LHC 40 and LHC 400

Advanced Temperature Calibrator

Manual

INSTRUMENTS

leyro

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LHC 40/400 ADVANCED TEMPERATURE CALIBRATOR

INDEX

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LHC 40/400 ADVANCED TEMPERATURE CALIBRATOR

1. General Information

- This instruction manual provides important information on the operation of the instrument. In order to work safely with this instrument, it is essential to comply with all safety and operating instructions indicated.

- Always comply with the accident prevention regulations and safety standards in force in the place where the instrument is used.

- The instruction manual is an integral part of the instrument and must be kept close to the instrument so that specialized personnel can consult it at any time.

- Specialized personnel must have read and understood the instruction manual before starting any work.

- The manufacturer is exempt from any liability for damage caused by use not in accordance with the intended purpose, failure to comply with this instruction manual, operation by insufficiently qualified personnel, as well as unauthorized modification of the instrument.

- The general conditions of sale included in the sales documentation apply.

- Technical modifications reserved

- Calibration at the factory and by the Spanish calibration association (ENAC/ISO 17025) is carried out in accordance with international regulations.

For more information, please see:

- Web page	www.leyro.net
- Corresponding technical sheet:	LHC 40 and LHC 400 Advance
- Technical Service	Tel: +3491283502 info@leyro.net

1.1 Symbolism

DANGER

Indicates an immediately hazardous situation that will result in death or serious injury if not avoided.

WARNING

Indicates a potentially hazardous situation which may result in death or serious injury if not avoided.

CAREFUL

Indicates a potentially hazardous situation that may cause death or minor or medium injuries or material or environmental damage if not avoided.

INFORMATION

Provides useful tips and recommendations as well as information for efficient and error-free use.

DANGER

Indicates risks caused by electric current. There is a risk of serious or fatal injury if these safety instructions are not observed.

WARNING

Indicates a potentially hazardous situation that may cause burns due to hot surfaces or liquids if avoided.

2. Security

WARNING

Before installation, commissioning and operation, ensure that the appropriate calibration oven has been selected with regard to the measuring range, version and specific measuring conditions.

Risk of serious injury and/or material damage in case of non-compliance,

The various chapters of this instruction manual contain other important safety instructions.

2.1 Intended use

The Advanced Calibration Oven is a portable unit for technical, industrial and laboratory tasks. Leyro Instruments' temperature ovens or calibration ovens are intended for calibrating thermometers, thermo switches/thermos, electrical resistance pyrometers and thermocouples.

The instrument has been designed and built solely for the purpose described herein and must be used in accordance with said purpose.

Comply with the technical specifications of this instruction manual. Improper handling or use of the instrument that does not comply with the technical specifications requires immediate commissioning and testing by a technician authorized by Leyro Instruments.

Handle the electronic precision instrument with due care (protect it from moisture, impacts, strong magnetic fields, static electricity, extreme temperatures; do not insert any objects into the instrument from the openings). The pins must be protected from dirt.
If the instrument is brought from a cold to a warm environment, a malfunction may occur due to condensation. In this case, wait until the instrument has adjusted to room temperature before putting it back into operation.

No claims will be accepted due to improper handling.

2.2 Personnel Qualification

WARNING

Risk of injury due to insufficient qualifications!

Improper handling can cause considerable personal injury and property damage.
The activities described in this instruction manual must only be carried out by qualified personnel.

Specialized personnel

Due to their professional training, knowledge of control and measurement technology, as well as their experience and knowledge of the regulations, standards and directives applicable in the country of use, the specialist personnel are able to carry out the described work and recognise possible hazards independently.

Some specific conditions of use require additional knowledge, such as those concerning aggressive media.

2.3 Personal protective equipment

Personal protective equipment protects specialist personnel from hazards that may affect their safety and health during work. Specialist personnel must wear personal protective equipment during various jobs on and with the instrument.

Observe the instructions regarding personal protective equipment in the work area!

The owner must provide personal protective equipment.

Wear protective glasses!

These protect the eyes from projected pieces and splashes.

2.4 Specific Risks

WARNING

In the case of hazardous substances to be measured such as oxygen, acetylene, toxic flammable substances, as well as in refrigeration systems, compressors, etc., the relevant regulations must be observed in each case in addition to all general rules.

DANGER

Danger of death from electric current. There is a direct risk of death from touching low-voltage parts.

- Installation and assembly of the electrical instrument must be carried out exclusively by a qualified electrician.
- Before changing the fuse, cleaning and maintenance/upkeep and in case of danger, disconnect the advanced calibration oven from the mains by removing the mains cable from the electrical socket.

WARNING

Residual media on the disassembled instrument may cause risks to people, the environment and facilities. Take appropriate precautionary measures.

