EasyCheck
User Manual

EasyCheck

Oxygen / Carbon Dioxide Analyser
for Quality Control in MAP

User Manual

EasyCheck_rev 2.01_en
Issued 12/09/2023

Visit our website at www.fensor.com

All specifications are subjected to variations
for products improvement without notice

Chapter 0   Table of Contents

Preface

Scope of this manual is to explain all necessary information about components, functions, installation and maintenance of the FENSOR instrument you have purchased.

Some sections may describe parts or functions not present in your configuration. In any case, it's suggested to completely read the manual prior to operating on the analyser.

Safety Information

FENSOR designes, manufactures and tests all its products in accordance to highest quality standards and to meet European directives, Harmonized standards and normatives which ensure the safe employ.

Because gas analysers are sophisticated and high-technology content instruments, they must be properly installed, used and maintained to ensure the proper operation along the time.

Carefully read all instructions written on this manual prior to operating on the analyser. If some parts are not clear, contact FENSOR to get more details.

When spare parts are required, ensure that qualified personnel use parts provided by FENSOR. Unauthorized parts not provided by FENSOR may affect the product's performance, place the safe operation of your process at risk and VOID YOUR WARRANTY.

Do not modify the EasyCheck, either mechanically or electrically, or the certification of the instrument will be invalidated and it may not operate safely.

It's the responsibility of the user to ensure that all local codes, regulations, rules and laws related to safety and safe operating conditions are met.

Important

For safety reasons, any analyser returned for repair or refurbishment must be accompanied with a declaration stating that the goods have not been used or exposed to any process or application which is likely to give raise to contamination by any substance likely to be detrimental to human health.

Unless the analyser is accompanied by such declaration, FENSOR reserves the right to refuse to undertake any repair or refurbishment.

Chapter 1   EasyCheck

1.1   Introduction

EasyCheck is a portable measurement device which, depending on the model, is designed for the analysis of Oxygen and Carbon Dioxide. A measurement range of 0 to 100 % volume can be covered for both gases.

EasyCheck has an internal memory for up to 1000 measured values, which are retained even after the device is switched off. The measurement data can be transmitted to your PC with the evaluation software that is included.

⚠️ The device is not suitable for use in potentially explosive areas and may not be used for measurements in which combustion gases are involved.

⚠️ During all measurement and calibration procedures, make absolutely sure that the EasyCheck is not connected to overpressure. The gas to be analysed must always be sucked in by the integrated pump at atmospheric pressure (= ambient pressure). Do not aspirate any liquids! Non-observance can lead to incorrect measurement results or to considerable damage to the device

1.2   Scope of Delivery

Quantity	Description
1	EasyCheck
1	Charger with plug adapters for different countries
2	Filter
1	Suction needle
1	Suction hose
40	Foam rubber platelets
1	USB cable
1	USB stick with software / manual / certificates
1	Carrying case

Chapter 2 Device Description

2.1 Function

With the help of the built-in pump the EasyCheck draws a gas sample into the integrated measuring chamber and on to its measuring cells. Threshold values can be set so that the device produces an optical signal for measurement results that are outside the specified range.

After completion of the analysis, the measured concentrations are saved automatically with the date, time and the specified threshold values. If the memory is full, the oldest value is overwritten when new measurements are stored.

The measurement value memory can be read-out and deleted by the user at any time with the software supplied. Refer to the chapter 4 of this manual (dedicated to the software) for more detailed information on processing the stored measurement readings.

2.2 Measuring Principle

The integrated pump sucks the gas sample to be measured into the respective measuring chamber of the sensor(s). After a certain time, the measuring chamber is filled with the medium to be measured and the sensor provides an analysis of the gas content in the medium. The result is interpreted by EasyCheck and shown on the display.

If provided, up to four pump profiles can be created on the EasyCheck. Different measuring times and suction pressures can be set via the pump profiles. More information about this you will find in the following chapters.

2.3 Sensors

Depending on the version, the EasyCheck has an electrochemical sensor. The corresponding gas concentration generates a low electrical voltage in the sensor. This voltage is measured and converted into a concentration value which is shown on the display. Electrochemical sensors therefore only have a limited service life, which can also depend on the measured concentration.

