COOLING EQUIPMENT

KINTEN

前瞻/專精/環保/高精度

科技節能技術的開創先驅

精準高效加工的最佳夥伴

# Contents

# 1. General Considerations

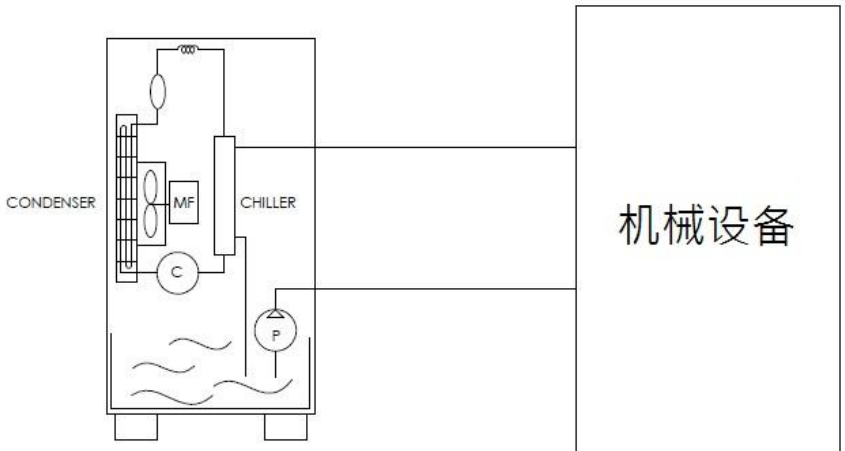
Thank you for using our cooler. In order to ensure the right operation and safety, please read the instructions carefully before use this cooler

- Keep cooler in clean, well-ventilated and well-lit places
- Do not locate Cooler in places with potential dangers, e.g. damp, rain, explosions, dust, etc.
- For the wire cables, please comply with the requirements of current capacity shown on the product plate and use secure and good quality ones.
- Cooler operators should either manufacturer or well-trained employees.
- Do not put anything on or surroundings of the cooler to avoid malfunction.
- Do not put anything on the cooler to eliminate the possibility of machine damage or personal injury caused by dropping in the machine accidently.
- Switch off the power ahead of maintenance or repair..
- For using open flame welding in maintenance, please keep the cooler dry or away from oil and gas.
- Well-ventilated is essential for safety (working in closed space might cause suffocation) while refrigerant refilled or discharged.

# 2. Setting considerations

The cooler designs for precision machinery. It helps the precision machinery which has best operation during the precision water temperature control.

Cooler arrange diagram（Pic. A）




（Pic. A）

## Transport considerations

- Don’t keep cooler upside down or tilt during moving.
- Avoid bump damage during moving cooler.
- Take safety procedures to prevent personal injury during moving cooler.
- Remove power plug before move cooler.
- Empty cooling liquid before move cooler.
- Using vehicles or forklifts to move cooler, the cooler should be in balance, not tilt or upside down. (Pic. B)

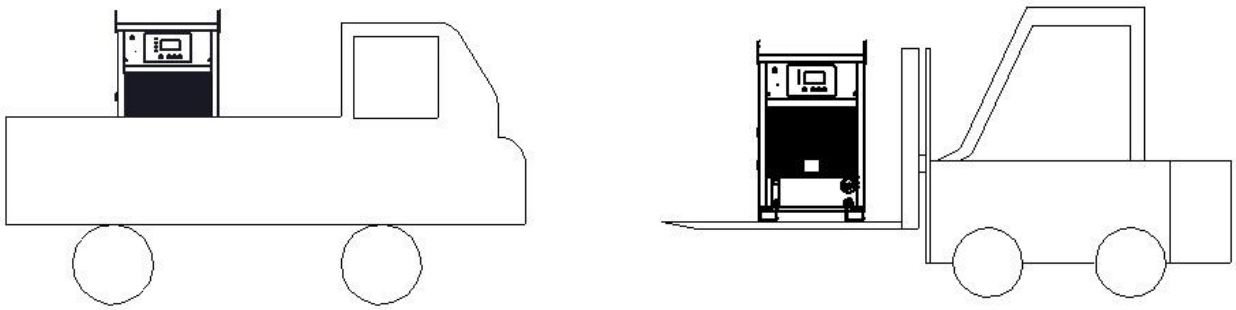
- Using truck-mounted crane or crane on-site to move cooler, please pay attention to the followings :

