

Refrigerated Circulating Water Bath

Operating manual and applicable equipment

S-LWB series



Check	Details
Controller	TC6
Operating temperature	Check the nameplate and supplied specification
About this edition	English translation and re-edited version of the supplied Korean operating manual. Match it to the equipment nameplate, controller and supplied configuration before use.

Photographs are representative examples. Appearance and controls can vary with manufacturing date or custom configuration. Do not apply these instructions to a different controller.

Contents: applicable model / safety and installation / equipment and operation / controller / maintenance and faults / warranty and GHT support.

Refrigerated Circulating Water Bath

Safety precautions

Read this manual and your facility procedures before use. Only authorised, trained personnel may operate the equipment. DANGER, WARNING and CAUTION identify precautions against electric shock, fire, explosion, burns and equipment damage.

Hazard	Required precautions
DANGER	Do not place explosive or flammable substances in the chamber. Do not install near ignition sources or where combustible gas or organic-solvent vapour may be present.
WARNING: electricity	Use a correctly rated, earthed supply matching the nameplate. Avoid overloaded multi-outlet connections. Never operate electrical parts with wet hands. Do not earth to gas pipes, plastic water pipes or telephone lines.
WARNING: heat	The chamber, door and exhaust become hot. Allow adequate cooling before opening or unloading. Use protective equipment suited to the temperature and task.
WARNING: service	Only qualified service technicians may dismantle, modify or inspect internal parts. Stop operation, cool the equipment and isolate the supply before cleaning, maintenance or moving.
Abnormal operation	If there is unusual noise, odour, smoke, leakage current or other abnormal behaviour, stop use, make the area safe, isolate the supply and contact GHT.

Do not wash by spraying water. Keep ventilation openings clear. Avoid moisture, dust, corrosive gases, direct sunlight, rain and external heat sources. Install indoors on a firm, level surface. Do not tilt, lay down or strike the equipment during transport.

Refrigerated Circulating Water Bath

Configuration and preparation

This refrigerated circulating bath is for controlled-temperature laboratory work in fields such as medicine, pathology, pharmacy and microbiology. It has external circulation connections, Pump switch, Drain valve and TC6 control. Low-water protection cuts heater output when water is absent.

1. Install on a stable, level surface and check the rated supply and earth.
2. Fill with the required amount of distilled or specified filtered water. Do not heat without water.
3. Close the lid, turn on the power/controller and set conditions. An illuminated display alone does not mean operation has started.
4. On circulating versions, verify the actual connection requirements, fluid level and Pump state. Beware of hot water, drains, lids and hoses.
5. After use, stop, cool and isolate the supply before draining and cleaning.

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TC6: display and keys

Display / key	Function
PV / SV	Measured value or parameter / setpoint.
Indicators	RUN/STOP, TIMER, heater output and auxiliary output.
RUN/STOP	Switches heater output. Hold ON/OFF for about 3 seconds to start.
MODE / MENU	Selects and saves settings. Hold for about 3 seconds to leave setting mode.
Digit key	Moves the cursor to the digit to be changed.
Decrease / increase	Lowens/raises the value. Hold decrease for about 7 seconds to toggle auto tuning.

Powering the display leaves the controller in standby; it does not itself start processing. Check temperature and time before starting.

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TC6: temperature, timer and buzzer

Press MODE to display TEMP. Use the digit and increase/decrease keys to set temperature. Press MODE to save, then again to move on. If no value was changed, one press moves to the next item.

TIME uses 00.00 for hours/minutes and starts counting after reaching the set temperature. In the humidity-chamber source, 00:00 gives continuous operation with elapsed-time display. Check actual behaviour on other models rather than assuming it.

BEEP is initially 30 seconds and adjustable up to 9999 seconds. After setting, hold MODE for about 3 seconds to return to the initial screen; hold ON/OFF for about 3 seconds to start.

DELY is delayed starting. Example: TEMP = 80°C, TIME = 3.00, DELY = 7.00 and BEEP = 60 starts heating after 7 hours, counts 3 hours after reaching 80°C and sounds for 60 seconds. Use only functions and temperatures supported by the actual equipment.

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TC6: auto tuning

During RUN, hold the decrease key for about 7 seconds. A/T flashes and tuning begins. The same long press toggles tuning on/off.

PID tuning raises and lowers temperature. The source gives two or three excursions and a duration of 2 to 6 hours depending on conditions. On completion, AT ends automatically and operation continues.

Repeated tuning is unnecessary when conditions have already been tuned appropriately. A setpoint more than 50°C away from the tuning temperature may produce deviations.

If temperature does not rise, check over-temperature protection. Do not simply increase the safety setting without checking the sample or water condition and equipment rating.

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Maintenance, faults and warranty

Stop, cool and isolate the supply before wiping with a soft cloth. Use only cleaning agents compatible with the materials; keep water and solvents out of electrical parts. Contact GHT for appropriate genuine or specified replacement parts.

If there is no power, check the external supply, plug and main breaker. Internal wiring, fuse, SSR and heater checks must be performed by a qualified technician with safe supply isolation. Users must not remove covers for live inspection.

If temperature does not rise, check the setpoint, operating state, over-temperature setting and heater indicator. Some source instructions mention setting protection at least 20% above the test temperature. Do not exceed the equipment or sample limit; ask GHT to confirm the correct setting.

For storage, clean and dry, unplug and protect against foreign matter. Close the oven vent when stored unused. Drain water-based equipment.

Warranty: the source manuals state one year from purchase or delivery. Confirm the applicable period, start date, transport charges and other terms in the GHT quotation/supply documents. Disaster, fire, flooding, unsuitable environments, misuse and unauthorised dismantling/modification are excluded. Humidity-chamber heaters are excluded as consumables in the source.

Contact GHT

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Provide the model, serial number, delivery date, operating conditions, symptoms and photographs.