SLB222 Analyzer

User's Guide

Instrument for the analytical Quality Control of several sorts of foodstuff.

Similar to
CDR FoodLab®, CDR WineLab®, CDR BeerLab®,
CDR CiderLab, CDR OxiTester, CDR PalmOil Tester

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In case of missing information or descriptions that could cause misunderstandings, please get in touch with me to solve it. Changes on this document are only allowed by the author!

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You are entitled to use the SLB222 analyzer software and the printed accompanying material at your place of work only.

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SLB222 is a generic code used for basic paperwork that can be used for all the following brands as shown below. Differences between the brands are based in the test applications installed e.g. for beer, wine, milk products etc.

BEERLab®

FOODLab®

FOODLAB®
Quality control systems for food and beverage

WINELab®

PALMOILTester

OXITester

CIDERLab

Additional tools for analysis provided by CDR
Our specialists are always interested in providing well tested tools that should be simple to use, of lowest toxicity and high accuracy. So we provide:

- Pipettes of fixed volumes and test specific volumes
- Extrafluid for fat extractions out of food matrices
- Hand oil press to extract oils out of nuts, fruits, seeds etc.
- Centrifuges adapted to tests on CDR analysers

Ask your responsible distributor for more information.

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! Common Safety Issues

Please read the Instruction Manual entirely prior operating your analysis system. In order to ensure a high level of performance, all warnings and references to technical safety in this document must be followed.

! 1 Hazards and Precautions

The cautions and safety regulations in this Instruction Manual meet international classifications:

	Danger - Electrical hazards
	Warns of a risk of injury or of a risk to life (for example by electrical shock).
	Danger – Mechanical hazards
	Warns of a risk of injury or of a risk to life. Warns of a risk of injury or of the analyser being severely damaged.
	Skin irritation
	Inflammable substance
	Introduces rules to be observed

The following safety issues have to be observed at all times:

 Electrical safety	- Check that the operating voltage is set correctly before you connect the device to the main power supply. To connect the analyzer to the main power supply, use only sockets which are grounded to avoid the risk of an electrical shock. - Use only grounded extension power cords. The used power cord has to correspond to the country specific regulations. - Never intentionally disconnect the grounding contacts. - There is the risk of electrical shock if the protective conductor is interrupted within or outside the analyzer, and/or the grounded contacts have been disconnected from the line. - Never remove protective guards or secured components since you could expose electrically live parts in this way. - Electrical connection contacts (plugs, sockets, etc.) can be electrically live. - Even after an analyzer has been switched off, components (e.g. capacitors) can be under voltage as the result of an electrical charge. - All current carrying parts are sources of danger for an electrical shock. - Surfaces (floors, work tables) have not to be moist when you are working with any electrical device. - Carry out only the maintenance work and/or the replacement of parts described in this document. - Unauthorized work on the analyzer can lead to the guarantee obligation becoming null and void with necessary expensive service work to correct it. - All work, which requires the analyzer to be opened, have to be carried out by an authorized technician who is familiar with the risks related thereto.
Mechanical Safety 	Analyzer is operating - Never open or unscrew analyzer‘s casing parts while it is switched ON. There is a risk of injury due to moving parts as fans, pumps, motors or any other mechanical movements.

Reagents and Controls	- Observe the suggestions in the package inserts for an exact use of the reagents and quality controls. Note that reagents and quality control material can be biological material! - Don't use Reagents, Controls and other Liquids after expiration date! - Avoid any liquid penetration into the analyzer.
Restrictions	Samples, Reagents and Controls - For consumables no guarantee can be provided for any resistance against organic solvents. For this reason, do not use any organic solvents unless such solvents are expressly indicated. - Do not use any other rinsing or cleaning solutions as recommended by the manufacturer or representative. - Waste liquid has to be disposed in compliance with the legislation.
Quality	Accuracy and Precision of the measured results - In order to ensure a flawless operation of the analyzer measure control samples and watch the function of the analyzer closely. - Faulty measurement results may result in an incorrect diagnosis or range danger for patient.
Fire and Explosion Hazards	- Do not place any inflammable or hazardous explosive material close to the device. - Electrical sparks could cause fire or explosions.
Operator Qualification	- The analyzer should only be operated by trained personnel. Improper operation of the analyzer might cause inaccurate measuring results!

! 2 Maintenance and Hygiene

- No **organic acid** based cleaning substances should be applied. Instead use cleaner designed for cleaning and disinfecting laboratory analysers.
- **Only use** a dampened cloth to clean the analyser.
- **Never spray** or pour cleaning solution directly onto the analyser that may negatively impact the analysers functions significantly.
- Keep the analyzer clean and **do not spill liquids** onto it.
- In case liquids were spilled onto the analyser, immediately absorb liquid with a

suitable cloth.
- Contact your distributor if your control measurements do not produce the expected results.

Cleaning and Disinfection

- Use a suitable surface disinfectant solution available for laboratory instruments.
- In urgent cases use **Surgical Spirit 94%** if no other more suitable solution is available.

! 3 First-Aid Measures

- If a person swallowed any chemical solution may be while servicing, wash out mouth with water.
- If provided person is unconscious, **then call a physician**.
- If inhaled, remove to fresh air. If breathing becomes difficult, **then call a physician**.
- In case of contact, immediately wash skin with soap and copious amount of water.
- In case of contact with eyes, flush with copious amounts of water for at least 15 minutes.
- Assure adequate flushing by separating the eyelids with fingers, **then call a physician.**

! 4 Repairs

Repairs to the analyzer may only be carried out by trained personnel, and replacement parts have to comply with the analyser specifications. In case of analyser problems contact your representative.

! 5 Safety of the product

European Directives consulted during the design stage. The analyzer has been designed and constructed following the health and safety requirements of the directives:

European Directives consulted during the design stage	
Directive Number	Title and implementation into Italian legislation

Directive 2014/30/EC	EMC Directive 2014/30/EC of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility (recast) (all languages), aligned to the New Legislative Framework, will be applicable from 20 April 2016.
Directive 2014/35/EU	DIRECTIVE 2014/35/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 February 2014 on the harmonization of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.

! 6 Norms and standards used for the design and testing

The SLB222 analyzer corresponds to the essential requisites of the norms:

EN 55022:2010	Radio disturbance characteristics - Limits and methods of measurement.
EN 61326-1:2013	Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements
EN 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements (IEC 61010-1:2010 + Cor. :2011
EN 61010-2-081	Safety requirements for electrical equipment for measurement, control and laboratory use - Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes (IEC 61010-2-081:2001)
EN 62368-1: 2014+A11:2017	Audio/video, information and communication technology equipment Part 1: Safety requirements **Rif. Compatible AC Adapter 24Vdc; 3 A ES1/PS2**
EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013	Information technology equipment – Safety – Part 1: general requirements **Rif. Compatible AC Adapter 24Vdc; 3 A with limited power (LPS)**

! 7 Conformity of the product

The instrument has the CE-mark in accordance with the Directive 89/336/CEE and successive modifications and integrations. Each modification that alters the design and construction characteristics of the instrument and not expressly authorised by CDR S.r.l. will cancel the conformity and consequently the right of use.

Use of the instrument that is not described by this document is considered. CDR S.r.l. will not be held responsible for damage caused by not respecting the technical specifications described herein and by the improper use of the instrument or biological products. See chapter 6.3 for the Declaration of conformity.

1 General information

1.1 Intended use

The SLB222 analyzer is made for the analysis on several sorts of food using CDR's dedicated test kits together with special test application instructions for use on production lines or special laboratories.
All analytical tests provided by the SLB222 analyzer are well calibrated after valid international standards.