Over temperature protection

WARNING

- For your safety, the advanced calibration furnace is equipped with an over-temperature protection, which independently disconnects the power supply to the heater in case of excessive temperature inside the housing. After cooling, the furnace must be sent to Leyro Instruments for inspection.
- The Advanced Calibration Furnace is designed as a measuring and regulating instrument. Protective measures must be taken if the Advanced Calibration Furnace is used for applications not explicitly mentioned in this instruction manual.

WARNING

- Do not use the advanced calibration oven inatmospheres with risk of explosion (flammable or explosive atmosphere, ATEX zones).
- If a malfunction of the advanced calibration furnace can cause personal injury or property damage, the installation must be secured with electromechanical protection devices.

2.5 Safety instructions for the use of calibration liquids

Wear protective glasses

Make sure that silicone oil does not come into contact with your eyes.

WARNING

Risk of burns

Before transporting or touching the oven, make sure that it is sufficiently cooled, otherwise there is a risk of burns.

2.6 Explanation of Symbols

It is absolutely necessary to read the instruction manual before assembling and putting the instrument into operation!

EC, European Community
Instruments with this marking comply with the applicable European directives.

3.0 Data Approvals and certificates

Approvals and certificates, LCA series, CE conformity

Low Voltage Directive	2004/108 CE, EN 61326 Emission (group 1, class B) and interference resistance (industrial area).
Low Voltage Directive	2006/95/EC, EN 61010-1, Safety provisions for electrical measuring, control, regulating and laboratory instruments.
Certificate	Calibration certificate 3.1 according to DIN EN 10204.
Calibration	Option: ENAC ISO 17025 calibration certificate.

For further technical data, please refer to the Leyro Instruments data sheet and order documentation.

3.1 LHC 40 and LHC 400 Advanced Calibration Furnaces

	LHC 40	LHC 400
Temperature Range	- 35.... 165 °C (1)	30 ... 450 °C
Accuracy	± 0.1 °C	± 0.1 °C
Stability	± 0.008 °C	± 0.008 °C
Screen Resolution	0.1, 0.01, 0.001 °C	0.1, 0.01, 0.001 °C
Warm-up time (2)	From - 5 to 100 °C: 12 min.	From 30 to 220 °C: 42 min.
Cooling time (2)	From 25 to - 30 °C:40 min.	From 220 to 100 °C:35 min.
Mounting depth	190mm	190mm
Volume	0.7 liters	0.7 liters
Tank dimensions	60x 190 mm	60x 190 mm
Auxiliary feeding	88 A 264 VAC, 45 to 65 HZ	88 A 264 VAC, 45 to 65 HZ
Electricity consumption	310W MAX	1,400 W MAX
Network connection cable	For Europe AC 320	For Europe AC 320
Dimensions	280x370x490 mm (WxHxD)	280x370x490 mm (WxHxD)
Weight	14.2 kg	13.2 kg

(1) AT 55 °C below ambient temperature.

(2) The probe of the reference thermometer used to perform the measurement has a diameter of 6 mm and an ambient temperature of 22°C ± 1°C.

4. Design and function

4.1 Description

The Advanced Calibration Oven is a portable unit for technical and industrial laboratory tasks. Leyro Instruments calibration ovens are designed to calibrate thermometers, thermoswitches/thermostats, electrical resistance pyrometers and thermocouples. The operational safety of the instruments is only guaranteed if used as intended (temperature sensor monitoring).

The specified limit values must not be exceeded under any circumstances (see chapter 3 “Technical Data”).

The appropriate instrument must be selected based on the application. The instrument must then be connected properly and all components must be tested and properly maintained.

The instrument is manufactured in several versions. The version is indicated on the nameplate on the calibration furnace.

4.2 Scope of Delivery

Calibration ovens are shipped in special safety packaging. The packaging must be retained in order to be able to safely send the calibration oven to the manufacturer for recalibration or repair.

Standard scope of delivery calibration furnace model LHC Advance.

- Advanced calibration oven
- Insert type A
- Insert extractor
- Network connection cable
- Calibration certificate
- Instruction manual

Compare using the delivery note to see if all the parts have been delivered.

WARNING

Use only the supplied network cable.

4.3 Overview of the different models of the device

Both the LHC 40 (hot/cold) and LHC 400 (heat) advanced calibration furnaces have the following features:

- It is made of robust, grey-lacquered steel and equipped with a carrying handle.
- The back contains a perforation accessible from above for inserting dough.
- Includes heating and cooling components for determining the reference temperature.
- It has thermal insulation.
- The front of the enclosure contains the complete electronic module for regulating the reference temperature.
- Semiconductor networks (SSR) are used to operate heating or cooling towers.
- On the front panel there is a 5.4" HMI temperature regulator, to indicate the reference temperature, the nominal temperature and PID control,

4.4 Isometric views of the advanced calibration furnace, LHC series

Front and top

The opening for inserting the removable insert (60 mm x 165 mm) is located at the top of the calibration furnace. The display and the control elements are located at the front of the furnace.

