



NÜVE SANAYİ MALZEMELERİ İMALAT VE TİCARET A.Ş.

EC 160

CO₂ INCUBATOR

USER'S MANUAL

CE

Z14.K25 281 Rev. No: 10 Rev. Date: 01/2018

Dear Nüve User,

We would like to take this opportunity to thank you for preferring this Nüve product. Please read the operating instructions carefully and keep them handy for future reference.

Please detain the packing material until you see that the unit is in good condition and it is operating properly. If an external or internal damage is observed, contact the transportation company immediately and report the damage. According to ICC regulations, this responsibility belongs to the customer.

While you are operating the instrument please;

1. obey all warning labels,
2. do not remove warning labels,
3. do not operate damaged instrument,
4. do not operate instrument with a damaged cable,
5. do not move instrument during operation.

In case of a problem contact your Nüve agent for an authorized service or maintenance.

The validity of the guarantee is subject to compliance with the instructions and precautions described in this manual.

Nüve reserves the right to improve or change the design of its products without any obligation to modify previously manufactured products.

Information contained in this document is the property of Nüve. It may not be duplicated or distributed without our permission.

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WARRANTY CERTIFICATE

1. Nüve warrants that the equipment delivered is free from defects in material and workmanship. This warranty is given for a period of two years. The warranty period begins from the delivery date.
2. Warranty does not apply to parts normally consumed during operation or general maintenance or any adjustments described in the operating instructions provided with the instrument.
3. Nüve does not accept any liability in case where the goods are not used in accordance with their proper intent.
4. The warranty may not be claimed for damages incurred during the shipment, for damages resulting from improper handling or use, abuse, fire, liquid spillage, tampering or unauthorized repairs by any persons, use of defective or incompatible accessories, exposure to abnormally corrosive conditions, use of the product in non-standard environmental conditions, including but not limited to failure to meet requirements of ambient temperature, lubrication, humidity or magnetic field influences, from the defects in maintenance, negligence, bad functioning of auxiliary equipment, in the case of force majeure or accident and incorrect power supply.
5. Any injury, loss or damage caused; due to a failure resulting from negligence of the instructions given in this manual; is beyond the scope of the warranty conditions.



BEFORE OPERATING THE INSTRUMENT THIS MANUAL SHOULD BE READ CAREFULLY.



THE VALIDITY OF THE GUARANTEE IS SUBJECT TO THE OBSERVATION OF THE INSTRUCTIONS AND PRECAUTIONS DESCRIBED IN THIS MANUAL.

INFORMATION CONTAINED IN THIS DOCUMENT IS THE PROPERTY OF NÜVE. IT MAY NOT BE DUPLICATED OR DISTRIBUTED WITHOUT PERMISSION.

PLEASE REGISTER ONLINE TO VALIDATE YOUR WARRANTY:

To register your warranty online, please visit our webpage www.nuve.com.tr and fill in the “Warranty Registration Form”.

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1. INTRODUCTION

1.1. USE AND FUNCTION

EC 160 CO₂ Incubator is especially designed for the applications in microbiology, hematology, vitro fertilization centers, oncology, dermatology, infection diseases, neurology, geriatrics, veterinary, neurobiology, pharmaceutical industry, dentistry, toxicology and internal diseases and other general and special applications.

EC 160 CO₂ Incubator maintains temperatures between ambient temperature + 7°C and 50°C and keep the temperature stable within the given tolerances. CO₂ concentration could be set between the values of 0.0 % and 20.0 %. The incubator will automatically start to operate according to its set values. The temperature is controlled with PID controlled microprocessor system as CO₂ is controlled with proportional system. Adjustable safety thermostat offers an additional safety for operations.

Advanced microprocessor system enables homogenous and stable temperature and CO₂ distribution in the chamber. Auto-Zero system validates CO₂ measurement every 12 minutes. Also another temperature sensor consists for reading ambient temperature.

The volume of EC 160 CO₂ Incubator's chamber is 160 liters and is manufactured as in one piece deep drawn stainless steel without any joint in order to prevent contamination. Rounded edges in chamber and removable shelves allow user to clean the chamber easily.

LCD technology is used for the display and display interface can be used in three different languages which are Turkish, English and French.

EC 160 is equipped with an advanced alarm system. Audial and visual alarms are used to warn the user when the door is open, the chamber temperature and CO₂ is out of the set values, the temperature sensor is broken, a problem is occurred in microprocessor control system or during power cut. Remote alarm with battery supply is provided with the incubator. NC contact part is also available in order to use with special alarm systems.

EC 160 CO₂ Incubator is designed to maintain the following conditions inside the chamber:

- Sterile operating environment,
- Stable temperature,
- Enriched CO₂ operating environment,
- High humidity level.

Sterile operating environment

The chamber is isolated from the external environment by the help of the gasket. Therefore; inside of the chamber maintains its sterility during any operation.

There are 3 different biological filters in the incubator in order to keep the chamber sterile.

- CO₂ gas passes through 0,22 µm biological filter before it reaches into the chamber.
- During the Auto-Zero, ambient air passes through 0,22 µm biological filter and then it goes to the Infrared Sensor (IR).
- The air inside the chamber passes through 0,22 µm biological filter continuously before it goes to the chamber again.

Stabile temperature

Chamber temperature is kept stable and homogeneous by the help of air jacket around the chamber. Heaters which help to maintain the stable and uniform temperature inside the chamber is located in right, left and bottom of the air jacket. The glass internal door is heated by means of the heater inside the outer door. PID controlled microprocessor control system guarantees precise temperature control and safety thermostat provides secure operating environment.

Enriched CO₂ operating environment

The main reason of the incubator is to provide enriched CO₂ environment. CO₂ decomposes inside the media; therefore, it prevents the alkalization which is harmful for the cells.

The pH of the culture media is kept constant by sodium bicarbonate. The chemical reaction of CO₂ and sodium bicarbonate can be represented as:



The continuous chemical reaction by maintaining a constant level of CO₂ gas assures the proper pH for the growth of cells.

Auto-Zero System

Validation of infrared CO₂ sensor is done by the means of Auto-Zero System which is given as standard feature of EC 160. The filtered ambient air, which is supposed to have 0% CO₂, is taken to IR sensor automatically in every 12 minutes and IR sensor is calibrated 120 times within a day without waiting its calibration. When the Auto-Zero system is active, it is seen “z” next to the CO₂ on the display.

High Humidity Level

EC 160 Incubator provides an environment which is enriched with the mixture of water and gas in order to prevent the evaporation of the culture media and keeps the pH as in desired level. High humidity level is provided with the help of humidity tray which is located bottom of the chamber. Humidity tray contacts with the heated bottom surface; therefore, evaporation of water occurs naturally and provides 95% ± 5% humidity at 37.0°C. High relative humidity prevents desiccation of the media and maintains the correct osmolality.

EC 160 CO₂ Incubator is designed and manufactured in accordance with international directives EN 61010-1, EN 61326 and DIN 12880. If the warnings mentioned in this manual are not considered, NUVE will not be responsible from their results.

