Instruction manual
Treadmill for rodents

Revision 4.0 - Sept. Y24

MOUSE   **RAT**

Motory Coordination

SKU: 47300, 47303, 47302, 47350, 47353, 47352

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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**
Address	Via G. di Vittorio, 2 – 21036 Gemonio, VA, ITALY
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We hereby declare that

Instrument.	**RODENT TREADMILL**
Catalog number	**47300 / 47302 / 47303 / 47350 /47352 /47353**

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*

January 2023

Date   Firma / *Signature*

MOD. 13 Rev. 1

Exercise is a multi-factorial activity that affects virtually every organ and tissue in the body.

Not only does exercise contribute to many health benefits, but lack of exercise is implicated in many chronic health problems.

As evidence continues to accumulate concerning the impressive range of health benefits that exercise confers, biomedical researchers have increasingly become interested in conducting systematic studies of exercise to further define those benefits".

Fatigue is a common and frequently poorly-understood symptom in many diseases and disorders.

New preclinical assays of fatigue may help to improve current understanding of fatigue-like behaviour in rodents and many other exercise paradigms and study treatment of fatigue.

Ugo Basile original TREADMILL for rodents is suitable for tests on either rats or mice, by simply replacing the lane assembly.

The Ugo Basile Treadmill is a compact and user-friendly device: test settings & monitoring are managed by the touch-screen control unit. It measures endurance, distance (absolute and relative), speed and number of shocks.

It incorporates a shock grid at the back of the treadmill to deliver an adjustable mild electric shock, when an aversive stimulus is required.

Shock can be pre-set from 0 to 2mA (in 0.1mA steps).

Test settings & monitoring are managed on the 4"3 touch-screen in the attached control unit.

The running-lane assembly can be manually tilted from -25° to +25°, in steps of 5°.

Speed can be selected from 1 to 100m/min, in steps of 1m/min, in constant, accelerating or custom ramp modes.

A special lane-assembly for tethered mice is also available as an alternative to the standard model.

X-PAD software to set up the experiment and manage the results is included.

What's in the box and options

SKU: 47303 Mouse Treadmill package content:
1 Treadmill base device.
1 Mouse lane assembly (up to 6 mice).
1 Power chord according to your country outlet.
1 USB pen drive containing this instruction manual and the quality control and warranty certificate.

SKU: 47302 Rat Treadmill package content:
1 Treadmill base device.
1 Rat lane assembly (up to 3 Rats).
1 Power chord according to your country outlet.
1 USB pen drive containing this instruction manual and the quality control and warranty certificate.

SKU: 47300 Combination package content:
1 Treadmill base device.
1 Mouse lane assembly (up to 6 mice).
1 Rat lane assembly (up to 3 Rats).
1 Power chord according to your country outlet.
1 USB pen drive containing this instruction manual and the quality control and warranty certificate.

SKU: 47353 Mouse Treadmill + Air Puff package content:
1 Treadmill base device + Air Puff
1 Mouse lane assembly (up to 6 mice).
1 Power hcord according to your country outlet.
1 USB pen drive containing this instruction manual and the quality control and warranty certificate.

SKU: 47352 Rat Treadmill package content:
1 Treadmill base device + Air Puff
1 Rat lane assembly (up to 3 Rats).
1 Power chord according to your country outlet.
1 USB pen drive containing this instruction manual and the quality control and warranty certificate.

SKU: 47350 Combination package content:
1 Treadmill base device + Air Puff
1 Mouse lane assembly (up to 6 mice).
1 Rat lane assembly (up to 3 Rats).
1 Power chord according to your country outlet.
1 USB pen drive containing this instruction manual and the quality control and warranty certificate.

Optional items ordering informations:

SKU   *Item description*
47300-013   6-lane assembly (each lane 45x5.5, height 15cm, without lid, for
                      thered mice)

Contents

1 Principle of Operation

Treadmills are rolling belts (tapis-roulants) with presettable speed and adjustable uphill and downhill inclination (slope), enabling forced exercise training and accurate testing of fatigue in lab animals.

"Treadmill running has been used extensively over the past decades to study behavioral, physiological, biochemical, and, more recently, molecular responses to both acute exercise stress and chronic exercise training.

Although investigators have used a wide variety of species for treadmill running studies, they have used rodents in most of these studies.

Treadmill running has the distinct advantage over other forms of exercise, including spontaneous wheel running and swimming, that the total amount of external work done by the rat can be easily calculated".

(Citation from Resource Book for the Design of Animal Exercise Protocols, APS, Feb 2006)

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 https://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.

Treadmill support QR code:

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.

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.

1.3 Intended use

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

2 Instrument Description

Our Treadmill consists of a main unit, incorporating the drive, the shocker, the running belt and the control unit with 4"3 touch-screen.

The assembly also incorporates a shock grid, positioned at the bottom of the ramp, made of 3mm bars, spaced 8mm apart.

Two different lane assemblies are available, to provide the ideal running tracks for either rats or mice: replacing the lane assembly is extremely easy.
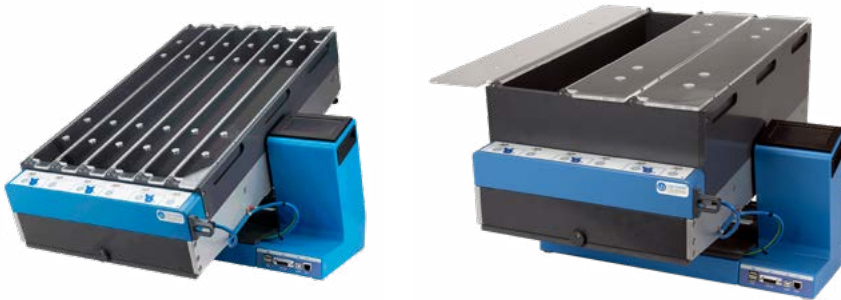
The whole hardware, except the lane assembly, is the same for both rats and mice: animal selection is quickly done when switching on the device.

