Instruction manual

RotaRod product family

Revision 4.1 - Sept. Y24

MOUSE RAT

Motor Coordination

Products SKU: 47650, 47750, 47750-D01

Valid for devices with firmware release from version 4.0.3.0 and later

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TRANSFORMING IDEAS INTO INSTRUMENTS

SAFETY CONSIDERATIONS

Although this instrument has been designed with international safety standard, this manual contains information, cautions and warnings which must be followed to ensure safe operation and to retain the instrument in safe conditions.

Service and adjustments should be carried out by qualified personnel, authorized by Ugo Basile organization.

Any adjustment, maintenance and repair of the powered instrument should be avoided.
If inevitable, it should be carried out by a skilled person who is aware of the hazard involved.

Capacitors inside the instrument may still be charged even if the instrument has been disconnected from its source of supply.

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CE CONFORMITY STATEMENT

Manufacturer	**UGO BASILE srl**
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We hereby declare that the following instruments:

SKU: 47650 RotaRod for mice
SKU: 47750 RotaRod for Rats
SKU 47750-D01 RotaRod for Fat Rats

are 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*

September 2024

Date

Firma / Signature

Product features and general information

The “Rota-Rod” technique has been originated by a 1957 paper of N.W. Dunham and T.S. Miya (see paragraph 9.1-Method Papers) and has proved to be of great value in research involving screening of drugs which are potentially active on motor co-ordination.

Ugo Basile designed the first industrial Rota-Rod in the 1960s. The name we coined soon became so popular, now everybody knows this instrument as RotaRod!

The Rota-Rod is the reference test to screen drugs potentially active, or having side effects, on motor coordination.

The 47650 Rot-Rod, is an evolution of the original model and the result of many years of research in cooperation with the latest development in behavioral and pharmacological research.

What's in the box and optionals

SKU: 47650 Mouse RotaRod package content:
1 Mouse RotaRod device.
5 Stainless still trip boxes for Mice
1 Power cord according to your country outlet.
1 USB pen drive containing this instruction manual and the quality control and warranty certificate.

SKU: 47750 Rat RotaRod package content:
1 Rat RotaRod device.
4 Stainless still trip boxes for Rats
1 Power cord according to your country outlet.
1 USB pen drive containing this instruction manual and the quality control and warranty certificate.

SKU: 47750-D01 Fat (big rats) Rats RotaRod package content:
1 Fat Rat RotaRod device.
4 Stainless still trip boxes for Fat Rats (big Rats)
1 Power cord according to your country outlet.
1 USB pen drive containing this instruction manual and the quality control and warranty certificate.

SKU: 47850 RotaRod combination package content:
1 Mouse RotaRod device.
1 Rat RotaRod device.
5 Stainless still trip boxes for Mice
4 Stainless still trip boxes for Rats
2 Power cord according to your country outlet.
2 USB pen drive containing this instruction manual and the quality control and warranty certificate.

Optional items ordering informations:

SKU	Use for	Item description
47650-325	***Mouse RotaRod***	Mouse RotaRod black enlarger with grooves 60 mm diameter instead of original 30 mm (5 pieces set, magnetic fixing)
47650-326	***Mouse RotaRod***	Mouse RotaRod black enlarger with rubber (smooth). 60 mm diameter instead of original 30 mm (5 pieces set, magnetic fixing)
47650-327	***Mouse RotaRod***	Mouse RotaRod Complex Wheel (30 bars)
47750-325	***Rat RotaRod***	Rat RotaRod black enlarger with grooves 120 mm diameter instead of original 60 mm 4 pieces set, magnetic fixing)
47750-326	***Rat RotaRod***	Rat RotaRod black enlarger with rubber (smooth). 120 mm diameter instead of original 60 mm (4 pieces set, magnetic fixing)
47750-327	***Rat RotaRod***	Rat Rota-Rod Complex Wheel (22 bars)

Contents

1 Principle of Operation

When a mouse falls off its cylinder section onto the trip-box below, the plate boxes and the corresponding magnetic switch is activated, thereby recording the animal endurance time in seconds.

The display shows the actual rotations per minutes (R.P.M.). At the end of a run, the display shows for each animal the running time, the rotation mode and the rotation speed at the time the animal fell off, combined with information pre-set by the user.
The distance is calculated according to the rod diameter.

The record related to each lane can be zeroed during the operation by resetting the related trip plate. This allows the operator to place a fresh mouse on a particular rotor lane while the mice on the other lanes are running (only in constant speed mode).

1.1 Notes on the instruction manual

This instruction manual included in the box is necessary for a correct installation of the instrument.

Please save this manual, keep it ready to be consulted by the qualified personnel using the instrument.

Our manuals are available as free download on our web site, www.ugobasile.com
For any additional information and/or assistance, you are welcome to contact our service department, first of all by specifying the serial number of your instrument at service@ugobasile.com

RotaRod support QR code:

Ugo Basile RotaRod product family is composed by 3 products for different animal use: the Mouse RotaRod, the Rat RotaRod and the Fat (big) Rats RotaRod; this instruction manual explains and covers all the functions of all the three versions of the Ugo Basile RotaRod while the software functionality are exactly the same on all the models.
Please note that the pictures showed in this manual refers to the Rat version of the RotaRod and device name apart all the other functions are exactly the same for all the other versions.

1.2 Safety instruction

The following guide lines must be followed to ensure safe operation:

DO NOT attempt to open or perform any service work before having contacted Ugo Basile support team
DO NOT connect up human subjects

1.3 Intended use

The device is intended for investigation use on laboratory animal only.
DO NOT USE THIS DEVICE ON HUMANS

1.4 Additional safety consideration

Use original accessories and spare parts only
Immediately disconnect and replace damaged main cord
Do not operate in hazardous environment or outside prescribed environmental limitation
Do not spray any liquid on the connectors, or other parts
Ugo Basile cannot in any way and form be held responsible for damage caused to things and people and warranty will be void, 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 component, accessories or parts with others not approved by the manufacturer
- Servicing carried out by unauthorized personnel.

2 Instrument Description

Ugo Basile RotaRod product family is made by 3 different models to be used for 3 rodent sizes:
RotaRod for Mice
RotaRod for Rats
RotaRod for fat (big) Rats

All RotaRod models work in the same manner but differ for sizes; they consist in a number of
cylinders, which are suitably machined to provide grip, plus a number of dividers enabling a number of animals to be on the rotor simultaneously.