2. TECHNICAL SPECIFICATIONS

2.1. TECHNICAL SPECIFICATIONS TABLE

TECHNICAL SPECIFICATIONS	EC 160
Temperature Range	Ambient Temperature +7°C / 50°C
Temperature Sensor	Pt-100
Control System	N-Smart™ Microprocessor Control System
Temperature Sensitivity	0.1°C
Temperature Distribution (at 37°C)	± 0.3°C
Temperature fluctuation (at 37°C)	±0.1°C
Disinfection temperature	90°C
CO ₂ Setting Range	%0.0 - 20.0
CO ₂ Set and Display Sensitivity	%0.1
CO ₂ Sensor	IR Sensor
CO ₂ Sensor / Auto-Zero	Standard – In every 12 minutes
Safety System	Gas expansion thermostat
Chamber Capacity	160 liters
Number of Shelves (std./max)	3 / 8
Power Consumption	1160 W
Power Supply	230 V, 50/60 Hz
Internal Material	Stainless Steel
External Material	Epoxy polyester coated steel
Internal Dimensions (W x D x H) (mm)	500 x 460 x 700
External Dimensions (W x D x H) (mm)	917 x 722 x 905

2.2. ACCESSORIES

2.2.1. FACTORY FITTED ACCESSORIES

EC 160H Cable port (25 mm)
 EC 160W **N-Smart™** Data monitoring software and RS 232 port

2.2.2. OPTIONAL ACCESSORIES

A 08 142 **AlerText™** GSM alarm module (SIM card is not included.)
 A 08 143 **nUVeRay™** UV light sterilization kit
 A 08 144 **NuveClean™** Decontamination kit for humidity tray (20 doses)
 K 13 009 **NuveWarn™** Remote alarm system with 10 m cable
 A 08 146 Stacking Adapter
 A 08 147 Support Frame

A 08 148	Roller Base
A 08 149	Gas Changeover Unit for two CO ₂ gas tanks (Tanks not included)
F 06 003	0,22 µm biological filter (Spare)
R 11 007	Single Stage Regulator for CO ₂ gas tank
R 01 154	Stainless steel shelf



A 08 142 and K 13 009 cannot be used at the same time.

3. PRECAUTIONS AND LIMITATIONS ON USE






The user shall pay attention to the following:

- Do not operate the instrument for purposes other than its main purpose.
- The instrument should only be used by authorized and trained staff after the instruction manual has been read carefully. Only authorized technical staff can handle the product in case of a failure.
- Electricity line should be suitable for the power of device and correctly grounded power supply should be used.
- Only original spare parts and original accessories supplied by Nüve should be used.
- The set temperature should not destroy the structure of the samples without user's notice.
- The boiling points of the samples should be higher than the set temperature.
- The freezing points of the samples are lower than the set the temperature.
- The samples which may liquefy and expand should not be in a sealed container.
- Liquids which may expand during heating should not overflow from their containers.
- The safety thermostat should be adjusted to the temperature higher than the set temperature.
- There should not be any material in the chamber that can damage to the device.
- The materials which will be subject to heating should not be combustible, explosive, heat susceptible, flammable, adhesive and fusible.
- Ensure that the vapors and gases generated during the operation are not harmful to human health and flammable or explosive.

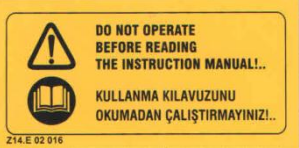










CO₂ is a toxic gas. If the door of EC 160 is kept opened for long periods, the CO₂ gas in the chamber is diffused to the laboratory. In that case, ventilate the laboratory.

4. SYMBOLS AND LABELS

	Symbol in the operating instructions: Attention, general hazard area. This symbol refers to safety relevant warnings and indicates possibly dangerous situations. The non-adherence to these warnings can lead to material damage and injury to personal.
	Notified Body: KIWA Belgelendirme Hizmetleri A.Ş. (İTOSB) İstanbul Tuzla Organize Sanayi Bölgesi Tepeören Mevkii 34597 Tuzla- İstanbul / TURKEY
	Symbol in the operating instructions: This symbol refers to important circumstances.
	Type B protection.
	Before operating the instrument this manual should be read carefully.

Labels on the product:

			
	 		
Earthed Wall Sockets	Fuses (2 x 1A) Fuses (1 x 5A)	UV Lamp	

5. INSTALLATION

5.1. ENVIRONMENTAL CONDITIONS

The CO₂ Incubator is designed to operate safely under the following conditions:

- Indoor use only
- Ambient temperature: 5°C to 40°C
- Maximum relative humidity for temperature up to 31°C: 80%
- Maximum altitude: 2000 m
- Temperature for maximum performance: 15°C / 25°C

5.2. HANDLING AND TRANSPORTATION

All handling and transportation must be carried out by using proper equipment and experienced staff. The instrument must be supported underneath and never be turned upside down.

5.3. UNPACKING

Remove the cardboard box packing and the second nylon wrapping around the instrument. Ensure that no damage has occurred during transportation. The below mentioned are provided with the instrument, please check them;

- 1 pc. user's manual and warranty
- 2 pcs. biological filter
- 3 pcs. shelves
- 2 pcs. of shelves' support
- 1 pc. shelves' stick
- Humidity tray
- 1 pc. power cable
- 2.5 meters tube for CO₂ connection

5.4. MAINS SUPPLY

The CO₂ Incubator requires 230 V, 50/60 Hz.

Please make sure that the supplied mains matches the required power ratings which are written on the name of plate of the instrument located at the back of the instrument.



Always plug-in the instrument to correctly grounded sockets.



A supply fitted with a circuit breaker should be used for protection against indirect contact in case of isolation fault.

5.5. POSITIONING

- Check that the positioning is suitable for the users.
- Check that the instrument is stable on its four pedestals.
- Check that the user will be able to follow up the operation even when he deals with something else.
- Check that the positioning of the device prevents interference with other equipment in the near surrounding.
- The bench where the instrument is positioned should be resistant to the weight of the instrument and vibration free.
- Leave at least 30 cm space on the left, right and back side of the instrument.

- Positioning of EC 160 should be away from windows and walls. The instrument should be in a place around which the air can ventilate easily.
- EC 160 should not be close to the window and exposed to sun light.
- Protect the device from direct ventilation.
- EC 160 should not be sited on thoroughfares or in line with doorways or opening windows.
- Doors of the room should not be opened frequently.
- If there is laminar flow cabinet in the room, it should not blow towards to EC 160.
- The air ventilation in the room should be minimum.
- If there is air condition in the room, it should be on during night and day. If air condition is on during day time, do not switch off air condition during night. Or it should be off all the time.
- The room temperature should be stable and it should be maximum 30⁰ C.

