

ATS-Chill V Series



ATS-Chill V Series Re-Circulating Chiller Instructional Manual



Warranty Agreement

Limited Warranty

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DISCLAIMER

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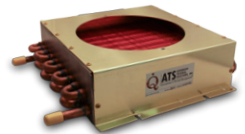
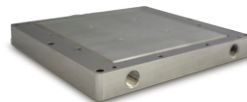
Section 1: Safety Notes

1. Safety notes

- Transport the equipment with care
- The unit must NEVER be overturned nor put upside down
- The equipment and its internal parts can be damaged:
 - by dropping
 - by shock
- The equipment should only be operated by properly instructed personnel
- Never operate the equipment without bath liquid
 - Do not start up the equipment if:
 - it is damaged or leaking
 - the supply cable is damaged
- Switch off the equipment and pull out the mains plug for:
 - servicing or repair
 - before moving the equipment
- Drain the bath before moving the equipment
- Have the equipment serviced or repaired only by properly qualified personnel

Other ATS Liquid Cooling Products:

- Flow Meters
- Leak Detectors
- Cold Plates
- Heat Exchangers



For these products and the entire ATS product line visit www.qats.com.

Before you operate the equipment please carefully read all the instructions and safety notes. If you have any questions please call **781-769-2800**. Follow the instructions on setting up, operation etc. This is the only way to exclude incorrect operation of the equipment and to ensure full warranty protection

Section 2: Unpacking

The ATS-Chill V Series chillers are packed carefully to prevent damage in transport. After unpacking, first check the equipment and accessories for possible transport damage. If, unexpectedly, the equipment is noticeably damaged, it is essential to notify the forwarding agent or the postal authorities so an inspection can take place. **Do not start operations with damaged instruments.** The unit may NEVER be overturned nor put upside down

Section 3: Equipment description

Materials

All components in contact with the thermostating liquid are made specifically from materials suitable for the recommended liquids and temperature, such as rust free, stainless steel, copper, brass, NBR and/or plastics.

Refrigeration unit

The refrigeration unit consists essentially of a fully sealed compressor. The thermostating liquid is cooled through a heat exchanger located inside the bath. Heat of condensation and motor heat are dissipated on air-cooled units through a fan-cooled ribbed condenser.

The refrigeration unit is protected against overpressure and compressor overload. With insufficient ventilation of the condenser (e.g. dirt deposits) the equipment is switched off.

Control unit

The control unit is provided with an LED display which indicates the measurements and settings as well as the operational status functionality. The set-point and other control settings are selected using two or three keys.

A Pt 100 temperature probe senses the outflow temperature inside the bath. The measurement is processed by a high-resolution AD converter. Further processing involves a special control algorithm to operate the heating triac (with reduced reaction on the main supply), the automatic compressor control, and the cooling control which operates with low-noise solenoid valves. The proportional cooling principle permits control in the cooling range without any energy wasting counter-heat.

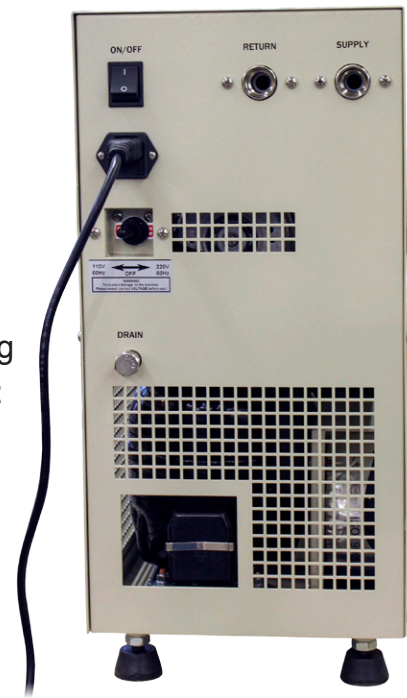


Figure 1 Water Outlets



Figure 2 Water Tank Container

Section 4: Brief instructions

4.1 Assembly and setting up

It is advisable to set up the equipment so that the control unit is towards the front and that the ventilation for the refrigeration unit, especially on equipment with an air-cooled condenser, (ventilation grille in lower part) is not impeded. Ensure a minimum spacing of 0.5m between ventilation grille and wall.



