



NÜVE SANAYİ MALZEMELERİ İMALAT VE TİCARET A.Ş.

**EN 300 - EN 400 - EN 400P
EN 500 – EN 500P**

INCUBATORS

USER'S MANUAL

CE

MANUFACTURER :

NÜVE SANAYİ MALZEMELERİ İMALAT VE TİCARET A.Ş.

Saracalar Mahallesi, Saracalar Kümeevleri No:4/2 Akyurt 06750

ANKARA - TURKEY

TEL: +(90) 312 399 28 30 (pbx)

FAX: +(90) 312 399 21 97

E-mail: sales@nuve.com.tr

WARRANTY CERTIFICATE

1. Nüve warrants that the equipment delivered is free from defects during material and workmanship. This warranty is provided 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 equipment.
 3. Nüve does not accept any liability in the case where the goods are not used in accordance with their proper intent.
 4. The warranty may not be claimed for damages occurred during the shipment, for damages resulting from improper handling or use, the defects in maintenance, negligence, bad functioning of auxiliary equipment, in the case of force majeure or accident and incorrect power supply.
 5. In the event of failure, Nüve shall be under no liability for any injury, or any loss or damage as the result of the failure other than the guarantee 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.**

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;

- obey all the warning labels,
- do not remove the warning labels,
- do not operate damaged instrument,
- do not operate the instrument with a damaged cable,
- do not move the 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 its permission.

Lifetime of the device is 10 years.

PLEASE REGISTER ONLINE TO VALIDATE WARRANTY:

To register your warranty online, please visit our web page www.nuve.com.tr and fill in **WARRANTY REGISTRATION FORM**.

TABLE OF CONTENTS

SECTION 1	4
INTRODUCTION	4
1.1 USE AND FUNCTION	4
SECTION 2	5
TECHNICAL SPECIFICATIONS	5
2.1 TECHNICAL SPECIFICATIONS TABLE	5
2.2 OPTIONAL ACCESSORIES	5
2.3 GENERAL PRESENTATION	6
SECTION 3	7
INSTALLATION PROCEDURE	7
3.1 LIFTING AND TRANSPORT	7
3.2 UNPACKING	7
3.3 POSITIONING	7
3.4 MAINS SUPPLY	8
3.5 PRIOR TO INCUBATION	8
SECTION 4	8
OPERATING PRINCIPLE	8
4.1 SWITCHING ON	8
4.2 DISPLAY AND CONTROL PANEL	9
4.2.1 Explanations and Functions for Display and Control Panel	9
4.3 PREPARATION OF USER SETTINGS	10
4.3.1 oP Operator Menu Parameters	11
4.4 PROGRAMMING SUMMARY	11
4.5 COMPLETION OF THE WORK	13
SECTION 5	14
PERIODIC MAINTENANCE AND CLEANING	14
5.1 PERIODIC MAINTENANCE	14
5.2 CLEANING	14
SECTION 6	14
DISPOSAL MANAGEMENT CONCEPT	14
SECTION 7	14
TROUBLESHOOTING	14
7.1 ERROR CODES EXPLANATIONS	15
SECTION 8	16
ELECTRICAL CIRCUIT DIAGRAM	16
8.1 EN 300 ELECTRICAL CIRCUIT DIAGRAM	16
8.2 EN 400 ELECTRICAL CIRCUIT DIAGRAM	17
8.3 EN 500 ELECTRICAL CIRCUIT DIAGRAM	18
8.4 EN 400P – 500P ELECTRICAL CIRCUIT DIAGRAM	19
SECTION 9	20
WARNING LABEL	20

SECTION 1

INTRODUCTION

1.1 USE AND FUNCTION

The EN 300, EN 400, EN 400 P, EN 500 and EN 500 P incubators are designed to incubate samples in biological, medical and pharmaceutical laboratories and in many industrial control laboratories.

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

The EN series incubators provide homogeneous temperature distribution by means of the sheet heaters placed onto three outer surfaces of the useful volume.

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

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

The EN series incubators are manufactured according to the following standards, EN 61010-1, EN 61010-2-010, EN 61000-6-3, EN 50419, EN 61326-1.

This device is in compliance with WEEE Regulation.

