

ASSOCIATED ENVIRONMENTAL SYSTEMS

BATTERY SAFETY



BATTERY SAFETY FEATURES

1

EMERGENCY STOP

Stop button to disable the chamber function rapidly.



2

SET POINT TEMP LIMIT

Temperature control set points to prevent the user from accidentally setting the chamber's temperature outside of the determined limits.



3

HIGH/LOW TEMP LIMIT

Independent high low limit controller set to prevent damage to cells.

***ATP limit point is: -20°C and 80°C**



4

AUDIBLE AND VISUAL ALARM



Three color system that emits an audible alarm when the chamber is in an alarm condition.

Green - Chamber is ready to use, and door is unlocked.

Blue - Chamber is in use, and door is locked.

Red - Chamber is in alarm condition, and door is locked.

5

RAPID TEMP CHANGE



Safety feature in place to monitor and detect a rapid temperature change.

BATTERY SAFETY FEATURES

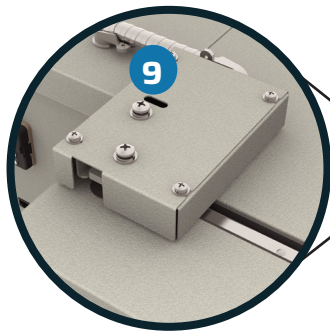
6
REINFORCEMENT
Reinforced stainless steel interior.



7
TEMPERATURE LIMITED SHEATH HEATERS
Stainless steel finned tubular heaters with a temperature sensor to limit the max operating temperature.



8
LOW FLOW VENT/ BURST DISK
Graphite burst disc with rupture sensor that triggers system alarm.



9
DOOR LOCK
Electronic rotary cam fail safe door lock with mechanical override. It is equipped with a cam position sensor indicating the lock state. AES XCHANGE logs door activity (open and close state) *Chamber will not run with an open door.



10
GAS SENSORS
Sensors for monitoring chamber working volume for combustible gasses.
***Optional single, dual or triple gas sensors**



***Door will not open in alarm condition**

***Lock rated to 1119 lbf or 4980 N**

BATTERY SAFETY FEATURES

CONTINUED

11

PRODUCT SENSORS



8 Thermocouple connectors installed on the rear of the chamber for customer device under test monitoring.

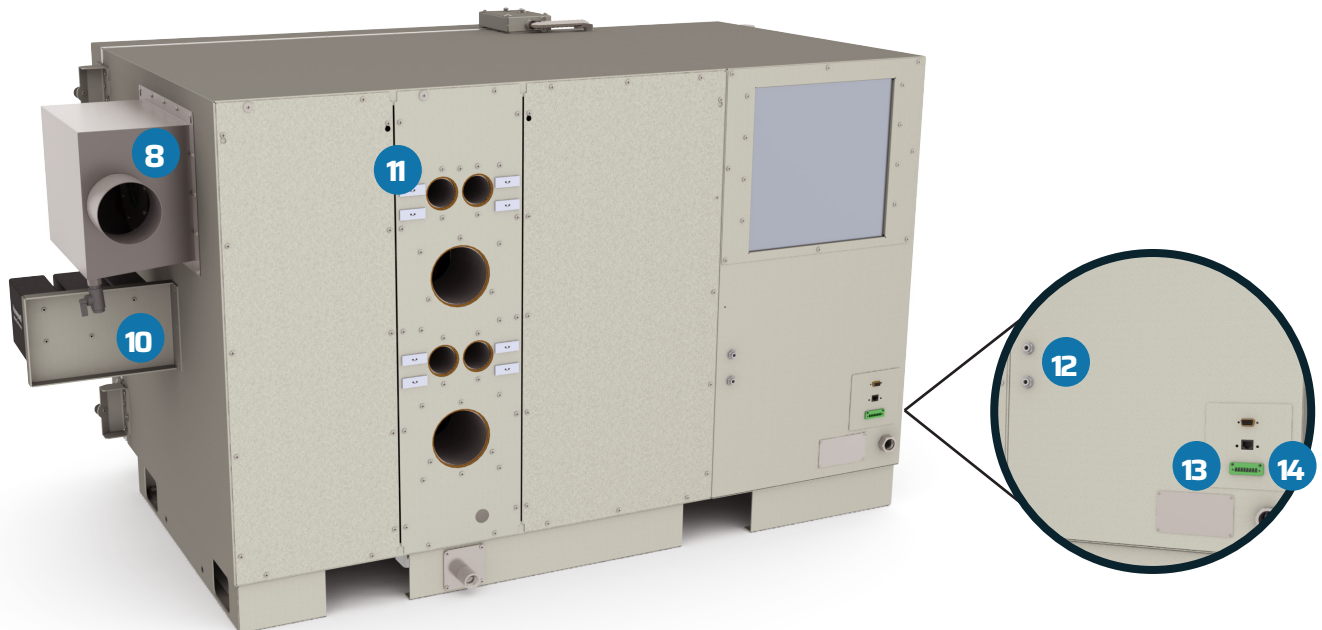
***Additional Thermocouples are optional**

