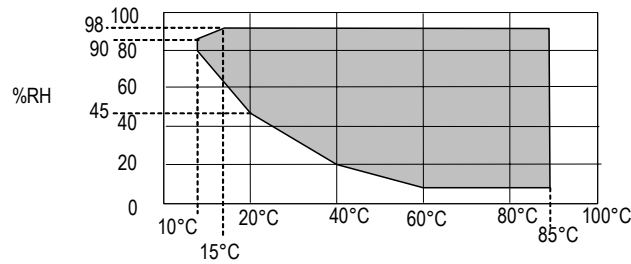


PREPARED BY	08/03/12 TJE		PLATINOUS SERIES LOW TEMPERATURE AND HUMIDITY CHAMBER SPECIFICATION	Model	Drawing No.	Spc. No.	ECSP12006	1/2
REVISION	A	8/5/13 BTP		EPX-2H		ESPEC		
	B	08/22/13 DPA		EPX-3H				
	C	1/7/19 TAF		EPX-4H				
	D							
	E							

1. Performance

- | | |
|---|--|
| 1.1. Temperature Range | -70 to 180°C |
| 1.2. Temperature Fluctuation ¹ | ± 0.3°C (± 0.5°C for 32 ft ³) ≤100°C
± 0.5°C (± 0.7°C for 32 ft ³) >100°C |
| 1.3. Temperature Gradient ² | ± 0.7°C (± 1.0°C for 32 ft ³) ≤100°C
± 1.0°C (± 1.5°C for 32 ft ³) >100°C |
| 1.4. Humidity Range | 10 to 98% RH (Range without Live Load) |



- | | |
|--|---|
| 1.5. Humidity Fluctuation ³ | ± 2.5% RH (± 3.0% RH for 32 ft ³) |
| 1.6. Humidity Gradient ³ | ± 3.0% RH (± 5.0% RH for 32 ft ³) empty chamber after stabilization |

1.7. Temperature Rate of Change¹

Model	Dry / Wet Heaters	Compressor	Heating °C/min Average Rate		Cooling °C/min Average Rate		Live Load (60 Hz)	
			208 Volt	50 Hz	60 Hz	23°C	-50°C	
EPX-2H	3 kW / 2.5 kW	2 hp x 2	6.0	3.0	4.0	1500	850	
EPX-3H	3 kW / 2.5 kW	2 hp x 2	5.0	2.0	2.5	1200	650	
EPX-4H	6 kW / 5 kW	2 hp x 2	6.0	0.9	1.2	1000	500	

¹ per IEC 60068 3-6 except measured in air supply.

² per IEC 60068 3-5

³ per IEC 60068 3-6

- | | |
|----------------------|--|
| 1.8. Air Circulation | 400 cfm for 8 ft ³ and 14 ft ³
800 cfm for 32 ft ³ |
|----------------------|--|

2. Dimensions (for move-in dimensions see section 3.6)

2.1. Exterior

Model	Dimensions (W x D x H)	Weight
EPX-2H	922 mm x 1180 mm x 1934 mm 36.31" x 46.46" x 76.14"	409 kg 900 lb.
EPX-3H	1022 mm x 1380 mm x 2034 mm 40.25" x 54.33" x 80.08"	470 kg 1035 lb.
EPX-4H	1422 mm x 1474 mm x 2187 mm 55.99" x 58.03" x 86.11"	632 kg 1390 lb.

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2.2. Interior

Model	Dimensions (W x D x H)	Volume
EPX-2H	500 mm x 607 mm x 750 mm 19.69" x 23.89" x 29.53"	228 L 8 ft ³
EPX-3H	600 mm x 807 mm x 850 mm 23.62" x 31.77" x 33.47"	412 L 14 ft ³
EPX-4H	1000 mm x 901 mm x 1000 mm 39.4" x 35.5" x 39.4"	1000 L 32 ft ³

3. Site requirements

3.1. Ambient Temperature

Allowable range of operation: 5 to 35°C (41 to 95°F)
Range of assured performance: 10 to 25°C (50 to 77°F)

3.2. Power

208/230V 3Ph 60Hz ±5%
200/220V 3Ph 50Hz ±5%

Model	Minimum Service Size
EPX-2H	40 A
EPX-3H	40 A
EPX-4H	60 A

ETL listed electrical panel conforming to UL508A

3.3. Water for Humidifier

3.3.1. Connection

3/8" hose barb fitting.

3.3.2. Flow Rate

Peak flow: 10 gph (30-75 psig).

3.3.3. Water Quality

0.2 µS/cm to 10 µS/cm.

Maximum 2 mg/L free chlorine & filtered to 5 micron or less.