The running surface can be manually tilted from -25° to +25°.

The device features an auto-cleaning tool and a pan to collect droppings.

Our treadmills are designed for optimal performance under conditions of intensive use.

2.1 Running Belt

Rodents running on the treadmill must be able to maintain good traction while walking or running, to prevent slipping. The running surface of the 47300 consists of an easy-to-clean alimentary-grade white belt, providing suitable grip.

The walking surface is not porous and is soft enough to eliminate foot problems that may arise from daily bouts of exercise training.

This specially selected material makse the treadmills easy to clean and disinfect and requires minimal maintenance, see "7.2 Cleaning".

2.2 Rat Lane Assembly

The rat assembly, a structure which is quickly and easily fitted to the main unit, consists of 15cm high external walls and inside partitions, to divide the running belt into 3 lanes, each 45x11cm. Each lane is provided with a transparent lid.

Removing and replacing the lane assembly is an easy job: see "7.3 Running Belt".

2.3 Mouse Lane Assembly

The Mouse assembly, similar to the rat device, has different dimensions: walls and parti-tions are 7cm high, and the running belt is divided into 6 lanes, each 45x5.5cm. Each lane is provided with a transparent lid.

A special lane assembly for tethered mice (47300-013) is also available: each lane 45x5.5, height 15cm, without lid, see "What's in the box and options" .

2.4 Shocker Circuit and Shock Grid

"Treadmill running is a form of forced exercise in which the animal does not have a choice of participating in the activity. Because of this, noxious stimuli (e.g., electric shock and bursts of high-pressure air) may be needed to motivate the animals to exercise" .

Our model incorporates as standard a shocker to deliver a mild electric shock, when an aversive stimulus is required, via deliver the shock grid positioned at the bottom of the walking slope.
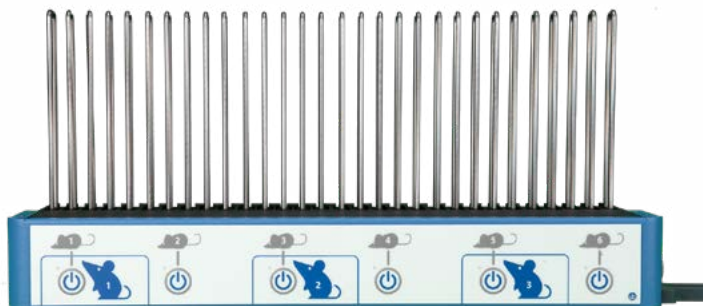
The shock circuit is incorporated in the main unit. Shock intensity can be preset via the attached controller module (from 0 to 2mA), as well as the cut-off number of shocks. The setting is common to all lanes.

The grid attached at the bottom of the running belt delivers the foot-shock and also functions as detection circuit.

The assembly incorporating the grid, its circuit, and the array of START buttons can be easily removed for cleaning: see "7.3 Running Belt".

The same grid also functions as detection system: the controller detects absolute and relative distances, which are recorded together with speed.

2.5 Controller with Touch-Screen

The controller is part of the main unit, attached to the tapis-roulant.
It incorporates a 4"3 touch-screen, for basic setting and monitoring, via an intuitive panel.

During the test, the touch-screen indi-cates the number of shocks received, the elapsed time, and the walked distance.
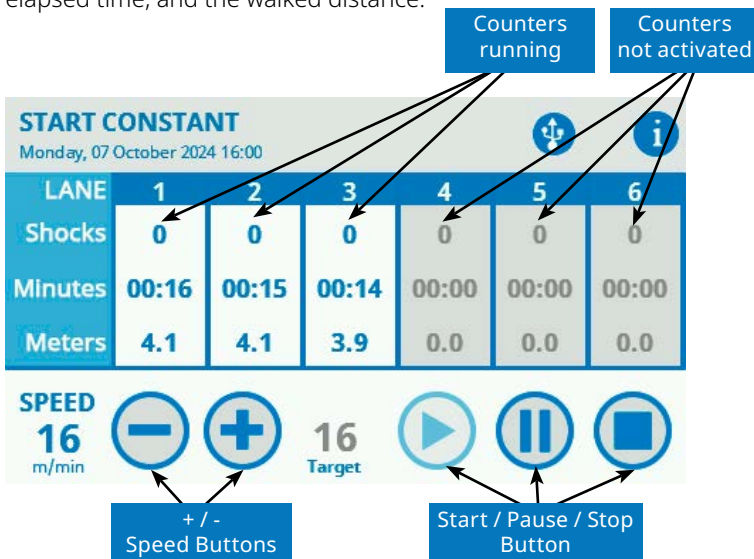
When the test is started the lane back-ground colour, which is normally grey, becomes white.

The test results for each section, can be browsed in a condensed view.

The X-PAD software, included as standard, provides a user-friendly interface to set the experiment and a powerful tool to manage the results easily on one's PC. Data exchange from the instrument to the PC is done via the USB flash drive provided.

Notes on Resistive Touch-Screens
If you have in mind the sensitivity to touch of your tablet or smart-phone, you might think the controller touch screen does not react promptly, and you have to press down harder.

This is because we employ a resistive touch-screen (while most smart phones use a capacitive screen); the resistive screens are better of our application because of:
- High resistance to dust and water
- Better use with gloved hand or stylus (because the conductive technology is dependent on the conductive nature of human body, it doesn't work if the user is wearing gloves).

2.6 Treadmill Features

The main features of the Treadmill are:
- SPEED: adjustable in the range 1-100m/min, in steps of 1 m/min.
- MODE: constant, linear (accelerating), custom ramp.
- SHOCK: 0 to 2mA.
- SLOPE: uphill or downhill, manual tilting, from -25° to +25°, in steps of 5°.
- CONTROLS: 4"3 touch-screen to set and monitor the test.
- SOFTWARE: X-PAD, user-friendly version, to set the experi-ment and manage the results.
- DETECTION: via grid at the bottom of the running belt.