  (1) Keep the cooler lift balance

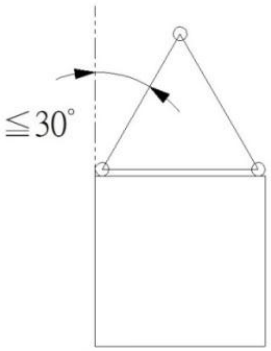
  (2) Use adequate slings and wire ropes to bear the weight of cooler

  (3) When slings and cranes are in operation, staff should keep a certain distance for safety.

  (4)Lifting cooler, the angle of slings and crane wire ropes should keep less than or equal to 30° (Pic. C)



（Pic. B）

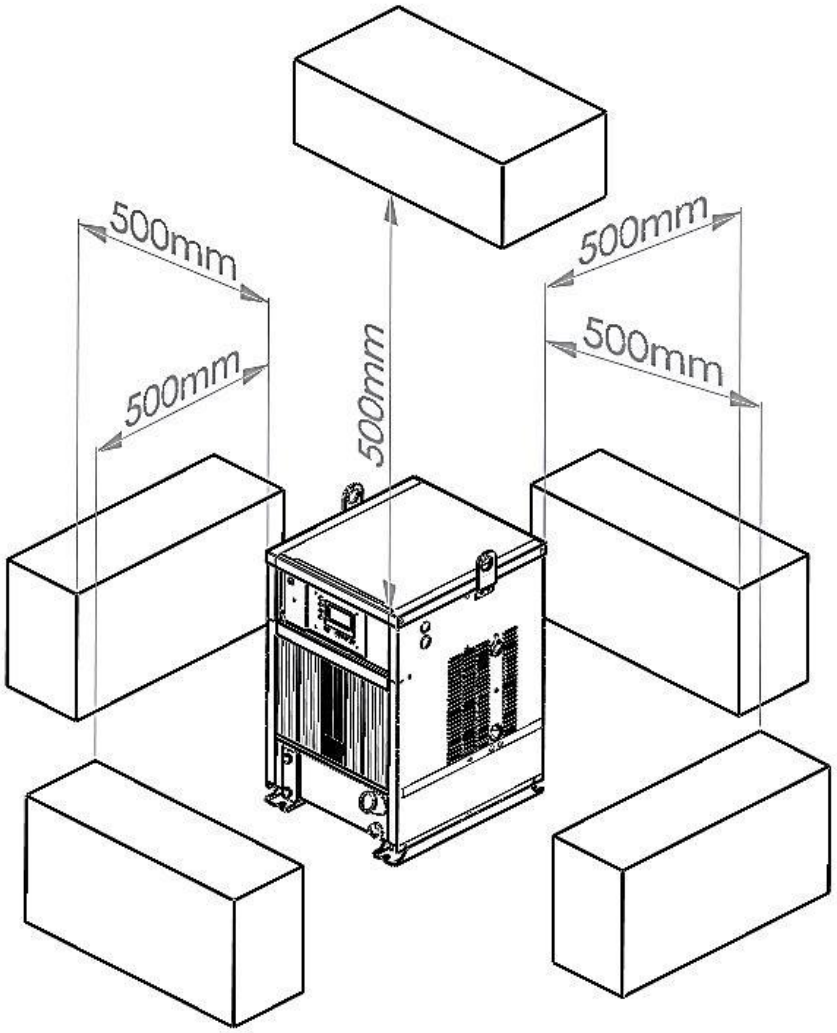



（Pic. C）

# 3. Installation

## Location

- Cooler should be installed in a clean and well-ventilated environment.
- Cooler should not be installed in a heat-generating place.
- Cooler should not be installed in a place with dust, oil mist, combustible, corrosive substances.
- Cooler should not be installed in a place above 40℃
- Cooler should be installed in a place with well-ventilation. (Pic. D)