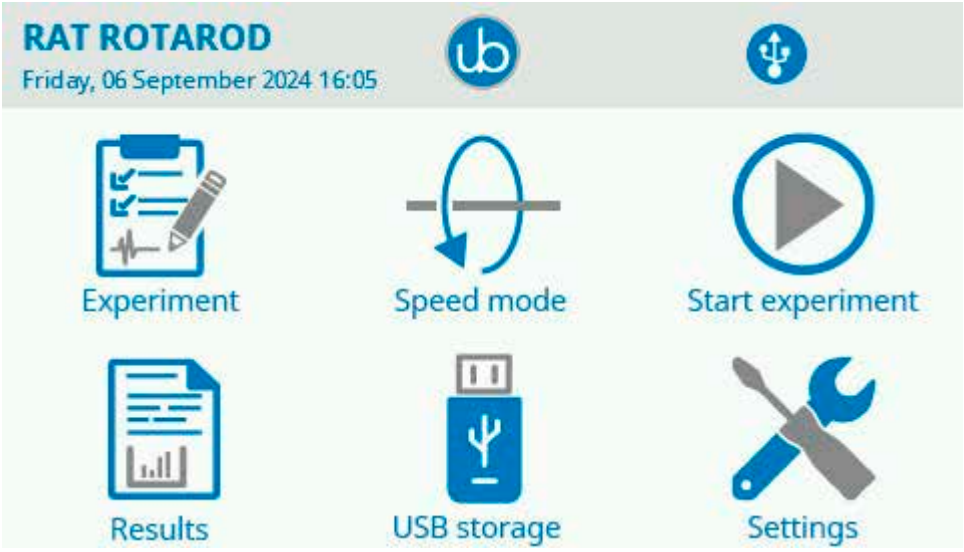
Model for	Rod Q.ty	Rod ø.	Divider NBR	Divider ø.	Lane	Fall h.
Mice	5	30 mm	6	25 mm	57 mm	16 cm
Rat	4	60 mm	5	46 mm	90 mm	30 cm
Fat Rat	4	80 mm	5	46 mm	127 mm	35 cm

The rotor, whose R.P.M. can be pre-set by the operator, turns on ball bearings. It is driven by a silent D.C. geared motor.

Drive speed is unaffected by voltage variations, friction, or wear. This ensures that all trials can be repeated in constant operating conditions.

All models incorporates a 4"3 touch-screen, for basic setting and monitoring, via an intuitive panel.

The picture shows the Rota-Rod main menu.



2.1 Touch-screen command/display

All RotaRod models incorporates a 4”3 touch-screen, for all settings and monitoring, via an intuitive panel. This panel can be used both with or with out wearing nitrile gloves.

The Ugo Basile RotaRod plate touch screen uses resistive technology and can be used with fingers, gloves or (recommended) a display pencil.
Resistive touch-screens (differently from commercial capacitive screens) are a better choice for laboratory applications because of:
• High resistance to dust and water
• Better use with gloved hand or stylus

2.2 Connection front panel

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

1. USB port: enables data export to a PC (via a USB pen drive), and allows firmware upgrade.
   Moreover, experiment created with the X-Pad software (see specific manual for details) can be uploaded into the device by using a simple USB pen drive.
   The lower USB connector is covered and has not to be used.
   DO NOT REMOVE THE USB CONNECTOR COVER

2. TTL I/O: 15pins D-SUB connector, provides TTL input and output for start/stop command and monitor the start with external data acquisition device..

3. COM: Reserved for maintenance and service purpose, not to be used.

4. Ethernet connector (RJ45):for LAN connection, provides communication with a web browser to load experiment from the Ugo Basile X-Pad software and for experimental data retrieving, with out the need of a USB pen use.

Connection front panel

3 Installation

3.1 Unpacking & preliminary check

Check the content of the shipment for completeness and visually inspect the instrument as soon as you take it out from the packaging.

If the box looks damaged, inform the courier and provide a conditional signature (not a full signature).

Once unpacking, if the instrument is damaged, notify our company, by writing an email to
support@ugobasile.com

If after a test, the instrument fails to meet the expected behaviour and performance, please contact our after sales service department at sales@ugobasile.com.

Protect the environment:
Dispose of packaging properly, according to existing and applicable waste management rules and regulations.

Open the packaging box and take the instrument out the box; make sure to remove all the packaging material form the apparatus before placing it in the experiment Lab room.

3.2 Assembling the instrument

Place the device on a stable and flat surface.
To guarantee the rated performance, a free area should be left around the instrument of at least 20 cm left, right and rear.

Choose a place with sufficient space to hold the RotaRod and all the other instruments/equipments you will need during the experiment.

Mount each trip box on the the base, sliding them from the front to the rear till You feel the rear magnet connected; lift and push down the trip box to test the correct mounting; when lifting it up they need to stay up. They are calibrated to stay up and move down when an animal fall on it to close the circuit and tell the electronics the animal presence.

Sliding trip box in position

Trip box mounted in the correct position

The RotaRod does not need to be levelled, base foots does not have regulation, just ensure the table holding the apparatus stable and levelled.

Remove the yellow label from the apparatus display and register Your device on register.ugobasile.com

Product registration is essential, while You will receive one additional year of warranty period registering it. No registered devices will have one warranty period year less.
WE STRONGLY ADVISE YOU TO IMMEDIATELY REGISTER YOUR DEVICE.

3.3 Power Connections

The Power Module (see figure below) is positioned on the right side of the rear panel and incorporates, from left to right (rear view), the fuse holder, the ON/OFF switch, the inlet connection for the power cord.

Power module

The fuse compartment holds two fuses. Use (T2.0A) timed fuses for operation at both 115 or 230V, for fuse replacement.
Make sure your power cord is provided with a reliable ground connection.

Connect the mains cord between the power socket of the RotaRod.
You can now switch the device ON

3.4 LAN connection

You may want to communicate from a standard PC to the RotaRod via **L**ocal **A**rea **N**etwork.
This connection makes possible to load experiment data created with the Ugo Basile X-Pad software (Windows app.) and the experimental data retrieving from the device to the PC without the need of use the USB pen.

You do have two ways to cable the device to a PC:

1. Connect the device directly to a PC Ethernet port by an Ethernet standard cable.
2. Connect the device to a LAN Switch/(wall LAN port) as part of a private or a Lab/Company network.

Despite the cabling You choose You need to consider:
LAN connection is based on TCP/IP protocol that needs a unique IP number to be assigned to the device as well as the appropriate Subnet mask number.

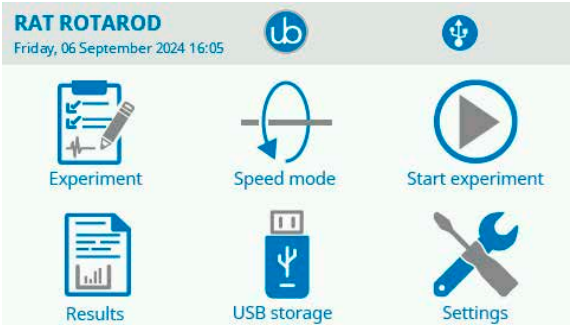
In case You decide to cable the device directly to a PC You will create a small LAN outside the company network and thus You will not need to have the IP number from Your IT administrator, unless You choose to use DHCP and let the server assign an IP address to the device.

