

Instruction manual

Librae Incapacitance tester

July 2020 revision 2.2



Pain
Inflammation



SKU: 47883/ 47882/ 47885/ 47880-001



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.



Your science, our devices
More than 30.000 citations

Instruction Manual
July 2020 Revision 2.2



CE CONFORMITY STATEMENT

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We hereby declare that

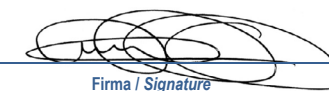
Instrument. **Librae Incapacitance tester for mice and rats**
SKU **47883/47882/47885/47880-001**

*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

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 Autostart 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.

A range of related products is featured at the end of this manual and also at ugobasile.com



What is in the box?

Librae package contents::

SKU: 47883

The Librae Incapacitance tester for **mice**
1 transparent plastic restrainer for mice
1 Pedal switch
1 Power cord in accordance with your country's requirements
1 Calibration weight
1 USB key containing a copy of:
This instruction manual
Quality control and warranty certificate

SKU: 47882

The Librae Incapacitance tester for **rats**
1 transparent plastic restrainer for rats
1 Pedal switch
1 Power cord in accordance with your country's requirements
1 Calibration weight
1 USB key containing a copy of:
This instruction manual
Quality control and warranty certificate

SKU: 47885

The Librae Incapacitance tester for **mice and rats**
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 Calibration weight
1 USB key containing a copy of:
This instruction manual
Quality control and warranty certificate

Additional optional items:

SKU: 47880-003

Librae Incapacitance tester restrainer for mouse in clear perspex, width 40 mm

SKU: 47880-002

Librae Incapacitance tester restrainer for rat in clear perspex, width 64 mm

SKU: 47880-320

Librae Incapacitance tester calibration weight 100 gr.

SKU: 47880-321

Librae Incapacitance tester magnetic pads (pair left + right)

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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, an original Ugo Basile design, see paragraph 2.1, incorporating the 2 force sensors, touch screen controls and a display screen for viewing data trends and results
- A Plexiglas restrainer for mouse or rat (or both depending on the model), see paragraph 2.2.
- A pedal switch to start the experiment (or use touch screen to start the experiment)

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.

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.

2.1.2 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.

2.1.3 Touch-screen command/display

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

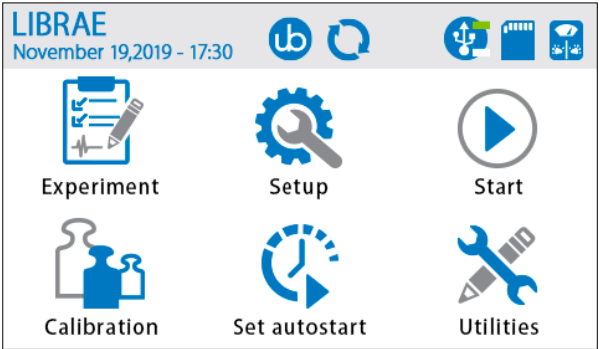


Figure 2.1.3.1, "Main Menu"

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.

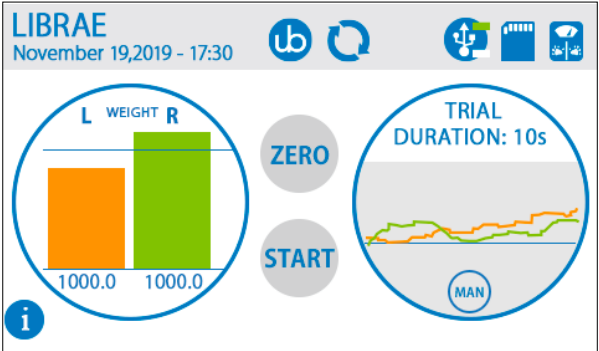


Figure 2.1.3.2, Measurement page

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

LIBRAE		
November 19, 2019 - 17:30		
DATE - TIME:	ID:	S#:
TREATMENT:	STAGE:	TRIAL:
PROTOCOL:	STAGE:	TRIAL:
DURATION:	PEAK L:	PEAK R:
MODE:	AVG L:	AVG R:

Figure 2.1.3.3, "Results Page"

2.1.4 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).

2.2 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.

