

# **STM-W Series**

## **Water Heater**

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# 1. General Description



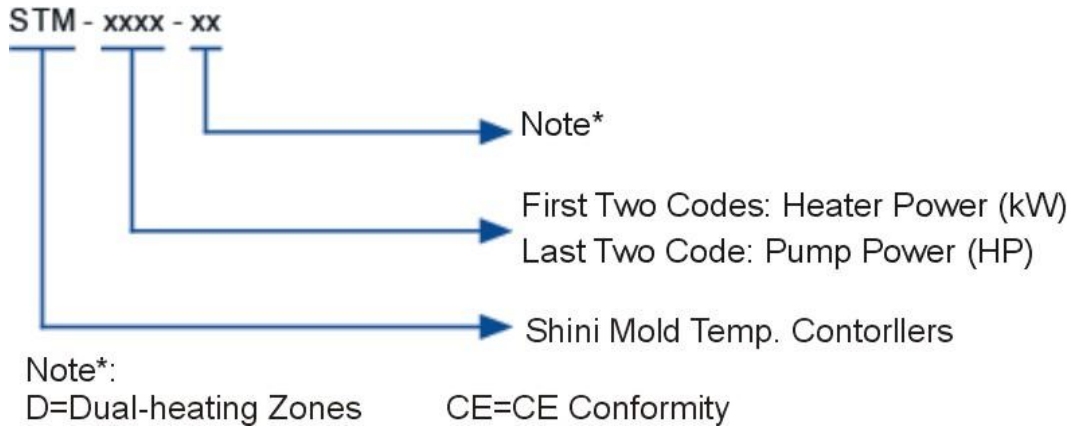
Read this manual carefully before operation to prevent damage of the machine or personal injuries.

STM-W series water heater are used to heat up the mould and maintain temperature, although they can be used in other similar applications. High temperature water from the mould is returned to the cooling tank and cooled by either indirect cooling (For high temperature models) or direct cooling (for standard models). It is then pressurised by the high - pressure pump, sent to the heating tank and finally to the mould with a constant temperature. The HANYOUNG temperature controller can maintain an accuracy of  $\pm 1^{\circ}\text{C}$ .



Model: STM-607W

## 1.1 Coding Principle



## 1.2 Feature

### 1) Standard configuration

- Controller adopts 3.2" LCD for easy operation.
- Equipped with the design of 7-day automatic start/stop timer. LCD screen can be converted between Chinese and English. The unit of temperature can be converted between °F and °C.
- P.I.D. multi-stage temperature control system can maintain a mould temperature with accuracy of  $\pm 0.5^{\circ}\text{C}$ .
- Adopts high efficiency water cycle pump, which can meet the demands of temperature control for precise moulds and mould loop with minor diameter to achieve precise temperature control and high efficient heat exchange. Pump inside adopts stainless steel to avoid explosion.
- Multiple safety devices including power reverse phase protection, pump overload protection, overheat protection and low level protection that can automatically detect abnormal performance and indicate this via visible alarm.
- For standard STM-W, the heating temperature can reach  $120^{\circ}\text{C}$

- Equipped with high pressure protection, safety pressure relieving, automatic water supplying and air exhausting.

## 2) Accessory option

- Water manifolds and Teflon hose are optional.
- Water-removing function of air blowing is optional for STM-W standard machine.
- All models can opt for magnetic pump except for STM-3650W series.
- RS485 communication function is optional. Display of mould temperature and mould return water temperature is optional.

All service work should be carried out by a person with technical training or corresponding professional experience. The manual contains instructions for both handling and servicing. Chapter 6, which contains service instructions intended for service engineers. Other chapters contain instructions for the daily operator.

Any modifications of the machine must be approved by SHINI in order to avoid personal injury and damage to machine. We shall not be liable for any damage caused by unauthorized change of the machine.

Our company provides excellent after-sales service. Should you have any problem during using the machine, please contact the company or the local vendor.

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## 1.3 Technical Specifications

### 1.3.1 Specification

Table 1-1: Specification

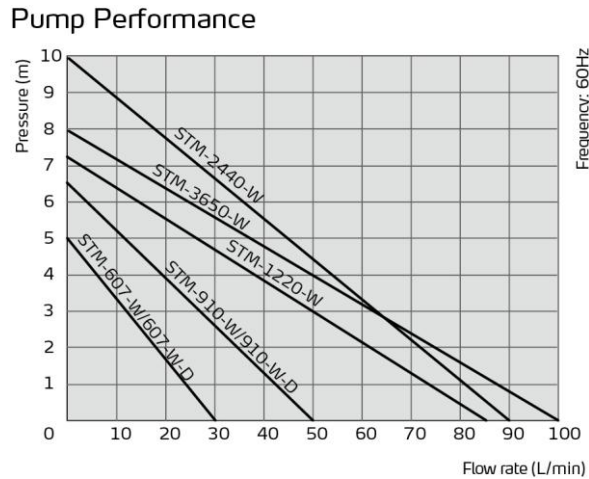
Model	Max. Temp.	Pipe heater (kW)	Pump power (kW) (50/60Hz)	Max. pump flow (L/min) (50/60Hz)	Max. pump pressure (bar) (50/60Hz)	Heating tank number	Heating tank capacity (L)	Cooling method	Mould coupling* (inch)	Dimensions (mm) (H×W×D)	Weight (kg)
STM-607W	120°C (140°C)	6	0.55/ 0.63	27/30	3.8/5	1	3.0	Direct	3/8" (2×2)	620×320×755	55
STM-607W-D		6×2	0.55×2 /0.63×2	27×2/ 30×2	3.8/5	2	3.0×2		3/8" (4×2)	655×590×760	95
STM-910W		9	0.75 /0.92	42/50	5.0/6.4	1	3.0		3/8" (2×2)	620×320×745	60
STM-910W-D		9×2	0.75×2 /0.92×2	42×2/ 50×2	5.0/6.4	2	3.0×2		3/8" (4×2)	655×590×760	105
STM-1220W		12	1.5/1.9	74/84	6.2/7.2	1	3.0		3/8" (4×2)	630×320×775	140
STM-2440W		24	2.8/3.4	90/90	8.0/10.2	2	7.4		1"(1×2)	820×360×937	140
STM-3650W		36	4.0	100/100	8.0/8.0	3	13.2			964×467×1011	150

Note: 1) "PW" stands for high temp. water heater, "HPW" stand for water heater with high temperature and high pressure, "\*" stands for options.

We reserve the right to change specifications without prior notice.

- 2) When equipped with water-removing function of air blowing, model code should be followed by "A".
- 3) In order to maintain stable temp. of heat transfer media (120°C), cooling water pressure should be no less than 2 kgf/cm<sup>2</sup>, but also no more than 5 kgf/cm<sup>2</sup>.
- 4) Pump testing standard : Power of 50 / 60Hz, purified water at 20°C. ( There is ±10% tolerance for either max. flow rate or max. pressure ).
- 5) Power supply: 3Φ, 230/400/460/575VAC, 50/60Hz.
- 6) "\*" stands for for heating the machine to 140°C, cooling water pressure should not be lower than 4kgf/cm<sup>2</sup>.

### 1.3.2 Pump Performance



Picture 1-1: Pump Performance

### 1.3.3 Reference Formula of Mould Controllers Model Selection

Heater Power (kW) = mould weight (kg) × mould specific heat (kcal/kg°C) × temperature difference between mould and environment (°C) × safety coefficient / heating duration / 860

Note: safety coefficient can select a value from 1.3 to 1.5.

Flow Rate (L/min) = heater power (kw) × 860 / [heating medium specific (kcal/kg°C) × heating medium density (kg/L) × in/outlet temperature difference (°C) × time (60)]

Note: Water specific heat = 1kcal/kg°C

Heating medium oil specific heat = 0.49kcal/kg°C

Water density = 1kg/L

Heating medium oil density = 0.842kg/L

## 1.4 Safety Regulations

Strictly abide by the following safety regulations to prevent damage of the machine or personal injuries.

### 1.4.1 Safety Signs and Labels



#### Danger!

The unit is designed to endure high temp, and high pressure. For safe operation, do not remove the covers or switches.



#### Attention!

The unit should be operated by qualified personnel only.

During operation, avoid wearing gloves or clothes that may cause danger.

Turn off main switch when power supply is off.

Stop the unit when there may be power supply problems caused by static electricity.

Put on safety gloves and shoes during installation or relocation.

Components from our company can only be used for replacement.



#### Warning!

Do not touch the switch with wet object or hands.

Do not use the machine before fully aware of its performance.

Be careful not to touch or hit the switch or sensor.

Please keep enough operation space, and keep away obstacles.

To avoid producing statics, clean the floor from oil or water to keep a dry environment.

Protect the machine against severe vibration or collision.

Do not remove safety signs or make it dirty.

Drunken, medicine-taking, or men without proper judgement should not operate the machine.



#### Warning!

High temperature, take care of hands! This label is attached on the surface of heating parts.



## 1.4.2 Signs and Labels

<p><b>WARNING</b></p> <ol style="list-style-type: none"> <li>1. Before starting, please refer to operation section of the manual.</li> <li>2. Water is used as the heat transfer medium. The maximum temperature setting value is 120°C(248°F).</li> </ol> <p>YP31012100000</p>	<ol style="list-style-type: none"> <li>1. Before starting, please refer to operation section of the manual.</li> <li>2. Water is used as the heat transfer medium. The maximum temperature setting value is 120°C(248°F).</li> </ol>
<p>(Attached on motor cover)</p>	<p>This is to indicate motor rotating direction. When phase reversal happens, the alarm sounds and indicator on control panel will indicate.</p> <p>Please exchange the place of two of the electrical wires to solve this problem.</p>
	<p>High voltage! Electrical shock may happen. Carefulness is required from the operator.</p>
	<p>Attentions! This is general warnings which operators should pay attention to.</p>
<p>YP30422000000</p>	<p>From mould: connector for circulating water/oil coming from mould.</p>
<p>YP30425000000</p>	<p>Pump pressure meter: indicating actual pressure of system.</p>
<p>YP30423000000</p>	<p>To mold: connector for circulating water/ oil to go to mould.</p>

	<ol style="list-style-type: none"> <li>1. To maintain temperature consistency, cooling water pressure must be higher than 2 bar at all time, but should never exceed 5 bar in any case.</li> <li>2. Clean Y-shape Cooling Water Strainer periodically to ensure perfect cooling capacity.</li> </ol>
	<p>Water inlet: inlet for replenishing water and cooling water.</p>
	<p>Water outlet: drainage outlet.</p>

Please abide by the safety guide when you operate the machine so as to prevent damage of the machine and personal injuries.



All electrical components should be installed by qualified electricians. Turn off main switch and control switch during repair and maintenance.



Warning! High voltage!

This mark is attached on the cover of the control box.



Warning! Be careful!

Be more careful when this mark appears.

### 1.4.3 Operation Regulations

1) Before operation, make sure that cooling water is clean soft water without pollutants.

※ Low quality water brings limescales, which may cause problems.

2) If problems of drainage or bad temperature control are noted, please clean solenoid valve and cooling water inlet and outlet.

3) Do not move the unit when it is in operation.

4) When in need of repairing, wait until oil temperature falls below 30°C.

- 5) Motor overload may be caused by phase shortage, pipe obstruction, broken bearing, etc. Motor overload relay will trip off to stop the machine when this happens. Fixing the problems, press RESET on overload relay to clear the alarm.
- 6) Before turn off the pump, wait until oil temperature falls below 50°C. Or the life of the unit would be affected.
- 7) If the setting temperature is below 100°C, then the pressure switch setting value should be 1.5-2 bar; If the setting temperature sets between 100°C and 200°C, then the recommendable pressure switch setting value should be 2.8 bar. If the cooling water pressure is too low, then the pressure switch setting value can be adjusted properly to ensure normal running. However, it may affect the limitation of setting temperature or cause unstable temperature control.
- 8) Please connect the cooling water outlet with high temperature resistant pipe when temperature is above 100°C.

## 1.5 Exemption Clause

The following statements clarify the responsibilities and regulations born by any buyer or user who purchases products and accessories from Shini (including employees and agents).

Shini is exempted from liability for any costs, fees, claims and losses caused by reasons below:

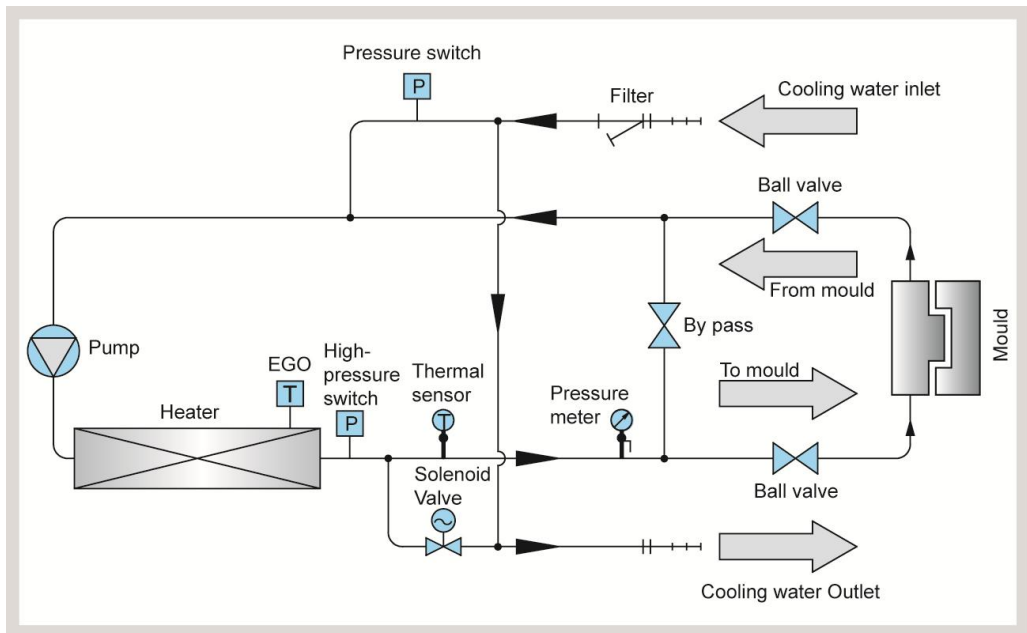
1. Any careless or man-made installations, operation and maintenances upon machines without referring to the Manual prior to machine using.
2. Any incidents beyond human reasonable controls, which include man-made vicious or deliberate damages or abnormal power, and machine faults caused by irresistible natural disasters including fire, flood, storm and earthquake.
3. Any operational actions that are not authorized by Shini upon machine, including adding or replacing accessories, dismantling, delivering or repairing.
4. Employing consumables or oil media that are not appointed by Shini.

## 2. Structure Characteristics and Working Principle

### 2.1 Main Functions

The STM-W series of standard water heater are used to heat up the mould and maintain this temperature. Besides, they can also be used in other similar applications. High temperature water from the mould is cooled by direct cooling and then sent to the pipe heater via high-pressure pump for heating to a constant temperature. With our optimised design, water can reach a maximum of 120°C and the HANYOUNG temperature controller can maintain an accuracy of  $\pm 1^{\circ}\text{C}$ .

#### 2.1.1 Working Principle



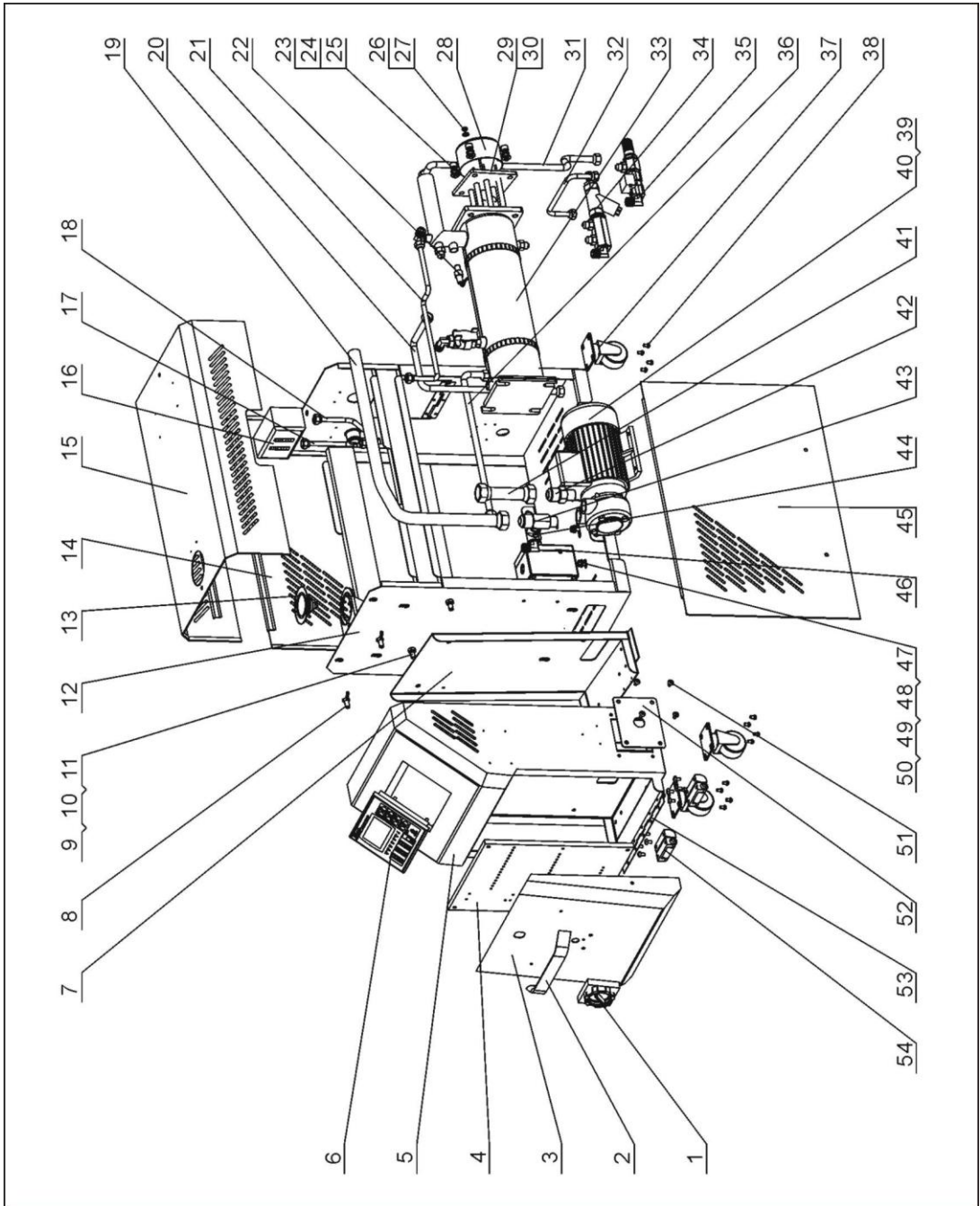
Picture 2-1: STM-W Working Principle

High temperature water returns to the machine and then be pressured by pump to the heater. After being heated, water will be forced to mould and continue the circle. In the process, if the water temperature is too high, the system will activate the solenoid valve to let cooling water cool down the temperature directly until the water is down to the system requirement. If the temperature

keeps increasing and reach to the set point of EGO, system will sound high pressure alarm and stop operation; when system pressure is too high (Reach set value of high pressure switch), alarm would sounds and machine halts; when cooling water pressure fails to reach the set value, pressure switch will send a signal of water storage to launch low pressure alarm and machine halts.

## 2.2 Assembly Drawing

### 2.2.1 Assembly Drawing (STM-607W/910W)



Remarks: Please refer to material list 2.2.2 for specific explanation of the Arabic numbers in parts drawing.

Picture 2-2: Assembly Drawing (STM-607W/910W)

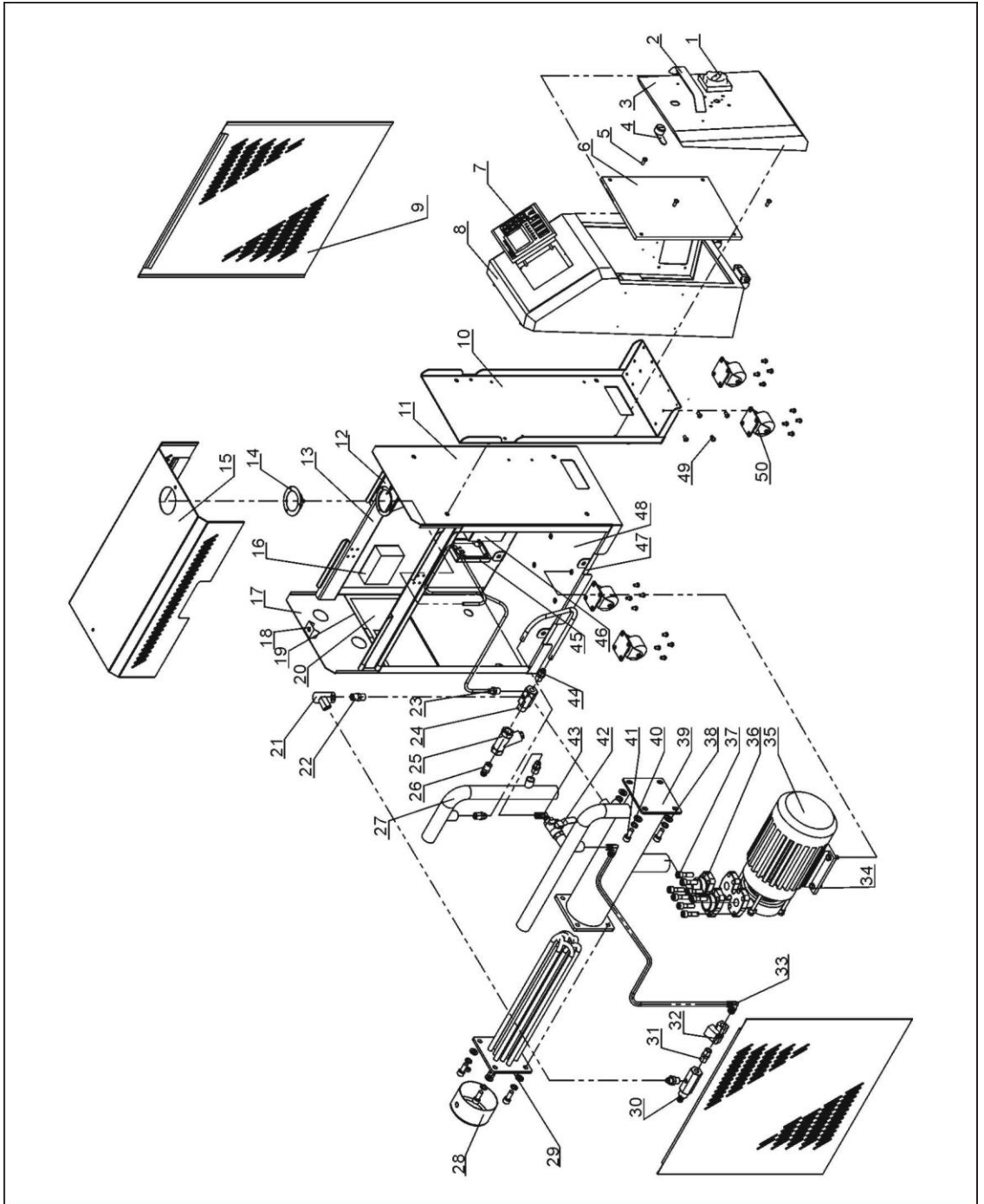
## 2.2.2 Parts List (STM-607W/910W)

Table 2-1: Parts List (STM-607W/910W)

No.	Name	Part No.	No.	Name	Part No.
1	Main power switch	YE10323200000	28	Electric heating pipe shield	BL80091000120
2	Door plate aluminum handle 6609	YW20660900100	29	Pipe heater unit STM-910W(9kW)	BH70091000250
3	Door plate	-	30	Pipe heater unit STM-607W(6kW)	BH70060700250
4	Base plate of electric control box	-	31	Teflon pipe with joint 3/8"*50CM	YW59385000000
5	Electric control box	-	32	Chilling water by-pass pipe	-
6	HANYOUNG controller MT100-01	YE81100010000	33	Heating tank parts	-
7	Electric control box rear plate	-	34	Filling water joint parts	-
8	Butterfly srew M8×15	YW69081500000	35	Drainage joint parts	-
9	Inner hexagon screw M8×20	YW61082000200	36	Filling water pipe	-
10	Elastic gasket 8	YW65008000100	37	Caster 2"	YW03000200000
11	Flat gasket 8	YW66082200100	38	Lentil-headed screw M6×15	YW63061700000
12	Machine frame	-	39	Pump TP-55	BM20005500350
13	Pressure gauge (0~1.0MPa)	YW85001000100	40	Pump TP-75	BM20007500150
14	Side plate	-	41	Pump outlet pipe	-
15	Cover plate	-	42	Copper teflon pipe connector 3/4"H*1/2"PT	BH12030401010
16	High and low pressure switch HLP830HME	YE90832500000	43	Copper pipe connector 1/2"PT×3/4"H× 1/4"PT mesoporous	BH12030400710
17	Low pressure pipe	-	44	Stainless steel tee joint 3/8"	YW52030800000
18	High pressure pipe	-	45	Side plate	-
19	Return water pipe	-	46	EGO combination	BH90115000050
20	Hot water by-pass pipe	-	47	Elastic gasket 6	YW65006000100
21	Pressure gauge pipe	-	48	Flat gasket 6	YW66061300000
22	Thermocouple	BE90341500050	49	Hexagon nut M6	YW64000600300
23	Inner hexagon screw M10×25	YW61102500000	50	Hexagon head screw M6×25	YW60062500000
24	Elastic gasket 10	YW65010000000	51	Thick screw M5×10	YW63051000000
25	Flat gasket 10	YW66102000000	52	Linear gripper fixing plate	-
26	Screw M8	YW64000600300	53	Electric control box mounting hinge	-
27	Gasket 6	YW66061300000	54	Big hingeCL219-1	YW06219100000

\* means possible broken parts. \*\* means easy broken part. and spare backup is suggested. Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

### 2.2.3 Assembly Drawing (STM-1220W)



Remarks: Please refer to material list 2.2.4 for specific explanation of the Arabic numbers in parts drawing.