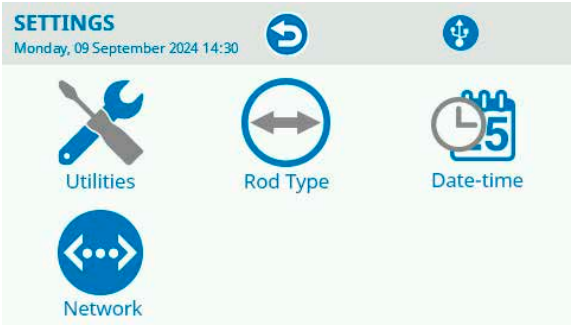
In case You want to cable the device into the company LAN You will need to ask Your IT administrator an IP number and a subnet mask to avoid conflict on the LAN.
Note that Default gateway number and DNS number are not necessary for this purpose.

Scenario 1 - device directly connected to a PC:

- You need to have an Ethernet cable (UTP Cat 5 minimum) of the necessary length to go from the device to the PC (not more than 100 mt.)
  Connect one end (Rj45 connector) into the Ethernet RotaRod port labelled “Eth” and the other end of the cable to Your PC Ethernet port.
  Be aware the not all PCs can be connected by a standard Ethernet cable, some old PCs needs a special Ethernet cable called “Ethernet cross cable”, if You find miss connection using a standard cable You may need to try with a cross one.

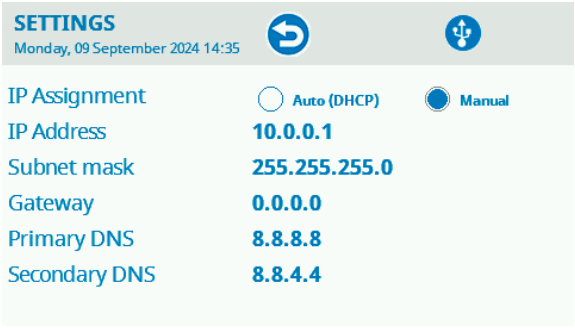
- Switch the device on and from the main menu press the Setting button and then Network, to enter into the Network configuration page.





Set the IP Assignment to Manual and assign an IP address pressing on the number at the of the text “IP Address”, delete the inserted number and digit 10.0.0.1, then press OK (this number will be the ID to reach the RotaRod)

Now press right the text “Subnet mask”, delete the inserted number and digit 255.255.0.0, then press OK.
Gateway, Primary DNS and Secondary DNS does not need to be configured.



Exit the Network page pressing the rounded arrow on top of the screen.

On Your PC (depending on the operating system You are running, Mac OSX or Windows or Linux) go to Your Ethernet card settings (the one You cable to the RotaRod)
You may have multiple Ethernet card on Your PC, be sure to choose the right one

and remember to switch off the WiFi to avoid confusion.

Configure the appropriate LAN card with the following data in manual mode:
IP address: 10.0.0.10
Subnet Mask: 255.255.0.0
Default Gateway, Primary DNS (DNS1) and Secondary DNS (DNS2) does not need to be configured.
Close the LAN card set-up

Open a Web browser on Your PC (Google Chrome is advisable to use but You may use as well Safari, Edge or Firefox or others)
On the browser address field digit the RotaRod IP address: http://10.0.0.1
The Login page will appear

Enter the default Login password (You may want to change it later)
which is: **UgoBasile**
You are now logged into the device.

Scenario 2 - device connected to an Ethernet Switch (Lab LAN)

- Use a standard Ethernet cable (UTP Cat 5 minimum) to connect the device to the Lab LAN
- Go to the Network page into the device and set the IP Assignment as Automatic (DHCP) and go back to the previous page using the top screen arrow button.
- Go to the main page of the RotaRod and press the top screen arrow to open the info page; You will see the assigned IP address of the device, take note of this number (E.G.: 192.168.1.26)
- Be sure Your PCs is connected at the same LAN (via cable or via WiFi and configured using a DHCP.
- Open a web browser and digit http:// followed by the RotaRod IP number: E.G. http://192.168.1.26
- The login page will appear
- Enter the default password (UgoBasile)
- You are logged into the device.

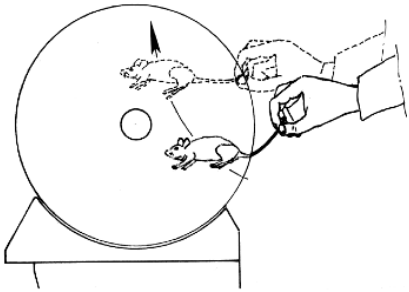
4 Operation

4.1 Placing the Rats on the Rotor

We recommend that the rotor is set in motion before placing the animal in position; otherwise, by the time the last animal is in place, the first may well be facing the wrong direction and is therefore likely to fall immediately when the drum starts rotating.

Start the rotor at the selected speed and then place the animals, one by one, in their respective lanes, at the same time resetting the related counter to zero, by lifting the corresponding trip plate.

Flip them up by the tail, right-side up but dorsal side in first, and then drop them between the rotating discs onto the rotor.



IMPORTANT:
The animal should not be lowered from above; if an attempt is made to place the animal directly on the rotor, it will spread its legs and blocks entry between the discs.

Experience and patience will teach the ideal technique: as in most behavioural devices, the man/animal interface is not less important than the animal/machine one, and requires some patience and gentle handling to be refined.

Speaking about animal/machine interface, the surface finishing of the drums is a sensitive point. The rotor drums are knurled to provide adequate grip.
Soft substances are not suitable, as the rats would cling to the drums without trying to keep pace with the revolving rotor as the experiment dictates; knurled Perspex provides, according to our experience, the ideal compromise, and remains spotless after years of use.

If you have the feeling that the rotor surface is too glossy and smooth, brush its knurled surface with a metallic brush; this action will not make the surface texture coarser, but it creates thousands of micro scratches which eventually improve the grip.

4.2 Adjusting the Detection Sensitivity

A small stainless steel screw allows the gap magnet/keeper to be adjusted thereby enabling the plate release-sensitivity to be regulated.
For juvenile (lighter) animals, it might be necessary to increase sensitivity a little.
Turn the screw CW to increase, CCW to decrease sensitivity.

