



**TEC 2800** Version: (AMOSTEC2800ECOP20150318)

## **Embedding Center(LCD)**

### Operation Manual

AMOS SCIENTIFIC PTY.LTD. ABN37 159 778 140

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# Foreword

Thank you for purchasing our TEC2800 Embedding Dispensing Console. Presented in this 《 Operation Manual 》 are the functions and operation method of the Embedding Center and the matters needing attention concerning safety. Please carefully read this manual before use so that you can understand its performance better and make full use of the functions. If you have any questions, contact us and we will provide satisfactory service for you at any time.

Please keep this Operation Manual appropriately for later consultation.

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# 1、 Safety Notes

## 1.1 Safety Matters

Please read these explicit rules. Act in violation of them can affect normal operation of the equipment, cause damage to the equipment or result in danger.



- Use 220VAC±10% at50HZ or 110VAC±10% at60HZ



- The input power supply must have good earthing



- The equipment should be installed far away from flammable and explosive objects



- Don' t open the equipment without authorization to prevent high voltage shock



- Only professional maintenance worker are allowed to repair this product



- Use fuses with correct capacity



- Ensure that power socket and circuit are able to bear at least two times of its rated current.

- The equipment should be installed far away from any interference source

◆ **Electrical Protection Ratings: I class, B type**

◆ **Baleful liquid Leak-in proof degree: Normal (enclosed equipment without liquid leak-in proof)**

◆ **Working system: Continuous running**

## 1.2 Installation environment

- More than 20cm of space around the equipment for heat dissipation.

- Free of water-drop ,steam, dust(including oily dust and flying dust)

- Free of corrosive, flammable and explosive gas and liquid

- Firm and without vibration

- Free of electromagnetic interference

- Ambient temperature and relative humidity at 5°C—+40°C and less than 90%, respectively

## 1.3 Delivery inspection

Although the product has already been inspected before leaving the factory, the following inspection is necessary at delivery because may be damaged and accessories get missing caused by careless handling during transportation.

- Open the packing boxes and check the contents to make sure that there exist the product, operation manual, certificate, packing list and accessories.
- Check the nameplate to make sure that the product is the one you ordered.
- Make sure that the product and accessories do not get damaged or missing during transportation.

# 2、 Characteristics & Scope of Application

## 2.1 Scope of Application

TEC2800 Embedding Center performs embedding of animal, plant and human body tissue which has been processed and paraffin treated, for later microtome section histology diagnosis and research, so that it is suitable to be used in medical institutions for tissue embedding before pathological analysis.

## 2.2 Characteristics

- It used for AC110V/220V, six route heating and Temperature control system.
- Electromagnetic valve controls paraffin flow via finger touch pad or foot pedal operation.
- Peltier cold spot is designed.

# 3、 Safety Regulations

European Union Committee In Vitro Diagnostic Medical Devices Directive IVDD (98/79/EC)

## 4、 Overview- Instrument Components

- 1) Forceps holder
- 2) Embed table
- 3) Left tray
- 4) Right tray
- 5) Switch of flow out
- 6) Paraffin tank
- 7) Display panel
- 8) Flow Regulating knob
- 9) Peltier Cold Spot
- 10) Switch of cold spot
- 11) Power supply
- 12) Left Paraffin Drawer
- 13) Right Paraffin Drawer