（Pic. D）

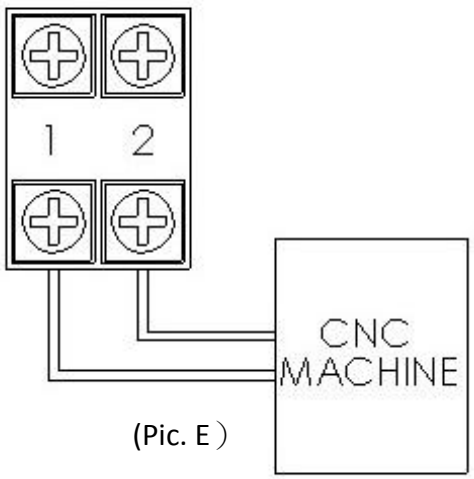
## Electrical wiring installation

- Power should be switched off before any wiring installation is conducted.
- The specifications of power supply and voltage should meet the requirements of cooler.
- Wiring installation technicians should have licenses and comply with safety standards.
- The safety switch should be installed on the front end of cooler's wiring.
- For safety concern, the ground wire should be connected.
- Remote control and Alarm signal wiring:

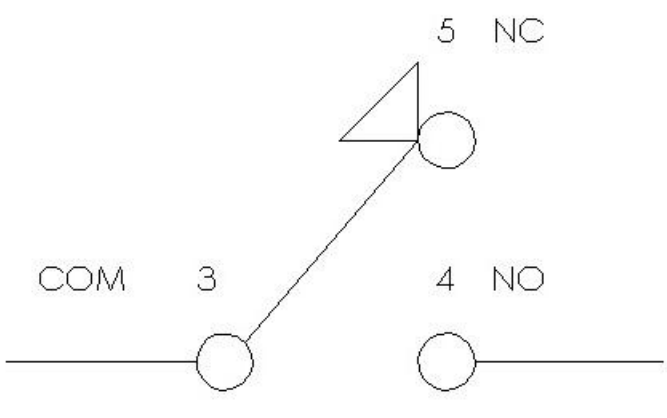
(1). Remote control wiring:

Machinery equipment controls the Cooler. Please take off the wires from terminal 1 and 2 to connect on machinery equipment controller. (Pic. E）

(2). Alarm signal wiring：To deliver the alarm signal from cooler to machinery equipment. Please connect the cooler terminal 3, 4, 5 wires. 3、4 is normally open contact(disconnect)；3、5 is normally close contact (connect)。(Pic. F)




(Pic. E）




(Pic. F)

## Piping requirements

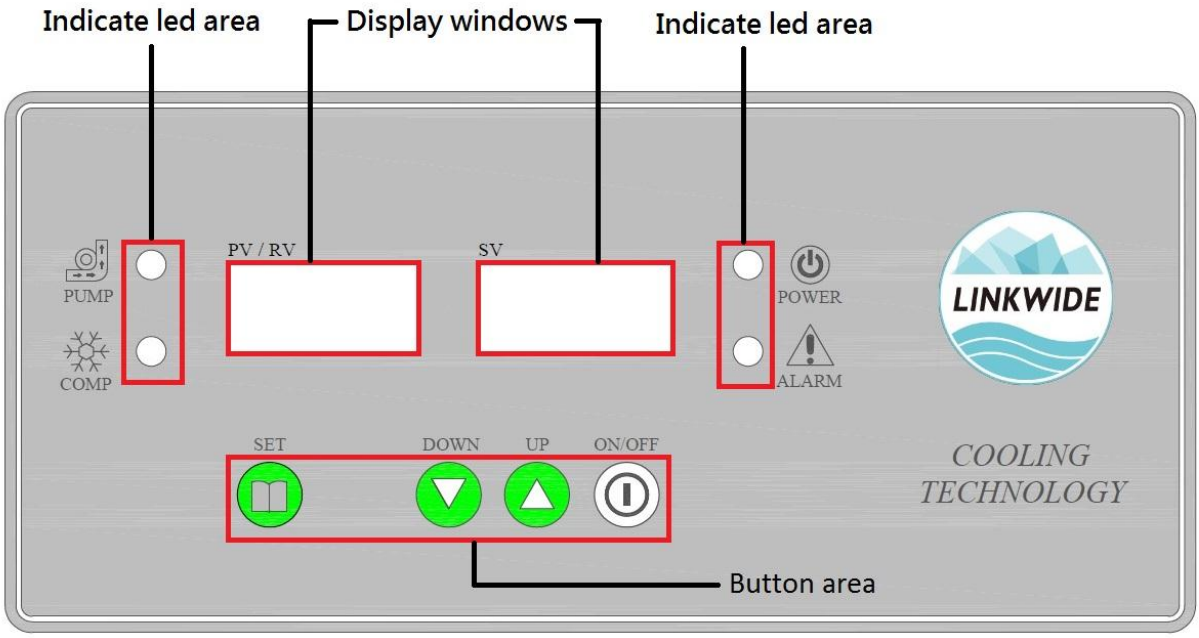
- The diameters of cooler’s piping should not smaller than external ones for connection
- The length of piping should be appropriate to avoid fluid flow and pressure loss
- Less pipe-bending and valve used to reduce the fluid flow and pressure loss.
- High pressure- resistant and flexible hoses are suggested to use, not cotton ones.
- Keep dirt or iron filings away from the pipelines during pipe installation to prevent the malfunction of heat exchanger or pump.