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 carrier 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 at sales@ugobasile.com.

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

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 on the experiment Lab room.

3.2 General Safety Instructions

The following guidelines must be followed to ensure safe operation:
· DO NOT attempt to open or perform any service work.
· DO NOT connect up human subjects.

3.3 Assembling the instrument

The Treadmill is shipped assembled: position it on a stable, sturdy, and reasonably flat bench or table surface.

It is a heavy device: please remember this when lifting it!

3.4 Before Applying Power

Consider the Power Module, positioned left on the back panel, which encompasses – from left to right - the mains switch, the inlet connection of the mains cord, and the fuse holder/voltage selector.

Mains Switch: This two-pole toggle switch, which complies with international safety standards, is lighted when the instrument is ON.
Fuse Holder: The fuse holder comprises two fuses, one on the live, and the other on the neutral. Use (T2.5A) timed fuses for operation at both 115 or 230 Volts.

For fuse replacement, please see "7.1 Electrical"

Mains Cord: It is a standard cable, Cat. # E-WP008. Make sure your power outtake is provided with a reliable ground connection.

3.5 Power Connections

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

3.6 Additional Safety Consideration

1. Use original accessories and spare parts only, see "What's in the box and options"
2. Immediately disconnect and replace damaged mains cord.
3. Do not obstruct a comfortable access to the power module.
4. Do not operate in hazardous environments or outside prescribed environ-mental limitations (i.e. +10c° / +40c°, 95% max. relative humidity, non-condensing), see also paragraph 7-47300 SPECIFICATIONS.
5. Do not spray any liquid on the connectors and on the geared motor.

UGO BASILE DOES NOT ACCEPT ANY RESPONSIBILITY FOR PROBLEMS OR HARM CAUSED TO THINGS OR PERSONS, ARISING FROM:
• 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.

3.7 LAN connection

Communication between the Treadmill and a PC is possible via a **L**ocal **A**rea **N**etwork (LAN).

This connection allows to load experiment data created with the Ugo Basile X-Pad software (Windows app.) and to download he experimental data result from the Treadmill directly to the PC, without USB storage.

It is possible to cable the Treadmill to a PC in two ways:
1. Connect the Treadmill directly to a PC Ethernet port by an Ethernet standard cable.
2. Connect theTreadmill 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 that LAN connection is based on TCP/IP protocol that needs a unique IP number to be assigned to the Treadmill as well as the appropriate Subnet mask number.
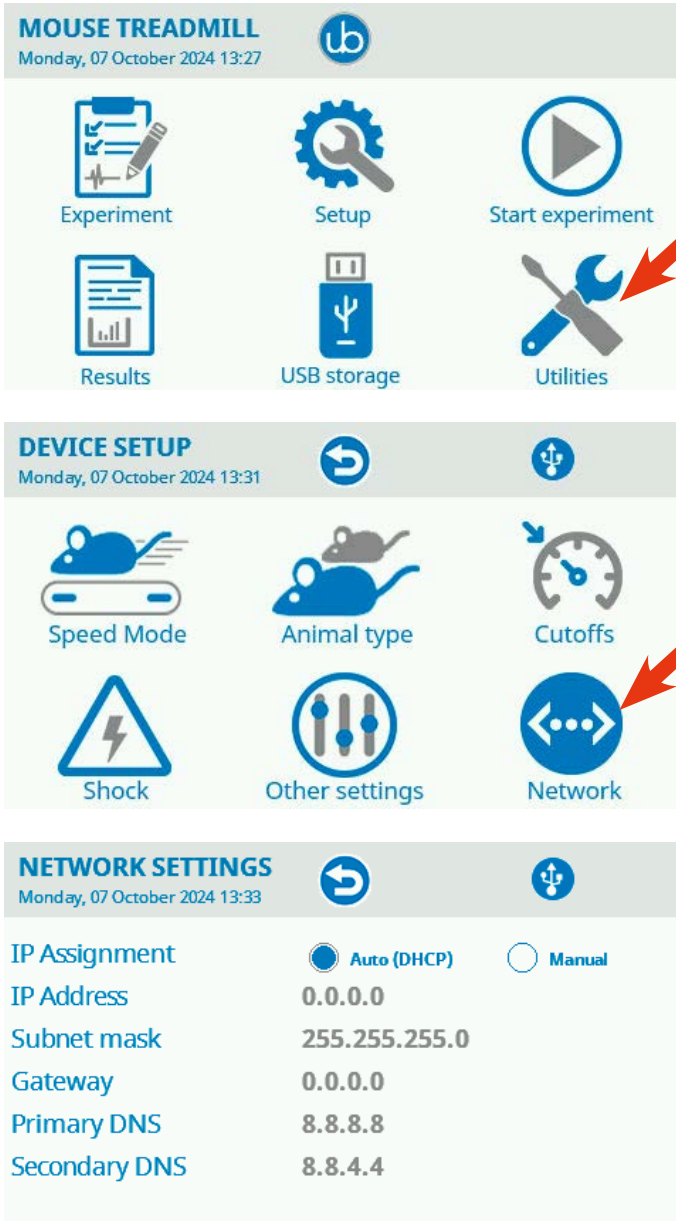
In case you decide to cable the Treadmill directly to a PC, you will create a small LAN outside the company networe. In this case you don't need to have the IP number from your IT administrator.

In case you want to cable the Treadmill into the Lab/Company LAN, you'll 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 - Treadmill directly connected to a PC:**
- You need to have an Ethernet cable (UTP Cat 5 minimum) of the necessary length to go from the Treadmill to the PC (not more than 100 mt.)
  Connect one end (Rj45 connector) into the EthernetTreadmill 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 Treadmill on and from the main menu press the Utility button and then Device Setup and then Network, to enter into the Network configuration page.