4.2 Filling and connection of external circuit

- Fill the equipment with the appropriate circulating liquid to suit the operating temp. It should be filled with pure water or a water-glycol mixture (min. 70:30%).
- When using water as the heat carrier for the CHILL-V ensure that there are no operating temperatures below 5°C in the outflow.
- To assist in venting the pump, the pressure connection should be left open when the equipment is filled for the first time, otherwise there may be permanent damage to the pump.
- Remove the plug on the filler opening at the upside. A funnel can be used for filling.
- When starting up for the first time, fill the bath as full as possible, up to the max. level.
- After filling up an external circuit, further liquid may have to be added.
- Connect the pump connections at the back of the equipment to the external circuit. The external circuit must be pressure-tight.
- Switch off the equipment before releasing the hose connections; the hose couplings are not self-sealing.
- Always ensure maximum flow cross-section in the external circuit (nipples, tubing, external apparatus). This results in increased flow rate and therefore better thermostating.
- The equipment is designed for operation with non-flammable liquids. Flammable liquids must not be used at temperatures higher than 25°C below the flame point

Section 4: Brief instructions (con't)

4.3 Connection to the supply

Connect the equipment only to a supply socket with protective earth contact.

Check the details on the rating label against the supply voltage. No warranty applies when the equipment is connected to the wrong supply.

4.4 Emptying

Place a container underneath the drain cock on the back of the equipment.

Switch off the equipment. Observe the appropriate regulation when disposing of used circulating liquid. Close the drain cock.



5. Operating Panel





Key Functions

POWER Power key


COOL Cooling Key

PUMP Circulating Key

 Setup key, for accessing parameter table and confirming change

 Data shift key, also for activating auto turning

 Data increase key

 Data decrease key



Display window

PV Process Value Display: Displays PV or code of a parameter

SV Setting Value Display: Displays SV, alarming code or value of a parameter

LED indicator

OUT Output Lamp

AUTO Auto Optimize (Auto-tuning)

OVER Over temperature alarm










LEVEL Low Level alarm (Option)

Operation Description






Basal display status: When powered on, the upper display window of the instrument shows the process value (PV), and the lower window shows the set-point (SV). This status is called basal display status. When the input signal is out of the measurable range (for example, the RTD circuit is broken, or input specification is set wrong), the upper display window will alternately display "orAL" and the high limit or the low limit of PV, and the instrument will automatically stop output.

5. Operating Panel (con't)


Set Value Setting:

In basal display status, we can set the set-point (SV) by pressing    or . Press  to decrease the value,  to increase the value, and  to move to the digit expected to modify. Keep pressing  or , to speed up the decreasing or increasing of the value.

Parameter Setting:

In basal display status, press  and hold for about two (2) seconds in order to access Field Parameter Table. Pressing  can go to the next parameter; pressing   or  can modify a parameter. The instrument will escape automatically from the parameter table if no key is pressed within 30 seconds.

Intelligence control and auto tuning

When the “At” control method is chosen, the control parameters can be obtained by running auto-tuning. At the first time of running auto-tuning, in basic display status, “At” will flash in the lower display window and the instrument executes on-off control. After two (2) to three (3) cycles of on-off action, the instrument will obtain the values of PID control parameters. If you want to escape from auto tuning status, press  for about two (2) seconds until the “At” flash stops. Depending on the system, the time of auto tuning can be several seconds to several hours. After the auto tuning finishes, the parameter “At” automatically changes to “OFF”. If the user wants to run auto tuning again, set the setting parameter from “At” to “on”.

Note 1: Before running auto-tuning, the set-point should be set to an often-used value or middle value first, and then start auto-tuning. Generally, for applications with heating time of 10~80% satisfying auto-tuning results can be obtained. If the heating time is not in the range of 10~80%, the auto-tuning will continually run, searching for satisfying result. Raising the set-point for heating time less than 10% or decreasing the set-point for heating time greater than 80% can improve auto-tuning result.

Note 2: Don't modify the set-point during auto-tuning. It may affect the precision of auto-tuning.

Note 3: The temperature fluctuation caused by interference may affect the precision of auto-tuning. Besides checking the wiring, increasing the parameter FILt (input digital filter) can also reduce interference.

Note 4: After auto-tuning finishes, the temperature rising typically has a little over-shoot (about 1~3°C). The transducer is often placed between the heater and heated material, and a little over-shoot can shorten the time of rising to set-point and save power. (Generally, the temperature of the transducer can be raised quicker than that of the heated material.)

