

HumAqua 5

| User Manual



CE

Cat No. 17180/1

Human

Diagnostics Worldwide

REVISION LIST OF THE MANUAL

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01/2003-05	First Edition
02/2011-09	Correction Dimension
03/2014-04	Correction temperature range
04/2018-02	New Design and new operation unit
05/2021-06	Revision of chapter 5.3.1 Operator menu parameters

SYSTEM VERSION

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SERVICE AND 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.

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 HumAqua 5 accurately controls the temperature of samples and commonly used in microbiology, research and industrial laboratories. They offer excellent temperature control of liquid producing a uniform and stable heating environment for the applications. It provides temperatures between 5°C above the ambient temperature and 99.9°C for procedures where temperature uniformity and stability are important. The homogeneous temperature distribution in the tank is ensured by means of the heaters which are placed around chamber.

The HumAqua 5 is equipped with a timer and controlled by a PID microprocessor controlled system to ensure precise temperature control. Two digital displays situated on the user-friendly control panel display the temperature and time values.

The 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.

All components which are exposed to liquid are made of high grade stainless steel to resist corrosion.

**The HumAqua 5 is manufactured according to the following standards:
EN 61010-1, EN 61326-1, EN 50419.**

This device is in compliance with WEEE Regulation.

If the warnings mentioned in this manual are not considered, HUMAN will not be responsible for the results.

3 TECHNICAL SPECIFICATIONS

TABLE 1

Technical Specifications	HumAqua 5	
Temperature range	Ambient + 5°C/99.9°C	
Temperature set and display sensitivity	0.1°C	
Temperature variation	+/-0.1°C	
Temperature fluctuation	+/-0.1°C	
Temperature homogeneity	< 0.3°C (at 40°C)	
Temperature sensor	Fe-Const.	
Temperature control system	Programmable microprocessor PID	
Timer	1min-999 hours + hold position	
Tank volume	6 litres	
Useful volume	4 litres	
USB slot	Up to 8 GB of external memory for temperature data logging	
Power consumption	600 W	
Power Supply	230Vac 50/60 Hz for cat.no. 17180/2 or 110Vac 60 Hz for cat.no. 17180/1	
Internal material	Stainless steel (304)	
External material	Epoxy-polyester painted steel	
Internal dimensions (W x D x H)	151 x 300 x 150 mm	
Physical dimensions (W x D x H)	Instrument without any components:	24 x 40.5 x 28 cm
	Space required for routine use:	34 x 55 x 40 cm
	Packaging dimensions:	45.5 x 30 x 38 cm
	Weight:	Gross: 6.55 kg Net: 8.25 kg

3.1 General View

FIGURE 2

- 1 Lid holder
- 2 Lid (optional)
- 3 Tank
- 4 HUMAN HumAqua 5 logo
- 5 Control panel
- 6 Grid
- 7 Temperature sensor
- 8 Safety Warnings



FIGURE 3

- 1 Power switch
- 2 Power cord connection
- 3 Safety thermostat adjusting button
- 4 Biohazard label
- 5 HUMAN type plate label
- 6 USB slot
- 7 Water discharge line



4 INSTALLATION PROCEDURE

4.1 Lifting And Transport

All lifting and transport must be carried out using proper handling equipment. The HUMAQUA 5 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

HumAqua 5

- 1 user manual
- 1 power cable
- 1 perforated grid

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 HumAqua 5 water bath is available in two variants with different electrical requirements.

Cat.no. 17180/2 requires 230 Vac, 50/60 Hz or

Cat.no. 17180/1 requires 110 Vac, 60Hz

4.5 Positioning

Lift the HUMAQUA 5 and carry it to carefully its place.
Check that no damage occurred during transportation.

Balance it on the four pedestals. If necessary, provide support heights.

Check the following:

- The proposed site is suitable for users.
- The operator can follow up the HUMAQUA 5 even he deals with something else.
- The HUMAQUA 5 does not occupy the utilisation space of other equipment or damage them.

4.6 Before Starting The Operation

4.6.1 Filling in water / liquid

- Fill the tank with distilled water/liquid until the maximum line MAX (see diagram below).
- NEVER OPERATE THE HUMAQUA 5 UNLESS DISTILLED WATER/LIQUID IS FILLED.
- Make sure that the liquid filled in is not flammable or explosive at the desired temperature.