MOUSE TREADMILL
Monday, 07 October 2024 13:27

| Experiment | Setup | Start experiment |
| Results | USB storage | Utilities |

DEVICE SETUP
Monday, 07 October 2024 13:31

| Speed Mode | Animal type | Cutoffs |
| Shock | Other settings | Network |

NETWORK SETTINGS
Monday, 07 October 2024 13:33

IP Assignment	● Auto (DHCP)	○ Manual
IP Address	0.0.0.0	
Subnet mask	255.255.255.0	
Gateway	0.0.0.0	
Primary DNS	8.8.8.8	
Secondary DNS	8.8.4.4	

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 Treadmill).

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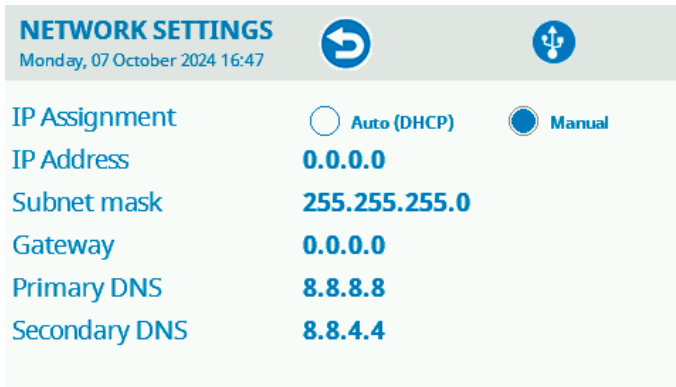
Exit the Network page pressing the rounder arrow on top of the screen.

On your PC (depending of the operating system You are running, Mac OSX or Windows or Linux) go to the Ethernet card settings (the one cabled to the Treadmill).

You may have multiple Ethernet card onyYour 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 (we suggest Google Chrome, however you can use other web browsers).

On the browser address field digit the Treadmill IP address: http://10.0.0.1 .

The Login page will appear.

Enter the default Login password which is: UgoBasile. (If you wish to change the preset Password see "5.11 Using LAN connection")

You are now logged into the Treadmill.

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

- Use a standard Ethernet cable (UTP Cat 5 minimum) to connect theTreadmill to the Lab LAN
- Go to the Network page into the Treadmill 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 Tteadmill 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 Treadmill IP number: E.G. http://192.168.1.26
- The login page will appear
- Enter the default password (UgoBasile)
- You are logged in the Treadmill

4 Preliminary

4.1 Placing the Animal on the Running Surface

We recommend that the belt is set in motion before placing the mice in position, or by the time the last mouse is in place, the first may well be facing the wrong direction.

In constant speed mode, start the motion at the selected speed and then place the mice/rats, one by one, in their respective lanes, at the same time starting the related counters to zero, by the corresponding button.

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 perfected.

Speaking about animal/machine interface, rodents running on the treadmill must be able to maintain good traction while walking or running, to prevent slipping. The running surface of the 47300 consists of an easy-to-clean alimentary-grade white belt, providing suitable grip; the walking surface is not porous and is soft enough to eliminate toenail and foot problems that may arise from daily bouts of exercise training.

This specially selected material make the treadmills easy to clean and disinfect, and require minimal maintenance, see also "7 Maintenance". This type of belts usually wear well, with minimal breakage, and rarely need to be replaced during the lifetime of the treadmill.

4.2 Acclimation

The Treadmill is basically an exercise machine, which does not require the animal to learn a specific task. A proper training phase is therefore not required.

However, it advisable to carry out an acclimation period with low and constant speed, in order for the naïve mouse to familiarize with the running belt: each mouse is placed into its section for a short period, before starting the actual test.

5 Operation

To start using the Ugo Basile Treadmill you first need to power the unit up; use the rear ON/OFF switch to power the unit ON.
A splash screen window will appear on the touch-screen for 4" indicating the device name.
After few seconds the main menu will appear. From this menu you will be able to manage your experiment via the 4"3 touch-screen.

5.1 Main Menu

The "Experiment" Icon brings you to a page where you can enter information about the test, including treatment, protocol, stage, trial, Animal ID. See "5.2 Experiment Menu"

Press on the "Setup" Icon to set the speed mode, animal type used in the experiment, the cutoffs, shock, network, and Other Setting. See "5.3 Device Setup menu"

Press on "Start Experiment" Icon to start your experiment. See "5.4 Performing experiments (general)"

Press on "Results" icon to access all the results of your experiment saved on the device. See "5.7 Results"

Press on "USB storage" icon to access the USB storage where tyou can export results, Load experiment, Unload experiment. See "5.9 USB Storage"

Press on "Utilities" icon to access update, siagnostic cycle, erase DB operation, date and time setting, belt cleaning, factory reset. See "5.10 Utilities"

5.2 Experiment Menu

Entering this menu the user will be able to manually fill the experiment tags (Treatment, Protocol, Stage, Inclination, Trial, ID) lane by lane.

Depending on the "Animal type" selected in the Setup menu, the user willbe asked to fill the information for each lane:
• 6 lanes for mice
• 3 lanes for rats
• 2 lanes for fat rats

To move between the lanes the user can use the arrows. To copy the tags of LANE 1 to alla the following lanes the user can use the "Copy to all lane" icon

In this phase the user can fill manually the experiment tags lane by lane (Treatment, Protocol, Stage, Inclination, Trial, ID).

Press this icon to copy the information enetered forlLane 1 to all the other lanes.

To enter the information tap on the filed and enter the data via the virtual keyboard.

In the "Result" Menu the entered information will be matched with the test results. Of course, the user may choose not to enter any information and leave the fields empty.

Always use this icon to go back to the previous menu.