1.2 System description

SLB222 analyzer is a standalone, compact instrument designed and made after latest technology. Its main part is the spectrophotometer with 4 channels and 2 beams each of different wavelength accompanied by an incubation block of 16 cells. Both are temperature-controlled at 37.0°C ±1 (98,6°F), for pre-warming of test cuvettes. **The analyzer is calibrated and controlled automatically after power ON where also other elementary function checks will be done**. Possible malfunction will be shown on display automatically after detection.

The analyzer is equipped with a coloured LCD touch screen. All operations take place by using a finger or a special touch-screen pen which is to put on a symbol or message. The analytical tests are internally stored along with the associated calibration parameters. Test results will be stored after its identification in a data base where it can be selected for later purposes. A lithium battery ensures a loss of all data. The dialogue language can be set in the menu of the device. Following language selection can be done: Italian, English, German, French and Spanish.

The analytical tests are mainly run as 2-phase test. In the first phase, a defined amount of sample material is pipetted into each pre-filled cuvette to R1 reagent. After incubation, a blank value is measured and stored. For colour handling, a reagent R2 is added to the cuvette content and after the second incubation the colour change can be read. The result is shown on the display and automatically memorized and printed out. Two USB interfaces as well as a Net interface for optional connection to the host computer.

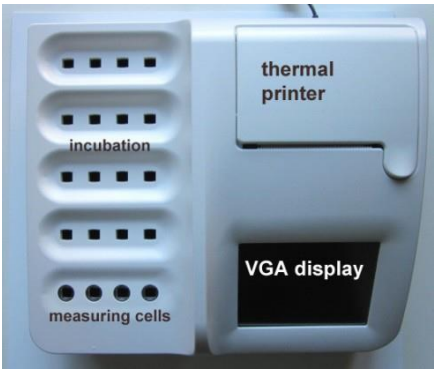
The built-in thermal printer is easy to handle and requires thermal paper. The power is provided by an external AC/DC power supply (LPS – Low Power Supply) that automatically adapts to the existing power supply from 115V to 230V. The secondary voltage is 24Vdc, 3A.

Analyser can be connected by USB cable to PC to save exported data or can be used for downloading software updates and any other data on CDR website.

Useful hint

In this Manual a bullet "•" draws your attention to an instruction.
Example: • Press enter-key to confirm ...

1.3 The SLB222 analyzer



Incubation block with 4x4 cells

Thermal graphic printer unit
Paper 80 mm x 45 mm x 12 mm

LCD-Touchscreen-Display
VGA 640x480 16-bit color

4 Reading cells, different wavelength,
Blue shining control LED's

Figure 1 SLB222 modules

Operating parts

Colour touchscreen display

Top line with:
Analyzer name, HOME button
Background Analysis button
USER selection /
Info about selected user and Company name

Main part

Menus for Settings, Analysis, and Results (DATABASE)

Base line with:

Info field, date and time

Figure 2 Display layout

TOUCH function: is an active area expressed as a symbol on dialogue that can be used to perform a function.

Beeper

A beep will be heard:
- after power on/off
- after touch of function on screen
- at end of incubation cycle
- if an error occurs

Measuring cells

After test selection a blue illuminated LED shows the reading cell that must be used for chosen test. Automatically the cell will be checked, if it fails the operator will be warned and the specific test is inhibited for further use. As a new innovation every measuring cell is equipped with an **Insertion Tube Sensor** at the button to control whether a cell is occupied by a cuvette or not.

During reading don't touch cuvette or other parts and avoid any vibrations!

Figure 3 Measuring cells

Connections

At rear site following parts are available:

ON/OFF button 24V DC electric power port

Figure 4 connections and its symbols

Power button ON/OFF

24V DC port for external power unit (internal pin is +)

Net port for RJ45 plugs for net connections

1 USB port type B, for PC connection (software update, data exportation)

1 USB ports type A, for exportation of data.

Connection to the host PC

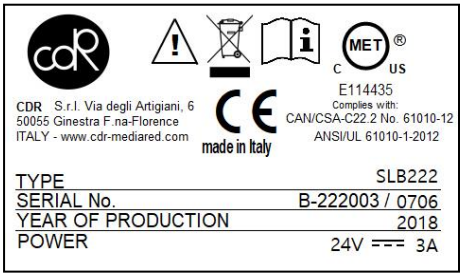
To upload analytical data, connect an USB cable between analyser and USB port of the pc. CDR offers the CDR Data Manger program to collect analysis data. See chapter 3.7.12.

Power requirements

The analyzer must be powered by an external power supply of secondary 24Vdc; 3 A with limited power (LPS), and branded with European Quality Marks for Safety like: TUV, VDE, SEMKO, NEMEKO etc. Use the power adapter supplied with the analyser to meet important safety regulations. Normally a standard power cable is supplied with the adapter with a protective ground contact. Check if the plug will fit the power outlet (convenience outlet) you have. If you need a common adapter use one that meets a standard regulation for safety.

Instrument nameplate

The instrument has a nameplate displaying specific information.



Address of manufacturer, CE mark, MET mark.
Symbols for attention and wasting
Type: SLB222 and
Serial number:
Year of production:
Power requirement: 24V, 3A AC

Figure 5 Nameplate

Important:

- Never remove the nameplate from the original position chosen by the manufacturer.
- Do not modify or falsify the data displayed on the nameplate.
- Do not clean the nameplate with abrasive products.

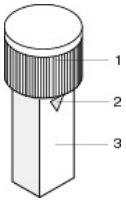
1.4 Storage of data

Analyser data, test specific data and results are stored in the memory as long as they will be overwritten or deleted by user interaction.

1.5 CDR Test cuvette

For opening or closing of the cuvette, it is much recommended to place the cuvette into a free incubation cell and turn then the cup on or off. This procedure keeps the optical window clean. On top of it a thread is seen for the new cup. This cuvette can be detected by an insertion sensor located in measuring cells. Advantage, dialogues change automatically by cuvette placement or removal. The function must be set up, see chapter 3.7.15.

Test cuvette



1 cup that closes the cuvette
2 triangular mark that indicates the reagent filling level of 1000µl for reagents
3 optical window, keep it clean, don't touch it with fingers!

Figure 6 CDR test cuvette

1.6 CDR Reagent kit

A test kit contains a number of 10 or 20 of test cuvettes inside

Important information on plate:
Instrument name
Test name: e.g. YAN ORGANIG NITROGEN
REF: 300xxx (order code)
LOT: reagent lot number
EXP: expiration date
Store at: storing temperature
Link for download METHOD; MSDS etc.
Symbols should be observed!
Pre-filled cuvettes in a welded aluminium bag.

Figure 7 Bag of pre-filled test cuvettes

MSDS: For all CDR test kits **M**aterial **S**afety **D**ata **S**heets are available on CDR's web-site downloadable only in English language: http://resources.cdrfoodlab.com
For testing, transportation, storing and wasting you should know any dangers or consequences!

Symbol explanation:

Expiration date followed by date e.g. 03/2019

Storing condition followed by temperature e.g. 2 to 8°C

For symbols for safety see chapter ! 1 Hazards and Precautions.

