

# CONSTANT TEMPERATURE WATER BATH



# Constant Temperature Water Bath — ToronWB™ CT

## Precision Water Bath for Critical Laboratory Work

ToronWB™ CT is a super constant temperature water bath engineered for laboratories, quality-control departments, and research environments that require accurate, stable temperature conditions for sample incubation, reagent preparation, enzymatic reactions, and analytical testing. Built around a closed-loop heating and circulation system, this instrument eliminates thermal gradients across the bath chamber and delivers uniform temperature distribution to every sample position simultaneously.

At the heart of the ToronWB™ CT Series is a combined internal circulation and external circulating pump system that continuously moves the heating medium throughout the chamber — and, when required, delivers temperature-controlled fluid to connected external equipment via the built-in circulation interface. The external circulation port features a 10 mm outer diameter and 8 mm inner diameter, making it directly compatible with standard laboratory fittings and jacketed vessels.

Two display and control modes are available to match operator preference and application precision. The LED dual-window mode provides clear, simultaneous readout of both measured and set temperatures at 0.1°C resolution with  $\pm 0.1^\circ\text{C}$  fluctuation — ideal for routine workflows. Switching to LCD mode upgrades resolution to 0.01°C with temperature fluctuation held to  $\pm 0.02^\circ\text{C}$  and touch-button interface operation — performance appropriate for pharmaceutical QC, analytical chemistry, and precision research applications where this equipment serves as a primary thermal reference.

High-efficiency heat preservation material in the chamber construction minimizes heat loss to the surrounding environment, reducing energy consumption and improving setpoint stability over extended unattended runs. The measured value deviation correction function allows operators to calibrate the displayed reading against a reference thermometer — supporting regulated environments where instrument accuracy documentation is required.

## APPLICATIONS

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## Constant Temperature Water Bath — ToronWB™ CT Applications

Designed for the full breadth of laboratory water bath use, the ToronWB™ CT serves a wide spectrum of thermal incubation, conditioning, and analytical testing needs:

- Enzymatic & Biochemical Reactions: Precise temperature maintenance for enzyme kinetics, PCR setup incubation, protein denaturation studies, and cell culture substrate conditioning.
- Pharmaceutical QC & Dissolution Testing: Temperature-controlled incubation of dosage form samples and reagents for dissolution testing, API characterization, and QC release testing protocols.
- Reagent & Sample Warming: Uniform warming of serological reagents, blood samples, culture media, and chemical solutions to defined temperatures prior to analysis or testing.
- Viscosity & Rheology Measurement: Temperature-stable sample conditioning for viscometers and rheometers via the external circulation interface — delivering fluid directly to jacketed measurement cells.
- Analytical Chemistry Incubation: Controlled-temperature incubation for colorimetric assays, turbidimetric tests, and gravimetric sample preparation.
- External Circulation & Jacketed Vessel Applications: Direct connection to jacketed reactors, condensers, or flow-through systems via the  $\geq 8$  L/min external pump.
- Food Science & Quality Testing: Moisture analysis, fat extraction, and thermal treatment protocols for food and agricultural samples.
- Material Conditioning & Testing: Temperature-controlled soaking and conditioning of material specimens before mechanical, chemical resistance, or hardness testing.



## FEATURES

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### Constant Temperature Water Bath — ToronWB™ CT Key Features

- Combined Internal & External Circulating Pump: Provides both internal bath circulation and external circulation capability ( $\geq 8$  L/min through a standard 10 mm OD / 8 mm ID external port).
- LED / LCD Dual Display with Touch Buttons: Choose between 0.1°C resolution (LED) or 0.01°C resolution (LCD).
- $\pm 0.02^\circ\text{C}$  Temperature Fluctuation: Exceptional temperature stability in LCD operating mode.
- Measured Value Deviation Correction: Allows operators to offset the displayed temperature reading against a calibrated reference thermometer.
- High-Efficiency Heat Preservation Chamber: Minimizes standby heat loss and shortens temperature recovery time.
- Standard External Circulation Interface: Universally compatible laboratory tubing dimensions (10 mm OD / 8 mm ID) for direct connections.

## THEORY & METHOD

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### Theory & Method: How the ToronWB™ CT Works

- Closed-Loop Temperature Control: An electrical resistance heating element raises the temperature of the water bath medium. A precision sensor continuously monitors the actual bath temperature and feeds live data back to the microprocessor controller. The controller compares the measured value against the user-programmed setpoint and modulates heater output accordingly — maintaining temperature within  $\pm 0.02^\circ\text{C}$  of setpoint (LCD mode) without oscillation or overshoot.
- Dual Internal & External Circulation: Temperature uniformity across the water bath chamber is achieved by continuous forced circulation of the heating medium via an internal pump, delivering  $\pm 0.1^\circ\text{C}$  uniformity (LED mode) across all sample positions. The same pump delivers temperature-controlled fluid through the external circulation interface at  $\geq 8$

L/min.

- Dual-Mode Display & Resolution: In LED dual-window mode, setpoint and measured temperatures are displayed simultaneously at 0.1°C resolution. In LCD mode, resolution improves to 0.01°C with touch-button interface operation.
- High-Efficiency Heat Preservation: Constructed with high-efficiency thermal insulation material that minimizes heat loss, reduces energy consumption, improves setpoint recovery speed, and reduces ambient heat rejection.

## TECHNICAL SPECIFICATIONS

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### Constant Temperature Water Bath — ToronWB™ CT Technical Specifications

| Parameter                 | Specification                            |
|---------------------------|------------------------------------------|
| Heating Medium            | Water                                    |
| Display Type              | LED dual-window / LCD with touch buttons |
| Temperature Range         | RT+5°C ~ 100°C                           |
| Temperature Resolution    | 0.1°C (LED) / 0.01°C (LCD)               |
| Temperature Fluctuation   | ±0.1°C (LED) / ±0.02°C (LCD)             |
| Temperature Uniformity    | ±0.1°C (LED) / ±0.2°C (LCD)              |
| Rated Power               | 1,000 W                                  |
| Voltage                   | 220 V, 50 Hz (110V is also available)    |
| Pump Flow Rate            | ≥ 8 L/min                                |
| External Circulation Port | OD 10 mm / ID 8 mm                       |

| Parameter                   | Specification      |
|-----------------------------|--------------------|
| Internal Dimensions (W×D×H) | 400 × 280 × 180 mm |
| Housing Dimensions (W×D×H)  | 460 × 400 × 350 mm |
| Opening Dimensions (W×D)    | 200 × 180 mm       |
| Net Weight                  | 14.5 kg            |
| Gross Weight                | 16.6 kg            |
| Package Size (W×D×H)        | 525 × 405 × 450 mm |

(Note: RT = ambient room temperature. Specifications subject to change without notice. All dimensions in millimeters (mm).)



**Torontech Inc.**

251 Consumers Road, Suite 1200  
Toronto, Ontario, M2J 4R3, Canada 🇨🇦

Phone: +1 416 368 2721 | Fax: +1 416 981 7652  
Email: [info@torontech.com](mailto:info@torontech.com)

**Torontech, LLC**

601 Brickell Key Drive, Suite 700  
Miami, FL 33131, USA 🇺🇸

Toll-Free: 1-866-383-7919  
Email: [sales@torontech.com](mailto:sales@torontech.com)

**Torontech ME FZE**

Meydan Grandstand, 6th Floor,  
Meydan Road, Nad Al Sheba,  
Dubai-261440, UAE 🇦🇪

Phone: +971 488 19252  
Email: [me@torontech.com](mailto:me@torontech.com)