Restrainers with custom measurements can be made on request. Please send an email to: sales@ugobasile.com

2.3 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 Autostart 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)

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 support@ugobasile.com

If after having tested the instrument, it fails to meet normal performance standards, please contact our after sales service, see paragraph 5.4-Customer Support.

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 (see paragraph 5.4-Customer Support), specifying the serial number of your instrument.

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.

Adjust the four rubber feet until the instrument is level.

Position the mouse or rat restrainer onto the base plate.

Do not lift or move the combined instrument when assembly is completed.

Do not incline the device, as the Perspex restrainer may accidentally fall off the plate. Please do not block the lateral ventilation grids.

For proper performance, ensure there is a free space of 20cm on the left, right and rear of the instrument.

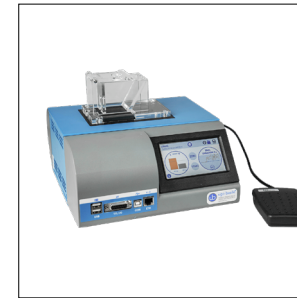


Figure 3.4.1

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. Use Ugo Basile accessories and parts only
2. Immediately disconnect and replace a damaged power cord
3. Do not obstruct easy access to the power module
4. Do not obstruct the grids on the sides of the cabinet, see paragraph 3.4
5. Do not operate in hazardous environments or outside prescribed environmental limitations, see paragraph 6.0
6. 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 supply
- 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 manufacturer
- Servicing carried out by unauthorized personnel

See also paragraphs 2.1.1 and 2.1.2

3.8 Connection

Connect the mains cord between the power socket of the Librae and the power outlet, provided with a reliable earth connection.

Connect the pedal switch to the Librae Incapacitance Tester (blue bushing Figure 3.8.1). Note that the connector of the pedal switch is provided with a polarization key; align it with the blue bushing, and gently push in. To remove the connector, gently pull out.

DO NOT ROTATE THE CONNECTOR: PERMANENT DAMAGE WILL OCCUR



Figure 3.8.1

The connection module on the front panel (Figure 3.8.2) encompasses the following connectors, from left to right:

1. Upper and lower USB ports: enable data exchange (configurations & results) with a PC, and allows firmware upgrades, via the USB flash drive provided in the box (see paragraph 4.7.1)
2. TTL I/O: 15pins D-SUB connector, provides TTL input and output for start/stop command and mode settings (see paragraph 4.8.1 for pin-out configuration)
3. COM: Reserved for maintenance and service purpose
4. Ethernet connector: Reserved, not to be used

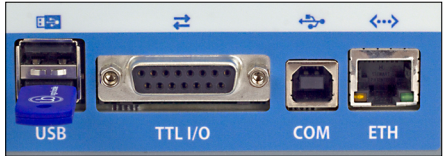


Figure 3.8.2



USB Hard Disk

If the internal memory is corrupted, the Instrument will ask you to insert a USB memory key into the lower USB port. This allows you to run the experiment. The instrument needs to be checked by UGO BASILE personnel for maintenance.

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

On the home page, press the “UB logo” button to view software and memory information, as shown in Figure 4.1.3. Press the “UB logo” again to return to main menu page.



Figure 4.1.3

4.1 Home Page

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

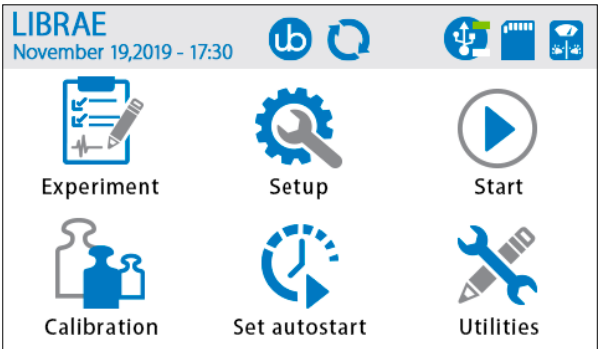


Figure 4.1.1 - Main Menu, with UB logo Home Page

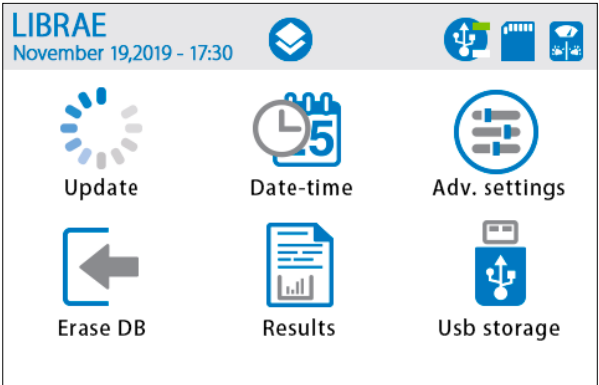


Figure 4.1.2 - Utilities Main Menu, with folder logo Home Page

4.1.1 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:

1. Press the SETUP icon to configure your experiment (Refer to paragraph 4.3)
2. Press the EXPERIMENT icon to fill in protocol, treatment, animal ID, etc... (Refer to paragraph 4.2)
3. If desired, configure Autostart parameters to operate with Autostart mode (Refer to paragraph 4.6)
4. Ensure that no animal (or other load) is present on the foot pads, and press START icon (Refer to paragraph 4.4)
5. Place the animal restrainer in the correct position.



6. 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.



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



8. When ready, press START button (or pedal switch) to run the experiment
 - 6.1 If Autostart Mode is enabled, wait for the instrument trigger for automated start. Refer to paragraph 4.6 for more details.
9. At the end of an experiment, a result window is displayed: you can accept or reject the result (Refer to paragraph 4.7.5).
Your experiment is complete, and Librae is ready to perform a new measurement

4.1.2 System Icons

System icons are shown in Figure 4.1.1.

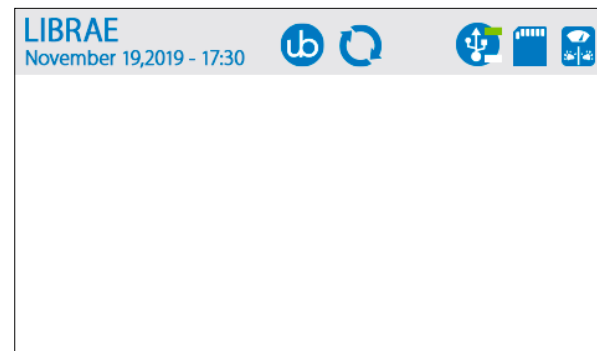


Figure 4.1.1.1

1. Date and Time: shows the current date and time. To modify it, go to UTILITIES (see paragraph 4.7.2).
2. UB Logo: shows software and memory information (see paragraph 4.1).
3. Update Firmware: Librae Incapacitance Tester is ready to install the update. See paragraph 4.7.1 for details.
4. USB memory stick:
 - 4.1 Grey: no USB stick detected (default)
 - 4.2 Green up: Upper USB memory stick detected and enabled
 - 4.3 Green down: Lower USB memory stick detected and enabled
5. SD internal memory:
 - 5.1 Blue: SD card detected and enabled (default)
 - 5.2 Grey: SD card failure
6. Scale icon:
 - 6.1 Grey: no acquisition in progress (default)
 - 6.2 Blue: acquisition in progress

4.1.3 Home Page Icons

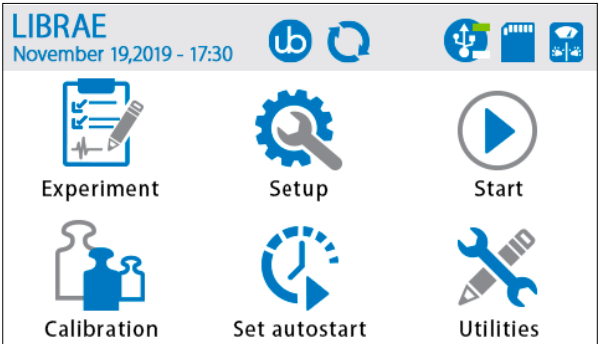


Figure 4.1.1 - Main Menu, with UB logo Home Page

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

1. Experiment: Enter information about the test, including treatment, protocol, stage, trials (see paragraph 4.2)
2. Setup: Configure the weight of the animal, experiment duration, and function mode (see paragraph 4.3)
3. Start: Perform the experiment (see paragraph 4.4)
4. Calibration: Calibrate the Librae Incapacitance Tester (see paragraph 4.5)
5. Set Autostart: Configure the autostart parameters (see paragraph 4.6)
6. Utilities: Change data and time, erase the database, copy the experimental results into a USB memory stick, and more. See paragraph 4.7 for more details.

