

SIC-A series

Air-cooled Water Chillers

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Version: V2.5 (English)



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1. General Description



Please read through this operation manual before using and installation to avoid damage of the machine and personal injuries.

The SIC-A series of air-cooled water chillers use a single closed-loop design for pressurised refrigerant. All models are equipped with compressor and motor overload protection, phase shortage and reversal alarms, antifreeze thermostat, pressure gauges, etc. They feature excellent performance and a long lifespan. The series of working flow is based on the basic principle of heat exchange. It is applicable to the industry that requires flow of precisely controlled chilled water, and considered as indispensable equipment for modern industry.



SIC-20A

Main Features:

- 1) Cooling range 7 ~ 35°C.
- 2) Stainless iron made insulated water tank.
- 3) Equipped with anti - freeze thermostat.
- 4) R22 refrigerant used as standard and optional R407 for efficient cooling.
- 5) Refrigeration loop controlled by high and low pressure switches.
- 6) Compressor and pump overload relays.
- 7) Italian made temperature controller maintains an accuracy of 1°C.
- 8) Compact design, easy to operate and maintain.
- 9) Low pressure pumps are standard configurations, while middle or high pressure pumps are optionally available.
- 10) Level meter of water tank is available as an option.
- 11) All adopt imported compressors.
- 12) SIC - A adopts tube - fin condenser design without any need of cooling water for excellent heat transfer and rapid cooling.
- 13) Upon request, it can be built to comply with worldwide electrical safety standards (For example : CE, UL, CSA, JIS etc.).

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 7, 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.

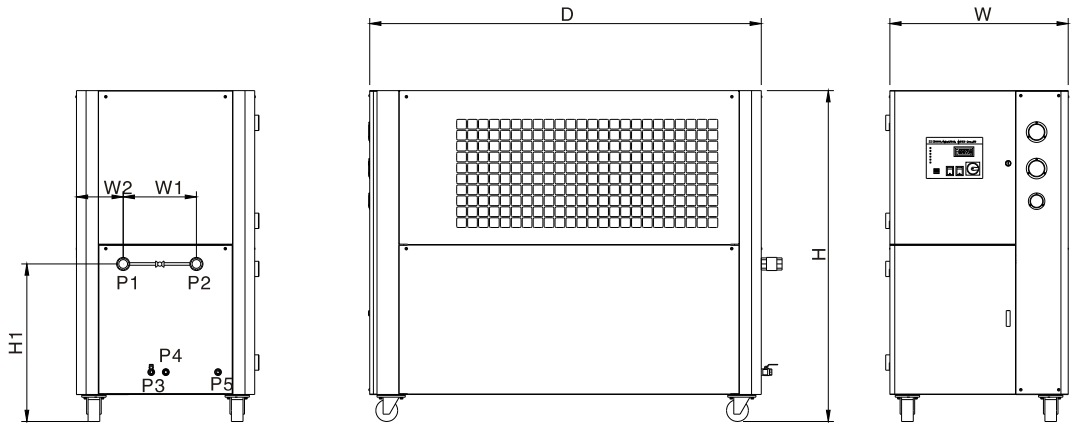
Our company provides excellent after-sales service. Should you have any problem during using the machine, please contact the company or the local vendor.

Headquarter and Taipei factory:
Tel: (886) 2 2680 9119

Hot service line on Mainland:
Tel: 800 - 999 3222

2. Technical Specifications

2.1 SIC-A Series Outer Dimensions



Model	H (mm)	H1 (mm)	W (mm)	W1 (mm)	W2 (mm)	D (mm)	P1 Process Water Inlet	P2 Process Water Outlet	P3 Water Tank Outlet Port	P4 Water Tank Overflow Port	P5 Water Tank Refill Port	Weight (kg)
SIC-1A	960	465	555	205	230	740	1/2"	1/2"	1/4"	3/8"	1/2"	110
SIC-3A	1400	640	735	360	174	1320	1"	1"	1/2"	1/2"	1/2"	305
SIC-5A	1400	640	735	360	174	1320	1"	1"	1/2"	1/2"	1/2"	315
SIC-8A	1350	640	735	300	204	1610	1 1/2"	1 1/2"	1/2"	1/2"	1/2"	400
SIC-10A	1440	640	735	300	204	1610	1 1/2"	1 1/2"	1/2"	1/2"	1/2"	420
SIC-12.5A	1520	648	905	457	189	1780	2"	2"	1/2"	1/2"	1/2"	520
SIC-15A	1520	648	905	457	189	1780	2"	2"	1/2"	1/2"	1/2"	560
SIC-20A	1950	700	1200	450	150	2920	2"	2"	1"	1/2"	1/2"	775
SIC-25A	1950	700	1200	450	150	2920	2"	2"	1"	1/2"	1/2"	800
SIC-30A	1950	760	1200	430	160	2920	2 1/2"	2 1/2"	1"	1/2"	1/2"	840
SIC-40A	1970	780	1300	450	200	3390	2 1/2"	2 1/2"	1"	1"	1"	1400
SIC-45A	1970	780	1300	450	200	3800	2 1/2"	2 1/2"	1"	1"	1"	1800
SIC-50A	1970	823	1420	700	360	4000	2 1/2"	2 1/2"	1"	1"	1"	2000

2. Technical Specifications



2.2 SIC-A Series Specification List

Model			SIC-1A	SIC-3A	SIC-5A	SIC-8A	SIC-10A	SIC-12.5A	SIC-15A	SIC-20A	SIC-25A	SIC-30A	SIC-40A	SIC-45A	SIC-50A	
Item	Parameter															
Refrigeration Capacity ⁽¹⁾	kW	50Hz	2.5	7.69	13.5	19.08	25.56	31.41	38.79	51.12	62.82	77.58	102.24	113.94	125.64	
		60Hz		9.12	16.2	22.8	30.6	37.6	46.5	61.2	75.3	93.1	122.4	136.6	150.7	
	Kcal / hr	50Hz	2150	6612	11607	16405	21976	27006	33352	43943	54013	66703	87906	97956	108026	
		60Hz		7838	13928	19686	26371	32407	40022	52731	64815	80043	105487	117547	129631	
Compressor	Type		Scroll ⁽²⁾				Scroll									
	Power	kW	50Hz	0.75	2.77	4.65	7	9.35	12	14.2	18.7	24	28.4	37.75	42.6	48
		60Hz	0.7951	3.32	5.6	8.55	11.5	14.7	17.6	23	29.4	35.2	46.2	52.8	58.8	
		Hp	1	3	5	8	10	12.5	15	20	25	30	40	45	50	
Refrigerant	Weight (kg)		1.5	2.7	4.3	7	8	11	13	18	22	26	34	42	48	
	Control Unit		Thermostatic expansion valve													
	Type ⁽³⁾		R22													
Evaporator	Type		Copper Tube	Tube-in-shell style												
Condenser	Type		Tube-fin style													
	Blower (kW)	50Hz	0.14	0.25	0.45	0.18 × 2	0.45 × 2	0.25 × 2		0.55 × 2	1.1 × 2	1.5 × 2	1.85 × 3	1.5 × 3	1.85 × 4	
		60Hz	0.14	0.30	0.54	0.22 × 2	0.58 × 2	0.30 × 2		0.66 × 2	0.66 × 2	2.2 × 2	2.7 × 3	1.5 × 3	2.7 × 4	
Water Tank (L)			25	50		85		150		180	200	270	400	400	650	
Pump ⁽⁴⁾	Power (kW) (50 / 60Hz)		0.37	0.75 / 1.1 0.75 / 1.5		1.1 1.1 / 1.5		1.5 / 2.2 2.2		2.2 / 3 / 4 3		3 / 4 5.5		4 / 5.5 5.5		
	Pump Flow (L / Min)		40	50 / 83 / 67		80 / 100 / 89		130 / 150 / 133		200 / 300 / 300		300 / 300 / 300		533 / 366 / 367		
	Working Pressure (kg/cm ²)		1.0	2.0 / 2.6 / 3.8		2.0 / 2.6 / 3.5		2.0 / 3 / 4.2		2.5 / 3 / 4.2				2.7 / 3.4 / 4.3		
Total Power (kW)	50Hz		1.26	3.77	5.85	8.46	11.35	11.6	15.8	22	28.4	35.4	47.3	51.1	59.4	
	60Hz		1.3	4.37	6.89	10.09	13.76	16.4	19.3	26.52	32.9	45.1	59.8	61.3	73.6	
Pipe Coupling (inch)	Cooling Water Outlet		1/2" × 1	1" × 1		1 1/2" × 1		2" × 1				2 1/2" × 1		2 1/2" × 1		
	Cooling Water Inlet		1/2" × 1	1" × 1		1 1/2" × 1		2" × 1				2 1/2" × 1		2 1/2" × 1		
	Drainage Port Of Water Tank		1/4"	1/ 2"										1"		
	Overflow Port Of Water Tank		3/8"	1/ 2"										1"		
Protections	Compressor		Overload relay													
	Pump		Overload relay													
	Refrigerant Circuit		High and low pressure switch / anti-freezing switch													
	Cooling Water Circuit		by-pass valve / Water level switch (Option)													
Power			1 Φ 230V, 50/60Hz		3 Φ, 230/400/460/575V, 50/60Hz											
Measures Exchange			1 KW = 860 Kcal/hr					1 RT = 3024 Kcal/hr			10000 Btu/hr = 2520 Kcal/hr					

Note: 1) Refrigeration capacity is tested under the condition that cold water outlet temperature is at 12°C and ambient temperature at 30°C.

2) A piston type compressor is used when power supply is 3Φ, 230V. (SIC-3A ~ SIC-5A)

3) Environment-friendly R407C refrigerant is optional. (Model denotes "U", such as SIC-5A-U)

4) This pump is used as standard when export to Southeast Asia; high pressure pump is optional for installation on customer's demand. (Model denotes "HP", such as SIC-5A-HP).

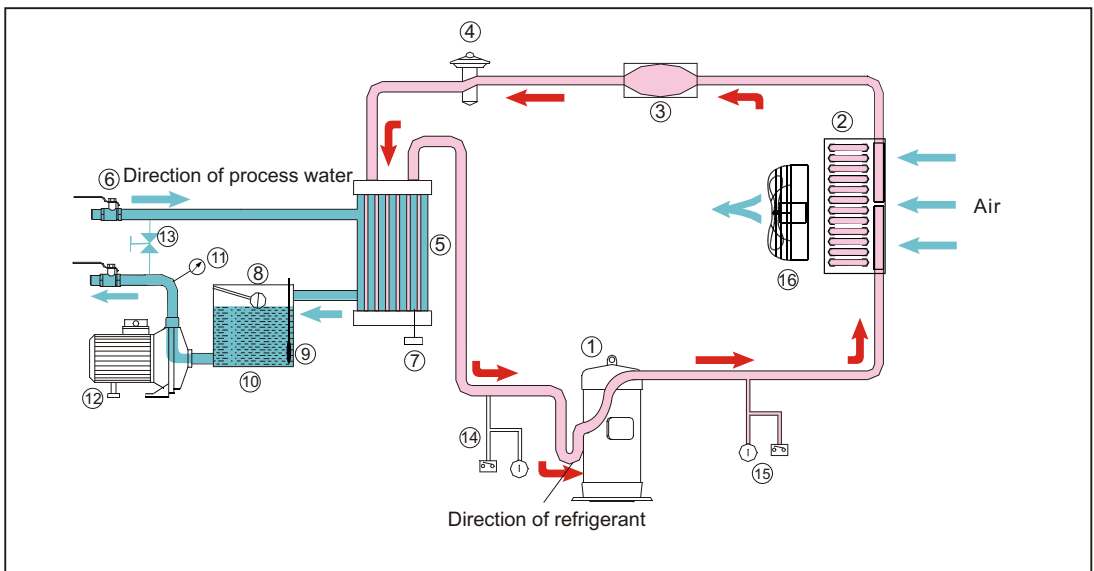
5) Demands on special voltage of power supply could be satisfied.

6) Air-cooled chillers are best to be used in the environment with ambient temperature under 35°C.

3. Main Functions

3.1 Working Principle

SIC-A air-cooled water chillers include compressor, condenser, thermostatic expansion valve, and evaporator four main components. The system adopts a single closed-loop design for refrigeration system. Refrigerant is alternatively changed from gaseous to liquid state to absorb or release heat thus a cooling effect is achieved.



Item	Description	Item	Description
①	Compressor	⑨	Temp. sensor
②	Condenser	⑩	Water tank
③	Dry filter	⑪	Pump pressure gauge
④	Expansion valve	⑫	Pump
⑤	Evaporator	⑬	By-pass valve
⑥	Ball valve	⑭	Low pressure switch
⑦	Anti-freezing switch	⑮	High pressures switch
⑧	Level sensor	⑯	Blower

When the machine is started, compressor (1) starts working. Refrigerant is compressed into high pressure and high temperature gas in the process from A to B. In the process from B to C and D, this high pressure and high temp. gas is cooled when it is passing through the condenser (2) and changed into liquid. Heat is taken away by the cooling water. In the process from D to E, the pressure of liquid refrigerant is reduced by expansion valve (4) and a part of the refrigerant is changed from liquid to gaseous state. In the process from E to A, refrigerant absorbs the heat of process water in the evaporator (5) and returns back to the compressor. This heat exchange process repeats until process water is cooled down to required temperature.

4. Safety Regulations

Operation should be carried out according to the safety regulations this manual to avoid damage of the machine and personal injuries.

Abide by the following regulations during operation.

Electrical installation should be done by qualified electricians.



Main switch and control should be turned before service and maintenance.



Warning! High voltage!

This sign is attached to the cover of control box!



Warning! Be careful!

Pay more attentions at the places where this sign is attached!



Attention!

drain the water inside when power off at the cold day to avoid freezing.



Attention !

No need for regular inspection because all the electrical parts in the control unit are fixed tightly !

Transportation and storage of the machine

Transportation

- 1) SIC-A series are packed in crates or plywood cases with wooden pallet at the bottom, suitable for quick positioning by fork lift.
- 2) After unpacked, castors equipped on the machine can be used for ease of movement.
- 3) Do not rotate the machine and avoid collision with other objects during transportation to prevent improper functioning.
- 4) The structure of the machine is well-balanced, although it should also be handled with care when lifting the machine for fear of falling down.
- 5) The machine and its attached parts can be kept at a temperature from -25°C to $+55^{\circ}\text{C}$ for long distance transportation and for a short distance, it can be transported with temperature under $+70^{\circ}\text{C}$.

Storage

- 1) SIC-A series should be stored indoors with temperature kept from 5°C to 40°C and humidity below 80%.
- 2) Disconnect all power supply and turn off main switch and control switch.
- 3) Keep the whole machine, especially the electrical components away from water to avoid potential troubles caused by the water.
- 4) Plastic film should be used to protect the machine from dust and rains.

Working environment

The machine should be operated:

- 1) Indoors in a dry environment with max. temperature $+45^{\circ}\text{C}$ and humidity no more than 80%.

Do not use the machine:

- 1) If it is with a damaged cord.
- 2) On a wet floor or when it is exposed to rain to avoid electrical shock.
- 3) If it has been dropped or damaged until it is checked or fixed by a qualified serviceman.

- 4) This equipment works normally in the environment with altitude within 3000m.
- 5) At least a clearance of 1m surrounding the equipment is required during operation. Keep this equipment away from flammable sources at least two meters.
- 6) Avoid vibration, magnetic disturbance at the operation area.

Rejected parts disposal

When the equipment has run out its life time and can not be used any more, unplug the power supply and dispose of it properly according to local code.

Fire hazard



In case of fire, Co₂ dry powder fire extinguisher should be applied.

5. Installation



Read this chapter before installation. Install the machine according to following steps!

Air-cooled water chillers should be installed in an environment that has good ventilation, such as draughty area against the window. Ambient temperature should not be more than 35°C if it is installed indoors. Use exhaust pipe to conduct the hot air produced by the chiller to the outside. If the chiller is installed outdoors, protective cover should be used.

5.1 Installation Instructions

- 1) Make sure that the voltage and frequency corresponds with the requirements on manufacturer's name plate.
- 2) Connect the machine with electrical wires and negative wire according to local code.
- 3) Use independent electrical wires and switch. Diameter of electrical wire should not be smaller than that of the electric wire which is used for the electrical control box.
- 4) Wiring connections should be firmly fixed.
- 5) The chillers use three phase & five core wire. Connect wire N to negative wire, PE to earth wire, and others to live wire.
- 6) Power supply:
Voltage deviation: Rated voltage in the nameplate: $\pm 10\%$
Frequency deviation: The rated frequency in the nameplate: $\pm 2\%$
- 7) According to the installation configuration diagram to install the pipe system, and use thermal insulation materials to protect the refrigerated water pipe.
- 8) Circulation pipe diameter of the pump should not less than that of condenser inlet pipe. Circulation pipe with larger diameter should be used for long distance transportation of process water.
- 9) Automatic exhaust tap should be installed at the top of circulation pipe, and at the lowest part drainage valve should be installed.
- 10) Water filter should used in the process water and cooling water circulation pipe if water quality and surroundings of cooling tower is bad.
- 11) After the installation is completed, check if there are leakages in the circulation system. Cold water circulation pipe should be covered with a layer of insulated material to avoid temperature increasing and water drops forming on the surface of circulation pipe.



Electrical wire connection of water chiller should be done by qualified electrician! Electrical wiring circuit should not be modified unless authorized by our company. We shall not be reliable for machine damages caused by unauthorized modification.

5.2 Installation Space

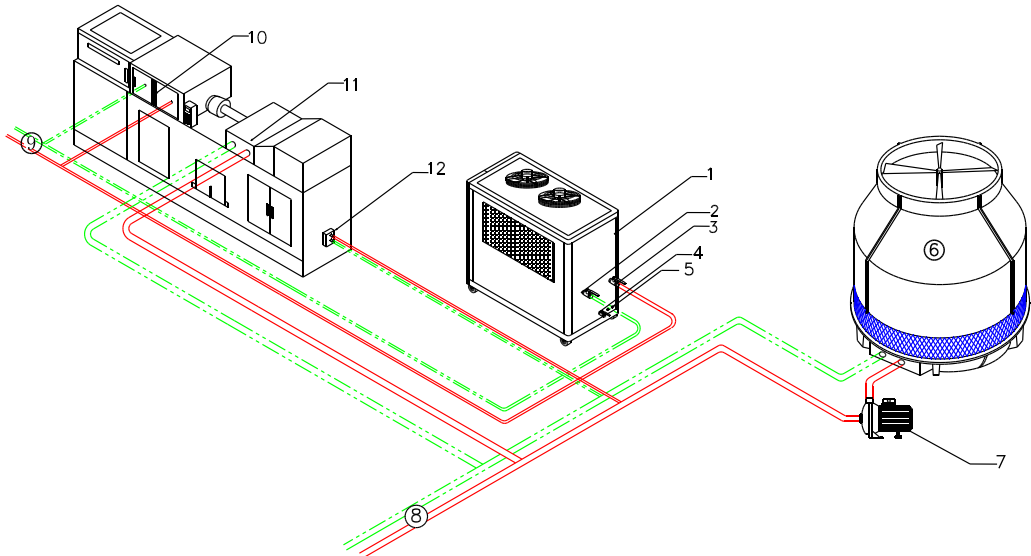
During installation of the machine, keep at least 500mm installation space around the machine as shown by the picture. Do not install the machine in a position crowded with other objects. This would cause inconvenience to operation, maintenance and repair.

Do not sit on the machine.

Make sure the machine is in an environment with good air convection.



5.3 Schematic Drawing of Installation



①	Water chiller	⑦	Cooling water pump
②	Process water outlet	⑧	Cooling water circulation
③	Process water inlet	⑨	Cold water circulation
④	Water discharge port	⑩	Mould cooling
⑤	Water refill port	⑪	Cooling chamber
⑥	Cooling tower	⑫	Hydraulic oil cooling

5.4 Power Supply

Make sure that power supply is the same as required before installation.
SIC-A series should be connected with 3Φ 400V power supply and earth wire.



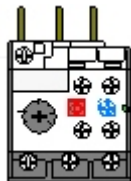
Before connecting the machine with power supply, please make sure that main switch is turned off!

6. Operation Guide

6.1 Control Panel



No.	Name	Functions	Remarks
1	Power indicator	Connect through power supply and turn on the main switch, the indicator will becomes bright.	Note! Do not disassemble any electrical components or terminals in case of electrical shock.
2	Anti-phase indicator	It is used to indicate phase reversal or phase shortage. The buzzer sounds and system stops working.	Check the power supply and exchange two of the live wires to reset the alarm.

No.	Name	Functions	Remarks
3	Pump overload indicator	When pump current exceeds the limits, this indicator becomes bright. The buzzer sounds and system stops working.	Check if the motor is blocked or the bearing is broken. If motor works normally, please check if the setting current of the overload relay in the control box is set too low. After the above measures are taken, wait for about 1 minute, then press the blue "reset" button to reset the alarm. 
4	Compressor overload alarm	If working current of the compressor is above the setting current of overheat relay, the alarm will be raised. The buzzer sounds and system stops working.	Check if the setting current of overheat relay is correct. Setting current of overheat relay should be bigger than the rated current of the compressor.
5	High pressure alarm	When the outlet pressure of the compressor is higher than setting value of high-pressure switch, the alarm will be raised. The buzzer sounds and system stops working.	High-pressure switch setting value should be correctly set as 25 bar.
6	Low pressure alarm	When the inlet pressure of compressor is lower than setting value of low-pressure switch, the alarm will be raised. The buzzer sounds and system stops working.	Low-pressure switch should be correctly set as 2 bar.
7	Buzzer	The buzzer makes audible alarm when problems is detected.	
8	Compressor switch	The start & stop of the compressor.	Note! Before turning on the compressor, turn on the pump first
9	Pump switch	The start & stop of the pump.	Pump rotating direction should be correct.
10	Main switch	Turn on/off main power.	
11	Temperature controller	Temperature setting and control.	Please refer to page 6-4 for details.

6.2 System Startup

- 1) Turn on the main switch.

**ON****OFF**

- 2) Turn on the pump.
- 3) Turn on the compressor.
- 4) Set process water temperature (Neglect this step if temperature is already set). Press   to increase or decrease water temperature. For this series of water chillers, process water temperature should be set as 7°C (never set below 4°C).
- 5) Anti-freezing setting: anti-freezing switch equipped (setting value 4°C). When process water temperature is lower than 4°C, the compressor will stop working.



Note!

Pump rotating direction should be correct.



Note!

Before starting the system, make sure that cooling water pump is turned on. Check the water tank of the chiller, do not start the machine when there is no water left in water tank. We shall not be liable for any damages caused by this reason.



Note!

In order to reduce the possibilities of machine damage and prolong the life, start the machine with correct methods.



Note!

Temperature setting value should not be lower than 4°C. Temperature of anti-freezing switch and high and low pressure switch is already set before delivery. We shall not be liable for any damage caused by unauthorized change of the setting.

6.3 Machine Shut Off

- 1) Turn off the compressor.
- 2) Turn off the pump.
- 3) Turn off the main switch.



Note!

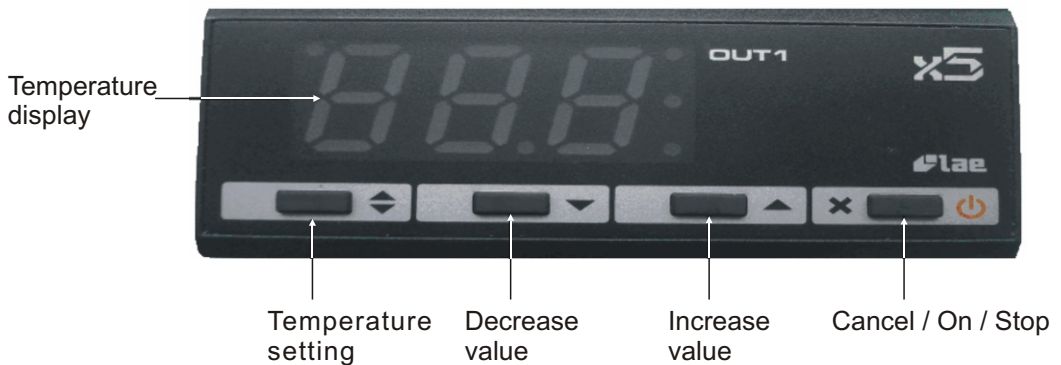
Avoid electrical shock when main switch is turned on.



Note!

In order to reduce the possibilities of machine damage and prolong the life, shut off the machine with correct methods.

6.4 Temperature 1 (Used for 1HP-15HP)



6.4.1 Temperature setting method

Limits of SPL and SPH for setting points exist in any condition and set through $\blacklozenge+x$ to acquire values of SPL and SPH.

Notices: all parameters must be reset when temperature unit changed.

6.4.2 Parameter value setting

S/No.	Parameter Code	Parameter Significance	Value Setting	Remark
1	SCL	Temperature unit 1°C: Display without radix point 2°C: Display with radix point °F: Fahrenheit	2°C	Unit: °C °F
2	SPL	Minimum temp. Setting	7	Unit: °C
3	SPH	Maximum Temp. Setting	35	Unit: °C
4	1Y	Control method Hy: Control by switch PID: Control by PID	HY	
5	1HY	Lagged value	1	Unit: °C
6	1CT	Control cycle time	120	Unit: S
7	BAU	Exit / Enter menu setting	NON	NON: Exit

Remark : Above parameter only available for temperature control model: LTR-5CSRE. Can't be used for other models.

6.4.3 Parameter setting method

When to setup, (user shall) continuously press buttons $\blacklozenge + \times$ for over 5 seconds at the same time. When adjustable parameter at first level appears, switch it to the setting of parameter at next level through pressing button $\blacktriangledown$ and return it to previous level by pressing button $\blacktriangle$. Press button $\blacklozenge$ to display parameter value and press $\blacklozenge + \blacktriangle$ or $\blacklozenge + \blacktriangledown$ simultaneously to change values. Press $\blacklozenge$ to confirm it and continue the next setting.

It will automatically quit parameter setting after 30S of no keyboard input.

6.4.4 Code meanings

---	Power supply self-test status (3S)	E1	Self setting time 1 error
5.4	Display of actual temperature	E2	Self setting time 2 error
Or	Sensor breaks	E3	Self setting time failure
Tun / 5.4	Process of PID self setting	OFF	Controller standby

6.5 Temperature 2 (Used for 20HP-50HP)



6.5.1 Temperature setting method

When the Temp. control work normally , press F1 “L1” , will show on the display, set value will be appeared after 2 sec, temperature is set by button  , After finished, Press button “F1” to save temperature value. 6 sec don't have any operation, it will return to control made automatically.

6.5.2 Parameter value setting

S/No.	Parameter Code	Parameter Significance	Value Setting	Remark
1	TYP	Parameter level selection	T2S	
2	▽SP	Minimum temp. Setting	7	Unit: °C
3	△SP	Maximum Temp. Setting	35	Unit: °C
4	rt1	OUT1 Delay time	3	Unit: m
5	PF1	OUT1 Fault output alarm (ON/OFF)	OFF	OFF : Off
6	ADJ	Deviation value	0	
7	HY1	OUT1 Lagged value	2	Unit: °C
8	HY2	OUT2 Lagged value	2	Unit: °C
9	rt2	OUT2 Delay time	4	Unit: °C
10	PF2	OUT2 Fault output alarm (ON/OFF)	OFF	OFF : Off
11	△dt	DT Maximum value setting	0	O : Temperature difference between too output point

Remark : 1. Above parameter only available for temperature control model: MTC12T1RD/3. Can't be used for other models.

2. For SIC-40P / 45P / 50P, rt1, rt2 should be setting as 0.

6.5.3 Parameter setting method

- 1) Close the temp. control: continuously press both " " ", "PAR" will be appeared after opening power come into parameter level selection through pressing button " " and " F1" , select the level you need through pressing button " " select " T2S " level.
- 2) Press button F1, Adjust the parameter through pressing   .
- 3) After above finished, turn off the power of temp. control, All parameter will be saved automatically .



Remark !

Parameters are set before delivery , please don't reset unless any special instance.

7. Service & Maintenance



All repair work should be done by qualified personnel only to avoid damage to the machine or personnel injury.

In order to operate the machine rightly and safely, please caution the matter as follows:

- 1) Do not turn off the main power switch to stop the machine, except emergency situation.
- 2) When failures set in and the machine stop work with buzzer sound, first press down the main power switch of the machine (alarm indicator will die), then go to check the reason of the failures, do not force the machine on before remove the failures.
- 3) Please check periodically to prolong the life of the machine and prevent the safety accident to appear.
- 4) Water supply should be processed, because the high PH can corrode the copper pipe acute. This must reduce the life of the heating and cooling implement, PH of the water supply must be between 7.0~8.5.
- 5) Keep the machine room dry, clean and vent.
- 6) The operation and service of the machine should be done by qualified technician only.
(Please take notice that the disassembly and the inspection of the machines are hazardous when the machines are running!)

7.1 Fill in The Refrigerant

- 1) Screw off the end cap of the liquid filling thimble valve, and connect the air suction pipe of the vacuum pump to the liquid filling thimble valve to take the vacuum pumping, and this process may take one to two hours.



The air return pipe

The end cap of the liquid filling thimble valve

The evaporation



The vacuum pump

- 2) After the vacuum pumping, connect the air pipe of the refrigerant tank to the liquid filling thimble valve, and fill the refrigerant into the air return pipe. Watch the change of the weight displayed by the electronic scale, and stop filling the refrigerant immediately when receiving the schedule weight. In the condition of the starting up, the shown pressure of the high pressure gage should be about 13 to 15 bar; and shown pressure of the low pressure gage should be about 3 to 5 bar. (Note: the temperature of the environment should be 30°C, and the temperature of the frozen water should be 12°C。)

SIC-A series filled weight

The model of the machine	The filled weight of the refrigerant (kg)	The model of the machine	The filled weight of the refrigerant (kg)
SIC-3A-P	4.0	SIC-20A-P	18
SIC-5A-P	4.5	SIC-25A-P	20
SIC-8A-P	7.0	SIC-30A-P	26
SIC-10A-P	9.0	SIC-40A-P	34
SIC-12.5A-P	10	SIC-45A-P	42
SIC-15A-P	13	SIC-50A-P	48



The electronic scale The coolants tank

7.2 Maintenance of The Subassemblies

7.2.1 Condenser

SIC-A series water chillers use the air cooled condenser with ferrule installed openly, in the using time, it hard to avoid any dust and sundries, which will influence the heat emission effect, so it is necessary to clean the condenser at fixed periods in order to keep its working performance. Use brush, dust catcher or compressed air to clean the wings and copper pipe. Then use the low pressure water to cascade the tray pipe. Note: do not let the water to cascade on the surface of the fan motor.



Note: do the cleaning work every half-year in the environment with little dust, but you must do the work every month in the environment with a great deal of dusts, and under the scurviness environment you had better see the situation to do the work.