SECTION 2

TECHNICAL SPECIFICATIONS

2.1 TECHNICAL SPECIFICATIONS TABLE

	EN 300	EN 400	EN 400 P	EN 500	EN 500 P
Temperature Range	Ambient Temp + 5° C / 80 ° C				
Temperature Sensor	Fe-Const				
Control System	N-Prime™				
Temperature Set and Display Sensitivity	0.1° C				
Temperature variation (up to 40 °C)/(40°C -80°C)	± 0.5° C / ±1°C				
Temperature fluctuation	± 1 ° C				
Timer	1 minute – 99.9 hours + hold				
Program delay time	1 minute – 99.9 hours				
Safety thermostat	Gas expansion thermostat (0 - 90°C)				
Useful Volume, liters	22	44	42	120	110
Number of Shelves (Standard/ Max.)	2/6	2/7	2/7	2/10	2/10
Power Consumption	100 W	200 W	238 W	350 W	388 W
Power Supply	230 V, 50 / 60 Hz				
Memory	3000 data*				
Internal Material	Electro- acid Coated Aluminum	Electro- acid Coated Aluminum	Steel Stainless	Electro- acid Coated aluminum	Stainless Steel
External Material	Epoxy - Polyester Painted Steel				
Internal Dimension (WxDxH)mm	300x240x300	420x320x360	420x280x360	500x490x500	500x450x500
External Dimension (WxDxH)mm	555x380x460	705x475x540	700x525x540	780x635x675	790x675x670
Packing Dimension (WxDxH)mm	640x470x640	790x570x760	790x570x760	870x740x860	870x740x860
Net/Packed Weight	26 / 31	39 / 45	39 / 45	60 / 70	66 / 74

*Shows the number of lines for each work done. Temperature, time and if there is error code consist of 1 line.

**Differently from EN 400 and EN 500, inner sides of EN 400P and EN 500P are made of stainless steel and their heaters are circular heaters which provide the homogeneity of the temperature by the circulation fans placed on their centers.

2.2 OPTIONAL ACCESSORIES

- R 01 014 Mesh type shelf for EN 300
- R 01 136 Mesh type shelf for EN 400
- R 01 126 Mesh type shelf for EN 400P
- R 01 135 Mesh type shelf for EN 500
- R 01 111 Mesh type shelf for EN 500P
- K 23 031 Shelf carrier for EN 300

- **K 23 047** Shelf carrier for EN 400
- **K 23 048** Shelf carrier for EN 400P
- **K 23 046** Shelf carrier for EN 500
- **K 23 040** Shelf carrier for EN 500P

NOTE: 2 pcs. shelf carrier should be ordered for each shelf.

2.3 GENERAL PRESENTATION



1	Display and control panel	6	Door
2	Safety thermostat adjusting button	7	Ventilation hole
3	On / Off switch	8	Glass door
4	Shelf	9	Glass door handle
5	Chamber gasket	10	Input USB

SECTION 3

INSTALLATION PROCEDURE

3.1 LIFTING AND TRANSPORT

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

3.2 UNPACKING

Remove the packing cardboard box and the second nylon packing around the incubator. The below written are provided with the equipment, please check them;

- User's manual
- 1 piece of warranty certification
- 2 piece of shelves
- 4 piece of shelf carriers
- 1 piece of power cable

Check that no damage has occurred during transport.

3.3 POSITIONING

Lift the incubator underneath and carry it carefully to its place.
Balance the incubator on four pedestals. If necessary, provide stable standing by adjusting the pedestal heights.
Place the shelf carriers and then the shelves.

Check the followings,

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

ATTENTION !!!

Please pay special attention to the followings,

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

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

3.4 MAINS SUPPLY

- The incubator requires 230 V, 50 Hz.
- Please make sure that the supplied mains matches the required power ratings.



Always plug-in the incubator to correctly grounded sockets.



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

3.5 PRIOR TO INCUBATION

Plug the instrument in to a grounded socket.

Check the followings,

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

The safety thermostat set value should always be set to a value which higher than the working temperature.

