

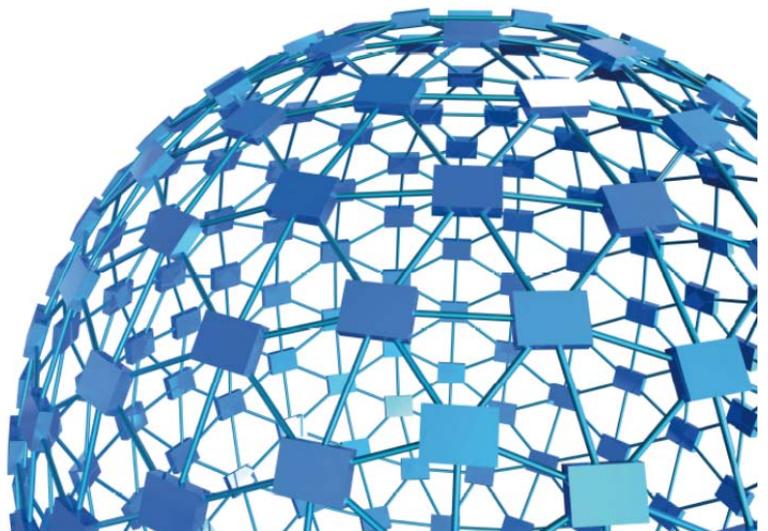


ugo basile

TRANSFORMING IDEAS INTO INSTRUMENTS

instruction manual

**Hot/Cold Plate NG
Cat. No. 35150**



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instruction manual

**Hot/Cold Plate NG
Cat. No. 35150**

Serial No.

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 OPENED INSTRUMENT UNDER VOLTAGE SHOULD BE AVOIDED AS MUCH AS POSSIBLE AND, WHEN INEVITABLE, 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.

Hot / Cold Plate

Cat. No. 35150



General

This new **Hot/Cold Plate NG** offers a wide temperature range, presetable in the range -5°C to 65°C , can be used as:

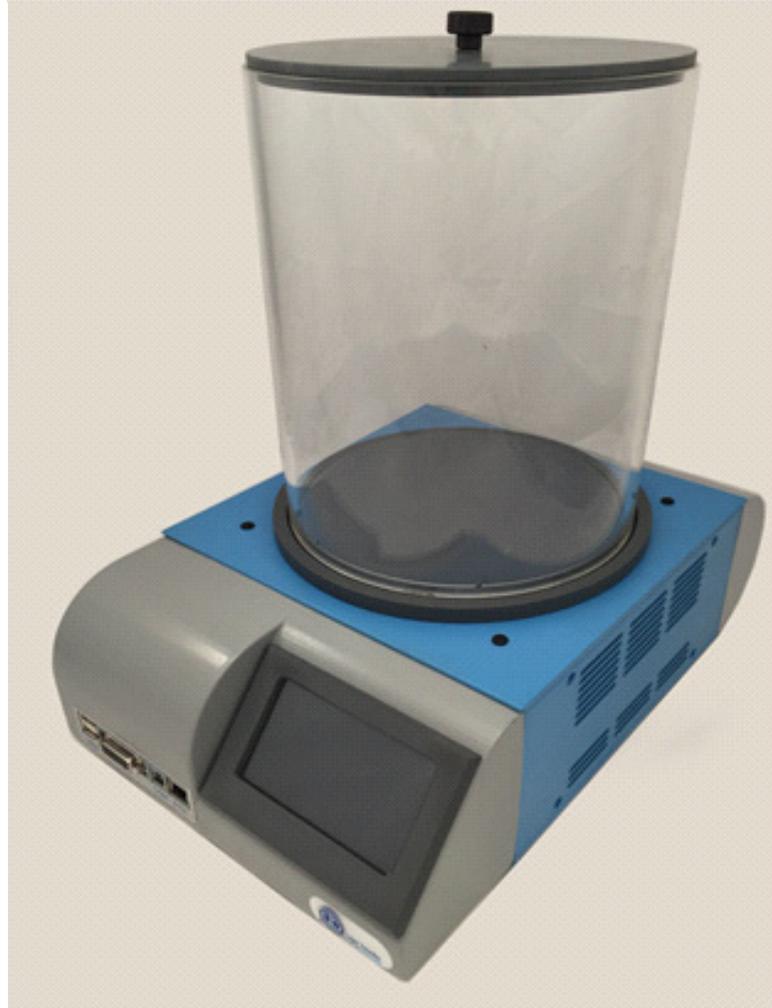
- A **conventional HOT PLATE**, to carry out a rapid precise screening of narcotic type analgesic drugs according to the well known Hot Plate Test devised by N.B. Eddy and D. Leinbach.
- As a **COLD PLATE**; the **Cold Plate Test** is useful in studying cold receptors and cold allodynia, a phenomenon very frequently observed in chronic pain on humans.

The lid reduces humidity condensation on the plate at low temperatures.

Two working modes allow for testing at fixed temperature or at increasing/decreasing temperature (RAMP).

An optional **auxiliary Plate** (heat only) can be connected to the main unit and will be useful in the habituation phase.

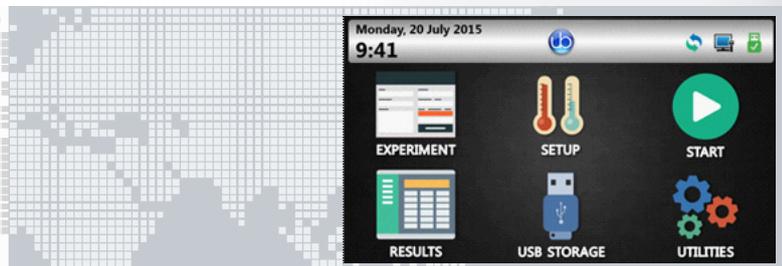
Brand new, user friendly software, to set up the experiment and manage the results.



for Rats

for Mice

- IT CAN BE USED AS HOT PLATE OR COLD PLATE
- NEXT GENERATION INSTRUMENT: SAME RELIABILITY, INNOVATIVE TECHNOLOGY!