5.6. GENERAL PRESENTATION

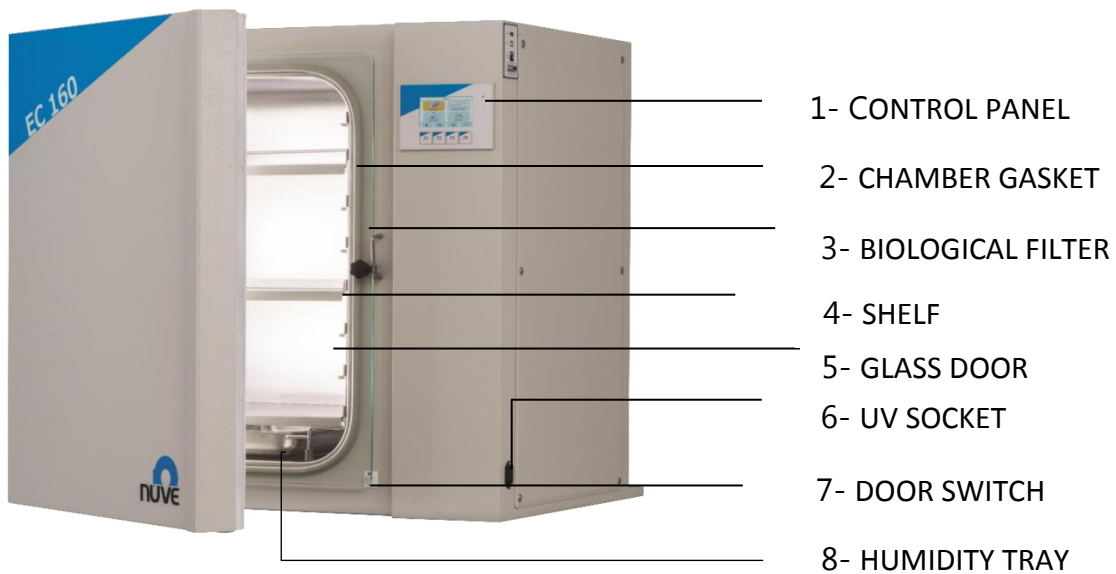


Figure 1

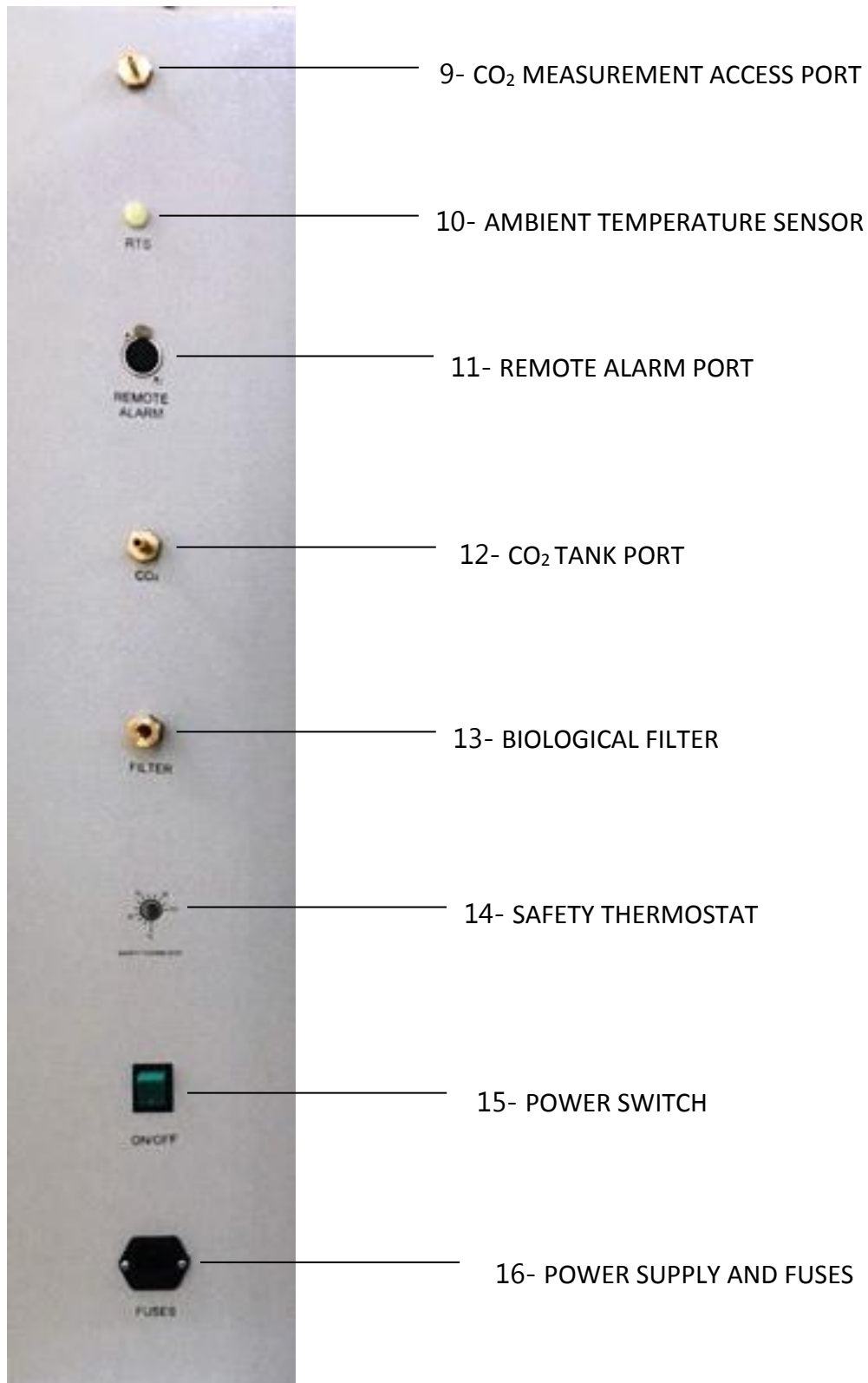


Figure 2

- 1- Control Panel:** Control panel includes LC display in order to control the device and set the desired values by using 4 different keys.
- 2- Chamber Gasket:** The silicon gasket prevents the leakage.
- 3- Biological Filter:** The filter is used to generate a sterile environment inside the chamber.
- 4- Shelf:** Stainless steel shelf is easy to remove.
- 5- Glass Door:** The door helps the user to observe the samples inside the chamber.
- 6- UV Socket:** nUVeRay™ is connected to this socket when the user wants to use the UV Disinfection program.
- 7- Door Switch:** With the help of the door switch, visible and audible alarm activates when the glass door is left open.
- 8- Humidity Tray:** This humidity tray is used to generate humidity by means of the distilled water inside the tray.
- 9- CO₂ Measurement Access Port:** User could use the port in order to connect an external measurement device and measure the CO₂ percentage inside the chamber.
- 10- Ambient Temperature Sensor:** Measure instant ambient temperature by Pt-100 sensor.
- 11- Remote Alarm Port:** When optional NuveWarn™ remote alarm system is connected to this port, the user is notified in case of alarms. Optional AlerText™ GSM alarm module is also connected to this port.
- 12- CO₂ Tank Port:** CO₂ connection is made via this input.
- 13- Biological Filter:** This filter is used to maintain a sterile environment inside the chamber.
- 14- Safety Thermostat:** Heating process is stopped automatically by the safety thermostat in case of uncontrolled overheating.
- 15- Power Switch:** This switch is used to power on or off the device.
- 16- Power Supply and Fuses:** In order to give energy to the device this power supply input is used. Fuses protect the incubator from instantaneous voltage fluctuation in mains supply.