# 4. Operation

## Check before use

- Right and suitable location for cooler installation.
- The tank of Cooler or machinery equipment has Enough liquid.
- Correct external pipe connected for cooler, without leakage.
- Right power supply and voltage for cooler.
- Terminals of input power, remote control and alarm sign are firmly attached.

## The describtion of two monitor operation




➢ Indicator leds

- POWER：Power indicator led
- PUMP：Pump indicator operation led
- COMP：Compressor indicator operation led
- ALARM：Abnormal alarm indicator led

➢ Button

- ON/OFF：Cooler start/stop switch;
  Switch option / confirm storage button
- UP：Set the parameter values up;
  Temperature setting mode button
- DOWN：Set the parameter values down;
- SET：Parameter enter button ; Confirm parameters set

## Operation

- Subsequent to external power generated, the monitor show software edition. The light of power glows and show temperature after 3 seconds. It means the cooler power on and waiting for operation
- Cooler works after press ON/OFF button. The light of PUMP grows and shows temp.
- Press △(UP) key for 3 seconds to enter setting of temp., then the SV numerical is shining. Press △(UP) ▽(DOWN) to set liquid temp. Press (SET) key to store setting value. Cooler will trigger / stop the compressor based on the set temperature to keep the liquid temperature constant.
- The compressor works when the light of COMP shines; The compressor stop works when the light of COMP went out
- Temperature control：

  ◆Fixed-temp. type：15℃～40℃ ◆Different-temp. type：-10℃～10℃
- Temperature accuracy：±1.5℃
- The light of ALARM shines when the cooler is unusual, the monitor shows malfunction code
- Please see 6. Troubleshooting to resolve alarm
- Repeatedly reboot/ shut down will cause the damage to cooler. When the cooler is down, take 3-minute-break to reboot.
- Abnormal vibration or loud sound during cooler running, check pipeline whether some air within and exhaust it
- The monitor of machinery equipment shows cooler unusual but cooler doesn’t have any alarm. Please check the Alarm signal wiring between cooler and machinery equipment is correct or not. (see pic. E and pic. F)

