FRAS 5

USER MANUAL

Release 1.00

distributed by:

FRAS 5

USER MANUAL

Software Release 1.

distributed by:

manufactured by:
H&D srl.
Strada Langhirano 264/1A – 43124 Parma – ITALY

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FIGURE INDEX

RESPONSIBILITY DECLARATION

H&D declines all responsibility for damage due to any type of modifications made on the Hardware and Software due to connection to other instruments not carried out by our personnel or not previously authorized by our firm.

In case the apparatus is damaged do not switch it on until it has been repaired by a technician from our company's Service Department. Any type of electric operation required to install or repair the instrument must be carried out by our staff; do not install in any other way.

The instrument should be used under the environment conditions and according to safety norms given in points II and III of the following chapter in order to guarantee that the results obtained by the instrument are equivalent to those given in the technical specifications.

Use this instrument only after reading this manual

SAFETY PRECAUTIONS

The photometer **FRAS 5** guarantees the maximum safety to the operator during its operation. However, as there is dangerous internal voltage, the operator must follow the general safety rules:

* Make sure that the Power Supply has the required voltage before switching on the instrument.

* The instrument must have a ground connection. In case of an electric short circuit the ground connection eliminates the danger of electric contact with the external metal parts.

* Do not use the commands or adjustments inside the instrument and notify the service staff as soon as any anomaly occurs during functioning.

* In case of overabsorption (due to short circuit or other failure or sudden changes in the instrument of voltage) intervene to ensure that the internal protection interrupts the power. In this case, if you look at it instrument has an intermittent functioning characterized by phases of spontaneous and off, unplug the cable from the power supply and notify the staff of the Technical Assistance Service.

* Do not open the instrument. Inside the instrument there are not parts serviceable or replaceable by the user.

* Do not put foreign objects (screwdrivers, drills, etc..) into openings in the body of the instrument.

* Do not try to unscrew the screws on the bottom cover of the instrument and inside the centrifuge.

* Any repair of the instrument must be carried out by the Technical Assistance Service.

* Any electric operation that is necessary to the installation must be carried out by qualified staff.

* If the instrument is damaged do not switch it on until it has been repaired by a technician of the Technical Assistance Service.

* Take care to prevent penetration of liquids into the instrument. If it occurs accidentally, unplug the instrument from the mains and do not reconnect it until the instrument has been checked by the Technical Assistance Service.

* Disconnect the instrument if it is left inactive for a long period.

* Note on the use of biological samples:

Handling clinical samples presents a significant biological safety hazard and should be carried out with extreme caution.

ELECTRICAL FEATURES AND LINE DISTURBANCE

Disturbances on the power line may be caused by several factors such as:

- Starting and stopping of electric motors.
- Atmospheric phenomena.
- Connection and disconnection of high line loads.

Serious power supply line disturbances have negative effects on the system.

An efficient ground connection is necessary to reduce line disturbances and guarantee the maximum safety to the operator.
Here below the requirements to the supply line:

Distribution:	1 phase, neutral and ground
Power supply:	100 ÷ 240 VAC 50 - 60 Hz
Consumption:	60 VA

TABLE OF SYMBOLS

Number	Symbol	Description
1		Alternating current
2		Ground terminal
3		On (power)
4		Off (power)
5		Caution: risk of electric shock
6		Caution: see attached documentation.
7		Caution: biological risk
8		CE mark
9		Instrument with double insulation

CHAPTER 1

GENERAL DESCRIPTION

1.0 FOREWORD

FRAS 5 is a POCT (Point of Care Testing) photometer that measures free radicals and antioxidant potential on whole blood sample and saliva. The operation of the machine is based on the measurement of the absorbance of a sample solution in a cuvette through a monochromatic light beam. After reading the absorbance, the instrument automatically converts that value into the appropriate U CARR (arbitrary Carratelli units) that are a measurement of Reactive Oxygen Metabolites.