Picture 2-3: Assembly Drawing (STM-1220W)

## 2.2.4 Parts List (STM-1220W)

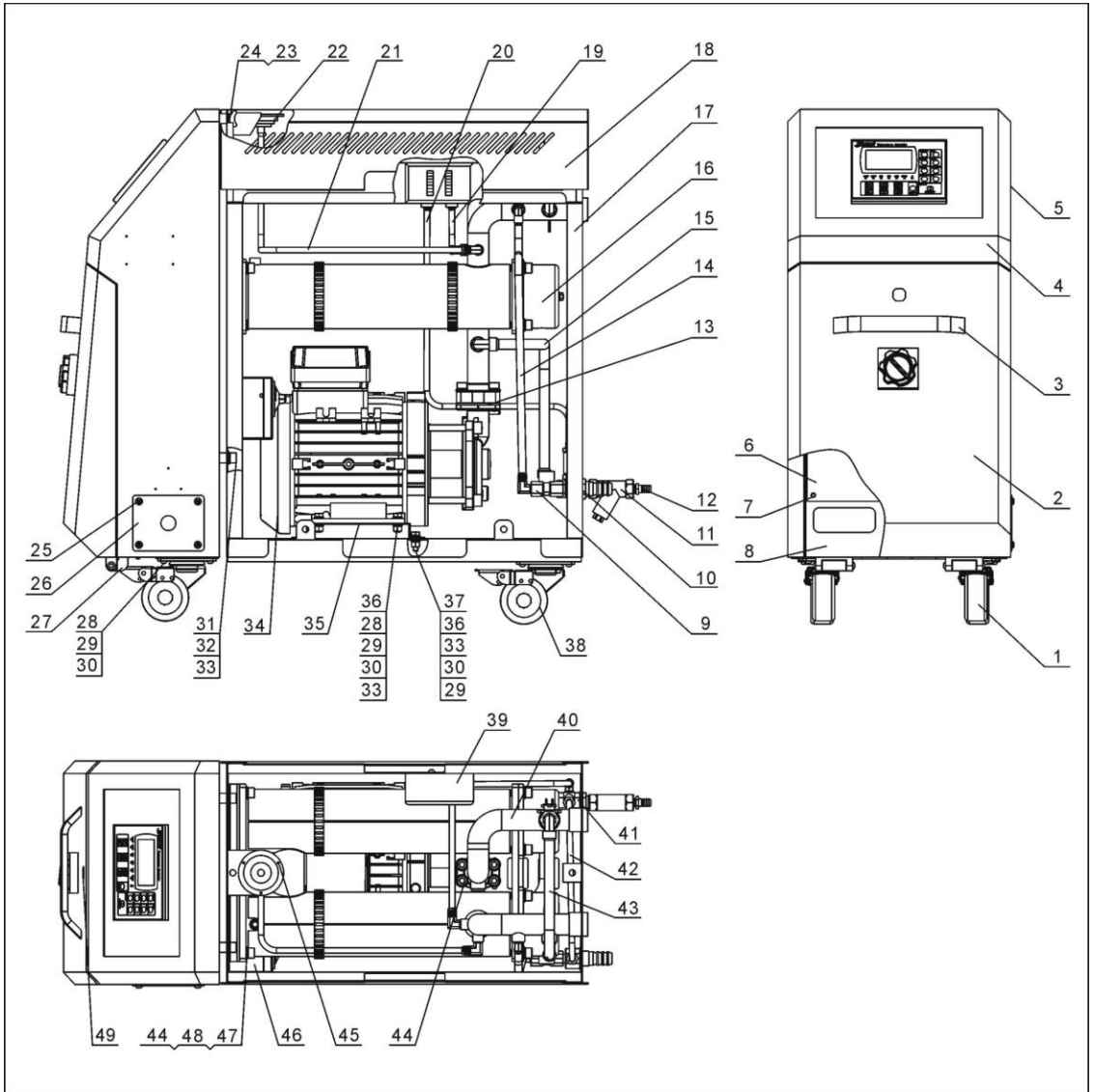
Table 2-2: Parts List (STM-1220W)

No.	Name	Part No.	No.	Name	Part No.
1	Main power switch	YE10323200000	26	Core 3/8" ×M13	BH12030801110
2	Door plate aluminum handle 6609	YW20660900100	27	Return water pipe	-
3	Door plate	-	28	Electric heating pipe shield	BL80091000120
4	Long gear lock	YW00000000100	29	Pipe heater unit	BH70122000150
5	Lentil-headed screw M6×15	YW62061500000	30	The third set of copper joint	BH12060703710
6	Base plate of electric control box	-	31	Pipe coupler 3/8"	BH12030800110
7	HANYOUNG controller	YE81100010000	32	Solenoid valve	YE32331000000
8	Electric components box	-	33	Teflon pipe connector 3/8PT×3/8H(L type)	YW04030800300
9	Side plate	-	34	Outer hexagonal screw M10×25	YW60102000100
10	Rear plate	-	35	Pump TP-150	BM20015000050
11	Clapboard	-	36	Pump flange	-
12	Pressure gauge fixing plate	-	37	Inner hexagon screw M10×25	YW61102500000
13	Pressure gauge	YW85001000100	38	Flat gasket D10	YW66102500000
14	Crossbeam	-	39	Heating tank	-
15	Cover plate	-	40	Elastic gasket D10	YW65010000000
16	High and low pressure switch	YE90832500000	41	Inner hexagon screw M10×30	YW61103000100
17	Rear plate	-	42	Copper ball core valve 1/2"	YW50010200100
18	Plate cover fixing plate	-	43	Copper teflon pipe connector 1/2H×1/2PT(L type)	YW04121200000
19	Fixing plate of rear plate mini cover	-	44	Teflon pipe connector 1/2PT×1/2H	BH12010200210
20	Rear plate mini cover	-	45	EGO protective box (up)	YR40000400300
21	Tee joint 1/4"	YW52010400000	46	EGO protective box (down)	YR40000400300
22	Pipe coupler 1/4"	BH12010400110	47	Stiffening rib 1	-
23	Copper teflon pipe connector 1/4PT×1/4H	BH12010400410	48	Base plate	-
24	The ninth set of copper joint	-	49	Lentil-headed screw M6×10	YW62061000000
25	Y type filter	YW57010200000	50	Universal castor 2"	YW03000200000

\* means possible broken parts. \*\* means easy broken part. and spare backup is suggested. Please confirm the version of manual before placing the purchase order to guarantee that the

item number of the spare part is in accordance with the real object.

## 2.2.5 Assembly Drawing (STM-2440W)



Remarks: Please refer to material list 2.2.6 for specific explanation of the Arabic numbers in parts drawing.

Picture 2-4: Assembly Drawing (STM-2440W)

## 2.2.6 Parts List (STM-2440W)

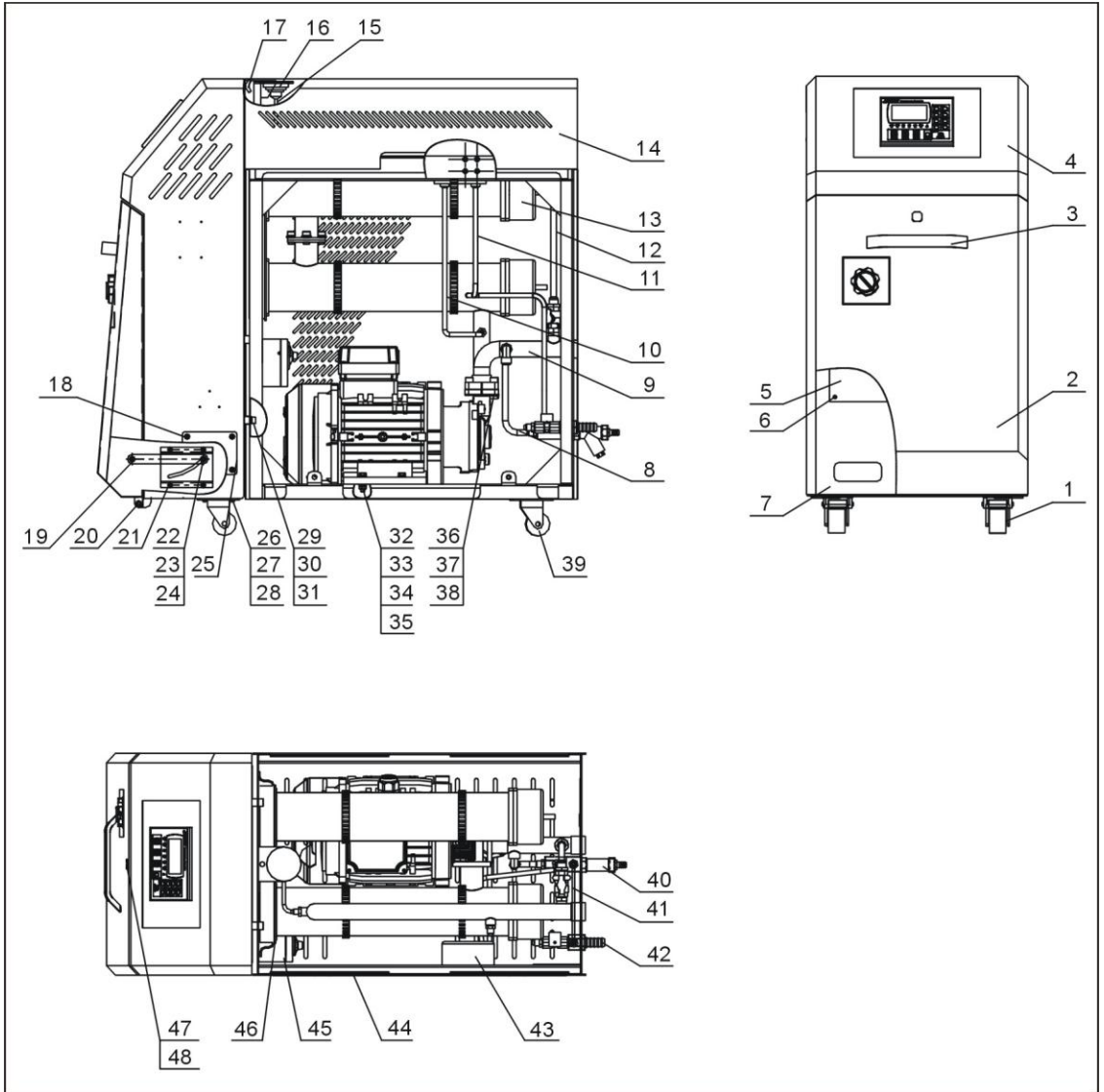
Table 2-3: Parts List (STM-2440W)

No.	Name	Part No.	No.	Name	Part No.
1	Movable castor 3"	YW03000300200	26	Line clamp fixing plate	-
2	Door plate	-	27	Big hinge CL219-1	YW60061000000
3	Door plate aluminum handle 6609	YW20660900100	28	Outer hexagon screw M6×16	YW60061600100
4	Electrical control box	-	29	Spring gasket 6mm	YW65006000100
5	Side plate	-	30	Flat gasket 6×18×1mm	YW66061800000
6	Base plate of electric control box	-	31	Inner hexagon screw M8×20	YW61082000200
7	Thick head screw M6×20	YW63062000000	32	Spring gasket 8mm	YW65008000100
8	Rear plate of electric control box	-	33	Flat gasket 8×22×1.5mm	YW66082200000
9	Water drainage pipe connector parts		34	PumpTP-280	BM20028000050
10	Copper female connector(suitable for set 1,2,3,4)	-	35	Pump base plate	-
11	Y type filtering water valve1/2"	YW57010200000	36	Hexagon nut M6	YW64000600300
12	Copper core M13×1/2PT	BH12131200010	37	Hexagon head screw M6×25	YW60062500000
13	Pump flange gasket	YR10150000000	38	Brake caster 3"	YW03000300000
14	Teflon pipe with connector 3/8"×50CM	YW59385000000	39	High and low pressure pipe HLP830HME	YE90832500000
15	Filling water pipe	-	40	Return pipe parts	-
16	Parts of heating tank	-	41	Filling pipe connector parts	-
17	Rack	-	42	Cooling water by-pass pipe	-
18	Cover plate	-	43	Hot water by-pass pipe	-
19	High pressure pipe	-	44	Inner hexagon screw M10×30	YW61103000100
20	High pressure pipe	-	45	Thick head screw M3×6	YW63030600000
21	Pressure gauge pipe	-	46	EGO assembly	BH90115000050
22	Pressure gauge (Range: 0~1.0MPa)	YW85001000100	47	Flat gasket 10.5×20×2mm	YW66102000100
23	Flat gasket 8×16×1.5mm	YW66081600000	48	Spring gasket 10mm	YW65010000000
24	Butterfly screw M8×15	YW69081500000	49	long door lock	YW00000000100
25	Lentil-headed screw M5×10	YW62051000000			

\* means possible broken parts. \*\* means easy broken part. and spare backup is suggested. Please confirm the version of manual before placing the purchase order to guarantee that the

item number of the spare part is in accordance with the real object.

## 2.2.7 Assembly Drawing (STM-3650W)



Remarks: Please refer to material list 2.2.8 for specific explanation of the Arabic numbers in parts drawing.

Picture 2-5: Assembly Drawing (STM-3650W)

## 2.2.8 Parts List (STM-3650W)

Table 2-4: Parts List (STM-3650W)

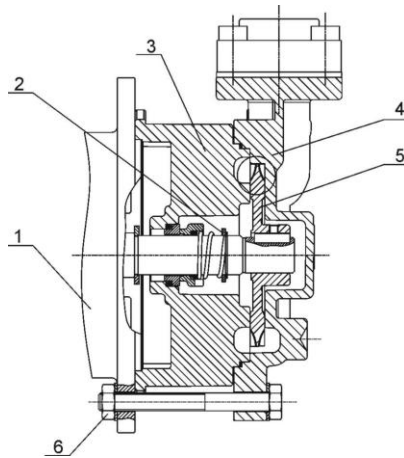
No.	Name	Part No.	No.	Name	Part No.
1	Black movable castor 3"	YW03000300200	25	Fixing plate for wire clamp	-
2	Door plate	-	26	Outer hexagon screw M6×16	YW60061600100
3	Door plate aluminum handle 6609	YW20660900100	27	Spring gasket 6	YW65006000100
4	Control box	-	28	Flat gasket 6×18×1	YW66061800000
5	Base plate of control box	-	29	Inner hexagon screw M8×20	YW61082000200
6	Thick head screw M6×20	YW63062000000	30	Flat gasket 8×22×1.5	YW66082200100
7	Rear plate of control box	-	31	Spring gasket 8	YW65008000100
8	Filling water pipe	-	32	TP-400	BM20423000050
9	Return water pipe parts	-	33	Flat gasket 8×16×1.5	YW66081600000
10	High pressure pipe	-	34	Hexagon screw M8×30	BM20015000050
11	Low pressure pipe	-	35	Hexagon nut M8	YW64080600000
12	Hot water by-pass pipe	-	36	Inner hexagon screw M8×20	YW61082000200
13	Heating tank parts	-	37	Spring gasket 8	YW65008000100
14	Cover plate	-	38	Flat gasket 8×16×1.5	YW66081600000
15	Pressure gauge pipe	-	39	Brake castor 3"	YW03000300000
16	Pressure gauge (0~10MPa range)	YW85001000100	40	Y type filter 1/2"	YW57010200000
17	Butterfly screw M8×15	YW69081500000	41	Cold water by-pass pipe	-
18	Lentil-headed screw M510	YW62051000000	42	Drainage pipe parts	-
19	Movable arm of the door plate	-	43	High and low pressure switch	YE90832500000
20	Big hinge CL219-1	YW60061000000	44	Side plate	-
21	Fixing plate of door plate	-	45	EGO assembly	BH90115000050
22	Movable pin of the door plate	-	46	Heating tank plate gasket	-
23	M5 Nut	YW64000600000	47	Long gear lock	YW00000000100
24	Flat gasket 5×13×1.0	YW66051300000	48	Baffle sheet of door lock	-

\* means possible broken parts.

\*\* means easy broken part. and spare backup is suggested.

Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

## 2.2.9 Pump



Picture 2-6: Pump

Table 2-4: Pump Parts List

No.	Name	Part No.				
		607W/607WD	910 W/910WD	1220 W	2440 W	3650 W
1	Motor	YM10055000500	YM10075000100	YM10015000000	YM10028000000	YM10040000000
2	Mechanical shaft seal *	YR80901000000	YR80901200000	YR80901600000	YR80902240000	YR80902240000
3	Bearing block	BW33005500110	BW33007500110	BW33015000110	BW33028000210	BW33028000210
4	Pump body	BW33005500210	BW33007500210	BW33015000210	BW33028000110	BW33028000110
5	Impeller	BW33055000310	BW33075000310	BW33015000310	BW33028000310	BW33028000310
6	Hexagon nut	YW64001000100	YW64001000100	YW64001000100	YW64001000100	YW64001000100

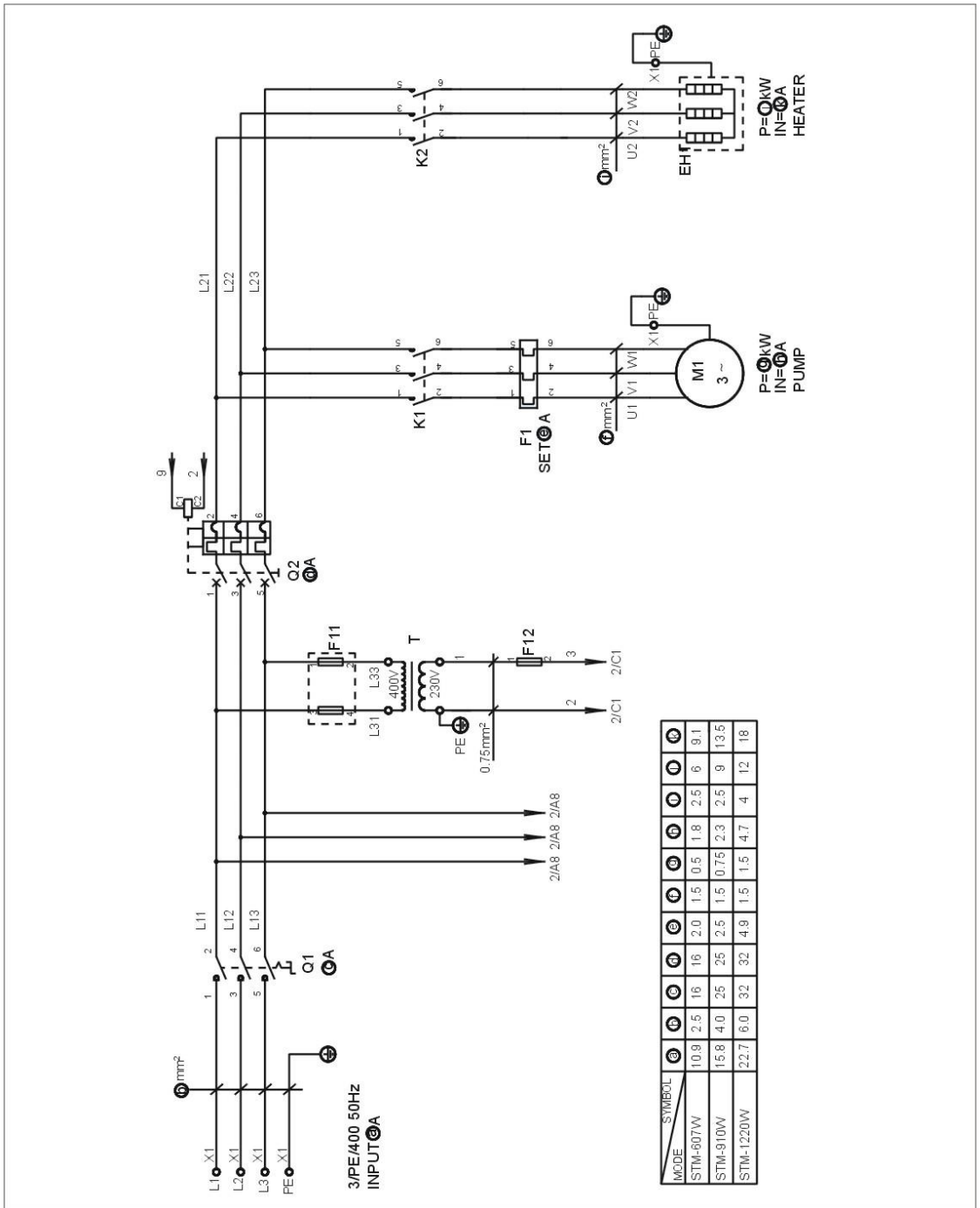
\* means possible broken parts.

\*\* means easy broken part. and spare backup is suggested.

Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

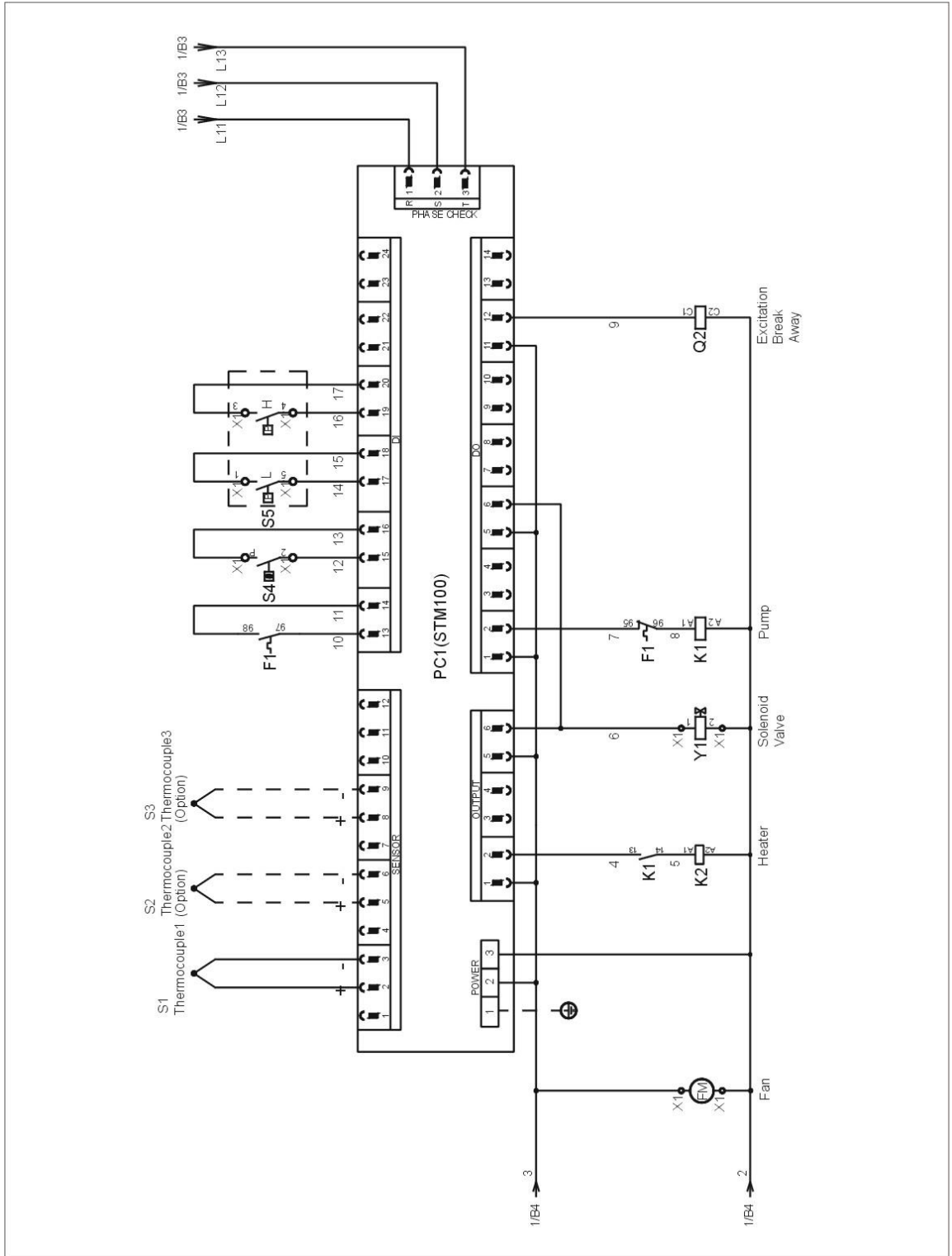
## 2.3 Electrical Diagram

### 2.3.1 Main Circuit (STM-607W~1220W 400V)



Picture 2-7: Main Circuit (STM-607W~1220W 400V)

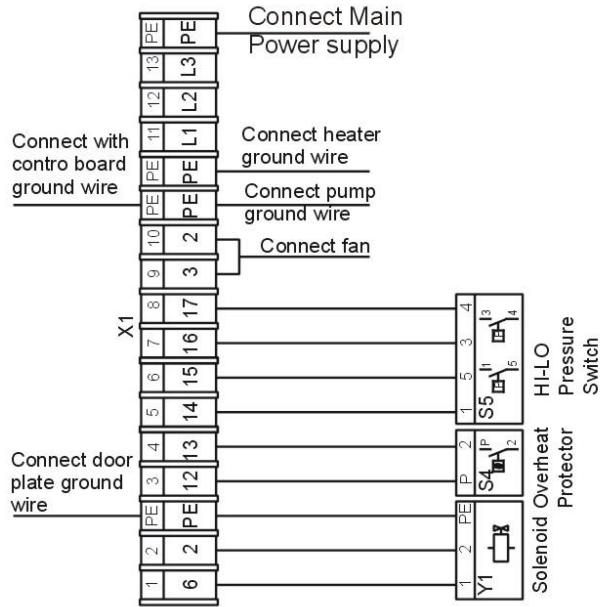
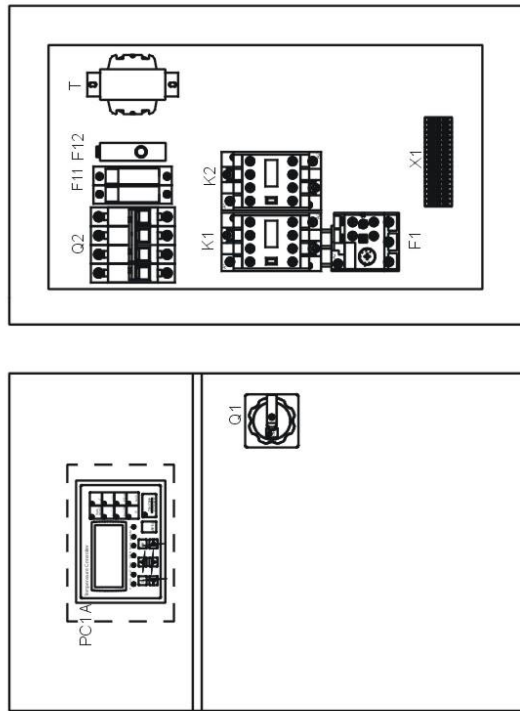
### 2.3.2 Control Circuit (STM-607W~1220W 400V)



Picture 2-8: Control Circuit (STM-607W~1220W 400V)

### 2.3.3 Electrical Components Layout (STM-607W~1220W 400V)

Technical requirement: 1. Directly introduce positive (+) and negative (-) poles of thermocouple to thermocouple input end in temperature controller instead of going through terminal strip.  
 2. Directly introduce electric heater and pumping to output end of contactor instead of going through terminal strip.



Picture 2-9: Thermocouple and Terminal Layout (STM-607W~1220W 400V)

### 2.3.4 Electrical Components List (STM-607W~1220W 400V)

Table 2-5: Electrical Components List (STM-607W 400V)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	16A	YE10021160000
2	Q2	Circuit breakers**	16A	YE40601500000
3	-	Excitation break away**	-	YE40023560000
4	K1	Contactors**	220V 50/60Hz	YE00601521000
5	K2	Contactors**	220V 50/60Hz	YE00601800000
6	F1	Overload relays	1.8~2.5A	YE01160180000
7	F11	Fuse box**	32A 2P	YE41032200000
8	-	Fuse**	2A	YE46002000100
9	F12	Fuse**	2A	YE41001000000
10	T	Transformer	500mA	YE70402300800
11	S1	Thermocouple	-	-
12	S2 S3	Thermocouple	-	-
13	S4	Overheat protector	-	-
14	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
15	PC1	Circuit board	100~240VAC 50/60Hz	YE81100010000
16	A	Control panel	-	
17	Y1	Solenoid valve**	230VAC 50/60Hz	-
18	X1	Terminal board	-	YE61250040000
19	-	Terminal board	-	YE61253500000
20	M1	Motor**	400V 50Hz 0.5kW	-
21	EH1	Heater**	400V 50Hz 6kW	-
22	FM	Fan*	230V 50/60Hz	-

\* means possible broken parts.

