



Operating Instructions

Sentrac[®] Strix[™] Edition

Hydrogen Leak Detector

Type number: SEN.122.162, SEN.122.163

From software version

2.01.01

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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.

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 Related Manuals

| Manual | Part no. |
|-------------------------------------|----------|
| Sensistor Sentrac Quick Start Guide | 592-012 |

1.1.2 Document History

| Revision | Date | Remark |
|----------|---------|----------------------|
| 01 | 10-2020 | 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

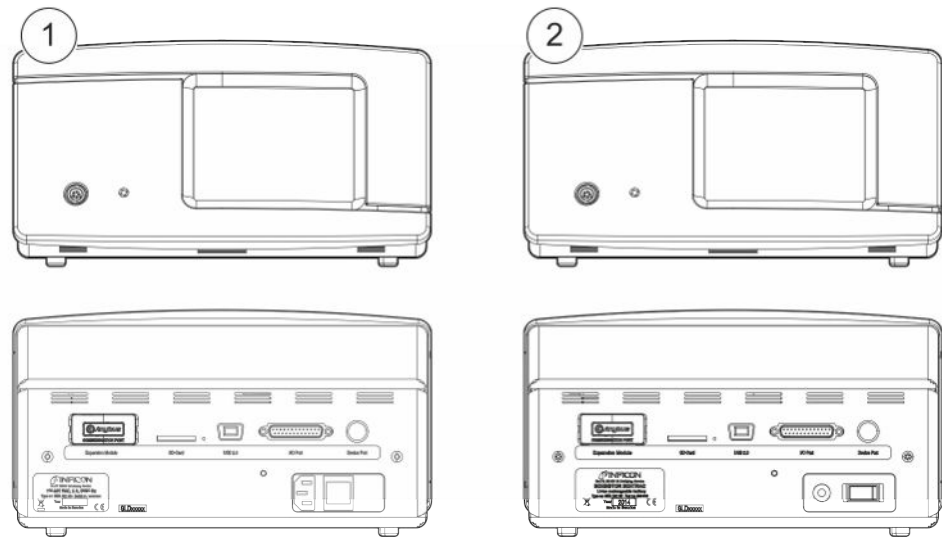


Fig. 1: Available Models

| Sensistor Sentrac | | | Part no. |
|-------------------|---------------------------------------|--------------------------------------|----------|
| 1 | Sentrac Strix edition, desktop model | For stationary use | 590-830 |
| 2 | Sentrac Strix edition, portable model | 12 hours operating time on batteries | 590-840 |

1.3 Password Menu

All menus except the service menu are available when no basic, intermediate, or advance password is set. If any of these passwords are set by the user, the following menus will be accessed with the respective password.

1.4 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

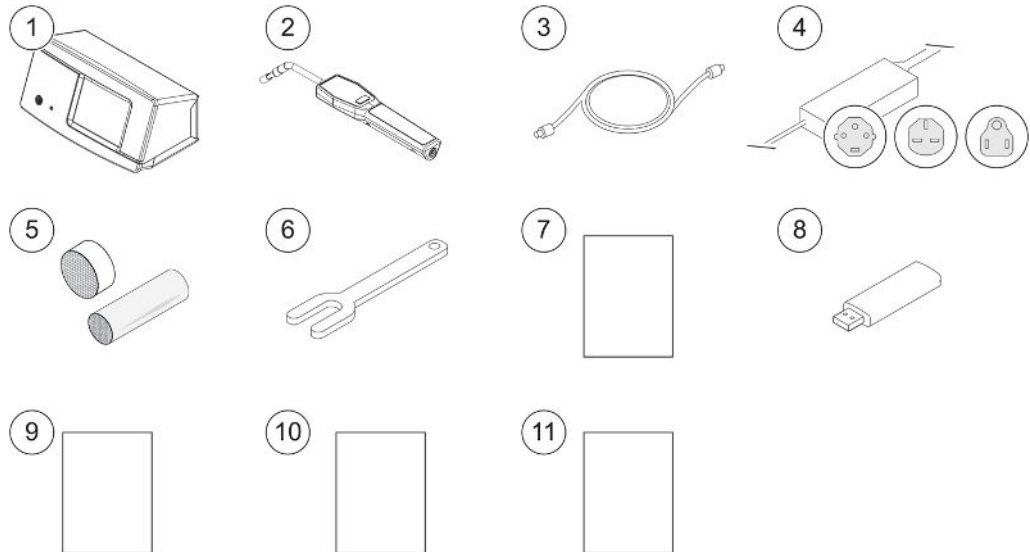
Hazardous situation resulting in damage to property or the environment

2 Equipment and Storage



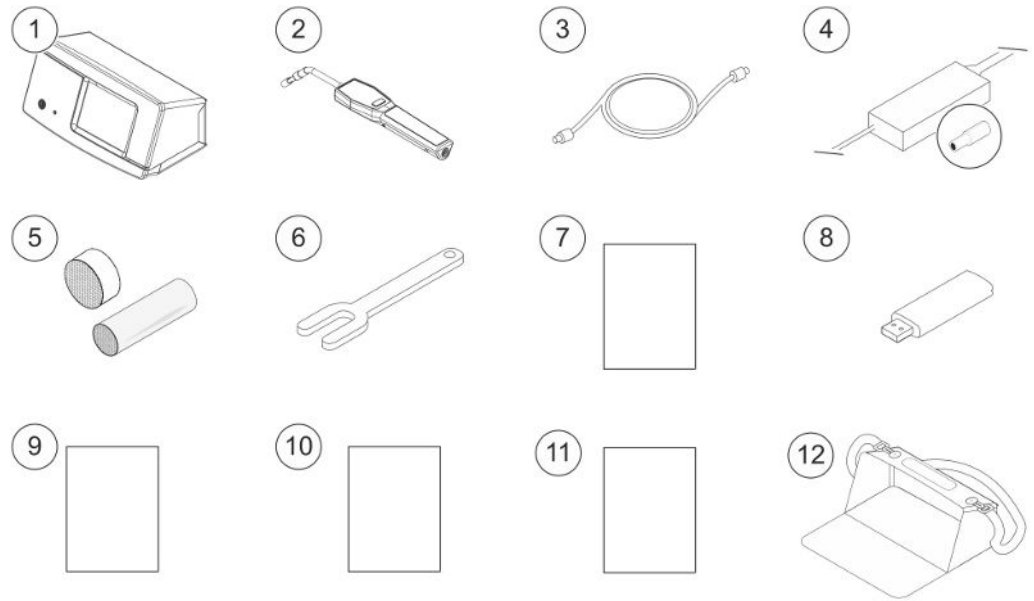
When receiving the equipment, check that it has not been damaged during transport.

2.1 Supplied Equipment Desktop Model



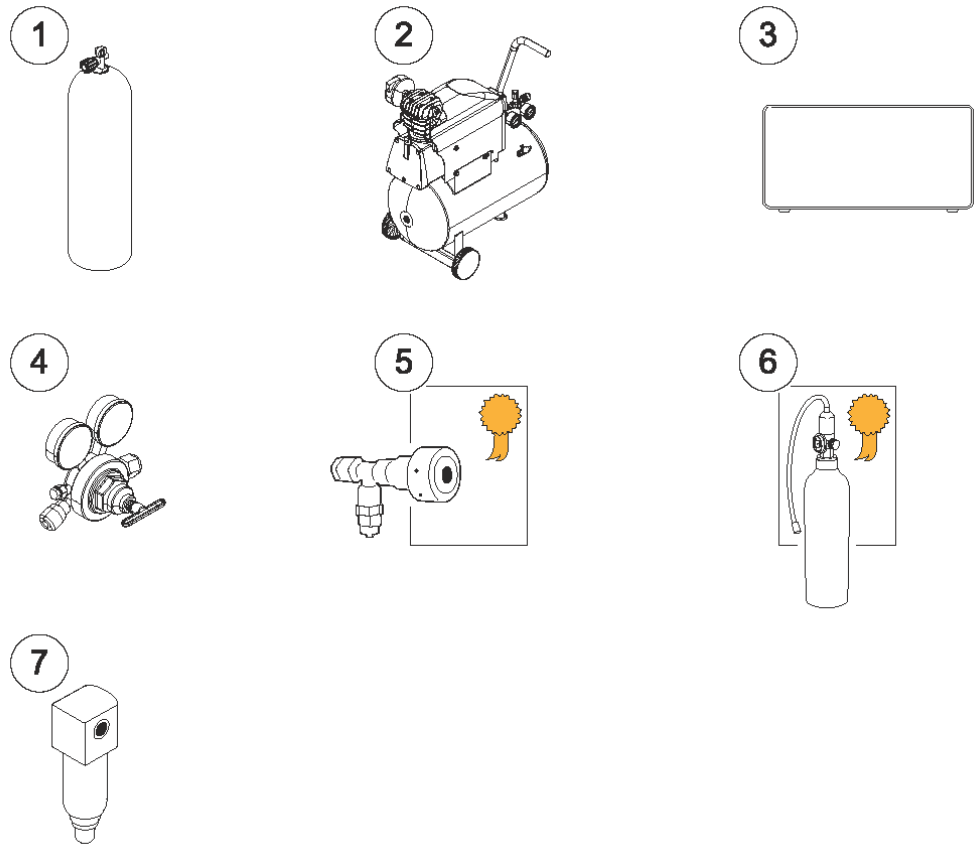
| Pos. | Part | Part no. |
|------|---|----------|
| 1 | Instrument Unit Desktop Model | 590-905 |
| 2 | Strix Hand Probe | 590-730 |
| 3 | Probe Cable (3 m) | 590-161 |
| 4 | Mains cord (Desktop Model) | |
| | EU | 591-146 |
| | UK | 591-147 |
| | US | 591-853 |
| 5 | Sample Kit Probe Tip | 591-799 |
| 6 | Sensor Key | 598-461 |
| 7 | Operating Manual instrument (this manual) | 592-010 |
| 8 | Translations of the manual (USB) | |
| 9 | Return Product Condition Report | |
| 10 | Instrument Test Record | |
| 11 | Quick Start Guide | 592-012 |

2.2 Supplied Equipment Portable Model



| Pos. | Part | Part no. |
|------|---|----------|
| 1 | Instrument Unit Portable Model | 590-915 |
| 2 | Strix Hand Probe | 590-730 |
| 3 | Probe Cable (3 m) | 590-161 |
| 4 | Battery Charger | 591-795 |
| 5 | Sample Kit Probe Tip | 591-799 |
| 6 | Sensor Key | 598-461 |
| 7 | Operating Manual instrument (this manual) | 592-010 |
| 8 | Translations of the manual (USB) | |
| 9 | Return Product Condition Report | |
| 10 | Instrument Test Record | |
| 11 | Quick Start Guide | 592-012 |
| 12 | Carrying Case | 591-993 |

2.3 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.