4.3 Training

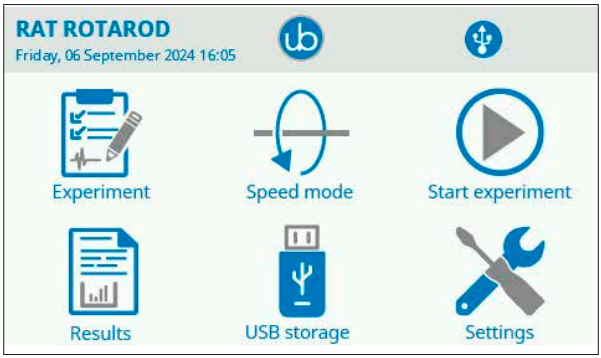
It advisable to carry out an acclimation and training session, before starting the motor co-ordination test.
With the rotor at low speed, say 4 or 5 R.P.M., each animal is placed upon its section in order to familiarize it with the revolving rotor.
After 2-3 training runs of 1-2 minutes at intervals of 2-3 hours, the animal should be accustomed to the RotaRod, and ready for the test properly.

4.4 Quick run

To start a simple experiment, or to start the device for animal placing/training you can follow the following instructions:
Switch the device ON using the rear ON/OFF button
On the main page press the **Speed mode** button and then the button **Constant Speed,** press the **Constant Speed** circular button and digit the speed You want the device runs; press the **OK** button and then the big rectangular button: **Start constant speed experiment** .
To make the RotaRod start rotating press the **RUN** button.
You may receive a warning pop-up if some of the trip box are not lifted up

4.5 Icons, button and pages on the display.

To start using the Ugo Basile RotaRod you first need to power the unit up; use the rear ON/OFF switch to power the unit ON and after the splash screen with the device name You will receive the main software menu:



Most of the icons in this page are buttons that can be used for setting up the device, here is an explanation of the Main page buttons and icons from the upper left to the right:

RAT ROTAROD
This is the instrument name, this element is not interactive, in other pages instate of this text in this position, you will find name of the page you are currently in.

Friday, 06 September 2042 16:05
Here is where the instrument shows the current date and time

This icon take You to the about page where You have several device information that can be useful for technical support.

Use the button to return to the Main page (this is the back button on all the device pages).
In the header part of the display there are several icons advising you about the device state and connections, that appear only in certain occasions or while external devices are connected:

This icon appears only in the main page and will take you to the About page where you can find technical informations regarding your device.

This icon is present in all pages except the main page and will take you to the previous page.

This icon is shown when a USB key is connected to the front panel USB connector and it contains a valid firmware update; it is only used for firmware update.

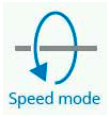
Shown when a USB device is connected to the USB front panel connector.

This icon indicates a possible internal memory card problem.

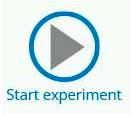
This icon appears while the external numeric keypad is connected to the front panel USB connector regardless the type of keypad you use (wired or wireless).

This button takes You to the page where You can set experiment parameters using the touch screen display, such as: Treatment, Protocol, Stage, Trial and animal ID for all the device lanes.
You may want to plan Your experiment using the provided Windows App calle d X-Pad where the PC use makes the field filling easier.
Once You have completed the Experiment planning and filled out all the necessary Experiment informations on the X-Pad App, You can transfer this information to the device in two ways; using the provided USB storage exporting the Experiment file and load it into the device, or directly transfer the Experiment information via LAN.

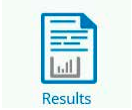
Always use the  button to return to the previous page.



This button takes You to the Speed mode page where You can choose the speed mode You want to use during Your experiment:
Constant Speed: the same speed for all the experiment time
Forward Ramp: where You need to set an initial speed, a final speed and an and a ramp time
Alternate Ramp: You need to set the initial ramp speed, the final speed and the ramp time; the device will perform the ramp once in a clockwise way and on counter-clockwise wise way in alternation.
Rocking mode: where You need to set rotation speed and number of revolution; the device will rotate at the set speed and change rotation direction after the set revolution number of time.
Max speed in this mode is set at 40 R.P.M.
Custom Ramp: It is possible to create complex ramp using the X-Pad Windows application, here is the way to load the file generated by the X-Pad software into the device and execute them.



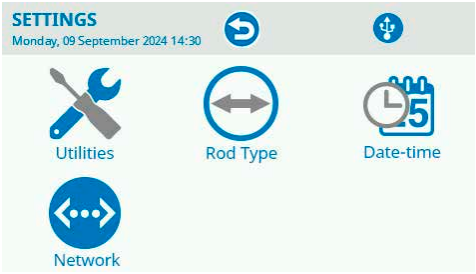
Use this button to go to the Start page, of the speed mode You previously select, to start running the experiment.



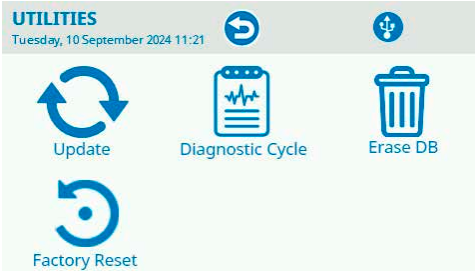
This button to go to the Result page, where the Experiment take place.

This button takes you to a page where you can:
Export result to a USB key (in .csv format to be used with data analyses applications)
Load experiment by a USB key which contains data created with the X-Pad Ugo Basile Windows application (note that this is not a custom ramp loading procedure, is used to load into the device data such as the list of animals, Treatment, Protocol, Stage, Trial and animal ID text).
Unload Experiment, useful to clear up previous loaded experiment data ans allows You to fill data manually.

- This is the way to access the Setting page where you have the following items::



This button takes You to the Utility page:



The **Update** button permits to update the device firmware and the system software with an update file stored into the inserted USB storage; please ask our technical support at service@ugobasile.com the correct update file indicating Your device serial number and actual firmware version that can be seen on the About screen. You can reach the About page pressing the Ugo Basile logo at the main page top centre.

The **Diagnostic Cycle** is for support purpose and execute a device internal test, run it only when asked by an authorized Ugo Basile technician.
An USB key must be inserted to save diagnostic data.

Erase DB: this button will erase all the internal database which include all the experimental data.
WARNING: THIS WILL DELETE ALL YOUR EXPERIMENT DATA MAKE A BACK-UP BEFORE EXECUTION
Use this button to clear all the device memory after being saved your experimental data; internal device memory is not infinite and when full needs to be cleared.

Factory reset button will execute an Erase DB + resets the device password for the LAN connection
Use this button to completely reset Your device; device LAN password will be reset at the default one (UgoBasile) and all the internal memory data (including experimental data) will be permanently deleted.

Jumping a page back:

The RotaRod model for mice and the one for Rats have the optional possibility to mount on the rod different Rod Enlargers and the RotaRod Complex wheel.
The RotaRod enlargers simply enlarge the Rod diameter:
Mice RotaRod version original rod diameter 30 mm, enlarger final diameter is 60 mm (the diameter the animal will run on)
You have 2 version of enlargers for the Mice RotaRod one grooved and one with a rubber smooth surface.

The RotaRod version for rats enlarge the original Rod diameter which is 60 mm to 120 mm and also in this version You have the two surfaces versions.

