



# THE *m-s* **endur® II** SERIES VRLA BATTERY *THE TRUE LONG LIFE BATTERY™*

**For SwitchGear and Control**  
CAPACITIES FROM 345 TO 2180 Ampere-Hours



The msEndur II is the latest advancement in battery technology with enhanced features for Utility applications.

**By combining the service life reliability of a flooded battery with the performance energy density of a valve-regulated battery, C&D has created the msEndur II — The True Long-Life Battery™.**

The msEndur II series of batteries are unmatched in power density with space saving modular designs and have a 20-year design life to reduce the total cost of ownership.

With its much lower float current, the msEndur II yields significant electrical costs savings over its life making it more environmentally friendly than other 2V VRLA batteries.

## APPLICATIONS

- **Electric Utility Substations**
- **Telephone Backup**
- **Microwave Sites**
- **Signaling Sites**
- **Offshore Platforms**
- **Mines**

## FEATURES & BENEFITS

### ADVANCED SYSTEM FEATURES

- Modular design for ease of installation and stacking flexibility
- Space saving design for the greatest amount of power in a small footprint
- Exceeds 1997 UBC Zone 4 seismic requirements for at or below grade installations
- Certified as NEBS Level 3 and compliant to Earthquake Risk Zone 4 in various system configurations
- Exceeds 2006 IBC requirements for 125% g level
- Tin-plated copper alloy connectors minimize maintenance
- New Ohmic Ring™ for ease of maintenance readings. With specially adapted probes only one technician is required to take readings.

### ADVANCED MATERIALS

- Advanced micro-porous **A**bsorbed **G**lass **M**at separators for ultra-low float current — reduces grid corrosion for a long, usable service life
- Proprietary calcium alloys to minimize positive grid corrosion and growth — maximizes battery life
- Robust polypropylene container and cover — enhances product quality and improves strength of materials for safe operation with flammability rating UL94 VO, LOI>28%

- Highly efficient, proprietary plate processing for high utilization of active material — results in high energy density and low float current

### ADVANCED PROCESSES

- Advanced formation process results in a narrow float voltage window making on-site float matching unnecessary
- Highly controlled manufacturing Highly processes for exceptional and consistent plate quality

### ADVANCED SERVICE LIFE & WARRANTY

- Proprietary cell design and manufacturing process provides for 20 year design life and documented long-lasting service life
- Best 2V VRLA Warranty in the Market: 7 years full warranty for float service applications

### ADVANCED EXPERIENCE

- Over 100 years of experience in the battery industry
- The only producer and marketer of complete battery and electronics systems for total power solutions
- Fully backed by a worldwide network for local service

## Constant Current Discharge Ratings

FV/Cell	Models	1 min	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	8 hr	10 hr	12 hr	24 hr
1.75	AT-07P	396.6	189.3	122.7	92.5	74.8	63.0	54.5	43.1	35.6	30.4	16.2
	AT-09P	529.7	259.3	170.2	128.7	104.2	87.8	75.9	60.0	49.6	42.3	22.6
	AT-11P	662.1	324.1	212.7	160.9	130.2	109.7	94.9	74.9	62.0	52.9	28.2
	AT-13P	737.7	352.1	228.2	172.1	139.2	117.2	101.4	80.1	66.3	56.6	30.2
	AT-15P	927.0	453.7	297.8	225.3	182.3	153.6	132.9	104.9	86.3	74.1	39.5
	AT-17P	1057.6	504.8	327.2	246.8	199.6	168.1	145.4	114.8	95.0	81.1	43.3
	AT-19P	1191.9	583.4	382.8	289.6	234.4	197.5	170.9	134.9	111.6	95.2	50.8
	AT-21P	1322.0	631.1	409.0	308.5	249.5	210.1	181.8	143.5	118.8	101.4	54.1
	AT-23P	1456.7	713.0	467.9	354.0	286.5	241.4	208.9	164.9	136.4	116.4	62.1
	AT-25P	1586.4	757.3	490.8	370.2	299.3	252.1	218.1	172.2	142.5	121.6	64.9
	AT-27P	1721.6	842.6	553.0	418.4	338.6	285.3	246.8	194.9	161.2	137.6	73.4
	AT-29P	1850.8	883.5	572.7	431.9	349.2	294.1	254.5	200.9	166.3	141.9	75.8
AT-35P		1101.9	723.2	547.1	442.8	373.0	322.8	254.8	210.8	179.9	96.0	
AT-39P		1199.0	777.2	586.1	474.0	399.2	345.4	272.7	225.6	192.6	102.8	

