed Air
3	Tracer Gas
4	Tracer Gas Filler e. g. TGF11
5	Hand Probe
6	Test Object
7	Evacuation and Gas Filling

5.2 Portable Model



Pos.	Description
1	Sensistor Sentrac Portable Model
2	Hand Probe
3	Test Object

5.3 Panel Model



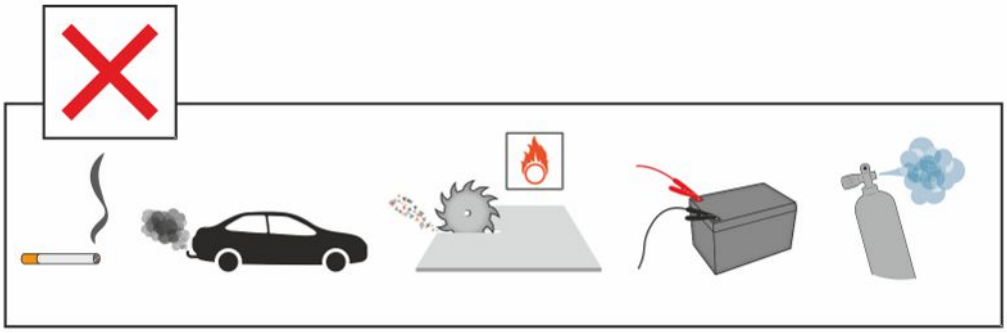
Pos.	Description
1	Sensistor Sentrac Panel Model
2	COMBOX 60
3	AP29ECO
4	Accumulation Chamber

6 Setup

⚠ WARNING

Make sure all relevant legislation and safety standards are complied with before putting the instrument into service.

6.1 Placement of the Instrument



Avoid to place the instrument close to hydrogen sources such as cigarette smoke, combustion engines, aluminium machining, lead battery charging stations and, in some cases, compressed air systems.

6.2 Connect the Instrument

1. Connect the Hand Probe to the instrument using the probe cable. If you have purchased another type of probe than the hand probes Strix or P60, contact INFICON for help. Adaptation equipment between probe and instrument may be required.
2. Plug the power cable into the power inlet of the instrument and into the nearest power socket.

To disconnect the Probe, hold around the knurled part of the connector and pull straight out. The standard cable length is 3 m. Several different cable lengths are available. See “Spare Parts and Accessories [▷ 58]”.

7 Settings

7.1 Probe Settings

► To set the probe button functions, click “Settings > Probe > Functions”.

The lamp options can also be set here.

7.2 General Settings

► To set display, sound, language, time, date and alarm settings, click “Settings > General”.

⚠ CAUTION

The highest levels of the Volume setting can be activated and de-activated by clicking the Enable High Volume Levels check box in the Settings / General menu. Advanced access level is required to activate the Enable High Volume Levels.

7.3 Communication Settings

The communication functions can be configured and activated in Communication Settings.

► Click “Settings > Communication”.

- Data can be logged with chosen pre-defined intervals or at chosen pre-defined events, which are activated on the Trigger function in the Log tab.
- The data to log can be chosen by activation of the Time, Date, Calibration, Measure, Locate, and Result check boxes in the Log tab.
- The log file is stored on the Internal Memory.

See “Export [▷ 42]”: “Info > Export/Import > Export” how to export log files.

- The INFICON I/O module port can be activated in the check box in the Bus Module tab.

The INFICON I/O module port cannot be activated on the Sentrac Portable model.

8 Menu System

8.1 Instrument Display

8.1.1 Menu Navigation

NOTICE

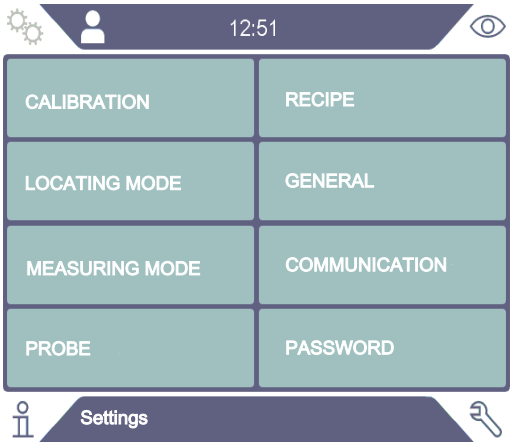
Do not cause any damage by sharp objects on the instrument touchscreen.

INFICON recommends using the fingertip for touching the touchscreen.

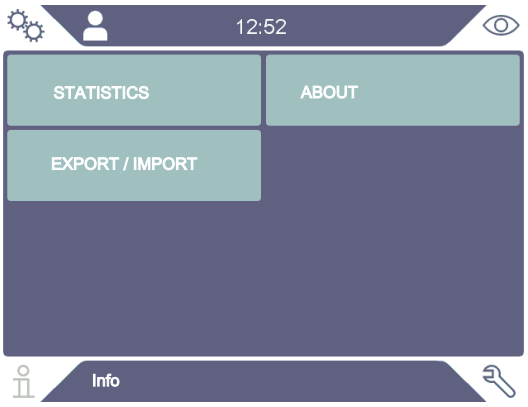
Icon colors		
Grey	Non clickable	Shows top screen in current menu.
Light blue	Clickable	Click to enter menu.
Super light blue	Clickable	Click to return to the top screen in current menu.

Operation Screen

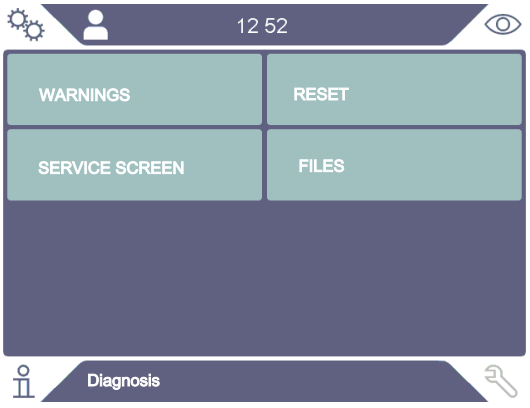
Settings Screen



Info Screen



Diagnosis Screen



8.1.2 Menu Buttons

Icon	Description	Icon	Description
	Settings		Combined Mode
	Operation		Audio
	Info		Mute
	Diagnosis		Sensitivity
	Measuring Mode		Calibration
	Locating Mode		Recipe

8.1.3 Navigation and Other Buttons

Icon	Description	Icon	Description
	Start		Load
	Stop, Close		Scrollbar
	Backward		Shift
	Forward		Back
	Next		Delete
	Save		

8.2 Passwords and Menu Overview

There are three different levels of access, indicated by the respective user icon below.

Icon	Description
	Basic. Basic users can operate the instrument, but not calibrate or change settings. No password.
	Intermediate. The intermediate password is 1111. Intermediate users can calibrate the instrument, but not change settings, edit or review logs.
	Advanced. The advanced password is 1422. Advanced users can operate, calibrate, change settings, edit or review logs.

If the password is not set, the user can operate, calibrate, change settings, edit or review logs as an Advanced user.

Passwords and Menu Overview

All menus except the service menu is available when the use of passwords is not activated.

The table below shows the available functions for the Basic, Intermediate, and Advanced access levels.

Menu Level 1	Menu Level 2	Tabs	Access level		
			Basic	Inter-mediate	Advanced
Operation	Measuring Mode		X	X	X
	Locating Mode		X	X	X
	Combined Mode		X	X	X
	Battery		X	X	X
	Audio		X	X	X
	Calibrate			X	X
	Sensitivity		X	X	X
	Recipe		X	X	X
Settings	Calibration	Calibrate		X	X
		Setup 1			X
		Setup 2			X
		Interval			X
		Info			X
	Locating Mode	Sensitivity			X
	Measuring Mode	Setup			X
		Disp. Gas			X
		Misc			X
	Probe	Functions			X
	Recipe	Recipes			X
	General	Display	X	X	X
		Sound		X	X
		Time			X
		Alarms			X
	Communication	Log			X
		Bus Module			X
	Password	Login	X	X	X

Menu Level 1	Menu Level 2	Tabs	Access level		
			Basic	Inter-mediate	Advanced
Info	Statistics	Run Time	X	X	X
	Export/Import	Export		X	X
		Import		X	X
	About		X	X	X
Diagnosis	Warnings	Warnings	X	X	X
	Service screen	Signals			
		Graph			
		Tools			
		Test Board			
	Reset	Factory Default			X
		Calibration			X
	Files	SD			
		USB			

How to Activate the use of Passwords

1. Click “Settings > Password”.
2. Click the "Activate" checkbox.
3. Click "check symbol".
4. Click “LOGOUT” to set the instrument in the Basic access level or first check the "Intermediate Level as Default" checkbox and then click LOGOUT to set the instrument in the Intermediate access level.

