**FEATURES & BENEFITS**

**APPLICATIONS**
- Wireline
- Wireless
- Customer Premise / PBX
- Broadband
- Microwave Repeater
- Fiber Optic Regen Sites

**INDOOR/OUTDOOR INSTALLATIONS**
- Cabinet Systems
- Rack Systems

- Long life alloy and design Telcordia certified exceeding 13 years service life.
- Tested and qualified by Telcordia to meet SR-4228 requirements.
- True Front Access threaded copper alloy inserts for reduced maintenance and increased safety.
- Terminal versatility - ease of diagnostic readings with Ohmic Ring™
- Reduced headspace driving higher energy density, in cabinet or rack applications
- Removable handles for ease of installation
- Innovative front terminal design maximizing energy density with direct connect extrusion fusion weld technology.
- Thermally welded case-to-cover bond to ensure a leak-proof seal.
- Flame-retardant polypropylene case and cover compliant with UL94 V-O with an Oxygen Limiting Index of greater than 28.
- Absorbent Glass Mat (AGM) technology for efficient gas recombination 99% plus.
- Flame-arresting, one-way pressure-relief vent for safety and long life.
- UL-recognized component.
- Multicell design for ease of installation and maintenance.
- Not restricted for air transport - Complies with IATA/ICAO Special Provision A67.
- Not restricted for surface transport - classified as non-hazardous material as related to DOT-CFR Title 49 parts 17 1-189.
- Not restricted for water transport - classified as non-hazardous material per Amendment 27.

**PRODUCT LINE EXTENSION TO**
C&D TEL VALVE REGULATED LEAD ACID (VRLA) BATTERY SERIES

**THE MOMENT OF TRUTH HAS ARRIVED**

TRUE Performance - 100% out of box capacity ratings at installation
TRUE Front Access Terminals - ensuring reliability & connection versatility
TRUE High Energy Density - highest true energy density solution in the market
TRUE Long life design - Telcordia SR-4228 industry leading 13 year service life
TRUE Seismic System - highest capacity energy storage system seismic NEBS tested
TRUE Flexibility - multiple models to fit each customers unique power system demands
### SPECIFICATIONS

#### Ampere Hour Capacity to 1.75 Volts per Cell @ 77°F (25°C)

<table>
<thead>
<tr>
<th>Model</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>12</th>
<th>16</th>
<th>20</th>
<th>24</th>
<th>36</th>
<th>48</th>
<th>72</th>
<th>100</th>
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<tbody>
<tr>
<td>TEL12-160FW</td>
<td>111.1</td>
<td>127.4</td>
<td>137.2</td>
<td>149.8</td>
<td>153.1</td>
<td>156.7</td>
<td>159.7</td>
<td>162.1</td>
<td>164.1</td>
<td>167.6</td>
<td>172.9</td>
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<tr>
<td>TEL12-160F</td>
<td>107.1</td>
<td>124.4</td>
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<td>157.3</td>
<td>159.5</td>
<td>161.5</td>
<td>164.7</td>
<td>169.4</td>
<td>172.6</td>
<td>174.9</td>
<td>179.2</td>
<td>181.4</td>
<td>183.4</td>
<td>183.8</td>
<td></td>
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<tr>
<td>TEL12-180F</td>
<td>123.1</td>
<td>143.5</td>
<td>155.2</td>
<td>163.2</td>
<td>169.2</td>
<td>174.0</td>
<td>177.9</td>
<td>181.2</td>
<td>184.0</td>
<td>186.4</td>
<td>190.4</td>
<td>196.3</td>
<td>200.3</td>
<td>203.3</td>
<td>208.9</td>
<td>211.9</td>
<td>214.8</td>
<td>215.5</td>
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</tbody>
</table>

### Specifications

- **Operating Temperature Range with temperature compensation**
  - Discharge: -40°F (-40°C) to +160°F (71°C)
  - Charge: -10°F (-23°C) to +140°F (60°C)

- **Nominal Operating Temperature Range**
  - +74°F (23°C) to +80°F (27°C)

- **Recommended Maximum Charging Current Limit**
  - C/5 amperes @ 20 Hr rate

- **Float Charging Voltage**
  - 13.5 to 13.8 VDC average per 12V unit

- **Maximum AC Ripple (Charger)**
  - 0.5% RMS or 1.5% P-P of float charge voltage recommended for best results.
  - Max voltage allowed = 1.4% RMS (4% P-P) Max current allowed = C/20

- **Self Discharge**
  - Battery can be stored up to 6 months at 77°F (25°C) before a freshening charge is required. Batteries stored at temperatures greater than 77°F (25°C) will require recharge sooner than batteries stored at lower temperatures. See C&D brochure 41-7272, Self-Discharge and Inventory Control for details.