Main Features

- **OPERATING TEMPERATURE:** -5.0°C to 65.0°C in steps of 0.5°C
- **DETECTION:** by pedal switch
- **OPERATING MODES:** fixed or ramping temperature, for dynamic experiments
- **X-PAD SOFTWARE:** brand new, user friendly software included as standard, to set up the experiment and manage the results
- **CONTROLS:** 4"3 touch-screen to set and monitor the test
- **DATA PORTABILITY:** via the USB Memory-Key, included



CHECK-LIST

- 35150 Hot/Cold Plate NG**
 35250 Thermal Escape Device

CLIENTE / CUSTOMER _____

Ordine No. / Order No. _____ Data / Date ____/____/____

UB code	CAT.No.	35150 Q.ty	35250 Q.ty	√	DESCRIPTION	DESCRIZIONE
	35150-001	1	1		HOT/COLD PLATE MAIN UNIT	UNITÀ PRINCIPALE (PIASTRA)
E-WP 008					MAINS CABLE	EUROPE
E-WP 008-1						U.S.A.
	35100-286	1	1		PERSPEX ANIMAL RESTRAINER	CONTENITORE CILINDRICO
	35100-320	1	1		RESTRAINER LID (for H/C PLATE)	COPERCHIO PER PIASTRA C/F
	37215-303	1	1		PEDAL SWITCH	PEDALE
E-FT 016		2	2		FUSE (T5A 6X32)	FUSIBILE (T5A 6X32)
E-AU 041 USB pen- drive	35150-302	1	1		INSTRUCTION MANUAL	MANUALE DI ISTRUZIONE
	X-PAD				SOFTWARE	SOFTWARE
	52010-323	1	1		USB CABLE A/B 1.8m	CAVO USB 1.8m
	35150-002		1		ADDITIONAL HOT PLATE	PIASTRA CALDA AGGIUNTIVA
	35100-320		1		PLATE CONNECTION CABLE	CAVO COLLEGAMENTO PIASTE
	35250-003		1		SET OF TUBES/CATWALK FOR 35250	SET DI TUBI E PASSERELLA PER 35250

OPTIONAL

35150-002		ADDITIONAL HOT PLATE	PIASTRA CALDA AGGIUNTIVA
-----------	--	----------------------	--------------------------

DATE / /	Serial No.	IMBALLATO DA / PACKED BY	
Set for			
<input type="checkbox"/> 115V 50 Hz	<input type="checkbox"/> 230V 50 Hz	<input type="checkbox"/> 115V 60 Hz	<input type="checkbox"/> 230V 60 Hz

IMPORTANT/IMPORTANTE:

Check the shipment for completeness immediately after receipt: should you find any discrepancy, please fill in the following part and transmit it to our fax no. +39 0332 745488

Al ricevimento della merce controllate che la spedizione sia completa: in caso di discrepanza, completate il formulario di seguito riportato ed inviatelo al nostro fax no. 0332 745488

FROM: Name	Company/Institution
DATE	REF.

NOTE

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Hot/Cold Plate NG

Cat. 3 5 1 5 0

1 GENERAL

The hot plate test is a test of the pain response in animals, used in basic pain research and in testing the effectiveness of analgesics by observing the reaction to pain caused by heat.

The method, devised by N.B. Eddy and D. Leimbach in 1953 (see paragraph 8.1-Method Papers) evaluates the reaction time of mice dropped on a heated surface and thus confronted with a heat stimulus applied to the plantar surface.

Eddy and Leimbach used a behavioral model of nociception where behavior such as jumping and hind paw-licking are elicited following a noxious thermal stimulus. Licking is a rapid response to painful thermal stimuli that is a direct indicator of nociceptive threshold. Jumping represents a more elaborated response, with a latency, and encompasses an emotional component of escaping.

When a central analgesic agent is administered to the animals, reaction time is markedly increased.

The new Hot/Cold Plate 35100 has been designed to study more recently published cold receptor systems of neurons, which are not activated by cold but rather by chemicals, as well as the traditional cold receptors. These neurons are present in the CNS as well as PNS, but they are different from the neurons which sense pain.

1.1 Principle of Operation

While in the original model, hot plate temperature was obtained by thermoregulated water circulation, commercially available models were later designed, including heating elements, precisely regulated, to perform rapid and precise screening of analgesic drugs on the animal by the hot plate test.

The test is performed by placing an animal on a heated (or cooled) surface; a transparent glass cylinder is used to keep the animal on the heated surface of the plate. After a brief period, typically several seconds, an animal will lift and lick a paw as the heat of the surface becomes uncomfortable: the animal is then immediately removed from the apparatus.

The dependent variable in this test is the latency time, defined as the time period between the zero point, when the animal is placed on the plate surface, and the time when the animal shows stereotypical response to pain/strong discomfort, such as paw licking,

or jumps to avoid thermal pain; the operator stops the counter via the pedal switch, thus recording the current temperature and the reaction time.

2 INSTRUMENT DESCRIPTION

The Instrument features:

- 1) a **main unit** of original design, see paragraph 2.1, incorporating the plate proper and a **touch screen command/display**
- 2) a Plexiglas **restrainer**, see paragraph 2.2.

The 35150 Hot/Cold Plate NG combines the same functionality of the previous version, higher performances, greater stability and uniformity, more precise and quicker temperature control, and much easier experimental organization and data management.

Operating modes will allow to work with constant temperature or ramp, defining the initial and final temperature to set an upward or a downward ramp.

The plate temperature is monitored in 0.5°C steps and reaction time is recorded in 0.1s increments.

2.1 Main Unit

The Plate is cut from a 10mm thick aluminium slab and is mated to high surface heating/cooling elements which provide even temperature to the entire test area.

A solid state temperature regulator senses the plate temperature via a digital thermometer and powers the heating/cooling elements through a proportional circuit to minimize temperature overshoot.

2.1.1 Important Notice on Temperature Range

The plate temperature can be set by the operator in the range -5 to 65°C. The extremes of this ample range can be reached, provided the room temperature remains in the interval 18-24°C.

