Instruction manual

Librae
Incapacitance tester

Revision 2.5 July 2024

Pain
Inflammation

LAN

SKU: 47883/ 47882/ 47885/ 47880-001

ugobasile.com

ugo basile®
TRANSFORMING IDEAS
INTO INSTRUMENTS

SAFETY CONSIDERATIONS

The Librae Incapacitance Tester has been designed and approved in accordance with international safety standards.

Please follow the safety instructions, cautions and warnings in this manual to ensure safe operation and to retain the instrument in a safe condition.

The instrument cover must not be opened or removed. Capacitors inside the instrument may be charged, even even after it has been disconnected from all power sources.

Product service and repair must be performed by qualified personnel authorized by the Ugo Basile organization.

Instruction Manual
July 2024 Revision 2.5

ugo basile®
TRANSFORMING IDEAS INTO INSTRUMENTS

CE CONFORMITY STATEMENT

Manufacturer	**UGO BASILE srl**
Address	Via G. di Vittorio, 2 – 21036 Gemonio, VA, ITALY
Phone n.	+39 0332 744574
Fax n.	+39 0332 745488
Email	support@ugobasile.com

We hereby declare that

Instrument.	**Librae Incapacitance tester for mice and rats**
SKU	**47883/47882/47885/47880-001**

is manufactured in compliance with the following European Union Directives and relevant harmonized standards

- ***2006/42/CE on machinery***
- ***2014/35/UE relating to electrical equipment designed for use* within certain voltage limits**
- ***2014/30/UE relating to electromagnetic compatibility***
- ***2011/65/UE and 2015/863/UE on the restriction of the use of certain hazardous substances in electrical and electronic equipment***

Account *Manager* — **Mauro Uboldi**

Nome / *Name*

July 2020

Date — **Firma / *Signature***

MOD. 13 Rev. 1

Back to contents

Product features

Thank you for your purchase of Librae Incapacitance Tester for measuring hind paw weight distribution using the most widely used method (>1,500 citations).

Your new instrument is designed with latest technologies to provide researchers with important features and benefits:

- Touch screen with Auto start button lets scientists set, control and manage instrument data quickly and seamlessly.
- The supplied USB key stores data for optimal portability (average paw weight, Standard Deviation, L/R ratio, etc....).
- The Left/Right weight histograms and scatter charts display experiment output for monitoring data trends in real time.
- Reliable data: high quality force sensor (0.1g resolution) is easily calibrated using the reference weight supplied.
- There are no screws or protruding parts that may interfere with animal comfort, maximising experiment repeatability.
- After each test, results can be stored or discarded. Experiment data can be transferred to PC spreadsheets such as Microsoft Excel.
- Magnetic foot pads can be easily detached for fast cleaning within seconds.
- LAN connection via Ethernet cable is provided to allow loading Experimental data from X-Pad Windows App and the experimental data retrieving, via Web page from a standard PC.

What is in the box?

SKU: 47883
The Librae Incapacitance tester for **mice** that contains:
1 transparent plastic restrainer for mice
1 Pedal switch
1 Power cord in accordance with your country's requirements
1 100 gr. calibration weight
1 USB key containing a copy of:
This instruction manual and the quality control and warranty certificate

SKU: 47882
The Librae Incapacitance tester for **rats** that contains:
1 transparent plastic restrainer for rats
1 Pedal switch
1 Power cord in accordance with your country's requirements
1 100 gr. calibration weight
1 USB key containing a copy of:
This instruction manual and the quality control and warranty certificate

SKU: 47885
The Librae Incapacitance tester for **mice and rats** that contains:
1 transparent plastic restrainer for mice
1 transparent plastic restrainer for rats
1 Pedal switch
1 Power cord in accordance with your country's requirements
1 100 gr. calibration weight
1 USB key containing a copy of:
This instruction manual and the quality control and warranty certificate

Additional optional items:

SKU: 47880-003
Librae Incapacitance tester restrainer for mouse in clear Perspex
Position 1 in restrainer figure

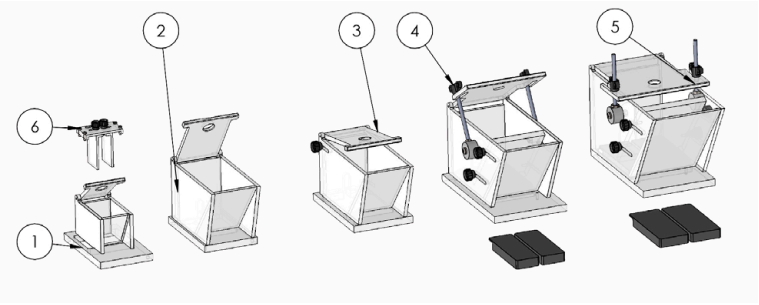
SKU: 47880-002
Librae Incapacitance tester restrainer for rats to 200gr in clear perspex, width 64 mm
Position 2 in restrainer figure

SKU:47880-004
Librae Incapacitance tester adjustable restrainer for large rats to 250gr in clear perspexPosition 3 in restrainer figure

SKU: 47880-007
Librae Incapacitance tester restrainer for animal weight to 350gr in clear perspex, including 2 magnetic pad
Position 4 in restrainer figure

SKU: 47880-008
Librae Incapacitance tester restrainer for animal weight to 500gr in clear perspex, including 2 magnetic pads
Position 5 in restrainer figure

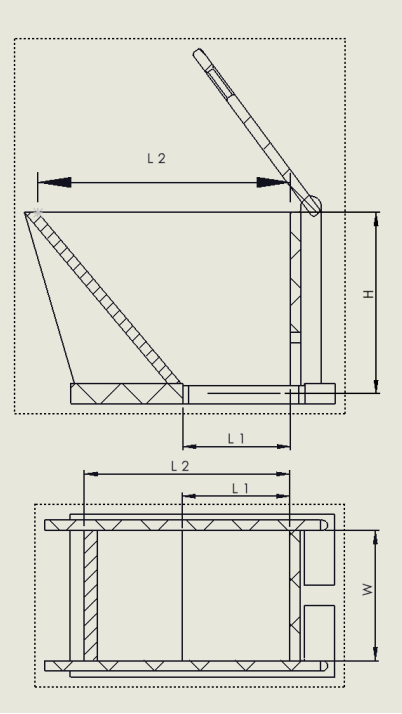
SKU: 47880-323
Animal Holder Reducer for small animal to be used with Librae Incapacitance tester restrainer 47880-003.
Position 6 in restrainer figure



Restrainer figure

P	SKU	L1 mm	L2 mm	H mm	W mm	Notes	Animal
1	**47880-003**	34	64	55	40		Mice
2	**47880-002**	53	124	89	64		Rats max 200 gr
3	**47880-004**	54-78	123-147	89	64	adjustable wall	Rats up to 250 gr
4	**47880-007**	68-107	140-190	94	80	adjustable roof	Rats from 250up to 350 gr
5	**47880-008**	67-117	155-217	114	100	adjustable roof	Rats from 350 up to 500 gr
6	**47880-323**	34	64	55	0-34	accessory for P1	Small mice

Please refer to the following figure as a dimension legenda for the table:



Restrainer dimension legenda

Contents

1 General 9
1.1 Principle of Operation 9
2 Instrument Description 9
2.1 Main Unit 9
2.1.1 Important Notice about the Force Range 10
2.2 Animal Welfare 11
2.3 Touch-screen command/display 11
2.4 Notes on Resistive Touch-Pads 12
2.5 Animal Restrainer 12
2.6 Librae Features 13
3 Installation. 13
3.1 Unpacking & Preliminary Check 13
3.2 Note on the Instruction Manual 13
3.3 Safety Instructions 14
3.4 Assembling the instrument 15
3.5 Before Applying Power 15
3.6 Intended Use 16
3.7 Additional Safety Considerations 16
3.8 Connection 17
4 Operation 19
4.1 Home Page 19
4.2 Quick setup for the first test 20
4.3 System Icons 22
4.4 Home Page buttons 23
4.5 Experiment 23
4.6 Setup 25
4.7 Set Autostart 26
4.8 Start 32
4.9 Results 33
4.10 Calibration 34
4.11 Utilities 34
4.12 Update 35
4.13 Date-Time 36
4.14 Erase DB 36
4.15 USB Storage 37
4.16 Factory Reset 38
4.17 Using LAN connection 38
4.19 Communication port connection 43
5 Maintenance 45
5.1 Electrical 45
5.2 Cleaning/disinfection 45
5.3 Long Inactivity 45
5.4 Customer Support 45
6 Specifications. 46

1 General

The Librae Incapacitance Tester can be used for a number of applications that require animal weight bearing measurement (hind paw weight distributions). The most common application is for joint pain studies and related drug candidates, especially for osteoarthritis.