9 Operating the Instrument

9.1 Preparation

NOTICE

Do not expose the probe to a hydrogen concentration as large as 5% when the instrument is not powered, as this could damage or destroy the probe sensor.

NOTICE

When the instrument is put into operation the sensor withstands temporary exposure to hydrogen concentrations up to 100%.

Avoid long exposures to high concentrations.

During normal use, the blue LED light of the instrument should be steady.

► If the LED light is flashing see “Troubleshooting [▷ 45]“.

► Ensure that the environment where the leak detection takes place is not contaminated or close to other hydrogen sources.

9.1.1 Conditions for Leak Detection

To use the instrument, the test object must be filled and pressurized with tracer gas (95% N_2 - 5% H_2) to achieve a gas flow through the leak.

Appropriate gas filling equipment can be obtained from your local supplier.

Exercise care in the handling of tracer gas after use. Released tracer gas contaminates the surrounding air with hydrogen and can affect subsequent measurements for some time. Ensure that the tracer gas is ventilated away from the target area, preferably to the outside of the building.

9.2 Battery Operation

The Sensistor Sentrac Portable Model is designed for mobile operation.

The battery symbol will change color to orange and flashing red when there is 15 and 8% left of the battery time, respectively.

The battery charger will not restart automatically when the battery runs low if you leave battery charger connected.

For stationary operation you must do the following:

1. When battery is low, connect the battery charger.
2. Disconnect the battery charger when the battery is fully charged.
3. Reconnect the battery charger to initiate a new charging cycle.

9.3 Settings

9.3.1 How to Locate Leaks

In Locating Mode, the signal is displayed in the form of a bar. The length of the bar varies with the gas concentration.

This mode gives an audio and visual signal which increases as a leak is approached (a higher gas concentration) and decreases as the probe is moved away from the leak.

NOTICE

The operation in Locating Mode is not quantitative, therefore, there is no actual calibration to be done, but rather a setting of the sensitivity.

If Locating Mode is used and the alarm function is required to be activated at a particular calibrated level, the unit must be calibrated according to the instructions below.

1. Click the Locating Mode icon ■ on the Operation Screen.
2. Set up a calibration leak which corresponds to the smallest leak you want to detect. For more information see “Calibration [▶ 38]”.
3. Put the probe close to the calibration leak and note the approximate reaction you get (no reaction, small, medium, high, full scale) within the first few seconds.

4 Click the Sensitivity icon on the Operation Screen and set the Sensitivity.

The Sensitivity setting can be set to change automatically to lower sensitivity, when exposed to larger leaks, by clicking the Auto Locating Range Enable check box in the Settings / Locating mode menu. The setting will return to the set value after the exposure.

A repeating short audio pulse to signal that the instrument is in operation can be activated for the Locating Mode screen and the Combined Mode screen by clicking the Audio Ready Pulse check box in the Settings / Locating mode menu.

The direct access to the Sensitivity setting on the Locate Mode screen and the Combined Mode screen can be activated and de-activated by clicking the Direct Sensitivity Adjustment check box in the Settings / Locating mode menu.

The audio signal can be suppressed below a lower limit using the Locating Audio Threshold (%) function in the Settings / Locating mode menu. The lower limit will be the chosen percentage of the current Sensitivity setting.

9.3.2 How to Detect Leaks

1 Move the probe tip close to and along the pressurized test object. A small leak can be more precisely located by moving the probe over the leak again.

2 Remove the probe promptly when a tone sounds. That indicates the detection/ location of a leak.

NOTICE

It is good practice to detect a leak, locate it, and then immediately remove the probe to avoid saturation. The probe is not damaged by long time exposure, but it will recover more slowly. After excessive exposure, the probe will be less sensitive for a short period of time.

Red fixed light together with Reject on the display means the instrument has detected a leak larger than the set reject level limit.
This Reject Indication can be activated and de-activated by clicking the Reject Indication check box in the Settings / Locating mode menu.

Large leaks may trigger the probe to react directly when approaching the test object. If the signal goes off the scale, simply reduce the sensitivity setting to bring the signal back onto the scale. Using the sensitivity setting in this way, you will be able to locate multiple leaks that are in close proximity to each other.

9.3.3 How to Measure Leaks

In Measuring Mode, the measured value is displayed in figures.

1. Calibrate the probe.
   See “Calibration [▸ 38]”.
2. Click the measuring Mode icon 1.23 on the Operation Screen.

Default unit in Measuring Mode is cc/s. To set it to other units click “Settings > Measuring Mode”.

The period during which the measured value is displayed can be adjusted in the Measuring Mode Settings menu. Click “Settings > Measuring Mode”.

The Hydrogen Leak Detector operates in the range 0.5 - 1000 ppm H_2. To obtain greatest accuracy over this range, follow the calibration recommendation. See “Calibration [▸ 38]”.

9.3.4 Measuring Leaks

1. Move the probe around and over the product, to locate the exact spot where the leak might be (signal will increase as probe approaches the leak).
2. Move the probe around 200 mm (8 in.) from the measurement point.
3. Make sure the instrument indicates 0. If not, wait until it does.
4. Move the probe as close as possible to the leak.
5. Hold it there until the measured value stabilizes. This takes approximately 2-4 s.
6. Remove the probe from the measuring point when the measured value stabilizes and remains on the display and read the measured value.
7. Continue to the next measuring point and repeat the procedure.

The instrument is not an absolute gage, it measures relative to the background.

Therefore, the probe must first be some distance from the leak and then moved towards the leak for accurate measurement.

9.4 Hands On

It is important to have a correct calibration when measuring the size of a leak in Measuring Mode and Combined Mode. Calibrate the probe before measuring, see “Calibration [▶ 38]”.

Ensure that the test object is pressurized properly before performing a test.

Parameters such as leak sizes, leak units and sensitivity can easily be set in the instrument.

1. Turn the instrument on. The instrument starts up and the blue LED light, on the right of the display, should be flashing slowly during warm-up phase. When the instrument is ready to use the blue LED shines with a fixed, steady light.
2. Move the Hand Probe close to and along the pressurized test object. Move the probe on the possible places where there may be leaks.
3. When a leak is found and the highest signal is found, move the probe away from the leak and back again for verification.

9.5 To Quantify Leaks

Measuring Mode

The Measuring Mode is used for measuring the size of a leak (or the concentration of a gas sample). To be able to do this measurement and obtain correct values, the instrument must first be calibrated using the calibration function.

In the Measuring Mode, the instrument determines the gas concentration from the change, as the probe goes from being exposed to background to being exposed to a certain gas concentration. The instrument does not continuously monitor the gas concentration but takes just one reading. Another suitable alternative name for this mode could be Sampling Mode. It is important to keep this in mind when using the instrument in this mode.

In Measuring Mode the probe should be moved directly from a background situation to the test point. The size of the leak in ppm, or any other selected units, is shown on the display. The probe can and should be removed from the measuring point as the measured value stabilizes and remains on the display. The period during which the measured value is displayed can be adjusted in the Settings menu.

The instrument operates in the range 0.5 - 1000 ppm H_2. To obtain greatest accuracy, follow the calibration recommendation. See ”Calibration [▶ 38]”.

Reject Level

A Reject level in leak size can be set in the Settings / Measuring mode menu. The Reject level can also be set in concentration, if the calibration was done with a calibration gas. The Reject level can be shown in the Measuring Mode screen and the

Combined Mode screen by clicking the Show Reject Level check box in the Settings / General menu. Operation without a Reject Level is achieved by setting it to 0, which is the default setting.

The Reject Level can be scaled with a Correlation Value. A reason for this could be a temporary change of tracer gas concentration or a change of geometry. The Correlation Value can be changed in the Settings / Measuring mode menu.

A measurement above the Reject level will generate an alarm. Alarms are signaled with red colors on the screen and the LED as well as a flashing text “Reject” on the screen. The alarm can also be signaled with a Chopped Audio Signal and a Probe Lamp Flash. These functions are activated by clicking the corresponding check boxes in the Settings / General menu.