4.2 Experiment

The screenshot shows the LIBRAE Experiment form page. It has the same header as Figure 4.1.1. Below the header, there are five input fields: 'TREATMENT' (a single line), 'PROTOCOL' (a single line), 'STAGE' (a single line), 'TRIAL' (a single line), and 'ID' (a single line). The 'TRIAL' and 'ID' fields are grouped together.

Figure 4.2.1 - Experiment form page

TREATMENT: treatment or drug delivered to the animal.
Depress the text field to enable a virtual keyboard (Figure 4.2.2).
This is an alphanumeric field: enter a maximum of 12 characters.



Figure 4.2.2 - Characters Virtual Keyboard



Figure 4.2.3 - Numeric Virtual Keyboard

PROTOCOL: name of the applied protocol. Depress the text field to enable a virtual keyboard.
This is an alphanumeric field: enter a maximum of 12 characters. Press OK to confirm and exit.

STAGE: number of stages to be performed. Depress the text field to enable a virtual keyboard.
This is an alphanumeric field: enter a maximum of 12 characters. Press OK to confirm and exit.

TRIAL: number of trials to be performed. Depress the text field to enable a virtual keyboard.
This is an alphanumeric field: enter a maximum of 12 characters. Press OK to confirm and exit.

ID: Identification number of the animal.
Depress the text field to enable a virtual keyboard.
This is an alphanumeric field: enter a maximum of 12 characters. 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.

4.3 Setup

Use the Setup page (Figure 4.3.1) to configure the parameters of the experiment:

1. **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 autostart 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. Refer to paragraph 4.6 for more details

NOTE: in manual start mode, the correct value rescales the graph, optimizing the display of graphical data.
2. **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).
3. **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. Autostart mode lets Librae automate the start of the experiment.

Refer to paragraph 4.6 for more details.

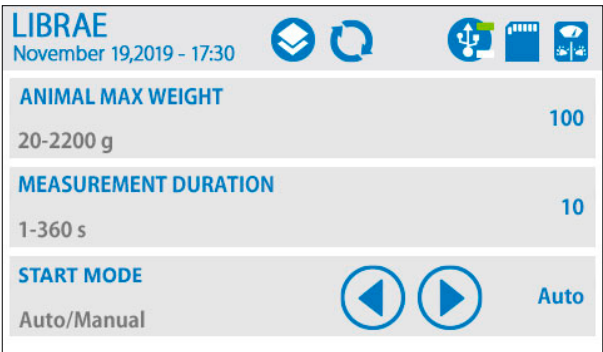


Figure 4.3.1

4.4 Start

START 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.

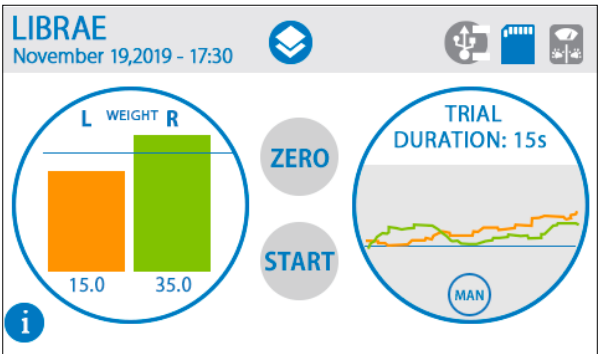


Figure 4.4.1

Horizontal

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

1. (i) **INFO button.** This button displays a pop-up windows with experiment details
2. **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.

3. **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.

4. **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.
5. **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.

4.5 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

DO NOT REMOVE the weight during the calibration procedure. 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..

NOTE: During calibration procedure, the values are stored ONLY after the confirmation of the last step. Before that, it is possible to escape the procedure just by pressing CANCEL button and NO DATA WILL BE STORED.

4.6 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.

1. 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)
2. 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%.
3. 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 autostart mode is selected.

