

OPERATING MANUAL

nin65e1-a (1409)

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Sensistor Sentrac Leak Detector

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General Safety Precaution



Warning

Tracer gas does not contain any oxygen. Be sure to keep small areas well ventilated to avoid suffocation.



Warning

Upon pressurization of the test object, be sure to have a pressure relief valve in case of accidental tracer gas pressure increase.



Warning

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

INFICON cannot take any responsibility for the consequences arising from the inappropriate use of certain test pressures.

1 General Information

Please read this Operating Manual carefully before putting your Sensistor Sentrac into service. When reading, pay particular attention to the **WARNINGS, CAUTIONS** and **NOTICES** found throughout the text.

1.1 About this manual

The purpose of this manual is to:

- Describe the working principle of the Sensistor Sentrac
- Teach the reader how to set up the Sensistor Sentrac
- 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
a	09-2014	First public release

1.2 Introduction to the Sensistor Sentrac

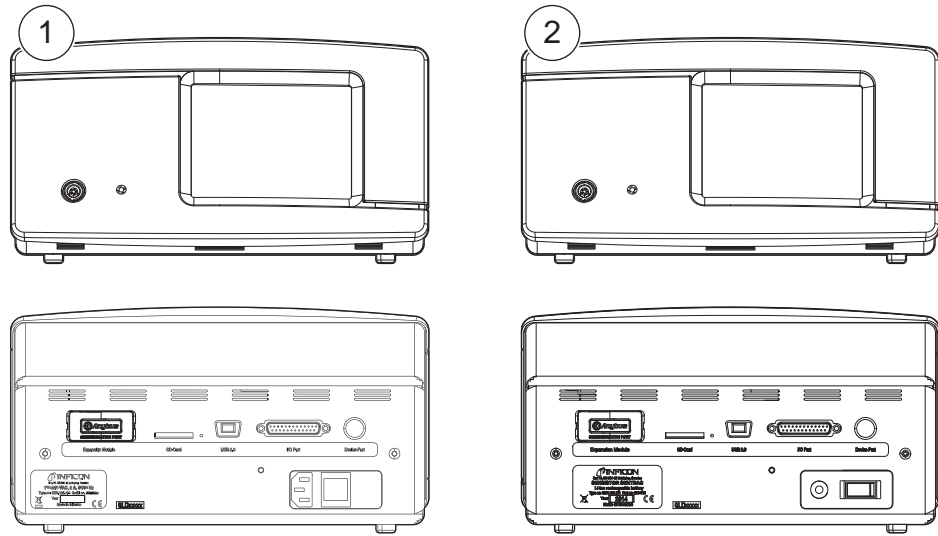
The Sensistor Sentrac Hydrogen Leak Detector can be used to detect the presence of a leak, where on the test object the leak is located and how much it is leaking.

1.2.1 Intended Use

- The Sensistor Sentrac 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.

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1.2.2 Available Models

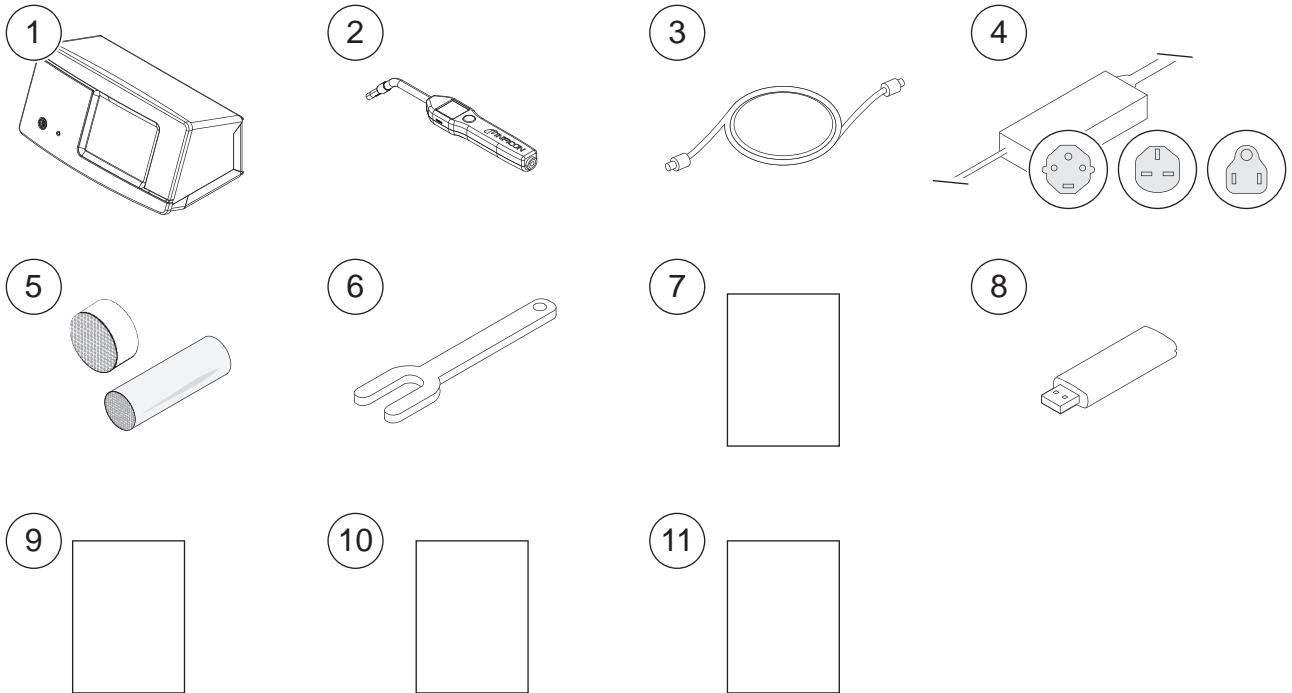


Sensistor Sentrac			Part no.
1	Desktop Model with Hand Probe	For stationary use.	590-900
2	Portable Model with Hand Probe and Carrying Case	12 hours operating time on batteries.	590-910