Depending on the version, the EasyCheck has an NDIR sensor, which is responsible for determining the CO2 concentration. This measuring cell works with infrared light, which is emitted by a special source. The light is absorbed by the carbon dioxide present in the test gas. Downstream of the measuring chamber, the unabsorbed light is detected by a sensor. From the received intensity of the IR light, the concentration of carbon dioxide can be calculated. The CO2 sensor is very stable over a long period of time and shows only minor signs of wear. However, the sensor is sensitive to strong impacts and thermal stress (temperatures above 50 °C). A regular check is required. The period of recommended maintenance depends here on the service life of the CO_2 measuring cell.

We recommend regular maintenance of the EasyCheck at intervals of max. 12 months.
Depending on the design of the EasyCheck, other measuring cells not described in detail here can also be used.

2.4 Data Logger

Up to 1000 measurements can be stored on the EasyCheck. If the memory is full, the oldest entries are overwritten with new measured values. The data can be read out and saved using the PC software supplied. More on this in section 4.2.

2.5 EasyCheckONE

EasyCheckONE has an electrochemical Oxygen measuring cell. The O_2 content in the measured gas mixture produces a low level of voltage in the measuring cell. This voltage is measured and converted into a concentration value which is then indicated on the display. The life of the O_2 measuring cell may be 12 - 18 months, but this depends heavily on the Oxygen content and the number of measurements taken. Therefore, we recommend regular maintenance of the analyzer at a minimum of every 12 months.

2.6 EasyCheckTWO

The EasyCheckTWO also has a O_2 measuring cell with the described properties. In addition, a NDIR measuring cell, which is responsible for determining the CO_2 concentration, is installed in the device. This measuring cell operates with infrared light, emitted from a special source. The light is absorbed by the Carbon Dioxide present in the measuring chamber. The non-absorbed light is captured by a sensor behind the measuring chamber. Based on the intensity of the light captured, the concentration of Carbon Dioxide located in the measuring chamber can be calculated.

The CO2 sensor has a long service life and shows only slight signs of wear. However, the sensor is sensitive to impact and thermal stress (temperatures above 50°C). Therefore, regular inspection is a necessity. The period of recommended maintenance depends on the lifetime of the CO_2 measuring cell. We recommend regular maintenance of the analyzer at a minimum of every 12 months.

2.7 N2 Visualization

Regardless of the model, the EasyCheck is also equipped with the option to display the N2 value (Nitrogen concentration) during a measurement. Otherwise the N_2 concentration is not displayed. The value indicated during a measurement in the display is a calculated value. The value is calculated from the measured gas concentrations (from O_2 or O_2/CO_2 depending on the model).

The display of the N_2 value is optional and can be activated or deactivated by the service partner. Display of the N_2 value is recommended only where N_2 exists in addition to the gas (O_2/CO_2) being measured. Only in this case will the displayed value coincide with the real concentration.

2.8 Power Supply

The power supply is provided by a battery pack. The charge status of the rechargeable battery is indicated by a battery symbol on the display. Only use the supplied original power supply unit to charge the rechargeable battery. The device has electronics that switch off the power supply when the battery is fully charged.

The device can remain permanently connected to the mains without any disadvantages. The battery pack has a service life of approx. 2 to 3 years. If necessary, the battery pack can be replaced. Only use original spare parts for this purpose.

⚠️ **Unsuitable power supplies, e.g. 9, 12 or 24 V, will lead to a defect in the charging circuit.**

The EasyCheck must then be returned to the manufacturer for service. Power supplies with 5 V DC > 1.2 A, hollow plugs with 2.1 or 2.5 mm bore are suitable. It is recommended to use only the original power supply provided by the manufacturer.

Chapter 3   Operation

This chapter describes the operation of the EasyCheck.

All of the following examples in the figures are based on using the EasyCheck TWO. The functions of the EasyCheck ONE correspond roughly with the devices shown here. The displays may deviate however from those indicated in the figures below.

3.1   Starting the Device

Pressing the Power button starts the EasyCheck. First, a start-up screen (fig. 3.1) is displayed. Then the sensor(s) are checked to ensure correct function. If the check of a sensor is not successful, the user will be informed (fig. 3.2).

