



TCU TEMPERATURE CONTROL UNITS - THERMOSTATS

Temperature Control Units (TCUs) are closed-loop recirculating systems that actively remove or add heat to a process fluid and deliver it at a precise, stable setpoint to an external load — reactor, instrument, laser, or test fixture. Unlike passive cooling or open-bath systems, a recirculating chiller continuously pumps conditioned fluid through a sealed circuit, preventing contamination, minimizing fluid loss, and maintaining the target temperature regardless of heat load fluctuations or ambient changes. Torontech's TCU lineup covers three tiers: the versatile DL Series for general laboratory and industrial cooling from -30°C to +5°C, the compact DL-400 for dedicated benchtop rotary evaporator service, and the Ultra-Low Temperature Recirculating Chiller for demanding cryogenic applications down to -100°C.

All Torontech TCUs use CFC-free refrigerants, compressors from globally recognized OEM suppliers, and fully sealed recirculation circuits. Eco-friendly refrigerants (R410A, R404A, R134a) comply with international environmental standards. Built-in protection features — liquid level monitoring, pressure gauges, integrated hose filters, and removable maintenance panels — reduce downtime and protect connected equipment. 110 V variants are available for North American installations alongside standard 220–240 V configurations.

Reliable Cold — Delivered

From benchtop rotary evaporator support to large-scale industrial reaction control and deep cryogenic synthesis, Torontech's TCU Temperature Control Units give laboratories and production facilities a single trusted source for precision cooling. Our DL Series, DL-400, and Ultra-Low Temperature Recirculating Chillers are engineered for international laboratory environments — with 110 V availability, CFC-free refrigerants, industrial-grade compressors, and dedicated after-sale support from our US and Canada offices.

Contact Torontech today to request a cooling capacity calculation, product recommendation, or quotation tailored to your application. Our application engineers are ready to match the right unit to your process — so your next experiment, synthesis, or production run runs at exactly the right temperature.

APPLICATIONS

Applications in Industries

Pharmaceutical & Biotech Precise chilling for jacketed reactors, fermenters, cell cultures, and analytical instruments where temperature stability directly governs product yield and quality. Chemical Synthesis & R&D Controls exothermic reactions in synthesis vessels and provides cryogenic conditions for low-temperature chemistry. Ultra-Low models enable synthesis routes unachievable above -40°C. Analytical Instrumentation Cooling for ICP-MS, atomic absorption spectrometers, rotary evaporators, and electron microscopes — eliminating heat-induced drift and extending instrument service life.	Food Processing & QC Stable cold-fluid supply for fermentation trials, ingredient stability testing, and QC laboratory instruments in food and beverage production environments. Materials Science & Aerospace Ultra-Low chillers simulate cryogenic operating conditions for stress testing, structural characterization, and material behavior studies at temperatures mirroring space environments. Industrial Lasers & Vacuum Systems High-capacity DL Series units provide continuous cooling for high-power lasers, welding equipment, and vacuum pumps, protecting critical components from thermal damage.
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Torontech offers a comprehensive range of advanced **TCU Temperature Control Units** and thermostats designed to meet diverse application requirements. Our product line includes:

- 1. **Recirculating Chiller Units:** These units are ideal for applications requiring consistent and reliable cooling. They ensure precise temperature control and efficient heat dissipation, making them suitable for use in laboratory instruments, analytical devices, and industrial processes.
- 2. **Ultra-Low Temperature Chillers:** Engineered for demanding applications, these chillers provide extreme cooling capabilities for processes requiring temperatures far below freezing. They are perfect for cryogenic research, low-temperature testing, and other specialized applications.

With a focus on innovation and performance, Torontech’s **Temperature Control Units** deliver exceptional accuracy, energy efficiency, and durability. Whether you need a solution for cooling laboratory equipment, regulating temperature-sensitive processes, or managing high-precision experiments, our range of TCUs and thermostats ensures optimal temperature management tailored to your needs.

Explore Torontech's cutting-edge **Recirculating Chiller Units** and **Ultra-Low Temperature Chillers** to achieve superior temperature control for your applications.

FEATURES

Why Choose Torontech for Your Temperature Control Needs?

✓ Precise Temperature Control PID-regulated compressor cooling keeps setpoints stable session after session — critical for reproducible results in regulated labs.	✓ CFC-Free, Eco-Friendly Refrigerants All Torontech chillers use environmentally compliant refrigerants (R410A, R404A, R134a), meeting international environmental standards.
✓ Closed-Loop Recirculation Sealed systems prevent bath fluid evaporation and contamination, extending fluid life and protecting connected equipment.	✓ Industrial-Grade Compressors Compressors sourced from globally recognized OEM suppliers ensure low noise, long service life, and consistent performance under continuous duty.
✓ Scalable Capacity Range From compact benchtop DL-400 units to high-capacity DL Series and cascade Ultra-Low chillers — one supplier for every cooling tier.	✓ World Wide Sales & Support Torontech's international teams provide pre-sale sizing, installation guidance, and after-sale technical support for every unit.

TECHNICAL SPECIFICATIONS

Product Comparison Table

Specification	Recirculating Chiller DL Series	Recirculating Chiller DL-400	Ultra-Low Temp Recirculating Chiller
Temp Range	-30°C to +5°C	-5°C to +35°C (approx.)	-100°C to ambient
Temp Stability	±2°C	±1°C (approx.)	±1°C (approx.)
Cooling Capacity	300 W-5,000 W (model-dependent)	~400 W @ 0°C	Up to several kW (cascade system)
Refrigerant	R410A / R404A (CFC-free)	R134a / R404A (CFC-free)	Cascade: R404A + R23 or equivalent (CFC-free)
Fluid Volume	10 L - 40 L	~4 L	Model-dependent
Flow Rate	20-30 L/min	~8 L/min	Model-dependent
Refrigeration Type	Single-stage compressor	Single-stage compressor	Dual-stage cascade

Closed-Loop System	✓	✓	✓
CFC-Free Refrigerant	✓	✓	✓
Compressor Brand	Global OEM (Tier 1)	Global OEM (Tier 1)	Global OEM (Tier 1)
Liquid Level Monitor	✓	—	✓
Pressure Gauge	✓	—	—
Eco-Friendly Design	✓	✓	✓
Voltage	220–240V / 110V option	220V / 110V option	220V / 110V option
Best For	Lab & industrial QC; fermenters, ICP, lasers	Benchtop rotary evaporators; compact labs	Cryogenic synthesis; materials science; pharma

* 110 V configurations available for all models upon request. Cooling capacities quoted at specified setpoints — consult Torontech for full load curves.



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