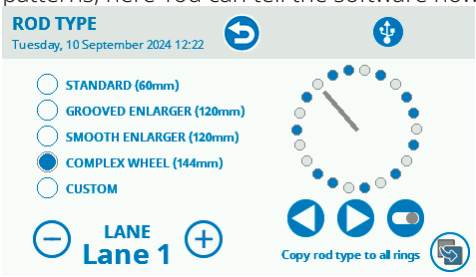
Optionally You have available the RotaRod Complex wheels which add a complexity to the classic RotaRod experiment

In this page you have ability to tell the device software which add-on You have mounted and in which lane:

The above picture is related to the Rat RotaRod.
Standard means You do not any add-on mounted in the selected lane
Grooved enlarger means You have mounted on the selected lane this type of Enlarger
Smooth Enlarger means You have mounted on the selected lane this type of Enlarger
Complex wheel, means You have mounted the Complex wheel on the selected lane
Custom, You can mount a custom rod enlarger and here you can input the rod diameter in mm

Using the **-** and **+** button You can change lane setting and set the add-on in the lane.

The Complex wheel selection allow You to instruct the device software about the complex wheel configuration; while You can set the complex wheel with different patterns, here You can tell the software how You did it:



Using the left and right arrow button You can select the Complex wheel pin presence; the blue filled circle indicate the pin presence the empty one the absence,

You can switch the state (present or absent) using this button: 

The button  allows You to copy the configuration to all lanes to avoid repeating the configuration manually.

All this data will be included into the Result file You export at the experiment ends.

4.6 Performing experiments (general)

All experiments done with animals need to be done after an habituation phase; refer to your lab director for the correct habituation procedure provided by your Lab standard for RotaRod experiment.

A preliminary phase, before starting the test itself needs to be done to have a correct result file at the experiment end.

This involves to populate some fields into the device and this operation can be done in two ways:

Filling the data into the field directly from the device touch display
or
Using the provided X-Pad3 windows application.

This second method implies the app installation in a computer (not provided) but gives the operator an easy way to populate the fields using a computer keyboard

4.7 Filling experiment data from the device touch panel.

From the main page press the button “Experiment” and in the next page You can digit, by the virtual keyboard the experiment data, which are the following: (remember that this data will appear on the result data file, use text thinking on a reading the result.)

- **Treatment**
  The text inserted in the field “treatment” allows to place animals into groups, which differ in phenotype, drug concentration, or any other parameter or condition (age, sex, weight) you want to compare.

- **Protocol**
  The “protocol” field defines the name of how the experiment will be performed.

- **Stage**
  The “stage” field is used to define the sequence of tests you will perform in a experiment (e.g. week number, training, retention, extinction, habituation, etc.)

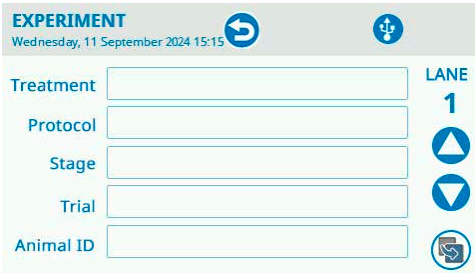
- **Trial**
  The “trial” field indicates how many times a test will be repeated within a stage (e.g., it would be 7 in case of a weekly stage with daily trials; Monday, Tuesday, Wednesday, etc.)

- **Animal ID**
  The “animal ID” field is used in case you do not want to refer to animals by a simple sequential number, like animal1, animal2, etc. Instead, the “animal ID” would be a code or a name you use to uniquely identify the animal to be

tested.

Using the up and down arrow button  You can select a different lane data page and if You do want to copy all the data (except the Animal ID) to all lanes You can use the Copy to all button 

Please note that using this inputting method you are not allowed to use small letter and a maximum of characters of 20 per field.



4.8 Filling experiment data from the X-Pad Windows App.

Please refer to the X-Pad3 Windows App instruction manual to understand how to install and use the software application.

Be informed that:
Using this Application you will not have the limitation you have using the device touch screen as inputting system and it will be easier to write the information into the device, even more with the X-Pad3 App you will find automatic procedure to populate all the experiment data.

In general term the procedure is to create a file with the X-Pad application on a computer, write the data file into the provided USB key (using the X-Pad3 “Make File for device”) , connect the USB key to the device and load the protocol into.

In addition You can transfer the data-file via web browser to the device if it is LAN connected

How to load a protocol made in the X-Pad application:
Please refer to the X-Pad instruction manual to understand how to do it.
Once you have created the protocol and register the protocol file (.db) into the USB key, detach the USB key from the PC and connect it into the USB device connector.
(You need to prior detach the USB keypad to free the USB connector).
From the main page of the device display press the button “USB storage” and then press the button “Load Experiment”, select the Protocol name you want to load from the list and press the “OK” button.

You will see the windows saying “Experiment has been loaded successfully, then press “OK” to close the windows.

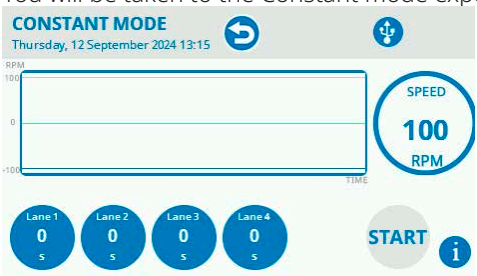
Go back to the Main page and press the button “Experiment” you will notice that the Experiment data are loaded and you can browse with the upper left arrows the different lanes.
When an X-.Pad protocol has bee loaded You are NOT allowed to edit field any more.
Filling all the experiment data is not mandatory, if You leave them empty they will be empty in the result data too.

4.9 Performing a constant speed experiment

The Constant speed test is an experiment where the rotation direction and the rotation speed does not change during all the test, there is no time limit for this test, the device will count the time the animal stays on the rod.

Having the Experiment data manually filled up or loaded from a X-PAD3 file you can start the experiment.

From the Main page press the **Speed mode** button and then the **Constant Speed** one, then press the circle **Constant Speed** button to set the rotation speed.
Input the rotation speed You want for the test in rotation Per minute (range is from 1 up to 100 r.p.m.) and press the OK button to enter the speed data.
Press the big rectangular button named: START CONSTANT SPEED EXPERIMENT
You will be taken to the Constant mode experiment page:



Press start to start the rotation of the rod an we advise You to take all the trip box down, in this way the device will not start counting time and You have the all the time You need to load the animals in all lanes; You will receive a warning Pop-up advising You that not all the trip plate are up, just press OK and continue.
While the rod is rotating You can load the animals on the lane and when finish You can start the experiment (counting time) just lifting up the lane related trip plate.