5.3 Device Setup menu

The parameters that characterize an experiment are set in the "Device Setup" Menu.
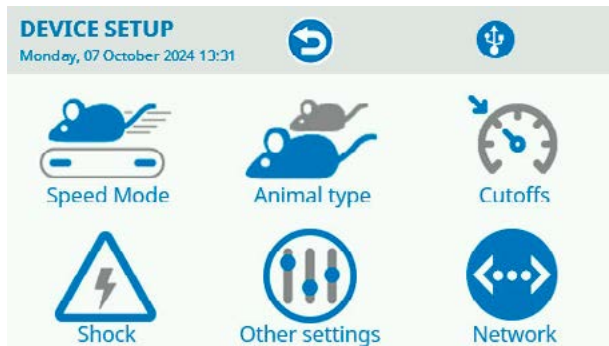
From this menu the user can set:

Speed Mode: Constant, Linear Ramp, Custom Ramp,

- *Costant*: With Constant Speed mode, the belt rotates at a speed which remains constant, for the duration of the test.
  To change the Speed, tap on the preset speed and insert the new information via the virtual keyboard.

- *Linear ramp*: This mode allows testing the subjects with an increasing/decreasing speed. It is necessary to set the initial and final speed, and the ramp (the time the rotor takes to go from the initial to the final speed).


Information required:
· Initial speed: between 1 and 100 m/min.
· Final speed: between 1 and 100 m/min.
· Ramp: from 1s to 9999s (acceleration limits: maximum 100m/min).

If the initial speed is lower than the final speed, the speed will be accelerating: on the contrary a decelerated speed is obtained by setting an initial speed higher than the final one).
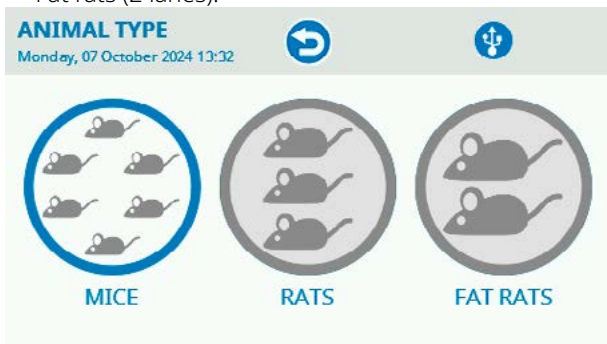
- *Custom Ramp*: the user can upload a custom ramp durectly via USB storage or LAN.
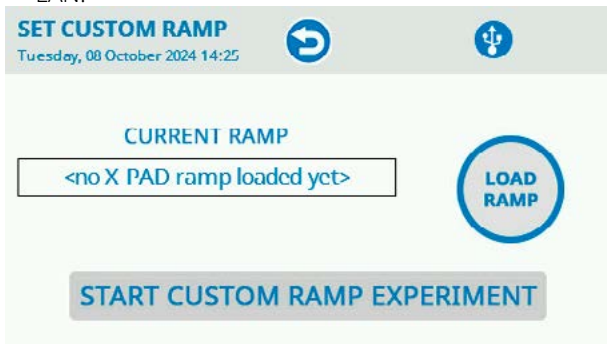
Animal Type:
Since the whole hardware, except the lane assembly, is the same for both rats and mice, it's important to specify which animals the device is going to deal with.
- Mice (6 lanes).
- Rats (3 lanes).
- Fat rats (2 lanes).

Cutoff Settings: On this page, it is possible to define cutoff levels.

Cutoff levels can be set for:
· Maximum Distance.
· Maximum Time.
· Maximum Shocks.
· Maximum Shock Time.

Shock Settings: defines the shock stimulus which will be delivered during the trial, setting the intensity (0-2.0 mA).

Other settings: Belt tilt, Airpuff minimum time

Network settings:

5.4 Performing experiments (general)

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

5.5 Starting at Constant Speed

In the constant speed mode, during IDLE state, the motor and the counters are disabled.

Pressing the START button, activates the motor. The motor stops and the counters are disabled by pressing the STOP button.

As the walking surface is a single belt (not separate for each lane), when the motor is started all the lanes will be moving at the same time, at the same speed.

After positioning the animal on the related lane, the test proper is started by pushing the related START button/s (1 to 6 for mice, 1, 3 and 5 for rats), which start the counters for each individual lane.

Please note the - and + buttons at the bottom of the panel: these enable the user to increase or decrease the speed even while the test is running.

In constant speed mode The user can manually decide to end single lane experiments, by pressing the on/off button on the shock grid ⏻.

When the test in a specific lane is over, a fresh mouse can be positioned and a new test started.

The test proceeds until one of the conditions entered in the Cutoff Settings is met (Maximum Distance, Maximum Time, Maximum Shocks, Maximum Shock Time).

5.6 Starting a Ramp

In the accelerating mode, when the START button is depressed, the Treadmill will pass from the IDLE state (motor and counters disabled), to the initial speed.

START LINEAR RAMP						
Tuesday, 08 October 2024 16:18						
LANE	**1**	**2**	**3**	**4**	**5**	**6**
Shocks	0	0	0	0	0	0
Minutes	00:00	00:00	00:00	00:00	00:00	00:00
Meters	0.0	0.0	0.0	0.0	0.0	0.0

SPEED **0** m/min

The test proper is started by the START button, which should be pressed as soon as the initial speed is reached.

In the RAMP mode, the individual lane buttons are not active, as the test starts simultaneously in all lanes (to guarantee that the whole ramp is exploited correctly).

START LINEAR RAMP						
Tuesday, 08 October 2024 16:18						
LANE	**1**	**2**	**3**	**4**	**5**	**6**
Shocks	0	0	0	0	0	0
Minutes	00:00	00:00	00:00	00:00	00:00	00:00
Meters	0.0	0.0	0.0	0.0	0.0	0.0

SPEED **9** m/min

START LINEAR RAMP						
Tuesday, 08 October 2024 16:19						
LANE	**1**	**2**	**3**	**4**	**5**	**6**
Shocks	0	0	0	0	0	0
Minutes	00:14	00:14	00:14	00:14	00:14	00:14
Meters	2.8	2.8	2.8	2.8	2.8	2.8

SPEED **13** m/min

The test proceeds until one of the conditions entered in the Cutoff Settings is met (Maximum Distance, Maximum Time, Maximum Shocks, Maximum Shock Time).

