

HUMIDITY/TEMPERATURE OPERATING SYSTEMS

Series 5400

Dehumidify, humidify, heat and cool bench-top and floor standing chambers, dry boxes, glove boxes and desiccator cabinets with volumes up to 60 cu. ft. Configured to meet most humidity and temperature applications requiring independent control of humidity from <2 to >98% RH and temperature from <32 to 135°F (0-55°C). Use with ETS or other controllers and chambers for testing, weighing, calibration, assembly, storage and R&D.

Features:

- Dehumidifiers
 - Renewable, indicating desiccant
 - Self-regenerating
 - Dry gas
- Ultrasonic humidifiers
- Cooling
 - Thermoelectric
 - Refrigeration
 - Liquid-to-gas conversion
- Electric Heaters
- Use with new chambers or retrofit existing chambers
- Custom systems available



Humidity



Temperature



electro-tech systems, inc.

www.electrotechsystems.com

3101 Mt. Carmel Avenue, Glenside, PA 19038 • Tel: (215) 887-2196 • Fax: (215) 887-0131

Description:

All ETS Operating Systems require 115 or 230 VAC, 50/60 Hz power. **Voltage requirements must be specified at time of order.**



Model 5461

Dehumidifiers: Available in closed and open loop configurations. Closed loop systems use desiccant/pump technology with a pump drawing air from the enclosure, passing it through a drying column containing indicating calcium sulfate (CaSO_4) then returning dry air to the chamber. The process is repeated until the desired humidity level is achieved.



Model 5471



Model 5465

Open loop systems use dry gas or dry air to purge an enclosure containing higher humidity air. A valve controls the flow of dry nitrogen (Ni) or other dry gas. A dual column self-regenerative molecular sieve desiccant dryer dries house air used to purge the chamber.



Model 5478

Desiccant based systems reduce humidity in properly sealed chambers to approximately 10% RH. Dry gas systems can maintain less than 1% RH.

Humidifiers: Ultrasonic humidifiers provide a quick and efficient means to achieve high humidity levels, even at elevated temperatures. Open and closed loop systems use distilled or deionized tap water, single or multiple transducers plus self-contained fans, pumps or house air to drive humidity levels to 100% below 86°F (30°C) in moderate size enclosures.



Model 5462



Model 5472



Model 5472-3 (3-Head)

Cooling: Cooling systems utilizing thermoelectric, refrigeration and liquid-to-gas conversion technologies provide precise temperature stability or rapid temperature reduction in properly configured test chambers. The actual temperature reduction achieved is a function of many factors including ambient temperature, chamber size, insulation, heat load and humidity. The Cooling Requirements Table (see specifications) provides an estimate of the correct size cooling system required for various non-insulated acrylic chamber surface areas without heat load.

Thermoelectric units are available in single or multiple configurations to increase cooling capacity up to 400 Watts (1150 BTU's). When used in conjunction with controlled heating, temperature stability better than 1°F/C in non-insulated acrylic enclosures can be achieved.

A 700 Watt (2000 BTU) refrigerator using environmentally friendly R134 refrigerant is the highest capacity cooler currently available. Evaporator temperatures kept above 32°F (0°C), enhancing temperature stability in non-insulated enclosures greater than 20 cu. ft.

Liquid CO₂-to-Gas conversion is a cost-effective system that cools through the rapid expansion of a liquid to gas as it passes through a small orifice, creating gas temperatures below -100°F (-73°C). It provides the fastest cooling of the three cooling technologies. Liquid nitrogen may also be used, but requires a cryogenic valve and hose assembly and is typically used in conjunction with nitrogen drying systems.



Model 5473-150 Thermoelectric



Model 5463 Gas Cooling

Gas cooling is not recommended for high humidity applications since the cold gas will dry the environment and may overwhelm the capacity of the humidifier.

Heaters: Electric heaters are supplied as single units or cascaded to achieve heating capacities from 125 to 1000 Watts. Integrated heating systems include circulating fans, overload protection, power on indication plus auxiliary weather-tight North American AC outlets housed in aluminum or stainless steel enclosures.