1.7 Pipettes

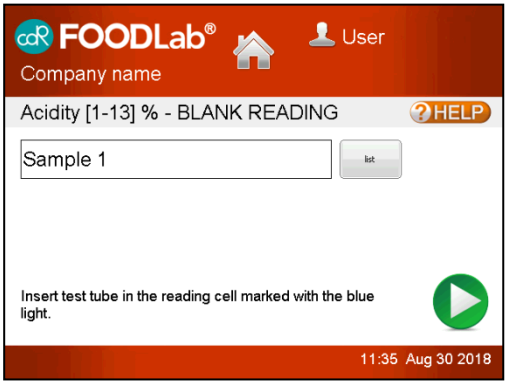
CDR offers a number of high-quality pipettes. In case of need ask your sales contact. For a maximum of accuracy, it is much recommended to use especially for the displacement of doughy sample material a positive displacement one. Ask your distributor for more information. Operate with pipette according to manufacturer's description! Know that a pipette is an instrument that needs after a certain time of use a special maintenance, otherwise results could be wrong!

MiniPet: types of different volumes can be in the accessories. It is not of highest accuracy and should be used only as described in the test application instructions.

1.8 Testing

For testing go as described in the specific test application instructions available in Menu **Settings** and **Test Methods**. For quick information about the test procedure, touch the question mark that is visible in main dialogue.

All following illustrations are examples!



Touch question mark to open the first application dialogue.

You're requested in this dialogue to place cuvette for sample 1 into the indicated reading cell.

Touch question mark to open the first application dialogue.

Figure 8 Sample 1 for blank reading

Figure 9 Help

Figure 10 Help

For every test you can have a look of a number of illustrations that explain the test procedure entirely.

Touch:

for next dialogue

for previous dialogue
or to leave a dialogue; Exit

to scroll the pages

Reagent indications

While reading test applications you will be confronted by different reagents terms. Understand the following description:

R1 basically all reagents pre-filled in test cuvettes are called as R1, also in bulk ware where the reagent must be pipetted into empty test cuvettes.

R1a is a reagent that activates the R1.

R2 is a reagent that causes an optical change depending to a concentration.

R3 is a reagent that causes an optical change depending to a concentration.

Important note for accurate results
Always mix the cuvette content intensively except it is described differently:
- prior reading of blank value or colour change
- after addition of sample or reagent.

1.9 User name

User names can be set up under **User Management** in **Settings** Menu. To add or delete a user name go as described in chapter 3.7.4 for more details. For a quick user selection touch the symbol on head line. The user name is also printed in results protocol.

1.10 Transportation and storage

Packaging, movement and transportation
The analyzer and its accessories are packed together in a cardboard box. To transport it, use its cardboard box to protect it against atmospheric influences. Please note that the carton does not provide sufficient protection against rain, sun, snow and wind.

Storage conditions
The analyzer in its carton must be stored in a closed environment within the temperature range +5°C to +40°C (41°F to 104°F) and a relative non-condensed humidity of 20% to 90%. The storage place must not be exposed to contaminating agents such as humidity, dust, acids, corrosive gases, salt, smoke etc. Do not stack the cartons more than five high.

Conservation and/or disposal of the packaging
The manufacturer recommends conserving the cardboard box in case of future transportation purposes. The disposal of the packaging does not present any particular dangerous aspects to persons, animals or materials. Before disposal of the cardboard box, consult the Council Directive 94/62/CE on packaging and the disposal of packaging.

1.11 Receipt of the analyzer

Each analyzer is checked following specific procedures on instruments by CDR prior shipment. However, damage could occur during transportation and will not be the responsibility of CDR. Effectuate a visual control of the packaging and the apparatus to check that there is no visual damage due to knocks and bangs. If damage is evident, call with your sales representative to find a solution.
Control whether all parts are available by Packing List.

1.12 SLB222 connection to PC

Your analysis system can be connected to a PC by a USB cable. After connection a temporary folder named CDRDRIVE is arranged on hard disk. This folder contains the file CONNECT.HTM. Klick CONNECT.HTM file and your PC will be connected with CDR's website. See more details in chapter 3.7.12.

This CDRDRIVE is used to:
- import a downloaded update/upgrade file into the unit (e.g.: up_ SLB _ sn xxxx _yymmdd . upd)
- export Analyzer Status (e.g.: STATUS.XML ⌈LOG.TXT ⌉⌈DB.DBC ⌉)
- export results out of the Database (e.g.: RESULTS.XML).

Note: when you disconnect the USB cable and reconnect it again data are maintained but after power off all data will be lost, CDRDRIVE disappeared!

Note: when you select UPDATE from SETTINGS menu, CDRDRIVE is renewed and any update file previously present is deleted to make room for a new update file to load.

Note: after updating procedure, the downloaded update file will disappear automatically.

2 Installation

For the installation of the analyzer proceed as follows:

A. Place **SLB222** on a plane surface in such a position that it is not exposed by mechanical vibrations or extreme temperature fluctuations or excessive light.

B. Connect the supplied external power adapter (LPS: Limited Power Supply) to the port at the rear of the instrument 24 Vdc, 3A (Figure 4) using the appropriate power cord to the mains (110V to 230V). In case the adapter is different from the one included with the instrument, check that the electrical and safety characteristics (24 Vdc, 3A) are equivalent (CE mark) and that the polarity of the connectors is respected Figure 4). Normally the thermal paper role is installed ready for use by the manufacturer. If not, go as described in chapter 5.2 Replacement of printer paper.

C. After power ON the analyzer, the photometer optics will be controlled together with other functional parts. A malfunction will be indicated on display.

After a while the following information is shown:

Figure 11

Followed automatically by next dialogue:

The name is shown after its test applications installed e.g.:
CDR FoodLab or
CDR WineLab or
CDR BeerLab ....

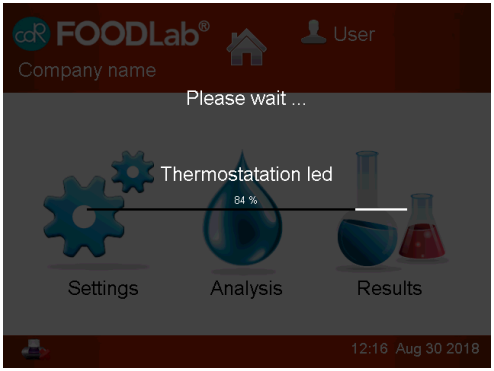
Figure 12

Test applications are loaded into the working memory for quick access.
According to the customer needs, the analyser will be configured for Oils & Fats or Milk and Dairy products or Eggs products, Tomato, Beer or Wine.
Similar analyzers have their own test application profile like the CDR WineLab or CDR FoodLab or CDR BeerLab.

If the analyzer is switched on first time after leaving production, automatically the dialogue for language setting appears.

- Select language symbol you want to work with. After that dialogues to set or control will appear as date & time, company name, user name.

After that the **Main dialogue** is shown:



Top line

Central dialogue

Base line.

Figure 13 Main Dialogue

PLEASE WAIT is shown while power up to operating temperature.
According to the system verification, different messages could appear that you must follow and confirm always by OK.

Use menu SETTINGS to configure your system, see chapter 3.7 for details.
Use menu ANALYSIS to run a test listed, see chapter 3.7.6 Test methods for details. Use menu RESULTS to get results, see chapter 3.8 for details.

Note

Regarding the operation on the SLB222, there is no risk for the operator if he uses the software as it is intended for!

After visual examination of the equipment, there shouldn't be an ergonomic danger for the operator!

End of installation.

3 Operation

3.1 Operation procedure

The SLB222 analyzer is equipped with dedicated software/application for the determination of parameters on different sorts of foodstuff.

Before you start analysis, check if the analyzer set up is OK, see chapter 3.7 Settings Menu.

