Instruction manual

Leak meter with camera

Testo Sensor LD pro

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2 Foreword

Dear Customer,

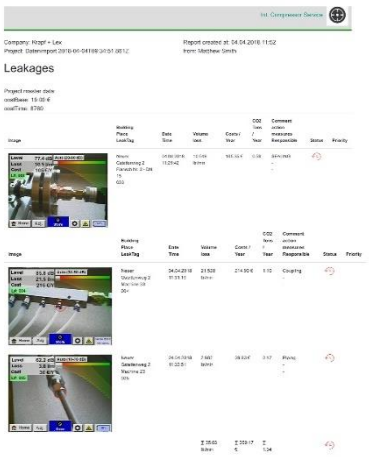
Thank you for purchasing our leak meter with camera **Testo Sensor LD pro**.
The new leak meter Testo Sensor LD pro with integrated camera and leakage calculation is an ideal measuring instrument which helps to find and document even smallest leakages (0.1 l/min corresponds to approx. 1 € p. a.) even in far distances.

Main functions:

- **Tracking and location of leaks**
  - compressed air, gas, steam and vacuum systems
  - condensate drain
  - seals
  - refrigeration systems

- **Documentation / storage of leaks with**
  - Picture of the leak position
  - Date / Time
  - Description of the leakage position with indication of company / department or hall / machine
  - Size of the leak in litres / min (units adjustable)
  - Leakage costs per year in € (currency freely definable)

Remark: By means of the Testo Leak Reporter software (Order-No. 8900 0510) detailed reports with summary totals, subtotals (departments / warehouses etc.) as well as history reports (for temporal / continuous improvements) could be created.



3 Safety instructions

3.1 About this document

- Read carefully this documentation and familiarize yourself with the product before putting it to use. Pay particular attention to the safety warnings to prevent injury and product damage.
- Keep this documentation to hand for easy reference when needed.
- Pass on this documentation to any subsequent users of the product.

3.2 Ensuring safety

- Only use the product as intended and within the parameters specified in the technical data. Do not use force for operating.
- Never measure with the device at or near live/energized parts!
  During leak detection on electrical systems, please maintain a sufficient safety distance to avoid dangerous electric shocks!
- Avoid any direct contact with hot and/or rotating parts.
- Always switch on the device before putting on the headphones! At high signal levels (bar graph headphones in the red area), the volume can be correspondingly high. The sensitivity setting can be used to reduce the volume.
- Never point the laser directly into eyes! Absolutely avoid a direct irradiation of eyes of humans and animals!
  Laser module: corresponds to DIN EN 60825-1: 2015-07 Class 2 (<1mW)
- Observe the prescribed storage and operating temperatures.
- Improper handling or violence will void the warranty.
- Any kind of interventions on the device, as far as they do not correspond to the intended and described procedures, lead to the warranty expiration and to the disclaimer.
- The device is intended solely for the described purpose.
- A use in hazardous areas is not allowed.

3.3 Environmental protection

- Disposal of faulty rechargeable batteries / empty batteries in accordance with applicable legal regulations.
- Lead back the product after the end of the period of use to the separate collection for electric and electronic devices (observe local regulations) or return the product to Testo Sensor GmbH for disposal.

Testo Sensor GmbH assumes no warranty as to its suitability for any particular purpose and assumes no liability for any errors contained in this manual. Nor for consequential damages in connection with the delivery, performance or use of this device.

4 General function description

When gases escape from leaks in piping systems (leaking screw connections, corrosion, etc.), noises are generated in the ultrasonic range. With the Testo Sensor LD pro even the smallest leaks, which are inaudible to the human ear and not visible due to their size, can be located several meters away.

The inaudible ultrasound is converted to audible frequencies in addition to the display emission level shown in the display. With the convenient, sound-proof headphones, these sounds can be heard even in noisy environments.

In addition, the new Testo Sensor LD pro calculates the cost associated with leaks, providing additional transparency about the state of the system under test or the potential cost savings.
The loss is displayed in l / min as well as in a freely selectable currency. The cost per liter or per cubic meter of compressed air can be stored in the device.

The professional measuring instrument Testo Sensor LD pro finds typical application in leak detection in compressed air systems.

With the help of an integrated laser pointer, which serves as a targeting device, the leak can be pinpointed.

Depending on the leakage, the appropriate accessories may be used to increase the sensitivity of the Testo Sensor LD pro, available accessories are:

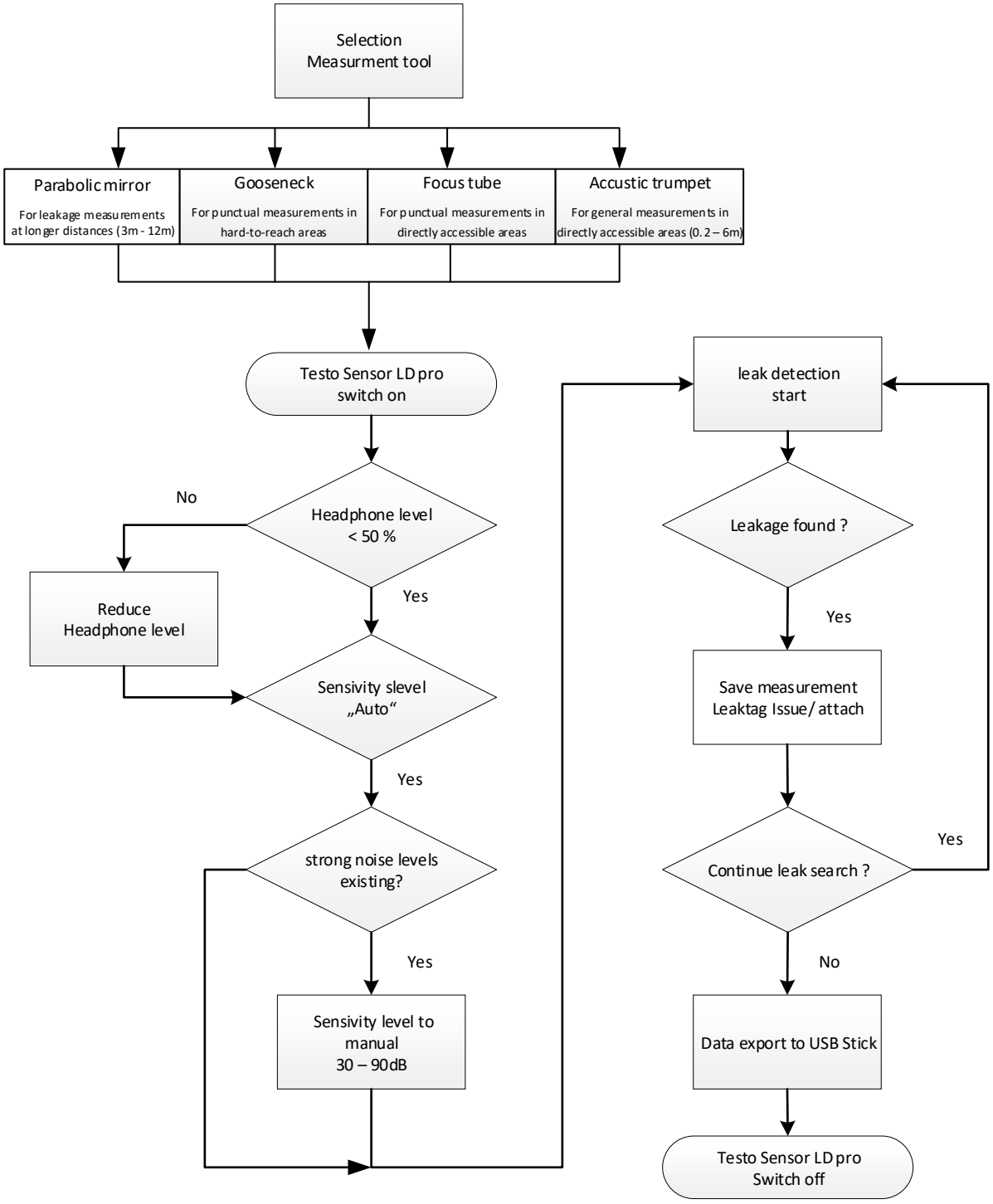
- Acoustic trumpet — For general measurements (0.2 - 6m) in directly accessible areas
- Focus tube with focus tip — For punctual measurements in directly accessible areas
- Gooseneck — For punctual measurements in hard-to-reach areas
- Parabolic mirror — For leakage measurements (3m - 12m) at longer distances

Note: To use the parabolic mirror and gooseneck, these components must be activated during initial commissioning in order to save the component-specific adjustment parameters. If this has not already been done ex-works, the data for this is supplied via USB stick. For the activation (parameter import), see chapter „Import measurement tool".

5 Technical data Testo Sensor LD pro

Dimensions	263 x 96 x 280 mm (incl. Preamplifier-module and acoustic trumpet)
Weigts	0.55 kg incl. Preamplifier-module and acoustic trumpet , complete set with transportation case approx. 3.5 kg
Frequency range	40kHz ± 2kHz
Power supply	Internal 7.4 V lithium-ion battery
Operating time	> 9 h (continuous operation)
Operating temperature	-5 °C to +40 °C
Charging	Ext. battery charger (included in the scope of delivery)
Charging time	approx. 4 h
Storage temperature	-20 °C to +50 °C
Laser	Wavelength 645-660nm, output < 1mW (Laser class 2)
Connections	3.5 mm jack for headphones, power jack for connecting an external charger USB Connection
Color Display	3.5“-Touchpanel TFT transmissiv
Interface	USB for data export / -import, SW update etc.
Datalogger	4 GB-Memory card (Micro SD Class 4)
Sensitivity	min: 0,1l/min at 6bar / 5m Distance

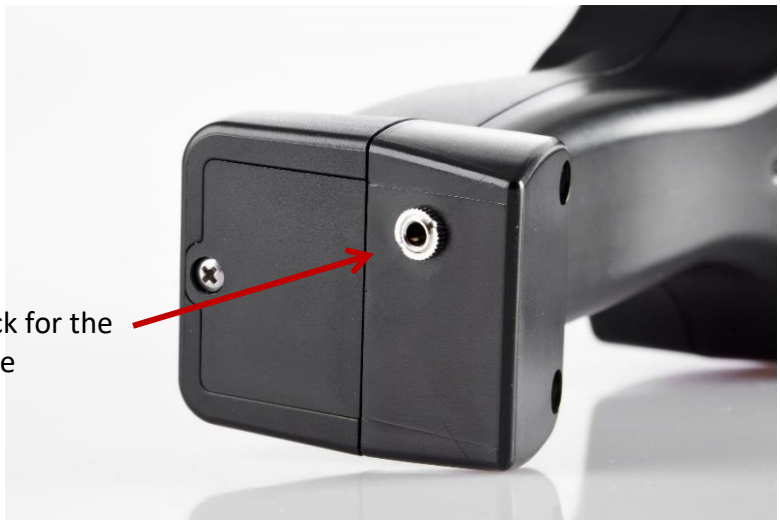
6 Procedure leak detection / measurement



