VDW
Crucial Temperature Solutions

**NÜVE SANAYİ MALZEMELERİ İMALAT VE TİCARET A.Ş.**

# EN 300 - EN 400 - EN 400P
# EN 500 – EN 500P

# INCUBATORS

# USER'S MANUAL

CE

**Z14 K25 231 Rev.No:05 Rev.Date: 01/2016**

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## 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.



**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.**

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# 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.

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

**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 | Programmable Microprocessor | | | | |
| 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 | | | | |
| 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 Hz | | | | |
| 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 |

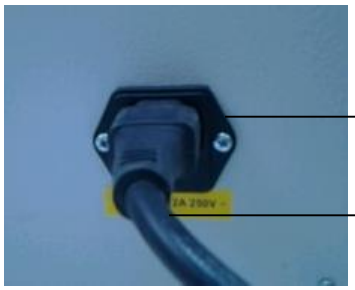
***** Differently from EN 400 and EN 500, inner sides of EN 400P and EN 500P are made of stainless steel and their heaters are circular heaters which provide the homogeneity of the temperature by the circulation fans placed on their centers.

## 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

# 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 ıncubator 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. |

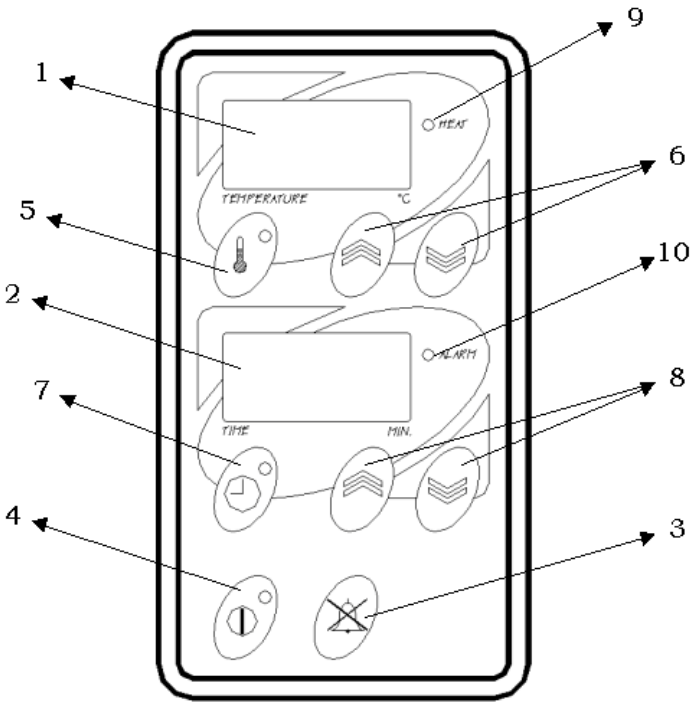
# SECTION 4

# OPERATING PRINCIPLE

## 4.1 SWITCHING ON

- Push On/Off switch.
- See that the microprocessor control system activates.
- Set the values and start the operation.

## 4.2 DISPLAY AND CONTROL PANEL




**01-Temperature Display**

- This display shows the chamber temperature during the operation and the set temperature value during programming. The error codes are also shown on this display.

**02-Time Display**

- This display shows the elapsed time during the operation and the set value during programming.

**03-Alarm Mute Key**

- This key is pushed to interrupt the alarm which goes off when the program ends and if any failure occurs during the operation.

**04-Start / Stop Key**

- This is the key which is pushed to start the program or to stop the running program.

**05-Temperature Set Key**

- This key is pushed to set the temperature.

**06-Temperature Value Increase/Decrease Keys**

- These keys are pushed to increase or decrease the values on the temperature display.

**07-Time Set Key**

- This key is pushed to set the time. (01 minute - 100 hours and Hold position)

**08-Time Value Increase/Decrease Keys**

- These keys are pushed to increase or decrease the values on the time display.

**09-Heat LED**

- This LED flashes during the heating process.

**10-Alarm LED**

- It lights up when the program ends and if any failure occurs during the operation.