Temperature increase/decrease at different rates is slightly different in the different ramp sections:

Temperature ramp	Range	Max. Rate ¹
▲ Up	-5° to 65°C	+9°C/min
▼ Down	65° to 30°C	-7°C/min
▼ Down	30° to 5°C	-3°C/min
▼ Down	5° to -5°C	-1°C/min

¹ The above measures have been taken at a room temperature of 21°C

2.1.2 Considerations Over Animal Welfare

In any analgesia test, great care must be taken to prevent the animals from inadvertent harm.

When an investigator initially begins using the hot plate test, and when first assessing a new strain of animal, care must be taken to identify the appropriate amount of stimulus (i.e., temperature of surface) that will produce the desired response (i.e., paw lick or jumping).

When operating at constant temperature, a cut-off time, generally 30 sec must be established to minimize risk of an animal sustaining tissue injury from prolonged exposure to the heated surface.

One should also assess the effects of a reference analgesic such as morphine to determine that the planned hot plate temperature will result in the desired sensitivity (J.N. Crawley “Current protocols in Neuroscience” J Wiley, 2001)

The 35150 is very quick in temperature changes: when operating in “ramp” mode, please pay attention when operating at temperature extremes and with extremely quick temperature ramps, to avoid irreversible damages on the animals on test (in particular when testing mice).



2.1.3 Touch Screen Command/Display

The 35150 incorporates a 4”3 touch-screen, for basic setting and monitoring, via an intuitive panel.

The picture shows the main menu.

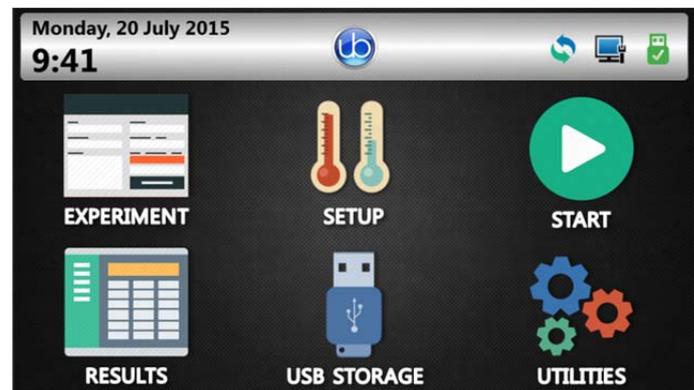
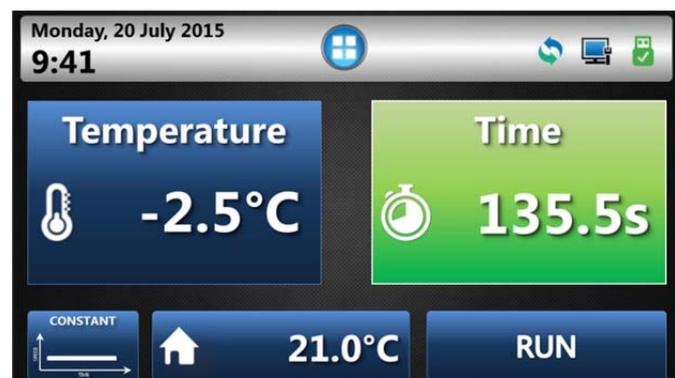


Figure 1, “Main Menu”

During the test, the touch-screen indicates the actual plate temperature, the operating mode, and the latency time.



this field indicates the environment temperature.



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



The brand new **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 managed via the USB flash drive provided.

See also paragraphs 2.5-Experimental Configuration and 2.6-Data Collection and Management

2.1.4 Notes on Resistive Touch-Pads

If you have in mind the sensitivity to touch of your tablet or smart-phone, you might think the Hot/Cold Plate touch-screen does not react promptly, and you have to press down harder, or use a pen.

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).

2.2 Perspex Restrainer

The animals are confined by a clear removable cylinder made of clear Plexiglas, which dimensions have been found to be suitable for both mice or rats.

Cylinders of different heights are available on request.



A **cylinder lid** is provided with the standard package, which purpose is to reduce frost condensation at low temperatures.

To guarantee the rated performances, the lid should always be used under 10°C.

2.3 Additional Plate

An “auxiliary” Hot Plate, Cat. No. 35150-002, can be supplied as an option, useful in the training and acclimation phase, for high-throughput tests.

The combination of a 35150 Hot/Cold Plate with a basic, heating only additional hot plate can be taken into consideration is useful in the habituation phase.

The 35150-002 is a basic unit and does not record the temperature and reaction time; as an independent unit, it can be used for basic tests as well, using a stop-watch:

See paragraph 7.2-Optional.



Figure 2, “Additional Hot Plate 35150-002”

2.4 Hot/Cold Plate Features

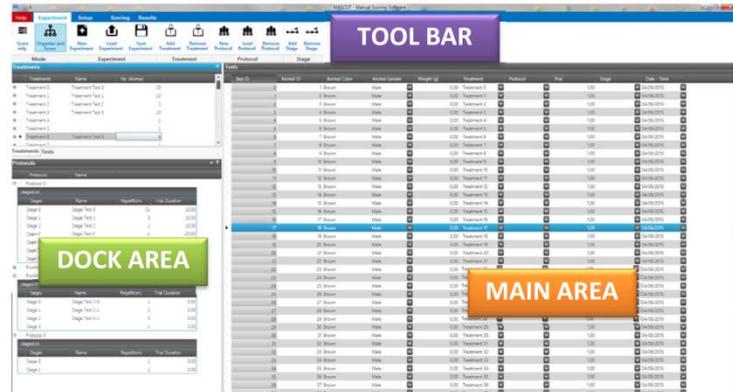
The main features of the new model are:

- **TEMPERATURE:** adjustable in the range -5.0 to 65.0°C, in steps of 0.5°C
- **MODE:** hot plate, cold plate, increasing/decreasing ramp
- **DETECTION:** by pedal switch
- **LATENCY TIME:** up to 999 seconds, in steps of 0.1
- **CONTROLS:** 4”3 touch-screen to set and monitor the test
- **SOFTWARE:** **X-PAD** brand new, user-friendly version, to set the experiment and manage the results
- **DATA PORTABILITY:** via the USB flash-drive provided.

