

# Liberty<sup>®</sup> AES

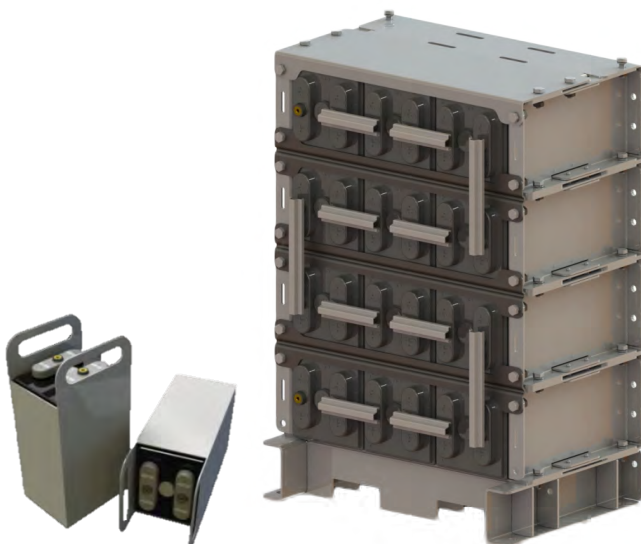
## THE LIBERTY AES 50 SERIES CYCLE and PSoC SERVICE BATTERY

### For Energy Storage & Renewable Storage Applications

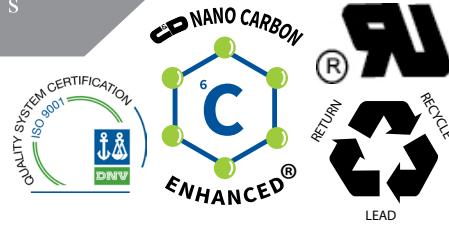
The Liberty<sup>®</sup> AES features the proven DCS technology for maximum cycle life in a space efficient, cost effective package. The DCS technology coupled with an advanced C&D Nano-Carbon<sup>®</sup> enhanced negative electrode provides time proven results and unmatched, industry leading cycle life, even in partial state of charge (PSoC) operation.

### APPLICATIONS

- Remote/Hybrid Sites
- Communications
- Off-Grid/Renewable
- Grid scale energy storage
- Other cycling and PSoC applications



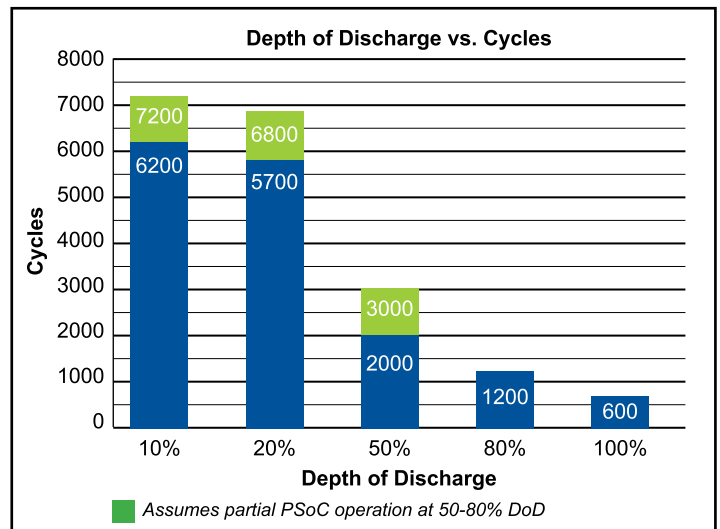
Modular systems & single jacketed cells available