1.1 Principle of Operation

The Librae Incapacitance Tester provides weight bearing measurement of restrained rats or mice, by using two force sensors, one per paw. These independently measure the paw weight over time (the weight averaged over a few seconds is normally used as the data point).
For example, the device provides an index of discomfort in the osteoarthritic knee, normally expressed as the Left/Right weight ratio or Left/Right weight difference between the two paws.

2 Instrument Description

The Instrument comprises:

- The main unit, incorporating the 2 force sensors, touch screen and a display screen for viewing data trends and results
- A Plexiglas restrainer for mouse or rat (or both depending on the model)
- A pedal switch to start the experiment (or use touch screen to start the experiment)
- One calibration weight of 100 gr.

The Librae Incapacitance Tester provides data files (CSV) that can be transferred to a PC for analysis using a spreadsheet application such as Microsoft Excel.
Data is also saved automatically (e.g. left and right weights, L/R ratio, etc...) and can be retrieved using the touch screen via USB key and via LAN connection using a standard PC with a Web browser.

2.1 Main Unit

The measurement plate on the unit is a 10mm aluminium slab, to ensure maximum thermal and mechanical stability.
High quality force sensors provide the measurement with a resolution of 0.1g.
Foot pads are magnetically attached to make them easy to remove and clean after every experiment. The foot pads are flat without any physical protrusions that could cause negative effects on the comfort or gait of the animal.
Four rubber feet act as dampeners in order to absorb small vibrations from the work bench or the environment.

2.1.1 Important Notice about the Force Range

The maximum weight the instrument can carry is 2’200g per paw.
Applied forces that are greater than 2’200g per paw, will not be measured.

A mechanical limit switch, avoids a force overload greater than 4’400g.

Do not place animals weighing more than 5’000g on the Librae Incapacitance Tester to avoid causing any permanent damage to the instrument.

2.2 Animal Welfare

In any analgesia test, great care must be taken to prevent the animal from experiencing any inadvertent harm.
When an investigator initially begins using the incapacitance test, and when first assessing a new strain of animal, care must be taken to identify the appropriate amount of stimulus that will produce the desired response.

2.3 Touch-screen command/display

Librae incorporates a 4.3" touch-screen display, for basic setting and monitoring, via an intuitive control panel.

Figure 2.1.3.1, "Main Menu"

During the test (Figure 2.1.3.2), the touch-screen display indicates the actual force applied on each foot pad, the duration of the experiment and the function mode.

Figure 2.1.3.2, Measurement page

The test results, can be browsed in a condensed view, as shown in Figure 2.1.3.3.

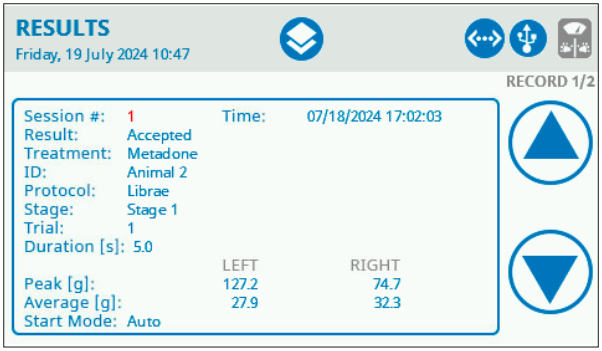


Figure 2.1.3.3, "Results Page"

2.4 Notes on Resistive Touch-Pads

If you compare the touch sensitivity of your tablet or smart-phone with the Librae touch-screen, you may notice a different, less sensitive response. You may need to press slightly harder, or use a stylus pen on the touch screen. This is because we employ a *resistive* touch-screen display (while most smart phones use a *capacitive* screen).

Resistive screens are a better choice for our application due to their:

- High resistance to dust and water
- Ability to work with gloved hands or stylus (unlike capacitive technology which is dependent on the conductive nature of human body and doesn't work if the user is wearing gloves).

2.5 Animal Restrainer

The animals are confined by a clear removable restrainer made of clear Perspex. Two different versions (mouse and rat) are available. The top lid helps easy removal of the animal when the experiment is finished.
Here is the list of available restrainers:

SKU: 47880-003
Librae Incapacitance tester restrainer for mouse in clear Perspex
Position 1 in restrainer figure

SKU: 47880-002
Librae Incapacitance tester restrainer for rats to 200gr in clear perspex, width 64 mm
Position 2 in restrainer figure

SKU:47880-004
Librae Incapacitance tester adjustable restrainer for large rats to 250gr in clear perspexPosition 3 in restrainer figure

SKU: 47880-007
Librae Incapacitance tester restrainer for animal weight to 350gr in clear perspex, including 2 magnetic pad
Position 4 in restrainer figure

SKU: 47880-008
Librae Incapacitance tester restrainer for animal weight to 500gr in clear perspex, including 2 magnetic pads
Position 5 in restrainer figure

SKU: 47880-323
Animal Holder Reducer for small animal to be used with Librae Incapacitance tester restrainer 47880-003.
Position 6 in restrainer figure

2.6 Librae Features

The main features of Librae Incapacitance Tester are:
1. Force range: from 20g to 2200g per paw, with a 0.1g resolution over the full scale
2. Manual and Auto start mode
3. Detection by pedal switch of elapsed time-out
4. Visualization averaging for smooth reading without affecting the sample rate
5. Histogram and Scroll Graph of applied force.
6. Data portability via USB memory card (.CSV file format)
7. LAN (Ethernet) connection for Experiment data loading and Experiment result retrieving.

3 Installation

3.1 Unpacking & Preliminary Check

Check the contents of your shipment (see “What is in the box?” page at the start of this manual), and visually inspect the instrument as you take it out of the packaging.

If the instrument appears to be damaged, inform the carrier immediately and send an email to service@ugobasile.com

Protect the environment:
Please dispose of packaging according to existing and applicable waste management rules and regulations.

3.2 Note on the Instruction Manual

This Instruction Manual included in the box (on the USB pen drive in a PDF form) is necessary for the correct installation and operation of the instrument.

We recommend reading the manual carefully, as it is essential for understanding the correct installation and operation of the instrument.

Please save the manual, ready for consultation by the qualified personnel using the instrument. Print it, only if necessary.

Our Instruction Manuals are available as free downloads on our web site, www.ugobasile.com
For any additional information and/or assistance, you are welcome to contact our Service Department, specifying the serial number of your instrument.
Write to service@ugobasile.com

3.3 Safety Instructions

The following guidelines must be followed to ensure safe operation.
DO NOT attempt to open the cover or perform any service work
DO NOT connect human subjects to the device

3.4 Assembling the instrument

Place the instrument on a stable and flat surface where it will be used for tests.
Position the mouse or rat restrainer onto the base plate.
Do not incline the device, as the Perspex restrainer may accidentally fall off the plate. Please do not block the lateral ventilation grids, ensure a free space of 20cm on the left, right and rear of the instrument.

