MECHANICAL DEVICES

Flex TC

-55ºC **+155ºC**

A Hi-tech Breakthrough

- Fluid Free Operation
- High performance: Fast Transition Rates
- Temp. stability +/- 0.1ºC
- Compact & Portable Design
- No Compressed Air Required
- Ultra Quiet Operation
- Low cost of Ownership
- Maintenance free
- Vibration free
- State of the art frost free solution

Developed for Laboratory Environments

The Flex-TC was designed to meet the strict standards of failure analysis or device characterization within integrated semiconductor companies, chip debugging and testing laboratories, semiconductor startups and fabless companies. Cool & Heat is transferred via direct contact/ conduction which is the most efficient way 4000 ($W \bullet K^{-1} \bullet m^{-2}$).

Flex-TC provides a high performance, reliable and self-contained system that is compact and extremely economical. The system requires 50/60Hz, Single Phase, 10A Max wall outlet and clean dry air or nitrogen for frost and humidity free operation. **The system is a perfect solution for office buildings as well since it does not require compressed air and maintenance.** The system can be remote controlled through an Ethernet communication port.

Features

- Temperature range of -55°C to +155°C
- Compact Footprint – Fits easily on a bench top
- Self-Contained – No external chiller and no compressed air required
- Low cost of ownership
- Fluid-Free Operation
- Rapid Temperature Cycling Rates
- Environmentally Friendly Operation
- ESD-SAFE
- Integrated into production test handlers
- T case and embedded thermal diode temperature sensing
- Ethernet (TCP/IP) Remote Interface
- Suitable for testing soldered devices and devices in sockets
- Integrates with every existing socket on the market
- Packages Supported:
  - •BGA •FCBGA •LGA •QFN •QFP
  - •CSP •WLCSP •Bare Die •and more
- Maintenance-free
- Vibration free
- Very low energy consumption
- Temperature stability ±0.1ºC

Fast & Powerful Cooling Capacity

Flex-TC cool & heat the DUT to the chosen temperature by **direct conduction** between the thermal head's plunger and the DUT. Flex-TC offers supreme cooling power 21W@-40C achieving 25°C to -40°C, in 2~4 minutes only. Flex-TC can maintain the set temperature at tight tolerance for an extended period of time. FlexTC can be used 24/7.

Benefits of Fluid Free Operation

One of the advantages of Flex-TC is its fluid free operation (No Chiller). By eliminating the coolant fluid you eliminate the risk of fluid leakages which might severally damage expensive test equipment.

Savings/Cost effective

- **Low cost & high performance**
- **Low energy consumption just 2.2KW/h**
- **Maintenance FREE**

Specifications

System General

Maximum Temperature	155 °C
Minimum Temperature	-55°C
Temperature Accuracy	+/- 0.2° C
Typical Transition Rates	25°C to -40°C, ~2min -40°C to +125°C, <3 min +125°C to 25°C, < 2 min Tcase PT100 Thermisor/ K-type
Temperature Sensor	thermocouple/ Thermal-Diode through the Ethernet port/ Thermal-Diode through the Analog port
Remote Interface Ports	Ethernet (TCP / IP)
System Indicators and Fail-safes	Thermal head over temperature, Fans operation, Cooling units operation,
DUT Pressure Force	2 - 100 Kg / Force
DUT Dimensions	≤ 2 x 2 mm
DB Rating	40 d BA
MTBF (Cooling system)	70,000hr

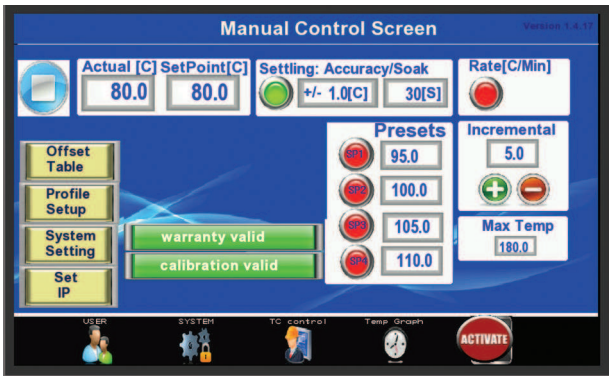
Mechanical Dimensions

System Enclosure mm / (inch)	L 420 (16.5”) x W 320 (12.5”) x H 220 (8.5”)
System Weight	22 KG
Thermal Head (mm)	80mm Diameter
Thermal Head Hose	2 meter (6.5ft) standard/ 3 meter (10ft)