3.2 Switching on the analyzer

To run the **SLB222** press the ON/OFF key at rear side. Make sure that the reading cells are free and not occupied by a cuvette! After that the analyzer heats up to 37°C/98.6°F and a headline will be printed out. This will take about 20 min.
The photometer parameters are checked automatically. A malfunction will be indicated on display.

The SLB222 is now ready to start analysis as soon as **TESTS** dialogue can be opened for a test selection.

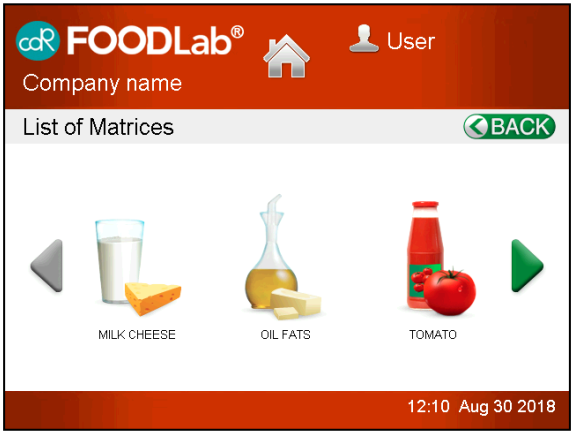
Figure 14 Main dialogue

3.3 Preparation of reagents and samples

Read carefully the information provided in the **Test Application Instructions!**
While power up prepare reagents and samples for testing.

3.4 Test selection and execution

- For a test selection, touch **Analysis** on display to open the **List of Matrices**. The following similar dialogue is shown:

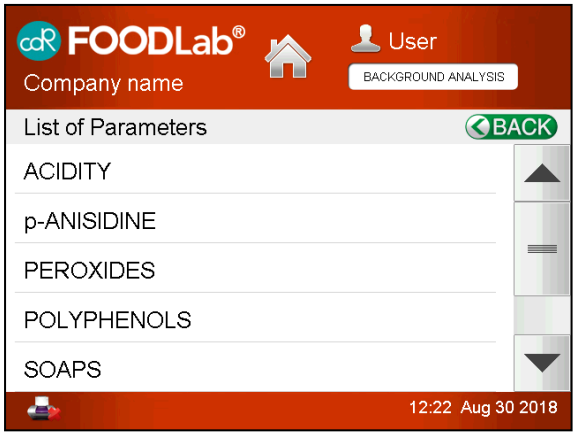


This example is a collection of test materials. This dialogue can be different to your device!

Figure 15 Matrices for test selection

- Touch the corresponding button e.g. OIL / FATS to open its List of tests.

Note that the following line of dialogues are very special and is according to the test application instruction. For other tests the procedure is different!

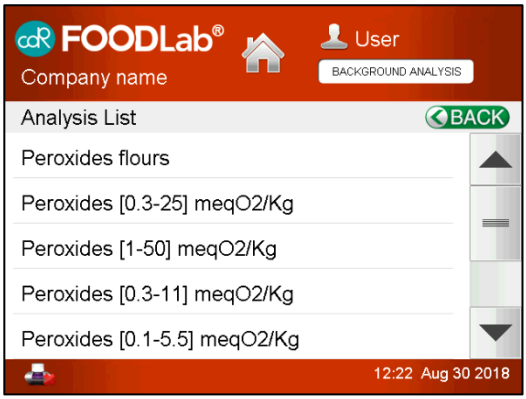


Note that the following line of dialogues are very special and is according to the test application instruction.
For other tests the procedure is different!

Use BACK key to get back to previous dialogue.

Figure 16 List of parameters

- Select a test you want to run by touching it on the list shown. If more test available as shown, touch arrow-key up or down to scroll through the list.

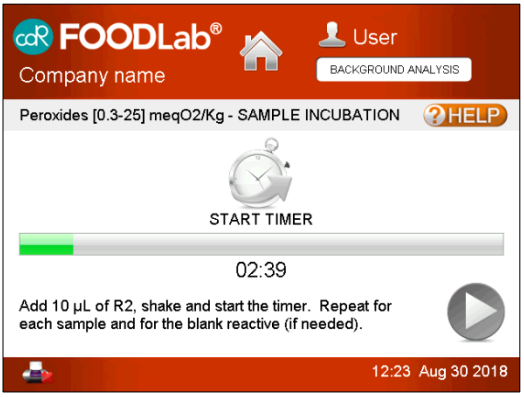


After test selection the **Analysis List** dialogue is shown e.g. Peroxides.

Since software upgrade 3 a ranking function is implemented. That means a test often used appears on top of list, a test not used is placed at the end of list.

Figure 17 Test List

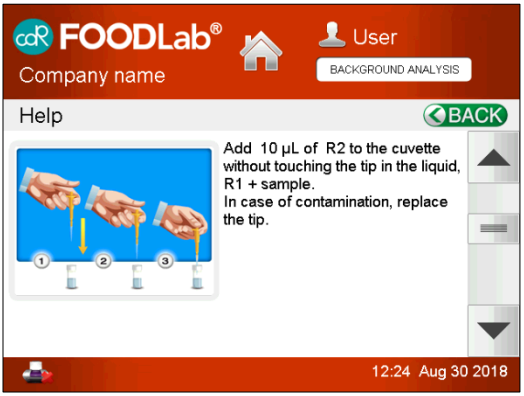
- Touch **Peroxides (0.3-25) meqO2/Kg** to run testing, the following dialogue appears:



An instruction is indicated that should be followed below the START icon.

If you touch this **"?"HELP**, you will get a series of separate dialogues for test application instructions.
See the following dialogue as an example:

Figure 18 Incubation for blank reading



In this example you can switch between more dialogs by using the arrow-key.

Note advises as shown for your orientation.

To leave this dialogue, touch BACK.

Figure 19 Help dialogue

You will be back at Timer dialogue.

- Touch **START** button to run the timer count-down. If the incubation cycle is over, a beeper is heard to get attention.
- Touch **NEXT** button to proceed next step of analysis, the following dialogue is shown:

Selectable symbols of test cuvettes are shown for a Blank Reading.

Especially for **testing of peroxides**, a red coloured symbol is shown to store the Reagent Blank value. Go as described in section 3.4.2 for more details.

Figure 20 Sample for Blank Reading

- Touch **Sample 1** that should be read and put test cuvette with sample 1 into the blue indicated measuring cell. The following dialogue appears:

This dialogue appears after sample selection.

The default sample identification can be changed by touching the arrow down symbol. A list pops up displaying previous entered ID's you can select again.

After setting of identification, follow the instruction given in this dialogue.

Figure 21 Blank Reading, Sample ID

- Proceed as advised and touch **READ** button for Blank Reading of sample 1.

For **positive sample identification**, touch Sample 1 to open a dialogue that allows a name of different figures. Different dialogues of figures can be selected by touching the corresponding button.
See next dialogue …

Sample identification name List of figures
X: clears the line of figures

Arrow ⇧ : big figures
Arrow ← : deletion of figure
Ok: to confirm and exit to leave dialogue:

Figure 22 Sample identification

Enter the identification you want, touch **ok** to confirm. Next dialogue appears:

After successful blank reading the cuvette symbol is shown with a check- mark.

For every sample a cuvette symbol is shown.

Figure 23 After blank reading

- Proceed as described for next sample, or touch STOP icon for END OF SESSION to finish BLANK READING session.

3.4.1 Cancellation of a test

A test run can be terminated by touching HOME on head line except during a measurement. A message will appear to providing functions **Continue** or **Finish**. If you select **Continue**, you return in the HOME dialogue, maintaining the open analysis in background. Selecting **FINISH**, you cancel the running test.