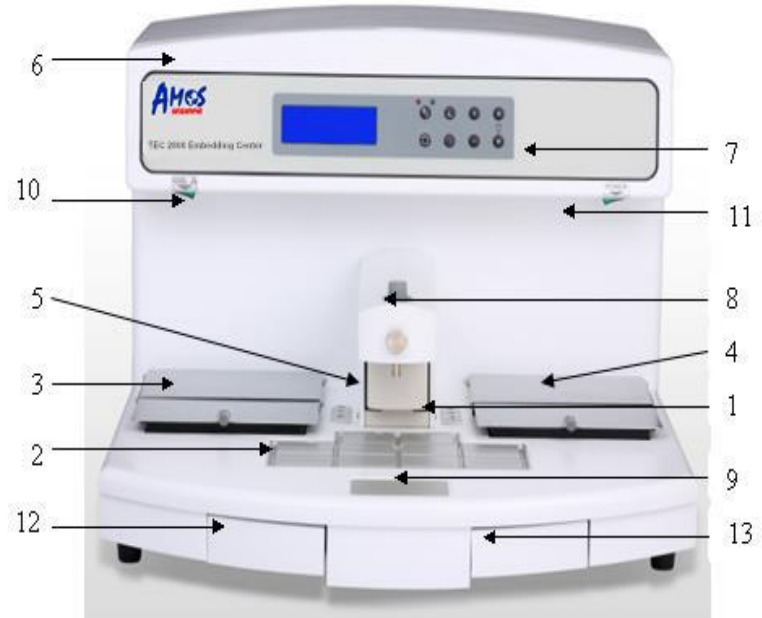


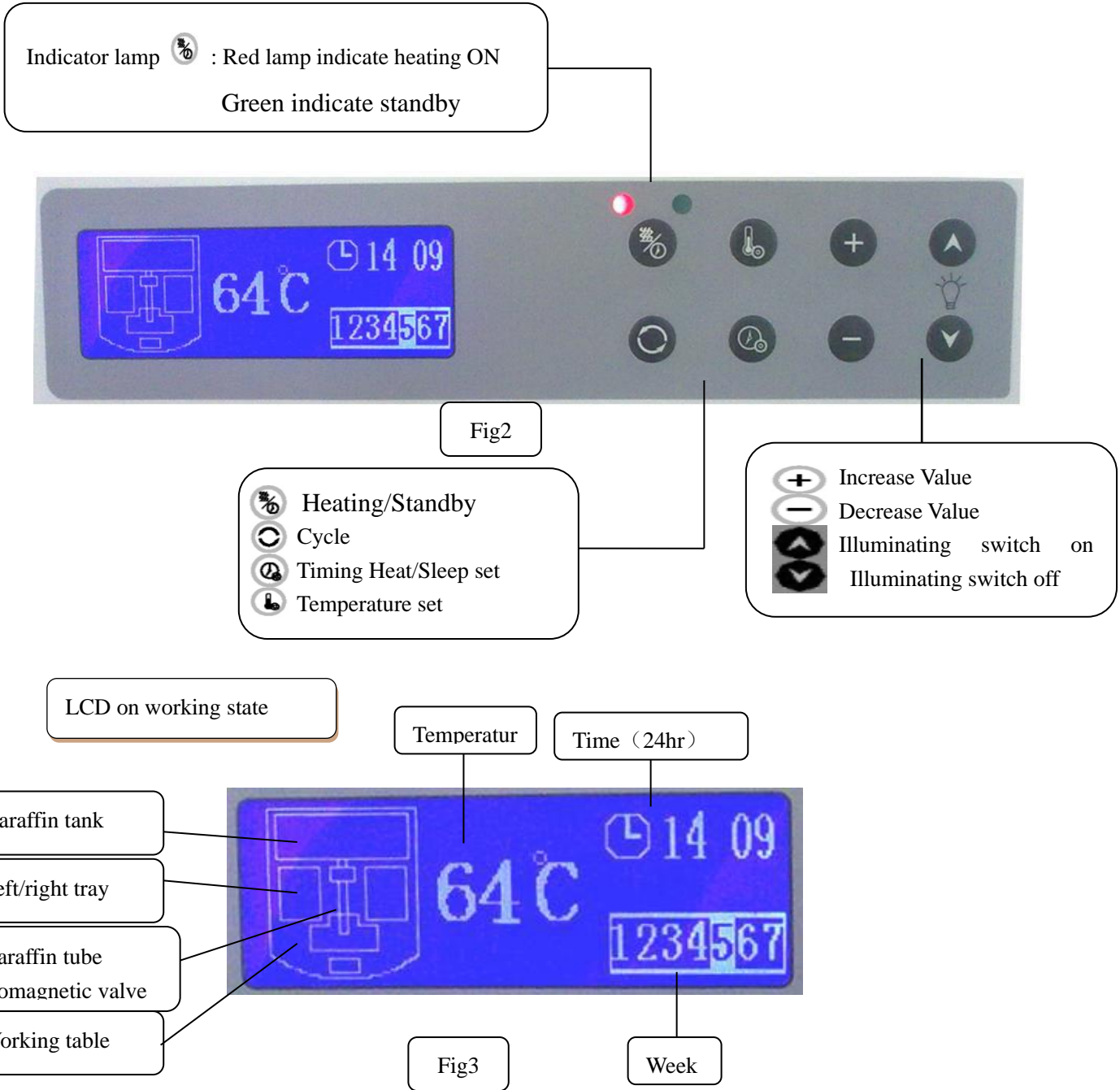
Fig (1)

