



UL-Recognized Component



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

**For Standby Telecom Applications**  
CAPACITIES FROM 345 - 2180 AMPERE-HOURS



The msEndur II is the latest advancement in battery technology with enhanced features for TEL 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 the most environmentally 2V VRLA battery.

## APPLICATIONS

- **Wireless**
- **Wireline**
- **Central Office**
- **Mobile Switching Centers**
- **PBX Systems**
- **Microwave**
- **Broadband Headend**
- **Network Operation Ctrs**
- **Data Centers**

## 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
- Certified as NEBS Level 3 and compliant to Earthquake Risk Zone 4 in various system configurations
- Exceeds 1997 UBC Zone 4 seismic requirements for at or below grade installations
- Exceeds 2000/2003 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 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
- Industry leading warranty

### 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

| AMPERES @ 77°F (25°) |        |      |      |      |      |      |      |      |       |       |       |
|----------------------|--------|------|------|------|------|------|------|------|-------|-------|-------|
| FV/Cell              | Models | 1 hr | 2 hr | 3 hr | 4 hr | 5 hr | 6 hr | 8 hr | 10 hr | 12 hr | 24 hr |
| 1.75                 | AT-07P | 189  | 123  | 93   | 75   | 63   | 55   | 43   | 36    | 30    | 16    |
|                      | AT-09P | 259  | 170  | 129  | 104  | 88   | 76   | 60   | 50    | 42    | 23    |
|                      | AT-11P | 324  | 213  | 161  | 130  | 110  | 95   | 75   | 62    | 53    | 28    |
|                      | AT-13P | 352  | 228  | 172  | 139  | 117  | 101  | 80   | 66    | 56    | 30    |
|                      | AT-15P | 454  | 298  | 225  | 182  | 154  | 133  | 105  | 87    | 74    | 40    |
|                      | AT-17P | 505  | 327  | 247  | 200  | 168  | 145  | 115  | 95    | 81    | 43    |
|                      | AT-19P | 583  | 383  | 290  | 234  | 198  | 171  | 135  | 112   | 95    | 51    |
|                      | AT-21P | 631  | 409  | 309  | 250  | 210  | 182  | 144  | 119   | 101   | 54    |
|                      | AT-23P | 713  | 468  | 354  | 287  | 241  | 209  | 165  | 136   | 116   | 62    |
|                      | AT-25P | 757  | 491  | 370  | 299  | 252  | 218  | 172  | 143   | 122   | 65    |
|                      | AT-27P | 843  | 553  | 418  | 339  | 285  | 247  | 195  | 161   | 138   | 73    |
| AT-29P               | 884    | 573  | 432  | 349  | 294  | 255  | 201  | 166  | 142   | 76    |       |
| AT-35P               | 1102   | 723  | 547  | 443  | 373  | 323  | 255  | 211  | 180   | 96    |       |
| AT-39P               | 1199   | 777  | 586  | 474  | 399  | 345  | 273  | 226  | 193   | 103   |       |

## Constant Power Discharge Ratings

| KILOWATTS PER CELL @ 77°F (25°C) |        |       |       |        |        |        |        |        |       |
|----------------------------------|--------|-------|-------|--------|--------|--------|--------|--------|-------|
| FV/Cell                          | Models | 1 min | 5 min | 10 min | 15 min | 20 min | 30 min | 45 min | 1 hr  |
| 1.67                             | AT-07P | 0.837 | 0.791 | 0.730  | 0.669  | 0.612  | 0.520  | 0.430  | 0.373 |
|                                  | AT-09P | 1.117 | 1.055 | 0.973  | 0.892  | 0.816  | 0.693  | 0.574  | 0.497 |
|                                  | AT-11P | 1.396 | 1.318 | 1.217  | 1.115  | 1.020  | 0.866  | 0.717  | 0.622 |
|                                  | AT-13P | 1.558 | 1.471 | 1.358  | 1.244  | 1.138  | 0.967  | 0.800  | 0.694 |
|                                  | AT-15P | 1.954 | 1.846 | 1.704  | 1.561  | 1.427  | 1.213  | 1.004  | 0.870 |
|                                  | AT-17P | 2.233 | 2.110 | 1.947  | 1.784  | 1.631  | 1.386  | 1.147  | 0.995 |
|                                  | AT-19P | 2.512 | 2.373 | 2.190  | 2.007  | 1.835  | 1.559  | 1.291  | 1.119 |
|                                  | AT-21P | 2.792 | 2.637 | 2.434  | 2.230  | 2.039  | 1.733  | 1.434  | 1.243 |
|                                  | AT-23P | 3.071 | 2.901 | 2.677  | 2.452  | 2.243  | 1.906  | 1.578  | 1.368 |
|                                  | AT-25P | 3.350 | 3.164 | 2.920  | 2.675  | 2.447  | 2.079  | 1.721  | 1.492 |
|                                  | AT-27P | 3.629 | 3.428 | 3.164  | 2.898  | 2.651  | 2.253  | 1.864  | 1.617 |
|                                  | AT-29P | 3.908 | 3.692 | 3.407  | 3.121  | 2.855  | 2.426  | 2.008  | 1.741 |
|                                  | AT-35P |       |       |        |        |        | 2.946  | 2.438  | 2.114 |
| AT-39P                           |        |       |       |        |        |        | 2.725  | 2.363  |       |

