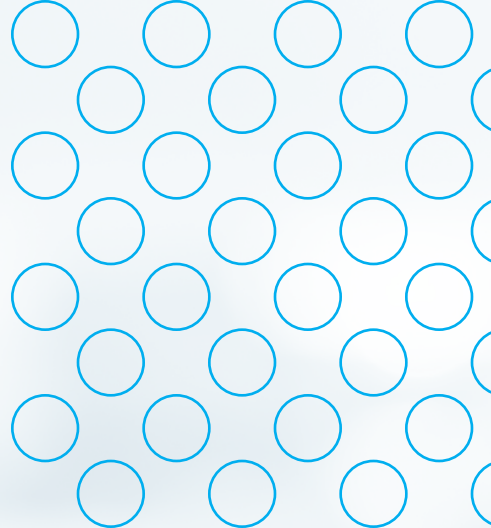


Bahnson
Environmental
Specialties

**Infinitely
Precise.
Ultimately
Reliable.**



Specifications (subject to change without notice)

Bahnsen Environmental Specialties can manufacture chambers to meet special size, voltage, or range requirements not accommodated below. Please speak with a Sales Associate to discuss your needs.

Interior Finish (All Models): 22 gauge stainless steel

Exterior Finish (All Models): Sprayed enamel over steel (optional stainless steel)

BENCHTOP MODEL									
CHAMBER MODEL	INTERIOR VOLUME	TEMP. RANGE	HUMIDITY RANGE	VOLUMETRIC UNIFORMITY	4-WIRE ELECTRICAL VOLTS / Ø / AMPS	INT. DIMENSIONS WXD _X H	EXT. DIMENSIONS WXD _X H	SHELVES STD/MAX	WEIGHT LBS./KG.
ES2000 A-BT	12.0 ft. ³ (335 liters)	35–70°C	N/A	±0.3°C (±0.6°F)	208–230 / 1 / 30	34 x 28.5 x 21.5 in. (87 x 73 x 55 cm.)	41 x 34.5 x 52.5 in. (104 x 88 x 133 cm.)	2/7	350/159
ES2000 AM-BT		35–70°C	10–96%		208–230 / 1 / 30				425/193
ES2000 C-BT		2–70°C	N/A	±3.0% RH	208–230 / 1 / 30				525/238
ES2000 CDM-BT		2–70°C	10–96%	208–230 / 1 / 30	570/259				
ES2000 CDMD-BT		2–70°C	10–96%	208–230 / 1 / 30	600/272				
UPRIGHT MODEL									
ES2000 A	33.8 ft. ³ (957 liters)	35–70°C	N/A	±0.3°C (±0.6°F)	208–230 / 1 / 30	34 x 28.5 x 60 in. (87 x 73 x 153 cm.)	41 x 34.5 x 91.5 in. (104 x 88 x 233 cm.)	4/19	450/204
ES2000 AM		35–70°C	10–96%		208–230 / 1 / 30				525/238
ES2000 C		2–70°C	N/A	±3.0% RH	208–230 / 1 / 30				700/318
ES2000 CDM		2–70°C	10–96%	208–230 / 1 / 30	745/338				
ES2000 CDMD		2–70°C	10–96%	208–230 / 1 / 30	775/352				
DOUBLEWIDE MODEL									
ES2000 A-DW	74.2 ft. ³ (2101 liters)	35–70°C	N/A	±1.0°C (±1.8°F)	208–230 / 1 / 30	75 x 28.5 x 60 in. (191 x 73 x 153 cm.)	82 x 34.5 x 91.5 in. (208 x 88 x 233 cm.)	8/38	1020/463
ES2000 AM-DW		35–70°C	10–96%		208–230 / 1 / 30				1060/481
ES2000 C-DW		2–70°C	N/A	±5.0% RH	208–230 / 1 / 30				1120/508
ES2000 CDM-DW		2–70°C	10–96%	208–230 / 1 / 30	1170/531				
ES2000 CDMD-DW		2–70°C	10–96%	208–230 / 1 / 30	1200/544				
TRIPLEWIDE MODEL									
ES2000 A-TW	114.8 ft. ³ (3251 liters)	35–70°C	N/A	±1.0°C (±1.8°F)	208–230 / 1 / 30	116 x 28.5 x 60 in. (295 x 73 x 153 cm.)	123 x 34.5 x 91.5 in. (312 x 88 x 233 cm.)	12/57	1420/644
ES2000 AM-TW		35–70°C	10–96%		208–230 / 1 / 30				1460/662
ES2000 C-TW		2–70°C	N/A	±5.0% RH	208–230 / 1 / 30				1520/689
ES2000 CDM-TW		2–70°C	10–96%	208–230 / 1 / 30	1570/712				
ES2000 CDMD-TW		2–70°C	10–96%	208–230 / 1 / 30	1600/726				