## 5、 Technical Specification

- ⊙ **Capacity** : Paraffin reservoir: 6Lt  
Cassettes/molds tray: 1.4Lt
- ⊙ **Working temperature**(increments 1°C): Paraffin Tank: from ambient to 90°C  
Cassettes/molds tray: from ambient to 90°C  
Working table : from ambient to 90°C  
Peltier cold spot: from ambient to -5°C  
Forceps Holder: 65°C constant
- ⊙ **Rated Power** :: 1200 W
- ⊙ **Voltage/Frequency**: AC 220V 50Hz or AC 110V 60Hz
- ⊙ **Fuse**: 220V/8A (110V/15A)
- ⊙ **Dimensions**: 560mm(Width)×640mm(Depth)×400mm(Height)
- ⊙ **Weight**: about 26Kg

# 6、 Operation

## 6.1 Key board Function & Instruction



**For Example 1:** After the machine starting time and date setting finish, it goes to Pic2, and then press to check the drawing on the left of Screen(pic 3), there are the relative icon flicker for paraffin tank, left/right tray, paraffin tube/electromagnetic valve, working table which temperature will also shows.









## Function of Indicator Lamp

The machine always on two states only, heating or standby.

Red lamp indicate the machine is heating ON

Green lamp indicate the machine is standby

## Function of Keyboard

-  Heating/Standby , machine is on heating or standby could be selected by this button.
-  Cycle button. It can be used for selecting display of time, temperature, week and setting area.
-  Temperature setting
-  Automatic heating or automatic standby
-  Increasing the value on the state of temperature ,date or time setting
-  Decreasing the value on the state of temperature, date or time setting
-  Turning on the illumination lamp or increasing the lamp brightness
-  Turning off the illumination lamp or decreasing the lamp brightness

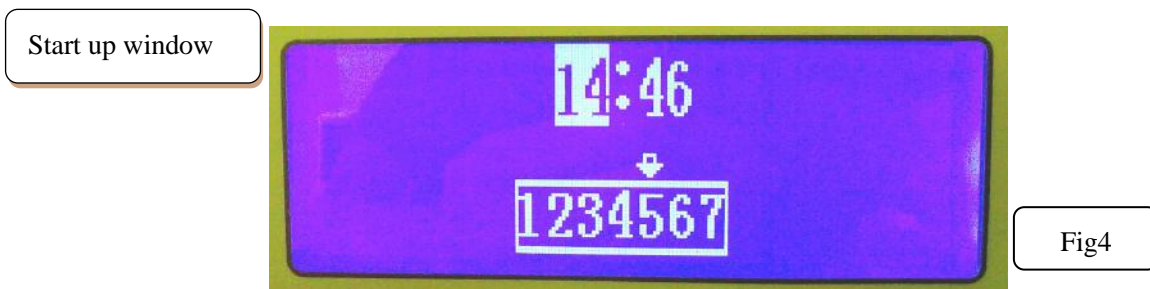
## 6.2 Operation Instruction



### 6.2.1 Start up time and day of the week set

■ ①Connect the machine to the power supply and switch on the embedding machine(See fig1,Page 2)

▲Attention: The voltage must be same as the nameplate marked, otherwise it could destroy the electrical system.