FV/Cell	Models	1 min	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	8 hr	10 hr	12 hr	24 hr
1.78	AT-07P	357.6	181.0	118.1	89.5	72.7	61.4	53.3	42.3	35.1	30.0	16.2
	AT-09P	477.5	247.6	163.8	124.6	101.2	85.6	74.3	58.9	48.9	41.8	22.5
	AT-11P	596.8	309.5	204.7	155.7	126.6	107.0	92.8	73.6	61.1	52.3	28.1
	AT-13P	665.2	336.6	219.7	166.5	135.2	114.3	99.2	78.7	65.3	55.9	30.1
	AT-15P	835.6	433.3	286.6	218.0	177.2	149.8	130.0	103.1	85.5	73.2	39.3
	AT-17P	953.7	482.6	314.9	238.8	193.9	163.9	142.2	112.8	93.6	80.1	43.1
	AT-19P	1074.3	557.2	368.5	280.2	227.8	192.6	167.1	132.5	110.0	94.1	50.6
	AT-21P	1192.1	603.3	393.7	298.4	242.4	204.8	177.7	141.0	117.0	100.1	53.9
	AT-23P	1313.0	681.0	450.4	342.5	278.4	235.4	204.2	161.9	134.4	115.0	61.8
	AT-25P	1430.5	723.9	472.4	358.1	290.8	245.8	213.3	169.2	140.4	120.2	64.6
	AT-27P	1551.8	804.8	532.3	404.8	329.1	278.2	241.4	191.4	158.8	135.9	73.0
	AT-29P	1669.0	844.6	551.1	417.8	339.3	286.8	248.8	197.4	163.8	140.2	75.4
AT-35P		1052.4	696.0	529.4	430.3	363.8	315.6	250.3	207.7	177.7	95.5	

FV/Cell	Models	1 min	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	8 hr	10 hr	12 hr	24 hr
1.80	AT-07P	331.9	175.7	115.0	87.5	71.2	60.4	52.5	41.8	34.7	29.8	16.1
	AT-09P	442.9	240.4	159.6	121.7	99.2	84.1	73.1	58.2	48.4	41.5	22.4
	AT-11P	553.7	300.5	199.5	152.2	124.0	105.1	91.4	72.7	60.5	51.8	28.0
	AT-13P	617.4	326.8	214.0	162.7	132.5	112.3	97.6	77.7	64.6	55.4	30.0
	AT-15P	775.1	420.6	279.3	213.1	173.7	147.2	127.9	101.8	84.7	72.6	39.2
	AT-17P	885.1	468.6	306.8	233.3	190.0	160.9	139.9	111.3	92.7	79.4	43.0
	AT-19P	996.6	540.8	359.1	273.9	223.3	189.2	164.5	130.9	108.9	93.3	50.4
	AT-21P	1106.4	585.7	383.5	291.6	237.5	201.2	174.9	139.2	115.8	99.3	53.7
	AT-23P	1218.1	661.0	438.9	334.8	272.9	231.2	201.1	159.9	133.0	114.0	61.6
	AT-25P	1327.6	702.8	460.2	349.9	285.0	241.4	209.9	167.0	139.0	119.1	64.5
	AT-27P	1439.6	781.2	518.7	395.7	322.5	273.3	237.6	189.0	157.2	134.7	72.8
	AT-29P	1548.9	820.0	536.9	408.3	332.5	281.7	244.9	194.9	162.2	139.0	75.2
AT-35P		1021.6	678.3	517.4	421.8	357.4	310.7	247.2	205.6	176.2	95.3	
AT-39P		1112.8	728.6	554.1	451.2	382.2	332.4	264.5	220.1	188.7	102.1	