Notes applicable to all models above:

- Temperature and humidity ranges are based upon 25°C/50% RH ambient.
- Refer to separate Humidity Performance Curves for specific range limitations of humidity control models.
- Exterior height shown with casters (except benchtop model), and with leveling bolts (benchtop model).
Door may be removed to decrease depth to 33".
- Shelf quantities are: "standard" number supplied with unit, "maximum" number based on minimum 3" spacings as recommended by BES.
- 50 Hz/220V, 120V, and other special voltages are available upon special request.
Consult factory for more information.
- "CDMD" models – A desiccant wheel drier is field mounted on the unit behind this model chamber.
This requires an additional depth allowance of 12".
- "CDM-AT" models – An air tower drier is field mounted on the unit behind this special model chamber.
This requires an additional depth of 5" for the compressed air fed system
- "-LT" & "-SS" models – The suffixes are added to denote Low Temperature capability option (–25°C) and Stainless Steel exterior option.





Our chambers are finely crafted to satisfy some of the most stringent, precise conditions necessary to support a wide array of research, development, and manufacturing applications. **We are committed to providing our customers with the performance and reliability they need to recognize an ongoing return on their investment.**

VOLUMETRIC UNIFORMITY FOR PERFORMANCE THAT GOES BEYOND CONTROL

When assessing the performance of an environmental chamber, it is crucial to consider factors beyond temperature control and to take into account uniformity and repeatability.

All chambers are designed to reach certain temperatures or relative humidity (RH) set points, and most chambers specify control accuracy. However, few chambers are designed to achieve volumetric uniformity, a measure that indicates identical conditions across every inch of storage space.

The Bahnsen ES2000 series of chambers delivers precise volumetric uniformity, with measurable temperature and RH uniformities down to $\pm 0.3^{\circ}\text{C}$ and ± 2 percent.

SIMPLIFY MAINTENANCE BY ELIMINATING DEFROST

Frost build-up in critical storage freezers wreaks havoc on inventory, production planning, and maintenance schedules. During the defrost process sensitive products are often put at serious risk.

At BES, we designed the ES2000 line to eliminate frost. Our chambers are capable of removing moisture from air circulation - without sacrificing temperature uniformity.

For additional protection, we never place sensors in glycol, which can mask temperature spikes.

PEACE-OF-MIND WITH FAIL-SAFE SYSTEM REDUNDANCY

Environmental chambers deal with highly sensitive products, which is why 100-percent mechanical redundancy of systems is essential.

Unlike many reach-in chambers, the double- and triple-wide models of the ES2000 series can be equipped with system redundancy to keep contents safe in the event of a mechanical failure.

CONFIGURABLE CHAMBERS TO MEET SPECIALIZED APPLICATIONS

Environmental chambers are used for a wide variety of applications, some of which require creative solutions.

We have decades of experience designing and building custom walk-in chambers for a range of unique clients. Our team of professional engineers thrive on projects that require a special touch.

That same spirit extends to the design of our reach-in chambers, and the ES2000 series has an array of customizable features that can be configured to some of the most challenging, specialized specifications.

For nearly 50 years, **Bahson Environmental Specialties (BES)** has designed, manufactured, installed, and serviced a diverse line of high-performance controlled environmental chambers. Our line of cutting-edge reach-in chambers and highly advanced walk-in rooms are finely crafted to satisfy the most stringent, precise conditions for a wide array of research, development, and manufacturing applications. **We offer clients a single-source solution, stretching from pre-sales support and design, to installation, validation, and maintenance.**



WALK-IN ROOMS

INDUSTRY-LEADING WALK-IN ROOMS

We have earned recognition in the industry for our trend-setting environmental rooms thanks to their outstanding performance and cutting-edge technology.

