Liberty 2000 MAX™

Dependability.
To The Max.

C&D TECHNOLOGIES
Power Solutions
We have taken the top-rated, most dependable VRLA battery available and added the latest technology to create the Liberty 2000 MAX™. You get maximum back-up performance and reliability whether you are supporting a cell site, central office, uninterruptible power system, switchgear or Internet server applications.

The Liberty 2000 MAX is the result of years of research in refining the best VRLA battery system on the market. Our numerous patents provide longer life and reduced maintenance. This translates to a lower life cycle cost, while ensuring maximum back-up power when you need it.

Measurable quality.
Outstanding performance.
• Consistent float voltage ±.050 Vpc
• On average, 100 percent system capacity at time of shipment
• 1200 cycles to 80 percent depth of discharge at 8-hour rate to 1.75 Vpc at 77°F
• 20-year design life at 77°F (25°C) full float service

Discover the newest VRLA technology for yourself.
For more information on the Liberty 2000 MAX, or to speak with a sales representative, please call us at (800) 543-8630 or your local C&D Representative. You can also e-mail us at powercom@cdtechno.com. Visit us on the Internet at www.cdpowercom.com.

Insulated Plate Boot
• Prevents shorting at bottom of plate
• Boot and c-wrap fully insulate plate

Deep Well Support Bridge
• Allows plate growth without affecting performance
• Increases the life of battery
• Reduces stress on Jar-to-Cover and Post seals
• Supports the element in horizontal position

Patented Ribbed Jar Design
• Provides extra strength
• Provides space-efficient airflow gap for uniform cell temperatures
• Better heat dissipation optimizes cell life
• Five times more tolerant against thermal runaway effects than non-ribbed designs

C-Wrap AGM
• Prevents plates from shorting on the side and edges
• Extra thick and absorbent mats for long life

Patented Positive Grid Design
• Proprietary grid design reduces plate growth
• Excellent cycling capability of 1200 cycles at 80% DOD to 1.75 Vpc at 77°F
• Thick lead-calcium-tin positive plate — 0.240 inches (6 mm) for 20-year design life

Dependability
y...Inside and Out

**PVC Jar and Cover**
- Prevents premature dry-out
- Lowest combination of oxygen and water transmission rate
- Meets ASTM D-635, UL-94-VO, 32% LOI standard

**Proven Jar-to-Cover Seal**
- Six times more reliable than most seal designs
- Tested to be leak free for over 20 years
- All cells 100% factory tested
- Ensures maximum product reliability

**Redundant Post Seal Design**
- Patented bonding process adheres lead to rubber bushing and rubber to PVC
- Provides leak-free operation

**Moss Shield**
- Prevents premature shorting, extending usable battery life

**Tetradic Lead Sulfate**
- Patented C&D paste formula provides large interlocking crystals for longer life
- Also used in “Roundcell”

**Largest Post Design**
- Lower post resistance
- Larger area for easy access by test equipment

**Threaded Copper Inserted Post**
- Reduces resistance
- Improves high rate performance
- High torque limit 160 lbs
- Minimal maintenance required

**Computer-Controlled Heliarc Weld**
- High quality consistent weld
- 100% tested for maximum reliability
- Provides leak-free operation

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- 100% tested for maximum reliability
- Provides leak-free operation
The Maximizer™ Makes the Best VRLA Battery Even Better

The Maximizer is the patented cap system that reduces corrosion of the positive grids, maintains a properly charged negative plate, and virtually eliminates dry-out. The Maximizer also:

- Reduces float current
- Maintains cell capacity
- Creates lower impedance
- Saves you money (with its lower current and longer useful life)

Excess oxygen is attracted to the Maximizer and prevented from affecting the negative plate potential.
### RHD/ RHDL

<table>
<thead>
<tr>
<th>Product model number</th>
<th>Positive plates</th>
<th>Width in (mm)</th>
<th>Depth in (mm)</th>
<th>Height in (mm)</th>
<th>Weight lbs (kgs)</th>
<th>Electrolyte specific gravity</th>
<th>Float voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>RHD-190/RHDL-160</td>
<td>3</td>
<td>3.0 (76.2)</td>
<td></td>
<td>40 (18)</td>
<td></td>
<td></td>
<td>2.25–2.27 Vpc at 77F (25C)</td>
</tr>
<tr>
<td>RHD-250/RHDL-215</td>
<td>4</td>
<td>3.8 (96.5)</td>
<td>15.44 (392.2)</td>
<td>8.9 (226.1)</td>
<td></td>
<td></td>
<td>2.19–2.21 Vpc at 77F (25C)</td>
</tr>
<tr>
<td>RHD-315/RHDL-270</td>
<td>5</td>
<td>4.5 (114.3)</td>
<td></td>
<td>61 (28)</td>
<td></td>
<td>1.300 RHD/1.250 RHDL</td>
<td></td>
</tr>
<tr>
<td>RHD-440/RHDL-375</td>
<td>7</td>
<td>5.9 (149.9)</td>
<td></td>
<td>83 (38)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RHD-600/RHDL-500</td>
<td>9</td>
<td>7.4 (186.0)</td>
<td></td>
<td>104 (47)</td>
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</table>

**Note:** RHDL and HDL cells are designed with 1.250 specific gravity acid for low float voltage applications or parallel operation with flooded cells.