Back of the instrument

On the back of the instrument there is a nameplate with the most important information about the specific model.

In addition, the serial number is displayed, for example S/n 53070005, as well as the mains voltage and the value of the fuses.

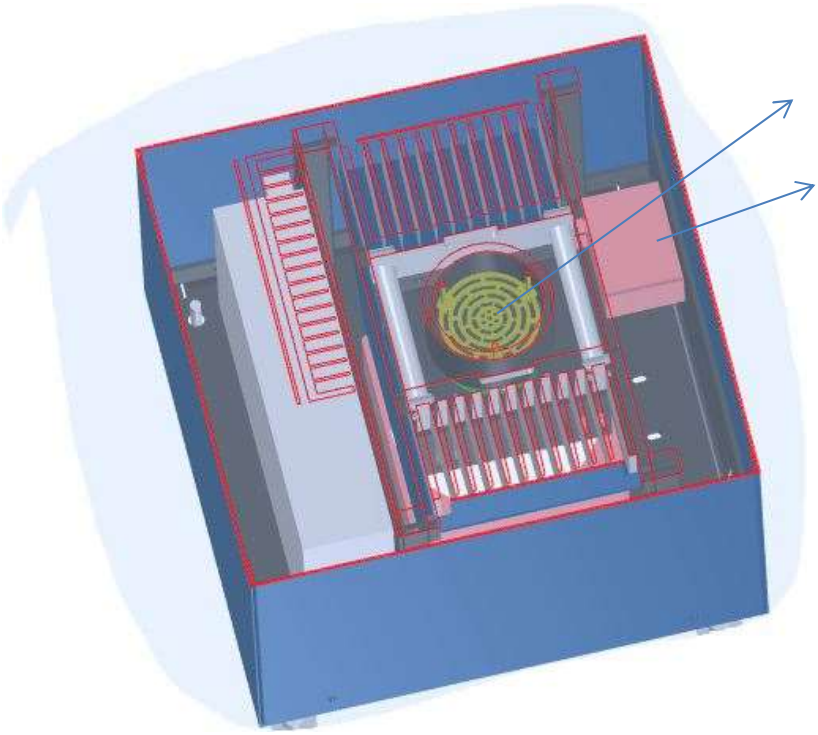
Model nameplate

RS 485 Communications Port

Network connection box with main switch

Bottom of the instrument

The air inlet must not be blocked in any way.



Fan 1

Network connection box with main switch

5.0 Transport, packaging and storage

5.1 Transport

Check the calibration oven for possible damage caused during transport. Report obvious damage immediately.

5.2 Packaging

Do not remove packaging until just before assembly.

Save the packaging as it is the ideal protection during transport (for example if the installation location changes or if the instrument is sent for possible repairs.

5.3 Storage

Permissible conditions at the storage site

- Storage temperature: - 10 ... 60 ºC
- Humidity: 30....95% relative humidity (non-condensing)

Avoid the following

- Direct sunlight or proximity to hot objects
- Mechanical vibration, mechanical impact (abrupt placement)
- Soot, steam, dust and corrosive gases
- Potentially explosive environment, flammable atmospheres

6.0 Commissioning, operation

6.1 Checking the temperature sensors

To check the temperature sensors, connect a separate temperature measuring instrument to the receipt. By comparing the temperature indicated on the external measuring instrument with the reference temperature, the condition of the receipt can be determined. Make sure that the receipt does not take long to reach temperature.

WARNING

Grounded thermocouples cannot be calibrated because they are grounded so measurements could lead to erroneous results.