5.7. CONTROL PANEL

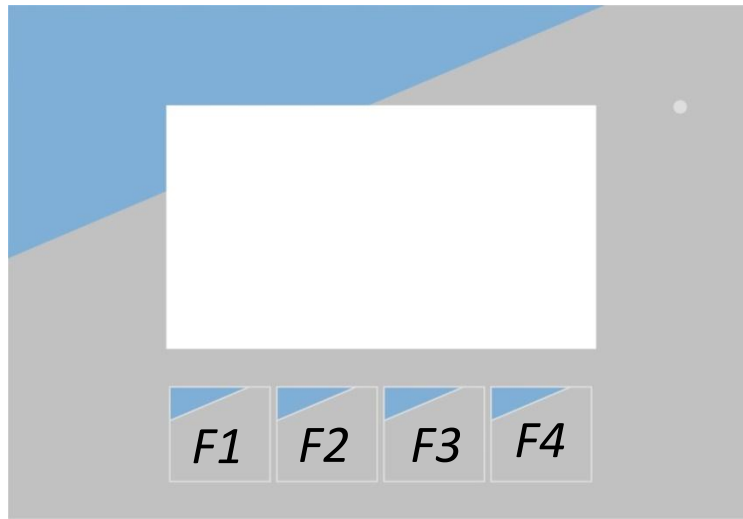


Figure 3

F1, F2, F3 and F4 buttons are named with the first letter of function and their functions correspond to the commands on the display.

5.8. PRIOR TO OPERATION

5.8.1. MOUNTING THE SHELVES AND HUMIDITY TRAY

Put the shelves' supports inside the chamber as it is shown in Figure 4.

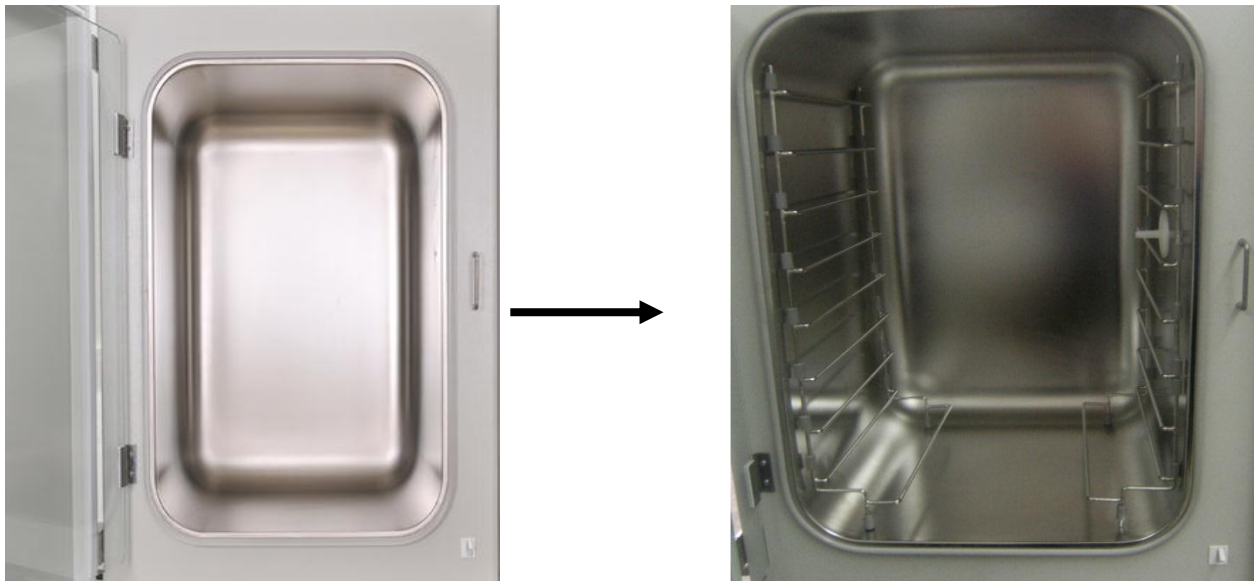


Figure 4

After placing the humidity tray on the shelves' support, put the shelves as in Figure 5.



Distilled water must be used in the humidity tray.



Figure 5

5.8.2. MOUNTING BIOLOGICAL FILTERS

- **Mounting the biological filter inside the chamber**

Mount the biological filter into its place as in Figure 6.

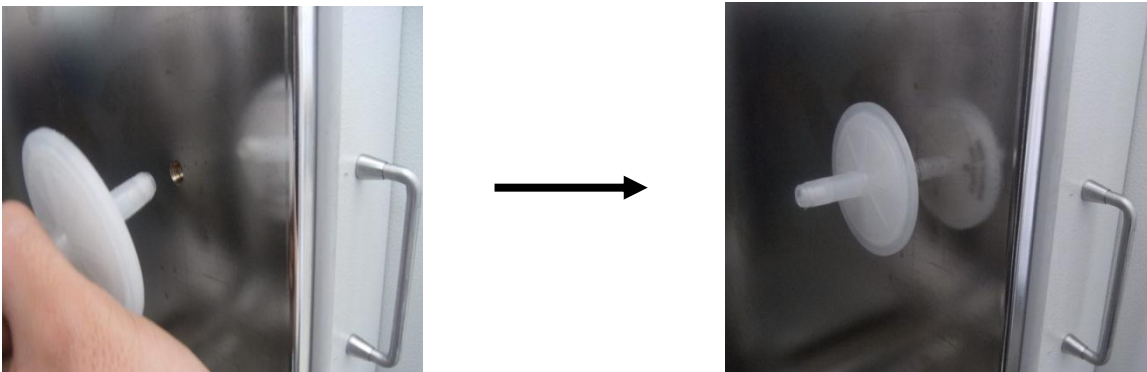


Figure 6

- **Mounting the biological filter outside of the chamber**

Mount the biological filter into “FILTER” port located at the back of the instrument as shown in Figure 2.

5.8.3. CO₂ TANK CONNECTION AND REPLACEMENT

- Place CO₂ upright and take necessary precautions for not falling over the tank.
- After connected the regulator to the CO₂ tank, follow the steps bellow:

- Connect the tube between the CO₂ tank's regulator and the CO₂ tank port of the incubator (Figure 2).
- Check the connection and be sure there is no leakage.
- Turn on the CO₂ tank.
- Observe the CO₂ tank's pressure.
- Set the regulator to 2 bars (6-7 liter/minute).



The tube used between CO₂ tank and the instrument should resist to 5 bars.



Tighten the connection of the tube with clamps and ensure that there is no leakage.



Please prevent the CO₂ gas tank from sun lights and heat. The distance between tank and a heat source must be at least 0.5 meters. The gas inside the CO₂ tank is heavier than the air and has risks for human's health.