System Requirements

Electrical	100/115/120/220/230/240 VAC ±10% 50/60 Hz, single, 10A Max.
Purge	0.2-0.6[BAR] Dry air/ Dry nitrogen
Ambient Temperature	5°C to 35 °C (40 to 95°F)
Ambient Humidity	20% to 95% RH

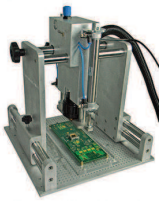
Operator Interface



- Temperature set points
- Preset temperature key buttons
- Ramp/Soak/Cycle profile programming, save & upload
- offset profile programming T case - Tjunction
- Ramp rate increment controls
- Stand-by operation mode
- Temperature is displayed and recorded
- Temperature overshooting control
- LabVIEW/C++/MATLAB /Visual Basic /Perl / Tickle drivers

Thermal head interface options

1. **Universal Adaptor plate** for sockets and soldered device applications.
2. **Custom Adaptor plate** for sockets and soldered device applications.
3. **Thermocouple inserted Lids** for sockets applications.
4. **Open Frame thermal lids** for sockets and soldered device applications.
5. **Pneumatic Tabletop Station (PTS)** for quick replacement of devices in the sockets
6. **Boom Stand Arm** - For soldered device applications
7. **Vacuum System** – for quick replacement of devices in the sockets

Interchangeable (NG) Device Plungers

Device Plungers are made of copper or aluminum and are exchangeable to fit the required setup;
Device plungers include a PT100 embedded sensor to guarantee accurate T case.
Each device plunger is robust designed for reliability and high performance.

P/N#	Temp Range	*Thermal Load (Watt)	DUT Dimensions
MDDT-485	-55ºC to 155ºC	21Watt @ -40C	2-50mm

Humidity and Frost Free Control

The Flex TC includes dry air or nitrogen purge inlet at the back panel. The purging is software controlled via a solenoid which is automatically opened when temp. <16ºC.
The dry air flows through the 4 thermal head nozzles and the front panel purge outlet creating a frost and humidity free curtain from both top and bottom sides of the DUT.

The Company

Mechanical Devices - Advanced Thermal Solutions Company is a global leader and innovator in temperature control solutions that are used primarily by semiconductor manufacturers to test their IC and wafer.

Mechanical devices temperature control systems perform fast, accurate, stable and cost effective solutions, using advance and patented technology.
With the industry's state-of-the-art temperature forcing systems Flex TC and Max TC, Mechanical devices is changing the way of testing and controlling the temperature, enabling semiconductor manufacturers to enhance their own profitability by improving the efficiency of their IC and wafer test processes.

MD end-user customers are among the world's top semiconductor manufacturers. Our systems can be well integrated with automatic test equipment (ATE) and Handler suppliers.
Mechanical Devices is head-quartered in Haifa Bay, Israel with a branch in San Jose, CA which includes sales and service center.
MD has number of sale representatives as well at key locations throughout the United State, Asia and Europe

Worldwide support

Mechanical Devices products are sold and serviced worldwide

IQNet CERTIFICATE

CE ISO 9001:2008

Addresses:

MECHANICAL DEVICES LTD
34 Ha'amelim Street
Haifa Bay 2624409
Israel

Phone: +972-4-849-0793
Fax: +972-153-4-8490793
Email: sales@mechanical-devices.com
www.mechanical-devices.com

MECHANICAL DEVICES INC
409 Reynolds Circle
San Jose CA 95112
USA

Phone: +1 (408) 791-8480

Email: sales@mechanical-devices.com
www.mechanical-devices.com