2.5 Experimental Configuration

Via the new **X-PAD** software, the operator can easily organize the experiment on her/his PC, and upload it to the Hot/Cold Plate via the USB flash drive provided.

Treatments, protocols, stages, animals, and various test features can be quickly defined and saved for future use.



Configurations are easily:

- exported to **Text**, **Excel** or **Pdf** reports 
- saved to cloud to **DropBox**, **OneDrive**, **GoogleDrive** 

2.6 Data Collection and Management

A basic version of the collected data can be viewed on the touch-screen; when transferred to PC via USB drive, test results appear in full version.

The **X-PAD** software automatically classifies the data, combining configuration settings with test results. The user can add information, before or after the test.

Results appear in a tree-like structure, where columns can be dragged and dropped to customize the layout.

Data are quickly:

- exported to **Text**, **Excel** or **Pdf** reports 
- saved to cloud to **DropBox**, **OneDrive**, **GoogleDrive** 

3 INSTALLATION

3.1 Unpacking & Preliminary Check

Check the contents of the shipment for completeness, packing list to hand, and visually inspect the instrument as soon you take it out of the packaging. Use the supplied **Check List**.

If the instrument is damaged, inform the carrier immediately, notifying our company. If after having tested it, the instrument fails to meet rated performances, please contact our after sales service, see paragraph 5.4-Customer Support.



Protect the environment!

Dispose of packaging properly, according to existing and applicable waste management rules and regulations.

3.2 Notes on the Instruction Manual

The 35150 Instruction Manual included in the package (on the USB pen drive) is necessary for the correct installation and operation of the instrument.

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

Please save the manual, ready to be consulted by the qualified personnel who use the instrument. Print it, only if necessary.

Our Instruction Manuals are available as free download on our web. For any additional information and/or assistance, you are welcome to contact our Service Department (see paragraph 5.4-Customer Support), specifying the serial number of your instrument.

3.3 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



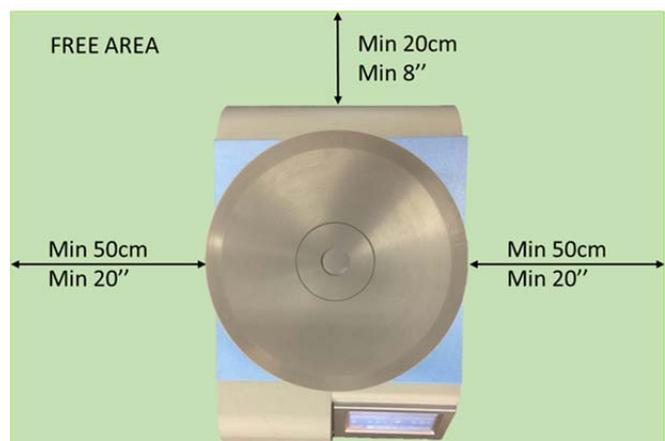
3.4 Assembling the Instrument

Put the instrument on a stable and flat bench or table surface. Position onto the base plate the animal restrainer supplied with the instrument. Once the Hot/Cold Plate is assembled, do not lift or move the combined unit. In particular, do not incline the base, as the Perspex restrainer may accidentally fall off the plate.

Please do not block the grids which protect the cooling fans on the cabinet side.

To guarantee the rated performances, a free area should be left around the instrument, as indicated in the drawing.

Obstructions which prevent the cooling fans to operate efficiently may degrade the instrument and alter its performance.



3.5 Before Applying Power

Consider the Power Module (see figure 3), 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.



Figure 3, "Power Module"

3.5.1 Mains Switch

This two-pole toggle switch, which complies with international safety standards, is lighted when the instrument is **ON**.

3.5.2 Fuse Holder

The fuse holder comprises two fuses, one on the live, and the other on the neutral. Use (T5A) timed fuses for operation at both 115 or 230 Volts. For fuse replacement, please refer to paragraph 5.1-Electrical.

3.5.3 Mains Cord

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

3.6 Intended Use

The Hot/Cold Plate is intended for investigation use on **laboratory animals only**.

3.7 Additional Safety Consideration

- 1) Use original accessories and spare parts only, see also paragraph 7-ORDERING INFORMATION.
- 2) immediately disconnect and replace damaged mains cord.
- 3) do not obstruct a comfortable access to the power module.
- 4) do not obstruct the grids of the cooling fans on the sides of the cabinet, see paragraph 3.4
- 5) do not operate in hazardous environments or outside prescribed environmental limitations (i.e. +10c° / +40c°, 95% max. relative humidity, non-condensing)
- 6) 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.

See also paragraphs 2.1.1 and 2.1.2

3.8 Connections

Connect the mains cord to a power outlet, **provided with a reliable earth connection.**

Now consider the connection module which is positioned on the front panel, for easy and quick access.

It encompasses the following connectors, from left to right:

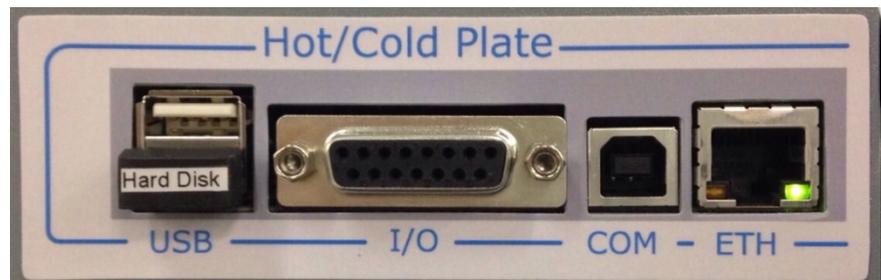


Figure 4, "Connection Module"

- the **upper USB** enables data exchange (configurations & results) with the PC, and allows firmware upgrades, via the USB flash drive provided, or to connect a keyboard (see paragraph 3.8.2)
- the **lower USB** accommodates the USB storage key labelled "HARD DISK". **WARNING: DO NOT REMOVE IT! See paragraph 3.8.1**
- **I/O** this D-SUB 15
- 5 connector provides TTL outputs for latency and temperature, see paragraph 4.8.1-Pin-Out
- **COM** this USB-B 2.0 allows communication to the PC (for Ugo Basile use, programming and debug)
- **ETH** the Ethernet connector will be used for remote diagnosis and Internet access used for standard operation.

