



MECHANICAL DEVICES



Max TC

Ultimate Power Temperature Forcing System
for thermal cycling of DUT from **-60°C** to **+175°C**
60W @ -40°C / 200W @ 0°C
Rapid Cooling and Heating Rates

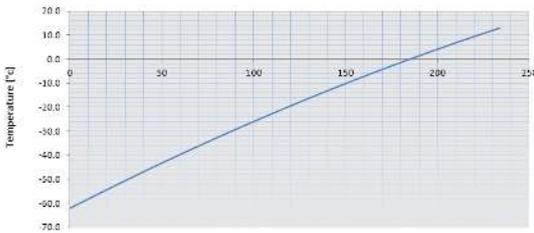
MaxTC

MaxTC high power temperature forcing system has the greatest cooling power of any product in its field. MaxTC temperature forcing system stimulates DUT to the desired temperature from -60°C to 175°C by direct contact between a thermal head's plunger and a socketed or soldered down DUT. MaxTC can be used to test multi-site DUTs using a thermal plate. It can be integrated into probe stations, handlers, testers, and ATEs. MaxTC is a stand-alone, plug and play system which requires only 208VAC 20A wall outlet and clean dry air or nitrogen for condensation free operation during cold testing.

Features

- Temperature range: -60°C to 175°C
- Cooling Power: 60W@-40°C / 200W@0°C
- Fast cooling/heating rates: (25°C to -40°C in < 2 min; 25°C to 125°C in < 1 min)
- Low cost and high performance
- Temperature accuracy: ±0.5°C
- Temperature stability: ±0.2°C
- Stand-alone system - No external chiller or compressed air required
- Maintenance FREE system
- Fully programmable via Ethernet port
- Condensation FREE operation
- Software controlled temperature cycling rates up to 100°C/min
- Compact size for lab environment or for integration with ATEs
- Quiet operation
- Vibration FREE, magnetic field FREE
- Software calibrated
- Suitable for testing socketed and soldered devices
- Environmentally friendly operation
- Seamless integration with handlers and ATE
- ESD safe
- Packages supported: BGA | FCBGA | LGA | QFN | QFP | CSP | WLCSP | Bare die

Cooling Power Graph



Specifications

System General

| | |
|--------------------------------------|---|
| Temperature Range | -60°C to 175°C |
| Cooling Power | 60W@-40°C |
| Transition Rates | 25°C to -40°C in < 2 min, 25°C to 125°C in < 1 min |
| Temperature Stability | 0.2°C |
| Temperature Accuracy | 0.5°C |
| Temperature Sensor | T case PT100 Thermistor/ K-Type Thermocouple Thermal-Diode through the Ethernet port |
| Temperature Calibration | Software calibrated |
| Remote Interface Ports | Ethernet (TCP/IP), USB |
| System Indicators and Fail-safes | Real-time status displayed on-screen and via remote interface |
| DUT Pressure Force DUT Dimensions | 2 – 100 Kg/Force (depending on interface) From 2x2mm to 100x100mm |

Mechanical Dimensions

| | |
|---------------------------|--|
| System dimensions mm/inch | (L) 620mm x (W) 480mm x (H) 360mm (L) 24.4 in x (W) 18.9 in x (H) 14.1 in |
| System Weight | 55 Kg |
| Thermal head (mm) | 80mm diameter |
| Thermal head hose | 2 meter (6.5ft) standard, 3 meter (10ft) optional |

System Requirements

| | |
|---------------------|--|
| Electrical | 208-240VAC, 50/60Hz, 16A |
| Ambient Temperature | 5°C to 35°C (40 to 95°F) |
| Ambient Humidity | 20% to 95% RH |
| Compressed Dry Air | <0.5cfm (1.5-3.0 PSI) |
| Dew Point | >-70°C (-100F) |
| Connection | 6mm Industrial Standard Quick Disconnect |

Operator Interface

- 7" color PLC touch screen with graphical interface
- Preset temperature key buttons
- Ramp/Soak/Cycle profile programming, save and upload
- Offset profile programming T case – T junction
- Ramp rate increment controls
- Stand-by operation mode
- Temperature display and recording
- Temperature overshooting control
- LabVIEW/C++/Visual Basic drivers/Perl/Tickle drivers
- Temperature control through thermocouple via K-type or D-type connector

Interchangeable New Generation Device Plungers

- MaxTC device plungers are made of Copper and are interchangeable to fit the required setup
- Plungers include a PT100 embedded sensor to guarantee an accurate T case temperature
- Each MaxTC plunger is designed for reliability and robust performance



MaxTC plunger



Installing plunger into a thermal head

| PN# | Temp Range | DUT Dimensions |
|---------|-----------------|-------------------------|
| MDDP585 | -60°C to +175°C | from 2x2mm to 100x100mm |

Thermal Head Interface Options

MaxTC's thermal head creates a direct mechanical contact with the DUT using one of the following interface options:

1. Universal Adapter plate connected to the PCB for open top socketed and soldered applications
2. Custom Adapter plate for socketed applications
3. Thermocouple Inserted Lids for open top socketed applications
4. Open Frame Thermal Lids for socketed and soldered applications
5. Pneumatic Tabletop Station (PTS) for quick replacement of devices in sockets
6. Microscopic Boom Stand Arm for soldered down device applications
7. Vacuum System for quick replacement of devices in sockets



Pneumatic system



Vacuum system



Boom stand



Mechanical adapters

Humidity and Frost Free Control

- MaxTC requires only 0.2 bar purge flow to prevent frost and humidity on the DUT test site.
- The MaxTC thermal head includes nozzles for dry air or dry nitrogen purge.
- Back side cover includes a purge outlet in order to prevent condensation on the back side of the PCB.
- Purging is software controlled and it starts automatically when the temperature drops to below 16°C.
- A constant flow of dry air creates a frost and humidity free shield around the DUT.
- Dew point is -100F for dry air or dry nitrogen (99.99%).

The Company

Mechanical Devices – an advanced thermal solutions company is a global leader and innovator in temperature control solutions that are being used primarily by semiconductor manufacturers to test their IC and wafer processes.

Mechanical Devices temperature control systems offer fast, accurate, stable, and cost effective solutions, using advanced and patented technology. With the industry's state-of-the-art temperature forcing systems, FlexTC and MaxTC, Mechanical Devices is changing the way the testing and temperature control is done, enabling semiconductor manufacturers to enhance their own profitability by improving the efficiency of their IC and wafer test processes.

Mechanical Devices end user customers include the world's top semiconductor manufacturers. The company's products FlexTC and MaxTC systems can be seamlessly integrated with the automatic test equipment (ATE) and handlers.

Mechanical Devices is head-quartered in Haifa Bay, Israel with a branch in San Jose, CA, USA which includes its newest sales and service center. Mechanical Devices has a number of sales representatives at key locations throughout Asia, Europe, and the United States.



Worldwide support

Mechanical Devices products are sold and serviced worldwide



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