7.2.2 The evaporator

The inner flank of the heat emission pipe will pile up a great deal of water incrustation after a long time use of the evaporator, which will influence the heat emission effect, so it is necessary to clean the evaporator at fixed periods in order to keep its working performance. Open the pollution discharge porthole on the bottom of the evaporator¹, and spray rinse the heat emission pipe from the outer flank to the innerflank, the water incrustation will be discharged from the pollution discharge porthole.



Note!

Drain the water inside the evaporator and the condenser away, when the machine stop running under 0 °C.

7.3 The Useful Life of The Key Parts of The Product

Name of the parts	Useful life
Pump	About 5 years
Compressor	About 5 years
Contactator	About 100,000 act

8. Trouble Shooting

Faults	The action of the protection units	The possible fault analysis	Solution
1. No power supply display or phase reversal	The protection units have no action	A. The power supply is not switched on B. The fuse wire of the control loop is burned out C. The line ordering of the power supply is in the reverse order D. The fault of the main switch or circuit	A. Power on after checking B. Check the protection loop C. Change the wires in order of two random power supply wires D. Check or replace
2. The pump over loading	The loader trips	A. Over current B. The fault of the pump C. The fault of the pump over loading controller	A. Reset the over loader B. Replace after checked and repaired C. Replace after checked and repaired
3. The compressor over loading	The loader trips	A. Over current B. The fault of the compressor C. The fault of the compressor over loading controller	A. Reset the over loader B. Replace after checked and repaired C. Replace after checked and repaired
4. The high pressure is too high	The high pressure switch trips	A. The refrigerant is too much B. The amount of blast to the condenser is not enough C. The sediment incrustation of the condenser is too much D. The dry filter is blocked up E. The open scale of the expansion valve is too narrow F. The fault of the expansion valve G. The fault of the fan H. The fault of the high pressure switch I. The condenser is beaten by the sun shine	A. Discharge some of the refrigerant B. Increase the amount of blast to the condenser C. Clean the condenser D. Clean the dry filter E. Adjust the open scale properly F. Replace after checked and repaired G. Replace after checked and repaired H. Replace after checked and repaired I. Prevent the condenser from being beaten by the sun shine
5. The high pressure is too low	The protection units have no action	A. The cooling action is not enough B. The vanes of the compressor are spoiled C. The amount of the cooling water is too big	A. Reset the temperature valve to a new one B. Replace after checked and repaired C. Adjust the flow quantity of the water valve
6. The low pressure is too low	The low pressure switch trips	A. The refrigerant is not enough B. The dry filter is blocked up C. The open scale of the expansion valve is too small D. The fault of the expansion valve E. The fault of the low pressure switch	A. Check the system pipe lines, weld pipe lines, and supply refrigerant. B. Clean the dry filter C. Adjust the open scale properly D. Replace after checked and repaired E. Replace after checked and repaired

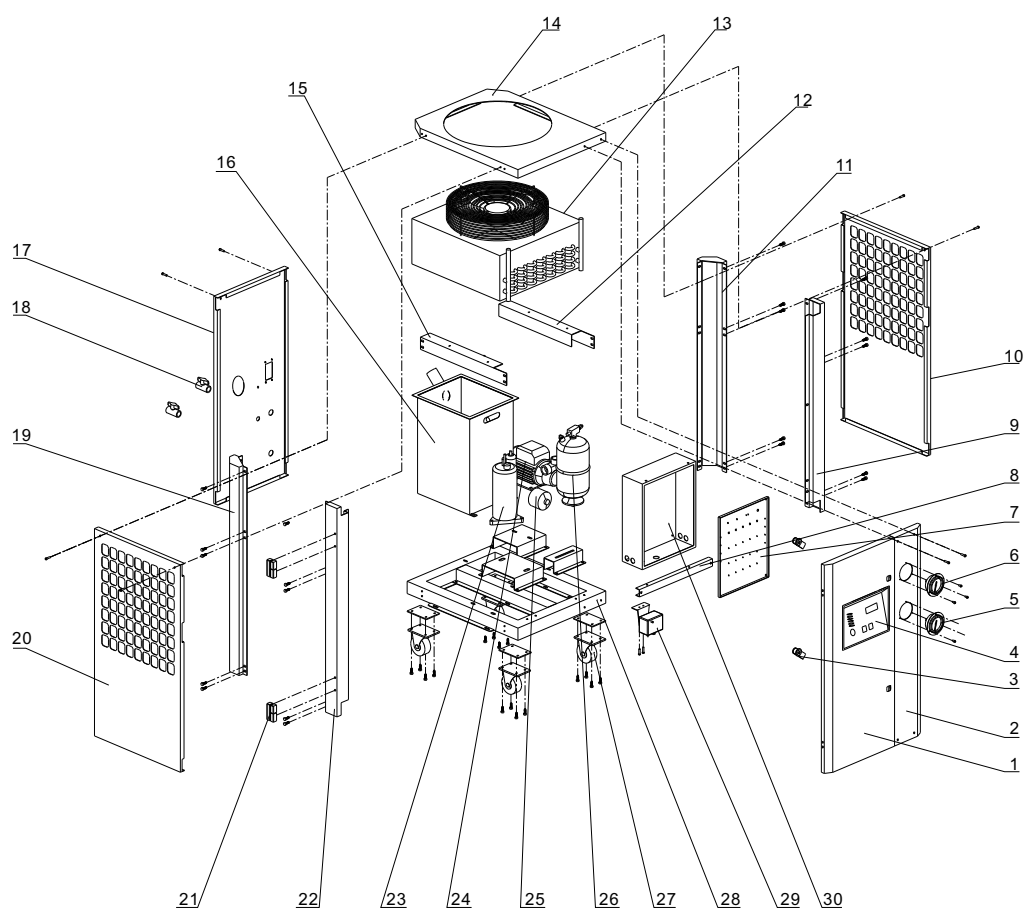
8. Trouble Shooting

Faults	The action of the protection units	The possible fault analysis	Solutions
7. The low pressure is too high	The protection units have no action	A. The cooling load is too big B. The power of the compressor decreases C. The open scale of the expansion valve is too big D. The packed weight of the refrigerant is excessive	A. Adjust the cooling load B. Replace after checked and repaired C. Adjust the open scale of the expansion valve D. Discharge some of the refrigerant
8. The compressor overheat	The protection units have no action	A. The heat degree of the refrigerant in the air return pipe is too high B. The high pressure is too high C. The low pressure is too low	A. Adjust the open scale of the expansion valve properly B. Check, repair and improve C. Check, repair and improve
9. The chassis of the air return pipe and the compressor frost over	The protection units have no action	A. The open scale of the expansion valve is too big B. The refrigerant is too much C. The heat load is too small	A. Adjust the open scale of the expansion valve properly B. Discharge some of the refrigerant C. Increase the heat load
10 The compressor can not start up or trips after starting up	The protection units have no action	A. The power supply wire is broken or the voltage is off normal B. The temperature control instrument is not set up properly C. The overloading protector is not reset	A. Check and connect the wires according to Specifications B. Reset the temperature control instrument C. Reset the over loading protector
	The freeze protection switch trips	A. The amount of the ice water is too much and bring about that the water temperature is too low B. The temperature control is set too low or has some faults C. The freeze protection switch is not properly set or has some faults	A. Check the pump and discharge the air in the water pipe B. Correct the set point or change C. Check, weld and repair
11 The cooling capacity can not get up to the standard		A. There is some air in the cooling system B. The water quantity and water supply in the cooling system is abnormal C. The fans run abnormally D. The filter is blocked up E. The configure of the cooling pump is not proper F. The cooling water pipe is not configured according to the standard	A. Discharge the air B. Control the water level of the water supply tank C. Check and repair D. Clean the filter E. Choose the pump up to the standard (flow quantity and delivery lift)

9. Assembly Drawing

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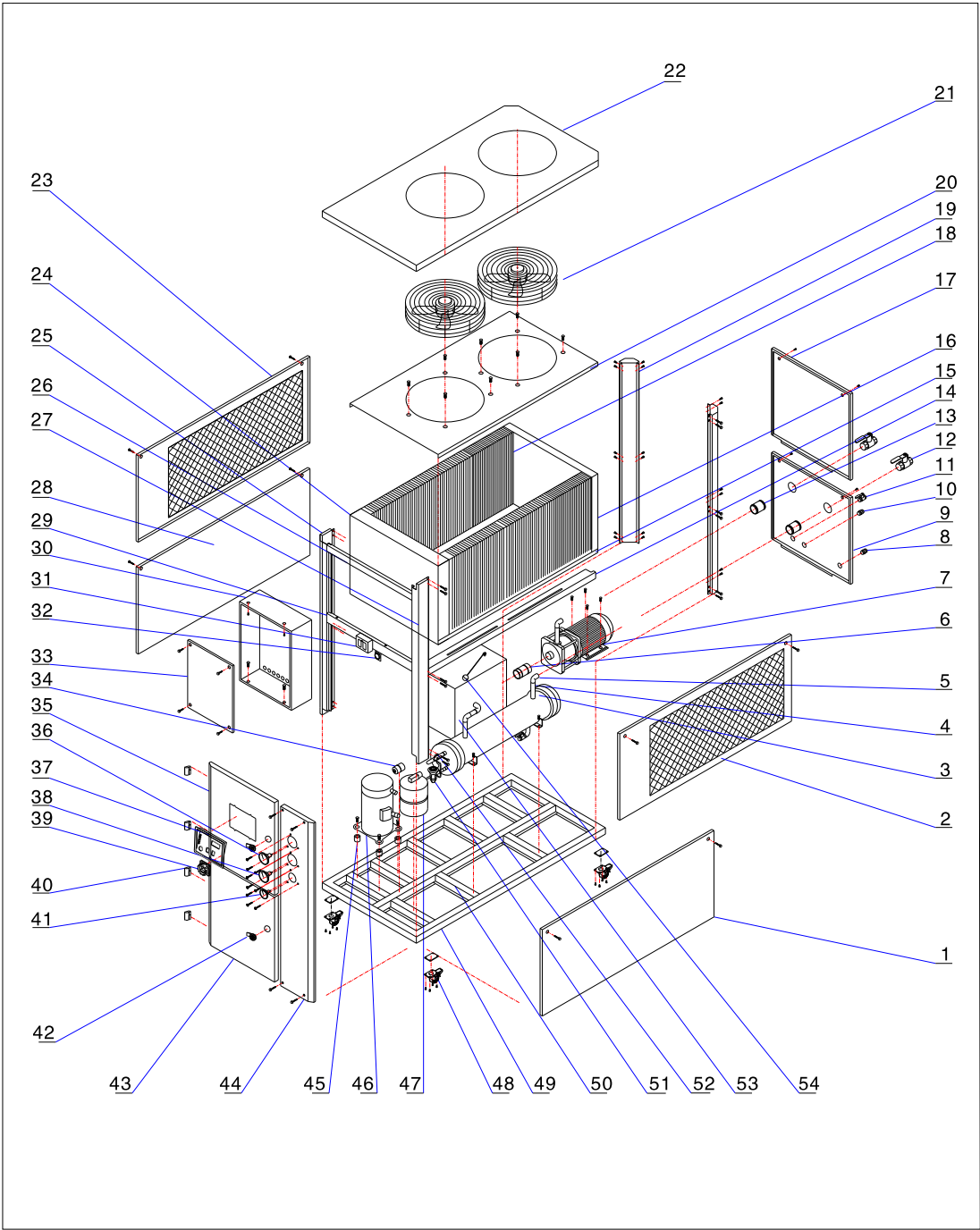
9.1 SIC-1A Series System Structure Diagram



9.2 SIC-1A Series Parts List

N0.	Name	No. of the materiel
1	Door plank	PSIC00000001XXA0004
2	Meter board	PSIC00000001XXA0001
3	Control box door lock	D2128002
4	Control panel	E4132000
5	Low pressure gauge	L1120001
6	High pressure gauge	L1120002
7	Electric bottom plate	PSIC00000001XXA4003
8	Electrical control box support beam	PSIC00000001XXA9001
9	Right front standing pole	PSIC00000001XXA1008
10	Side plate (right)	PSIC00000001XXA0002
11	Back standing column(right)	PSIC00000001XXA1005
12	Condenser support beam right	PSIC00000001XXA1009
13	Condenser	L6000060
14	Top plate	PSIC00000001XXA0005
15	Back standing column(left)	PSIC00000001XXA1009
16	Water tank	PSIC00000001XXA7001
17	Rear plate	PSIC00000001XXA0003
18	Ball valve	T2202000
19	Back standing column(left)	PSIC00000001XXA0005
20	Side plate(left)	PSIC00000001XXA0002
21	Small	D1104010
22	Front standing pole(left)	PSIC00000001XXA1008
23	Compressor	L1000010
24	Water pump	T3216025
25	Dry filter	L2000006
26	Fluid reservoir	L3206000
27	Castor	D3113000
28	Base	PSIC00000001XXA1001
29	Pressure controller	L1110003
30	Electrical control box	PSIC00000001XXA4002

9.3 SIC-3A~15A Series System Structure Diagram



9.4 SIC-3A~15A Series Parts List

NO.	Name	No. of the materiel		
		SIC-3A-P	SIC-5A-P	SIC-8A-P
1	Right below board	L1105018	L1105018	L7063000
2	Right up board	L1105019	L1105019	L7064000
3	The evaporator	L1500301	L1505000	L1508000
4	Galvanization water pipe	K4503000	K4503000	K4501001
5	Elbow of the water pipe	L9000009	L9000009	L9000020
6	The rubber pipe*	L1310001	L1310001	L1310002
7	The pump*	L1407506	L1407506	L1401101
8	The compensate stretch	L9000008	L9000008	L9000008
9	Back below board	L1105020	L1105020	L7079000
10	The direct connection	D1203007	D1203007	D1203007
11	Ball valve*	T2117000	T2117000	T2117000
12	Ball valve*	T2117000	T2117000	T2117000
13	Water pipe direct connection	D1203006	D1203006	D1203007
14	Middle side beam	L1105035	L1105035	L7073000
15	Fan cover base board	L1105025	L1105025	L7058000
16	Fan cover back board	L1105026	L1105026	L7072000
17	Back top board	L1105021	L1105021	L7079000
18	The condenser	L1603050	L1603050	L1608100
19	Back standing column	L1105034	L1105034	L7101000
20	Fan cover board	L1105032	L1105032	L7059000
21	Outer rotor fan	L1930000	L1930000	L1918004
22	Cover	L1105031	L1105031	L7078000
23	Left top board	L1105023	L1105023	L7068000
24	Fan cover front board	L1105027	L1105027	L7060000
25	Left standing column	L1105033	L1105033	L7101000
26	Control box top beam	L1105037	L1105037	L7066000
27	Right front standing column	L1105033	L1105033	L7101000

NO.	Name	No. of the materiel		
		SIC-3A-P	SIC-5A-P	SIC-8A-P
28	Left below board	L1105018	L1105018	L7061000
29	Control box below beam	L1105039	L1105039	L7062000
30	Control box	M0805007	M0805018	M0805030
31	High and low pressure switch	L1303000	L1303000	L1308301
32	Adjustable anti-freeze switch	L1307110	L1307110	L1307110
33	Control base board	L1105030	L1105030	L7076000
34	Drying filter	L1308300	L1316400	L1316400
35	Top door board	L1105024	L1105024	L7102000
36	High pressure meter	L1303501	L1303501	L1303501
37	Control panel	E4124005	E4124005	E4124005
38	Low pressure meter	L1301501	L1301501	L1301501
39	Main power switch	E1416000	E1416000	E1432000
40	Hinge	D3320302	D3320302	D3320302
41	Water pressure meter	L2201000	L2201000	L2201000
42	Door lock	T4142000	T4142000	T4142000
43	Left below door board	L1105022	L1105022	L7099000
44	Meter board fixing board	L1105023	L1105023	L7066000
45	Anti-vibrate leg for the compressor	L1303010	L1303012	L130313
46	Compressor *	L1703000	L1705000	L1708000
47	Storage bin	L9005000	L9006000	L9007000
48	Castor	D3122000	D3122000	D3122000
49	Bottom frame	L1105040	L1105040	L7067000
50	Below beam	L1105039	L1105039	L7073000
51	Heat expansion valve	L1300300	L1300500	L1300800
52	liquid filling thimble valve	L1301040	L1301040	L1301040
53	Stainless water tank	L1105044	L1105044	L7107000
54	Floating ball valve*	L1304000	L1304000	L1304000

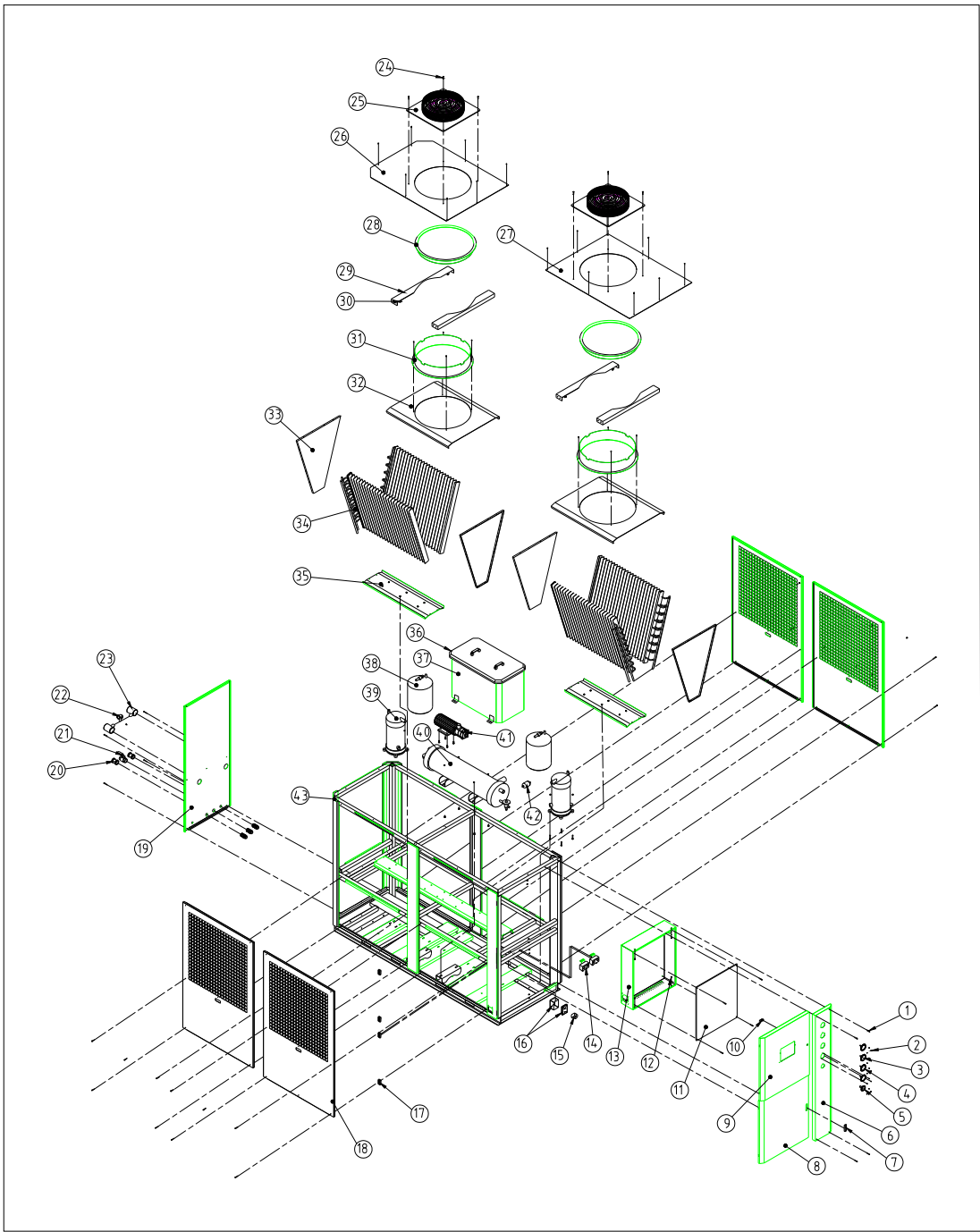
*Indicates latent wearing parts; **Indicates latent wearing parts and it's suggested to back them up.

N0.	Name	No. of the materiel		
		SIC-10A-P	SIC-12.5A-P	SIC-15A-P
1	Right below board	L7063000	L7108000	L7108000
2	Right up board	L7064000	L7109000	L7109000
3	The evaporator	L1510000	L1512500	L1515001
4	Galvanization water pipe	K4501001	K4501001	K4501001
5	Elbow of the water pipe	L9000020	T2202007	T2202007
6	The rubber pipe*	L1310002	L1310002	L1310002
7	The pump*	L1401101	L1402007	L1402207
8	The compensate stretch	L9000007	L9000009	L9000007
9	Back below board	L7079000	L7122000	L7122000
10	The direct connection	D1303007	D1203007	D1203007
11	Ball valve*	T2117000	T2117000	T2117000
12	Ball valve*	T2117000	T2117000	T2117000
13	Water pipe direct connection	D1203007	D1203007	D1203007
14	Middle side beam	L7073000	L7121000	L7121000
15	Fan cover base board	L7058000	L7154000	L7154000
16	Fan cover back board	L7072000	L7145000	L7145000
17	Back top board	L7079000	L7155000	L7155000
18	The condenser	L1608100	L1612502	L1615002
19	Back standing column	L7101000	L7124000	L7124000
20	Fan cover board	L7059000	L7115000	L7115000
21	Outer rotor fan	L1918004	L1930000	L1930000
22	Cover	L7078000	L7147000	L7147000
23	Left top board	L7068000	L7114000	L7114000
24	Fan cover front board	L7060000	L7116000	L7116000
25	Left standing column	L7101000	L7124000	L7124000
26	Control box top beam	L7066000	L7123000	L7123000
27	Right front standing column	L7101000	L7124000	L7124000

NO.	Name	No. of the materiel		
		SIC-10A-P	SIC-12.5A-P	SIC-15A-P
28	Left below board	L7063000	L7109000	L7109000
29	Control box below beam	L7062000	L7113000	L7113000
30	Control box	M0805038	M0805049	M0805054
31	High and low pressure switch	L1308301	L1308301	L1308331
32	Adjustable anti-freeze switch	L1307110	L1307110	L1307110
33	Control base board	L7076000	L7125000	L7125000
34	Drying filter	L1316400	L1330700	L1330700
35	Top door board	L7102000	L7114000	L7114000
36	High pressure meter	L1303501	L1303501	L1303501
37	Control panel	E4124005	E4124005	E4124005
38	Low pressure meter	L1301501	L1301501	L1301501
39	Main power switch	E1412000	E1432000	E1463000
40	Hinge	D3320302	D3320302	D3320302
41	Water pressure meter	L2201000	L2201000	L2201000
42	Door lock	T4142000	T4142000	T4142000
43	Left below door board	L7099000	L7146000	L7146000
44	Meter board fixing board	L7066000	L7114000	L7114000
45	Anti-vibrate leg for the compressor	L1303014	L1303015	L1303016
46	Compressor*	L1710000	L1000006	L1701500
47	Storage bin	L9000700	L9008000	L9009000
48	Castor	D3122000	D3110000	D3110000
49	Bottom frame	L7067000	L7111000	L7111000
50	Below beam	L7073000	L7112000	L7112000
51	Heat expansion valve	L1301000	L1301250	L1301500
52	Liquid filling thimble valve	L1301040	L1301040	L1301040
53	Stainless water tank	L7107000	L7157000	L7157000
54	Floating ball valve*	L1304000	L1304000	L1304000

*Indicates latent wearing parts; **Indicates latent wearing parts and it's suggested to back them up.

9.5 SIC-20A~30A Series System Structure Diagram



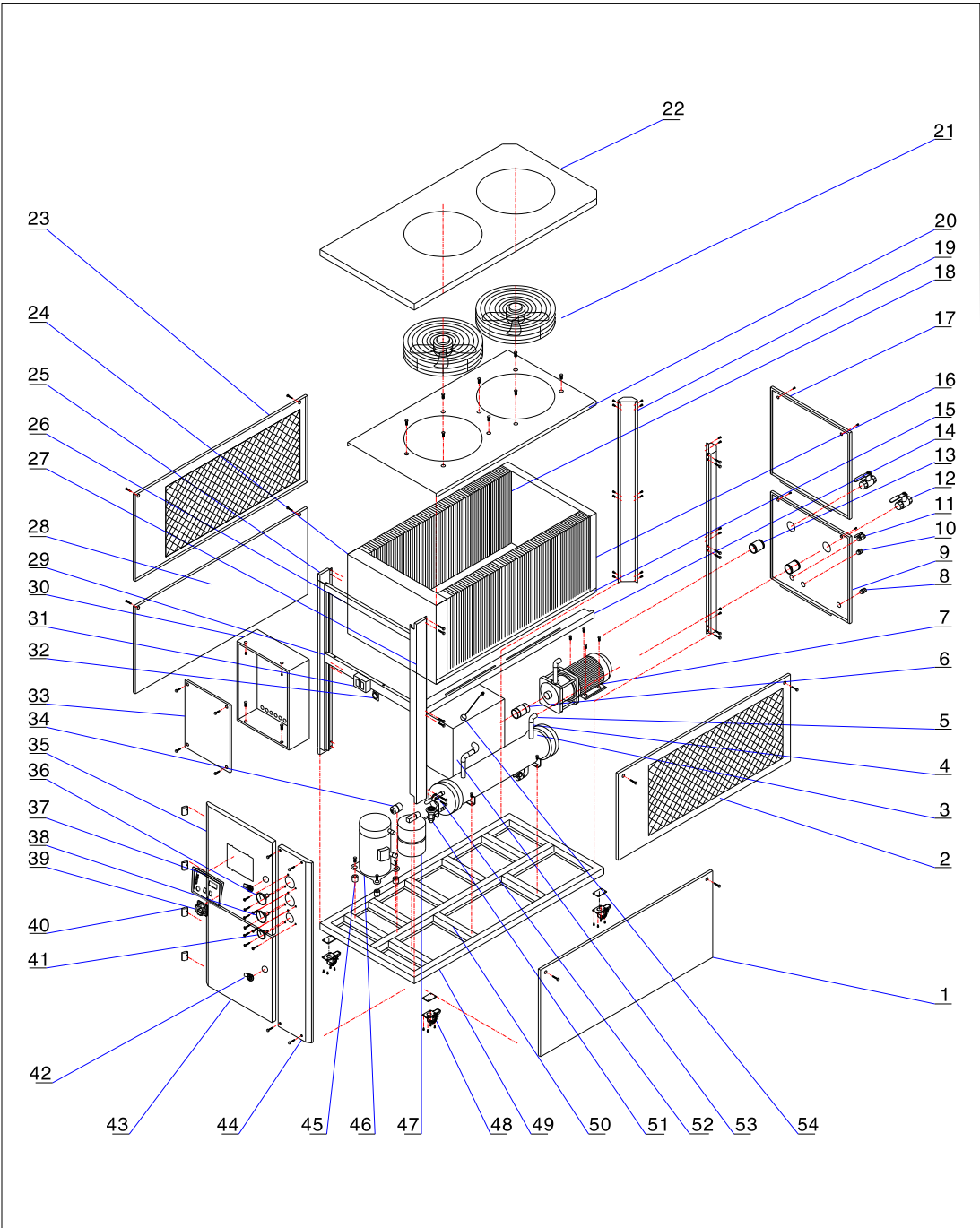
9.6 SIC-20A~30A Series Parts List

NO.	Name	No. of the materiel		
		SIC-20A-P	SIC-25A-P	SIC-30A-P
1	Thick head screw M6×45	F1326000	F1326000	F1326000
2	Screw M4×5	F1405001	F1405001	F1405001
3	Pressure gauge (Oil) MF-15	L1301502	L1301502	L1301502
4	Pressure gauge (Oil) MF-35	L1303500	L1303500	L1303500
5	Pressure gauge 0-10kg	L2201000	L2201000	L2201000
6	Surface board	-	-	-
7	Contorl box dowel	D1271711	D1271711	D1271711
8	Lower panel	-	-	-
9	Upper panel	-	-	-
10	Long pin lock	T4142000	T4142000	T4142000
11	Control base board	-	-	-
12	Flat head screw M6×10	F1410000	F1410000	F1410000
13	Control box	-	-	-
14	Pressure controller	L1308301	L1308301	L1308301
15	Anti-freeze switch	L1307110	L1307110	L1307110
16	Plastic protective cover	L1309000	L1309000	L1309000
17	Hinge	D3320302	D3320302	D3320302
18	Side plate	-	-	-
19	Rear plate	-	-	-
20	Galvanized three-way water tube 1/2"	D1203007	D1203007	D1203007
21	Copper ball valve 4"	T2117000	T2117000	T2117000
22	Flat gate Valve 1"	L9000013	L9000013	L9000013
23	Galvanized three-way water tubes 2"×1"	A2221000	A2221000	L9000012
24	Inner hexagon socket cap screw M10×40	F1203010	F1203010	F1203010
25	Fan	-	-	-
26	Back pressing plate	-	-	-
27	Front pressing plate	-	-	-

NO.	Name	No. of the materiel		
		SIC-20A-P	SIC-25A-P	SIC-30A-P
28	Fan cover 1	-	-	-
29	Support beam 1	-	-	-
30	Out hexagonal screw M8×20	F1119001	F1119001	F1119001
31	Fan cover 2	-	-	-
32	Top plate on condenser	-	-	-
33	Side plate on condenser	-	-	-
34	Condenser	L1620002	L1625001	L1630001
35	Side plate on condenser	-	-	-
36	Water tank cover	-	-	-
37	Water tank	-	-	-
38	Liquid reservoir	L9006000	L9007000	L9008000
39	Compressor	L1701001	L1712501	L1701502
40	Evaporator	L1520000	L1520000	L1530000
41	Water pump	-	-	-
42	Expansion valve	L1301080	L1301010	L1301250
43	Housing	-	-	-

*Indicates latent wearing parts; **Indicates latent wearing parts and it's suggested to back them up.