2 Equipment and Storage

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

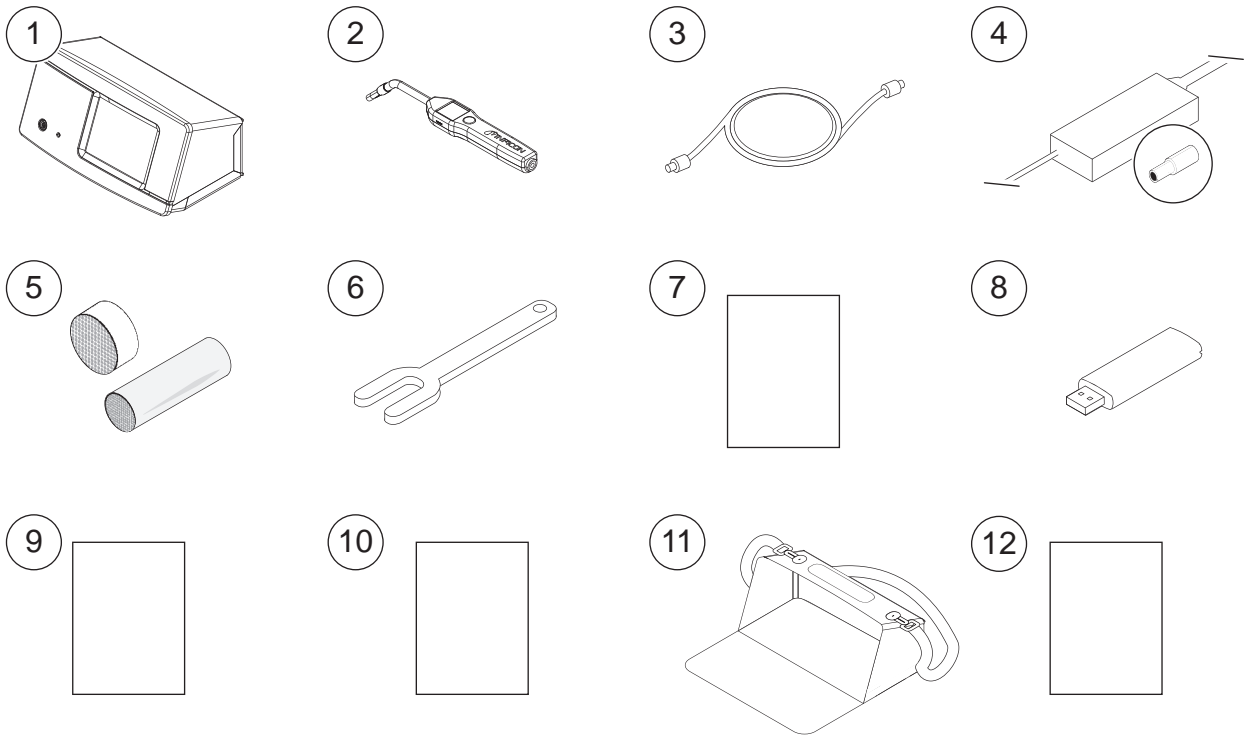
2.1 Supplied Equipment Desktop Model



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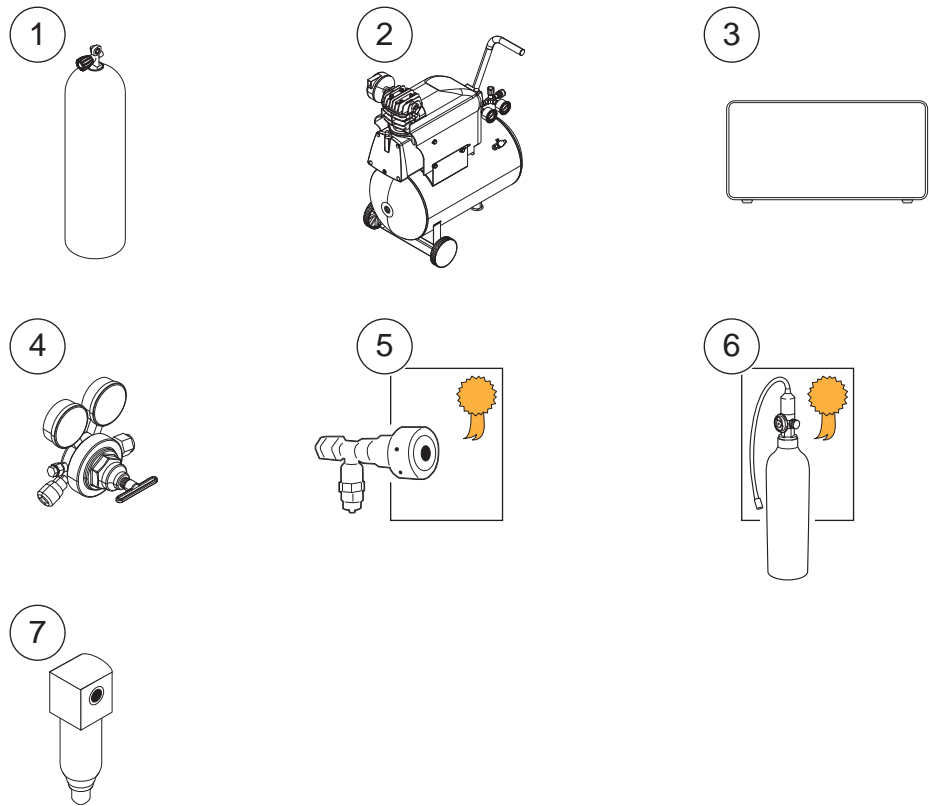
Pos.	Part	Part no.
1	Detector Unit Desktop Model	599-065
2	Hand Probe P60	590-890
3	Probe Cable (3 m)	590-161
4	Mains cord (Desktop Model)	
	EU	591-146
	UK	591-147
	US	591-853
5	Sample Kit Probe Tip	591-799
6	Sensor Key	598-147
7	Operating Manual Sensistor Sentrac (this manual)	592-010
8	Translations of the manual (USB)	
9	Return Product Condition Report	
10	Leak Detector Test Record	
11	Quick Start Guide	592-012

2.2 Supplied Equipment Portable Model



Pos.	Part	Part no.
1	Detector Unit Portable Model	599-066
2	Hand Probe P60	590-890
3	Probe Cable (3 m)	590-161
4	Battery Charger	591-795
5	Sample Kit Probe Tip	591-799
6	Sensor Key	598-147
7	Operating Manual Sensistor Sentrac (this manual)	592-010
8	Translations of the manual (USB)	
9	Return Product Condition Report	
10	Leak Detector Test Record	
11	Carrying Case	591-993
12	Quick Start Guide	592-012

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 Chapter 17.1 “Spare Parts” on p. 73 and Chapter 17.2 “Accessories” on p. 74.

2.4 Storage

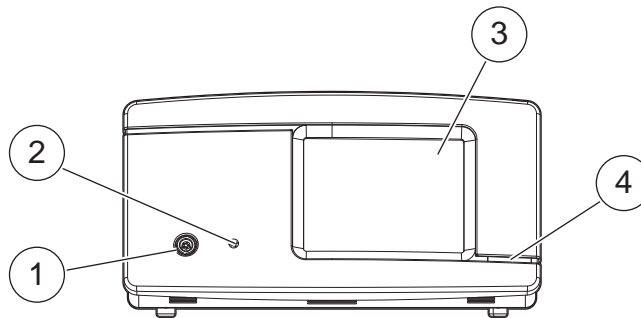
For prolonged storage, factors such as temperature, humidity, saline atmosphere and so on, can damage the detector elements.

Please contact your local representative for more information.

3 *Sensistor Sentrac Description*

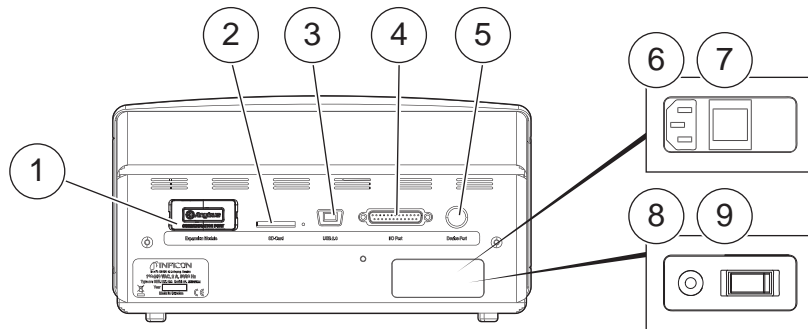
The Sensistor Sentrac is manually controlled by the touchscreen menu system. The screen also shows results and sequence graphically and in plain text.