There is an Auto Conversion function that recalculates the Reject Levels if the Displayed Gas and/or leak rate Unit is changed. The text “Automatic Conversion Enabled” is shown on the Setup tab in the Settings / Measuring mode menu when such recalculation can be done. The text will change to “Automatic Conversion Disabled” if the settings are changed in a way that not allows recalculation, e. g. changing the Unit to ppm.

Lower Limit

It is possible to set a lower limit of the leak sizes to be shown on the Measuring Mode screen and the Combined Mode screen using the Display Threshold (%) function in the Settings / Measuring mode menu. The lower limit will be the chosen percentage of the Reject Level set.

The audio signal for the Measuring Mode screen can be suppressed for leak sizes below a lower limit using the Measuring Audio Threshold (%) function in the Settings / Measuring mode menu. The lower limit will be the chosen percentage of the Reject Level set. If a percentage for the Display Threshold (%) is set higher than the percentage for the Measuring Audio Threshold (%), then the display lower limit will be valid also for the audio lower limit.

A repeating short audio pulse to signal that the instrument is in operation can be activated for the Measuring Mode screen by clicking the Audio Ready Pulse check box in the Settings / Measuring mode menu.

The display of the Measure value with 3 digits can be activated and de-activated by clicking the 3 Digits Measure Value check box in the Settings / Measuring mode menu.

10 Recipes

A recipe is a collection of settings suited for a particular test setup. This is used for having different settings for different test objects.

Calibration settings are not saved in the recipe.

A calibration leak or calibration gas is normally used to calibrate the instrument.

10.1 Recipe Screen

► Click “Settings > Recipe” to enter the Recipe menu.

10.2 Create a Recipe

10.2.1 New Recipe

Set up the instrument with the parameters that are to be saved in the recipe.

1. Click “Settings > Recipe” to enter the Recipe menu.
2. Check the Recipes active check-box to activate the use of recipes.
3. Add a new recipe by clicking the plus icon.
4. Type in the name wanted for the recipe, confirm with the Return Key.
5. The new recipe is now active. The recipe name will appear in the upper part of the display.

10.2.2 Modify a Recipe

1. Activate the recipe you want to modify by clicking the Load icon.
2. Modify the settings for your recipe.
3. Click “Settings > Recipe” to enter the Recipe menu.
4. Save your recipe by clicking the Save icon.

10.2.3 Select an Existing Recipe

1. Click “Settings > Recipe” to enter the Recipe menu.
2. Check the Recipes active check-box to activate the use of recipes.
3. Select a recipe in the list.
4. Click the Load icon to load the recipe.

10.2.4 Delete a Recipe

1. Click “Settings > Recipe” to enter the Recipe menu.
2. Select a recipe in the list.
3. Click the Delete icon.

11 Calibration

11.1 About Calibration

There are two ways of calibrating the probe:

- Calibration gas: Available at gas suppliers and has a known concentration of hydrogen (10 ppm hydrogen in synthetic air is recommended).
- Calibration leak: Available at INFICON and has a fixed leak rate (mbar l/s or g/y).

Both methods take less than 2 minutes to perform.

If calibration fails you can still use the instrument. Last valid calibration parameters will be used. You should, however, check that the instrument reacts to the reference.

11.1.1 When Needed?

It is important to have a correct calibration when measuring the amount of a leak. Calibration may then be necessary when the instrument is set in these modes:

- Measuring Mode, or
- Combined Mode used to measure leaks.

Set Calibration Interval

Automatic calibration reminder can be set in this way:

1. Click “Settings > Calibration > Interval”.
2. Set interval.
   Spans between 1 h to a maximum of 60 days. Set the interval to "Off" to turn the automatic calibration reminder off.

The unit will then signal the interval through a pop-up menu with the text "Calibrate!" This pop-up menu will be shown every time the Combined Mode or Measuring Mode screens are entered and a flashing text "Calibrate!" will be shown on these screens, if the option to start a new calibration is not chosen in the pop-up menu.

The sensitivity changes slowly with time. Therefore we recommend regularly calibration to keep the highest measuring accuracy. How often you need to calibrate depend on measuring situation and leak rate size. Contact INFICON to get help to this assessment.

11.1.2 Required Equipment

- Calibration Gas or Calibration Leak
- Tracer gas (to feed the leak)
- Relevant Certificate

For more information see “Spare Parts and Accessories [▶ 58]”.

11.2 How to Calibrate

INFICON support two types of Calibration Leak. The one with large leaks must be connected to tracer gas pressure to work. The small leak is connected to a small fillable gas container. Read the instruction delivered with the leak how to set up and how to use the leak.

11.2.1 Prepare the Calibration Leak

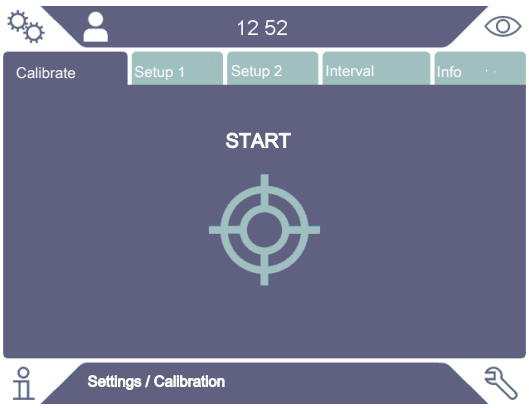
Leak with container:

1. Fill the gas container to the indicated pressure with tracer gas.
2. Leak is ready to use.

Leak without container:

1. Connect the leak with tracer gas with the pressure according the certificate.
2. Vent the hose from air via the Purge Valve on the leak.
3. Start to use the leak.

11.2.2 Set the Calibration Value



1. Click “Settings > Calibration > Setup 1”.
2. Set the Calibration Unit and Calibration Value (as stated on the calibration certificate issued for the leak).
3. If using Calibration Leak: Click “Settings > Calibration > Setup 2” to set calibration Leak Gas type.

4 Set Leak Gas (as stated on the calibration certificate issued for the leak)

Example, Calibration Leak:

Calibration Leak Rate is 4.2E-05 mbar l/s (95% N_2 - 5% H_2).

Calibration Unit = mbar l/s

Calibration Value = 4.2E-05

Calibration Leak Gas = 95% N_2 - 5% H_2

Example, Calibration Gas:

Calibration Gas containing 10 ppm Hydrogen in synthetic air.

Calibration Unit = ppm

Calibration Value = 10

NOTICE

If another pressure is used than that on the certificate, correlate the resulting flow and use this value as Calibration Value. During the calibration procedure, the concentration of the calibration leak should always be within the range of:

5 ppm - 400 ppm H_2

$1x10^{-5}$ to $4x10^{-3}$ cc/s (mbarl/s) defined for air

3 to 120 g/a defined for R134a

Use the same value or higher (maximum 10 times higher) than the Reject Level.

If uncertain of the optimal calibration leak for your application, please contact your local provider of the instrument.

Click Interval to activate and set the Calibration Interval Reminder. Click Info for information about the last successful calibration time.

The Measure value can be made grey, if the time set in the Calibration Interval has passed since the last calibration, by clicking the check box “Grey if Uncalibrated” in the Settings / Calibration menu.

The use of a popup window to remind the operator, that the time set in the Calibration Interval has passed since the last calibration, can be activated by clicking the check box “Reminder Popup” in the Settings / Calibration menu. The word Calibrate will always flash on the Measuring Mode screen as well as the Combined Mode screen, if the time set in the Calibration Interval has passed since the last calibration.

11.2.3 Calibration Procedure

1. Click the Calibration icon on the Operation Screen, or click “Settings > Calibration > Calibrate > Start”.
2. Keep the probe in the background air.
3. Click the Start button or the Probe button.
4. Expose the Probe to the Calibration Leak or the Calibration Gas. Keep it in exposed position while the Calibration in progress bar is moving.
5. Remove the Probe when the display shows Remove probe and gives a sound signal.
6. Continue the calibration routine until you can save the calibration.

NOTICE

Wait at least the indicated time on the screen between each calibration. The indicated time is 15 and 30 s, for the Strix and P60 hand probes, respectively.

The Calibration Sampling Time in the calibration sequence can be changed in the Settings / Calibration menu.