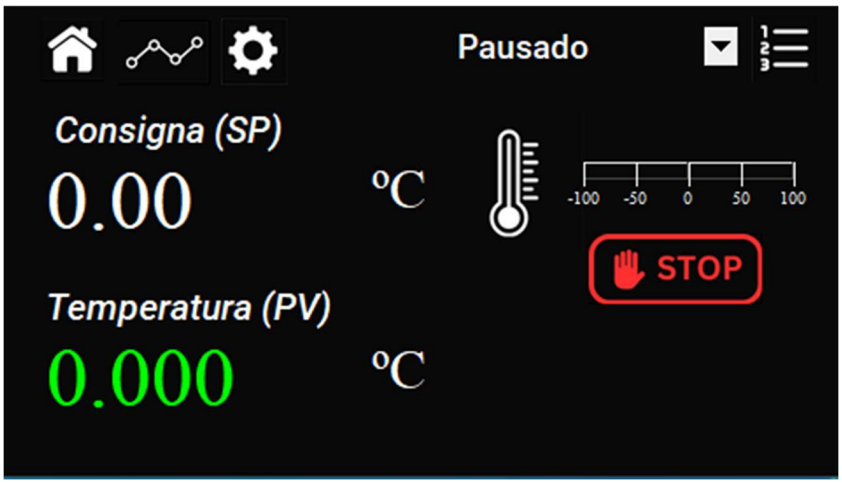
6.2 Starting procedure

If the calibrator is not used for a long period, moisture may penetrate into the heating towers due to the materials used (magnesium oxide). After transport or storage of the furnace in a humid environment, the heating towers must be preheated slowly. During the drying process, it is assumed that the furnace has not yet reached the insulation voltage required for the protection class.

6.3 Switching on the calibration ovenQUICK START

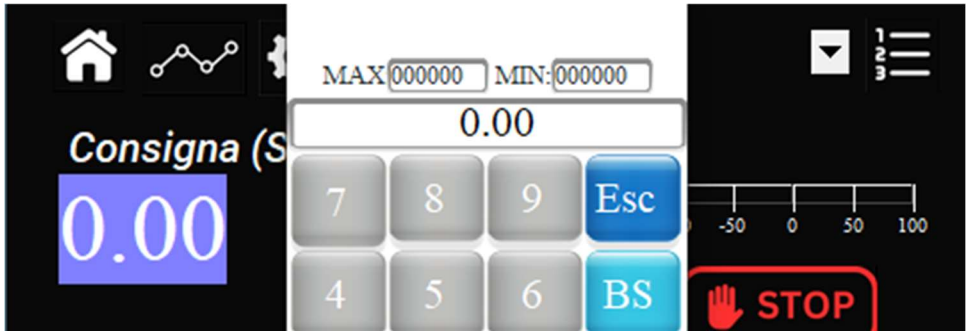
1) Connect the power cable and turn on the button located next to it, both on the back.
2) Press the power switch. The regulator will be activated. Wait until the screen lights up completely and you see the indications.

Once the equipment is turned on, it is in PAUSE mode.



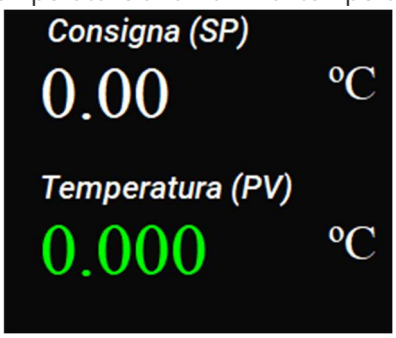
Press the drop-down arrow down and for immediate use press MANUAL MODE.
After about 10 seconds the team already starts to control.

After being fully powered up, it will start in control mode. To change the set point, press on the screen, in the area of the set point digits and change the value, once the value has been entered and pressed + enter, the equipment will start to work.



[redacted]

6.4 Display of reference temperature and nominal temperature



6.5 Inner bushings

After use, remove the inner inserts with the help of an insert extractor tool and then clean the bushing. This prevents the bushings from sticking to the oven.

6.6 Preparation of the calibration oven

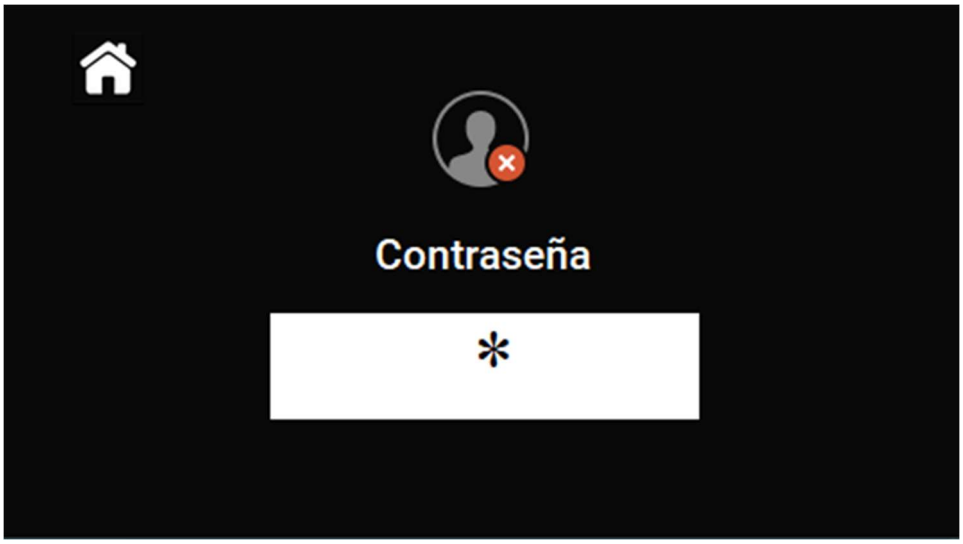
To achieve maximum accuracy from a calibration furnace, fill with an appropriate calibration insert

7. Handling the calibration hone

Three modes are available for handling.