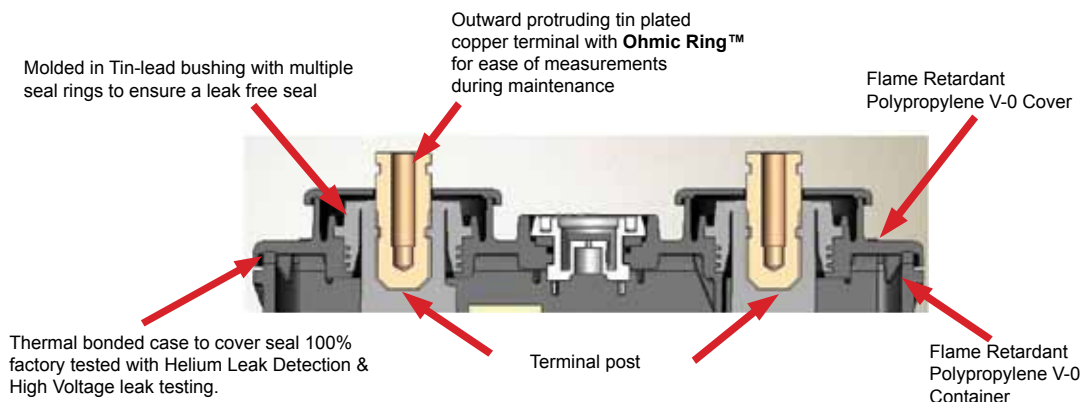
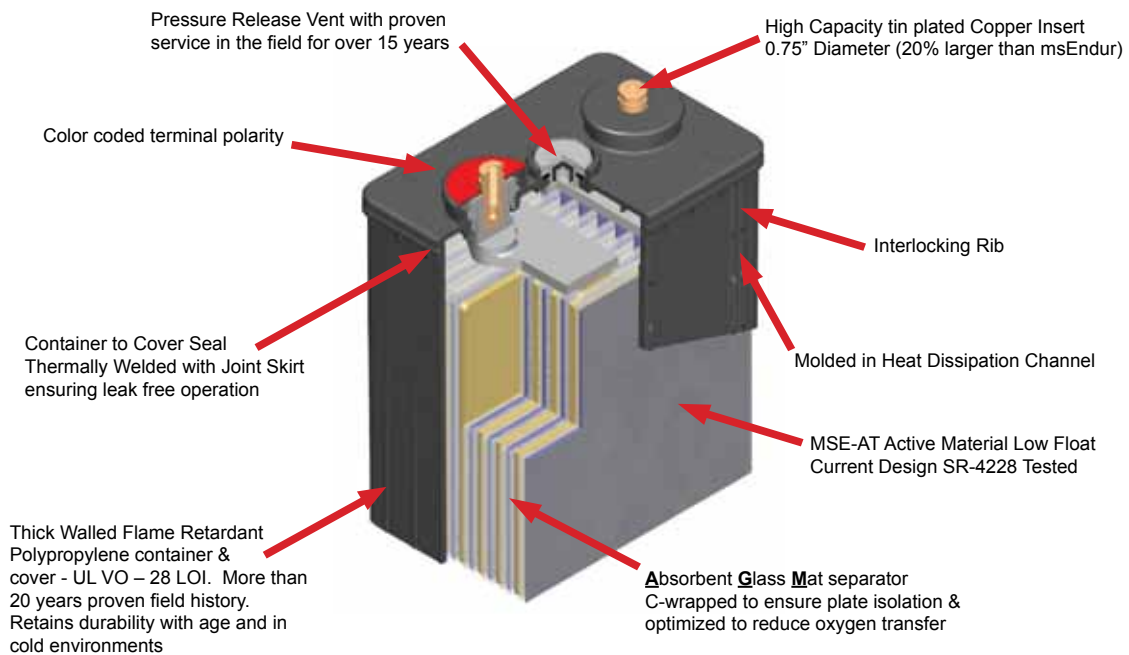
FV/Cell	Models	1 min	1 hr	2 hr	3 hr	4 hr	5 hr	6 hr	8 hr	10 hr	12 hr	24 hr
1.81	AT-07P	319.5	172.7	113.7	86.5	70.4	59.7	51.9	41.3	34.3	29.4	15.9
	AT-09P	426.5	235.8	157.5	120.3	98.1	83.1	72.3	57.5	47.8	41.0	22.1
	AT-11P	533.1	294.7	196.9	150.4	122.6	103.9	90.3	71.9	59.8	51.2	27.7
	AT-13P	594.3	321.2	211.4	160.9	131.0	111.0	96.5	76.8	63.9	54.8	29.6
	AT-15P	746.3	412.6	275.7	210.5	171.7	145.5	126.5	100.6	83.7	71.7	38.8
	AT-17P	852.0	460.5	303.1	230.6	187.8	159.1	138.4	110.1	91.6	78.5	42.5
	AT-19P	959.6	530.5	354.4	270.7	220.7	187.0	162.6	129.3	107.6	92.2	49.8
	AT-21P	1065.0	575.6	378.9	288.3	234.8	198.9	172.9	137.6	114.5	98.1	53.1
	AT-23P	1172.8	648.4	433.2	330.8	269.8	228.6	198.8	158.1	131.5	112.7	60.9
	AT-25P	1278.0	690.7	454.7	346.0	281.8	238.7	207.5	165.1	137.4	117.7	63.7
	AT-27P	1386.0	766.3	511.9	391.0	318.8	270.2	234.9	186.8	155.4	133.2	72.0
	AT-29P	1491.0	805.8	530.4	403.6	328.7	278.5	242.1	192.6	160.3	137.4	74.3
AT-35P		1002.1	669.5	511.3	416.9	353.3	307.2	244.3	203.2	174.1	94.1	
AT-39P		1093.6	719.9	547.8	446.1	377.9	328.6	261.4	217.5	186.4	100.9	