1.1 TECHNICAL CHARACTERISTICS

Photometric system		
Light source	:	High efficiency 505 nm led.
Spectral range	:	505 nm wavelength
Photo detector	:	High sensitivity solid state.
Measuring principle	:	Lambert Beer's law
Temperature	:	37 °C
Centrifuge		
Speed	:	6000 rpm ± 5%
Positions	:	4 cuvettes (4 microvettes with special adapter)
Interface		
Display	:	Back-lighted touchscreen.
Printer	:	Graphic, 384 points per line, for thermosensitive paper.
Connection	:	USB2.0

General characteristics		
Power supply	:	100 ÷ 240 VAC 50 - 60 Hz
Consumption	:	60 VA
Operating conditions		
Temperature	:	15 ÷ 32 °C (operating) 0 ÷ 50 °C (non operating)
Relative humidity	:	20 ÷ 80 % (operating) 0 ÷ 90 % (non operating)
Altitude	:	< 2000 m (operating)
Environmental coefficient	;	2
Acoustic Pressure	:	<75dBA
Protection class IP		IP30
Safety	:	EEC 73/23 and EEC 93/68 DIRECTIVE
Electromagnetic compatibility	:	EEC 89/336 DIRECTIVE
In vitro diagnostics	:	EC 98/79 DIRECTIVE
Dimensions	:	40 x 26,5 x 13 (h) cm
Weight	:	2.6 Kg

1.2 INSTRUMENT DESCRIPTION

Figure 1.1 - Front view

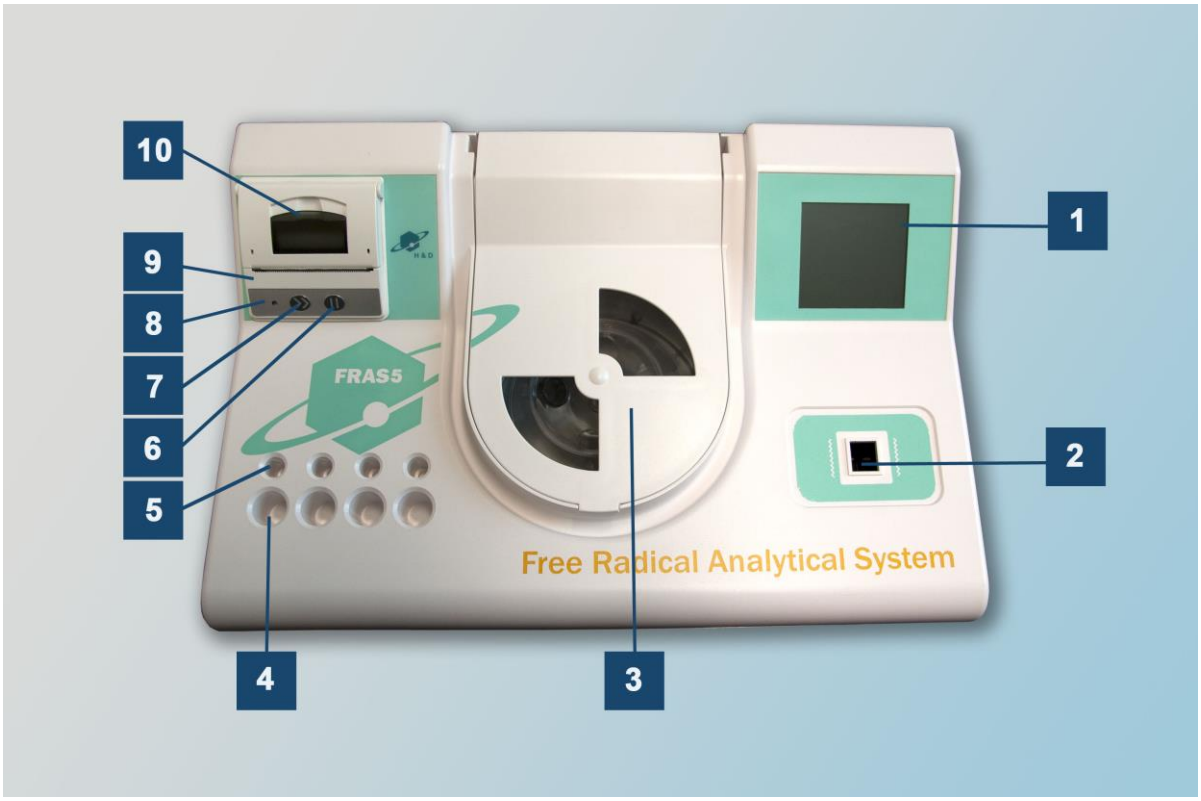
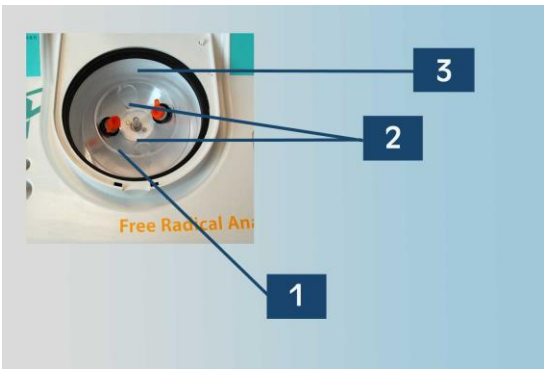