Figure 3.4.1

3.5 Before Applying Power

The Power Module (see figure 3.5.1) is positioned on the left hand side of the back panel, which encompasses – from left to right - the fuse holder, the main ON/OFF switch and the inlet connection of the power cord.

Figure 3.5.1

The two-pole toggle switch, which complies with international safety standards, allows you to turn the instrument ON or OFF.
The fuse holder uses two fuses. Use (T400mA) slow-blow fuses for operation at

both 115 or 230 Volts, for fuse replacement, please refer to paragraph 5.1-Electrical. The power cord inlet fits a standard C13 cable, Cat. # E-WP008. Ensure your power out-take is provided with a reliable ground connection.

3.6 Intended Use

THE LIBRAE INCAPACITANCE TESTER IS INTENDED FOR INVESTIGATION USE ON LABORATORY ANIMALS ONLY.

3.7 Additional Safety Considerations

1. 1. Use Ugo Basile accessories and parts only
1. 1. Immediately disconnect and replace a damaged power cord
1. 1. Do not obstruct access to the power module
1. 1. Do not obstruct the grids on the sides of the cabinet
1. 1. Do not operate in hazardous environments or outside prescribed environmental limitations
1. 1. Do not spray any liquid on the connectors, display, or other parts

Ugo Basile cannot in any way and form be held responsible for damage caused to things and people due to:

- Incorrect electrical power supply connected to the Librae device
- Incorrect installation procedure
- Incorrect or improper use or, in any case, not in accordance with the purpose for which the instrument has been designed and the warnings stated in the instruction manual supplied with the instrument
- Replacement of original components, accessories or parts with others not approved by the Ugo Basile
- Servicing carried out by unauthorized personnel

3.8 Connection

Connect the mains cord between the power socket of the Librae and the power outlet, provided with a reliable earth connection.
Librae is equipped with a power management that allow the following input:
Voltage from 100 up to 240 Volt at 50/60 Hz.
Librae device absorb 15Watt

Connect the pedal switch to the Librae Incapacitance Tester (blue connector Figure 3.8.1). Note that the connector of the pedal switch is provided with a polarization key; align it with the blue connector, and gently push in, DO NOT FORCE THE CONNECTOR TO PLUG-IN, if force is needed it means Your are not correctly alligned.
To remove the connector, gently pull out.
DO NOT ROTATE THE CONNECTOR AFTER INSERTION: PERMANENT DAMAGE WILL OCCUR

Figure 3.8.1

The connection module on the front panel (Figure 3.8.2) is composed by the following connectors, from let to right:

- Upper **USB** ports: enable data exchange (Experiment & results) with a Windows PC X-Pad app, and allows firmware upgrades, via the USB flash drive provided in the box.
  NOTE THAT THE LOWER USB PORT MUST NOT BE USED, DO NOT REMOVE THE CLOSING CAP

- **TTL I/O:** 15pins D-SUB connector, provides TTL input and output for start/stop command and mode settings

- **COM**: Reserved for maintenance and service purpose

- **ETH**, Ethernet connector: used to connect the device to a LAN or directly to a PC to load Experiment data created by X-Pad Windows App (provided with the device) and retrieve Experiment result data, by a web site generated by the device.

Figure 3.8.2

USB fault icon

If the internal memory is corrupted, the Instrument will show an icon at the top of the screen:
Grey icon means no presence of the memory (you need to insert a correct memory inside the device, please ask our tech support the procedure to insert the correct memory)
Red icon means mis-function of the memory, the system is unable to read or write it. (in this case You need to change the memory with a well functioning one, please ask our tech support the procedure to change the memory)
If You need to format the SD card, format it FAT-32 from a Windows PC.
Service email address is service@ugobasile.com

4 Operation

Turn the instrument ON by using the ON/OFF power switch at the rear of the device. The instrument starts up and performs a system check, which might take up to 60 seconds. During this time the UB logo and product name will be displayed (Figure 4.0.1)

Figure 4.0.1

4.1 Home Page

When the start-up is finished, the Home Page Menu is displayed (Figure 4.1.1 and 4.1.2).

Figure 4.1.1 - Main Menu

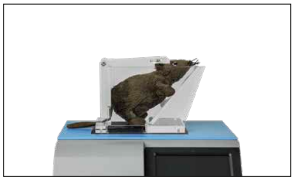
4.2 Quick setup for the first test

You are now ready to configure and run your first experiment.
The following steps will guide you to quickly configure Librae Incapacitance Tester and get your first results:
From the main page of the Librae display:

- Press the EXPERIMENT icon to fill in protocol, treatment, animal ID, etc...
- If desired, configure Autostart parameters to operate with Autostart mode Setup/Set Autostart
- Ensure that no animal (or other load) is present on the foot pads, and press START icon
- Place the animal restrainer in the correct position.

- To let the animal enter the restrainer, tilt the restrainer upwards to open the rear. The restrainer includes a hole for the rodent tail so that it does not become enclosed.

- After the animal has entered the restrainer, tilt the restrainer back down to the flat position



When ready, press START button (or pedal switch) to run the experiment

If Autostart Mode is enabled, wait for the instrument trigger for automated start.

At the end of an experiment, a result window is displayed: you can accept or reject the result

Your experiment is complete, and Librae is ready to perform a new measurement

4.3 System Icons

System icons appears at the displat top:

Figure 4.1.1.1 Top icons

- **Date and Time:** shows the current date and time.
  To modify it, go to Utilities/Date-time

- **UB Logo**: shows the About page which contains informations like: software version, memory information and Ethernet card IP address.
  To modify IP address go to Setup/Network

- **Update** Firmware: Librae Incapacitance Tester has found a valid update into the inserted USB key

- **USB** memory stick:
  Blue icon: a correct USB key is inserted
  Red Icon: the inserted USB key is not properly functioning

- **SD internal memory:**
  Red: Grey: SD card failure

- **Scale icon:**
  Grey: no acquisition in progress (default)
  Blue: acquisition in progress

4.4 Home Page buttons

Figure 4.1.1 - Main Menu, with UB logo Home Page

Main menu page (Figure 4.1.1) gives you access to the following commands:

- **Experiment**: Enter information about the test, including treatment, protocol, stage, trials
- **Setup**: Configure the weight of the animal, experiment duration, Start mode, Advanced settings and Network (LAN) parameters
- **Start**: take You to the Start experiment page to start the experiment
- **Result**: take You to the result page to see experiment result data measured
- **Calibration**: Start the device calibration procedure
- **Utilities**: Firmware Update, data and time settings, erase the database, copy the experimental results into a USB memory stick, load Experimental data from the USB stick and perfom the Factory reset..

4.5 Experiment

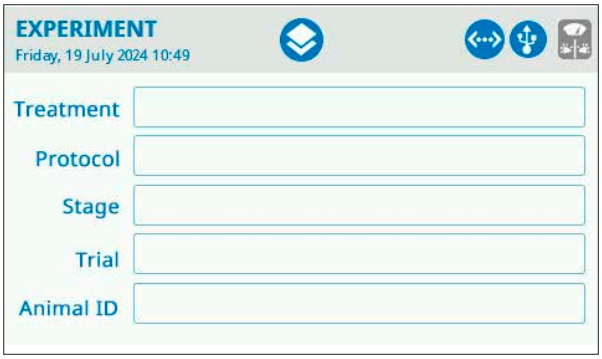


Figure 4.2.1 - Experiment form page

TREATMENT: treatment or drug delivered to the animal.
Press the text field to enable a virtual keyboard
This is an alphanumeric field: enter a maximum of 20 characters.