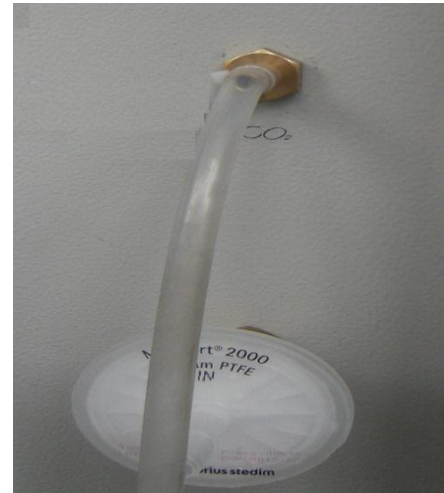


Figure 7

6. OPERATING PRINCIPLES


6.1. SWITCHING ON


- Plug-in the instrument to correctly grounded sockets.
- Turn on the device by power switch which is at the back of the incubator and see the LED of power switch is on.
- See that the control and the display panel are activated.
- Learn the function of the control and display panel (See Section 5.7).
- The system controls itself for 60 seconds after it is energized.



NUVE logo appears on the screen for 1-2 minutes for control process. This screen is displayed until the control process is done.

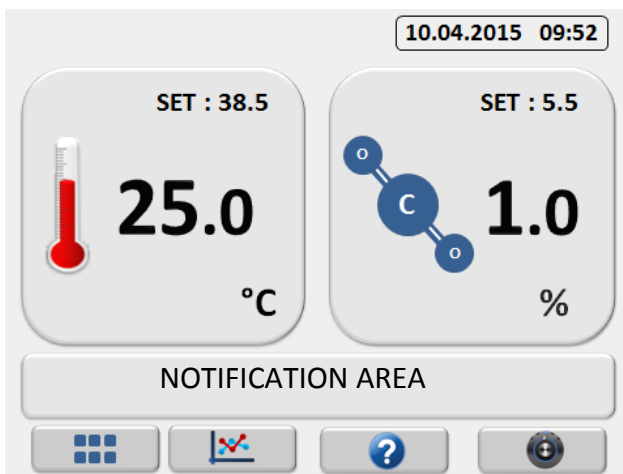
- Ensure that the safety thermostat is adjusted to a value higher than the set temperature.

 Prior to operation, ensure that no substance has been left in the chamber.

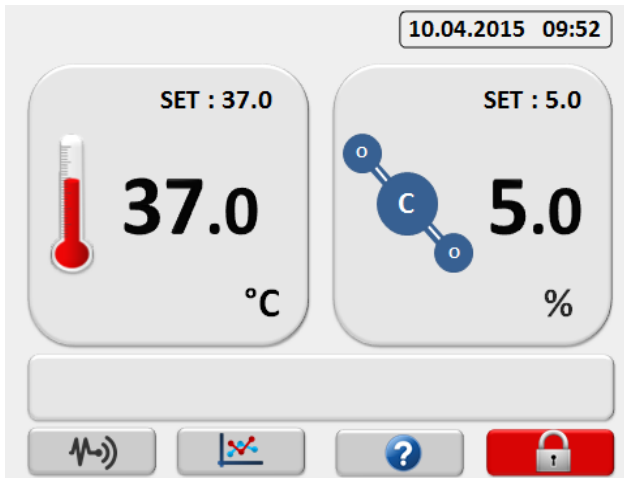
 At most 70% of the surface area of the shelves should be loaded in order to obtain a uniform temperature distribution.

6.2. OPERATING MODE AND MENU

6.2.1. OPERATING MODE



Incubator starts to operate automatically according to the set values. In the operating mode, the chamber temperature, CO₂ value, and set temperature and CO₂ value are displayed.



Lock icon appears on the right bottom corner if the device is locked. Press that icon to reach the keypad for unlocking the device. Also sensor values button appears at the left bottom corner.



Security screen contains user defined password. With the correct password combination menu screen opens directly.

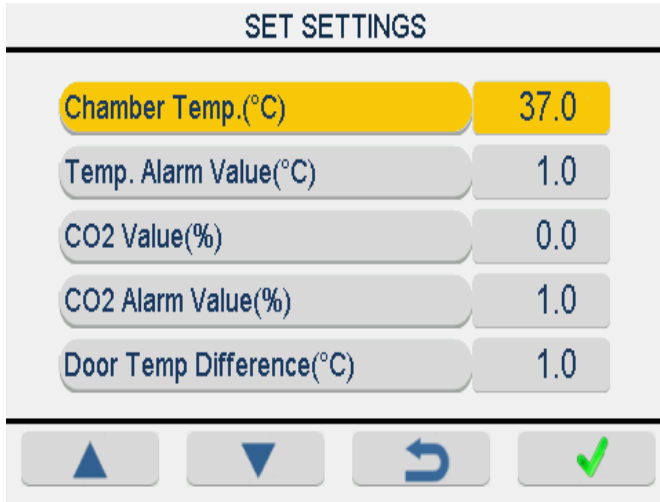


The menu password for EC 160 CO₂ Incubators is 2112. It is suggested to change it for your security.




Door temperature value aims for avoiding influence of ambient temperature to chamber temperature distribution. Door set temperature equals to chamber set temperature value + door temperature difference.

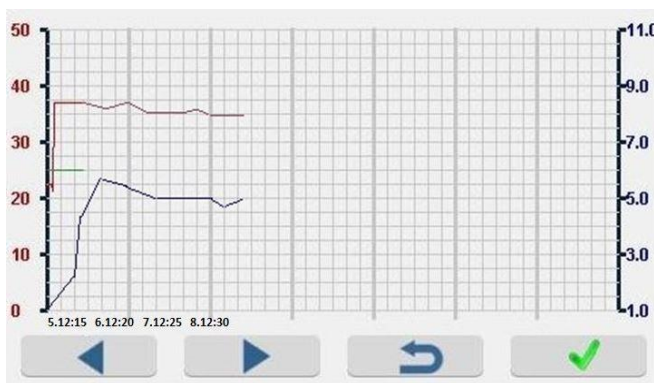
6.2.2. SET BUTTON



Values of chamber temperature, temperature alarm, CO2, CO2 alarm and door temperature difference are shown in this screen. Pressing up and down button you can increase or decrease value of parameter after choosing with ENTER (F4) button.

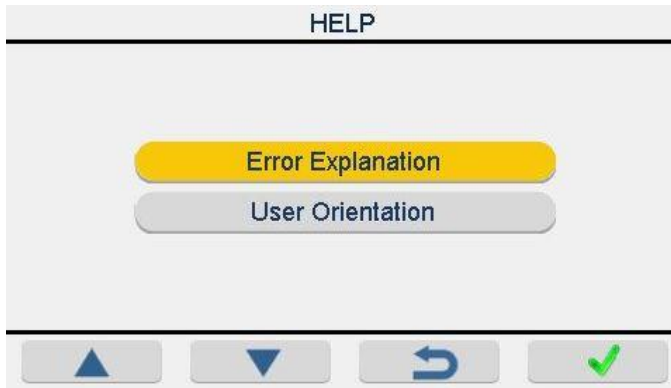
 When the ambient temperature is cold in winter, it is suggested to set the door temperature difference value as +2.0.

