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## 1 - General information

### 1.1 To user



Please read the manual thoroughly before operating the machine.

Please keep your manual, receipt, QC pass and warranty card for further use.

Don't spoil any label on the machine so that you can enjoy our service.

Please contact your local dealer or our service center if you need any further help.

This manual is only apply in our standard model, only reference for customized model

### 1.2 Unpacking

Your chiller is delivered in special carton package; please reserve the carton and other packing stuff before you can make sure chiller is running properly. If the chiller doesn't work, the chiller could be replaced for a new one within 7 days after you receive the chiller. If you have found any damage in the delivery, please contact logistic company and your local dealer for submitting damage claim.



This sign marked all Safety related chapter in this manual, the sign marked on the machine is reminding for safety operation.



This sign means high voltage danger.

Please read all the instructions on safety notice and operation carefully.

## 2 - General Information

### 2.1 Content

Laser chiller operators manual

### 2.2 Product introduction

#### 2.2.1 Type Code Explanation

D IC 020 A S H-L A 1-F AA-E 01

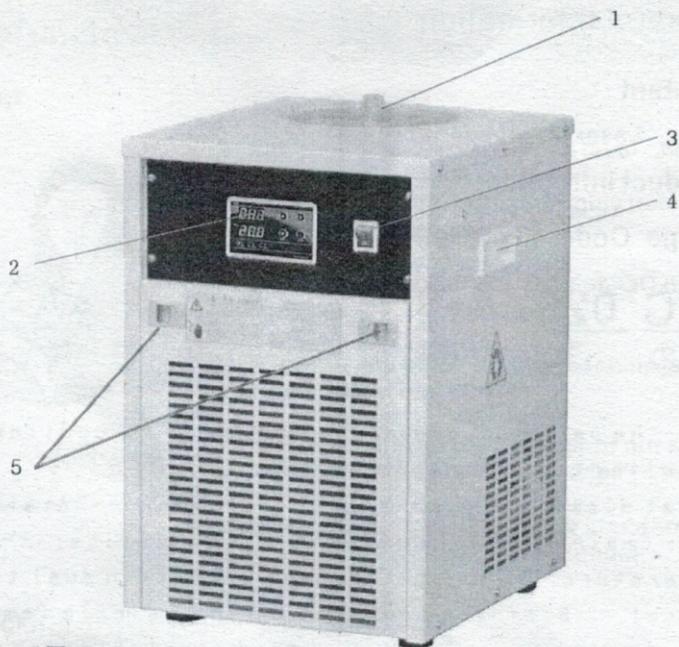
(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)

- ① D: the series product of company      ② cooling machine
- ③ cooling capacity code---004, 005, 006
- ④ heat dissipation characteristics-----A:air cooled W:  
water cooled    ⑤ Cold water characteristics:-----D: dual  
Temperature. & Control    H:high precision dual temp.  
control    S:single temperature    B:single temperature  
high precision    ⑥ water pump characteristics:-----L:  
low lift    H:high lift    S:super high lift    N:no lift
- ⑦ Structure of application code    L:laser water chiller  
I:industry water chiller    ⑧ Product version: A: the 1st  
generation    B: the 2nd generation    ⑨ Refrigerant Type :  
1: R134a    2:R22    3:R404A    4: R407C    5: R410A    ⑩ Power  
supply: A:220V~/50Hz    F:380V/3N~/50Hz (sale in domestic  
market)
- ⑪ Specific description of customizing specification
- ⑫ Sales region code: C: sale in domestic market
- ⑬ Non-standard change code ----- 01, 02, 03....

#### 2.2.2 Product Characteristics

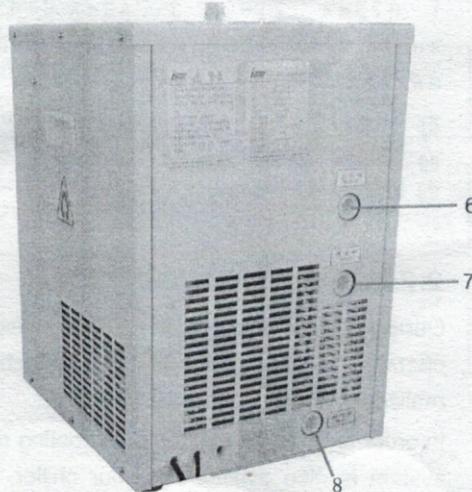
Our chillers are equipped with digital display electronic temp. Controller, one key operation for varies settings and malfunction prompt function, other steps will be realized by memories automatically.

