Quick set-up Guide
Multi-Maze 8 Arms for Mice

Version 1.0 - Dec. Y24

MOUSE

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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**
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PRODUCT:	**MULTIMAZE**
CATALOG NUMBER	**41500 (series)**

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*

October 2024

Date Firma / *Signature*

MOD. 13 Rev. 1

Product Features and General Information

The unique modular system of the Ugo Basile MULTI-MAZE, will enable user to set-up an electronically controlled maze to test the mouse in different environment, combining one of the different arenas provided, and the required number of arms, each provided with an electronically controlled independent door, in the following configurations

• Y-Maze

• T-Maze

• 8-Arm Radial Maze

• Please refer to the MultiMaze instruction manual for details

MultiMaze doors can be manually operated by the Multimaze control unit

Using the ANY-maze software You can operate the MultiMaze doors (open and close) as well as the Pellet dispenser (if You have them), create procedure where a door open or close if the animal make an action or enter a certain zone as well delivering pellets based on animal actions or position.

You can also manually operate the MultiMaze doors by the provided Multimaze control unit and manually delivering pellet from the pellet dispenser using the button on each pellet dispenser unit.

Contents

1 Hardware installation

1.1 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

1.2 Intended Use

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

1.3 Additional Safety Consideration

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:

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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 Assembling the instrument

After unpacking the device, removing all the packaging material and place the MultiMaze base cart (if provided) on the Lab floor.

In case the MultiMaze base cart is not provided, You will need to place the MultiMaze on a robust desk.

The minimum needed space to hold the MultiMaze is 100 x 100 cm, but we advise You to have at least 120 x 120 cm of available space on the desk.

2 power supply inlet are also needed to complete the set-up.

Place the central arena (in the picture for the 8 Arms configuration)

on the MultiMaze base cart, after having closed the wheel brakes (or on the desk.) roughly in the centre.

Manually insert the 8 arms, one by one, matching the 2 pins on the base and the above interlocking position.

Pay attention to pair the arm number with the central base connector door number.

In other words place the Arm number 1 close to the connector "door 1" and sequentially place the number 2 and so on.

When finish placing all the arms, You should have the following configuration:


Regulate the two levelling feet at the external end of each arms to level the arms vs. the central arena plane; the space between the central arena and the arm floor (see from above) has to have the minimum space possible, which means the floor and the central arena plane needs to be at the same level.

Manually unscrew/screw the 2 levelling feet to obtain the result, please pay attention in regulating booth of the feet at the same position. If You have one feet higher or lower the other You will not obtain a good device stability.
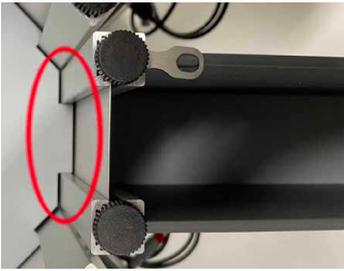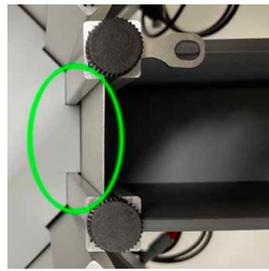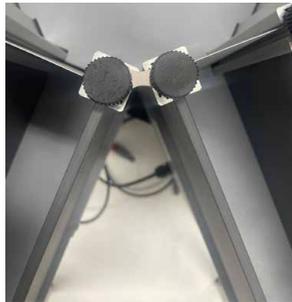
Wrong regulation   Correct regulation

The correct levelling of the 8 arms id essential for a correct movement of the sliding doors, that need to be as smooth as possible.

Now link all the arms together for a better stability using the provided latches:

Not linked (wrong)   Correctly linked (right)

You now need to electrically connect the arms to the central unit of the MultiMaze, connecting all the red connector of each arm to the respective female connector labelled "Door X" where X it is the door number used to identify each door/arms by the electronics.

PS: do not force the connectors while inserting them, there is a specific position for insertion; rotate the male connector to fit the female connector pin for the correct insertion.

Connect the " Control unit for MultiMaze" to the central device base, using the provided flat cable:

From the back of the "Control unit for MultiMaze" to the connector beside the Arm connector number 3

Remember to close the connector screws for a reliable connection.

3.3 Power Connections

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

Power module

Make sure your power cord is provided with a reliable ground connection.

Connect the mains cord between the power socket of the Climbing test and Your outlet.

MultiMaze can operate from 100 up to 240 Volt AC at 50/60 Hz and absorb 75 Watt.

Fuses are T1.25A

You can now switch the device ON

3.4 Testing doors movement

Using the "Control unit for MultiMaze"

You can manually control the close/opening of all the maze doors:

PS the unit does not need a separate power.

Set the main switch at the left on **Manual** position

Set the **Selected doo**r switch **UP**

Set the **Enable SEL** switch UP

Using the numbered (from 1 to 8) switches You can close or open the respective doors; try open and close all the door.