When an animal falls down into the trip plate the device will register the time of the related lane and if You want to repeat the test of this animal You just have to load him again on the rod and lift the trip plate up to start counting time again.

Press Stop when You want stop the experiment for all lanes and unload the ani-

mal.

To get the Experiment result data You can have them on the Result page and You can download them using the USB storage as a bridge or via LAN if Your device is LAN connected.

During the experiment You will have a graph indicating You the rod performance in terms of rotation and speed, the value of the speed You set for the Experiment and the time for each lane; the button gives You a summary of the Experiment data You set in a pop-up windows for 3 sec.

4.10 View and export result experiment data

At the end of an experiment you can review the result data going from the Main page to the result page pressing the "**Result**" button.
In this page you can browse the collected data and using the left up and down arrow browse all session and lanes.

In order exporting the result experiment data you need to:
Got to the main page
Press "**USB Storage**"
Insert a proper USB key into the USB connector on the front panel (Upper slot only)
Press "**Export Result**"

In addition, if Your device is LAN connected You can export experiment data directly to the PC via web browser.
Log in into the device via the web browser, by the menu go to the Result page and press the Download CSV file.

Result data are exported in .csv (Comma Separated Value) file (which can be imported/edited by several spread sheet applications and data analysis software like Microsoft Excel®)

A confirmation windows will appear confirming the export procedure has been correctly done.

4.11 Performing a Forward Ramp experiment

Forward ramp is an experiment where you need to set:
- Initial speed R.P.M..
- The final speed R.P.M..
- The Ramp duration time in seconds.

The RotaRod will start the experiment from the set speed as initial reaching the final speed in the time You set

From the Main page press the **Speed mode** button and then the **Forward Ramp**

one, then press the corresponding button to set:
- Initial speed R.P.M..
- The final speed R.P.M..
- The Ramp duration time in seconds.

Then press the big rectangular button named: **START FORWARD RAMP EXPERIMENT** to go to the start page:

Drop all the trip plate down

Pressing the **RUN** button the rod will rotate at the initial set speed and does not start counting time till the trip box are lifted up and You press the **START** button.

If You press the **START** button with not all the trip plate lifted up you will receive a warning and You can decide to continue (maybe You are testing less animals then the lanes) or cancel the Starting procedure.
When an animal falls down, the time and speed will be recorder and You can not continue the test with this lane being the ramp already not at the starting point.

When the RotaRod reached the ramp time it will continue rotating at the final speed till You press the Stop button

Display will show You the Experiment graph live, current speed and the button gives You an Experiment summary.

4.12 Performing an Alternate Ramp experiment

This mode is similar to the Forward ramp one with the difference that You need to set:
- Initial speed R.P.M..
- The final speed R.P.M..
- The Ramp duration time in seconds.

The rod will start rotating clockwise at the initial speed, reaching the final speed in the Ramp duration time then slow down back to the initial speed, then invert the rotation direction and perform the same ramp counter-clockwise, alternating the rotation direction till You press the Stop button.

4.13 Performing a Rocking mode experiment

In this speed mode You need to set:
- Rocking speed in R.P.M.
- Number of rotation in numbers

The Rod will rotate clockwise at the set speed, making the given number of rotations, then will invert the rotation direction counter-clockwise repeating the same and alternating the rotation direction till You press the STOP button.
In this mode the rotation speed is 40 R.P.M.

4.14 Performing a Custom Ramp experiment

You can use the Ugo Basile X-Pad3 windows application to create complex custom ramps experiments which are not possible to be created from the device display. Please refer to the Ugo Basile X-Pad3 instruction manual to learn how to use the software.
In brief, once you have created the complex ramp using the RotaRod tab in X-Pad3, you need to export a file using the "Make the Ramp File for Device" and write the file in a USB key (you can use the provided one or another one FAT32 formatted) In order loading the ramp into the device:
From the main page of the RotaRod device press "**Speed mode**" then choose "**CUSTOM RAMP**", to load the ramp you need to insert the USB key where you wrote the ramp file and press "**LOAD RAMP**".
You will see the list of the founded ramps into the key and with the up and down arrow you can select the one you need to load.
Once selected press the **OK** button and you will have a confirmation message.

Please note that the last loaded ramp is in the memory and can be used several times; if you need to change it with another ramp repeat the just described procedure.

Now you have loaded you experiment ramp and to start the experiment you need to press the button "START CUSTOM RAMP EXPERIMENT"

4.15 Exporting result data (details)

Once your experiment is finished you can review the saved experiment data from the Result page and exporting them to a USB key from the USB Storage page using the Export Result function. Please insert a valid (FAT32 formatted) USB key into the from USB connector before pressing the Export result button.
Experiment result data are saved into the USB key in .csv format, (Comma Separated Value) file, which can be imported/edited by several spread sheet applications and data analysis software like Microsoft Excel®.
File name is having the following syntax:
RR_Results_YYYY-MM-DD_HHMMSS.csv
Where RR means RotaRod YYYY-MM-DD represent the Year-Months-Day and HH-MM-SS the hours and minutes and seconds when the result data has been saved.

In addition, if Your RotaRod is LAN connected You can export experiment data directly to the PC via web browser.
Log in into the device via the web browser, by the menu go to the Result page and press the Download CSV file.

Here is the list of the exported data:

Session (A progressive number of the experiment session performed)

Lane (The lane number starting from one the first left in a front device view)

Date_Time (The date and the time the event occurred)

EventCode (an internal code to identify the event)

EventDescription (A text describing the event)

Event code	Event description	Event reason
0	START LANE	The lane has been started
1	PLATE-DN	The trip-box has been lowered
2	PLATE-UP	The trip-box has been lifted
10	PROT-END	The experiment has reached the end of the protocol
20	STOPPED	The experiment has been stopped
30	RAMP-CONST	In a custom ramp, a constant speed segment has started
31	RAMP-ACC	In a custom ramp, a ramp segment has started

Treatment (The text inserted manually or loaded via X-PAD3 into the Treatment field in the Experiment page)

Protocol (The text inserted manually or loaded via X-PAD3 into the Treatment field in the Experiment page)

Stage (The text inserted manually or loaded via X-PAD3 into the Treatment field in the Experiment page)

Trial (The text inserted manually or loaded via X-PAD3 into the Treatment field in the Experiment page)

ID (The text inserted manually or loaded via X-PAD3 into the Treatment field in the Experiment page)

Latency (Is the time in seconds between the Experiment start and the time the even occurred)

Revolutions (The number of revolutions)

Mode (the speed mode selected for the session)

Speed the rerecorded rod rotation speed in R.P.M.)