9.7 SIC-40A~50A Series System Structure Diagram



9.8 SIC-40A~50A Series Parts List

N0.	Name	No. of the materiel		
		SIC-40A-P	SIC-45A-P	SIC-50A-P
1	Right below board	L1104024	L1104024	L1104024
2	Right up board	L1104024	L1104024	L1104024
3	The evaporator	L1514000	L1514500	L1514500
4	Galvanization water pipe	K4504000	K0000301	K0000301
5	Elbow of the water pipe	A2203042	A2203042	A2203042
6	The rubber pipe*	L1310003	L1310003	L1310003
7	The pump*	L1404000	L1404000	L1404000
8	The compensate stretch	T2204006	T2204006	T2204006
9	Back below board	L1104025	L1104025	L1104025
10	The direct connection	D1203031	A2203001	A2203001
11	Ball valve*	T2116000	T2116000	T2127000
12	Ball valve*	T2202002	T2202002	T2202004
13	Water pipe direct connection	D1203031	A1203031	A1203031
14	Middle side beam	L1104033	L1104033	L1104033
15	Fan cover baseboard	L1104017	L1104017	L1104017
16	Fan cover back board	L1104018	L1104018	L1104018
17	Back top board	L1104025	L1104025	L1104025
18	The condenser	L1640002	L1604500	L1604502
19	Back standing column	L1104040	L1104040	L1104041
20	Fan cover board	L1104019	L1104019	L1104019
21	Outer rotor fan	L1975001	L1975001	L1975001
22	Cover	L1104030	L1104030	L1104030
23	Left top board	L1104041	L1104041	L1104041
24	Fan cover front board	L1104020	L1104020	L1104020
25	Left standing column	L1104042	L1104042	L1104042
26	Control box top beam	L1104034	L1104034	L1104034
27	Right front standing column	L1104043	L1104043	L1104043

NO.	Name	No. of the materiel		
		SIC-40A-P	SIC-45A-P	SIC-50A-P
28	Left below board	L1104024	L1104024	L1104024
29	Control box below beam	L1104035	L1104035	L1104035
30	Control box	M0805074	M0805092	M0805093
31	High and low pressure controller	L1308301	L1308301	L1308301
32	Adjustable anti-freeze switch	L1307110	L1307110	L1307110
33	Control base board	L1104044	L1104044	L1104044
34	Drying filter	L1330700	L1330700	L1330700
35	Top door board	T1104045	T1104045	T1104045
36	High pressure meter	L1303501	L1303501	L1303501
37	Control panel	E4124005	E4124005	E4124005
38	Low pressure meter	T1301501	T1301501	T1301501
39	Main power switch	E3112000	E3112000	E3112000
40	Hinge	D3320302	D3320302	D3320302
41	Water pressure meter	L2201000	L2201000	L2201000
42	Door lock	T1442000	T1442000	T1442000
43	Left below door board	L1104046	L1104046	L1104046
44	Meter board fixing board	L1104047	L1104047	L1104047
45	Anti-vibrate leg for the compressor	L1303016	L1303015	L1303016
46	Compressor*	L1701502 L1701001	L1701002	L1712501
47	Storage bin	L9009000	L9009000	L9009000
48	Castor	-	-	-
49	Bottom frame	L1104048	L1104048	L1104048
50	Below beam	L1104036	L1104036	L1104036
51	Heat expansion valve	L1301500	L1301500	L1301500
52	liquid filling thimble valve	L1301040	L1301040	L1301040
53	Stainless water tank	L1104016	L1104049	L1104050
54	Floating ball valve*	L1800101	L1800101	L1800101

*Indicates latent wearing parts; **Indicates latent wearing parts and it's suggested to back them up.

9.9 The Major Parts and Their Functions

9.9.1 Compressor

- 1). Compress and transport the refrigeration steam and produce the low pressure in the evaporator and the high pressure in the condenser, so the compressor is the heart of the whole system.
- 2). The compressors of our company are the two types of scroll and piston.
- 3). The power of the generic compressors is 25 to 30 percent of the ice water machine's refrigeration capacity.



Fig. 9.3.1

9.9.2 Condenser

- 1). The condenser is the equipment which output heat and it can discharge the heat absorbed by the cooling agent in the evaporator and the heat converted by the compressor by consuming the power to the cooling medium.
- 2). Our company adopt the air cooled condenser with ferrule(Tube-fin style).

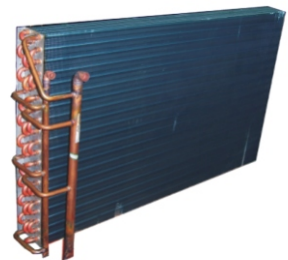


Fig. 9.3.2

9.9.3 Dry filter

- 1). The functions of the dry filter are: clean the impurity in the cooling agent, absorb the free water content in the freon, and prevent the narrow section (especially the valve port of the heat expansion valve) of the pipe from forming ice jam.
- 2). The size of the filter is usually chosen according to the pipe diameter of the cooling agent pipe.
- 3). The dry filter is installed in front of the heat expansion valve to maintain the strictness of the valve.



Fig. 9.3.3

9.9.4 The heat expansion valve

- 1). The heat expansion valve is used to take the effect of throttle and pressure relief, and also adjust the flow quantity of the cooling agent going into the evaporator.
- 2). The heat expansion valve is usually installed in front of the evaporator.



Fig. 9.3.4

9.9.5 Evaporator

- 1). The evaporator is the equipment which output the refrigerating capacity, in which the cooling agent absorb the heated of the cooled objects and gain the aim of refrigeration.
- 2). The evaporators of our company are the type of Tube-in-shell style.



Fig. 9.3.5

9.9.6 High and low pressure controller

- 1). The high and low pressure controllers are used to control the working pressure of the compressor suction port and outlet port.
- 2). The pressure of the high pressure controller is set to 25 bar, and pressure of the low pressure controller is set to 2 bar.
- 3). Give an alarm when the pressure of the compressor outlet port is higher than 25 bar or the pressure of the compressor suction port is lower than 2 bar.



Fig. 9.3.6

9.9.7 Liquid tank

- 1). The liquid tank is used to store the liquid cooling agent from the condenser and make sure that the heat transfer area of the condenser can be made full use of.
- 2). The liquid tank is installed in the pipe between the condenser and the dry filter.

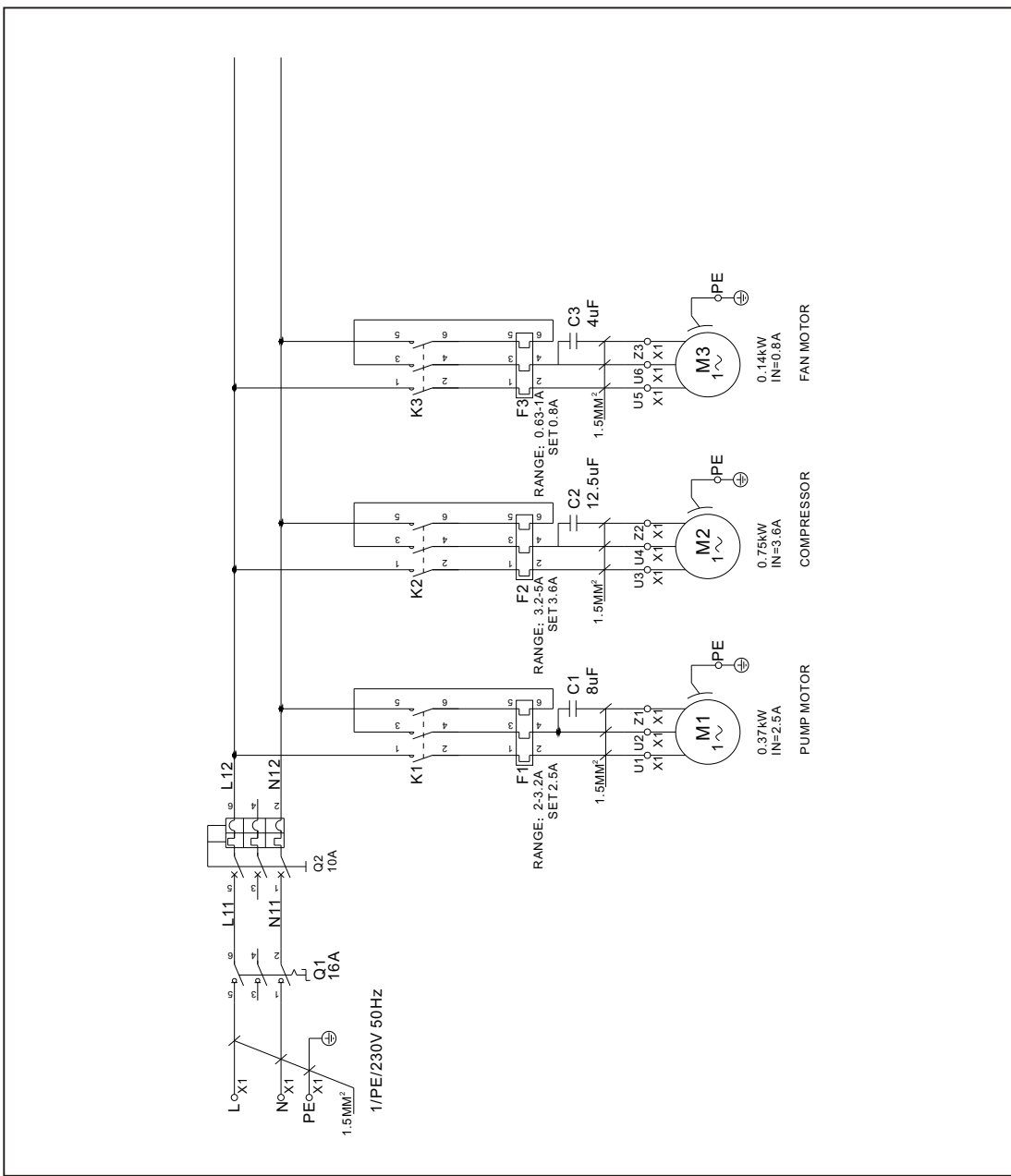


Fig. 9.3.7

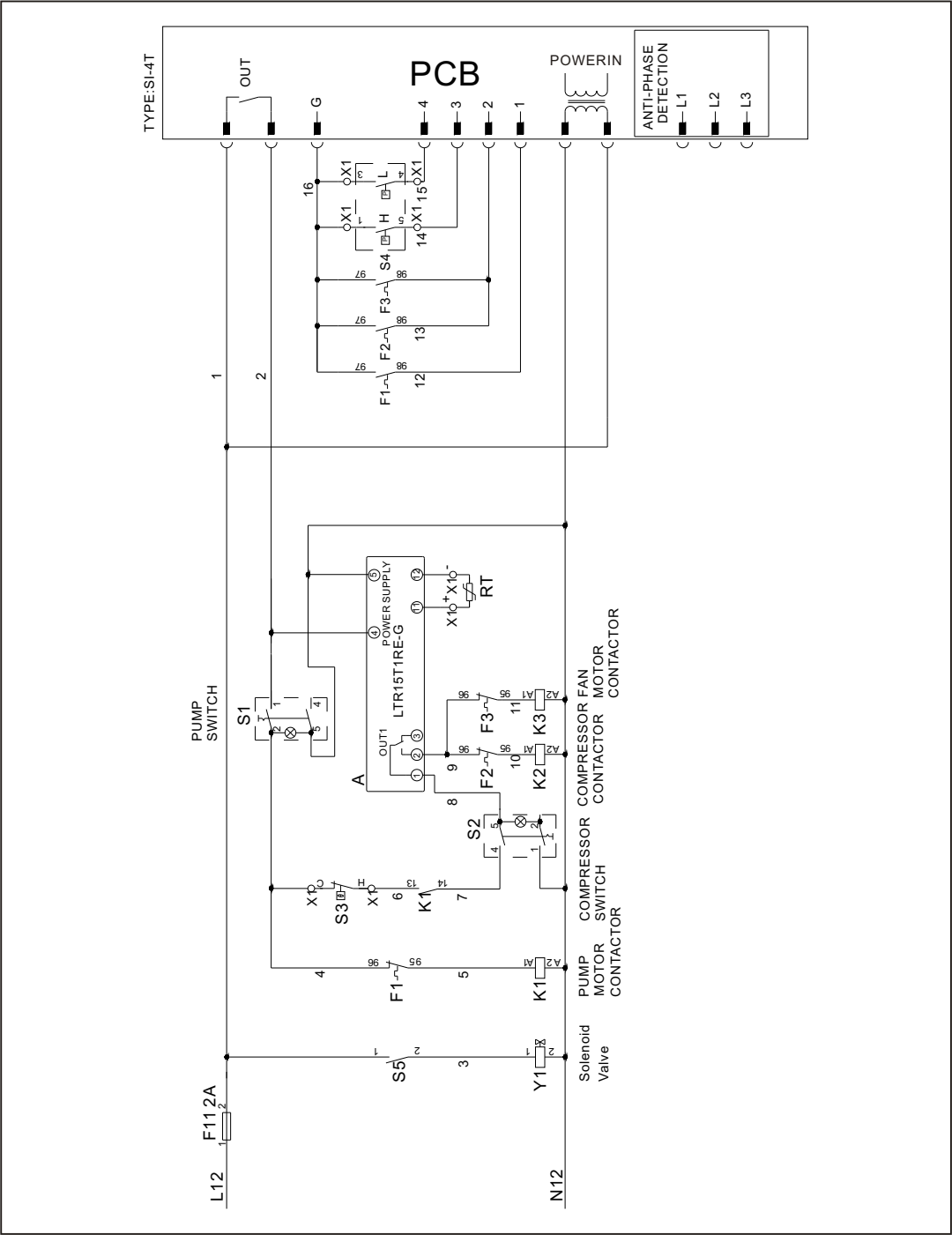
10. Electrical Circuit

10.1 SIC-1A Electrical Circuit

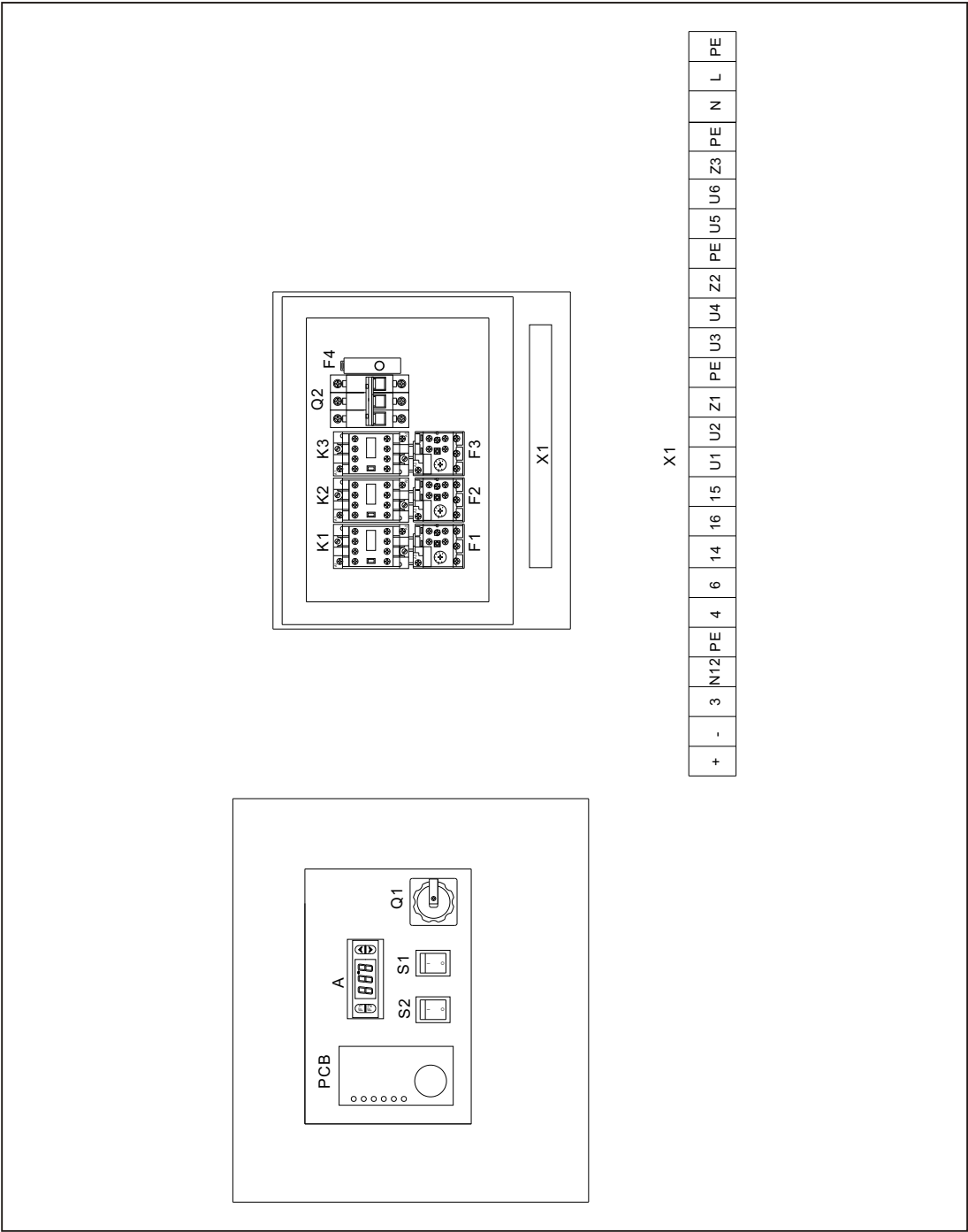
10.1.1 Main circuit principle diagram



10.1.2 Control circuit principle diagram



10.1.3 Components layout

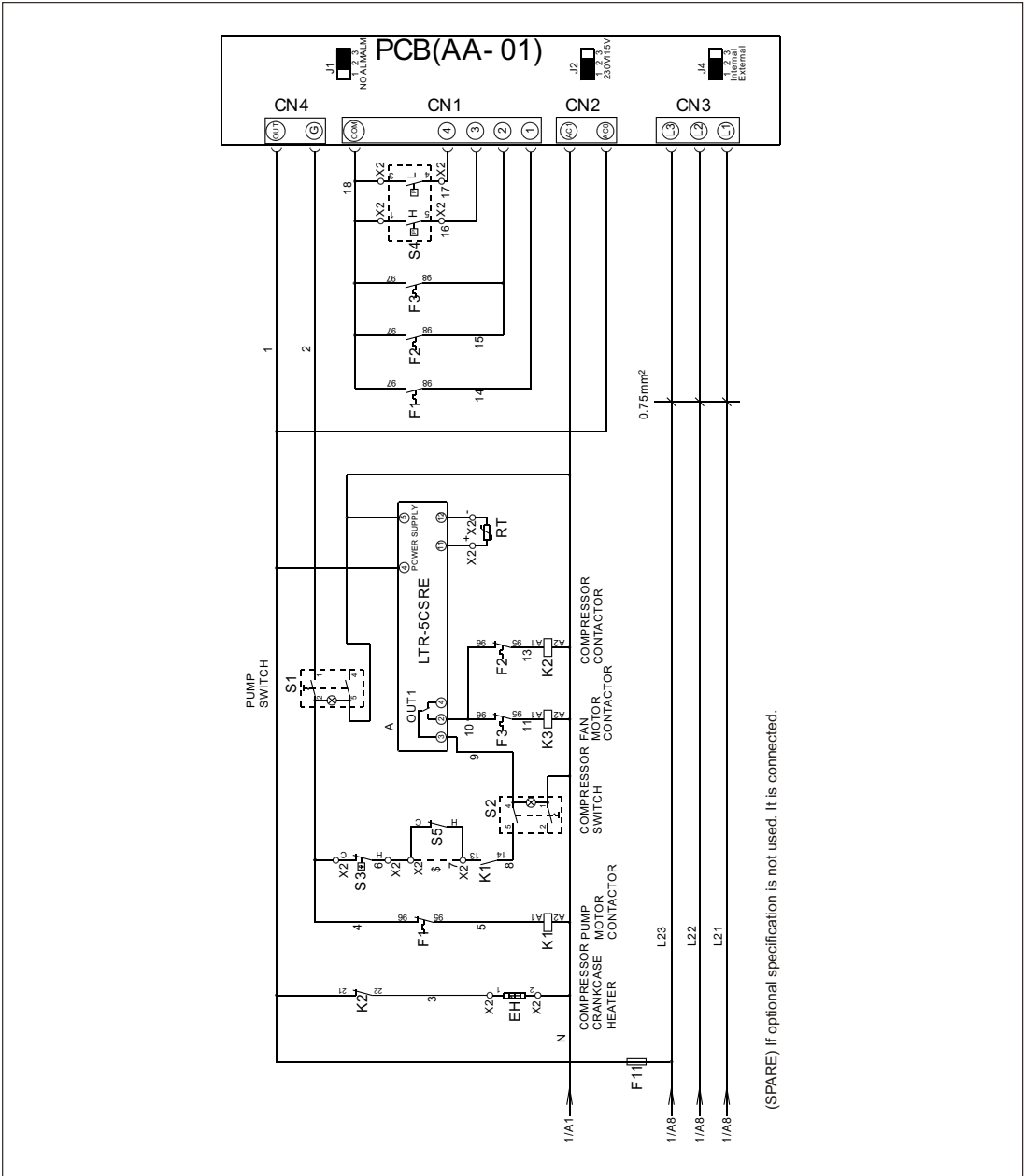


10.1.4 SIC-1A Electrical components list

No .	Name	Specificatons	Parts number
Q2	Breaker	10A	E3114003
Q1	Main power switch	16A	E1205001
K1	Contactor	230VAC 50Hz	E5212002
K2	Contactor	230VAC 50Hz	E5212001
K3	Contactor	230VAC 50Hz	E5212001
A	Temp. Controller	230VAC 50/60Hz	E2101011
RT	Thermal resistance	PTC 1000	-
F1	Overheat relay	2-3.2A	E5223003
F2	Overheat relay	3.2-5A	E5228003
F3	Overheat relay	0.63-1A	E5222000
F4	Fuse	2A	E2111000
S1,S2	Alternative switch	250V~10(5)A 4P WH	E1201000
S3	Anti-freeze switch	250V~16(4)	L1160002
S4	High and low pressure switch	H:5-30bar L:0.7-6bar	L1110003
PCB	Control board	400/230VAC	E2115011
X1	Terminal block	32A	F3209021
	Terminal block	-	F3209030
M1	Pump motor	220-240V 0.37kW	T3216025
M2	Compressor	220V 50Hz 0.75kW	L1000010
M3	Fan motor	220V 50Hz0.14kW	L6000060

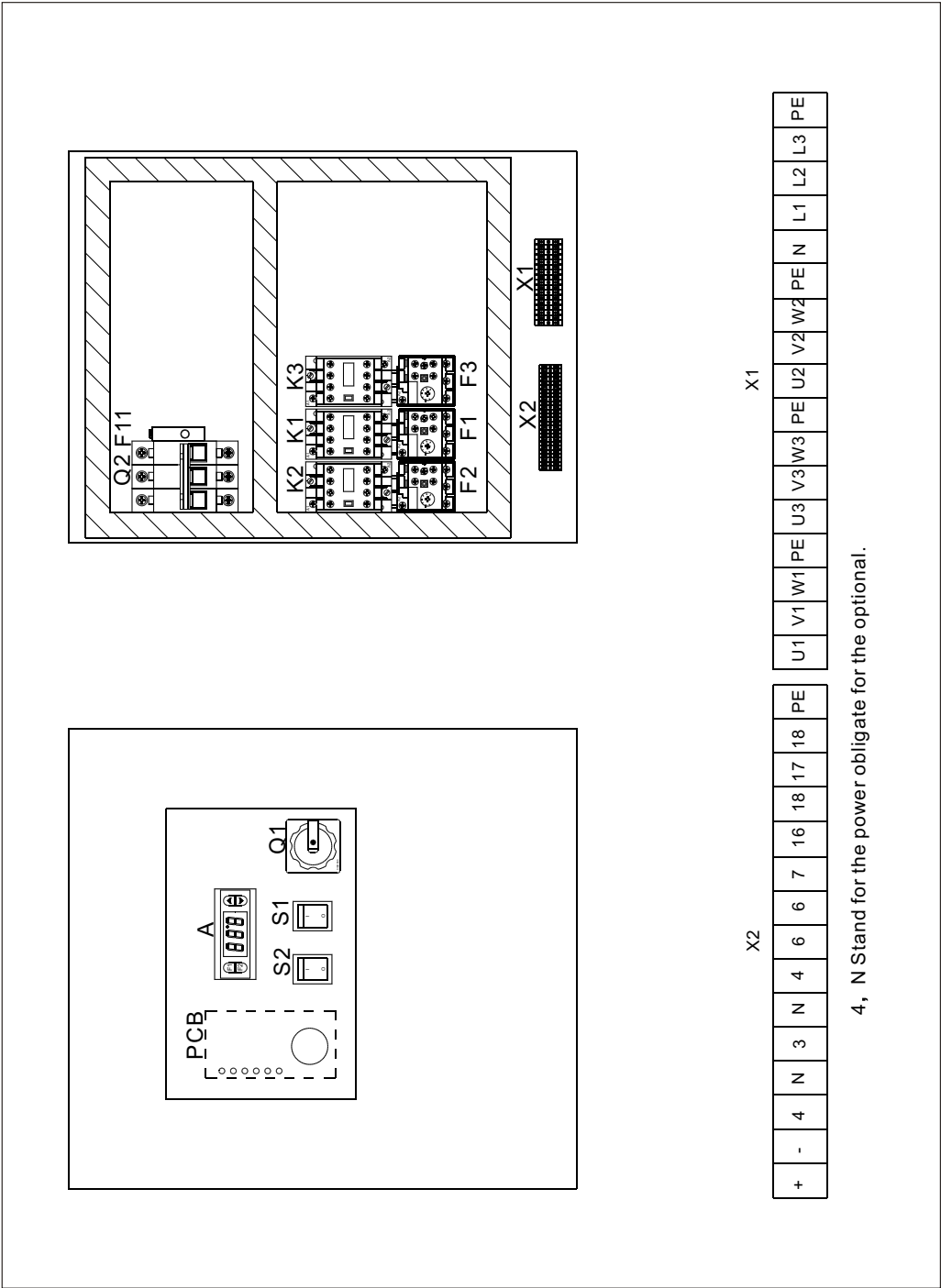
10.2 SIC-3A / 5A-P Electrical Circuit

10.2.1 Control circuit principle diagram

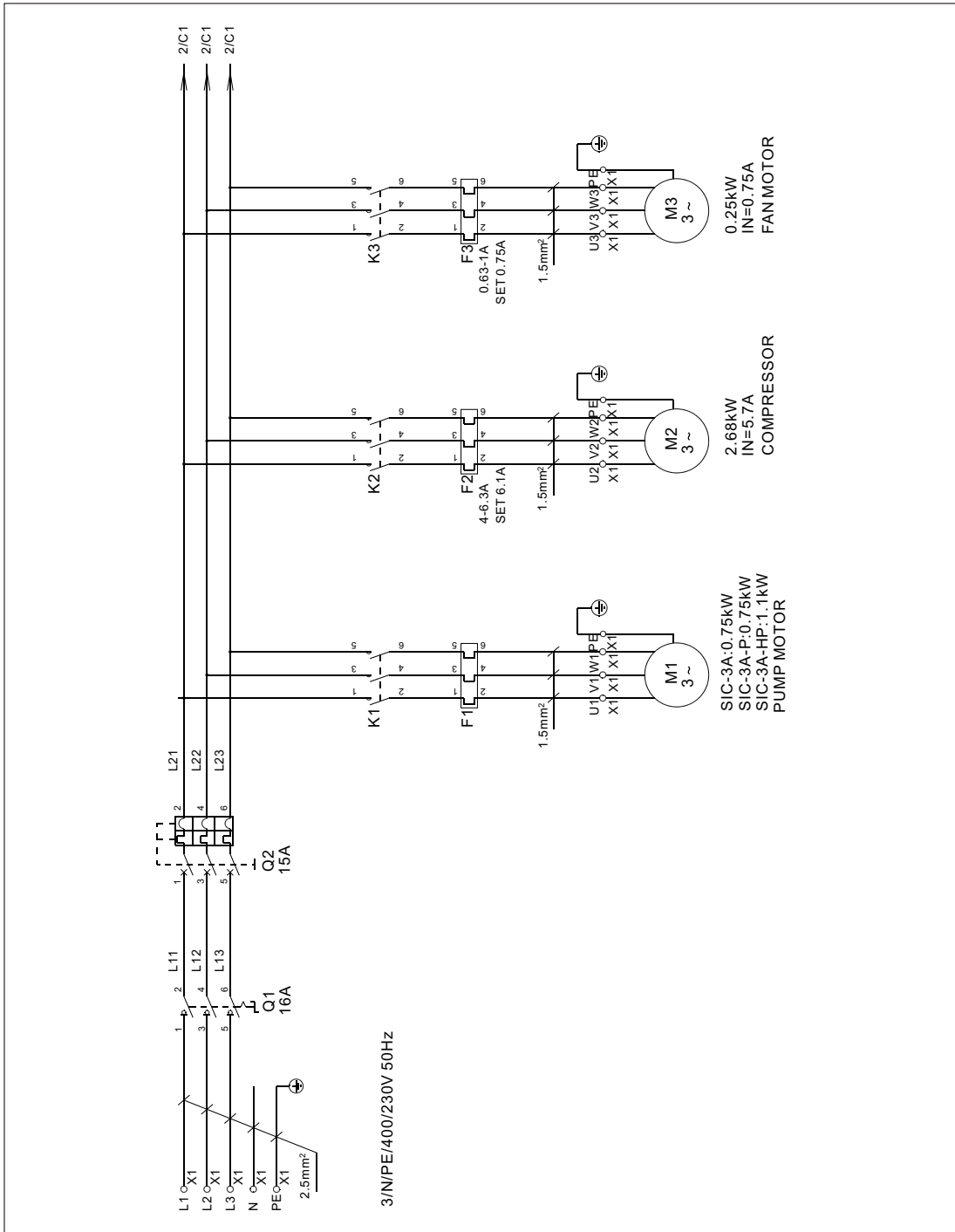


(SPARE) If optional specification is not used, it is connected.