Figure 1.2 - Frontal panel with indication of its parts

Ref. Nr.	Name	Description
1	Display	The display shows help messages for the operator.
2	Reading Cell	Temperature-controlled reading cell.
3	Centrifuge Door	Door used to gain entrance and regress to the centrifuge rotor.
4	Cuvette place holders	Holder that can be used to temporarily place cuvettes.
5	Microvette place holders	Holder that can be used to temporarily place microcuvettes.
	"Pause printer" button	Pressing this button causes the printer to be in pause. Any printing will be suspended. Press again to continue printing.
6	"Feed printer" button	Pressing this button causes the paper roll to advance.
7	"Printer status" LED	Continuous light: printer is active. Intermittent flashes: printer is paused. 3 blinking pulses: end of paper or flip is open.
8	Printer	Produces a readout of the results of the operation of the instrument.
9	Lever for opening printing paper compartment	It allows to open the flip for replacing the paper roll.

Figure 1.3 - Legend



Ref. Nr.	Name	Description
1	Rotor	It rotates at 6000 rpm during the centrifugation.
2	Cuvette / microvette places	The microvettes should be inserted in the appropriate adapters.
3	Capsule	The bowl of the centrifuge.

Figure 1.4 - Details of the centrifuge compartment with indication of its parts

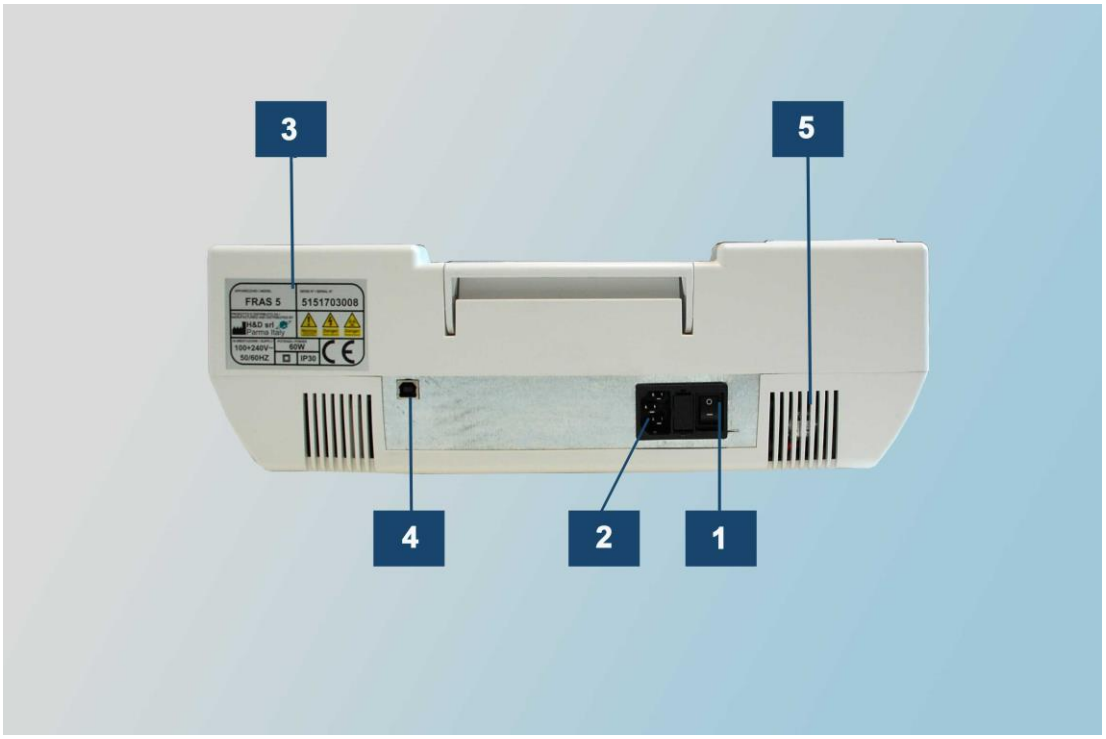


Figure 1.5 - Rear panel

Ref. Nr.	Name	Description
1	Switch	For turning on the instrument. To turn on, move the switch to "I" position, to turn off move to "O" position
2	Mains outlet	For connecting to mains (cable included in the package).
3	Technical and Safety Labeling	There are some technical information, the serial number and manufacturing information. They draw attention to some issues concerning the safe use of the instrument.
4	Interfaccia USB	Type B USB outlet for connecting to PC (the cable is an accessory)
5	Fan	Operates to avoid excessive internal heat.