The user can manually decide to end single lane experiments, by pressing the on/off button on the shock grid ⏻.

As soon as the FINAL SPEED is reached, the belt will keep rotating at constant speed and the timers will continue counting.

When the test is over, the related counters stop and the display shows the lane with a grey backdrop; the data are saved and will appear in the RESULT table.

The motor and the counters will stop by pressing the STOP button at any time during the experiment.

5.7 Results

Data are saved in the internal memory and they can be scrolled on the touch-screen. Reach the results section by depressing the "RESULTS" icon from the home page.

As in the example, all the Experiment-related information entered by the user will appear in this page:
· Session
· Treatment
· Protocol
· Stage
· Trial
· Type (Animal Type)
· Mode (Speed Mode)

The test results will appear in the table under the experiment-trelated information:
· Lane
· Runs
· Shocks
· Meters
· Speed (m/min)
· Animal ID
· Reason (Why the experiment ended)

Results can then be saved on the USB flash drive, and uploaded on the PC for further processing, see "5.9 USB Storage". When transferred to PC via USB drive, test results appear in extended version.

5.8 Important Note On Shock Frequency/ Detection

In our model, the detection of the animal stepping on the grid at the bottom of the running surface, is carried out by the same circuit which administers the shock.

The sampling frequency is 3Hz. If the animal steps on and off the grid in less than 333 milliseconds, it may not be detected.

This should be a rare occurrence indeed and should not affect the correct event recording.

5.9 USB Storage
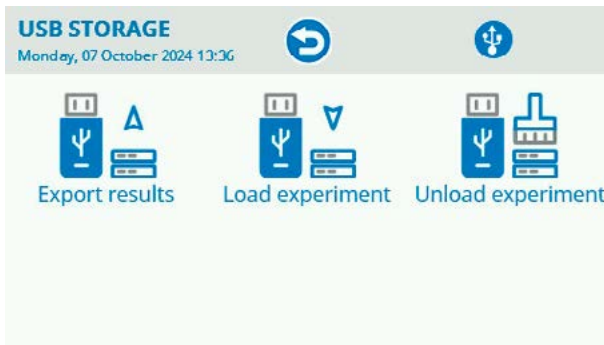
From the Main Menu, by tapping on "USB Storage" icon the user will access a page where it is possibile to:

- **Export the results** on a USB key. Insert in the upper USB port the USB flash drive pro-vided with standard package. Correct insertion is confirmed by the icon on the toolbar. If you try to save the data without USB-KEY, an error dialog box will appear. When the download procedure ends correctly, the following dialog box is displayed. The file will be saved in .CSV format.
- **Load experiment** form a USB key. Insert a USB flash drive, containing at least one protocol. Tap on "Load Experiment" icon. This will open a new window, displaying all the loadable protocols found on the USB key. Use the arrows on the right of the screen to scroll the list up and down. Having selected the desired protocol, if the protocol was properly loaded the confirmation box will show up, while an error box will appear if the file has been found corrupted. After opening a protocol, the user will be able to test the animals following to the loaded protocol, combined with the information contained therein.
- **Unload experiment**.

5.10 Utilities

Update

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.

Diagnostic Cycle

Press this icon to run a diagnostic cycle of the Treadmill. This diagnostic cycle will test the ON/OFF buttons on the grid/button assembly, the shocker, and the proper functionality of the belt.

Before running the diagnostic cycle, the user can insert a USB stick into the designated slot. Once the diagnostic cycle is complete, the report file will be downloaded directly onto the USB stick, ready for export.

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 BACKUP BEFORE EXECUTION

Use this button to clear all the device memory. Perform this operation only after correctly exporting and saving the experiment results. Keeping the device's internal memory clean is beneficial both for easier data analysis and because the internal memory is not unlimited and when full needs to be cleared.

Date-Time

From this page the user can set date and time information

Belt Cleaning
The cleaning option is very useful at the end of an experimental session to help the user cleaning the device. When selected, it will start the motion of the carpet at a low speed (10 m/min) for 2 minutes, keeping the shock grid deactivated. A blade positioned below the running belt will remove the animal dropping.

Factory Reset
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.

5.11 Using LAN connection

If your Treadmill is LAN connected (see "3.7 LAN connection") you can load experiment parameters file generated by the Ugo Basile X-Pad app into the Treadmill and download experimental data result without the need to use the USB storage.

LAN Connection is done by a standard web browser. We suggest Google Chrome, however you ca use other web browsers.

To start a connection session make sure the LAN connection installation has been properly done (see "3.7 LAN connection") and then open Your web browser.

LAN connection to the Treadmill is password protected, for data security.
The factory password is UgoBasile. It is possible to change this preset password with one of your choice.
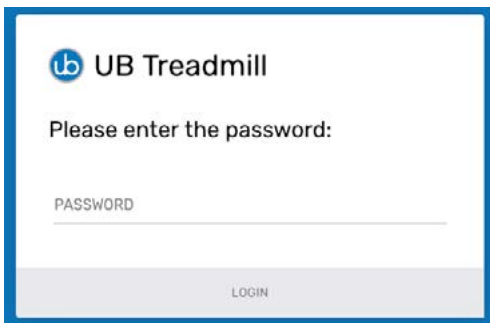
To change the LAN connection password:
1. Log in to your Treadmill with the factory password (UgoBasile).
2. Go to the main menu (the 3 lines at the top left) and select the command "Change Password".
3. You'll be asked to enter the current password and enter two times the new password.. The new password 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 feature use.

If you loose the password, you can reset it from the device touch panel.