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

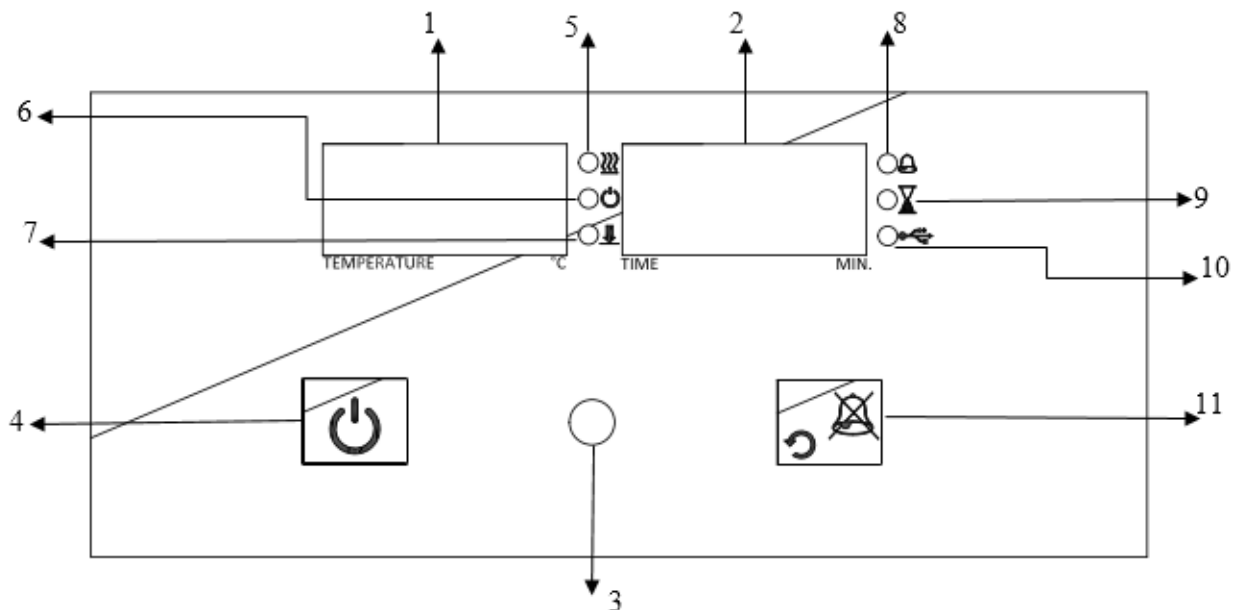
SECTION 4

OPERATING PRINCIPLE

4.1 SWITCHING ON

- Push the On/Off switch on the back of the device.
- See that the microprocessor control system activates.
- Learn the functions of the control panel (Section 4.2.1.).
- Set the values and start the operation according to section 4.3.

4.2 DISPLAY AND CONTROL PANEL



- | | | |
|------------------------|---------------------------------|------------------------------|
| 1. Temperature display | 6. "Operating the program" lamp | 11. Back / Alarm mute button |
| 2. Time display | 7. Data transfer lamp | |
| 3. Encoder button | 8. Alarm led | |
| 4. Start / Stop button | 9. "End of the program" lamp | |
| 5. Heating lamp | 10. Usb lamp | |

4.2.1 Explanations and Functions for Display and Control Panel

01-Temperature Display

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

02-Time Display

This display shows the values set for time during program preparation. Also; this display shows the time values in the control of the settings.

03-Encoder Button

The encoder button has two physical movements. The button turn clockwise and anticlockwise to increase or decrease the temperature and time values of the program. Also, the button press for select / confirm.

04-Start / Stop Button

Used button to start the device to operating at set values or to stop the operation.

05-Heating Lamp

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

06-“Operating The Program” Lamp

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

07-Data Transfer Lamp

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

08-Alarm Led


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

09-“End of The Program” Lamp

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

10-Usb Lamp

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




	The device supports up to 8 GB of external memory.
---	---


11-Back / Alarm Mute Button

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

4.3 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 (see section 4.3.1). You can set the parameter values by turning the encoder button right or left on time display.