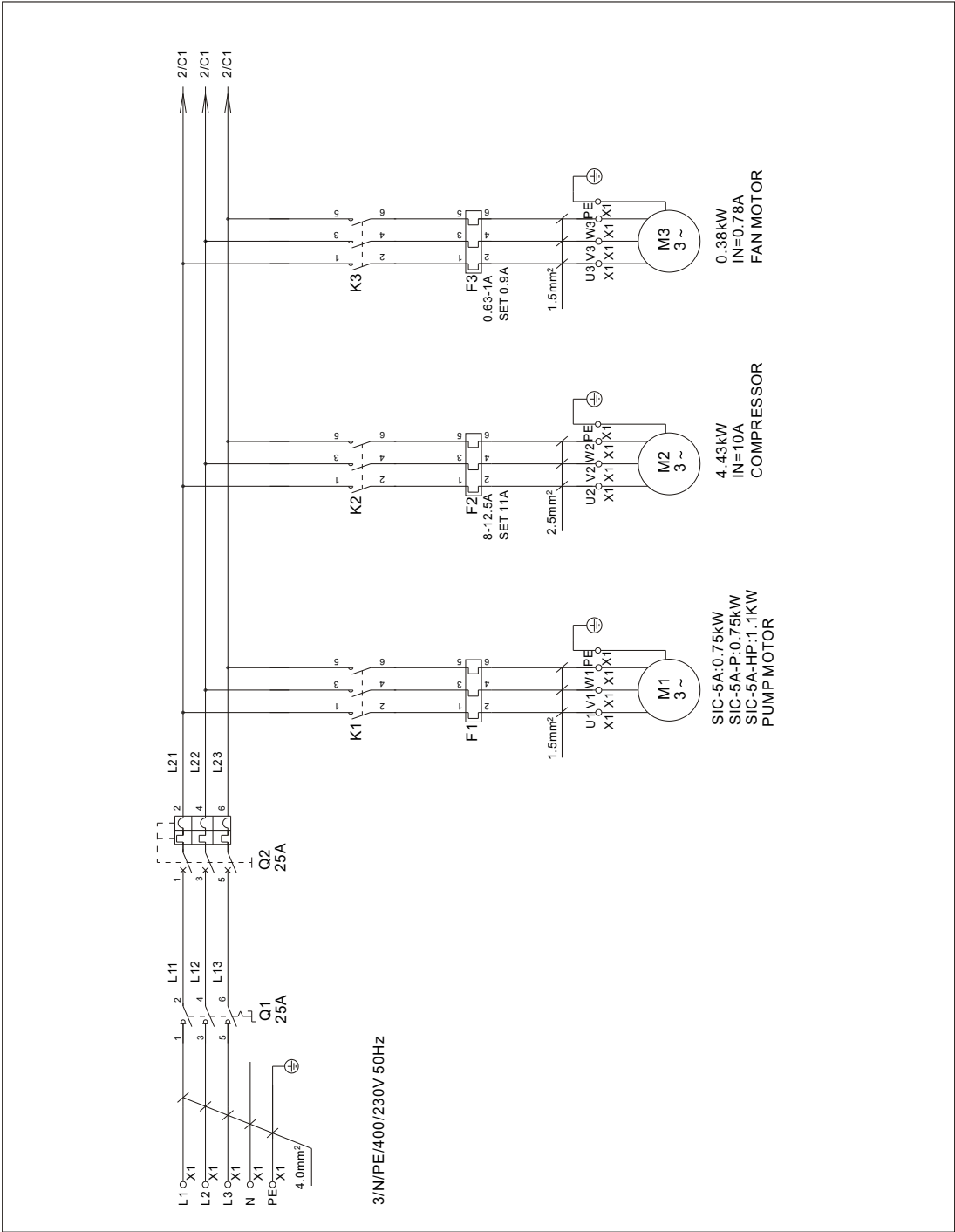
10.2.2 Components layout



10.2.3 SIC-3A-P Main circuit principle diagram



10.2.4 SIC-5A-P Main circuit principle diagram



10.3 SIC-3A / 5A-P Electrical Components List

10.3.1 SIC-3A-P Electrical components list

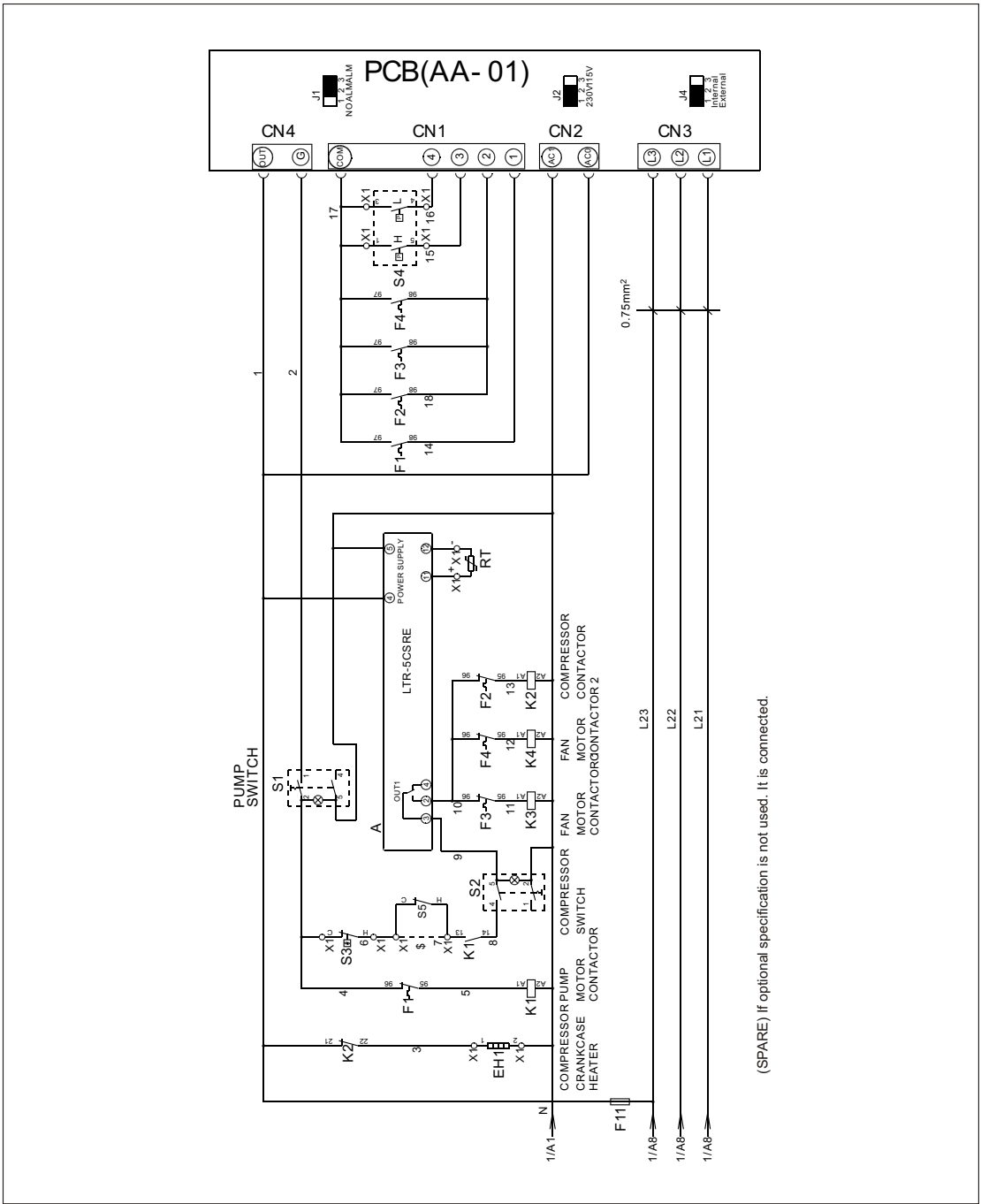
No .	Symbol	Name	Specifcatons	Parts number
1	Q1	Main switch	16A	E1416000
2	Q2	Circuit breaker	15A	E3114000
3	K1	Contactor	230VAC 50/60Hz	E1130100
4	K2	Contactor	230VAC 50/60Hz	E1131010
5	K3	Contactor	230VAC 50/60Hz	E1130000
6	A	Temperature controller	230VAC 50/60Hz 2W	E2101004
7	RT	Thermistor	----	----
8	F1	Overload relay	----	E1216250
9	F2	Overload relay	4-6.3A	E1204631
10	F3	Overload relay	0.63-1A	E1263010
11	F11	Fuse	2A	E3202007
12	S1 S2	Control switch	250V ~ 10(5)A 4P WH	E1304000
13	S3	Anti-frozen switch	250V ~ 16(4)A	L1307110
14	S4	HI-LO pressure switch	H:5-30bar L:-0.7-6bar	L1308301
15	PCB	Control board	230V 50Hz	E2304002
16	X1	Terminal board	----	E5125001
17		Terminal board	----	E5125002
18	X2	Terminal board	----	E5125001
19		Terminal board	----	E5125002
20	M1	Pump motor	400V 50Hz	----
21	M2	Compressor	400V 50Hz 2.68KW	----
22	M3	Fan motor	400V 50Hz 0.25KW	----
23	EH1	Compressor Crankcase Heater	230V 50/60Hz 35W	----

10.3.3 SIC-5A-P Electrical components list

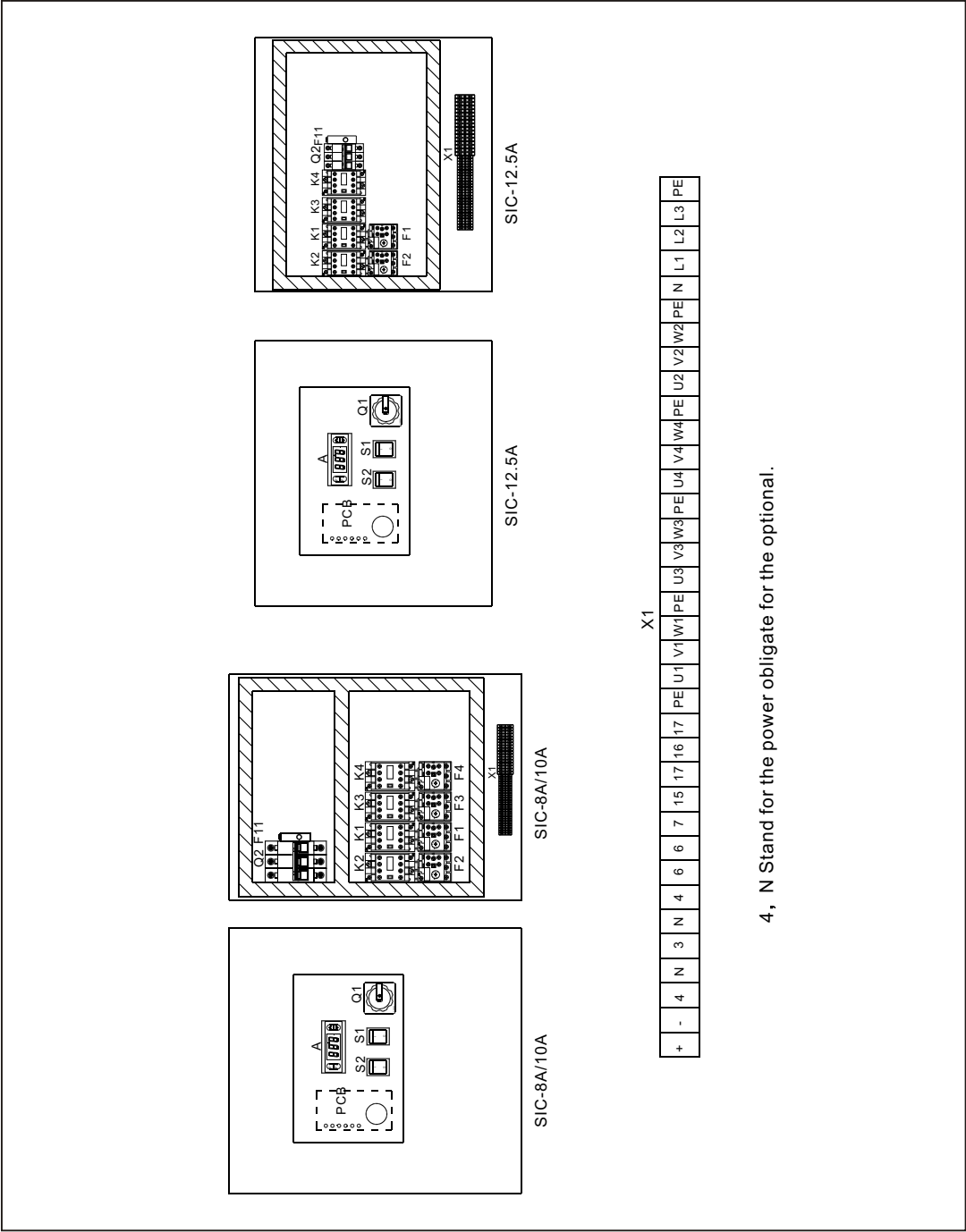
No .	Symbol	Name	Specifcatons	Parts number
1	Q1	Main switch	25A	E1425000
2	Q2	Circuit breaker	25A	E3125000
3	K1	Contactor	230VAC 50/60Hz	E1130100
4	K2	Contactor	230VAC 50/60Hz	E1132110
5	K3	Contactor	230VAC 50/60Hz	E1130000
6	A	Temperature controller	230VAC 50/60Hz 2W	E2101004
7	RT	Thermistor	----	----
8	F1	Overload relay	----	E1216250
9	F2	Overload relay	8-12.5A	E1208125
10	F3	Overload relay	0.63-1A	E1263010
11	F11	Fuse	2A	E3202007
12	S1 S2	Control switch	250V ~ 10(5)A 4P WH	E1304000
13	S3	Anti-frozen switch	250V ~ 16(4)A	L1307110
14	S4	HI-LO pressure switch	H:5-30bar L:-0.7-6bar	L1308301
15	PCB	Control board	230V 50Hz	E2304002
16	X1	Terminal board	----	E5125001
17		Terminal board	----	E5125002
18		Terminal board	----	E5104001
19		Terminal board	----	E5104004
20	X2	Terminal board	----	E5125001
21		Terminal board	----	E5125002
22	M1	Pump motor	400V 50Hz	----
23	M2	Compressor	400V 50Hz 4.43kW	----
24	M3	Fan motor	400V 50Hz 0.34kW	----
25	EH1	Compressor Crankcase Heater	230V 50/60Hz 35W	----

10.4 SIC-8A/10A/12.5A-P Electrical Circuit

10.4.1 Control circuit principle diagram

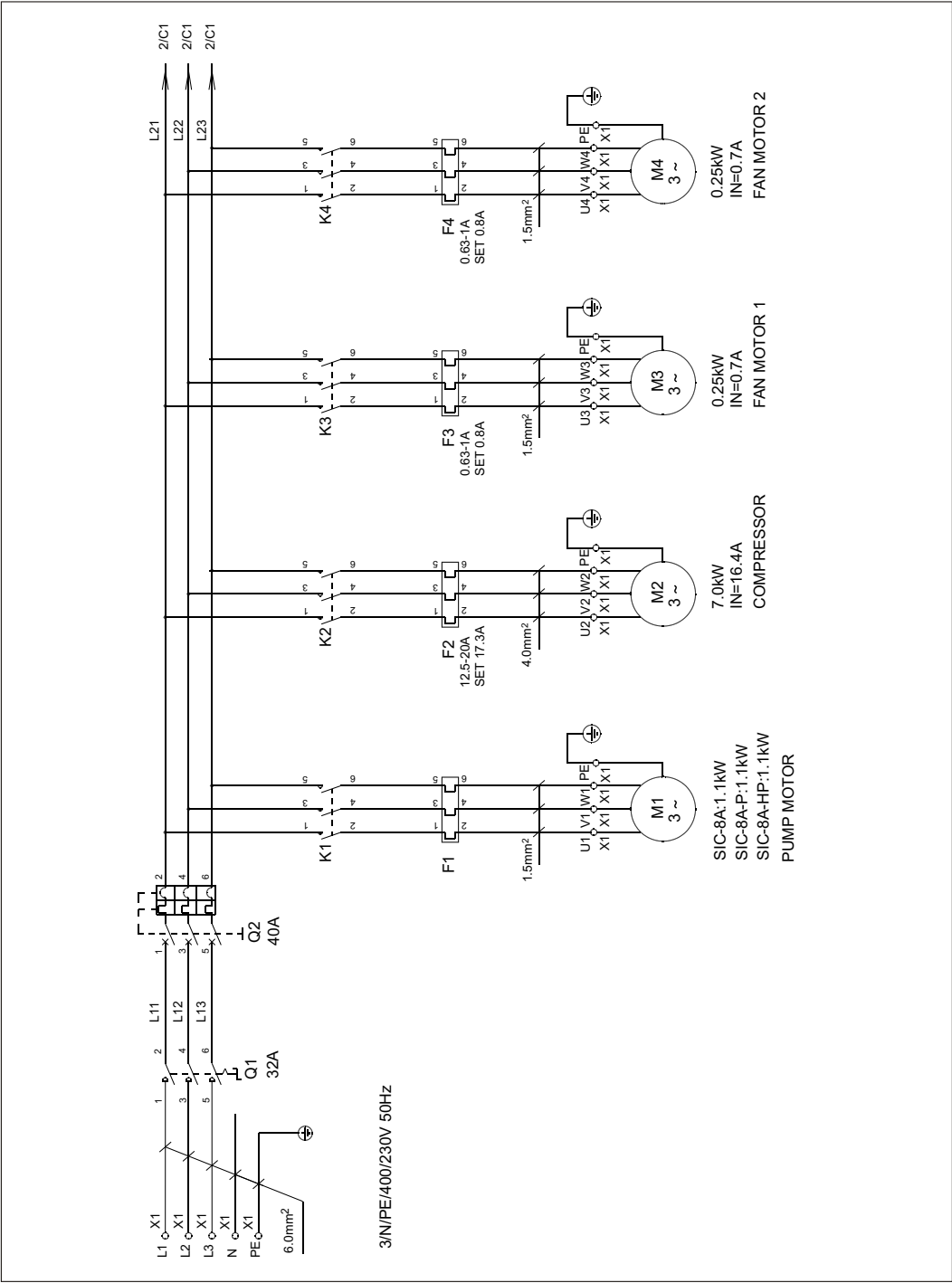


10.4.2 Components layout diagram

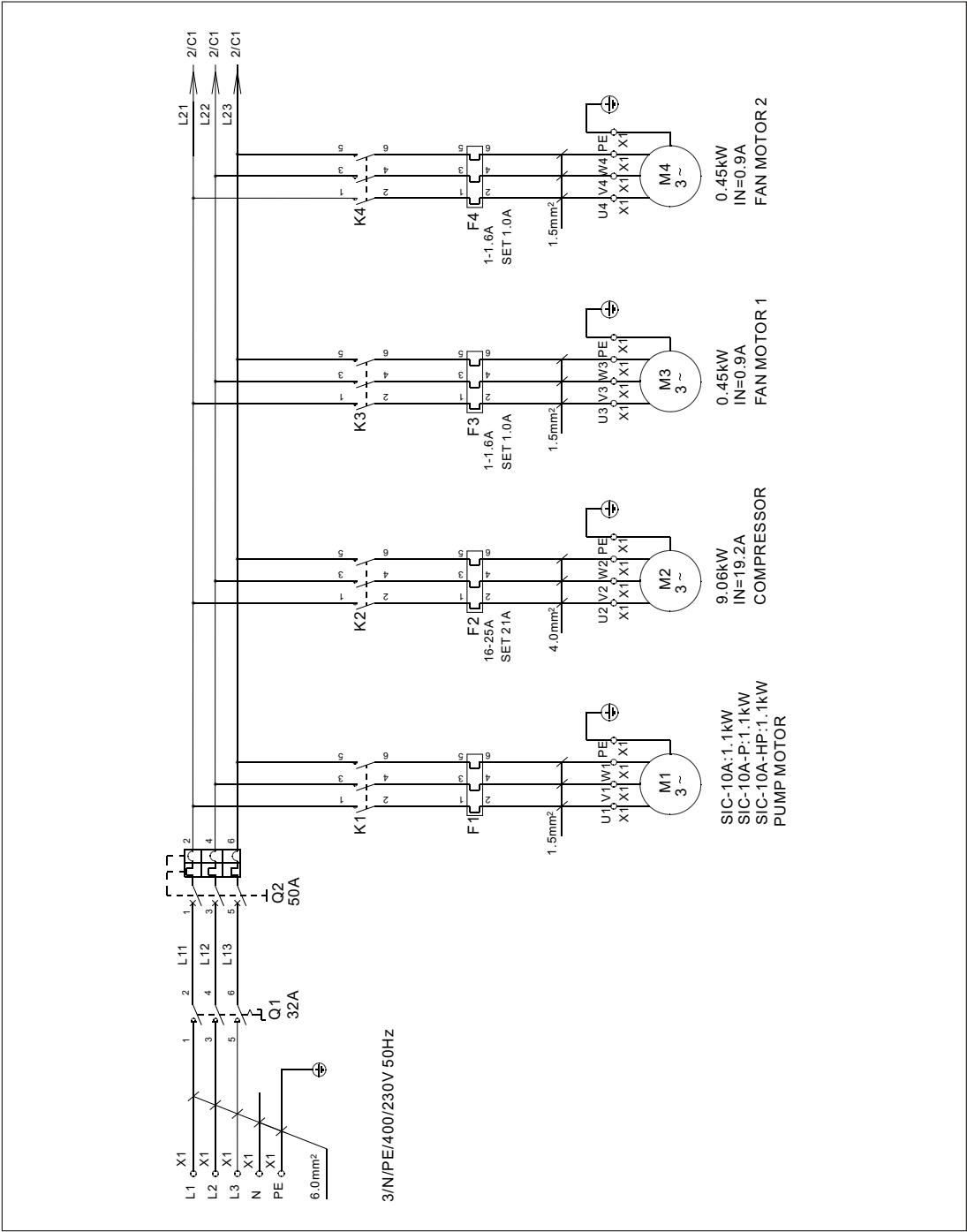


4, N Stand for the power obligate for the optional.

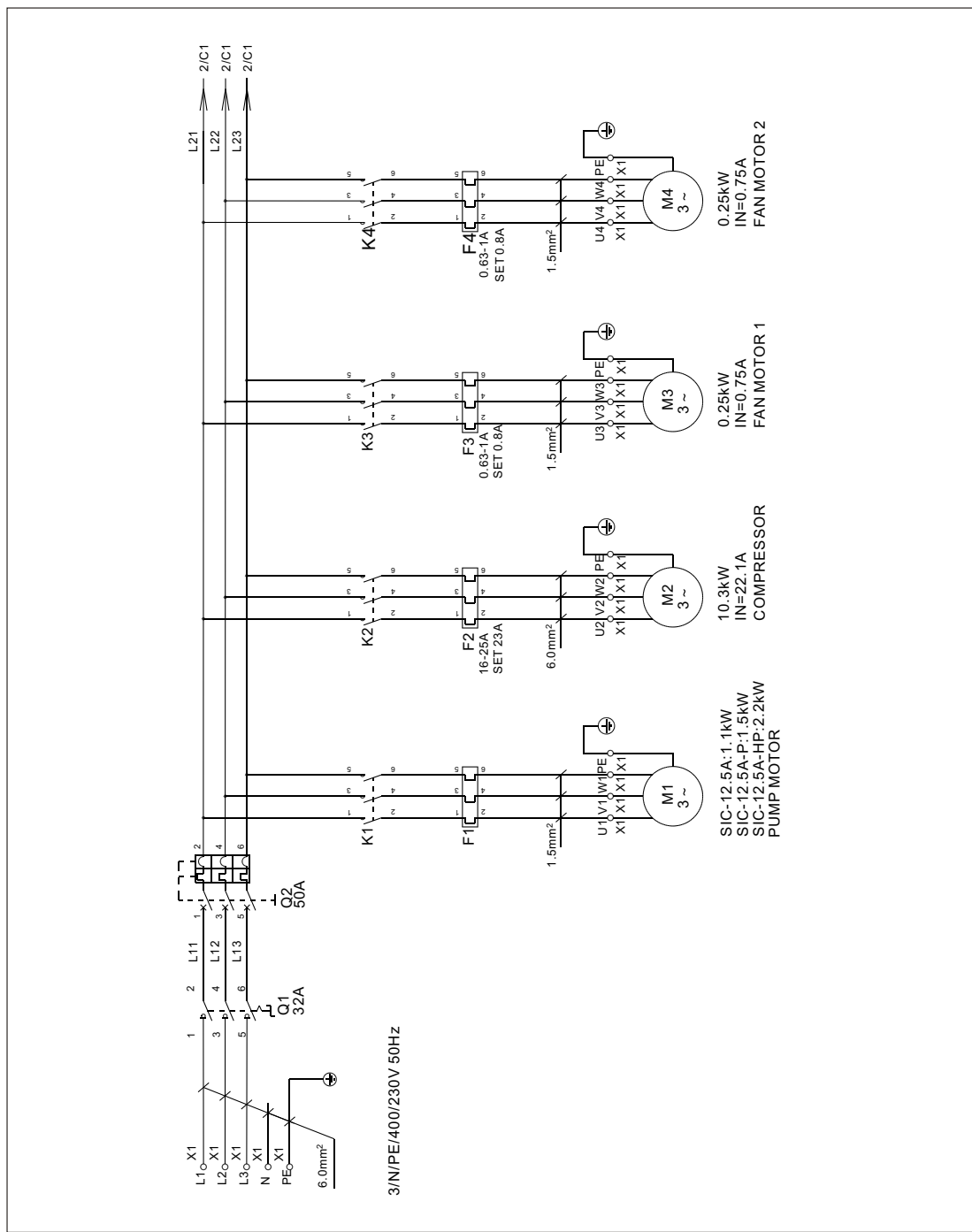
10.4.3 SIC-8A-P Main circuit principle diagram



10.4.4 SIC-10A-P Main circuit principle diagram



10.4.5 SIC-12.5A-P Main circuit principle diagram



10.5 SIC-8A / 10A / 12.5A -P Electrical Components List

10.5.1 SIC-8A-P Electrical components list

No .	Symbol	Name	Specifcatons	Parts number
1	Q1	Main switch	32A	E1432000
2	Q2	Circuit breaker	40A	E3120000
3	K1	Contactor	230VAC 50/60Hz	----
4	K2	Contactor	230VAC 50/60Hz	E1133110
5	K3 K4	Contactor	230VAC 50/60Hz	E1130000
6	A	Temperature controller	230VAC 50/60Hz 2W	E2101004
7	RT	Thermistor	----	----
8	F1	Overload relay	----	----
9	F2	Overload relay	12.5-20A	E1212520
10	F3 F4	Overload relay	0.4-0.63A	E1204630
11	F11	Fuse	2A	E3202007
12	S1 S2	Control switch	250V ~ 10(5)A 4P WH	E1304000
13	S3	Anti-frozen switch	250V ~ 16(4)A	L1307110
14	S4	HI-LO pressure switch	H:5-30bar L:-0.7-6bar	L1308301
15	PCB	Control board	230V 50Hz	E2304002
16	X1	Terminal board	----	E5125001
17		Terminal board	----	E5125002
18		Terminal board	----	E5104001
19		Terminal board	----	E5104004
20		Terminal board	----	E5106002
21		Terminal board	----	E5106004
22	M1	Pump motor	400V 50Hz	----
23	M2	Compressor	400V 50Hz 7.0KW	----
24	M3 M4	Fan motor	400V 50Hz 0.18KW	----
25	EH1	Compressor Crankcase Heater	230V 50/60HZ 45W	----

10.5.2 SIC-10A-P Electrical components list

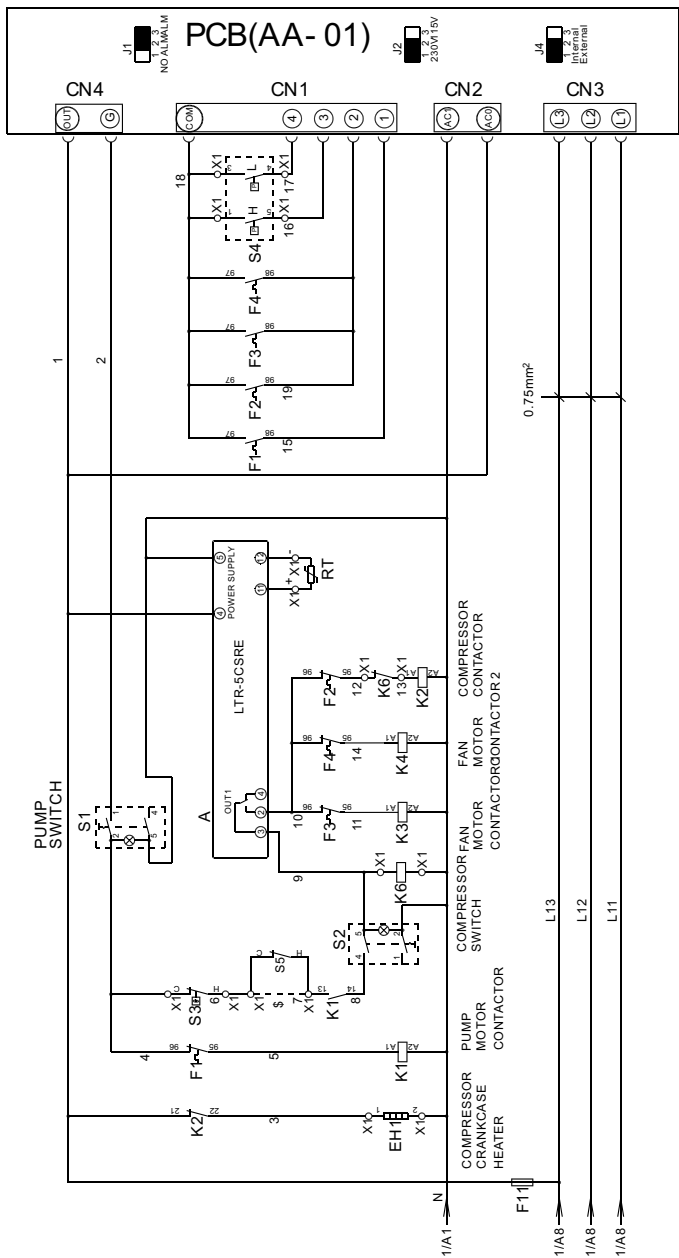
No .	Symbol	Name	Specificatons	Parts number
1	Q1	Main switch	32A	E1432000
2	Q2	Circuit breaker	50A	E3117000
3	K1	Contactor	230VAC 50/60Hz	E1130100
4	K2	Contactor	230VAC 50/60Hz	E1133110
5	K3 K4	Contactor	230VAC 50/60Hz	E1130000
6	A	Temperature controller	230VAC 50/60Hz 2W	E2101004
7	RT	Thermistor	----	----
8	F1	Overload relay	----	E1225041
9	F2	Overload relay	16-25A	E1216251
10	F3 F4	Overload relay	1-1.6A	E1201160
11	F11	Fuse	2A	E3202007
12	S1 S2	Control switch	250V ~ 10(5)A 4P WH	E1304000
13	S3	Anti-frozen switch	250V ~ 16(4)A	L1307110
14	S4	HI-LO pressure switch	H:5-30bar L:-0.7-6bar	L1308301
15	PCB	Control board	230V 50Hz	E2304002
16	X1	Terminal board	----	E5125001
17		Terminal board	----	E5125002
18		Terminal board	----	E5104001
19		Terminal board	----	E5104004
20		Terminal board	----	E5106002
21		Terminal board	----	E5106004
22	M1	Pump motor	400V 50Hz	----
23	M2	Compressor	400V 50Hz 9.06kW	----
24	M3	Fan motor	400V 50Hz 0.18kW	----
25	EH1	Compressor Crankcase Heater	230V 50/60Hz 45W	----