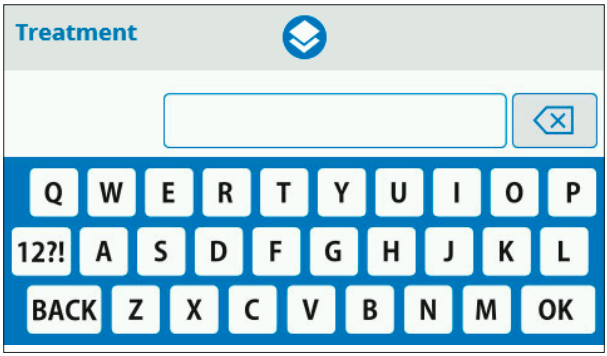


Figure 4.2.2 - Characters Virtual Keyboard

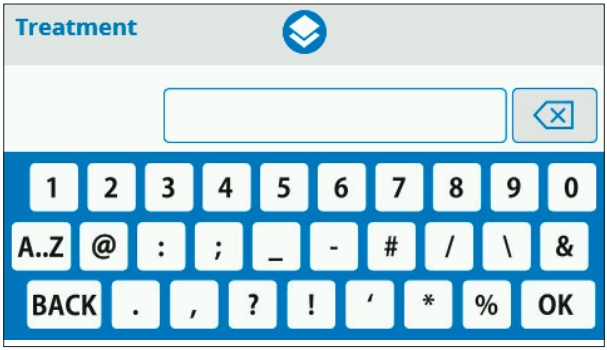


Figure 4.2.3 - Numeric Virtual Keyboard

PROTOCOL: name of the applied protocol. Press the text field to enable a virtual keyboard.

STAGE: number of stages to be performed. Press the text field to enable a virtual keyboard.

TRIAL: number of trials to be performed. Press the text field to enable a virtual keyboard.

ID: Identification number of the animal. Press the text field to enable a virtual keyboard.

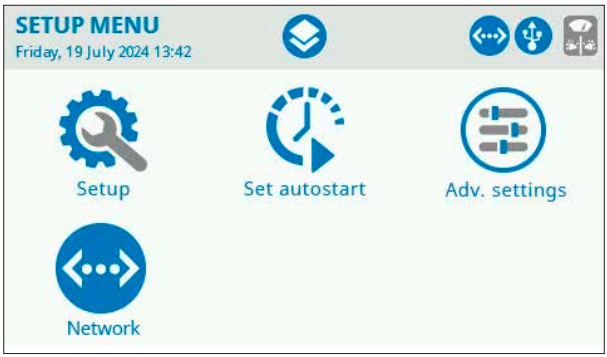
Press OK to confirm and exit.

In the RESULT table, the entered information will be matched with the test results. The user may choose not to enter any information and leave the fields empty.

The Home Page icon takes the user back to the home page.

4.6 Setup

Use the Setup page (Figure 4.3.1) to configure the experiment parameters, Auto-start mode, weight averaging (in advanced settings) and network parameters (like IP address, IP mode etc...):



Press the Setup button to enter the basic settings:

- **Animal Max Weight:** this value allows you to rescale the histogram and the plot chart during the measurement. Moreover, this value is used during the auto-start procedure. Use a numeric value from 20g to 4400g.

  NOTE: if the value is not set correctly, the autostart procedure may not work as expected.

  NOTE: in manual start mode, the correct value rescales the graph, optimizing the display of graphical data.

- **Measurement Duration**: this value is the maximum duration for the experiment. Numeric value range is from 1 second to 360 seconds.
  NOTE: If necessary, it is possible to STOP the experiment before the elapsed time-out, just push STOP virtual button (or pedal switch).

- **Start Mode:** this sets the operative start mode of Librae. Manual mode allows you to START/STOP the experiment by pushing the virtual buttons on the screen or press the pedal switch.

  Autostart mode lets Librae automate the start of the experiment...

From the setup menu, pressing the **Set autostart** button will display this page

4.7 Set Autostart

Autostart is a unique Librae Incapacitance Tester feature. By selecting this operative mode, Librae helps the user to perform the experiment in a consistent way, reducing variability and user bias or intervention during measurement.
Before using this feature, it is important to set the parameters in order to take advantage of autostart.

Figure 4.6.1 shows the Autostart settings menu.

- Autostart Weight Threshold: this parameter sets the minimum weight the Librae MUST consider for animal. The percentage value from 10% to 90% is referenced to the animal weight (Refer to paragraph 4.3)

- Autostart Stabilization Threshold: this parameter sets the percentage weight variation referenced to the animal weight (Refer to paragraph 4.3). Percentage value from 1% to 20%.

- Autostart Sustain Time: this parameter sets the acceptable time for satisfying the previous two parameters. Numeric value from 200 msec to 5 sec.

Figure 4.6.1

To help the user understand how this feature works, an example is shown below.

Let's assume the test has a mouse that weighs 50 g, the experiment duration is 15 seconds, and auto start mode is selected.

Configure the SETUP menu as follows:
- Animal Max Weight: 60g;
- Measurement Duration: 15s;
- Start Mode; Auto

Press the SET AUTOSTART icon, and set the parameters as follows:
- Auto start Weight Threshold: 60%. With this value, Librae considers the presence of the animal ONLY IF MORE THAN 36g (60% of 60 grams) are measured.
- Autostart Stabilization Threshold: 10%. With this value, Librae considers that the animal is quiet and ready for experiment ONLY IF the NOISE on foot pads is LESS THAN 6g (10% of 60 grams). See Figure 4.6.2 for details.
- Autostart Sustain Time: 3s. With this value Librae NEEDS AT LEAST 3S in which the previous conditions are satisfied.

Go to Home Page Menu, and press START button (Figure 4.6.2);

Figure 4.6.2

START the experiment (Figure 4.6.3);

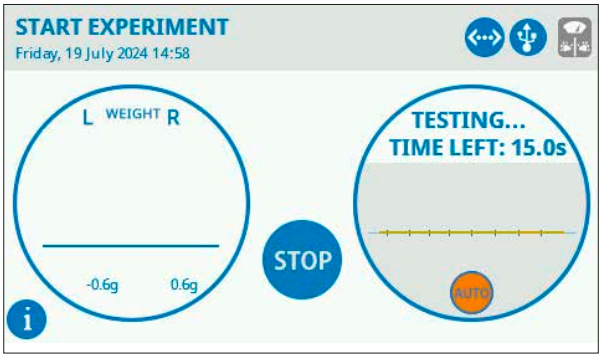


Figure 4.6.3 - Autostart is waiting for the minimum weight. AUTO icon is ORANGE.

Put the animal inside the restrainer (Figure 4.6.4);

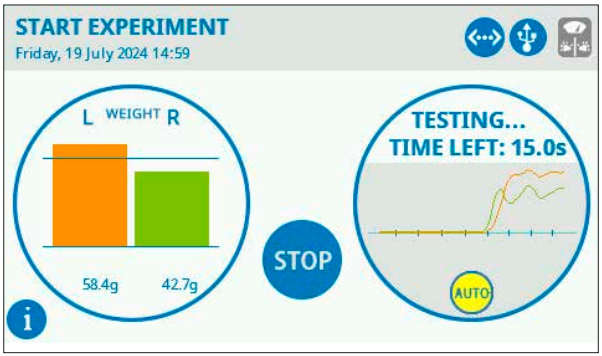


Figure 4.6.4 - Autostart is waiting for the weight stabilization. AUTO icon is YELLOW.

When ALL the autostart requirements are completed the experiment automatically starts (Figure 4.6.5).

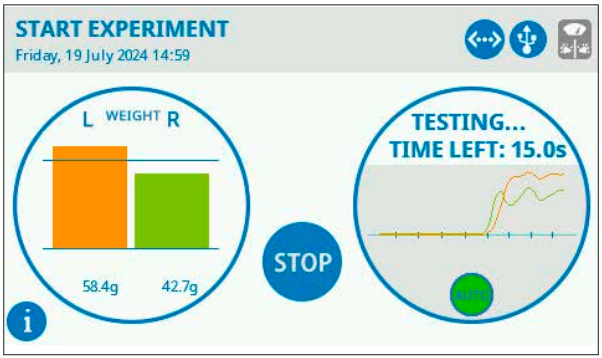


Figure 4.6.5- Autostart is waiting for stabilization time to elapse. AUTO icon is GREEN.