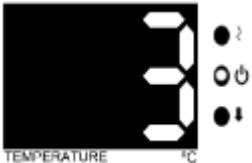
	<p>Again press the encoder button and confirm the set value. Press the back button to return the work screen.</p>
---	---

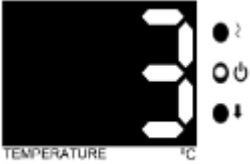


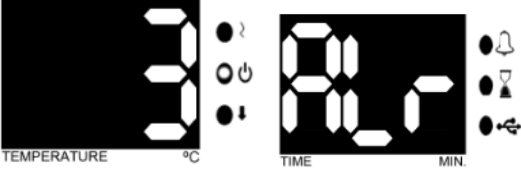




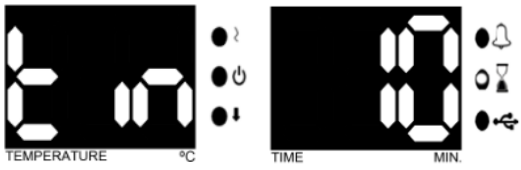
4.3.1 oP Operator Menu Parameters



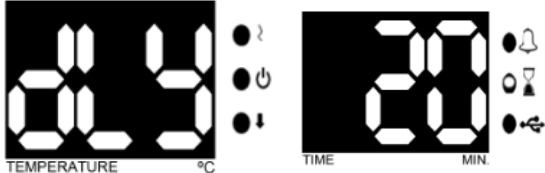


- 1: Recording Period:** This time is recording period of temperature and error information.
- 2: Lid Alarm Time:** Not used for all EN models.
- 3: Lid Alarm Range:** Not used for all EN models.
- 4: Timer Set Band:** When the read temperature reaches the "Set Temperature - TIMER SET BAND" value, the 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.

4.4 PROGRAMMING SUMMARY

Follow the below steps to set and save the values.

	<p>Push the encoder button</p>
	<p>By pushing the encoder button select SET menu.</p>
	<p>See that second LED flashes in the temperature display, again push the encoder button.</p>

	<p>See the parameter flashing on the temperature display.</p>
	<p>By turning the encoder button set operating temperature value.</p>
	<p>Push the encoder button and save set value.</p>
	<p>See the parameter flashing on the temperature display.</p>
	<p>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.</p>
	<p>Push the encoder button and save set value.</p>
	<p>Turn the encoder button to the right.</p>
	<p>See that second LED flashes in the time display, again push the encoder button.</p>
	<p>See the parameter flashing on the time display.</p>

	<p>By turning the encoder button set operating time value (01 minute to 99 hours 54 minutes or Hold).</p>
	<p>Push the encoder button and save set value. See 'dLY' in the temperature display.</p>
	<p>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).</p>
	<p>Push the encoder button and save set value.</p>
	<p>Push 'the start button' and start the program.</p>

<p>NOTE:</p>	<p>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.</p>
---------------------	---

NOTE: During the program, the time starts to count up after the instrument has reached to the set temperature.

4.5 COMPLETION OF THE WORK

- See that the program is over (See “End” and “End of the program lamp”).
- Take the samples out. Be careful while handling the samples after the operation as they can be hot.
- Wipe the chamber surface if needed when the chamber is cold enough.
- You may leave the incubator at stand-by position or switch it off.
- Operating records are transferred to the usb port attached a USB memory.

<p>NOTE :</p>	<p>The usb led and the data transfer led on the control panel turn on during transfer of data in memory and the transfer process starts automatically. Do not remove external memory from usb port without the data transfer led turn off and the audible alarm finished.</p>
----------------------	---

<p>NOTE :</p>	<p>Records are transferred to external memory when external memory is connected to the Usb port. For get the records without program ending, Usb memory, hold down the "Mute" button for 3 seconds until "Data Transfer Lamp" lights up, then remove from Usb port.</p>
----------------------	---

ATTENTION !!!

If the unit is in START position in case of the open door, it will keep operating and the heaters will be over-heated. Besides, the heaters and other components may be defected. Please be careful.

The samples may be hot after the operation, please be careful while handling them!!

SECTION 5

PERIODIC MAINTENANCE AND CLEANING

5.1 PERIODIC MAINTENANCE

- The incubator does not require any periodical maintenance which is carried out by the operator.
- Please contact to Nuve agent for an authorised service or maintenance.

5.2 CLEANING

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

SECTION 6

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. Applicable local regulations for disposal have to be carefully observed. The instruments and electronic accessories (without batteries, power packs etc.) must be disposed off 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 off in accordance with applicable local regulations.