10.5.3 SIC-12.5A-P Electrical components list

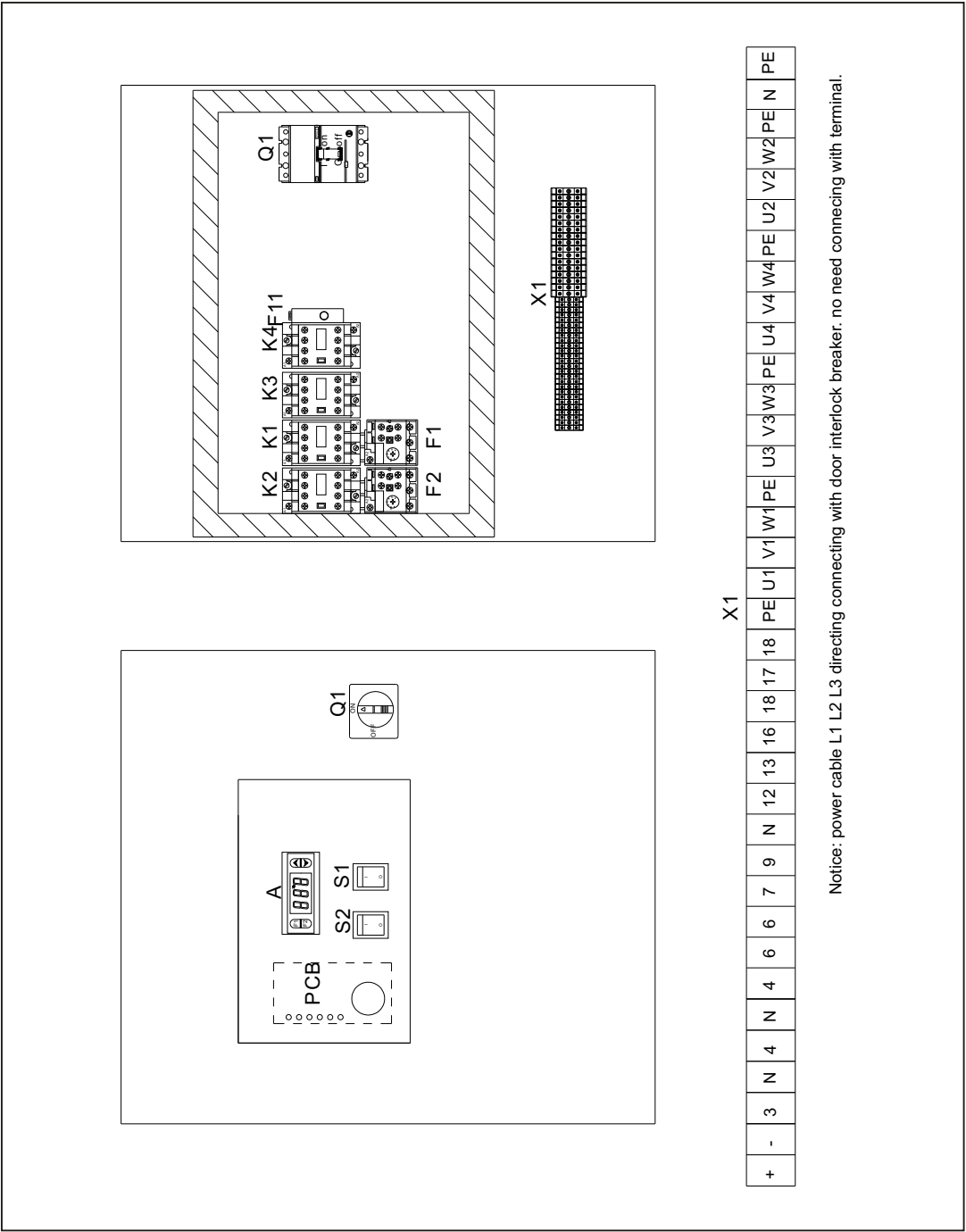
No .	Symbol	Name	Specifcatons	Parts number
1	Q1	Main switch	32A	E1432000
2	Q2	Circuit breaker	50A	E3117000
3	K1	Contactor	230VAC 50/60Hz	E1130100
4	K2	Contactor	230VAC 50/60Hz	E1134100
5	K3 K4	Contactor	230VAC 50/60Hz	E1130000
6	A	Temperature controller	230VAC 50/60Hz 2W	E2101004
7	RT	Thermistor	----	----
8	F1	Overload relay	----	E1204631
9	F2	Overload relay	16-25A	E1216201
10	F3 F4	Overload relay	0.63-1A	E1263010
11	F11	Fuse	2A	E3202007
12	S1 S2	Control switch	250V ~ 10(5)A 4P WH	E1304000
13	S3	Anti-frozen switch	250V ~ 16(4)A	L1307110
14	S4	HI-LO pressure switch	H:5-30bar L:-0.7-6bar	L1308301
15	PCB	Control board	230V 50Hz	E2304002
16	X1	Terminal board	----	E5125001
17		Terminal board	----	E5125002
18		Terminal board	----	E5106002
19		Terminal board	----	E5106004
20	M1	Pump motor	400V 50Hz	----
21	M2	Compressor	400V 50Hz 10.3KW	----
22	M3	Fan motor	400V 50Hz 0.25KW	----
23	EH1	Compressor Crankcase Heater	230V 50/60HZ 45W	----

10.6 SIC-15A-P Electrical Circuit

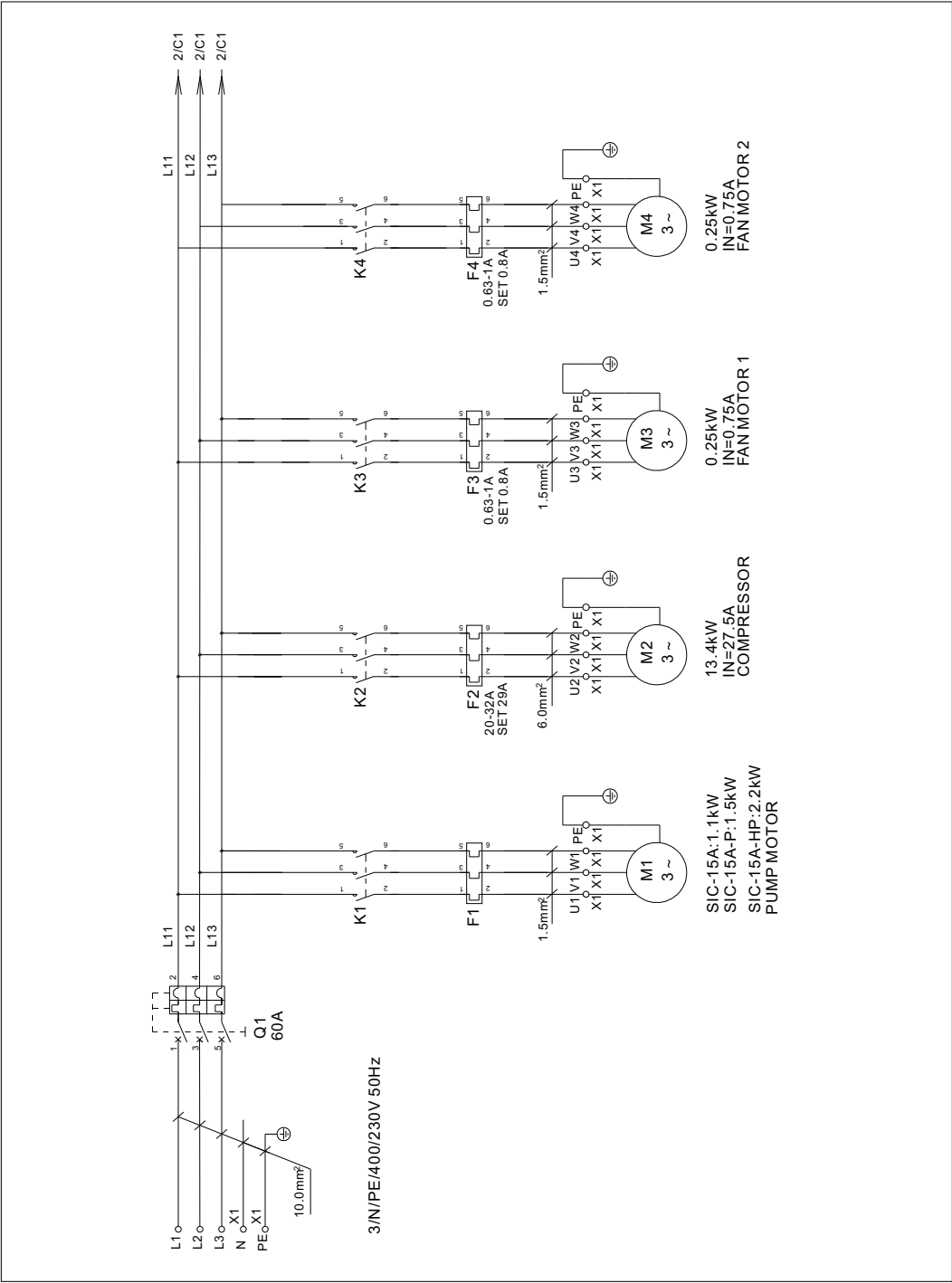
10.6.1 Control circuit principle diagram



10.6.2 Components layout diagram



10.6.3 SIC-15A-P Main circuit principle diagram



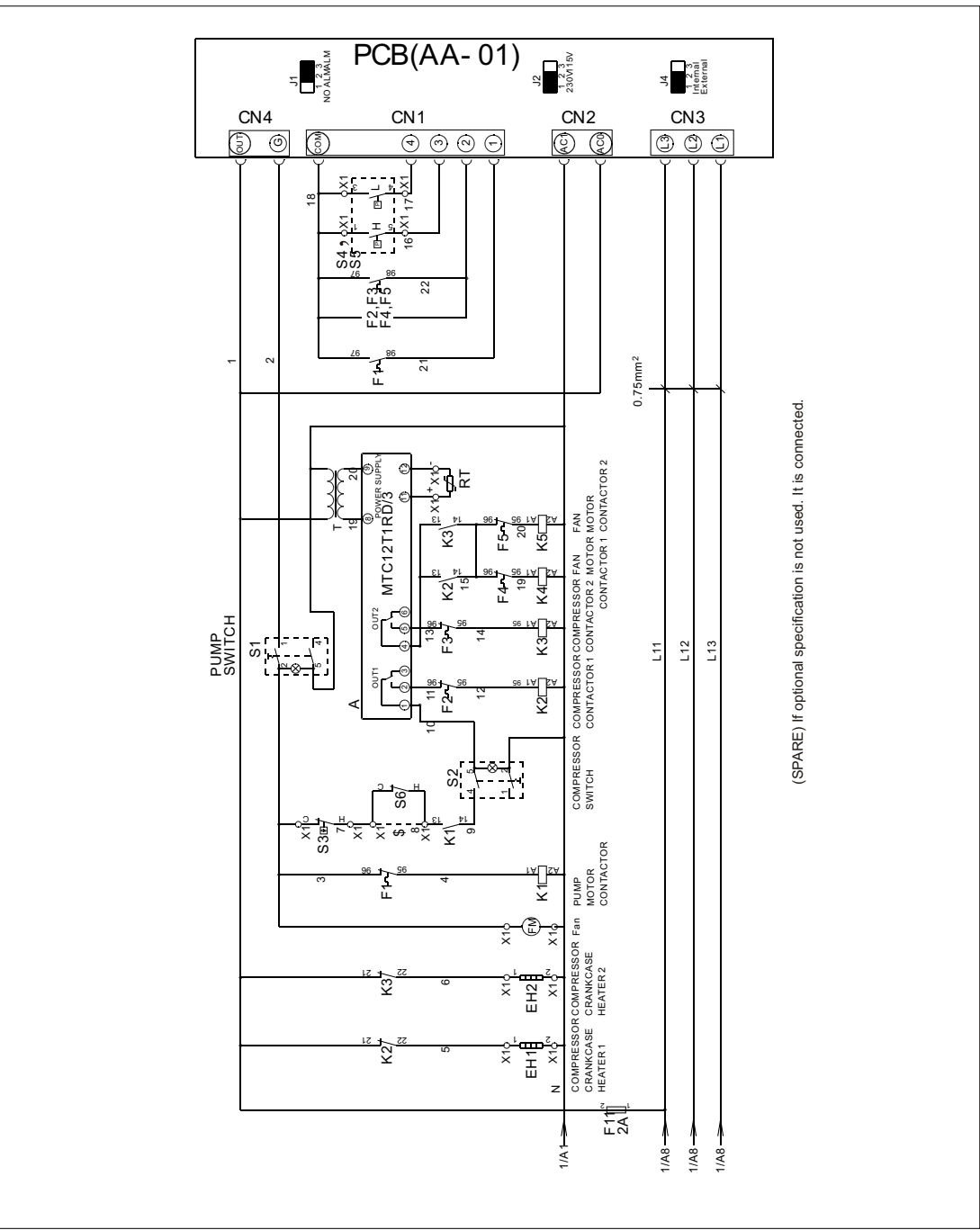
10.7 SIC-15A -P Electrical Components List

10.7.1 SIC-15A-P Electrical components list

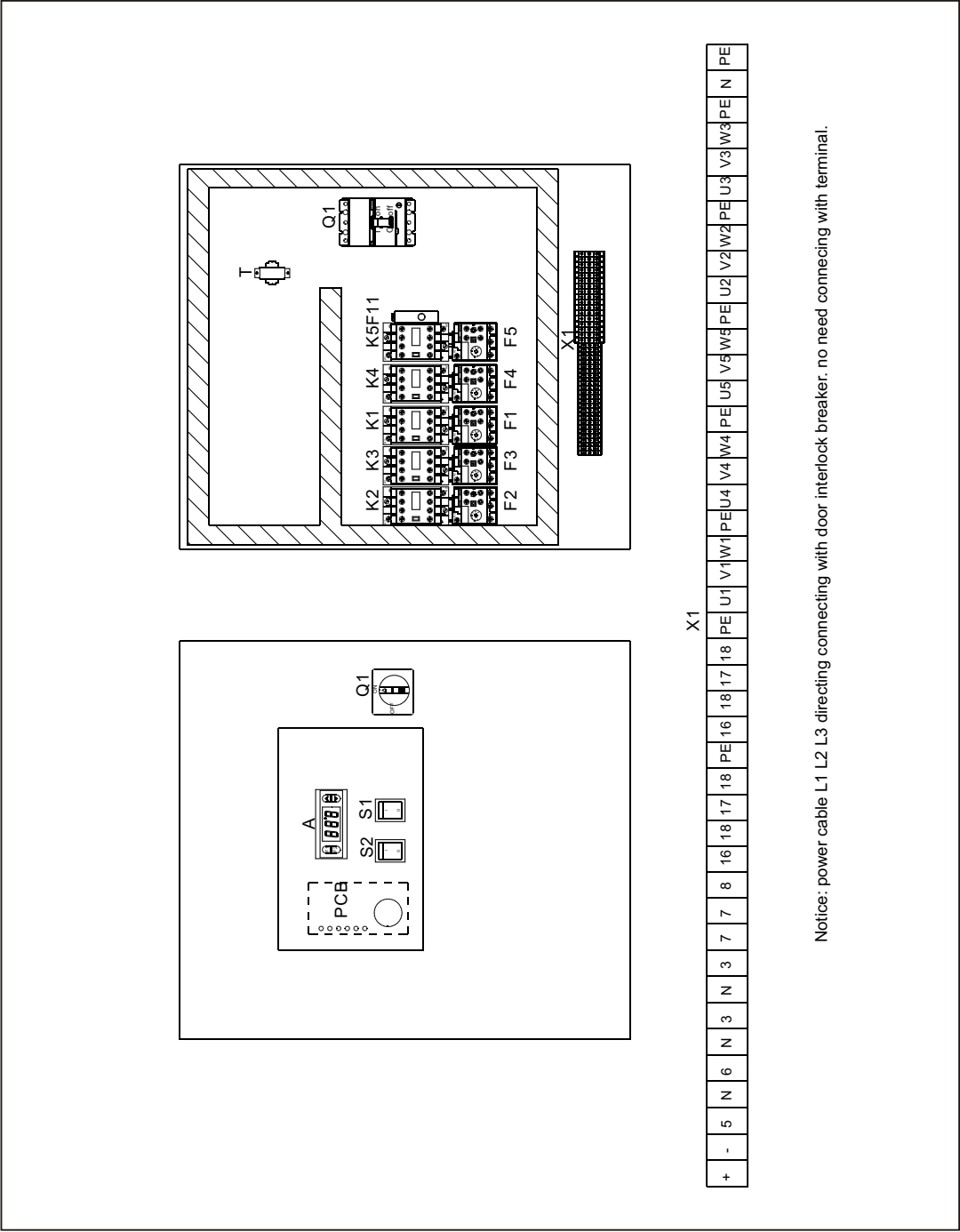
No .	Symbol	Name	Specifcatons	Parts number
1	Q1	Main switch	60A	E3118001
2	Q2	Circuit breaker	230VAC 50/60Hz	E1130100
3	K1	Contactor	230VAC 50/60Hz	E1134100
4	K2	Contactor	230VAC 50/60Hz	E1130000
5	K3 K4	Contactor	230VAC 50/60Hz	----
6	A	Temperature controller	230VAC 50/60Hz 2W	E2101004
7	RT	Thermistor	----	----
8	F1	Overload relay	----	E1204631
9	F2	Overload relay	20-32A	E1220322
10	F3 F4	Overload relay	0.63-1A	E1263010
11	F11	Fuse	2A	E3202007
12	S1 S2	Control switch	250V ~ 10(5)A 4P WH	E1304000
13	S3	Anti-frozen switch	250V ~ 16(4)A	L1307110
14	S4	HI-LO pressure switch	H:5-30bar L:-0.7-6bar	L1308301
15	PCB	Control board	230V 50Hz	E2304002
16	X1	Terminal board	----	E5125001
17		Terminal board	----	E5125002
18		Terminal board	----	E5106002
19		Terminal board	----	E5106004
20		Terminal board	----	E5101001
21		Terminal board	----	E5101002
22	M1	Pump motor	400V 50/60Hz	----
23	M2	Compressor	400V 50/60Hz 9.06KW	----
24	M3	Fan motor	400V 50/60Hz 0.25KW	----
25	EH1	Compressor Crankcase Heater	230V 50/60HZ 45W	----

10.8 SIC-20A / 25A-P Electrical Circuit

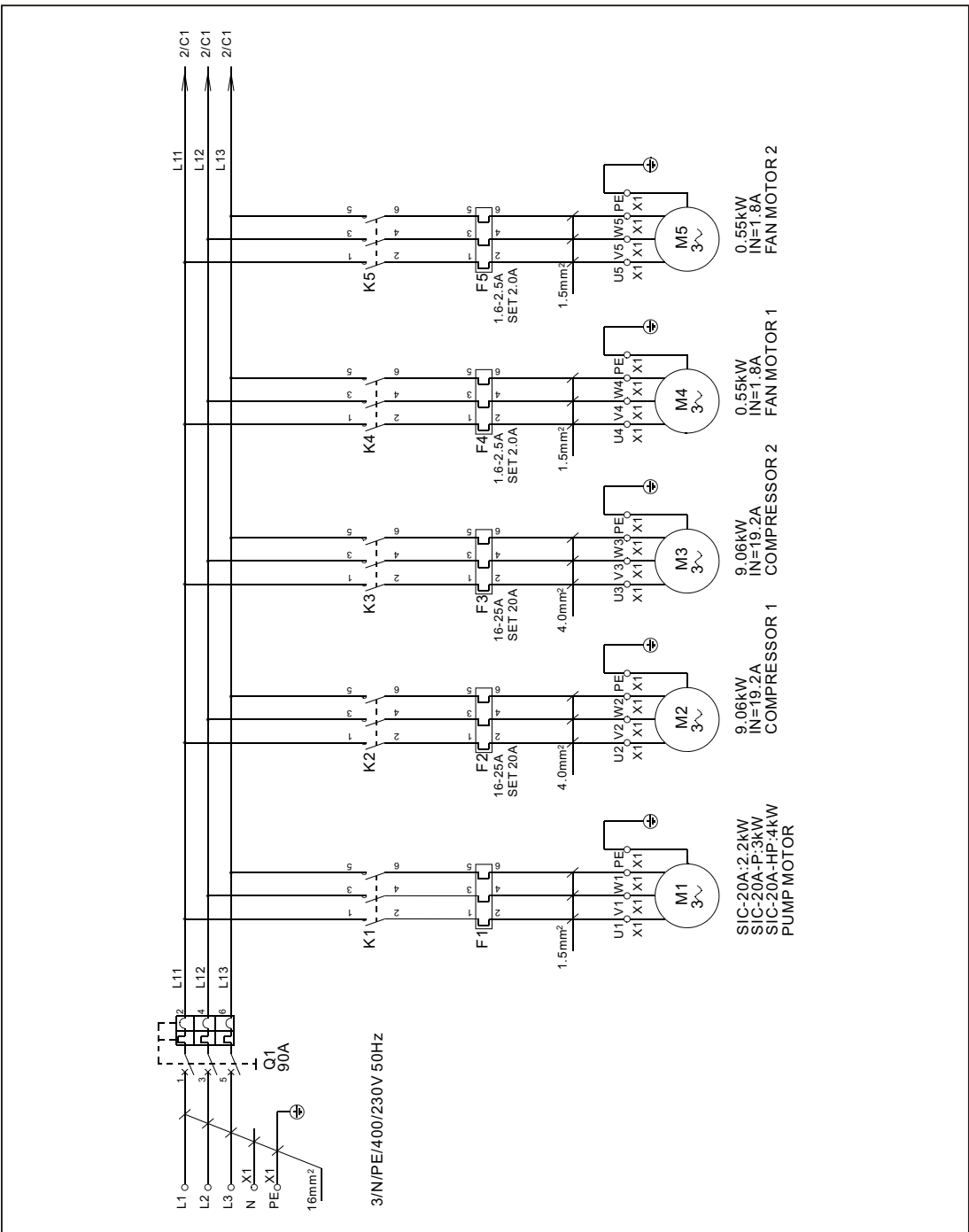
10.8.1 Control circuit principle diagram



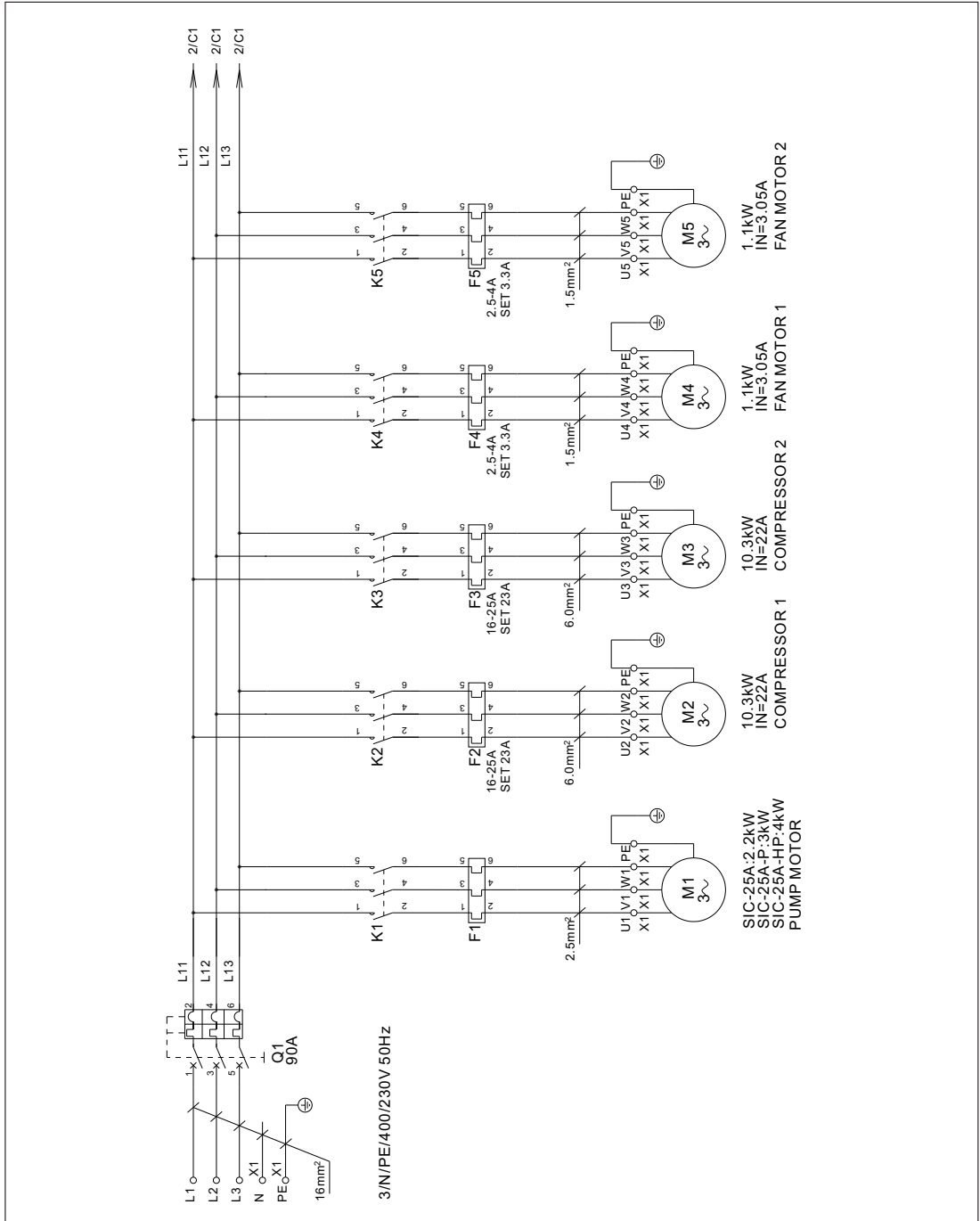
10.8.2 Components layout diagram



10.8.3 SIC-20A-P Main circuit principle diagram



10.8.4 SIC-25A-P Main circuit principle diagram



10.9 SIC-20A / 25A-P Electrical Components List

10.9.1 SIC-20A-P Electrical components list

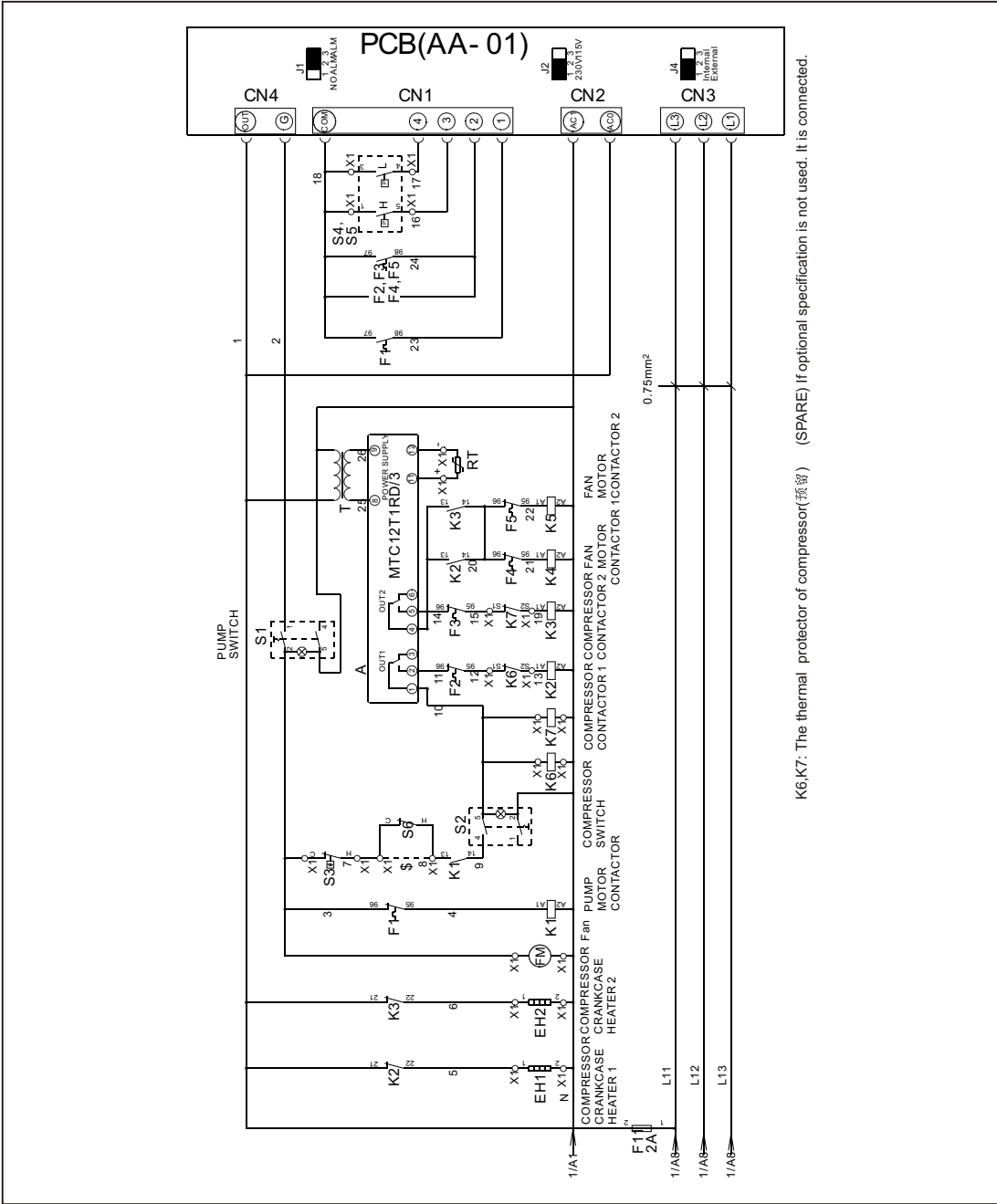
No .	Symbol	Name	Specifcatons	Parts number
1	Q1	Circuit Breaker	90A	E3119001
2	K1	Contactor	230VAC 50/60Hz	E1130100
3	K2 K3	Contactor	230VAC 50/60Hz	E1133110
4	K4 K5	Contactor	230VAC 50/60Hz	E1130000
5	A	Temperature controller	230VAC 50/60Hz 2W	E2101006
6	RT	Thermistor	----	----
7	T	Transformer	IN=230V OUT=12V 3VA	E3300153
8	F1	Overload relay	----	E1204631
9	F2 F3	Overload relay	16-25A	E1216251
10	F4 F5	Overload relay	1.6-2.5A	E1216250
11	F11	Fuse	2A	E3202007
12	S1 S2	Control switch	250V ~ 10(5)A 4P WH	E1304000
13	S3	Anti-frozen switch	250V ~ 16(4)A	L1307110
14	S4	HI-LO pressure switch	H:5-30bar L:-0.7-6bar	L1308301
15	PCB	Control board	230V 50Hz	E2304002
16	X1	Control board	----	E5125001
17		Control board	----	E5125002
18		Control board	----	E5104001
19		Control board	----	E5104004
20		Control board	----	E5116000
21		Control board	----	E5116001
22	M1	Pump motor	400V 50/60Hz	----
23	M2 M3	Compressor	400V 50/60Hz 9.06kW	----
24	M4 M5	Fan motor	400V 50/60Hz 0.55kW	----
25	EH1 EH2	Compressor Crankcase Heater	230V 50/60Hz 45W	----
26	FAN	Fan	230V 50/60Hz	----