3.8.1 USB Hard Disk



The USB storage key must be ALWAYS connected to the bottom port (see picture below). This USB key works as the inner memory of the system. It contains the collected data and the protocols.

If the instrument does not detect the USB HARD DISK, a message box asks to disconnect and to reconnect the USB Key and restart the device.



If during a normal operation, the user disconnects the USB HARD DISK, the device automatically switch off and restarts.

WARNING: this operation could damage the experiment data and Impair the internal memory.

3.8.2 Keyboard

When setting up the experiment, it is often requested (although not compulsory) to enter data via the touch-screen. For example information about the test, stage, animal, treatment, etc.

To ease the data input, it is possible to connect a standard QWERTY keyboard to the upper USB port. The keyboard will be automatically recognized and **alphanumeric** data typed on the keyboard will appear on the touch-screen.

Beside all the alphanumeric keys, the PC will accept:

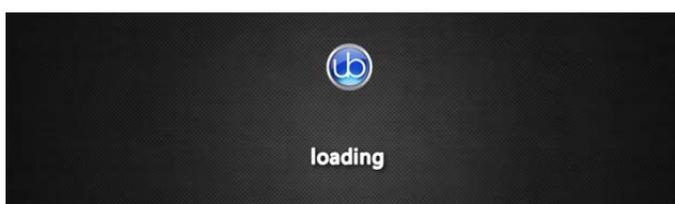
- The **backspace**, to cancel the entered data
- The **ESC** key, to leave the menu
- The **ENTER** key, to confirm the input and move to the following field

3.9 Installation of X-PAD Software

The **X-PAD** software is saved on the USB Flash Drive provided with the instrument: download it on the Hard Disk of your PC.

4 OPERATION

Switch on the Hot/Cold Plate: the instrument will perform a check of the CPU, which might take up to 60 seconds, during which the display will show:



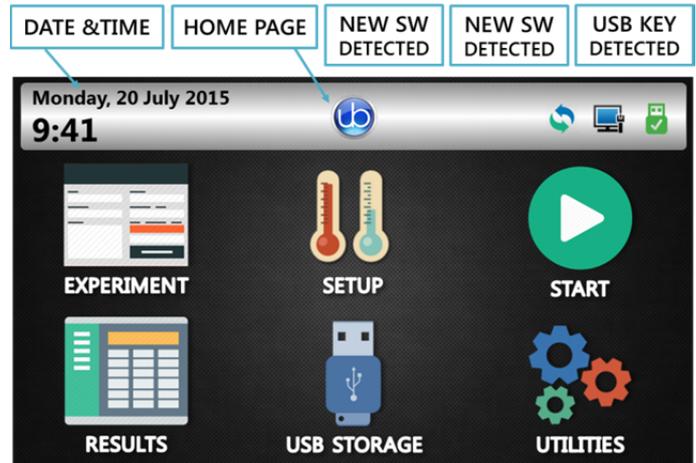
After switching on the instrument, first of all, get familiar with its controls.

4.1 Home Page

The test is managed by the 4"3 touch-screen.

This is how the Home Page looks like.

From the Home Page, the logo button  on the tool-bar, opens the "screen-saver" window



This window displays current date and time, and the version of the software on-board.

From any other menu, the logo button  always brings back to the Home page.



4.1.1 System Icons



NEW SOFTWARE DETECTED: if this icon is present, a new version of SW has been detected on the USB Key.



ETHERNET DETECTED: an Ethernet connection has been detected



USB KEY DETECTED: if this icon is present, a USB has been detected on the USB port.

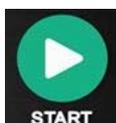
4.1.2 Home Page Icons



In the **EXPERIMENT** page, it is possible to enter information about the test, including treatment, protocol, stage, trial, see paragraph 4.2.



Temperature and Mode are defined in the **SET-UP** page, see paragraph 4.3.



goes to **START** Page, see paragraph 4.4



goes to RESULTS Page, see paragraph 4.5



goes to USB STORAGE Page, see paragraph 4.6

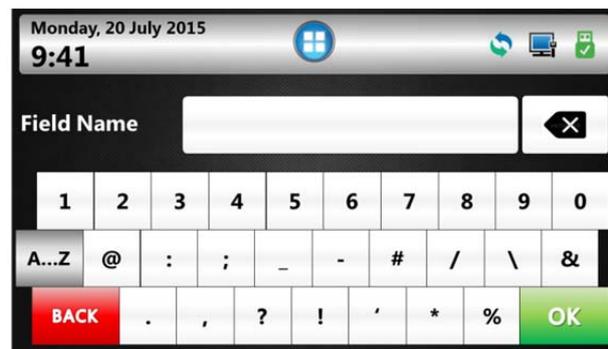
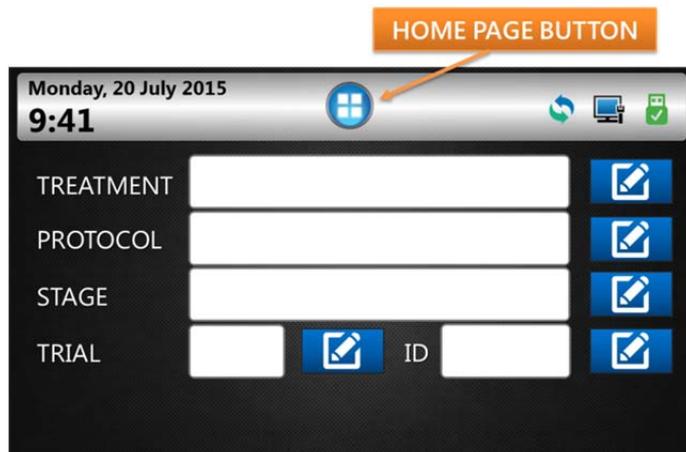


goes to UTILITIES Page, see paragraph 4.6.1

4.2 Experiment

In the EXPERIMENT page, it is possible to enter information about the test.