3.4.2 Storing of Reagent Blank value

This description is special for testing of peroxide values! If you put R2 reagent into the test cuvette with R1 reagent, a red colour is shown. This colour “Reagent Blank” must be subtracted by testing of samples to get accurate results.

This Reagent Blank Value is different between reagent lots. So whenever you start with

a new peroxide reagent lot, you must store the reagent blank for all curves used for peroxides! The values are stored as long as they are restored.
To store Reagent Blank Value, proceed as follows:

- Select in dialogue **Blank reactive** in dialogue testing peroxide.
- Put a test cuvette only with R1 reagent into the indicated reading cell.
- Touch **READ** to store the 1st blank result.
- Do blank reading now for more samples as described.
- Touch **STOP** to terminate blank reading session.
- Add **10µl of R2** reagent into the test cuvette(s) and start incubation cycle.
- After incubation, mix cuvette content and place cuvette into the indicated reading cell as requested by dialogue.
- Touch **READ** to store the 2nd blank result(s).

This procedure can be combined together with cuvettes containing a sample. **The advantage of this two phases test is that intensive coloured oils cannot interfere with the R2 reagent!**

3.4.3 Print of results

A print-out is configured as follows:

Analyzer name
Date and time
Test name and Operator ‘s name
Calibration parameter K- and Q-values
Sample 1 ….
Result with unit and Name
Note about exceeded measuring range [*]

3.4.4 Exceeded measuring range

In case of exceeded measuring range, a [*] star is shown on display and in print-out, proceed as follows:

- If result is shown as [<] smaller, repeat test using double amount of sample volume and divide result by two.

- If result is shown as [>] bigger, repeat test using half of the sample volume and multiply result by two.

3.5 Printing of results

The results of the analysis are shown on the display and printed out on paper.
On request they can be shown in menu **Results**, see chapter 3.8.

3.6 Standardization of tests

A recalibration directly on the analyzer is not possible. In case of calibration questions ask your distributor or manufacturer CDR srl. For a customized calibration curve you

can store a test with a new name and customer specific calibration factors K and Q.

3.7 Settings Menu

This dialogue consists of two pages selectable by NEXT button.

The HOME button on Top line leads you back.

Touch **Proceed** for other options.

Figure 24 Menu Settings

3.7.1 Language

Touch the **LANGUAGE** button to open its dialogue.

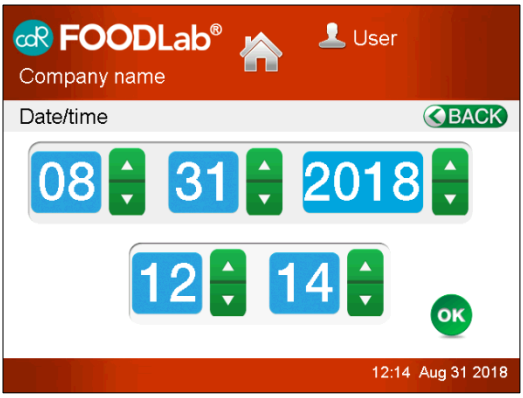
Touch language you want to run, it's once available for operation.

Touch HOME to leave dialogue.

Figure 25 Language selection

3.7.2 Date/Time

Touch DATE/TIME button to open its dialogue.



Setting of day, month and year by arrow-keys up and down.

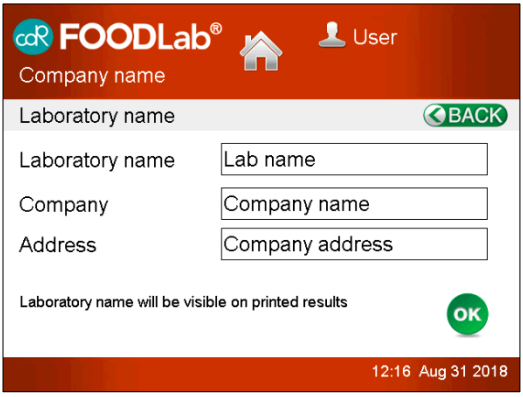
Setting of hours and minutes by arrow-keys up and down.

Touch **OK** for storing.

Figure 26 Date/Time

3.7.3 Laboratory's name and address

Touch LABORATORY NAME to open its dialogue LAB SETTINGS.



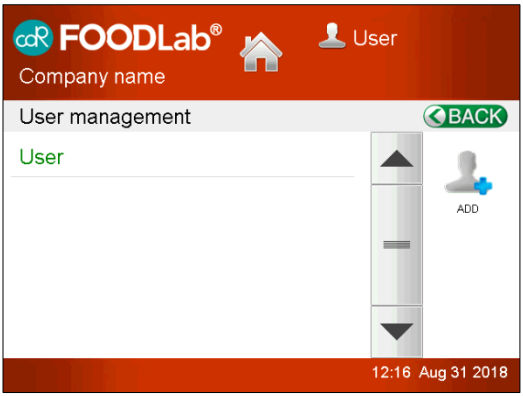
Touch a position and specify your entry on appearing dialogue.

Touch **OK** for storing.

Figure 27 Name of Laboratory

3.7.4 User Management

Touch USER MANAGEMENT to open its dialogue.



Here on Top Line you've quick access to the dialogue shown to update the present operator's name.

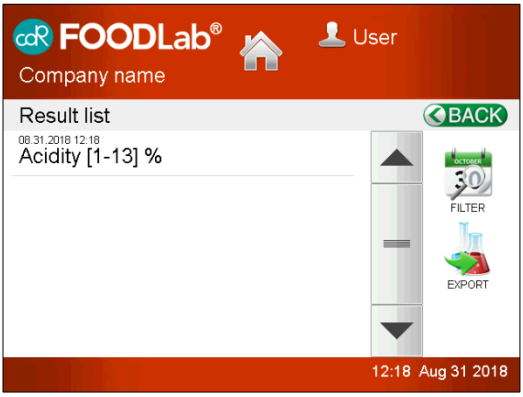
Here is shown a list of operators. A new operator can be set-up by the **ADD** button, a dialogue appears to set-up the entries.

An operator can be removed by the **DELETE** button.
Touch HOME to leave dialogue.

Figure 28 User Management

3.7.5 Export Results

Touch **Results** in the *main dialogue* to open its dialogue.



The complete database can be exported in a file RESULTS.XLM, to use it with MS-Excel, by USB cable on CDRDRIVE on hard disk (pc).

After touching the Export, the results are exported.

Proceed as described in chapter 3.8.

Figure 29 Export Results

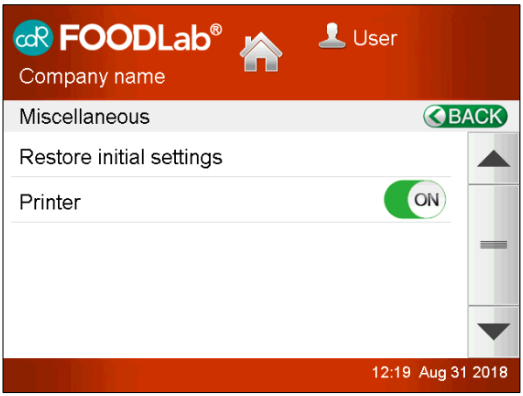
- Touch **BACK** or **HOME** to leave the dialogue.

3.7.6 Analysis Methods

Touch **Analysis Methods** to open its dialogue. For all tests the application methods are available and explained step by step. After selection a series of different dialogues will be shown to get details for test application. These dialogues are also available after starting a test run and selection of HELP symbol.

3.7.7 Printer

Touch **Miscellaneous** to open its dialogue.