\*\* means easy broken part. and spare backup is suggested.

Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

Table 2-6: Electrical Components List (STM-910W 400V)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	25A	YE10125250000
2	Q2	Circuit breakers**	25A	YE40602500000
3	-	Excitation break away**	-	YE40023560000
4	K1	Contactors**	220V 50/60Hz	YE00601521000
5	K2	Contactors**	220V 50/60Hz	YE00602522000
6	F1	Overload relays	2.2~3.2A	YE01160220000
7	F11	Fuse box**	32A 2P	YE41032200000
8	-	Fuse**	2A	YE46002000100
9	F12	Fuse**	2A	YE41001000000
10	T	Transformer	500mA	YE70402300800
11	S1	Thermocouple	-	-
12	S2 S3	Thermocouple	-	-
13	S4	Overheat protector	-	-
14	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
15	PC1	Circuit board	100~240VAC 50/60Hz	YE81100010000
16	A	Control panel	-	
17	Y1	Solenoid valve**	230VAC 50/60Hz	-
18	X1	Terminal board	-	YE61250040000
19	-	Terminal board	-	YE61253500000
20	-	Terminal board	-	YE61040000000
21	-	Terminal board	-	YE61043500000
22	M1	Motor**	400V 50Hz 0.75kW	-
23	EH1	Heater**	400V 50Hz 9kW	-
24	FM	Fan*	230V 50/60Hz	-

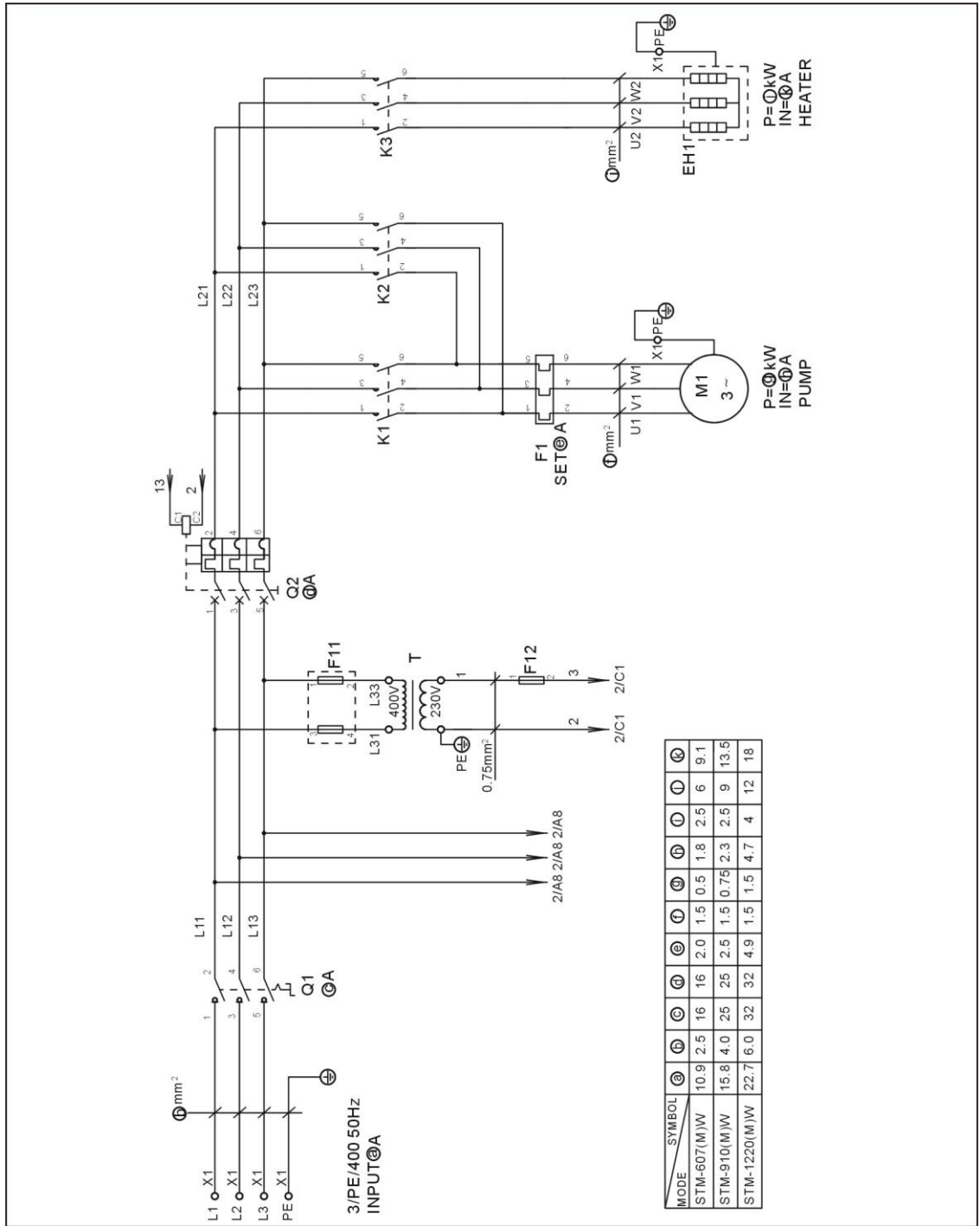
\* means possible broken parts. \*\* means easy broken part. and spare backup is suggested. Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

Table 2-7: Electrical Components List (STM-1220W 400V)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	32A	YE10323200000
2	Q2	Circuit breakers**	32A	YE40603200000
3	-	Excitation break away**	-	YE40023560000
4	K1	Contactors**	220V 50/60Hz	YE00601521000
5	K2	Contactors**	220V 50/60Hz	YE00602622000
6	F1	Overload relays	4.5~6.3A	YE01160450000
7	F11	Fuse box**	32A 2P	YE41032200000
8	-	Fuse**	2A	YE46002000100
9	F12	Fuse**	2A	YE41001000000
10	T	Transformer	500mA	YE70402300800
11	S1	Thermocouple	-	-
12	S2 S3	Thermocouple	-	-
13	S4	Overheat protector	-	-
14	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
15	PC1	Circuit board	100~240VAC 50/60Hz	YE81100010000
16	A	Control panel	-	
17	Y1	Solenoid valve**	230VAC 50/60Hz	-
18	X1	Terminal board	-	YE61250040000
19	-	Terminal board	-	YE61253500000
20	-	Terminal board	-	YE61043500000
21	-	Terminal board	-	YE61060000000
22	-	Terminal board	-	YE61063500000
23	M1	Motor**	400V 50Hz 1.5kW	-
24	EH1	Heater**	400V 50Hz 12kW	-
25	FM	Fan*	230V 50/60Hz	-

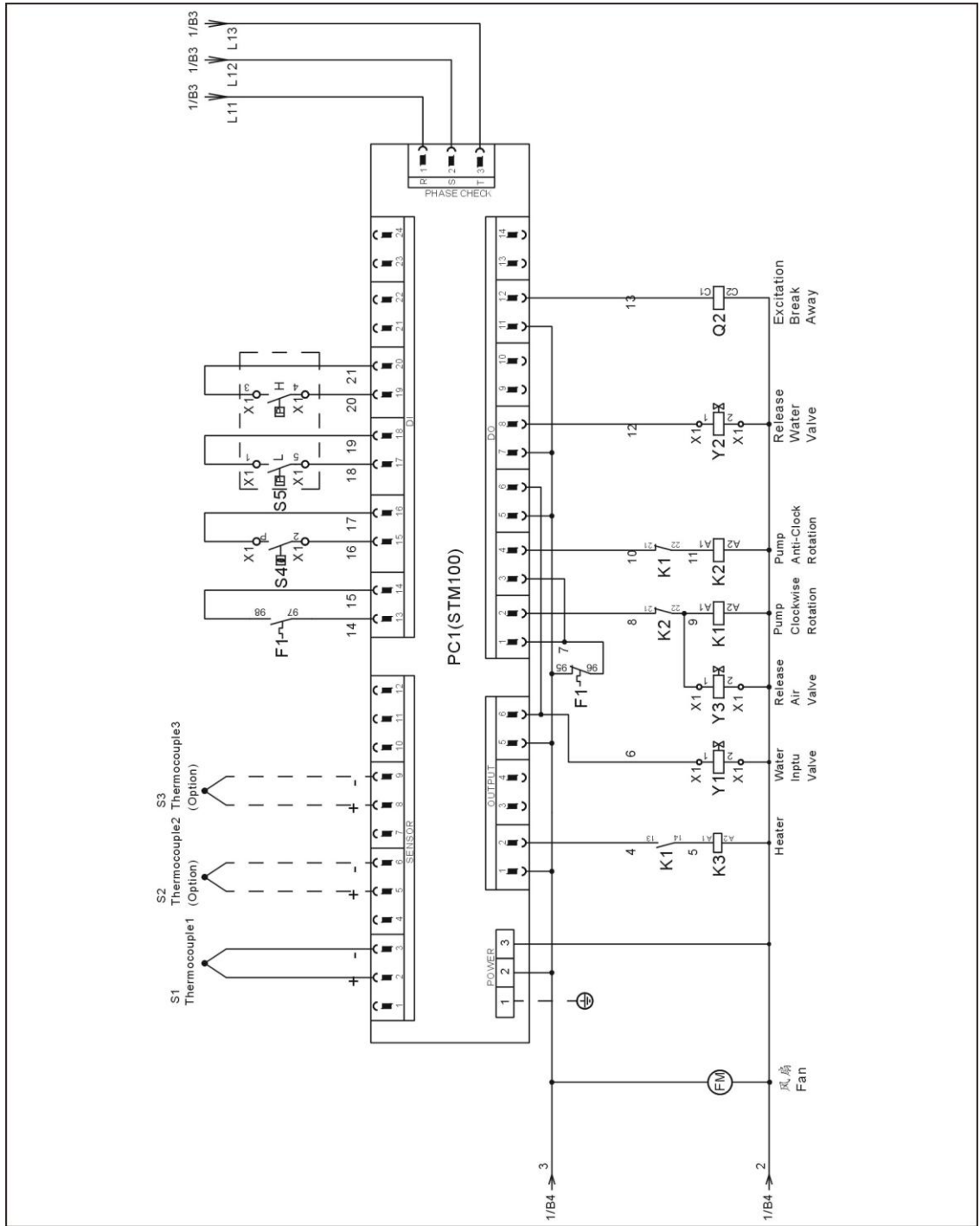
\* means possible broken parts. \*\* means easy broken part. and spare backup is suggested. Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

### 2.3.5 Main Circuit (STM-607WA~1220WA 400V)



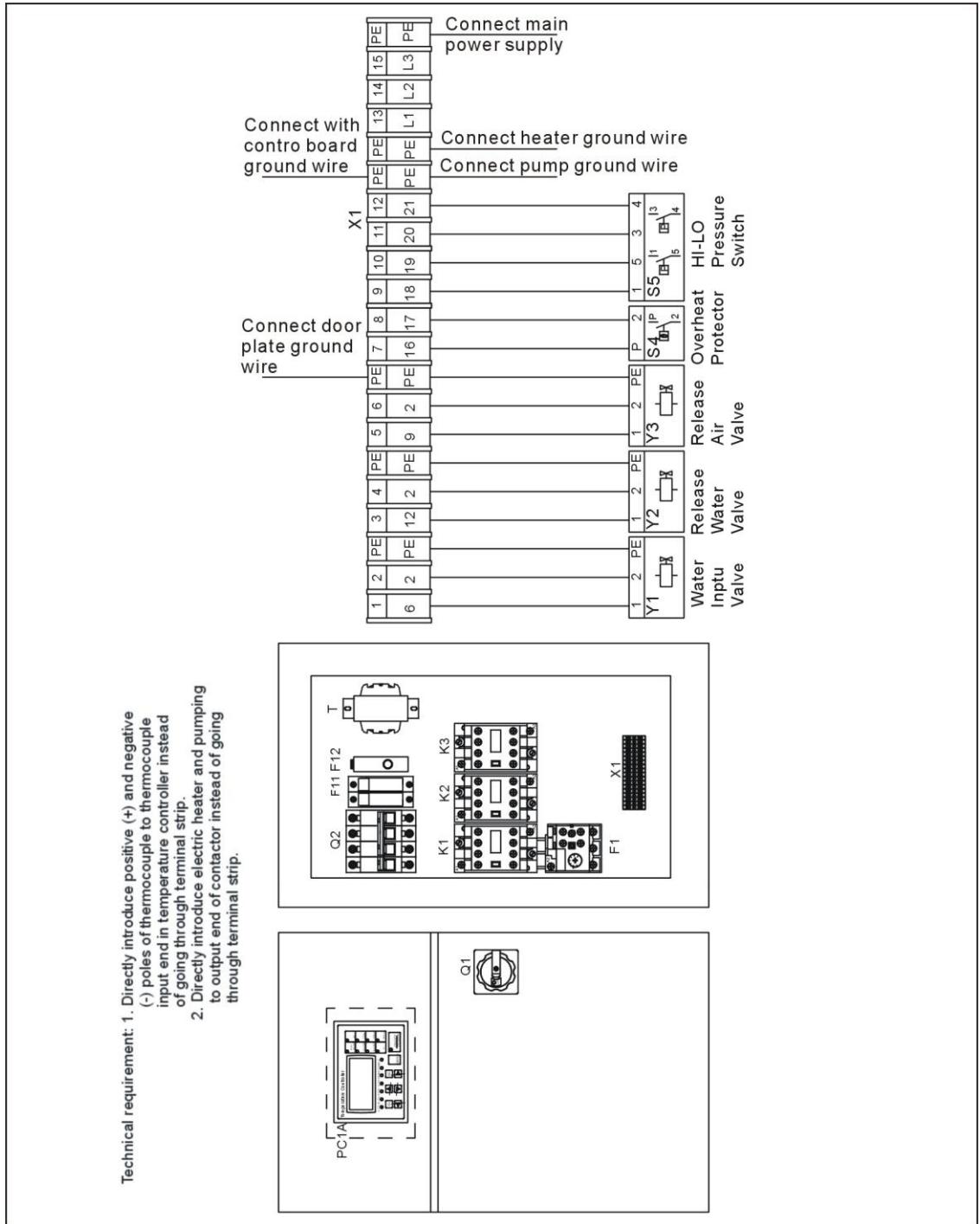
Picture 2-10: Main Circuit (STM-607WA~1220WA 400V)

### 2.3.6 Control Circuit (STM-607WA~1220WA 400V)



Picture 2-11: Control Circuit (STM-607WA~1220WA 400V)

### 2.3.7 Electrical Components Layout (STM-607WA~1220WA 400V)



Picture 2-12: Thermocouple and Terminal Layout (STM-607WA~1220WA 400V)

### 2.3.8 Electrical Components List (STM-607WA~1220WA 400V)

Table 2-8: Electrical Components List (STM-607WA 400V)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	16A	YE10021160000
2	Q2	Circuit breakers**	16A	YE40601500000
3	-	Excitation break away**	-	YE40023560000
4	K1 K2	Contactors**	220V 50/60Hz	YE00601521000
5	K3	Contactors**	220V 50/60Hz	YE00601800000
6	F1	Overload relays	1.8~2.5A	YE01160180000
7	F11	Fuse box**	32A 2P	YE41032200000
8	-	Fuse**	2A	YE46002000100
9	F12	Fuse**	2A	YE41001000000
10	T	Transformer	500mA	YE70402300800
11	S1	Thermocouple	-	-
12	S2 S3	Thermocouple	-	-
13	S4	Overheat protector	-	-
14	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
15	PC1 A	Circuit board	100~240VAC 50/60Hz	YE81100010000
16	Y1~Y3	Solenoid valve**	230VAC 50/60Hz	-
17	X1	Terminal board	-	YE61250040000
18	-	Terminal board	-	YE61253500000
19	M1	Motor**	400V 50Hz 0.5kW	-
20	EH1	Heater**	400V 50Hz 6kW	-
21	FM	Fan*	230V 50/60Hz	-

\* means possible broken parts.

\*\* means easy broken part. and spare backup is suggested.

Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

Table 2-9: Electrical Components List (STM-910WA 400V)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	25A	YE10125250000
2	Q2	Circuit breakers**	25A	YE40602500000
3	-	Excitation break away**	-	YE40023560000
4	K1 K2	Contactors**	220V 50/60Hz	YE00601521000
5	K3	Contactors**	220V 50/60Hz	YE00602522000
6	F1	Overload relays	2.2~3.2A	YE01160220000
7	F11	Fuse box**	32A 2P	YE41032200000
8	-	Fuse**	2A	YE46002000100
9	F12	Fuse**	2A	YE41001000000
10	T	Transformer	500mA	YE70402300800
11	S1	Thermocouple	-	-
12	S2 S3	Thermocouple	-	-
13	S4	Overheat protector	-	-
14	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
15	PC1 A	Circuit board	100~240VAC 50/60Hz	YE81100010000
16	Y1~Y3	Solenoid valve**	230VAC 50/60Hz	-
17	X1	Terminal board	-	YE61250040000
18	-	Terminal board	-	YE61253500000
19	-	Terminal board	-	YE61040000000
20	-	Terminal board	-	YE61043500000
21	M1	Motor**	400V 50Hz 0.75kW	-
22	EH1	Heater**	400V 50Hz 9kW	-
23	FM	Fan*	230V 50/60Hz	-

\* means possible broken parts. \*\* means easy broken part. and spare backup is suggested. Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

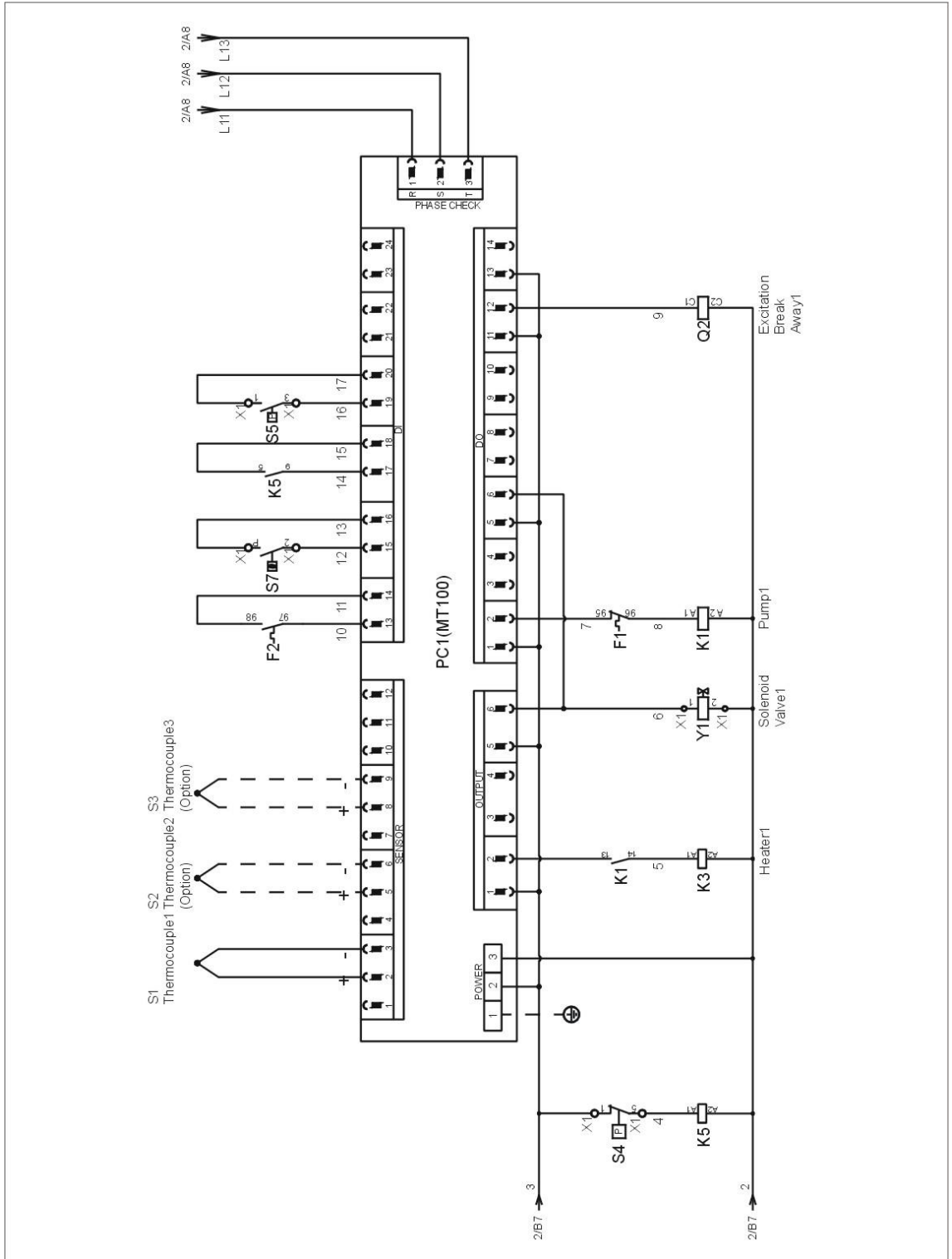
Table 2-10: Electrical Components List (STM-1220W 400V)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	32A	YE10323200000
2	Q2	Circuit breakers**	32A	YE40603200000
3	-	Excitation break away**	-	YE40023560000
4	K1 K2	Contactors**	220V 50/60Hz	YE00601521000
5	K3	Contactors**	220V 50/60Hz	YE00602622000
6	F1	Overload relays	4.5~6.3A	YE01160450000
7	F11	Fuse box**	32A 2P	YE41032200000
8	-	Fuse**	2A	YE46002000100
9	F12	Fuse**	2A	YE41001000000
10	T	Transformer	500mA	YE70402300800
11	S1	Thermocouple	-	-
12	S2 S3	Thermocouple	-	-
13	S4	Overheat protector	-	-
14	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
15	PC1 A	Circuit board	100~240VAC 50/60Hz	YE81100010000
16	Y1~Y3	Solenoid valve**	230VAC 50/60Hz	-
17	X1	Terminal board	-	YE61250040000
18	-	Terminal board	-	YE61253500000
19	-	Terminal board	-	YE61043500000
20	-	Terminal board	-	YE61060000000
21	-	Terminal board	-	YE61063500000
22	M1	Motor**	400V 50Hz 1.5kW	-
23	EH1	Heater**	400V 50Hz 12kW	-
24	FM	Fan*	230V 50/60Hz	-

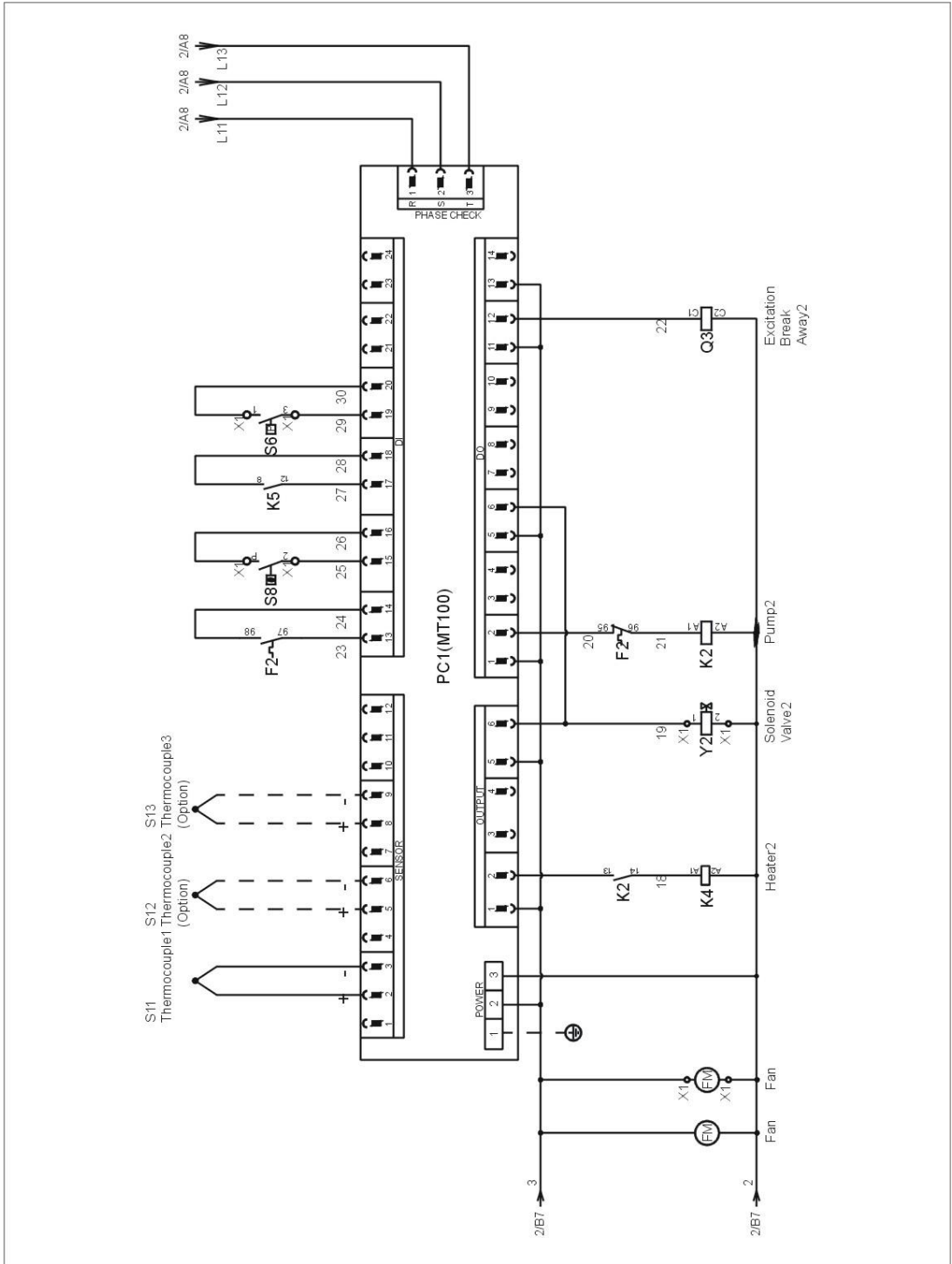
\* means possible broken parts. \*\* means easy broken part. and spare backup is suggested. Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.