7 Device components and controls

7.1 Testo Sensor LD pro

Picture 1

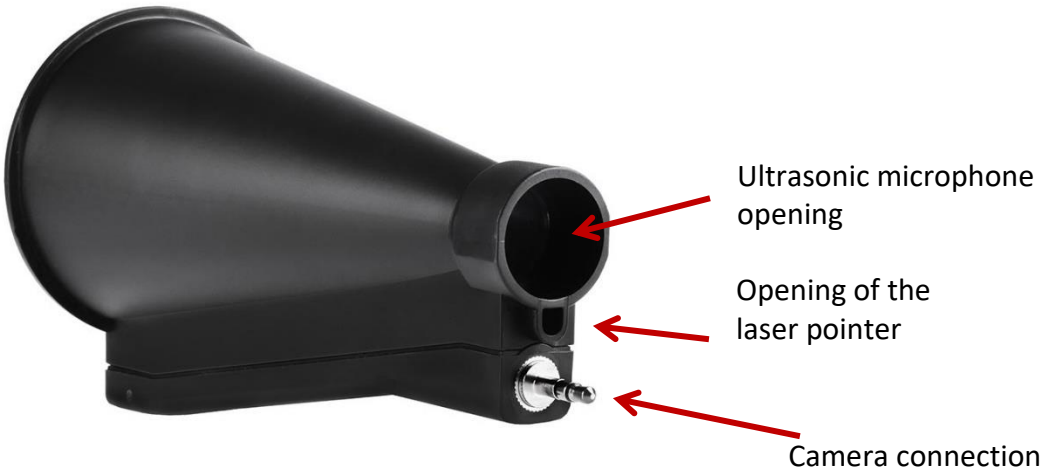


Picture 2

7.2 Pre Amplifier module

Picture 3

7.3 Acoustic trumpet with camera



Picture 4

7.4 Focus tube with focus tip

Picture 5

7.5 Gooseneck (Optional)

Picture 6

7.6 Parabolic mirror

Picture 7

7.7 Assembly with acoustic trumpet

The acoustic trumpet allows acoustic amplification by bundling the sound waves. Due to the special design, the integrated laser pointer will work properly. The camera is integrated at the bottom of the acoustic trumpet and is electrically connected to the preamplifier module via the jack plug.
Assembling is done by plugging the individual components until easy locking audible (plug in to the stop).
The components are removed in reverse order, for unlocking the preamplifier module, the release button must be pressed too.

Picture 8

7.8 Assembly with focus tube with focus tip

The focus tube with focus tip is used to detect very small leaks, to accurately locate them.
Just like the acoustic trumpet, the tube can be plugged into the preamplifier with ultrasonic receiver.
The use of the camera is **no longer** possible.

The components are removed in reverse order, for unlocking the preamplifier module, the release button must be pressed too.

Picture 9

7.9 Assembly with Gosseneck

Due to its flexibility, the gooseneck tool is used for punctual measurements in hard-to-reach areas. Connection to the Testo Sensor LD pro is via the supplied spiral cable, see Figure 10.

It is **no longe**r possible to use the camera.

To remove the component, remove the connection cable by pressing the release button on both sides and pulling off the cable.

Picture 10

7.10 Assembly with Parabolic mirror

The parabolic mirror is used for measurements at greater distances as well as for high requirements regarding selectivity and location of leakage positions.
Connection to the Testo Sensor LD pro is via the supplied spiral cable, see Figure 11.

To remove the component, remove the connection cable by pressing the release button on both sides and pulling off the cable.

Picture 11

Note: To use the parabolic mirror and gooseneck, these components must be activated during initial commissioning in order to save the component-specific adjustment parameters. If this has not already been done ex-works, the data for this is supplied via USB stick. For the activation (parameter import), see chapter „Import measurement tool".

8 Commissioning / Application Testo Sensor LD pro

	Please first observe the safety instructions in section 3

8.1 Switch on

Press the power button for about 1 second, the power will turn on, and a start-up sequence will appear on the display. Pressing the button again switches the device off again.

On-Off button, see device components and controls

8.2 Headphone Volume Up / Volume Down

The volume keys increase or decrease the volume in the headphone in 16 levels.
Continuously pressing the button automatically increases / decreases the value.

Volume up / down buttons for headphone volume, see device components and controls

 **Please make sure the headphone level is < 50% before putting on the headphones.**

8.3 Sensitivity level

When starting a leak detection or after switching on the sensitivity level "Auto" should be selected.
In case of strong noise levels from the environment it can be switched to a manually adjustable gain level, see chapter 10.4 „Setting of Sensitivity level“

Manual sensitivity level at measurement start: 30 – 90dB

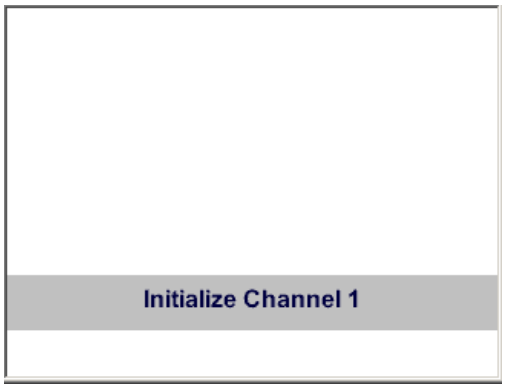
9 Operation

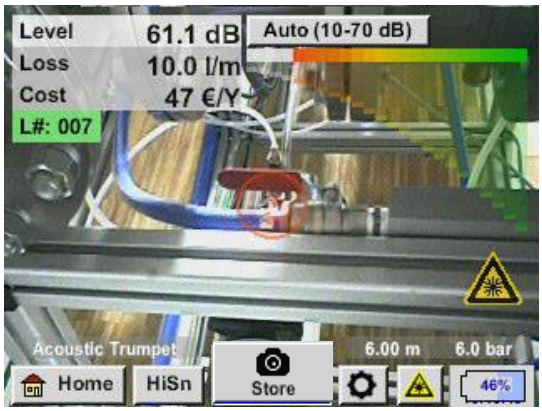
The operation is largely self-explanatory and menu-driven via the touch panel.
The selection of the respective menu items occur via short "tapping" with the finger or a soft round pen.

Attention: **Please use no pens or other objects with sharp edges!**
The foil can be damaged!

Inputs or changes can be made within all white text fields

9.1 Initialization

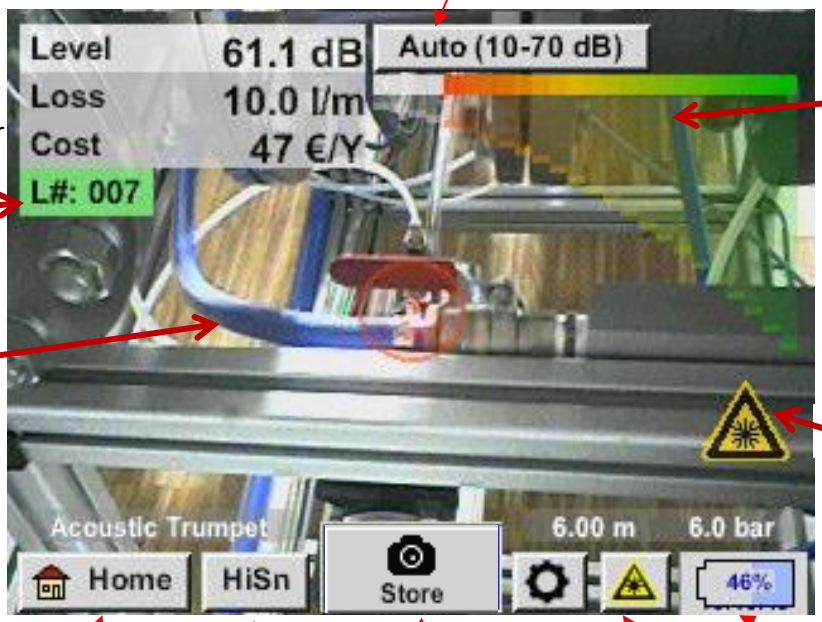




After switching on the Testo Sensor LD pro, the initialization takes place and then switch to leakage display

9.2 Screen Leckage measurment

The following picture shows and describes the display elements.



Button Sensivity level

Displayed values for:

- Signal-Level in dB
- Leakage size
- Leakage costs per year

Bar graph of Signal level

LeakTag number

Actual camera image

Laser „On“ Icon

Home Menu button

Mode switch button Auto or manual (HiSn)

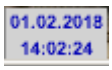
Store button for Measurement

Setting button

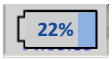
Laser „On/Off“ button

Date/ Time and battery condition indicator

Date / Time:



Battery condition indicator

Battery condition: 

Power supply connected and battery is charging: 

10 Settings

The operation is largely self-explanatory and menu-driven via the touch panel.
The selection of the respective menu items occur via short "tapping" with the finger or a soft round pen.

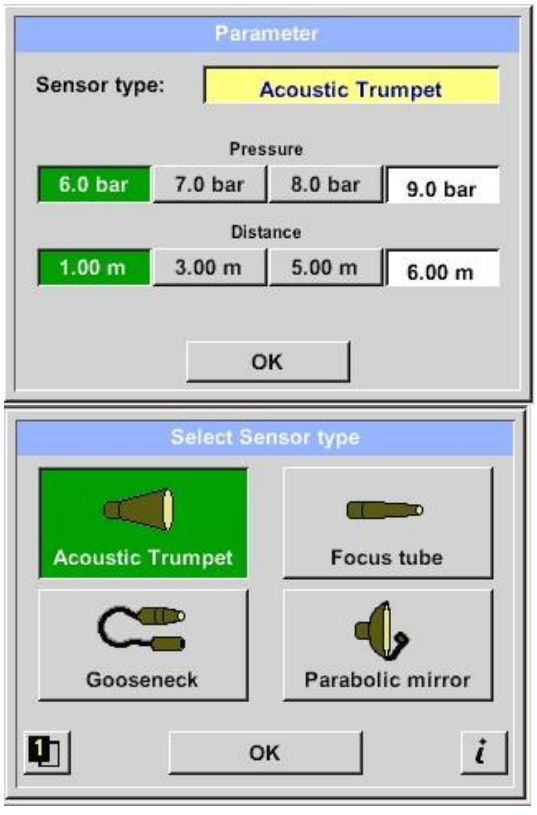
Attention: **Please use no pens or other objects with sharp edges!**
The foil can be damaged!