Depress the keyboard icon  to activate the virtual keyboard.



Enter a maximum of 12 characters in each field. TREATMENT, PROTOCOL, STAGE and TRIAL are text boxes, where it possible to specify the related information. Repeat the same process for each lane.

In the RESULT table 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.



The Home Page icon brings back to the home page.



NOTE:

Whenever a virtual keyboard is involved to enter data, it is possible to use an external QWERTY keyboard, connected to the RotaRod upper USB port, see also paragraph 3.8.2.

4.3 Set-Up

In this page it is possible to set-up **Mode** and **Temperature**.

The user may choose among the **CONSTANT** and **RAMP** modes, by depressing the related button at the page bottom.



Having selected the mode and temperature (see paragraphs 4.3.1 and 4.3.2), press



to go back to the Home page.

4.3.1 Constant Temperature

With **Constant Temperature** mode, the user may select the desired temperature, from -5.0°C to 65.5°C, with 0.5°C increments (or decrements).



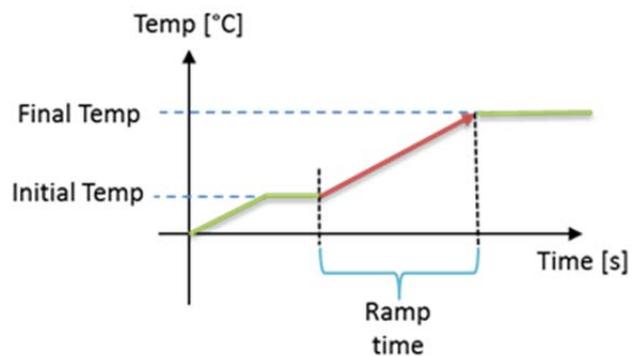
Depress the icon  to activate the numeric keyboard, and enter a temperature value between **-5 and 65°C**. Confirm by **“OK”**.

Go back to the home page , then select the  button to run the test. See paragraph 4.4.

The plate maintains the same temperature for the duration of the test.

4.3.2 Increasing/Decreasing Temperature Ramp

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



Depress the icon  to activate the numeric keyboard to enter:

- **Initial temperature:** between **-5.0** and **65.0°C**
- **final temperature:** between **-5.0** and **65.0°C**
- *if the initial temperature is lower than the final temperature, the ramp will be increasing: on the contrary a decreasing temperature is obtained by setting an initial temperature higher than the final one)*
- **ramp:** from 1s to 999s . Please note that the maximum temperature increasing/decreasing rate is dictated by physical limits. See also paragraph 2.1.1)

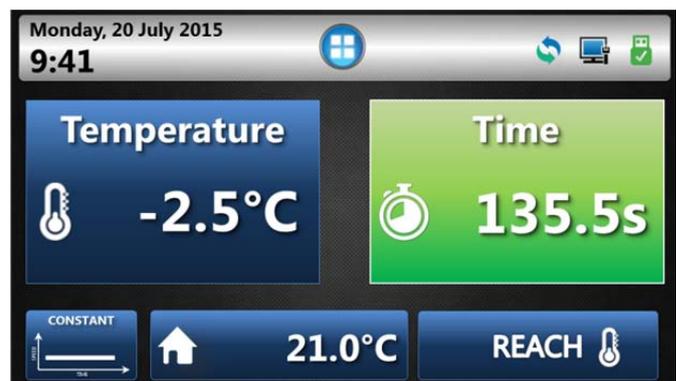
After setting temperatures and ramp, press  to go back to the home page, then select  to run the test, see paragraph 4.4.

4.4 Starting the Test

Having set the temperature and the ramp (in temperature ramp mode), press 

Press 

The plate rapidly reaches the preset temperature (initial temperature in ramp mode).



During the process, the temperature becomes **yellow**



and the right button indicates **STOP**, see note below.

When the preset temperature is reached, the figure becomes **green**



the right button becomes **START**.

The instrument is ready for the test proper: drop the animal on the plate and start the test and the latency timer, by depressing either the **START** button or the **pedal switch**.

When the animal shows stereotypical response to pain/strong discomfort, typically paw licking, or jumps to avoid thermal pain, the operator stops the counter by the **pedal switch**, thus recording the current temperature and the latency time.

The data are saved and will appear in the **RESULTS** table, see paragraph 4.5.

In the **ramp mode**, if the the final temperature is reached without an animal reaction, the plate maintains it and the latency timer keeps counting, until the pedal switch is depressed: in the result table the record will be marked as **FAIL**.



ATTENTION:

The **STOP** button should **never** be used to score the latency time.

This button interrupts the test: the plate goes back to the original temperature, and the datum is **not saved**.

4.5 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.

The home page is reached from any menu, but depressing the  button



As you see from the example, all the Experiment-related information entered by the user appear under the blue headings

- DATE-TIME
- TREATMENT
- ID
- PROTOCOL
- STAGE
- TRIAL



The test results appear under the red headings:

- LATENCY
- TEMPERATURE
- MODE
- RESULT
- RAMP PARAM.

Scroll through the results by the UP  and DOWN  arrows.

Results can then be saved on the USB flash drive, and uploaded on the PC for further processing, see paragraph 4.6.1. When transferred to PC via USB drive, test results appear in extended version.

4.6 USB Storage



By depressing the USB icon, you will reach the USB Storage menu.



4.6.1 Save Data



By pressing this icon, it is possible to export the results on a USB-KEY.

Insert in the upper USB port the USB flash drive provided with standard package. Correct insertion is confirmed by the  icon on the toolbar.

If you try to save the data without USB-KEY, the following dialog box will appear.



When the download procedure ends correctly, the following dialog box is displayed.