### 2.3.10 Control Circuit (STM-607W-D/910W-D 400V)

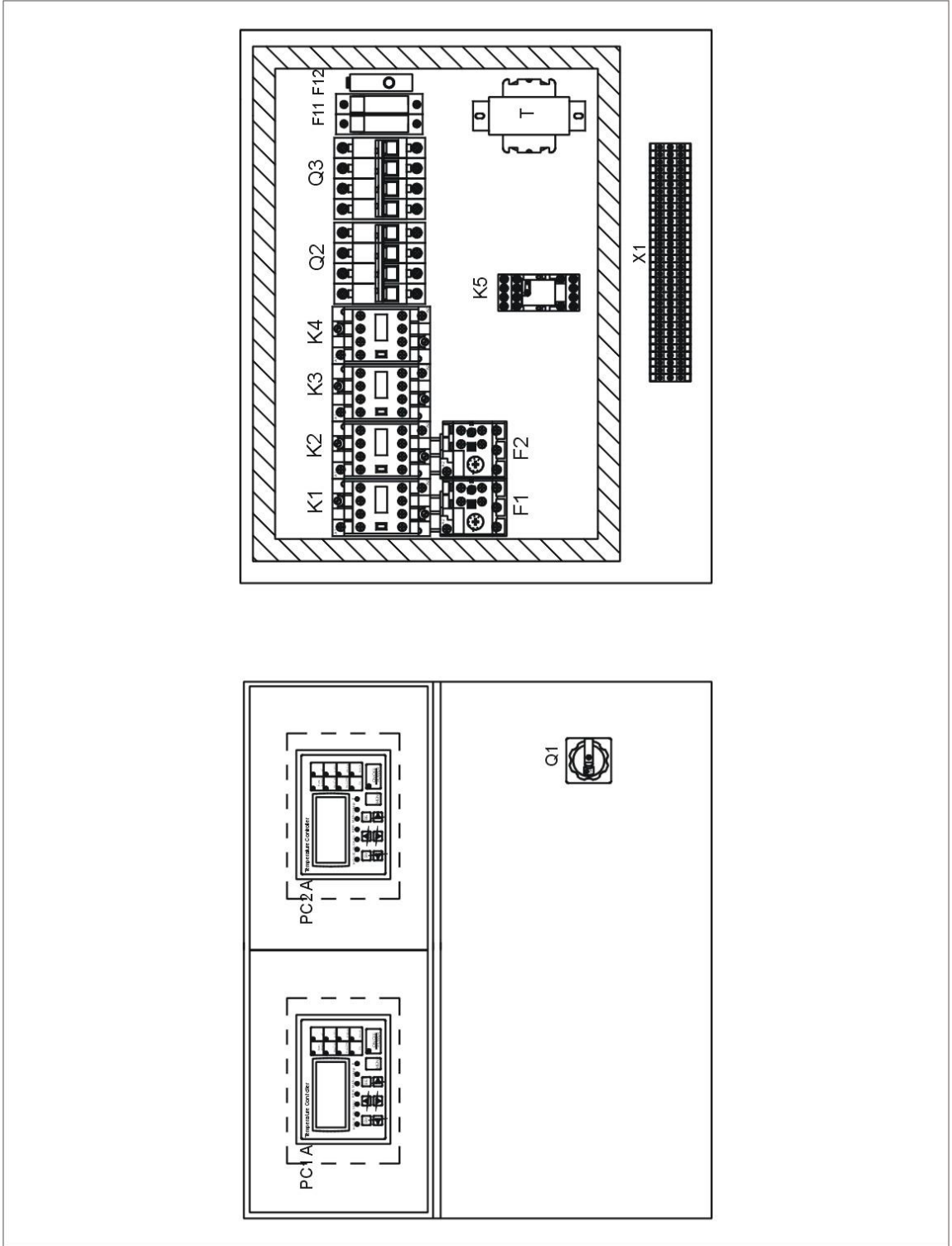


Picture 2-14: Control Circuit 1(STM-607W-D/910W-D 400V)



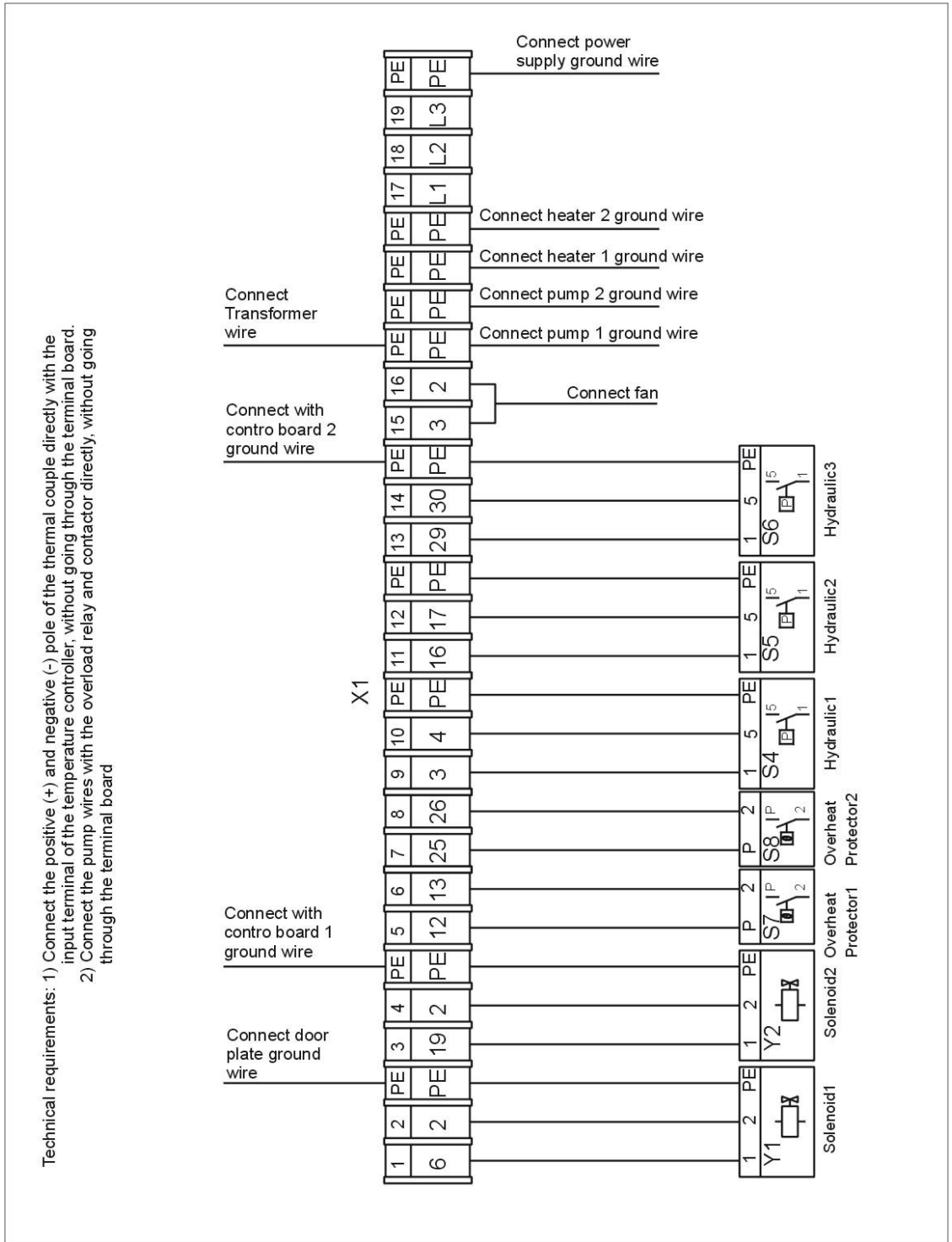
Picture 2-15: Control Circuit 2(STM-607W-D/910W-D 400V)

### 2.3.11 Electrical Components Layout (STM-607W-D/910W-D 400V)



Picture 2-16: Electrical Components Layout (STM-607W-D/910W-D 400V)

### 2.3.12 Thermocouple and Terminal Layout (STM-607W-D/910W-D 400V)



Picture 2-17: Thermocouple and Terminal Layout (STM-607W-D/910W-D 400V)

### 2.3.13 Electrical Components List (STM-607W-D/910W-D 400V)

Table 2-11: Electrical Components List (STM-607W-D 400V)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	32A	YE10323200000
2	Q2 Q3	Circuit breakers**	16A	YE40601500000
3	-	Excitation break away**	-	YE40023560000
4	K1 K2	Contactors**	220V 50/60Hz	YE00601521000
5	K3 K4	Contactors**	220V 50/60Hz	YE00601800000
6	K5	Middle relay	230V 50/60Hz	YE03270700000
7	F1 F2	Overload relays	1.8~2.5A	YE01160180000
8	T	Transformer	IN=400V      OUT=230V 500mA	YE70402300800
9	F11	Fuse box**	32A 2P	YE41032200000
10	-	Fuse**	2A	YE46002000100
11	F12	Fuse**	2A	YE41001000000
12	PC1	Circuit board	100~240VAC 50/60Hz	YE81100010000
13	A	Control panel	-	
14	S1 S11	Thermocouple	-	-
15	S2 S3 S12 S13	Thermocouple	-	-
16	S7 S8	Overheat protector	250V 5(4)A	YE21503000000
17	S4~S6	Hydraulic switch	AC 230V 12A	YE15102400000
18	Y1 Y2	Solenoid valve**	230VAC 50/60Hz	-
19	X1	Terminal board	-	YE61250040000
20	-	Terminal board	-	YE61253500000
21	-	Terminal board	-	YE61060000000
22	-	Terminal board	-	YE61063500000
23	M1 M2	Motor**	400V 50Hz 0.5kW	-
24	EH1 EH2	Heater**	400V 50Hz 6kW	-
25	FM	Fan*	230V 50/60Hz	-

\* means possible broken parts.

\*\* means easy broken part. and spare backup is suggested.

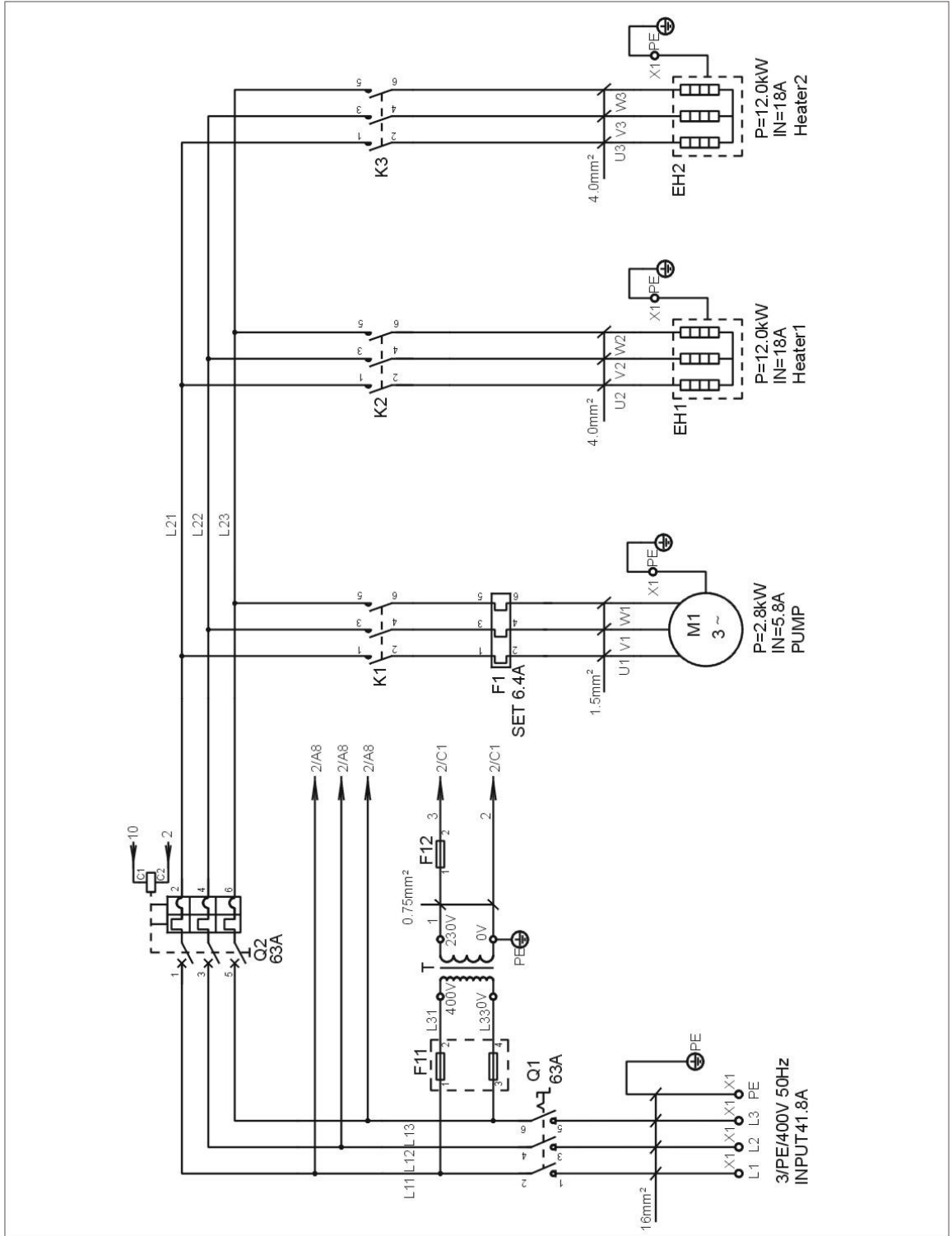
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

Table 2-12: Electrical Components List (STM-910W-D 400V)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	63A	YE10636300000
2	Q2 Q3	Circuit breakers**	25A	YE40602500000
3	-	Excitation break away**	-	YE40023560000
4	K1 K2	Contactors**	220V 50/60Hz	YE00601521000
5	K3 K4	Contactors**	220V 50/60Hz	YE00602522000
6	K5	Middle relay	230V 50/60Hz	YE03270700000
7	F1 F2	Overload relays	2.2~3.2A	YE01160220000
8	T	Transformer	IN=400V OUT=230V 500mA	YE70402300800
9	F11	Fuse box**	32A 2P	YE41032200000
10	-	Fuse**	2A	YE46002000100
11	F12	Fuse**	2A	YE41001000000
12	PC1	Circuit board	100~240VAC 50/60Hz	YE81100010000
13	A	Control panel	-	
14	S1 S11	Thermocouple	-	-
15	S2 S3 S12 S13	Thermocouple	-	-
16	S7 S8	Overheat protector	250V 5(4)A	YE21503000000
17	S4~S6	Hydraulic switch	AC 230V 12A	YE15102400000
18	Y1 Y2	Solenoid valve**	230VAC 50/60Hz	-
19	X1	Terminal board	-	YE61250040000
20	-	Terminal board	-	YE61253500000
21	-	Terminal board	-	YE61100000000
22	-	Terminal board	-	YE61103500000
23	M1 M2	Motor**	400V 50Hz 0.7kW	-
24	EH1 EH2	Heater**	400V 50Hz 9W	-
25	FM	Fan*	230V 50/60Hz	-

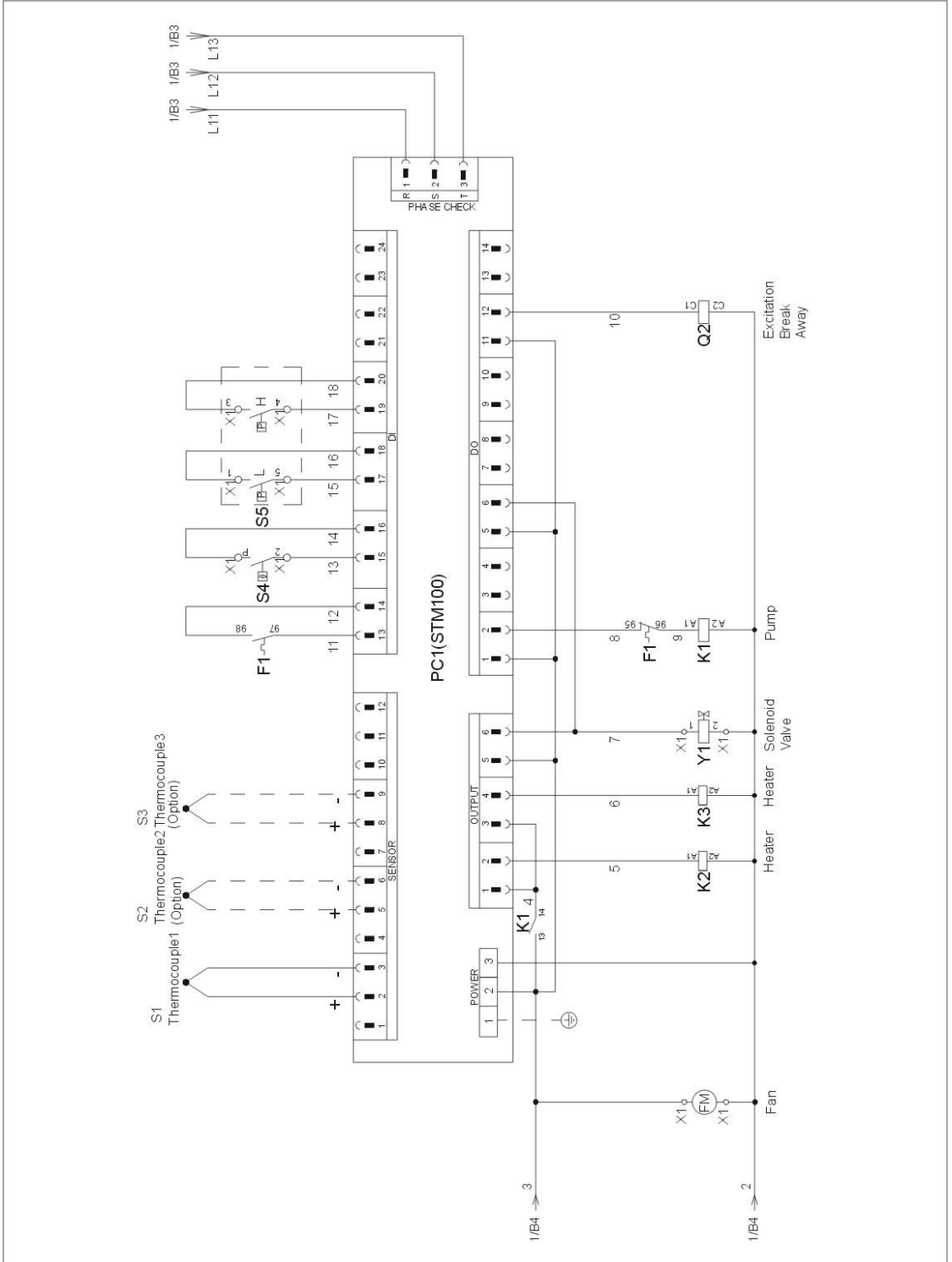
\* means possible broken parts. \*\* means easy broken part. and spare backup is suggested. Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

### 2.3.14 Main Circuit (STM-2440W 400V)



Picture 2-18: Main Circuit (STM-2440W 400V)

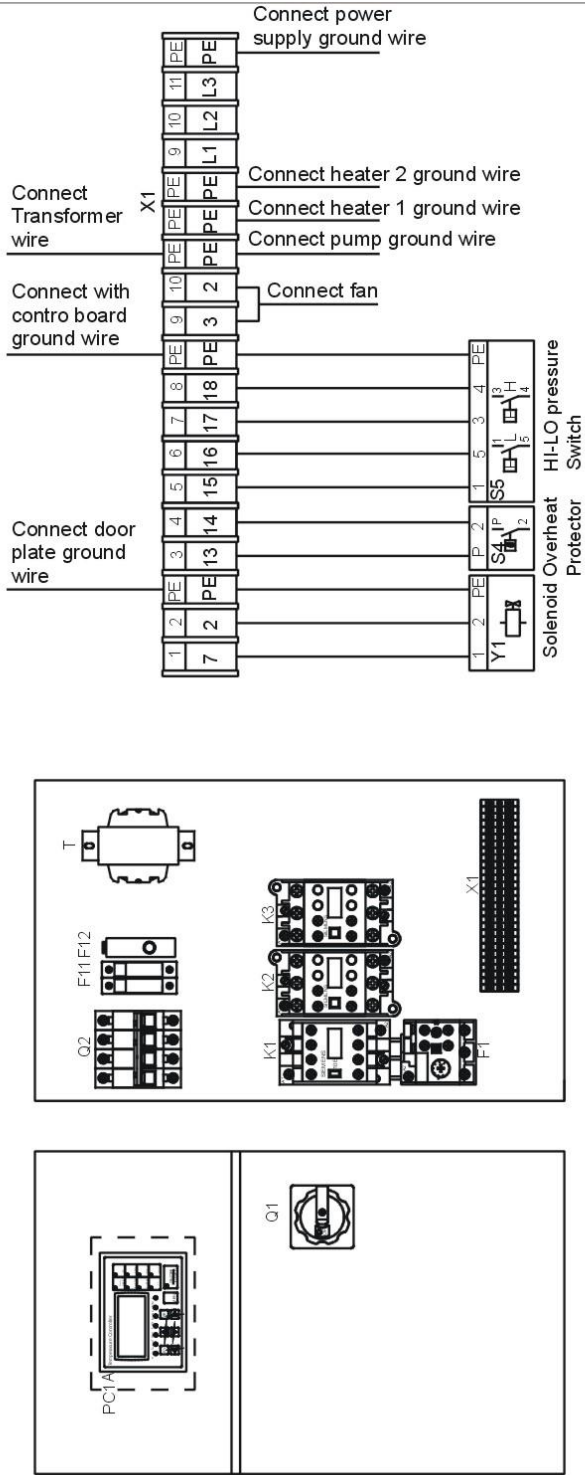
### 2.3.15 Control Circuit (STM-2440W 400V)



Picture 2-19: Control Circuit (STM-2440W 400V)

### 2.3.16 Thermocouple and Terminal Layout (STM-2440W 400V)

Technical requirements: 1) Connect the positive (+) and negative (-) pole of the thermal couple directly with the input terminal of the temperature controller, without going through the terminal board.  
 2) Connect the pump wires with the overload relay and contactor directly, without going through the terminal board



Picture 2-20: Thermocouple and Terminal Layout (STM-2440W 400V)

### 2.3.17 Electrical Components List (STM-2440W 400V)

Table 2-13: Electrical Components List (STM-2440W 400V)

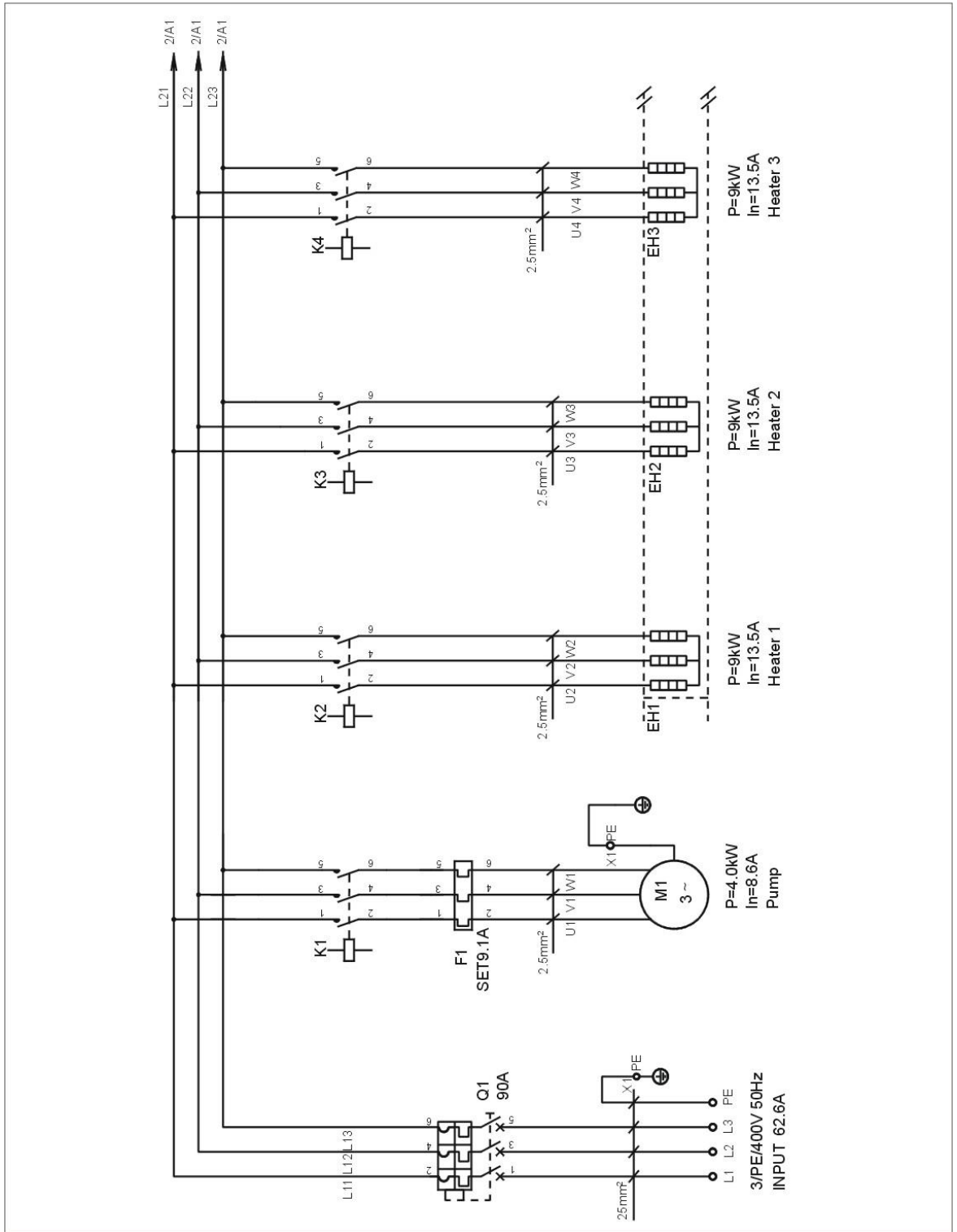
NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	63A	YE10636300000
2	Q2	Circuit breakers**	25A	YE40606000000
3	-	Break away**	-	YE40023560000
4	K1	Contactors*	220V 50/60Hz	YE00601521000
5	K2 K3	Contactors**	220V 50/60Hz	YE00602622000
6	F1	Overload relays	5.5~8A	YE01160550000
7	T	Transformer	IN=400V      OUT=230V 500mA	YE70402300800
8	F11	Fuse box**	32A 2P	YE41032200000
9	-	Fuse**	2A	YE46002000100
10	F12	Fuse**	2A	YE41001000000
11	S1	Thermocouple	-	-
12	S2 S3	Thermocouple	-	-
13	S4	Overheat protector	250V 5(4)A	YE21503000000
14	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
15	PC1	Circuit board	100~240VAC 50/60Hz	YE81100010000
16	A	Control panel	-	
17	Y1	Solenoid valve**	230VAC 50/60Hz	-
18	X1	Terminal board	-	YE61250040000
19	-	Terminal board	-	YE61253500000
20	-	Terminal board	-	YE61043500000
21	-	Terminal board	-	YE61160000000
22	-	Terminal board	-	YE61163500000
23	M1	Motor**	400V 50Hz 2.8kW	-
24	EH1 EH2	Heater**	400V 50Hz 12W	-
25	FM	Fan*	230V 50/60Hz	-

\* means possible broken parts.

\*\* means easy broken part. and spare backup is suggested.

