Operating Manual

CO2 INCUBATOR

Series INCO2

Manufacturer and customer service
KAVOSHTEB Co.
No.2 East Alley North Mottahari Blvd.
SafaDasht Tehran
IRAN
Phone: +98 2165536644
E-mail: Info@Kavoshteb.com
Internet: www.kavoshteb.com
Customer service:
Service hotline: +98 (0)9105038832_ +98 (0)9105038825
E-mail: service@kavoshteb.com
For service enquiries, please always specify the appliance number on the nameplate.
Shipping address for repairs:
No.2 East Alley North Mottahari Blvd.
SafaDasht Tehran
IRAN
Please contact our customer service before sending appliances for repair or before returning equipment, otherwise, we have to refuse acceptance of the shipment.

M1402 | Date 05/2023

About this manual

Purpose and target audience

This manual describes the design, function, transport, putting into operation, the actual operation and maintenance of CO2 incubators INCO2. It is intended for use by trained personnel of the owner, who have the task of operating and/or maintaining the respective appliance.

If you are asked to work on the appliance, read this manual carefully before starting. Familiarize yourself with the safety regulations. Only perform work that is described in this manual. If there is something you do not understand, or certain information is missing, ask your manager or contact the manufacturer. Do not do anything without authorization.

Versions

The appliances are available in different configurations and sizes. If specific equipment features or functions are available only for certain configurations, this is indicated at the relevant

points in this manual.

Due to individual configurations and sizes, illustrations in this manual may be slightly different

from the actual appearance. Function and operation are identical.

Storage and resale

This instruction manual belongs with the appliance and should always be stored where

persons working on the appliance have access to it. It is the responsibility of the owner to

ensure that persons who are working or will work on the appliance are informed as to the

whereabouts of this instruction manual. We recommend that it is always stored in a protected

location close to the appliance. Make sure that the instruction manual is not damaged by heat

or humidity. If the appliance is resold or transported and then set up again at a different location, the operating instructions must go with it.

For the current version of this operating manual in pdf format, please go to http://www.kavoshteb.com

Contents

1.For your safety

1.1 Terms and signs used

In this manual and on the appliance itself, certain common terms and signs are used to warn you of possible dangers or to give you hints that are important in avoiding injury or damage. Observe and follow these notes and regulations to avoid accidents and damage. These terms and signs are explained below.

1.1.1 Terms used

⚠ **Warning**	Warns about a dangerous situation that might lead to death or serious Injuries.
⚠ **Caution**	Warns about a dangerous situation that might lead to moderate or minor injuries.
NOTICE	Warns about material damage.

1.1.2 Signs used

1.2 Product safety and dangers

The appliances described in this manual are technically sophisticated, manufactured using high-quality materials and subject to many hours of testing in the factory. They reflect the state of the art and comply with recognized technical safety regulations. However, there are still risks involved, even when the appliances are used as intended. These are described below.

⚠WARNING

After removing covers, live parts may be exposed. You may receive an electric shock if you touch these parts. Disconnect the mains plug before removing any covers. Only electrical engineers may work on the electrical equipment of the appliances.

⚠WARNING

When loading the appliance with an unsuitable load, poisonous or explosive vapors or gases may be produced. This could cause the appliance to explode, and people could be severely injured or poisoned. The appliance may not be loaded with materials / test objects that release toxic or explosive vapors when heated up (see also chapter Intended use on page 8).

⚠WARNING

Leaving the door open during operation can cause the appliance to overheat or pose a fire hazard. Do not leave the door open during operation.

⚠WARNING

Gas bottles may burst or explode at high temperatures. Keep the gas bottles away from open flames. Store gas bottles below 50 °C and ensure that the location is always well ventilated. Prevent water from penetrating as well as backflow into the gas bottles. It is essential that you read the safety notes and instructions of the gas supplier.

⚠WARNING

Condensation might cause a short circuit. After transport or storage at high humidity conditions, the appliance shall be stored unpacked at normal conditions for at least 24 hours. During this period of time the appliance shall not be connected to the power supply.

⚠Caution

Danger of suffocation. CO_2 and N_2 can have a suffocating effect in high concentrations. In normal mode, the appliance emits small amounts of CO_2 and N_2 to its surroundings. You should therefore ensure that the room in which it is installed is properly ventilated. A ventilation rate of 250 m^3 / h is required. Always close the stop valve or pressure reducer on the gas bottles if the appliance is not in operation.

⚠Caution

High concentrations of CO_2 can cause cold burns or frostbite. Avoid contact with CO_2 gas to the eyes and skin. CO_2 and N_2 are not dangerous. You should nevertheless familiarize yourself with the applicable safety regulations prior to handling such gas bottles.

1.3 Requirements of the operating personnel

The appliance may only be operated and maintained by persons who are of legal age and have been instructed accordingly. Personnel who are to be trained, instructed or who are undergoing general training may only work with the appliance under the continuous supervision of an experienced person. Repairs may only be performed by qualified electricians. The regulations in the separate service manual must be observed.

1.4 Responsibility of the owner The owner of the appliance

► is responsible for the flawless condition of the appliance and for it being operated in accordance with its intended use.
► is responsible for ensuring that persons who are to operate or service the appliance are qualified to do this, have been instructed accordingly and are familiar with the operating instructions at hand;
► must know about the applicable guidelines, requirements and operational safety regulations, and train staff accordingly;
► is responsible for ensuring that unauthorized persons have no access to the appliance;
► is responsible for ensuring that the maintenance plan is adhered to and that maintenance work is carried out properly.
► has to ensure that the appliance and its surroundings are kept clean and tidy, for example through corresponding instructions and inspections;
► is responsible for ensuring that personal protective clothing is worn by operating person

1.5 Intended use

CO_2 incubators INCO2 series are intended for incubation of cell cultures or similar.

The appliance is not explosion-proof. The appliance may only be loaded with materials and substances which cannot form any toxic or explosive vapors at the set temperature and which cannot explode, burst or ignite.

The appliance may not be used for the drying, evaporation and baking of paints or similar materials, the solvents of which could form an explosive mixture when combined with air. If there is any doubt as to the composition of materials, they must not be loaded into the appliance. Potentially explosive gas-air mixtures must not form, neither in the working chamber nor in the direct vicinity of the appliance.

Only feed distilled water as well as CO_2 and N_2 into the chamber through the media connections on the rear of the appliance. Introducing other liquids or gases is not permitted.

The incubator may not be used for sterilization purposes. The UV Sterilization programs that are saved in the appliance only serve to disinfect the appliance itself. Do not use them to sterilize medical devices!

1.6 Changes and conversions

No unauthorized changes or alterations may be made to the appliance. No parts may be added or inserted which have not been approved by the manufacturer. Unauthorized changes or alterations result in the CE declaration of conformity losing its validity, and the appliance may no longer be operated. The manufacturer is not liable for any damage, danger or injuries that result from unauthorized changes or alterations, or from non-observance of the regulations in this manual.

1.7 Behavior in case of malfunctions and irregularities

The appliance may only be used in a flawless condition. If you as the operator notice irregularities, malfunctions or damage, immediately take the appliance out of service and inform your superior.

1.8 What to do in case of accidents

1. Keep calm. Act with determination and consideration. Pay attention to your own safety.
2. Switch off the appliance and close the valves of the gas bottle.
3. Call a doctor.
4. Start first aid measures. If available: Call a trained first aid helper

In case of contact with CO_2 to the eyes and skin:

Rinse eyes out with water for at least 15 minutes. In case of cold burns, rinse with water for at least 15 minutes. Cover over in a sterile way. Call a doctor.

When breathing in CO_2 or N_2:

High concentrations can cause suffocation. Symptoms may include a loss of mobility and unconsciousness. The victim is not aware of suffocating. Low concentrations of CO_2 can cause accelerated breathing and headaches. Anyone affected should breathe fresh air, using a breathing device independent of recirculating air. Keep the person warm and calm. Call a doctor. In case of respiratory arrest, use artificial respiration.