10.1 election of measurement tool

Actual there are 4 different measurement tools available

- Acoustic trumpet — For general measurements (0.2 - 6m) in directly accessible areas
- Focus tube with focus tip — For punctual measurements in directly accessible areas
- Gooseneck — For punctual measurements in hard-to-reach areas
- Parabolic mirror — For leakage measurements (3m - 12m) at longer distances

Home → Configuration → Parameter → Sensor type
oder
Setting button  *→ Parameter → Sensor type*



The required or desired measuring tool can be selected using the ***"Sensor type"*** selection field in the ***"Parameters"*** menu.

After selection of the field, the menu ***"Select sensor type"*** is opened..

Please select the required measuring tool and confirm it with ***"OK"***.

Note: The measuring tools ***"Gooseneck"*** and ***"Parabolic mirror"*** must be activated / loaded during initial commissioning, see chapter ***"Import/Export".***

Use the key  e o obtain further information such as the serial number.

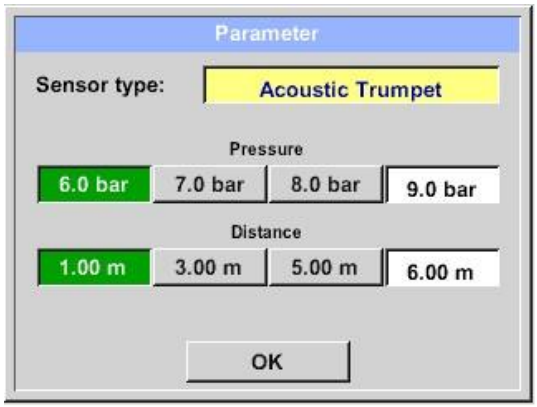
10.2 Parameter for the measurement

To get correct readings, the parameters

- Existing pressure
- Distance to measuring point

are needed.

Home → Configuration → Parameter → Pressure/ Distance
or
Setting buttone  *→ Parameter → Pressure/ Distance*



The pressure entry can be made by selecting one of the 3 predefined values or via the text field.
Max. Permissible pressure value is 10bar.
In case of higher pressures, please insert 10bar)

For the distance input, acoustic trumpet / parabolic mirror, there are 3 predefined values or a text field for the measuring-specific distance input.
Acoustic trumpet: 3 - 6m
Parabolic mirror: 3-12m

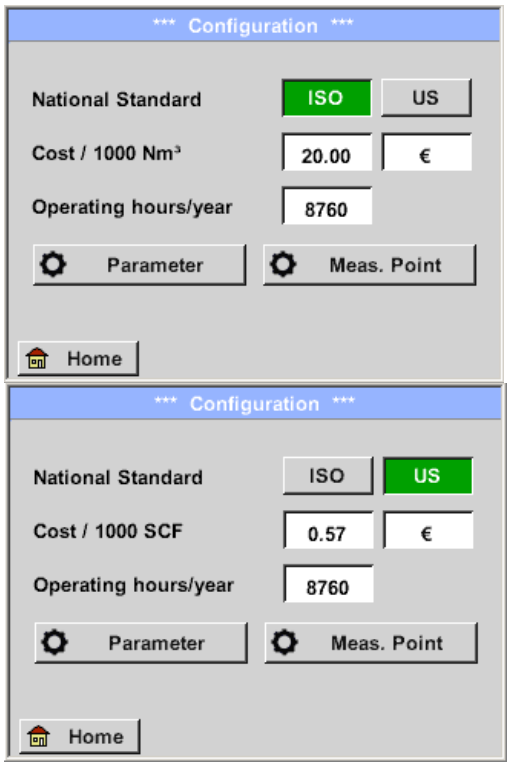
Note: Distance refers to distance from measuring point to the measurement tool.
Fixed values are defined for the focus tube and the gooseneck, i.e. 20 cm and 5 cm.
Permissible input range for the acoustic trumpet is 1m to 6m, for the parabolic mirror 3m to 12m.

Pressure input range is 0.3bar to max. 10bar, for vacuum leakages -0.1bar to -1bar.

10.3 Configuration

In the configuration menu the unit system is set and the required parameters are defined to calculate the corresponding cost/year.

Home → Configuration



By selecting the national standard of ***„ISO“*** or ***„US“*** you can store your production cost for ***„1000 Nm³*** “ or ***„1000 SCF“.*** These inputs and the “***Operating hours/year”*** are used as the basis for the cost calculation.

The basic costs are entered via the text boxes ***„Cost / 1000 Nm³“*** for **„ISO“**, **„Cost / 1000 SCF“** for ***„US“*** and **“Operating hours/year”**.

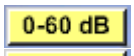
The currency of the production costs can be stored as text in the text field. ***„Currency“.***

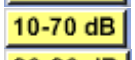
The inputs ***„Parameter“*** and ***„Meas. Point“*** Follow the same procedure as described in chapter 10.2.

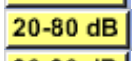
Acceptance of the values and return to the basic settings menu is done by pressing the ***„Home“.***

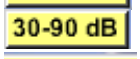
10.4 Sensitivity settings

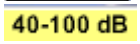
In order to cover a measuring range from the smallest leaks (0.1 l / min) up to large leaks, the **LD 500** has different measuring sensitivity levels:

- 0 – 60dB 

- 10 – 70dB 

- 20 – 80dB 

- 30 – 90dB 

- 40 – 100dB 

Note: The measurement sensitivity level 0 -60dB (most sensitive setting) can only be used in manual mode. The mode can be changed by pressing the ***"Mode Switch button***".

- **HiSn -- manual sensitivity mode**
- **Auto -- automatic sensitivity mode**

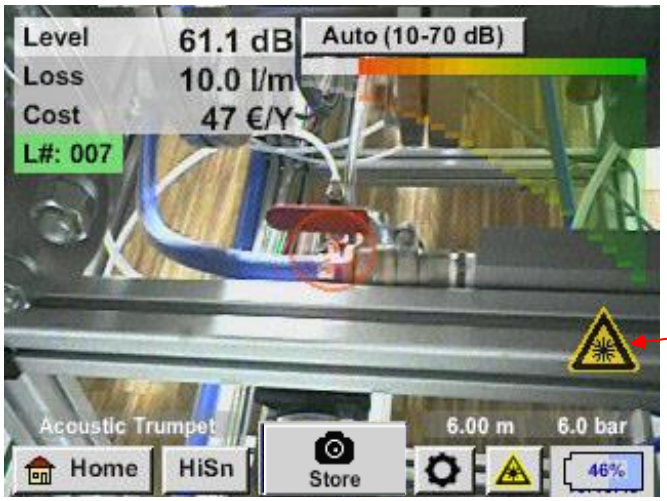
The individual stages can be selected in manual mode by pressing the ***"Sensitivity"*** setting button. The steps are changed to the next step each time the button is pressed.

The***„Auto“*** 

setting allows you to automatically switch to the preferred sensitivity level for the Testo Sensor LD pro. However, this requires a min. measuring time of 2 seconds.

10.5 Laser On/Off

The laser pointer can only be switched on or off via the laser on / off button  in the display (not via the membrane keypad). When switched on, the display shows a laser warning symbol.



Laser „On“ Icon

Please note the warnings for laser operation!
Avoid direct / indirect (via reflexion) irradiation of the eyes in humans and animals!

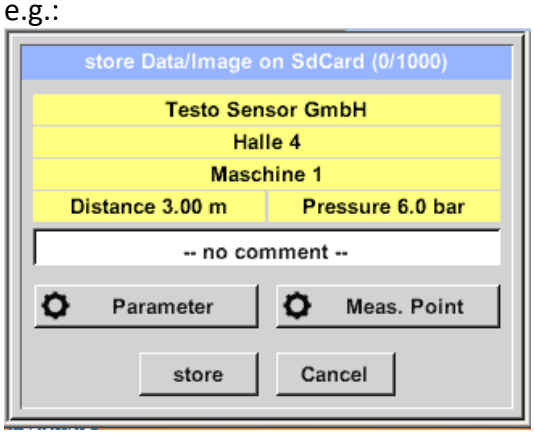
10.6 Storing of the measurement

To store the measurements please press either the button **„Store“** on the foil keypad, see chapter Device components and controls, or by button **„Store“** 

in the display.

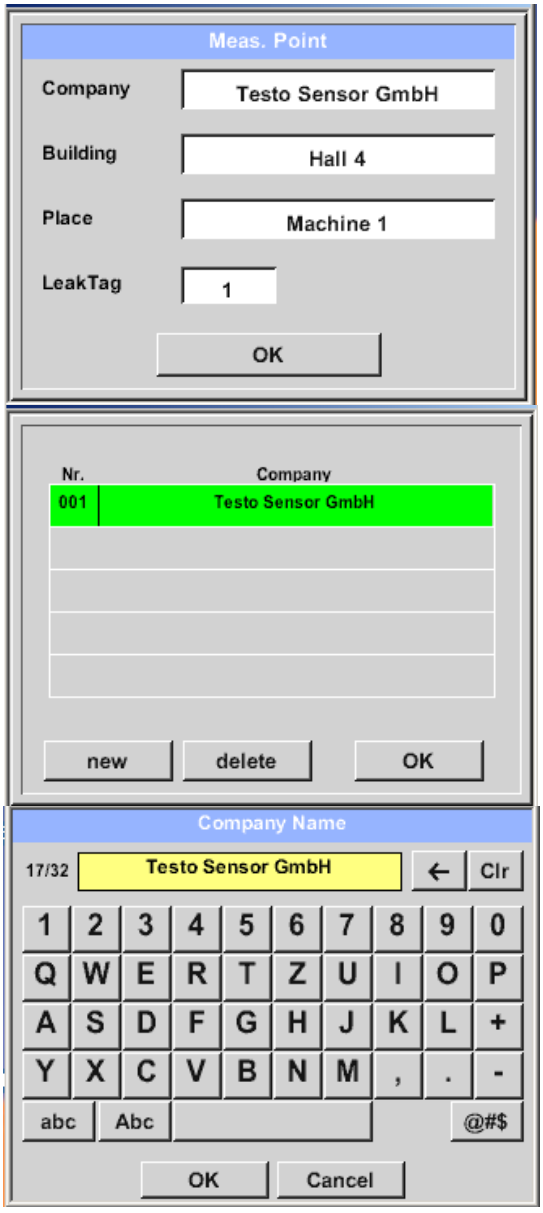
All data are stored on to the internal SD card.
The measurement data, the measurement point and the image of the measurement point are saved as a journal, which can be exported later and a report can be created with the Testo Leak Reporter (Order-no.: 8900 0510).