Calibration mode: In this normal operating state, the voucher calibration can be performed.

Before performing the linearization of the instrument or recalibration of the unit, we must go to the home screen marked with the home logo and click on users.Once there, enter the PSWD 111



Once entered, return to the menu with the CASA logo and click on linearization.

* * * * * * * * * * *

THE SCREEN ADJUSTMENT CAN ONLY BE MANIPULATED BY A RESPONSIBLE PERSON AND NEVER LEAVE THE VALUE OUT AT 0 ALWAYS GIVE A VALUE

LINEARIZATION MODIFICATIONS ARE ALWAYS PERFORMED IN ºC

Nominal value mode: Enter the nominal temperatures in this mode.

Main menu: In this mode, make all settings such as the given nominal temperature and the adjustment of control parameters.

7.1 Operation in calibration mode in each operating mode

"Calibration oven operating mode"

- Place the appropriate insert into the control tank

Angle sensors, sensors with larger diameters or with special designs can be calibrated in an oven. That is why ovens are the most suitable tool.

"Calibration oven" operating mode

- If necessary, clean the tank
- Place the appropriate insert inside (aluminum)

The inner insert has several holes for inserting the temperature sensors to be calibrated as well as the external reference for comparative calibration. The oven is heated or cooled until the desired calibration temperature is reached. When the temperature is stable, the temperature probes to be calibrated are compared with the reference thermometer.

In the multifunction version there are different types of inserts:

LHC 40/400 ADVANCED TEMPERATURE CALIBRATOR

DRY BLOCK Temperature stability ±0.008 ºC Temperature stability ±0.01 ºC Uniformity ±0.03 ºC Uniformity ±0.05 ºC Accuracy 0.1 ºC Insert size 59.5mm x165mm Tank capacity 0.7 liters Optional inserts Inserts´

Type A. 1 x Ø 3.5 /1 x Ø 6.5/ 1 x Ø 8.5/ 1 x Ø 10.5 mm

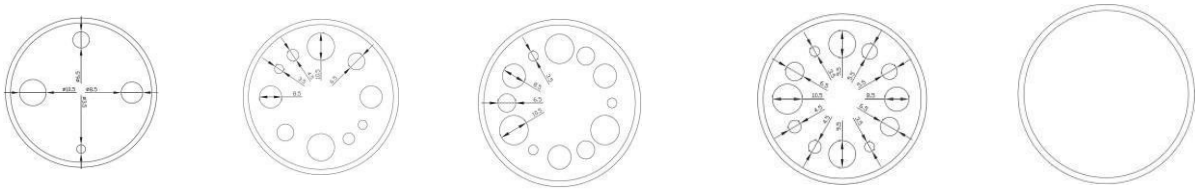
Type B. 2 x Ø 3.5 /2x Ø 4.5/ 2 x Ø 6.5/ 2 x Ø 8.5/ 2 x Ø 10.5 mm 3 x Ø 3.5 /3x Ø 6.5/ 3 x Ø 8.5/3 x Ø 10.5 mm

Type C. 2 x Ø 3.5 /1x Ø 4.5/ 1 x Ø 5.0/1 x Ø 5.5/1 x Ø 6.5/ 1 x Ø 8.5 /1x Ø 9.0/ 1 x Ø 9.5/1 x Ø 10.5 mm

Type E. Unmachined insert.

External insert for calibration of optical pyrometers (Blackbody), includes hole for external sensor Ø 3 mm. Tª range -20 ..150 º C

Calibration insert for surface probes, includes hole for external sensor Ø 3 mm. Tª range -25 .. 150 ºC



TO B C D AND

7.2 Home Screen

We connect the equipment to the power supply and turn on the AC switch. We wait for the equipment to start completely (30 s).

Control home screen.

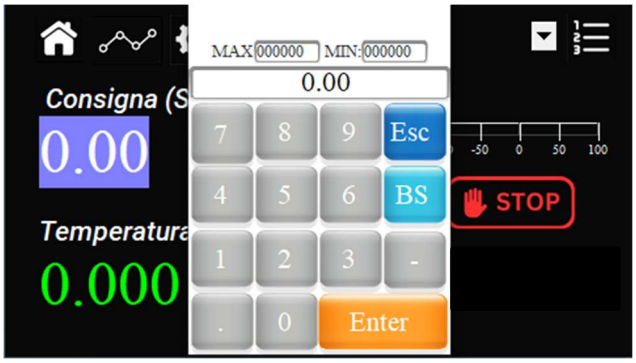
Before starting any necessary modifications, we must press pause to change the control state from pause mode to manual operation mode.