In case of gas leakage: Leave the room immediately, warn others and ventilate the room. If you re-enter the room, use a breathing device independent of recirculating air if it has not been established that the atmosphere is harmless.

1.9 Switching off the appliance in an emergency

Press the main switch at the below of the display (Fig. 1) and disconnect the power plug (Fig. 2).

Fig. 1 Switch off the appliance by pressing the main switch

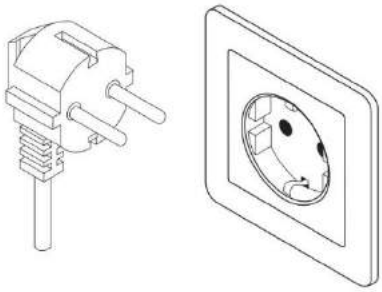

Fig. 2 disconnect the power plug

2. Construction and description

2.1 Construction

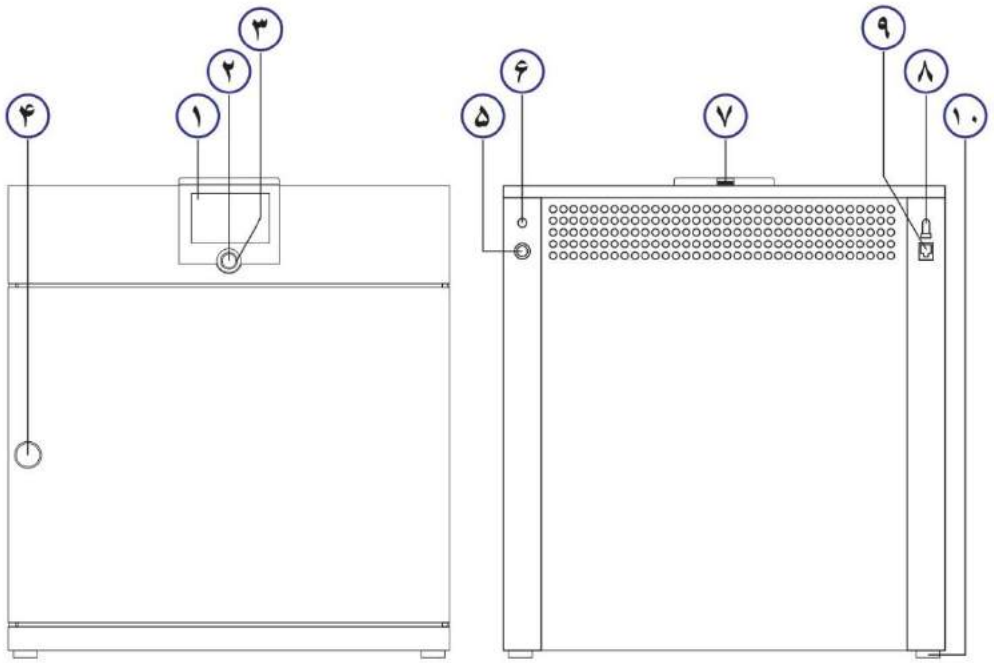

Fig. 2 Construction of CO2 incubators ICO

1. Control Panel and LCD display
2. On/Off switch
3. Status Indictor (Green/Red)
4. door handle
5. Inlet Power Cable
6. Fuse 5A
7. USB Port and flush memory
8. CO2 Inlet Connection
9. Female RG45 Connection
10. Adjustable Feet
11. Nameplate (see page 12)

2.2 Description and function

Air is heated inside the appliance by means of large-area all-round heating. The interior of appliances with passive humidity control is humidified with water that evaporates from a tray that is placed inside. Carbon dioxide (CO2) injected into the interior through sterile filters. Interior ventilation ensures a uniform distribution of the gases, creating a homogeneous atmosphere.

2.3 Material

For the outer housing, KAVOSHTEB uses stainless steel (ASTM 430) and for the interior, stainless steel (ASTM 304) is used, which stands out through its high stability, optimal hygienic properties and corrosion resistance to many (but not all!) chemical compounds (caution for example with chlorine compounds). The chamber load for the appliance must be carefully checked for chemical compatibility with the materials mentioned. A material resistance table can be requested from the manufacturer.

2.4 Electrical equipment

► Operating voltage and current consumption: See nameplate
► Protection class I, i.e. operating insulation with PE conductor in accordance with EN 61010
► Appliance fuse: Safety fuse 250 V/5 A, quick-blow

2.5 Connections and interfaces

2.5.1 Electrical connection

This appliance is intended for operation on an electrical power system with a system impedance Z_{max} of a maximum of 0.5 ohm at the point of transfer (service line). The operator must ensure that the appliance is operated only on an electrical power system that meets these requirements.

2.5.2 Communication interfaces

The communication interfaces are intended for appliances which meet the requirements of IEC 60950-1.

<u>USB interface</u>

The appliance is fitted by default with a USB interface in accordance with the USB specification. This way, you can

► transfer user ID data stored on a USB storage medium to the appliance (see page 65).

The USB port is located on the top of the Controller (Fig. 3).

Fig. 3 The USB port is located on the top of the Controller

Ethernet interface

Via Ethernet interface, the appliance can be connected to a network, so that you can transfer programmes to the appliance and read out protocols. The Ethernet interface is located on the rear of the appliance (Fig. 4).

With an optional USB to Ethernet converter, the appliance can be directly connected to a computer / laptop.

Fig. 4 Ethernet interface

2.6 Designation (nameplate)

The nameplate (Fig. 5) provides information about the appliance model, manufacturer and technical data. It is attached on the lower right behind the door (see page 10).

Fig. 5 Nameplate (example)

1 Type designation
2 Operating voltage
3 Appliance Serial Number
4 Humidity range
5 Temperature range
6 CO2 range
7 ISO13485 conformity
8 Address of manufacturer

2.7 Technical data

Appliance size	60	108	160	240
Appliance width * [mm]		710		
Appliance height * [mm] (varies due to adjustable feet)		824		
Appliance depth * (without door handle) [mm]		650		
Depth of door handle [mm]		54		
Chamber width * [mm]				
Chamber height * [mm]				
Interior depth * [mm] (less 35 mm for fan)				
Chamber volume [liters]				
Net weight [kg]				
Weight including packaging [kg]				
Power [W]	1100	1300	1500	1700
Current consumption [A] 230 V, 50/60 Hz	4.8	5.7	6.6	7.2
max. number of sliding shelves				
max. load per sliding shelf [kg]				
max. load per appliance [kg]				
Operating temperature range	5 °C above room temperature up to			
Setting temperature range [°C]				
Adjustment precision [°C]				
Temporal temperature deviation at 37 °C [K]				
Spatial temperature deviation at +37 °C				
Range of passive humidity [% rh]				
Adjustment range for CO2 [%]	0 to 20			
Setting accuracy for CO2 [%]	0.1			

* see Fig. 6

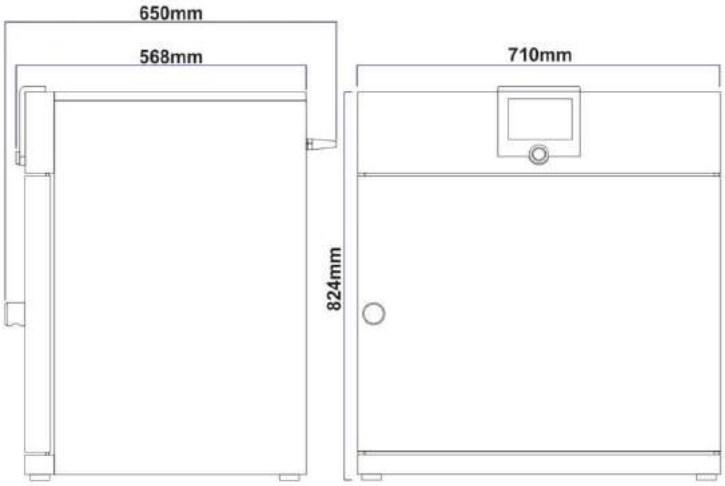

Fig.6 Dimensions 108Liter for sample

2.8 Applied directives and standards

INSTITUTE OF GLOBAL CERTIFICATION

Institute of Global Certification

IGC

Management System Certification Body

CERTIFICATE

No. 23-B-1590 Rev. 0

Kavosh Teb Ayandeh Negar

No.4, East Second Alley, North Motahari Blvd., Safadasht, Tehran, IRAN

Company Reg. No.: 7028

has documented and implemented system in compliance with the requirements of

ISO 13485:2016

Medical Devices Quality Management System

for

Manufacture, Sales and After Sale Service of Laboratory Equipment such as Laminar Air FlowCabinets (Biological Safety Cabinets), Incubator and Shaker