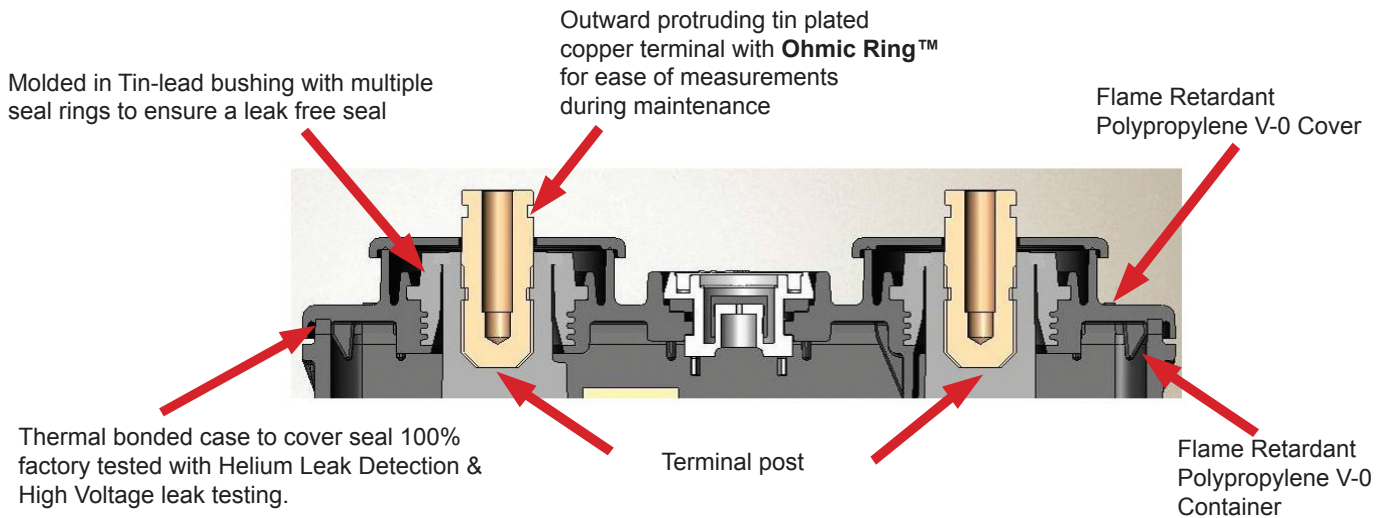
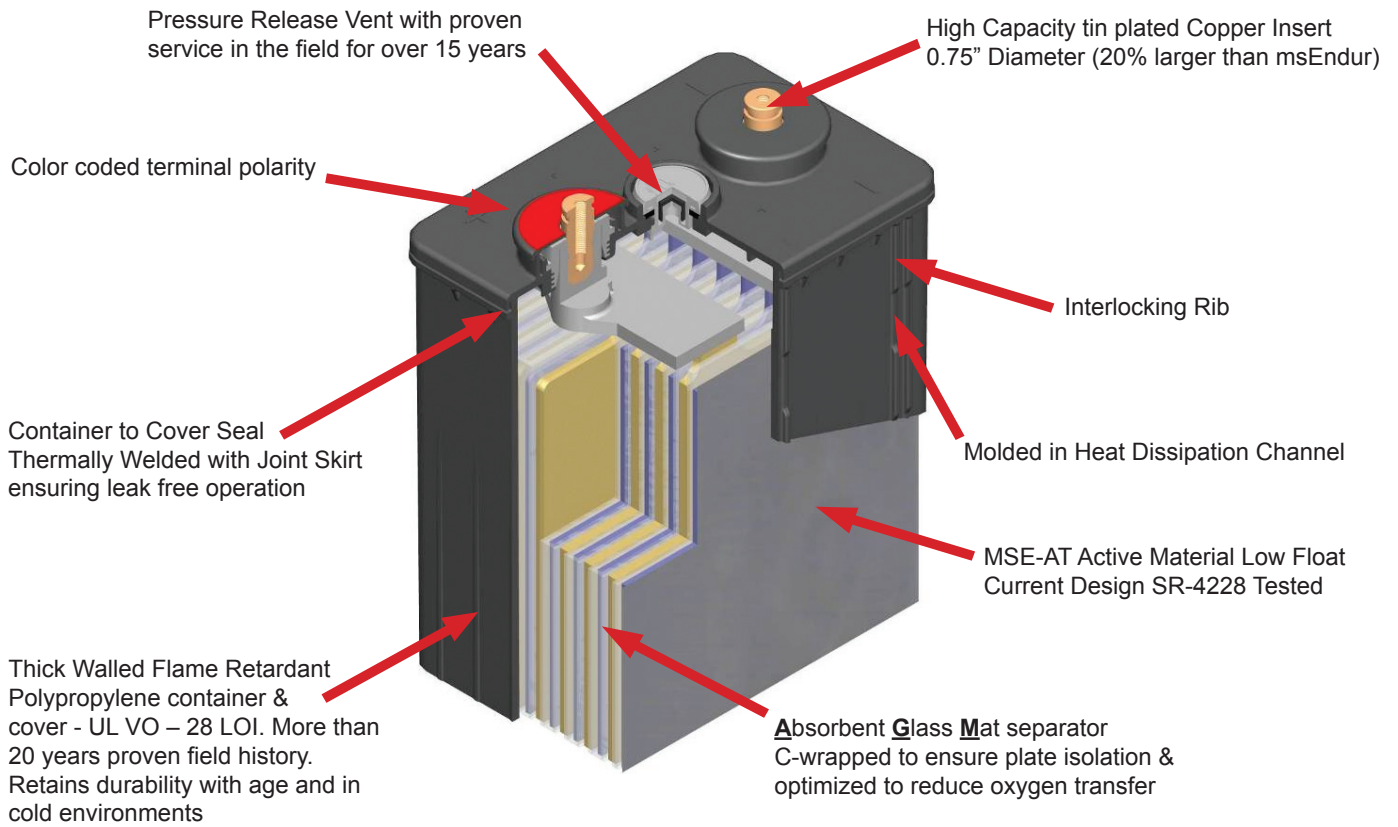
Please refer to the **msEndur II Stackable Module System with Module Dimensions and Weights brochure, 12-1014**, for a listing of typical msEndur II Module Systems dimensions and weights.