By default it is paused, which means that the equipment is NOT controlled with the internal PT 100. To control the equipment, press MANUAL MODE, the state will change from standby mode to control mode.

In case of emergency or accident, immediately press the red STOP button and the equipment will automatically go into pause mode, then turn off the equipment and unplug it.

7.2.1 Modification of the established point

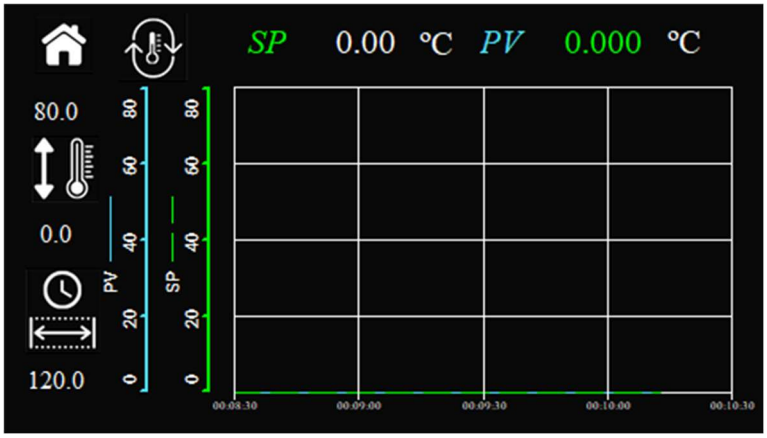
We will have to touch the number indicated in the set point value and change it to the necessary one. To return to the main screen press enter, to send the new set point to the equipment or cancel or return arrow, to discard.



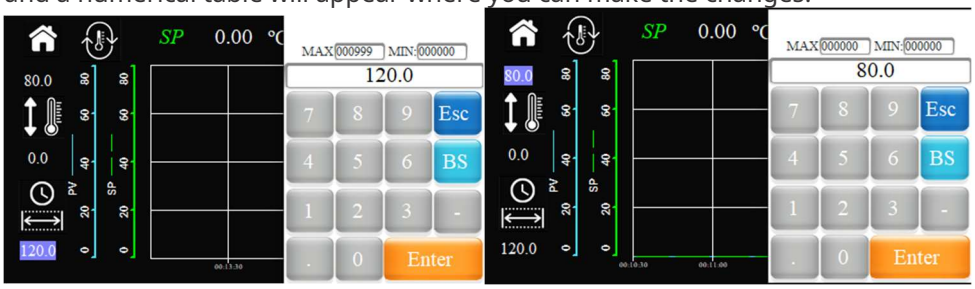
7.2.2 Trend graph.

To go directly to the trend chart, you must press the trend key.

This screen allows the display of the graph with a resolution of up to 0.1 °C. as well as changing the time base of the graph. Expressed in SECONDS

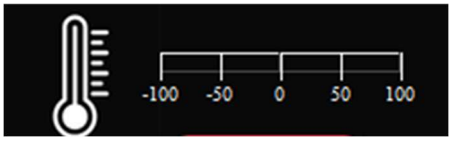


To change the graph resolution with the time base, click on the indicated numbers and a numerical table will appear where you can make the changes.



7.2.3 Exit actions

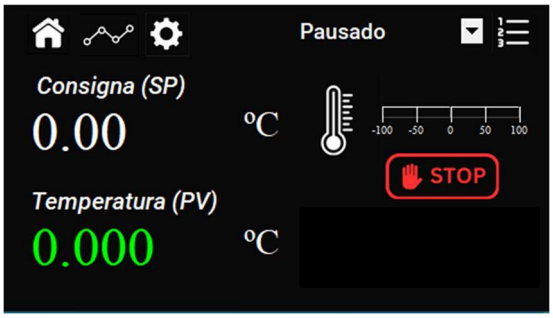
This graphic bar allows the visualization of the status of the equipment in % of cold and heat, you can observe the power of the outputs.



7.2.4 Home Menu Logo HOME

By pressing the menu we will access all the equipment options.

In control mode we go directly to the control screen from where the unit is managed.



8. Programs

In program mode we will directly access the 8-segment program configurable in both temperature in ºC and time in Seconds.

On the main screen you will find the shortcut to programming and events, called profile actions. Once pressed, you will have different options:

- Run Previous: This option will run the last selected profile.

- Run profile: choose the necessary profile by pressing actions and run profile.

- View/edit event profile: with this key you can turn on or off the necessary event (only event 1 works on this device).