If the calibration is not saved, the instrument will revert to the previous value.

When changing setup or probe you will need to repeat the exposure 2-3 times to get Calibration OK.

When performing a calibration the instrument will indicate if the probe sensor has lost its sensitivity and needs to be changed. For information about changing the probe sensor, see “Changing Probe Sensor (P60) [51]” or “Changing Probe Sensor (Strix) [52]”.

12 Info

12.1 Statistics

12.1.1 Run Time

► To see the current operation time, click “Info > Statistics > Run Time”.

12.2 Export/Import

12.2.1 Export

Backup of all useful settings, including recipes, can be exported to a USB memory stick.

1. Insert an USB memory stick in the USB-C port.
2. Click “Info > Export/Import > Export”.
3. Click the "Backup Settings to USB" button.

⇨ A text file is created on the USB memory stick.

⇨ The settings can be imported to other Sentrac instruments.

Settings can only transferred between instruments with SW version 3.01.01 or later.

Copies of log files can be exported to a USB memory stick.

1. Insert an a USB memory stick in the USB-C port
2. Click “Info > Export/Import > Export”.
3. Click the "Copy Log Files to USB" button.

⇨ A text file is created on the USB memory stick.

12.2.2 Import

All useful settings, including recipes, can be imported from a USB memory stick.

1 Insert an USB memory stick with the backup in the USB-C port.

2 Click “Info > Export/Import > Import”.

3 Click the "Restore Settings from USB" button.

⇨ The previously exported settings, including any recipe, is imported to the instrument.

Settings can only transferred between instruments with SW version 3.01.01 or later.

12.3 About

► To shown the serial number and software version of the instrument and probe, click “Info > About”.

13 Diagnosis

13.1 Warning

► To see a list of all occurred warnings, click “Diagnosis > Warnings”.

This list can only be reset by authorized service personnel.

13.2 Service Screen

This screen is used for servicing and repair.

Available only to authorized service personnel.

13.3 Reset

- To reset the instrument to default settings, click “Diagnosis > Reset > Factory Default” and click the RESET button.
- To reset the calibration, click “Diagnosis > Reset > Calibration” and click the RESET button.

13.4 Files

This screen is used for servicing and repair.

Available only to authorized service personnel.

14 Troubleshooting

14.1 Fault

Fault Symptom	Fault	Measures
No sound in Detection Mode and Analysis Mode.	Sound set low.	Click the speaker icon to increase the volume
	Broken speaker or speaker cable loose.	Send in for repair.
No picture on display, no sound.	Fuse broken.	Check fuse. Replace if broken.
	Main Cable broken.	Replace the Main Cable.
	Discharged battery (Portable Model).	Charge the battery.
	Main PCB broken.	Send in for repair.
Bad sound out of the speaker.	Broken speaker.	Send in for repair.
No picture on display	Display broken or display cable loose.	Send in for repair.
White picture on display.	Main PCB broken or display cable loose.	Send in for repair.
Wrong colors on display	Display cable broken or loose	Send in for repair.
Display image reversed	Display cable broken or loose	Send in for repair.
No working display touch function	Display broken or touch cable loose.	Send in for repair.
Loss of spots or black lines on screen.	Display broken.	Send in for repair.
No LED light	Main PCB broken or LED cable loose	Send in for repair.
Short operation time on Portable Model.	Old or broken battery.	Send in for repair.
The time and dates resets at restart.	The clock battery is empty.	Send in for repair.
Settings lost on restart	Main PCB Memories broken (Flash Memories).	Send in for repair.
No button function on probe	Probe PCB broken or probe display cable loose	Send in for repair.

Fault Symptom	Fault	Measures
No picture on probe display	Probe PCB broken or probe display cable loose	Send in for repair.
Low or no gas sensitivity.	Old or broken gas sensor.	Replace sensor.
	Probe broken.	Send in probe for repair.
No probe lamp light	Broken lamp.	Send in for repair.
	Broken probe PCB.	Send in for repair.

14.2 Warning Messages

Message	Indicators	Message in the menu warning list	Code
Probe not connected.	Blue LED flashing.	(None)	(None)
SD Card Hardware Error Please Contact Service	Red measure window at screen, red LED	(None)	(None)
Battery discharged. Recharge battery.	Orange measure window at screen	(None)	(None)
Sensor broken or not connected. Change sensor or connect sensor. (Voltage too high, Error E1)	Red measure window at screen	Sensor broken or not connected. (Voltage too high)	01
Sensor broken. Change sensor. (Voltage too Low, Error E2)	Red measure window at screen	Sensor broken. (Voltage too Low)	02
Sensor broken. Change sensor. (Temperature too Low, Error E3)	Red measure window at screen	Sensor broken. (Temperature error)	03
Probe disconnected. Reconnect the probe. (Error 04)	Red measure window at screen	Probe disconnected.	04
Low sensor signal.		Reject level too low for sensor sensitivity.	09

15 Maintenance Instructions

⚠ DANGER

Electrical shock

Always switch off the instrument before performing maintenance.

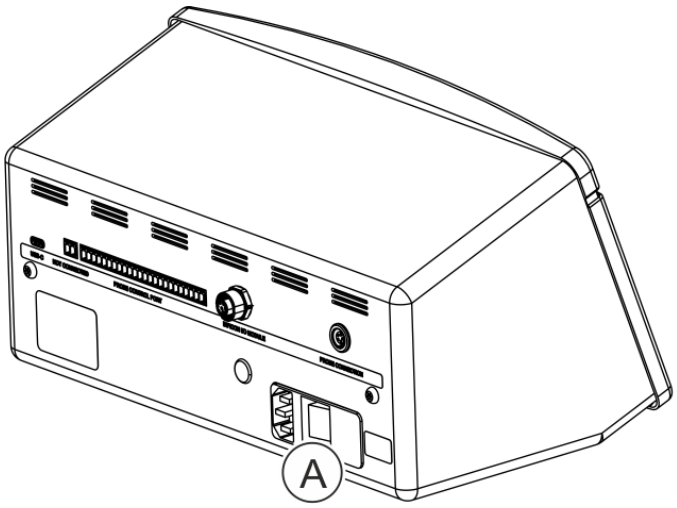
⚠ DANGER

Electrical shock

Do not open the instrument needlessly! Service of this equipment may only be carried out by service organizations authorized for this purpose by INFICON. Changing the battery is the only time when opening the instrument is needed and allowed.

15.1 Changing Fuses

Part	Part no.	Qty. Consumables
Fuse, 2A T slow	591-578	2



Disassemble

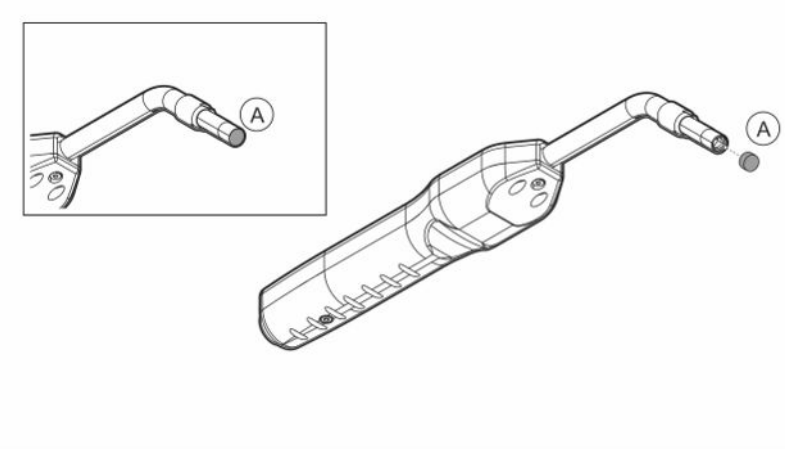
1. Remove the lid (A) containing the fuses.
2. Remove the fuses.