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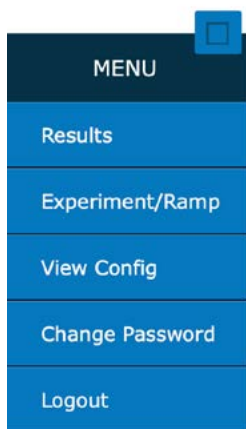
On the Result page you will find the experiment data result and the possibility to download the .csv file with the data on your computer by pressing the Download CSV File button.

ⓑ UGO Basile Treadmill

Number of records in DB: **18**

Download CSV File

Records

Session	Lane	Date	Treatment	Protocol	Stage	Trial	ID	TimeElapsed [hh:mm:ss]	PauseD [s]
2	1	10/10/2024 13:24:16						00:00:00	
2	2	10/10/2024 13:24:16						00:00:00	
2	3	10/10/2024 13:24:17						00:00:00	
2	4	10/10/2024 13:24:18						00:00:00	
2	5	10/10/2024 13:24:18						00:00:00	
2	6	10/10/2024 13:24:19						00:00:00	

The Experiment/Ramp page will give You the ability to load into the device:
• Experiment data
• Ramp experiment

Both the file can be created by the Ugo Basile Windows app X-Pad which is included in Your Treadmill device.

Create the Experiment file and/or a Ramp file in X-Pad and safe it on Your PC.

Via the web browser connect to the Treadmill as described and select from the menu the function Experiment/Ramp:

ⓑ UGO Basile Treadmill

X-Pad Experiment animal list

Scegli file Nessun file selezionato

Send to device

X-Pad Ramp file (.tr2)

Scegli file Nessun file selezionato

Send to device

Use the button Select File (is in Italian in the pics while this Windows is an Italian edition) to select the Experiment or the Ramp file on your drive 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 Treadmill.

The View Configuration page is intended for showing 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 Treadmill and ending the working session.

6 Connections

6.1 I/O port connection

The Treadmill 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.

The 15-pin D-SUB connector provides different output trigger, in the form of TTL signals.

All pins, except pin 8, are TTL digital signals. Pin 8 is an analog output which provides the rotation speed.

Pins 14 and 15 are ground.
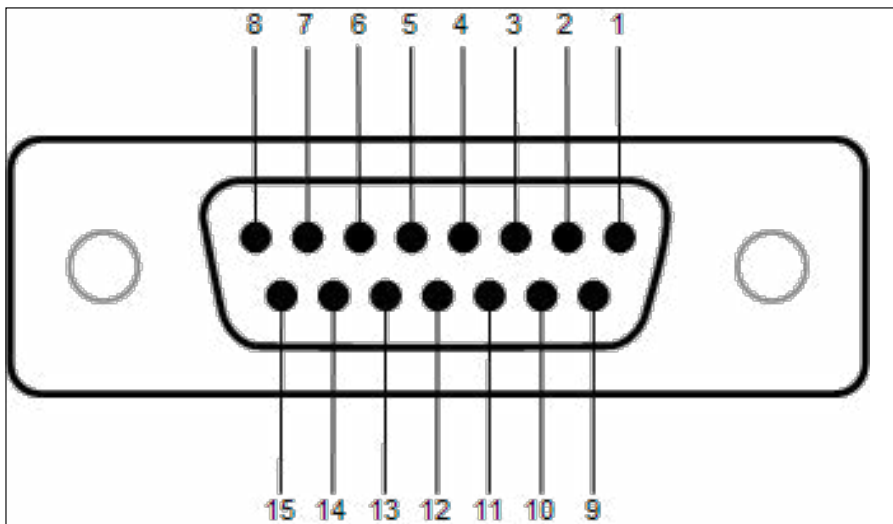
D-sub connector pins

DB-15 Pin#	Description	Level Low	Level High
1	LANE 1 SHOCK	NO SHOCK	SHOCK DELIVERED
2	LANE 2 SHOCK	NO SHOCK	SHOCK DELIVERED
3	LANE 3 SHOCK	NO SHOCK	SHOCK DELIVERED
4	LANE 4 SHOCK	NO SHOCK	SHOCK DELIVERED
5	LANE 5 SHOCK	NO SHOCK	SHOCK DELIVERED
6	LANE 6 SHOCK	NO SHOCK	SHOCK DELIVERED
7	EXPERIMENT STATUS	NOT RUNNING	RUNNING
8	ANALOG SPEED OUT	3m/min= 0.5V	100m/min = 10V
9 - 13	NOT USED		
14 - 15	GROUND		

D-sub connector pin-out table

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**

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

The 47300 Treadmill was designed to make cleaning very easy.

For general cleaning, do not use organic solutions, liable to impair the lane assembly, the acrylic components and touch-pad. Cotton wool and water can be used for cleaning purposes.

For disinfection, use a non-alcoholic disinfectant, or H_2O_2.

Each part needing specific cleaning can be conveniently disassembled. Please see the following paragraphs and follow the instruction carefully.

7.3 Running Belt

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.

The running surface of the 47300 consists of a white alimentary-grade belt, easy-to-clean and soft enough to provide suitable grip, but not porous.

This specially selected material is easy to disinfect and requires minimal maintenance.

The "Belt cleaning" feature, in the utility menu provides a very efficient tool to be used at the end of each experimental session.

A blade positioned below the running belt will remove the animal droppings: enhance the action of the blade by adding a moderate quantity of disinfectant on the belt during the cleaning phase.

Aligning the Belt

Make sure that the belt is always centred to the chassis of the Treadmill. When the belt is misaligned with respect to the axis of the Treadmill, it is necessary to reset it by regulating the screws placed in the rear part of the Treadmill.

Here is a list of the steps to be followed to perform the aforementioned regulation:

1. Enter the "Start experiment" page and select the button.

2. Press the button "+" to increase the speed up to 20 m/min.

3. Place yourself behind the Treadmill and establish whether the belt is misaligned towards left or right.

4. **If the belt drifts to the left side**, rotate the left regulation screw clockwise of a quarter of a turn and do the same for the screw on the right but counter-clockwise.