If the EasyCheck has an O_2 sensor and has not been calibrated in ambient air for more than 24 hours, a calibration request will be made (fig. 3.3). If the calibration is successful, this will be as shown in fig. 3.4. After the start-up, the EasyCheck is ready for use.
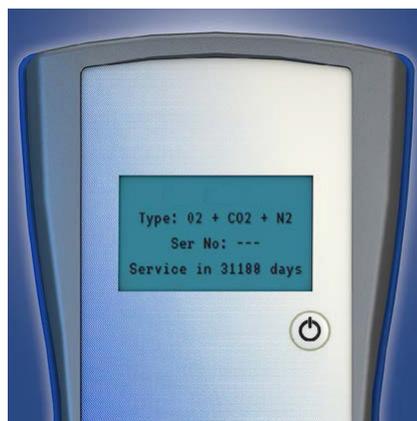

Fig. 3.1 – EasyCheck startup
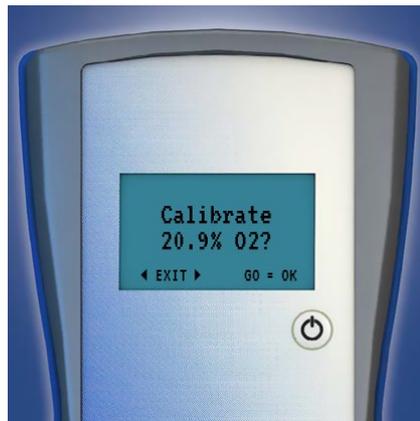

Fig. 3.2 – Sensor failure
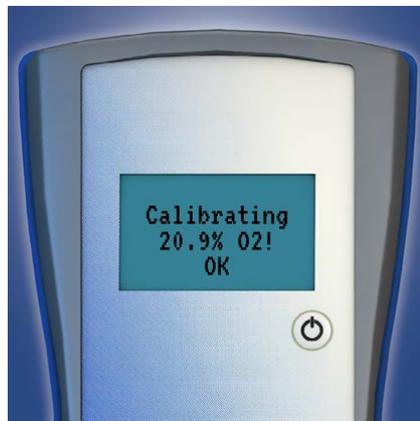
Fig. 3.3 – Daily span calibration

Fig. 3.4 – Calibration OK

Make sure that you only use ambient air for the ambient air calibration (Calibrate 20.9% O2). Refer to fig. 3.3.

3.2   Start Measurement

To start a measurement with the EasyCheck, the **GO** button must be pressed in the main view (fig. 3.5). The measurement starts immediately. After the measurement has been completed, it is stored in EasyCheck as described in Chapter 4.

Fig. 3.5 – Main screen

A measurement can be stopped by pressing the key ←. No measurement data is saved if a measurement has been stopped.

3.3   Menu

To open the menu, the ← or → key must be pressed in the main view. The menu will open as shown in fig. 3.6. The menu consists of three submenus: *User*, *Product* and *Calibration*.

For navigation, the whole cross of keys is used. The ↑ and ↓ keys are used to select the required submenu. The ← or → keys are used to exit the menu. The **GO** key confirms the menu selection and leads to the selected submenu.

Fig. 3.6 – EasyCheck menu

3.3.1   User Menu

The User menu is used to set a user. Thus, measurements can be assigned to a user. The user is saved with in the data record of a measurement. This is useful for the later analysis of the measured values.
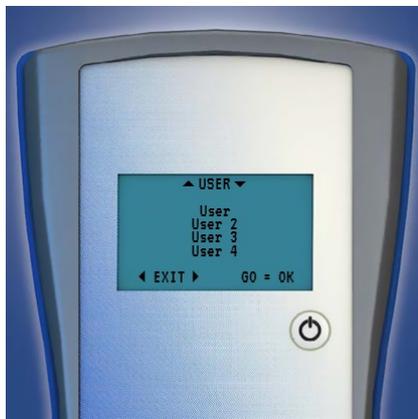

Fig. 3.7 – User menu

If a user is selected, this is confirmed as shown in fig. 3.8.

Fig. 3.8 – Selected User

The menu navigation is similar to the previous menu. When you exit the user menu, the system navigates back to the upper menu level.

At least one user is always created. Additional users can be created with the PC software. More on this in section 4.4.

3.3.2 Product Menu

The Product menu is used for product selection. A product is linked to a name, barcode, limit value(s) for the gas(es) used and a pump profile. For more details, see section 4.3.