Our walk-in rooms are versatile enough to simulate a variety of temperature and humidity conditions suited for testing, controlled storage, or laboratory applications.

Our range of room specifications:

- Cold/Freezer:** -50°C to +10°C
- Warm:** +10°C to +70°C
- Cleanroom:** Class 100 to 100,000 at -20°C to +40°C
- Stability:** Temperature uniformity and multiple relative humidity (RH) setpoints
- Dry:** Relative humidity (RH) to less than one percent
- Ultra-Low:** -70°C to -80°C



REACH-IN CHAMBERS

REACH-IN AND UPRIGHT CHAMBERS DESIGNED FOR PRECISION AND CONTROL

Our ES2000 line of reach-in chambers is designed for durability and high performance. With key features including volumetric temperature and humidity uniformity, mechanical redundancy, a range of size variations, and decades-long lifespan, these industry-leading chambers are built for applications where failure is not an option.

Features and specifications of the ES200 line include:

- Internal dimensions of 12, 33.8, 74.2, and 114.8 cubic feet
- Temperature range of -30°C to +70°C
- Temperature uniformity as low as +/- 0.3°C
- 10- to 96-percent relative humidity (RH) range

Special options: Photostability, CO2, Dessicant drier, Explosion safe, Air tower, Clean room applications



VALIDATION/SUPPORT

SINGLE-SOURCE VALIDATION AND SUPPORT SERVICES

In addition to building excellent products, we take pride in our ability to support our customers through the entire lifecycle of their environmental chambers.

Our factory-trained installation and service teams provide:

- Start up
- Validation/Mapping
- Calibration
- Predictive/Preventative maintenance
- Repair
- Retrofit

Our chambers come in a **range of sizes and design specifications** that allow them to meet some of the most demanding applications, specialized storage requirements, and unique conditions.

A COMPREHENSIVE SELECTION OF CONFIGURATION OPTIONS

Access Ports: Available in 1-inch, 2-inch, and 3-inch sizes. 1-inch port comes standard.

Chart Recorders: Can be factory installed into control panels for a permanent record of chamber conditions.

Classified/Hazardous Interiors: Can be constructed to National Electric Code (NEC) Class I Division II requirements.

CO2 Controls: The system allows for CO2 control from low parts per million to high percentage levels. A high quality, infrared technology gas sensor allows for excellent repeatability, linearity, and control.

Condensate Pump: Can be provided to move condensate/drain water to remote locations.

Data Communication: The RS-485 option enables both remote monitoring and control of parameters. The 4-20 mA option provides only remote monitoring.

Dry Air Tower: Extends low humidity performance without drier reject heat or for frost-free operation below 0°C.

Duplex Receptacle: A single 3A receptacle may be provided on the interior back wall for small electric/electronic equipment.

Electrofin Coil Coating: Provides for ultra-high corrosion resistance to strongly acidic atmospheres.

Glass Door/View Window: A factory-installed, triple-pane window to view products in test. Note that this option limits the low-end range to 0°C.

Heated Condensate Pan: An alternative to the condensate pump to evaporate condensate/drain water.

International/Special Voltages: Available in 50 hertz and 220-240 volts with CE mark or 120 volts upon request.

Lighting Control: Configurable for photostability testing, as well as various general internal lighting.

Low Temperature (LT): Capable of achieving -30°C.

Mechanical Redundancy: Both the double- and triple-wide units can be equipped with duplicate refrigeration and airflow systems.

National Electric Manufacturers Association (NEMA) Cord Set: Available with a plug and receptacle rather than hard-wired.

Programmable/Ramping Control: Ramp/soak profile capability is available through drop down menus. Offerings extend up to 99 steps with cycle repeats to provide virtually unlimited numbers of profiles and steps.

Pass-Thru Chambers: To store or transfer material into or between cleanroom environments.

Benchtop Stand: 33-inch-high, stainless-steel single-unit stand with casters for -BT chambers.

Cabinet and Shelves: Chamber interior, exterior, and shelves are available in 316 stainless steel.

Uninterruptible Power Supply (UPS)

Backup Power: In the event of power loss, the control system can continue to display process values and record or retransmit values for monitoring. Standard options range from 20 minutes to over an hour.

Water-Cooled Refrigeration System:

Uses the building water supply to provide efficient cooling and low heat rejection.





Bahnsen

Environmental Specialties

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