

HumaTherm

| User Manual



CE

Cat No. 17195/1

Human

Diagnostics Worldwide

REVISION LIST OF THE MANUAL

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01/2005-07	First edition
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SYSTEM VERSION

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SERVICE UND SUPPORT

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1 SAFETY INSTRUCTIONS

1.1 Introduction

This manual is considered part of the instrument and must be available to the operator and the maintenance personnel. For accurate installation, use and maintenance, please read the following instructions carefully.

In order to avoid damage to the instrument or personal injury, carefully read the "GENERAL SAFETY WARNINGS", describing the appropriate operating procedures. Please contact your HUMAN authorised local Technical Service in the event of instrument failure or other difficulties with the instrument.

1.2 User Warranty

HUMAN warrants that instruments sold by one of its authorised representatives shall be free of any defect in material or workmanship, provided that this warranty shall apply only to defects which become apparent within one year from the date of delivery of the new instrument to the purchaser.

The HUMAN representative shall replace or repair any defective item within this warranty period at no charge, except for transportation expenses to the point of repair.

This warranty excludes the HUMAN representative from liability to replace any item considered as expendable in the course of normal usage, e.g.: lamps, valves, syringes, glassware, fuses, tubing etc.

The HUMAN representative shall be relieved of any liability under this warranty if the product is not used in accordance with the manufacturer's instructions, altered in any way not specified by HUMAN, not regularly maintained, used with equipment not approved by HUMAN or used for purposes for which it was not designed.

1.3 Intended Use of the Instrument

The instrument must be used for its intended purpose. It must be operated in perfect technical conditions, by qualified personnel, in such working conditions and maintained as described in this manual, in the GENERAL SAFETY WARNINGS. This manual contains instructions for qualified professional operators.

1.4 General Safety Warnings

Use only chemical reagents and accessories specified and supplied by HUMAN and/or mentioned in this manual. Place the product so that it has proper ventilation.

The instrument should be installed on a flat, stationary working surface, that is free of vibrations.

Do not operate in area with excessive dust.

Operate at temperature and at a humidity level in accordance with the specifications listed in this manual.

Do not operate this instrument with covers and panels removed.

Use only the power cord specified for this product, with the grounding conductor of the power cord connected to earth ground.

Use only the fuse type and rating specified by the manufacturer for this instrument.

The use of fuses with improper ratings may pose electrical and fire hazards.

To avoid fire or shock hazard, observe all ratings and markings on the instrument.

Do not power the instrument in environments that are potentially explosive or at risk of fire.

Prior to cleaning and/or performing maintenance on the instrument, switch off the instrument and remove the power cord.

Only cleaning materials described in this manual may be used, as other materials may damage parts. It is recommended to always wear protective clothing and eye protection while using this instrument.

All warning symbols that appear in this manual must be carefully observed.

1.5 Disposal Management Concept

The applicable local regulations governing disposal must be observed. It is the user's responsibility to arrange for proper disposal of the individual components. All parts which may contain potentially infectious materials must be disinfected by suitable, validated procedures (autoclaving, chemical treatment) prior to disposal. Applicable local regulations for disposal must be carefully observed. The instruments and electronic accessories (without batteries, power packs etc.) must be disposed of according to the applicable local regulations for the disposal of electronic components.

Batteries, power packs and similar power sources must be removed from electric/electronic parts and disposed of in accordance with applicable local regulations.

1.6 Biohazard Warning

Analytical instruments for in vitro diagnostic application involve the handling of human samples and controls which should be considered at least potentially infectious. Therefore every part and accessory of the respective instrument which may have come into contact with such samples must equally be considered as potentially infectious.

The „BIOHAZARD“ warning label must be affixed to the instrument prior to first use with biological material!



FIGURE 1

Biological Hazard Symbol

1.7 Instrument Disinfection

Before performing any servicing on the instrument it is very important to thoroughly disinfect all possibly contaminated parts. Before the instrument is removed from the laboratory for disposal or servicing, it must be decontaminated. Decontamination must be performed by authorised well-trained personnel, and in observance of all necessary safety precautions.