After pressing one of the two **„Store“** keys, the corresponding information for the measuring point must be completed. The measuring point information of the last stored storage (company, building and location) is displayed, the numbering of the leak tag is increased by 1.
e.g.:



10.6.1 Measuring point designation / selection

Store ➔ Meas. Point



All information about the measuring point can be changed by selecting the corresponding text field or the stored measuring points can be loaded from the internal database.

Then a menu opens with the available / saved entries.
When selecting a saved value, select it (highlighted in green) and then take over with ***„OK“***.

If a new entry is necessary, the input menu opens after pressing the ***„new“*** button.

Input is accepted via ***„OK“***.

This procedure is analogous to enter the information for company, building and location.

Using the ***„delete“*** button, individual entries can be deleted.

10.6.2 Parameter of measurement (Re-Check)

Store ➔ Parameter

At this point, it is again possible to check and correct the parameters „Pressure" and „Distance".

Changing the parameters gives new values for leakage and cost.
Execution of the corrections see description chapter 10.2

10.6.3 Comment

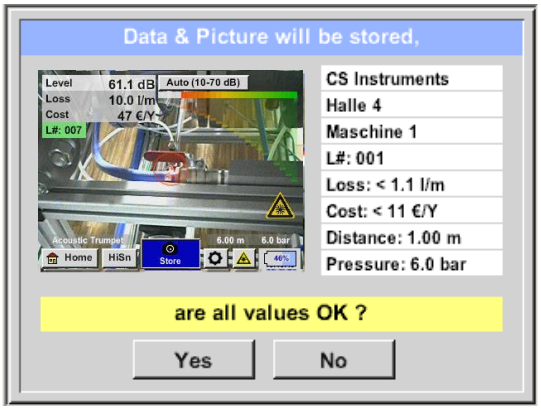
Store ➔ Text field Comment

In addition to the details of the measuring point e.g. company, building and location, it is possible to enter a comment (up to 32 characters).

To do this, select the text field ***„Comment“*** and enter the comment.

10.6.4 Storing measurement data to internal SD-card

Store ➔ store



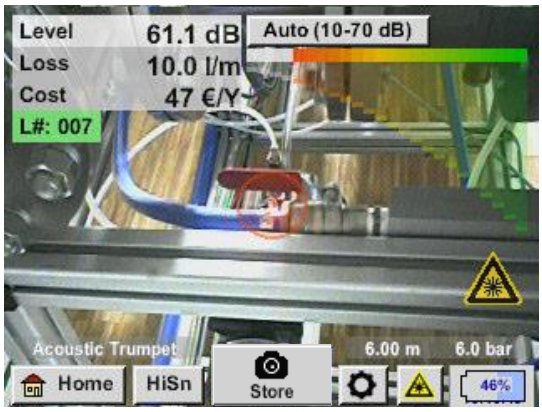
Before final storage of the measurement on the internal SD card, a summary is created and the correctness is queried once more for safety.

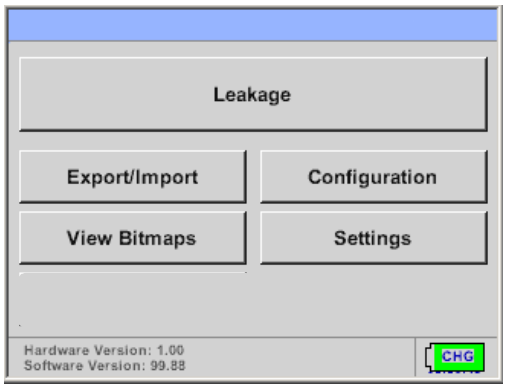
Storage is done with the ***„Yes“*** key.

The ***„No“*** key returns to the previous menu.

11 Basic settings menu Testo Sensor LD pro

Home 





With the button ***„Home“*** you access the basic menu of the Testo Sensor LD pro.

Return to measurement by pressing ***„Leakage“*** –button.

11.1 Configuration

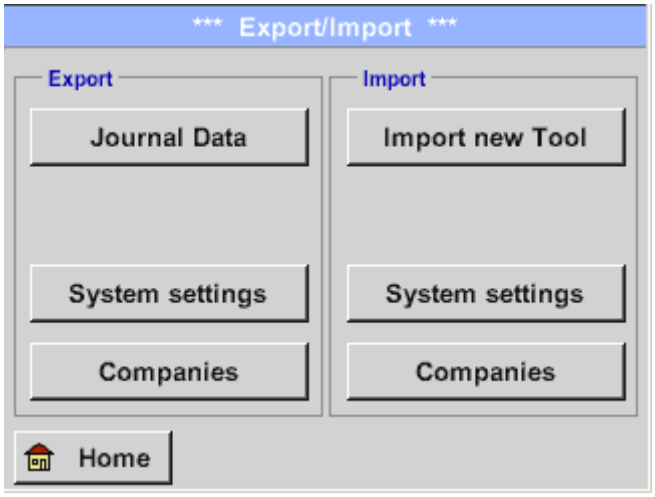
Home → Configuration

See also chapter 10.3

11.2 Export/Import

With *Export / Import*,

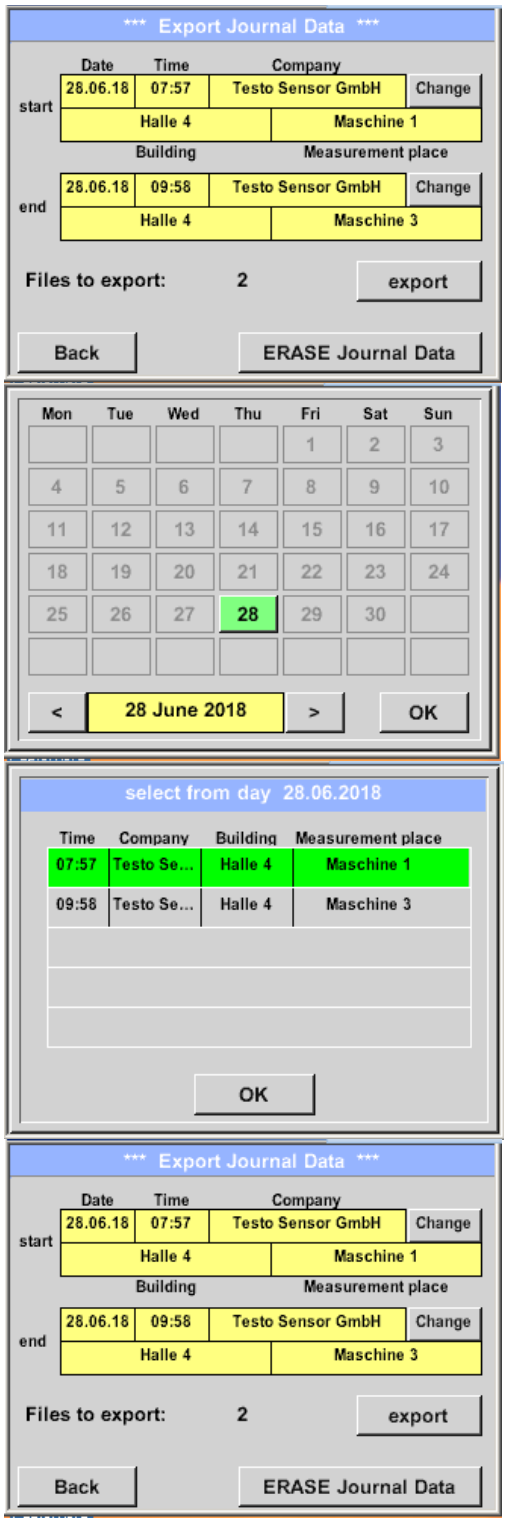
- recorded "journal data" can be transferred to a USB stick
- system settings can be exported as well as imported
- measuring points (company, building and location data) can be exported as well as imported.
- Non-activated optional measurement tools can be activated/loaded.



11.2.1 Export

11.2.1.1 Export „Journal Data“

Export / Import → Export → Journal Data



With the help of the ***„Change*** -button you can set a period between ***„Start“*** and ***„End“***.

Stored measurement data that lies within this period will be exported.

The selected date is always highlighted in green and the dates of the Sundays are - as in the calendar - red.

For days on which measurement data was recorded, the date numbers are visually exalted

If several measurements have been recorded on a date, they will appear after the date selection.
Now you can easily select the desired recording.
With ***„OK“***. the start or end time is taken over.

Press the ***„Export“***- button to transfer the selected data to the USB stick.
In the example given, 2 measurements are exported.

With ***„ERASE Journal Data“*** the Journal Database is deleted.
For verification is still a security question.

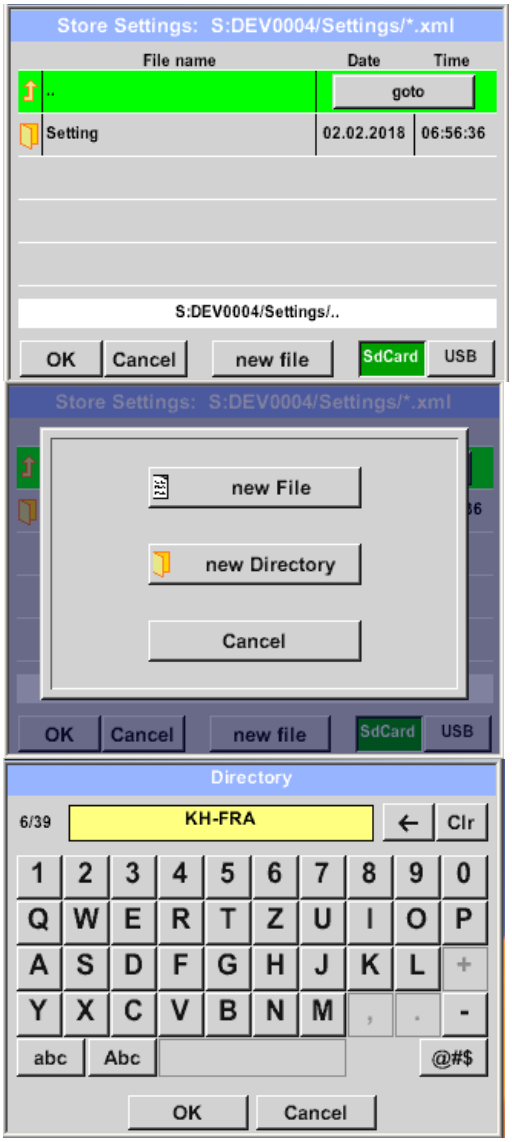
With ***„Back“*** you return to the main menu.