In order to optimize and improve cooling efficiency and performance, adjustable cooling system is also available for our chiller, which outstandingly prolonged the life time of the compressor and enhanced temp. Control Stability.



**Front/Top**

- 1.Water tank Cover
- 2.Temp. Controller
- 3.Switch with light
- 4.Handle
- 5.Lock catch



**Back**

- 6.Water outlet
- 7.Water inlet
- 8.Drain

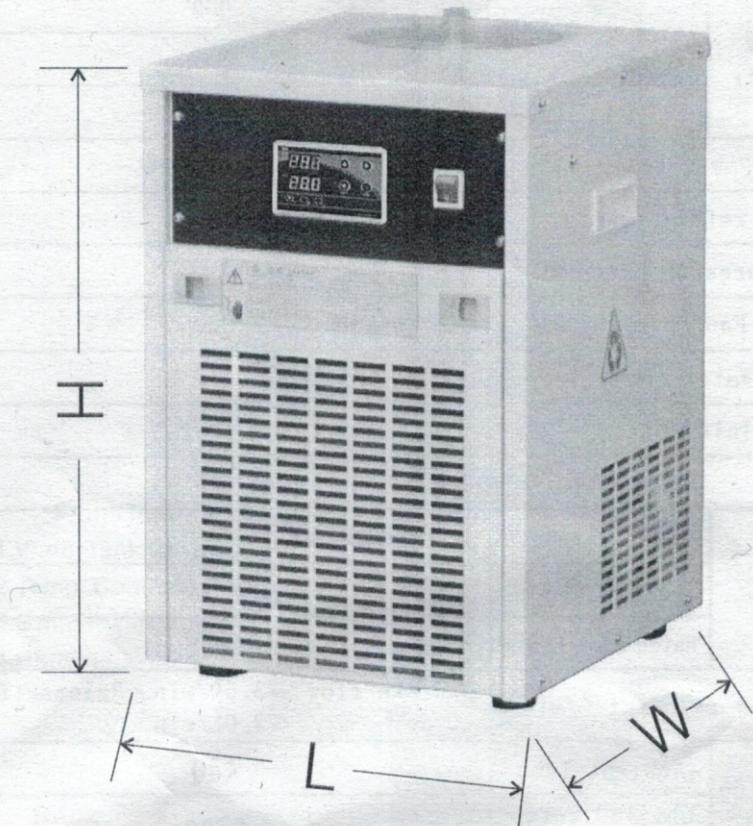
## 2.3 Technical Specifications

Model		DIC002ASL-LA1-AAA-C08
cooling capacity	W	600
	Btu/h	2064
	Kcal/h	516
Power supply		220V~/50Hz
refrigerant		R134a
compressor power HP		1/4
Fan Power W		36
Water tank L		3.2
Inlet/Outlet		Rp½ (DN15)
Drain		Rp½ (DN15)
pump	Power of pump W	91
	Lift Range m	4~10
	Rated Flow L/min	16.7
Flow work point L/min		Operate flow $\geq 3.5\text{L}/\text{min}$ , Release flow $\leq 2.0\text{L}/\text{min}$ .
operation range	Ambient Temp	<40
	Chilled Water Temp	8~30
Net weight Kg		30
L×W×H (mm)		350×420×500

NOTE: Water temp's min. stability is  $\pm 0.2^\circ\text{C}$ . The max. ambient temp is  $40^\circ\text{C}$  and temp setting range is  $8\sim 25^\circ\text{C}$ . Polypropylene water filter with its element diameter at  $5\mu\text{m}$ .

Nominal condition: ambient temp  $30^\circ\text{C}$  and chilled water temp  $22^\circ\text{C}$ .

## 2.4 Dimensions



Note: No filter

Model	Dimensions	L (mm)	W (mm)	H (mm)
DIC002ASL-LA1-AAA-C08		350	420	550

### 3 - Installation and start up

#### 3.1 Safety Notes

- ①Please ask our dealer or professional staff to install the chiller  
The person who installs the chiller must be certified by government recognized licensor, if the chiller was not installed properly, water leakage, fire, and wound, electric shock may occur.
- ②Take proper measures to prevent suffocation caused by refrigerant leakage  
If the machine is installed indoor, ventilation well could avoid of suffocation hazard caused by gas leakage.
- ③Make sure the machine is properly grounded.  
Electric shock may occur if the machine is installed without grounded.
- ④Don't stretch anything into the equipment.  
The high speed fan will be damaged by foreign material.
- ⑤In case of abnormal running appear, cut off the power, contact our local dealer for instructions.  
Fire hazard, electric shock etc. might occur if keep running the machine under abnormal conditions.
- ⑥Don't operate the machine with wet hands.  
Electric shock may occur.
- ⑦Don't repair the chiller by yourself  
In safety sake, please ask our dealer or a professional staff to repair it.
- ⑧Don't install the chiller in a flammable and explosive place
- ⑨Neutral liquid and liquid whose gravity and heat transmission are similar with water are required, in order to protect the water pump, water with solid particles are not allowed.
- ⑩when replace the liquid please note the pump can't be run without water.
- ⑪In cold areas, proper anti-freezing measures should be done.