1. 1. Experiment runs until time-out (Figure 4.6.6)

Figure 4.6.6 - Experiment is running

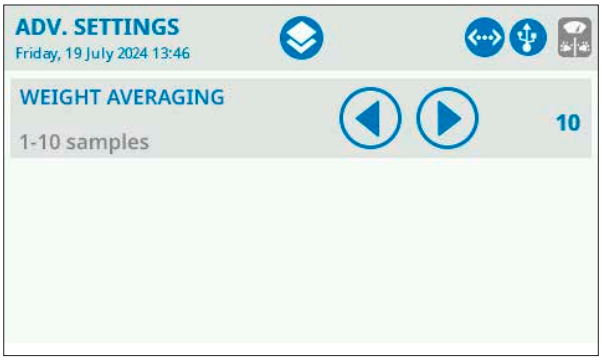
When the experiment is finished, a trial results windows is displayed, as Figure 4.6.7 shows. The experiment results can be accepted or rejected. A new experi-

ment can be started.

Figure 4.6.7

NOTE: both accepted and rejected experiments are stored into the experiment db records.

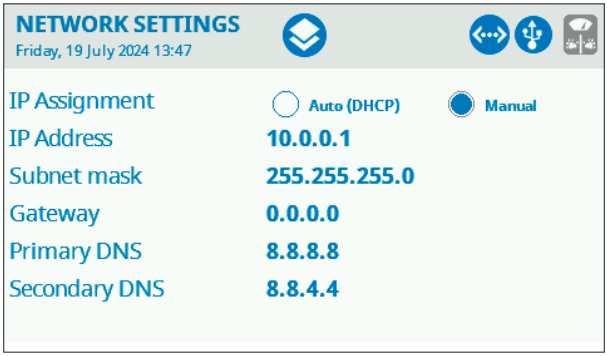
From the setup menu, pressing the **Adv settings** button will display this page



Advanced setting allows users to change the weight averaging parameter. Numeric values range from 1 sample to 10 samples. This parameter affects ONLY the visualization of the graph during the experiment.

NO DOWN-SAMPLING OR DECIMATION WILL BE APPLIED TO MEASUREMENTS.

From the setup menu, pressing the **Networks** button will display this page:



In case Your Librae device is connected to a LAN or directly to a PC with an Ethernet cable, in order communicate You need to configure this parameters.

In case You connected the Librae to a company/Institution LAN, You need to ask Your IT manager to configure these parameters correctly to avoid LAN malfunction or LAN conflict that can interfere with the Institution LAN and create problems to Your colleague.
ALWAYS ASK PERMISSION AND CONFIGURATION PRIOR CONNECTION THIS DEVICE TO THE LAB/INSTITUTION/COMPANY LOCAL AREA NETWORK TO YOUR IT MANAGER.

In case You connect the Librae directly to You PC, using a standard Ethernet Cat5 cable You need to set these parameter like:

Please note that some old computer need a special (crossed) Ethernet cable for a point-to-point connection (Librae to PC directly), try using a standard Ethernet cable first and in case of non-functionality, change it with a crossed Ethernet cable.

Set the IP Assignment to Manual
Pressing the IP Address number input an IP number that will identify Your Librae: Eg: 10.0.0.1

Set in the same way the Subnet mask: eg: 255.255.255.0

No need to set or change the other parameters: Gateway, Primary DNS and Secondary DNS.

In order communicate You now need to set Your PC network card; depending on the operating system ou run on Your PC (Windows, Mac or others) You will have different windows to find in order setting the network card IP parameters.

Set the IP Address of Your PC Ethernet card (the interface where You connect the Ethernet cable coming from the Librae) with an appropriate IP number different from the one set on the Librae: e.g.: 10.0.0.10, then set the Subnet mask same than the one set on the Librae: e.g.: 255.255.255.0
No need to set Your PC Ethernet card default gateway and DNSs.

If You do have just the Ethernet card LAN interface on Your PC, configuration the Librae/PC direct connection You will be out the company/Institution network, so not able to browse the web or send/receive emails.

If You have in Your PC a secondary Ethernet port or a WiFi connection correctly set You can booth connect to the Librae and use the Company/Institution network.

Once the configuration is done You can open Your PC preferred browser (we prefer using Google Chrome) You just nee to enter the Librae IP address: e.g. 10.0.0.1 to communicate with the Librae device.

4.8 Start

START Experiment screen (Figure 4.4.1) enables the starting and stopping of an experiment. Apply ZERO (tare) to the measurement (if necessary), and see the applied force distribution. This feature is particularly useful to check the animal position inside the restrainer, and if the experiment is running correctly.

Figure 4.4.1

Elements displayed on the START page (from left to right) provide the following functionality:

- **(i) INFO button**. This button displays a pop-up windows with experiment details

- **Histogram**. This graph displays the weight distribution between Left paw and Right paw. The weight in grams is also displayed. A horizontal dynamic line allows users to check if the weight is equally distributed between both paws.

NOTE: the horizontal dynamic line shows the half weight of the animal (this is the expected weight per paw). This means "how much weight gap" is present between paws.

- **ZERO** button. This button applies a "zero balance" to Librae. Use this only if the instrument is not already in zero position prior to the experiment start.

NOTE: Librae performs a zero balance EVERY TIME the start page is selected. DO NOT APPLY any force before selecting the start page, APART FROM TARE IF IT IS REQUIRED..

NOTE: Press ZERO button IF a negative weight is shown by histogram or by numeric values.

- **START/STOP** button. This contextual button allows users to start or stop the experiment. Press START to run the experiment. Press STOP to cease it. The trial results window dialog will be displayed (see figure 4.6.7). Accept or reject the experiment data to proceed.

- Time Scroll Graph. This graph shows the weight of both paws over time. This allows users to see the "story" of the signal during the experiment.

NOTE: This graph is for visualization purpose only! Some peaks or spikes may not be visible. Librae acquires and saves data from the force transducer at maximum speed. Export the .csv file for data analysis.

4.9 Results

Results button shows (Figure 4.7.5.1) the results of the experiments stored inside Librae Incapacitance Tester.
Every result box contains:

- Date and time of the experiment
- Treatment, ID, protocol, stage and trial
- Experiment accepted or rejected
- Duration
- Functional mode
- Peak and average values for each paw

Use the up/down arrows to scroll through results.

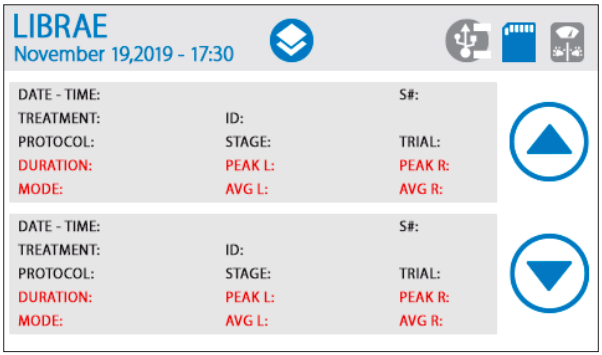


Figure 4.7.5.1

NOTE: The result box displays only a small set of data. Download the .csv file for the complete experiment data.

4.10 Calibration

Librae Incapacitance Tester is factory calibrated by Ugo Basile technicians. It is possible to override the original calibration if required by a customer quality policy (or other reasons).

For this purpose, Librae guides the user through a wizard calibration procedure. To run the procedure, press the CALIBRATION icon on the Home Page Menu (Figure 4.1.1).

NOTE: Before running the calibration wizard procedure, ensure that NO weight is applied on the food pads, AND a 100g calibrated weight is present. If necessary, Ugo Basile can supply a 100g calibrated weight. Refer to paragraph 7.0 for ordering details.