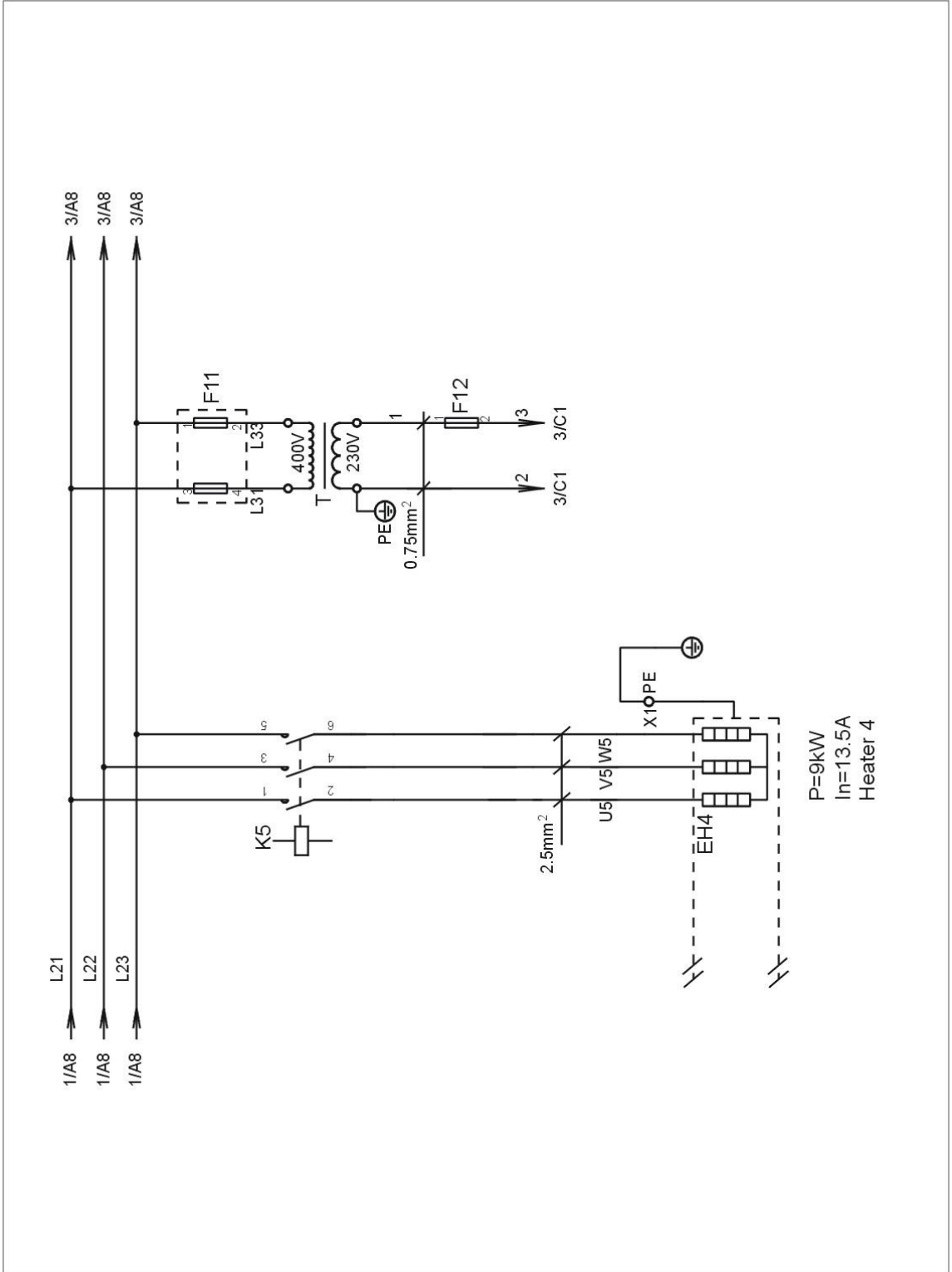
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

### 2.3.18 Main Circuit (STM-3650W 400V)



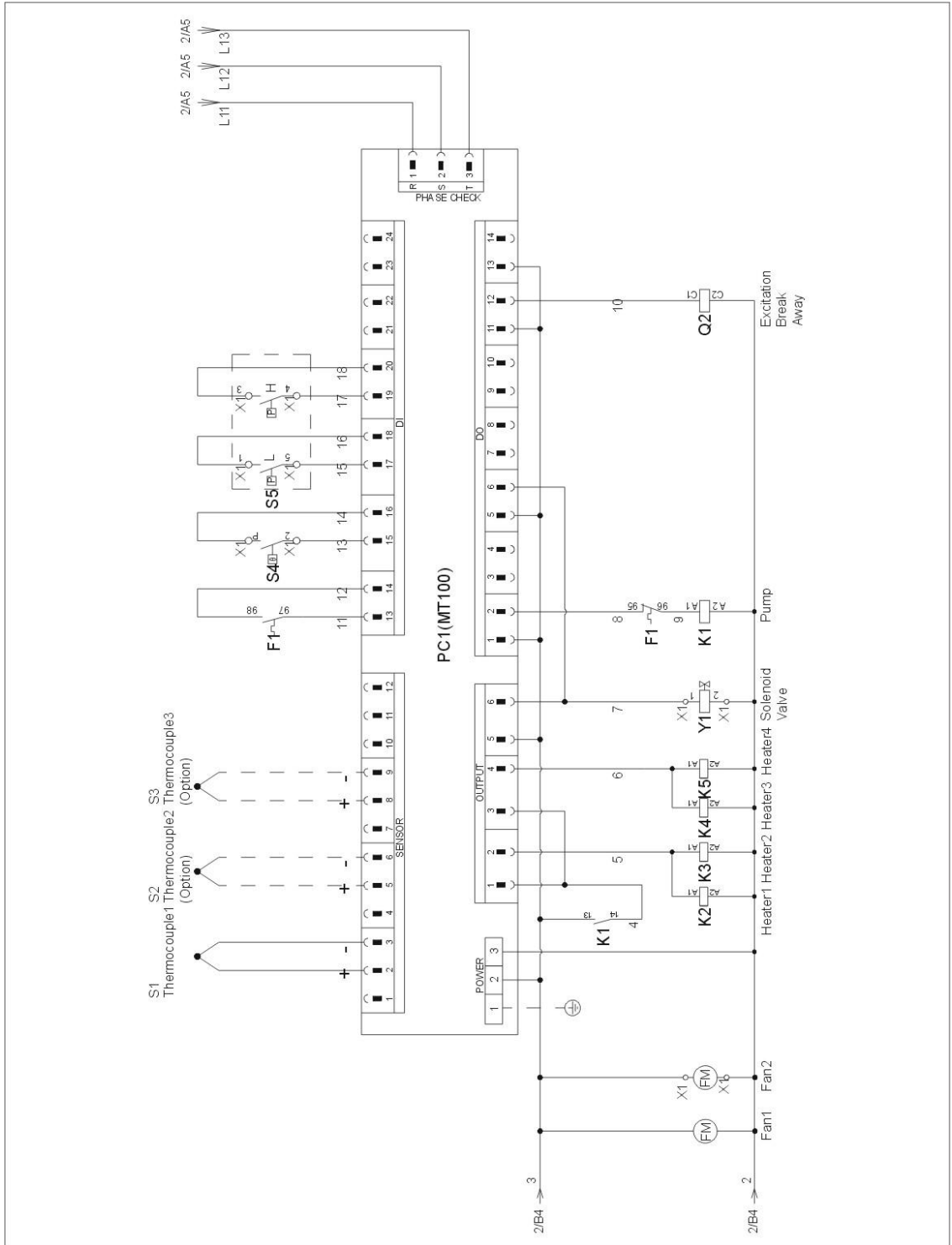
Picture 2-21: Main Circuit 1(STM-3650W 400V)





Picture 2-22: Main Circuit 2(STM-3650W 400V)

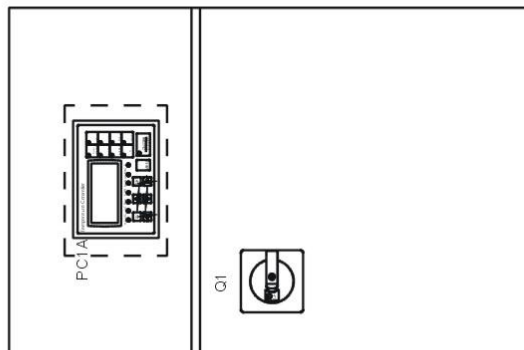
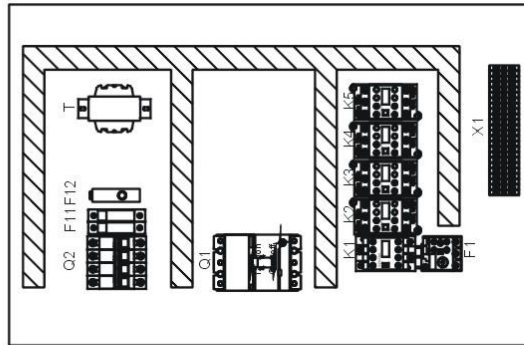
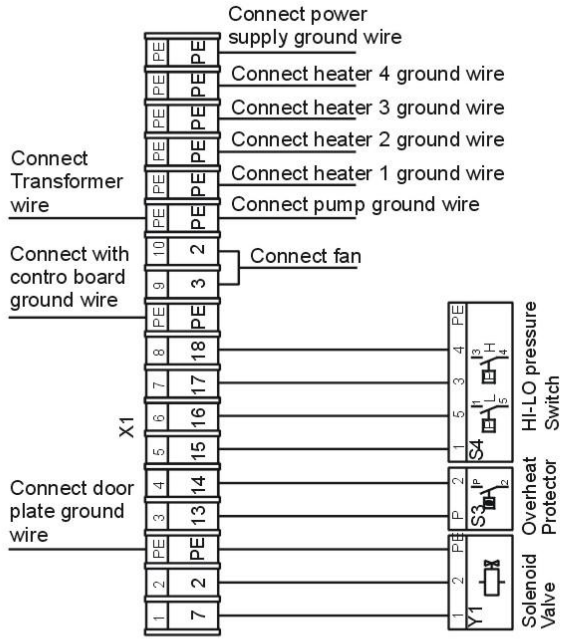
### 2.3.19 Control Circuit (STM-3650W 400V)



Picture 2-23: Control Circuit (STM-3650W 400V)

### 2.3.20 Electrical Components Layout (STM-3650W 400V)

Technical requirements: 1) Connect the positive (+) and negative (-) pole of the thermal couple directly with the input terminal of the temperature controller, without going through the terminal board.  
 2) Connect the pump wires with the overload relay and contactor directly, without going through the terminal board



Picture 2-24: Electrical Components Layout (STM-3650W 400V)

## 2.3.21 Electrical Components List (STM-3650W 400V)

Table 2-14: Electrical Components List (STM-3650W 400V)

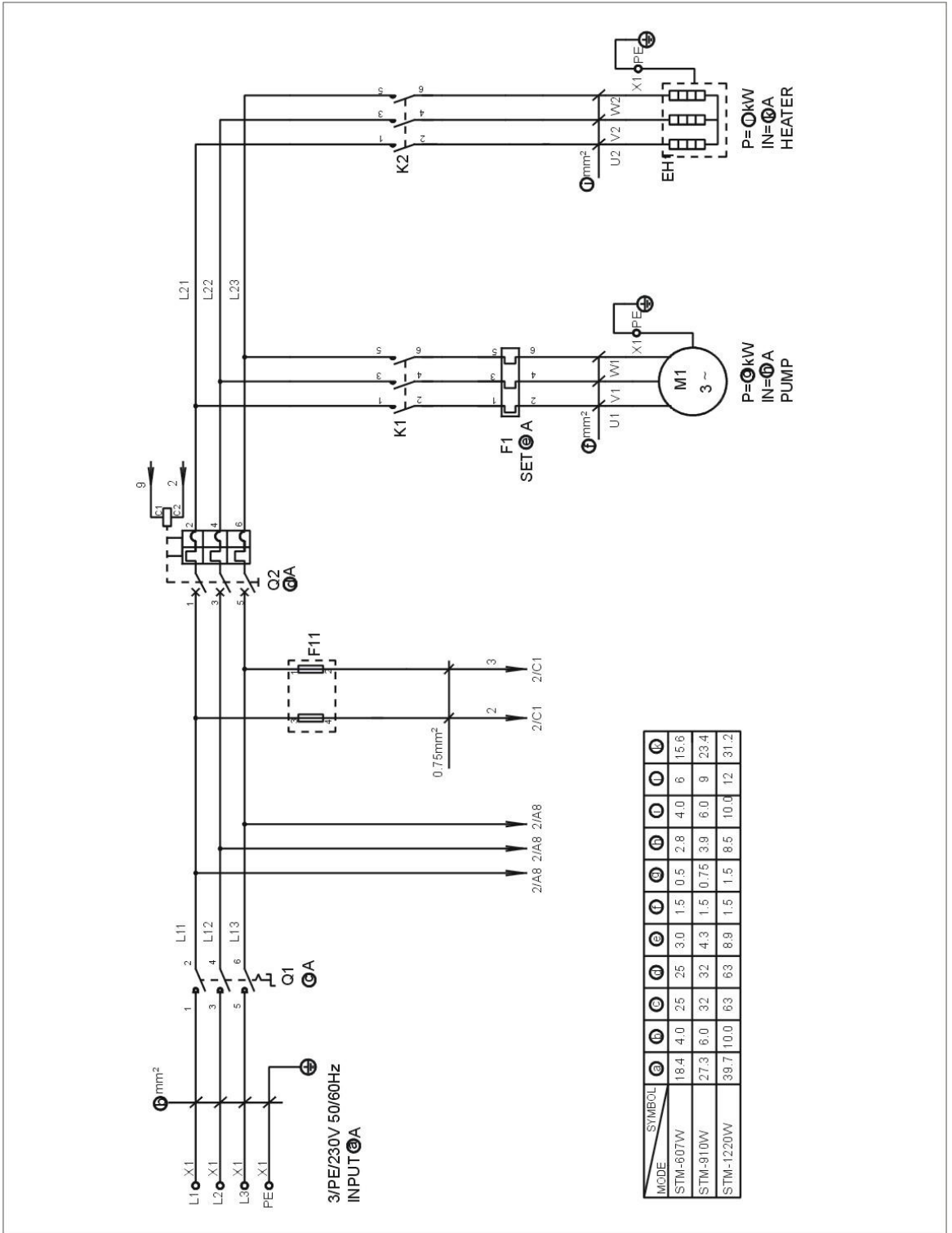
NO.	Symbol	Name	Specification	Part NO.
1	Q1	Circuit break*	90A	YE41109000000
2	-	Circuit breake**	220VAC 50/60Hz	YE40101600000
3	K1	Break away**	220V 50/60Hz	YE00601621000
4	K2~K5	Break away**	220V 50/60Hz	YE00602522000
5	F1	Overload relays	7~10A	YE01167100000
6	T	Transformer*	IN=400V      OUT=230V 500mA	YE70402300800
7	F11	Fuse box**	32A 2P	YE41032200000
8	-	Fuse**	2A	YE46002000100
9	F12	Fuse**	2A	YE41001000000
10	S1	Thermocouple	-	-
11	S2 S3	Thermocouple	-	-
12	S4	Overheat protector	250V 5(4)A	YE21503000000
13	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
14	PC1	Circuit board	100~240VAC 50/60Hz	YE81100010000
15	A	Control panel	-	
16	Y1	Solenoid valve**	230V 50/60Hz	-
17	X1	Terminal board	-	YE61250040000
18	-	Terminal board	-	YE61253500000
19	-	Terminal board	-	YE61163500000
20	M1	Motor**	400V 50Hz 4.0kW	-
21	EH1~EH4	Heater**	400V 50Hz 9.0kW	-
22	FM1	Fan*	230V 50/60Hz	-

\* means possible broken parts.

\*\* means easy broken part. and spare backup is suggested.

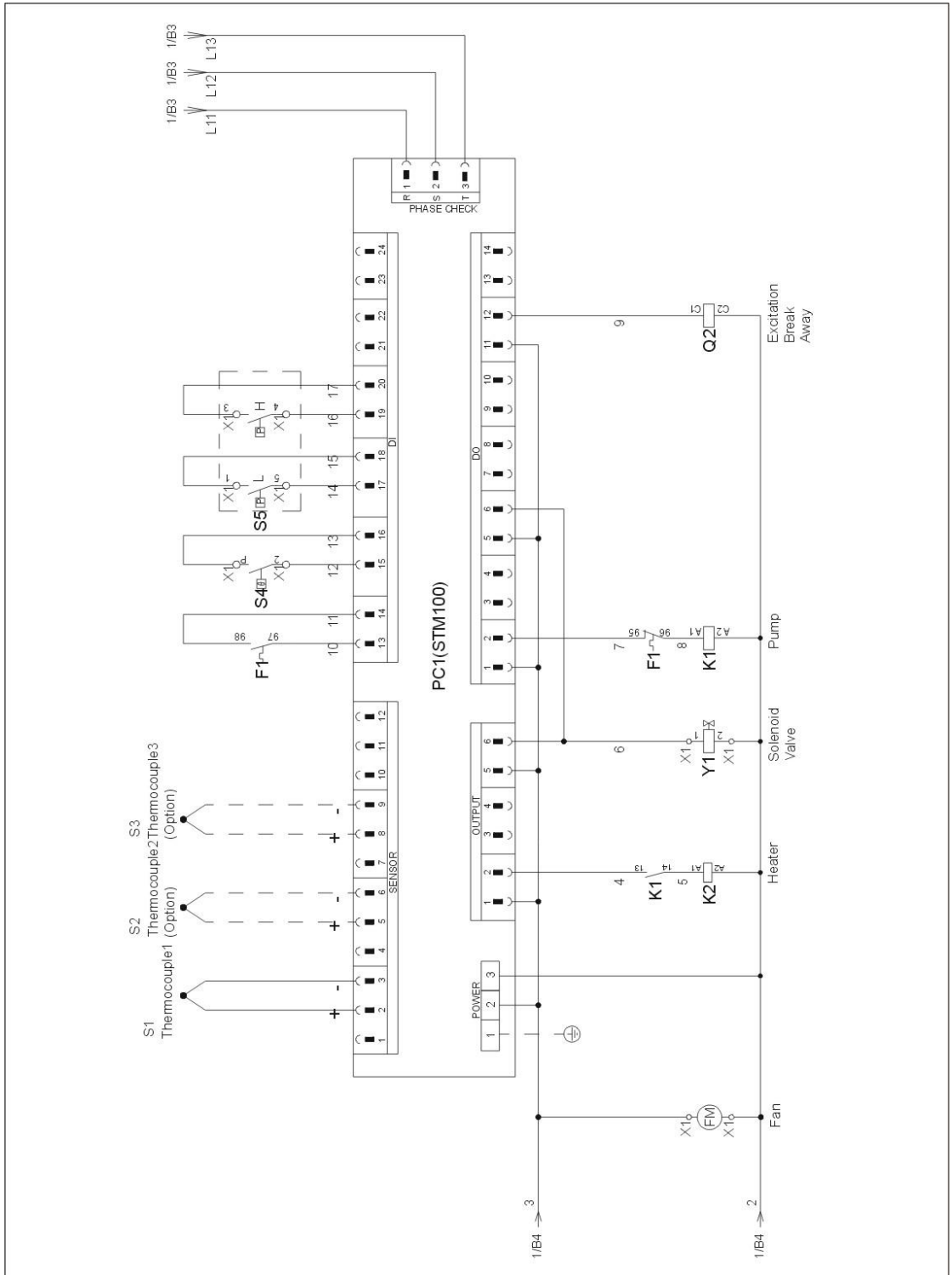
Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

### 2.3.22 Main Circuit (STM-607W~1220W 230V)



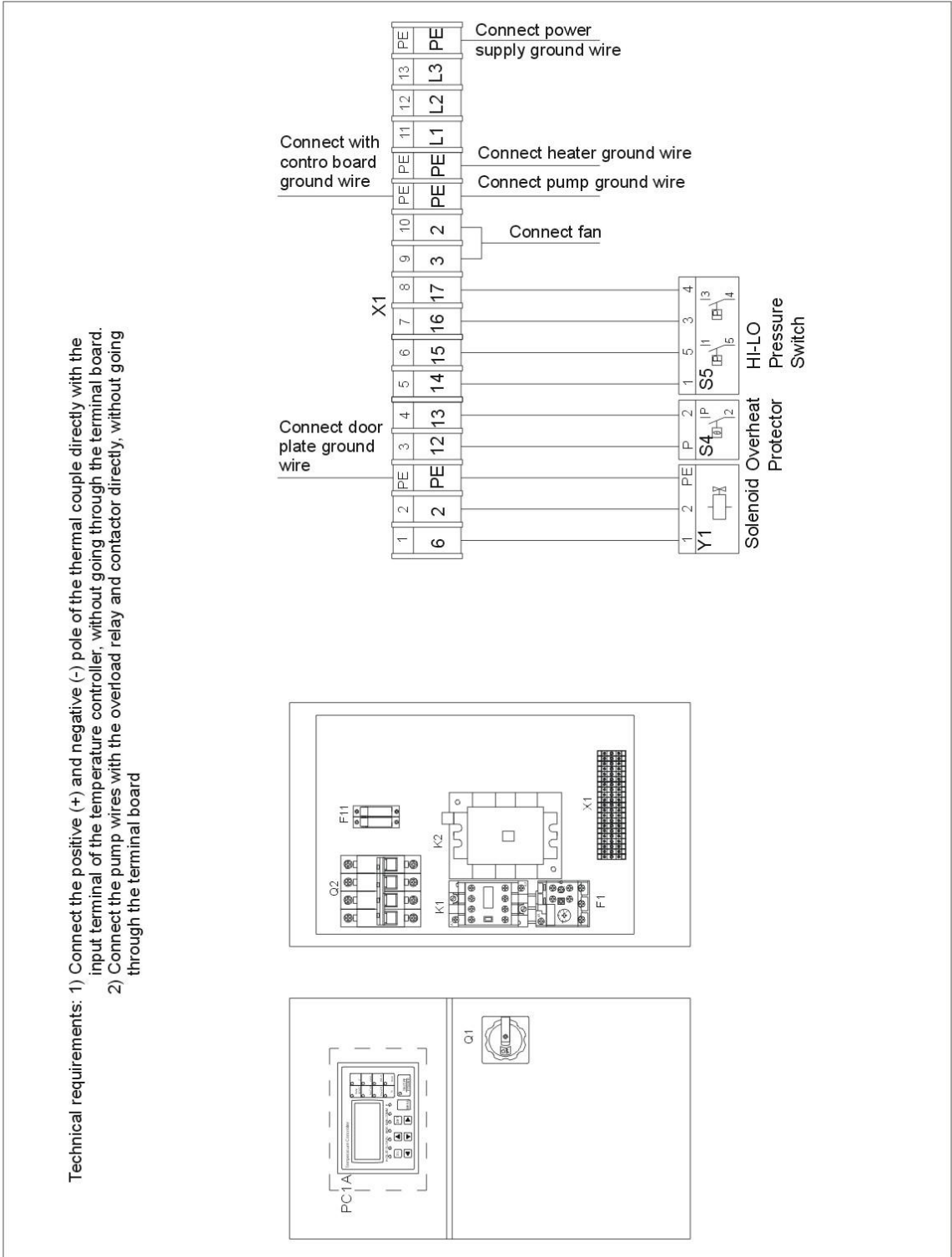
Picture 2-25: Main Circuit (STM-607W~1220W 230V)

### 2.3.23 Control Circuit (STM-607W~1220W 230V)



Picture 2-26: Control Circuit (STM-607W~1220W 230V)

### 2.3.24 Electrical Components Layout (STM-607W~1220W 230V)



Picture 2-27: Thermocouple and Terminal Layout (STM-607W~1220W 230V)

### 2.3.25 Electrical Components List (STM-607W~1220W 230V)

Table 2-15: Electrical Components List (STM-607W 230V)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	25A	YE10125250000
2	Q2	Circuit breakers**	25A	YE40602500000
3	-	Excitation break away**	-	YE40023560000
4	K1	Contactors**	220V 50/60Hz	YE00601521000
5	K2	Contactors**	220V 50/60Hz	YE00602522000
6	F1	Overload relays	2.8~4A	YE01160280000
7	F11	Fuse box**	32A 2P	YE41032200000
8	-	Fuse**	2A	YE46002000100
9	S1	Fuse**	-	-
10	S2 S3	Thermocouple	-	-
11	S4	Thermocouple	-	-
12	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
13	PC1	Circuit board	100~240VAC 50/60Hz	YE81100010000
14	A	Control panel	-	
15	Y1	Solenoid valve**	230VAC 50/60Hz	-
16	X1	Solenoid valve**	-	YE61250040000
17	-	Terminal board	-	YE61253500000
18	-	Terminal board	-	YE61040000000
19	-	Terminal board	-	YE61043500000
20	M1	Motor**	400V 50Hz 0.5kW	-
21	EH	Heater**	400V 50Hz 6kW	-
22	FM	Fan*	230V 50/60Hz	-

\* means possible broken parts.

\*\* means easy broken part. and spare backup is suggested.

Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

Table 2-16: Electrical Components List (STM-910W 230V)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	32A	YE10323200000
2	Q2	Circuit breakers**	32A	YE40603200000
3	-	Excitation break away**	-	YE40023560000
4	K1	Contactors**	220V 50/60Hz	YE00601521000
5	K2	Contactors**	220V 50/60Hz	YE00602722000
6	F1	Overload relays	3.5~5A	YE01160350000
7	F11	Fuse box**	32A 2P	YE41032200000
8	-	Fuse**	2A	YE46002000100
9	S1	Fuse**	-	-
10	S2 S3	Thermocouple	-	-
11	S4	Thermocouple	-	-
12	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
13	PC1	Circuit board	100~240VAC 50/60Hz	YE81100010000
14	A	Control panel	-	
15	Y1	Solenoid valve**	230VAC 50/60Hz	-
16	X1	Solenoid valve**	-	YE61250040000
17	-	Terminal board	-	YE61253500000
18	-	Terminal board	-	YE61040000000
19	-	Terminal board	-	YE61043500000
20	M1	Motor**	400V 50Hz 0.75kW	-
21	EH	Heater**	400V 50Hz 9kW	-
22	FM	Fan*	230V 50/60Hz	-

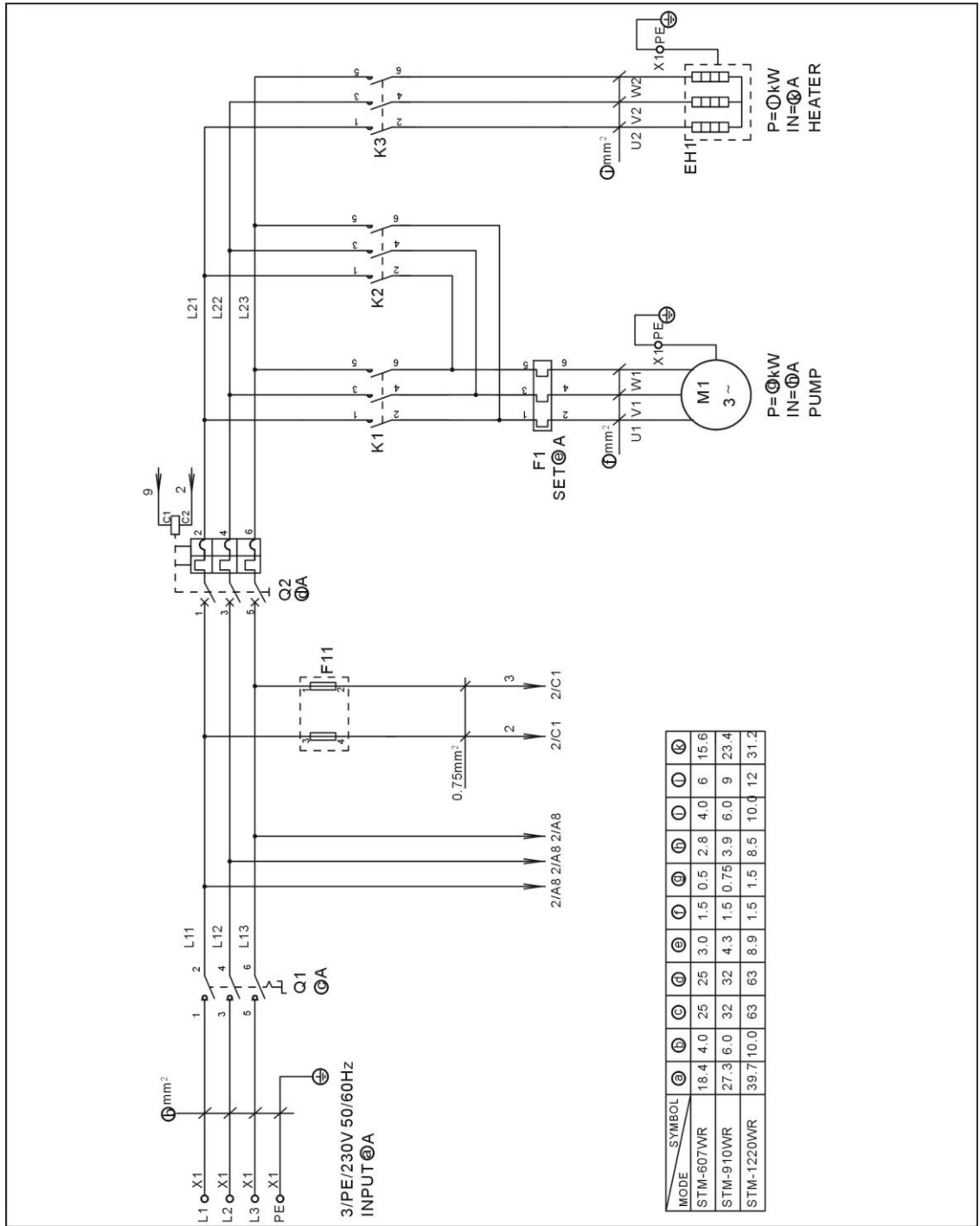
\* means possible broken parts. \*\* means easy broken part. and spare backup is suggested. Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

Table 2-17: Electrical Components List (STM-1220W 230V)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	63A	YE10636300000
2	Q2	Circuit breakers**	63A	YE40606000000
3	-	Excitation break away**	-	YE40023560000
4	K1	Contactors**	220V 50/60Hz	YE00601621000
5	K2	Contactors**	220V 50/60Hz	YE00503500000
6	F1	Overload relays	7~10A	YE01167100000
7	F11	Fuse box**	32A 2P	YE41032200000
8	-	Fuse**	2A	YE46002000100
9	S1	Fuse**	-	-
10	S2 S3	Thermocouple	-	-
11	S4	Thermocouple	-	-
12	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
13	PC1	Circuit board	100~240VAC 50/60Hz	YE81100010000
14	A	Control panel	-	
15	Y1	Solenoid valve**	230VAC 50/60Hz	-
16	X1	Solenoid valve**	-	YE61250040000
17	-	Terminal board	-	YE61253500000
18	-	Terminal board	-	YE61100000000
19	-	Terminal board	-	YE61103500000
20	M1	Motor**	400V 50Hz 1.5kW	-
21	EH	Heater**	400V 50Hz 12kW	-
22	FM	Fan*	230V 50/60Hz	-

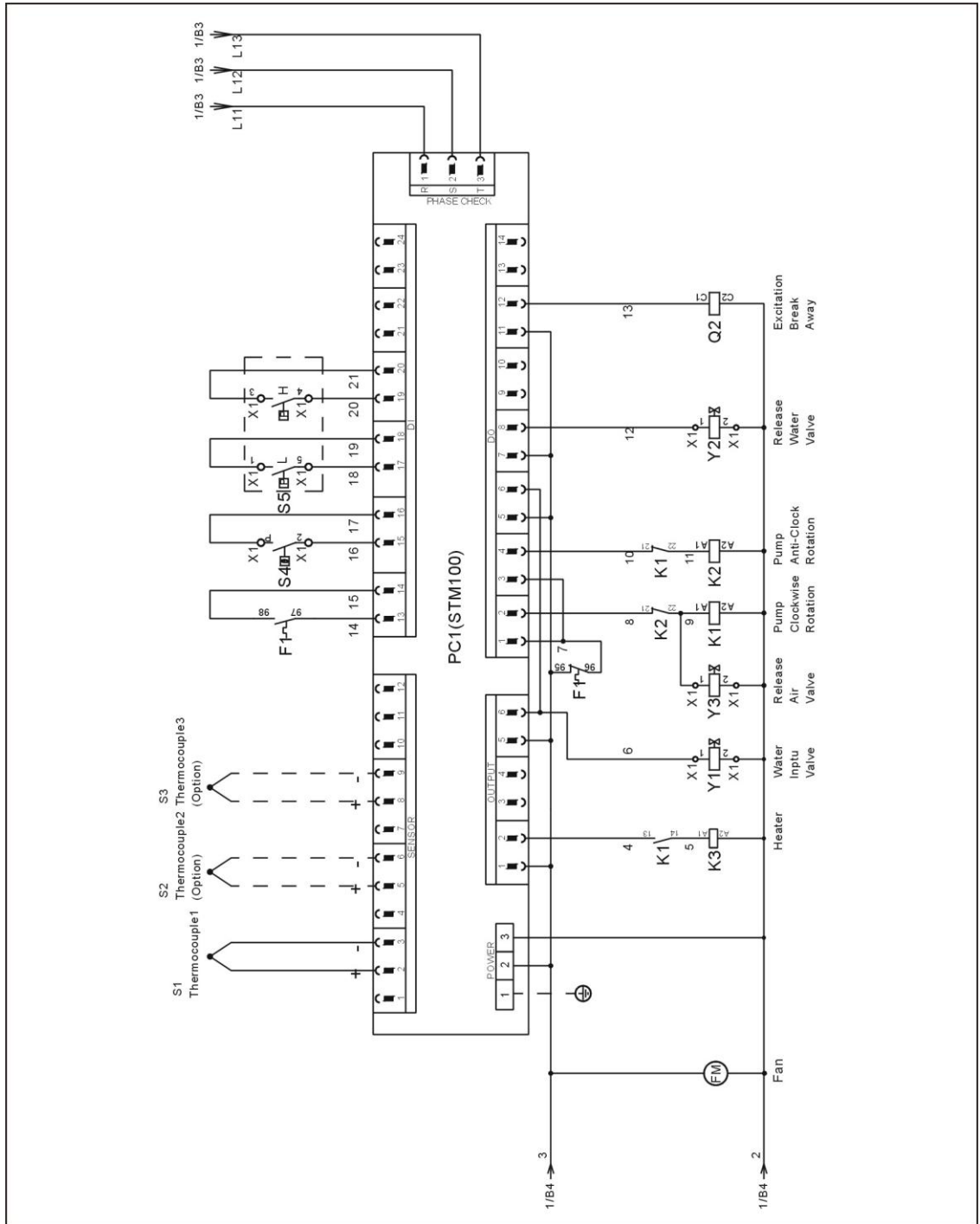
\* means possible broken parts. \*\* means easy broken part. and spare backup is suggested. Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

### 2.3.26 Main Circuit (STM-607WA~1220WA 230V)



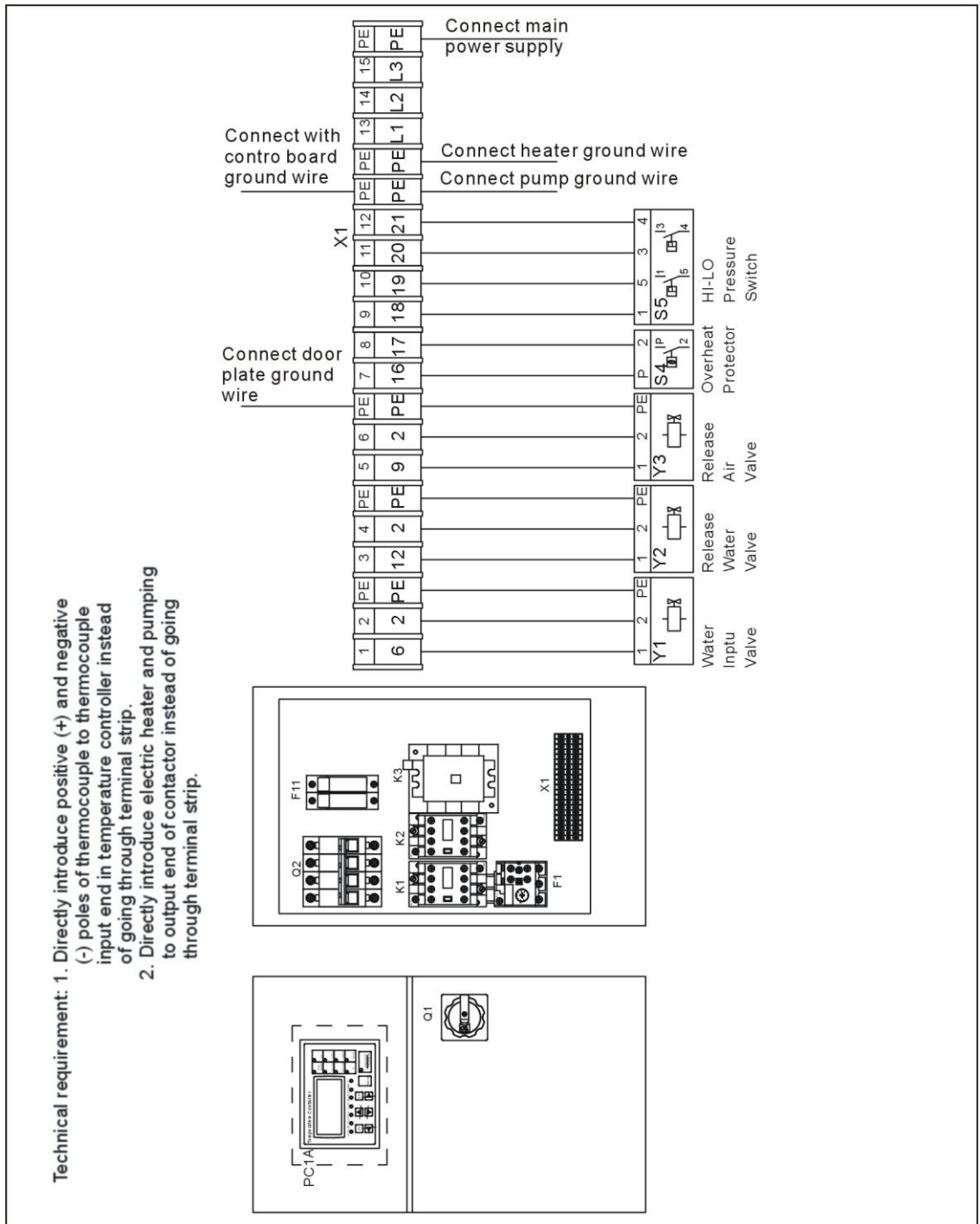
Picture 2-28: Main Circuit (STM-607WA~1220WA 230V)

### 2.3.27 Control Circuit (STM-607WA~1220WA 230V)



Picture 2-29: Control Circuit (STM-607WA~1220WA 230V)

### 2.3.28 Electrical Components Layout (STM-607WA~1220WA 230V)



Picture 2-30: Thermocouple and Terminal Layout (STM-607WA~1220WA 230V)

## 2.3.29 Electrical Components List (STM-607WA~1220WA 230V)

Table 2-18: Electrical Components List (STM-607WA 230V)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	25A	YE10125250000
2	Q2	Circuit breakers**	25A	YE40602500000
3	-	Excitation break away**	-	YE40023560000
4	K1 K2	Contactors**	220V 50/60Hz	YE00601521000
5	K3	Contactors**	220V 50/60Hz	YE00602522000
6	F1	Overload relays	2.8~4A	YE01160280000
7	F11	Fuse box**	32A 2P	YE41032200000
8	-	Fuse**	2A	YE46002000100
9	S1	Fuse**	-	-
10	S2 S3	Thermocouple	-	-
11	S4	Thermocouple	-	-
12	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
13	PC1 A	Circuit board	100~240VAC 50/60Hz	YE81100010000
14	Y1~Y3	Solenoid valve**	230VAC 50/60Hz	-
15	X1	Solenoid valve**	-	YE61250040000
16	-	Terminal board	-	YE61253500000
17	-	Terminal board	-	YE61040000000
18	-	Terminal board	-	YE61043500000
19	M1	Motor**	230V 50Hz 0.5kW	-
20	EH	Heater**	230V 50Hz 6kW	-
21	FM	Fan*	230V 50/60Hz	-

\* means possible broken parts.

\*\* means easy broken part. and spare backup is suggested.

Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

Table 2-19: Electrical Components List (STM-910WA 230V)

NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	32A	YE10323200000
2	Q2	Circuit breakers**	32A	YE40603200000
3	-	Excitation break away**	-	YE40023560000
4	K1 K2	Contactors**	220V 50/60Hz	YE00601521000
5	K3	Contactors**	220V 50/60Hz	YE00602722000
6	F1	Overload relays	3.5~5A	YE01160350000
7	F11	Fuse box**	32A 2P	YE41032200000
8	-	Fuse**	2A	YE46002000100
9	S1	Fuse**	-	-
10	S2 S3	Thermocouple	-	-
11	S4	Thermocouple	-	-
12	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
13	PC1 A	Circuit board	100~240VAC 50/60Hz	YE81100010000
14	Y1~Y3	Solenoid valve**	230VAC 50/60Hz	-
15	X1	Solenoid valve**	-	YE61250040000
16	-	Terminal board	-	YE61253500000
17	-	Terminal board	-	YE61040000000
18	-	Terminal board	-	YE61043500000
19	M1	Motor**	230V 50Hz 0.75kW	-
20	EH	Heater**	230V 50Hz 9kW	-
21	FM	Fan*	230V 50/60Hz	-

\* means possible broken parts. \*\* means easy broken part. and spare backup is suggested. Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

Table 2-20: Electrical Components List (STM-1220WA 230V)

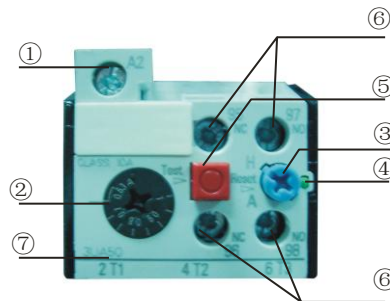
NO.	Symbol	Name	Specification	Part NO.
1	Q1	Main switch*	63A	YE10636300000
2	Q2	Circuit breakers**	63A	YE40606000000
3	-	Excitation break away**	-	YE40023560000
4	K1 K2	Contactors**	220V 50/60Hz	YE00601621000
5	K3	Contactors**	220V 50/60Hz	YE00503500000
6	F1	Overload relays	7~10A	YE01167100000
7	F11	Fuse box**	32A 2P	YE41032200000
8	-	Fuse**	2A	YE46002000100
9	S1	Fuse**	-	-
10	S2 S3	Thermocouple	-	-
11	S4	Thermocouple	-	-
12	S5	Hi-lo pressure switch	H:5-30bar L:-0.7-6bar	YE90083000100
13	PC1 A	Circuit board	100~240VAC 50/60Hz	YE81100010000
14	Y1~Y3	Solenoid valve**	230VAC 50/60Hz	-
15	X1	Solenoid valve**	-	YE61250040000
16	-	Terminal board	-	YE61253500000
17	-	Terminal board	-	YE61100000000
18	-	Terminal board	-	YE61103500000
19	M1	Motor**	400V 50Hz 1.5kW	-
20	EH	Heater**	400V 50Hz 12kW	-
21	FM	Fan*	230V 50/60Hz	-

\* means possible broken parts. \*\* means easy broken part. and spare backup is suggested. Please confirm the version of manual before placing the purchase order to guarantee that the item number of the spare part is in accordance with the real object.

## 2.4 Main Electrical Components Description

### 2.4.1 Overload Relay

At delivery, the overload relay is set for manual reset. (the reset button pointing to H). Manually reset the relay at the tripping of the switch. When motor overload occurs, stop the machine, then check and solve the problem. After that open the door of control box, press down the reset button of overload relay (if you can not press down the reset button, wait for one minute).



Picture 2-31: Overload Relay

- 1) Terminal for contact coil A2.
- 2) Setting current adjusting scale.
- 3) Reset (blue).

H: manual reset

A: automatic reset

- 4) Switch position indication (green).

Tripping of a manual-resetting is indicated by a pin projecting from the front plate.

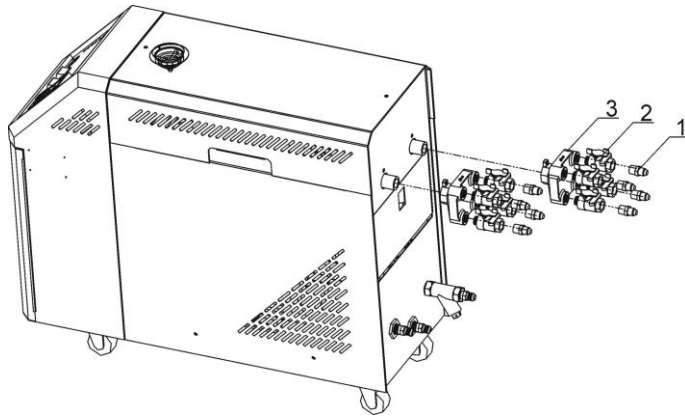
- 5) Test button (red).

- 6) Auxiliary contact terminals shown in 95.96.97.98. NC and NO contacts are shown in position 95.96. and 97.98. respectively.

- 7) Main circuit connection No. must be correspond with terminal Number of contactor.

## 2.5 Operation Procedures

### 2.5.1 Installation steps for options water manifold (dewaxing)



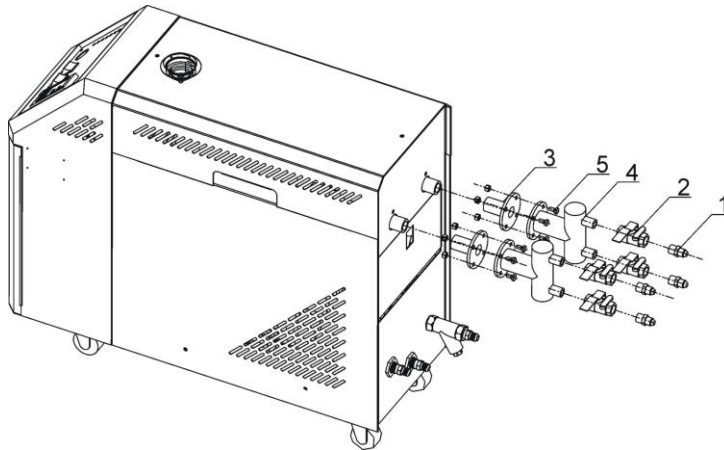
- 1) Install copper joint to the level valve.
- 2) Install level valve with copper joint to the dewaxing water manifold.
- 3) Install water manifold to the machine.
- 4) Install Teflon to copper joint.



Note!

For the operating temperature not higher than 200°C, Teflon with temperature resistance 200°C is usable; for the operating temperature from 200 to 300°C, must use Teflon with temperature resistance 300°C.

### 2.5.2 Installation steps for options water manifold (welding)



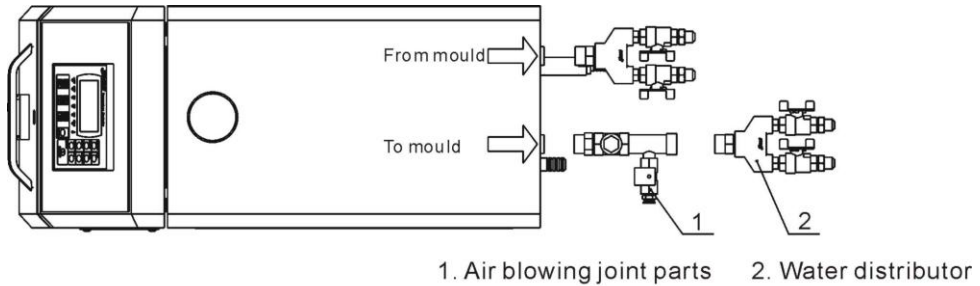
- 1) Install copper joint to the level valve.
- 2) Install level valve with copper joint to the welding water manifold.
- 3) Install water manifold to the machine.
- 4) Connect water manifold with manifold joint via screws.
- 5) Install Teflon to copper joint.



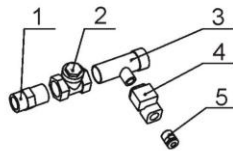
**Note!**

For the operating temperature not higher than 200°C, Teflon with temperature resistance 200°C is usable; for the operating temperature from 200 to 300°C, must use Teflon with temperature resistance 300°C.

### 2.5.3 Installation Steps for Function of Water Drainage via. Air Blowing



Air blowing joint parts



1. Pipe coupler   2. Non-return valve   3. Air blowing joint  
4. Solenoid valve   5. Quick pipe joint

- 1) Connect the air blowing joint parts to “Toward mold mouth” on mold temperature controller and then install the water distributor.
- 2) When it's in OFF state, press SUCTION. By then, the solenoid valve of air suction and cooling solenoid valve will be opened to drain water by blowing air.
- 3) After 1~2min of water drainage, press SUCTION again. By then, the water drainage is finished; close the ball valve on water distributor and then take out mold.

### 3. Installation and Debugging

#### 3.1 Installation Space

During installation of the machine, keep at least 500mm installation space around the machine as shown by the picture. Do not install the machine in a position crowded with other objects. This would cause inconvenience to operation, maintenance and repair.

Do not sit on the machine.

Keep away flammable and explosive goods.



Picture 3-1: Installation Space

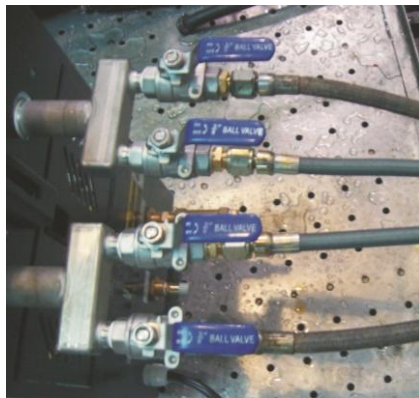
#### 3.2 Mould and Water Coupling

- 1) It is necessary, while connecting from the access to mould, to use two spanners to fix the switching connector and ball valve before screw tightly the horn nut of the connector pipe, otherwise water might leaks from the machine.



Picture 3-2: Mould and Water Couplings 1

2) Unused mould couplings can be connected with each other by a teflon pipe, as shown in.



Picture 3-3: Mould and Water Couplings 2



Note!

Cooling water inlet and outlet as shown by the Figure. Please do not connect reversely. Please connect the cooling water outlet with high temperature resistant pipe when temperature is above 100°C.



Cooling water outlet  
Cooling water inlet

Picture 3-4: Mould and Water Couplings 3

- 3) Connect cooling water inlet with water supply and cooling water outlet with a drainage pipe. After that, turn on water supply.

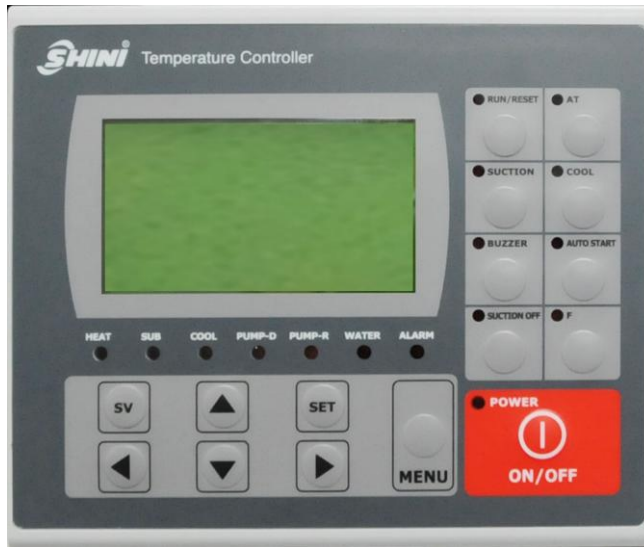
### 3.3 Power Supply

Make sure that power supply is the same as required before installation.

Mould heater are generally set to be used with 3 $\Phi$ 400V power supply or other specifications according to customers' requirement.