2 USE AND FUNCTION

The HumaTherm incubator is designed to incubate samples in biological, medical and pharmaceutical laboratories and in many industrial control laboratories.

They maintain drying and incubation temperatures between 5°C above the ambient temperature and 80°C keep the temperature stable within the given tolerances.

The HumaTherm incubator provides homogeneous temperature distribution by means of the sheet heaters placed onto three outer surfaces of the useful volume.

The HumaTherm ensures reliable working conditions by the programmable microprocessor controlled main PCB, which has very high control accuracy. As an additional security feature, the safety thermostat is also available.

Microprocessor control system will shut down the temperature sensor and in case of malfunctions that may occur in the control system, the alarm system will be activated and the user is warned visually and audibly. The study data are recorded in the memory and can be transferred to external USB memory. At the same time, unauthorized persons have been blocked permission to change parameters with improved password menu.

The HumaTherm incubator is manufactured according to the following standards,

EN 61010-1, EN 61010-2-010, EN 61000-6-3, EN 50419, EN 61326-1.

This device is in compliance with WEEE Regulation.

3 TECHNICAL SPECIFICATIONS

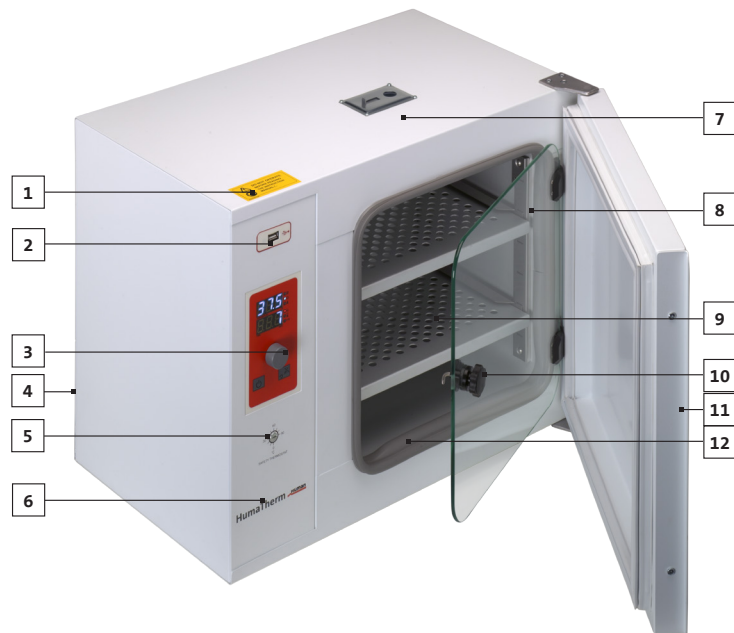
3.1 Technical Specifications Table

Technical Specifications	HumaTherm
Temperature Range	Ambient +5°C / 80°C
Temperature set and display sensitivity	0.1°C
Temperature variation	+/-0.5°C
Temperature fluctuation	0.1°C
Temperature sensor	Fe-Const.
Temperature control system	Programmable microprocessor PID
Timer	1 min – 100 hours + hold position
Internal volume	22 litres
Internal Material	Electro-acid coated aluminium
External Material	Epoxy-polyester painted steel
USB Slot	Up to 8 GB of external memory for temperature data logging
Power consumption	100 W
Power supply	230 Vac 50/60 Hz for cat. no. 17195 or 110 Vac 60 Hz, for cat. No. 17195/110
Internal dimensions (W x D x H)	300 x 245 x 300 mm
Physical dimensions (W x D x H)	
Instrument without any components:	56 x 39 x 45 cm
Space required for routine use:	66 x 85 x 50 cm
Packaging dimensions:	66 x 47 x 53.5 cm
Weight:	Gross: 27.3 kg Net: 23 kg

TABLE 1

3.2 General View

FIGURE 2



1. Safety Warnings
2. USB slot
3. Control panel
4. On the backside: Power switch & Power cord connection
5. Safety thermostat adjusting button
6. HUMAN HumaTherm Logo
7. Ventilation hole
8. Glass door
9. Shelf
10. Glass door handle
11. Door
12. Chamber gasket

4 INSTALLATION PROCEDURE

4.1 Lifting And Transport

Because of the heavy weight of the incubator, all lifting and transport must be carried out using proper handling equipment. The incubator must be supported from underneath and never be turned over.