2.4 Storage Environment Sensistor Sentrac

| | |
|-----------------|--------------------------------|
| Desktop Model | (590-830) |
| Temperature: | 0°C - 45°C (32°F - 113°F) |
| Humidity Range: | 10% to 75% RH (non-condensing) |
| | |
| Portable Model | (590-840) |
| Temperature: | 0°C - 45°C (32°F - 113°F) |
| Humidity Range: | 10% to 75% RH (non-condensing) |

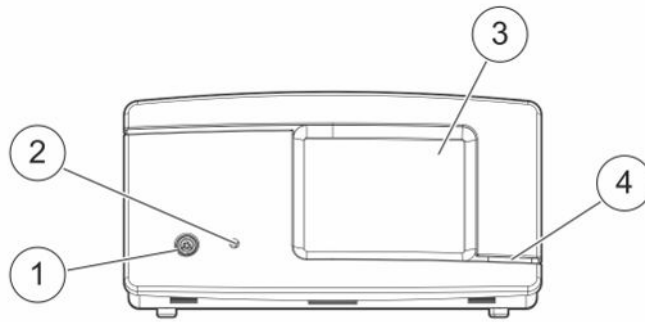


For long storage period we strongly recommend that the power supply battery is charged only to 50% of full charge to keep high charging capacity level for long time.

3 Instrument Description

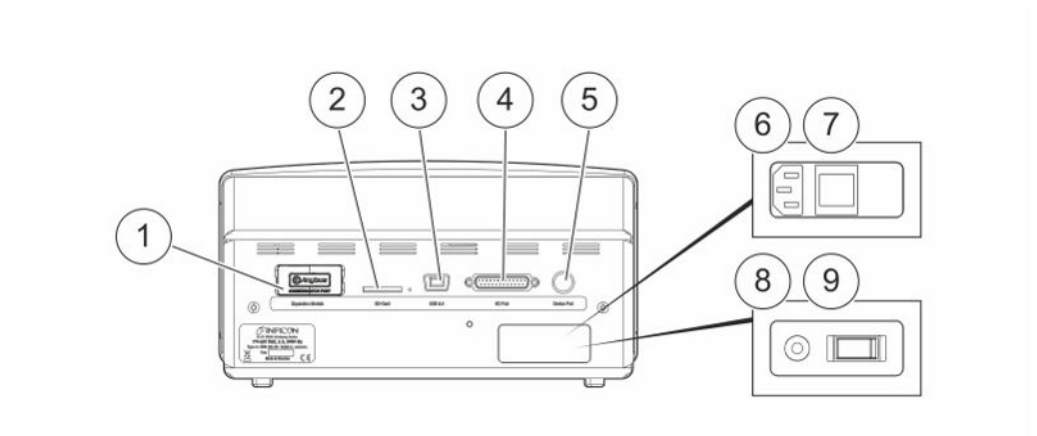
The instrument is manually controlled by the touchscreen menu system. The screen also shows results and sequence graphically and in plain text.

3.1 Front View



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

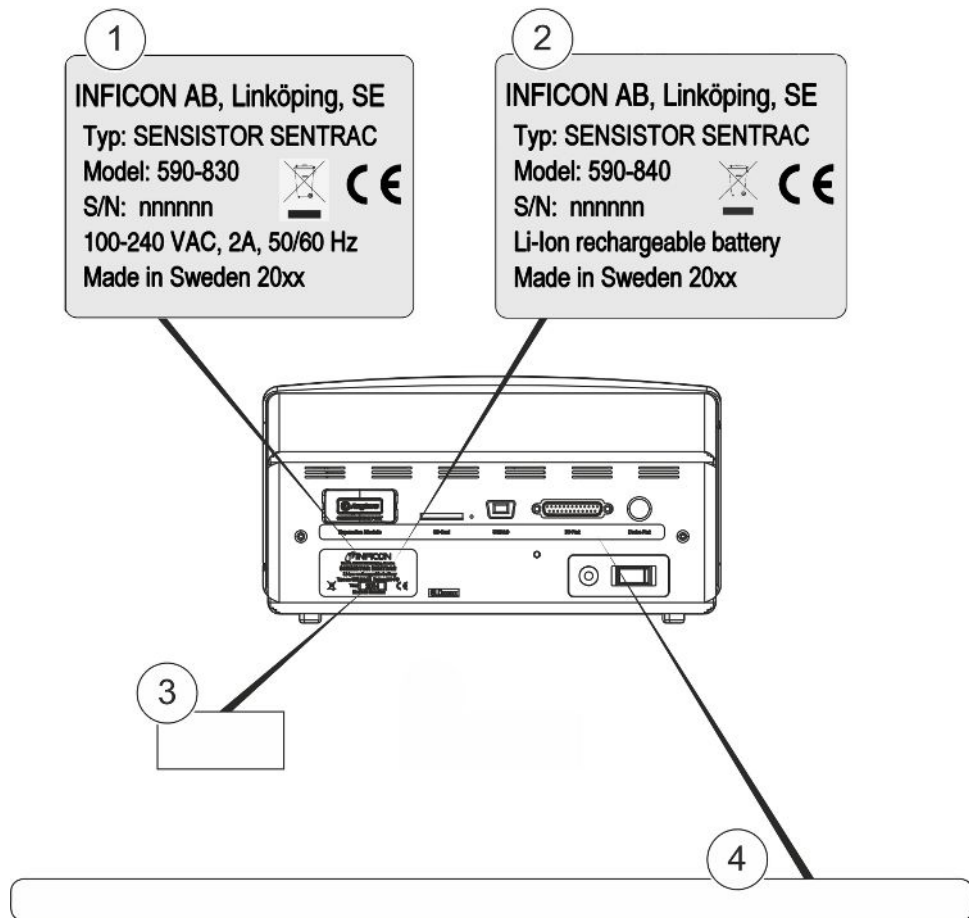
3.2 Rear View





| Pos. | Port/Interface | Connect |
|------|-------------------------------|-----------------------------|
| 1 | Not used | - |
| 2 | SD Card Slot | SD Card |
| 3 | USB 2.0 | To a host (for example PC) |
| 4 | I/O-connector | RS232, PLC I/O and signals. |
| 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 | Device Plate Desktop Model |
| 2 | Device Plate Portable Mode |
| 3 | Manufacturing Year Label |
| 4 | Connections Label |
| SEN. 122.162 | Type number Desktop Model |
| SEN. 122.163 | Type number Portable Model |
|  | WEEE symbol. See Disposing of the Instrument. |
|  | CE marking. Conformity with the essential health and safety requirements. |

4 Hand Probe

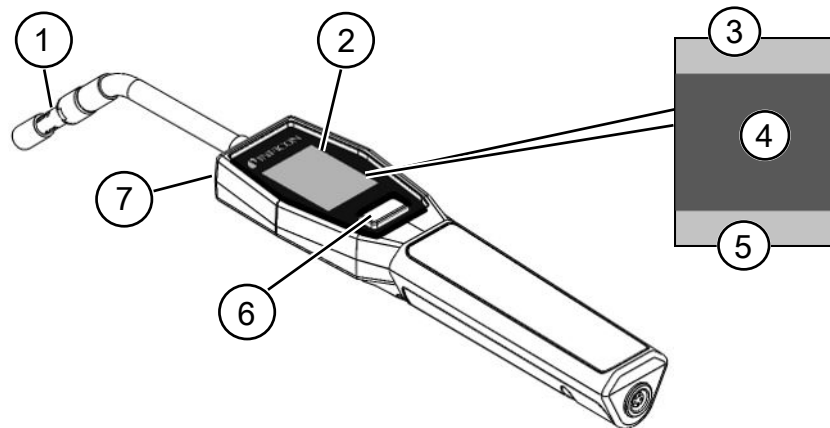
NOTICE

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



| 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.

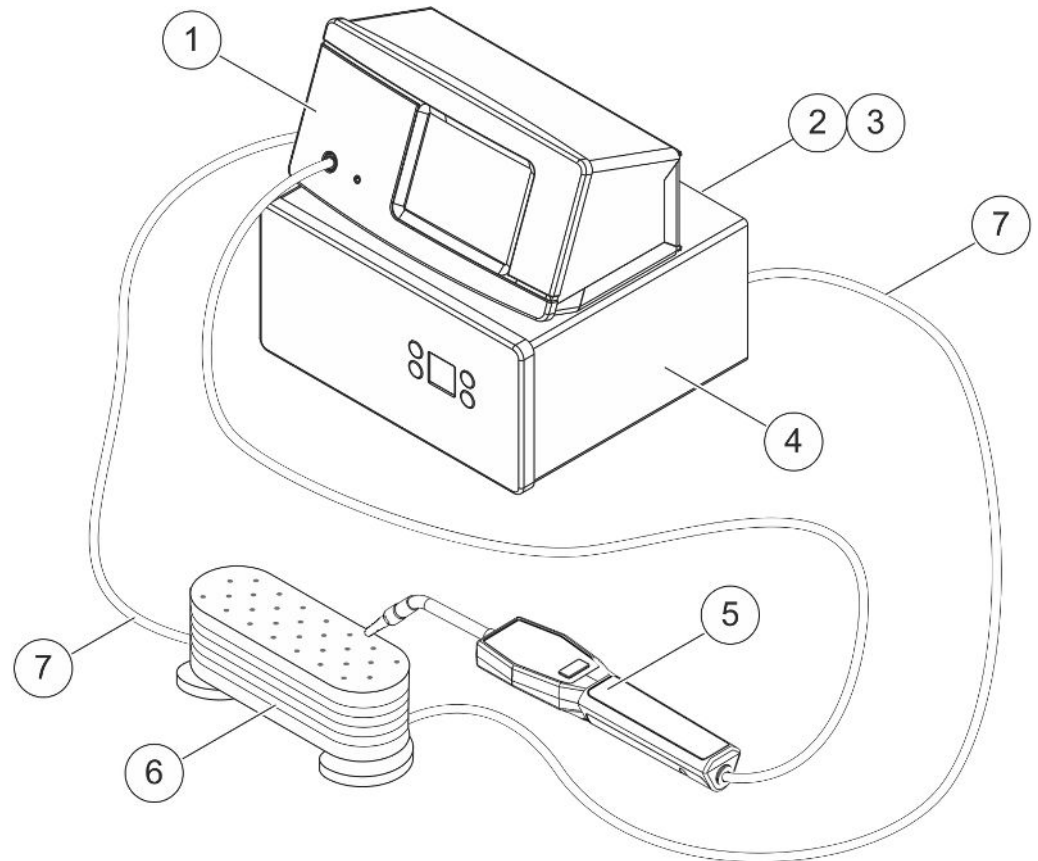
For more information see Spare Parts.