6.2.3. GRAPHIC SCREEN BUTTON



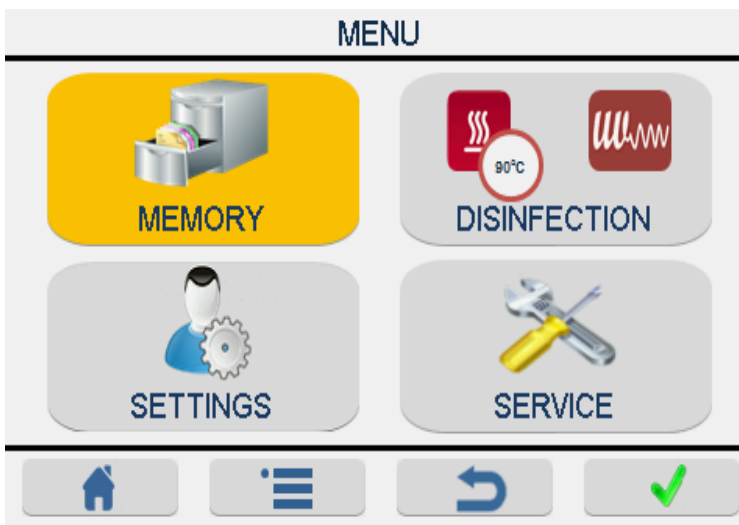
Chamber temperature and CO2 value are shown graphical and two different adjustable scales with respect to time. Temperature and CO2 scales can be adjusted by pushing select button.

6.2.4. HELP BUTTON



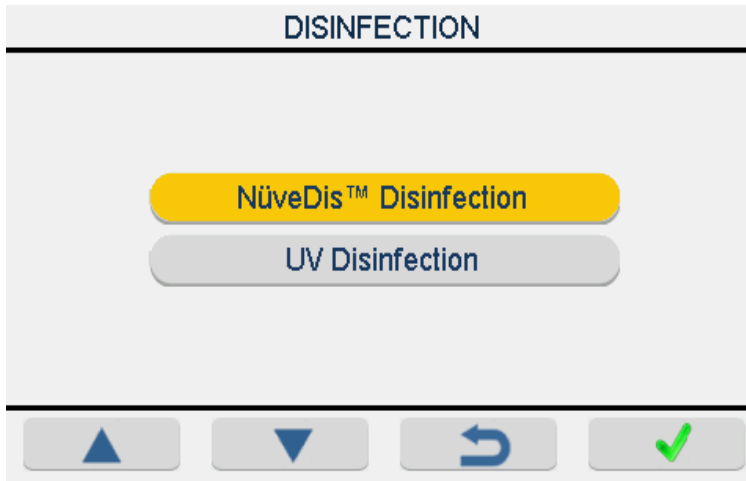
This part contains possible failures of device and their explanations. User orientation aims to make customer usage more interactive and consciously. It contains warnings and advices.

6.2.5. MENU BUTTON



MENU screen are shown by pressing (F1) button on operating screen and TAB (F2) button helps for select function. ENTER (F4) button confirms selected icons.

6.3. DISINFECTION



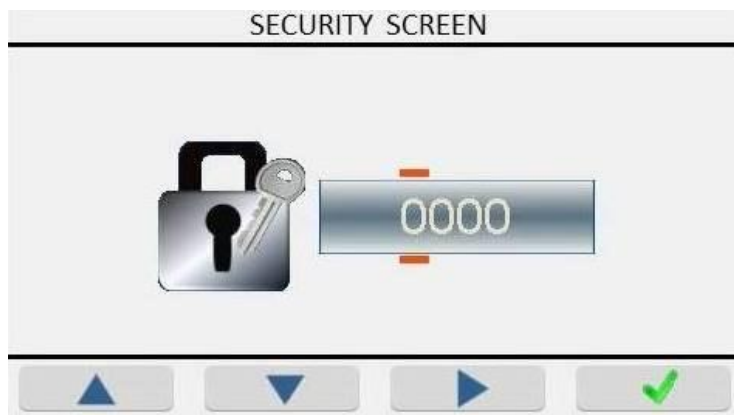
There are two types of disinfection process in device. These are **NüveDis™** 90°C disinfection and optional **nUveRay™** disinfection with UV lamp. They can be chosen by pressing up down arrow and confirmed by ENTER (F4) button.



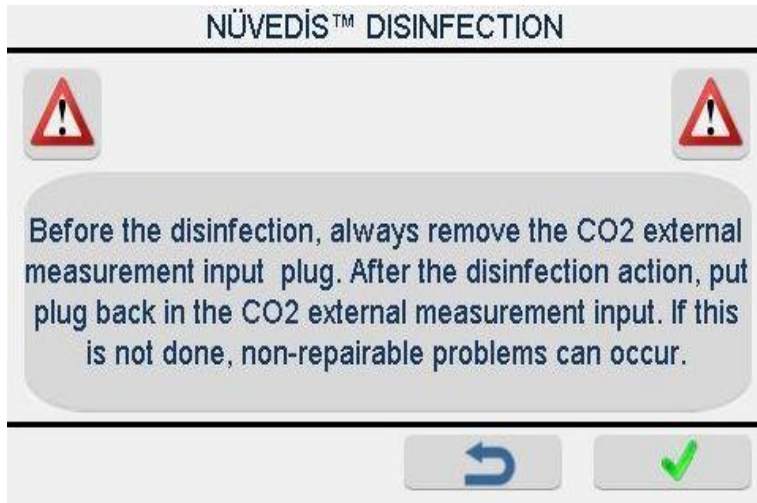
Before the disinfection process, please remove all the samples from the chamber and remove the biological filter in the chamber.

6.3.1. NüveDis™ DISINFECTION AT 90° C

Before 90° C Disinfection is started, fill the humidity tray with distilled water. When NüveDis™ DISINFECTION selected and approved by pressing the ENTER (F4) key, warning screens will be seen. Take necessary cautions according to warnings.



Before 90°C Disinfection is started, security password is shown at the screen. Authorized persons can choose by (F1-F2) buttons and select by (F4).