1. Configure the SETUP menu (refer. to paragraph 4.3) as follows:
 - 1.1 Animal Max Weight: 60g;
 - 1.2 Measurement Duration: 15s;
 - 1.3 Start Mode; Auto.
2. Press the SET AUTOSTART icon, and set the parameters as follows:
 - 2.1 Autostart Weight Threshold: 60%. With this value, Librae considers the presence of the animal ONLY IF MORE THAN 36g (60% of 60 grams) are measured.
 - 2.2 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.
 - 2.3 Autostart Sustain Time: 3s. With this value Librae NEEDS AT LEAST 3S in which the previous conditions are satisfied.
3. Go to Home Page Menu, and press START button (Figure 4.6.2);

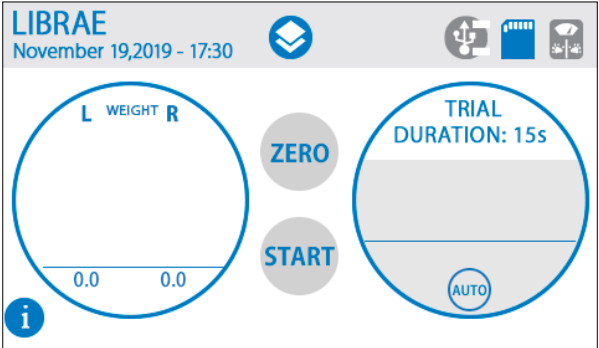


Figure 4.6.2

4. START the experiment (Figure 4.6.3);

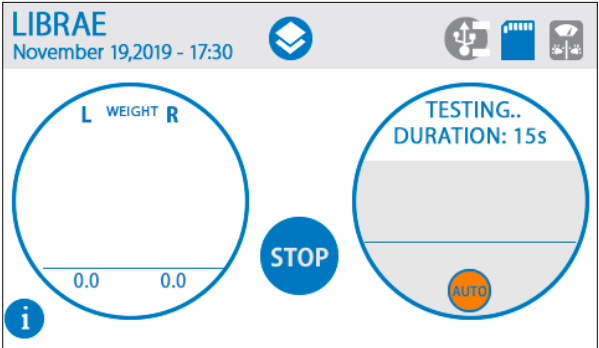


Figure 4.6.3 - Autostart is waiting for the minimum weight. AUTO icon is ORANGE.

5. Put the animal inside the restrainer (Figure 4.6.4);

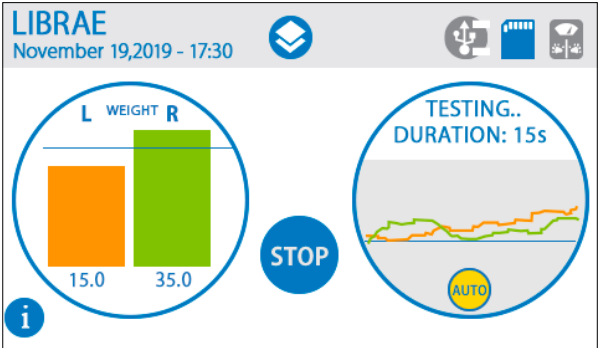


Figure 4.6.4 - Autostart is waiting for the weight stabilization. AUTO icon is YELLOW.

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

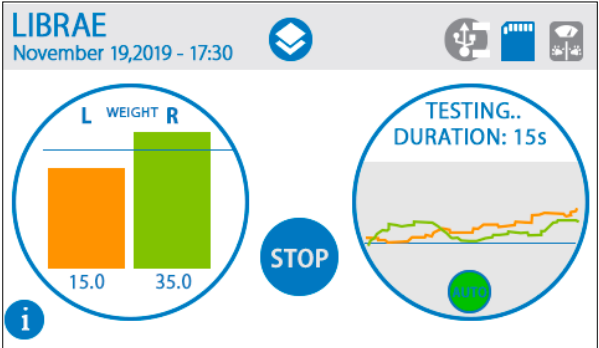


Figure 4.6.5- Autostart is waiting for stabilization time to elapse. AUTO icon is GREEN.

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

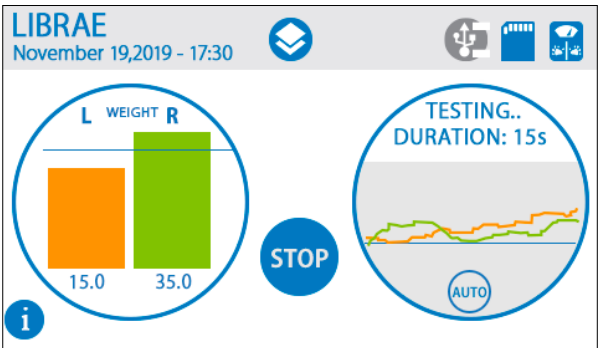


Figure 4.6.6 - Experiment is running

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 experiment can be started.