Figure 4.5.1 shows the calibration steps procedure. Follow the instructions on the screen to calibrate your Librae Incapacitance Tester.

Figure 4.5.1

Follow the instructions from the calibration wizard.
After the execution of all steps, Librae Incapacitance Tester will be calibrated with the new values.

NOTE: Calibration is not necessary if it is not required by customer quality policy. The instrument is shipped fully calibrated.

NOTE: During the calibration procedure, Librae MUST be positioned on a stable workbench. In addition, Librae must be horizontal, level, and stationery. Avoid calibration if this is not possible..

4.11 Utilities

UTILITIES menu (Figure 4.7.1) contains five submenus for setting the instrument, exporting data, checking results, and more.

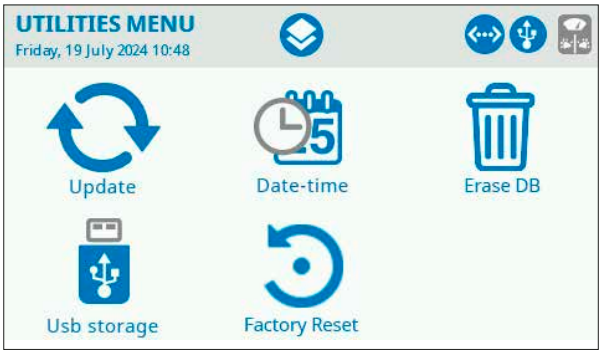


Figure 4.7.1

4.12 Update

This function allows you to update the software of the instrument. Before running the update procedure, check the installed firmware version (see Figure 4.1.3) and ask the Ugo Basile service department for the latest revision writing an email to service@ugobasile.com indicating Your Librae Serial number
Be also sure to have the original USB key provided with the device or another one with a min of 8 GB FAT32 Formatted on a Windows PC

To perform a software update:
SAVE YOUR DATA AND EXPERIMENT BEFORE PROCEEDING!
Then:

- Copy the update file our service department sent You into a USB memory key.
- Insert the USB memory key into Librae Incapacitance tester.
- Wait for update system icon appears at the top of the screen
- Press Update button and wait for a reboot.

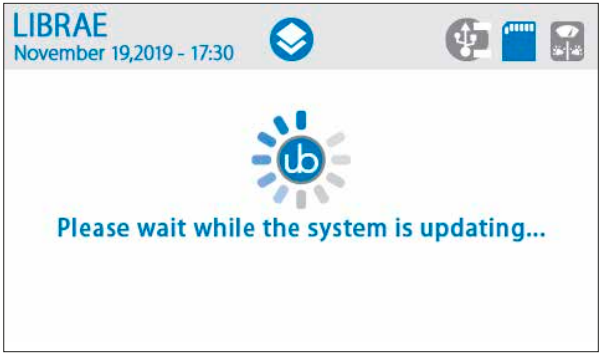


Figure 4.7.1.1

Now, the Librae Incapacitance Tester is up to date. An Erase DB could be necessary. Refer to paragraph 4.7.4 for details.

NOTE: DO NOT REMOVE USB memory key during update. The instrument will be

damaged.

NOTE: Insert the USB memory key before update procedure. If not, Librae will show a warning message, WITHOUT performing update

NOTE: DO NOT MODIFY the update binary file.

4.13 Date-Time

Date and TIme menu allows to change the calendar and clock settings, as shown in Figure 4.7.2.1.
Use the up/down arrows to adjust current time and date. Press OK to confirm

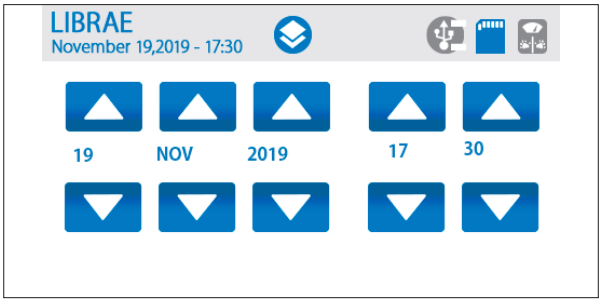


Figure 4.7.2.1

4.14 Erase DB

Erase Data Base button allows the deletion of ALL data and experiments stored on the Librae Database. This function is normally NOT required.
After the button is pressed, a Confirm window appears. Press OK to delete the database. Press CANCEL to escape.

NOTE: ONLY Use this command after a software update procedure. Refer to paragraph 4.7.1 for details.

WARNING: ALL YOUR DATA WILL BE PERMANENTLY DELETED!

4.15 USB Storage

USB Storage menu (Figure 4.7.6.1) allows to save experimental data to USB memory key and to load/unload Experiment created by the X-Pad Windows app.

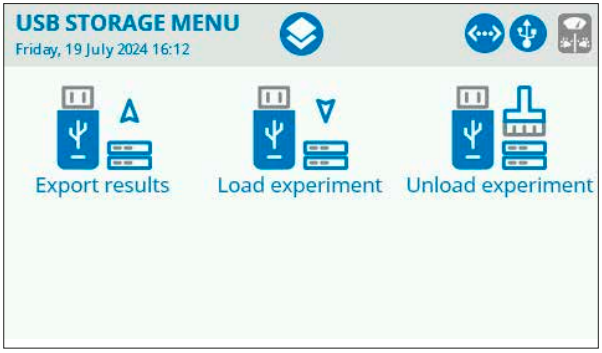


Figure 4.7.6.1

Export result write the experimental result data on a inserted USB key in .csv format.
When exporting result data to the USB key You will get 2 files:
One file contains the experiment result data as indicated in the result page with the following syntax:
Librae_Results_YYYY-MM-DD_HHMMSS.csv
Where YYYY-MM-DD_HHMMSS represent the download date and time

The second file is a raw data file containing the graphical data of the 2 paw weight and has the following syntax:
Librae_Results_YYYY-MM-DD_HHMMSS_raw.csv
Where YYYY-MM-DD_HHMMSS represent the download date and time

If no USB key are inserted (or not properly formatted) You will get an error like:
"Data download impossible.
Please insert your USB Storage"

Note that You can retrieve Your experimental data also via a LAN connection using a Web browser from a Ethernet connected PC

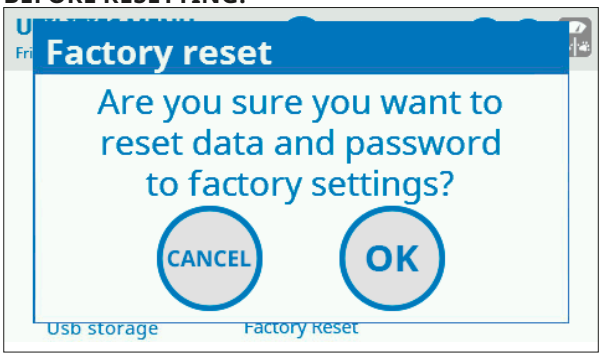
Load experiment, allow You to load an experiment data file generated via the Ugo Basile X-Pad Windows App using the USB key.

Note that You can transfer the X-Pad file also via a web browser from a PC LAN connected to the Librae.

Unload experiment, permit You to discharge a previous loaded experiment

4.16 Factory Reset

This command is used for resetting the LAN connection password to the factory default which is UgoBasile.
For security reason performing the Factory reset ALL the experiment result data are deleted.
IF YOU DO NEED TO RESET THE LAN PASSWORD, SAVE YOUR RESULT DATA BEFORE RESETTING.