SECTION 7

TROUBLESHOOTING

If the incubator does not operate, check the followings,

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

The incubator does not heat, check the followings,

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

7.1 ERROR CODES EXPLANATIONS

Er1

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

Er2

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

Er3

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

Er4

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

EoF

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

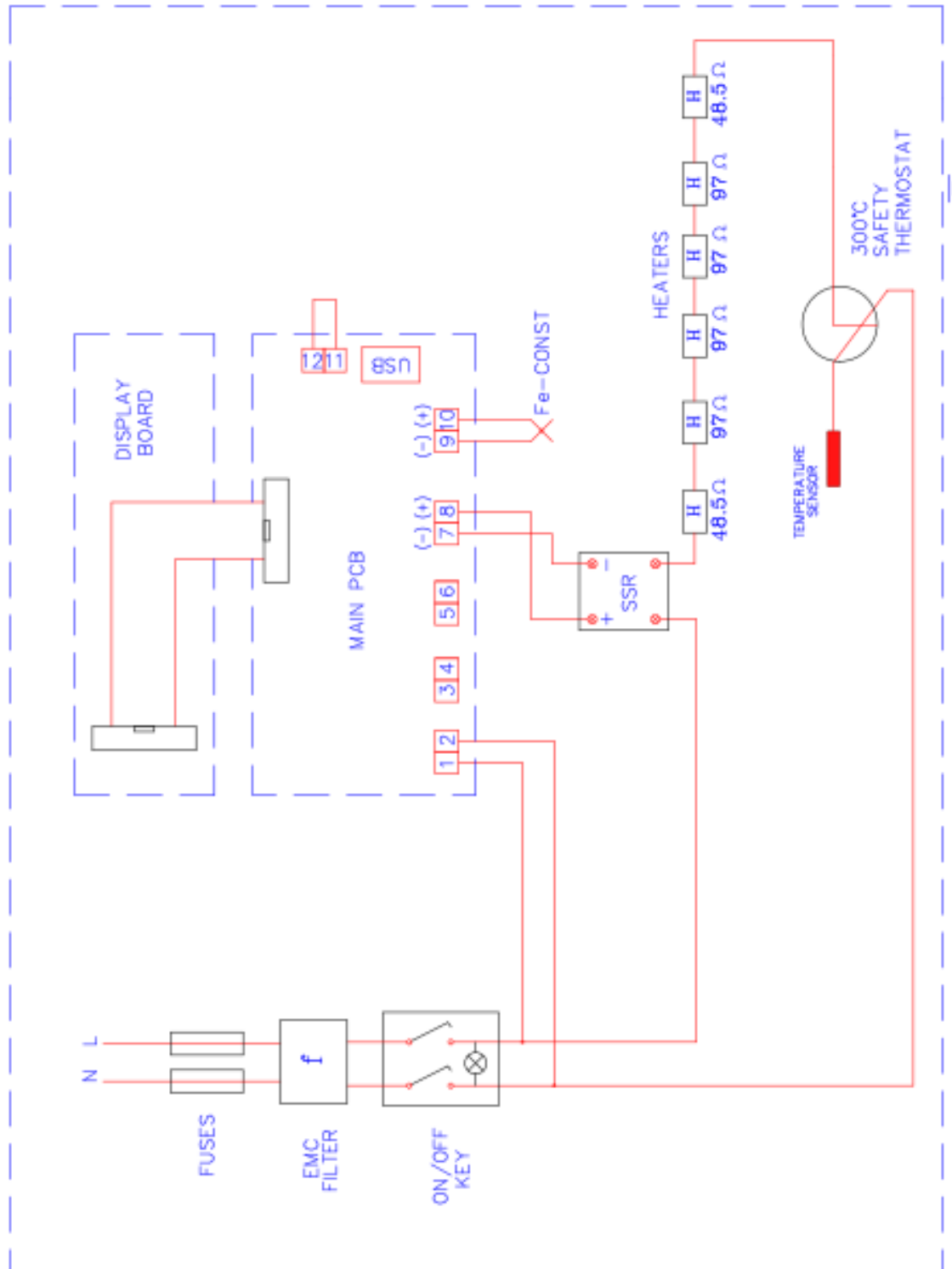