Figure 1.6 - Legend

1.3 PRECAUTIONS AND LIMITATIONS

INTENDED USE

The device FRAS 5 is intended for in Vitro Diagnostic use and performing of oxidative stress tests. The instrument is intended for use by health personnel.

The instrument must be used together with In Vitro Diagnostic kits: refer to the kit use instruction for information about clinical applications. It is the responsibility of the user to ensure that the kits are approved for the use on the instrument.

Refer to the kit use instruction for information about material disposal.

PERFORMANCE

The FRAS 5 instrument is programmed for the performance of oxidative stress tests.
It is the responsibility of the user to ensure compliance with the requirements of each individual test manufacturer.

PROTECTION

	Electronic components may cause electric shock and injury. Do not remove covers or doors if not specifically recommended in this manual.
	The use of clinical samples involves an important biological risk and must therefore be carried out with the utmost caution. re are some blood-borne infections that can be passed on in blood or in body fluids that can become mixed with blood, such as saliva.
	The instrument is designed to ensure maximum protection of the user during normal operation.

CHAPTER 2

INSTALLATION AND PRELIMINARY OPERATIONS

Check the integrity of the box before opening it.

2.1 TRANSPORTATION, STORAGE AND UNPACKING

There are certain precautions to keep in mind during transportation, storage and unpacking of the instrument in order to avoid damages also due to storage in an improper environment.

TRANSPORTATION

In its packaging the instrument weighs about 6.0 Kg and about 3 Kg without packaging. The dimensions are 51 x 41 x 43.5 (h) cm with packaging, and 40 x 2.5 x 13 (h) cm without.

No special equipment is required for transporting, loading or unloading the instrument in its box.

When handling the equipment the warning on the outside of the packaging (TOP-BOTTOM) must be respected.

STORAGE

The equipment should be stored in its original packing consisting of one box, and stored in respect of the warnings applied to the outside (TOP-BOTTOM).

If during storage or shipment the box is damaged it may be necessary to make sure that the instrument has not been damaged. If the instrument has not been damaged, the packaging should be returned to its orginal position in the box before restorage of the instrument.

In case of damage, notify the Supplier.

The type of packing ensures reliable protection and insulation if the crate is stored in a suitable place. It is therefore cessary to store the crate containing the instrument in a dry place free of dust.

2.1.1 COMPOSITION OF THE SUPPLY

Proceed to unpack the instrument. The following accessories are supplied with it:

Q.ty	*Description*	*Code*
2	Balance microvette	MCB300
1	10 µL minipipette	Minipip
1	40 µL minipipette	Minipip.40
1	Power supply cable	29800410
1	Plastic cover	52040530
2	Thermal printer paper	Ecart2
1	User manual	53872314
1	Pen	P01

2.2 INSTALLATION

The photometer overall dimensions are 40 x 26.5 x 13 (h) cm. To ease access to the instrument for maintenance, some space should be left around the instrumant. It's also preferable to place the instrument well spaced from other instruments in order to avoid mutual interactions**.**

Please allow 10 cm in the rear part in order to improve the air circulating inside the instrument.

- The primary activities for installing the instrument are as follows.
- Identify a person in charge of the activities necessary for installation, who will contact the Supplier for further explanations or questions if necessary.
- Select the place of installation.
- Purchase any accessories other than those supplied with the instrument.

Although the photometer has been designed with components capable of operating in a range of environments, it is a good idea to check the environmental conditions in order to ensure more reliable performance.

- High temperatures can age the parts and produce temporary or even permanent alterations.
- A particular dusty environment may cause an abrasive action on the components and therefore reduce their life.
- Vibrations can cause errors in the measurements made by the instrument.
- High frequency and high intensity pulses generated by electronic devices or induced by surroundings may cause errors in the system.
- Do not place the instrument near any heat source like radiators, hot air tubes or in places directly exposed to sun rays.
- Avoid storing in places subject to sudden temperature change.

Install the in instrument on its own feet in a flat non-infalmmable surface with adequate space around it to permit ease of maintenance if necessary.

A power outlet should be available in the place of installation and have the following characteristics:

Distribution	:	1 phase, neutral and ground
Power supply	:	100 - 240 VAC 50 - 60 Hz
Consumption	:	60 VA

A cable with three wires and a Schuko plug is supplied with each instrument, for connection to the power mains and grounding. Connect the instrument to a plug with the ground contact, controlled by a differential switch. If the wiring is not grounded according to regulations, this may constitute a hazard for the personnel and may be a source of malfunction of the instrument.