If some of the doors does not operate as expected switch the system off, check all electrical connections and try again.

If some of the doors does not operate correctly contact

service@ugobasile..com

4.2 Installing Pellet dispenser

If You bought the pellet dispenser units for Your MultiMaze You may want to install them one at the end of each MultiMaze arm:

Note that Pellet dispenser units are numbered with a label; pair the Pellet dispenser number with the Arm number when installing them.

To hardware install the pellet dispenser just manually remove the end arm wall and place in state the pellet dispenser sliding it inside the guide.

If You find the Fluid holder in state of the end arm wall, in order removing it You need to unscrew the underneath screw to remove the unit; the black holder will remain in place for future use.

To electrically install the pellet dispenser units use the 8 provided Rj45 cables (they are standard Ethernet CAT 5 cables) to connect the pellet dispenser units with the correspondent connector number at the back of the "Control unit for Pellet dispenser"

Note that pellet dispenser can be manually driven by pressing the press button on each units that will deliver one pellet.

If the pellet dispenser is empty of pellet it will continue rotating, fill them with the appropriate pellet for mice.

4.2 Installing fluid holder

If You bought the fluid holder You can install them in state of the Pellet dispenser or in state of the end arm wall.

To hardware install the fluid holder, just manually remove the end arm wall and insert the fluid holder in the base holder and .manually tight the fixing knob underneath.

Do the same if You do have the pellet dispenser installed previously detaching the RJ45 cable.

4.2 Connecting the ANY-maze PC

If You plan to use the video tracking software ANY-maze to perform Your experiment, You will need to connect the PC running the software to the MultiMaze system.

Hardware connection:

Connect the provided USB cable from the maze central unit (the USB connector is close to the arm connector number 5) to the ANY-maze PC

Connect the Pellet dispenser control unit to the ANY-maze PC using the provided USB cable

4.2 Connecting the ANY-maze Video camera

If You bought the Ugo Basile video camera with the ceiling mounting kit, You will need to hardware install the ceiling mounting kit at the Lab roof.

As an alternative You can use one photographic light stand which has been designed for light but can be use as a efficient camera stand.

Camera needs to be placed at the MultiMaze centre at a certain heigh to permit a MultiMaze total view with minimum distortion.

Ugo Basile multi-focal lens camera has a knob to vary the focal lens from 2.8 up to 12 mm; adjust the focal lens depending on the camera position.

Use the second knobs on the camera to adjust the focus.

In order adjusting the focus we advise You to follow the next steps and use ANY-maze viewer to regulate camera position and camera focusing.

4.2 ANY-maze set-up

Install ANY-maze software in an compatible Windows PC using the ANY-maze Setup 7.46.exe file included into the provided USB pen and inside the folder Any-maze

For ANY-maze system requirement visit the following Internet link:

https://www.any-maze.com/equipment/computers/

Once the software has been correctly installed, launch it

Create a new ANY-maze user and log in then go to the I/O tab

You first need to configure the MultiMaze and Pellet dispenser interfaces following this procedure:

Be sure to have only the MultiMaze USB cable connected to the PC and no others USB cables.

Into the ANY-maze I/O windows, You should see only the ANY-maze digital interface 1 (which is the MultiMaze interface)

Press the button: Configure this device:

You need to set the ports from 1 to 8 as a **TTL output** and the rest of the available ports (from 9 to 12) as: **not used**

When finish press the OK button

Now select the Output switches button below the ANY-maze digital interface 1.

Pressing the TTL output on port (from 1 to 8) You should open and close the relative ports on the MultiMaze.

Be sure that on the "Control unit for MultiMaze" the main switch on the panel is set to USB (not to Manual or BNC) other wise You are not able to control the doors by ANY-maze software.

Test the correct operation of each of the MultiMaze ports.

You now need to connect the USB cable coming from the Pellet dispenser control unit to the PC and in the I/O windows of the software You should see 2 new items:

ANY-maze digital interface 2

and

ANY-maze digital interface 3.

You need to configure them for the use of the Pellet dispenser.

Press the ANY-maze digital interface 2 and the button "configure this device:

Select the port 1 and set it as Ugo Basile Pellet dispenser (not generic Pellet dispenser)

You will notice that also the port 2 will be used and this is because the Ugo Basile Pellet dispenser need two ports, one for the delivering pellet signal and one back, confirming the pellet has been delivered.

Continue configuring the port 3 as an Ugo Basile Pellet dispenser (it will also use the port 4.)

Continue setting up all the available port till the 11 and 12 port, then press the OK button.

With this interface You can control the pellet dispenser from 1 to 6 (two are missing to reach the total number of 8 so You need to configure the second interface)

Select the ANY-maze digital interface 3 and press Configure this device.

Configure the port 1 and 2 as a Ugo Basile Pellet dispenser and the 3 and 4 port as well, then configure the rest of the available ports (from 5 to 12) as Not used

Your I/O interface tab is now configured.

Create a new empty experiment, under the menu File.