Fig. 3.9 – Product menu

The parameters of the product are saved in the data records of the measurement. If a product is selected, this is confirmed as shown in fig. 3.10.
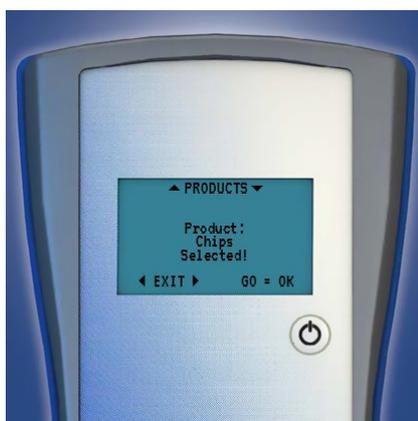

Fig. 3.10 – Selected product

The menu navigation is similar to the previous menu. When you exit the product menu, the system navigates back to the upper menu level.

At least one product is always created. Further products can be created with the PC software. More on this in section 4.3.

3.3.3   Calibration Menu

The Calibration menu is used for the regular calibration of the sensors. If configured, up to two calibration points per sensor are available for selection in this menu, one lower and one upper calibration point. The exact calibration points depend on the sensors used or on the application.

Fig. 3.11 – Calibration menu

The menu navigation is similar to the previous menu. When leaving the calibration menu, navigation returns to the upper menu level. To ensure the accuracy of the EasyCheck, the device should be calibrated with test gas at regular intervals. Calibration is recommended at least once a month or if the device has not been used for a longer period of time.
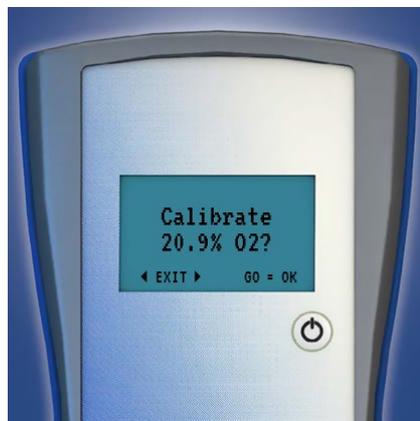

Fig. 3.12 – Calibration successful

If a calibration point is selected, a question is asked beforehand, as shown in fig. 3.12, whether this point should really be calibrated. If the calibration was successful, it is confirmed with OK. If the measured calibration value was outside the expected limits, a Calibration Error is displayed and the calibration value is not accepted. However, this is only a simple protection function against incorrect calibration, therefore the following applies:

> ⚠️ An improper calibration of a sensor will lead to falsified measuring results! It is advisable to have only qualified personnel carry out calibrations.

3.3.4   Password

To protect the menus from unintended use, it is possible to provide them with a password. The password can be activated per menu item with the PC software. More about this in section 4.5

Fig. 3.13 – Password

The password menu is shown in fig. 3.13. The password consists of four digits from 0-9 each. Navigation is done using the ←, →, ↑, ↓ keys to enter the password and the **GO** key to confirm it.

Unlike in the previously described menus, the ← & → keys must be pressed simultaneously to exit the password menu. If the entered password is correct, you will be redirected to the previously selected menu. If it is incorrect, this will be displayed on the EasyCheck as shown in fig. 3.14.
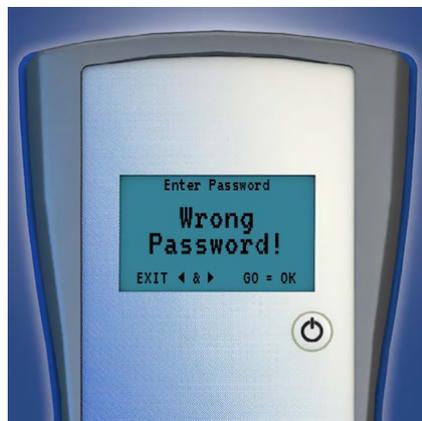

Fig. 3.14 – Wrong password

3.4   Switch Off

The EasyCheck switches itself off by default after 60 minutes without use. It can also be switched off manually. To do this, the ⬇ key must be pressed for approx. five seconds. The EasyCheck purges the sensors with air and then switches itself off (fig. 3.15).