Assemble

1. Install new fuses.
2. Reinstall the lid (A) containing the fuses.

15.2 Changing Probe Tip Filter (P60)

Part	Part no.	Qty. Consumables
Probe Tip Filter	591-234	1



Disassemble

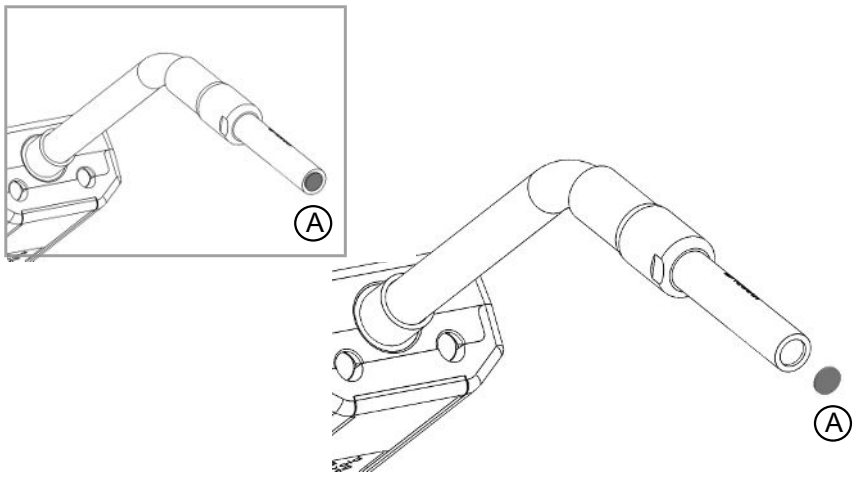
► Remove the Probe Filter (A) using a needle.

Assemble

► Install the new Probe Filter.

15.3 Changing Probe Tip Filter (Strix)

Part	Part no.	Qty. Consumables
Probe Tip Filter	590-310	1



Disassemble

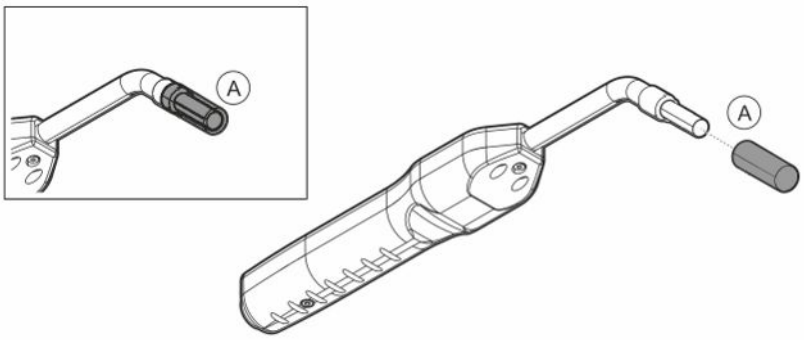
► Remove the Probe Filter (A) using a needle.

Assemble

► Install the new Probe Filter.

15.4 Changing Probe Protection Cap (P60)

Part	Part no.	Qty Consumable
Probe Tip Protection Cap	591-273 (set of 50)	1
	590-625 (set of 500)	1



Disassemble

1. Attach the supplied Sensor Key at the bottom of the Probe Tip Protection Cap (A) and pull with one finger on each side of the probe tip.
2. Remove the Protection Cap (A).

Assemble

► Install the new Probe Tip Protection Cap by pressing it over the tip until you hear a clicking sound.

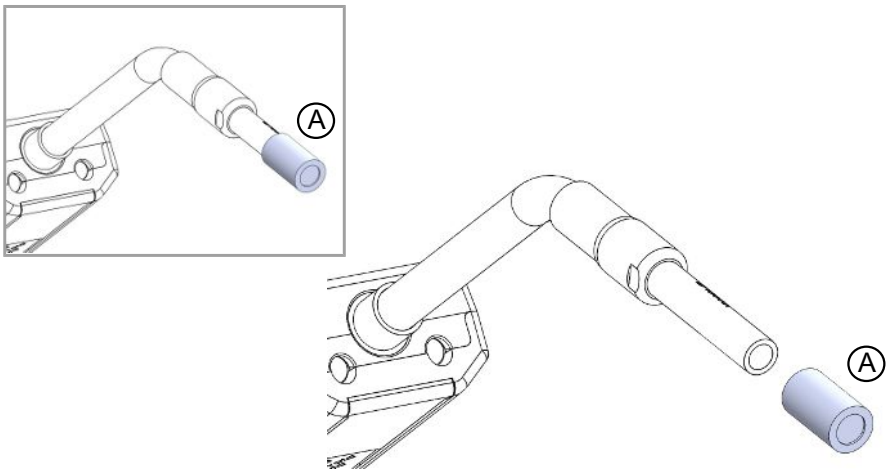
If the probe tip filter is removed, an air gap is formed between the inner metal filter and filter in the protection cap.

The filter in the protection cap prevents water to get into the probe if the probe comes in contact with water.

It is recommended to always replace the protection cap with a new if exposed to water.

15.5 Changing Probe Protection Cap (Strix)

Part	Part no.	Qty Consumable
Probe Tip Protection Cap	590-300 (set of 50)	1
	590-305 (set of 500)	1



Disassemble

1. Attach the supplied Sensor Key at the bottom of the Probe Tip Protection Cap (A) and pull with one finger on each side of the probe tip.
2. Remove the Protection Cap (A).

Assemble

1. Install the new Probe Tip Protection Cap by pressing it over the tip.

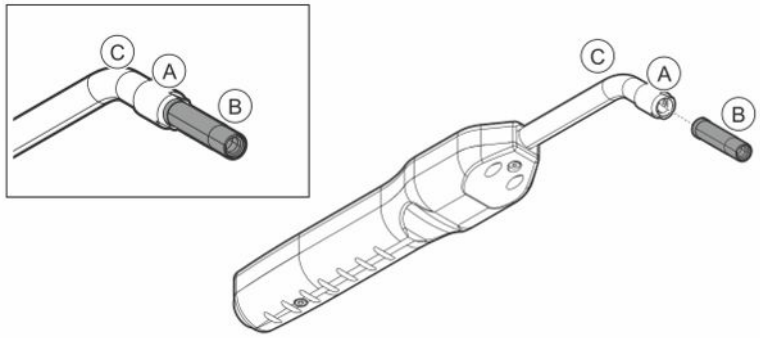
If the probe tip filter is removed, an air gap is formed between the inner metal filter and filter in the protection cap.

The filter in the protection cap prevents water to get into the probe if the probe comes in contact with water.

It is recommended to always replace the protection cap with a new if exposed to water.

15.6 Changing Probe Sensor (P60)

Part	Part no.	Qty. Consumables
Hydrogen Sensor	590-292	1



Disassemble

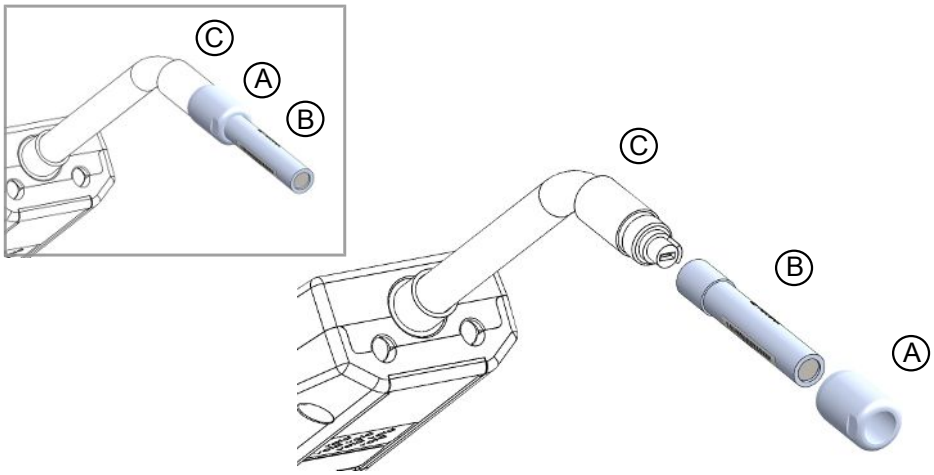
1. Loosen the safety nut (A) using the Sensor Key.
2. Remove the Sensor (B) by pulling it straight out.

Assemble

1. Carefully install the new Sensor. Make sure that the Probe Pipe (C) and Sensor connects correctly.
2. Reinstall the safety nut (A).

15.7 Changing Probe Sensor (Strix)

Part	Part no.	Qty. Consumables
Strix Sensor	590-290	1



Disassemble

1. Loosen the safety nut (A) using the Sensor Key.
2. Remove the Sensor (B) by pulling it straight out.

Assemble

1. Carefully install the new Sensor. Make sure that the Probe Pipe (C) and Sensor connects correctly. Use the markers on Probe Pipe and Sensor for correct alignment.
2. Reinstall the safety nut (A).

