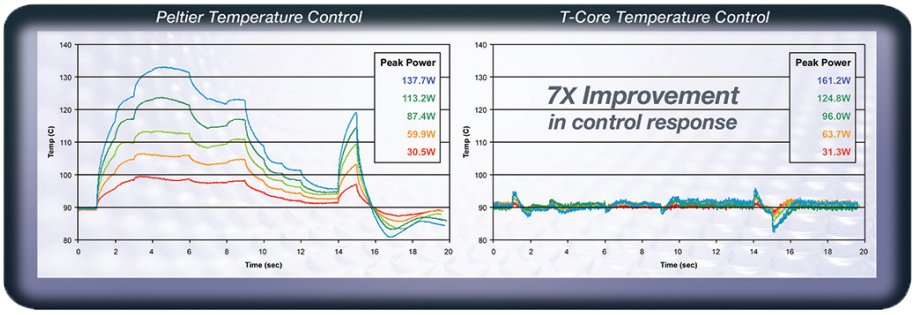
T-Core Thermal System

Scalable Multi-Channel Active Thermal Control System



T-Core 4M Controller

Air-cooled ATC Head

Automotive

Mobility

IoT/IoV & Optoelectronics

Computing & Network

Industrial & Medical

Consumer

Capabilities

- Industry-leading T-Core Active Thermal Control (ATC) for up to 800 W power dissipation
- Full data correlation to multi-site ATC test handlers
- Scalable architecture to support multiple sites with 3 RTD sensors per site
- Supports tri-temp testing with single insertion
- Intuitive, configurable software user interface

Key Features

- High-speed, 1 ms closed-loop ATC for applications in Engineering Development, Test, Burn-In and System-Level Test
- Flexible control loop, leveraging device power or diode temperature
- Fast temperature ramp up to 100°C/second
- Closed-loop Automatic Flow Control (AFC) for liquid-cooled, air-cooled or phase-change (refrigerant-cooled) thermal heads

- **Wide test temp range from -55°C to +155°C**
- **Precise temperature guard band ± 1°C**
- **Low to >800 W power dissipation**
- **Ultra fast thermal response for low Tj rise via device temperature or device power feedback**

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Specifications

Platform

AC Power Input
- 188-240 VAC, 30 AMP (service), Single Phase

Module Size
- 3U, 19" rack-mount, 23.7" (602 mm) deep

System Weight (Controller)
- 43 lbs / 19.5 kg

Heater Power
- ±150 VDC; 1200 W, 2400 W, 3600 W and 4000 W configurations

Thermal
- Maximum temperature set point: head dependent (see table below)
- Temperature control accuracy at heater: ±1°C
- Temperature resolution at heater: 0.1°C
- Temperature stability at heater: ±2°C at start of test (SOT) with appropriate device thermal interface

Control Channels
- 1 to 16. Systems can be added to provide additional control channels in multiples of 4 or 16

Cooling Options
- Air, Cold air with Liquid Nitrogen (LN2), Chiller, Air-to-Liquid heat exchanger, Liquid-to-Liquid heat exchanger, Single and dual-stage Kryotech condensing unit

Safety
- LOTO switch, EMO loop

Software User Interface (UI)
- Flexible user interface that supports automation scripts and real-time parameter watch windows
- High speed data logging (4 ms) and charting

Device Feedback Options

HTF
- Heater Temperature Following — controls the temperature of the heater that contacts the device

DTF
- Device Temperature Feedback — controls the device temperature using a temperature-sensing diode on the device

HTF/PF, ATF/PF (Patented)
- HTF or ATF with Power Following — controls device temperature using device power dissipation feedback from the test system

ETF (Patented)
- Extrapolated Temperature Feedback — uses mathematical control model to manage device temperature if diode or power feedback is not available

ATF
- Auxiliary Temperature Feedback — Thermal control using direct feedback from any auxiliary RTD thermal sensor

T-Core Controller Configurations

T-Core 2M	T-Core 4M	T-Core 16M*
2 channels 800 W max heater power per channel	2 channels 800 W max heater power per channel	16 channels 250 W max heater power per channel

* 2 RTD sensors per channel

Standard Thermal Head Options

Thermal Head Type	Maximum Contact Size	Die Force Control	Socket Force Control	Cooling Method	Temperature Range
Single-Channel Air-Cooled	12 mm x 13 mm or 1" x 1"	Mechanical (Spring)	Adjustable (Pneumatic)	Fan	ambient to +125°C
Single-Channel Air-Cooled	16 mm x 27 mm or 1" x 1"	Mechanical (Spring)	Adjustable (Pneumatic)	Heat exchanger/chiller with water, glycol, HFE	-60°C to +125°C
Single-Channel Air-Cooled	16 mm x 27 mm or 1" x 1"	Adjustable (Pneumatic)	Adjustable (Pneumatic)	Heat exchanger/chiller with water, glycol, HFE	-60°C to +125°C
Dual-Channel, Liquid-cooled, independent control	39 mm x 39 mm	Adjustable (Pneumatic)	Adjustable (Pneumatic)	Heat exchanger/chiller with water, glycol, HFE	-60°C to +125°C
Single-Channel Refrigerant-Cooled	16 mm x 27 mm or 1" x 1"	Adjustable (Pneumatic)	Adjustable (Pneumatic)	Kryotech bench-top condensing unit	-40°C to +125°C

** Custom size and temperature range options can be developed

Certified per SEMI S2/S8 and NFPA 79 requirements

Other Options

Active Flow Control
- Provides closed-loop fluid flow control for optimum thermal performance across wide temperature range

Control PC
- Windows XP or higher with available Ethernet port

Power Summing Interface
- Delivers flexible power following capability based on 2 to 4 scalable device power inputs (current or voltage)

All specifications are subject to change without notification and are for reference only. For detailed performance specifications, please contact Cohu.

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