The file will be saved in .CSV format

4.6.2 Load Protocol



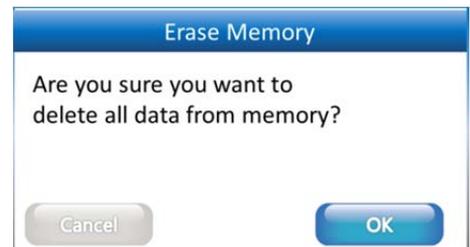
This function is not enabled yet. It will be implemented in one of the next version and free upgrades will be sent to all users.

4.6.3 Erase Memory



By pressing the icon, the internal data memory (test results) will be deleted.

A message box will ask to confirm the decision.

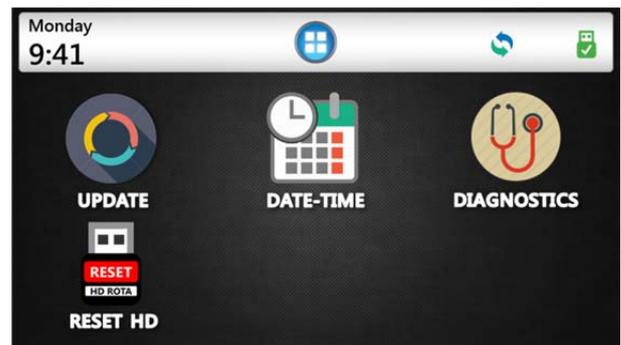


ATTENTION:

After confirming the procedure, it will not be possible to recover the data.

4.7 Utilities

The UTILITIES menu offers the following options:



4.7.1 Software Update



For software update you will receive the “**HC_Update.hex**” file by E-Mail or download it from our web site.

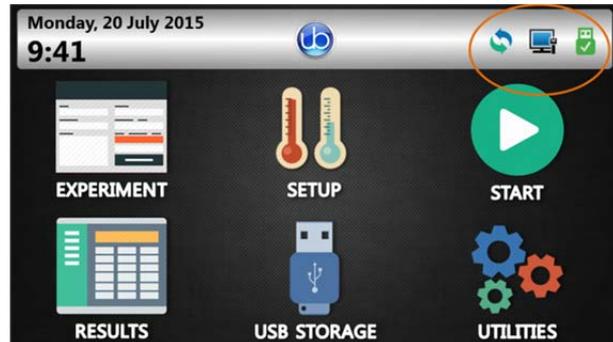
The file is to be saved on a USB key (FAT32 file system formatted), for example the standard Ugo Basile USB key provided with the Rota-Rod.

Proceed as follows:

- A. **Switch OFF** the Rota-Rod
- B. Copy the “**HC_Update.hex**” file on USB Key (file system FAT32);
- C. **Switch ON** the Rota Rod
- D. Insert the USB KEY containing “HC_Update.hex” file into the UPPER USB port (see picture on the right)



- If the USB key is detected, the  icon on the system bar will appear on the tool-bar
- If the system recognizes a new SW version, the  icon will appear on the toolbar.



Only if the two icons are there, it is possible to proceed with the update.

- E. Select in sequence:



- F. Confirm by answering **OK** to the question “Update Rotarod application?”



- G. Wait about 30 seconds for the instrument to reboot.



IMPORTANT:

do not remove the USB Key during the updating procedure!!!

- H. Wait about 30 seconds
- I. **Switch OFF** the instrument
- J. Remove the USB key from the upper USB port (NB: do NOT remove the USB Hard disk from the lower USB port!)
- K. **Switch ON** the instrument
- L. Press the HOME button to check the new SW version.



4.7.2 Setting Date & Time

Select the "DATE-TIME" icon



Set date and time by using the the UP ▲ and DOWN ▼ arrows, then confirm by pressing **OK**.



4.7.3 Diagnostics



By selecting this function, the Hot/Cold Plate will perform a self-diagnostics automatic test.

The Diagnostics function is not available in this version. Upgrades will be provided free of charge



4.7.4 Reset HD



This button resets the HD, which contains ALL THE EXPERIMENTAL DATA.

A message box will ask to confirm the action.



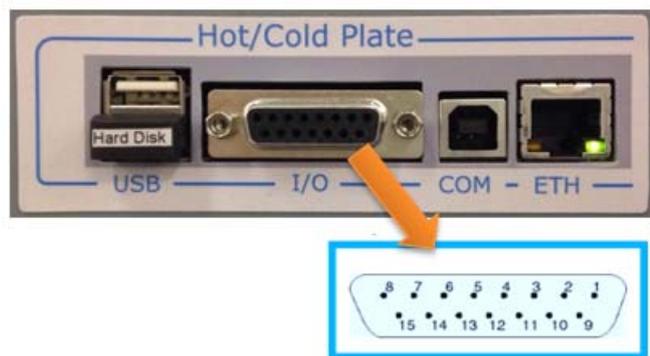
ATTENTION:

After confirming the procedure, it will be impossible to recover the data.

4.8 Signal Output

For some sophisticated application, and interface with other systems, it might be useful to obtain outputs for temperature, mode, and status.

The 15-pin D-SUB connector (see picture and paragraph 3.8) provides different output trigger, in the form of TTL signals.



4.8.1 Pin-Out

Pin No.	DESCRIPTION	LEVEL LOW	LEVEL HIGH
Pin 1	COUNTER STATUS	TIMER OFF	TIMER ON
Pin 2 to 6	NOT USED		
Pin 7	TEMPERATURE	REACHING	REACHED
Pin 8 to 13	NOT USED		
Pin 14 -15	GROUND		

5 MAINTENANCE

While any service of the instrument ought 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 MAINS CORD BEFORE CARRYING OUT ANY MAINTENANCE JOB!

5.1 Electrical

To inspect and/or replace the fuses, **disconnect the mains cable first!** Insert a miniature screwdriver in the slot indentation, see paragraph 3.5.2, and snap out the slide which houses the fuses. Use T5A fuses for operation at both 230 or 115 Volts.

Snap in the fuse slide: the mechanical “click” ensures that it is locked.

5.2 Cleaning

Hot/Cold Plate 35150 does not require any maintenance apart from normal cleaning.