For example 2: Start up time and day of the week setting




② After the power is on , it enters into TIME checking interface to set hour, minute and date of week by  



and .

- ③ you could choose the desired object hour, minute and date of week by pressing the cycle button .


▲Attn: 1.The machine has automatic memory of the time, date. If the time, date is set, even if the external power supply turn off, it doesn' t need to reset when the machine restart.

2.Keep the setting status five seconds, it automatically jump to working condition. If you want to quickly jump to working condition, please press the Heating/standby button  to quit. It can' t set the parameters on the working condition.

## 6.2.2 Temperature of Working area check and Set






### ■ Check the temperature of working area

On the working condition, the left side of LCD shows the selected position as the flicker, and its temperature also showed on the LCD. For example, the paraffin tank icon flicker and the temperature is displayed for paraffin tank. (Details to check Page4.)

Please press  to check the actual temperature of paraffin tank, left/right tray, paraffin tube/electromagnetic valve, working table as direction.

### ■ Temperature of working area set

For example 3: Set the temperature of paraffin tank

- \* On the working condition, press  and temperature display values will have a white background.
- \* Press  to select the working area(paraffin tank)
- \* Set the desired temperature value by by  
- \* Press  to quit.

## 6.2.3 Timing Heating Or Sleep Set

■ Set automatic heating time and automatic sleep time for each day of one week .

For example 4: Timing heating or Sleep set

Timing fix windows



Fig5

- \* Press to enter automatic time setting interface ,
- \* Press to select the object: Hour, Minute , day of week, Heating, Standby.
- \* Set the desired automatic time by and
- \* Press to quit .

For example , it shows the automatic heating time is on Monday, time:18:03 on the Fig5

**▲Attention:** When it appears icon of "moon" , it means the automatic sleep time setting .  
 When it appears icon of “heating” , it means automatic heating time setting

Time 00:00 is the key point of the heating/sleep controls.

When the automatic heating time is set 00:00 one day, it means the automatic mode will not active that day .

For example , if the operator is unnecessary to use the instrument at Sunday , it can set the automatic heating time as 00:00)

Once set automatic heating time ( not be 00:00) , the instrument will start to heat up at the time set .  
 Once set automatic sleep time ( not be 00:00) , the instrument will start to sleep at the time set .

Example: If it need to set the working time of every day is AM8:00–PM16:00, and the machine is sleep on Saturday and Sunday.

Setting protocols:

Monday , AM8: 00 at Automatic heating mode, Sleep at PM16:00;

Tuesday , AM8: 00 at Automatic heating mode, Sleep at PM16:00;

Wednesday , AM8: 00 at Automatic heating mode, Sleep at PM16:00;



Thursday , AM8: 00 at Automatic heating mode, Sleep at PM16:00;

Friday , AM8: 00 at Automatic heating mode, Sleep at PM16:00;

Saturday, AM00: 00 at Automatic heating mode, Sleep at any time;

Sunday, AM00: 00 at Automatic heating mode, Sleep at any time

## 6.2.4 Heating Mode and Sleep Mode Manually Set

- Turn on the machine and enter into the working window, press  to set the heating mode or sleep mode.
- After the heating or sleep mode set ( example 4), it also could adjust the heating or sleep mode by  at any time.

## 6.2.5 The Use of Peltier cold spot

- Switch on the peltier cold spot (See Fig.1) to start refrigerating. Usually the temperature will reach a value between 0°C and -5°C after two minutes. Then the table can be used. This function is designed for the user of stainless steel embedding mold.