3.1 *Front View*



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

3.2 Rear View

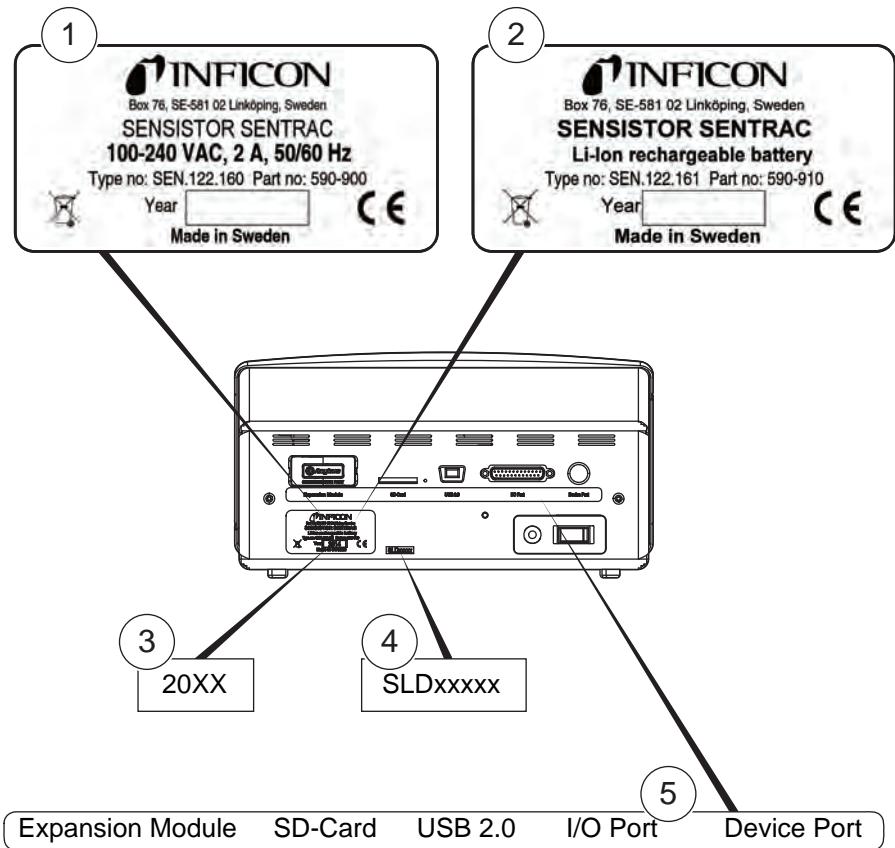


Pos	Port/Interface	Connect
1	Not used. For future option.	-
2	SD Card Slot	SD Card
3	USB 2.0 Port	To a host (for example PC)
4	I/O Port	RS232, PLC I/O and signals.
5	Device Port	Probe, Tracer Gas Filler and other devices.
6	Power Input (Desktop Model)	Power Cable
7	Power Switch (Desktop Model)	-
8	Power Input (Portable Model)	Battery Charger
9	Power Switch (Portable Model)	-




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3.3 Labels

At the back of the Sensistor Sentrac, a label indicates the electrical specifications of the leak detector and its serial number.



Pos	Label
1	Device Plate Desktop Model
2	Device Plate Portable Model
3	Manufacturing Year Label
4	Serial Number Label
5	Connections Label

<p>SEN.122.160</p>	<p>Type number Desktop Model</p>
<p>SEN.122.161</p>	<p>Type number Portable Model</p>
	<p>Serial number</p>
	<p>WEEE symbol. See Chapter 20 "Disposal" on p. 79 for more information.</p>
	<p>CE marking. Conformity with the essential health and safety requirements.</p>

4 *Hand Probe P60*



Caution

Do not expose the probe to a hydrogen concentration greater than 0.1% when the instrument is not powered on, as this could damage or destroy the probe gas sensor.



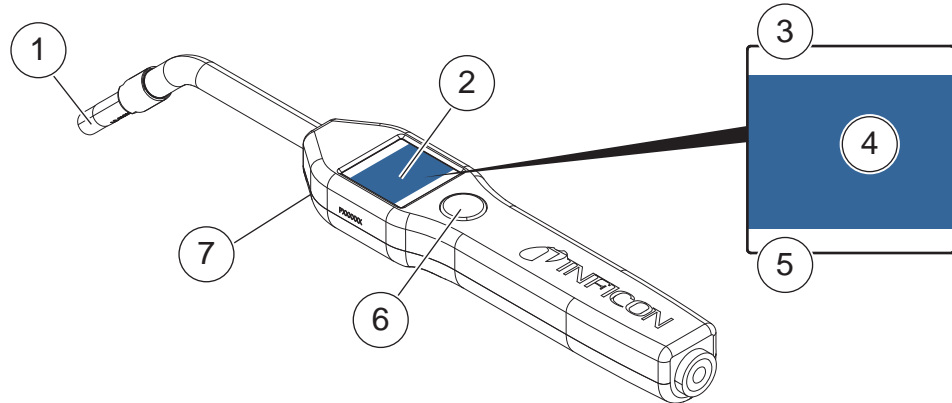
Caution

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

4.1 *General Information*

The Hand Probe P60 is a non-sucking probe. Gas sensing takes place in the replaceable sensor located in the tip of the probe.

4.2 Description



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.

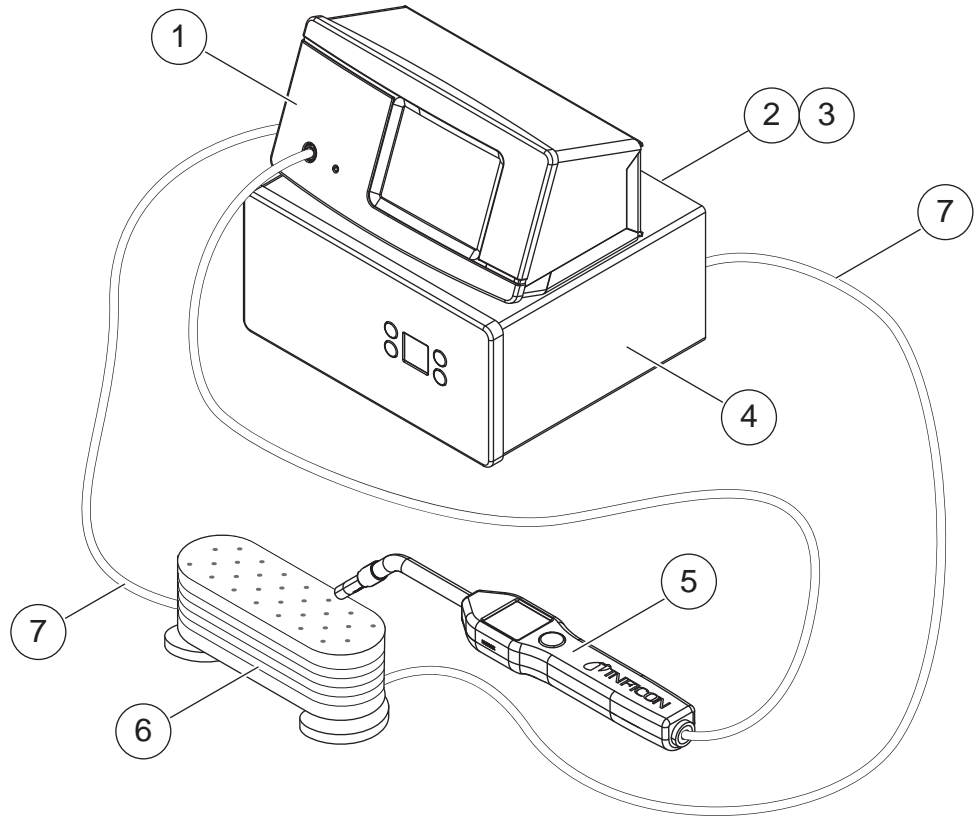
Notice The probe can be ordered with a flexible neck. For more information see Chapter 17 “Spare Parts and Accessories” on p. 73.

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 Chapter 10 “Calibration” on p. 47.