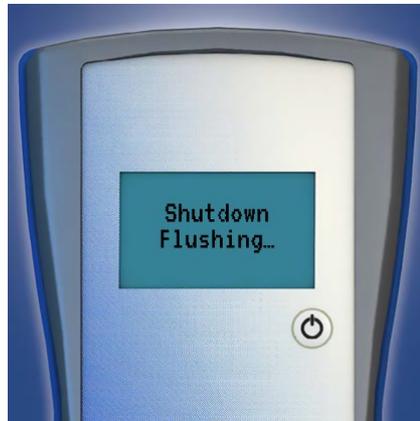**Fig. 3.15** – Switch off EasyCheck

3.5   Service and Maintenance

The EasyCheck will operate reliably for many years with minimal maintenance and care if you observe the following points:

- Use only flawless and original intake filters. Dirty filters may obstruct the sample gas flow through the measuring cell or may not sufficiently clean the sample gas from solids.
- Check the sample gas passage through the needle/lance occasionally. If it is clogged, the sample gas no longer reaches the measuring cell. This leads to measurement errors. Replace blocked or bent needles/lances immediately with new ones.
- Clean the housing only with a dry or slightly damp cloth. Do not use any cleaning products. Never rinse the device with water or other cleaning liquids.
- Avoid strong temperature changes in connection with condensate formation. If condensate should ever form, dry the EasyCheck under normal ambient conditions (room temperature). The EasyCheck may only be used again after an adequate drying time.
- Avoid strong vibrations of the device.
- The battery must be recharged as soon as possible after an automatic undervoltage switch-off. Prolonged storage in a completely discharged state will cause the battery to become damaged.

Chapter 4   PC Software

This chapter describes the PC software supplied with the EasyCheck. The PC software is required for reading out and exporting the measurement data of the EasyCheck. In addition, users and products can also be created and managed via this tool. Last but not least, password protection, time zone and visual alarms can be set when exceeding/falling below measured values.

4.1   Start Software

To use the PC software, the EasyCheck must be connected to the PC via USB cable. When starting the PC software for the first time, the correct COM port must be selected first. This is done via the *Device -> COM port* tab. A drop-down menu opens with the overview of the COM ports available on the PC.
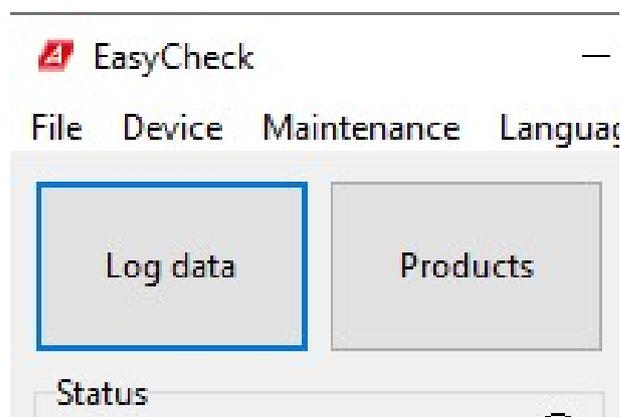

Fig. 3.16 – Start Screen

After the correct COM port has been selected, the EasyCheck can be read out via the *Device-> Load data from device* tab or the *F5* key. The readout process is visualized as shown in fig. 3.17.
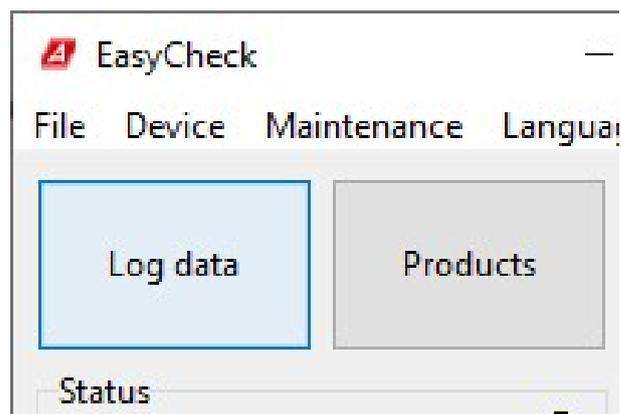

Fig. 3.17 – Readout data from EasyCheck Screen

If the reading process was successful, this is signalled with status *Synchronised* and a green LED. After the EasyCheck has been read out, the log data can be analysed and products, users and settings can be managed.

4.2   Log Data

After a successful synchronisation with the EasyCheck as described in Chapter section 4.1, the measured values stored on the EasyCheck can be displayed via the *Log data* button (fig. 3.18).