## 6.2.6 Finger touch pad or foot pedal to control paraffin flow

Prepared work before paraffin flows

- Wax melting is required long time, so it better to start work until the wax is completely melted in order not to damage the electromagnetic valve to control the paraffin flow out.
- Release the wax inside the paraffin tube before using. Best way is that press and hold the switch of flow out 2-3 seconds that could help the wax release.
- Paraffin flow value could be adjusted. Operation: Rotate the Flow Regulating knob by hand to adjust the rate of flow as the direction.

### Hand Switch

- Gently push the switch at the rear of the paraffin discharge port with the index finger( tick sound), the molten paraffin will flow out, and release the finger to stop the flow.

### Foot Switch



- Insert the plug of the foot switch into the socket at the rear side. Gently step this switch after the paraffin gets melted, the molten paraffin will flow out. When the switch is released, the molten paraffin will stop flowing out.







Fig(6)

## 6.2.7 Lamp open/close and Lamp intensity adjustable

■ It has two modes :

1. The illuminate light of machine is default on the lightest. The machine will keep the lightest lamp by pressing  to turn on or pressing  to turn off.

2. If user would like to change the brightness as desired, it should be active this function:

**PRESS  and  simultaneous** when start the instrument till language selection interface comes, and increase the lamp brightness by holding , decrease the lamp brightness by holding .

## 6.2.8 The Use of Magnifier

■ Remove the knob as the red arrows shows on fig 7, and install the magnifier on the position shows on Fig 8. Please adjust the angle before using.



Fig (7)

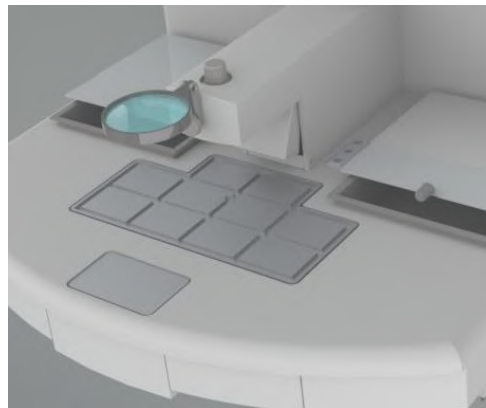


Fig (8)

## 7、 Trouble Shooting

Problem	Issued	Reason	Judge method	Corrective action
LCD is not working well	LCD is unlit	Power supply not connect	Connect the power	Connect the power
		Fuse Open circuit	Take out the fuse to check its internal resistance by multimeter, if the value is infinite, the fuse is broken	Replace a new one
		12 V power supply is broken	Check its output by multimeter DC gear. If no output with 12V,the power supply is broken	Replace a new one
		7805VR-tube no output	Check its output by multimeter DC gear. If no output with 5V,the 7805 is broken	Replace a new 7805
	LCD no digital C	Crystal oscillator is broken	Check its output waveform by oscilloscope, no the waveform that means the crystal oscillator is broken. Or check the voltage of both end of Crystal oscillator , if the voltage is lower an half of normally, it is broken	Replace a new one
		Chip MSP149 is broken	All function is out of order, the chip is broken	Replace a new MSP149
		LCD Screen is broken	Change to a new one, if the display is well, the LCD is broken	Replace a new LCD
Buzzer beeps	LCD display E1 or E2	certain solid state relay on MSP430F147 board is broken	Plus 5V power on the control port of solid state relay, if it is out of control, the solid state relay is broken	Replace a new solid state relay
		Sensor is broken	Connect a new sensor to terminal to start machine, if all be okay, it means the sensor is broken	Check the broken sensor by multimeter and replace a new one.
working area is not heating	no heating at paraffin tank, working table, paraffin tube,left/right tray	Heating film broken	Check the output resistance of heating parts by multimeter, if open circuit, it means the heating film is broken	Replace a new heating film
		Temperature set error	Check each position's temperature value	Reset the value
No Paraffin flows out from Paraffin	Pipeline don't heat up	Pipeline's heating wire burns out or electromagnetism valve's heating film damages	Check the output resistance of heating parts by multimeter, if open circuit, it means the heating film is broken。	Replace a new heating film