# User parameter setting code：

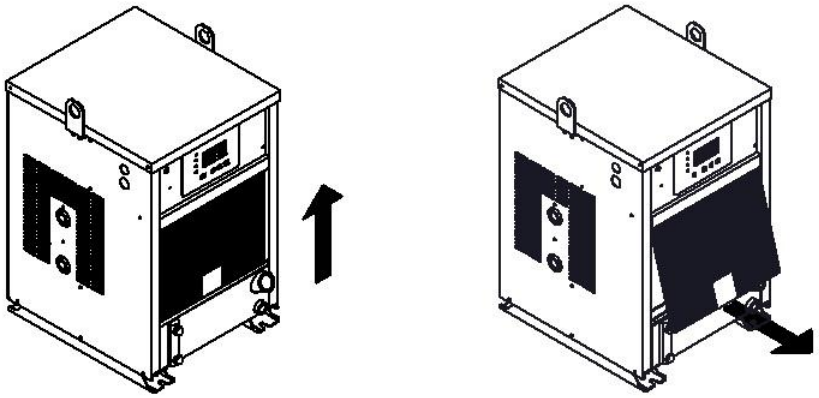
| Code level 1 | Code level 2 | Code Name | Lower limit value | Top limit value | Maker setting value | Unit | Introductions |
|---|---|---|---|---|---|---|---|
| U1 | | User Setting | - | - | - | - | |
| | U10 | Fixed-temp. setting | 15 | 40 | 40.0 | ℃ | |
| | U11 | Different temp. setting | -10 | 10 | 10 | ℃ | |
| | U12 | Plus temp. control DF setting | 0 | 20 | 1.5 | ℃ | - |
| | | Minus temp. control DF setting | 0 | 20 | 1.5 | ℃ | - |
| | U13 | Delay Alarm time | 0 | 240 | 10 | MIN | |
| | U14 | IP address setting | 1 | 64 | 1 | - | RS-485IP address setting |
| | U15 | Fix/different temp. setting | 0 | 1 | 0 | - | 0=Fix-temp. 1=different temp. |
| | U16 | Manual/Auto setting | 0 | 1 | 0 | - | 0=Manual turn on<br>1=Auto turn on |
| | U17 | Shutdown alarm setting | 0 | 1 | 0 | - | 0=NC 1=NO |
| U2 | | Search temp. | - | - | - | - | Search all sensor temp. |
| | U20 | Liquid temp. | - | - | - | ℃ | Liquid sensor temp. |
| | U21 | Environment temp. | - | - | - | ℃ | Environment sensor temp. |
| | U22 | Deice temp. | - | - | - | ℃ | Deice sensor temp. |
| | U23 | Heater temp. | - | - | - | ℃ | Heater sensor temp. |
| | U24 | Condenser temp. | - | - | - | ℃ | Condenser sensor temp. |
| | U25 | PCB temp. | - | - | - | ℃ | PCB sensor temp. |
| U3 | | Search Ampere | - | - | - | - | Search Ampere of component operation |
| | U30 | Compressor operation ampere | - | - | - | A | |
| | U31 | Heater operation ampere | - | - | - | A | |
| | U32 | Pump operation ampere | - | - | - | A | |
| | U33 | Fan operation ampere | - | - | - | A | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| U4 | | Search time | - | - | - | - | Search the total operation time of cooler |
| | U40 | Compressor operation time | 0 | 59 | - | Min | Total operation time of compressor |
| | U41 | Compressor operation time | 0 | 999 | - | Hour | Total operation time of compressor |
| U5 | | History alarm list | - | - | - | - | Search recently nine alarms list |
| | U50 | History alarm list no.0 | - | - | - | - | alarm code |
| | U51 | History alarm list no.1 | - | - | - | - | alarm code |
| | U52 | History alarm list no.2 | - | - | - | - | alarm code |
| | U53 | History alarm list no.3 | - | - | - | - | alarm code |
| | U54 | History alarm list no.4 | - | - | - | - | alarm code |
| | U55 | History alarm list no.5 | - | - | - | - | alarm code |
| | U56 | History alarm list no.6 | - | - | - | - | alarm code |
| | U57 | History alarm list no.7 | - | - | - | - | alarm code |
| | U58 | History alarm list no.8 | - | - | - | - | alarm code |
| | U59 | History alarm list no.9 | - | - | - | - | alarm code |
| U6 | | Edition information | - | - | - | - | Recently Software edition |
| | U60 | Monitor software edition | - | - | - | - | |
| | U61 | PCB software edition | - | - | - | - | |