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

|   |                   |   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |  |
|---|-------------------|---|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|--|
| Cells, Voltage per Unit   |                   | 1 cell, 2 VDC   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |  |
| Energy Saving Operating Temperature                                   |                   | 77°F (25°C)   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |  |
| Connection Torque:  |                   | Initial: 160 in-lbs (18 N-m), Re-torque: 125 in-lbs (14 N-m)  |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |  |
| Recommended Float Charging Voltage<br>(ATL Recommended Float Voltage) |                   | AT-P = 2.25 - 2.27 volts per cell average @ 77°F (25°C)<br>ATL-P = 2.17 - 2.22 volts per cell average @ 77°F (25°C) |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |  |
| Charger Compensation Temperature / Voltage                            |                   | (-)2 mV/cell/°F above 77°F (-3.6 mV/cell /°C above 25°C)<br>+2 mV/cell/°F below 77°F (+3.6 mV/cell/°C below 25°C)   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |                   |  |
|   | AT-07P<br>ATL-07P | AT-09P<br>ATL-09P   | AT-11P<br>ATL-11P | AT-13P<br>ATL-13P | AT-15P<br>ATL-15P | AT-17P<br>ATL-17P | AT-19P<br>ATL-19P | AT-21P<br>ATL-21P | AT-23P<br>ATL-23P | AT-25P<br>ATL-25P | AT-27P<br>ATL-27P | AT-29P<br>ATL-29P | AT-35P<br>ATL-35P | AT-39P<br>ATL-39P |  |
| Number of Terminals   | 2                 | 2   | 2                 | 2                 | 2                 | 2                 | 4                 | 4                 | 4                 | 4                 | 4                 | 4                 | 4                 | 4                 |  |
| 8 Hr<br>AH Rate to 1.75<br>v/c @ 77°F<br>(25°C)                       | 345 / 295         | 480 / 390   | 600 / 490         | 640 / 515         | 840 / 685         | 920 / 780         | 1080 / 880        | 1150 / 980        | 1320 / 1075       | 1380 / 1175       | 1560 / 1270       | 1605 / 1370       | 2040 / 1660       | 2180 / 1855       |  |
| 10 Hr<br>AH Rate to 1.80<br>v/c @ 68°F<br>(20°C)                      | 330 / 275         | 460 / 365   | 575 / 460         | 610 / 485         | 800 / 645         | 875 / 735         | 1030 / 825        | 1095 / 920        | 1260 / 1010       | 1315 / 1100       | 1490 / 1195       | 1535 / 1285       | 1945 / 1560       | 2085 / 1745       |  |