10.9.2 SIC-25A-P Electrical components list

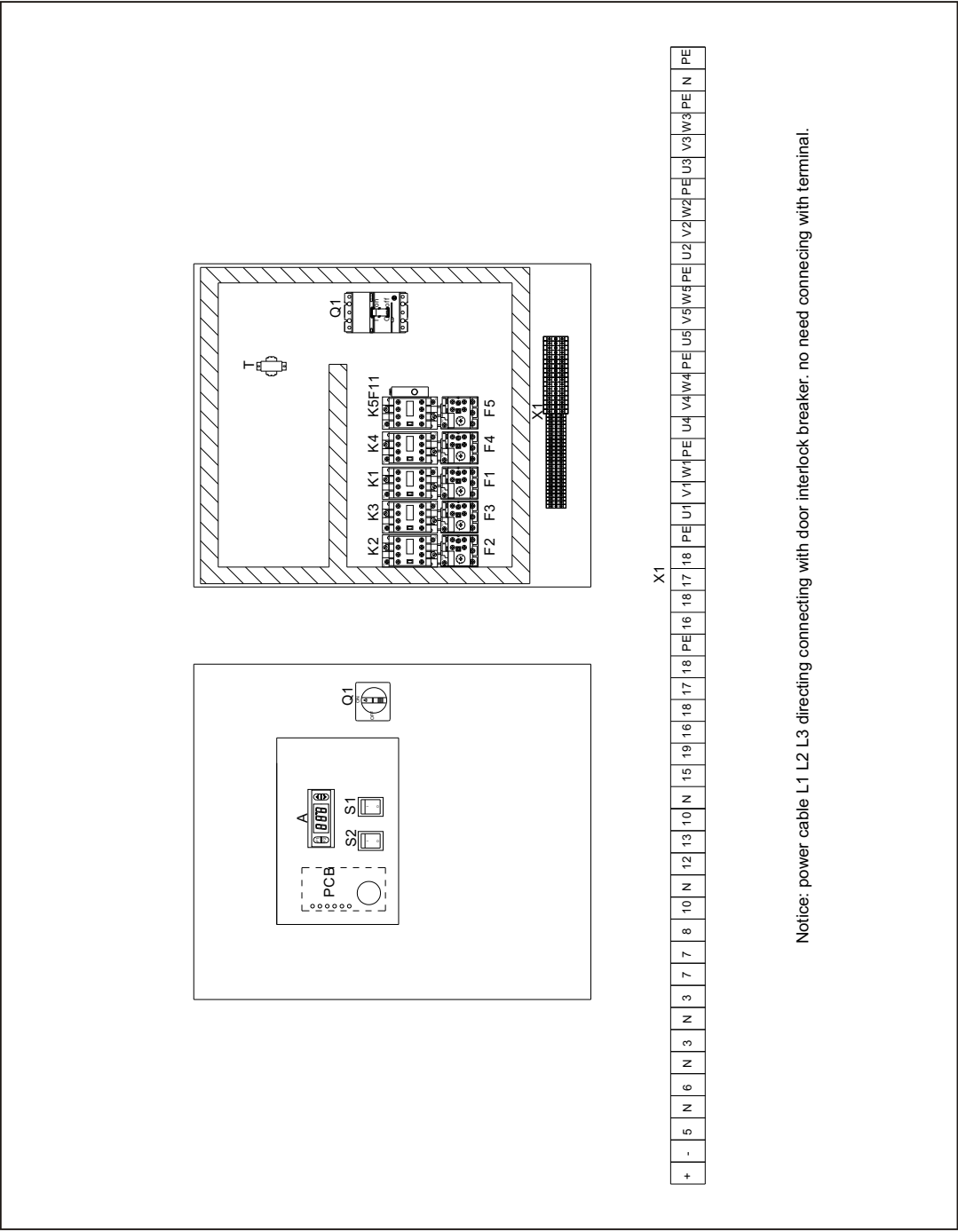
No .	Symbol	Name	Specifcatons	Parts number
1	Q1	Circuit Breaker	90A	E3119001
2	K1	Contactor	230VAC 50/60Hz	E1130100
3	K2 K3	Contactor	230VAC 50/60Hz	E1134100
4	K4 K5	Contactor	230VAC 50/60Hz	E1130000
5	A	Temperature controller	230VAC 50/60Hz 2W	E2101006
6	RT	Thermistor	----	----
7	T	Transformer	IN=230V OUT=12V 3VA	E3300153
8	F1	Overload relay	----	E1204631
9	F2 F3	Overload relay	16-25A	E1216201
10	F4 F5	Overload relay	2.5-4A	E1225041
11	F11	Fuse	2A	E3202007
12	S1 S2	Control switch	250V ~ 10(5)A 4P WH	E1304000
13	S3	Anti-frozen switch	250V ~ 16(4)A	L1307110
14	S4	HI-LO pressure switch	H:5-30bar L:-0.7-6bar	L1308301
15	PCB	Control board	230V 50Hz	E2304002
16	X1	Control board	----	E5125001
17		Control board	----	E5125002
18		Control board	----	E5106002
19		Control board	----	E5106004
20		Control board	----	E5116000
21		Control board	----	E5116001
22	M1	Pump motor	400V 50/60Hz	----
23	M2 M3	Compressor	400V 50/60Hz 10.3kW	----
24	M4 M5	Fan motor	400V 50/60Hz 1.1kW	----
25	EH1 EH2	Compressor Crankcase Heater	230V 50/60Hz 45W	----
26	FAN	Fan		

10.10 SIC-30A-P Electrical Circuit Diagram

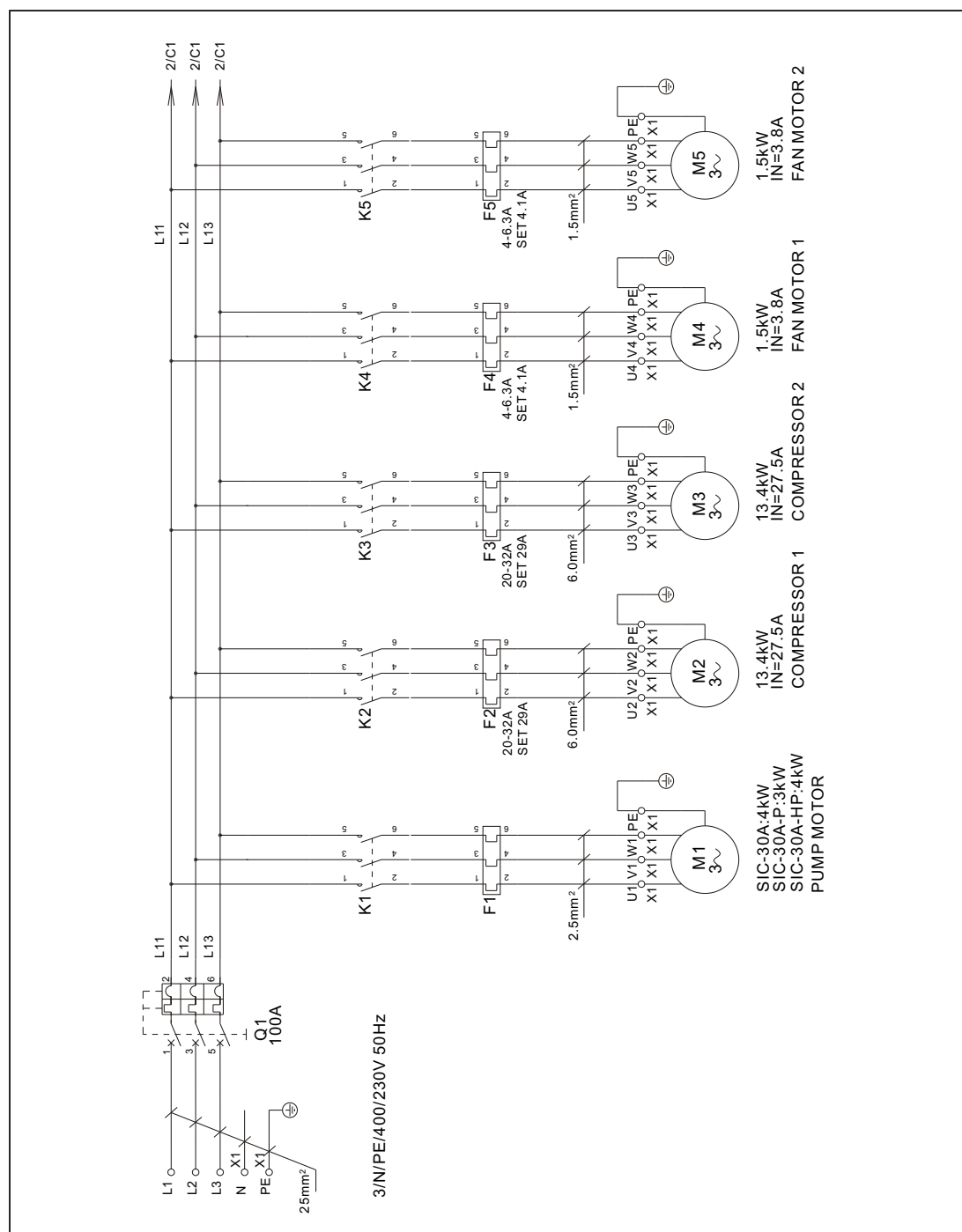
10.10.1 Control circuit principle diagram



10.10.2 Components layout diagram



10.10.3 SIC-30A-P Main circuit principle diagram

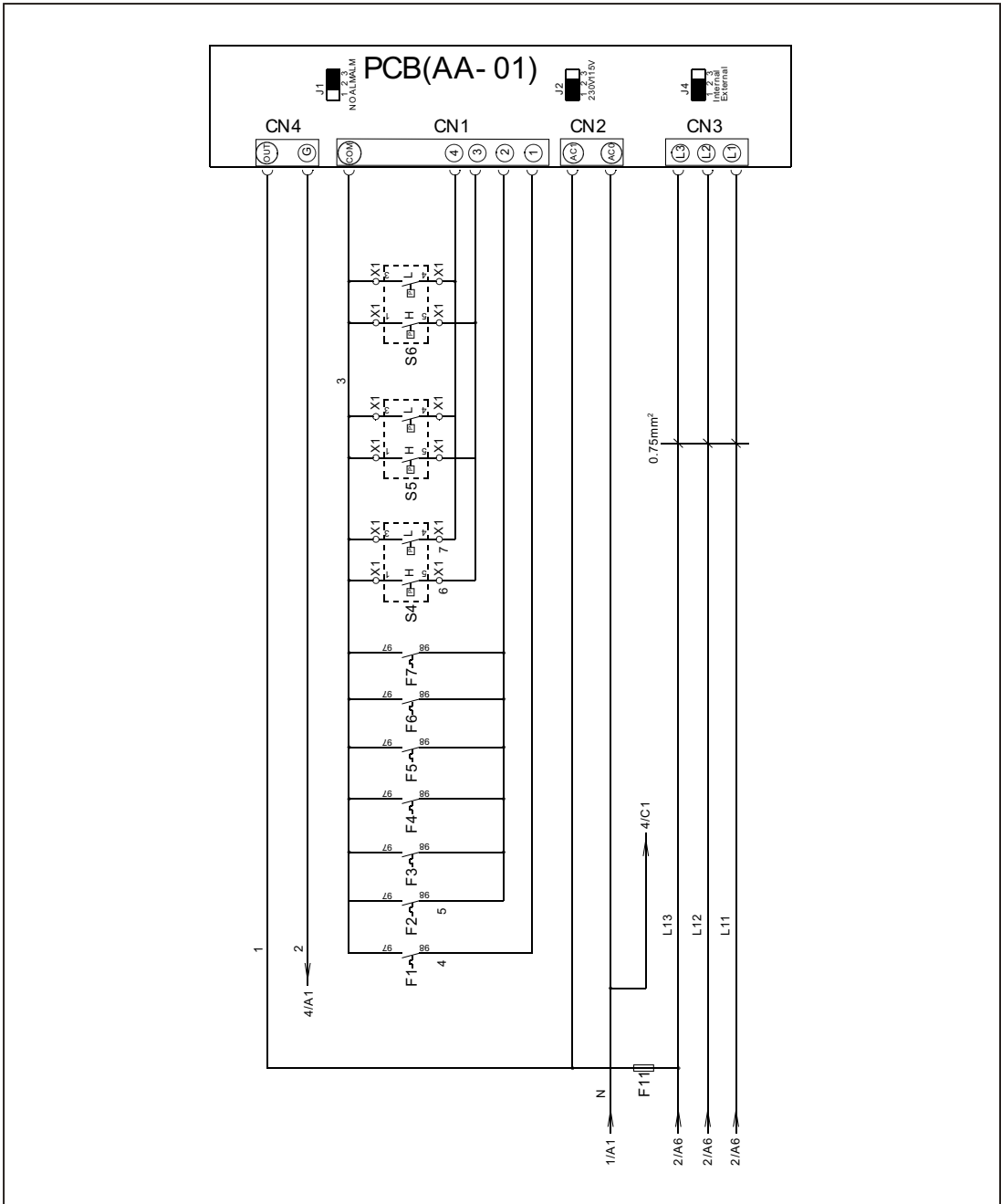


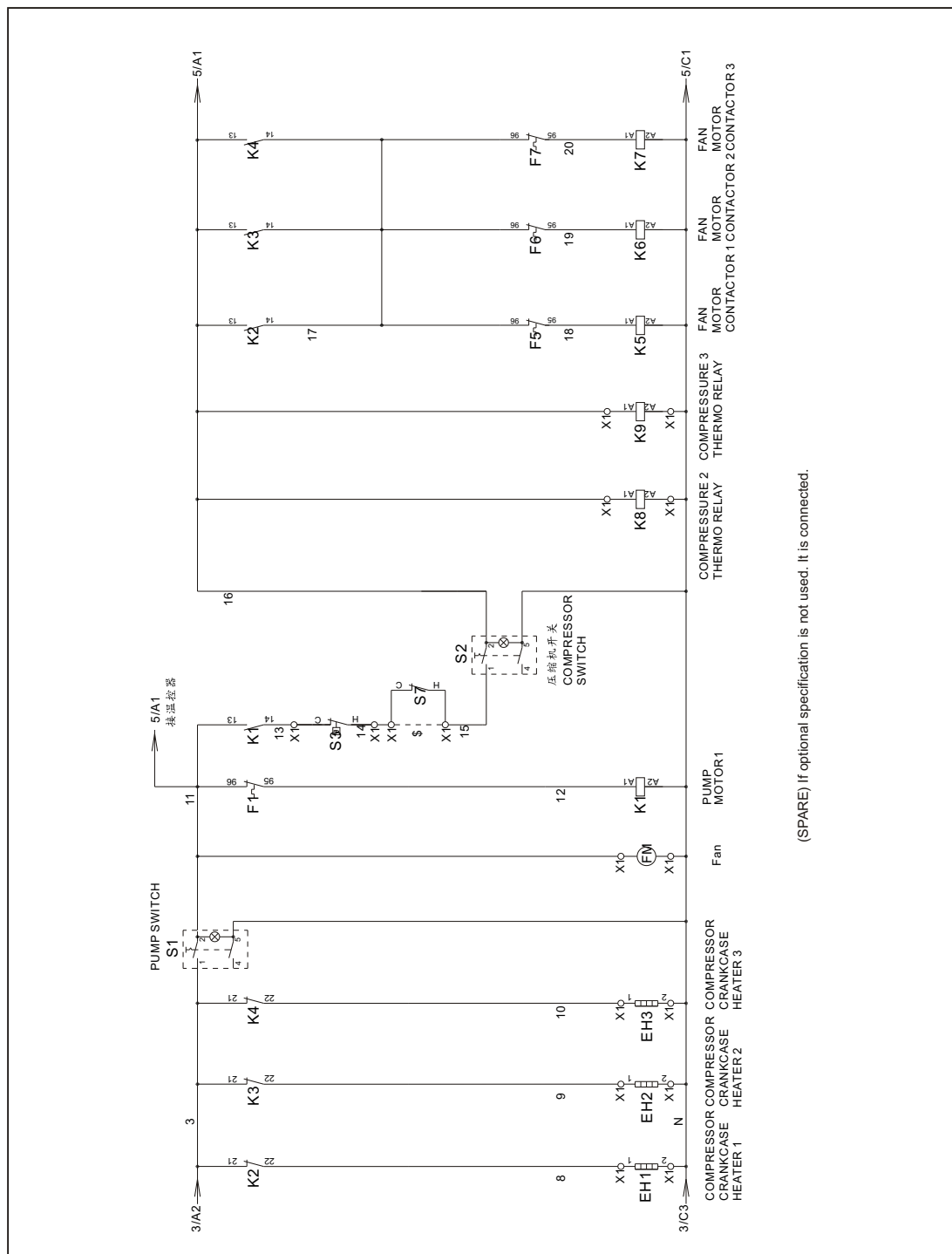
10.11 SIC-30A-P Electrical Components List

No .	Symbol	Name	Specifcatons	Parts number
1	Q1	Circuit Breaker	100A	E3114002
2	K1	Contactor	230VAC 50/60Hz	E1131100
3	K2 K3	Contactor	230VAC 50/60Hz	E1134100
4	K4 K5	Contactor	230VAC 50/60Hz	E1130000
5	K6 K7	Compressor Protector	230VAC 50/60Hz	----
6	A	Temperature controller	230VAC 50/60Hz 2W	E2101006
7	RT	Thermistor	----	----
8	T	Transformer	IN=230V OUT=12V 3VA	E3300153
9	F1	Overload relay	----	E1263101
10	F2 F3	Overload relay	20-32A	E1220322
11	F4 F5	Overload relay	4-6.3A	E1204631
12	F11	Fuse	2A	E3202007
13	S1 S2	Control switch	250V ~ 10(5)A 4P WH	E1304000
14	S3	Anti-frozen switch	250V ~ 16(4)A	L1307110
15	S4	HI-LO pressure switch	H:5-30bar L:-0.7-6bar	L1308301
16	PCB	Control board	230V 50Hz	E2304002
17	X1	Terminal board	----	E5125001
18		Terminal board	----	E5125002
19		Terminal board	----	E5106002
20		Terminal board	----	E5106004
21		Terminal board	----	E5135000
22		Terminal board	----	E5135001
23	M1	Pump motor	400V 50/60Hz	----
24	M2 M3	Compressor	400V 50/60Hz 13.4kW	----
25	M4 M5	Fan motor	400V 50/60Hz 1.5kW	----
26	EH1 EH2	Compressor Crankcase Heater	230V 50/60Hz 45W	----
27	FAN	Fan	2300V 50/60Hz	----

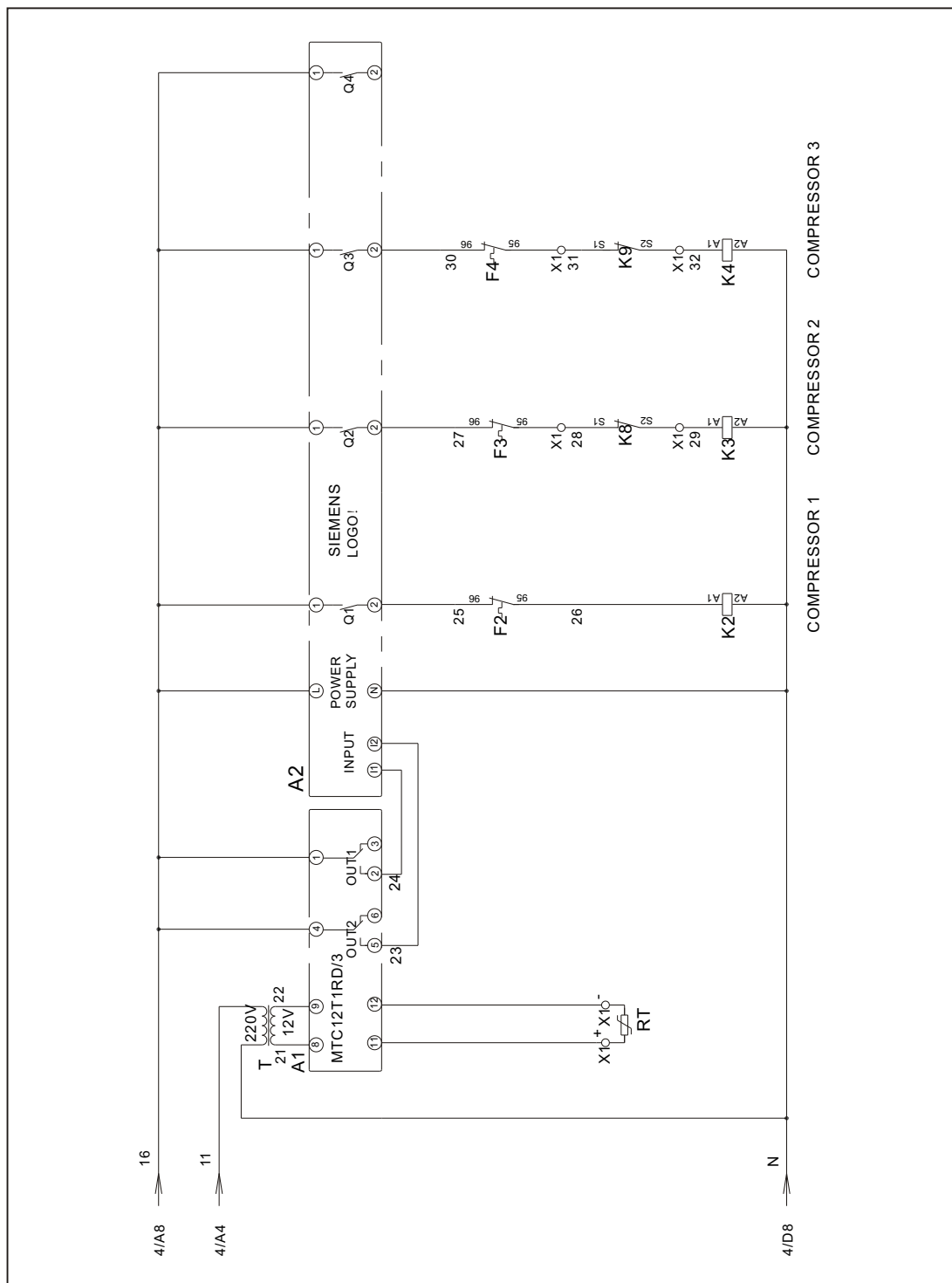
10.12 SIC-40A-P Electrical Circuit Diagram

10.12.1 Control circuit principle diagram

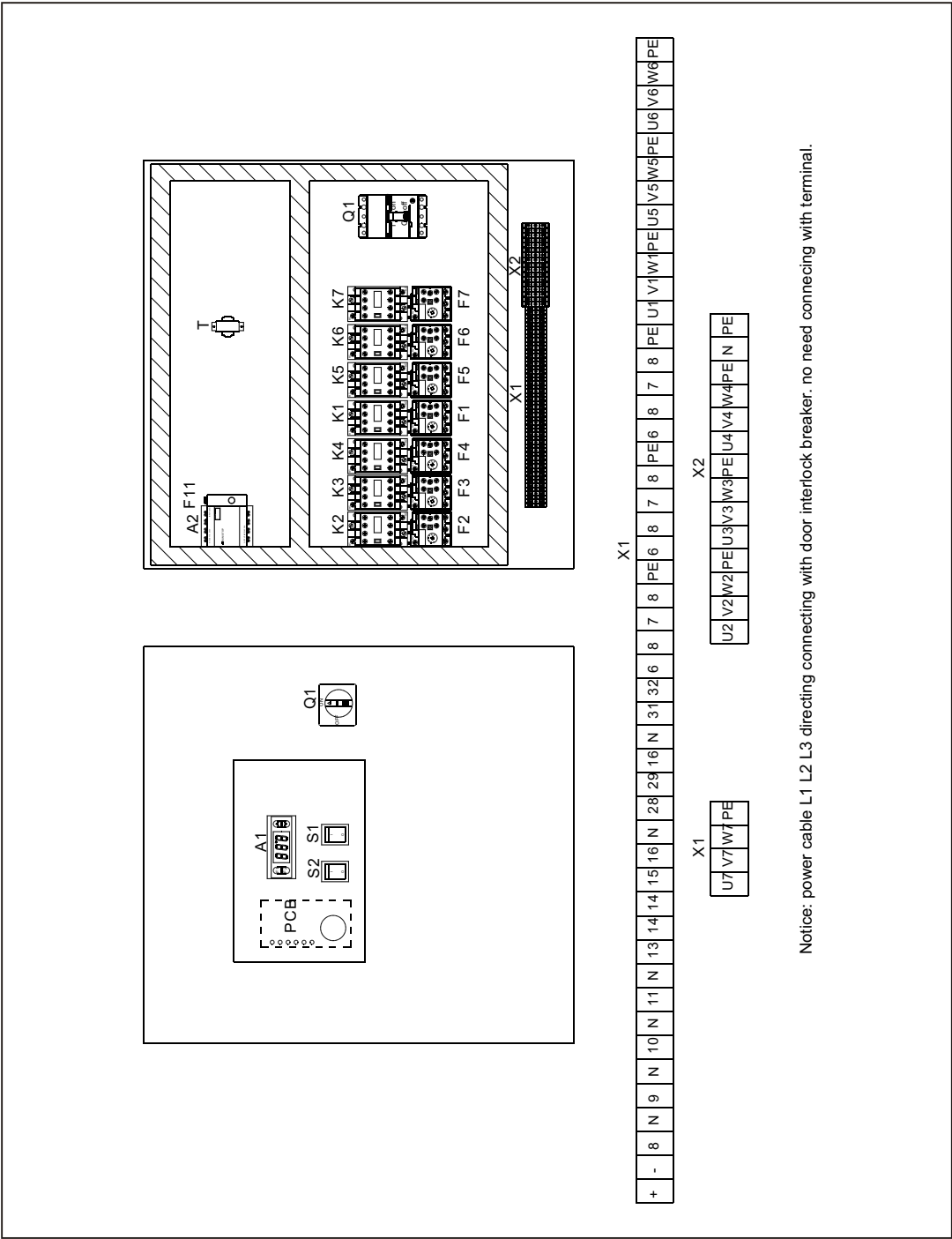




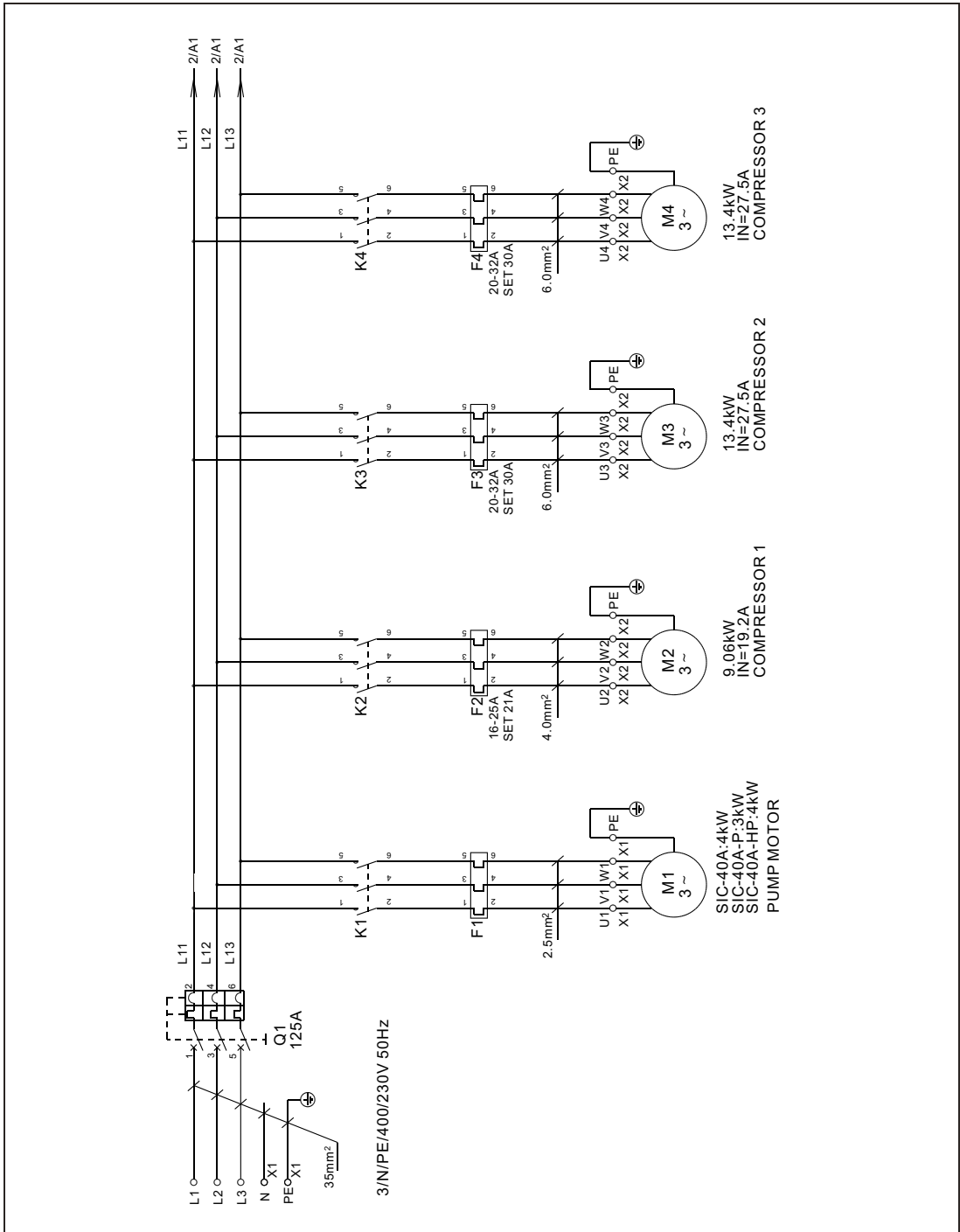
(SPARE) If optional specification is not used. It is connected.