FIGURE 4



4.6.2 Important Points

- Do not heat the samples in sealed containers which can liquefy or expand during the operation.
- Determine of the boiling points of the samples and set the temperature accordingly.
- Make sure that the samples do not overflow from their containers when heated.
- Do not operate the HUMAQUA 5 at the temperatures which may harm the samples or cause them to deform.
- Make sure that the vapour or steam produced during the operation is not harmful to humans nor flammable or explosive.
- Make sure that the safety thermostat is adjusted to the temperature which is higher than the set temperature.

5 OPERATING THE HUMAQUA 5

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 Controls And Indicators

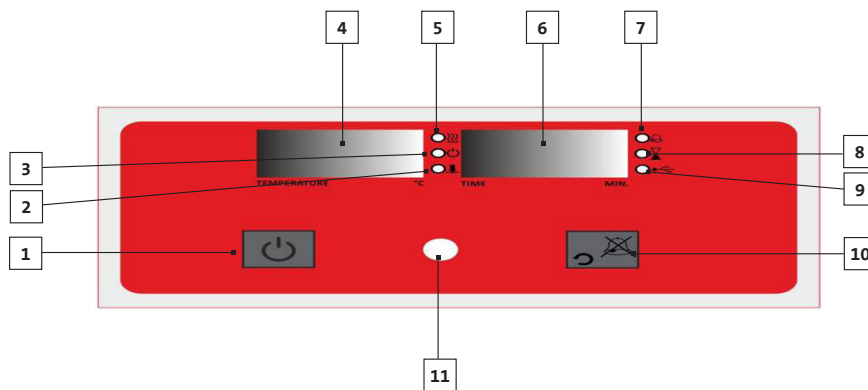


FIGURE 5

- 1 Power button
- 2 Data transfer lamp
- 3 "Operating the program" lamp
- 4 Temperature display
- 5 Heating lamp
- 6 Time display
- 7 Alarm led
- 8 "Terminating the program" lamp
- 9 USB lamp
- 10 Back and alarm mute button
- 11 Encoder button

1. Start / Stop Button

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

2. Data Transfer Lamp

The lamp indicates that the records are transferred in the memory or that the file is transferred during a software update.

3. "Operating The Program" Lamp

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

4. Temperature Display

This display shows the 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 warning when power is interrupted,

The set temperature values and alarm values.

5. Heating Lamp

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

6. Time Display

This display shows the values set for time during program preparation. Furthermore it shows time values in the control of the settings.

7. Alarm Led

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

8. “Terminating The Program” Lamp

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

9. Usb Lamp

This lamp is on when connected to a USB external memory for temperature logging.

 The device supports up to 8 GB of external memory.

10. Back / Alarm Mute Button

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

11. Encoder Button

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

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 below steps to change the password, update current date / time information and access the operator’s menu where other settings are made.



Wait by pressing the encoder button



Lift your hand when you see “oP” on the temperature display and again press the encoder button. If the device has a menu protection password, password screen “oPS” will come on the temperature display.



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 time display.
















Again press the encoder button and confirm the set value. Press the back button to return the work screen.





5.3.1 oP Operator Menu Parameter

1. **Recording Period:** This time is recording period of temperature and error information.
2. **Lid Alarm Time:** Not applicable.
3. **Lid Alarm Range:** Not applicable.
4. **Timer Set Band:** When the read temperature reaches the "Set Temperature - TIMER SET BAND" value, the time starts counting backwards.
5. **Buzzer ON/OFF:** The alarm sound on/off 0: OFF 1: ON
6. **Date Setting - Year:** Two digits are displayed the year information of date. If updating is necessary, change.
7. **Date Setting - Month:** The month information of date is displayed. If updating is necessary, change.
8. **Date Setting - Day:** The day information of date is displayed. If updating is necessary, change.
9. **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 used when you want to change the set values. No password if 0 is selected.

5.4 PROGRAMMING SUMMARY

You can also set the HumAqua 5 on a stand-by mode. Just follow the below steps and save the values.

	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.
	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 values.
	Push “the start button” and start the program.

! 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 operation of the program, the time starts to count up after the instrument has reached to the set temperature.

5.5 Completion of the Operation

- See that the program is over.

! ATTENTION!!