Here the built-in printer can be activated or inactivated.

Here on dialogue the printer is activated.

Touch **OK** for storing.

Figure 30 Printer ON/OFF

3.7.8 Audio

Touch VOLUME to open its dialogue.

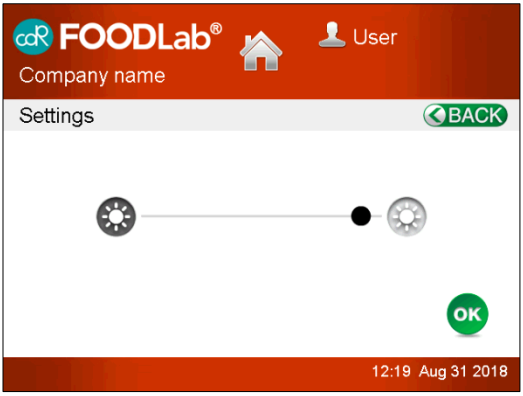
Adjust here the loudness of the beeper by touching symbols. The green line shows the adjusted range of loudness.

Touch **OK** for storing.

Figure 31 Audio loudness

3.7.9 Brightness

Touch LUMINOSITY to open its dialogue.



Adjust here the brightness of the display by touching symbols.
The green line shows the adjusted range of brightness.

Touch **OK** for storing.

Figure 32 Brightness setting

3.7.10 Analysis Profile

Touch **Analysis profile** to open its dialogue.

For each test you can configure the functional parameters and you can store a test duplication/clone under a customer defined test name.

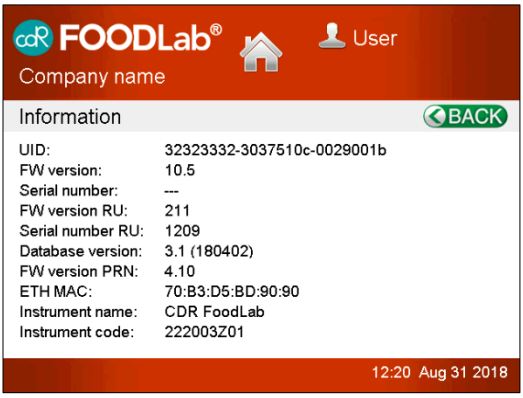
Select a test and chose:
- Symbol **Change**, to open the list of test parameters.
- Symbol **Delete**, to remove a cloned test out of the list. The Original tests cannot be deleted!

For a test duplication proceed as follows:
- Select the test that should be duplicated/cloned
- Touch **Edit**
- Change name and parameter (former K and Q calibration values) Get only parameter for a new matrix tested by CDR Research Laboratory!
- Touch **Clone** for storing.

The new test is now available in the list of tests. The original test cannot get lost.

3.7.11 Info

Touch INFO to open its dialogue.



List of analyzers data like Serial number S/N or any component, software information and ip address for networking.

Touch **BACK** for exit.

Figure 33 Info

3.7.12 Updating Software (version >3.0)

For upgrade software version proceed as described:

- Analyzer must be warmed up and ready for analysis.
- Connect USB cable between Analyser and PC with Internet connection
- Touch Update in the Settings menu

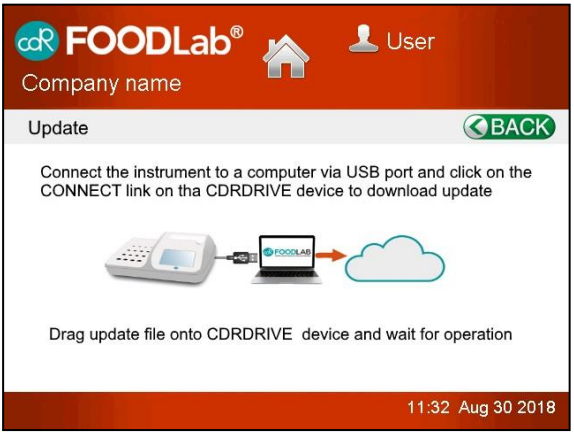
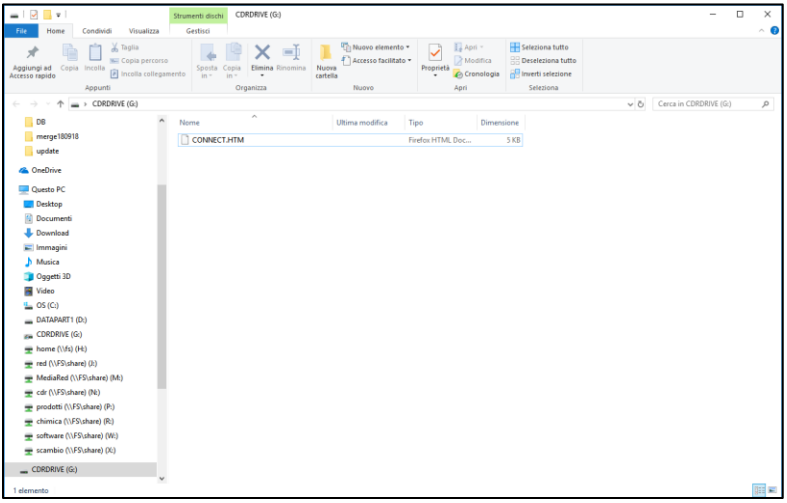
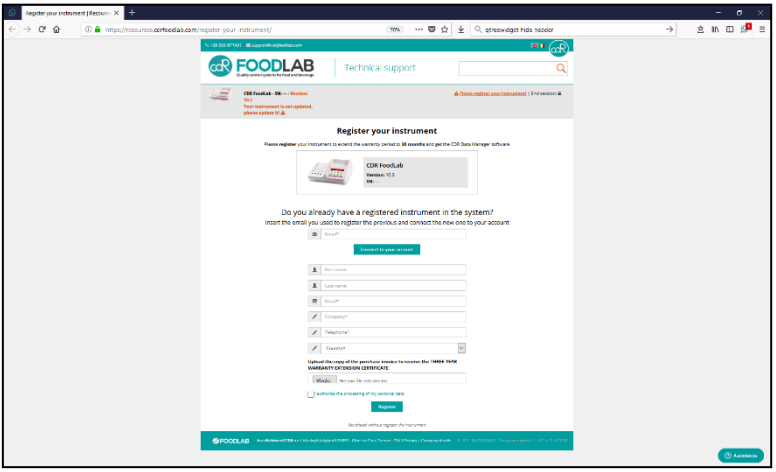