IN CASE OF ANY ERROR, THE PROGRAM IS STOPPED AUTOMATICALLY AND IMMEDIATELY.
--

PLEASE CONTACT TO AN AUTHORIZED NUVE AGENT TO SEEK TECHNICAL HELP IF AN ERROR OCCURS.
--

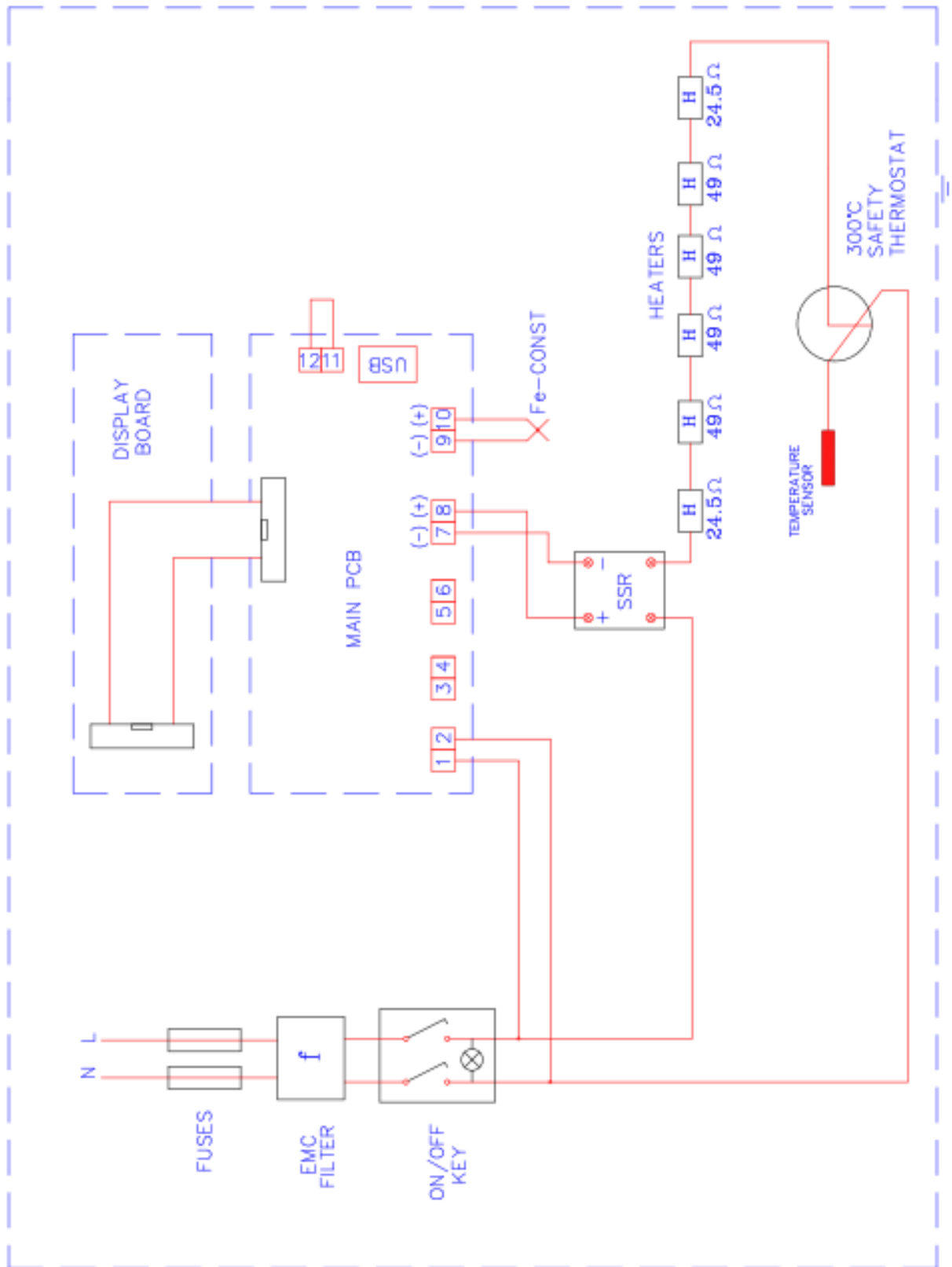
SECTION 8

ELECTRICAL CIRCUIT DIAGRAM

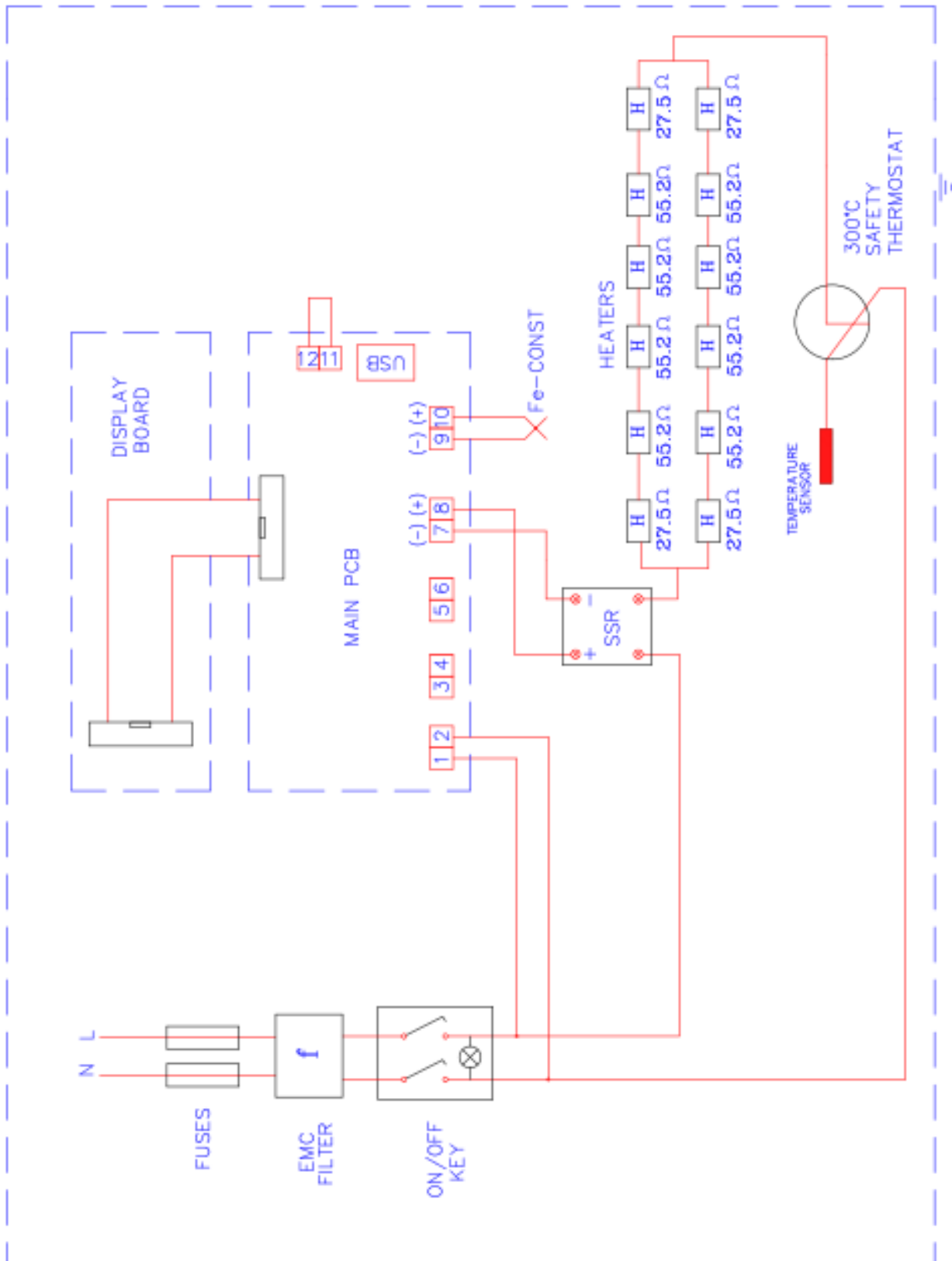
8.1 EN 300 ELECTRICAL CIRCUIT DIAGRAM