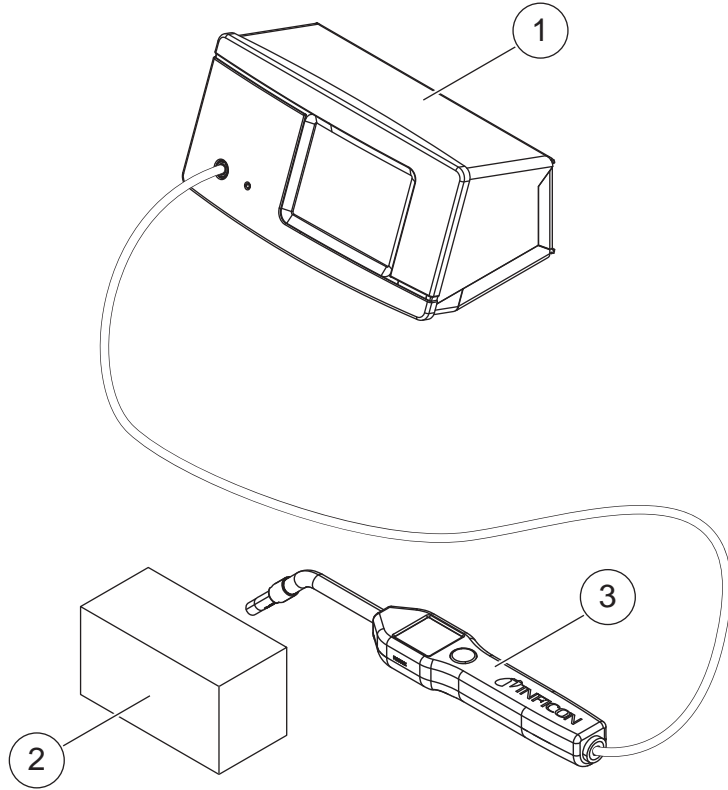
5 System Examples

5.1 Desktop Model



- 1 Sensistor Sentrac Desktop Model
- 2 Compressed Air
- 3 Tracer gas
- 4 Tracer Gas Filler
- 5 Hand Probe
- 6 Test Object
- 7 Evacuation and Gas Filling

5.2 *Portable Model*



- 1 Sensistor Sentrac Desktop Model
- 2 Test Object
- 3 Hand Probe

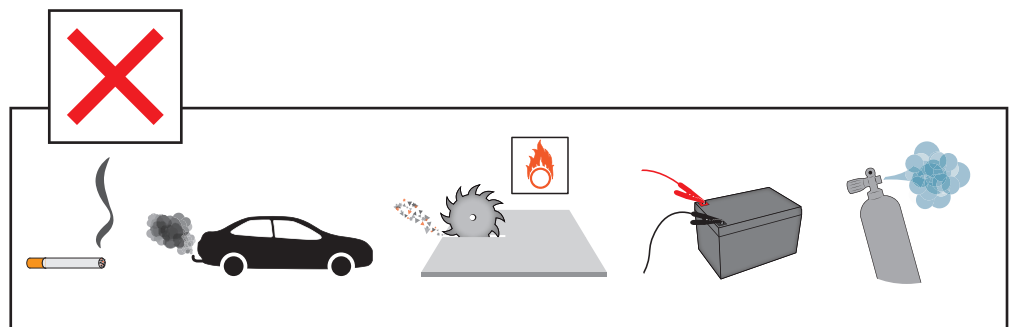
6 Setup



Warning

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

6.1 Placement of the Sensistor Sentrac



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

6.2 Connect the Sensistor Sentrac

- 1 Connect the probe to the Sensistor Sentrac using the probe cable. If you have purchased another type of probe than the Hand Probe P60, contact INFICON for help. It may require adaptation equipment between samples and instruments.
- 2 Plug the Power Cable into the power inlet of the Sensistor Sentrac and into the nearest power socket.

Notice

To disconnect the Probe, hold around the knurled part of the connector and pull straight out.

Standard cable length is 3 m. Several different cable lengths are available. See Chapter 17 "Spare Parts and Accessories" on p. 73.

7 Menu System

7.1 Menu Overview

Menu Level 1	Menu Level 2	Tabs
Operation	Measuring Mode	
	Locating Mode	
	Combined Mode	
	Battery	
	Audio	
	Calibrate	
	Sensitivity	
	Recipe	
	I-Guide	
Settings	Calibration	Calibrate
		Setup 1
		Setup 2
		Interval
		Info
	Locating Mode	Sensitivity
		Misc
	Measuring Mode	Unit
		Disp. Gas
		Reject
		Misc
		I-Guide
	Probe	Functions
	Recipe	
	General	Display
		Time/Date
		Misc
	Communication	USB
		RS232
		PLC Out
PLC In		
Ana. Out		
Password	Login	
	Intermediate	
	Advanced	

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Menu Level 1	Menu Level 2	Tabs
Information	Statistics	Run Time
		Calibration
		I-Guide
	Export/Import	Export
		Import
	Settings overview	
	I/O	
	Show password	
	About	
	Diagnosis	Warnings
Service screen		Signals
		Locating graph
		Debug settings
Reset		Settings
		Factory Default
Calibration		

7.2 Sensistor Sentrac Display

7.2.1 Menu Navigation



Caution

Do not use any sharp objects on the Sensistor Sentrac display. INFICON recommends using the fingertip for touching the display.

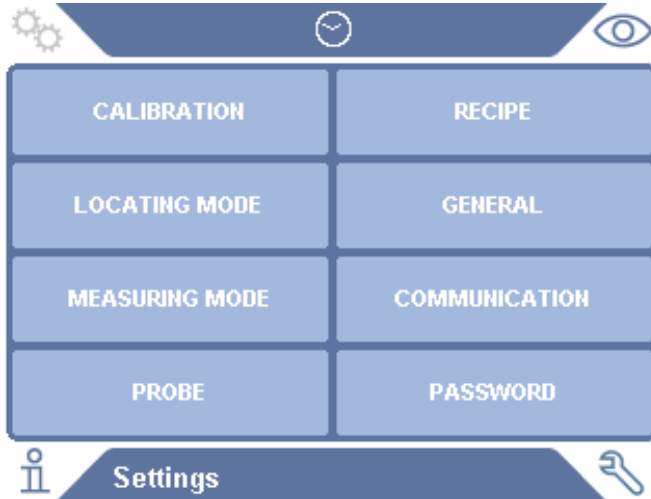
Icon colors

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



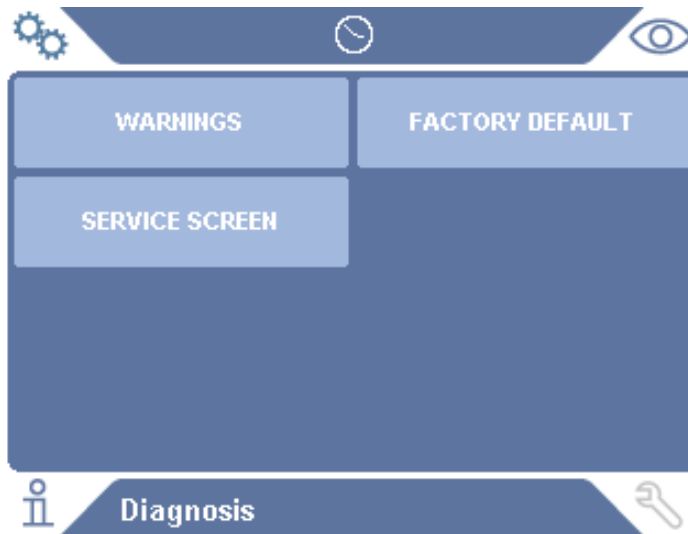
Settings Screen



Info Screen
















Diagnosis Screen








7.2.2 Menu Buttons







Icon colors	
Light blue	Indicating selectable or editable choices.
Light grey	Used for non-selectable or non-editable items.
Black or White	Machine-given parameters or important measuring results.