Figure 35 Software Update

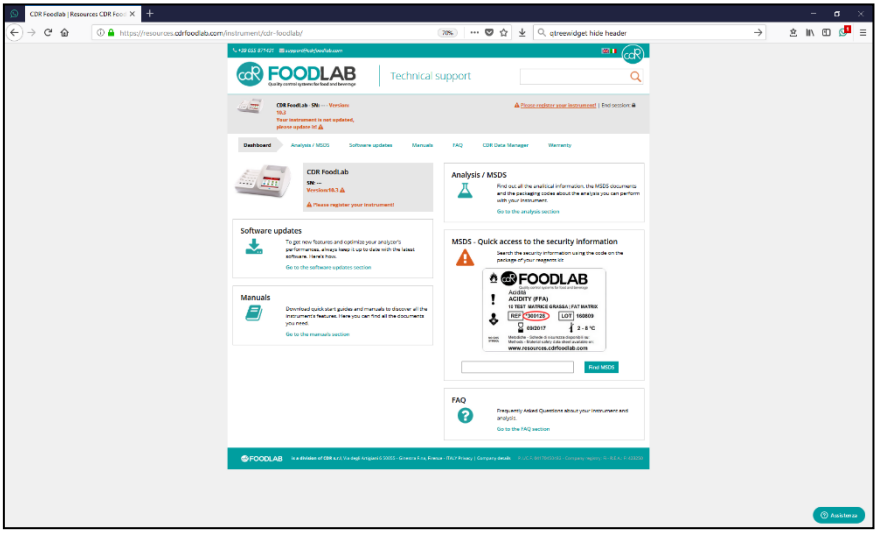
on the pc will open



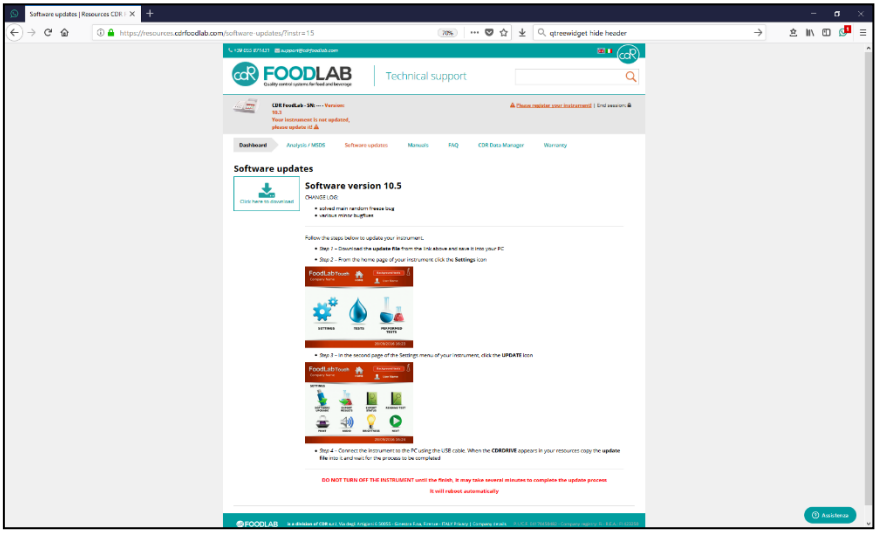
Click on CONNECT.HTM link to registration form



After the registration, it will open the download intro form:



Click on software update window



When the file of update is downloaded, drag it onto CDRDRIVE.

The screen of the instrument will show the following:

Please wait .
The instrument is about to be update
DO NOT SWITCH THE INTRUMENT OFF

and during the update phases of programmation

Device upgrade mode
GUI
UPGRADE IN PROGRESS, PLEASE WAIT.

At the end, the instrument will restart.

The new software version can be controlled in dialogue SETTINGS Menu/Info
Results in database will not be affected by this function.
Touch **Back** to leave dialogue.

.

3.7.13 Export Status

Touch EXPORT STATUS to open its dialogue

Function allows you to save system settings on CDRDRIVE. The export Analyzer Status (e.g.: STATUS.XML 「LOG.TXT 」「DB.DBC 」) contains information about all the settings and the history of the instrument.

Touch **Back** to leave dialogue.

Figure 37 Export Status

3.7.14 Reading Test

Touch READING TEST to open its dialogue

Use this dialogue only after instructions given by CDR or your local distributor!

Reagents and measuring cells can be controlled by this function.

Touch **OK** to exit.

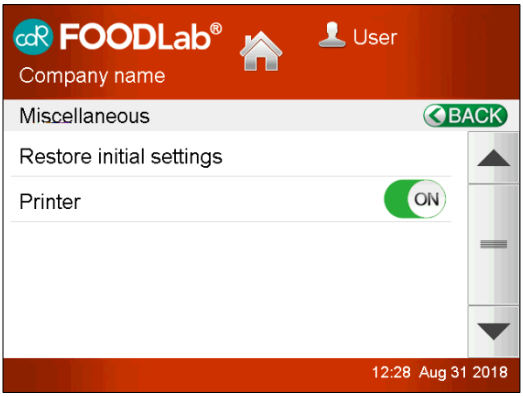
Figure 38 Reading Test

3.7.15 Detection Test Tube (not active)

The Tube Detection Sensor normally is disabled (off position). The advantage is that the system detects a cuvette placement, it knows if a reading cell is occupied or not. This function works together with a new cuvette which is under development. In between let it be in off position.

3.7.16 Restore initial settings

This function allows you to get back to Factory Setting in case of need. **Be sure you will lose user settings and all results! In the meantime, installed updates remain installed.**

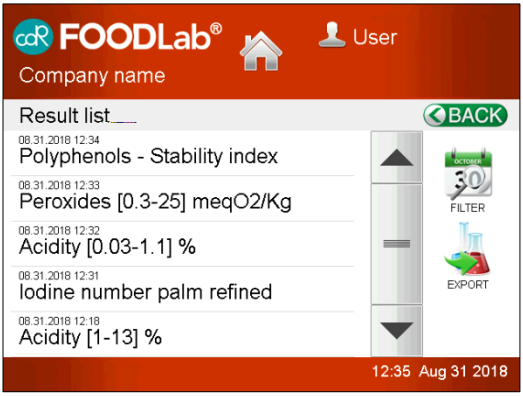


Proceed as explained in dialogue.

Figure 39 Factory Default

3.8 Results (Data Base)

Touch Results to open its dialogue.



All test results are stored in a folder, listed after test name, date and time. New: the tests shown are dependent on the FILTER setting!

You can scroll thought the list by arrow keys up/down.
After touching a test, a dialogue appears showing samples with their results and units.

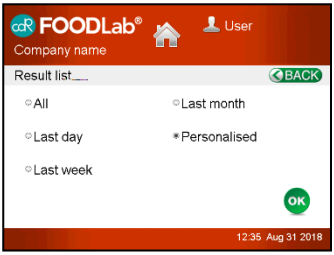
To get a printout touch the printer icon.

Figure 40 Test results

EXPORT
After touching it a dialogue appears to select the destination of the file to be exported (RESULTS.XML) USB cable to pc. Make sure the cable to pc is connected.

FILTER
After touching FILTER, a dialogue appears see figure 41 Filter configuration.
And can be selected:

- All selection, all results are selectable.
- Last day
- Last week
- Last month



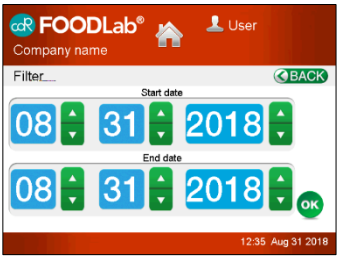


Figure 41 Filter setting

- Personalized, proceed as follows:

Select "**Start date**" touching in calendar year/month by arrow keys up/down.
Select "**End date**" touching in calendar year/month by arrow keys up/down.
Touch symbol ○ to remove entry quickly.
Touch **OK** to start sorting of data.

3.9 Background Analysis

After starting of a time-consuming test, the instrument allows to run another test to save time. After starting a test, you can set it e.g. after start of incubation cycle, by touching the HOME icon. A message will appear to providing functions **Continue** or **Finish**. If you select **Continue**, you return in the HOME dialogue, you can start a new analysis maintaining the open analysis in background. Selecting **FINISH**, you cancel the running test.

4 Error messages

Please understand that not all messages generated by the system can be explained in this document. In most cases read the message and try to solve it as displayed by the system. In case of a more serious message get in touch with your distributor e.g. **Temperature is out of range**, measurements could be wrong!

