

## T650 Thermal Platform

The T650 “Integra” family of hot plates was designed to provide an affordable yet reliable approach to conductive thermal testing. They not only offer the lowest purchase cost but the high quality construction assures the lowest cost of ownership.

These hot plates are the quickest and most economical approach to testing electronic components. They are much faster than chambers and interconnecting and tuning of the device under test is easy.

The T650 is heated by cartridge elements embedded in the plate. It is cooled by the expansion of liquid Carbon Dioxide (LCO<sub>2</sub>) or liquid Nitrogen (LN<sub>2</sub>) in an extremely efficient channel hermetically sealed within the plate. Two standard sizes are available (6.75”X6.75” & 11”X11”). The plates are surface ground for flatness and hard plated for durability. A microprocessor-based digital indicating temperature controller is integrated within the hot plate chassis, making for a compact design. The controller has a dual LED display showing both desired temperature and current set point. The thermal ramp rate can be set via the front panel.

A latching failsafe is included in the hotplate to guard against thermal runaway. The plates come in a choice of 115 VAC or 230 VAC input.



### Features:

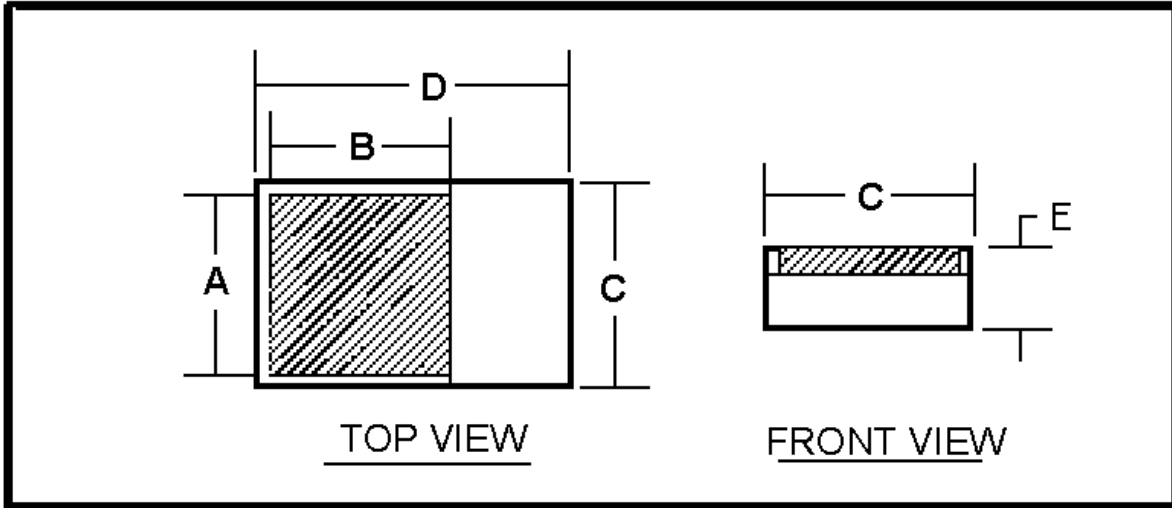
- Low initial cost
- Rapid and efficient testing of components
- Compact size
- Brazed monolithic thermal platform
- Extremely efficient channel design
- Very fast temperature ramp rates
- Controller integrated in chassis
- Surface hard plated for long wear

### Standard Features:

***Ramp and soak profile programming***

***EIA 232 serial Modbus RTU interface***

Optional IEEE-488 GPIB Interface in a remote minibox.

**Dimensions of the system**

**Dimension Table (refer to diagram above)**

MODEL	USABLE PLATE AREA		OVERALL CHASSIS DIMENSIONS		
	A (w)	B (d)	C (w)	D (d)	E (h)
T6506	6.75" (171mm)	6.75" (171mm)	7.75"	12.75"	3" (3.45" w/ feet)
T65011	11" (280mm)	11" (280mm)	12"	16.5"	3" (3.45" w/ feet)

**Facility Data**

MODEL	Temperature Range LCO2	Temperature Range LN2	Heating	Cooling LCO2	Cooling LN2	Facility 110/230VAC 60/50Hz
T6506	-65°C to +130°C	-100°C to +130°C	1000 watts	300 or 900 psig	15-25 psig	9/4.5 Amps
T65011	-65°C to +130°C	-100°C to +130°C	2000 watts	300 or 900 psig	15-25 psig	17/8.5 Amps



**Systems Include:**

Temperature plate with integrated controller, valve, power supply cord and operations manual.

**Accessories Available:**

- Clear polycarbonate cover w/handle
- Adapter plate w/hardware
- LCO<sub>2</sub> Hose-6' with adapter fitting & filter
- LN<sub>2</sub> Hose-6' insulated stainless steel
- Low pressure supply Nitrogen (GN<sub>2</sub>) purge system for desiccator (Facility GN<sub>2</sub> supply of 100 psig or less)
- High pressure supply Nitrogen (GN<sub>2</sub>) purge system for desiccator (Facility GN<sub>2</sub> supply of 100 to 2000 psig)
- Desiccator for nitrogen purge.

**Controller Features and Specifications:**

- ✓ Dual Digital LED Display
- ✓ Optional Digital Communications EIA 232 or IEEE-488 GPIB (external)
- ✓ Fast 10Hz Sensor Sampling
- ✓ Burst Firing Heating Mode
- ✓ Nema 4X Sealed Front Panel
- ✓ 0.1% Sensor Calibration Accuracy
- ✓ ISO 9001 Registered Manufacturing Process
- ✓ Automatic Heating and Cooling Modes
- ✓ Sensor Break Protection
- ✓ Programmable Ramp to Set Point



PARAMETER	DESCRIPTION
Control Type	Microprocessor based digital circuitry
Outputs	Heat and cool modes with PID and PWM control
Output Type	Optically isolated zero crossing solid state relay
Input Type	"T" type thermocouple
Input Span	-99° to +130° C range
Input Sampling	200 millisecond / 10 Hz
Input Accuracy	+/- 0.1% of span +/- 1 degree Celsius
Input Stability	+/- 0.1degree C per degree change in ambient
Display Type	Dual 4 digit LED 0.4" upper 0.25" lower
Display Update	500 millisecond / 2 Hz, time filter adjustable
Operating Environment	0° C to 65° C / 0-90% RH non-condensing
Communications	Optional EIA 485 serial or IEEE-488 GPIB (external)
Display Units	C degrees default display; F degrees programmable
Storage Temperature	-40° to 185° F, -40° to 85° C
Agency Approvals	UL, C-UL, CE, NEMA 4X
Power	100-240VAC +10% -15%; 50/60 Hz +/- 5%
Power Off Data Retention	Nonvolatile memory
PID Tuning	Factory tuned default; customer manual/auto tune
Alarm/Limit Availability	Optional programmable alarm/limit with user output
Alarm/Limit Type	Programmable process or deviation, silenced or non-silenced, latching or non-latching
Alarm/Limit Display	Front panel annunciated or non-annunciated
Alarm/Limit Assignment	Sensor input # 1 high side, low side or high & low side
Alarm/Limit Logic	Programmable as normally open or normally closed
Alarm Limit Tolerance	Programmable Hysteresis
Programmable Ramping to Set Point Time Units	Ramp rate programmed in degrees Celsius per minute