Mode (Is the temperature mode chosen for the experiment)

Distance (is the run distance measured in mm according to the Rod diameter)

RodDiameter (Is the Rod diameter in mm)

ComplexWheelRungs (is the rungs (pin) complex wheel configuration)

ConstantSpeed (is the rotation speed in Constant speed mode)

RampInitialSpeed (is the initial ramp speed used in Forward ramp mode)

RampFinalSpeed (is the final ramp speed used in Forward ramp mode)

RampTime (is the forward ramp time duration in seconds)

AlternateRampInitialSpeed (is the initial ramp speed used in Alternate ramp mode)

AlternateRampFinalSpeed (is the final ramp speed used in Alternate ramp mode)

AlternateRampTime (is the Alternate ramp time duration in seconds)

RockingSpeed (is the rod speed in Rocking mode)

RockingRevs (is the rod number of revolution in Rocking mode)

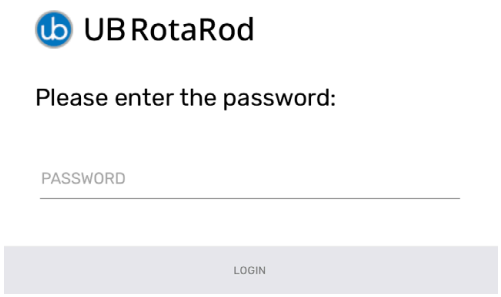
4.16 LAN connection

If Your device is LAN connected You can load experiment parameters file generated by the Ugo Basile X-Pad app into the device and retrieve experimental data result without the need to use the USB pen as a data bridge.

LAN Connection is done by a standard web browser, while we do prefer to use Google Chrome, You can try to use Your preferred web browser.

To start a connection session make sure the LAN connection installation has been properly done and then open Your web browser.

LAN connection to the device, for data security, is password protected; the factory password is *UgoBasile*, and You may want to change it.



To change the LAN connection password:

1. Log in to your device with the factory password (*UgoBasile*)
2. Go to the main menu (the 3 lines at the top left and select the command "Change Password"
3. You will asked to input the current password and input two times the new password.
   Password need to be 8 or 15 characters, should contain at least a lower

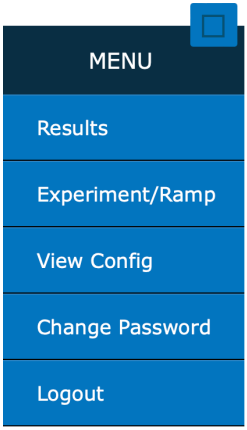
case letter, an upper-case letter, a number and a symbol.
It is advisable to secure store the password set for future use, while if You loose it You do not have any chance to retrieve Your experiment data via LAN. (You can still download data using the USB key).

If You lost the password You can reset the password from the device touch panel, but be aware that the password reset will delete all the stored experiment result data.

To reset the password (and the stored result data):
On the device touch screen panel from the main page press the Utility button and then the Device Setup button, then press Factory reset and You will be asked for a reset confirmation.
Result data were deleted and the password has been set as UgoBasile.

LAN Connection menu:

Clicking on the three white line at the top left on the browser windows You can open the main connection menu:



On the Result page You will find the experiment data result and the possibility to download the .csv file with the data on Your computer by pressing the Download CSV File button.

Firmware version: **V.4.0.1.0**
Device clock: **Wednesday, 17 July 2024 11:38**

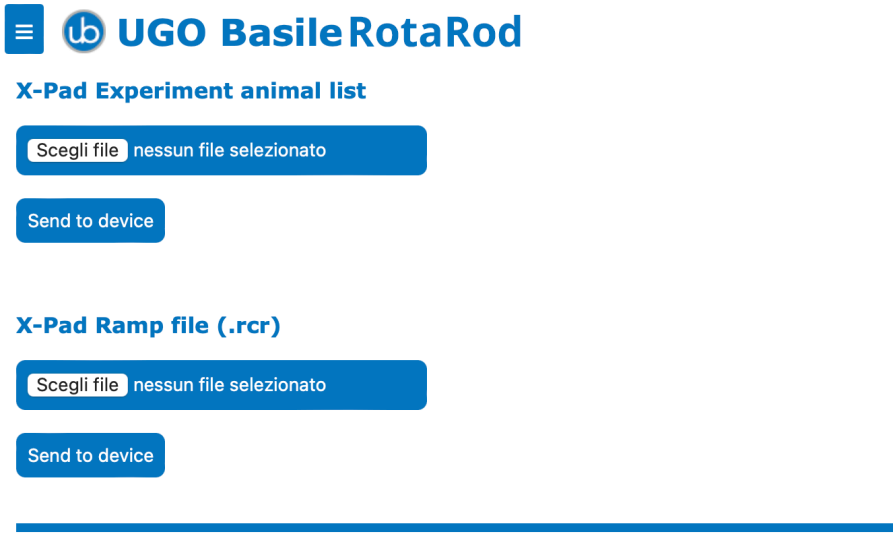
Number of records in DB: **0**

Download CSV File

Records

Session	Date Time	Event Code	Event Description	Treatment	Protocol	Stage

The Experiment/Ramp page will give You the ability to load into the device:
Experiment data (.db)
Ramp experiment (.rcr)
both created by the Ugo Basile Windows app X-Pad which is included in Your RotaRod device.
Create the Experiment file and/or a Ramp file in X-Pad and safe it on Your PC.
By the web browser connect to the RotaRod as described and select from the menu the function Experiment/Ramp:



Use the button Select File (is in Italian in the pics while this Windows is an Italian edition) to select on Your drive the Experiment or the Ramp file and then press the relative button Send to device.
You will receive a confirmation message.
The Experiment data and/or Ramp data will be loaded into the RotaRod.

The View Configuration page is intended to show the system data and can be required by our support team to have Your device information for service purpose.

The Logout command is to disconnect Your browser from the RotaRod and ending the working session.

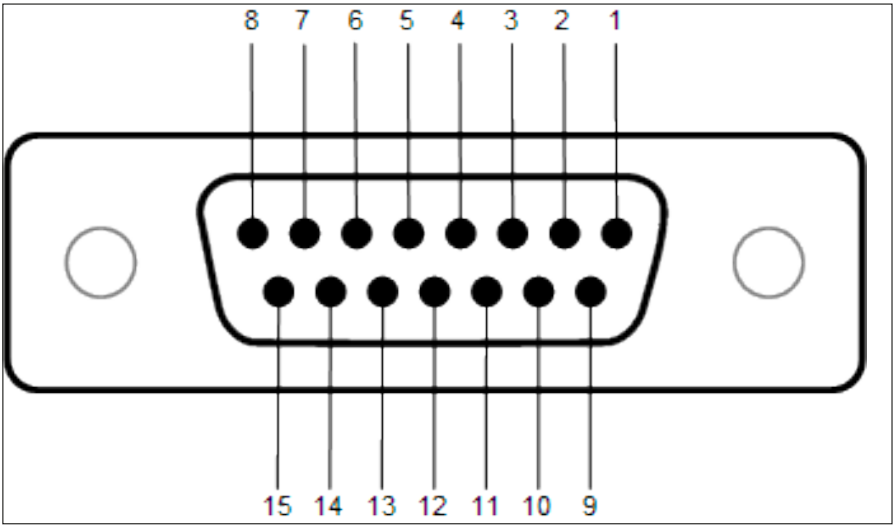
5 Connections

5.1 I/O port connection

The RotaRod is provided with a D-sub (DA-15 female) TTL I/O port.
This port could be used to synchronize some events with external instruments or acquisition systems.
TTL Output signal are electrical isolated in order to guarantee an electrical barrier.