# 5. Maintenance Considerations

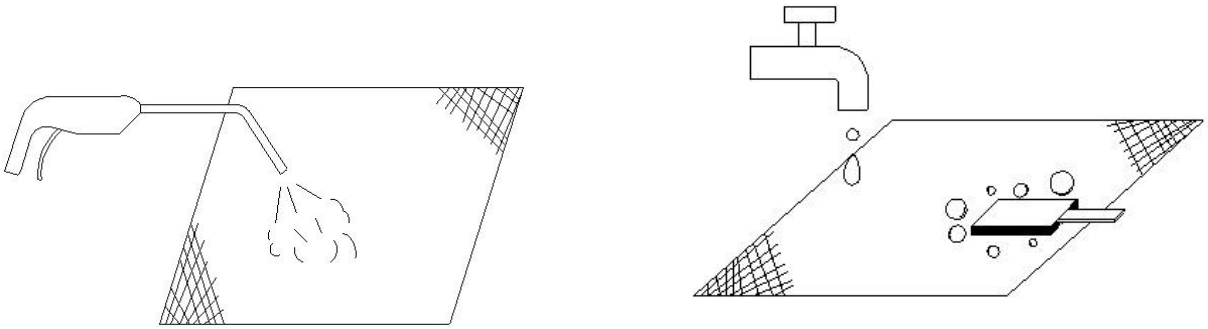
- Before carrying out cooler maintenance, power supply should be turned off and take safety precautions
- Cooler should be installed in well-ventilated places. When cooler installed in a place above 40℃, it will reduce the efficiency of cooling and cause damage to cooler.
- Neutral detergent or high quality of soaps should be used for cleaning the surface of cooler. Do not use acid solvent to damage the paint.
- Avoid detergent splashing over electrical components, clean the electrical components with damp clean cloth.
- Remove the air filter (Pic. g) and check whether condenser is dusted or covered with grease. When the clogged on the heat sink of the condenser is found, use brush or air spray gun to clean it. For severe grease, use neutral detergent or notify manufacturer to do the cleaning maintenance.
- Cleaning air filter once per week, use air spray gun or brush, water to clean dust, grease, etc.; (Pic. h) for severe grease, use neutral detergent. After cleaning, let it dry and put it back.
- When the filter completely covered with grease, new one is suggested for replacement. Otherwise this might have negative impact on heat sink of condenser.

- When a filter is installed on the side of inlet, clean it once a week.
- Cooler should be installed or placed on a flat surface, not at a tilt to avoid anomalies.



（Pic. g） ▲

（Pic. h） ▼



# 6. Troubleshooting

Cooler troubleshooting or maintenance should be operated under safety regulation and by those who are well-trained or with professional license.

| Code | | Reason | Troubleshooting |
|---|---|---|---|
| E01 | PCB sensor malfunction | (1). PCB sensor is disconnect or defective contact<br>(2). Temp. controller is unusual | (1). Check whether the sensor is disconnection<br>(2). Check whether malfunction on the sensor |
| E02 | Water sensor unusual | (1). Water sensor is disconnection or defective contact<br>(2). Temp. controller is unusual | (1). Check whether the sensor is disconnection<br>(2). Check whether malfunction on the sensor |
| E03 | Environment sensor malfunction | (1). Room sensor is disconnect or defective contact<br>(2). Temp. controller is unusual | (1). Check whether the sensor is disconnection<br>(2). Check whether malfunction on the sensor |
| E04 | Deice sensor malfunction | (1). Deice sensor is disconnect or defective contact<br>(2). Temp. controller is unusual | (1). Check whether the sensor is disconnection<br>(2). Check whether malfunction on the sensor |
| E05 | Heater sensor malfunction | (1). Heater sensor is disconnect or defective contact<br>(2). Temp. controller is unusual | (1). Check whether the sensor is disconnection<br>(2). Check whether malfunction on the sensor |
| E06 | Condenser sensor malfunction | (1). Condenser sensor is disconnect or defective contact<br>(2). Temp. controller is unusual | (1). Check whether the sensor is disconnection<br>(2). Check whether malfunction on the sensor |
| E07 | Compressor Ampere value unusual | (1). Compressor Ampere setting mistake<br>(2). Check whether unusual on the compressor | (1). Reset compressor Ampere value<br>(2). Check whether malfunction on the compressor |
| E08 | Heater Ampere unusual | (1). Heater Ampere setting mistake<br>(2). Heater unusual | (1). Reset heater Ampere value<br>(2). Check whether malfunction on the heater |
| E09 | Pump Ampere unusual | (1). Pump Ampere setting mistake<br>(2). Pump unusual | (1). Reset pump Ampere value<br>(2). Check whether malfunction on the pump |

