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Note: The document would be subject to modification without further notice.

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Without our written consent, any portion of the document shall not be copied, duplicated or translated into other language.

*Thank you for your use of our product. Before use of the instrument, please carefully read the instruction. In case of unclear issue, please immediately contact us. We shall provide you our services. Thank you for your cooperation.*

**Document Number : BYQ65110000000ESM**  
**Document Version: April 2010, Version 1.0**

## Important notes

### 1. Usual practice

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**Note:** The important information contained herein shall be carefully read. Failure to follow the instruction would result in damage or abnormal run of equipment.

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**Warning!** The warning information shall be carefully observed in every operation step or method. Failure to correctly observe the instruction would result in damage of equipment or personal injury.

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### 2. Safety

At any time of operation, maintenance or repair of this instrument, the following basic safe guidelines shall be followed. Failure to follow these guidelines or warning herein would impact on the protection provided to the instrument and the safety criteria for design and manufacturing and the predicted application range of the instrument would be impaired.

*We shall bear no liability for any consequence resulted from user's failure to meet the following requirements.*

#### a) Earth of instrument

In order to avoid electric shock accident, the input power wires of instrument shall be surely earthed. This instrument uses 3-pin earth plug and this plug is provided with a third (earth) pin and is merely used together with earth type power socket. It is a safe unit and is also absolutely necessary for the normal work of instrument. If the plug is impossible to be inserted into socket, please ask electrician to fix a correct socket and not make the earth plug lose safety protection function.

*The earth of the supply source to the ground shall be well.*

#### b) Apart from live circuit

Any operator shall not arbitrarily open instrument to replace element or make inner adjustment, which shall be made only by qualified maintenance personnel. Any element shall not be replaced under the "power on" state.

#### c) Supply source

Before connection of AC power supply, one shall make sure that the voltage power supply is consistent with the voltage required for the instrument and the rated load of power socket is not below the load required by the instrument. In order to ensure safety, the phases of power socket of instrument shall be consistent with phases of its power wire plug (i.e. L: phase wire, N: zero wire, and E: earth wire)

#### d) Power wire

Generally, this instrument uses the accompanied power wire. Damaged power wire, if any, shall be replaced with one of the same type and specification and repair shall not be allowed. During operation of this instrument, the power wire shall neither be pressed nor fixed in easy-accessible location.

#### e) Insertion and withdrawal of power wire

At insertion and withdrawal of power wire, its plug shall be held with hands. The plug shall be fully

inserted into the socket and at withdrawal of plug the power wire shall not heavily pulled.

#### f) Fire protection

In order to avoid accident, any other mixed solutions of low flash point shall not be used. The instrument shall be apart from hot gas, furnace and other heat and fire sources. No inflammable or explosive shall be placed around the instrument.

#### g) Placement of instrument

This instrument shall be placed in low RH, low dusty, and well-ventilated room free of corrosive gas or strong magnetic field interference and shall not be fixed in wet or dusty place.

The holes on this instrument are for ventilation and prevention from over-heat and shall not be blocked or covered. In case of operation of a single instrument, the distance between its surrounding ventilation hole and the nearest object shall not be below 300mm. Excessively high temperature would impair instrument performances or result in troubles. This instrument shall not be used in place subjected to sunshine or strong light radiation.

For instrument the normal working environment is room temperature 10~30°C and RH<70%.

Before stopping work, the power supply shall be turned off. In case of prolonged shutdown of this instrument, the power plug shall be withdrawn and the instrument shall be covered with soft cloth to avoid dust.

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**Note:** In any of the following cases, one should withdraw the power plug of instrument from the power socket, contact the supplier or ask maintenance personnel for treatment:

- The instrument is splashed with liquid.
  - The instrument is rained or watered.
  - The instrument works abnormally, especially generates abnormal sound or odor.
  - The instrument is dropped or its casing is damaged.
  - The instrument functions abnormally.
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**Warning!** Not all the safety issues on use of our product are completely described herein. Before use of this instrument, the user shall work out corresponding safety and health measures and determine their applicable scope.