## 4.3 PROGRAMMING SUMMARY

| | |
|---|---|
|  | Push the temperature setting button. |
|  | Set the temperature by pushing the “value increase/decrease” keys on the temperature adjustment side. |
|  | Push the “temperature set” key again to save the temperature value. |
|  | Push the “time set” key. |
|  | See “t ın” on the temperature display. Set the time value by pushing the “value increase/decrease” keys on the time adjustment side (01 minute to 99 hours 54 minutes or Hold) |
|  | Push the “time set” key again. |
|  | See “dly” on the temperature display. Set the delay time, after which the program starts, by pushing the “value increase/decrease” keys on the time adjustment side (01 minute to 99 hours 54 minutes) |
|  | Push the “time set” key again to save the settings. |
|  | Push the “start/stop” key to start the program. |

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

### 4.4 COMPLETION OF THE WORK

- See that the program is over.
- Take the samples out. Be careful while handling the samples after the operation as they can be hot.
- Wipe the chamber surface if needed when the chamber is cold enough.
- You may leave the incubator at stand-by position or switch it off.

**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 CONSEPT

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 dismounted 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 ERRORS RECOGNISED BY THE MICROPROCESSOR CONTROL SYSTEM

**OFL:**

- The chamber temperature exceeds 85°C.
- The temperature sensor (Fe-Const) endings are broken.

