



# FreeZone® Plus™ 4.5 Liter Cascade Freeze Dry Systems

## SPECIFICATIONS

### All models feature:

- Upright stainless steel collector capable of removing 4 liters of water in 24 hours and holding 4.5 liters of ice before defrosting.\*
- Dual 1/3 hp CFC-free refrigeration systems to cool collector to **-84° C (-119° F)**. For samples containing water or acetonitrile. Not for use with samples containing methanol or ethanol.
- 12-Port Drying Chamber 10-273-19 included (requires attachment).
- ❖ Brushed stainless steel and glacier white, powder-coated steel exterior with blue accents.
- ❖ LCD that displays system operating parameters, set-up parameters and alarm messages. It may be user-configured to display vacuum in mBar, Pa or Torr and temperature in ° F or ° C. It also displays total number of hours of refrigeration system operation and time since the refrigeration system was serviced and the total number of hours of vacuum pump operation and time since the vacuum pump was serviced (in hours).
- ❖ Red alarm light that flashes and beeper that sounds to indicate that an abnormal system event has occurred, including: power failure, improper line voltage supply, collector temperature rise above -40° C, service vacuum pump (after 1000 hours of vacuum use), and moisture in collector. Pressing the Menu Switch displays the alarm message on the LCD.
- LED vacuum and temperature “waves” for at-a-glance display of relative system vacuum and collector temperature.
- ❖ Moisture sensor that prevents refrigeration or vacuum start-up when moisture is detected in the collector chamber area.
- Vacuum control valve that maintains setpoint vacuum level.
- ❖ Vacuum break valve that bleeds air into the system when power to the freeze dryer or vacuum pump is shut off. If a power outage less than approximately 5 minutes occurs, the freeze dryer will restart and the refrigeration and vacuum system will resume operation once power is restored. If the power failure is more than approximately 5 minutes and the collector warms above safe limits, the freeze dryer will not automatically restart.
- Rear-mounted RS-232 port to transmit data to a user-supplied computer. Transmission intervals may be user-configured for 10, 30, 60, 300 or 600 seconds.
- Automatic start-up switch for collector cool-down and vacuum pull-down with manual override switches.
- Side-mounted, retractable, 9" collector drain hose.
- Clear acrylic lid, 3/4" thick, with 3" diameter port for connection of drying chamber (included).
- Side-mounted power switch, rear-mounted electrical receptacle (for vacuum pump connection) and 3-wire cord with 20 amp plug.
- 3" diameter casters.
- 3/4" OD vacuum connection, three feet of 3/4" ID vacuum hose and two clamps.
- Overall dimensions: 22.5" w x 24.2" d x 36.5" h (without drying chamber) (57.2 cm x 61.5 cm x 92.7 cm).
- Overall dimensions: 22.5" w x 24.2" d x 46.9" h (with drying chamber) (57.2 cm x 61.5 cm x 119.1 cm).

### Models conform to the following standards:

- UL Standard 61010A-1 (60 Hz models).
- CAN/CSA C22.2 No. 1010.1 (60 Hz models).
- CE Conformity marking (230 volts, 50 Hz models).



FreeZone Plus 4.5 Liter Cascade Freeze Dry System 16-108-506.

### Options include:

- PTFE-coated collector coil and chamber for processes involving corrosive compounds.
- Domestic or international electrical configuration.

### All models require (not included):

- Vacuum pump with a displacement of at least 86 liters per minute, 0.002 mBar ultimate pressure and fitting suitable for 3/4" ID vacuum hose. See pages 57-59.
- Freeze dry glassware if not bulk freeze drying. See pages 60-63.

### See ordering information on page 35.

\* Freeze drying rate will be lower for samples other than shell-frozen plain water. For optimum performance, room temperature should be 21° C (70° F) or colder.

❖ Exclusive feature