Figure 4.6.7

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

4.7 Utilities

UTILITIES menu (Figure 4.71) contains six submenus for setting the instrument, exporting data, checking results, and more.

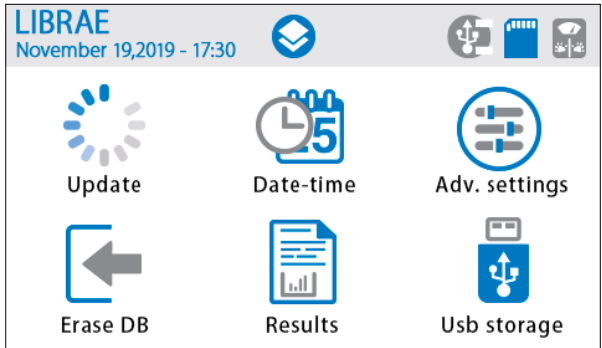


Figure 4.71

4.7.1 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 check Ugo Basile website for the latest version, (www.ugobasile.com)

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

1. Download the software update from Ugo Basile website
2. Copy the update file into a USB memory key.
3. Insert the USB memory KEY into Librae Incapacitance tester.
4. Wait for update system icon (refer. to paragraph 4.1.1)
5. Press Update button and wait for a reboot.

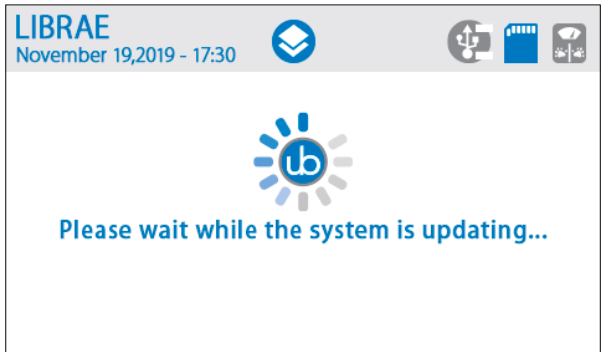


Figure 4.7.1.1

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.

4.7.2 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

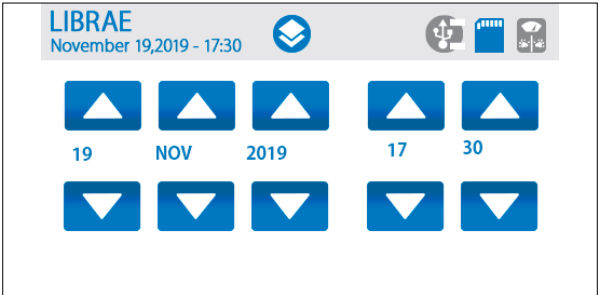


Figure 4.7.2.1

4.7.3 Advanced Settings

Advanced setting allows users to change the weight averaging parameter (Figure 4.7.3.1). Numeric values range from 1 sample to 10 samples. This parameter affects ONLY the visualization of the graph during the experiment.

NO DOWNSAMPLING OR DECIMATION WILL BE APPLIED TO MEASUREMENTS.

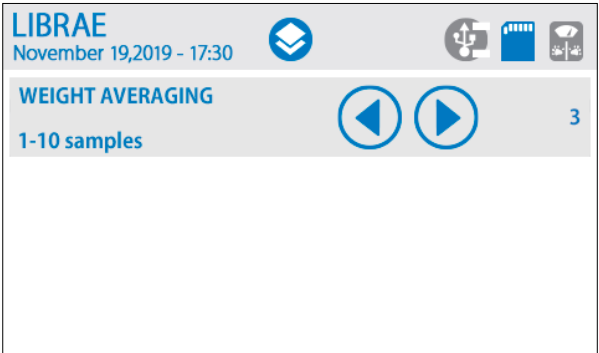


Figure 4.7.3.1

4.7.4 Erase DB

Erase DataBase 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!

4.7.5 Results

Results button shows (Figure 4.7.5.1) the results of the experiments stored inside Librae Incapacitance Tester.