Attention: With ***„ERASE Journal Data“*** all journal data are deleted.

11.2.1.2 Export of System-settings

This function allows you to copy the saved settings to a USB stick

Export / Import → Export → System settings



Here the definition of the storage location takes place.
Selection for internal SD card with activation of key ***„SdCard“*** or on USB stick with key ***„USB“***.
The selection of the desired folder is made by selecting and activating with ***„goto“*** button.

If a new directory is required, this is done by pressing ***„new File“***, this can be created by selecting ***„ new Directory“***

Saving a system file with a new name takes place analogously, then the key ***„new File“*** must be pressed

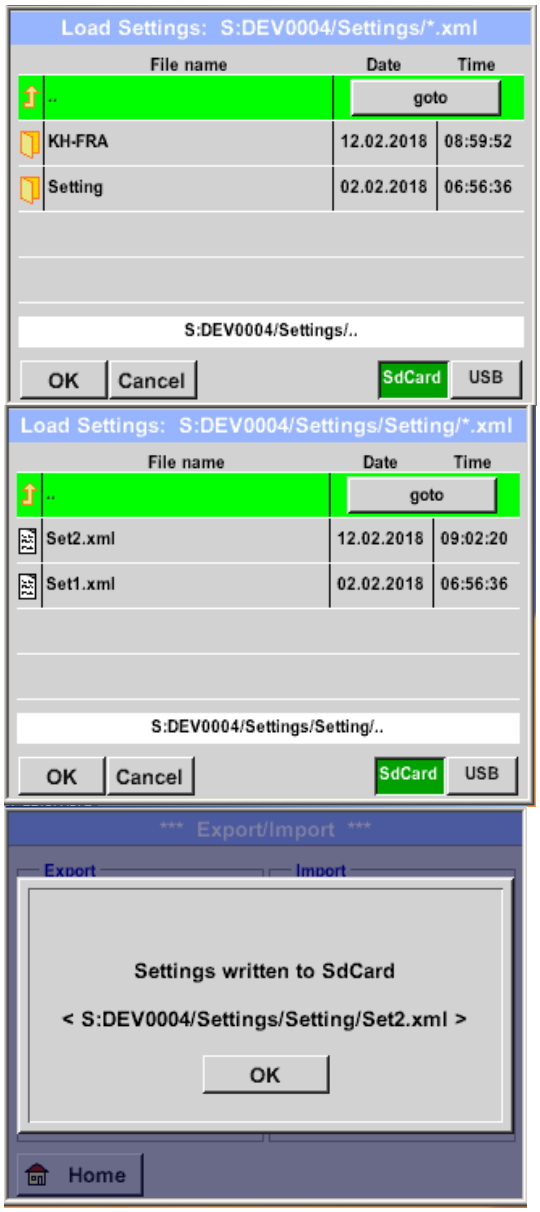
Entries are to be confirmed with ***„OK“.***

With ***„Cancel“*** you return to the previous menu.

11.2.2 Import

11.2.2.1 Import of system settings

Export / Import → Import → System settings



Sequence of directory and file selection is analogous to file export.
Selection of internal SD card with activation of key ***„SdCard“*** or of USB stick with key ***„USB“***.

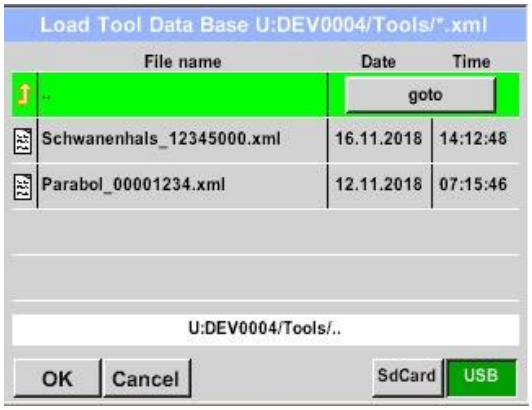
The selection of the desired folder is made by selecting and activating with the ***„goto“*** button, then select corresponding system file.

Selection to be confirmed with ***„OK“.***

Since system-relevant changes are made here, a confirmation prompt is issued, which must be confirmed with ***„OK“***.

11.2.2.2 Import new measurement tool

Export / Import → Import → Import new Tool



The directory and file selection process is the same as for export e.g. system settings Selection of internal SD card with activation of button ***"SdCard"*** or of USB stick withbutton ***"USB".***

Select the desired folder by pressing the ***"goto"*** key and then the corresponding system file.

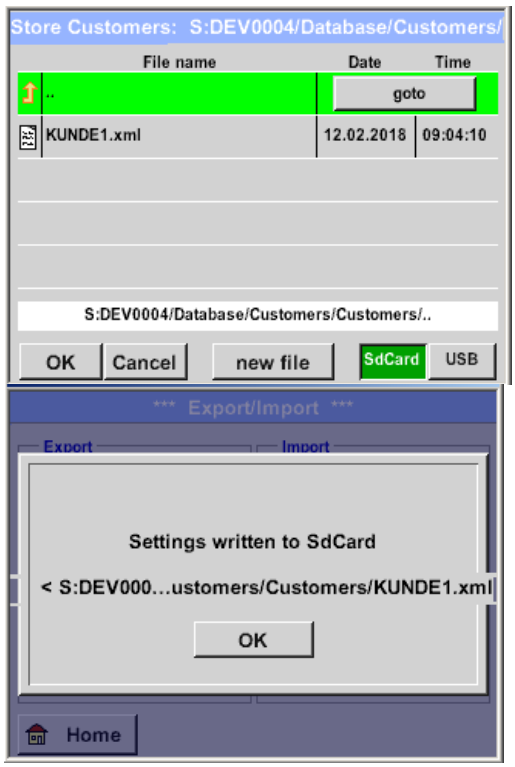
Confirm your entries witht ***„OK“***.

Since system relevant changes are made here, a security query is made which must be confirmed with ***"Yes".***

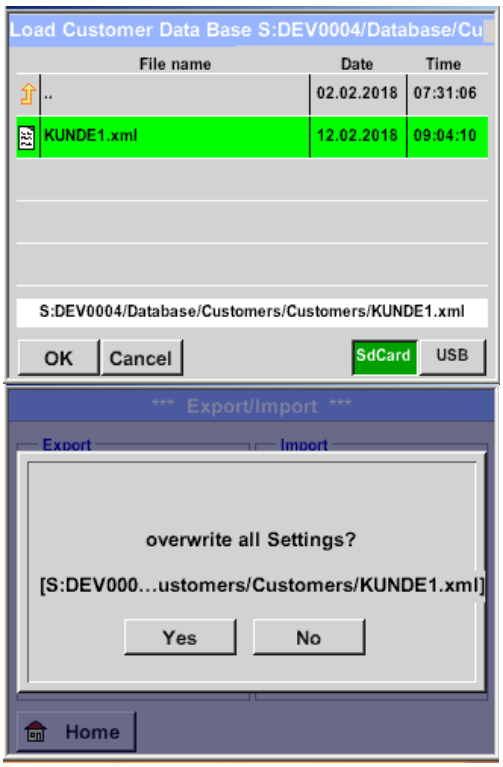
11.2.3 Export / Import Customer database

These functions allow the stored measuring point descriptions (companies, buildings and location) to be exported as an XML file or to be imported from another Testo Sensor LD pro exported database.
That means it is also possible to create and import the database externally, but the prerequisite is the correct format of the XML file.

Export / Import → Export → Customers



Export / Import → Import → Customers

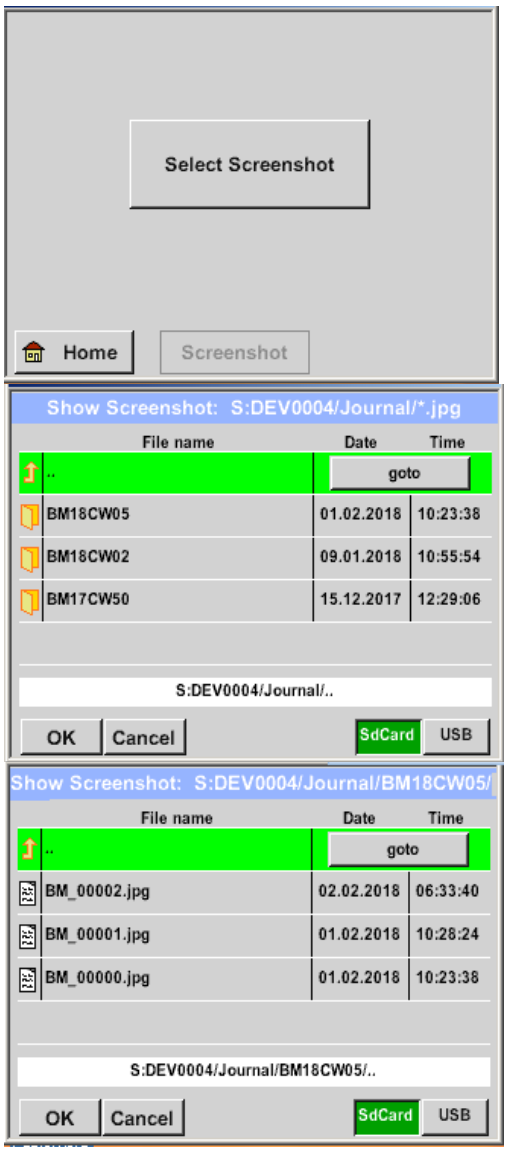


As data changes are made during importing, a confirmation question needs to be confirmed with ***„Yes“***.

Remark: Customer data will be exported to folder \\DEV0004/Database .
Data to be imported (XML files) must be stored in the directory \\DEV0004/Database as well.

11.3 View bitmaps

View Bitmaps → Select Screenshoot



This allows the stored pictures (measurement pictures) on the SD-Card or USB Stick to load and shown in the display again.