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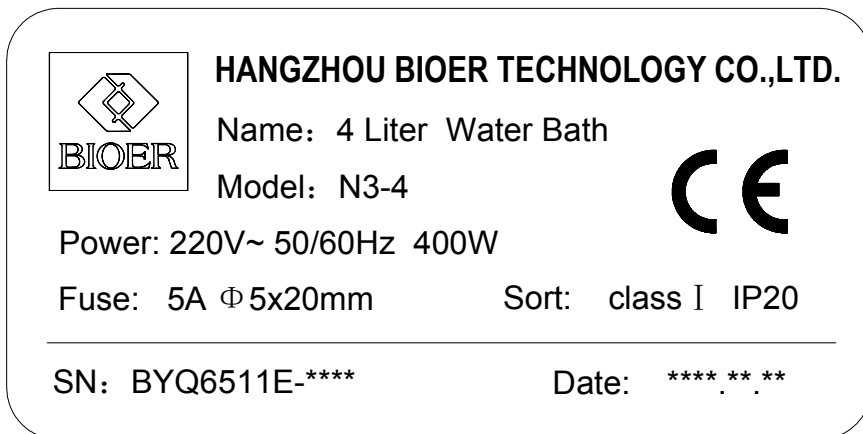
### 3. Other notes

- a) Before turning on the power switch, check the control system and water bath for correct and sure connection wires. Correctly insert connection wires without heavy insertion.
- b) In case of troubles during operation, eliminate them after immediate shutdown, and re-start the machine to make test. Under "On" state, even after elimination of troubles, the instrument shall be stopped before restarting.
- c) The temperature of the instrument shall be calibrated once every year and after replacement of temperature sensor, the temperature shall be re-calibrated
- d) When filling liquid into bath cares, it shall be avoided splashing liquid taken into electrical chamber. The medium level in the bath shall be at least 2cm from the bath cover to avoid splashing liquid outside the bath.
- e) The medium level in the bath shall not be too low; otherwise the displayed temperature would be greatly different from the actual one.
- f) In case of temperature inside the instrument bath over 50°C, not touch the surface of bath frame or bath cover to avoid burning.
- g) When the temperature exceeds the boiling point of water, the liquid medium should be replaced with a higher boiling point of the medium. According to the different altitude or different media.

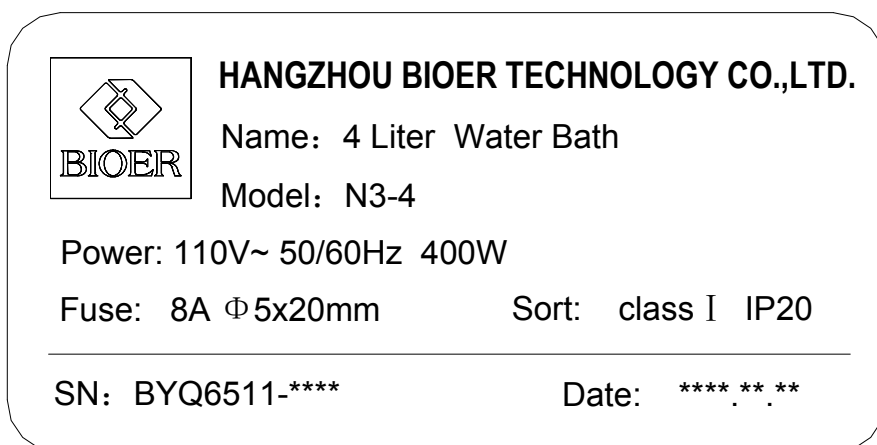
## 4. LABELS

### a) Tablet

Label for BYQ6511E:



Labels for BYQ6511U:



MET standard label (for BYQ6511U)



### b) Warning Sign



**Warning:** Please make sure to add water in the water bath before power on. Although the unit has the over-heating protection, the dry heating will make a damage to the instrument and reduce the life time!