4.17 Using LAN connection

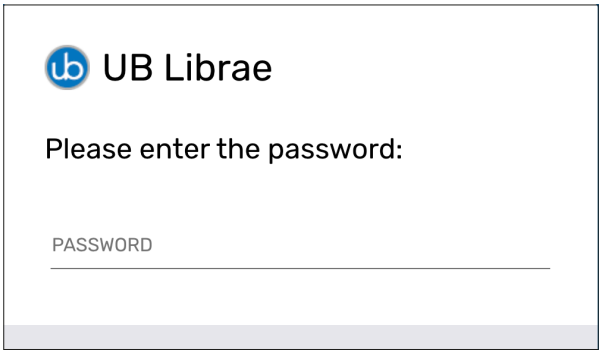
As explained You can choose to communicate from a PC from/to the Librae device in two different ways:

- Using the USB key as a bridge media
- Using a LAN (Ethernet) connections (Password protected access)

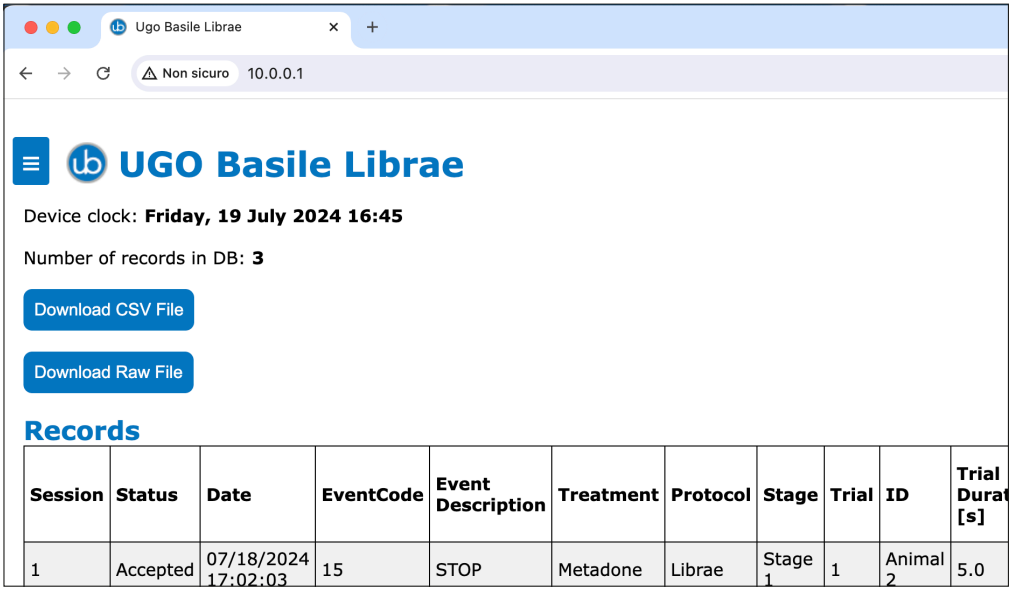
If Your Lab does not permit the USB key use, for security reasons You may want to switch to the LAN connection.
Booth method permit the same functionality, which are:

- Loading Experiment data to the Librae from a file created with the Ugo Basile X-Pad Windows application.
  This is an easy way to insert experimental data into the Librae device to have them into the result data, while You can do it by a standard PC having a key-board in state using the Librae touch display, which is small.
- Retrieving experiment result at the end of experimental sessions

To connect to the Librae via LAN connection (after the setup already described has been done), open a web browser on Your connected PC and input on the URL field the IP address set at the Librae device You want to communicate with:
E.g. 10.0.0.1
You will get the Login page:

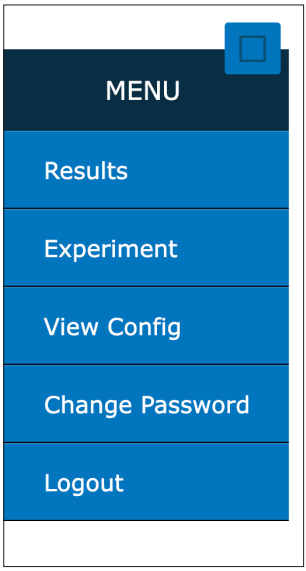


The default Login Password is **UgoBasile**; input the default Password to login



You wil be driven to the Result page.

Using the three white lines ☰ (menu) at the top left of the Page You will find the following Command:

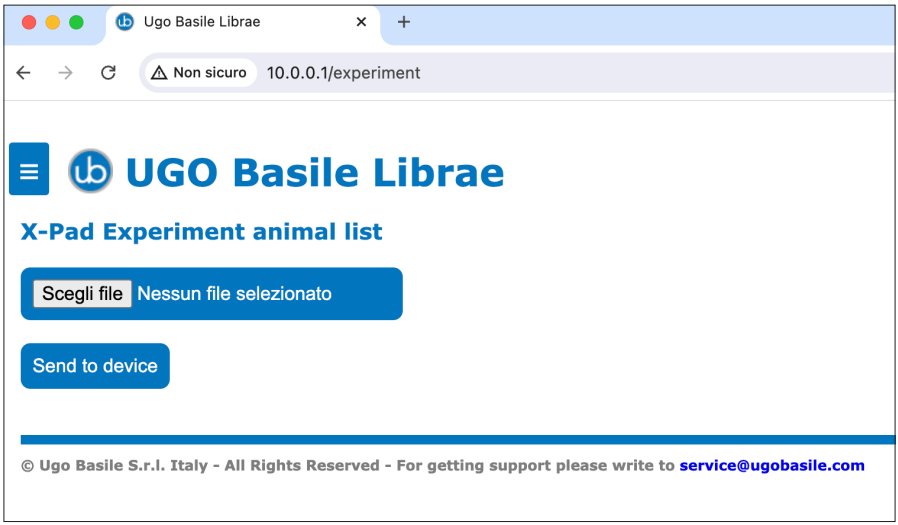


The **Result** command takes You at the Result page where You can Download the CSV result data file, in two forms:
RAW data file
CSV data file
CSV file contains the experiment result data as indicated in the result page with the following syntax:
Librae_Results_YYYY-MM-DD_HHMMSS.csv
Where YYYY-MM-DD_HHMMSS represent the download date and time

The RAW file contains the graphical data of the 2 paw weight and has the following syntax:
Librae_Results_YYYY-MM-DD_HHMMSS_raw.csv
Where YYYY-MM-DD_HHMMSS represent the download date and time

Pressing the correspondent button You will find the files into your PC download folder.

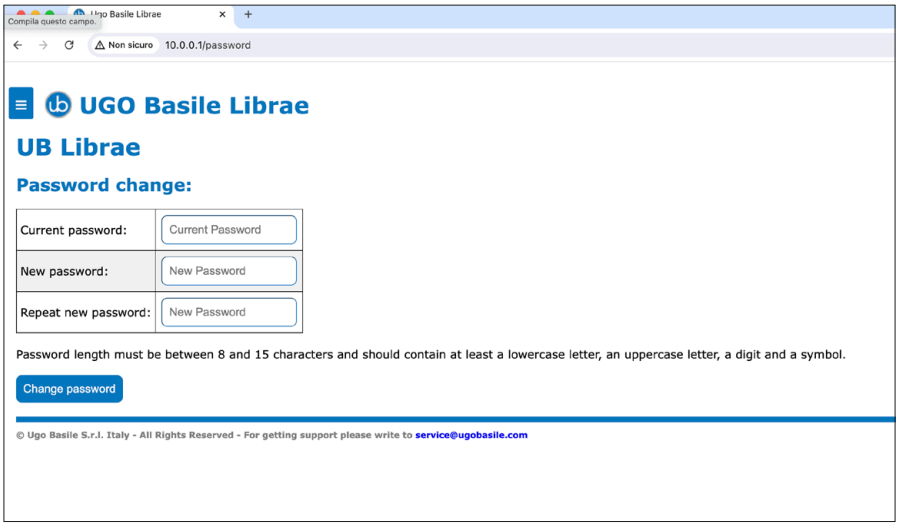
The **Experiment** command gives You the ability to load an experiment parameters file, created with the X-Pad Windows App., into the Librae device.