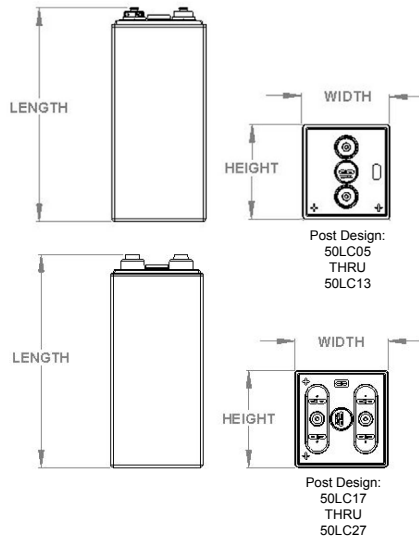
### Features and Benefits

- 95% round trip efficiency
- 99.9% charge efficiency
- 20 year design life
- High density pasted plates for high cycle life
- Every cell capacity tested to ensure performance
- C&D Nano-Carbon<sup>®</sup> enhanced active material to maximize cycle performance and PSoC operation
- Low calcium Lead/Tin alloy plates for efficient gas recombination for long life in both cycling and float applications
- Absorbent Glass Mat (AGM) technology for efficient gas recombination of up to 99% and freedom from electrolyte maintenance
- Threaded copper alloy inserts for reduced maintenance and increased safety
- Reduced system hardware for rapid installation
- Terminal versatility - ease of diagnostic readings with C&D Ohmic Ring<sup>®</sup>
- Meets IBC and UBC seismic requirements
- High-strength, leak-free polymer container allows for non-restricted shipping: Water: non-hazardous per IMDG Amendment 27 Surface: non-hazardous per DOT-CFR title 49, 171-189 Air: IATA/ICAO, provision A67
- 100% helium leak tested and dielectric tested to ensure seal integrity
- UL-recognized component
- Flame retardant UL94V0/28% LOI is optional.

### INDUSTRY LEADING CYCLE LIFE



## DIMENSIONS



Liberty AES Model	Height		Width		Length		Weight	
	inches	mm	inches	mm	inches	mm	lbs	kg
50LC05	6.19	157	2.00	50.8	14.09	358	16	7.3
50LC09			3.50	88.9			22	9.9
50LC13			5.00	127			31	14.0
50LC17	6.50	165	43	19.2				
50LC21	8.00	203	6.25	159			52	23.3
50LC25	9.50	241					51	27.4

## SPECIFICATIONS

Cells, Voltage per unit	1 cell, 2 VDC
Typical Operating Temperature	77°F (25°C)
Connection Torque	110 in-lbs (12.4 N-m)
Recommended float charging voltage	2.25 - 2.27 Volts per cell @ 77°F (25°C)
Recommended cycle service voltage	2.35 - 2.40 Volts per cell @ 77°F (25°C)
Recommended charging current limit	6 x I10 w/voltage limit of 2.40 Volts per cell @ 77°F (25°C)
Charger temperature compensation (not recommended for cycle service)	-2mV/cell/°F above 77°F (25°C) +2mV/cell/°F below 77°F (25°C)

## DISCHARGE RATINGS

Hours	Amperes* to 1.75 VPC @ 77°F (25°C)									
	1	2	4	5	6	8	10	12	20	24
50LC05	54.1	34.2	20.6	17.5	15.3	12.4	10.6	9.2	6.2	5.3
50LC09	117.1	75.0	44.3	37.2	32.3	25.8	21.7	18.8	12.4	10.6
50LC13	175.6	112.5	66.4	55.8	48.4	38.7	32.5	28.2	18.6	15.9
50LC17	234.2	150.0	88.6	74.4	64.6	51.7	43.4	37.6	24.8	21.2
50LC21	292.7	187.5	110.7	93.0	80.7	64.6	54.2	46.9	30.9	26.5
50LC25	351.2	255.1	132.9	111.6	96.8	77.5	65.1	56.3	37.1	31.8

\*All ratings are subject to change by C&D Technologies, Inc.

## MODULE CONFIGURATIONS

Module Type	Volts	Nominal Ah Capacity (20 hr)	Stacking Dimensions						Unpacked Weight	
			Width		Height*		Depth**		lbs	kg
			in	mm	in	mm	in	mm		
12-50LC05	24	124	16.84	428	13.07	332	13.69	348	257	117
12-50LC09	24	248	25.78	655					410	186
12-50LC13	24	372	34.78	883					586	266
3-50LC17 †	6	496	21.91	557	6.88	175	16.08	408	212	96
4-50LC17 †	8	496	28.25	718					275	125
3-50LF21 †	6	618	21.91	557	8.38	213			249	112
4-50LF21 †	8	618	28.25	718					325	147
3-50LC25 †	6	742	21.91	557	9.88	251			311	141
4-50LC25 †	8	742	28.25	718					407	185

\*Height does not include base. Typical base height is 4.00" (102 mm)

\*\* Depth does not include terminal protection. Typical terminal protection adds 0.50" (12.7 mm)

†Equivalent competitors' cell can be replaced without removing existing racks

## SINGLE CELL TRAY DIMENSIONS



Liberty AES Model	Height		Width		Length		Weight	
	in	mm	in	mm	in	mm	lbs	kg
50LC05	17.12	435	2.20	55.9	6.49	165	21	9.4
50LC09			3.69	93.7			27	12.3
50LC13			5.26	134			37	16.7
50LC17	6.60	168	6.82	173	6.60	168	63	28.6
50LC21			8.32	211			76	34.4
50LC25			9.82	249			90	40.6

\*All dimensions are subject to change by C&D Technologies, Inc.

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