- **Equalize charge and cycle service voltage**
  - 14.40 to 14.80 VDC average per 12V unit @ 77°F (25°C)

- **Terminal: Inserted - Inter-unit connector provided**
  - Threaded copper alloy insert terminal to accept 1/4-20 UNC bolt

- **Terminal Initial Torque:**
  - 110 in.-lbs. (12.4 N-m)

### Telcordia Part Numbers

- **Battery Part Number**
  - TEL12-160FW
  - TEL12-160F
  - TEL12-180F

- **CLEI Code**
  - PBMBC10FRA
  - PBMBB10FRA
  - PBMBD10FRA

- **CPR**
  - 212312
  - 212304
  - 212314

### Battery Specifications

<table>
<thead>
<tr>
<th>Battery</th>
<th>Voltage Per Unit</th>
<th>Ampere Hour Capacity 8 Hour Rate @ 77°F (25°C) to 1.75 v/c</th>
<th>Ampere Hour Capacity 10 Hour Rate @ 68°F (20°C) to 1.80 v/c</th>
<th>Maximum Discharge Current</th>
<th>Short Circuit Current</th>
<th>Ohms Impedance 60 Hz (Ω)</th>
<th>Battery Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEL12-160FW</td>
<td>12 V Monobloc</td>
<td>160 Ah</td>
<td>153 Ah</td>
<td>800 Amperes</td>
<td>5600 Amperes</td>
<td>0.0027 Ohms</td>
<td>121 lbs / 55 kg</td>
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<tr>
<td>TEL12-160F</td>
<td>12 V Monobloc</td>
<td>157 Ah</td>
<td>151 Ah</td>
<td>800 Amperes</td>
<td>4700 Amperes</td>
<td>0.0031 Ohms</td>
<td>115 lbs / 53 kg</td>
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<tr>
<td>TEL12-180F</td>
<td>12 V Monobloc</td>
<td>181 Ah</td>
<td>174 Ah</td>
<td>800 Amperes</td>
<td>4500 Amperes</td>
<td>0.0037 Ohms</td>
<td>131 lbs / 60 kg</td>
</tr>
</tbody>
</table>
### DIMENSIONS

**TEL12-160F & TEL12-180F**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
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</thead>
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<tr>
<td>TEL12-160FW</td>
<td>16.56</td>
<td>420.57</td>
<td>17.72</td>
<td>449.99</td>
<td>16.22</td>
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<td>415.90</td>
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<tr>
<td>TEL12-160F</td>
<td>20.35</td>
<td>516.86</td>
<td>21.51</td>
<td>546.25</td>
<td>22.01</td>
<td>559.05</td>
<td>20.16</td>
<td>512.17</td>
</tr>
<tr>
<td>TEL12-180FW</td>
<td>20.35</td>
<td>516.86</td>
<td>21.51</td>
<td>546.25</td>
<td>22.01</td>
<td>559.05</td>
<td>20.16</td>
<td>512.17</td>
</tr>
</tbody>
</table>

* All dimensions in inches and (millimeters). All dimensions are for reference only. Contact a C&D Representative for complete dimensions information.

* Note: Batteries to be mounted with 0.5 IN (1.25CM) spacing minimum and free air ventilation.

### CONSTANT CURRENT RATINGS - AMPERES @ 77°F (25°C)

**TEL12-160F**

| End point volts/cell | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 12   | 16   | 20   | 24   | 36   | 48   | 72   | 100  |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1.75                 | 111.1 | 63.7 | 45.7 | 36.0 | 29.8 | 25.5 | 22.4 | 20.0 | 18.0 | 16.4 | 14.0 | 10.8 | 8.8  | 7.5  | 5.2  | 3.9  | 2.7  | 2.0  |
| 1.80                 | 107.1 | 62.0 | 44.7 | 35.3 | 29.3 | 25.1 | 22.0 | 19.7 | 17.7 | 16.2 | 13.8 | 10.6 | 8.7  | 7.4  | 5.1  | 3.9  | 2.6  | 1.9  |
| 1.85                 | 99.2  | 58.6 | 42.6 | 33.7 | 28.1 | 24.1 | 21.2 | 18.9 | 17.1 | 15.6 | 13.3 | 10.3 | 8.4  | 7.1  | 4.8  | 3.7  | 2.5  | 1.8  |
| 1.90                 | 87.0  | 52.7 | 38.8 | 30.9 | 25.8 | 22.2 | 19.6 | 17.5 | 15.8 | 14.4 | 12.3 | 9.5  | 7.7  | 6.5  | 4.4  | 3.3  | 2.2  | 1.6  |

**TEL12-160F**

| End point volts/cell | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 12   | 16   | 20   | 24   | 36   | 48   | 72   | 100  |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1.75                 | 107.1 | 62.2 | 44.9 | 35.4 | 29.3 | 25.1 | 22.0 | 19.7 | 17.7 | 16.1 | 13.7 | 10.6 | 8.6  | 7.3  | 5.0  | 3.8  | 2.5  | 1.8  |
| 1.80                 | 102.7 | 60.3 | 43.7 | 34.5 | 28.7 | 24.8 | 21.6 | 19.3 | 17.4 | 15.9 | 13.5 | 10.4 | 8.5  | 7.2  | 4.9  | 3.7  | 2.5  | 1.8  |
| 1.85                 | 95.2  | 58.9 | 41.8 | 33.0 | 27.5 | 23.8 | 20.8 | 18.5 | 16.7 | 15.3 | 13.0 | 10.0 | 8.2  | 6.9  | 4.7  | 3.5  | 2.4  | 1.7  |
| 1.90                 | 83.7  | 51.2 | 37.7 | 30.1 | 25.2 | 21.7 | 19.1 | 17.1 | 15.4 | 14.1 | 12.0 | 9.2  | 7.5  | 6.3  | 4.3  | 3.2  | 2.1  | 1.5  |