- Create Program: used to create a program to calibrate in automatic mode:

  To start programming you must press options and create steps:

  either First: a step is added, which is instant change. The number needed for this calibration must be entered and the waiting time is 0 hours 0 minutes 0 seconds. The compensation must be disabled.

  either Second: another step called wait must be added. This step runs an open-ended timer, which will end when the setpoint has been reached. The same setpoint must be set as in the previous step.

  ATTENTION: You must selectaboveWhen temperatures are heatingand belowWhen they are fromcooling.

  either Third: a step is added, which is a constant value. Once the set point has been reached, the equipment will remain at that point for the time specified.

  These steps should be repeated for the necessary calibration points, maintaining the order of set point, hold, and constant value.

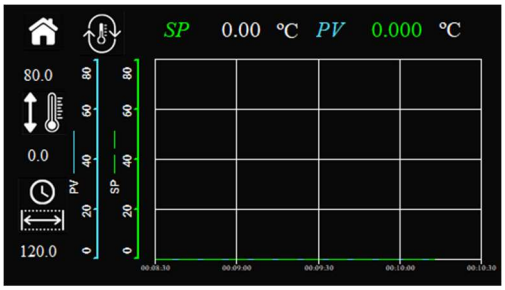
  If you do not want this profile, click cancel new profile and in actions of that same profile click delete profile.

- Go to profiles: allows you to view all created profiles.

  eitherActions:
  - Run Profile: Used to run the required profile
  - View/edit steps: In this option you can view the profile data and modify it if necessary.
  - Export File: This option is used to save the data to USB.
  - Delete Profile: Used to delete the unwanted profile.

The program can be started from program screen 3 or from the initial screen by clicking on the PROGRAM drop-down menu and changing to manual mode.

In graphic mode we will access the graph where we can see both the SP and PV curves, we can make resolutions of up to 0.1 °C - see the graphic section in the previous points.

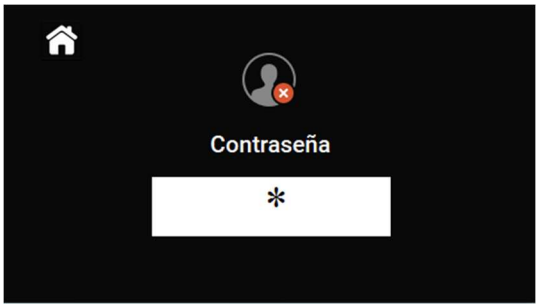


To access the linearization mode, you must first register as a user and enter PSWD 111 for this section. It is necessary to send an email toinfo@leyro.net and request the linearization manual not included in this

7.2.5.9Login

To log in to your computer and access all features, press the Login key and then enter the keyword "111".
To exit the session press the Close Session key

In user mode we will access the registration function. This function is only necessary in case the equipment needs to be linearized.



In settings we find a wide variety of information for the user. Change resolution of the PV Process value. 0.1 / 0.01 / 0.001
We also find a drop-down menu for changing the language, available in Spanish, English, German, French and Italian.

We also found information regarding ModBus addresses enabled for remote control through a DB9 communication port, in this case the communication protocol is Modbus RTU RS485

IN ALL THE PREVIOUS SCREENS YOU CAN RETURN TO THE CONTROL SCREEN, CONTROL LOGO OR THE MAIN MENU HOME LOGO

7.2.5.3Configuration

- Variable

- Process Value: If you press process value 1, you will see the process values, if necessary you can add an offset.

- Linearization: You can enter an offset to the internal PT 100 by pressing linearization 1 for the internal probe.

7.2.5.8Aid

- About: in this option we will observe the internal characteristics of the equipment.

7.2.5.9Login

To log in to your computer and access all features, press the Login key and then enter the keyword "111".
To exit the session press the Close Session key

- Modify Profile : This section allows you to modify the setpoint set points in the profile.

9. PT 100

This equipment allows fluid control through an internal probe.

To calibrate the internal probe, choose linearization on the menu screen.

The function must be interpolated and the units must be in source.

To adjust both the internal and external probe by comparison with a standard, the same set point must be established both in the equipment and in the linearization at input point 1. When the equipment has reached the temperature, it is observed that it marks the probe to be calibrated and that it marks the standard and if the probe to be calibrated is out of adjustment, the value that it should mark at output point 1 will be entered.

This process can be repeated with a maximum of 8 calibration points.

The equipment is factory calibrated.

10. Cooling the calibration oven

WARNING BURNING RISK

Before transporting or touching the calibration oven, it is necessary to ensure that it is sufficiently cool, otherwise there is a risk of burns both to the oven and to the test specimen. In order to bring the calibration oven from a high temperature to a low temperature as quickly as possible, the nominal temperature must be set to a temperature lower than the ambient temperature.
The fan integrated into the heating instruments slowly increases the rotation speed thus creating more cooling air.