Environmental features of the place of installation should be:

Temperature	:	15 ÷ 32 °C (operating) 0 ÷ 50 °C (not operating)
Relative Humidity	:	20 ÷ 80 % (operating) 0 ÷ 90 % (not operating)
Altitude	:	< 2000 m (operating)

2.3 UNINSTALLATION

When uninstalling the instrument, remove all accessories attached to the USB cable, turn the instrument power switch to the "O" position, and unplug the power cable and all electrical connection that were made between the rear panel of the instrument and the power source.

CHAPTER 3

USE

3.0 INTRODUCTION – SWITCH ON OF THE INSTRUMENT

To turn on the instrument, the operator turns the switch to "I" on the left side of the back of the intrument (Figure 2.1). After switching on the instrument, the instrument displa messages to the operator that clearly indicates all operations to be performed and the icons to be pressed. After switching ON the instrument, the phases described in the following paragraphs will be executed.

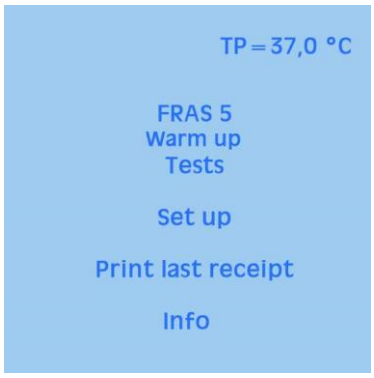
3.1 START UP OF THE INSTRUMENT, AUTO-DIAGNOSIS, PRINT OF THE PRESENTATION MESSAGE

The display shows for some moments the following message:

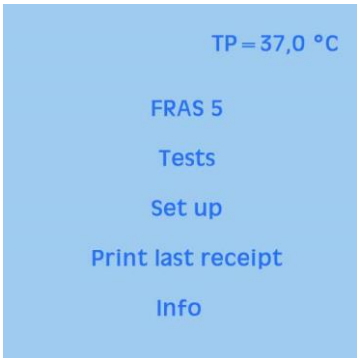
Then the auto-diagnosis starts. If a problem is detected, a warning message will be shown in the display referring to the defects detected and the steps that must be taken. If this is the case follow the steps as indicated in the warning message.

3.2 WARMING PHASE

After switching on the instrument, warming of the reading cell will begin. If the desired temperature of the reading cell is not yet reached, the display will show the following message:



The real time reading cell temperature is shown in the top-right corne of the display:



If no icon is pressed, the instrument stays in these conditions until the temperature of the reading cell reaches 37°C. This temperature is maintained constant for as long as the instrument is turned ON.

Once the warming up phase is complete, the **Main Menu** will be activated

3.3 MAIN MENU

- **Tests**: allows to perform all available tests present in the instrument;
- **Settings**: main settings menu;
- **Print last receipt**: allows to obtain a second copy of the last printed receipt;
- **Info**: shows all the available informations about the installed system, the serial number and other useful elements that may be communicated to the Supplier if assistance is required.

TESTS MENU

In the test menu, it is possible to start all the procedures of the tests installed in the instrument. Follow all the steps indicated by messages on the instrument display as well as those decribed in individual specific test procedures.

SETTINGS MENU

- **Correction Factor:** This function allows you to set the K-factor for each test executable from the machine, i.e., the correction factors necessary to compensate for small differences in sensitivity that occurs between different batches of reagents. These values are clearly stated on the packaging of the purchased kits.

  Note:
  The k-factor variables have values in the range 0 to 20; the value 10 represents the neutral value (without correction); values in the range 11 to 20 produce a correction in a 5% increase for each unit; values in the range 0 to 9 produce a fix in 5% decrease for each unit;
- **Date & Time:** setting of the internal clock. The set time will also be printed on receipts;
- **Language:** Allows you to choose the language used in the system;
- **Printer**: Allows you to enable or disable receipt printing;
- **Centrifuge:** Used for enabling or disabling the centrifuge during the execution of the tests;
- **Instrument check:** Forces a second execution of the initial autotest, as to highlight possible settings in the system;
- **Calibration cuvette:** It allows the calibration of the sensor that controls the insertion of the cuvette in the readings area. Follow the indications to display
- **Service:** Service menu available for technical assistance via remote diagnosis. Normally the password that is protected is not activated unless this option is selected by the Service provider.