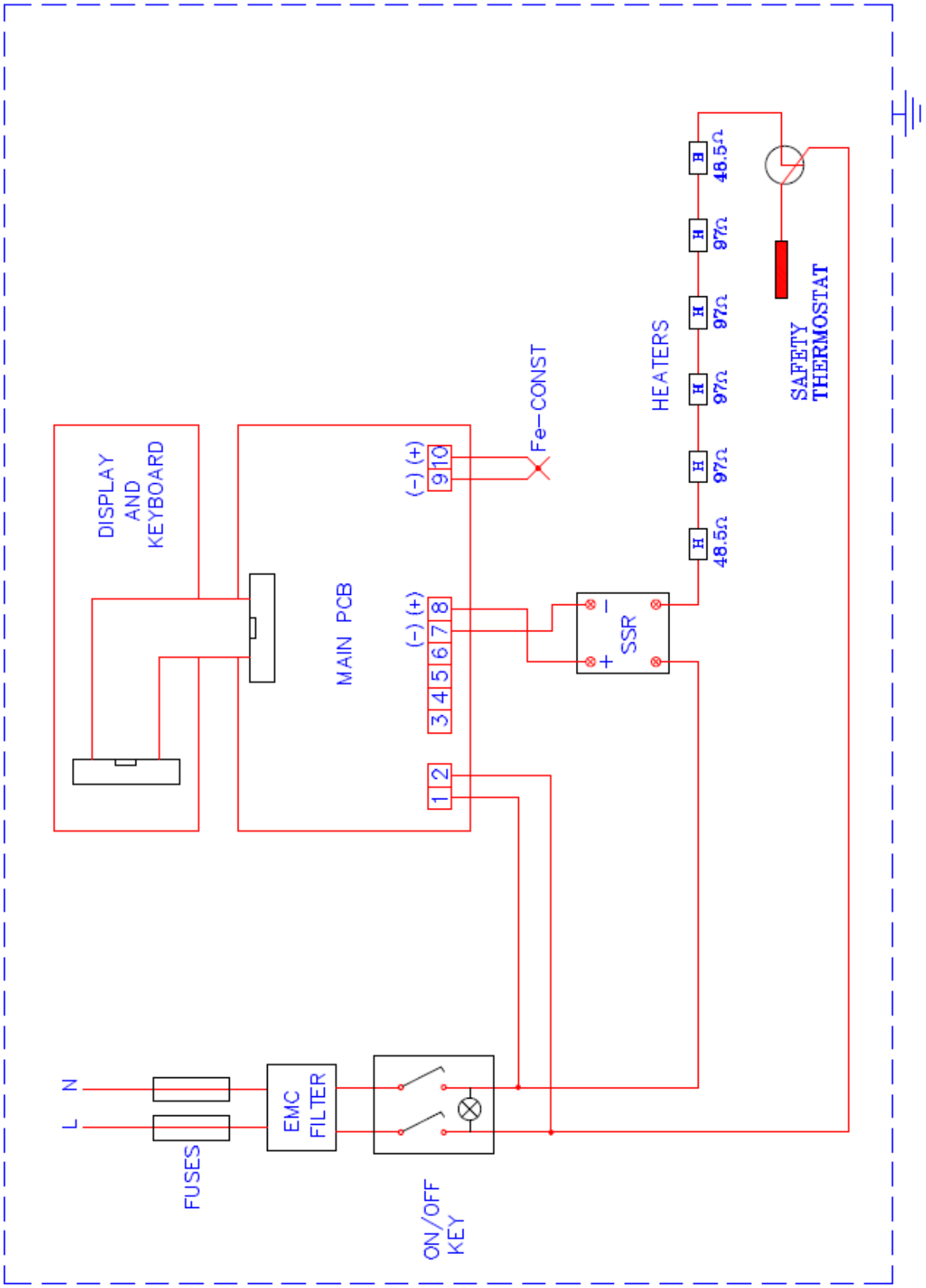
**IN CASE OF ANY ERROR, THE PROGRAM İS STOPPED AUTOMATİCALLY AND İMMEDİATELY.**

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