Nozzle		The lower temperature causes the paraffin not to melt in paraffin pipeline.	Check each position's temperature value	Set high temperature of Paraffin tube electromagnetic valve
	Pipeline heat up, but no paraffin flows out.	Electromagnetism Valve out of work, wires burns out	Electromagnetism Valve no voice, Check its wire resistance by multimeter, if open circuit, it means the Electromagnetism valve is broken	Change the Electromagnetism valve wire
		The flow setting knobs was closed		Adjust the knob counter-clockwise 6-8 circles to open
		Strainer is blocked or has air bubble		takes out the strainer to cleaning or expels the air bubble
The panel shows incorrect time.	Display wrong time	Chip is broken		Replace the new one chip
Cold spot is unable to refrigerate	Cold spot is unable to refrigerate	Peltier is damaged	Check it by multimeter, if open circuit, it means the Peltier is broken	Replace Peltier
Leak paraffin	Paraffin tank is leak	Rubber ring is abrade		Replace a new rubber ring
		The paraffin tank welded has pores		Replace a new paraffin tank
If there are any trouble can not be resolved , please contact with the manufacturer .				

## 8、 Clearance & Maintenance

### 8.1 Cleaning The Instrument

#### Instrument outside cleaning

- Clean the dust of outer surface of the instrument be with dry cloth is okay. If touch the instrument often by hand, damp cloth could to be used. Clean the residue wax on working table could be used small shovel.

#### Paraffin tank Cleaning

- Before replace to new wax, please clean up the used wax. It will has some bubble at filter,

please removal to prevent the blocking wax.

**Left/right tray Cleaning**

■ Left/right tray is used part frequency, so please clean the impurity inside.

**Switch of flow out and adjustable knob Cleaning**

■ Please clean this parts always.



Fig(9)

**Left/Right paraffin drawer Cleaning**

■ Please always to clean the residual wax inside.

## 8.2 Maintenance

**Paraffin tank maintenance**

■ Regularly check the paraffin net to replace the damaged

**Fuse replaced**

■ Insert the fuse(1) into the fuse socket (2) as it is showed in the Fig 10 and insert the whole fuse socket into the socket (3).

Attention: Cut off the power supply and then pull the plug before change the fuse 。 To ensure trouble-free operation of the instrument, make sure to comply with the explanation in the operation manual. , Fuse specification: 8A (220V), 15A (110V)。

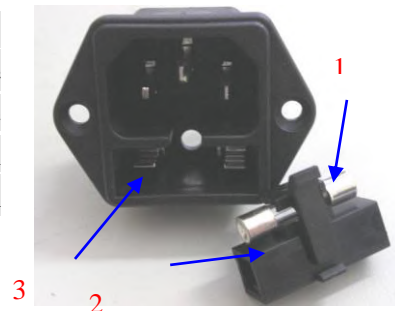


Fig (10)