15.8 Software Update

1. Download the update folder containing two update files to a USB memory stick.
2. Insert the USB memory stick into the USB-C port.
3. Follow the instructions on the screen.

16 Service

⚠ DANGER

Electrical shock

Always switch off the instrument before performing maintenance.

⚠ DANGER

Electrical shock

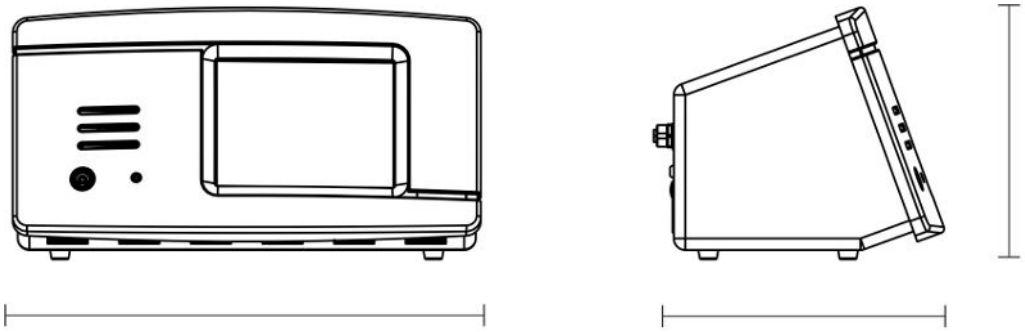
Do not open the instrument needlessly! Service of this equipment may only be carried out by service organizations authorized for this purpose by INFICON. Changing the battery is the only time when opening the instrument is needed and allowed.

⚠ CAUTION

If the instrument suffers external damage, it must be checked and repaired by a service organization authorized by INFICON.

In case of required service or repair, contact nearest INFICON service center. Please visit www.inficon.com for further information.

17 Technical Data



Electrical Data	
Power supply (Desktop Model)	100-240 V (ac), 50/60 Hz, 67 W max. load
Internal rechargeable battery (Portable Model)	Li-Ion, 14.5 V / 102 Wh (7000 mAh)
External 24 V DC power supply (Panel Model)	24 VDC, 2.2 A
Physical Data	
Lowest detectable leak rate	0.5 ppm H_2
Measurement range	$5x10^{-7}$ mbarl/s or cc/s with 5% H_2
Sensor response time	At 10 ppm, the P60 and Strix reaction time of the measured signal is about 0.5 and 0.2 s, respectively. The P60 and Strix response time is about 2 and 0.6 s, respectively.
Time until ready for operation	1 min for P60 and 30 s for Strix
Capacity	
Portable Model	Operating time: 15 – 25 h
Other Data	
Dimensions Desktop Model	166 x 305 x 188 mm ~ 6.5 x 12.0 x 7.4 in.
Dimensions Portable Model + Carrying Case	200 x 330 x 280 mm ~ 7.8 x 12.9 x 11 in.
Dimensions Panel Model	155 x 305 x 144 mm ~ 6.1 x 12 x 5.7 in.
Weight	Desktop Model: 3.5 kg ~ 7.7 lbs Portable Model: 4.0 kg ~ 8.8 lbs Panel Model: 2.2 kg ~ 4.8 lbs
Ambient temperature	10-45°C (50-113°F)
Ambient humidity	10-90% RH (non-condensing)
Protection (IEC529)	Desktop Model IP40 (front), IP30 (back) Portable Model IP40 (front), IP30 (back)

Electrical Data	
	Panel Model IP40 (front), IP20 (back)

17.1 Interfaces and Connectors

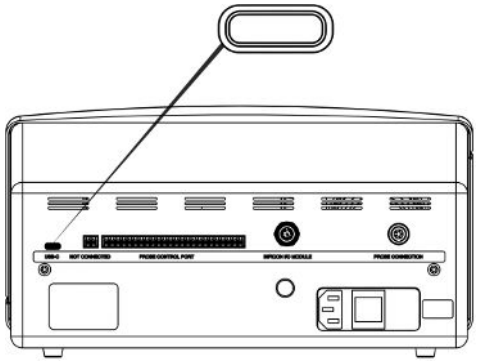
⚠ CAUTION

The outputs will be destroyed

Outputs are not relay types. Do not connect external drive source such as 24 VDC or 100/230 VAC.

All ports below are the same for Desktop, Portable and Panel Models, except where otherwise stated.

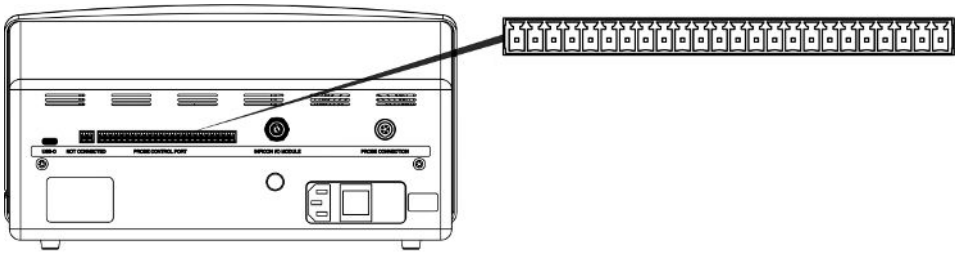
17.1.1 USB-C Port



Connector:	USB cable
Purpose:	For connecting the instrument to a PC or a USB-C memory stick
Cable:	USB-C plug (male) – USB standard type A (male)

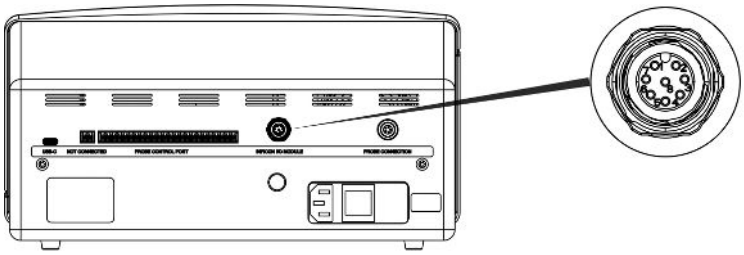
17.1.2 Probe Control Port

The Probe Control Port is not activated in this Software Version.



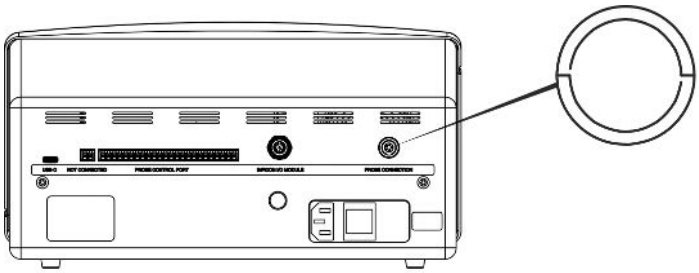
Connector:	Phoenix MC 3,81 mm pitch or equivalent

17.1.3 INFICON I/O Module



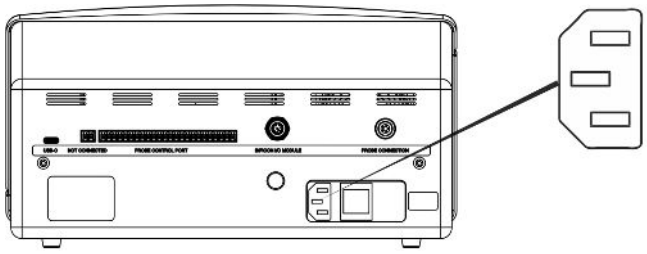
Connector:	M12 8-pin

17.1.4 Probe Connection Port



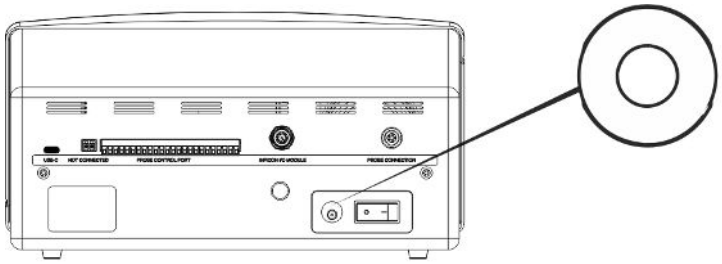
Cable:	C21 Probe Cable

17.1.5 Power Input (Desktop Model)



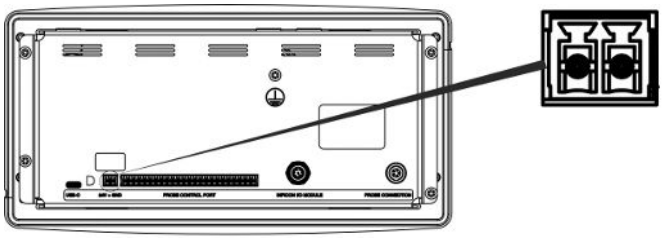
Cable:	Power Cable

17.1.6 Power Input (Portable Model)



Cable:	Battery Charger

17.1.7 Power input (Panel model)



Cable:	598-469 External DC Power Cable (supplied)