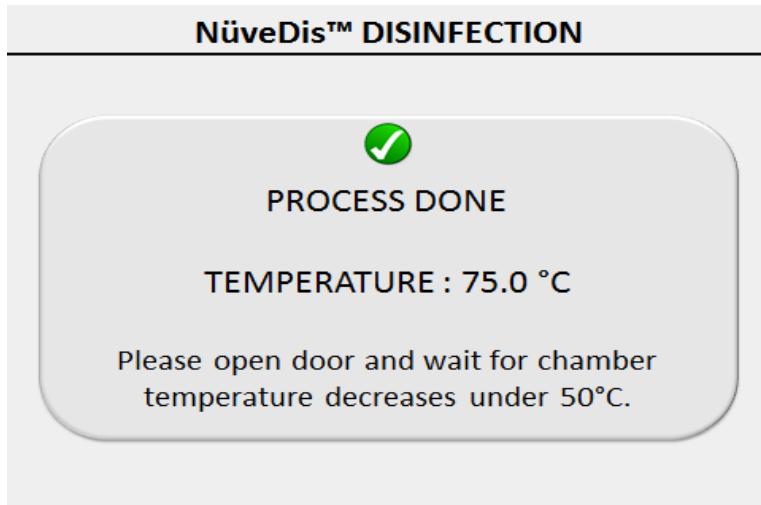
After password is confirmed correctly, warning page comes to screen for informing the user.



Warning page is passed by pressing F4 button and start option is selected by F2 button and confirmed by F4 button. Chamber temperature reaches $90\pm 2^{\circ}\text{C}$ 9 hours disinfection process is began.



Disinfection operation screen.



When time countdown is done you should wait the chamber temperature decreases the 50°C for next operation.

6.3.2. UV DISINFECTION WITH nUVeRay™


Place the UV lamp unit (Figure 8) onto the glass door (Figure 9). Connect the power cable of the UV lamp to the UV lamp socket which is located on the right side of the device as in Figure 10.




Figure 8




Figure 9

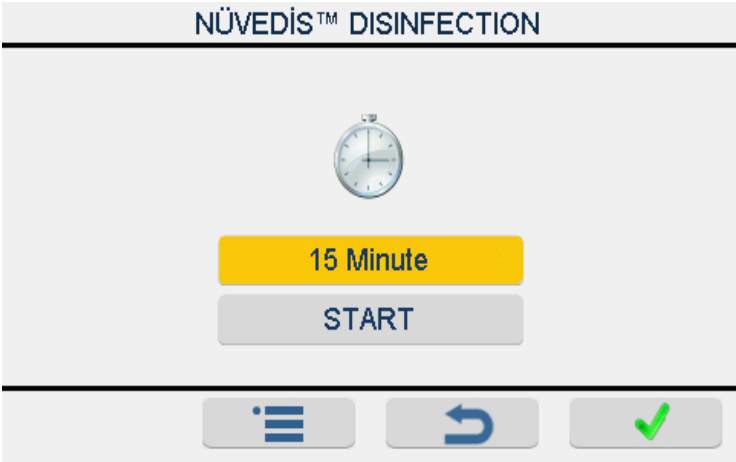
 During UV Disinfection process, do not to contact with the direct UV light.

 UV lamp should be cleaned frequently against dust and dirt which decrease the efficiency of UV light. It is strongly suggested to change the UV lamp once

a year because over a year the efficiency of UV light against microorganisms decreases.

 High humidity decreases the efficiency of UV light. Do not use humidity tray during UV disinfection.

When the UV DISINFECTION is selected and approved by pushing ENTER (F4) key, warning screens will be seen. Take necessary cautions according to warnings on the screen. Use ENTER (F4) key to see next screen.

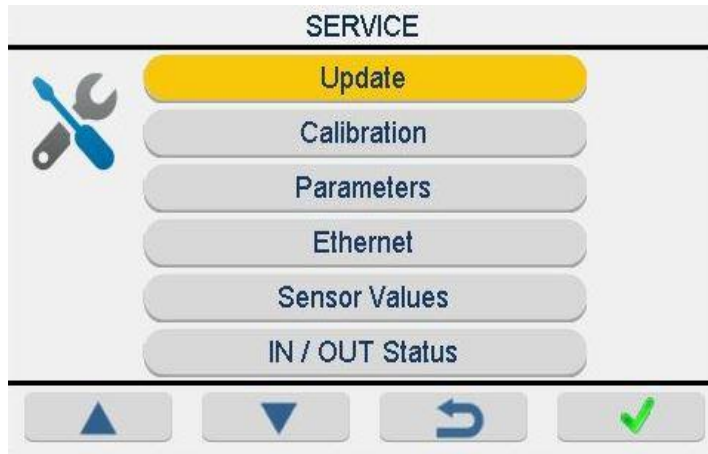


UV Disinfection time can be set from 15 minutes to 24 hours and start with F4 button.



During the UV Disinfection process, the screen on the left is seen on the display, time starts counting backwards from its set time and stops when time is over. If STOP key (F4) is pushed, UV disinfection stops manually.

6.4. SERVICE



This page is for technical service personal and it contains device settings.

6.5. SETTINGS



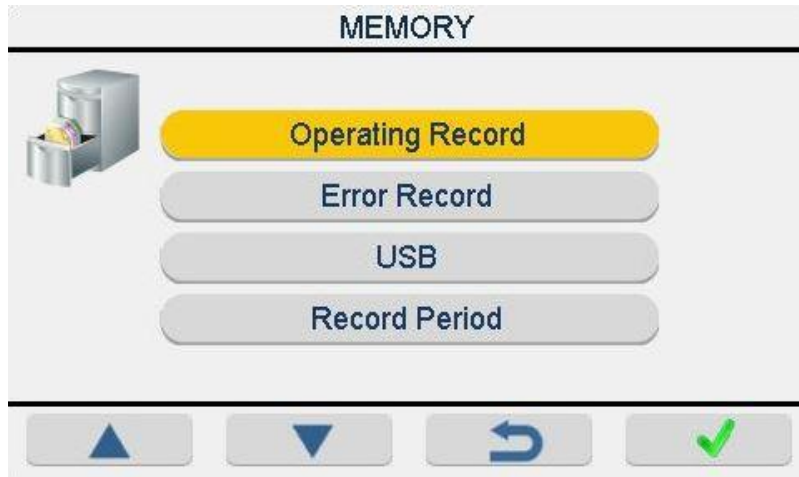
In this page user can enter user information into user settings Date and time are selected and entered into date and time section. Language section is for language selections.

6.5.1. SECURITY SETTINGS



For device safety in this page device can be locked and password key can be changed.

6.5.2. MEMORY



All operating and error records are stored in this section. You should be state date interval for operating record as section of error record. Operating and error record data can be transferred to USB and record period can be set to given period.

7. PERIODIC MAINTENANCE AND CLEANING

7.1. PERIODIC MAINTENANCE

- It is highly recommended to replace the filter inside the chamber once in a year and replace the filter in the back side of the unit in every 6 months. The period of changing filter depends on the amount of ambient air pollution and frequency of usage.
- The air circulation pump should be replaced in every 3 years.
- **nUVeRay™** UV lamp should be replaced once in a year.
- Please refer to service manual for further instructions regarding periodic maintenance.

