



Temptronic mobile, high speed temperature environments for optical component characterization and testing.



The rapid pace of component design and high volume production demands high efficiency for testing, characterization, and tuning. Thermally, it means that devices must reach their programmed temperatures quickly. ThermoStream® mobile Environments are designed to do just that.

Using Device-Under-Test (DUT) control, the ThermoStream can temperature cycle a device from ambient to -20°C in under 10 seconds. In this example, DUT control produces clean, dry air at -40°C until the component approaches -20°C. Then the air temperature is automatically regulated to -20°C and holds to within 1°C.

Whether testing high volume components with limited temperature cycling or more complex devices that need extensive tuning at temperature, there is a ThermoStream model to help you meet desired yields.

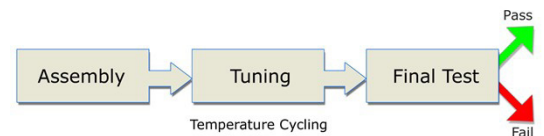
ThermoStreams provide:

- Mobility to generate cold temperatures without LN₂ or LCO₂
- Rapid temperature transition times, up to 40°C/sec.
- Temperature accuracy and stability with DUT control
- Frost elimination with dry-air purge

Used by the leading manufacturers of optical components, ThermoStreams provide rapid temperature transitions with very precise temperature control.



With many connections to the DUT for characterization of optics, laser tuning, and other measurements, open access to the test fixture is critical to productivity. (Agilent test instruments shown with optical transceiver)



Rapid thermal cycling from -80 to 225°C provides optimal throughput for device characterization and tuning at temperature. (See DUT control below.)



DUT Control and Delta Temperature bring optical components to temperature with speed and precision

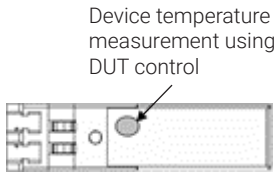


Fig. 1. DUT control: The ThermoStream controller drives the environment to temperature based on reading a sensor affixed to the device. Sensor types can be type T or K thermocouples, 100 Ohm RTD, or diode.

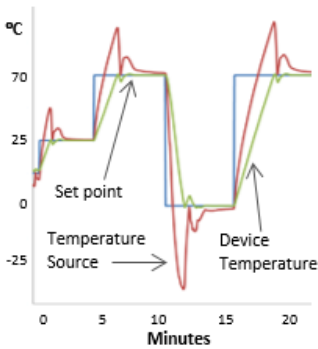


Fig. 2. DUT control example. Thermal cycling between 3 set points: ambient to 70°C; 70°C to 0°C, 0°C to 70°C with 5-minute soak times. Using DUT control, the ThermoStream overdrives the environment to reduce transition time. A selectable max and min allowable temperature protects the DUT from thermal damage.

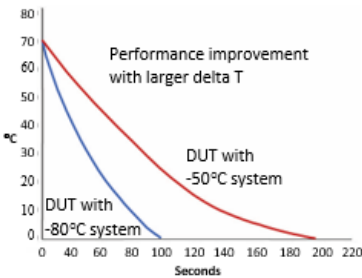


Fig. 3. Delta T reduces test time by half. Response time for two systems to get device to 0°C set point, transitioning from 70°C. The greater the temperature differences (Delta T) between system capacity and set point, the higher the throughput.

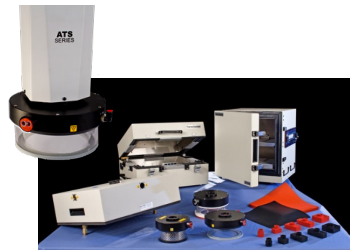


Fig. 4. Adapts to test environment. An articulated arm, automated vertical positioning and remote control optimize user access to test device.

Enclosures with direct or indirect air flow provide an efficient environment. Ease of changing out enclosures provides flexibility to use ThermoStreams as the thermal source with different test fixtures and component packages.

Temptronic models commonly used for characterization and tuning at temperature. The ATS-710 has a touch screen display and Ethernet communications.

Component Tester Models	ATS-545 & ATS-710*
LN2 or LCO2 not required	✓
Temperature Range (at thermal head)	-80° to +225°C
System Airflow Output	4 to 18 scfm (1.8 to 8.5 l/s) continuous
Transition Rates	-55° to +125°C, <10 sec +125° to -55°C, <10 sec
Temperature Display & Resolution	±1°C
Temperature Accuracy	±1°C
Directly Control Device Under Test (DUT)	✓
DUT Control Sensors	Type T or K Thermocouples, RTD (100 Ohm), Diode*
Remote Interface	IEEE, 488, RS232
Thermal Cap for localized thermal test environment, moisture condensation protection at DUT site	✓
LabView™ drivers	✓
CE Compliant and CFC-free	✓
Heated Defrost	✓
Reduced Power Mode - heat only when not using cold temperatures	✓
Automatic Power Reduction - reduce power usage during idle time	✓
Mechanical Arm or Turret Configuration	✓
Optional Extended Height & Reach Configuration for Mechanical Arm	✓
Thermal Cap size options and Flexhose to connect external thermal chamber or test enclosure	✓
Facility Requirements	CDA at 90 psi minimum, various power available 200-250 VAC, 50/60Hz

Comparison of ThermoStream and Thermal Chamber

	ThermoStream	Chamber	Note
Waiting time to get device to temperature	Seconds	Minutes	Typical ThermoStream transition: 15°C/sec
Easily adaptable to fixtures for different component size	✓	X	Variety of standard enclosures: caps, shrouds, hoods, top-and front-load
Mobility to use both at test bench and on production floor	✓	X	Easily rolled to location without the need for LN ₂ or LCO ₂
Flexibility to bring wires and cables to fixture	360°	X	Fixed ports in chambers limit wire and cable access
Automated thermal cycling and device access	✓	X	ThermoStream automates raising and lowering of temperature source