Please refer to the **msEndur II Performance Specifications Brochure, 12-1015**, for an expanded list of constant power and constant current ratings and end voltages.

You may also access the product ratings by logging onto the **C&D Battery Sizing Program** at [www.cdstandbypower.net](http://www.cdstandbypower.net)

## Specifications and Characteristics

<b>Cells, Voltage per Unit</b>	1 cell, 2 VDC Nominal
<b>Recommended Operating Temperature</b>	77°F (25°C)
<b>Recommended Float Charging Voltage</b>	2.25 - 2.27 VPC at 77°F (25°C)
<b>Charger Compensation Temperature / Voltage</b>	-2mV/cell/°F above 77°F (-3.6mV/cell/°C above 25°C) +2mV/cell/°F below 77°F (+3.6mV/cell/°C below 25°C)
<b>Connection Torque</b>	Initial: 160 in-lbs (18 N-m) Re-toque: 125 in-lbs (14 N-m)



## Modules

msEndur II cells are designed to be mounted in stackable modules of either 3, 4, 5, 6, 8 or 10 cells.

The specific system configuration is flexible and can be configured to best match the physical requirements of the customer's site.

Detailed system dimensions and combinations are available in the **msEndur II Module Brochure 12-1014**.

## Service Life - Reliability

The msEndur II is the latest advancement in battery technology. By combining the service life reliability of a flooded battery with the performance energy density of a valve-regulated battery C&D has created the **msEndur II — The True Long-Life Battery™**. The msEndur II series of batteries are unmatched in power density with space saving modular designs and have a 20-year design life to reduce the total cost of ownership.



## The msEndur II VRLA battery is the environmentally friendly battery that saves you money in normal operation.



The same low float current that ensures a twenty year life, is good for the environment and saves money

- Up to 75% lower float current
- Consumes up to 75% less electricity
- Lower float current generates less heat
- Less heat generated reduces required air conditioning
- Less electricity consumed in float charging and air conditioning = reduce carbon emissions

Go to [www.cdtechno.com/savings](http://www.cdtechno.com/savings) to check out your possible savings

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