7.2. CLEANING

- Clean the device when the chamber is at room temperature after disconnecting the power cable.
- Clean the device with a damp cloth to remove dirt and dust.
- A soft washcloth must be used not to cause any damage in the chamber.
- Do not use alkaline cleaning reagents and metal brushes for cleaning.
- Use liquid detergent to remove tough dirt.
- Take precautions while handling chemical cleaners. Please be aware of the undesirable effects of the chemicals and be careful while applying them.
- Protect your incubator against rust and ensure any rust spots that may develop are removed.
- The chamber can be cleaned with a surface disinfectant (70% alcohol).
- Be careful to remove any encrusted spots of dried medium.
- Avoid chlorinated solutions which might damage the chamber.
- Shelves, shelf supports and humidity tray can be sterilized at steam sterilizer (20 minutes at 121°C) or at dry heat sterilizer (30 minutes at 180°C).

- Disinfection can be handled with **NuveDis™** at 90°C whenever it is considered as necessary by the user.
- **nUveRay™** can be used for disinfection.

8. DISPOSAL MANAGEMENT CONCEPT

The currently valid local regulations governing disposal must be observed. It is in the responsibility of the user to arrange proper disposal of the individual components.

All parts which may comprise potentially infectious materials have to be disinfected by suitable validated procedures (autoclaving, chemical treatment) prior to disposal. Applicable local regulations for disposal have to be carefully observed.

The instruments and electronic accessories (without batteries, power packs etc.) must be disposed of according to the regulations for the disposal of electronic components. Batteries, power packs and similar power source have to be dismantled from electric/electronic parts and disposed of in accordance with applicable local regulations.

9. TROUBLESHOOTING

If the CO₂ Incubator fails to operate, please check the followings:

- The power switch is on;
- The fuse is sound;
- The plug is plugged-in properly;
- The plug is not defective;
- The mains supply is present.

In CO₂ alarm conditions, please check the followings:

- Check the CO₂ pressure in the CO₂ tank from the pressure regulator.
- Check the tube connection between the outlet of pressure regulator and CO₂ inlet on EC 160 for leakage.
- Glass door is closed and the chamber gasket is tight.

9.1. ERROR CODES

In case of below written failures, related error codes are shown on the display.

Error 1: Door, chamber and ambient Pt-100 sensor failure.

Error 2: If the temperature falls down to below 88°C during disinfection, process will stop and screen goes back to the normal operating mode.

Error 3: If the temperature exceeds the 95°C during disinfection, process will stop and screen goes back to the normal operating mode.

Error 4: CO₂ gas sensor failure.



After the disinfection process, temperature and CO₂ controls start when the temperature and CO₂ values are in the alarm limit.



During Auto-zero and disinfection process, alarm limit error do not appear.



If auto-zero operates when disinfection starts, auto-zero stops and auto-zero does not operate during disinfection period. Auto-zero does not also operate while service menu is open.



If an error occurs, please contact with an authorized Nüve agent to seek technical help.

9.2. FUSE REPLACEMENT

The fuses shall always be replaced by the authorized personnel.

10. OPTIONS

10.1. AlerText™ GSM ALARM MODULE



GSM Module transfers data via GPRS. SMS is sent to 5 different mobile phone numbers in case of failures. In addition to this, message could be sent as an e-mail. The data is saved on the internal memory of GSM module in case of failures on the communication.



There could be some errors while the messages are being delivered which means messages have not been delivered.

10.1.1. CONNECTING THE GSM MODULE TO THE DEVICE

- The optional GSM Module connection is made via NC contact output which is located on the back side of the device. Before starting the operation, please connect the GSM Module to the device. GSM Module has 1 adaptor with 12V/2A output, 1 removable antenna and 1 main terminal. Connection between the main terminal and power socket should be made correctly.



Please be careful and do not connect the main terminal's cables to the RTD input, otherwise module will be defective and cannot be used again!

- It is important to make the antenna connection correctly to ensure the GSM Module is working and able to send a message.
- Connect contact inlet of terminal to remote alarm input of device.
- SIM card of GSM network is supplied by the user.
- NUVE must be informed in advance regarding to mobile phone numbers to which the failure message will be sent.
- NUVE must be informed in advance regarding to SMS message content which will be sent.
- The cost of SIM card and SMS differs according to the GSM network and will be covered by the user.

10.2. CO₂ CHANGEOVER UNIT

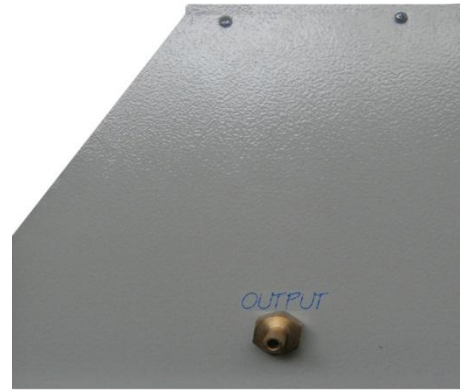
CO₂ changeover unit replaces CO₂ tank in case of CO₂ shortage while not interrupting the operation of EC 160. The LEDs on CO₂ changeover unit notifies which tank is in use. If two CO₂ tanks are empty, user is notified by the red led.



Figure 9



Please connect the CO₂ tank's hoses to their place as it is shown in the picture above.



Please connect this output to the CO₂ input of the device which is located at the back side of the incubator.

10.3. NuveCell™ SOFTWARE



NuveCell™ software provides user monitoring and saving operation, temperature and CO₂ values on computer. Refer Section 6.9.2 for more detailed information regarding to usage of NuveCell™.


10.4. Ø25 mm CABLE INPUT

By means of this Ø25 mm cable input, external measurement could be done. Also, an instrument such as magnetic stirrer can be operated inside. This port is factory mounted option. The port should be sealed well after the cable is passed through against CO₂ leakage.

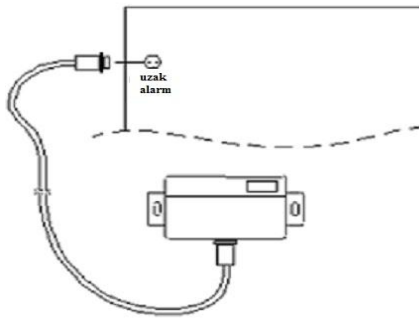
10.5. NuveWarn™ REMOTE ALARM SYSTEM



EC 160 CO₂ Incubator is supplied with a standard remote alarm feature. This feature can be used only if an optional remote alarm kit is connected to the device. For all the alarm situations (open door, chamber temperature is out of range from set value, broken temperature sensor etc.) the remote alarm will be activated.

 To turn off the acoustic alarm, push to the HELP key at first and then push to the MUTE key on the display.

10.5.1. MOUNTING THE REMOTE ALARM KIT



The remote alarm kit includes an alarm unit and 10 meters of cable with a connector. Connect one side of the cable to the connector at the back side of the EC 160 and the other side to the alarm unit (See Figure 12).

Figure 10



Mount the remote alarm kit to a wall or board no more than 10 meters away from the device where it is easily accessible.

10.6. nUveRay™ UV DISINFECTION KIT



The disinfection kit is used for the disinfection after the work in the incubator is done. Chamber is disinfected by means of **nUveRay™** after all the shelves, humidity tray and samples removed. Refer Section 6.3.2 for more detailed information regarding to usage of **NuveRay™**.

11. ELECTRICAL CIRCUIT DIAGRAM