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**Warning!** There are two warning signs read 'HOT SURFACE !'. The metal part near those signs (on the block and hot lid) is not allowed to be touched by any part of the body for fear of the body burn, during the program execution and in the short period after the program execution!

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## 5. Warranty and After-sales services

For our supplied instruments we conduct after-sale services as follows:

a) Contents of warranty:

- In case of trouble resulted from defects in material or workmanship occurring in 1 month from the delivery day, we shall replace the instrument.
- We shall provide the entire instrument twelve (12) months of warranty period from the company to be free from defects in material and workmanship. Bioer Co's obligation under this warranty shall be limited to repair or exchange (at Bioer Co.'s option) of the water bath, which proves to be defective as described herein.
- The buyer is responsible for freight to the maintenance shop designated by Bioer Co. on all warranty claims. The buyer is also responsible for the transportation expenses of the freight to the maintenance shop. Bioer Co. shall be responsible for the transportation expenses of the freight to the buyer (which is only applicable to domestic buyers).
- After the warranty comes due, Bioer Co. reserves the right to charge cost price for maintenance of a defective device.

b) Range of warranty:

The above warranty is not applicable to defective devices with incorrect use, abnormal operating conditions, improper application, and unauthorized maintenance or alteration.

*The Bioer Co. makes no express warranties other than those which are described herein. Any descriptions in sales promotion under specific conditions shall not create an express warranty that the goods shall conform to such description.*

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**Note:** Once it is opened, the package should check according to the checklist. If the buyer finds any items to be missing or damaged, do not hesitate to contact the distributor.  
After the acceptance check is passed, the buyer should fill out the check form and send its photocopy (or fax it) to the distributor. The Bioer Co. establishes the archives and maintenance record with the returned form.  
Please store the package and packing materials in a safe place in case of future device maintenance. The above warranty does not extend to goods damaged as result of cheesy package.

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## Contents

1. Applications and features of product.....	1
2. Normal working conditions .....	1
3. Transportation and storage conditions.....	1
4. Basic parameters.....	1
5. Operation instruction .....	1
<b>5.1. Structural schematic diagram.....</b>	<b>1</b>
<b>5.2. Preparations.....</b>	<b>2</b>
<b>5.3. Start.....</b>	<b>2</b>
<b>5.4. Operation.....</b>	<b>2</b>
<b>5.5. Setting of working temperature.....</b>	<b>3</b>
<b>5.6. Correction of temperature.....</b>	<b>3</b>
<b>5.7. Protection.....</b>	<b>3</b>
<b>5.8. Alarm .....</b>	<b>3</b>
<b>5.9 Accessories of water bath .....</b>	<b>3</b>
<b>Attached diagram: Wiring diagram .....</b>	<b>5</b>

## 1. Applications and features of product

This product is a micro-computer controlled thermostatic water bath, is characterized by low noise, clear display interface, easy operation and high safety and reliability, and has the functions of LED display, temperature calibration, alarm and dry-burning protection and is widely used in petroleum, chemical medicine, biochemical, light industry, scientific research, etc.