! PLEASE BE AWARE OF THE LIQUID AMOUNT IN THE TANK DURING LONG OPERATIONS. PROTECT THE BATH AGAINST FAILURES CAUSED BY THE LACK OF LIQUID.

- Take the samples out at the end of the operation. Be careful while handling the samples after incubation as they can be hot.
- Remove the undesirable effects occurred during the operation after the tank has been completely emptied.
- You may leave the bath at stand-by or switch it off.
- Check the liquid level in the tank during long operations and refill to the max line if necessary
- 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 the USB port without the data transfer led turn off and the audible alarm finished.

6 PERIODICAL MAINTENANCE AND CLEANING

6.1 Periodical Maintenance

- Check the water/liquid amount in the tank and add some if necessary.

6.2 Cleaning

- Do the cleaning after you have disconnected the electrical cable at room temperature.
- Discharge the contaminated water/liquid by removing the tap of the hose at the back side. Place the tap again after the water/liquid in the tank has been completely discharged.
- You may wipe the tank surface against dust and dirt.
- You may use mild liquid soap against difficult dust and dirt.
- Protect your tank against rust coming from outside. Remove all rust before it gets bigger.
- Please be aware of the undesirable effects of the chemicals and be careful while applying them.

7 TROUBLESHOOTING

If the HUMAQUA 5 does not operate, CHECK WHETHER

- The on/off switch is open(the bath is switched on),
- It is connected well to the power supply,
- The fuses are sound,
- The plug is not defective,
- The installation of the mains supply is not defective,
- There is mains supply.

Errors Recognised By The Microprocessor Control System OFL:

- The temperature in the tank exceeds 99.9°C. Contact to an authorized technical help.
- The temperature sensor(Fe-Const) endings are broken.

CONTACT TO YOUR AUTHORIZED HUMAN DISTRIBUTOR IF ANY ERROR OCCURS.

8 ELECTRICAL CIRCUIT DIAGRAM

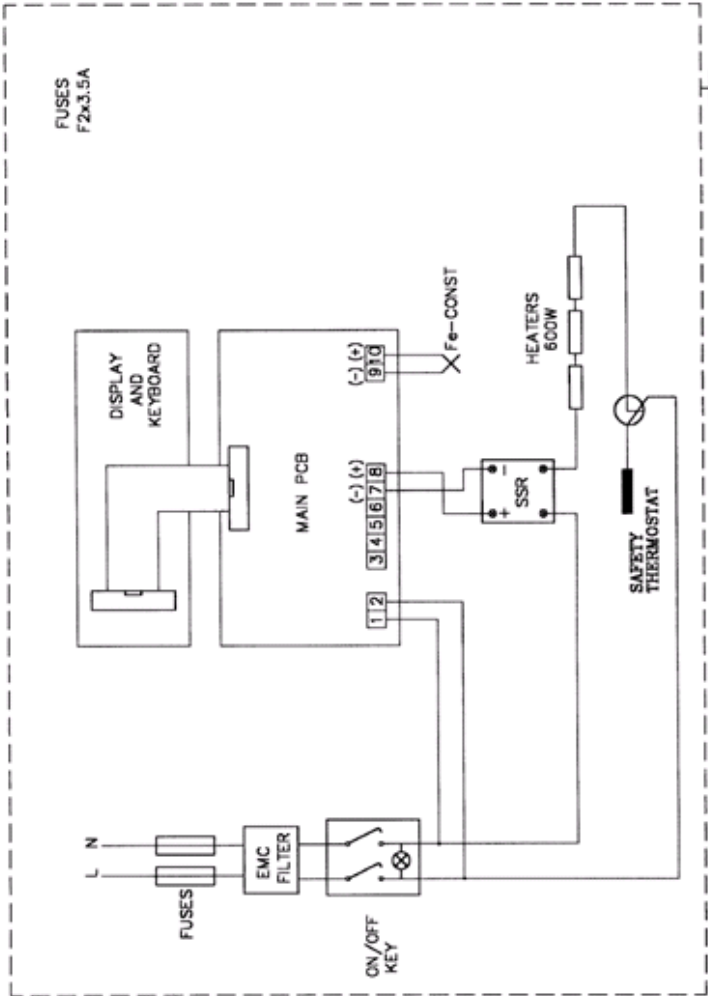


FIGURE 6

HUMAN

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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