Important Note: In order to prevent damage of the instrument, please assure that the instrument has reached the specified operation temperature before it is connected to mains. This is most important after transportation of the instrument at lower temperatures. Do not connect the instrument with mains until it is warmed up accordingly, otherwise the electronic parts of the instrument may be damaged due to condensing humidity.

4.2 Contents Of Package

HumaTherm

- 1 user manual
- 1 power cable
- 4 shelf carriers
- 2 shelves

4.3 Environmental Conditions

- Please pay special attention to the followings,
- Indoor use only
- Room temperature from 5°C to 40°C
- Humidity level 80% at 22°C

4.4 Mains Supply

The HumaTherm incubator is available in two variants with different electrical requirements.

Cat.no. 17195 requires 230 Vac, 50/60Hz or

Cat.no. 17195/110 requires 110 Vac, 60Hz

4.5 Positioning

Lift the incubator underneath and carry it carefully to its place.

Check that no damage occurred during transportation.

Balance the incubator on four pedestals. If necessary, provide stable standing by adjusting the pedestal heights.

Place the shelf carriers and then the shelves.

Check the followings,

- The proposed site is suitable for the user,
- The operator can follow up the HumaTherm even he deals with something else.
- The Humatherm incubator does not occupy the utilisation space of others or does damage them.
- Leave at least 20 cm. free space between the equipment and wall.

Please pay special attention to the followings,

At most 70% of the surface area of the shelves should be used in order to obtain a uniform temperature distribution.

- Indoor use only
- Temperature from 5°C to 40°C
- Maximum relative humidity of 80% for temperature up to 22°C,
- Maximum altitude: 2000 m.
- The maximum performance is obtained between 15°C and 25°C.

Check the followings,

- Make sure that the safety thermostat is adjusted to the temperatures which are higher than the set temperature.
- If it is necessary the ventilation hole is open to discharge the gases and the vapours which occur during incubation.
- Liquids are not heated in sealed containers.
- The boiling points of the samples are higher than the set temperature.
- Liquids which may expand during heating do not overflow from their containers.
- The vapours and gases which are generated during the operation are not harmful to humans or flammable or explosive.
- The set temperature does not destroy the structure of the samples.
- Plug the power cable into a grounded socket.

! Note: Never use explosive, flammable, acidic or toxic liquids. Read carefully the functions of the control panel.

4.6 Preparing To The Operation**Check the following:**

- The ventilation hole is open to discharge the gases and vapours which may occur during the incubation.
- Liquids are not heated in sealed containers.
- The boiling points of the samples should be higher than the set temperature.
- Liquids which may expand during heating do not overflow from their containers.
- Vapours and gases which may occur during the incubation are not flammable or explosive or harmful to humans.
- The set temperature does not destroy the structure of the samples.

Set the safety thermostat. **Please keep in mind that the safety thermostat set value should always be higher than the working temperature.**

Read carefully the functions of the control thermostat.

5 OPERATING THE HUMATHERM

5.1 Switching On

- Switch on.
- See that the microprocessor activates.
- Learn the functions of the control and display panel (See 5.2. below).