Warning: please cut off the power before installation!!

### 3.2 Site requirements:

Ambient temperature and relative humidity (RH)

Our chiller suitable for install indoors, ambient temp. from 5°C to 35°C, RH less than 80% (No condensation).

#### Location

The chiller should be installed on solid horizontal surface, the closer to the laser equipment, the better cooling performance will achieve; keep the chiller off the heating source at least 4inch (1.4meters), such as heating tube and boiler.

Please install the chiller at place where drainage system is available in order to keep the installation place clean in case of any leakage occurs, please don't install the chiller in erosive gas, humidity, dusty places or indoors with high temp..

Our chiller is equipped with wheel, which makes it easier for installation and operation; the front wheel could be locked to secure the unit. Avoid voltage drops by using properly grounded power outlets wired with 14 gauges or larger diameter wire. If possible, be close to the power distribution panel. Using an extension cord may cause low line voltage problems, the voltage loss should be with 10% from the extension cord if this is inevitable.

The heating discharged by the fan is 1.4 times than the rated cooling capacity, so the air-draft and air discharge side shouldn't be too close to wall. The air discharge side should reserve at least 0.8m, the installation site should ventilate well, the air-draft and air discharge volume of the site should be a bit large than the chiller, or use air-condition with larger cooling capacity than the heat discharge of the chiller to cool the installation site.

### 3.3 Power connection

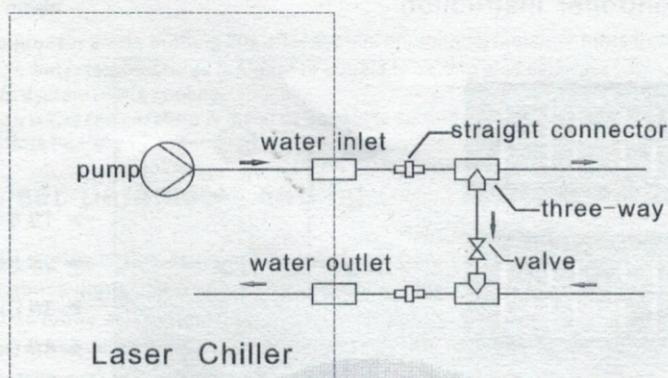
Make sure the power wire rightly connected and current, frequency should be match with the requirements marked on the label which was pasted on the back of the chiller.

### 3.4 Connection accessories

#### Process pipeline

There are 2 inner thread interfaces for water pipe connection and water inlet and outlet adapter is designed for connecting the accessories and working pipeline.

## Connecting of water bypass and accessories for water circulation.



### 3.5 Water supplement

Please add clean liquid in the water tank, the water level should above the coil, then cover the water tank.

### 3.6 Closed loop system or bypass setting

Please connect the chiller with peripheral equipment, the liquid flow direction is determined by the way of connecting; liquid was pumped into chiller from outlet and pumped out from water outlet.

### 3.7 Start up

#### Cooling fluid

##### Choose proper cooling fluid

Notice: Cooling fluid which is safe, healthy, environment-friendly and compliance with our chiller is necessary, fluid which is erosive and inflammable is not allowed.



Warning: erosive and inflammable liquid is not allowed!!!



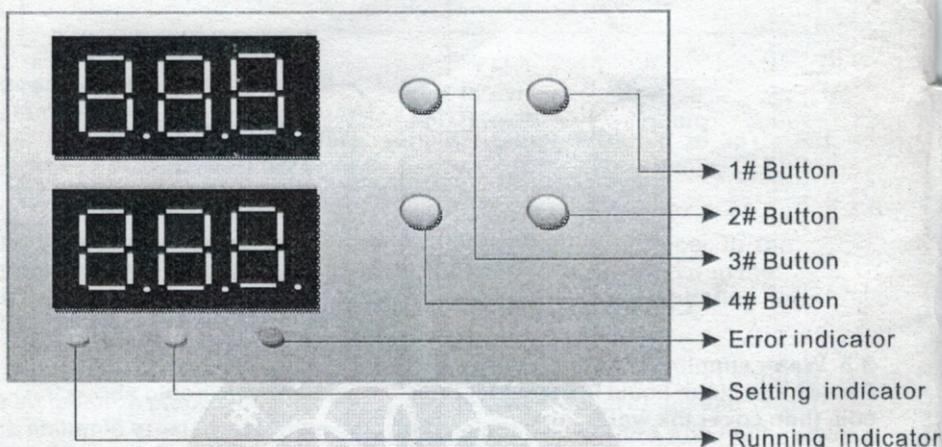
Warning: Anti-freezing liquid is necessary for operation under 8°C