## 2. Normal working conditions

Ambient temperature: 10°C~30°C

RH: ≤70%

Air pressure: 75 kPa to 106 kPa

Power supply: 220-240V~ 50/60Hz 400W for BYQ6511E

And 100-120V~ 60 Hz 400W for BYQ6511U

Fluid volume increases: around 20mm from Inner upper surface of the liquid

## 3. Transportation and storage conditions

Ambient temperature : -20°C~+55°C

RH: ≤80%

## 4. Basic parameters

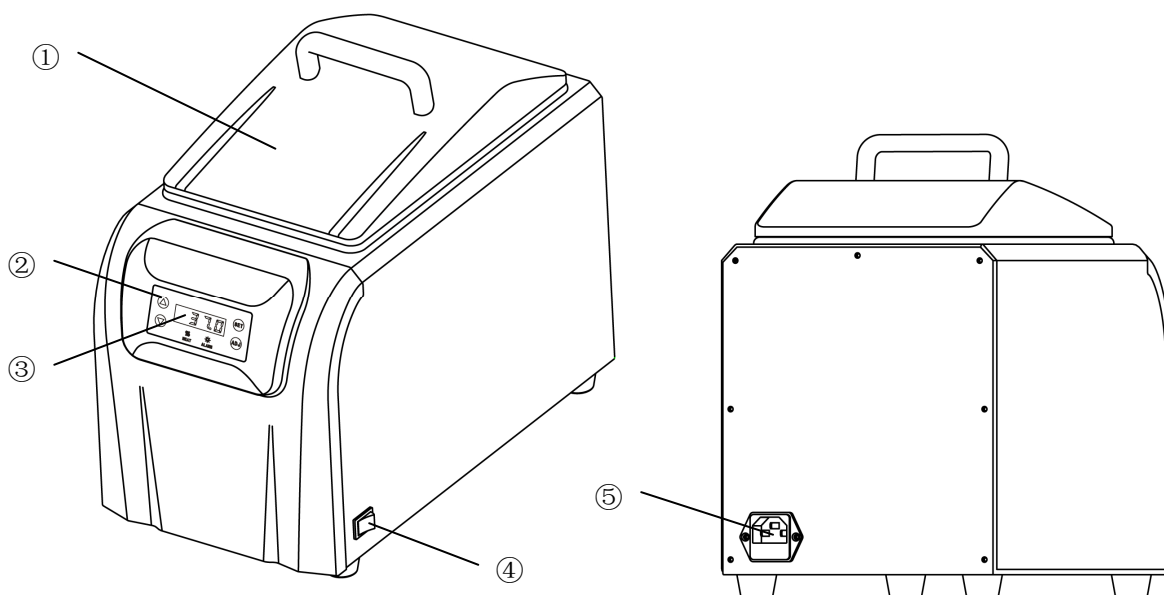
Parameter \ Model	BYQ6511E	BYQ6511U
Capacity	4L	
Range of temperature control	room temperature +5~99.9°C	
Temperature control accuracy	±0.2°C(37°C)	
Temperature uniformity	±0.2°C(37°C)	
Input power supply	220-240V~ 50/60Hz	100-120V~ 60 Hz
Input power	400 W	
Dimensions of inner bath (L×W×H)	238×135×146 (mm)	
Fuse	AC250V 5A ( 5×20)	AC125V 8A(Φ5×20)
Outside dimensions (L×W×H)	379.8×211.2×249.7(mm)	
Net weight	6.5kg	

## 5. Operation instruction

### 5.1. Structural schematic diagram

The structural portion of the instrument includes water bath, operation panel, LED display screen, cover(Accessories Optional), casing, power switch, power socket, heating element, temperature

control component, and over-heat protection component.



Note: ① cover (Accessories Optional) ② operation panel ③ LED display screen  
④ power switch ⑤ powersocket, fuse holder

## 5.2. Preparations

Connection of power wire: The instrument-accompanied power wire shall be used and the instrument power switch shall be at "Off" state. After connection, the connection between the power wires with instrument socket shall be checked for being too loose, and in case of too loose connection, replacement shall be made.

Filling liquid to water bath: Before being heated, the water bath shall be filled with a given amount of liquid.

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**Warning!** Before starting, the instrument shall be filled with a given amount of water. In spite of over-heat protection function, dry-burning would still damage the instrument and decrease its service life.

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## 5.3. Start

After turning on instrument power switch, the system conducts self-inspection. In case of unqualified self-inspection, it will enter alarm interface and in case of qualified self-inspection it will enter working state. The parameters of instrument may be set from the operation interface.