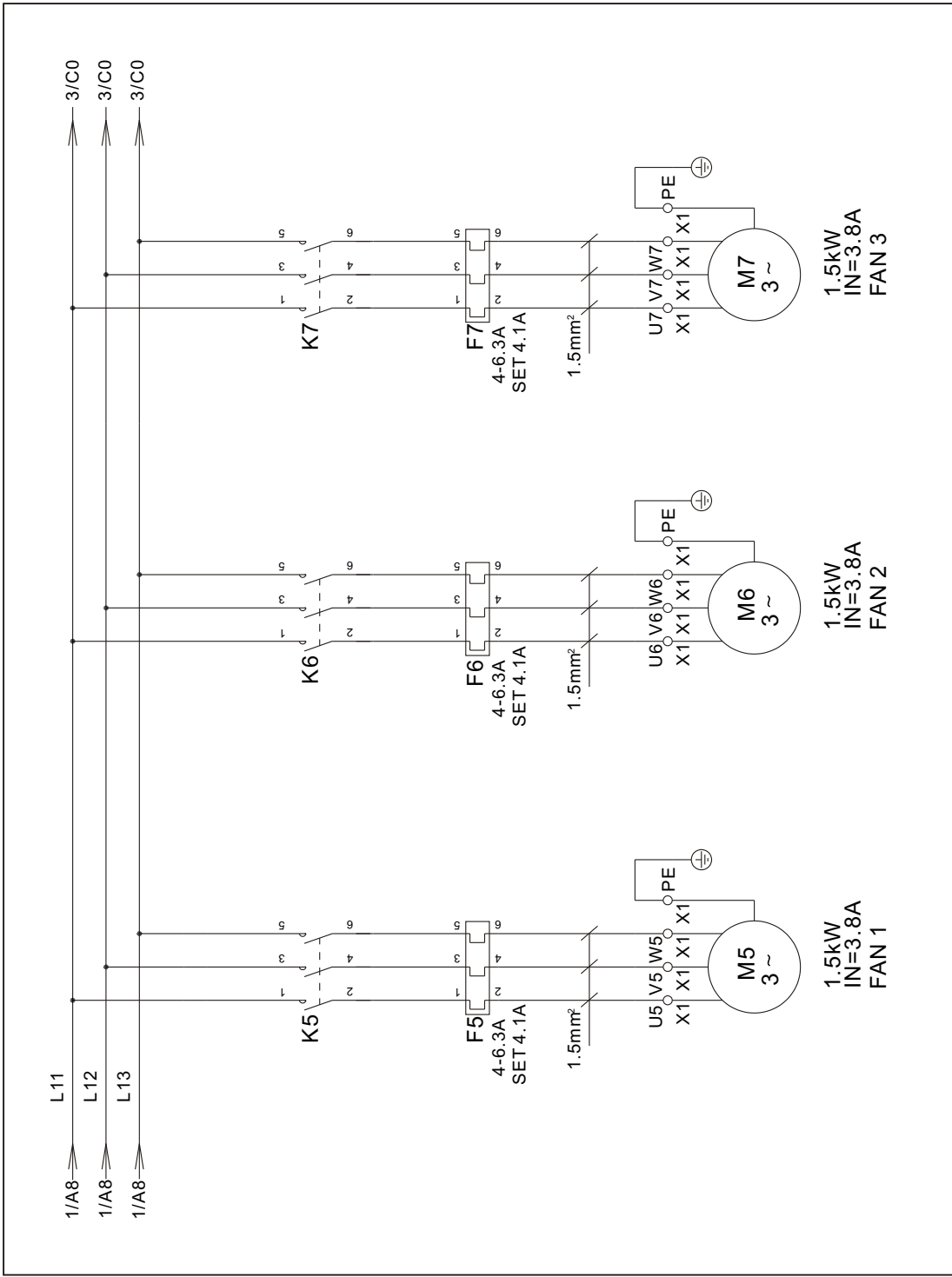


10.12.2 Components layout



10.12.3 SIC-40A-P Main circuit principle diagram



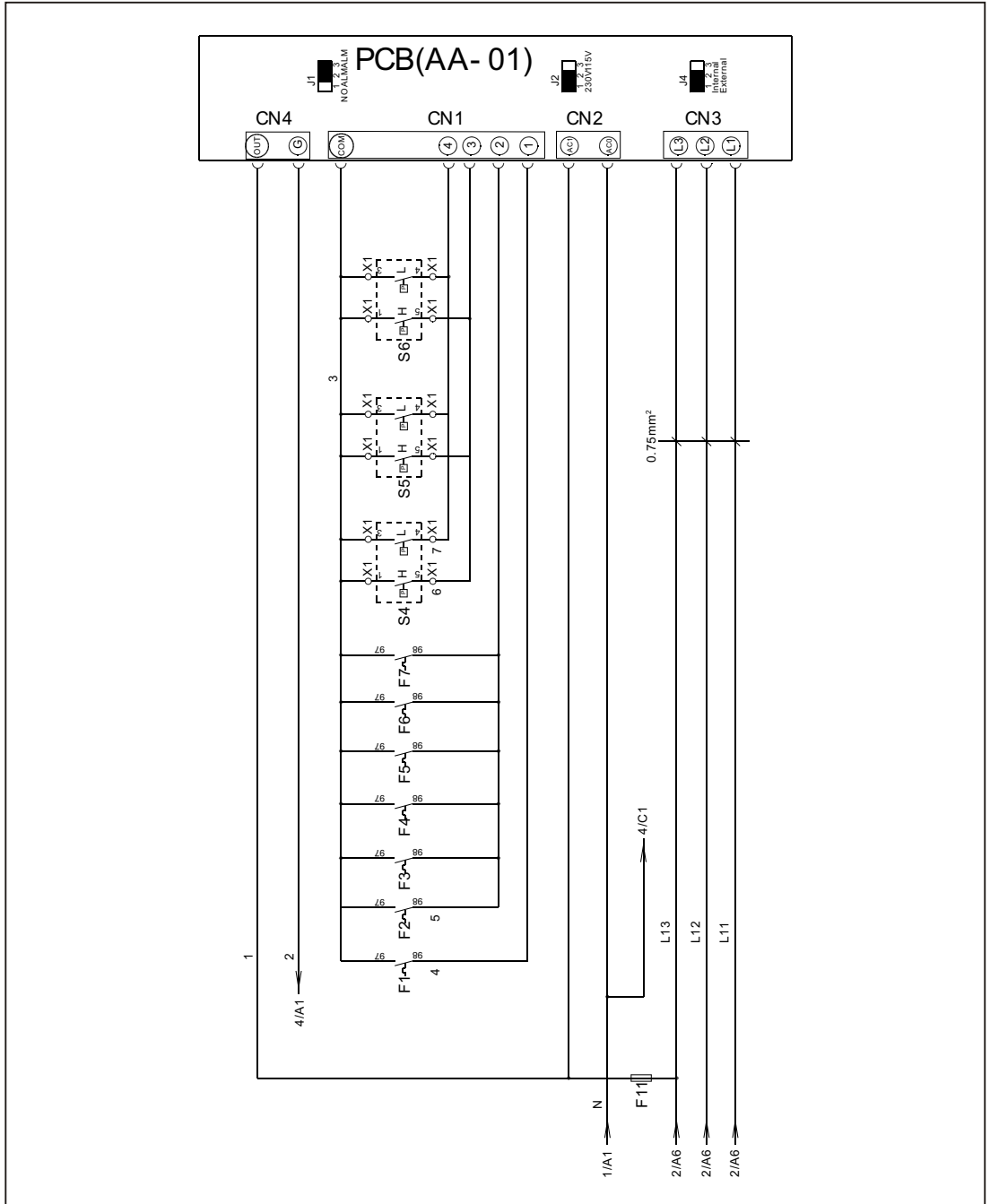


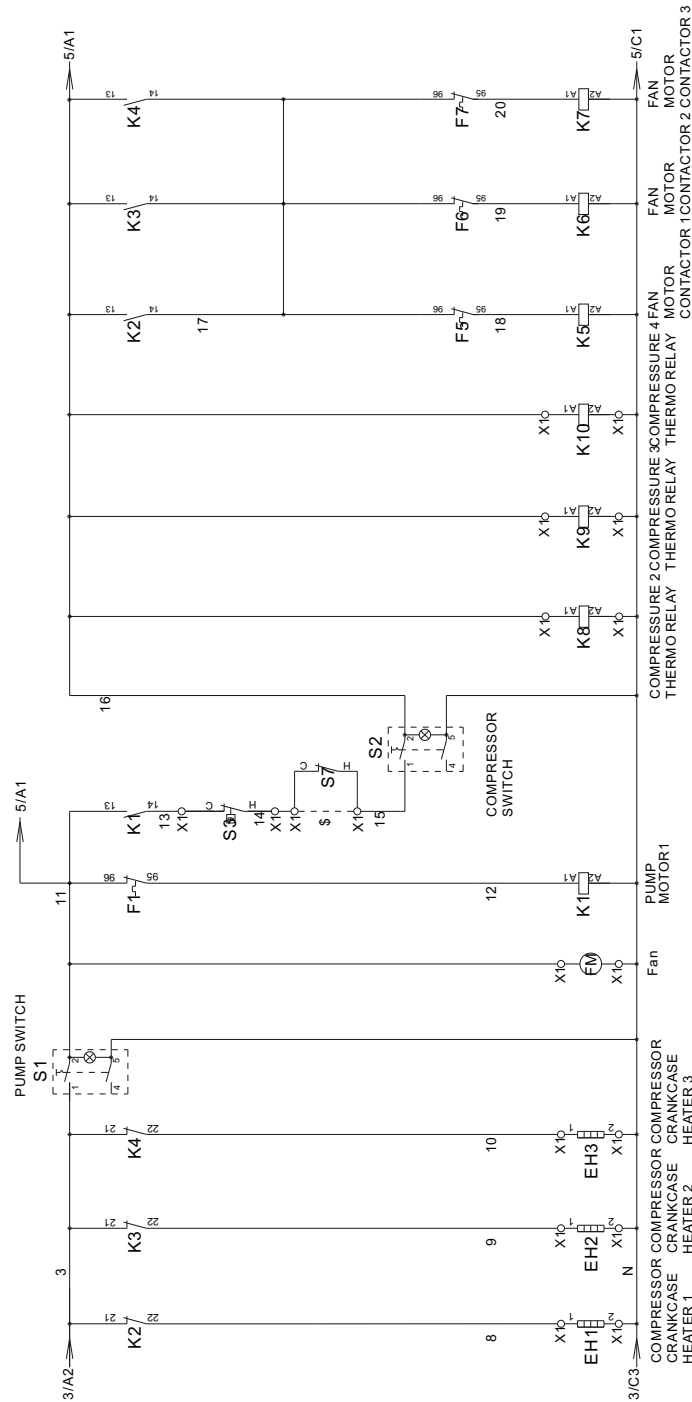
10.13 SIC-40A-P Electrical Components List

No .	Symbol	Name	Specifcatons	Parts number
1	Q1	Circuit Breaker	125A	E3112000
2	K1	Contactor	230VAC 50/60Hz	E1131100
3	K2	Contactor	230VAC 50/60Hz	E1133110
4	K3 K4	Contactor	230VAC 50/60Hz	E1134100
5	K5 K6 K7	Contactor	230VAC 50/60Hz	E1130000
6	K8 K9	Compressor Protector	230VAC 50/60Hz	----
7	A1	Temperature controller	230VAC 50/60Hz 2W	E2101006
8	A2	LOGO! Controller	AC115V~230V No display model	E2110001
9	RT	Thermistor	----	----
10	T	Transformer	IN=230V OUT=12V 3VA	E3300153
11	F1	Overload relay	----	E1263101
12	F2	Overload relay	16-25A	E1216251
13	F3 F4	Overload relay	20-32A	E1220322
14	F5 F6 F7	Overload relay	4-6.3A	E1204631
15	F11	Fuse	2A	E3202007
16	S1 S2	Control switch	250V ~ 10(5)A 4P WH	E1304000
17	S3	Anti-frozen switch	250V ~ 16(4)A	L1307110
18	S4	HI-LO pressure switch	H:5-30bar L:-0.7-6bar	L1308301
19	PCB	Control board	230V 50Hz	E2304002
20	X1	Terminal board	----	E5125001
21		Terminal board	----	E5125002
22	X2	Terminal board	----	E5104001
23		Terminal board	----	E5104004
24		Terminal board	----	E5106002
25		Terminal board	----	E5106004

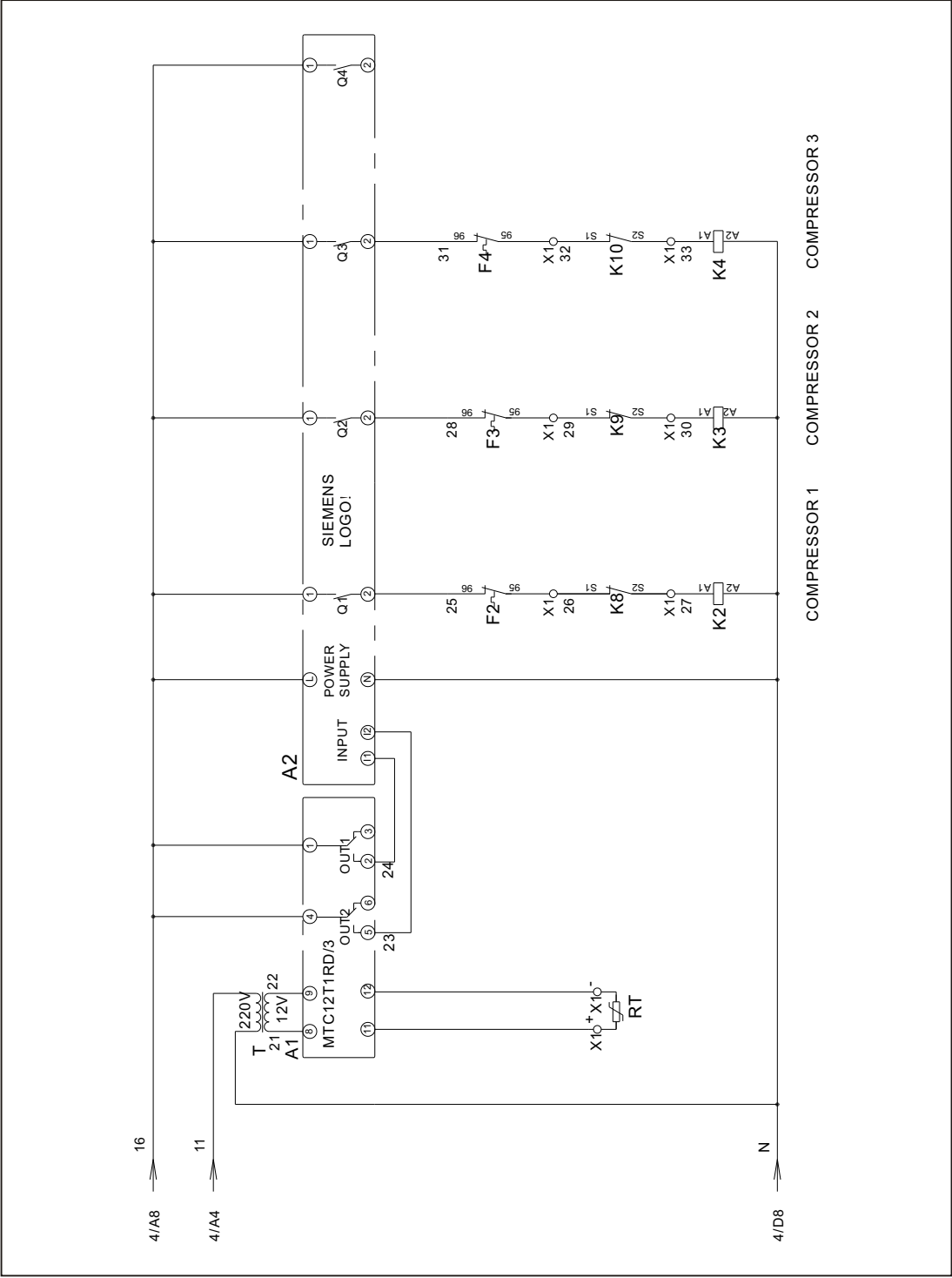
No .	Symbol	Name	Specificatons	Parts number
26		Terminal board	----	E5135000
27		Terminal board	----	E5135001
28	M1	Pump motor	400V 50Hz	----
29	M2	Compressor	400V 50Hz 9.06kW	----
30	M3 M4	Compressor	400V 50Hz 10.3kW	----
31	M5 M6 M7	Fan motor	400V 50/60Hz 1.5KkW	----
32	EH1 EH2 EH3	Compressor Crankcase Heater	230V 50/60Hz 45W	----
33	FAN	Fan	230V 50/60Hz	----

10.14.1 Control circuit

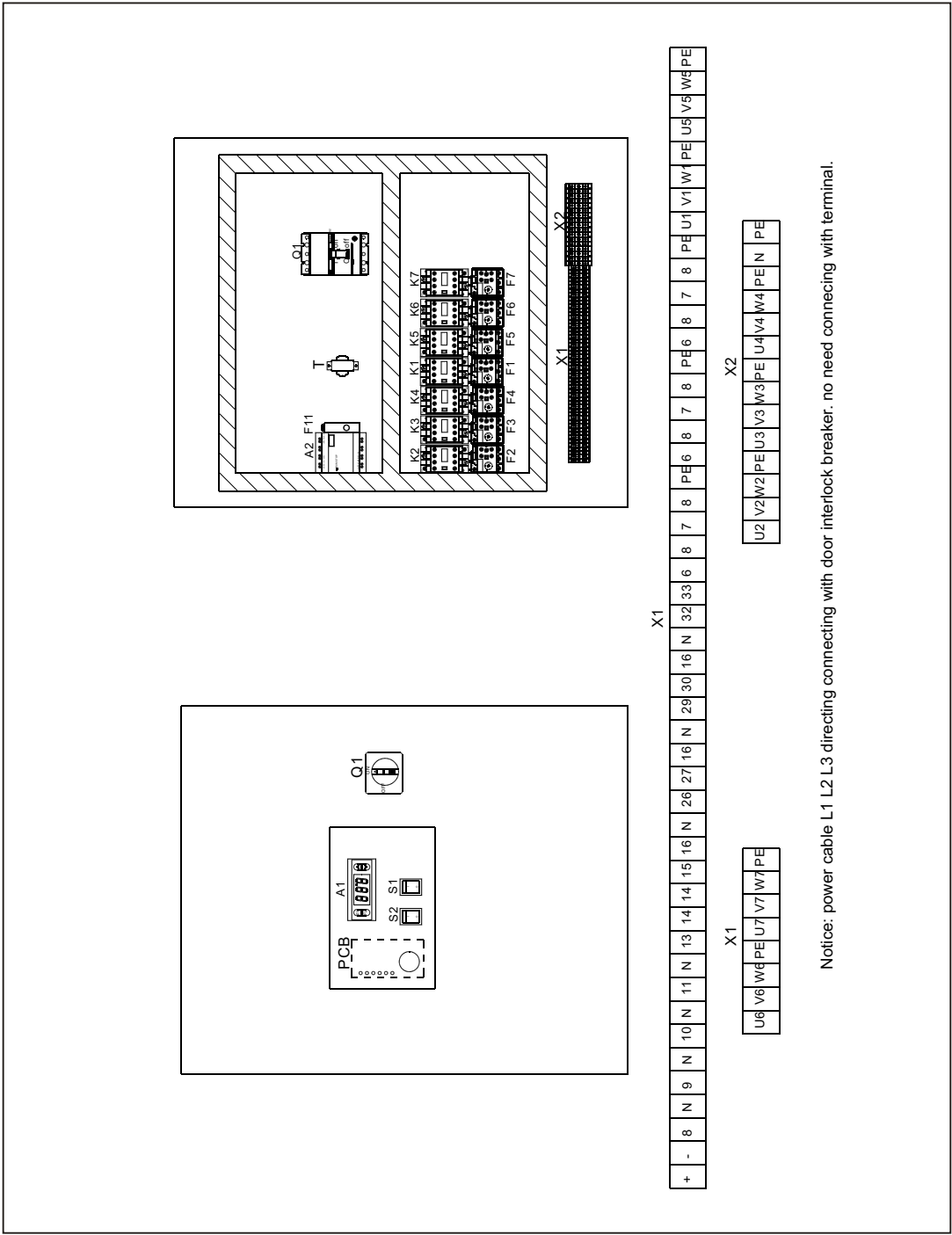




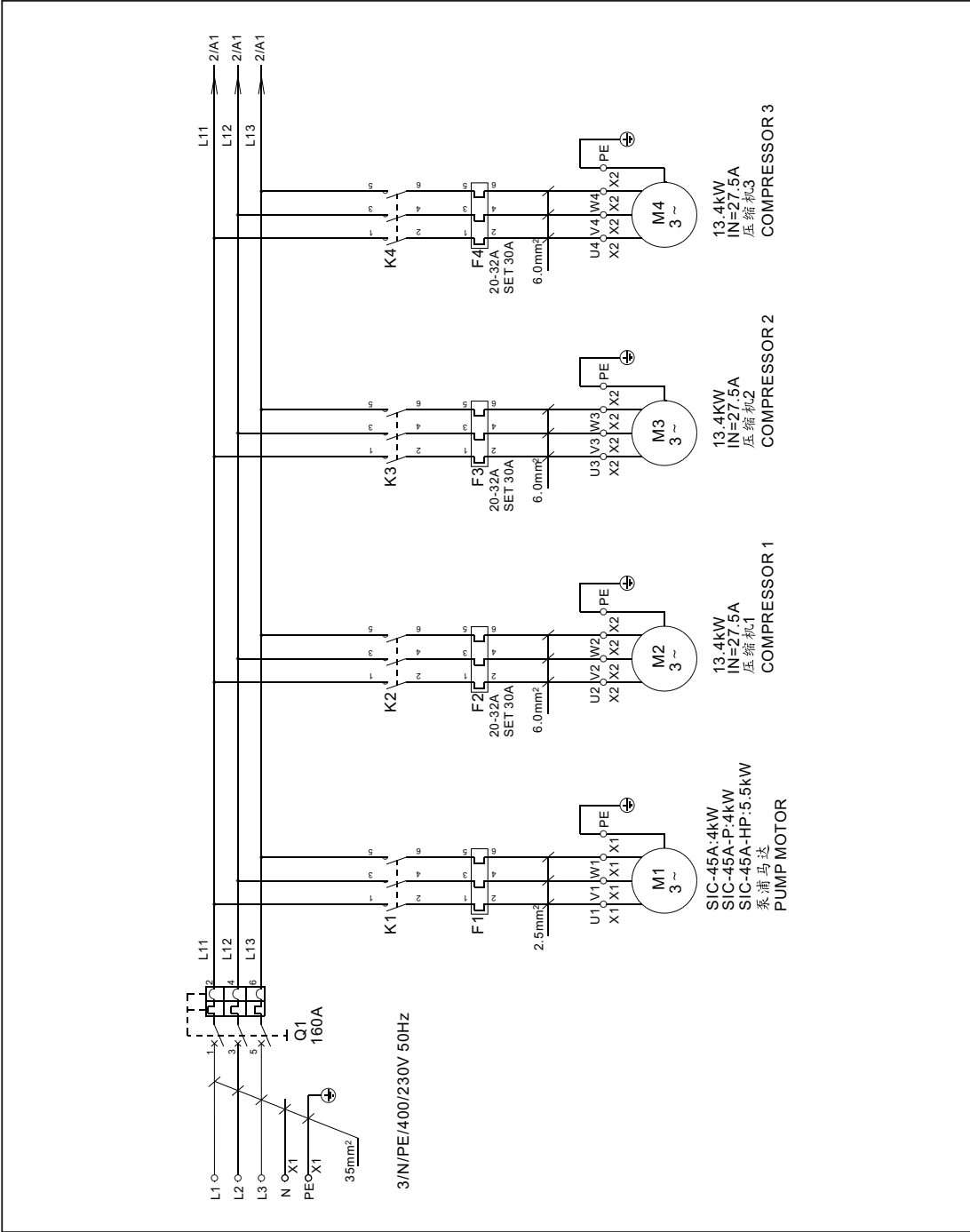
(SPARE) If optional specification is not used. It is connected.

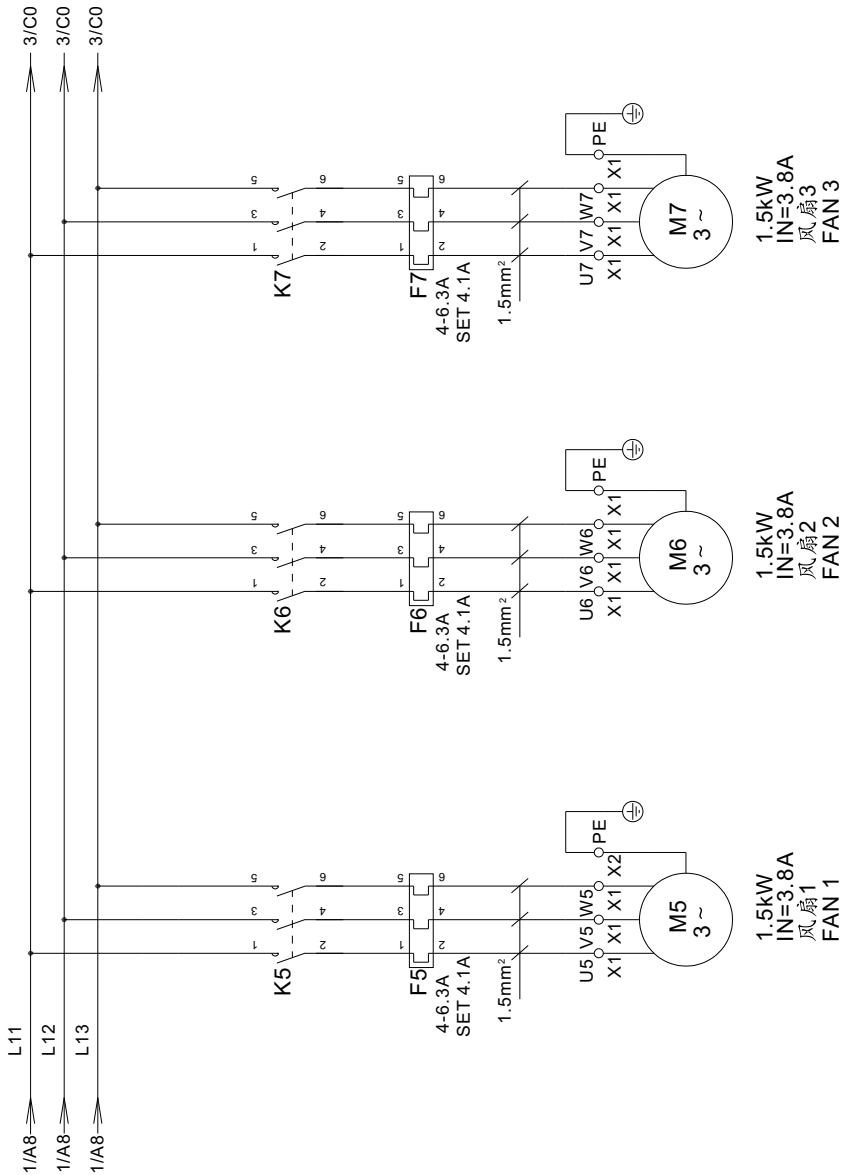


10.14.2 Components layout



10.14.3 SIC-45A-P Main circuit





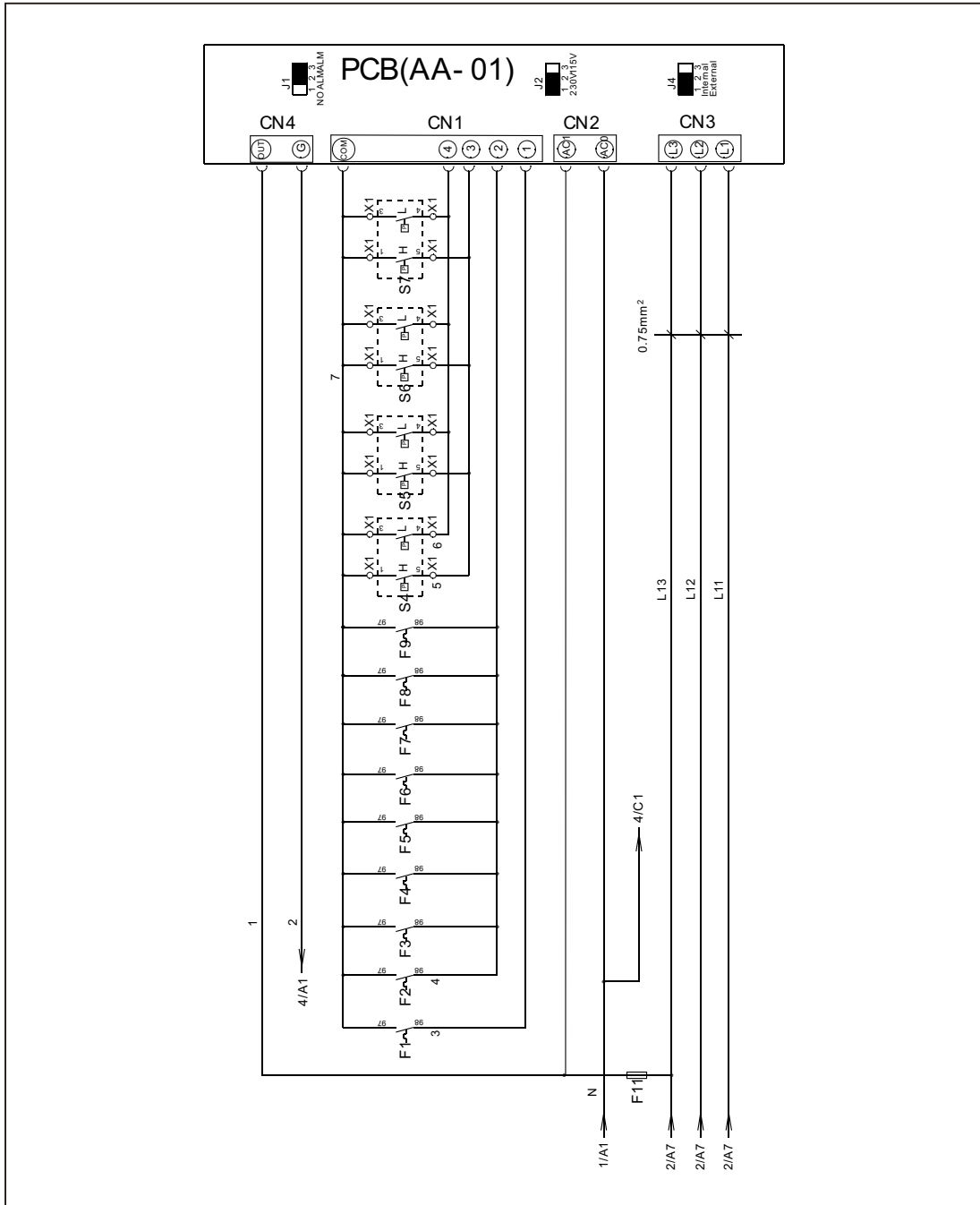
10.15 SIC-45A-P Electrical Components List