Icon	Description
	Settings
	Operation
	Info
	Diagnosis
	Measuring Mode
	Locating Mode
	Combined Mode

Icon	Description
	Audio
	Mute
	Sensitivity
	Calibration
	Recipe
	I-Guide




7.2.3 Navigation and Other Buttons

Icon	Description
	Start
	Next
	Backward
	Close
	Save
	Scrollbar
	Shift

Icon	Description
	Stop
	Save
	Forward
	Backspace
	Load
	Checkbox

7.3 Passwords

There are three different levels of access, indicated by the respective user icon below. The supervisor assigns access levels to other users.

Icon	Description
	Basic users can operate the product, but not calibrate or change settings. No password.
	Intermediate users can calibrate the product, but not change settings, edit or review logs.
	Advanced users can operate, calibrate, change settings, edit or review logs.

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

8 *Operating the Sensistor Sentrac*

8.1 *Preparation*



Caution

Do not expose the probe to a hydrogen concentration greater than 0.1% when the instrument is not powered, as this could damage or destroy the probe sensor.



Caution

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

Notice

During normal use, the leak detector's blue LED light should be steady. If the LED light is flashing go to Chapter 13 "Troubleshooting" on p. 55.

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

8.1.1 *Battery Operation*

The Sensistor Sentrac Portable Model is designed for mobile operation.

Notice

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

For stationary of 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.

8.1.2 *Conditions for Leak Detection*

To use the Leak Detector, the test object must be filled and pressurized with tracer gas (95% N₂ - 5% H₂) to achieve a gas flow through the leak.

Notice 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.

8.2 Settings

8.2.1 How To Locate Leaks

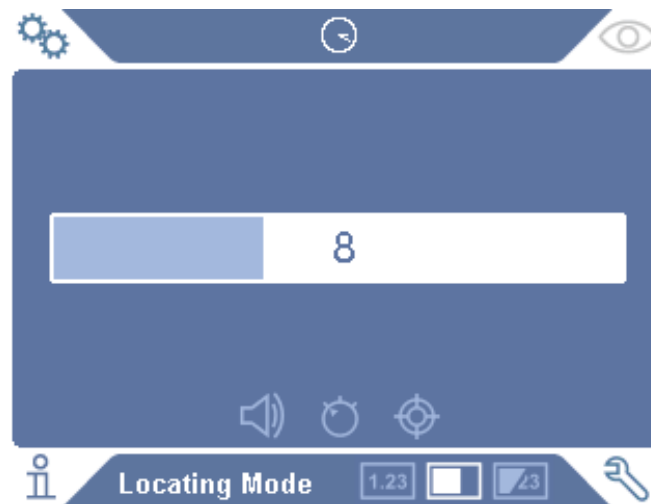
In Locating Mode, the signal is displayed in the form of a bar. The length of the bar varies with the gas concentration.

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 Chapter 10 "Calibration" on p. 47.
- 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.

8.2.2 Performing Leak Detection

- 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 chime 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.

8.2.3 How To Measure Leaks

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



- 1 Calibrate the probe.
See Chapter 10 “Calibration” on p. 47 for more information.
- 2 Click the **Measuring Mode icon** on the Operation Screen.

Notice

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 leak detector operates in the range 0.5 - 1000 ppm H₂. To obtain greatest accuracy over this range, follow the calibration recommendation. See Chapter 10 “Calibration” on p. 47.

8.2.4 Performing Leak Measurement

- 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 to at least 50 mm (2 in.) from the measurement point.
- 3 Make sure the instrument indicates 0 cc/s. If not, wait until it does. The output DET SIGNAL is low when the instrument is not measuring any tracer gas.
- 4 Move the probe close to or on the leak, at a distance of 0-6 mm (0- 0.24 in.).
- 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.
- 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.

8.3 Hands On

Notice

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 performing measuring, see Chapter 10 “Calibration” on p. 47.

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 Sensistor Sentrac unit on. Unit starts up and the blue LED light, on the right of the display, should be flashing slowly during warm-up phase. When unit 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.

8.4 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 detector 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 detector 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 detector 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 steadies and remains on the display. The period during which the measured value is displayed can be adjusted in the Settings menu.

The leak detector operates in the range 0.5 - 1000 ppm H₂. To obtain greatest accuracy, follow the calibration recommendation. See Chapter 10 "Calibration" on p. 47.

8.5 I-Guide

Summarizing the 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 subject while the time-staple 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-staple 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-staple 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.

9 Recipes

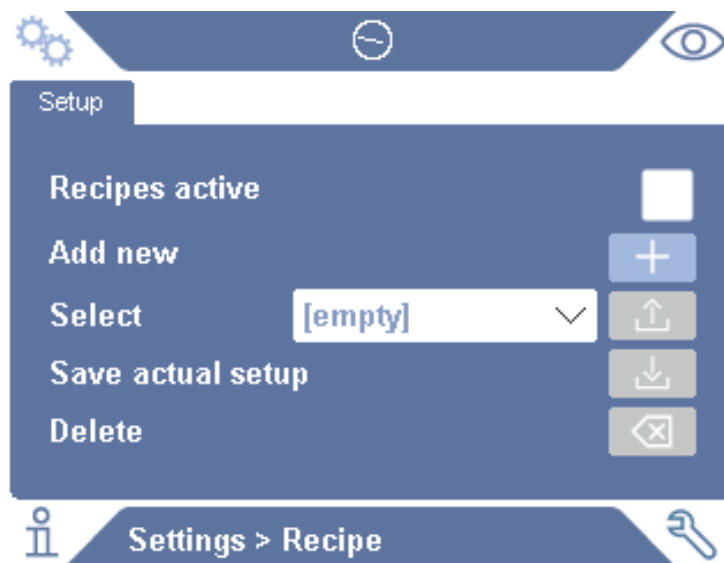
A recipe is a collection of settings suited for a particular test setup. This is used for having different settings for different test objects.

Notice Calibration settings are not saved in the recipe.

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

9.1 Recipe Overview

Click **Settings >> Recipe** to enter the Recipe Setup menu.



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9.2 Create a Recipe

9.2.1 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.

9.2.2 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.

9.2.3 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.

9.2.4 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**.

9.3 Probe Settings

To set the probe button functions, click **Settings >> Probe >> Functions**.
The lamp options can also be set here.

9.4 General Settings

To set brightness, sound, date and language, click **Settings >> General**.

9.5 **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.

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.

10 Calibration

10.1 About Calibration

There are two ways of calibrating the probe:

- Calibration gas: Available at gas suppliers and has a known concentration of hydrogen (recommend 10 ppm hydrogen in synthetic air).
- 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.

Notice

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.

10.1.1 When Needed?

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

- Locating Mode
- 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.
To turn automatic calibration reminder off.

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

Notice

The sensitivity change slowly during the 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.

10.1.2 Required Equipment

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

For more information see Chapter 17 "Spare Parts and Accessories" on p. 73.

10.2 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.

10.2.1 Prepare the Calibration Leak

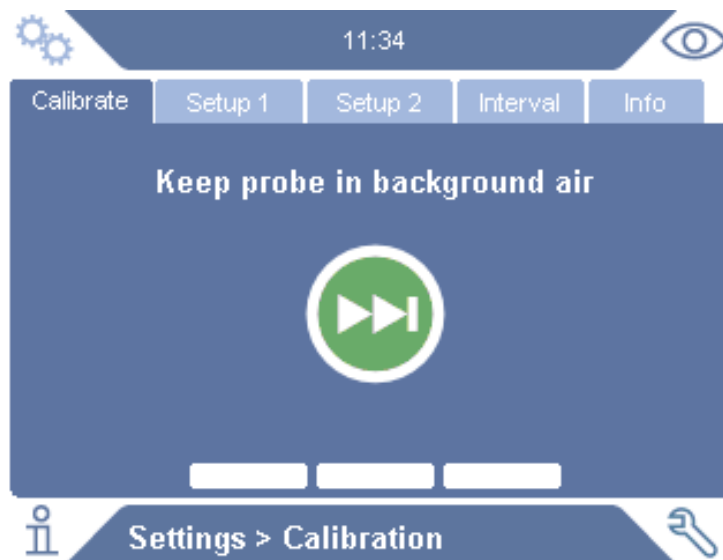
Leak with container:

- 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.