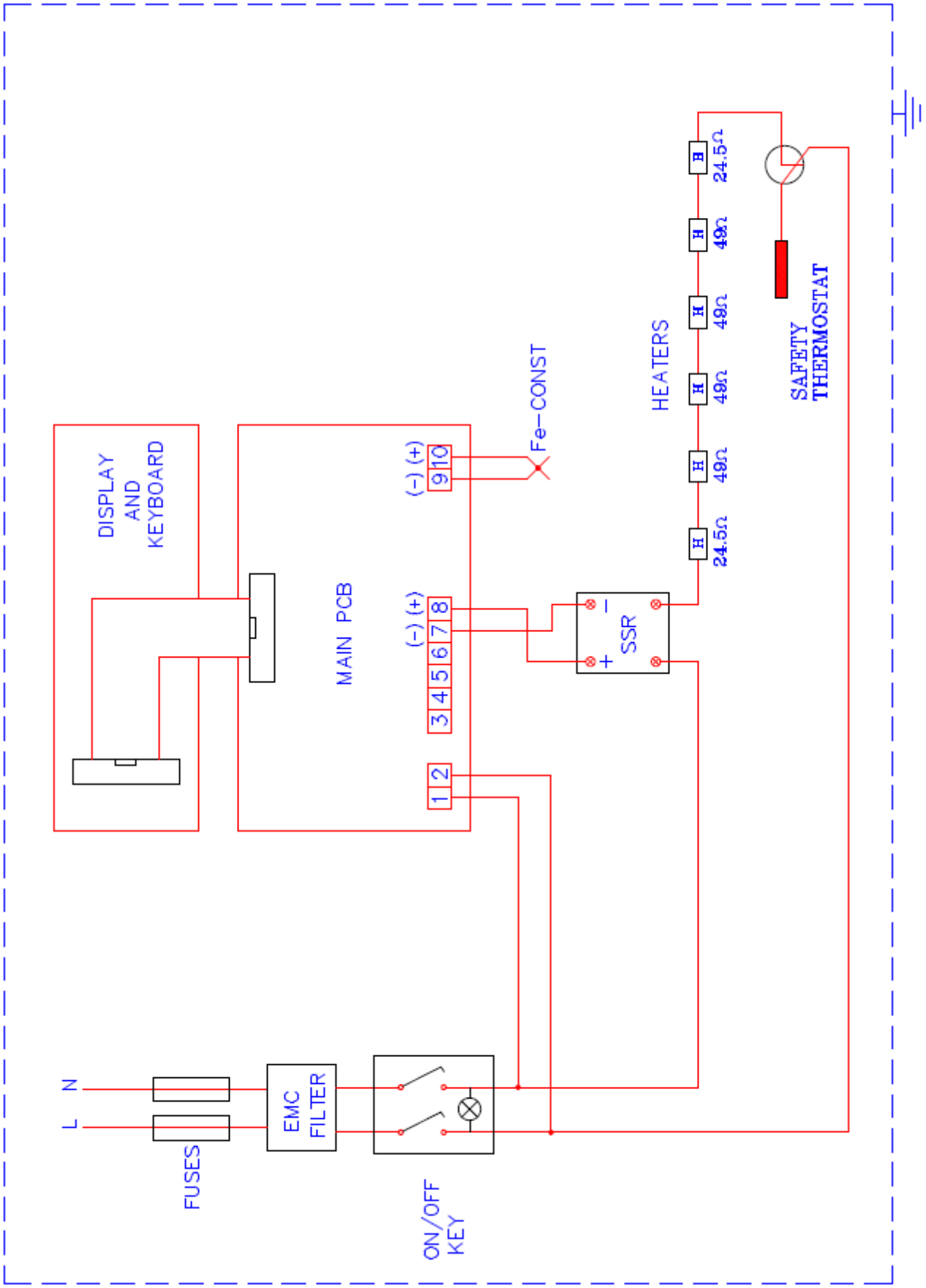
# SECTION 8

# ELECTRICAL CIRCUIT DIAGRAM

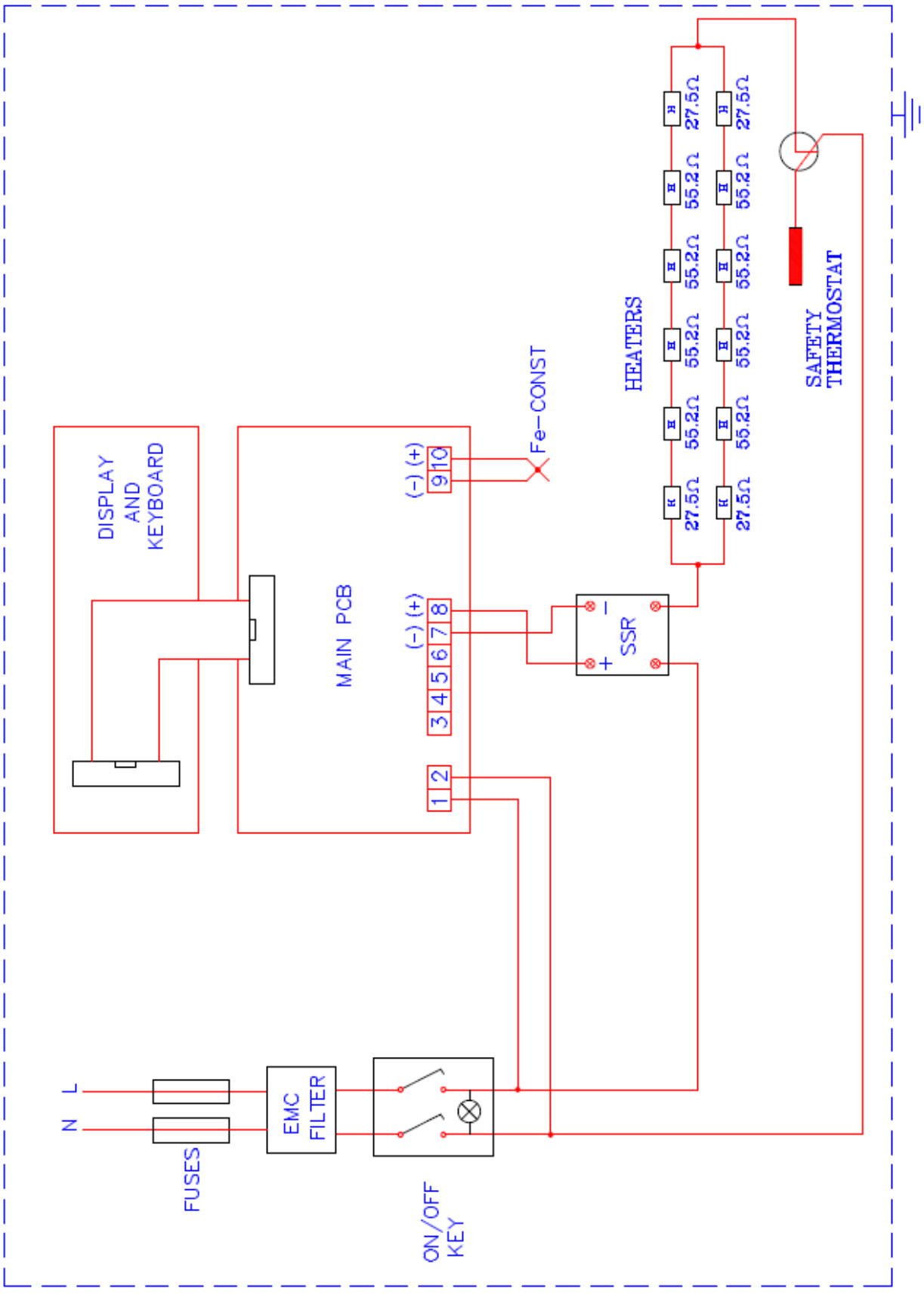
## 8.1 EN 300 ELECTRICAL CIRCUIT DIAGRAM