6. Technical Data

Specifications for Chill-V

Model	Chill150V	Chill300V	Chill600V	Chill1000V
Temperature range @25°C	5~40°C	5~35°C	5~35°C	5~35°C
Temperature Stability	±0.1°C	±0.1°C	±0.1°C	±0.1°C
Cooling Capacity@20°C	150W	300W	600W	1000W
Pump pressure	0.4bar	0.6/4bar	4bar	4bar
Pump Flow Rate	7-10 L/min	15 L/min	10L/min	10 L/min
Working mode	Continuous	Continuous	Continuous	Continuous
Filling Port mm	Ø25	Ø25	Ø25	Ø25
Reservoir Capacity	1.0 L	4.5 L	8 L	8 L
Dimensions (W x D x H)	230 x 260 x 380mm (9.06 x 10.24 x 14.96")	235 x 475 x 490mm (9.25 x 10.24 x 19.29")	325 x 620 x 550 (12.8 x 24.4 x 21.65")	325 x 620 x 550 (12.8 x 24.4 x 21.65")
Power Volts Hz Amps	AC220V, 50Hz, 5A	AC220V, 50Hz, 10A	AC220V, 50Hz, 10A	AC220V, 50Hz, 10A
Shipping Weight (kg)	10	23	32	40

7. Maintenance

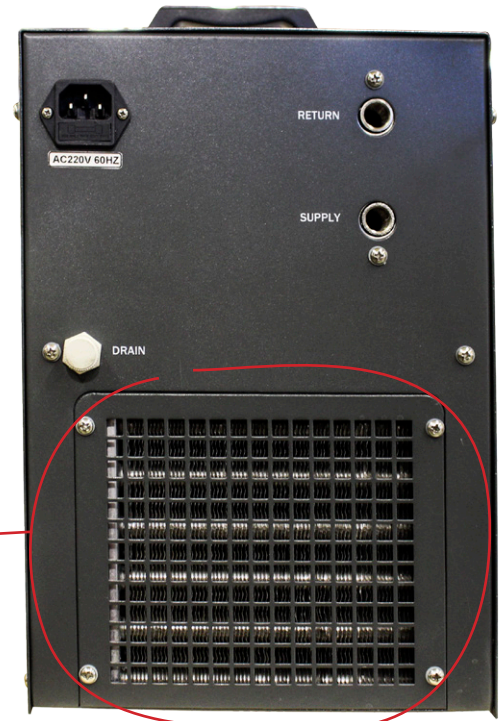
7.1 Cleaning

- Before cleaning the equipment, remove the main plug.
- The unit can be cleaned with water with the addition of a few drops of a detergent (washing-up liquid), using a moist cloth.
- Water must not enter the control unit
- The user is responsible for carrying out an appropriate detoxification of any dangerous material which has been spilled on or in the unit. This applies in particular when the unit is passed on to someone else for operation, repair, storage etc.



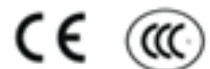
7.2 Maintenance of the refrigeration unit

- The refrigeration unit operates largely maintenance-free. If the unit is being operated in a dusty atmosphere the condenser of the refrigerator has to be cleaned at intervals of 4 to 6 months or more frequently. This is best done by blowing compressed air or nitrogen into the ventilation openings for a few minutes
- It may be useful to unscrew the grill. This can be done in a most suitable way by screwing off the ventilation grid, then cleaning the condenser with a vacuum cleaner (using the brush-top).



7.3 Repair and disposal instructions

- The refrigeration unit is filled with refrigerant. Repair and disposal must only be carried out by a qualified refrigeration technician.
- Before you return the equipment for servicing it is advisable to contact our Technical Service department.
- If the equipment has to be returned to the factory, please ensure that it is carefully and properly packed. We accept no responsibility for damage due to unsatisfactory packing.



Advanced Thermal Solutions, Inc

Advanced Thermal Solutions is a leading engineering and manufacturing company supplying complete thermal and mechanical packaging solutions, from analysis and testing to final production. ATS is world renowned for its portfolio of more than 5,000 high performance heat sinks, research-quality test equipment's, and leading-edge R&D, specifically tailored to the telecom, LED and computing industries. In addition, ATS provides thermal design consulting services and training for the electronics cooling industry. For more information about Advanced Thermal Solutions, please visit www.qats.com.

For further technical information, please contact Advanced Thermal Solutions, Inc. at **781.769.9979** or email qats-hq@qats.com or visit www.qats.com.



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