Warning: Power off button can only turn the machine into standby mode.

## 4 - Operation

### 4.1 Temp. Controller instruction



#### Button instruction

- 1# button: setting (Press to enter setting mode)
- 2# button: On/Off (Exit setting, system On/Off)
- 3# button: Value increase (Press to increase setting value, keep pressing for continuous increase)
- 4# button: Value decrease (Press to decrease setting value, keep pressing for continuous decrease).

#### Indicator instruction

- Running indicator: indicator flashes when system enters running status, the indicator is on when compressor starts running.
- Setting indicator: indicator flashes when system enters setting status
- Error indicator: indicator flashes when system malfunctions.
- 3 digital nixie tubes: physical temperature value for above window; setting temperature value for below window.

#### Running mode

System will automatically detect setting values of previous setting, running indicator flashes after power on

Cooling only

When water temperatures is higher or equals to setting plus calibrate value, compressor starts working 20s after system on, running indicator turns from flash status to on.

## LASER CHILLER OPERATORS MANUAL

When water temperatures is lower or equals to setting temperature value, the compressor stop working, running indicator changes from on status to flash.

Compressor protection period: Compressor will restart after 60 seconds between each stop.

### Bypass mode

Compressor starts working 20s after system on, running indicator turns from flash status to on.

When water temperatures is higher or equals to setting plus calibrate value, bypass value is not working, system starts cooling.

When water temperature is lower or equals to setting temperature value, bypass valve starts, system starts heating.

## User parameter setting

Press setting button 3seconds to enter user parameter setting after system power on detect, above digital nixie tubes showing code, blow digital nixie tubes show setting value, both nixie tubes and setting indicators flashes at the same time; press setting button to choose, press value increase and decrease button to modify setting value.

Code	Menu	Setting range	Default setting
Dc	Temperature setting	-19. 9~70°C	20. 0°C
DH	Temperature setting	(0, 1 bypass) or 1~5°C	2. 0°C

## Error alarming

SN	ERROR CODE	Error description	Normal	Malfunction	Normal & error output(Normal/error)	
					Compressor	Alarm relay
1	E01	Sensor error	Normal	Open circuit or short circuit	1/0	1/0
2	E02	High temp.	T < THset	T > THset	1/1	1/0
3	E03	Low temp.	T > THset	T < THset	1/0	1/0
4	E04	System pressure	Normal close	Normal open	1/0	1/0
5	E05	Flow	Normal close	Normal open	1/0	1/0
6	E06	Liquid level	Normal close	Normal open	1/1	1/0

## 4.2 Solution for no error codes display

### I . Insufficiency cooling:

- ① Please check whether the condenser radiator and air filter is dirty
- ② Whether the temp. of the installation site is too high and ventilation condition is bad
- ③ Slightly refrigerant leakage(E3 error has been reported yet)
- ④ Whether the chiller has exceeded its designed lifetime, replace a new compressor might be a solution

### II. No water flow or low water flow:

Please check below:

Whether there's air inside the water pump, check whether the filter under the water tank is blocked, whether the pump capacitor is working and the pump relay is closed.

## 5 - Maintenances

Required periodic maintenance

### 5.1 Condenser, vent hole, air filter

Condenser, vent hole, air filter should keep clean and periodically inspect in order to optimize the performance of cooling

### 5.2 Pure water filter

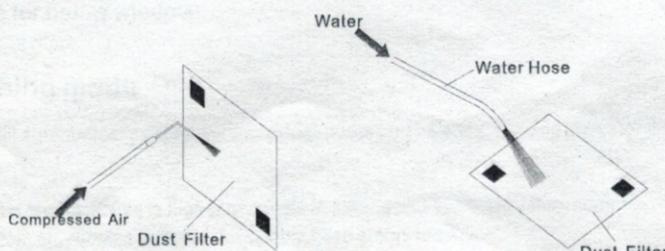
Please rinse and replace the filter periodically.