5.2 Control And Indicators

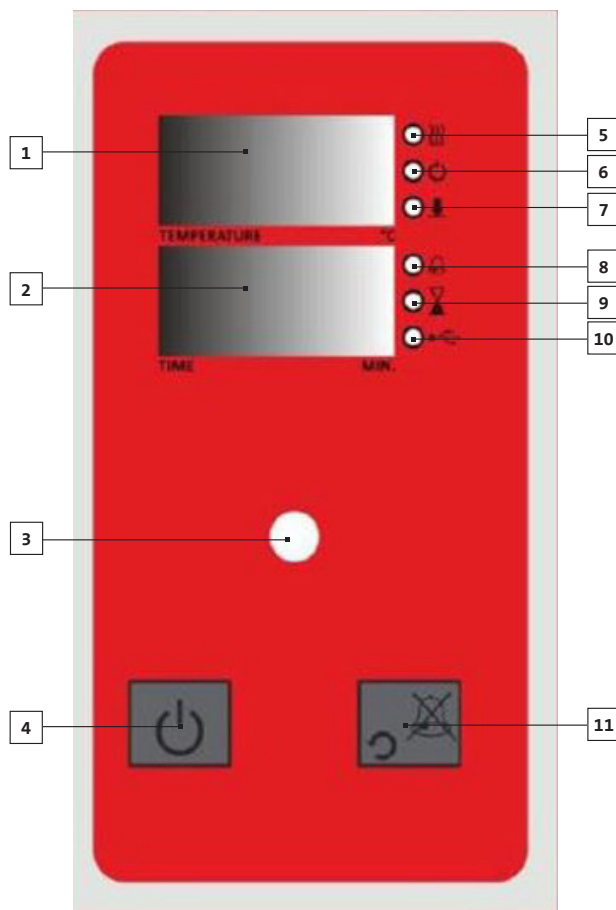


FIGURE 3

- 1 Temperature display
- 2 Time display
- 3 Encoder button
- 4 Start / Stop button
- 5 Heating lamp
- 6 „Operating the program“ lamp
- 7 Data transfer lamp
- 8 Alarm led
- 9 „Terminating the program“ lamp
- 10 USB lamp
- 11 Back / Alarm mute button

01 - Temperature Display

- This display shows Sterilization chamber temperature during “stand-by” and during the operation (thermometer position), During program preparation, the temperature setting values or the alarm setting values, Failure codes, EoF warnings when the power is interrupted, The set temperature values and alarm values.

02 - Time Display

- This display shows the values set for time during program preparation. This display will also show the time values in the control of the settings.

03 - Encoder Button

- The encoder button has two physical movements. Turn the button clockwise and anticlockwise to increase or decrease the temperature and time values of the program. You can also press the button to select or confirm something.

04 - Start / Stop Button

- Use this button to start the device and to operate at set values or to stop the operation.

05 - Heating Lamp

- The led is “on” during heating, it indicates that the heating process is carried out.

06 - “Operating The Program” Lamp

- A lamp indicating that the program is running as soon as the device is starting.

07 - Data Transfer Lamp

- The Lamp indicates that records are transferred into the memory or that files are transferred during a software update.

08 - Alarm Led

- This led flashes when there is a warning or an error on the device.

09 - “Terminating The Program” Lamp

- It is a warning lamp that indicates that the running program is finished.

10 - USB Lamp

- This lamp is on when a USB external memory stick is connected. The device supports up to **8 GB** of external memory.

11 - Back / Alarm Mute Button

- This button is used to silence the audible alarm in case of an error and to cancel the changes in the menu.

5.3 Preparation Of User Settings

The device has a password protected menu. The password is set to “000” when the device first starts. Follow the steps below to change the password, update current date / time information and access the operator’s menu where other settings are made.





	<p>Wait by pressing the encoder button.</p>
	<p>Lift your hand when you see “oP” on the temperature display and press again the encoder button. If the device has a menu protection password, password screen “oPS” will come on the temperature display.</p>
	<p>You enter the set password to turn the encoder button right and left. (The password will not be asked if the device is newly installed.) Confirm the password by pressing the encoder button. Observe that the parameter numbers on the temperature display change with each pressing the encoder button. For operator menu parameter descriptions. You can set the parameter values by turning the encoder button right or left on the time display.</p>
	<p>Press again the encoder button and confirm the set value. Press the back button to return to the work screen.</p>

TABLE 2

5.3.1 OPERATOR MENU PARAMETERS

1: Recording Period:

This time is recording period of temperature and error information.

2: Timer Set Band:

When the read temperature reaches the “Set Temperature - TIMER SET BAND” value, the time starts counting backwards.

3: Buzzer ON/OFF:

The alarm sound on/off 0: OFF 1: ON

4: Date Setting - Year:

Two digits are displayed the year information of date. If updating is necessary, change.

5: Date Setting - Month:

The month information of date is displayed. If updating is necessary, change.

6: Date Setting - Day:

The day information of date is displayed. If updating is necessary, change.