4.2 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.

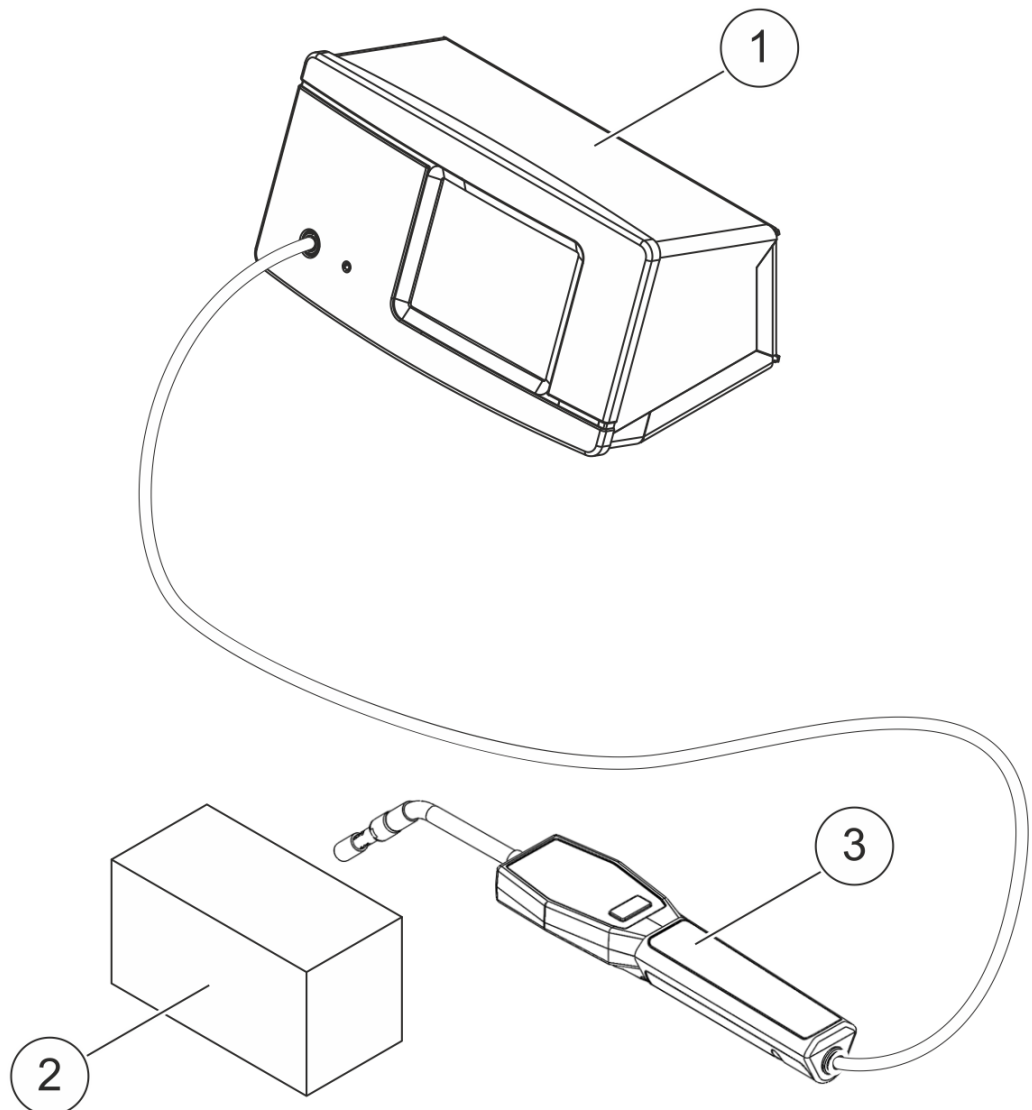
5 System Examples

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 | Strix Hand Probe |
| 6 | Test Object |
| 7 | Evacuation and Gas Filling |

5.2 Portable Model



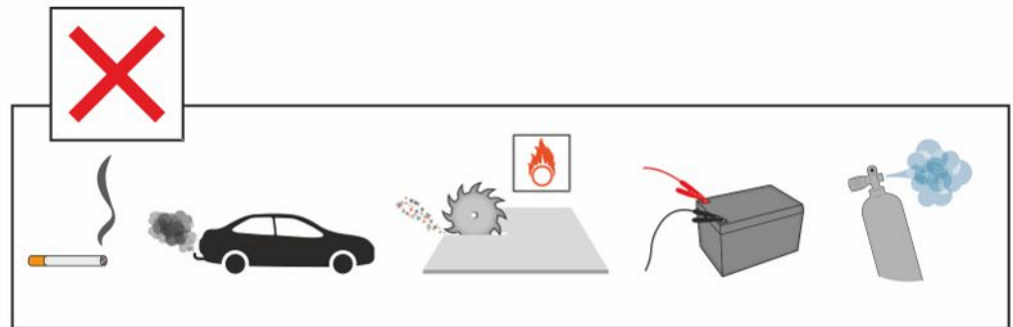
| Pos. | Description |
|------|---------------------------------|
| 1 | Sensistor Sentrac Desktop Model |
| 2 | Test Object |
| 3 | Strix Hand Probe |

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 Strix Hand Probe, 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.

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 brightness, sound, date and language, click Settings > General.

7.3 Communication Settings

In Communication Settings the outgoing ports can be configured.

- ▶ Click Settings > Communication.

USB and RS232

Data can be printed during specific intervals or at specific events. The printed data are in scientific format.

PLC Out

PLC Out is set high when a selected event occurs and stays high during the event.

PLC In

High signal on PLC In triggers a set function.

Ana. Out

Generates an analog voltage, 0.15V to 10.0V, with a resolution of 8 bits between set values of Measuring Mode.

8 Menu System

8.1 Instrument Display

8.1.1 Menu Navigation

NOTICE

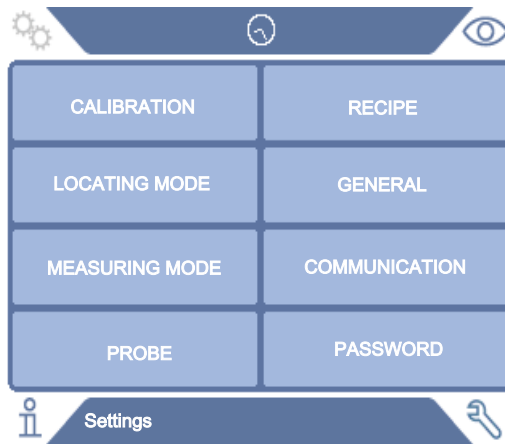
Do not cause any damage by sharp objects on the instrument touchscreen.
 INFICON recommends using the fingertip for touching the touchscreen.

| 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



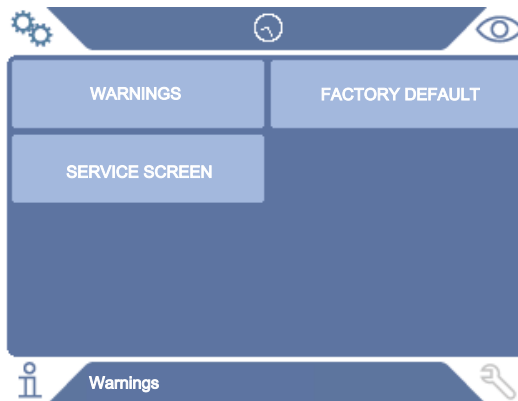
Settings Screen
















Info Screen












Diagnosis Screen



8.1.2 Menu Buttons




| Icon | Description | Icon | Description |
|---|----------------|---|-------------|
|  | Settings |  | Audio |
|  | Operation |  | Mute |
|  | Info |  | Sensitivity |
|  | Diagnosis |  | Calibration |
|  | Measuring Mode |  | Recipe |
|  | Locating Mode |  | I•Guide |
|  | Combined Mode | | |

8.1.3 Navigation and Other Buttons

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

8.2 Passwords and Menu Overview

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

| Icon | Description |
|---|---|
|  | <p>Basic.</p> <p>The password can be set to access basic level</p> <p>Basic users can operate the instrument, but not calibrate or change settings.</p> <p>No password.</p> |
|  | <p>Intermediate.</p> <p>The password can be set to access intermediate level.</p> <p>Intermediate users can calibrate the instrument, but not change settings, edit or review logs.</p> |
|  | <p>Advanced.</p> <p>The password can be set to access the advanced level.</p> <p>Advanced users can operate, calibrate, change settings, edit or review logs.</p> |



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

Passwords and Menu Overview

All menus except the service menu is available when no Basic, Intermediate-, Advance-password is set. If any of these passwords are set by the user, the following menus will be accessed with respective password.

The first tab Login is used for logging into the different access levels.

Under the tab “Intermediate” the Password can be set to access Intermediate level.