Fig. 3.18 – Log Data EasyCheck

In this screen, the measured values (up to 1000) are displayed in tabular form. The menu item *Delete log data* deletes all measured values on the EasyCheck.

The measured values can be exported as .xlsx file (MS Excel) or .csv file (Comma Separated Values).

The button *Background colour off* turns off the colour highlighting of measured values that were measured outside the product-specific limit values.

Fields with a red background are the measured values that are outside the limits. Fields with a yellow background indicate which limit value has been explicitly exceeded/fallen short of.

4.3   Products

After a successful synchronisation with EasyCheck, as described in Chapter section 4.1, the products stored in EasyCheck can be managed via the *Products* button. The product *Product* is created by default. This can easily be overwritten or deleted. A new product can be created via *Add product*. Up to ten products can be created. A product has the following parameters:
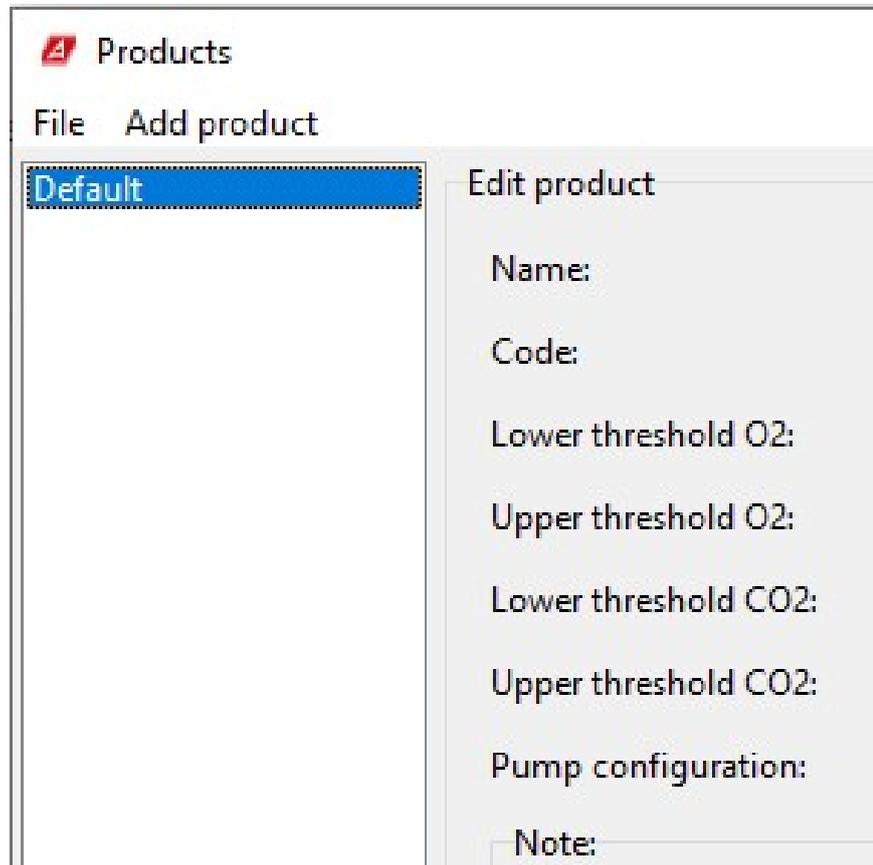

Fig. 3.19 – Product menu

- **Name**: Name of the product. Will be displayed on EasyCheck
- **Code**: Bar code or other identification code associated with the product. Is not displayed in EasyCheck. Only used for assignment in the data log.
- **Lower threshold Gas1**: Lower limit value of Gas1 (by default oxygen O_2). Is not displayed in EasyCheck, but is considered for visual feedback when limit values are exceeded/fallen short of.
- **Upper threshold Gas1**: Upper limit value of Gas1 (by default oxygen O_2). Is not displayed in EasyCheck, but is considered for visual feedback when limit values are exceeded/fallen short of.
- **Lower threshold Gas2**: Lower limit value of Gas2 (by default carbon dioxide CO_2). Is not displayed in EasyCheck, but is considered for visual feedback when limit values are exceeded/fallen short of.
- **Upper threshold Gas2**: Upper limit value of Gas2 (by default carbon dioxide CO_2). Is not displayed in EasyCheck, but is considered for visual feedback when limit values are exceeded/fallen short of.
- **Pump configuration**: Up to four pump profiles can be stored, one of which must be assigned to a product. Pump profiles influence the measuring time and the suction pressure of the EasyCheck. By default, only the pump profile *Standard* is used.