10.2.2 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 mbarl/s (95%N₂/5%H₂).

Calibration Unit = 'mbarl/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 - 400 ppm H₂

1×10^{-5} to 4×10^{-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 Leak Detector.

Click **Interval** to activate and set the Calibration Interval Reminder.

Click **Info** for information about the last successful calibration time.

10.2.3 Calibrate 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 30 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 Chapter 14.4 "Changing Probe Sensor" on p. 61.

11 Info

11.1 Statistics

11.1.1 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.

11.1.2 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**.

11.1.3 I-Guide

To see statistics about:

- number of tested objects
- number of accepted tests
- number of rejected tests

Click **Info >> Statistics >> I-Guide**.

11.2 Export/Import

11.2.1 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.

11.2.2 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.

11.3 *Settings Overview*

To show all settings, click **Info >> Settings overview**.

Notice If recipe is used, only active settings are shown.

11.4 *I/O*

To show the PLC Out and PLC In status visually click **Info >> I/O**.

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

11.5 *Show password*

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

11.6 *About*

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

12 *Diagnosis*

12.1 *Warning*

To see a list of all occurred warnings, click **Diagnosis >> Warnings**.

Notice This list can only be reset by authorized service personnel.

12.2 *Service Screen*

This screen is used for servicing and repair.

Notice Available only to authorized service personnel.

12.3 *Reset*

To reset the Sentrac to default settings, click **Diagnosis >> Reset**.

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

13 Troubleshooting

13.1 Fault 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 the gas sensor.
	Probe broken.	Send in for repair.
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.

13.2 Hardware Error Messages

Warning	Message	Indicators	Message in the menu warnings list	Error Code
Alert	Probe not connected.	Blue LED flashing.	(None)	(None)
Alert	SD-card not inserted.	Orange measure window at screen.	(None)	(None)
Alert	Battery discharged. Recharge battery.	Orange measure window at screen, fast Blue LED flashing.	(None)	(None)
Alert	Low sensor signal.		Reject level to low for sensor sensitivity.	(None)
Alarm	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
Alarm	Sensor broken. Change sensor. (Voltage to Low, Error E2)	Red measure window at screen, Blue LED flashing.	Sensor broken. (Voltage to Low)	02
Alarm	Sensor broken. Change sensor. (Temperature to Low, Error E3)	Red measure window at screen, Blue LED flashing.	Sensor broken. (Temperature error)	03
Alarm	Probe disconnected. Reconnect the probe. (Error 04)	Red measure window at screen, Blue LED flashing.	Probe disconnected.	04
Alarm	Probe communication problem. Try restart instrument or change cable. If the problem remains contact service. (Error 05)	Red measure window at screen, Blue LED flashing.	Probe communication problem.	05
Alarm	Probe Software not compatible with instrument. Change probe or upgrade probe software. (Error 06)	Red measure window at screen, Blue LED flashing.	Probe Software not compatible with instrument.	06
Alarms	Two probes connected. Disconnect probe and restart instrument. (Error 07)	Red measure window at screen, Blue LED flashing.	Two probes connected.	07
Alarms	Instrument hardware error, service recommended (Error 08)	Red measure window at screen, Blue LED flashing.	Instrument hardware error.	08
Alarms	Probe hardware error, service recommended. (Error 09)	Red measure window at screen, Blue LED flashing.	Probe hardware error.	09

14 Maintenance Instructions



Caution

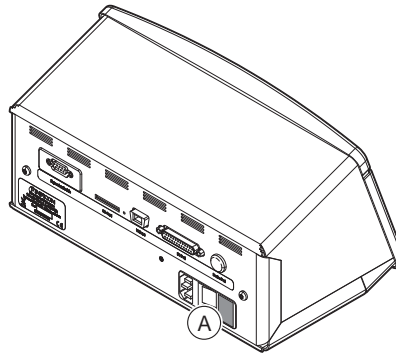
Do not open the detector! Service of this equipment may only be carried out by service organizations authorized for this purpose by INFICON.

Notice

Always switch off the instrument before performing maintenance.

14.1 Changing Fuses

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



Disassemble

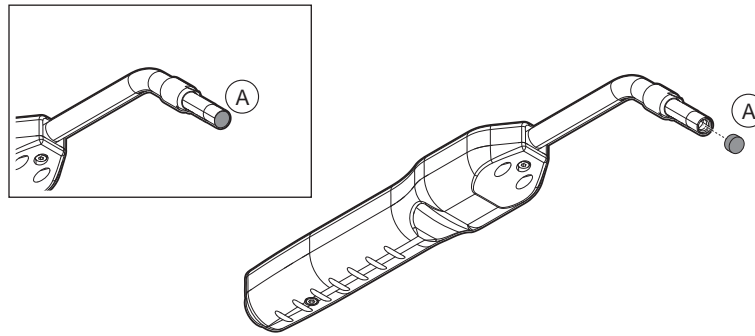
- 1 Remove the lid (A) containing the fuses.
- 2 Remove the fuses.

Assemble

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

14.2 Changing Probe Tip Filter

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



Disassemble

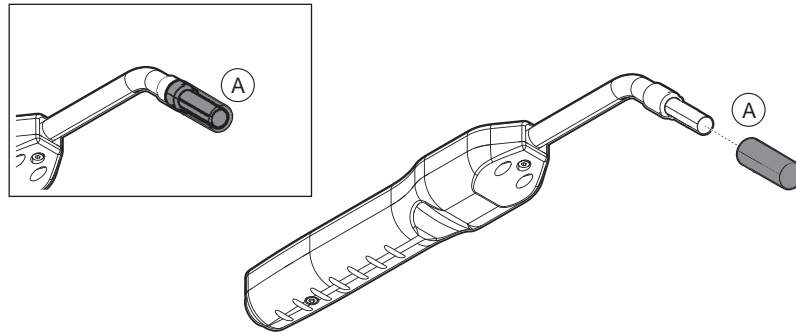
- 1 Remove the Probe Filter (A) using a needle.

Assemble

- 1 Install the new Probe Filter.

14.3 Changing Probe Protection Cap

Part	Part no.	Qty	Consumables
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

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

Notice

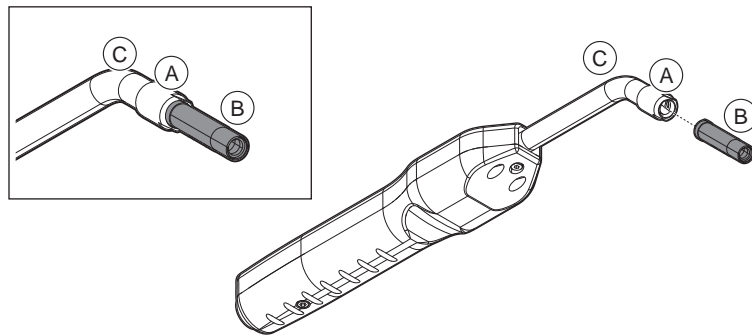
If the probe tip filter is removed, an air gap is formed between the inner metal filter and filter in the protection cap.