ATTENTION

After switching off or disconnecting the mains connection, the built-in fan no longer generates cooling air. However, sufficient thermal decoupling between the fan and the mains is ensured.ovenand enveloping.

11. Maintenance, Cleaning and Recalibration

11.1 Maintenance

The instruments described here are maintenance-free. All repairs must be carried out by the manufacturer only. Fuse replacement is not permitted. Before replacing the fuse, switch off the calibrator and calibration oven and disconnect them from the mains by removing the mains cable from the socket.

11.2 Cleaning

ATTENTION

- Cool theovencalibration
- Before cleaningovencalibration turn it off and disconnect it from the network
- Clean the instrument with a damp cloth
- Make sure electrical connections do not get wet
- Once the instrument has been disassembled, it must be rinsed and cleaned before returning it to protect people and the environment from residues of the measuring medium.

- Residual media on the disassembled instrument may cause risks to people, the environment and the installation. Take appropriate protective measures.

See chapter 11.2 “Return” for more information about returning the instrument.

11.2.1 Cleaning calipers with inner sleeve

A small amount of metal dust is produced in gauges with insert sleeves, which can clog the bore and the sleeve. To prevent this, remove the inner sleeves periodically and before any long period of non-use. Clean the furnace bore with compressed air and the bore and insert with a dry cloth.

11.2.2 Cleaning the fan grill

All ovens have a fine mesh grill inside, through which cooling air enters the oven. Clean the grill regularly depending on air contamination with a vacuum cleaner or brush.

11.2.3 Cleaning the calibration oven

Remove all silicone from the tank. Remove the sensor basket from the tank and clean the basket, magnetic stirrer and tank by applying water with a large amount of cleaning substances. Allow all components to dry. If distilled water is used, remove the calibration liquid and allow the sensor basket, magnetic stirrer and tank to dry thoroughly.

11.2.4 Cleaning the calibration oven

Clean the outside of the calibration oven with a damp cloth and a little water or with a non-aggressive solvent-free cleaning product.

11.3 Recalibration

ISO/17025 Certified

The calibration furnace has been adjusted and checked before shipment using internationally recognized standard quality measuring instruments.
According to ISO/17025 the calibration furnace must be checked at appropriate periodic intervals depending on the use. It is recommended that the instrument be re-calibrated by the manufacturer at periodic intervals of approximately 12 months or approximately every 500 operating hours. Every factory re-calibration also includes a thorough and free check of all system parameters against specifications. Any deviation from the basic values is corrected.
The basis for recalibration is the ISO 17025 guidelines. The measures detailed in this document must be observed and applied during recalibration.

ATTENTION

If the defects cannot be corrected by the measures detailed above, the instrument must be taken out of service immediately and incorrect commissioning must be prevented. In such cases, the manufacturer must be consulted. If you wish to return the instrument, please observe the instructions in the chapter “Returns”

13. Disassembly, return and disposal of waste

WARNING
Residual media on the disassembled instrument may cause risks to people, the environment and the installation. Take appropriate protective measures.

13.1 Disassembly

WARNING
Risk of burns. Allow the instrument to cool sufficiently before disassembling it. Danger due to very hot media escaping during disassembly.

To avoid damage

1. Cool the instrument as described in the chapter “Cooling the instrument”.oven”.
2. Turn off the calibration oven and remove the plug.
3. Remove residual calibration fluid from theoven. See the chapter “Cleaning theoven”.

13.2 Return

WARNING
It is essential to observe the following when sending the instrument: All instruments sent to LEYRO INSTRUMENTS must be free of hazardous substances (acids, lyes, solutions, etc.)

Use the original packaging or suitable packaging to return the instrument.

To avoid damage

1. Place the instrument together with the insulating material in the packaging. Insulate all sides of the transport packaging evenly.
2. If possible, attach a desiccant bag.
3. Apply a marker indicating that this is a highly sensitive measuring instrument being shipped.

13.3 Waste disposal

Incorrect disposal may cause environmental hazards. Dispose of instrument components and packaging materials in accordance with the waste treatment and disposal regulations in force in the country of use.

Remove silicone as described in the safety data sheet

Instruments with this marking should not be disposed of in household waste. For disposal, they must be returned to the manufacturer or handed over to the appropriate municipal authority.

14. ACCESSORIES LHC 40/400 Advance

- Aluminum insert 59.5*165mm
- 1.5mm power cable with F-type connector according to CEE7/4
- standards Instruction manual.

14.1 Additional

- Embossed aluminum suitcase with reinforced handle and wheels.
- Various inserts
- Insert extractor and magnetic stirrer extractor.

15. PASSWORD

The password is:111

Notas

LHC 40/400 ADVANCED TEMPERATURE CALIBRATOR