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

Refer to Figure and Table below for connector pin out



D-sub connector pins

DB-15 Pin#	Signal Name	Signal Type	Description
1	Trip Box 1 status	TTL OUT	* Lifted -> TTL High Level Lowered -> TTL Low Level
2	Trip Box 2 status	TTL OUT	* Lifted -> TTL High Level Lowered -> TTL Low Level
3	Trip Box 3 status	TTL OUT	* Lifted -> TTL High Level Lowered -> TTL Low Level
4	Trip Box 4 status	TTL OUT	* Lifted -> TTL High Level Lowered -> TTL Low Level
5	Trip Box 5 status	TTL OUT	* Lifted -> TTL High Level Lowered -> TTL Low Level (mouse version only)
6	Motor rotation direction	TTL OUT	Forward -> TTL High Level Reverse -> TTL Low Level
7	Reserved	TTL OUT	Reserved
8	Motor speed	ANALOG OUT	**~ 5.4V = 100 R.P.M. ~ 2.7V = 50 R.P.M. ~ 0V = 0 R.P.M.
9	Start/Stop trigger	TTL IN	Like Start/Stop button
10	Reserved	TTL IN	Reserved
11	Reserved	TTL IN	Reserved
12	Experiment running	TTL OUT	Experiment running -> TTL High Level Experiment idle -> TTL Low Level
13	Reserved	TTL OUT	Reserved
14	GND	POWER	Power Ground
15	GND	POWER	Power Ground

D-sub connector pin-out table

* Active only while experiment is running
** It is highly recommended to calibrate the external data acquisition device, before starting experiments.

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

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

7 Maintenance

While any service of the instrument have to be carried out by Ugo Basile personnel or by qualified personnel authorized by UGO BASILE organization, this manual section describes normal maintenance procedures which can be carried out at your facility.

UNPLUG THE MAIN CORD BEFORE CARRYING OUT ANY MAINTENANCE JOB

The device does not require any particular maintenance.

7.1 Electrical

To inspect and/or replace the fuses, disconnect the mains cable first!
Insert a miniature screwdriver in the slot indentation and snap out the slide which houses the fuses. Snap in the fuse slide: the mechanical "click" ensures that it is locked.

7.2 Cleaning/disinfection

Rota-Rod does not require any maintenance apart from normal cleaning.

Do not use organic solutions, liable to impair the discs and the acrylic components and touch-pad.

Cotton wool and water can be used for cleaning purposes. For disinfection, use a non-alcoholic disinfectant, or H2O2.

DO NOT use aggressive chemical agents to clean any part of the device.

Disinfection:
While the device can be sanitized using vaporized hydrogen peroxide, keep particular attention during the sanitation process while H_2O_2 at high concentration and high temperatures for a long time can damage the aluminium and plastic device parts.

7.3 Long Inactivity

The instrument does not require any particular maintenance after long inactivity, except cleaning.
It is be possible that after years of inactivity the internal battery needs to be replaced.

7.4 Customer Support

For any further information you may desire, concerning the use and/or the maintenance of the device, please do not hesitate to contact our service department

(or our local distributor) either directly of via our support page at the following link:
ugobasile.com/support/support-request

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 during transport due to poor packaging; whenever possible, please use the original packaging.

8 Specification

General	
Command Input	4.3 inches touch-screen (Resistive)
Read-out	4.3 inches touch-screen (Resistive), PC
Power Requirements	Universal input 100-240 VAC, 50-60Hz, 200W max
Sound Level	< 60 dB
Operating environment	10°C to 40°C; 5% to 95% RH (non-condensing)
Operation	
Speed	Adjustable in the range 1-100 RPM, in steps of 1 RPM
Speed modes	Constant, Forward Ramp, Alternate Ramp, Custom Ramp, Rocking
Rotation	Forward, reverse, rocking
Rotor Start/Stop	On the touch-screen/TTL
Counting Start /Stop	Each section via its trip box
Trip-Box (plate)	Stainless-steel to ease sterilization
Data Acquisition	Via the provided X-PAD software
Data Portability	by USB flash drive
LAN connection	Ethernet TCP/IP
TTL Output	For lane status, rotation and speed
Data format	.csv (Comma Separated Values)

7 Warranty

Your device is covered by 12 months on factory warranty period.
Registering the device on our registering web site page will give you an additional 12 months free warranty period.

To make the product registration.

1. Photograph or note the serial number of the device, which can be found on a metal label on the back of the device.
2. Browse the internet page: register.ugobasile.com
3. Fill out the form and you will receive the new warranty certificate

UB Care warranty extension

It is possible to buy a warranty period extension called UB Care 12 or UB CARE 24 respectively of additional 12 or 24 months.
UB CARE is available only within the first 12 months after the delivery date, not later.

For 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

Ugo Basile SRL
Via Giuseppe Di Vittorio 2, 21036 Gemonio (VA) ITALY - Tel. +39 0332 744574 - sales@ugobasile.com

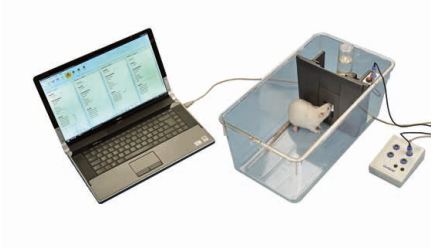
Back to content

For other Ugo Basile products related to this device visit ***ugobasile.com*** web site for details

e-VF Handheld Electronic Von Frey of original design

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

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

Ugo Basile SRL
Via Giuseppe Di Vittorio 2, 21036 Gemonio (VA) ITALY - Tel. +39 0332 744574 - sales@ugobasile.com

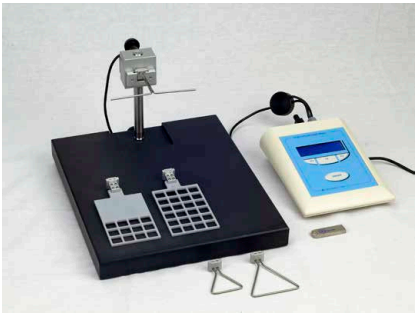
For other Ugo Basile products related to this device visit ***ugobasile.com*** web site for details

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

The Rota-Rod Family