

**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.



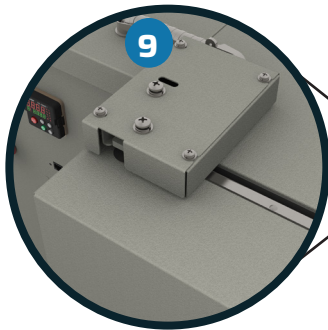
8

## LOW FLOW VENT/ BURST DISK

Graphite burst disc with rupture sensor that triggers system alarm.



9



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.

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

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

10

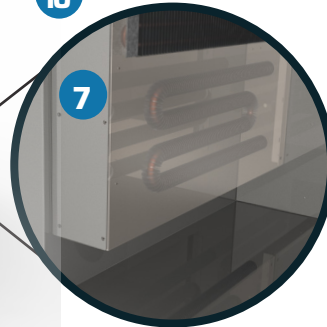
## GAS SENSORS



Sensors for monitoring chamber working volume for combustible gasses.

**\*Optional single, dual or triple gas sensors**

10



7



# BATTERY SAFETY FEATURES

## CONTINUED

11

### PRODUCT SENSORS

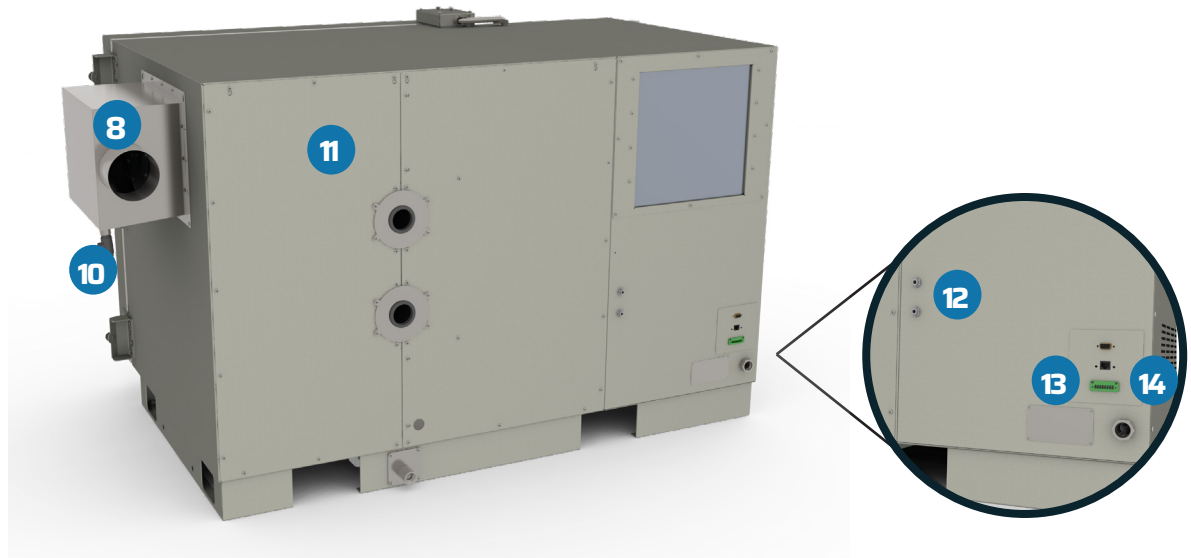
8 Thermocouple connectors installed on the rear of the chamber for customer device under test monitoring.

**\*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

## SD-512-4-SAFE



### SPECIFICATIONS

Volume	12 cubic ft (339.802 liters)
Temperature	-37°C to 180°C (-34.6°F to 356°F)
Rise Rate	5°C/min
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

## SD-508-4-SAFE



### SPECIFICATIONS

Volume	8 cubic ft/226.53 liters
Temperature	-37°C to 180°C (-34.6°F to 356°F)
Rise Rate	5°C/min
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)
Rise Rate	3.88°C/min
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	2.5°C/min
Pull Down Rate	2.8°C/min
Electrical Supply	208 VAC, 1 PH, 60Hz
Full Load Amps	13A
Electrical Connectivity	Attach power cable with NEMA L5-15
Refrigeration System	Single stage

# AES SAFETY LEVELS

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 $\Delta$ mass <50%	No venting, fire, or flame*; no rupture; no explosion. Weight loss <50% of electrolyte weight (electrolyte = solvent + salt).
4	Venting $\Delta$ 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)
             		

Standard AES Chambers
  AES Safe Required
  AES Safe Required With Additional Gas Sensing



(978) 722.0022  
[www.AssociatedEnvironmentalSystems.com](http://www.AssociatedEnvironmentalSystems.com)

**BATTERY SAFETY**