⚠ WARNING

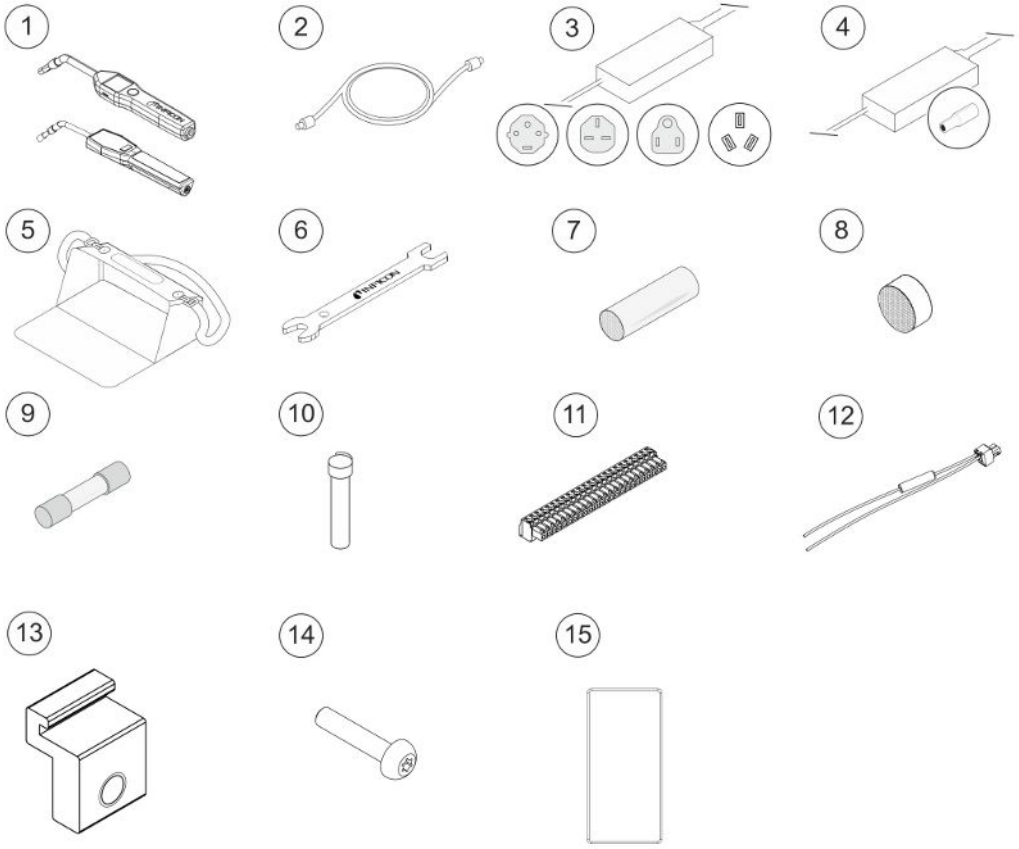
The supplied External DC Power Cable (598-469) must be used.

The 24 V DC power supply must be of SELV* type. INFICON can recommend TDK-Lambda DRB120-24-1 (560-324) or MeanWell EDR 75-24.

* The International Electrotechnical Commission (IEC) defines a SELV system as "an electrical system in which the voltage cannot exceed 120 V DC (ELV) under normal conditions, and under single-fault conditions, *including* earth faults in other circuits".

18 Spare Parts and Accessories

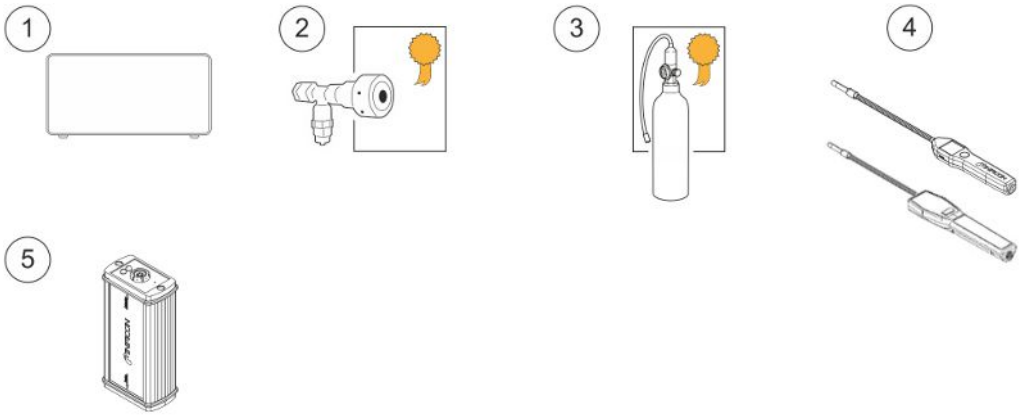
18.1 Spare Parts



Pos.	Part	Type	Description	Part no.
1	Hand Probe	P60	With a rigid neck	590-890
		Strix	With a rigid neck	590-730
2	C21 Probe Cable	3 m		590-161
		6 m		590-175
		9 m		590-165
3	Mains Cord			
	Desktop Model	EU		591-146
		UK		591-147
		US		591-853
		CN		592-155
4	Battery Charger		Portable Model	591-795
5	Portable Case		Portable Model	592-184
6	Sensor Key			598-461
7	Probe Tip Protection Cap	P60	set of 50	591-273
			set of 500	590-625

Pos.	Part	Type	Description	Part no.
		Strix	set of 50	590-300
			set of 500	590-305
8	Probe Tip Filter	P60	set of 50	591-234
		Strix	set of 50	590-234
9	Fuse, 2A T slow		Desktop Model	591-578
10	Hydrogen Sensor	P60		590-292
		Strix		590-290
11	Pluggable terminal block 24 ways			592-189
12	External DC Power Cable Assembly		Panel model	598-469
13	Profile Bracket		Panel model	598-315
14	Profile Bracket screw		Panel model	592-152
15	Sealing cord		Panel model	592-173

18.2 Accessories



Pos.	Part	Type	Description	Part no.
1	Tracer Gas Filler	TGF11		Contact INFICON for further information
2	Calibration Leak		For calibration and function tests of probes	Contact INFICON for further information
3	Calibration Gas		For calibration and function tests of probes	Contact INFICON for further information
4	Hand Probe	P60-FLEX	With flexible neck	590-790
		Strix-FLEX	With flexible neck	590-740
5	COMBOX60	P60	Probe adapter	590-821

For a complete list of all spare parts and accessories, please contact:
support.sweden@inficon.com

19 Support from INFICON

19.1 How to Contact INFICON

For Sales and Customer Service, contact your nearest INFICON Service Center. The address can be found on the website: www.inficon.com

If you are experiencing a problem with your instrument, please have the following information readily available before contacting Customer Service:

- The serial number and firmware version for your instrument,
- A description of your problem,
- A description of any corrective action that you may have already attempted, and the exact wording of any error messages that you may have received.

19.2 Returning Components to INFICON

Do not return any component of your instrument to INFICON without first speaking with a Customer Service Representative. You must obtain a Return Material Authorization (RMA) number from the Customer Service Representative.

If you deliver a package to INFICON without an RMA number, your package will be held and you will be contacted. This will result in delays in servicing your instrument.

Prior to being given an RMA number, you may be required to complete a Declaration Of Contamination (DOC) form if your instrument has been exposed to process materials. DOC forms must be approved by INFICON before an RMA number is issued. INFICON may require that your probe be sent to a designated decontamination facility, not to the factory.

20 Declarations of Conformity

EU Declaration of Conformity

We – INFICON AB - 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 AB.