Please press button „Select Screenshot“ and select the required picture (bitmap).

The pictures are stored and organized in different directories

The directory structure is year / calendar week

Designation: BMyyCWxx
yy = Year xx = calendar week

The selection of the desired folder is made by selecting and activating with the ***„goto“*** button.

Select the desired image and then display with ***„OK“***.

11.4 Device Settings

The settings are all protected by a password!

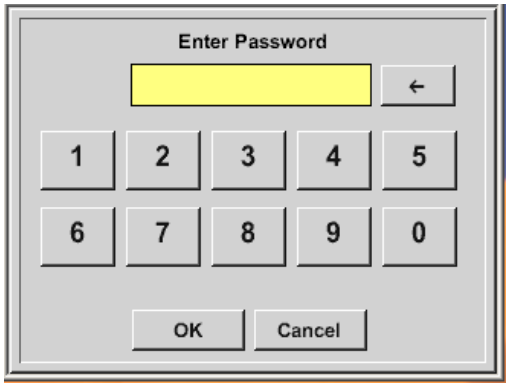
Settings or changes are generally confirmed with OK!

Remark:
If you go back to main menu and then again one of the setting menus is called, you must enter the password again.

Overview of the *Settings*

11.4.1 Passwort-Settings

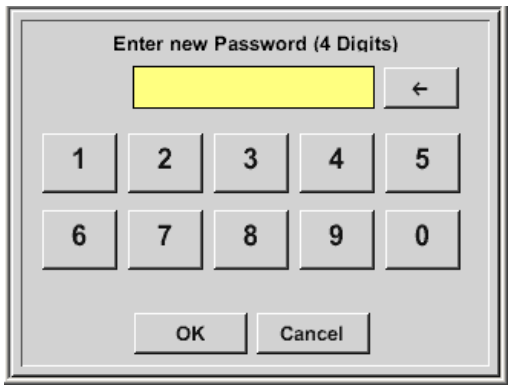
Settings ➔ Passwort Settings



Factory settings for password at the time of delivery: 0000 (4 times zero).

If required, the password can be changed in the *Password settings*.

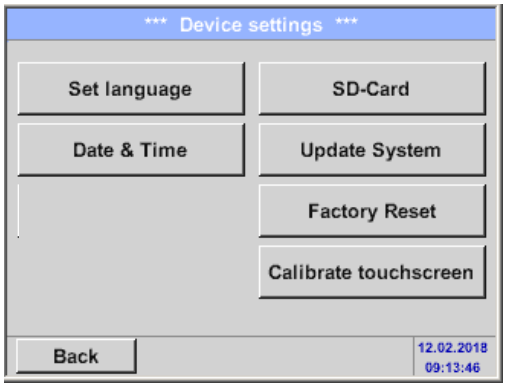
The new password must be entered two times in a row and in each case confirmed with *OK*



If an incorrect password is entered there appears *Enter password* or *New password repeat* in red font.
If you can't remember the password, please use Master password in order to enter a new password.
Remark:
The master password is supplied together with the instrument's documentation.

11.4.2 Device Settings

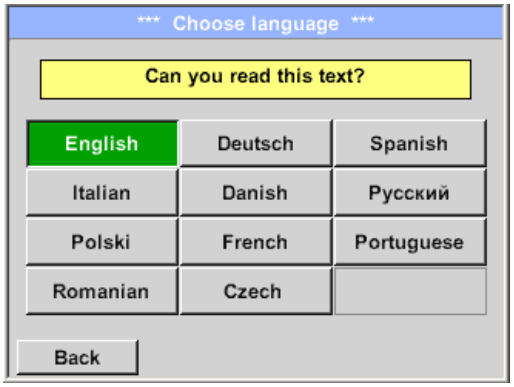
Settings ➔ Device settings



Overview of *Device settings*

11.4.2.1 Language

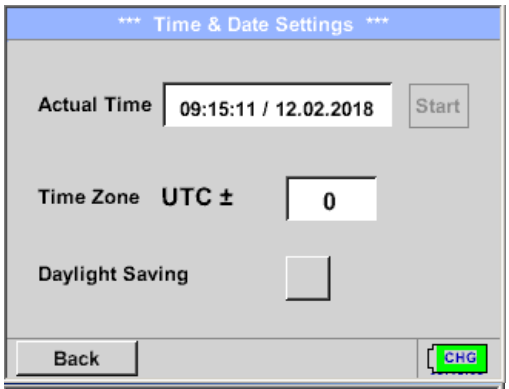
Settings ➔ Device settings ➔ Set language



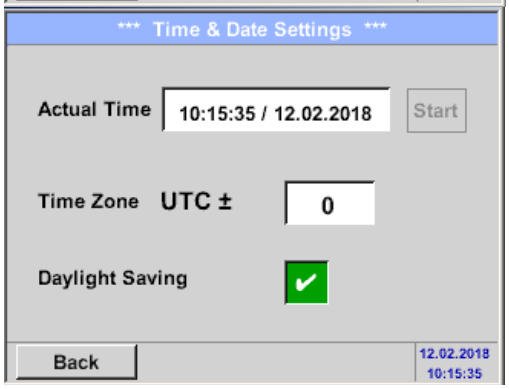
Here you can select one of 11 languages for the Testo Sensor LD pro.

11.4.2.2 Date & Time

Settings ➔ Device settings ➔ Date & Time



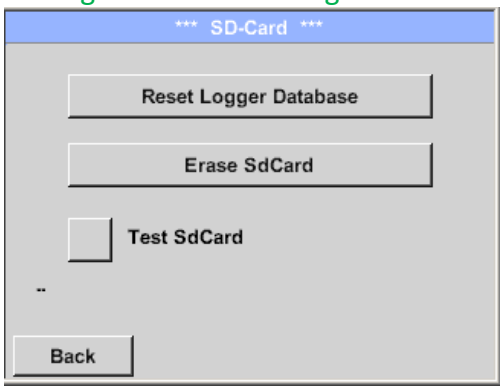
By pushing the *Time Zone* description field and enter the correct *UTC*, you can set the correct time all over the world.



The summer and wintertime switchover is realized by pushing the *Daylight Saving* button.

11.4.2.3 SD-Card

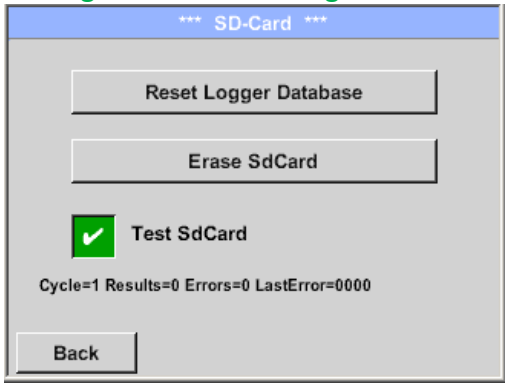
Settings ➔ Device settings ➔ SD-Card ➔ Reset Logger Database
Settings ➔ Device settings ➔ SD-Card ➔ Erase SdCard



By pressing *Reset Logger Database* all actual stored data on SD-Card will be blocked for use in Testo Sensor LD pro. Nevertheless all data are still stored and available for external use only.

By pressing *Erase SdCard* all Data on the SD-Card will be deleted.

Settings ➔ Device settings ➔ SD-Card ➔ Test SdCard



With activation of *Test SdCard* data are written and read to and from the SD-card.

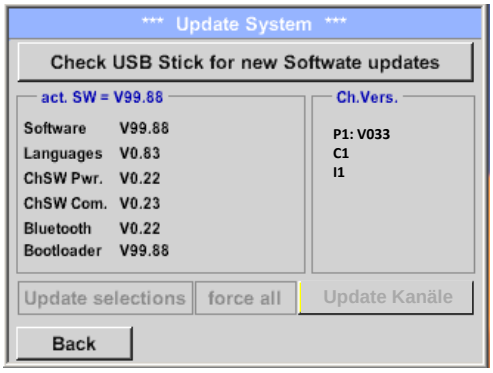
The number of test cycles, as well as possible errors and error codes are display in the status line.

Press the *Back* button to returns to the device settings menu.

11.4.2.4 System update

If required, there is the possibility for the Testo Sensor LD pro to download a firmware update to the device via the USB stick. You receive the software update from your supplier.
The received file must then be stored on the USB stick and transferred to your device as described below.

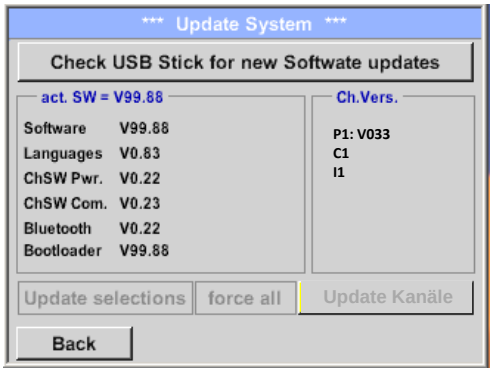
Settings ➔ Device settings ➔ System-Update



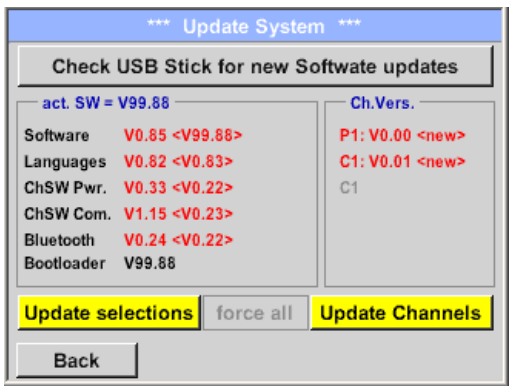
Overview of *System-Update*-Functions.

11.4.2.4.1 Check for Updates

Settings ➔ Device settings ➔ System-Update➔ check USB-Stick for new Updates



After pressing the button *"Check USB Stick for new Software updates"* the following messages appear in the window, is the Testo Sensor LD pro is not properly connected to the USB flash drive or there are no files available.



If the Testo Sensor LD pro is correctly connected to the USB stick and there are new versions of the individual SW Parts, the new versions are marked in red.

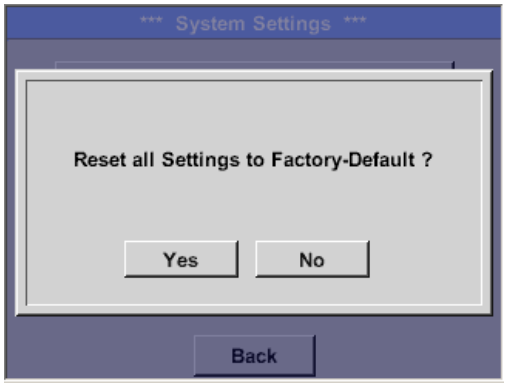
The update is started by pressing the „***Update selections"***. button.