Model 5474



Model 5474L

Specifications:

Dehumidifiers:

Model 5461: Closed loop, Desiccant/Pump

Drying medium: Renewable, indicating CaSO₄
 Capacity: 1 lb (.45kg)
 Outlet Dew Pt.: -100°F @ 100°F Sat. air in
 Pump/ Output flow rate: Reciprcating/0.21 SCFM
 Dimensions: Approx. 12"x12"x12" (30x30x30cm)
 Weight: 3.25 lbs (1.5kg)

Model 5465: Open Loop, Dry Gas

Drying medium: Nitrogen, CO₂, Dry Air, etc.
 Capacity: Determined by source (tank or gas generator)
 Control: Solenoid Valve with pressure regulator
 Output flow rate: Adjustable 0.2 – 2.0 SCFM
 Weight: 2 lbs (0.9kg)

Model 5471: Closed Loop, Desiccant/Pump

Drying medium: Renewable, indicating, CaSO₄
 Capacity: 2.5 lb (1.2kg)
 Outlet Dew Pt.: -100°F @ 100°F Sat. air in
 Pump/Outlet flow rate: Diaphragm/0.71 SCFM
 Dimensions: 6.5"Wx9.5D"x16"H (6.5x24x40.6cm)
 Weight: 7 lbs (3.2kg)

Model 5478: Self-Regenerating Desiccant

Drying medium: #5A Molecular sieve
 Source/Capacity: Continuous, air @ 50-100psi
 Outlet Dew Pt.: -40°F DP @ 90°F Sat. air in
 Output flow rate: 0.26 SCFM @ 50 psig
 Dimensions: 6.5"Wx9.5"Dx4.5"H (16.5x24x11.5cm)
 Weight: 7 lbs (3.2kg)

Humidifiers:

Model 5462: Open Loop, Single-Head Ultrasonic

Air source: Fan, 1.0" (25mm) ID tube
 Water: Distilled or deionized
 Capacity: 0.5 Gal (1.9 l)
 Max RH: 100% @ 72°F (22°C)
 Dimensions: 11"Wx6"Dx9"H (28x15x23cm)
 Weight: 3 lbs (1.4kg)
 Output: <0.5 cfm

Model 5472: Open Loop, Single-Head Ultrasonic

Air source: Pump, 1.0" ID tube
 Water: Deionized from included deionizer column
 Capacity: 5.0 Gal (19 l) tank or deionized tap water
 Max RH: 100% @ 72°F (22°C)
 Dimensions: 6.5"Wx9.5"Dx6.5"H (16.5x24x16.5cm)
 Weight: 7 lbs (3.2kg)
 Options: 3-Head transducer, house air & closed loop
 Output: 1-Hd – 0.71 cfm; 3-Hd – 0.71 cfm

Coolers:

Model 5473 Thermoelectric

Cooling capacity: 100, 150, 200, 300 & 400 Watts
 Cooling requirements: Refer to Table below
 Power Req.:6A@115/3.5A@230VAC per 200W cooling

Model 5463 Liquid CO₂

Source: Liquid CO₂ tank with dip tube (user supplied)
 Cooling: To 25°F (-4°C) in 13 ft³ acrylic chamber
 Control: Solenoid valve with pressure regulator

Model 5475 Refrigeration

Cooling capacity: 700 Watts
 Cooling requirements: Refer to Table below
 Power Req.: 8A

Model 5466 Liquid Nitrogen

Source: Liquid Ni Tank, 50psi min (user supplied)
 Cooling: To 25°F (-4°C) in 13 ft³ acrylic chamber
 Control: Cryogenic hose & solenoid valve

Cooling requirement Table for non-insulated acrylic chambers

	Area (in ²)			
	5	10	15	20
2000	60	125	200	275
3000	80	175	275	400
4000	100	225	375	500
5000	125	275	450	650
6000	150	325	525	750
7000	175	375	625	900
8000	200	425	700	1000

Heaters:

Model 5474

Capacity: 2x250 Watt Electric strip
 Housing: Stainless steel, 16"x13"x3.125" (41x33x8cm)
 Fans: 1x110 cfm
 Thermal Protection: 135°F (55°C)
 Aux AC Outlet: Dual North American GFI

Model 5474-L

Capacity: 2x250 Watt Electric strip
 Housing: Aluminum, 24"x14"x4" (60x36x10cm)
 Fans: 2x110 cfm
 Thermal Protection: 135°F (55°C)
 Aux AC Outlet: Dual North American GFI

Warranty: One (1) Year

Specifications subject to change without notice.

12/07