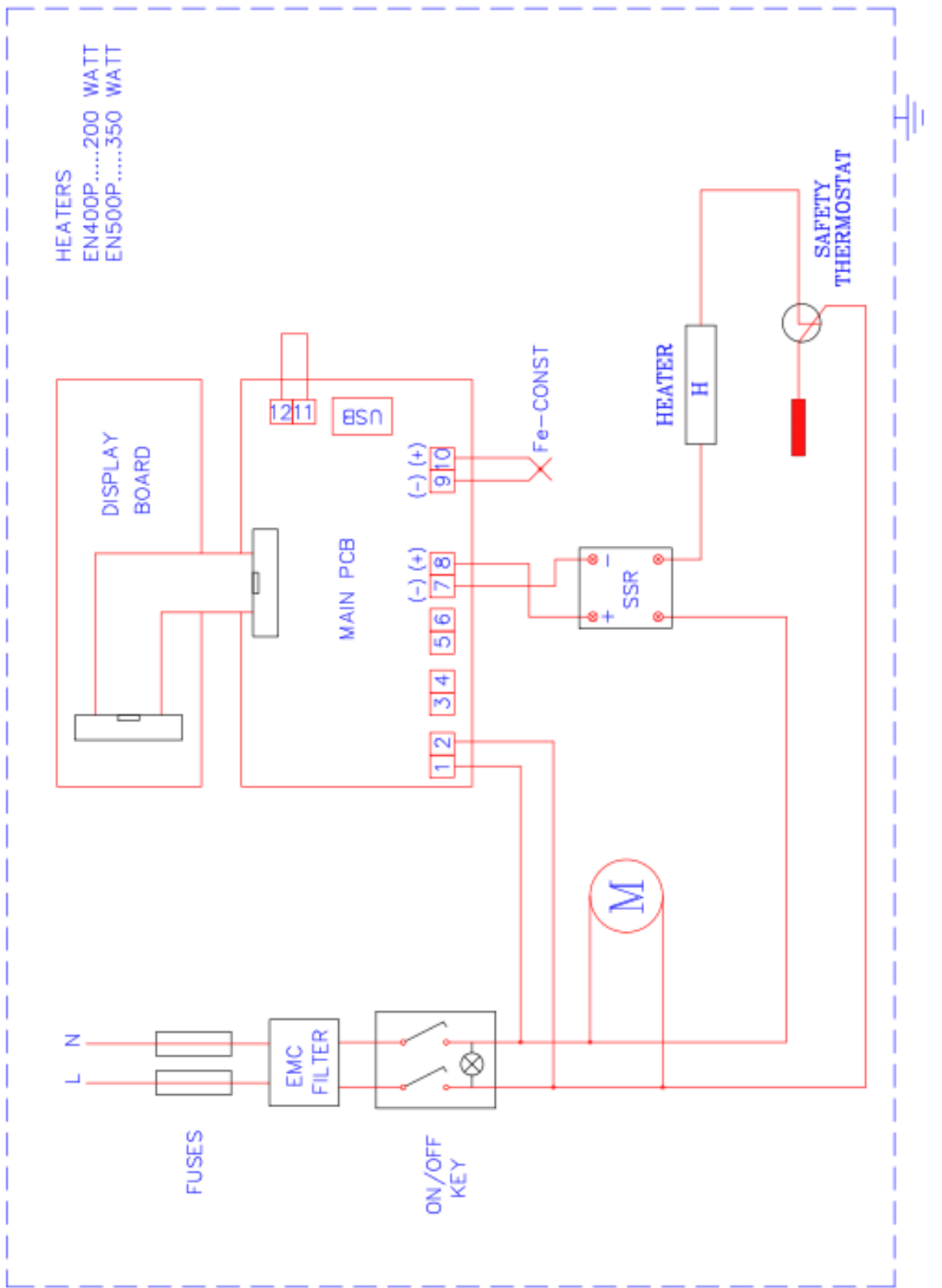
8.2 EN 400 ELECTRICAL CIRCUIT DIAGRAM



8.3 EN 500 ELECTRICAL CIRCUIT DIAGRAM



8.4 EN 400P – 500P ELECTRICAL CIRCUIT DIAGRAM



SECTION 9

WARNING LABEL





GROUNDING PLUG



**EN 300
FUSES (2x1A)**



**EN 400 - EN 400P
FUSES (2x 1,6A)**



**EN 500 - EN 500P
FUSES (2x2A)**