If it is required to install all files (not only the files marked as new), you have press the button ***„Force all"***

11.4.2.5 Factory Reset

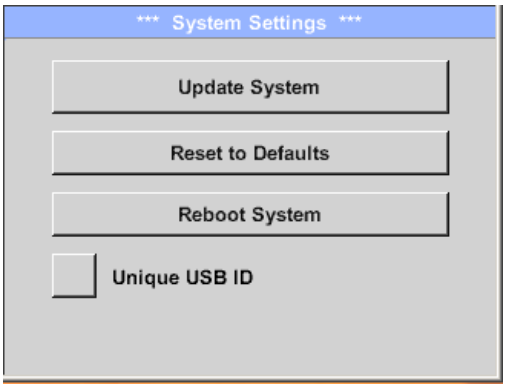
11.4.2.5.1 Reset to default settings

Settings ➔ Device settings ➔ System ➔ Reset to Defaults



Before the settings are changed to the production default settings a safety prompt is displayed and must be confirmed by pressing the button ***„Yes“***.

Note: Saved measurement data will not be deleted or overwritten.



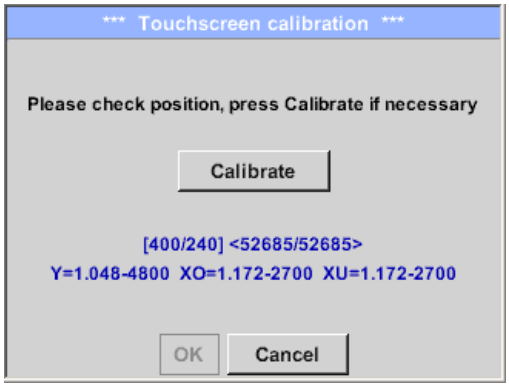
If needed with ***„Reboot System“*** the Testo Sensor LD pro could be restarted(reboot) here.

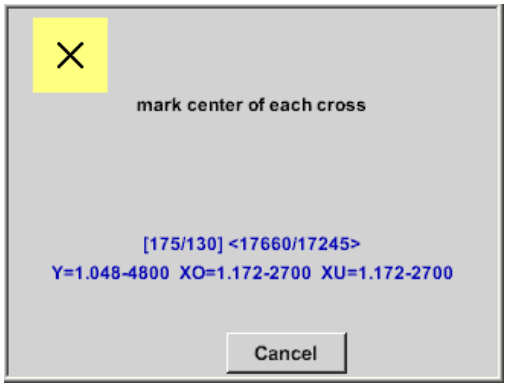
11.4.2.5.2 Unique USB ID

For connections with the PC, a status and therefore a unique USB ID can be defined here. Relevant for simultaneous connection of several USB devices to the PC.

11.4.2.6 Calibration of touchpanel

Settings ➔ Device settings ➔ calibrate touchscreen





If necessary, the touch-screen calibration can be changed here.

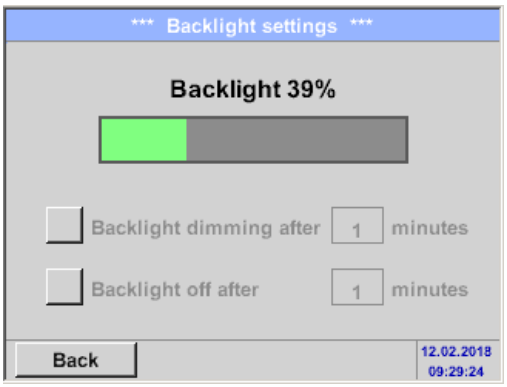
Push *Calibrate* and it appears, 1. left above,2. bottom right, 3. bottom left, 4.right above and 5. in the middle, a calibration cross that must be pushed consecutively.

If the calibration finished positive a message *"Calibration successful"* appears and have to be confirmed with *OK*.

Is this not the case, so you can repeat the calibration with the help of the Cancel and *Calibrate* buttons.

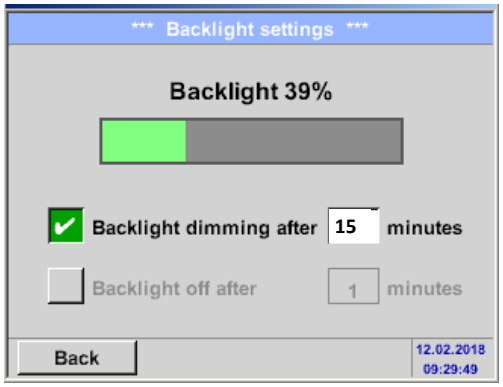
11.4.3 Set backlight brightness

Settings ➔ Set backlight



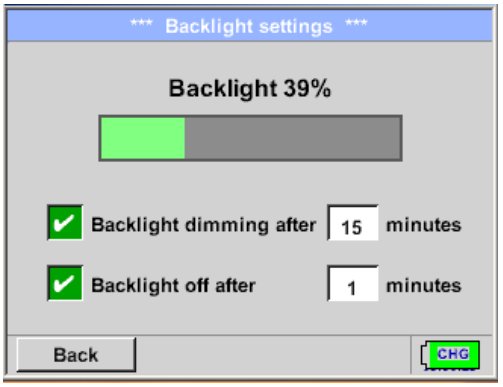
Here you adjust the desired *Backlight* (15-100%) of the display directly.

E.g. *Backlight* to 39 %



With the help of the *Backlight dimming after* button, after a definable time interval (here after 15 minutes), the *Backlight* can be reduced to the minimum.

As soon as the dimmed screen is operated again, the *Backlight* is committed automatically on the last set value before dimming.



To reduce the energy consumption (device runtime), you can switch off the display backlight by setting ***"Backlight off after".***

Remark:
At the first touch, the *Backlight* in our example is reset to 39%, after that a "normal" function operation is possible.

<u>Important</u>:
If the *Backlight dimming after* button is not activated, then the *Backlight* stays permanently on, in the currently set brightness.

11.4.4 Cleaning

Settings ➔ Cleaning

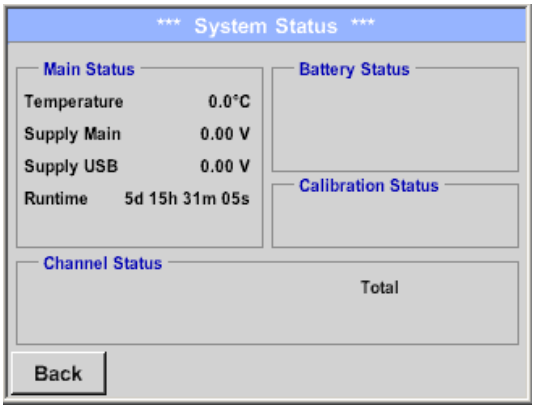
This function can be used for cleaning the touch panel during running measurements.

If one minute is not enough time to clean, the process can be repeated at any time.

Is the cleaning faster finished, then you can push the *to abort press long* button (for one or two seconds) to cancel.

11.4.5 System-Status

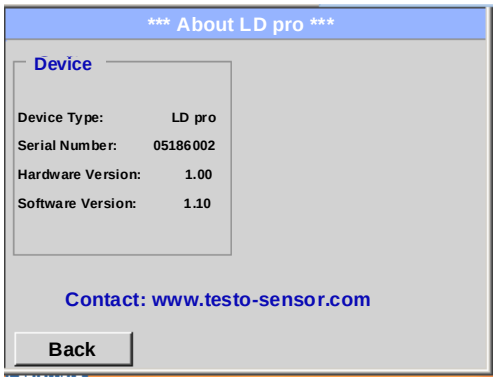
Settings ➔ System-Status



The menu item ***"System status"*** provides information about the power supply voltages and an operating hour counter.

11.4.6 About Testo SensorLD pro

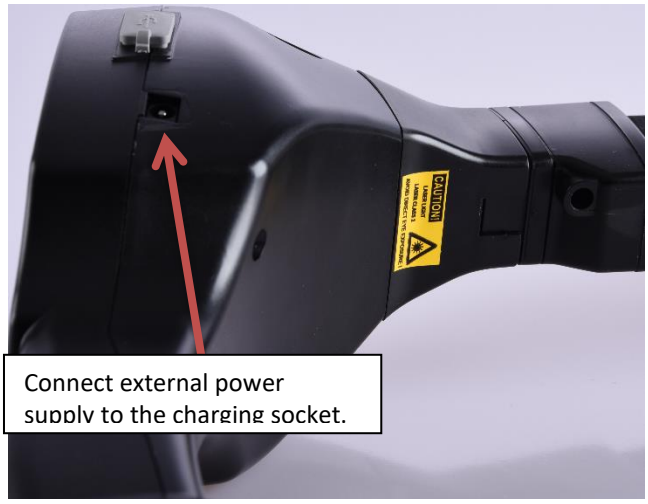
Settings ➔ About LD pro

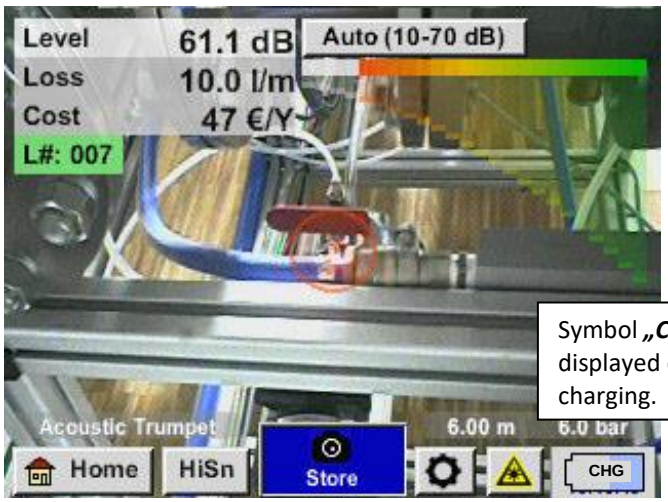


Brief description of the Hardware and Software Version, as well as the Serial Number of the Testo Sensor LD pro.

12 Charging the batteries

The battery is charged within the device. For this, the supplied plug-in power supply is connected to the built-in charging socket of the Testo Sensor LD pro and the 230V socket.