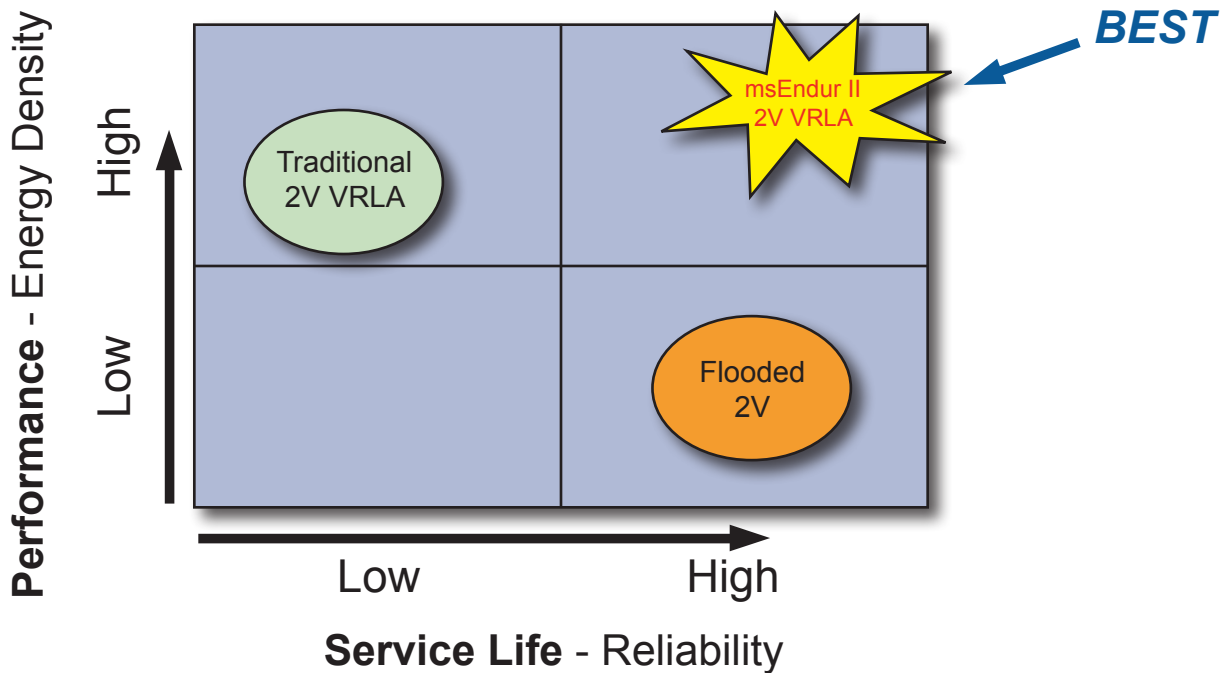
**Modules**

msEndur II cells are designed to be mounted in stackable modules of either 3, 4, 5, 6, 8 & 10 cells. The most popular module sizes and configurations for Telecom systems are:

|                          | AT-07P through AT-21P | AT-15P through AT-39P |
|--------------------------|-----------------------|-----------------------|
| <b>Cells Wide/Module</b> | 6                     | 3                     |
| <b>Modules High</b>      | 4                     | 8                     |

The specific cell wide x module high 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**.



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**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

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