Technical Area:
B: Active Medical Devices (Non-Implantable) – Others
F: Parts or services
- Distribution services
- Maintenance services

The certificate is issued on the basis of the results mentioned in the pertinent audit report.
Validity of the certificate is conditionally limited by positive results of surveillance audits, which the certified company is committed to undergo.

This certificate can be invalid if the certificate holder does not fulfill the conditions set out in the certification agreement.

IGC is accredited by IAS for the scope and sub scopes described in this certificate

Initial issue date: Apr. 18. 2023
Expire date: Apr. 17. 2026

Institute of Global Certification IGC ISO 13485 CERTIFIED

G. Gilbert
Head of Certification Body

Rm. 501, Daeryung techno town, 638, Seobusaet-gil, Geumcheon-gu, Seoul, Republic of Korea
www.igcert.org

2.9 Ambient conditions

► The appliance may only be used in enclosed areas and under the following ambient condition

Pollution degree 2 Altitude of installation max. 2,000 m above sea level:

Ambient temperature	10 °C to 35 °C
Humidity rh	10-70 %rh at 31 °C 50 %rh at 40 °C
Maximum mains voltage fluctuations	AC 230 V (+/- 10 %)

► The appliance may not be used in areas where there is a risk of explosion. The ambient air must not contain any explosive dusts, gases, vapors or gas-air mixtures. The appliance is not explosion-proof.

► Heavy dust production or aggressive vapors in the vicinity of the appliance could lead to sedimentation in the interior and, as a consequence, could result in short circuits or damage to electrical parts. For this reason, sufficient measures to prevent large clouds of dust or aggressive vapors from developing should be taken.

2.11 Scope of delivery

► Power cable

► 1 or 2 stainless steel perforated sheets (load capacity: 15 kg each)

► 1 stainless steel water tray (only for appliances with passive humidity control)

► Gas connection hose (depending on the model: one to three)

► the operating instructions at hand

3. Delivery, transport and setting up

3.1 For your safety

⚠WARNING

Because of the heavy weight of the appliance, you could injure yourself if you try to lift it. To carry appliances of size 60, at least two persons are needed; for appliances of the sizes 108 and 160, four people are needed. Appliances larger than that may not be carried but must be transported with a manual pallet jack or forklift truck.

60	108	160	240
			

⚠Caution

You might get your hands or feet squashed when transporting and installing the appliance. Wear protective gloves and safety boots. When grasping the bottom of the appliance, grasp it only on the sides:

Fig. 7 get your hands or feet squashed when transporting

3.2 Delivery

The appliance is packed in cardboard and is delivered on a wooden palette.

3.3 Transport

The appliance can be transported in the following way:

► On a manual pallet jack

3.4 Unpacking

NOTICE

► To avoid damage, do not unpack the appliance until you reach the installation site.

Remove the cardboard packaging by pulling it upwards or carefully cutting along an edge.

3.4.1 Checking for completeness and transport damage

► Check the delivery note to ensure that the delivery is complete.

► Check the appliance for damage. If you notice deviations from the delivery note, damage or irregularities, do not put the appliance into operation but inform the manufacturer.

3.5 Storage after delivery If the appliance is first to be stored after delivery: Read the storage conditions from page …….

3.6 Setting up

3.6.1 Preconditions

The installation site must be flat and horizontal and must be able to reliably bear the weight

of the appliance (see Technical data on page 13). Do not place the appliance on a flammable surface.

The appliance emits small amounts of CO2 and N2 to its surroundings during operation. Therefore, the installation site must be ventilated.

Depending on the model (see nameplate), a 230 V or 115 V power connection must be available at the installation site.

The distance between the wall and the rear of the appliance must be at least 15 cm. The clearance from the ceiling must not be less than 20 cm and the side clearance from walls or nearby

appliances must not be less than 5 cm (Fig. 8). Sufficient air circulation in the vicinity of the

appliance must be guaranteed at all times.

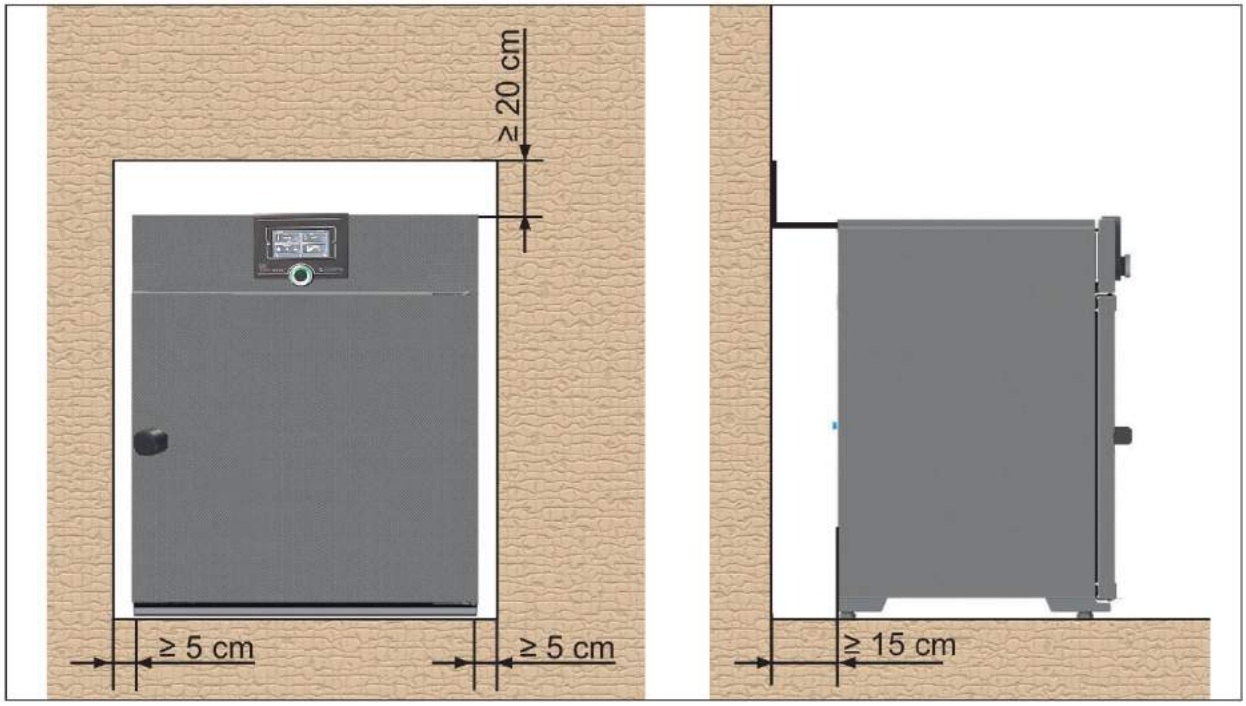

Fig. 8 Minimum clearance from walls and ceiling

3.6.2 Tilt protection

Due to its center of gravity, the appliance can fall over to the front and injure you or other people. Always attach the appliance to a wall with the tilt protection included in the delivery. In case there is not enough space, do not put the appliance into operation and do not open the door. Contact the KAVOSHTEB service (see page 2).