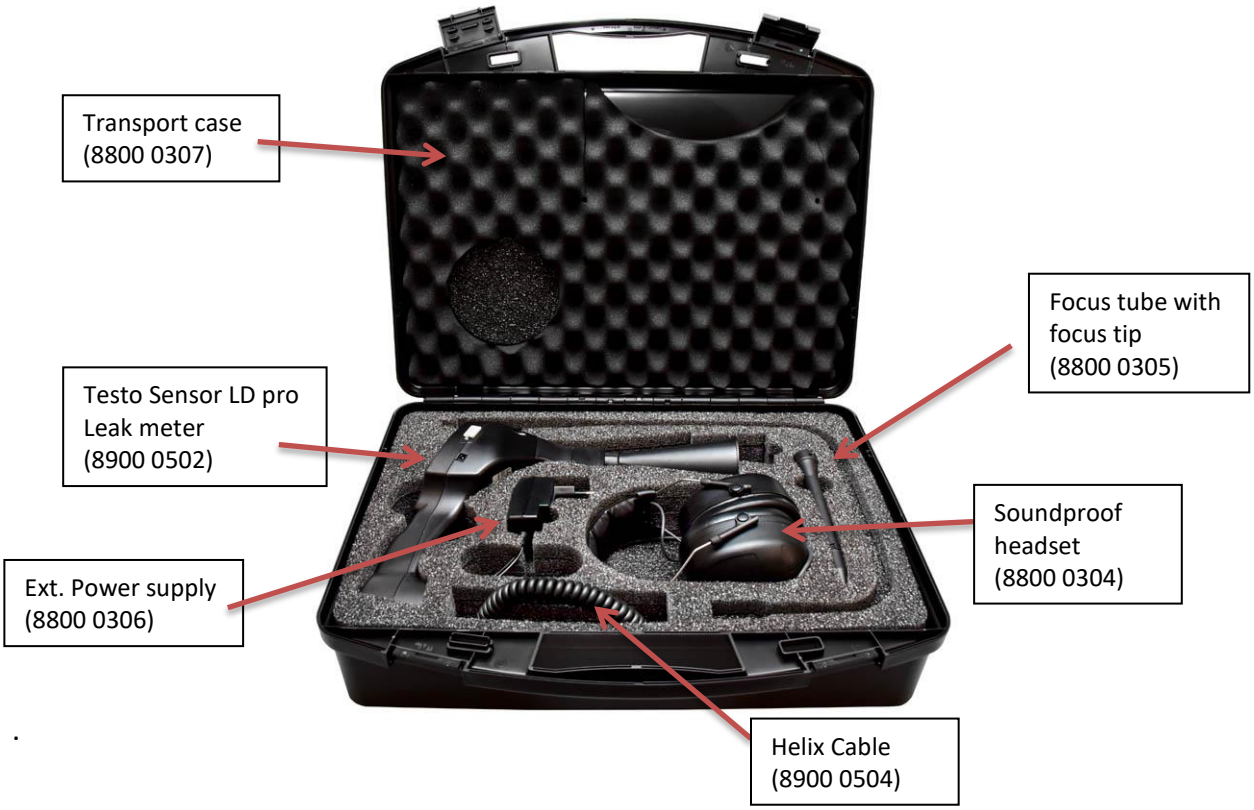


The Testo Sensor LD pro checks the charging status of the battery and starts the charging process automatically if necessary.

Protection of exhaustive discharge !
To protect the Li-ION accumulator of exhaustive discharge the device is switching off automatically if a cell voltage of 6,4V will be reached.

13 Scope of delivery

The Testo Sensor LD pro is available either as a single unit or in a set. The set contains all the components and accessories that are protected in a a rugged and shock-resistant transport case.



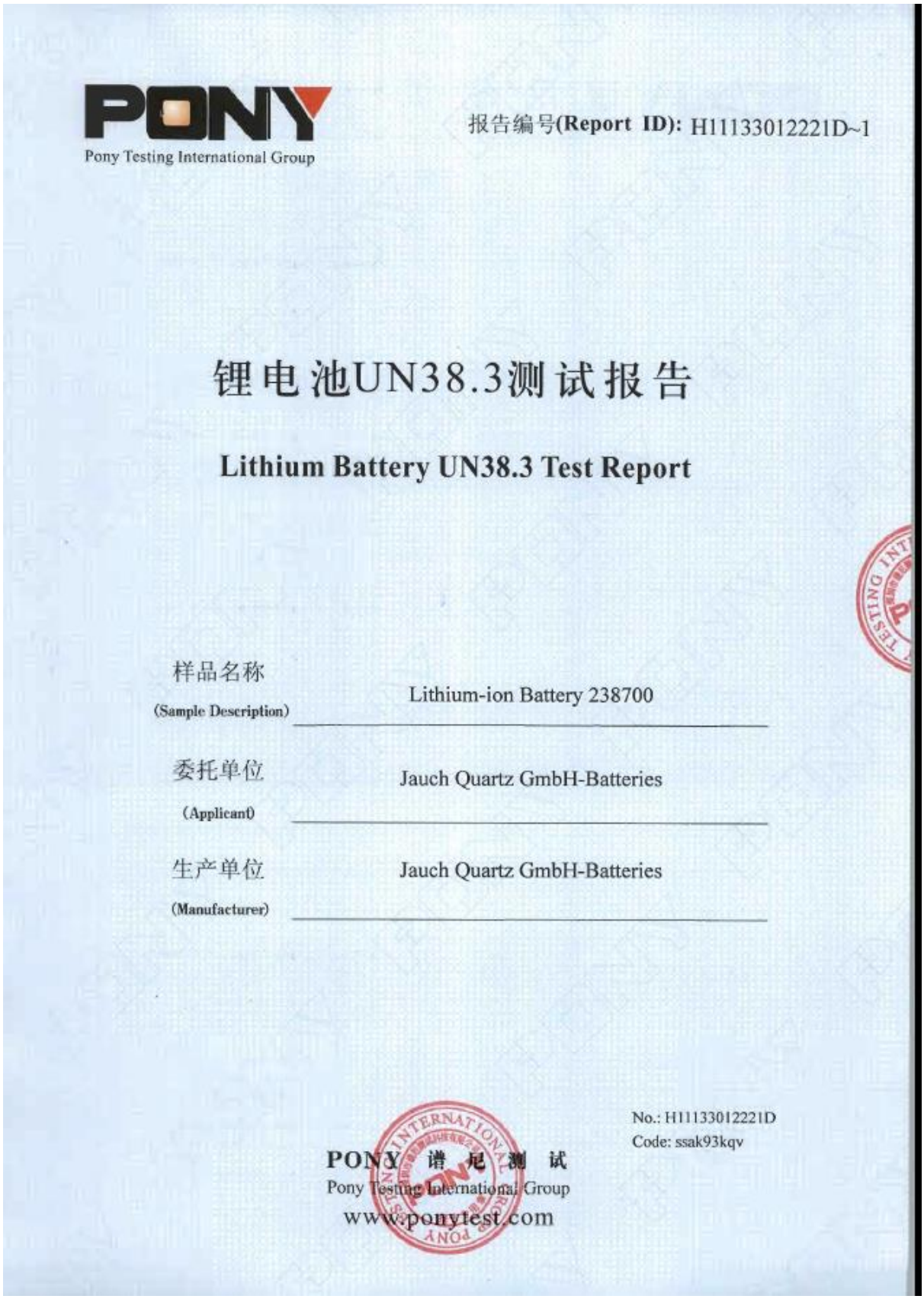
.

The following table lists the components with their order numbers.

Description	Order No.
Set Testo Sensor LD pro consisting of:	**8900 0501**
Testo Sensor LD pro leak detector with acoustic trumpet, and integrated camera	8900 0502
Sound-proof headset	8800 0304
Focus tube with focus tip	8800 0305
Battery charger(AC adapter plug)	8800 0306
Transportation case	8800 0307
Helix cable for connecting the ultrasonic sound sensor, length 2m extended	8900 0504
Gooseneck (optional)	8900 0506
Parabolic mirror (optional)	8900 0507

14 Appendix

In the appendix on the following pages you will find the Test Report of the Li-ion batteries used.



PONY
Pony Testing International Group

报告编号(Report ID): H11133012221D~1

锂电池UN38.3测试报告

Lithium Battery UN38.3 Test Report

样品名称 (Sample Description): Lithium-ion Battery 238700

委托单位 (Applicant): Jauch Quartz GmbH-Batteries

生产单位 (Manufacturer): Jauch Quartz GmbH-Batteries

No.: H11133012221D
Code: ssak93kqv

PONY 谱尼测试
Pony Testing International Group
www.ponytest.com

Report ID: H11133012221D~1 Page 1 of 11

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I、SAMPLE DESCRIPTION

Sample Name	Lithium-ion Battery		Battery Type	238700	
Client	Jauch Quartz GmbH-Batteries				
Manufacturer	Jauch Quartz GmbH-Batteries				
Nominal Voltage	7.2V	Rated Capacity	2600mAh	Limited Charge Voltage	8.56±0.025V
Charge Current	1250mA	Maximum Continuous Charge Current	2600mA	End Charge Current	100mA
Cut-off Voltage	5.5V	Maximum Discharge Current	5200mA	Use	---
Cells Number	2PCS	Cell Model	18650	Rated Capacity	2600mAh
Manufacturer of cell	Samsung SDI Co., Ltd				
Chemical component	Li-Ion				
Client date	2013-11-12		Finished date	2013-12-02	

II、REFERENCE METHOD

《United Nations Recommendations On The Transport Of Dangerous Goods, Manual Of Tests And Criteria》(ST/SG/AC.10/11/Rev.5/Amend.1).

III、TEST ITEM

1. Altitude simulation
2. Thermal test
3. Vibration
4. Shock
5. External short circuit
6. Impact
7. Overcharge
8. Forced discharge

IV、CONCLUSION

ITEM	SAMPLE NUMBER	STANDARD	CONCLUSION
Altitude simulation	N1~N4 C1~C4	UN38.3	PASS
Thermal test			PASS
Vibration			PASS
Shock			PASS
External short circuit			PASS
Impact	N9~N13		PASS
Overcharge	N5~N8 C5~C8		PASS
Forced discharge	N14~N23 C9~C18		PASS

The submitted battery and component cell were complied with the UN Manual of Tests and Criteria, Part III, sub-section 38.3.

Prepared by: Pony Tiwi Kun Checked by: chengpeng Approved by: Liyou

Approval Date: December 2, 2013

PONY 谱尼测试 Pony Testing International Group

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