Under the tab “Advance” the Password can be set to access Advance level.

| Menu Level 1 | Menu Level 2 | Tabs | Password | | |
|--------------|----------------|------|----------|---------------|---------|
| | | | Basic | Inter-mediate | Advance |
| 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 |

| Menu Level 1 | Menu Level 2 | Tabs | Password | | |
|--------------|-------------------|--------------|----------|---------------|---------|
| | | | Basic | Inter-mediate | Advance |
| | I•Guide | | X | X | X |
| Settings | Calibration | Calibrate | | X | X |
| | | Setup 1 | | | X |
| | | Setup 2 | | | X |
| | | Interval | | | X |
| | | Info | | | X |
| | Locating Mode | Sensitivity | | | X |
| | | Misc | | | X |
| | Measuring Mode | Unit | | | X |
| | | Gas | | | X |
| | | Reject | | | X |
| | | Misc | | | X |
| | | I•Guide | | | X |
| | Probe | Functions | | | X |
| | Recipe | | | | X |
| | General | Display | | | X |
| | | Time/Date | | | X |
| | | Misc | | | X |
| | Communication | USB | | | X |
| | | RS232 | | | X |
| | | PLC Out | | | X |
| | | PLC In | | | X |
| | | Ana. Out | | | X |
| | Password | Login | X | X | X |
| Intermediate | | | X | X | |
| Advanced | | | | X | |
| Info | Statistics | Run Time | X | X | X |
| | | Calibrations | X | X | X |
| | | I•Guide | X | X | X |
| | Export/Import | Export | | | X |
| | | Import | | | X |
| | Settings overview | | X | | X |
| | I/O | | X | | X |

| Menu Level 1 | Menu Level 2 | Tabs | Password | | |
|--------------|----------------|-----------------|----------|---------------|---------|
| | | | Basic | Inter-mediate | Advance |
| | Show password | | X | X | X |
| | About | | | | |
| Diagnosis | Warnings | Warnings | | X | X |
| | Service screen | Signals | | | |
| | | Locating Graph | | | |
| | | Debug Settings | | | |
| | | Test Board | | | |
| | Reset | Settings | | X | X |
| | | Factory Default | | | |
| | | Calibration | | | |

9 Operating the Instrument

9.1 Preparation

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 go to Chapter “Troubleshooting”.
- ▶ 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% N₂ - 5% H₂) 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 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

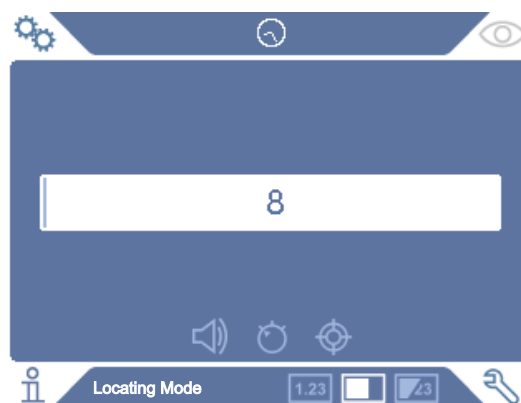
In Locating Mode, the signal is displayed in the form of a bar. The length of the bar varies with the gas concentration.

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.
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.

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.

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.
2. Click the measuring Mode icon 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 0.1 - 1000 ppm H₂. To obtain greatest accuracy over this range, follow the calibration recommendation. See Calibration.

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 1-2 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.

NOTICE

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.

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

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 0.1 - 1000 ppm H₂. To obtain greatest accuracy, follow the calibration recommendation. See Calibration.

9.6 I•Guide

The I•Guide sums several measuring results. A fixed or moving number of measurements with a maximum 25 measurement points can be chosen. The instrument must be in Measuring Mode or Combined Mode for this function to be active. Toggle the Mode function for Hand Probe.



To use I•Guide

If a fixed number of measurement points is used, then measure according to the following steps:

1. Press the probe button, or start button on the screen, to begin the first measurement.
2. Place the probe on the test object while the time bar moves. The instrument registers the results.
3. You might need to wait until the next measurement. The instrument signals Wait.
4. Repeat the procedure for the next measuring point.

When all measurements are made, the sum of all leaks is shown. If the sum of all leaks is greater or the same as the Reject Level, REJECT is shown. If the sum of all leaks is under the Reject Level, ACCEPT is shown. And if the sum of all leaks is greater than Reject Level before all measurements are made then REJECT is shown.

To begin a new measurement action or to stop a current measurement, press the probe button and hold the button for a moment.

It is possible to measure or search in Combined Mode for a leak without registering the measurement. A measurement value is only registered when the time bar is moving.

Measuring with Dynamic Measurement Points

If a dynamic number of measurement points is selected, then do the measurement in the following steps:

1. Press the probe button, or start button on the screen, to begin the first measurement.
2. Place the probe near the measurement point while the time bar is moving.
3. You might need to wait until the next measurement. The instrument signals Wait.
4. Repeat the procedure for the next measuring point.
5. When you sum up all the measurements press and hold on the probe button a short time.

To view specific measurements, press the **backward** and **forward** buttons simultaneously.

If a measurement is to be aborted and restarted, press and hold the probe button a few seconds. You can also click the Abort button on the screen.

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.

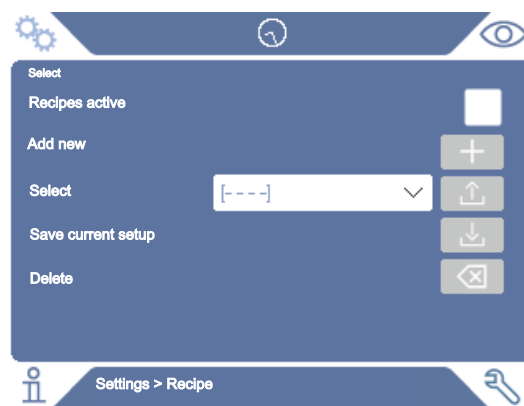


Calibration settings are not saved in the recipe.

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

10.1 Recipe Overview

- Click Settings > Recipe to enter the Recipe Setup 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 Setup menu.
2. Check the Recipes active check-box to activate the use of recipes.
3. Add a new recipe by clicking the plus icon aligned with Add new.
4. Type in the name wanted for the recipe.
5. Choose the new recipe in the drop down list and click the Recipes Active checkbox to activate your recipe. 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.
2. Modify the settings for your recipe.

3. Click Settings > Recipe to enter the Recipe Setup menu.
4. Modify your recipe.
5. Click Save actual setup to save your recipe.

10.2.3 Select an Existing Recipe

1. Click Settings > Recipe to enter the Recipe Setup menu.
2. Check the Recipes active check-box to activate the use of recipes.
3. Select a recipe in the Select pull down menu.
4. Click the download/select icon to load the recipe.

10.2.4 Delete a Recipe

1. Click Settings > Recipe to enter the Recipe Setup menu.
2. Select a recipe in the pull down menu.
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 second to a maximum of 255 days. Set the interval to "Off" to turn the automatic calibration reminder off.

The unit will then signal the interval through a pulsating sound indication together with the text "Calibrate!"



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.

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

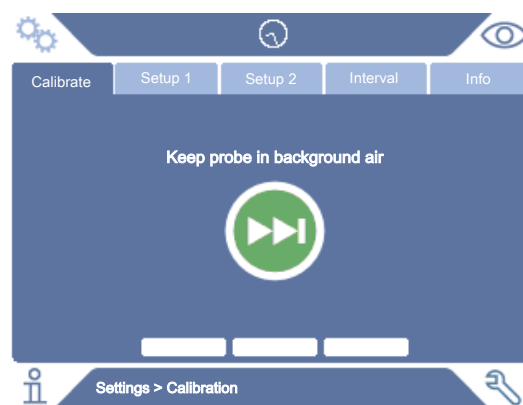
Leak with container:

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% N₂ - 5% H₂).

Calibration Unit = mbar l/s

Calibration Value = 4.2E-05

Calibration Leak Gas = 95% N₂ - 5% H₂

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 - 1000 ppm H₂

1×10^{-5} to 4×10^{-3} cc/s (mbar l/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.

11.2.3 Calibration Procedure

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

7. Continue the calibration routine until you can save the calibration.

NOTICE

Wait at least 15 seconds between each calibration.

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.

12 Info

12.1 Statistics

12.1.1 Run Time

- ▶ To see the current operation time, click Info > Statistics > Run Time.

Two runtime counters can be reset and used for specific needs. The two timers are also reset when a reset is performed on the instrument.

12.1.2 Calibration

To see information regarding:

- number of calibrations in total
 - number of failed calibrations
 - date and time of latest calibration
 - etc.
- ▶ Click Info > Statistics > Calibration.

12.1.3 I•Guide

To see statistics about:

- number of tested objects
 - number of accepted tests
 - number of rejected tests
- ▶ Click Info > Statistics > I•Guide.

12.2 Export/Import

12.2.1 Export

Backup of all useful settings, including recipes, can be exported to an SD-card.

1. Insert an SD-card in the SD-card holder
2. Click Info > Export/Import > Export
3. In Settings, click on the backup to SD-button

A text file is created on the SD-card.

The settings can be imported to any Sentrac instrument.

12.2.2 Import

All useful settings, including recipes, can be imported from an SD-card.

1. Insert the SD-card with the backup into the SD-card holder
2. Click Info > Export/Import > Import
3. In Settings, click on the backup from SD-button

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

12.3 Settings Overview

- ▶ To show all settings, click Info > Settings overview.



If recipe is used, only active settings are shown.

12.4 I/O

- ▶ If recipe is used, only active settings are shown.

The Analog Out level is also shown. The displayed digits show the voltage.

12.5 Show Password

- ▶ To show the set password(s), click Info > Password.

12.6 About

- ▶ To show 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.



The Factory Default and Calibration tabs are available only to authorized service personnel.