5. **If the belt drifts to the right side,** rotate the left regulation screw counter-clockwise of a quarter of a turn and do the same for the screw on the right but clockwise. See following pictures:

6. Observe the behaviour of the belt for at least two minutes. If necessary, repeat the operations described at points 3, 4 and 5.

Regulating the Belt's Strain

It is recommended to regulate the strain of the belt in case it starts slipping on the rollers. This operation is very important to lengthen the lifetime of the components of the Treadmill.

During the regulation of the strain of the belt, keep the belt itself as slow as possible.

1. Enter the "Start experiment" page and select the button

2. Press the button "+" to increase the speed up to 20 m/min

3. If the belt slips then slow down the belt until it stops, rotate both screws of a quarter of a turn in clockwise sense and, if necessary, repeat points 2 and 3.

4. Finally check if, after regulating the strain, the belt is correctly aligned.

Lane Assembly
The lane assembly can be easily re-moved for cleaning: just lift the whole assembly with due care, by holding it via the two recessed handles provided.

ATTENTION: Do not use organic solutions, liable to impair the acrylic components. Cotton wool and water can be used for daily cleaning.

For disinfection, use a non-organic disinfectant, or H_2O_2.

Drop Pan

The drop-pan positioned below the grid at the bottom of the running surface can be removed for cleaning.

Please follow the steps in sequence, to avoid any damage to the cleaning blade positioned between the belt and the drop-pan:

A. UNPLUG THE MAINS CORD

B. First remove the lane assembly.

C. Detach the cable connecting the grid/button assembly to the controller.
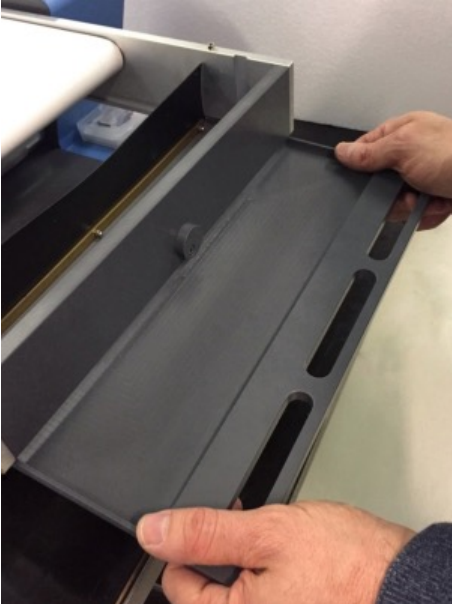

D. Remove the whole grid/button assembly.

E. Unlatch the drop-pan drawer, by turning the stopper, see picture:

F. Pull-out the drawer, and the attached cleaning blade.

After cleaning, reposition the drop-pan by repeating the same actions in reverse order: reassemble the grid, connect the cable, re-position the lane assembly.

Grid Assembly

To assure correct operation, shock delivery and detection, the grid needs to be clean.
When necessary, it can be easily removed, following the steps outlined below:

A. First remove the lane assembly as shown in the picture on paragraph 6.3.1.

B. Detach the cable connecting the grid/button assembly to the controller, then remove the whole grid/button assembly.

C .Hold the grid assembly as shown in the picture, in order to keep the button array, and the electronic block away from water/liquids.

D. Clean the grid thoroughly, with the help of an abrasive sponge, and a suitable disinfectant.

E. Dry carefully.

F. Reassemble by repeating the above steps in reverse order.

7.4 Lubrication

Our Treadmills do not require any lubrication: all its rotating components are lubricated for life.

7.5 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.

7.6 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 packing; whenever possible, please use the original packing.

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, 1500W max
Sound Level	80 dB ca. at maximum speed
Operating environment	10°C to 40°C
Detection	By pedal switch and via numeric key pad
Operation	
Speed	Adjustable in the range 1 to 100m/min, in steps of 1m/min
Mode	Constant, Ramp (accelerating), Multi-step personalized ramp
Slope	Manual tilting, positive (uphill) or negative (downhill) from -25° to +25°, in steps of 5°
Shock	From 0 to 2mA (in 0.1mA steps), 3Hz
Start/Stop	From the touch-screen
Detection	When touching the shocker
Results	Time Elapsed, Speed, Distance (absolute and relative), Shocks number, Events.
Data Acquisition	Via dedicated X-PAD software or .cvs file for PC.
Data Portability	By USB flash drive (included)
Data Input	Exported to .cvs, protocol, ramp
Data Output	Results table in .csv
TTL Output	Shock status, running status and speed

Warranty
This device is covered by 12-month on-factory manufacturer warranty.
An additional 12 month on-factory warranty period (total 2 years) is available for free after device registration.

9 Warranty

Your device is covered by 12 months on factory warranty period.
Registering the device on our registering web site page will give you a 12 months free warranty period.
To make the product registration.

1. Take a picture or a note of the device serial number which is written in a metallic label at the of the instrument case.
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 in the first 12 months after the delivery date, not later.

10 Related Products

Measurement of motor coordination and balance can be used not only to assess the effect of drugs or other experimental manipulations on mice and rats, but also to characterize the motor phenotype of transgenic or knock-out animals.

The tests can be used equally well for rats and mice, and have been used both for the phenotypic characterization of transgenic mice and for evaluating the effects of lesions and aging in rats.

RotaRod for Mice an Rats

**Complex Wheel
for Mouse and Rat RotaRod**

**Enlargers
for Mouse and Rat Rotarod**

**Activity Cage - Spontaneous Activity
for Mice and Rats**

**Grip Strength Meter (GSM) for Mice
and Rats**

**Activity Cage - Spontaneous Activity
for Mice and Rats**

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Hole Board Device - Boissier-Simon method

Running Wheels - Rodents Motor Activity Measurement

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