An existing product can be deleted via *Delete product*. At least one product must have been created.

4.4   User

After a successful synchronisation with EasyCheck, as described in Chapter section 4.1, the users stored in EasyCheck can be managed via the *Users* button. New users can be added via *Add user*. Up to 10 users can be created. Via *Delete user* a user can be deleted. At least one user must be created. Users are saved with the measurement data in the data log and are used for assignment when analysing the measurement values.
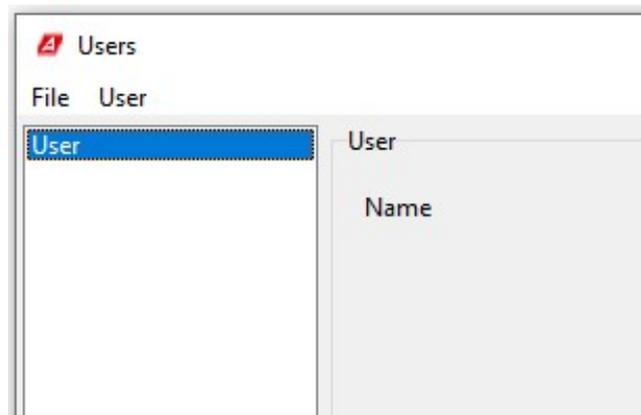

Fig. 3.20 – User menu

4.5   Configuration

After a successful synchronisation with EasyCheck, as described in Chapter section 4.1, the settings in EasyCheck can be managed via the *Settings* button. In the Configuration window, shown in fig. 21, the menu items in EasyCheck can be protected separately with a password each.

The associated passwords can also be managed here. It is also possible to set a time zone for displaying the time in EasyCheck and an automatic summertime/wintertime changeover. Last but not least, the visual feedback can be deactivated or activated in EasyCheck if the limit values are exceeded or fallen short of. The passwords for the EasyCheck menus are initially set to *0000*.
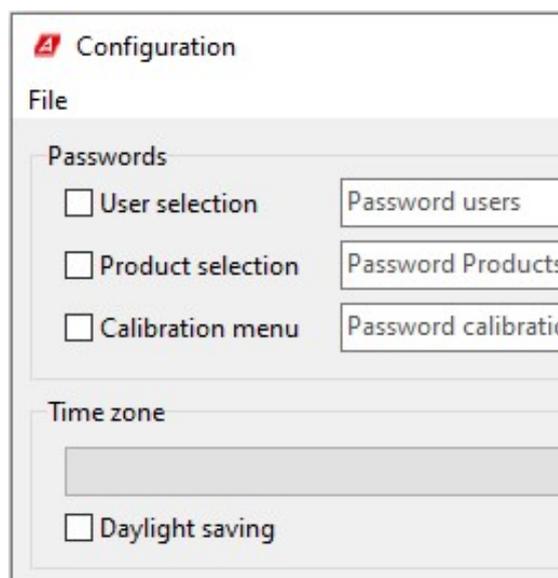

Fig. 3.21 – Software configuration

Chapter 5   Spare Parts List

# Range Code	Range (ch1)
Filter: 1 PU = 5 pcs P.N. A39667	
Needle: 1 PU = 12 pcs P.N. A53026	
Foam rubber sticks: 1 PU = 520 pcs (13 strips) P.N. A36111	
Hose: 1 PU = 2 pcs P.N. A53025	
USB-data cable: 1 PU = 1 pcs P.N. A32618	
Power pack + adapter set: 1 PU = 1 pcs P.N. A19040	
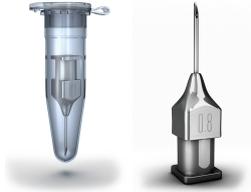
Chapter 6   Warranty

What is covered:
Any defect in material and workmanship from normal use in accordance with the user manual. This warranty applies to all analysers purchased worldwide. FENSOR reserves the right in its sole discretion to invalidate this warranty if the serial number does not appear on the analyzer.

For how long:
One year from shipment by manufacturer or purchase from a distributor with proof of purchase.

