

TVAC SYSTEMS FOR SMALLSAT

Perform pre-launch test requirements in-house and on schedule with Frontier Standard Thermal Cycling Test Systems. Designed and built by the industry leaders in space simulation testing, our TVAC Thermal Cycling systems meet NASA GSFC-STD-7000 standards for vacuum bake-out, temperature margins, thermal cycling, soak time performance, and pressure. Perfect for CubeSats and other space-bound components, this TVAC system gives you control of your testing process with an easy-to-use system that is fully integrated, configurable, and budget-friendly.

Put TVAC testing in your hands with Frontier's standard

TVAC THERMAL CYCLING SYSTEMS

- Get all the TVAC Bake-Out functionality, plus thermal cycling testing capabilities
- Test products for qualification, acceptance, pre-launch requirements, and in-orbit environment viability
- Replicate the extreme pressure and temperature environments of launch and orbit sequences
- Use for performance verification, component qualification, or material research

Hermetic refrigeration and heating circulator

Aluminum platen features single-zone uniform thermal control with conduction heating via resistive heaters and chiller lines located inside platen

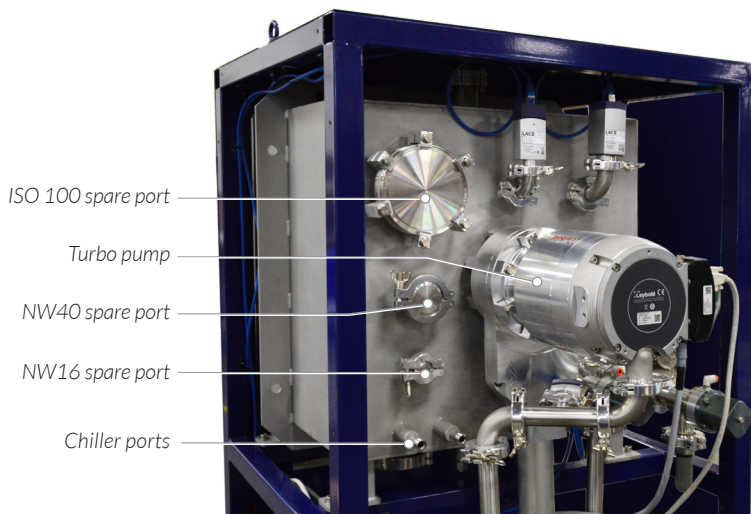
Fully integrated and enclosed system mounted on ruggedized mobile cart

Programmable test recipes and data logging for vacuum, pressure, and temperature

Cube or cylindrical style stainless steel test chamber accommodates configurations up to 6U and includes 6-inch glass viewport and internal LED lighting



FST-2020 Standard Thermal Cycling Test System



ISO 100 spare port

Turbo pump

NW40 spare port

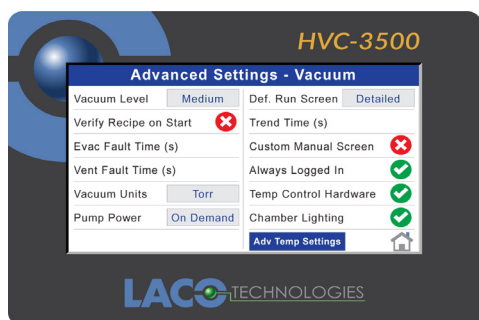
NW16 spare port

Chiller ports

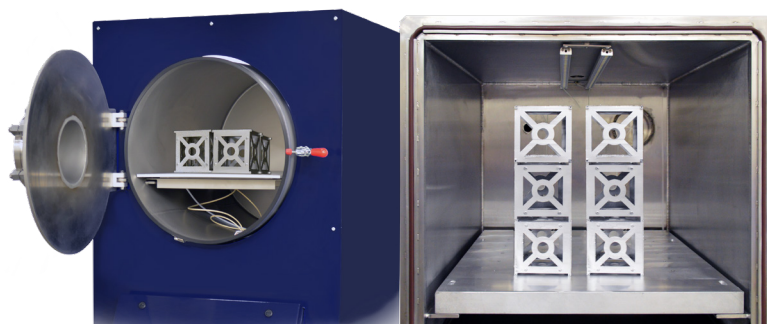
VERSATILE TVAC TESTING

Enjoy flexible test options with pre-configured standard ports and feedthroughs. Customize your system with additional ports and feedthroughs, radiant heating and cooling shrouds, emissivity coating, and platen mounting inserts.

Engineered TVAC Systems You Can Trust.



LACO's HVC-3500 Thermal Vacuum Controller provides automated vacuum and temperature control, customizable software, and adjustable test recipes.



High volume test area with conductive thermal control platen accommodates up to 6U.

FRONTIER STANDARD TVAC TEST SYSTEM SPECIFICATIONS		
TVAC THERMAL CYCLING SYSTEMS		
PART NUMBER	FST-1824 (cylindrical)	FST-2020 (cube)
CHAMBER DIMS (INSIDE)	17.5" DIA X 24.0" D	20.0" W X 20.0" H X 20.0" D
WORKING DIMS (INSIDE)	16.0" DIA X 22.0" D	19.1" W X 15.3" H X 19.0" D
TEMPERATURE RANGE	From -40 °C (-40 °F) to 150 °C (300 °F)	
THERMAL CONTROL	Single-zone conduction electrical heating via platen for bake-out. Thermal cycling cooling/heating via dedicated chiller unit.	
WATTAGE	Electric heater: 3000W Chiller: 3500W at 150 °C to 0 °C and 1500W at -40 °C	
POWER	System: 208-240V, 60HZ (single phase), 20 AMPS Chiller: 208-240V, 60HZ (three phase), 30 AMPS	
UPGRADE OPTIONS	Thermal shrouds, emissivity coating, feedthroughs, platen mounting inserts	Feedthroughs, platen mounting inserts



FST-1824 Standard Thermal Cycling Test System

STANDARD SPECIFICATIONS FOR BAKE-OUT AND THERMAL CYCLING SYSTEMS			
TEST CAPACITY	Capacity up to 6U—appropriate for testing nano, CubeSat, FlatSat, and small satellites	VALVE CONTROL (PNEUMATIC)	Auto and manual control valves—manual mode with turbo pump valve sequencing to protect turbo pump
VACUUM LEVEL	Capable of vacuum levels in the 10 ⁻⁶ Torr range	RECIPES	Vacuum, vent, hold and heat (up to 20 recipe configurations)
PUMPING SYSTEM	Dry pump: 9 CFM Turbomolecular pump: 1 X 10 ⁻⁶ Torr, 290 l/sec N2	DATA STORAGE	Ethernet, internal microSD card, USB drive
SPARE PORTS	CF 2.75 / ISO 100 / NW40 / NW16	TEMPERATURE CONTROL	Setpoint PID, 1 Zone
CONTROLLER	LACO's HVC-3500 thermal vacuum controller. 7-inch color touchscreen with graphical display of vacuum system, vacuum pressure, and temperature	TEMPERATURE MEASUREMENT	3 each additional RTD probes

Maximize your uptime & ask us about our 2-year Service Plan!