14 Serial Communication

USB/RS232

Types of USB/RS232 commands

| | |
|----------------------|---|
| • Read Parameter | Read parameters who have impact of the measurement |
| • Write Parameter | Write parameters who have impact of the measurement |
| • Read Device Setup | Read data about the instrument and device |
| • Write Device Setup | Write data about the instrument and device |
| • Command Execute | Function command |
| • Read File | Read file on SD-card |
| • Command File | Function command to manage file on SD-card |

Command Structure

| Syntax | Sequence of Data |
|---|------------------------|
| Read Parameter + [nn] + \n | rPnn\n |
| Write Parameter + [nn] + [space] + [value/text] + \n | wPnn [value/text]\n |
| Read Device Setup + [cc] + \n | rDcc\n |
| Write Device Setup + [cc] + [space] + [value/text] + \n | wDcc [value/text]\n |
| Command Execute + [cc] + [space] + [value/text] + \n | cEcc [value/text] \n |
| Read File + [sd] + [space] + [File name.LOG] + \n | rFsd [File name.LOG]\n |
| Command File + [dl] + [space] + [File name.LOG] + \n | cFdl [File name.LOG]\n |

nn = number of parameter

cc = info (2 characters)

\n = cursor return (do not write "\n" when using the terminal of the installer)



Some *Write* commands require a restart of Sentrac to start working.

| | | |
|---------------------|------------|------------------|
| RS232 set up | Baud rate: | 115200 (Default) |
| | Data: | 8 |
| | Priority: | None |
| | Stop bit: | 1 |

Read and Write Parameters

| Parameter | Read | | Write | |
|---------------------------|------------------|--|------------------|---|
| | Sequence of Data | Answer | Sequence of Data | value/text |
| LANGUAGE | rP01\n | Language: [text] | wP01 [value]\n | 0 = EN 1 = DE 2 = FE 3 = IT 4 = ES 5 = CH 6 = JP |
| OPERATION_MODE | rP02\n | Operation Mode: [text] | wP02 [value]\n | 0 = Measuring Mode 1 = Locating Mode 2 = Combined Mode |
| CALIBRATION_UNIT | rP03\n | Calibration Unit: [text] | wP03 [text]\n | If write cc/s, Pa m ³ /s, cc/in, SCCM, g/yr, oz/yr, mbarl/s, mm ³ /s, mm ³ /min automatic converting is enabled. Max 14 characters. |
| CALIBRATION_VALUE | rP04\n | Calibration Value: [value] | wP04 [value]\n | |
| CALIBRATION_SAMPLING_TIME | rP05\n | Calibration Sampling Time (s): [value] | wP05 [value]\n | 3 - 60 |
| LEAK_GAS | rP06\n | Leak Gas: [text] | wP06 [text]\n | If write 95%N ₂ - 5%H ₂ , Air, He, N ₂ , H ₂ , R123a, R22, R290, R404a, R407c, R410, R600a, R1234yf automatic converting is enabled. Max 14 characters. |

| Parameter | Read | | Write | |
|-----------------------|------------------|---------------------------------------|------------------|---|
| | Sequence of Data | Answer | Sequence of Data | value/text |
| LEAK_GAS_VISCOSITY | rP07\n | Leak Gas Viscosity (μPas): [value] | wP07 [value]\n | Enable when Leak gas not set to: 95%N ₂ /5%H ₂ , Air, He, N ₂ , H ₂ , R123a, R22, R290, R404a, R407c, R410, R600a, R1234yf |
| LEAK_GAS_DENSITY | rP08\n | Leak Gas Density (g/l): [value] | wP08 [value]\n | Enable when Leak gas not set to: 95%N ₂ - /5%H ₂ , Air, He, N ₂ , H ₂ , R123a, R22, R290, R404a, R407c, R410, R600a, R1234yf |
| CAL_INTERVAL_ACTIVE | rP09\n | Interval Reminder active: [text] | wP09 [text]\n | 0 = On 1 = Off |
| CAL_INTERVAL_DAYS | rP10\n | Days: [value] | wP10 [value]\n | 0 - 255 |
| CAL_INTERVAL_HOURS | rP11\n | Hours: [value] | wP11 [value]\n | 0 - 23 |
| CAL_INTERVAL_MINUTES | rP12\n | Minutes: [value] | wP12 [value]\n | 0 - 59 |
| LOC_SENSITIVITY | rP13\n | Sensitivity: [value] | wP13 [value]\n | 1 - 15 |
| LOC_RANGE_CHOICE | rP14\n | Locating Range: [text] | wP14 [text]\n | 0 = Manual 1 = Auto |
| LOC_REJECT_INDICATION | rP15\n | Reject Indication: [text] | wP15 [text]\n | 0 = On 1 = Off |
| LOC_READY_PULSE | rP16\n | Locating Audio Ready Pulse: [text] | wP16 [text]\n | 0 = On 1 = Off |
| LOC_DIRECT_ADJUST | rP17\n | Direct Sensitivity Adjustment: [text] | wP17 [text]\n | 0 = On 1 = Off |
| LOC_AUDIO_THRESHOLD | rP18\n | Locating Audio Threshold (%): [value] | wP18 [value]\n | 0 - 100 |
| MEASURE_UNIT | rP19\n | Measuring Unit: [text] | wP19 [text]\n | If write cc/s, Pa m ³ /s, cc/in, SCCM, g/yr, oz/yr, mbarl/s, mm ³ /s, mm ³ /min automatic converting is enabled. Max 14 characters. |
| CORR_VALUE | rP20\n | Correlation Value: [value] | wP20 [value]\n | |

| Parameter | Read | | Write | |
|----------------------|------------------|--|------------------|---|
| | Sequence of Data | Answer | Sequence of Data | value/text |
| MEAS_GAS | rP21\n | Displayed Gas: [text] | wP21 [text]\n | If write 95%N ₂ - 5%H ₂ , Air, He, N ₂ , H ₂ , R123a, R22, R290, R404a, R407c, R410, R600a, R1234yf automatic converting is enabled. Max 14 characters. |
| MEAS_GAS_VISCOSITY | rP22\n | Displayed Gas Viscosity (μPas): [value] | wP22 [value]\n | Enable when Displayed Gas not set to: 95%N ₂ - 5%H ₂ , Air, He, N ₂ , H ₂ , R123a, R22, R290, R404a, R407c, R410, R600a, R1234yf |
| MEAS_GAS_DENSITY | rP23\n | Displayed Gas Density (g/l): [value] | wP23 [value]\n | Enable when Displayed Gas not set to: 95%N ₂ - 5%H ₂ , Air, He, N ₂ , H ₂ , R123a, R22, R290, R404a, R407c, R410, R600a, R1234yf |
| MEAS_GAS_SHOW | rP24\n | Displayed Gas Name: [text] | wP24 [text]\n | 0 = On 1 = Off |
| REJECT_LEVEL | rP25\n | Reject Level: [value] | wP25 [value]\n | |
| REJ_CHOPPED_AUDIO | rP26\n | Chopped Audio Signal: [text] | wP26 [text]\n | 0 = On 1 = Off |
| REJ_PROBE_FLASH | rP27\n | Probe Lamp Flash: [text] | wP27 [text]\n | 0 = On 1 = Off |
| SHOW_REJECT_LEVEL | rP28\n | Show Reject Level: [text] | wP28 [text]\n | 0 = On 1 = Off |
| MIN_PRESENT_TIME | rP29\n | Min Presentation Time (s): [value] | wP29 [value]\n | 0.1 – 100 (1=0.1 s) |
| DISPLAY_THRESHOLD | rP30\n | Display Threshold (%): [value] | wP30 [value]\n | 0 – 99 |
| MEAS_AUDIO_THRESHOLD | rP31\n | Measuring Audio Threshold (%): [value] | wP31 [value]\n | 0 – 99 |

| Parameter | Read | | Write | |
|-------------------|------------------|-------------------------------------|------------------|--|
| | Sequence of Data | Answer | Sequence of Data | value/text |
| MEAS_READY_PULSE | rP32\n | Measuring Audio Ready Pulse: [text] | wP32 [text]\n | 0 = On 1 = Off |
| MEAS_DIGITS | rP33\n | 3 digits in measure value: [text] | wP33 [text]\n | 0 = On 1 = Off |
| MULTIPOINT | rP34\n | I·Guide Mode: [text] | wP34 [text]\n | 0 = Off 1 = Fixed 2 = Dynamic |
| MULTIPOINT_TIME | rP35\n | I·Guide Measuring Time (s): [value] | wP35 [value]\n | 0.5 – 200 (1 = 0.1 s) |
| POINTS | rP36\n | I·Guide Positions: [value] | wP36 [value]\n | 1 – 100 |
| MULTIPOINT_SUM | rP37\n | I·Guide Sum: [text] | wP37 [value]\n | 0 = Off 1 = On |
| MULTIPOINT_BLOCK | rP38\n | I·Guide High Signal Wait: [text] | wP38 [value]\n | 0 = Off 1 = On |
| PROBE_BUTTON_FUNC | rP39\n | Probe Button Function: [text] | wP39 [text]\n | 0 = No function 1 = Toggle Mode 2 = Zero Loc. Sig 3 = Probe Lamp 4 = Print 5= Sensitivity |
| PROBE_LAMP | rP40\n | Probe Lamp: [text] | wP40 [text]\n | 0 = Off 1 = On |
| RECIPES_ACTIVE | rP41\n | Recipes active: [text] | wP41 [text]\n | 0 = On 1 = Off |
| SCREEN_BRIGHTNESS | rP42\n | Brightness: [value] | wP42 [value]\n | 1 - 17 |

| Parameter | Read | | Write | |
|--------------------------|------------------|--|------------------|--|
| | Sequence of Data | Answer | Sequence of Data | value/text |
| SCREEN_TIMEOUT | rP43\n | Screen saver: [text] | wP43 [text]\n | 0 = Off 1 = 5 s 2 = 30 s 3 = 1 min 4 = 2 min 5 = 5 min 6 = 10 min 7 = 20 min 8 = 30 min 9 = 1 h 10 = 2 h |
| AUDIO_BASE_FREQ | rP44\n | Base frequency (Hz): [value] | wP44 [value]\n | 0 = 0 1 = 300 2 = 400 3 = 500 4 = 600 5 = 700 |
| SPEAKER_MUTE_HEADPHONE | rP45\n | Mute speaker if headphone: [text] | wP45 [text]\n | 0 = Mute 1 = No mute |
| SPEAKER_MUTE_SCREENSAVER | rP46\n | Mute speaker in screen save mode: [text] | wP46 [text]\n | 0 = On 1 = Off |
| Read All Parameters | rPAL\n | [List of all parameters rP1 to rP44] | - | - |

Read and Write Device Setup

| Setup | Read | | Write | | Explanation |
|------------------------------------|------------------|-------------------------------|------------------|---------------------|--|
| | Sequence of Data | Answer | Sequence of Data | value/text | |
| Read/write instrument serial | rDis\n | [S/N] | wDis [text]\n | S/N | Max 8 characters |
| Read instrument S/W version | rDiv\n | [SW ver. No.] | - | - | X.XX.XX |
| Read/write device serial | rDds\n | [S/N] | wDds [text]\n | S/N | Device e.g P60. Max 8 characters |
| Read/write device type | rDdt\n | [Device type], e.g P60 | wDdt [value]\n | 0 - 9 | 0 = UNKOWN 1 = P60 2 = PL60 3 = COMBOX60 4 = TGF11 5 = AP29_SENTRAC 6 = P50 7 = AP29 8 = COMBOX 9 = STRIX |
| Read device S/W version | rDdv\n | [SW ver. No.] | - | - | X.XX.XX |
| Read device S/W bootloader version | rDdb\n | [SW B ver. No.] | - | - | X.XX.XX |
| Measure [Value read request] | rDmv\n | [Same digit as on the screen] | - | - | |
| Set Main Run Time | - | - | wDlr [value]\n | In minutes. | In terminal, write "wDlr 60\n" for 1 hour. |
| Read/write real time clock | rDcl\n | [yyyy-MM-dd HH:mm:ss] | wDcl [text]\n | yyyy-MM-dd HH:mm:ss | |