7: Time Setting - Hour:

The hour information of time is displayed. If updating is necessary, change.

A: Time Setting - Minute:

The minute information of time is displayed. If updating is necessary, change.

B: Time Setting – Second:

The second information of time is displayed. If updating is necessary, change.

C: Date / Time Update:















0: No change 1: Update date / time according to the entered values. The entered values are considered as current Date / Time information when 5, 6, 7, 8, 9, A parameters are changed and B parameter is set to 1.

D: Password:

The password used to enter the operator parameters. This password is used when you want to change the set values. No password when 0 is selected.

5.4 Programming Summary

TABLE 3

	Push the encoder button.
	By pushing the encoder button select SET menu.
	See that second LED flashes in the temperature display, again push the encoder button.
	See the parameter flashing on the temperature display.
	By turning the encoder button set operating temperature value.
	Push the encoder button and save set value.
	See the parameter flashing on the temperature display.
	By turning the encoder button set operating Set alarm value. If the temperature is out of Set alarm value, audible and visual alarm will be activated.
	Push the encoder button and save set value.
	Turn the encoder button to the right.
	See that second LED flashes in the time display, again push the encoder button.
	See the parameter flashing on the time display.
	By turning the encoder button set operating time value (01 minute to 99 hours 54 minutes or Hold).
	Push the encoder button and save set value. See 'dLY' in the temperature display.

Note: In order to display the set values during the operation, push the encoder button once. The values set on the temperature display and the time display of the device will appear for 5 seconds. During the program, the time starts to count up after the instrument has reached the set temperature.



By turning the encoder button set operating delay time value. If 'Off' is selected, heating will start without delay.

If any numerical value is selected; after pressing Start, it starts heating after the set delay time (01 minute to 99 hours 54 minutes).



Push the encoder button and save set value.



Push the start button to start the program.

5.5 Completion Of The Operation

- See that the program is over.
- Take the samples out. Be careful while handling the samples after the operation as they can be hot.
- Wipe the chamber surface if needed when the chamber is cold enough.
- You may leave the incubator at stand-by position or switch it off.
- Operating records are transferred to the USB port by connecting a USB memory.
- The USB led and the data transfer led on the control panel turn on during transfer of data in memory and the transfer process starts automatically. Do not remove external memory from USB port without the data transfer led turn off and the audible alarm finished.

6 PERIODIC MAINTENANCE AND CLEANING

6.1 Periodical Maintenance

The incubator does not require any periodical maintenance which is carried out by the operator.

6.2 Cleaning

- After unplugging the equipment and the equipment is at the room temperature, wipe down the incubator chamber to remove any undesirable effects of the operation, for example spillage.
- You may use a soft brush to clean the chamber.
- For the external body, you may use a piece of cloth. Mild detergent use is recommended to remove difficult dust and dirt.
- Protect your chamber against rust coming from outside.

Please be aware of the undesirable effects of the chemicals and be careful while applying them.

7 TROUBLESHOOTING

If the HumaTherm does not operate, CHECK WHETHER:

- The on/off switch is on
- The plug is plugged-in properly
- The plug is not defective
- The mains supply is present
- Fuses are sound
- The installation of the plug is not defective

If the HumaTherm does not heat, check the following:

- The program is started
- The safety thermostat is adjusted higher than the set temperature

7.1 ERROR CODES EXPLANATIONS

Er1

The temperature sensor endings are broken. The error code flashes on the temperature display and an audible alarm sounds.

Er2

An electronic failure occurs in the microprocessor. The error code flashes on the temperature display and an audible alarm sounds.

Er3

The temperature sensor measures a temperature higher than 147°C. The error code is shown on the temperature display and an audible alarm sounds.

Er4

The temperature sensor endings are connected in reverse. The error code flashes on the temperature display and an audible alarm sounds.

EoF

This error code appears if any probable power cut causes when the sterilization phase "EoF" flashes and the audible alarm sounds on the temperature display.

IN CASE OF ANY ERROR, THE PROGRAM IS STOPPED AUTOMATICALLY AND IMMEDIATELY.

PLEASE CONTACT TO AN AUTHORIZED HUMAN DISTRIBUTOR IF ANY ERROR OCCURS.