3.4. Refrigeration Cooling

3.4.1. Air Cooled (Built-in)

Model	Heat Rejection to ambient (BTU / Hr)	Noise Level** (dBA)
EPX	25,000	76

** Noise level measured 1 m out and 1 m above the floor, all sides

3.4.2. Water Cooled (Optional, replaces air cooled)

(minimum 30 psi differential pressure)

Allowable water temp. range : 5 to 32°C

Range of assured performance: 10 to 30°C

Flow rate and pressure varies with water temp.

Model	Water* (gpm) @24°C	Connection Size (NPT)	Noise Level** (dBA)
EPX	2.0	1/2"	75

* Detailed flowrate charts available upon request

** Noise level measured 1 m out and 1 m above the floor, all sides

3.5. Gravity Drain

1/2" hose barb fitting

3.6. Move-in Dimensions

Model	Dimensions (W x D x H)
EPX-2H	965 mm x 1219 mm x 1943 mm 38.00" x 48.00" x 76.50"
EPX-3H	1067 mm x 1416 mm x 2045 mm 42.00" x 55.75" x 80.50"
EPX-4H	1467 mm x 1511 mm x 2197 mm 57.75" x 59.50" x 86.50"

PREPARED BY	08/03/12 TJE	PLATINOUS FEATURES DETAILS SPECIFICATION	Model	Drawing No.	Spc. No.	ECSP12003	1/4	
REVISION	G		9/14/18 TAF			ESPEC		
	H		1/29/20 TAF					
	J							
	K							
	L							

Note: The information provided here is a supplement to the equipment specifications for Platinous models.

1. Additional utilities information:

The system is provided with an **electrical disconnect switch** which includes a lockout feature. The disconnect rating is listed in the chamber specification.

For humidity models (EPL or EPX), the **humidity water usage rate** varies depending on the set test conditions.

Example:	Condition	Usage
	continuous 85°C/85%	1/2 - 3/4 gallons per hour

Water used for humidification must be of high quality. Micro-Siemens (abbreviated μS) is a rating of conductivity for water. The lower the conductivity is, the higher the quality of the water. ESPEC offers a “de-ionizing” filter option to meet the minimum quality required, assuming there is low mineral content in the supply water. It is recommended to have the water supply analyzed by a water conditioning company for additional purification options.

Warning: If the water is *too* pure, it can actually be corrosive, creating holes in the chamber’s stainless steel liner.

2. Cabinet features:

The **exterior** of the Platinous chamber is 430 stainless steel, which is magnetic for easy hanging of notices.

The **interior** chamber liner is 304 stainless steel. The liner has rounded corners for easy cleaning. The chamber is insulated with high temperature fiberglass.

The **door frame** is made of an unsaturated polyester material to create a thermal break between the test conditions inside and the ambient conditions outside. In addition, the thermal break has a surface heater as an additional method to help prevent condensation on the exterior of the chamber.

One **cable port** is provided to allow users to run wires and other lines into the chamber. This 4 inch diameter port comes with two flexible silicone port plugs (impervious to water), which can be used to seal the port. The exterior comes equipped with a screw on cap for sealing the port when it is not in use. Additional ports can be added as an option. ESPEC uses a resin sleeve as a thermal break between the interior and exterior with all cable ports.

All models include heavy-duty **casters** with leveling feet. Primary service panels are hinged or lift off style for convenient access and locked via quarter-turn fasteners. No lift off panel weighs more than 25 lbs.

Operator panel found on the front of the electrical enclosure includes: P300 touch screen interface, product temp protector set point, USB port and optional chamber light switch. Optional chart recorder and optional emergency stop pushbutton are installed below the operator panel. Other optional features may have switches or indicators installed on the enclosure, as well.

A separate interface panel allows access to standard external relays and optional computer connections.

The side walls of the chamber have pilasters for supporting the shelves.

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3. Refrigeration systems:

Ultimate low temperature (as shown on specification)	Refrigeration type	Refrigerant used*	Number of compressors
-35 °C	Single Stage	R-404A	1
-30 °C	Single Stage	R-449A	1
-70 °C	Cascade	R-404A and R-508B	2
-70 °C	Cascade	R-449A and R-508B	2

- The refrigeration system is modular to allow for high quality construction methods and ease of service.
- Platinum models include charging taps for easy maintenance.
- MSDS documents on the refrigerants can be found by following this link:

R-404A / R-449A / R-508B

https://www.chemours.com/Chemours_Home/en_US/msds-search/

*R-404A can be substituted with optional R-449A

4. Operational features:

Humidity controlled models (EPL or EPX) have a **humidity generator**:

Humidity generation method
Internal steam generator, surface evaporating type, with sheathed heater.

Recirculating airflow is generated by one or more externally-mounted **blower motors**. Each permanently lubricated motor has a direct shaft into the chamber's plenum with a Sirocco Fan attached. The airflow in the specification is a measured rate, taking into account pressure drop. The number and power of blower motors:

Model(s)	Number	Size
EP 2 & 3	2	40 Watt.
EP 4	4	40 Watt.