Execute Commands

| Execute command | Sequence of Data | Value/text | Explanation |
|-----------------------|-------------------|------------|---|
| Bitmap Dump | cEBD\n | - | Save a bitmap of Sentrac screen on SD-card inserted into Sensistor Sentrac. File name: [time].bmp |
| Operation Mode change | cEom [value]\n | 1 ... 3 | 1 = Localization 2 = Measuring 3 = Combined |
| Set analog out | cEao [value]\n | 0 ... 255 | 0.15 - 10.0 V, with a resolution of 8 bits between set values of Measuring Mode |
| Load recipe | cElr [value]\n | 1...8 | |
| Factory reset | cEfd\n | - | |
| Settings reset | cEsr\n | - | |
| Set Last service | | - | Date set by Sensistor Sentrac's real time clock |
| Wake up screen | cEwu\n | - | |

Read File (Data)

| File data | Read | | |
|-----------|--------------------|---|---|
| | Sequence of Data | Answer | Explanation |
| Read Data | rFsd SENTRAC.LOG\n | SENTRAC.LOG+[File content] ("SENTRAC:LOG No data saved/File I/O err" if no saved data) ("SD-card not inserted" if no SD-card) | Read the content of saved measuring data on SD-card and send it as a text file. |

Command File

| Command File | Sequence of Data | Answer | Explanation |
|--------------|--------------------|--|--|
| Delete file | cFdl SENTRAC.LOG\n | File deleted ("No data to delete/Data delete error" if no saved data) ("SD-card not inserted" if no SD-card) | Delete saved measuring data on SD-card and send it as a text file. |

15 Troubleshooting

15.1 Faulty Symptoms

| 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 the 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. |
| No picture on display | Display broken or lamp cable loose. | Send in for repair. |
| White picture on display. | Main PCB broken or display cable 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. |
| Bad sound out of the speaker. | Broken speaker. | 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. |
| Low or no gas sensitivity. | Old or broken gas sensor. | Replace sensor. |
| | Probe broken. | |
| No prob lamp light | Broken lamp. | Send in for repair. |
| | Broken probe PCB. | Send in for repair. |
| No display light or partly picture | No display light or partly picture. | Send in for repair. |

15.2 Warning Messages

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

16 Maintenance Instructions

⚠ DANGER

Electrical shock

Always switch off the instrument before performing maintenance.

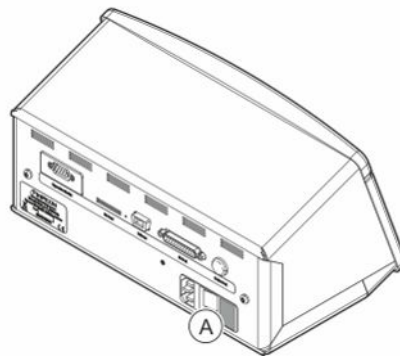
⚠ DANGER

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.

16.1 Changing Fuses

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



Disassemble

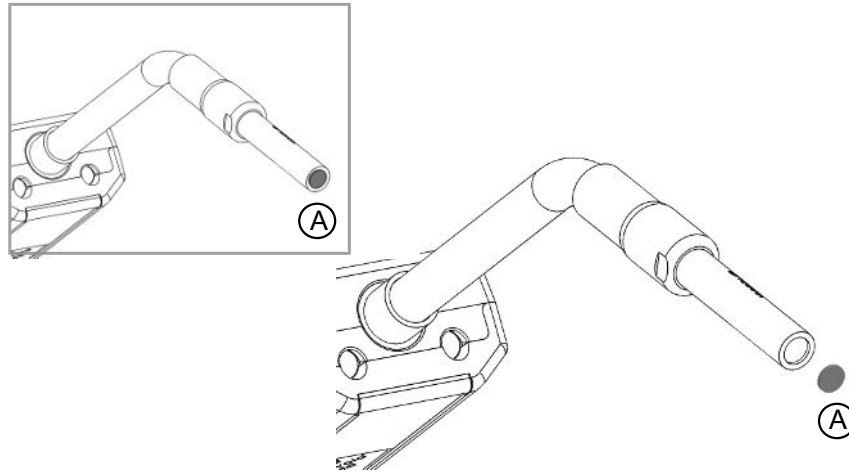
1. Remove the lid (A) containing the fuses.
2. Remove the fuses.

Assemble

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

16.2 Changing Probe Tip Filter

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



Disassemble

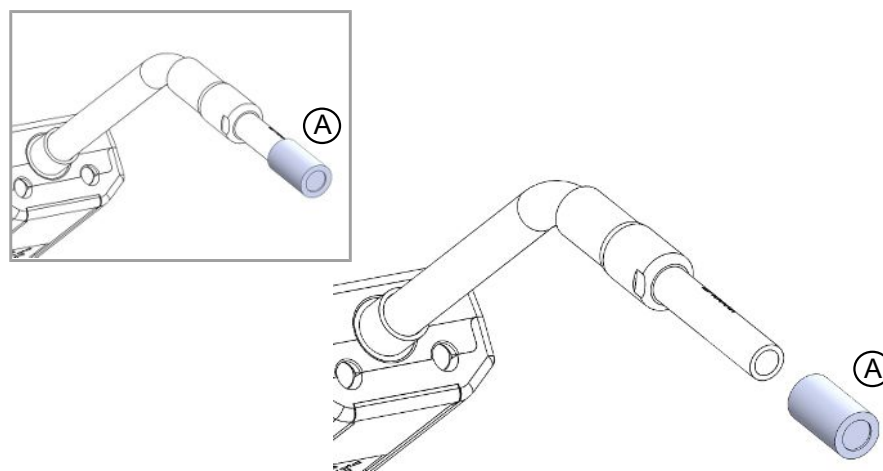
- ▶ Remove the Probe Filter (A) using a needle.

Assemble

- ▶ Install the new Probe Filter.

16.3 Changing Probe Protection Cap

| 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.



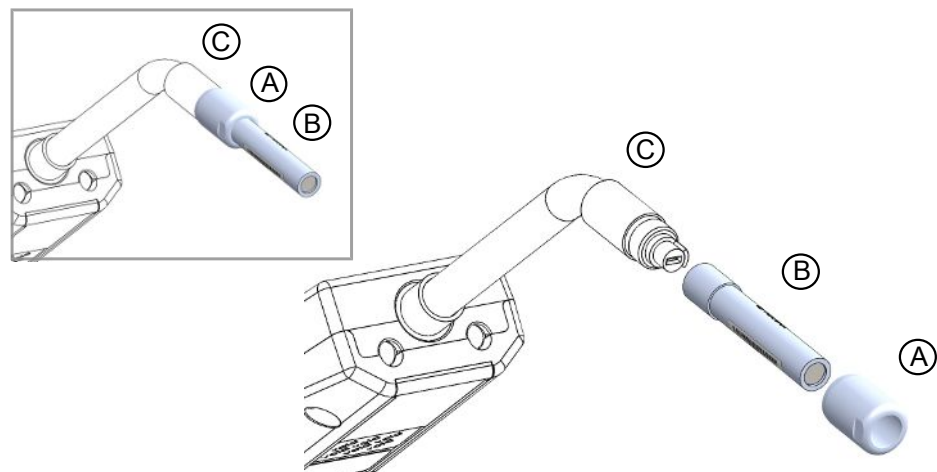
If the probe tip filter is removed, an air gap is formed between the inner metal filter and filter in the protection cap.

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.

16.4 Changing Probe Sensor

| 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.

2. Reinstall the safety nut (A).

16.5 Changing the Battery (Portable Model)

⚠ DANGER

Electrical shock

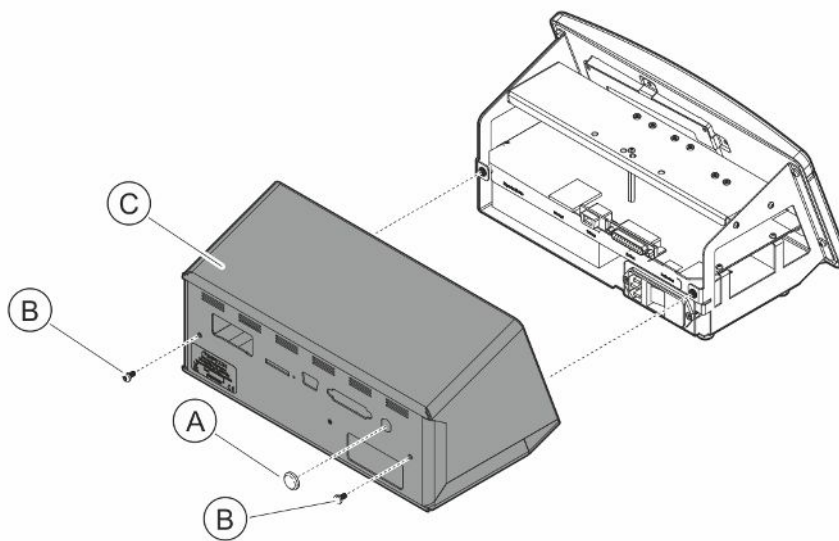
Always switch off the instrument before performing maintenance.