## 5.4. Operation

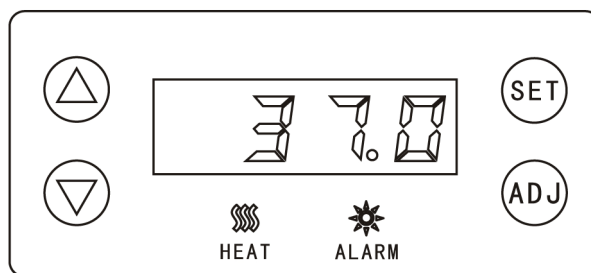
During operation process of instrument, if it under heating state, the green indication lamp on HEAT will light on and in case of stopping heating, the said indication lamp will light off and the instrument is under constant-temperature state.

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**Note:** During heating process of instrument, the body shall not be contacted with it to avoid burning.

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### 5.5. Setting of working temperature

From operation interface, LED display screen will at utmost 4-digit temperature value (3 integral and one decimal) with a display precision 0.1°C. Setting range of 00.0 to 99.9.

After pressing SET key and selecting the position corresponding to the digit, the selected digit will flash. Through pressing up/down key, the value for the position is selected. After 8 seconds from completion of selection and stopping of operation, the digit will stop flashing, and the system will default the current setting value and will operate in accordance with the value.

### 5.6. Correction of temperature

Pressing ADJ key from operation interface, it would be entered the working temperature calibration state. The setting of temperature is the same to that for working temperature. After 8 seconds from completion of setting and stopping of operation, the digit will stop flashing and the system will store the calibrated value.

### 5.7. Protection

#### a) Dry-burning protection

The inner tube is fixed with dry-burning protector. In case of dry burning under no liquid and When the temperature reaches  $110 \pm 5^\circ\text{C}$ , the heating tube will stop heating.

#### b) Over-current protection

The power socket of the instrument is built with a current fuse and in case of over-current the said fuse will be burnt out and the instrument will stop working. Only after elimination of the troubles and replacement of fuse, may the instrument be restarted.

### 5.8. Alarm

In case of trouble alarm in instrument, the red indication lamp at the ALARM position will light on and the instrument will stop running and send out alarm sound. After elimination of troubles the red indication lamp will light off, alarm sound will stop and the instrument will normally run again.

#### a) Alarm of open-circuit of temperature sensor

In case of open-circuit of temperature sensor (PT100), the red indication lamp will light on and the system will send audio and video alarm and stop heating.

#### b) Alarm of short-circuit of temperature sensor

In case of short-circuit of temperature sensor (PT100), the red indication lamp will light on and the system will send audio and video alarm and stop heating.

### 5.9 Accessories of water bath

#### 5.9.1 “A” -shaped cover (Gabled Lid)

“A”-shaping will make the distilled water during heating drop at both ends; otherwise it will drop to containers in the water bath to contaminate reagent. The intermediate hole is for inserting thermometer to correct the temperature. Size: 265×162×75 (L×W×H) .



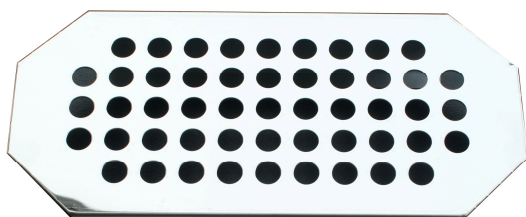
**5.9.2 Metal sheet cover**

It is made of drawn stainless steel and two 500ml or two 250ml flasks may be simultaneously used. When 250ml flask is used, ring-shaped cover may be placed. Size: 265×162×75 (L×W×H) .



**5.9.3 Flask tray**

It is made of drawn stainless steel. When flasks are immersed in water bath, the openings of the tray will make flasks heated evenly. Size: 210×100×30 (L×W×H) .