1. Screw the tilt protection onto the back of the appliance as illustrated.
2. Bend the tilt protection upwards by 90 ° in the desired distance to the wall (consider the minimum distance to the wall, see Fig. 8).
3. Drill a hole, insert a plug and screw the tilt protection to a suitable wall. (see Fig. 9).

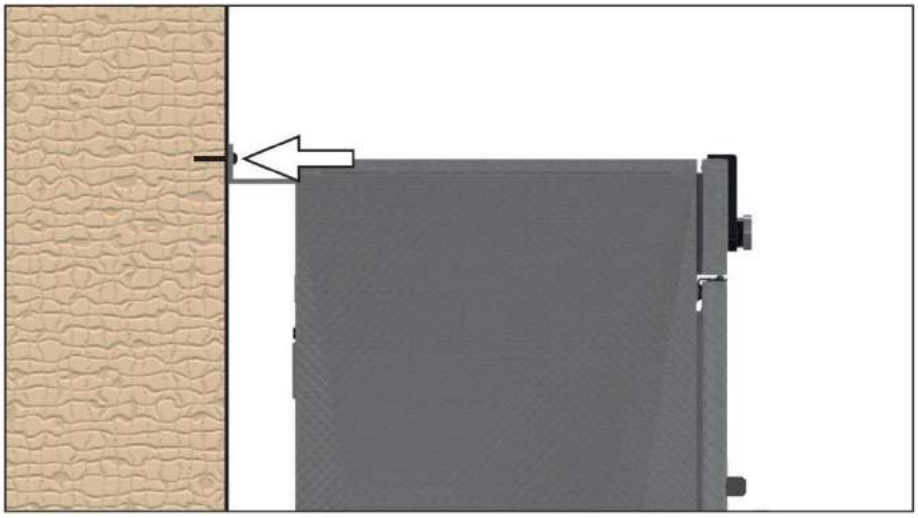

Fig. 9 plug and screw the tilt protection

3.6.3 Adjusting the doors

For appliances it is possible to adjust door that warp due to the floor conditions. In order to do so, every door has two adjuster screws at the top and at the bottom (Fig. 10).
First, adjust the door at the top and then, if further adjustment is necessary, at the bottom as well.

1. Open the door.
2. Undo the screws.
3. Adjust the door.
4. Tighten the screws again.
5. Check door alignment.
6. If necessary, readjust.

Fig. 10 adjusting the door

4. Putting into operation

NOTICE

The first time the appliance is operated, it must not be left unattended until it has reached the steady state.

4.1 Connect the appliance to the power supply

⚠WARNING

Condensation might cause a short circuit. After transport or storage at high humidity conditions, the appliance shall be stored unpacked at normal conditions for at least 24 hours. During this period of time the appliance shall not be connected to the power supply.

Observe the connection and power ratings (see nameplate and "Technical Data" on page 13). Make sure to establish a safe PE conductor connection.

Plug the provided power cable into the power supply (Fig. 11). Place the power cable so that

► it is easily accessible at all times and can be pulled off quickly, for example in case of interference or an emergency;

► it does not represent a trip hazard;

► it cannot come into contact with any hot parts.

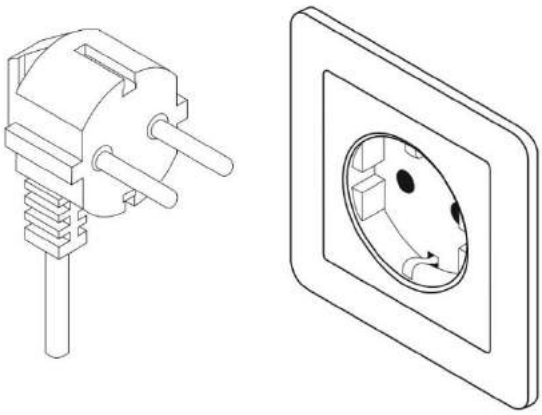

Fig. 11 adjusting the door

4.2 Establishing water supply

4.2.1 Water specifications

Only demineralized/deionized water with the following specifications may be used in KavoshTeb appliances:

► Conductivity of 5 – 10 µS/cm

► pH value between 5 and 7

► chlorine-free The use of ultrapure water or DI water with an electrical conductance level below 5 µS/cm can damage silicone tubing and cause pitting on the stainless steel components installed.

4.2.2 For this appliances with passive humidity control:

inserting the water tray to the narrow side (Fig. 12) and fill 1.5 cm to 2 cm of water into the tray (for specifications see section 4.2.1). Place the water tray in the center of the appliance floor.

(Fig. 12) inserting the water tray

4.3 CO2 and N2 connection

⚠WARNING

Danger of explosion and poisoning when introducing gases/substances other than CO2. Only carbon dioxide (CO2) and nitrogen (N2) may be introduced into the appliance through the gas connections on the rear of the appliance.

⚠WARNING

Gas bottles may burst or explode at high temperatures. Keep the gas bottles away from open flames. Do not store gas bottles at or above 50 °C and ensure that the location is always well-ventilated. Prevent water from penetrating as well as backflow into the gas bottles. It is essential that you read the safety notes and instructions of the gas supplier.

⚠Caution

Danger of suffocation. CO2 and N2 can have a suffocating effect in high concentrations. In normal mode, the appliance emits small amounts of CO2 and N2 to its surroundings. You should therefore ensure that the room in which it is installed is properly ventilated. A ventilation rate of 250 m³ / h is required. Always close the stop valve or pressure reducer on the gas bottles if the appliance is not in operation.

⚠Caution

High concentrations of CO2 can cause cold burns or frostbite. Avoid contact with CO2 gas to the eyes and skin.

<u>CO2 specification</u>

► carbon dioxide 4.5

► purity 99,995 Vol. %

On the rear of the appliance, connect the delivered gas connection tubes to the CO2 gas bottles (pressure reducer) and to the connections “CO2 In”. Set pressure reducer to between 1.0 and 1.2 bar.

4.4 Switching on

Switch on the appliance by pressing the On/Off switch on the front of the appliance (Fig. 13). The status indicate that start-up is in progress. the status lights have 2 color; green is normal, if an error has occurred the indictor becomes red. After the first start-up the indictors becomes red because indicates appliance is restarted, the appliance display is set to English by default.

However, to get a basic overview of operating the appliance, you should read the following chapter first.

Fig. 13 Switch on appliance

5. Operation and control

5.1 For your safety

⚠WARNING

Leaving the door open during operation can cause the appliance to overheat or pose a fire hazard. Do not leave the door open during operation.

⚠WARNING

Gas bottles may burst or explode at high temperatures. Keep the gas bottles away from open flames. Do not store gas bottles at or above 50 °C and ensure that the location is always well-ventilated. Prevent water from penetrating as well as backflow into the gas bottles. It is essential that you read the safety notes and instructions of the gas supplier.

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Danger of suffocation. CO2 and N2 in high concentrations can have a suffocating effect. In normal mode, the appliance emits small amounts of CO2 and N2 to its surroundings. You should therefore ensure that the room is properly ventilated. A ventilation rate of 250 m³ / h is required. Always close the stop valve or pressure reducer on the gas bottles if the appliance is not in operation.

⚠Caution

High concentrations of CO2 can cause cold burns or frostbite. Avoid contact with CO2 gas to the eyes and skin.

5.2 Operating personnel

The appliance may only be operated by persons who are of legal age and have been instructed accordingly. Personnel who are to be trained, instructed or who are undergoing general training may only work with the appliance under the continuous supervision of an experienced person.

5.3 Opening the door

► To open the door, pull the door handle and to close the door push the door handle.

(**Do Not turn door handle to the left or right**).

► To close the appliance, push the door closed and push the door handle as illustrated in fig.14.