PROBLEM CHECK

Start problem:	blue LEDs are blinking contentiously, no information on display longer than 5 minutes. Fatal error in startup procedure, must be repaired by the manufacturer! Get in touch with your service.
DB ERROR:	Could be appeared when the configuration file is not compatible with the analyser. action: try again or upload on the analyser the appropriate configuration file
Printer Offline:	the printer is disconnected action: try again or contact the assistance
Reading Unit Offline:	the reading part is disconnected action: try again or contact the assistance

5 Maintenance

5.1 Recommended actions and precautions

The analyzer is easy to use and it is normally free of maintenance.
Do not spill any liquid over the analyzer. I case of spilled liquid suck it immediately up with a suitable tissue or use a pipette to remove it out of cells.
Wipe the surface with a disinfection solution made for laboratory instruments once a week for your own safety.

For measuring safety, it is recommended to use frequently a suitable precision or accuracy control material.

Problem cases

SLB222 does not power ON

Obviously, a problem with available power.

- Check wires connected between analyser and plug, or
- Call a technician in to check power supply.

Reading/incubation cells charged by dirt or liquid

- Switch off analyser immediately!
- Remove liquid by a pipette or tissue. In case of bigger amount of liquid, turn it to let it drop down.
- Clean cells with lint-free paper.
- Pay attention to instructions of safety!
- Power on analyser after cleaning and watch display for any messages.
- If needed, call technical service.

Printout too weak

Thermal paper is too old, or charged by intensive sun light.

- Change thermal paper, see chapter 5.2.

5.2 Change of printer paper

To replace the paper, proceed as follows (see figure 42):

- Use only thermal paper of good quality. A roll must be of 80 mm width, the dimention of max. 45 mm, the central axis of 12 mm.
- Put the green lever up to open the printer module.
- Remove remaining parts of the used one.
- Take a new one, lead the paper through the printer module, place the axial pin in its position and fix it in housing part.
- Put the green lever down to close the printer module.
- Close the cover.
- Use the green wheel to position the paper 2-4 cm out of the housing.

Figure 42 Printer - change of thermal paper

6 Appendix

6.1 Additional products for analysis

Extrafluid	CDR code 300133, 100 ml It's for the extraction of oils out of chocolate, cakes, cremes etc.
Hand press	For the extraction of oil out of nuts, seeds etc. Ask your Distributor for more details
Pipette kit	A special kit of useful pipettes are available in respect to the installed tests (for oils/fats, milk/cheese, crèmes or tomatoes, wine/beer).
Centrifuge	ACF064, for sample treatment in breweries
Ultrasonic	ACF065, for degas of samples in breweries

6.2 Spare parts

System is made maintenance free, therefore no spares available. Any repairs must be done at CDR plant.

6.3 Declaration of conformity

CDR srl, in via degli Artigiani, 6 – Ginestra Fiorentina - Florence - ITALY declare, under their responsibility, that the equipments designed and produced by them

Model	SLB222
Code	SLB222/222xxx
Serial number	
Year of manufacture	2018 and following

IS IN CONFORMITY

where applicable, to the laws that transpose the Electromagnetic Compatibility Directive 2014/30/EC, the Low Voltage Directive 2014/35/EU and especially the following:

EN 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use. Part 1: General requirements
EN 62368-1: 2014+A11:2017	Audio/video, information and communication technology equipment Part 1: Safety requirements **Rif. Compatible AC Adapter 24Vdc; 3 A ES1/PS2**
EN 60950-1:2006/A11:2009/A1:2010/A12:2011/A2:2013	Information technology equipment – Safety – Part 1: general requirements **Rif. Compatible AC Adapter 24Vdc; 3 A with limited power (LPS)**
EN 61010-2- 081	Safety requirements for electrical equipment for measurement, control and laboratory use. Part 2-081: Particular requirements for automatic and semi-automatic laboratory equipment for analysis and other purposes
EN 61326-1 **EN 61000-3-3**	Electrical equipment for measurement, control and laboratory use. EMC requirements. Part 1: General requirements Electromagnetic compatibility (EMC) Part.3-2 : Limits for harmonic current emissions (equipment input current ≤ 16 A per phase) Part.3-3 : Limitation of voltage fluctuations and flicker in low-voltage supply system for equipment with rated current ≤ 16 A.
IEC 62471	Photobiological safety of lamps and lamp systems

Florence, 01/06/2018

For CDR srl
(the legal representative)
Mr. Luciano ROMOLI

6.4 Technical data

Analyser Type:	Analyser with photometer technique for In-Vitro-Diagnostic
Operating system:	Free RTOS
Main processor:	STM32F777NIH
Memories:	SDRAM 256 MB 8GB SD ship for storing of user data application routine
Measuring head:	4 cells, 2 optics each, temp. controlled at 37°C ±1/98.6°F - automatic calibration and self-testing - linearity control, if necessary warning message - drift compensation automatically - photometric range: 0,0-6,0 Abs - photometric resolution: A = 0,0001 max - photometric accuracy: ± 3%
Self-checking:	made automatically after power on and after test selection.
Tube sensor:	each measuring cell is equipped with a tube insertion sensor.
Analysis methods:	Endpoint, Kinetic and fixed time
Incubation block:	37,0°C ±1/98.6°F, temp. controlled, 4 x 4 positions
Cuvettes:	Volume at triangular mark: 1000µl Mixed polymer, for optical use Cups: Polystyrol made
Languages:	English, German, Francais, Italiano, Espanol, Chinese, Russian
Tests selectable:	pre-defined test stored in memory
LCD-Display:	TFT 5,7” touch screen function, VGA 640x 480 16 bit, colour depth
Printer built-in:	Thermal graphic printer (paper: 80 x 45 x 12 mm)
Sound Emission	< 80 dBA
Ports:	2 x USB 3.0 host, 1 x Ethernet RJ45, LAN 1 x USB printer port for servicing
System time:	real time clock for time and date
Power supply:	external AC/DC adapter LPS Prim. voltage: 100 - 250V, 47 - 63 Hz, 0,8 A Sec. voltage 24V, 1,4 VA, max.: 3,0 A Fuses: no Safety certificates: TÜV/GS, UL, CE
Environment-conditions:	rel. humidity: 20% - 80%, no condensing temperature range +12 to +40°C / 53.6 to 104°F
Dimensions:	height 110 mm, width 335 mm, depth 300 mm
Weight:	2.8 kg

6.5 Data interface

For a data transfer to a personal computer the SLB222 offers the connection via USB port. For using the **LAN-port**, a special protocol must be installed by an software update. So please get in touch with your Net-administrator and ask which protocol should be provided by CDR within the update! The analyser ip address can be seen in Settings/INFO on lower line.

6.6 Waste disposal

6.6.1 Wasting of instrument

The instrument is constructed of materials that do not present particular problems for the operator during disposal.
The operator/owner must handle the waste product, (the substance or object of which the holder demolishes or has decided or has the obligation to demolish) as outlined by the European Directive 91/156/CEE on waste product, 91/689/CEE on dangerous waste product and 94/62/CE on packaging and waste materials (for Italy see D.L.vo 22 of the 05/02/97), in such a way that the waste material can be recuperated or disposed of without danger to human health and without using procedures or methods that could cause danger to the environment.

In particular:
a) without creating risk to water, air, the earth and the flora and fauna
b) without causing inconvenience by noise and smells.
c) without damaging the landscape and sites of particular interest, protected by the norms in force.

ATTENTION!
Do not hesitate to contact your distributor about any question that is inherent to the demolition procedures of the instrument and about any other subject not been contemplated in this technical document.

6.6.2 Wasting of cuvettes and reagents

- Waste only after valid regulations!