**5.9.4 Test Tube stand**

**Test Tube stand for 41 x 18 mm**

**Test Tube stand for 41 x 15 mm**

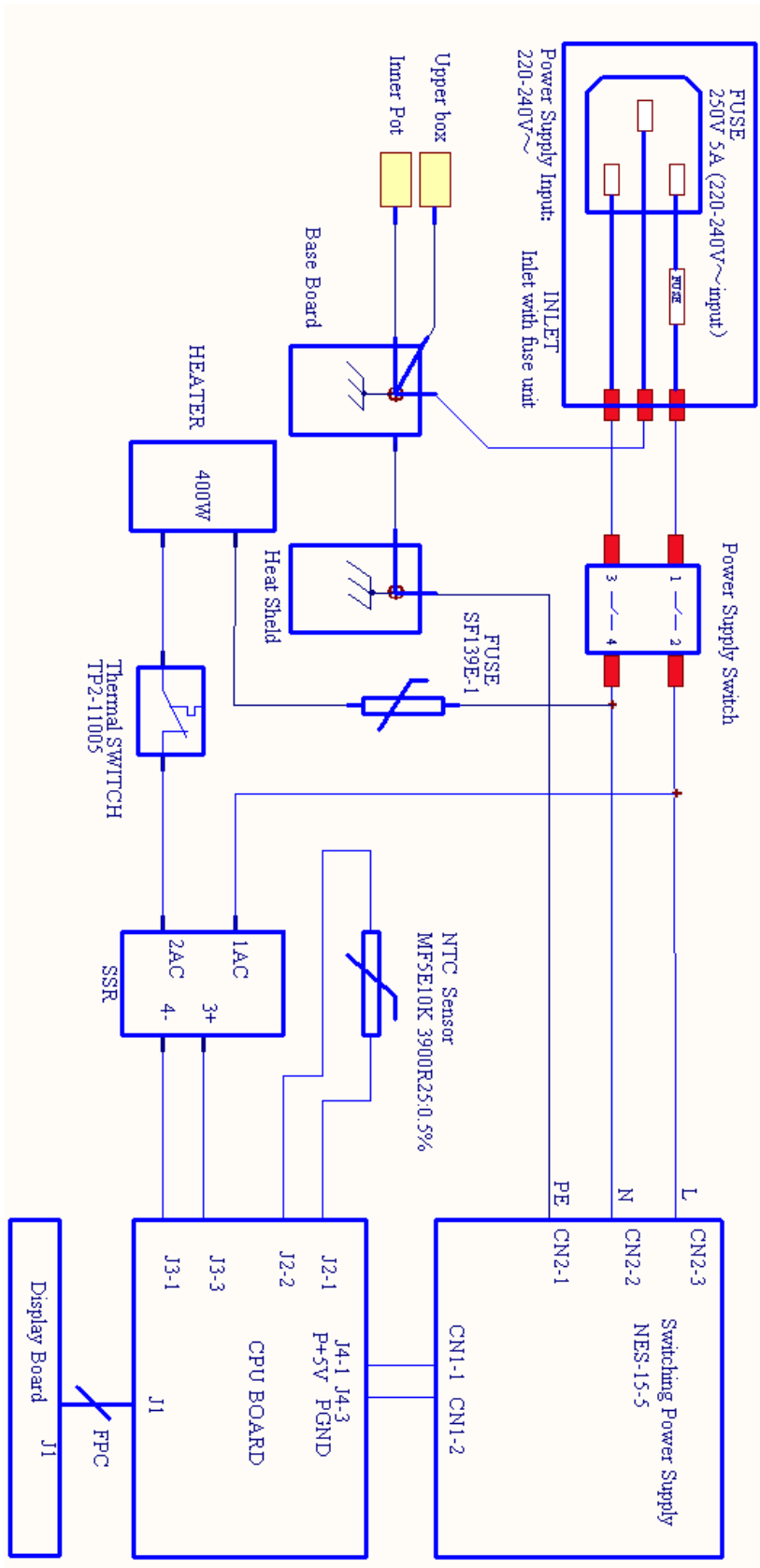
It is divided into 41×15 and 41×18 and the openings on bottom plate of test tube stand will make test tubes heated evenly.