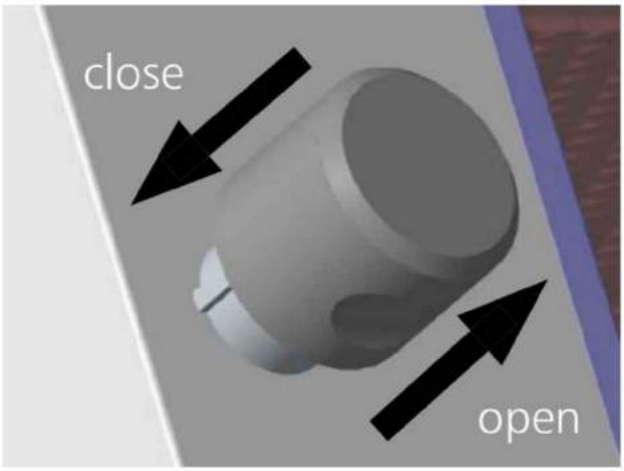


Fig. 14 Door open and close

5.3.1 Appliance behavior when door is open

► Heaters shut off

► Fan shut off

► Acoustic alarm after 30 seconds

► Carbon dioxide and temperature alarms go off as well

5.4 Loading the appliance

⚠WARNING

When loading the appliance with an unsuitable load, poisonous or explosive vapors or gases may be produced. This could cause the appliance to explode, and people could be severely injured or poisoned. The appliance may only be loaded with materials which do not form any toxic or explosive vapors when heated up and cannot ignite (see also Intended use on page 8). If there is any doubt as to the composition of materials, they must not be loaded into the appliance.

NOTICE

► Check the chamber load for chemical compatibility with the materials of the appliance (see page 11). Insert the sliding steel grids or sliding shelves. The maximum number or grids / shelves and the load capacity are specified in the technical data overview from page13. Load the chamber leaving enough space between the items so that proper air circulation in the interior is guaranteed. Do not place any of the chamber load on the bottom, touching the side walls or right below the ceiling of the chamber (Fig. 15). In case of improper loading (not enough space between the items), the set temperature may be exceeded or it may take longer until it is reached.

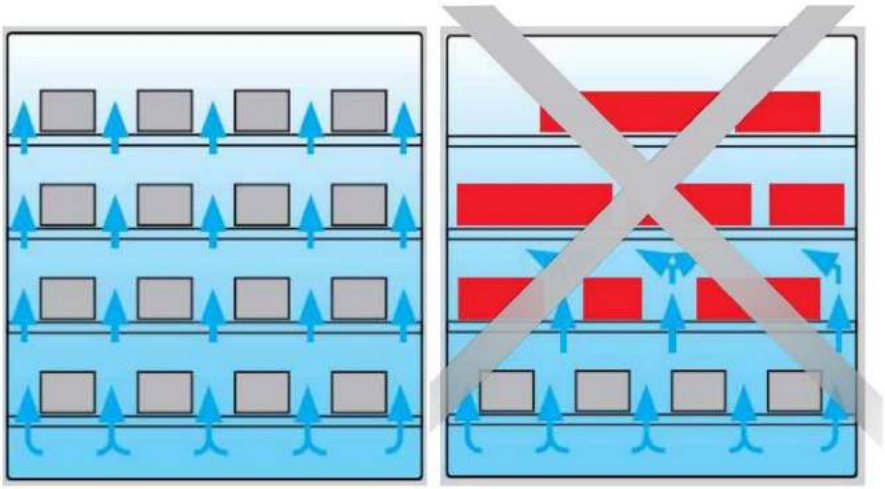


Fig. 15 Correct placement of the chamber load

5.5 Operating the appliance

5.5.1 Controller and display

Press the power on and touch the KavoshTeb logo as illustrated below:

5.5.2 Main Menu

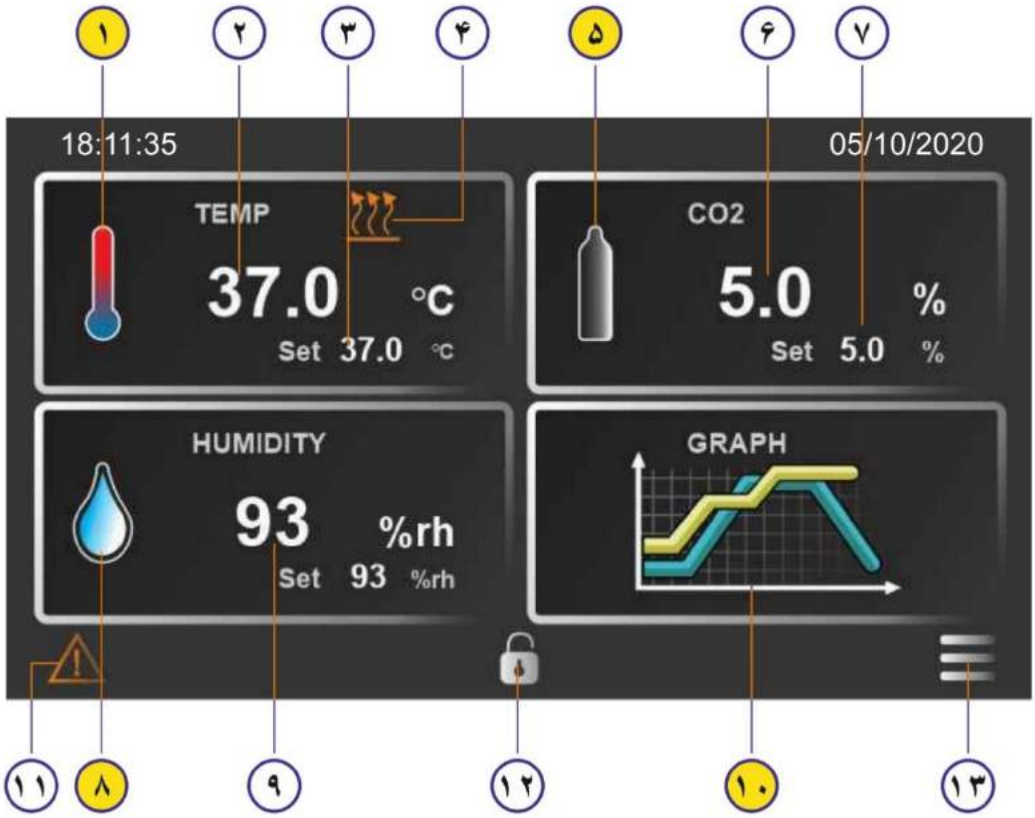


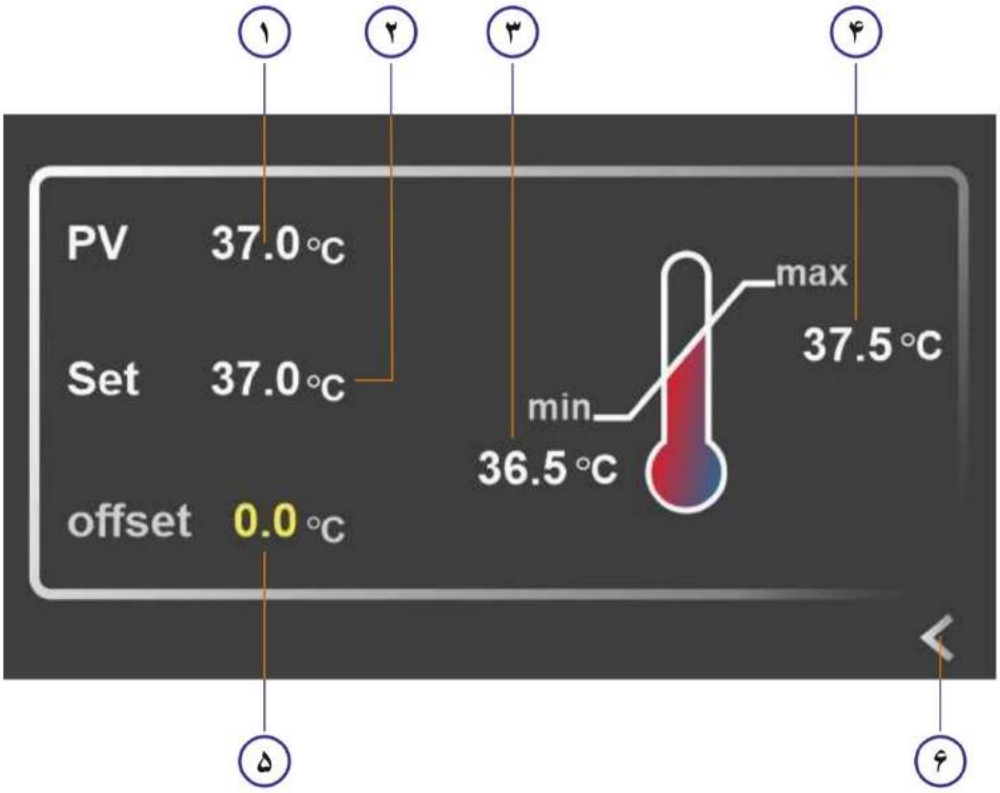
Fig. 17 Controller of INCO2 series appliances in operating mod

1 Temperature menu
2 Actual temperature display
3 Set point temperature display
4 Temperature heater status
5 CO2 menu
6 Actual %CO2 display
7 Set point %CO2 display
8 Humidity menu
9 Actual humidity display
10 Graphical representations of set point and actual values
11 Alarm Icon
12 Access Level definition
13 Setting Menu

5.5.3 Temperature menu

In this menu you can set the desired temperature point, low limit and high limit Alarm.

For removing error after calibration, you need access level 4 so set the offset by using password “4444”.



1 Temperature Process Value

2 Temperature Set Point

3 Minimum limit (Temp. low alarm)

4 Maximum Limit (Temp. high alarm)

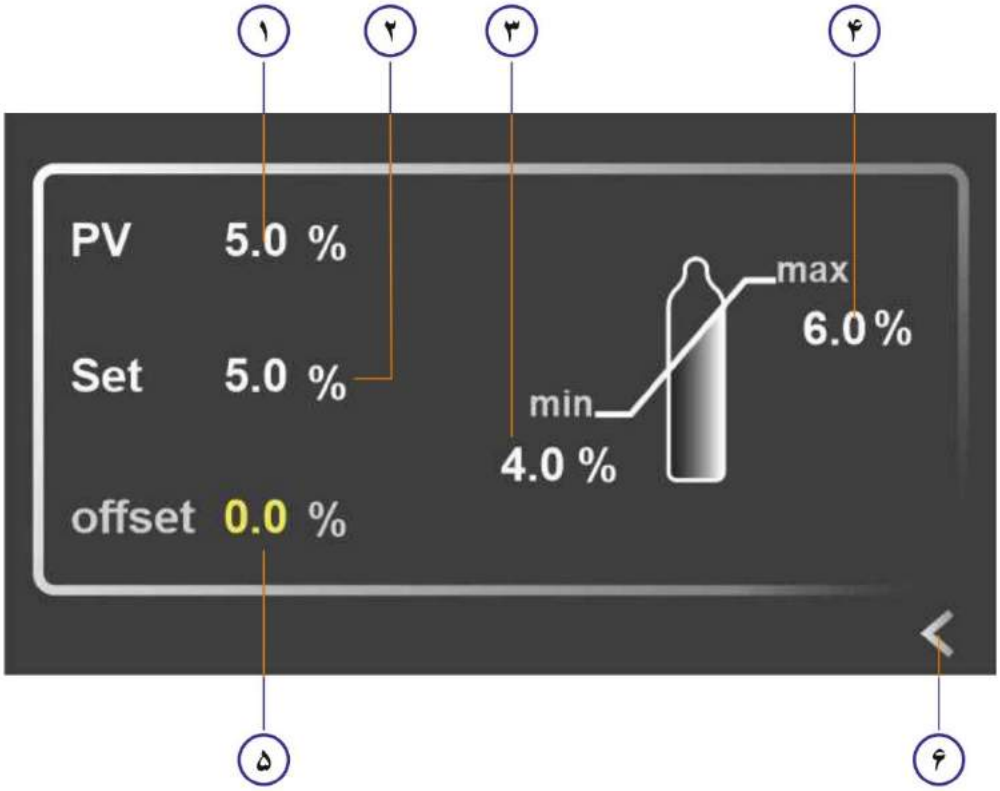
5 Temperature offset

6 Back to previous menu

5.5.4 CO2% menu

In this menu you can set the desired CO2% point, low limit and high limit Alarm.

For removing error after calibration, you need access level 4 so set the offset by using password “4444”.



1 CO% Process Value

2 CO% Set Point

3 Minimum limit (CO% low alarm)

4 Maximum Limit (CO% high alarm)

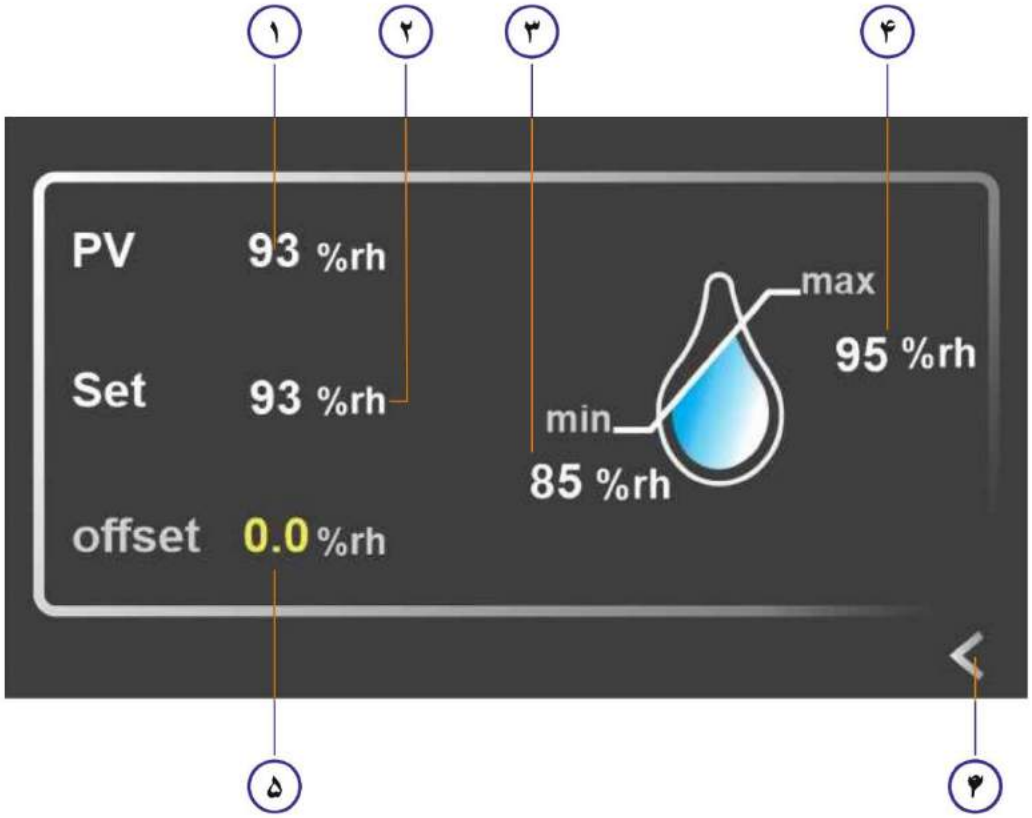
5 CO% offset

6 Back to previous menu

5.5.5 Humidity menu

In this menu you can set the rh% low limit and high limit Alarm.