## 9、 Instrument Diagram

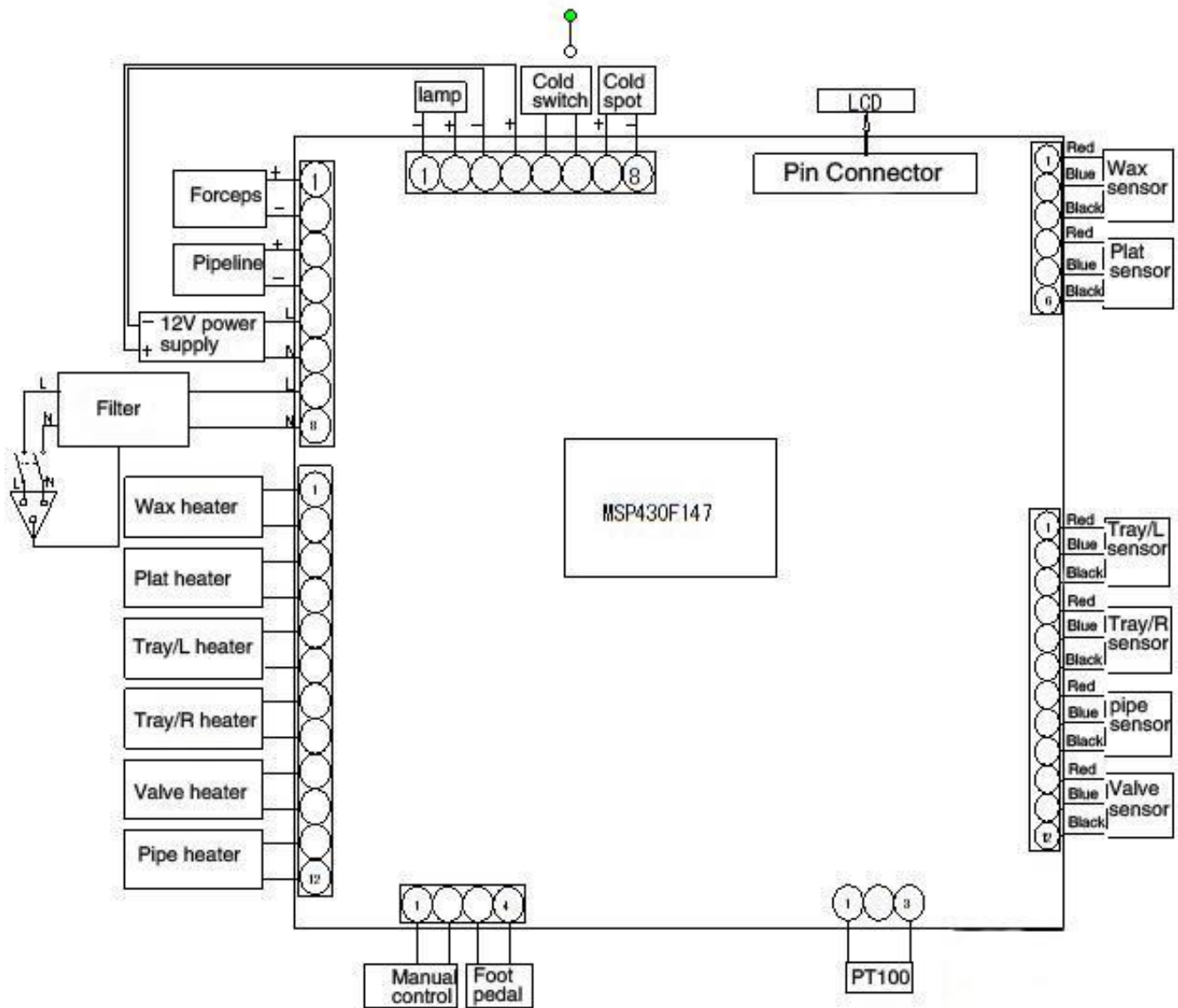


Fig (11)



### Standard accessories list

No	Accessory Name	Qty	Notes
1	<b>Embedding Center</b>	1 set	
2	<b>Power Cord</b>	1pc	
3	<b>Fuse</b>	2pcs	
4	<b>Foot Switch</b>	1pc	
5	<b>Magnifier</b>	1pc	<p>Chrome coating with fixed mount (ZMNB-00-70).</p> <p>Adapter(ZMNB-00-83);</p> <p>Connector (ZMNB-00-84);</p> <p>Bolt :M4*12;</p> <p>Screw:M3*4* 1 pc</p>
6	<b>Operation Manual</b>	1pc	

Published by:



## **AMOS SCIENTIFIC PTY.LTD**

1 Prestige Dr Clayton South VIC 3169 Melbourne, Australia

Tel: +61-410190188 FAX: +61-3-98081503

ABN 37 159 778 140

[www.amos-scientific.com](http://www.amos-scientific.com)