Do not use organic solutions, on the restrainer and cabinet, as they are liable to impair the cylinder transparency and to crack the acrylic components and the touch pad.

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

5.3 Long Inactivity

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

5.4 Customer Support

For any further information you may desire concerning the use and/or maintenance of the Hot/Cold Plate, please do not hesitate to contact our **service department** (or our local distributor) either directly or via our support page <http://www.ugobasile.com/support.html>:



UGO BASILE s.r.l.

Via G. Di Vittorio 2
21036 GEMONIO – Varese, ITALY



Phone : +39 0332 744574



service@ugobasile.com
logistics@ugobasile.com
sales@ugobasile.com

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.

6 35150 SPECIFICATIONS

General

Commands	4"3 touch-screen (resistive)
Read-out	on the touch-screen
Power Requirement	Universal input 85-264 VAC, 50-60Hz, 40W max.
Sound Level	< 60 dB (A)
Operating Temperature	18° to 24°C see paragraph 2.1.1

Operation

Temperature	adjustable in the range -5.0 to 65.0°C, with 0.5°C increments
Mode	hot plate, cold plate, ramp (increasing or decreasing)
Counting Start	by START button or pedal switch
Counting Stop	by pedal switch
Latency Time Counter	up to 999.9 seconds, in 0.1 steps
Data Acquisition	via X-PAD software, provided
Data Portability	by USB flash drive, provided
TTL Output	for temperature and counter status
Data	exported to Text, Excel or Pdf, or saved to cloud to Drop-Box, OneDrive, GoogleDrive
Configurations	exported to Text, Excel or Pdf, or saved to cloud to Drop-Box, OneDrive, GoogleDrive

Physical

Total Weight	8Kg
Shipping Weight	12Kg approx.
Dimensions	25(w)x37(d)x47(h)cm – including restrainer
Packing Dimensions	68x34x28cm

Warranty

Warranty 35150 is covered by a 24-month warranty

7 ORDERING INFORMATION

35150 Hot/Cold Plate, complete with standard accessories

- 35150-001* Cabinet (controller with touch-screen and Plate assembly)
- 35100-286* Cylindrical Animal Restrainer, for Mice and Rats, 25cm height
- 35100-320* Restrainer Lid
- 37215-303* Pedal Switch
- E-AU 041 USB pen drive, including:
 - 35150-302* Instruction Manual
 - X-PAD* Software Package
- 52010-323* USB CABLE A/B 1.8m
- E-WP008* Mains Cord – Europe (or E-WP008-1 U.S.A. / E-WP008-2 U.K.)
- Set of 2 fuses

7.1 Thermal-Escape Set-Up

The 35250 **Thermal-Escape Device** includes a complete 35150 Hot/Cold Plate and the following additional parts:

- 35150-002* Additional Hot Plate
- 35100-320* Plate Connection Cable
- 35250-003* Set of Tubes/Catwalk for 35250

7.2 Optional

For high-throughput, the combination of a 35150 Hot/Cold Plate with a basic, heating only additional hot plate can be taken into consideration. The 35150-002 is a basic unit and does not record the temperature and reaction time.

As it is an independent unit, it can be used for basic tests as well, using a stop-watch to detect latency time:

- 35150-002* **Additional Hot Plate** (heating only)

8 BIBLIOGRAPHY

8.1 Method Papers

- N.B. Eddy & D. Lembach: **"Synthesis, Anti-Inflammatory and Analgesic Activity of Pyrido [2, 1-b] Quinazoline Derivatives"** J Pharma Exp 953: 703-385, 1953

8.2 Papers Dealing With Ugo Basile Hot/Cold Plate

- C.V. Möser: **"TANK-Binding Kinase 1 (TBK1) Modulates Inflammatory Hyperalgesia by Regulating MAP Kinases and NF-κB Dependent Genes"** J. Neuroinflammation 12:100, 2015
- S.H. Lin et alia: **"Genetic Mapping of ASIC4 and Contrasting Phenotype to ASIC1a in Modulating Innate Fear and Anxiety"** Eur. J. of Neuroscience 41(12): 1553–1568, 2015
- L. Zvejniece et alia: **"R-Phenibut Binds to the α2-δ Subunit of Voltage-Dependent Calcium Channels and Exerts Gabapentin-Like Anti-Nociceptive Effects"** Pharmacol. Biochemistry and Behav. 137: 23-29, 2015
- S.J. Wang et alia: **"Acupoint Specificity on Acupuncture Regulation of HYPOTHALAMIC- Pituitary-Adrenal Cortex Axis Function"** BMC Complem. & Alternative Med. 15: 87, 2015
- W. Kallenborn-Gerhardt et alia: **"Nox2-Dependent Signaling Between Macrophages and Sensory Neurons Contributes to Neuropathic Pain Hypersensitivity"** Pain 55(19): 2161-2160, 2014
- M.W.H. Schaap et alia: **" Measuring Pain-Related Behaviour in Four Inbred Rat Strains. Differences in Hot Plate Behaviour"** Proceedings of Measuring Behavior 2012, MB 2012
- D. Piomelli et alia: **"Anandamide suppresses pain initiation through a peripheral endocannabinoid mechanism"** Nature NSC, 2010
- M. Sakurai et alia: **"Oxaliplatin-Induced Neuropathy in the Rat: Involvement of Oxalate in Cold Hyperalgesia but not Mechanical Allodynia"** Pain 147: 165-174, 2009

Notes

A series of horizontal dashed lines for writing notes, spanning the width of the page.





CE CONFORMITY STATEMENT

Manufacturer **UGO BASILE srl**
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We hereby declare that

Instrument. **HOT/COLD PLATE**
Catalog number **35150**

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

- *2006/95/CE relating to electrical equipment designed for use within certain voltage limits*
- *2004/108/CE relating to electromagnetic compatibility*
- *2006/42/CE on machinery*
- *2011/65/UE on the restriction of the use of certain hazardous substances in electrical and electronic equipment*

Account Manager

Adriano Basile

Nome / Name

December 2015

Date


Firma / Signature