The **temperature sensor** is a type-T thermocouple. The **humidity sensor** is a type-T thermocouple with wet sock. The P-300 automatically calculates relative humidity. A solid state humidity sensor may be substituted by the request of the customer at the time of order.

Two **event relay terminals**¹ allow the user to control the device-under-test (DUT), or external equipment during specific program steps.

Safety features:

- Three levels of overheat protection, two settable by the user:
 1. Overheat and overcool settings in the controller
 2. Independent overheat and overcool product temp protector, setting by the user (on operator panel)
 3. FM approved limit controller
- Audible alarm with on-screen explanation.
- Specimen relay terminal¹ allows the device-under-test (DUT) power to be interlocked with the chamber so that a thermal-runaway doesn't occur after the chamber shuts down unexpectedly.

¹ Detailed wiring instructions are in the manual.

- The standard external alarm relay terminal¹ allows the user to activate additional alarms when the chamber goes into alarm. This is in addition to the normal audible alarm already integrated with the system.
- The refrigeration system monitors discharge temperature to avoid lubrication-related damage.
- The failure of the blower motor causes system shutdown to avoid risk of damage due to overheating.

5. Accessories:

- Replacement fuses.
- One shelf with brackets. The standard shelf supports 35 lb. (16 kg) and can be adjusted in 50mm increments.
- One box of 24 wet bulb wicks. (humidity models)
- Cleaning brush for humidifier. (humidity models)
- Two unwired connectors for use with relay connections (i.e. external alarm, programmable events, or specimen power)
- Program Manager Lite.
- Operations manual, programmer manual, and parts list / schematics.

6. System programmer / controller features

Model	P-300
Display	Color TFT (Active Matrix), 640x480 resolution, touch-screen
Control Method	PID (Proportional, Integral, Derivative)
Communications	Standard: USB External Memory Port, Includes Pattern Manager Lite for PC Optional: RS-232, RS-485, GP-IB, Ethernet
Operating Modes <i>(as indicated in upper left of the display)</i>	STOP chamber off, programmer on CONSTANT runs at set value continually (three constant settings) PGM runs selected test profile (40 programs, 99 steps per program)

More information about the P-300 controller can be seen at www.espec.com/p300/

7. Optional Equipment

- Communications Hardware
 - Web controller
 - IEEE-488
 - RS-232
 - RS-485
- Water Treatment
 - Treatment cartridge
 - Spare cartridges (Set of 6)
 - Portable water tank for supplying water to the chamber without connecting to a pressurized system.
- Access Ports (see option drawing for possible locations)
 - 2" (50 mm) port
 - 4" (100 mm) port
 - 6" (150 mm) port (No screw on cap)
 - Custom feed-through per customer requirements
- Low Humidity or Condensation control
 - Dry air purge to minimize condensation on the product during temperature transitions.
 - Controlled low humidity system for low humidity testing down to 10°C 15%
 - Controlled ultra low humidity system for testing down to 5°C 10%
- Safety Related
 - Emergency stop palm button to de-energize all hazardous voltages leaving the electrical box.

- Viewing Window
 - Multi-pane heated window installed in the door. This window has a clear full-surface heater to ensure it doesn't attract moisture condensation.

Model	Window viewing area
EP 2 & 3	9" x 10.375"
EP 4	17" x 10"-11.375"
 - A chamber lamp integral to window to illuminate the workspace. Light switch to the right of the chamber door.
- Inner Glass Door
 - Note: not available with viewing window option.
 - Note: high temperature of the chamber limited to 150°C
 - Glass door behind main door for observation and operating the device-under-test (DUT)
- Refrigeration gauges
 - Integrated gauges to monitor refrigeration system.
- Shelves
 - Additional shelves are designed for 16 kg load and come with 1 set of rails.
- Sensors
 - Solid state humidity sensor in lieu of wet bulb sensor. Note, high humidity in the chamber is limited to 95%. Best choice if operating below 40°C 15%RH
 - Product temperature sensor is a 1" thermocouple probe with 8' leads in the workspace and terminated in the option panel or at the recorder.
 - Product temperature control a 1" thermocouple probe with 8' leads in the workspace. Used when the customer wants to drive the product into a specific temperature or to automatically compensate for temperature offset from the control location to the product location.
- Performance Enhancements
 - Liquid nitrogen direct injection for boost cooling.
 - Custom boost heating per customer requirement.
- Event Relays
 - Six additional event relay terminals
- Recorders
 - Circular chart recorders are available in 12" diameter and 1 to 4 input channels. (2 channel is standard)
 - Strip chart recorders are available in 100mm paper and 1, 2 or 6 channels. (6 channel is standard)
 - Data acquisition recorders are paperless units available in 6 or 12 channels. (6 channel is standard)
- Main Power
 - Floor mounted transformer allows connection to 460V main power