Size: 206×203×118 (L×W×H) (test tube stand- 18, Size: 206×203×118)

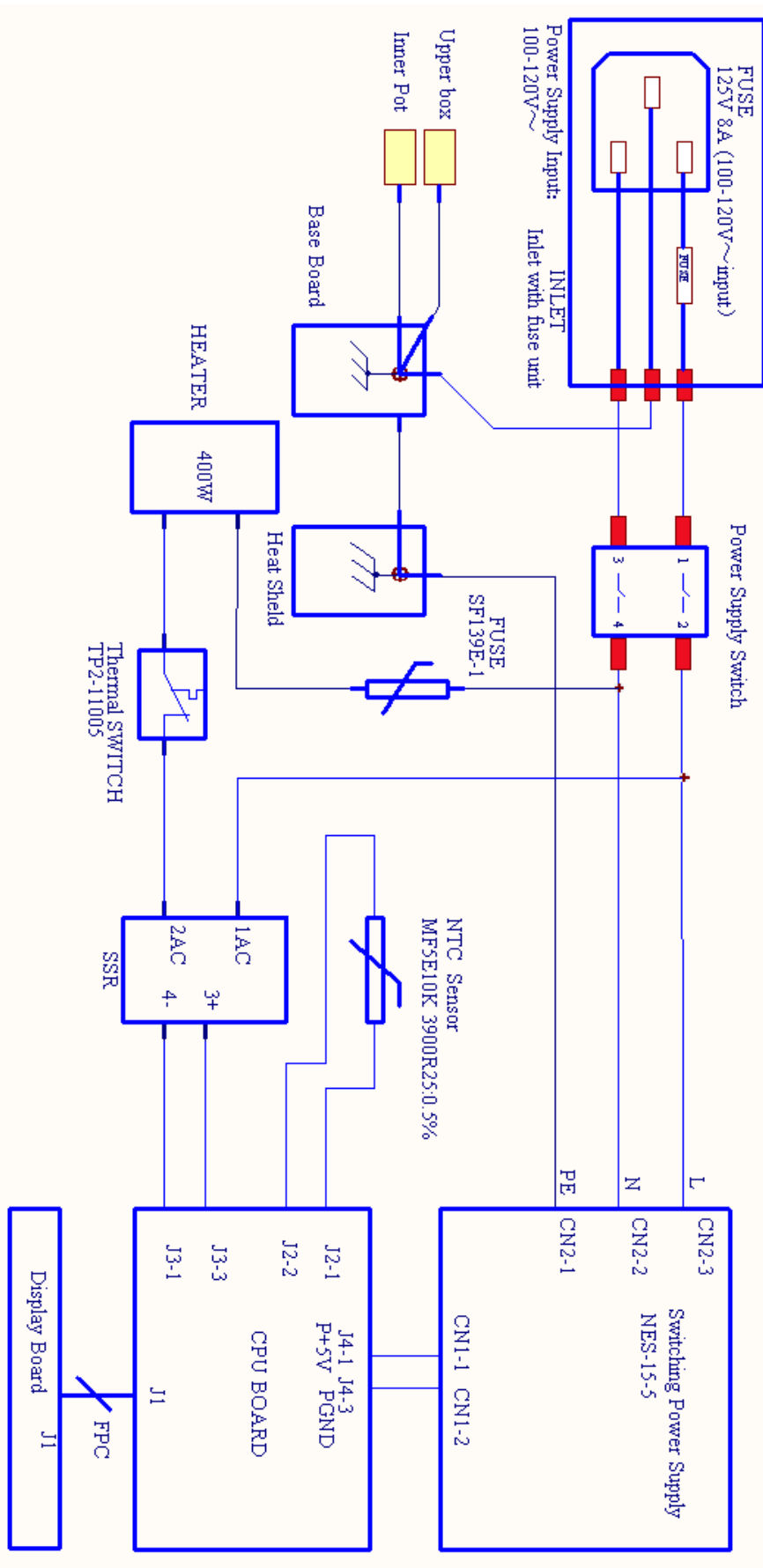


**Attached diagram: Wiring diagram**

For 220V



For 110V



**Note:**

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