## 4. Operation Guide

### 4.1 Control Panel



Picture 4-1: Control Panel

Table 4-1: Control Panel

No.	Name	Functions	Remarks
1	LCD	Display showing LCD	
2	ON/OFF POWER	Power ON, OFF shift key	After connect power, press "POWER ON/OFF", initial screen is displayed and starts. Pls note that even if regulator is idle, electric shock may happen if power is on.
3	MENU	LCD menu shift key	Initial password: 3588
4	SET	Parameters setting	Confirm parameters
5	SV	Change set value	Modify setting temp.
6	▲/▼	Change parameters	
7	◀/▶	Cursor movement	
8	RUN/RESET	Control start and stop	
9	AT	AUTO-TUNING switch start and stop	Auto-tuning can run during operation. Auto-tuning cannot work

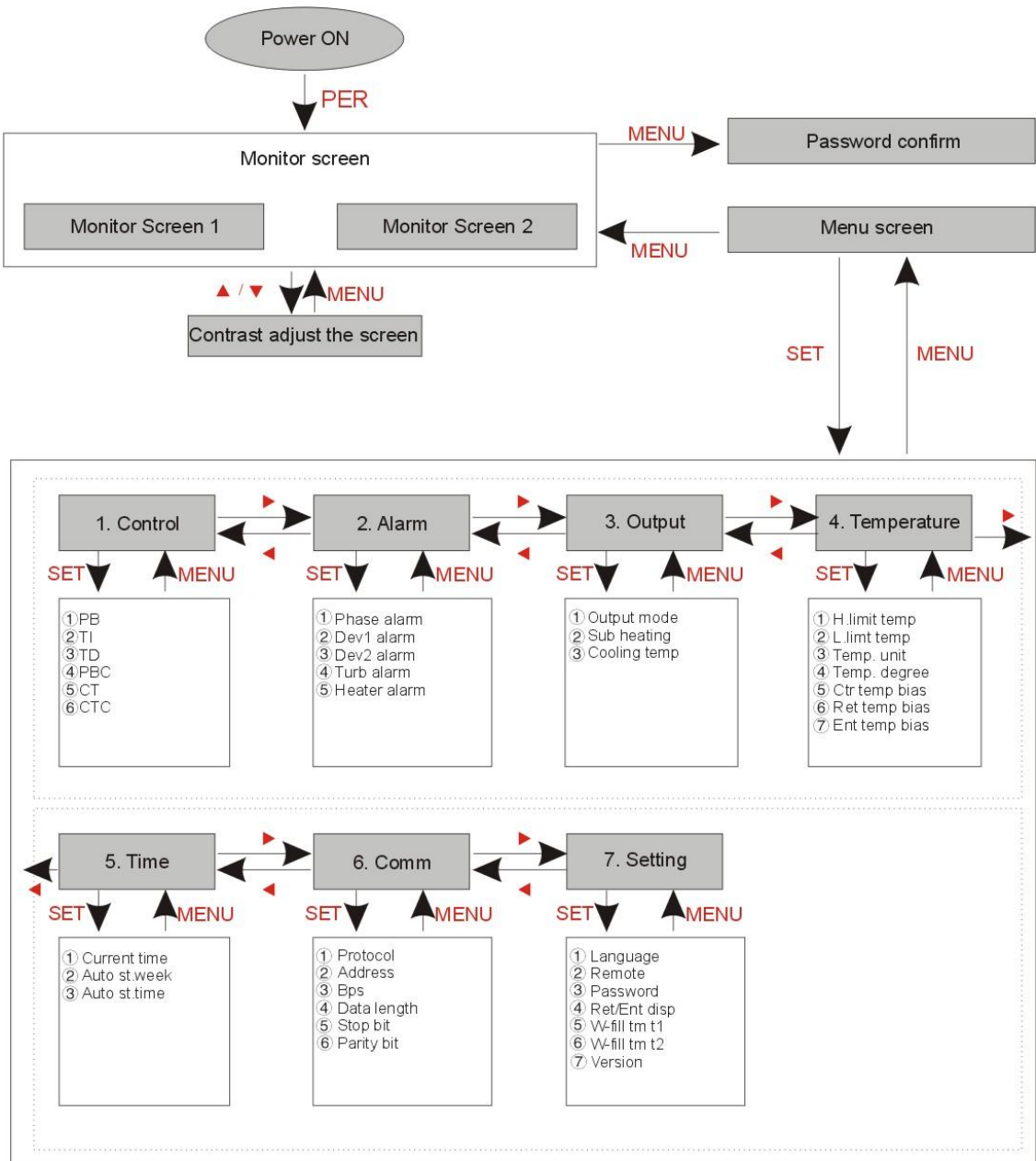
No.	Name	Functions	Remarks
			under SUCTION and COOL operation.
10	SUCTION	SUCTION switch start and stop	SUCTION is to remove medium (water/oil) from molds. Can not start during operation or cooling. After SUCTION turns on, "SUCTION relay" and "pump inverse run relay" will turn on.
11	COOL	Forced cooling switch start and stop	Press it for 2 secs for forced cooling, then stop heating output while output 100% cooling control. If control temp. is below Cooling Temp, forced cooling will be auto stopped then control turns off.
12	BUZZER	Turn off buzzer	Press "BUZZER" key and "BUZZER" LED lightens; buzzer and alarm relay are idle even error occurs.
13	AUTO START	Start and stop key	
14	SUCTION OFF	SUCTION relay switch start and stop	Under SUCTION is on, this key is to turn on or off SUCTION relay.
15	F	Not used (for extension)	
16	HEAT	Heating output (MAIN) display LED	
17	SUB	Heating output (SUB) display LED	
18	COOL	Cooling output display LED	
19	PUMP_D	Display pump running LED	
20	PUMP_R	Display pump inverse running LED	
21	WATER	Display water filling LED	
22	ALARM	Give the alarm LED	Refer to table 4-2 for errors type

Table 4-2: Error Type

<b>Error display</b>	<b>Reasons</b>	<b>Alarm</b>	<b>Temp. control</b>
Board error	Controller error	Activated	Stop
Calib error		Activated	Stop
Adc error		Activated	Stop
Rjc error		Activated	Stop
Eeprom error		Activated	Maintain its status
Phase error	Phase disconnect or phase reverse	Activated	Stop
Over temp. ego	Contact input for ego temp. check	Activated	Stop
Over pump	Contact input for pumper overload check	Activated	Stop
Low press	Contact input for low pressure check	Activated	Stop
High press	Contact input for high pressure check	Activated	Stop
L. level water	Contact input for low water level check	Activated	Stop
Appear "-----" on temperature display	Sensor abnormality	Activated	Stop
Dve1 alarm	Deviation between control temp. and entered temp.	Activated	Maintain its status
Dev2 alarm	Deviation between control temp. and retrieved temp.	Activated	Maintain its status
Turb. Alarm	Control temp. is suddenly dropped	Activated	Maintain its status
Heater alarm	Control temp. does not rise	Activated	Maintain its status

Notes: When alarm sounds, controller will automatically start the protective function and stop the machine. Press "ON" to restart the machine.

## 4.2 Menu Introduction



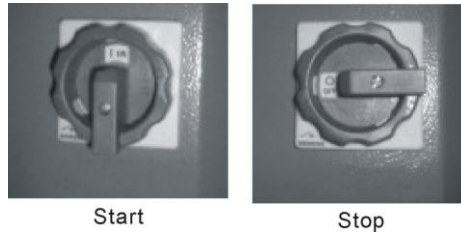
Pictute 4-2: Menu Outline

## 4.3 Machine Startup

- 1) Conenct pipeline from STM water in/outlet to the mold. (refer to chapter 3.2 for pipeline connector)
- 2) Connect chilled water port and water backup port. (refer to chapter 3.2 for

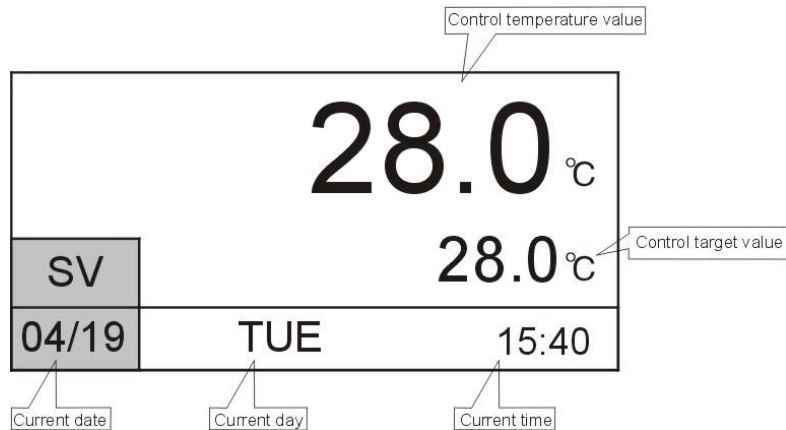
pipeline connector)

- 3) Open all the global valves.
- 4) Switch on main power.



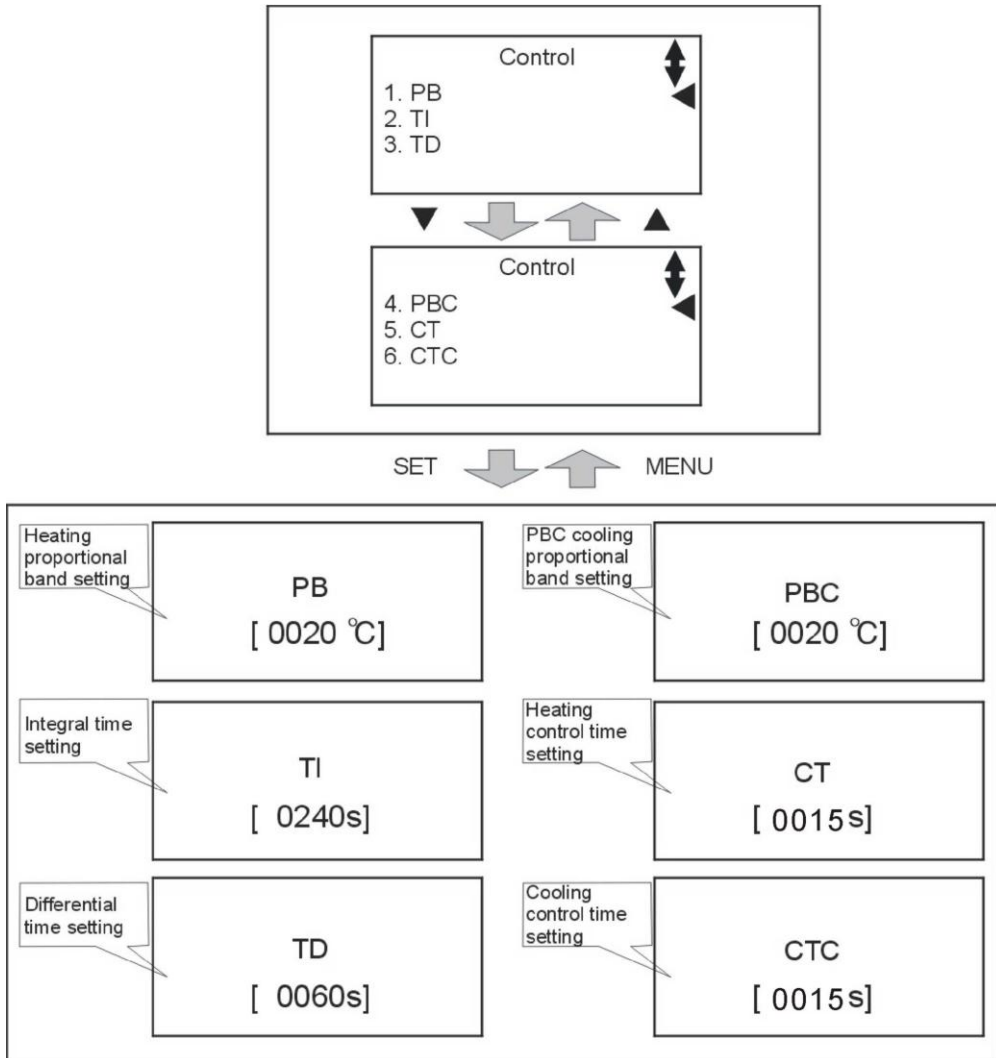
Picture 4-3: Main Power Switch

- 5) Press ON/OFF POWER key to enter menu screen.



Picture 4-4: Initial Menu

- 6) Press MENU key to enter menu selection, press ◀/▶ keys to select control setting, press SET key to enter setting menu, see picture below. Parameter setting is based on AT auto-tuning. Never change it privately.



Picture 4-5: Control Setting

7) Press MENU key to return to menu screen, press ◀/▶ key to select alarm setting then press SET to enter setting menu, see picture below. Here is parameter setting:

PHASE——used

Water out temp. deviation——0 (not opt for temp. sensor)

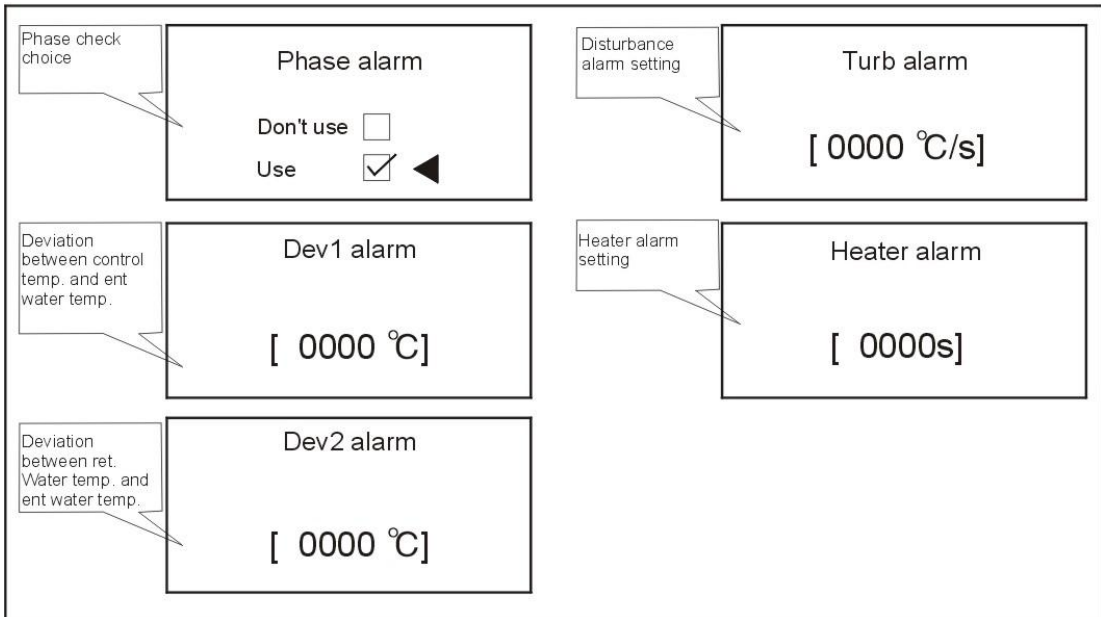
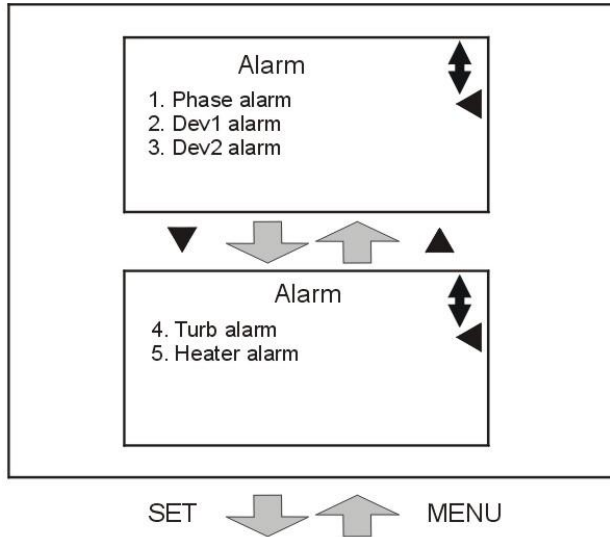
5 (opt for temp. sensor, increase it suitably if frequent alarms)

Return water deviation——0 (ont opt for temp. sensor)

10 (opt for temp. sensor, increase it suitably if frequent alarms)

Interfere alarm——control temp.-10

Heater alarm——depending on auctual setpoint, default setting is 0 upon delivery to make it out of service.



Picture 4-6: Alarm Setting

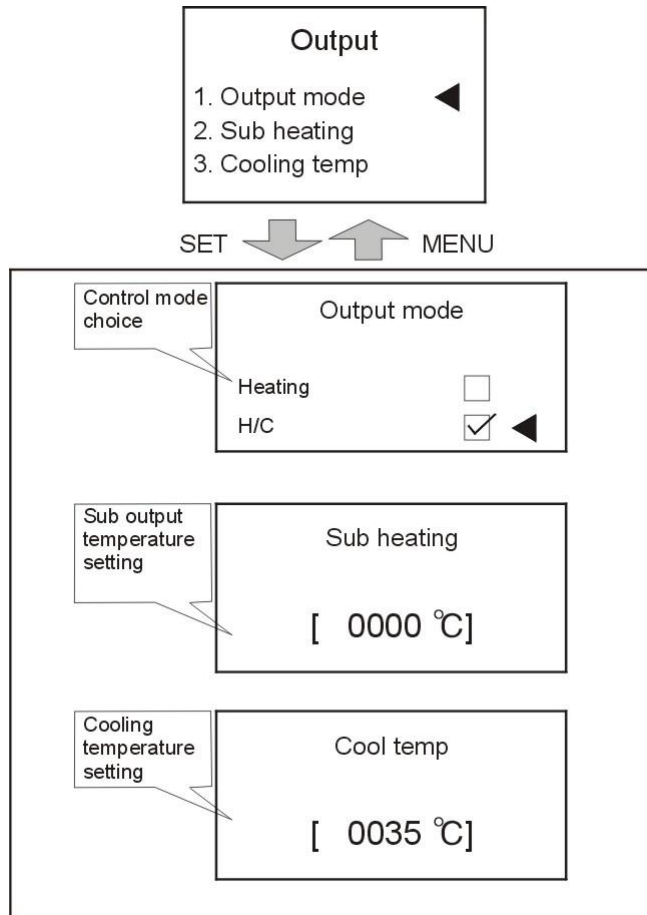
8) Press MENU key to return to menu screen, then press ◀/▶ key to select output setting and press SET key to enter setting screen, see picture below. Here is parameter setting:

OUTPUT MODE——heating or cooling control

SUB HEATING——0 (only 1 group of heater)

5 (two or more groups of heater)

COOLING TEMP.—35



Picture 4-7: Output Setting

9) Press MENU key to return to menu screen, then press ◀/▶ keys to select temp.setting, press SET key to enter setting screen, see picture below.

H. LIMIT TEMP.—based on actual operation.

L. LIMIT TEMP.—based on actual operation.

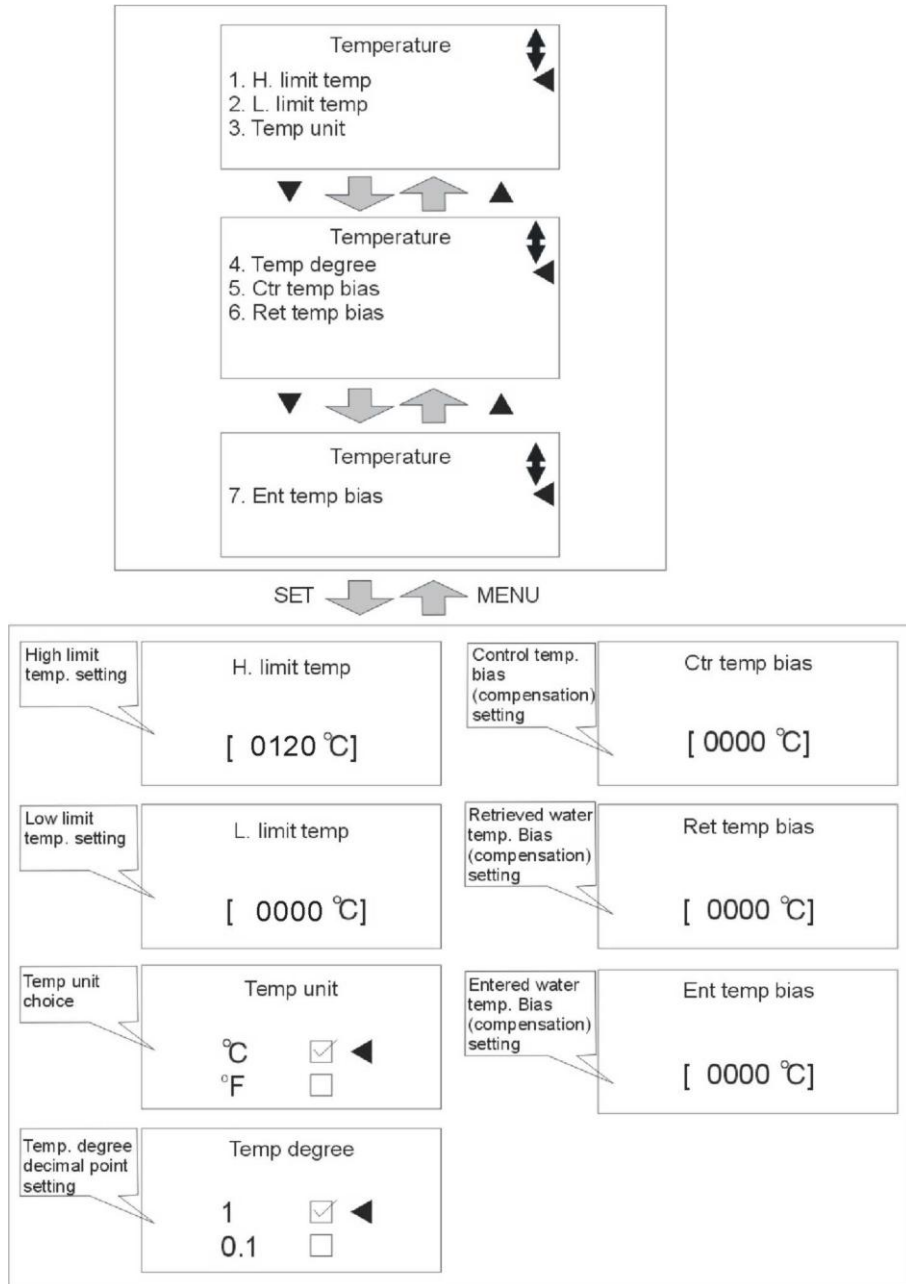
TEMP. UNIT—°C (Celsius and Fahrenheit)

TEMP. DEGREE—0.1

CTR TEMP BIAS——based on actual operation.

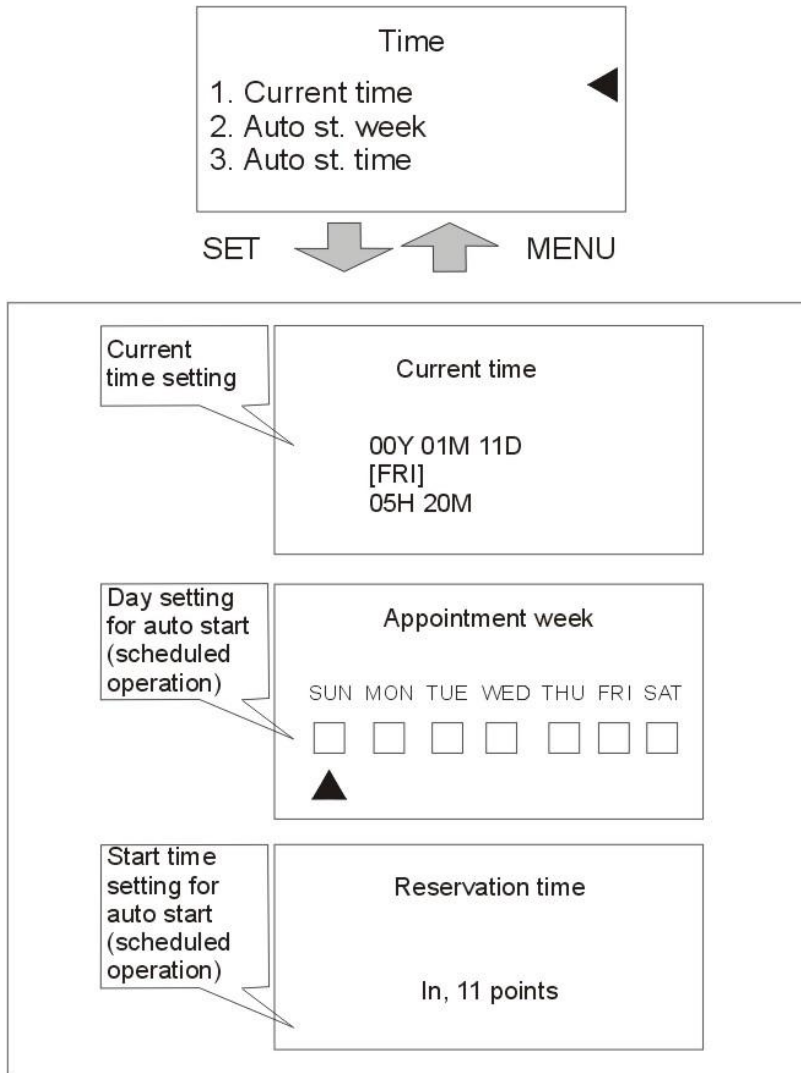
RET TEMP BIAS——based on actual operation

ENT TEMP BIAS——based on actual operation



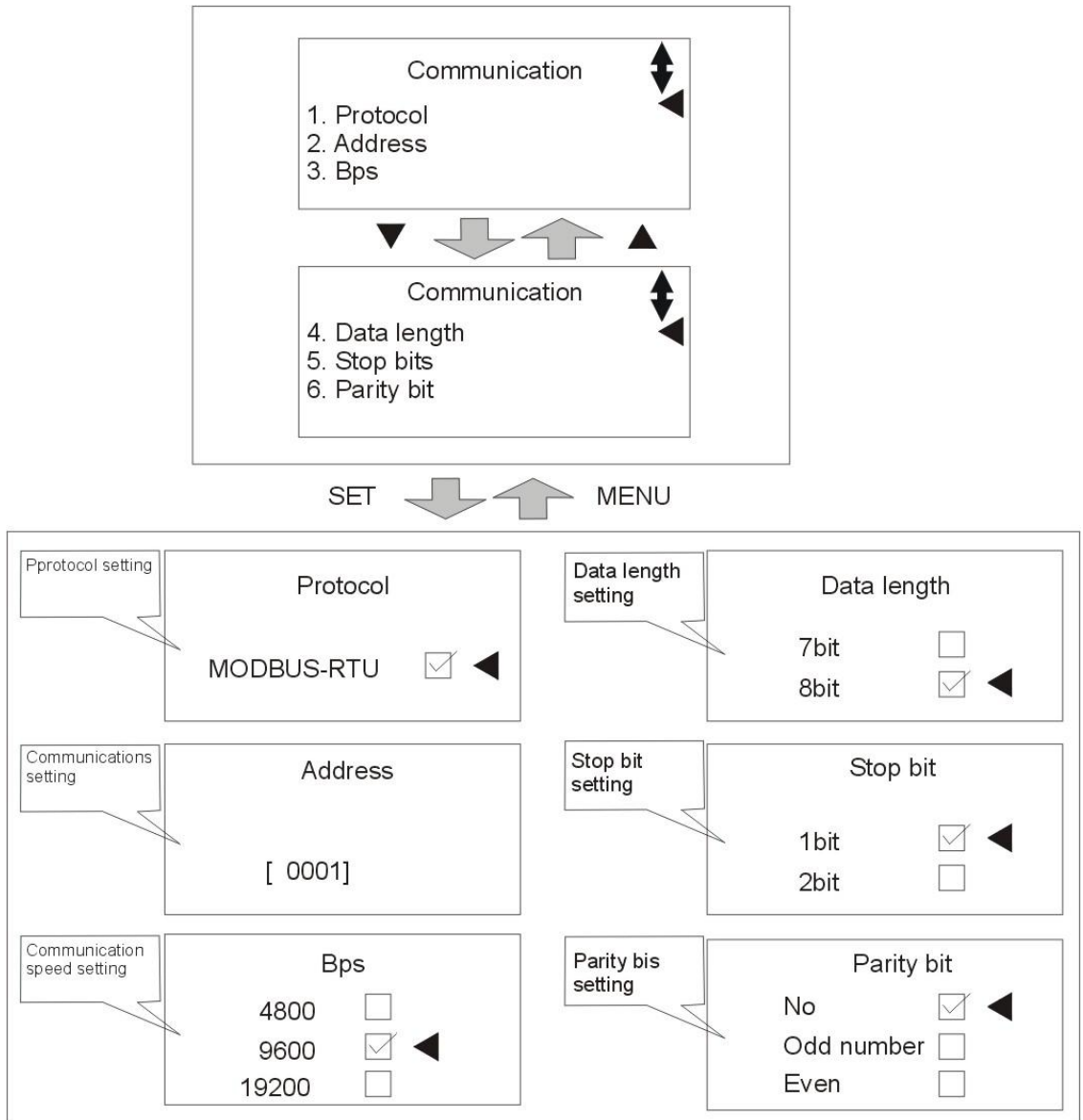
Picture 4-8: Temperature Setting

10) Press MENU key to return to menu screen, press ◀/▶ key to select time setting, press SET key to enter setting screen, see picture below. Time has been set before delivery; customers can set appointment time based on actual needs.