No .	Symbol	Name	Specifcatons	Parts number
1	Q1	Circuit Breaker	160A	E3116001
2	K1	Contacto	230VAC 50/60Hz	E1131100
3	K2 K3 K4	Contacto	230VAC 50/60Hz	E1134100
4	K5 K6 K7	Contacto	230VAC 50/60Hz	E1130000
5	K8 K9	Compressor Protector	230VAC 50/60Hz	----
6	A1	Temperature controller	230VAC 50/60Hz 2W	E2101006
7	A2	LOGO! Controller	AC115V~230V No display model	E2110001
8	RT	Thermistor	----	----
9	T	Transformer	IN=230V OUT=12V 3VA	E3300153
10	F1	Overload relay	----	E1263101
11	F2 F3 F4	Overload relay	20-32A	E1220322
12	F5 F6 F7	Overload relay	4-6.3A	E1204631
13	F11	Fuse	2A	E3202007
14	S1 S2	Control switch	250V ~ 10(5)A 4P WH	E1304000
15	S3	Anti-frozen switch	250V ~ 16(4)A	L1307110
16	S4	HI-LO pressure switch	H:5-30bar L:-0.7-6bar	L1308301
17	PCB	Control board	230V 50Hz	E2304002
18	X1	Terminal board	----	E5125001
19		Terminal board	----	E5125002
20	X2	Terminal board	----	E5106002
21		Terminal board	----	E5106004
22		Terminal board	----	E5135000
23		Terminal board	----	E5135001
24	M1	Pump motor	400V 50Hz	----
25	M2 M3 M4	Compressor	400V 50Hz 13.4KW	----

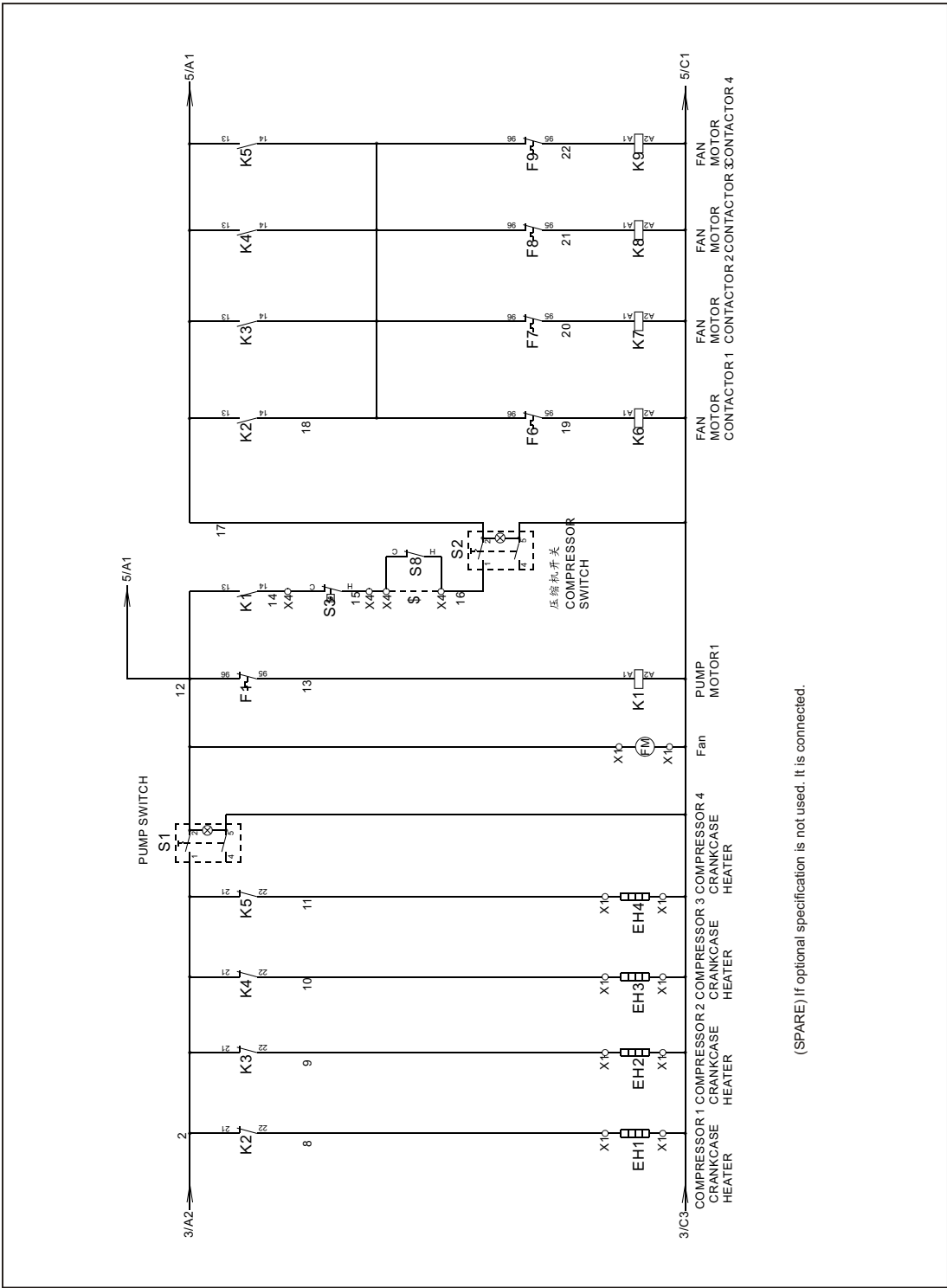
No .	Symbol	Name	Specificatons	Parts number
26	M5 M6 M7	Fan motor	400V 50/60Hz 1.5KkW	----
27	EH1 EH2 EH3	Compressor Crankcase Heater	230V 50/60Hz 45W	----
28	FAN	Fan	230V 50/60Hz	----

10.16 SIC-50A-P Electrical Circuit

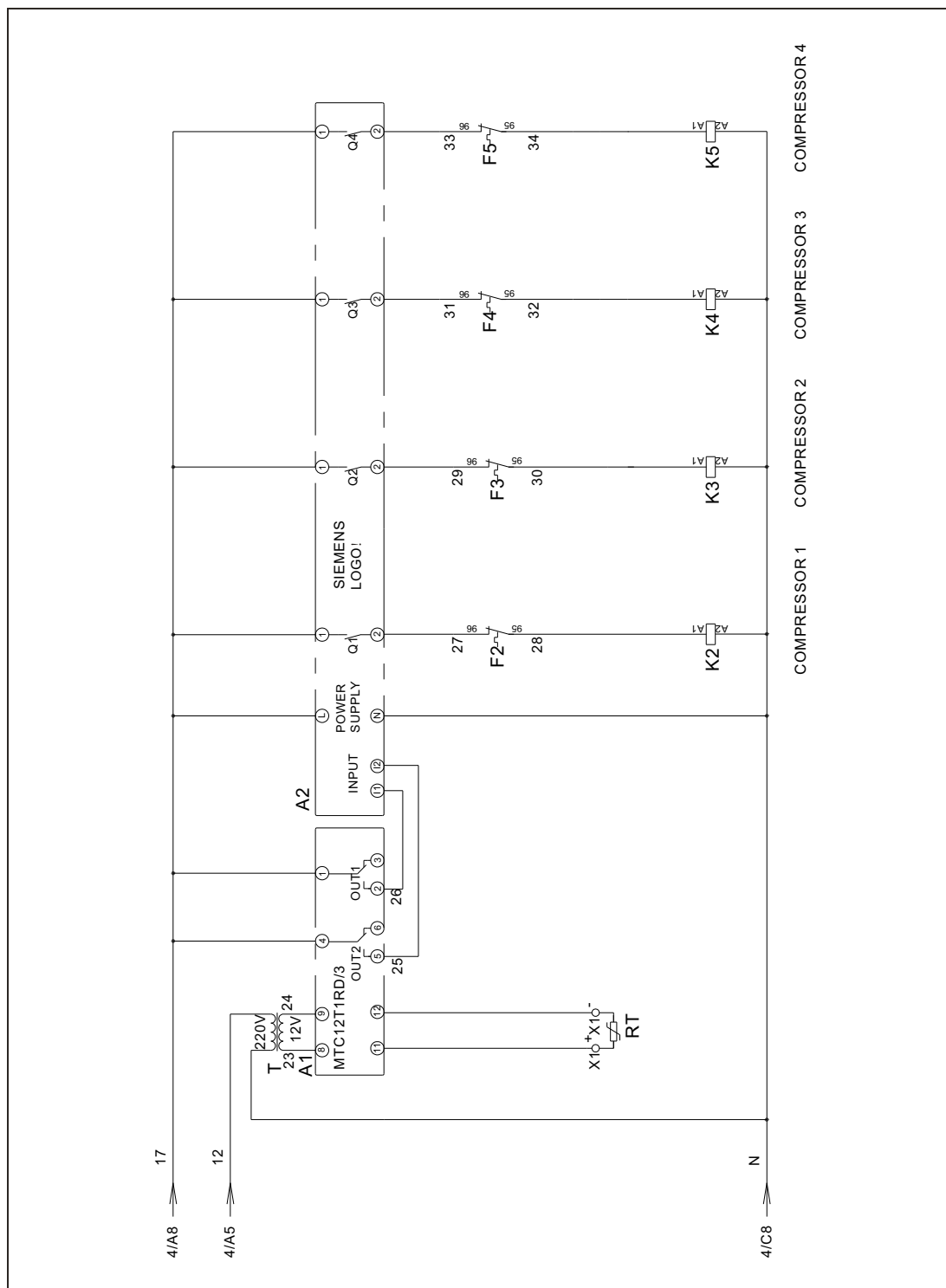
10.16.1 Control circuit



10. Electrical Circuit



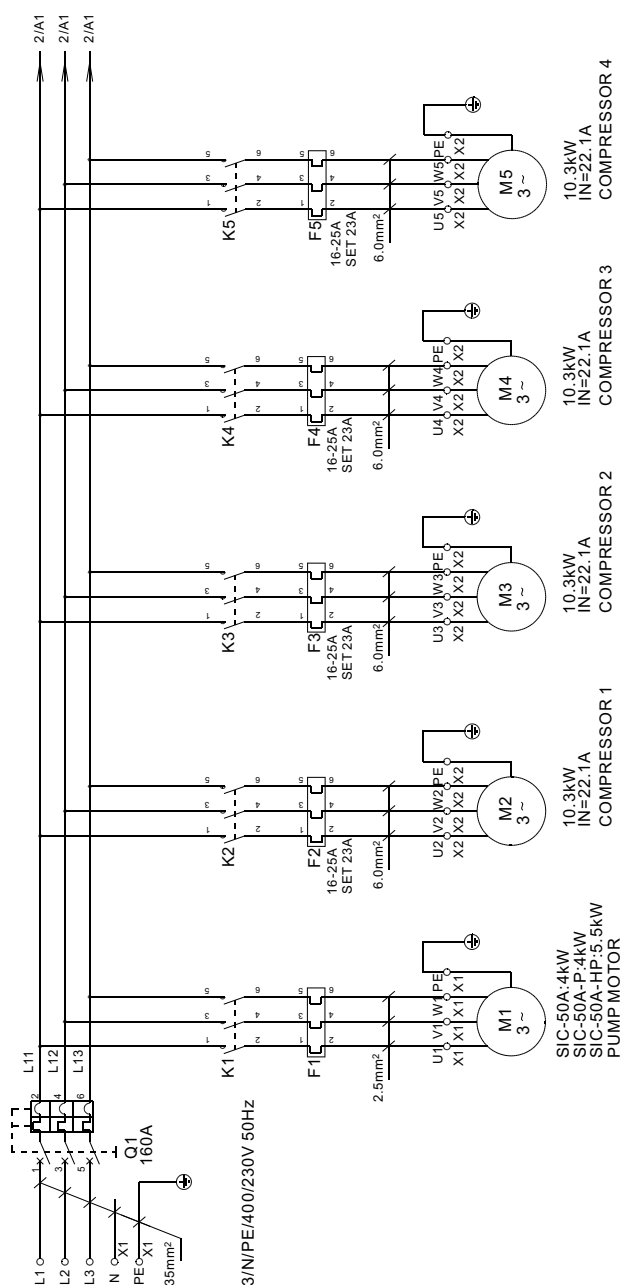
(SPARE) If optional specification is not used. It is connected.

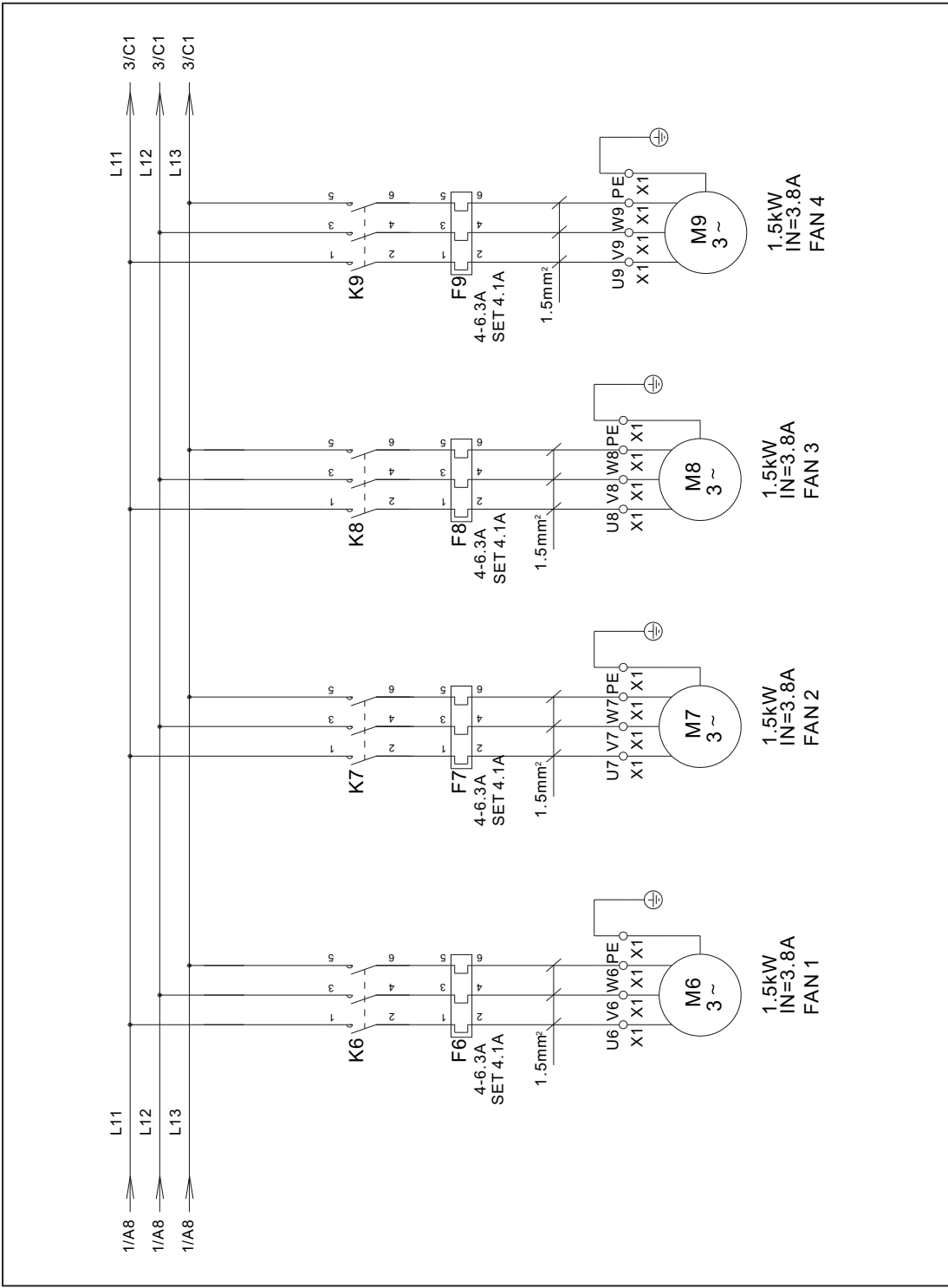


The technical drawing illustrates the internal layout of a control cabinet. It includes a main panel with components labeled A1, A2, F11, Q1, T, K2, K3, K4, K5, K6, K7, K8, K9, F2, F3, F4, F5, F6, F7, F8, F9, X1, and X2. A detailed view of the terminal block X1 shows connections for power (L1, L2, L3, N, PE), motor (M1, M2, M3, M4, M5, M6, M7, M8, M9, M10, M11, M12, M13, M14, M15, M16, M17, M18, M19, M20, M21, M22, M23, M24, M25, M26, M27, M28, M29, M30, M31, M32, M33, M34, M35, M36, M37, M38, M39, M40, M41, M42, M43, M44, M45, M46, M47, M48, M49, M50, M51, M52, M53, M54, M55, M56, M57, M58, M59, M60, M61, M62, M63, M64, M65, M66, M67, M68, M69, M70, M71, M72, M73, M74, M75, M76, M77, M78, M79, M80, M81, M82, M83, M84, M85, M86, M87, M88, M89, M90, M91, M92, M93, M94, M95, M96, M97, M98, M99, M100), and other signals (U1, U2, U3, U4, U5, U6, U7, U8, U9, U10, U11, U12, U13, U14, U15, U16, U17, U18, U19, U20, U21, U22, U23, U24, U25, U26, U27, U28, U29, U30, U31, U32, U33, U34, U35, U36, U37, U38, U39, U40, U41, U42, U43, U44, U45, U46, U47, U48, U49, U50, U51, U52, U53, U54, U55, U56, U57, U58, U59, U60, U61, U62, U63, U64, U65, U66, U67, U68, U69, U70, U71, U72, U73, U74, U75, U76, U77, U78, U79, U80, U81, U82, U83, U84, U85, U86, U87, U88, U89, U90, U91, U92, U93, U94, U95, U96, U97, U98, U99, U100).

Notice: power cable L1 L2 L3 directing connecting with door interlock breaker. no need connecting with terminal.

10.16.3 SIC-50A-P Main electrical circuit





10.17 SIC-50A-P Electrical Components List

No .	Symbol	Name	Specificatons	Parts number
1	Q1	Circuit Breaker	160A	E3116001
2	K1	Contactor	230VAC 50/60Hz	E1131100
3	K2 K3 K4 K5	Contactor	230VAC 50/60Hz	E1134100
4	K6 K7 K8 K9	Contactor	230VAC 50/60Hz	E1130000
5	A1	Temperature controller	230VAC 50/60Hz 2W	E2101006
6	A2	LOGO! Controller	AC115V~230V No display model	E2110001
7	RT	Thermistor	----	----
8	T	Transformer	IN=230V OUT=12V 3VA	E3300153
9	F1	Overload relay	----	E1263101
10	F2 F3 F4 F5	Overload relay	16-25A	E1216201
11	F6 F7 F8 F9	Overload relay	4-6.3A	E1204631
12	F11	Fuse	2A	E3202007
13	S1 S2	Control switch	250V ~ 10(5)A 4P WH	E1304000
14	S3	Anti-frozen switch	250V ~ 16(4)A	L1307110
15	S4	HI-LO pressure switch	H:5-30bar L:-0.7-6bar	L1308301
16	PCB	Control board	230V 50Hz	E2304002
17	X1	Terminal board	----	E5125001
18		Terminal board	----	E5125002
19	X2	Terminal board	----	E5106002
20		Terminal board	----	E5106004
21		Terminal board	----	E5135000
22		Terminal board	----	E5135001
23	M1	Pump motor	400V 50Hz	----
24	M2 M3 M4 M5	Compressor	400V 50Hz 10.3KW	----
25	M6 M7 M8 M9	Fan motor	400V 50/60Hz 1.5KW	----

No .	Symbol	Name	Specificatons	Parts number
26	EH1 EH2 EH3 EH4	Compressor Crankcase Heater	230V 50/60Hz 45W	----
27	FAN	Fan	230V 50/60Hz	----

10.18 Main Electrical Components List

10.18.1 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. Check and solve the problem. Then open the door of control box, press down the blue reset button of overload relay. (if you can not press down the reset button, wait for one more minute)

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

H: manual reset

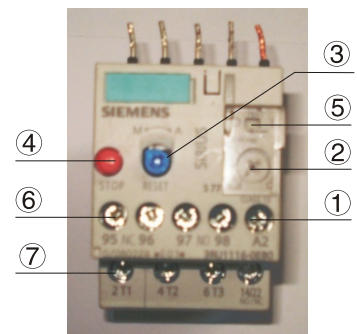
A: automatic reset

- 4) Stop.

- 5) ON / OFF indication and TEST function.

- 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.



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.)

11. Maintenance Schedule

11.1 General Machine Information

Model: _____ SN: _____ MFG. Date: _____

Voltage: _____ Φ _____ V Frequency: _____ Hz Total power: _____ kW

11.2 Check after Installation

- ☐ Check the pipes are all correctly connected.
- ☐ Check if there are leakages in the piping system.
- ☐ Check if there are breaks in welding joint.

Electrical Installation

- ☐ Voltage: _____ V _____ Hz
- ☐ Fuse specification: 1 phase _____ A 3 phase _____ A
- ☐ Check power phase

11.3 Daily Checking

<u> / / </u>	<u> / / </u>	<u> / / </u>
☐ Check switch functions	☐ Check switch functions	☐ Check switch functions
☐ Check all the electrical wires	☐ Check all the electrical wires	☐ Check all the electrical wires
<u> / / </u>	<u> / / </u>	<u> / / </u>
☐ Check switch functions	☐ Check switch functions	☐ Check switch functions
☐ Check all the electrical wires	☐ Check all the electrical wires	☐ Check all the electrical wires
<u> / / </u>	<u> / / </u>	<u> / / </u>
☐ Check switch functions	☐ Check switch functions	☐ Check switch functions
☐ Check all the electrical wires	☐ Check all the electrical wires	☐ Check all the electrical wires
<u> / / </u>	<u> / / </u>	<u> / / </u>
☐ Check switch functions	☐ Check switch functions	☐ Check switch functions
☐ Check all the electrical wires	☐ Check all the electrical wires	☐ Check all the electrical wires
<u> / / </u>	<u> / / </u>	<u> / / </u>
☐ Check switch functions	☐ Check switch functions	☐ Check switch functions
☐ Check all the electrical wires	☐ Check all the electrical wires	☐ Check all the electrical wires
<u> / / </u>	<u> / / </u>	<u> / / </u>
☐ Check switch functions	☐ Check switch functions	☐ Check switch functions
☐ Check all the electrical wires	☐ Check all the electrical wires	☐ Check all the electrical wires
<u> / / </u>	<u> / / </u>	<u> / / </u>
☐ Check switch functions	☐ Check switch functions	☐ Check switch functions
☐ Check all the electrical wires	☐ Check all the electrical wires	☐ Check all the electrical wires
<u> / / </u>	<u> / / </u>	<u> / / </u>
☐ Check switch functions	☐ Check switch functions	☐ Check switch functions
☐ Check all the electrical wires	☐ Check all the electrical wires	☐ Check all the electrical wires
<u> / / </u>	<u> / / </u>	<u> / / </u>
☐ Check switch functions	☐ Check switch functions	☐ Check switch functions
☐ Check all the electrical wires	☐ Check all the electrical wires	☐ Check all the electrical wires

11. Maintenance Schedule

[illegible]

11. Maintenance Schedule

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11.4 Weekly Checking

/ /

- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

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- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

/ /

- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

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- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

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- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

/ /

- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

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- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

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- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

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- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

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- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

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- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

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- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

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- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

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- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

/ /

- ☐ Check switch functions
☐ Check all the electrical wires
☐ Check electrical connections
☐ Check protection & alarm function

11. Maintenance Schedule



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|--|--|--|
| ☐ Check switch functions | ☐ Check switch functions | ☐ Check switch functions |
| ☐ Check all the electrical wires | ☐ Check all the electrical wires | ☐ Check all the electrical wires |
| ☐ Check electrical connections | ☐ Check electrical connections | ☐ Check electrical connections |
| ☐ Check protection & alarm function | ☐ Check protection & alarm function | ☐ Check protection & alarm function |

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|--|--|--|
| ☐ Check switch functions | ☐ Check switch functions | ☐ Check switch functions |
| ☐ Check all the electrical wires | ☐ Check all the electrical wires | ☐ Check all the electrical wires |
| ☐ Check electrical connections | ☐ Check electrical connections | ☐ Check electrical connections |
| ☐ Check protection & alarm function | ☐ Check protection & alarm function | ☐ Check protection & alarm function |

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| ☐ Check switch functions | ☐ Check switch functions | ☐ Check switch functions |
| ☐ Check all the electrical wires | ☐ Check all the electrical wires | ☐ Check all the electrical wires |
| ☐ Check electrical connections | ☐ Check electrical connections | ☐ Check electrical connections |
| ☐ Check protection & alarm function | ☐ Check protection & alarm function | ☐ Check protection & alarm function |

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|--|--|--|
| ☐ Check switch functions | ☐ Check switch functions | ☐ Check switch functions |
| ☐ Check all the electrical wires | ☐ Check all the electrical wires | ☐ Check all the electrical wires |
| ☐ Check electrical connections | ☐ Check electrical connections | ☐ Check electrical connections |
| ☐ Check protection & alarm function | ☐ Check protection & alarm function | ☐ Check protection & alarm function |

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|--|--|--|
| ☐ Check switch functions | ☐ Check switch functions | ☐ Check switch functions |
| ☐ Check all the electrical wires | ☐ Check all the electrical wires | ☐ Check all the electrical wires |
| ☐ Check electrical connections | ☐ Check electrical connections | ☐ Check electrical connections |
| ☐ Check protection & alarm function | ☐ Check protection & alarm function | ☐ Check protection & alarm function |

11. Maintenance Schedule



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|--|--|--|
| ☐ Check switch functions | ☐ Check switch functions | ☐ Check switch functions |
| ☐ Check all the electrical wires | ☐ Check all the electrical wires | ☐ Check all the electrical wires |
| ☐ Check electrical connections | ☐ Check electrical connections | ☐ Check electrical connections |
| ☐ Check protection & alarm function | ☐ Check protection & alarm function | ☐ Check protection & alarm function |

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|--|--|--|
| ☐ Check switch functions | ☐ Check switch functions | ☐ Check switch functions |
| ☐ Check all the electrical wires | ☐ Check all the electrical wires | ☐ Check all the electrical wires |
| ☐ Check electrical connections | ☐ Check electrical connections | ☐ Check electrical connections |
| ☐ Check protection & alarm function | ☐ Check protection & alarm function | ☐ Check protection & alarm function |

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|--|--|--|
| ☐ Check switch functions | ☐ Check switch functions | ☐ Check switch functions |
| ☐ Check all the electrical wires | ☐ Check all the electrical wires | ☐ Check all the electrical wires |
| ☐ Check electrical connections | ☐ Check electrical connections | ☐ Check electrical connections |
| ☐ Check protection & alarm function | ☐ Check protection & alarm function | ☐ Check protection & alarm function |

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|--|--|--|
| ☐ Check switch functions | ☐ Check switch functions | ☐ Check switch functions |
| ☐ Check all the electrical wires | ☐ Check all the electrical wires | ☐ Check all the electrical wires |
| ☐ Check electrical connections | ☐ Check electrical connections | ☐ Check electrical connections |
| ☐ Check protection & alarm function | ☐ Check protection & alarm function | ☐ Check protection & alarm function |

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|--|--|--|
| ☐ Check switch functions | ☐ Check switch functions | ☐ Check switch functions |
| ☐ Check all the electrical wires | ☐ Check all the electrical wires | ☐ Check all the electrical wires |
| ☐ Check electrical connections | ☐ Check electrical connections | ☐ Check electrical connections |
| ☐ Check protection & alarm function | ☐ Check protection & alarm function | ☐ Check protection & alarm function |

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11. Maintenance Schedule



- ☐ Check switch functions
- ☐ Check all the electrical wires
- ☐ Check electrical connections
- ☐ Check protection and alarm function
- ☐ Check refrigerant circulation pipe

- ☐ Check switch functions
- ☐ Check all the electrical wires
- ☐ Check electrical connections
- ☐ Check protection and alarm function
- ☐ Check refrigerant circulation pipe

- ☐ Check switch functions
- ☐ Check all the electrical wires
- ☐ Check electrical connections
- ☐ Check protection and alarm function
- ☐ Check refrigerant circulation pipe

- ☐ Check switch functions
- ☐ Check all the electrical wires
- ☐ Check electrical connections
- ☐ Check protection and alarm function
- ☐ Check refrigerant circulation pipe

- ☐ Check switch functions
- ☐ Check all the electrical wires
- ☐ Check electrical connections
- ☐ Check protection and alarm function
- ☐ Check refrigerant circulation pipe

11.6 Half-yearly Checking

/ /

- ☐ Check switch functions
- ☐ Check all the electrical wires
- ☐ Check electrical connections
- ☐ Check protection & alarm function
- ☐ Check refrigerant circulation pipe
- ☐ Check and clean the condenser and evaporator
- ☐ Check and clean the filter and expansion valve
- ☐ Check system performance

/ /

- ☐ Check switch functions
- ☐ Check all the electrical wires
- ☐ Check electrical connections
- ☐ Check protection & alarm function
- ☐ Check refrigerant circulation pipe
- ☐ Check and clean the condenser and evaporator
- ☐ Check and clean the filter and expansion valve
- ☐ Check system performance

/ /

- ☐ Check switch functions
- ☐ Check all the electrical wires
- ☐ Check electrical connections
- ☐ Check protection & alarm function
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Local Warranty Statement

1. Local warranty applies to the country of purchase only. Once the product is transited out of the country of purchase, this warranty is invalidated.
2. The warranty is only applicable to the original purchaser and in the country of purchase.
3. The warranty covers parts and labour only; and excludes freight and on-site call-out charges.
4. Your SHINI product is guaranteed against manufacturing defects for a period of twelve (12) months from the date of purchase locally unless stated otherwise.
5. The warranty shall immediately cease and become void if the product is found to have been modified or repaired by an unauthorized person.
6. The warranty is subjected to the following limitations and exclusions:
 - (a) Malfunctions or damages resulting from not complying with the recommended manner as outlined in our operation manual in relation with the application, installation, operation and maintenance.
 - (b) Defects from using wrong electrical supply, misuse or damage by negligence and abuse.
 - (c) Malfunctions or damages resulting from natural disaster, fire, civil unrest and/or accidents.
 - (d) Wear parts and accessories.
7. If your SHINI product is not the same place of purchase, you can still send the product to your local SHINI's branch or distributor for servicing at your full costs according to the individual country service policy.
8. If there is no SHINI's branch or distributor in your country, although obviously there is no warranty covered by SHINI, you may direct contact SHINI requesting for the supply of replacement parts at your full costs.
9. All the electricity installation ,connection and maintenance should be carried out by the specialists or contact SHINI or its local agents.

10. The warranty is deemed valid only if the followings are completely filled in:

Purchaser's name and address: _____

Your supplier's name and address: _____

(company stamp)

Product model: _____ Serial number: _____

Invoice Number: _____ Date of purchase: _____

Please send all queries and comments to:

Shini Plastics Technologies, Inc.

Corporate Product & Marketing Center

9 Shini Road, Dalang, Dongguan, Guangdong, China

Tel: (0769) 8331 3588 Fax: (0769) 8331 3589

Corporate e-mail: shini@shini.com

Corporate internet: www.shini.com