Pressing “Scegli File” (which is in Italian in this pic, while the operative system of this PC is in Italian language, but You will get “Select File” if Your PS is set in English language.. You can select the previous created X-Pad file to be loaded into the Librae device, where You can check at the Experiment page the data loaded.

The **View Config** command drives You to a system information page for service purpose only.

The **Change Password** menu item is the way to change the default password with Your personal Password.
Entering this page You will be asked to input the current password in the first field (which is UgoBasile in case of a new device or a reset ones)
An entering two times the new password.
Please read the Password rules indicated on the Web page.



The **Logout** menu item Disconnect You from the Librae device.

4.18 Connections

4.19 Communication port connection

Librae Incapacitance Tester is provided with a D-sub (DA-15 Female) TTL I/O port (see Figure 3.8.2). This port can be used to synchronize some events with external instruments or acquisition systems. TTL Output signal are electrically isolated to provide an electrical barrier between Librae Incapacitance Tester and any other external device.

TTL signals are refereed to Power Ground (pin 14 and pin 15)

Refers to Figure 4.8.1.1 and Table 4.8.1.1 for connector pin out

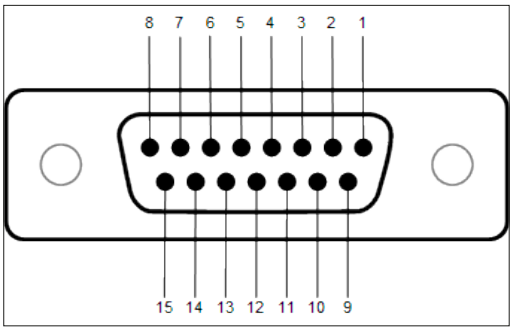


Figure 4.8.1.1

DB-15 Pin#	Signal Name	Signal Type	Description
1	Start/Stop	TTL OUT	Start -> TTL High Level Stop -> TTL Low Level
2	Manual/Autostart	TTL OUT	Manual -> TTL High Level Autostart -> TTL Low Level
3	Reserved	TTL OUT	Reserved
4	Reserved	TTL OUT	Reserved
5	Reserved	TTL OUT	Reserved
6	Reserved	TTL OUT	Reserved
7	Reserved	TTL OUT	Reserved
8	Reserved	ANALOG OUT	Reserved
9	Reserved	TTL IN	Reserved
10	Reserved	TTL IN	Reserved
11	Reserved	TTL IN	Reserved
12	Reserved	TTL OUT	Reserved
13	Reserved	TTL OUT	Reserved
14	GND	POWER	Power Ground
15	GND	POWER	Power Ground

Table 4.8.1.1

NOTE: TTL OUT is designed for connection with scientific instruments! DO NOT CONNECT ANY POWER DEVICE!

NOTE: DO NOT SINK a current more than 10mA from each TTL pin. DAMAGE WILL OCCUR

5 Maintenance

While any service or repairs of the instrument are performed by Ugo Basile, this section describes normal maintenance procedures that can be performed at your facility.

UNPLUG THE POWER CORD BEFORE CARRYING OUT ANY MAINTENANCE WORK

5.1 Electrical

To inspect and/or replace the fuses, disconnect the mains cable first! Insert a miniature screw-driver in the slot indentation and snap out the slide which houses the fuses. Use T400mA fuses for operation at both 230 or 115 Volts.
Snap in the fuse slide: the mechanical "click" ensures that it is locked.

5.2 Cleaning/disinfection

The Librae unit (47880) does not require any maintenance apart from normal cleaning.

Do not use organic solutions on the restrainer and cabinet, as they are liable to impair the transparency of the restrainer and crack the acrylic component and the touch pad.
Cotton wool and water can be used for cleaning purposes. To disinfect, use a non-alcoholic disinfectant, or H_2O.

5.3 Long Inactivity

The instrument does not require any particular maintenance after long inactivity, except cleaning

5.4 Customer Support

For any further information you may require concerning the use and/or maintenance of the Librae Incapacitance Tester, please do not hesitate to contact our service department (or our local distributor) either directly of via our support page. Before sending any instrument to our factory for repair, please contact our logistics department to obtain a return authorization number (RMA) and shipping/packing instructions. We may not be held responsible for damages caused during transport due to poor packing. Whenever possible, please use the original packing.

6 Specifications

General	
Command Input	4.3" touch-screen (resistive)
Read-out	4.3" TFT touch-screen
Power Requirements	Universal input 85-264 VAC, 50-60Hz, 15W max.
Sound Level	< 45dB(A)
Operating Environment	10°C to 40°C; 5% to 95% RH (non-condensing)
Operation	
Animal weight (per paw)	from 20g to 4400g
Precision	from 0.05% to 0.1%
Measurement Duration	from 1s to 360s
Measurement Mode	Manual and Auto start
Auto start parameters	Weight threshold, Stabilization Threshold, Sustain Time
Weight Averaging	1 sample to 10 samples
Start Experiment	Start button, pedal switch, or Auto start
Stop Experiment	Stop button, pedal switch, or elapsed time-out
Data export	.csv format, from USB key (provided)
TTL Output	Start/Stop, Measurement Mode. 5VDC +/- 10%; 10mA MAX
Physical	
Total Weight	2.5kg
Shipping Weight	5kg
Dimensions (without restrainer)	25cm(w) x 31cm(d) x 13cm(h)
Dimensions (including restrainer)	25cm(w) x 31cm(d) x 25cm(h)
Packaging dimensions	68cm(w) x 34cm(d) x 28cm(h)
Warranty	
Product Warranty	The Librae Incapacitance Tester unit (47880) is covered by a 12-month warranty. Coverage can be increased to 24-months for free when you register your instrument on the UGO BASILE website.

Other Ugo Basile products related to this device
visit ugobasile.com web site for details

TGR - Thermal Gradient Ring (Zimmermann's method)

The original Plantar Test for thermal stimulation (Hargreaves Apparatus)

Dynamic Plantar Aesthesiometer (DPA) for mechanical stimulation

Thermal Place Preference (TPP Test) for Mice & Rats

Plethysmometer, the 1st and original device for measuring paw volume & oedema

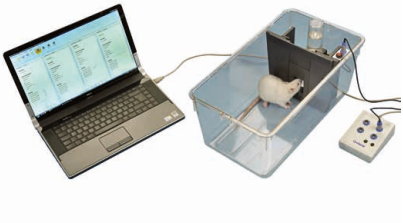
Analgesy-Meter the 1st and original Randall-Selitto paw-pressure test

Other Ugo Basile products related to this device
visit ugobasile.com web site for details

Hot/Cold Plate for screening of thermal hyperalgesia/allodynia

e-VF Handheld Electronic Von Frey of original design

PAM Pressure Application Measurement (for joint pain)



Orofacial Stimulation Test (Fehrenbacher, Henry, Hargreaves method)

Tail-Flick Unit, thermal stimulation of the tail, according to D'Amour & Smith method

I.R. Heat-Flux Radiometer for Tail and Plantar Test

Back to contents

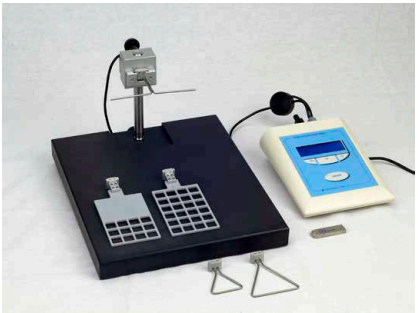
Additional Ugo Basile products for motory coordination
Visit ugobasile.com web site for details

The 1st, original Mouse RotaRod for motory coordination studies

OPERON (Papaleo-Scheggia's method) for Attentional Set-Shifting Task

Fear Conditioning System - ANYmaze

Rodent Treadmill NG with interchangeable lane assembly for rats or mice



GSM Grip-Strength Meter for mice and rats