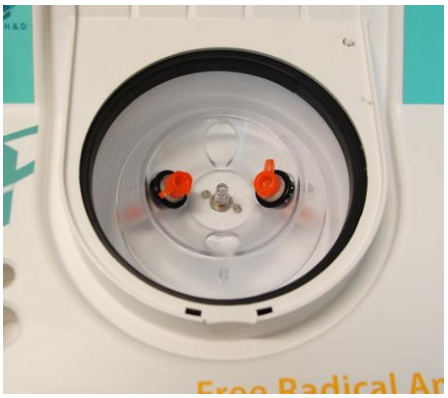
3.4 CHECKING THE CALIBRATION SYSTEM

The **FRAS** system should be checked periodically with **Controls Serum** in order to assure that test results are correct.

3.5 PRECAUTIONS DURING THE USE OF THE INSTRUMENT

The correct use of the centrifuge requires following the recommendations described below:

- Use for each test **only** the specific balancing microvette included with the instrument;
- Position the cuvette in the appropriate rotor housing in order to provide the proper rotor balance when working (see the figure):



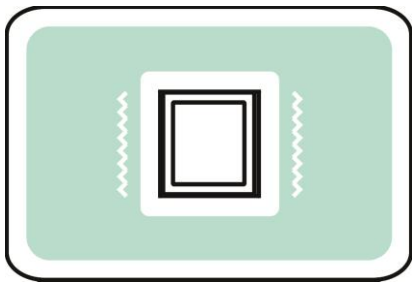
Balanced positioning (correct)

Unbalanced positioning (incorrect)

- Make sure that the balancing microvette is filled with water
- Make sure that the front door is closed before activating the centrifuge; if the door is not properly closed the tests won't start.
- Remove any cuvette present in the reading slot since the centrifuge will not work if there is a cuvette is in the reading slot.

During the measurement cycle follow the following recommendations:

- Insert the cuvette pressing it down to the bottom of the housing. A spring helps correctly positioning the cuvette and holds it still during the reading.
- The cuvette must be inserted in the reading slot with the ribbed sides positioned according to the instruction reported on the label.

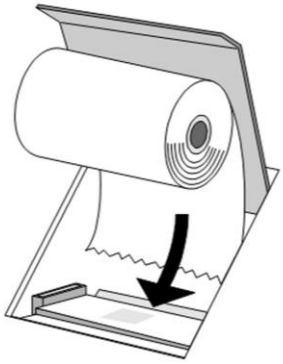


- If the cuvette is removed from its housing during the incubation period and it's not positioned back within 10 seconds the analysis cycle will be interrupted.

3.6 REPLACING PRINTER PAPER

Follow this procedure:

- Open the paper holder door by lifting the dark flap until a "click" is heard.
- Place the roll in the paper holder and leave some leader space in the roll beyond the initial flap.



- Close the paper holder door.

CHAPTER 4

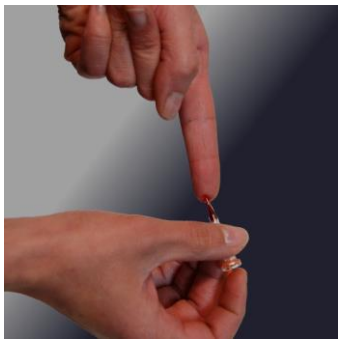
PERFORM TEST

4.1 PROCEDURE d-ROMs + PAT

Before preforming a test, prepare all the necessary materials to carry out the test, a finger pricker, some disinfectant (only alcool-swab), a few cotton wool pads, the microvettes, the 10 microliters minipipette, the 40 microliters minipipette the tips, the cuvettes for d-ROMs e PAT test, the microcuvette for d-ROMs test and the chromogen vial for PAT test.

All instructions to perform tests appear on the display.

Taking a blood sample and test preparation:



1. Lightly massage the finger from which the blood sample is to be drawn to improve blood flow. Disinfect the finger using a fresh alcohol-swab (do not use disinfectants other than alcohol) and let it dry.

2. Using a disposable finger-pricker or sterile lancet, puncture the finger on the top of the finger itself.

3. Lightly discard the first drop of blood produced by wicking it away with a cotton swab and discarding it. This is necessary because this drop may contain a high amount of lipid.

4. Take the microvette out of its container and disconnect the small orange lid (you will need it later on to close the smaller entrance of the microvette). While keeping the microvette inclined with the smaller entrance upwards, keep the finger vertically till the drop of blood touches the smaller entrance of the microvette. The drop of blood will flow into the microvette and you can help more drops to flow inside the microvette by a light massage of the whole finger towards its tip. In this was you fill the microvette to at least the level of the three (3) little fins running along the microvette body (more blood means easier plasma extraction later on). Please do not squeeze the finger too hard as this may rupture blood cells (referred to as haemolysis), but proceed by massaging the finger gently from the palm to the finger tip.