Who is warranted:
This warranty is limited to the first customer who submits a claim. Under no circumstances will the warranty extend to more than one customer.

What we will do:
If your FENSOR analyser is defective with respect to material and workmanship, we will repair it or, at our option, replace it at no charge to you. If we choose to replace some components, we may use new or reconditioned replacement parts. If we choose to replace your analyzer, we may replace it with a new or reconditioned one of the same or upgraded design.

Limitations:
FENSOR will not pay for: loss of time; inconvenience; loss of use of your analyzer or property damage caused by your analyser or its failure to work; any special, incidental or consequential damages; or any damage resulting from alterations, misuse or abuse; lack of proper maintenance; unauthorized repair or modification of the device; connection of any equipment not provided with the analyzer or other failure to follow the user manual.

What is not covered:
This warranty does not cover installation; defects resulting from accidents; damage while in transit to our service location; damage resulting from alterations, misuse or abuse; lack of proper maintenance; unauthorized repair or modification of the transmitter; affixing of any attachment not provided with the analyzer; fire, flood, or acts of God; or other failure to follow the user manual.

How to obtain warranty service:
Call FENSOR at **+331 85 08 15 77**. Trained technicians will assist you in diagnosing the problem and arrange to supply you with the required parts.

If warranty service is provided by a distributor, FENSOR will provide all required parts under warranty at no charge to you, but the distributor is an independent business and may render a service charge for their services. FENSOR will not reimburse you or otherwise be responsible for those charges.

You may obtain warranty service by returning you analyser, postage prepaid to:

FENSOR SARL
4 rue du docteur Heulin
75017 Paris - France
info@fensor.com

Be sure to pack the analyzer securely. Include your name, address, telephone number, date of purchase and a description of the operating problem. After repairing or, at our option, replacing your analyzer, we will ship it to you at no cost for parts and labor.

Chapter 7   Return Policy

If an FENSOR analyser malfunctions, the following procedure must be completed:

- Notify FENSOR, giving full details of the problem, and provide model number and serial number of the analyser.
- The instrument must be shipped to the factory on customer responsibility.

⚠️ Gas analysers are sophisticated and brittle instruments. It's necessary to provide a suitable packaging to protect them during transport. <u>Damages produced by shock while in transit are NOT covered by warranty</u>.

⚠️ For safety reasons, any analyser returned for repair or refurbishment must be accompanied with a declaration stating that the goods has not been used or exposed to any process or application which is likely to give raise to contamination by any substance likely to be detrimental to human health.

⚠️ Unless the analyser is accompanied by such declaration, FENSOR reserves the right to refuse to undertake any repair or refurbishment.

- Upon the receipt, FENSOR will evaluate the instrument to determine the cause and the entity of the malfunction.
- If damage is covered under the terms of the warranty, the instrument will be repaired by FENSOR at no cost to the owner and returned at the conditions specified in section 6.
- If the cause of damage is not covered under the terms of warranty or if the warranty has expired, an estimate for the cost of the repairs will be provided. Upon receipt of the owner's approval to proceed, the analyser will be repaired and returned.

Decontamination Declaration

For safety reasons, any analyser returned for repair or refurbishment must be accompanied with a declaration stating that the goods have not been used or exposed to any process or application which is likely to give raise to contamination by any substance likely to be detrimental to human health.

Unless the analyser is accompanied by such declaration, FENSOR reserves the right to refuse to undertake any repair or refurbishment.

Please fulfil this form prior to this analyser or any component / subpart being returned to FENSOR.

General information			
Instrument model		Company name	
Serial Number		Company address	
Original PO #		Telephone	
Contact person		e-mail address	
Reason for return / Description of the malfunction:			

Safety information		
Has this equipment been exposed to any of the following?		
Biohazard	YES	NO
Biological agents	YES	NO
Hazardous chemicals	YES	NO
Radioactive substances	YES	NO
Other hazards	YES	NO
Provide details of any hazardous material used with this analyser, component, subpart:		
Describe you cleaning or decontamination method:		
Has the equipment been cleaned and decontaminated?	YES	NOT NECESSARY

Declaration			
I declare that above listed information is true and it's safe for FENSOR personnel to operate on the returned instrument.			
Name		Position	
Signature		Date	

fensor

http://www.fensor.com