As a protocol name digit the one You prefer (we use Ugo Basile MultiMaze)

As Operating mode You need to select "Video Tracking Mode with input/output" which is inside the Standard modes group

Connect the USB cable coming from the Video Camera

Select video source and with the right mouse button select "New Video source" to select the Ugo Basile Camera:

Give a name to this video source that can be "MultiMaze Camera".

From the drop down list of the available cameras select: DMK37AUX287

(If You do not find the camera in the list You need to install the camera driver on Your PC using the camera driver installer kit into the provided with the camera USB storage.)

You now need to define the I/O device for the MultiMaze doors and Pellet dispenser:

Go to the icon "I/O devices" and right click selecting New I/O device.

Assign to it the ANY-maze digital interface 1.

Give the device a name like MultiMaze doors

Create another new I/O device assign it the ANY-maze digital interface 2.

Name this device as Pellet dispenser 1 to 6

Create another new I/O device and assign it the ANY-maze digital interface 3.

Name this device as Pellet dispenser 7 to 8

You now need to create a new Apparatus; name it MultiMaze which use as a video source use the one You previously created the MultiMaze camera.

You now need to draw a map of the apparatus but You may want to jump this step and do it later; to continue just digit 200mm in the "length of the ruler line" and You will need to specify later the exact ruler length.

Press the ON/OFF output icon and right click selecting "New on/off output

This will be Your Multimaze door number 1; name this item Door 1

Select the Port to use icon under and from the drop down list select the appropriate port which is connected to the MultiMaze door 1, which is on the Digital interface number 1 at the TTL 1

Repeat this, creating 8 On/Off outputs related to the MultiMaze doors

Configure now Your 8 pellet dispenser to be able to use them into a procedure and to do this:

Go to the Pellet dispenser icon on the Inputs and Outputs section and right click

on it.

Select new pellet dispenser and name it as "Pellet dispenser 1"

Press on the Port to use button below to assign the port which will be ANY-maze digital interface 2 - Pellet dispenser 1-2 (remember two port for one pellet dispenser)

Repeat this process creating 8 Pellet dispensers using the appropriate ports on the digital interface 2 and 3

YOUR ANY-MAZE SOLUTION IS NOW CONFIGURED FOR THE USE OF THE UGO BASILE MULTIMAZE + PELLET DISPENSER

Please note that a pre-configured ANY-maze protocol file called **"Ugo Basile MultiMaze.szp"** is loaded into the USB pen provided with the device which is already configured as above indicated.

You can find this file into the Any-maze folder/Pre-configured ANY-maze protocol

You just need to load this file into Your ANY-maze solution and avoid make all the manual configuration.

9 Pellet dispenser use

Pellet dispenser are designed to be used with pellet for mice and rats, in this MultiMaze model they are configured to be used only with mice; if You need to use them for rats in the future You will need to buy the Rat wheel for pellet dispenser.

The principle of operation:

Having the pellet transparent tank filled with the correct pellets, when the electronics or the manually operation of the press button tells the device to deliver a pellet, the aluminium holed disk start rotating, when the rotation pairs the escape hole tube a pellet will move down the cannula guiding it to the manger.

Along the cannula there are 2 photo beams intercepting the pellet path and ensuring that just one pellet has been delivered giving the electronics a feed back signal.

Pellet calibre for mice is 10-20 mg

Tank capacity is approximately 4'000 pellet but we strongly advise You to not fill the tanks and place the necessary pellet for the experiment and not more; a max of 200/300 pellet are probably sufficient for the majority of the experiments.

Pellets make a lot of dust and absorb humidity during time and all this factors can interfere with the device functionality.

If You need to have more pellet in the tank because Your experiment take a long time and You do not want to be close the maze during the experiment filling the missing pellet, You can load more than 300 pellet in the tank using the pellet separator placed (see picture)

Do not press the separator down the tank, just gently place it inside.

The black cover is to close the tank just to avoid pellet smell out the device; You may choose to place it in position or not.

At the end of each experiment is important to empty the pellet dispenser and

clean it with compressed air to remove all the pellet dust.

Some suggestion in handling pellet and pellet dispenser:

- DO NOT LEAVE PELLETS INTO THE PELLET DISPENSER LONGER THAN THE EXPERIMENT TIME.
- DO NOT USE WATER TO CLEAN THE PELLET DISPENSER TANK AND PARTS
- STORE YOUR PELLET IN A FRESH NON HUMID PLACE (FRIDGE IS PERFECT)
- ALL TIME CLEAN THE PELLET DISPENSER AT THE EXPERIMENT ENDS.
- USE THE CORRECT PELLET CALIBRE FOR MICE OR RATS

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 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

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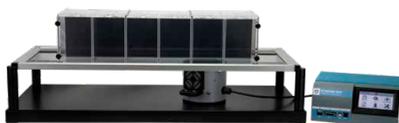35550 - Thermal Gradient Ring (Zimmermann's method)

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