### 5.3 Liquid level

Please check the water level periodically, the water level should be above the coil, water supplement is necessary if the water level is lower than the coil; please replace the water frequently based on the actual water condition. If the water flow is not normal, please press the red button on the water filter to discharge the air inside the water circuit. Please check whether the back water circuit is leakage and the water level is lower, when there're bubbles in the soft tube and back water inlet.

### 5.4 Clean the air filter periodically

The air filter could be removed easily from both sides, use gentle detergent to remove the dust, clean the filter with clean water, and fix the filter back after it's dry.



View of Dust Filter cleaning

## 6 - Trouble shooting



Warning: For qualified staff only, danger voltage exists after power on!

### 6.1 System not working (No cooling or pump not working)

Whether the power wire is connected to the socket

Whether the power is ready

Whether the power switch on the panel is on

### 6.2 Pump not working properly

Check water level, whether the pump is pumping water or not.

Check whether the motor of the pump is working

Check whether the recirculation system is blocked

### 6.3 Pump insufficient pumping

Please check whether the voltage is too low

Please check whether the diameter of the pipe is too small

Please check whether the fluid viscosity is too high

Please check the connection tube carefully

### 6.4 insufficient cooling or No cooling

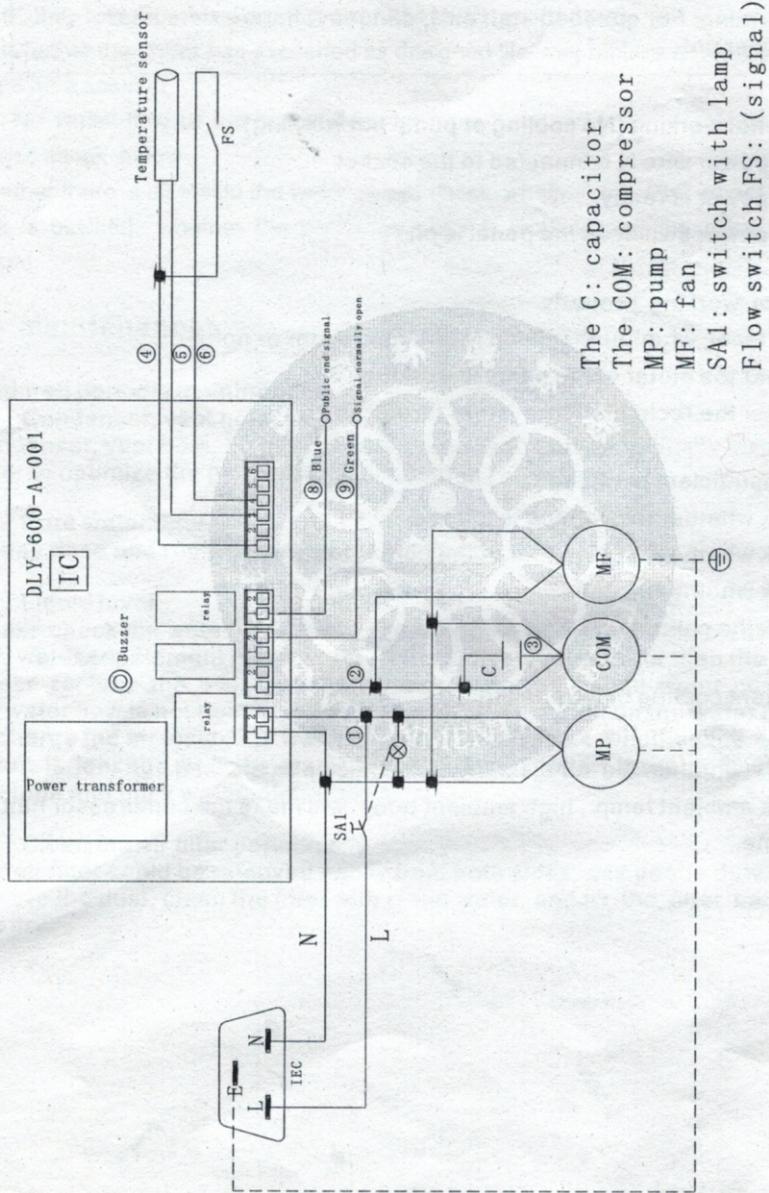
Please check whether the voltage is too high or too low

Please check whether the air discharge side has been blocked

Please check ambient temp., high ambient temp. will make the compressor halt for a short time.

## 7 - Maintenance and technical support

### 7.1 Circuit Diagram



DIC002ASL-LA1-AAA-C08 Circuit Diagram

## 7.2 Cooling system