For removing error after calibration, you need access level 4 so set the offset by using password “4444”.



1 Humidity Process Value

2 Humidity Set Point =Process value*

3 Minimum limit (rh% low alarm)

4 Maximum Limit (rh% high alarm)

5 rh% offset

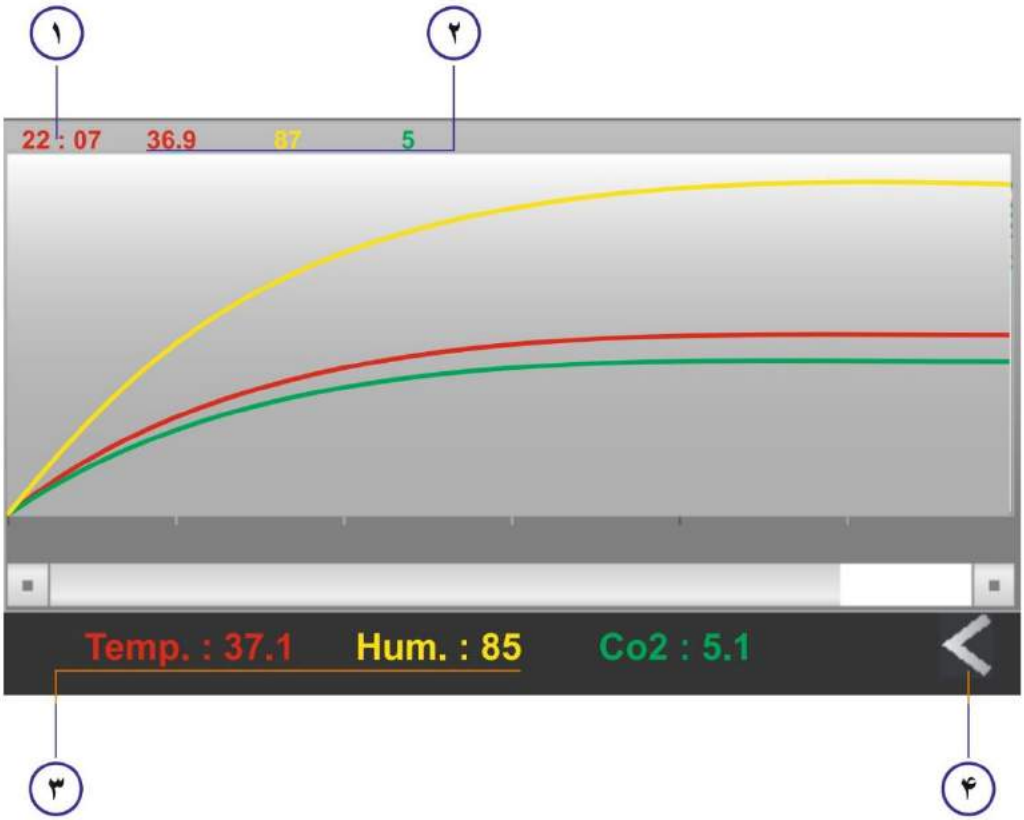
6 Back to previous menu

*In appliances with passive humidity control this is not applicable.

5.5.6 GRAPH display

The GRAPH display provides an overview of the chronological sequence of the set point values and actual values for temperature, humidity, CO2 as a curve.

Touch a point on the curve to see registration value according to the recorded time.



1 Parameters record time

2 Parameters Record time

3 Online Parameters value

4 Back to previous menu

5.5.7 Setting Menu

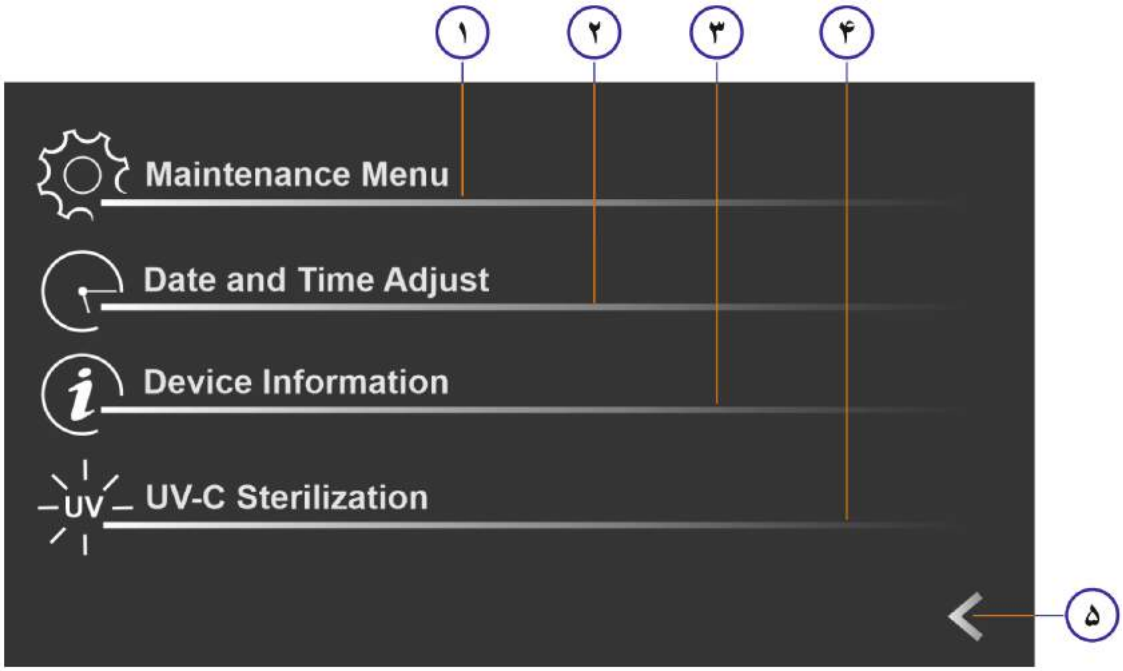
In this menu there are 4 submenus:

1 Maintenance Menu (just manufacturer can adjust this menu)

2 Date and time adjust

3 Device Information

4 UV-C Sterilization



5.5.7.1 Maintenance Menu

(just manufacturer can adjust this menu)

5.5.7.2 Date and time setting

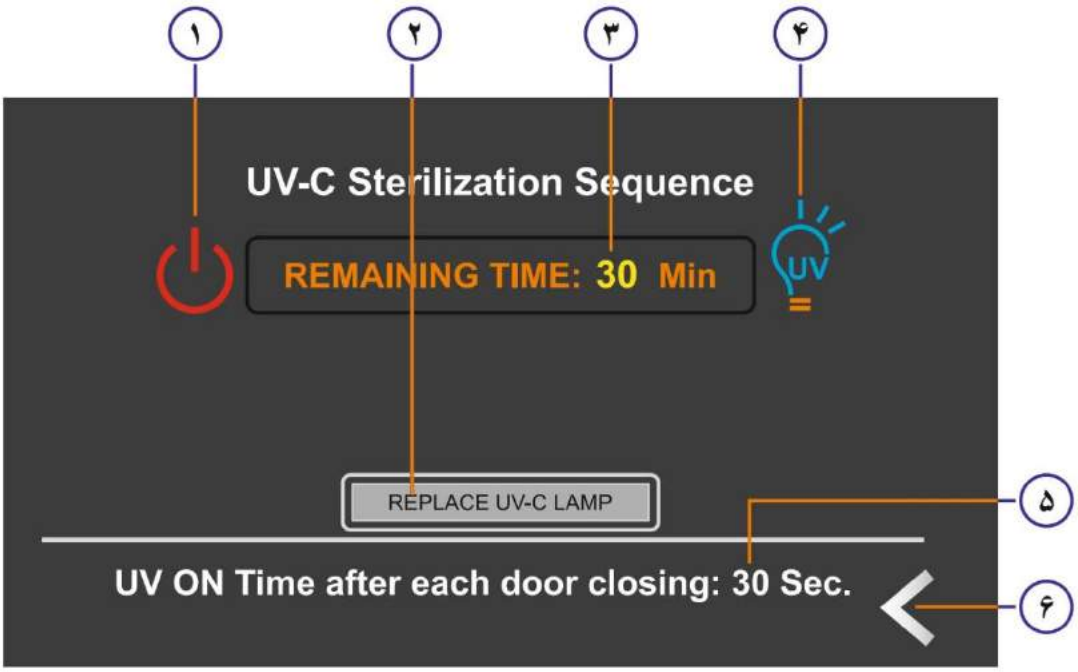
Touch the “Date and time adjust” on the controller and set date and time as below:

5.5.7.3 Device Information

In this menu you can see appliance model, Serial Number, manufacture date and Guaranty expiration date.