| | | | |
|---|---|---|---|
| E10 | Fan Ampere malfunction | (1). Fan Ampere setting mistake<br>(2). Fan motor unusual | (1). Reset fan Ampere value<br>(2). Check whether malfunction on the fan motor |
| E11 | 3 phase power source unusual | (1). R、S、T disconnection<br>(2). R、S、T order mistake | (1). Check whether power and voltage are normal<br>(2). Check R, S, T whether correct connection |
| E13 | Refrigerant high pressure unusual alarm | (1). Filter is dirty<br>(2). Condenser is dirty<br>(3). Cooler is in the bad-ventilated environment<br>(4). Refrigerant pressure switch unusual<br>(5). Fan stop working or fall out<br>(6). Compressor unusual | (1). Clean filter<br>(2). Clean the oil mist and dust on condenser<br>(3). Move cooler to a place with well-ventilation<br>(4). Change new refrigerant pressure switch<br>(5). Lock tight blade or change new motor<br>(6). Check whether malfunction on the compressor |
| E14 | Refrigerant low pressure unusual | (1). Refrigerant is not enough<br>(2). Refrigerant pressure switch malfunction<br>(3). Compressor unusual | (1). Check whether leak on refrigerant pipe<br>(2). Change refrigerant pressure switch<br>(3). Check whether malfunction on the compressor |
| E15 | PCB malfunction | (1). PCB unusual | (1). Check or change PCB |
| E17 | Deice low temp. unusual | (1). Room Temp. too low<br>(2). Deice sensor unusual | (3). Check whether the room temp. is too low<br>(4). Check whether malfunction on the deice sensor |
| E18 | Low water temp. alarm | (1). Water temp. Room temp. is too low<br>(2). Water sensor unusual<br>(3). Temp. controller unusual | (1). Check whether the liquid temperature and the room temperature are too low<br>(2). Check whether malfunction on the water sensor<br>(3). Check whether malfunction on the temperature controller |

| | | | |
|---|---|---|---|
| E19 | High water temp. unusual | (1). Water temp. is too high<br>(2). Water sensor unusual<br>(3). Cooler capacity is not enough<br>(4). Refrigeration system unusual | (1). Switch off the machine to let the liquid temperature cool down to tolerance range and restart it.<br>(2). Replace water sensor<br>(3). Replace with a large capacity cooling machine<br>(4). Check whether the refrigerant pipe is leaking |
| E20 | Heater high temp. unusual | (1). Liquid sensor unusual<br>(2). Temp. controller unusual | (1). Check whether malfunction of the liquid temp.<br>(2). Check whether malfunction on the temperature controller |
| E21 | Condenser high temp. unusual | (1). Filter is dirty<br>(2). Condenser is too dirty<br>(3). Cooling environment is not good<br>(4). Condenser malfunction<br>(5). Fan shuts down or drop off<br>(6). Compressor unusual | (1). Clean filter<br>(2). Clean the dust and oil on the condenser<br>(3). Cooler should be installed in a place with well-ventilation.<br>(4). Change condenser<br>(5). Lock tight blade or change Fan<br>(6). Check whether malfunction of the compressor |
| E23 | Liquid level insufficient alarm | (1). Liquid insufficient of the cooler tank | (1). Add cooling liquid to the normal level in the tank |
| E24 | Water pressure unusual | (1). Flow too low of water no cycle<br>(2). Water pressure switch unusual<br>(3). Pump unusual | (1). Check whether enough liquid in the tank<br>(2). Too thin, too long or too flat pipe can make damage<br>(3). Check whether malfunction on the water pressure switch<br>(4). Check whether has air in the water pipe |
| E26 | PCB temp. too high | (1). PCB sensor disconnection or defective contact<br>(2). PCB temp. is too high | (1). Check whether the sensor is disconnection<br>(2). Switch off the machine to let the PCB temp. cool down to tolerance range and restart it |
| E32 | PCB communication unusual | (1). PCB circuit unusual | (1). Check PCB circuit |

# KINTEN

PRECISE TECHNOLOGY

OIL Cooler　WATER Cooler　AIR Conditioner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