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.

14.4 Changing Probe Sensor

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 drawing 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).

14.5 Software Update

- 1 Download the update software to a computer.
- 2 Locate the downloaded file. Double click on Setup.exe.

Notice 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 Sentrac to the computer.

Notice Connect the probe to the instrument if the probe-software is to be updated.

- 5 Double click on the icon on the desktop.

Notice Check for the code **[Instrument Serial no.]** in the COM port window. If the code is present, the communication between the computer and the Sentrac is set up.

- 6 Chose which unit to update, Sentrac or probe.
- 7 Click **download** to perform the software update.
- 8 Restart the instrument after completed update.

15 Service



Caution

Do not open detector! Service of this equipment may only be carried out by service organizations authorized for this purpose by INFICON.

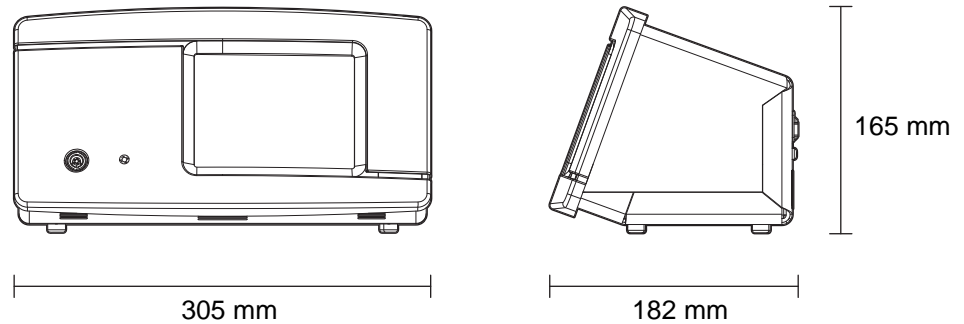


Caution

If the detector 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.

16 Technical Data



Electrical Data

Power supply 100–240 V (ac), 50/60 Hz, 2 A

Internal rechargeable battery* (Li-Ion)

Physical Data

Lowest detectable leak rate	0.5 ppm H ₂ 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 0.5 seconds and response time about 2 seconds.
Time until ready for operation	1 min

Capacity

Portable Model	Operating time: 12 - 20h
----------------	--------------------------

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
Protection (IEC529)	Desktop Model IP52 (front), IP30 (back) Portable Model IP52 (front), IP50 (back with case)

* Portable Model

16.1 Interfaces and Connectors



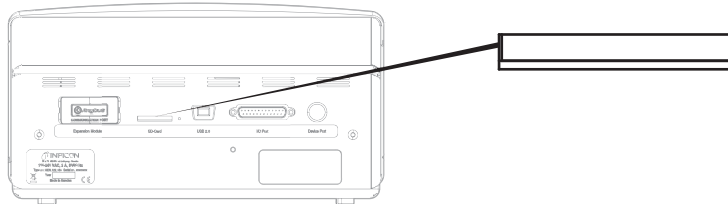
Caution

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

Notice

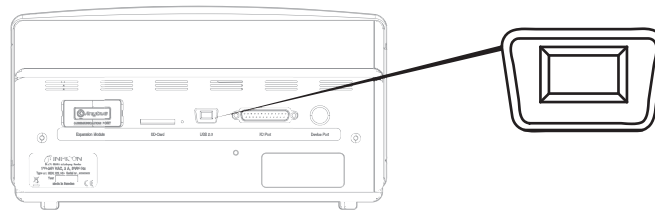
All ports below are the same for both Portable and Desktop Model, except for where otherwise stated.

16.1.1 SD Card Slot



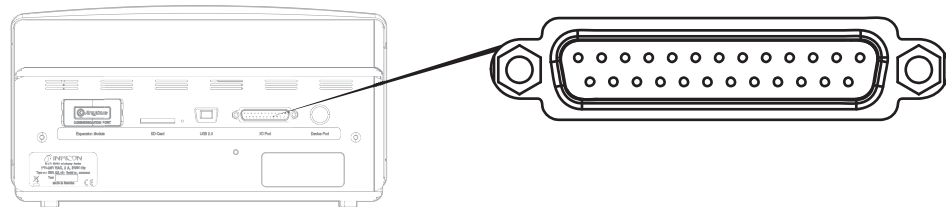
Connector:	SD card
Purpose:	For import and export of recipes

16.1.2 USB Port



Connector: USB cable
 Purpose: For connecting the Sensistor Sentrac with a PC.
 Cable: USB 2.0 type Mini-B plug (male) - USB standard type A (male)

16.1.3 Communication Port



Connector: 25 pin female D-sub

nin65e1-a (1409)

Pin	Signal	Specification	Function
1	RS232: Shield	See note 1)	Serial communication
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	24V	Max 2A 2)	Power supply for I/O
10	GND		GND for I/O

Pin	Signal	Specification	Function
11	Analog input 0-10V	Nominal level = [+0.05 ... +9.95] V Maximum level = [-50 ... +50] V Input impedance = 22kohm Input LP-filter fc = 2.9kHz 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
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 = -1.65V Output voltage swing, max = +1.65V Output impedance = 160ohm @ 400Hz 136ohm @ 1kHz 122ohm @ 10kHz Output LP filter fc = 133kHz	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 0-10V	Nominal range = [0.150 ... +10.0] V Resolution: 8-bit Output current = -65mA (sourcing) / +100mA (sinking) Unlimited capacitive load No short-circuit protection	Linear output between to measuring level. Check value level, Calculate RL voltage, calculate resolution. No Locating value.
24	GND		GND for I/O
25	PLC input EXT1	See note 3)	Selectable input function, see note 6)

Notes

1) OUTNote on RS-232 communication: 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).

2) $2A = 24V + \text{total Digital outputs current.}$

3) Nominal level = [0 ... +24] V

Maximum level = [-50 ... +50]V

Low-high threshold = appr. 8.5V

Input impedance = min 23kohm

Input functions selectable in the menu:

- Unused
- Start (I-Guide)
- Stop (I-Guide)
- Locating Signal Zeroing
- External Alert (Error high)

4) Nominal level = [0 ... +24] V

Maximum sourcing current = 500mA

Output impedance = max 4ohm

Output functions selectable in the menu:

- Unused
- Reject
- Accept (only I-Guide)
- Calibrated
- Not Ready
- Gas Signal
- Not Ready or Gas Signal
- Error (summary error)

5) (Outputs)

Unused

Reject

Accept

Calibrated

Not Ready

Gas Signal

Not Ready or Gas Signal

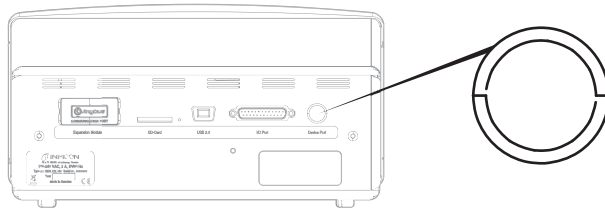
Error (summary error)

6) (Inputs)

Unused

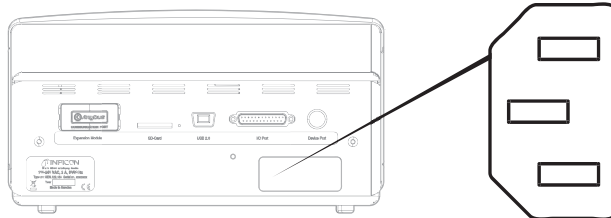
- Start (I-Guide)
- Stop (I-Guide)
- Locating Signal Zeroing
- External Alert