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

Designation of the product:

Sensistor Sentrac® Hydrogen Leak Detector

and either of the following hand probes:

- **P60**
- **Strix**

Models:

Desktop model (SEN.122.164)

Portable model (SEN.122.165)

Panel model (SEN.122.166)

The products meet the requirements of the following Directives:

- ***Directive 2014/35/EU (Low Voltage)***
- ***Directive 2014/30/EU (Electromagnetic Compatibility)***
- ***Directive 2011/65/EU (RoHS)***

Applied harmonized standards:

- ***EN 61010-1:2010***
- ***EN 61326-1:2013, Edition 3***
- ***EN 63000:2018***

Linköping, 01/02/2023

Patrik Kaliff, CEO

Linköping, 01/02/2023

Niclas Edvardsson, R&D Manager

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UK CA

INFICON

UK Declaration of Conformity

We – INFICON AB - 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 AB.

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

Designation of the product:

Sensistor Sentrac® Hydrogen Leak Detector

and either of the following hand probes:

- **P60**
- **Strix**

Models:

Desktop model (SEN.122.164)

Portable model (SEN.122.165)

Panel model (SEN.122.166)

The products meet the requirements of the following UK legislation:

- ***S.I. 2016 No. 1091 (EMC)***
- ***S.I. 2012 No. 3032 (RoHS)***
- ***S.I 1989 No. 728 (Low Voltage)***

Applied designated standards:

- ***EN 61010-1:2010***
- ***EN 61326-1:2013, Edition 3***
- ***EN 63000:2018***

Linköping, 01/02/2023

Patrik Kaliff, CEO

Linköping, 01/02/2023

Niclas Edvardsson, R&D Manager

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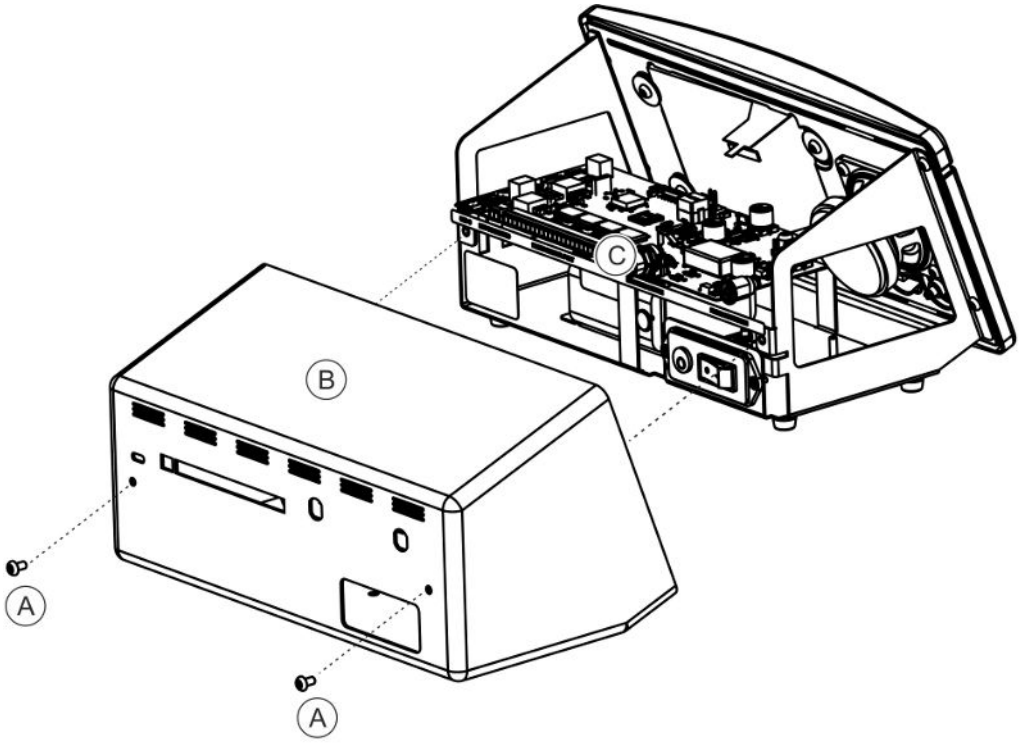
21 Removal of the Battery (Portable Model)

⚠ DANGER

Electrical shock

► Always switch off the instrument before opening it.

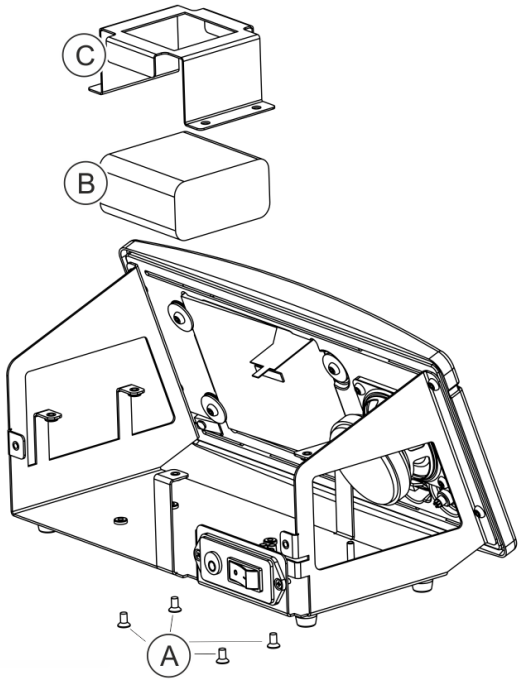


To change the battery remove the cover first.

Removing the Cover

1. Disconnect the mains connector.
2. Remove the two screws (A) holding the cover (B).
3. Remove the cover (B).
4. Remove all contacts on the electronic board (C).
5. Remove the four screws holding the electronic board (C).
6. Remove the electronic board.

Removal of Battery



1 Remove the four screws (A) holding the battery bracket (C).

2 Disconnect the battery cables from the push wire connector.

3 Remove the battery (B) and battery bracket (C).

22 Disposing of the Instrument

According to EU legislation, this product must be recovered for separation of materials and may not be disposed of as unsorted municipal waste.

If you wish you can return this INFICON product to the manufacturer for recovery.

The manufacturer has the right to refuse taking back products that are inadequately packed and thereby presents safety and/or health risks to the staff.

The manufacturer will not reimburse you for the shipping cost.

Shipping address:
INFICON AB
Wahlbecksgatan 25A
SE-582 13 Linköping
Sweden

23 Appendix

23.1 Parameter index

Parameter	Range	Factory Default
Language		English
Operation Mode		Combined Mode
Unit		cc/s
Calibration Value	>0 <1E+30	2.20E-5
Calibration Sampling Time (s)	>2	8
Leak Gas		Air
Viscosity (uPas)	>0 <1E+30	18.2
Density (g/l)	>0 <1E+30	1.20
Interval Reminder		Off
Grey if Uncalibrated		Off
Calibration Reminder Popup		On
Sensitivity	1-15	8
Locating Range		Auto
Reject Indication		On
Locating Audio Ready Pulse		On
Direct Sensitivity Adjustment		On
Locating Audio Threshold (%)	0-100%	0
Measuring Unit		cc/s
Correlation Value	>0 <1E+30	1.00
Displayed Gas		Air
Displayed Gas Viscosity (uPas)	>0 <1E+30	18.2
Displayed Gas Density (g/l)	>0 <1E+30	1.20
Show Gas Name		On
Reject Level	1.0E-30 to 1.0E+30	1.0E-4
Chopped Audio Signal		Off
Probe Lamp Flash		Off
Show Reject Level		On
Min Presentation Time (s)	0.1-100.0	1.0
Display Threshold	0-100%	0
Measuring Audio Threshold (%)	0-100%	0
Measuring Audio Ready Pulse		On
3 digits in measure value		Off

Parameter	Range	Factory Default
Probe Button Function		No function
Probe Lamp		On
Recipes active		Off
Brightness	1-10	8
Screen saver		5 min
Base frequency (Hz)	200, 300, 400, 500, 600, 700	400
Mute Speaker if Headphone		On
Mute Speaker in Screen Save Mode		On
Enable High Volume Levels		Off
Date Format		YYYY-MM-DD
12-hour Notation		Off
Show Time		On
Log Trigger		Off
Log Destination		Internal Memory
Bus Module Activate		Off
Password Activate		Off

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www.inficon.com reachus@inficon.com

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