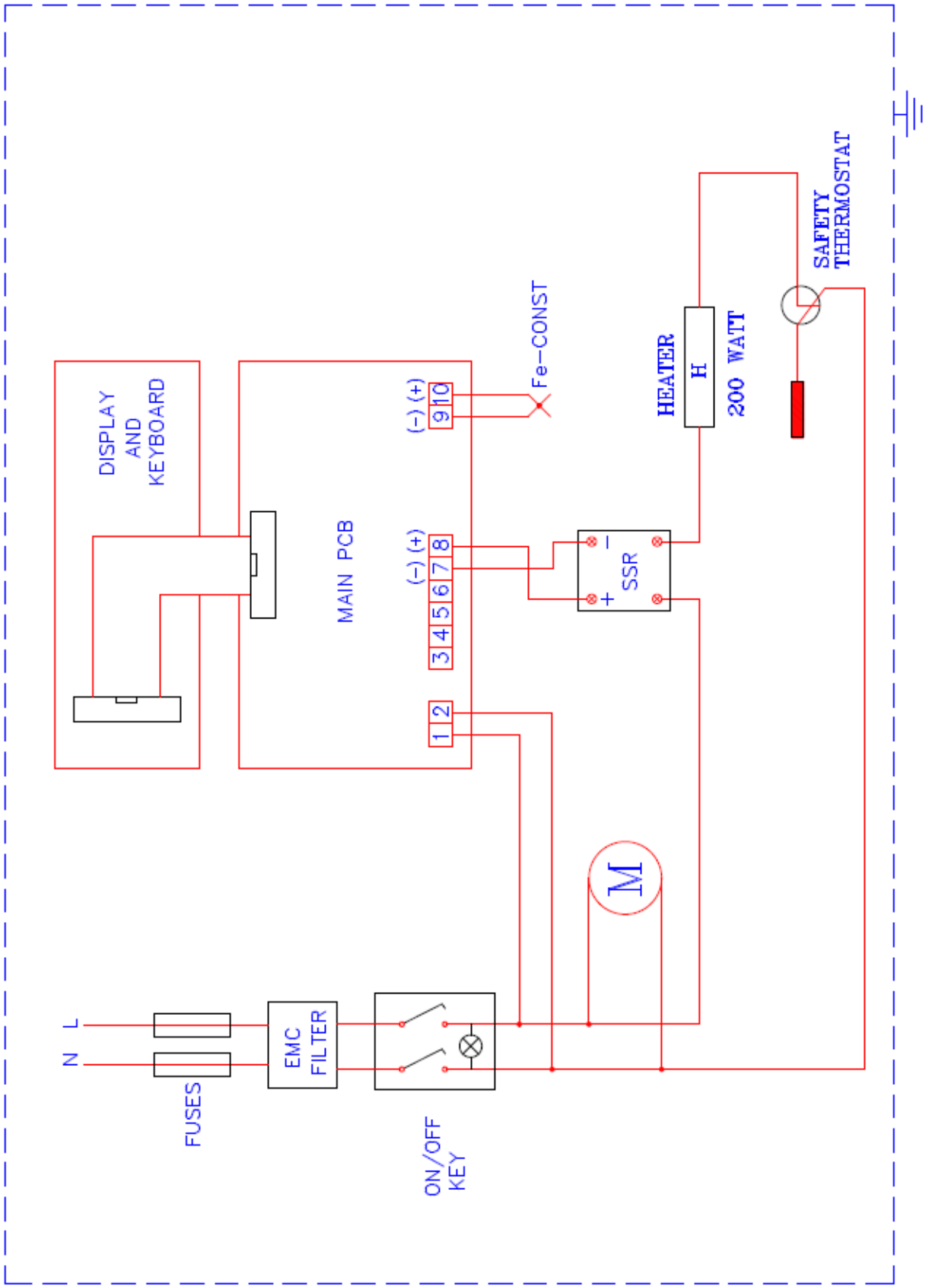
## 8.2 EN 400 ELECTRICAL CIRCUIT DIAGRAM