16.1.4 Connection Port



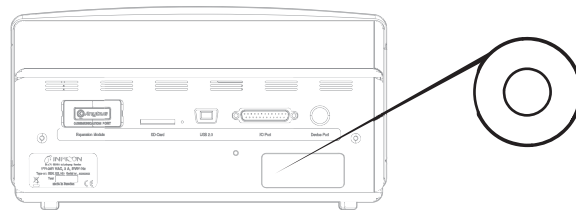
Connector: Probe or TGF11 connector
Cable: C21 Probe Cable

16.1.5 Power Input (Desktop Model)



Cable: Power Cable

16.1.6 Power Input (Portable Model)

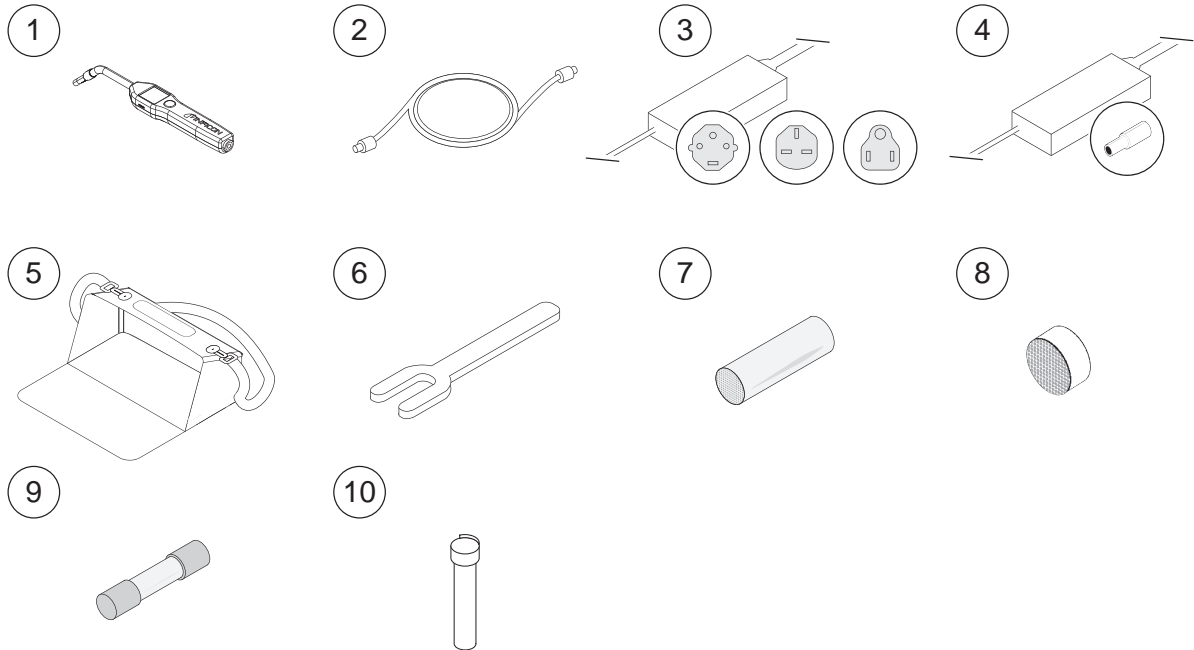


Cable:

Battery Charger

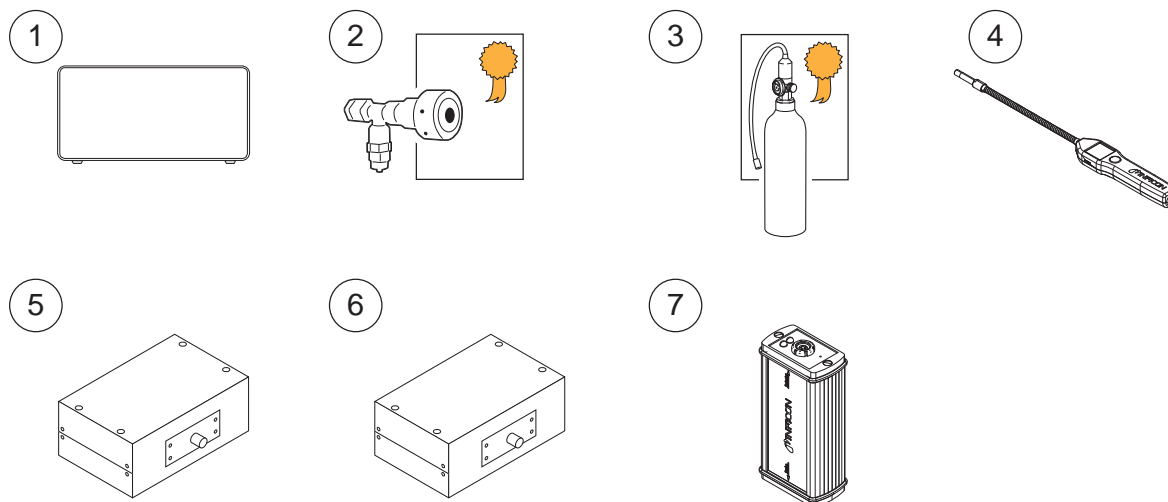
17 Spare Parts and Accessories

17.1 Spare Parts



Pos.	Part	Type	Description	Part no.
1	Hand Probe	P60	With a rigid neck.	590-890
2	C21 Probe Cable	3 m		590-161
		6 m		590-175
		9 m		590-165
		4 m (spiral)		590-163
		6 m (spiral)		590-164
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			598-147
7	Probe Tip Protection Cap		set of 50	591-273
			set of 500	590-625
8	Probe Tip Filter		set of 50	591-234
9	Fuse, 2A T slow		To Sensistor Sentrac Desktop Model	591-578
10	Hydrogen Sensor			590-292

17.2 Accessories



Pos.	Part	Type	Description	Part no.
1	Tracer Gas Filler	TGF11		
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.	599-082
5	Sniffer Probe	AP55		590-550
6	Counter Flow Probe	AP57		
7	COMBOX60		Probe adapter.	590-820

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

18 Support from INFICON

18.1 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.

18.2 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.

19 Declaration of Conformity



Declaration of CE Conformity

Manufacturer

INFICON AB
Westmansgatan 49
SE-582 16 Linköping
Sweden

Object of the declaration (marketing identification):

Part no	Product name	Configuration ID
590-900	Sensistor Sentrac, Hydrogen Leak Detector, desktop model	SEN.122.160
590-910	Sensistor Sentrac, Hydrogen Leak Detector, battery model	SEN.122.161

The object of the declaration described above is in conformity with the relevant Community Directives, namely:

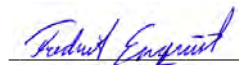
CE Marking Directive (93/68/EC)
EMC Directive (2004/108/EC)
LVD, Low Voltage Directive* (2006/95/EC)
RoHS Directive (2011/65/EC)

Harmonized European standards which have been applied

No.	Ed	Subject
EN 61326-1:2006	2	Class B: Electrical equipment for measurement, control and laboratory use.
EN 61000-6-3:2007	2	Emission standard for residential, commercial and light-industrial environments.
EN 61326-1:2006	2	Industrial Requirements Electrical equipment for measurement, control and laboratory use.
EN 61000-6-2:2005	3	Immunity standard for industrial environments.

*Internal voltage range is not in scope of directive. AC/DC power supply of desktop model is CE-marked and installed correctly.

For INFICON AB, Linköping, Sweden, June 23, 2014



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R&D Manager

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20 Disposal



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

Westmansgatan 49

582 16 Linköping

Sweden

21 Appendix

21.1 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 Remainder 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
Measuring Audio Ready Pulse		On
3 digits in measure value		Off
I-Guide Mode		Off

Parameter	Range	Factory Default
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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