12

SAFETY PURGE



Inert gas purge is triggered when the chamber is in an alarm state.



13

CHAMBER ALARM INPUT



The external terminal block sends a voltage signal that, when interrupted, will trigger an alarm state and shut down the chamber.

***This can be interfaced with other test equipment or DUT.**

14

CHAMBER ALARM OUTPUT



When the chamber is powered and in a safe state the contact closes. Loss of power or alarm condition opens the contacts.

***This Alarm output is designed to safely disable test equipment or DUT.**

BATTERY TEST CHAMBERS

SC-512-SAFE



SPECIFICATIONS

Volume	12 cubic ft (339.802 liters)
Temperature	-37°C to 180°C (-34.6°F to 356°F)
Pull Down Rate	5°C/min
Electrical Supply	208VAC, 1PH, 60Hz
Full Load Amps	40 A
Electrical Connectivity	Attach power cable with Non-NEMA L6-50
Refrigeration System	Single stage

SC-508-SAFE



SPECIFICATIONS

Volume	8.6 cubic ft/243.525 liters
Temperature	-37°C to 180°C (-34.6°F to 356°F)
Pull Down Rate	5°C/min
Electrical Supply	208 VAC, 1 PH, 60Hz
Full Load Amps	40A
Electrical Connectivity	Attach power cable with Non-NEMA L6-50
Refrigeration System	Single stage

BATTERY TEST CHAMBERS

SD-508-SAFE



SPECIFICATIONS

Volume	8 cubic ft/226.53 liters
Temperature	-37°C to 180°C (-34.6°F to 356°F)
Pull Down Rate	1.24°C/min
Electrical Supply	208 VAC, 1 PH, 60Hz
Full Load Amps	25 A
Electrical Connectivity	Attach power cable with NEMA L6-30
Refrigeration System	Single stage

SD-501-SAFE





SPECIFICATIONS

Volume	1.01 cubic ft/28.59liters
Temperature	-37°C to 180°C (-34.6°F to 356°F)
Rise Rate	2.8°C/min
Pull Down Rate	3.0°C/min
Electrical Supply	208 VAC, 1 PH, 60Hz
Full Load Amps	13A
Electrical Connectivity	Attach power cable with NEMA 5-15p
Refrigeration System	Single stage

AES SAFETY LEVELS

 Standard AES Chambers  AES SAFE Required

Severity Level	Description	Severity Classification & Effects Criteria
0	No Effect	No effect. No loss of functionality.
1	Reversible Loss of Function	No defect; no leakage; no venting, fire, or flame; no rupture; no explosion; no exothermic reaction or thermal runaway. Cell reversibly damaged. Repair of protection device needed.
2	Irreversible Defect/Damage	No leakage; no venting, fire, or flame; no rupture; no explosion; no exothermic reaction or thermal runaway. Cell irreversibly damaged. Repair needed.
		
3	Leakage Δ mass <50%	No venting, fire, or flame*; no rupture; no explosion. Weight loss <50% of electrolyte weight (electrolyte = solvent + salt).
4	Venting Δ mass \geq 50%	No fire or flame*; no rupture; no explosion. Weight loss \geq 50% of electrolyte weight (electrolyte = solvent + salt).
5	Fire or Flame	No rupture; no explosion (i.e., no flying parts).
6	Rupture	No explosion, but flying parts of the active mass.
7	Explosion	Explosion (i.e., disintegration of the cell)
		

*Gas Sensors and Additional Safety Features Available



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AES SAFE