8 ELECTRICAL CIRCUIT DIAGRAM HUMATHERM

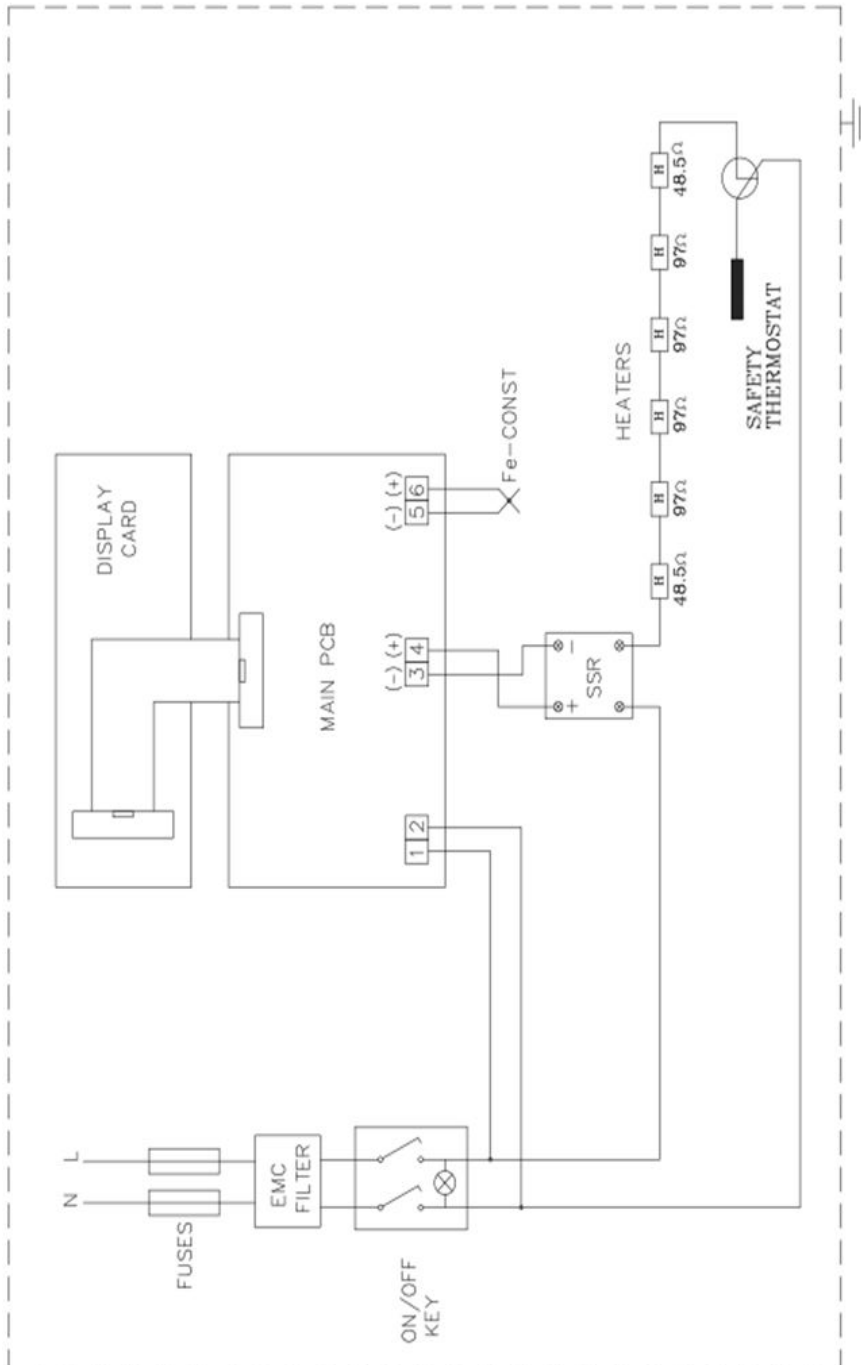


FIGURE 4

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The logo graphic consists of a horizontal bar with a red-to-orange gradient. On the right side, the bar has a 3D effect, appearing to fold upwards and then downwards, creating a stylized 'H' shape.

Human