5.5.7.4 UV-C Sterilization

Incubator is equipped with UV-C lamp that is a measure intended to eliminate airborne and waterborne contaminants that may have entered the chamber. The UV lamp is usually isolated from the cell culture chamber by a plenum cover, effective relative humidity above 70 % was found to adversely impact the effectiveness of UV. In addition, the UV lamp must be replaced periodically (each 500 hour) to maintain its effectiveness.



1 Sequence start and stop

2 UV Lamp Replacement

(for rest the time counter after UV lamp replacement touch this section)

3 Sterilization adjustable timer

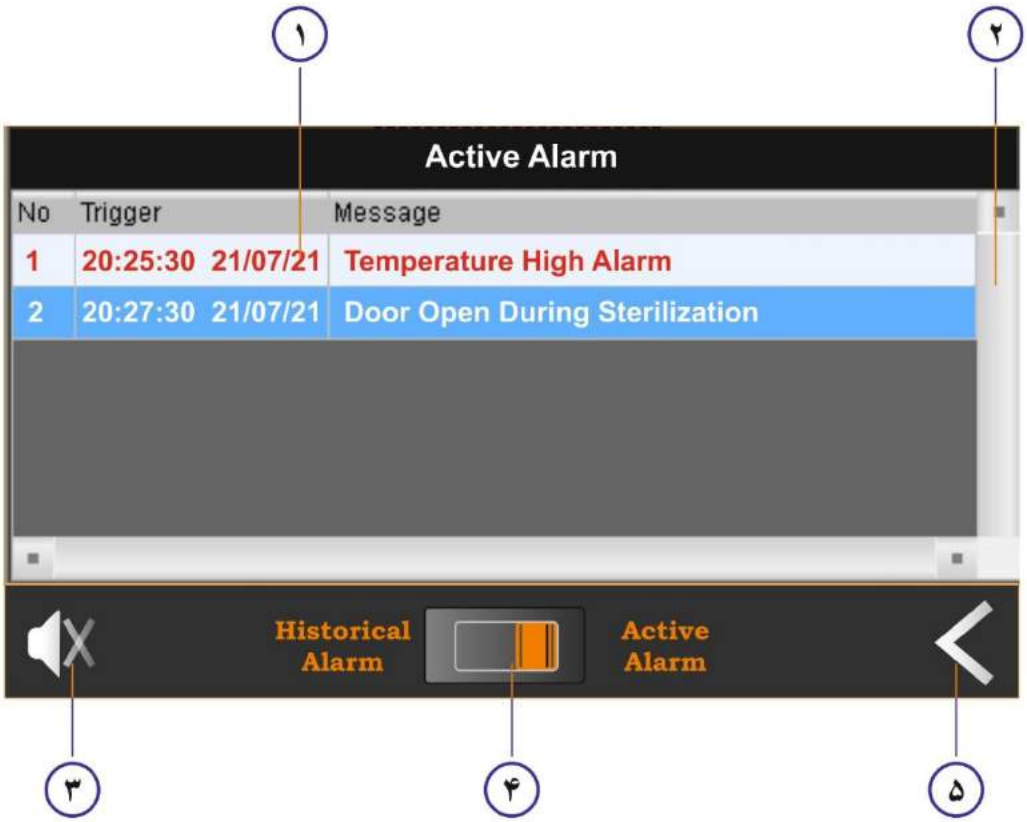
4 UV Indicator

5 UV ON

6 Back to previous menu

5.5.7.5 Active Alarm

Warning messages of the monitoring function If the acoustic alarm has been activated in the menu mode (Sound, indicated by the speaker symbol), the alarm is additionally signaled by an intermittent acoustic signal. If the confirmation key is pressed, the acoustic alarm can be temporarily switched off until the next alarm event occurs.



1 Date and Time of event

2 Scrollbar

3 Mute, unmute

4 Historical and Active Alarm Page

5 Back to previous page

5.5.8 Protocol

The appliance continually logs all relevant measured values, settings and error messages at 1-minute intervals. The internal log memory is of the continuous memory type. The logging function cannot be switched off and is always active. You can export the protocol data for different periods to a USB storage.

5.6 Disposal

For disposal, please contact your dealer or the manufacturer.

5.7 Alarm List

Alarm List			
raw	**Message Title**	**description**	**Action**
1	Humidity Hi alarm	Humidity exceeded than(Max) Limit value	If humidity rises 1% more than (max)Limit value "Hi humidity " alarm is shown in HMI .
2	Humidity Low alarm	Humidity is lower than the (Min) Limit value	If humidity decrease 1% Low than (min)Limit value "Low humidity " alarm is shown in HMI .
3	CO2 Hi Alarm	%CO2 exceeded than (Max) Limit value	If CO2% rises 0.1% more than (max)Limit value "Hi CO2 " alarm is shown in HMI .
4	CO2 Low Alarm	%CO2 is lower than the (Min) Limit value	If CO2% decrease 0.1% Low than (min)Limit value "Low CO2 " alarm is shown in HMI .
5	Temperature Hi	Temperature exceeded than(Max) Limit value	If temperature rises 0.1°C more than (Max) limit value "Hi temperature " alarm is shown in HMI
6	Temperature Low	Temperature is lower than the (Min) set point	If temperature decrease 0.1°C more than (Min) limit value "Low temperature " alarm is shown in HMI
7	Door Open	Door is open or Read relay is faulty	after 3 min. "Door Open" alarm is shown in HMI Please close the door or call Supplier to change the read Relay
8	Device restarted	Power failure or turning the device **Off** and **On**	"Device Restarted" message is shown in HMI,
9	CO2 Not Reached	%CO2 is lower than the set point value	"Low CO2 " alarm is shown in HMI and CO2 valve will be open to inject CO2 Gas into the chamber
10	Sterilized Sequence Passed Successfully	Sterilized sequence over	"Sterilized Sequence Passed Successfully" is shown in HMI
11	UV-C Sterilization Sequence aborted	Sterilized sequence aborted by the user	"UV-C Sterilization Sequence aborted" is shown in HMI
12	UV-C Sterilization Sequence Started	UV-C Sterilization Sequence Started	"UV-C Sterilization Sequence Started" is shown in HMI. Please Do Not Open the Door !
13	Temperature wire break	Temperature sensor wire or transmitter wire is break	Change the temp. sensor or repair the wiring. Call Supplier!
14	CO2 wire break	CO2 sensor wire or transmitter wire is break	Change the CO2 sensor or repair the wiring. Call Supplier!
15	Humidity wire break	Humidity sensor wire or transmitter wire is break	Change the Humidity sensor or repair the wiring. Call Supplier!
16	UV-C Lamp Life Expired	UV-C Lamp Life Expired	UV-C Lamp Life Expire and must be replace with new one. Please Call Supplier !
17	UV-C Lamp Life time Reset	UV-C Lamp Life time Reset	UV-C Lamp Life time must be rest after lamp replacement
18	Safety Thermostat Error	Temperature is exceeded than max allowable range so mechanical safety thermostat is operated	Cooling fan is started to control the over temperature! Please call Supplier