5. Before turning the cuvette vertically, close first the smaller opening of the microvette with the small orange lid and than close the other opening with the bigger lid. Insert the microvette in its container.

6. Place the microvette and its container in the centrifuge caring that the other balancing microvette is correctly positioned in the centrifuge, in order to operate the centrifuge properly and not shake or damage the centrifuge itself.

d-ROMs fast test

Once the centrifugation is completed, collect 10 µL of **R3 of d-ROMs test** (with white pipette) and pour it into a small microcentrifuge tube containing the reagent liquid R2 of the d-ROMs test.

Collect 10 µL of plasma (with white pipette) from the microvette using a new pipette-tip and eject the contents into the small microcentrifuge tube containing the reagent liquid R2 of the d-ROMs test. Please take care to insert the tip of the pipette well into the tube wile transferring its content.

Mix the tube by inversion (turning it upside down) for at least for **15 seconds**.

Pour the contents of the tube into the cuvette with the green cap and Mix by inversion for **10 seconds**. Avoid foaming.

Insert the cuvette in the reading cell making sure that the ribbed sides are oriented according to the instructions reported and in accordance to the label over the reading cell of the instrument. Make sure also that the cuvette is pushed down to the the bottom of the reading cell.

Wait for the result of the test shown on the instrument display and make sure that the test results output was printed on the printer paper.

PAT test

Take the cuvette contaning the reagent R1 of the PAT test, remove the security ring from the cuvette, and add add 40 µL of reagent R2 of the PAT test from the little bottle using the green light pipette. Close the cuvette with its lid on and mix by inversion **for 10 seconds**.

Insert the cuvette into the reading cell making sure that the ribbed sides are oriented according to the instructions reported and in accordance to the label over the reading cell of the instrument. Make sure also that the cuvette is pushed down to the bottom of the reading cell. Wait for the first reading and record it. Remove the cuvette from the reading cell.

Collect 10 µL of plasma (with white pipette) from the microvette with the with a new provided pipette-tip and pour it into the small cuvette containing the liquid R1 + R2 of the PAT test, which you just removed from the reading cell.

Tranfer the plasma into the cuvette. Mix by inversion **for 10 seconds**.

Insert the cuvette into the reading cell again making sure that the ribbed sides are oriented according to the instructions reported and in accordance to the label over the reading cell of the instrument.
Make sure also that the cuvette is pushed down to the bottom of the reading cell. Wait for the result of the test. Record the reading.

OSI Index

To obtain the **OSI Index**, select the combined d-ROMs *fast* + PAT test (Redox fast) from the list of the tests available. When these are selected and a printout of the both test readings are obtained, the OSI index will be automatically printed.

OBRI Index

To obtain the **OBRI Index** it is necessary to select the OBRI test from the list of tests available.

The instrument will guide you in the execution of the combined d-ROMs *fast* + PAT test. Howeved before doing so, you must enter the value of total cholesterol. Then the following values will be printed: d-ROMs fast and PAT tests, plus the OSI and OBRI indices.

SAT test

Weigh a glass and a piece of cotton, using the appropriate scales issued with the instrument and write down the obtained value (T_0).

Give the piece of cotton to the patient and invite the subject to roll the cotton in the mouth for 1 minute (for about 60 bites without chewing the cotton) in order to induce the production of saliva. Saliva should be conveyed onto the cotton.

At the end of the minute, re-weight the glass and the cotton and the difference in weight during this time might give a value between 1.1 to 1.4 g.

This above range meets the optimal salivay flow to have the optimal antioxidant power from uric acid in the saliva. If this is greater or less than expected, it should be repeated by reducing or increassing the number of times the cotton is rolled in the mouth while squezzing the cotton but not by increasing the total residence time of the cotton in the mouth.

Take the cuvette containing the SAT R1 reagent and add 40 µL of R2 solution using the **light green** pipett e equipped with the instrument and the relative disposable tip.

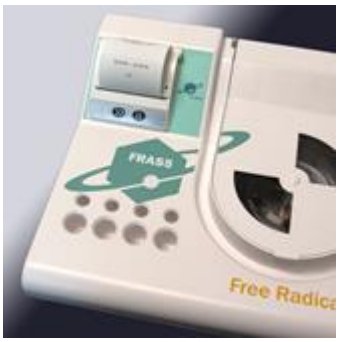
Close the cuvette with the lid and mix by inversion for about 10 seconds. Insert the cuvette into the reading cell, making sure that the ribbed sides are oriented according to the instruction reported and in accordance with the label and also make sure that the cuvette is pushed down to the bottom of the reading cell.