⚠ 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.

| Part | Part no. | Qty | Consumables |
|-----------------------|----------|-----|-------------|
| Instrument casing | 598-194 | 1 | |
| Battery Li-Ion 14,8 V | 591-782 | 1 | |

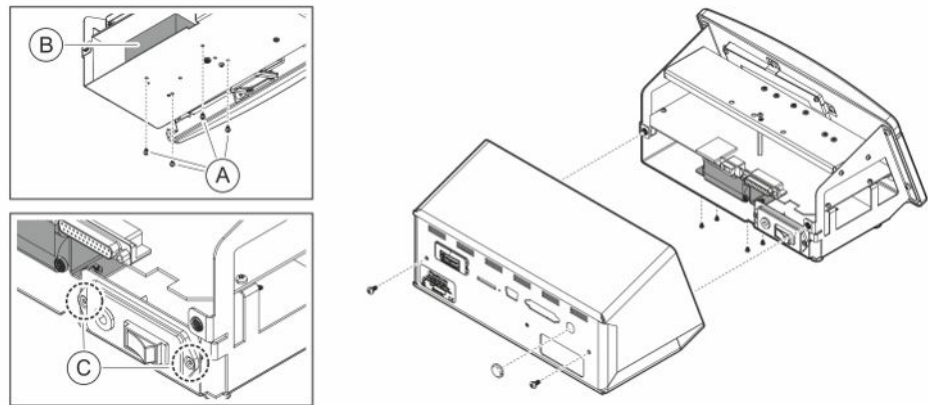


To change the battery remove the cover first:

Removing the Cover

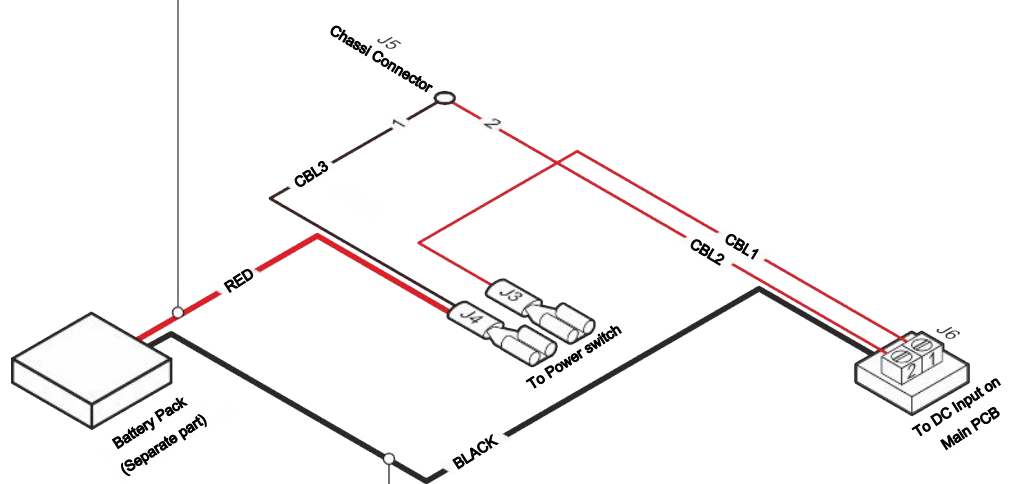
1. Disconnect the mains connector.
2. Use a Spanner for notched nut to remove the Probe Connection Port nut (A).
3. Remove the two screws (B) holding the cover (C).
4. Remove the cover (C).

Changing the Battery



1. Remove the two screws (C) holding the power switch panel.
2. Remove the four screws (A) holding the Battery (B).
3. Remove the Battery (B).
4. Remove the Battery cabling from the power switch panel and main PCB.
5. Install the new Battery.
6. Mount the Battery cabling according to drawing below.
7. Reinstall and tighten the four screws (A) holding the Battery.

Insert RED battery cable and CBL3 into J4
 RED battery cable length = 150 mm



Insert BLACK battery cable into J6 pin 2
 BLACK battery cable length = 300 mm

Assembling the Cover

1. Reinstall the cover (C). Make sure that the lock washer on the Probe Connection Port (LEMO connector on main PCB) is still present. Important for proper grounding. Make sure that no cables are pinched between the cover and the chassis.
2. Reinstall and tighten the two screws (B) holding the cover (C). Tighten to 4 Nm.
3. Reinstall the Probe Connection Port nut (A).
4. Use a Spanner for notched nut and tighten the Probe Connection Port nut.
5. Check the resistance between the ground pin in the mains socket and the outside of the probe cable connector, should be 9Ω or lower. If not, check the lock washer on the Probe Connection Port.

16.6 Software Update

- 1** Download the update software to a computer.
- 2** Locate the downloaded file. Double click on Setup.exe.
 - ⇒ If an older version of the software is already installed, it must be removed. Follow the given directions.
- 3** An icon will appear on the desktop when the installation is finished.
- 4** Connect the instrument to the computer.
 - ⇒ Connect the probe to the instrument if the probe-software is to be updated.
- 5** Double click on the icon on the desktop.
 - ⇒ Check for the code [Instrument Serial no.] in the COM port window. If the code is present, the communication between the computer and the instrument is set up.
- 6** Chose which unit to update, instrument or probe.
- 7** Click “download” to perform the software update.
- 8** Restart the instrument after completed update.

17 Service

 DANGER**Electrical shock**

Always switch off the instrument before performing maintenance.

 DANGER**Electrical shock**

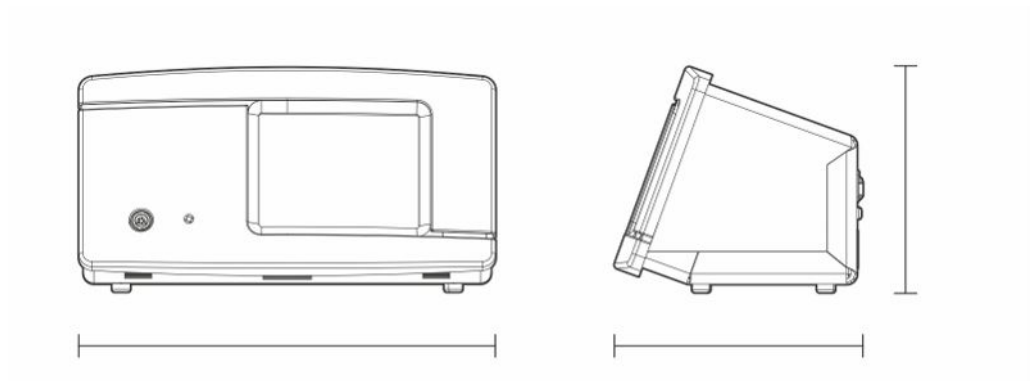
Do not open the instrument needlessly! Service of this equipment may only be carried out by service organizations authorized for this purpose by INFICON. Changing the battery is the only time when opening the instrument is needed and allowed.

 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.

18 Technical Data



| | |
|--|---|
| Electrical Data | |
| Power supply | 100-240 V (ac), 50/60 Hz, 2 A |
| Internal rechargeable battery (Portable Model) | Li-Ion, 14.8 V / 65 Wh (4400 mAh) |
| Physical Data | |
| Lowest detectable leak rate | 0.1 ppm H ₂ |
| Measurement range | 5x10 ⁻⁷ mbarl/s or cc/s with 5% H ₂ |
| Sensor response time | At 10 ppm, the reaction time of the measured signal is about 0.2 seconds and response time about 0.6 seconds. |
| Time until ready for operation | 30 s |
| Capacity | |
| Portable Model | Operating time: 12 – 20 h |
| Other Data | |
| Dimensions Desktop Model | 165 x 305 x 182 mm ~ 6.5 x 12.0 x 7.2 in. |
| Dimensions Portable Model + Carrying Case | 200 x 330 x 280 mm ~ 7.8 x 13 x 11 in. |
| Weight | Desktop model: 4.2 kg ~ 9.2 lbs Portable model: 4.8 kg ~ 10.5 lbs |
| Ambient temperature | 10-45°C (50-113°F) |
| Ambient humidity | 10-90% RH (non-condensing) |
| Protection (IEC529) | Desktop Model IP52 (front), IP30 (back) Portable Model IP52 (front), IP30 (back) |

18.1 Interfaces and Connectors

CAUTION

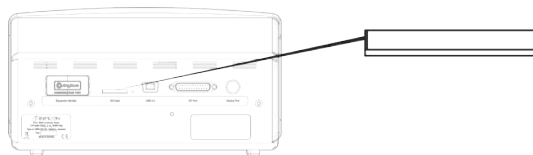
The outputs will be destroyed

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



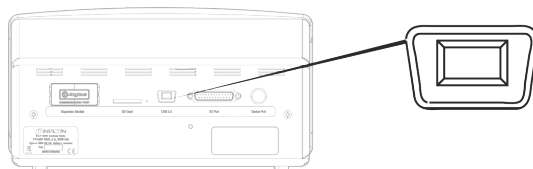
All ports below are the same for both Portable and Desktop Model, except for where otherwise stated.

18.1.1 SD Card Slot



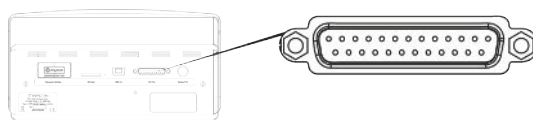
| | |
|------------|--|
| Connector: | SD card |
| Purpose: | For import and export of recipes and logged data |

18.1.2 USB 2.0 Port



| | |
|------------|--|
| Connector: | USB cable |
| Purpose: | For connecting the instrument to a PC |
| Cable: | USB 2.0 type Mini-B plug (male) – USB standard type A (male) |

18.1.3 I/O-Connector Port



| | |
|------------|---------------------|
| Connector: | 25 pin female D-sub |
|------------|---------------------|

| Pin | Signal | Specification | Function |
|-----|---------------|------------------------|----------------------|
| 1 | RS232: Shield | See note ¹⁾ | Serial communication |

| Pin | Signal | Specification | Function |
|-----|--|--|---|
| 2 | RS232: TxD (DTE transmit data) | See note ¹⁾ | Serial communication |
| 3 | RS232: RxD (DTE receive data) | See note ¹⁾ | Serial communication |
| 4 | RS232: RTS (Request to send, issued by DTE) | See note ¹⁾ | Serial communication |
| 5 | RS232: CTS (Clear to send, issued by DCE) | See note ¹⁾ | Serial communication |
| 6 | RS232: DCE ready | See note ¹⁾ | Serial communication |
| 7 | RS232: Signal GND | See note ¹⁾ | Serial communication |
| 8 | RS232: CD (Carrier detect, issued by DCE) | See note ¹⁾ | Serial communication |
| 9 | 24 V | Max 2 A ²⁾ | Power supply for I/O |
| 10 | GND | | GND for I/O |
| 11 | Analog input 0-10 V | Nominal level = [+0.05 ... +9.95] V Maximum level = [-50 ... +50] V Input impedance = 22 k Ω Input LP-filter fc = 2.9 kHz A/D internal resolution: 10-bit | Not used |
| 12 | PLC input EXT0 | See note ³⁾ | Selectable input function, see note ⁶⁾ |
| 13 | PLC input EXT2 | See note ³⁾ | Selectable input function, see note ⁶⁾ |
| 14 | Audio line out return (GND) | | GND External Speaker |