Every result box contains:

- 1. Date and time of the experiment
- 2. Treatment, ID, protocol, stage and trial
- 3. Experiment accepted or rejected
- 4. Duration
- 5. Functional mode
- 6. 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.

4.7.6 USB Storage

USB Storage menu (Figure 4.7.6.1) allows to save experimental data to USB memory key,

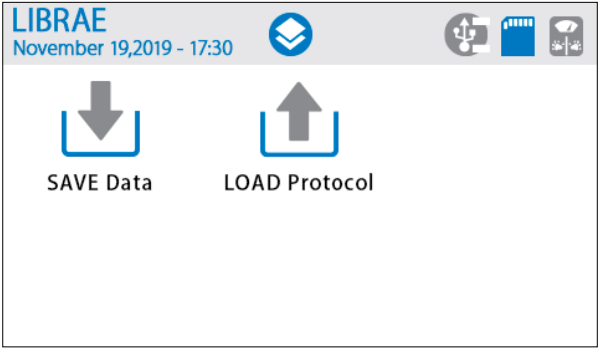


Figure 4.7.6.1

Data will be exported in .csv format. Use a text editor, spreadsheet or Microsoft Excel to open and analyze your experiment data.

NOTE: INSERT a USB memory key BEFORE SAVING or LOADING any data.

4.8 Connections

4.8.1 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 referred to Power Ground (pin 14 and pin 15)

Refers to Figure 4.8.1.1 and Table 4.8.1.1 for connector pinout

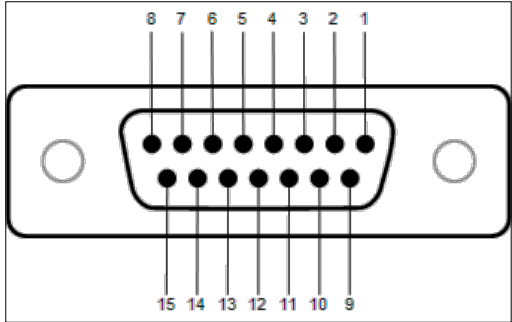


Figure 4.8.1.1

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 H₂O.

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 or 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

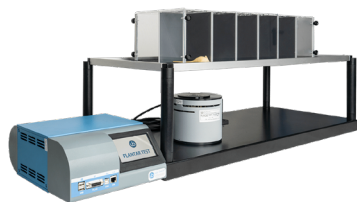
General	
Command Input	4.3” touch-screen (resistive)
Read-out	4.3” TFT touch-screen
Power Requirements	Universal input 85-264 VAC, 50-60Hz, 15W max.
Sound Level	< 45dB(A)
Operating Environment	10°C to 40°C; 5% to 95% RH (non-condensing)
Operation	
Animal weight (per paw)	from 20g to 4400g
Precision	from 0.05% to 0.1%
Measurement Duration	from 1s to 360s
Measurement Mode	Manual and Autostart
Autostart parameters	Weight threshold, Stabilization Threshold, Sustain Time
Weight Averaging	1 sample to 10 samples
Start Experiment	Start button, pedal switch, or Autostart
Stop Experiment	Stop button, pedal switch, or elapsed timeout
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



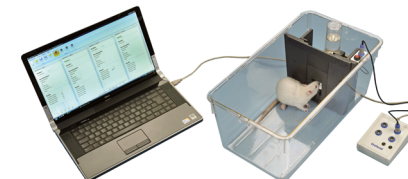
Hot/Cold Plate for screening of thermal hyperalgesia/allodynia



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 Flick and Plantar Test

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The 1st, original Mouse RotaRod for motory coordination studies



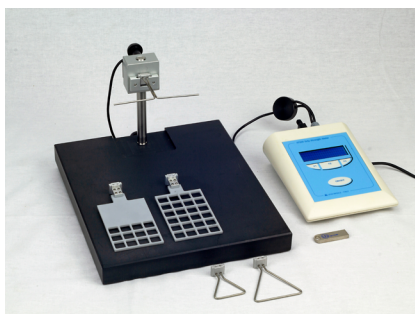
OPERON (Papaleo-Scheggia's method) for Attentional Set-Shifting Task



Fear Conditioning System - ANYmaze



Rodent Treadmill NG with interchangeable lane assembly for rats or mice



GSM Grip-Strength Meter for mice and rats

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