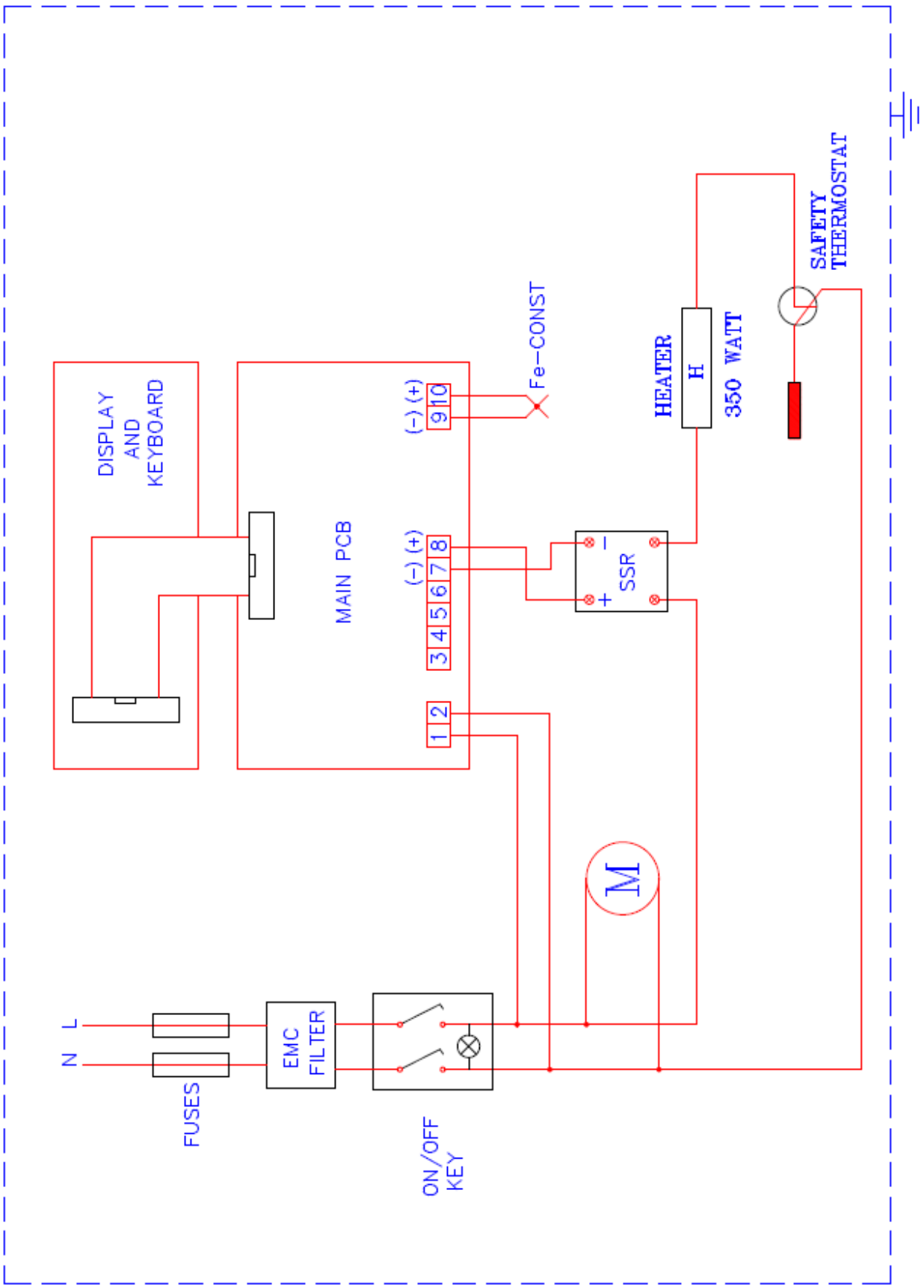
## 8.3 EN 500 ELECTRICAL CIRCUIT DIAGRAM



## 8.4 EN 400P ELECTRICAL CIRCUIT DIAGRAM



## 8.5 EN 500P ELECTRICAL CIRCUIT DIAGRAM



# SECTION 9

# WARNING LABEL




**GROUNDED PLUG**


**EN 300**
**FUSES (2x1A)**


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


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