

Portable Conditioning Units

Mechanical & LN₂ Cooling



Russells Technical Products portable conditioning units provide innovative, practical solutions for customers across a variety of applications. Offering a robust range of temperature and/or humidity capabilities, these units will condition existing environmental test chambers, temporary test spaces, and custom remote enclosures.

With options for single-stage or cascade refrigeration, or LN₂ cooling, virtually every environment is attainable with our portable conditioning units. A Russells mechanically cooled PCU offers robust environmental testing flexibility, while LN₂ cooling provides a wider cooling range and expedites temperature pull downs for your more extreme testing needs.



TYPICAL PCU PERFORMANCE:

- » **Temperature Range:**
-65°C to +165°C (-85°F to +329°F) in cascade configurations and
-25°C to +165°C (-13°F to +329°F) in single-stage configuration
-85°C to +165°C (-120°F to +329°F) with LN₂ cooling*
- » **Humidity Range:**
10% to 95% RH within the bounds of a +85°C (+185°F) max dry bulb and a +4°C (+40°F) min dewpoint*
- » **Air Delivery Range:**
686 CFM to 372 CFM*

*extended ranges available



Left: For extreme testing, Russells offers a PCU equipped with LN₂ cooling for a wider cooling range and expedited temperature pull downs.

Above: PCU systems are available as an optional add-on to the Russells standard G-Series line of environmental test chambers.

STANDARD FEATURES:

- » Three-sided access to base mounted system components
- » Continuous TIG welded 304 stainless interior liner
- » Non-settling oven grade fiberglass insulation
- » Dual silicone one-piece door gaskets with mitered and vulcanized corners
- » Durable, maintenance free powder coat finish
*custom colors available
- » 6" duct ports on left-hand side wall
- » Heavy duty swivel casters with incorporated leveling pads
- » Refrigeration service manifolds with gauges
- » Quick response vapor generator with replaceable Inconel immersion heaters (humidity models only)
- » Vapor generator failsafe overtemp protection (humidity models only)
- » Humidity water demineralizer with one cartridge* (humidity models only)

REFRIGERATION:

- » Single stage or cascade refrigeration*
- » Direct or indirect LN₂ cooling[^]
- » Zero ozone depletion refrigerants*
- » Energy saving refrigeration bypass capacity control*
- » Low stage desuperheater*
- » Oil pressure switches*
- » Compressor suction and discharge pressure switches*
- » ASME certified vapor tank and condensor*
- » Inherent compressor overload protection*
- » High stage compressor crankcase heater*
- » Compressor head fans*
- » Low stage oil separator*
- » All piping joints silfos or silver soldered
- » Stainless steel compressor condensate pans*
- » Cryogenic service control solenoid valve[^]

CONTROLS:

- » Watlow F4T programmer/controller
- » Ethernet Modbus TCP communication
- » Touchscreen control interface
- » Robust graphing and datalogging capability
- » Digital Product Safeguard high/low temperature limit with audible alarm
- » Solid state humidity sensor* (humidity models only)

ELECTRICAL:

- » UL 508A compliant control panel
- » All wiring meets National Electric Code (NEC) standards
- » 120v control circuit transformer
- » Fully enclosed electrical panel
- » All circuits fused or circuit breaker protected
- » Full system function switches and indicator lights
- » All wiring color coded and labeled
- » High temperature failsafe limit
- » Master heating circuit contactor
- » Air circulator/heater interlock
- » Balanced load on 3 phase power

OPTIONAL ACCESSORIES:

- » russellsOne touch screen temperature and humidity programmer/controller
- » Insulated flexible air ducts
- » LN₂ or CO₂ boost cooling*
- » Humidity water demineralizer*
- » Circular or electronic chart recorders
- » GN₂ purge system to minimize migrating moisture and condensation to control humidity
- » VFD fan control
- » Boost heating system
- » Dry air purge to minimize migrating moisture and condensation to control humidity
- » Air-cooled or water-cooled refrigeration condensor*
- » Additional LN₂ nozzles for variable flow rate[^]
- » Main power disconnect switch
- » Running time meter
- » Minimal spark options for battery testing and potentially hazardous test articles
- » High heat options (temperature only models)
- » Multiple voltage options
- » NRTL/eSAFE inspection

* denotes mechanical cooling only feature

[^] denotes LN₂ cooling only feature