The instrument will carry out the first reading in about 2 seconds.
Remove the cuvette from the reading cell following the instructions that appear on the display.

Take a sample of 10 µL of saliva and add it into the cuvette containing the R1+R2 SAT solution which you just removed from the reading cell of the instrument.

The saliva must be taken using the white pipette equipped with the instrument and the relative disposable tips.

Close the cuvette with the lid and mix by inversion for about 10 seconds.



Insert the cuvette into the reading cell, as above, making sure that the ribbed sides are oriented according to the instruction reported and in accordance with the label and also make sure that the cuvette is pushed down to the bottom of the reading cell. The instrument will carry out the second reading.

Wait 1 minutes for the results and the printing of the receipt with the test value results (in µmol/L).

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CHAPTER 5

MAINTENANCE

FRAS 5 does not require special maintenance procedures. The following procedures are sufficient, in general, to preserve the integrity of the instrument:

- Keep the instrument in a dry and dust-free place; humidity content must be within the range specified under operating conditions and condensed humidity should be avoided.
- Avoid rapid changes of temperature both during the use and the storage.
- Clean periodically, or when it is necessary, clean the body of the instrument with a soft, dry cloth, avoid rubbing vigorously to prevent damage to the display.
- If the visible presence of deposits or liquid are observed, clean gently the inside of the reading cell or the centrifuge with a cotton gauze.
- In case of long periods of inactivity, disconnect the instrument from the mains and cover the instrument with its lid cover.

CHAPTER 6

MALFUNCTION AND DIAGNOSTIC MESSAGES

6.1 MALFUNCTIONS

Here are the most common malfunctions that may occur during the use of FRAS 5 and the possible remedies for the user. If none of these leads to the solution of the problem, please contact Technical Service support.

The instrument will not turn on

Verify that the plug connector at the rear of the instrument is properly connected to the mains.
Check the integrity of the power cable and accessories (extensions, etc.).

The instrument does not print a ticket at the end of the test

Check if the paper roll is exhausted; check for the proper closing of the printer door; check that the paper roll can rotate freely in its seat. If necessary replace the paper roll with a new one.
Check the "PRINTER" mode setup to verify if the printer is enabled or disabled.

The instrument vibrates too much during the centrifugation

Check that there is a microvette or a balancing cuvette in the correct position; check that the adapters for the microvette are fully positioned in their home base.

The display indicates that the temperature of the reading cell has incorrect values

Check that the room temperature is within the range of operating conditions of the instrument; check that the instrument is not exposed to air currents (air conditioner).
Attention: during the centrifugation the temperature of the centrifuge may go down a few degrees, this is normal.

The instrument gives results that appear incongruous with what is expected

Check the correct setting of K-factor of the reagents and the K-factor of the instrument; check that the reading cell is at the correct temperature; check for the presence of foreign bodies in the reading cell that could intercept the light beam.

The instrument seems to block while printing the report at switch on or after the test

Check the LED on the printer, if you see a 3-pulse flash, check the paper roll and close the door. If you observe an intermittent flashing and pause, press the pause button to return the printer to action.

6.2 DIAGNOSTIC MESSAGES

In the presence of certain malfunctions, the instrument provides a set of diagnostic messages that are intended to prevent the operation of the instrument in less than ful efficiency, possible source of erroneous results, or to facilitate the implementation of service by providing a preliminary indication on the possible nature of the fault.

Not all failures are accompanied by diagnostic messages and it is essential to keep in mind the recommendations above at 6.1.

The following table contains a list of diagnostic messages from their respective cases.
(Please note that some messages may differ slightly or not be present depending on the release of the firmware of the instrument.)

DIAGNOSTIC MESSAGE	PROCEDURE	MEANING	MEASURE
CHECK CLOCK BATTERY (COD. 003)	Printed after autotest	Clock battery out	Contact technical support
CHECK READING CELL (COD. 001)	Printed after autotest	The instrument does not receive a signal from the optical unit	Check for foreign bodies in the reading cells. If not decisive, contact technical support.
CHECK WARMING (COD. 004)	Displayed during test procedures	The instrument fails to stabilize the correct temperature	Check the correct room temperature or the presence of air currents. If not decisive, contact technical support
CHECK PAPER PRINTER (COD. 002)	Displayed during printing	The instrument cannot print because it is locked	Check the paper roll and close the printer door; make sure the printer is not paused and eventually press the pause button. If not decisive, contact technical support