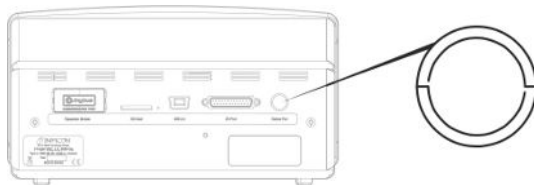
| Pin | Signal | Specification | Function |
|-----|-----------------------|--|---|
| 15 | Audio line out | AC-coupled Output is unbalanced Line_OUT- is connected to GND Line_OUT+ carries analog audio symmetrically to GND Output voltage swing, min = - 1.65 V Output voltage swing, max = +1.65 V Output impedance = 160 Ω @ 400 Hz 136 Ω @ 1 kHz 122 Ω @ 10 kHz Output LP filter f_c = 133 kHz | Output External Speaker |
| 16 | PLC output EXT0 | See note ⁴⁾ | Selectable output function, see note ⁵⁾ |
| 17 | PLC output EXT1 | See note ⁴⁾ | Selectable output function, see note ⁵⁾ |
| 18 | PLC output EXT2 | See note ⁴⁾ | Selectable output function, see note ⁵⁾ |
| 19 | PLC output EXT3 | See note ⁴⁾ | Selectable output function, see note ⁵⁾ |
| 20 | RS232: DTE ready | See note ¹⁾ | Serial communication |
| 21 | GND | | GND for I/O |
| 22 | RS232: Ring indicator | See note ¹⁾ | Serial communication |
| 23 | Analog output 0-10 V | Nominal range = [0.150 ... +10.0] V Resolution: 8-bit Output current = -65 mA (sourcing) / +100 mA (sinking) Unlimited capacitive load No short-circuit protection | Linear output between two measuring levels. Check value level, Calculate RL voltage, calculate resolution. |
| 24 | GND | | GND for I/O |
| 25 | PLC input EXT1 | See note ³⁾ | Selectable input function, see note ⁶⁾ |

Notes

| | |
|----|--|
| 1) | <p>OUT Note on RS-232 communication:</p> <p>This system is a DCE device with only RXD, TXD and GND. Remaining RS-232 signals are not implemented. A DB9-to-DB25 adapter can be used: then connect the DB25 male to this system (DCE) and connect the DB9 female to the terminal device (DTE).</p> |
| 2) | <p>2 A = 24 V + total Digital outputs current. Not available for portable model</p> |
| 3) | <p>Nominal level = [0 ... +24] V</p> <p>Maximum level = [-50 ... +50] V</p> <p>Low-high threshold = appr. 8.5 V</p> <p>Input impedance = min 23 kΩ</p> <p>Input functions selectable in the menu:</p> <ul style="list-style-type: none"> • Unused • Start (I•Guide) • Stop (I•Guide) • Locating Signal Zeroing • External Alert (Error high) |
| 4) | <p>Nominal level = [0 ... +24] V. Not available for portable model</p> <p>Maximum sourcing current = 500 mA</p> <p>Output impedance = max 4 Ω</p> <p>Output functions selectable in the menu:</p> <ul style="list-style-type: none"> • Unused • Reject • Accept (only I•Guide) • Calibrated • Not Ready • Gas Signal • Not Ready or Gas Signal • Error (summary error) |
| 5) | <p>Outputs:</p> <ul style="list-style-type: none"> • Unused • Reject • Accept • Calibrated • Not Ready |

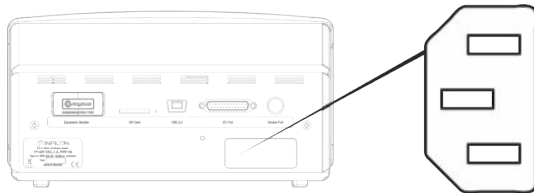
| | |
|----|---|
| | <ul style="list-style-type: none"> • Gas Signal • Not Ready or Gas Signal • Error (summary error) |
| 6) | <p>Inputs:</p> <ul style="list-style-type: none"> • Unused • Start (I•Guide) • Stop (I•Guide) • Locating Signal Zeroing • External Alert |

18.1.4 Probe Connector Port



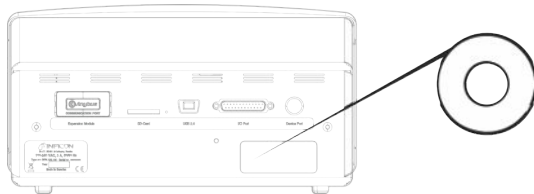
| | |
|--------|-----------------|
| Cable: | C21 Probe Cable |
|--------|-----------------|

18.1.5 Power Input (Desktop Model)



| | |
|--------|-------------|
| Cable: | Power Cable |
|--------|-------------|

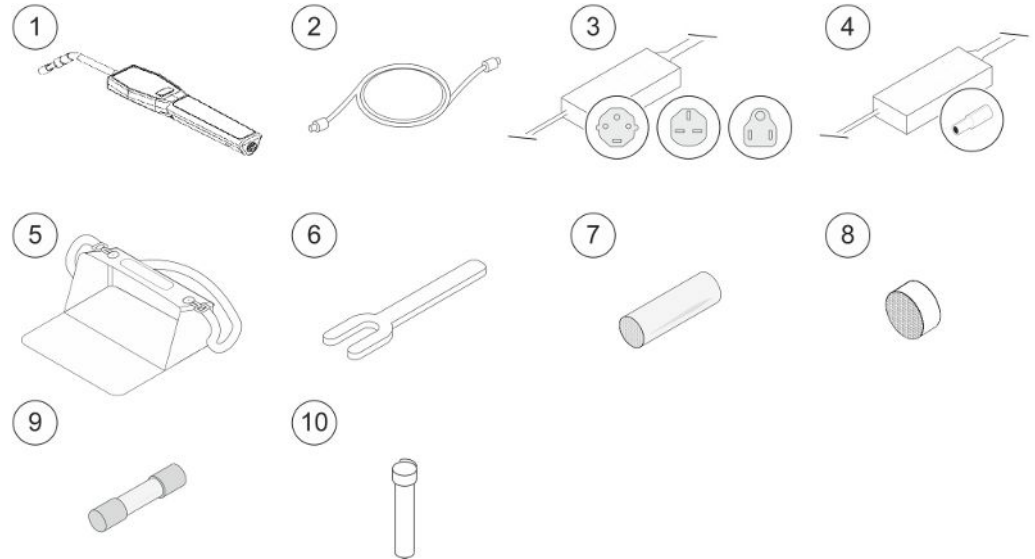
18.1.6 Power Input (Portable Model)



| | |
|--------|-----------------|
| Cable: | Battery Charger |
|--------|-----------------|

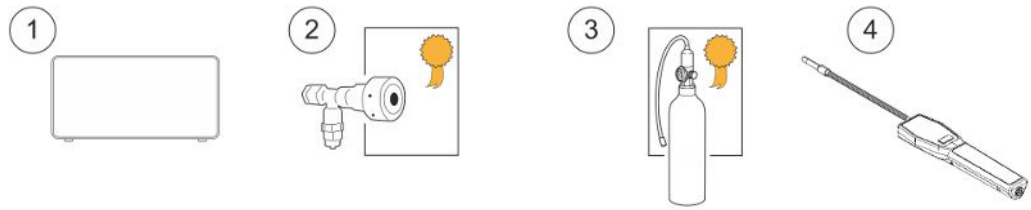
19 Spare Parts and Accessories

19.1 Spare Parts



| Pos. | Part | Type | Description | Part no. |
|------|-----------------------------|-------|--|----------|
| 1 | Hand Probe | 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 |
| 4 | Battery Charger | | To Sensistor Sentrac Portable Model | 591-795 |
| 5 | Carrying Case | | To Sensistor Sentrac Portable Model | 591-993 |
| 6 | Sensor Key | | | 598-461 |
| 7 | Probe Tip Protection Cap | | set of 50 | 590-300 |
| | | | set of 500 | 590-305 |
| 8 | Probe Tip Filter | | set of 50 | 590-310 |
| 9 | Fuse, 2A T slow | | To Sensistor Sentrac Desktop Model | 591-578 |
| 10 | Strix Sensor | | | 590-290 |

19.2 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 | Strix-FLEX | With flexible neck | 590-740 |

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

20 Support from INFICON

20.1 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.

20.2 Returning Components to INFICON

Please use the Product Return Form that was included with the product on delivery.

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.

21 EU Declaration 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 following hand probes:**

- P60
- Strix

Models:

**Desktop model
Portable model**

Type numbers:

**SEN.122.160
SEN.122.161
SEN.122.162
SEN.122.163**

Linköping, 09/10/2020

Fredrik Enquist, Development Manager

The products meet the requirements of the following Directives:

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

Applied harmonized standards:

- **EN 61000-6-3:2007**
- **EN 61000-6-2:2005**
- **EN 50581:2012**
- **EN 61010-1:2010**
- **EN 61326-1:2013**

INFICON AB
P.O. Box 76
SE-581 02 Linköping
Sweden
Phone: +46 (0)13-355900
Fax: +46 (0)13-355901
www.inficon.com
E-mail: leakdetection@inficon.com

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 active | | Off |
| Days | 0-255 | 0 |
| Hours | 0-23 | 0 |
| Minutes | 0-59 | 0 |
| 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 | | Off |
| Min Presentation Time (s) | 0.1-100.0 | 1.0 |
| Display Threshold | 0-100% | 0 |
| Measuring Audio Threshold (%) | 0-100% | 0 |

| Parameter | Range | Factory Default |
|----------------------------------|-------------------------------|-----------------|
| Measuring Audio Ready Pulse | | On |
| 3 digits in measure value | | Off |
| I•Guide Mode | | Off |
| I•Guide Measuring Time (s) | min 0.5 s max 1000 s | 5.0 |
| I•Guide Positions | 1-25 | 4 |
| Probe Button Function | | No function |
| Probe Lamp | | Off |
| Recipes active | | Off |
| Brightness | 1-17 | 15 |
| Screen saver | | Off |
| Base frequency (Hz) | 0, 300, 400, 500, 600, 700 | 400 |
| Mute speaker if headphone | | Off |
| Mute speaker in screen save mode | | Off |

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