### HD/ HDL

<table>
<thead>
<tr>
<th>Product model number</th>
<th>Positive plates</th>
<th>Width in (mm)</th>
<th>Depth in (mm)</th>
<th>Height in (mm)</th>
<th>Weight lbs (kgs)</th>
<th>Electrolyte specific gravity</th>
<th>Float voltage</th>
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<tbody>
<tr>
<td>HD-300 HDL-260</td>
<td>3</td>
<td>3.0 (76.2)</td>
<td></td>
<td>55 (25)</td>
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<td>2.25–2.27 Vpc at 77F (25C)</td>
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<td>HD-400 HDL-350</td>
<td>4</td>
<td>3.8 (96.5)</td>
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<td>80 (36)</td>
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<td>2.19–2.21 Vpc at 77F (25C)</td>
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<tr>
<td>HD-500 HDL-440</td>
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<td>4.5 (114.3)</td>
<td></td>
<td>98 (45)</td>
<td></td>
<td>1.300 HD/1.250 HDL</td>
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</tr>
<tr>
<td>HD-700 HDL-610</td>
<td>7</td>
<td>5.9 (149.9)</td>
<td></td>
<td>132 (60)</td>
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<tr>
<td>HD-900 HDL-785</td>
<td>9</td>
<td>7.4 (186.0)</td>
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<td>166 (75)</td>
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<tr>
<td>HD-1100 HDL-960</td>
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<td>8.9 (226.0)</td>
<td></td>
<td>200 (91)</td>
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<tr>
<td>HD-1300 HDL-1135</td>
<td>13</td>
<td>10.3 (261.6)</td>
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<td>237 (108)</td>
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</table>

### Module Specifications

<table>
<thead>
<tr>
<th>RHD/ RHDL</th>
<th>HDL/ HDL</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Module building blocks</th>
<th>No. of cells</th>
<th>Volts</th>
<th>8-Hour capacity (ampere hours)</th>
<th>Width</th>
<th>Height**</th>
<th>Depth**</th>
<th>Weight</th>
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</thead>
<tbody>
<tr>
<td>6-RHD-190*</td>
<td>6</td>
<td>12</td>
<td>200 (538)</td>
<td>21.2</td>
<td>9.9 (251.5)</td>
<td>16.95 (430.5)</td>
<td>310 (141)</td>
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<tr>
<td>6-RHD-160*</td>
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<td>12</td>
<td>170 (465)</td>
<td>18.3</td>
<td>9.9 (251.5)</td>
<td>16.95 (430.5)</td>
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<td>4-RHD-250*</td>
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<td>8</td>
<td>260 (538)</td>
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<td>9.9 (251.5)</td>
<td>16.95 (430.5)</td>
<td>385 (175)</td>
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<td>4-RHD-215*</td>
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<td>225 (538)</td>
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<td>9.9 (251.5)</td>
<td>16.95 (430.5)</td>
<td>307 (140)</td>
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<td>4-RHD-315*</td>
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<td>21.2</td>
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<td>16.95 (430.5)</td>
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<td>4-RHD-270*</td>
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<td>27.0</td>
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<td>16.95 (430.5)</td>
<td>408 (185)</td>
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<tr>
<td>3-RHD-440*</td>
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<td>460 (538)</td>
<td>21.2</td>
<td>9.9 (251.5)</td>
<td>16.95 (430.5)</td>
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<tr>
<td>3-RHD-375*</td>
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<td>6</td>
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<td>27.0</td>
<td>16.95 (430.5)</td>
<td>16.95 (430.5)</td>
<td>408 (185)</td>
</tr>
<tr>
<td>3-RHD-440*</td>
<td>3</td>
<td>6</td>
<td>460 (666)</td>
<td>27.0</td>
<td>16.95 (430.5)</td>
<td>16.95 (430.5)</td>
<td>408 (185)</td>
</tr>
<tr>
<td>3-RHD-375*</td>
<td>3</td>
<td>6</td>
<td>390 (991)</td>
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<td>3-RHD-600*</td>
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<td>3-RHD-500*</td>
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<td>16.95 (430.5)</td>
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<td>3-RHD-400*</td>
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<td>16.95 (430.5)</td>
<td>16.95 (430.5)</td>
<td>502 (228)</td>
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</tbody>
</table>

### Parallel System Capacities Available

FROM 170 TO 5720AH

For ampere rates see publication 12-371-AMP
For kilowatt rates see publication 12-371-KW
For RHDL/ HDL see publication 12-376

Note: All ratings conform to IEEE-485. 1997

*Add 4.9 inches (125 mm) for HD/HDL, or 4.4 inches (112 mm) for RHD/RHDL, to the height of the base support, for total stack height.

The base support weight ranges from 34 lbs (15.3 kgs) to 55 lbs (25 kgs) depending on width. A reduced height (2.5 inches tall) base is available as an option.

**Total depth includes clear faceplate over terminal connections. Subtract 1/2 inch (12.7 mm) without faceplates.

†These modules can be installed in a 23-inch relay rack. Allow 4 inches (102 mm), the height of the rack base, for the total stack height.

††Stack height is limited to six modules for seismic zone 4.
Design a system using these standard building blocks. You can:
- Mount modules in relay racks
- Mount relay rack on top of modules
- Build complete front access system
- Vary module widths to spread floor load

UNIQUE MODULAR DESIGN STACK SYSTEM (patent pending)
- Integrated module system exceeds 1994 UBC Zone 4 requirements
- Provides thermal management of cells
- Allows simple, quick installation and removal of cells
- Provides consistent compression of cells
- Provides airflow channels between cells

1. Steel Module
2. Pressure plate
3. Pressure plate adjustment bolts
4. Cell spacer plate
5. Cells

MOUNTING AND TERMINATING CHOICES

Standard Termination
Low Profile Mounting
Modules stacked on optional low profile base
(shown with protective faceplates and optional front access cam system)

Top Termination
Standard Mounting
Modules stacked on standard height base module (shown with protective faceplate removed)

Side Bus Bar Termination (not shown)
Used with multiple stack applications

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