**TEL12-180F**

| End point volts/cell | 1    | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   | 12   | 16   | 20   | 24   | 36   | 48   | 72   | 100  |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 1.75                 | 123.1 | 71.7 | 51.7 | 40.8 | 33.8 | 29.0 | 25.4 | 22.8 | 20.4 | 18.6 | 16.9 | 12.3 | 10.0 | 8.5  | 5.8  | 4.4  | 3.0  | 2.2  |
| 1.80                 | 117.3 | 69.6 | 50.6 | 40.0 | 33.3 | 28.8 | 25.0 | 22.3 | 20.2 | 18.4 | 15.6 | 12.1 | 9.8  | 8.3  | 5.6  | 4.3  | 2.9  | 2.1  |
| 1.85                 | 107.9 | 66.5 | 48.0 | 38.3 | 31.9 | 27.4 | 24.1 | 21.5 | 19.4 | 17.7 | 15.1 | 11.8 | 9.5  | 8.0  | 5.4  | 4.1  | 2.7  | 2.0  |
| 1.90                 | 95.1  | 59.1 | 43.6 | 35.1 | 29.4 | 25.3 | 22.3 | 19.9 | 18.0 | 16.4 | 14.0 | 10.8 | 8.8  | 7.4  | 5.0  | 3.7  | 2.5  | 1.8  |
FRONT ACCESS BATTERY RACK SYSTEMS

- TRUE High Energy Density with TEL12-180F
- Front Access for Ease of Installation and Maintenance
- Pre Wired from the Factory
- Integrated Grounding Hardware and Multiple Grounding points
- TRUE Seismic Systems Shaker Table Tested
- Tested to GR-63-CORE and GR-1089-CORE
- Cable Management System
- Thermal Management Features Ensuring Long Life

Five Tier Seismic Zone 2
- NEBS Level 3 Zone 2
- Standard Breaker Panel
- Optional Bus Panel
- +24VDC 1800 Ah
- -48VDC 900 Ah
- Height = 82.13 inches (2086 mm)
- Width = 23.5 inches (597 mm)
- Depth = 22.52 inches (572 mm)
- Weight = 300 lbs (136 kgs)

Five Tier Seismic Zone 4
- NEBS Level 3 Zone 4
- Standard Breaker Panel
- Optional Bus Panel
- +24VDC 1800 Ah
- -48VDC 900 Ah
- Height = 80.69 inches (2050 mm)
- Width = 24.88 inches (632 mm)
- Depth = 23.63 inches (600 mm)
- Weight = 375 lbs (170 kgs)

Six Tier Seismic Zone 4
- NEBS Level 3 Zone 4
- Standard Bus Panel
- Optional Side Breakers
- +24VDC 2160 Ah
- -48VDC 1080 Ah
- Height = 84 inches (2134 mm)
- Width = 24.88 inches (632 mm)
- Depth = 25.25 inches (641 mm)
- Weight = 410 lbs (186 kgs)

NEBS Zone 2 5-Tier Racks

<table>
<thead>
<tr>
<th>System Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>110-7050-01</td>
<td>(+) 24VDC Top Common Bus</td>
</tr>
<tr>
<td>110-7050-02</td>
<td>(+) 24VDC 10x 100A Ckt Bkrs</td>
</tr>
<tr>
<td>110-7050-05</td>
<td>(-) 48VDC Top Common Bus</td>
</tr>
<tr>
<td>110-7050-06</td>
<td>(-) 48VDC 5x 100A Ckt Bkrs</td>
</tr>
</tbody>
</table>

Note: Please contact C&D for additional rack options.

NEBS Zone 4 5-Tier Racks

<table>
<thead>
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<th>System Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>110-7051-01</td>
<td>(+) 24VDC Top Common Bus</td>
</tr>
<tr>
<td>110-7051-02</td>
<td>(+) 24VDC 10x 100A Ckt Bkrs</td>
</tr>
<tr>
<td>110-7051-05</td>
<td>(-) 48VDC Top Common Bus</td>
</tr>
<tr>
<td>110-7051-06</td>
<td>(-) 48VDC 5x 100A Ckt Bkrs</td>
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NEBS Zone 4 6-Tier Racks

<table>
<thead>
<tr>
<th>System Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>110-7052-01</td>
<td>(+) 24VDC Top Common Bus</td>
</tr>
<tr>
<td>110-7052-05</td>
<td>(-) 48VDC Top Common Bus</td>
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</tbody>
</table>

Note: Please contact C&D for additional rack options.