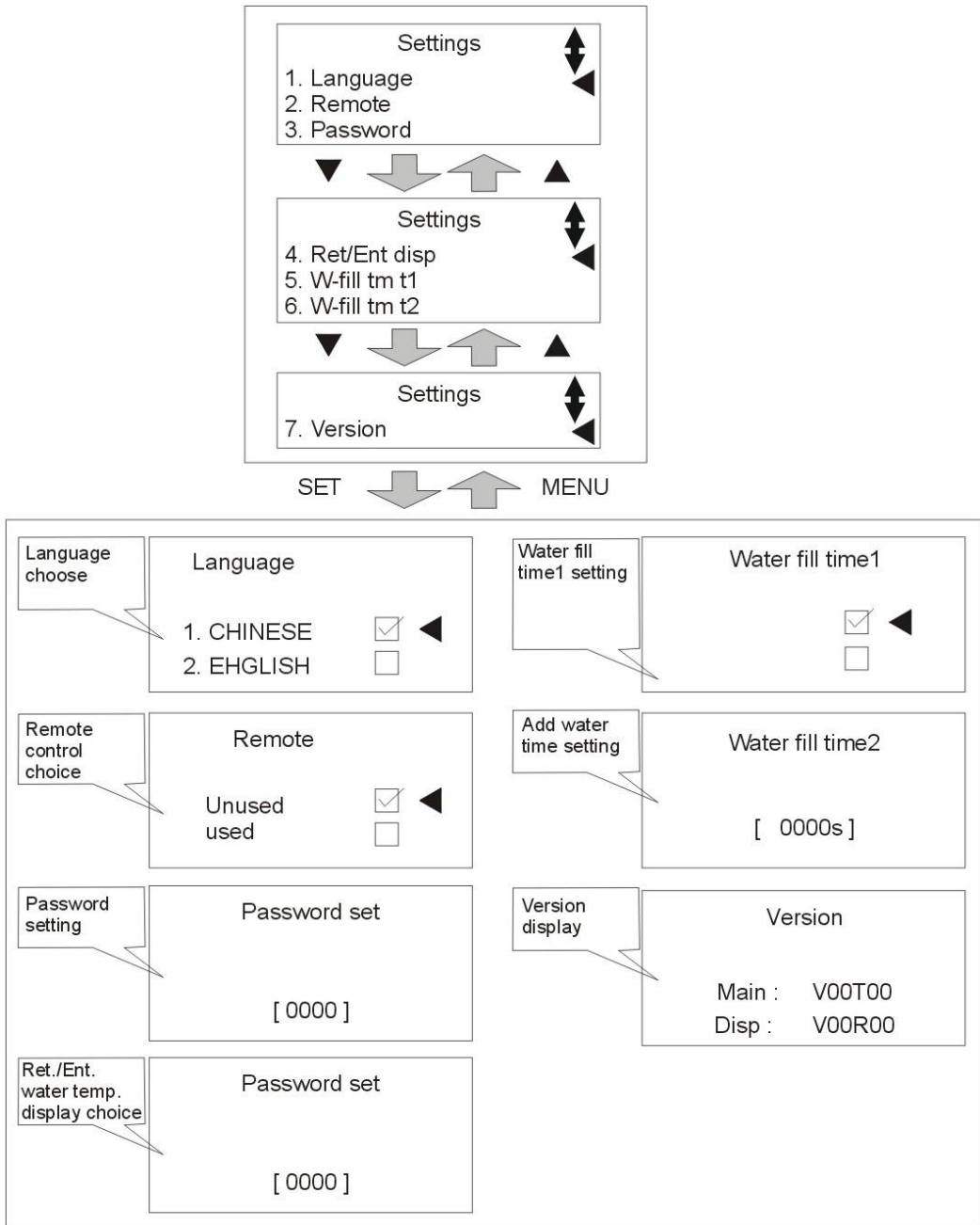
Picture 4-9: Time Setting

11) Press MENU key to return to menu screen, press ◀/▶ key to select communication setting, press SET key to enter setting screen, see picture below. If communication function is selected as an option, customers should set communication parameters based on actual needs.



Picture 4-10: Communication Setting

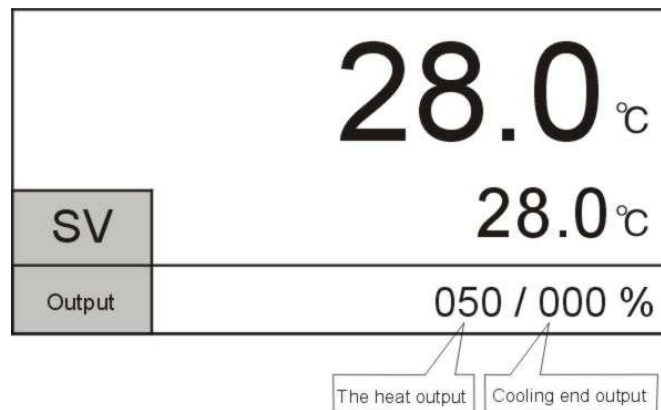
12) Press MENU key to return to menu screen, press ◀/▶ key to select device setting, press SET key to enter setting screen, see picture below. Before delivery, parameters have been set and customers can modify them based on actual needs.



Picture 4-11: Equipment Setting

13) Set mold temperature (if temp. has been set, this step can be ignored). Press SV key and control target value column will be flashing, press ◀/▶ key to move cursor then press ▲/▼ key to change values. Finally press SET key to confirm them. Maximum setting temperature of STM is 120°C.

14) After setting the target value, press RUN/RESET key to begin temperature control, Auto-tuning is needed if deviation of control is a little bit large. Press AT key and LED light begins flashing to start Auto-tuning. When flashing ends, Auto-tuning finishes and parameters will be automatically saved. During Auto-tuning, pressing AT key will exit Auto-tuning process; controller will conduct temperature control based on parameters set before Auto-tuning.



Picture 4-12: Operation Screen

#### 4.4 Parameter Reference Table

English Name	Description	Range	Default
Control pv	Control temp.	-50~500°C	-
Ret pv	Retrieved water temp.	-50~500°C	-
Ent pv	Entered water temp.	-50~500°C	-
Sv	Control target temp.	-50~500°C	-50°C
Hout	Amount of heating output	0~100%	0%
Cout	Amount of cooling output	0~100%	0%
Pb	Heating proportional band	0~550°C	20°C
Ti	Integral time	1~3600s	240s
Td	Derivative time	1~3600s	60s
Pbc	Derivative time	0~550°C	20°C
Ct	Time for heating output	1~100s	15s
Ctc	Time for cooling output	1~100s	15s
Phase alarm	Use for phase check	ON/OFF	OFF
Dev1 alarm	Alarm for deviation between control temp. and entered water temp.	0~550°C(0=off)	0=off
Dev2 alarm	Alarm for deviation between entered water temp. and retrieved water temp.	0~550°C(0=off)	0=off

Turb. Alarm	Alarm for sudden temp. drop	0~550°C/s (0=off)	0=off
English Name	Description	Range	Default
Heater alarm	Alarm for not reaching to the setting temp.	0~3600s(0=off)	0=off
Output mode	Select between heating and heating/cooling control	Heating Heating/cooling	Heating/cooling
Sub heating	Set "off temperature" in sub heating output	0~550°C (0=off)	0=off
Cooling temp	Set compulsory cooling	-50~500°C	35°C
H.limit temp	High(upper) limit temp.	-50~500.0°C	500°C
L.limit temp	Low(lower) limit temp.	50~500.0°C	-50°C
Temp unit	Swlect °C/ °F	°C/ °F	°C
Temp. degreeen	Select the decimal point position 0.1/1	0.1, 1	1
Ctl temp bias	Control temp. bias (compensation)	-550~550.0°C	0°C
Ret temp bias	Retrieved water temp. bias (compensation)	-550~550.0°C	0°C
Ent temp bias	Entered water temp. bias (compensation)	-550~550.0°C	0°C
Current time	Year/month/date/day/hour/minute	99/12/31/mo~su/24/59	-
Auto st. week	Mon/tue/wed/thur/fri/sat/sun	Mo~Su	-
Auto st. time	Hour/minute	24/59	0
Protocol	Proto col	Modbus-rtu	Modbus-rtu
Address	Communication address	0~99	1
Bps	Communication speed	4800, 9600, 19200	9600
Data length	Data length	7, 8	8
Stop bit	Stop bit	1, 2	1
Parity bit	Parity bit	None, even, odd	None
Language	Selsct language	Chinese, English	Chinese
Remote	Remote control	Use, unused	Unused
Password	Password setting	0~9999	0
Ret/ent disp	Display ret/ent water temp.	Off, on	Off
w-fill tm t1	Water fill time t1	0~6000sec	0
w-fill tm t2	Water fill time t2	0~60sec	0
version	Display its version	-	-

## 4.5 Stop the Machine

- 1) Press COOL key to shut down heating output, and open cooling process.
- 2) Await until temp. drops to 50°C below, press COOL key to shut down forcedcooling, then press RUN/RESET key to stop operation.
- 3) Switch main power to OFF position.



Warning!

When main switch is turned on, be careful of electrical shock.



Note!

Pump motor rotating direction should be the same as indicated.



Note!

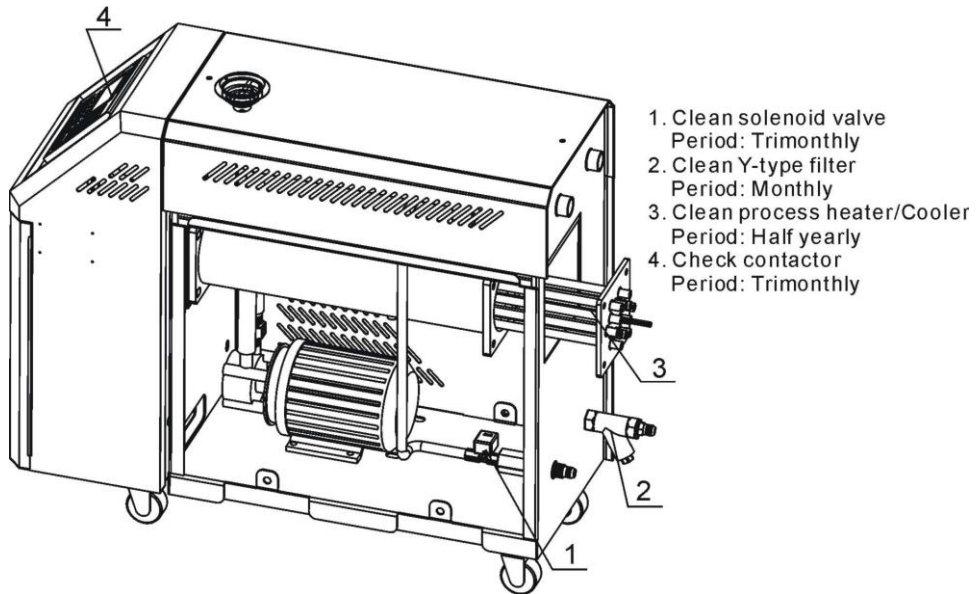
In order to prolong machine lifespan, please do as above steps to turn on and off the machine.

## 5. Trouble-shooting

Failures	Possible reasons	Solutions
LCD displays nothing after switch on power and press ON/OFF key.	Did not connect through power supply. Main switch broken. Power supply wires problems. Control circuit fuse melt. Transformer broken.	Connect through power supply. Replace main switch. Check electrical wires. Fix the fuse. Replace the transformer.
Phase alarm.	Power supply low voltage. Phase shortage. Phase reversal. PCB problems.	Check power supply. Check power supply. Exchange two of the wires of power supply. Replace the PCB.
Pump overload.	Abnormal fluctuations of power supply. Pump blocked. Pump motor problems. Overload relay (F1) setting value error.	Check power supply. Check the pump. Check pump motor. Set the setting current of overload relay to equal to 1.1 times of motor rated current. Please refer to Mian Components for detailed description of overload relay. Reset overload relay: Wait for one minute, then press the blue button to reset.
EGO overheats.	EGO temperature setting mistakes. EGO poor temperature detecting. Heater contactor K1 and K2 problems.	Correctly set EGO temperature. (EGO temperature setting value= temperature setting value+10°C) Replace EGO. Replace the contactor.
Low liquid level.	Oil shortage.	Fill high temp. oil.
Insufficient pressure.	Insufficient water pressure of external water supply. Pressure switch failure.	Increase the water pressure of external water supply. Repaly the pressure switch.
Excess process pressure.	Globe valve of mould circulating water is not open or pipe blockage. Pressure switch failure.	Check the globe valve and pipeline. Repaly the pressure switch.
Temp. window displays “----“	Abnormal sensor.	Check and repair sensor.
Once running, pump output indicator lightens but pump cannot start. Afetr a while pump still fails to run.	PCB output relay problems. Electrical circuit problems.	Check or replace the PCB. Check electrical circuit.

Failures	Possible reasons	Solutions
Differences between setting temperature and actual temperature is too big.	Too short time after machine startup. Temperature parameter setting error. Cooling water valve problems.	Wait for a while. Check temperature parameters. Please refer to the standard manual of setting parameters. Replace solenoid valve.
Temperature can't rise up.	Heater contactor problems. Heater problems. Thermocouple problems. PCB output point problems.	Replace the contactor. Replace pipe heater. Replace thermocouple. Check and repair PCB.
Circuit breaker tripping off at turning on main switch.	Short circuit of main circuit. Transformer short circuit or connected with earth wire. Problems of circuit breaker.	Check electrical wire. Replace circuit breaker.
Circuit breaker tripping off at turning on pump switch.	Pump motor coil short circuit. Problems of circuit breaker.	Check pump motor. Replace circuit breaker.
Circuit breaker tripping off after short heater output.	Heater tube short circuit or shell contact. Problems of circuit breaker.	Replace heater tube. Replace circuit breaker.

## 6. Maintenance and Repair



Pay attention to the following rules during maintenance:

- 1) Please reduce the temperature to room temperature (below 50°C), cut off power supply and drain oil and water first while inspecting the machine; carry out operations with safety gloves on after complete confirmation of spaces for inspection and maintenance.
- 2) It is necessary to carry out periodic inspections in order to prolong service life of the system and prevent from safety accidents.  
(Please note that it is dangerous to check or tear down the machine during operation.)

### 6.1 Open the Covers

- 1) Open the top covers of the unit. (Refer to the pictures below)



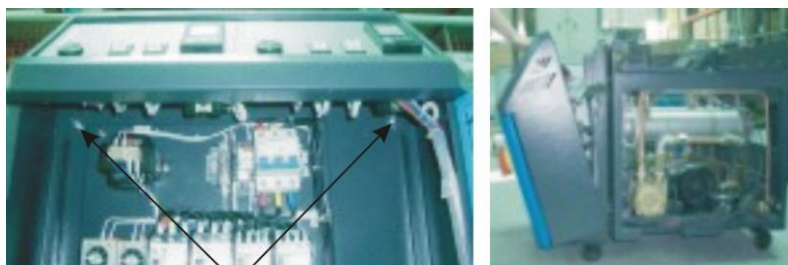
Picture 6-1: Open the Covers 1

2) Take down the side covers. (Refer to the pictures below)



Picture 6-2: Open the Covers 2

3) Open the cover of control box. Screw off two butterfly screws to unlock the cover. (Refer to the pictures below)



Butterfly screws

Picture 6-3: Open the Covers 3

## 6.2 Y Type Strainer

- 1) Clean soft water should be used as cooling water. Filter screen is used in the strainer to stop impurities and pollutants to enter into water pipe.
- 2) Impurities or pollutants may cause errors and bad temperature control. Clean filter screen of the strainer periodically.
- 3) Cleaning steps: turn off power and cooling water supply. Open the top cover of filter screen to clean the filter.



Picture 6-4: Y Type Strainer

## 6.3 Solenoid Valve

Replace solenoid valve:

- 1) Open machine top cover.
- 2) Take down right side cover.
- 3) Unfix the solenoid valve for replacement.
- 4) Install the covers in a reverse order.



Solenoid valve

Picture 6-5: Solenoid Valve

## 6.4 Pipe Heater

- 1) Open machine rear cover door. (Refer to pictures below)



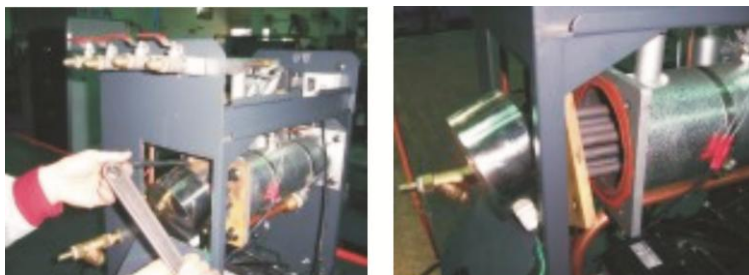
Picture 6-6: Pipe Heater 1

2) Unlock heater cap. (Refer to pictures below)



Picture 6-7: Pipe Heater 2

3) Unlock the screws of pipe heater to take it out. (Refer to the pictures below.)



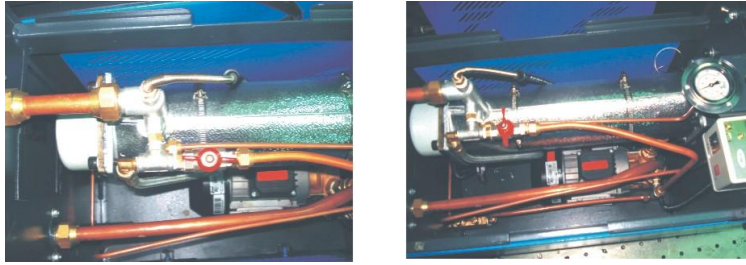
Picture 6-8: Pipe Heater 3

4) Install the pipe heater in a reverse order.

## 6.5 By-pass Globe Valve

Shut off the by-pass globe valve when water pressure gauge display value is too

low.



Picture 6-9: By-pass Globe Valve

## 6.6 Printed Circuit Board

MAIN terminal board drawing (refer to next page for terminal position and number).

### ① SENSOR TERMINAL1 (sensor terminal)

2, 3 : control temp. sensor terminal

5, 6 : return water temp. sensor terminal

8, 9 : water out temp. sensor terminal

11, 12 : 1~5V input terminal

### ② DI TERMINAL (contactor input terminal)

13, 14 : pump overload contactor input terminal

15, 16 : EGO overheat contactor input terminal

17, 18 : underpressure contactor input terminal

19, 20 : overpressure contactor input terminal

21, 22 : lower water limit contactor input terminal

23, 24 : upper water limit contactor input terminal

### ③ OUTPUT TERMINAL (output terminal for controlling)

1, 2 : heating control output MAIN (RELAY output)

3, 4 : heating control output SUB (RELAY output)

5, 6 : cooling control output (RELAY output)

④ DO TERMINAL (relay contactor output terminal)

- 1, 2 : pump running contactor output terminal
- 3, 4 : pump inverse running contactor output terminal
- 5, 6 : backup water contactor output terminal
- 7, 8 : SUCTION contactor output terminal
- 9, 10 : alarm contactor output terminal
- 11, 12 : relay contactor output terminal
- 13, 14 : reserve

⑤ PHASE CHECK TERMINAL (phase detect terminal)

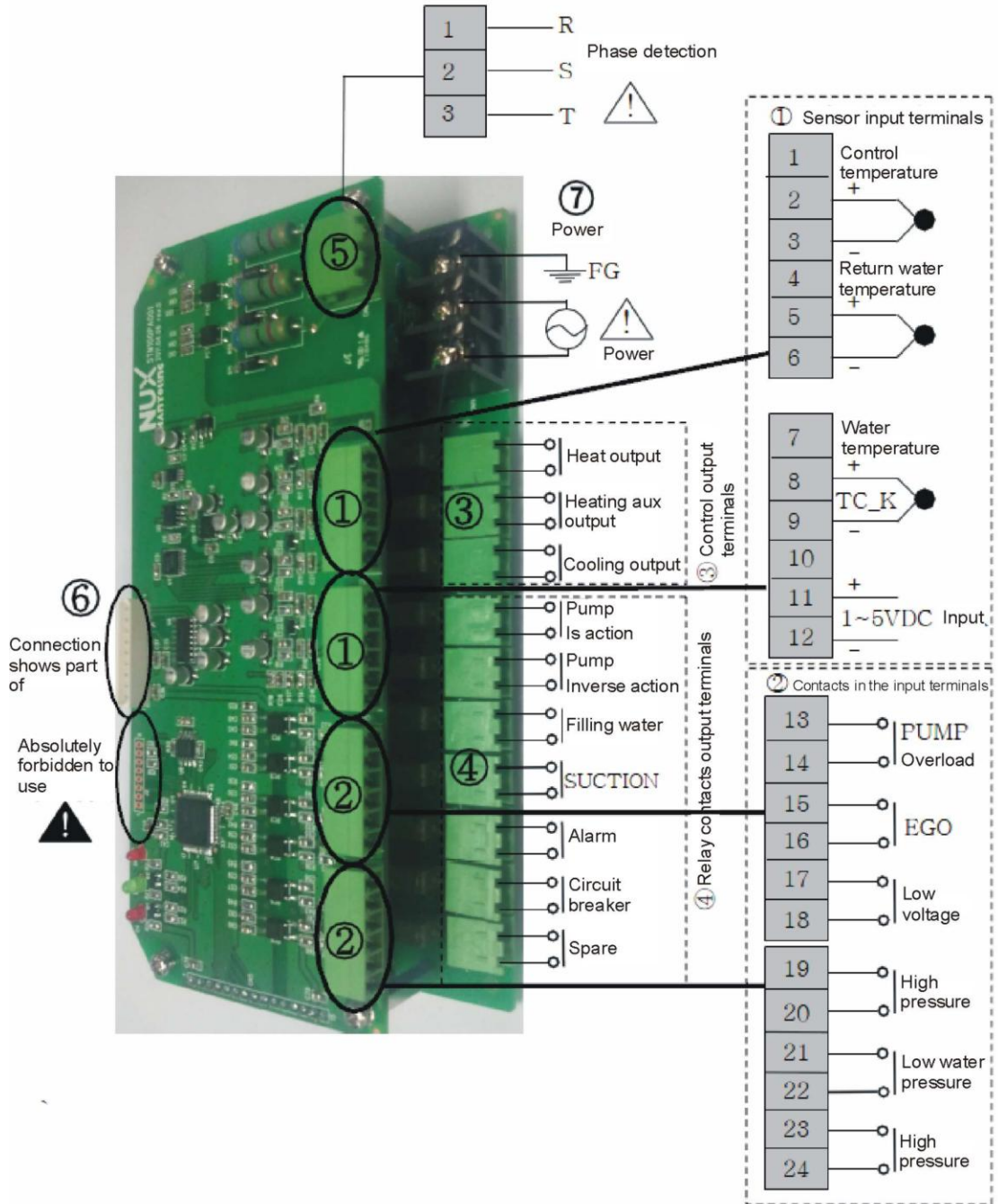
- 1 : R phase connect terminal
- 2 : S phase connect terminal
- 3 : T phase connect terminal

⑥ DISPLAY CN (connect terminal for display)

Connect stub cable with STM100.

⑦ POWER TERMINAL (power supply terminal)

- 1 : FG terminal
- 2, 3 : power supply terminal (100~240VAC)



## 6.7 Displayer Terminal Connecting Diagram

### ① DI TERMINAL

1, 2: Run/stop di terminal

### ② COMM TERMINAL

1, 2, 3, 4: rs485 Comm terminal

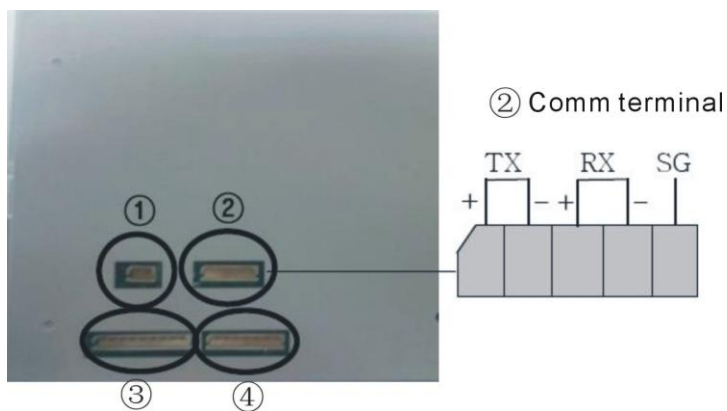
5: Earth terminal

### ③ MAIN CN

Connet to the electric cables which also connected with stm100

### ④ TEST PIN

Test pin No connector



## 6.8 Maintenance Schedule

### 6.8.1 About the Machine

Model \_\_\_\_\_ SN \_\_\_\_\_ Manufacture date \_\_\_\_\_

Voltage \_\_\_\_\_  $\Phi$  \_\_\_\_\_ V Frequency \_\_\_\_\_ Hz Power \_\_\_\_\_ kW

### 6.8.2 Installation & Inspection

Check the installation space is enough as required.

Check the pipes are correctly connected.

#### Electrical installation

Voltage: \_\_\_\_\_ V \_\_\_\_\_ Hz

Fuse melting current: 1 Phase \_\_\_\_\_ A 3 Phase \_\_\_\_\_ A

Check phase sequence of power supply.

### 6.8.3 Daily Checking

Check machine startup function.

Check all the electrical wires.

### 6.8.4 Weekly Checking

Check loose electrical connectors.

Check and clean Y type filter <sup>1</sup>.

Check solenoid valve.

Check motor overload and phase reversal alarm function.

Check whether pipeline joints are under looseness.

Check the sensitivity of EGO.

### 6.8.5 Trimonthly Checking

Check level switch.

Check the contactor <sup>2</sup>.

Replace the hot kerosene with a using temperature above 160 degree <sup>3</sup>.

### 6.8.6 Half-yearly Checking

Check damaged pipes.

Clean process heater/cooler.

Check indicator and buzzer.

- Replace the hot kerosene with a using temperature above 120~160 degree <sup>4</sup>.

#### 6.8.7 Yearly Checking

- Replace the hot kerosene with a using temperature above 120 degree <sup>5</sup>.

#### 6.8.8 3 year Checking

- PC board renewal.
- No fuse breaker renewal.

- Note: 1. Y-type filter has the function of filling water cooling protection effect, be sure the waterway are clear to avoid cooling failure.
2. Manufacturer laboratory data for AC contactor is two million times in life. we suggest service life for one million four hundred thousand times, if work eight hours per day, recommended replacing frequency is 1.5 years, if work day and night, replacement is suggested to be done every six months.
3. Hot kerosene coke will influence the detection accuracy of internal temperature probe and the efficiency of heat elements, three months replacing frequency is suggested.
4. Hot kerosene coke will influence the detection accuracy of internal temperature probe and the efficiency of heat elements, six months replacing frequency is suggested.
5. Hot kerosene coke will influence the detection accuracy of internal temperature probe and the efficiency of heat elements, suggested replacing frequency is one year.