Overview
The rechargeable batteries are lead-lead dioxide systems. The dilute sulfuric acid electrolyte is absorbed by separators and plates and thus immobilized. Should the battery be accidentally overcharged producing hydrogen and oxygen, special one-way valves allow the gases to escape thus avoiding excessive pressure build-up. Otherwise, the battery is completely sealed and is, therefore, maintenance-free, leak proof and usable in any position.

Battery Construction

<table>
<thead>
<tr>
<th>Component</th>
<th>Positive plate</th>
<th>Negative plate</th>
<th>Container</th>
<th>Cover</th>
<th>Safety valve</th>
<th>Terminal</th>
<th>Separator</th>
<th>Electrolyte</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw material</td>
<td>Lead dioxide</td>
<td>Lead</td>
<td>ABS</td>
<td>ABS</td>
<td>Rubber</td>
<td>Copper</td>
<td>Fiberglass</td>
<td>Sulfuric acid</td>
</tr>
</tbody>
</table>

General Features
- Absorbent Glass Mat (AGM) technology for efficient gas recombination of up to 99% and freedom from electrolyte maintenance or water adding.
- Not restricted for air transport—compiles with IATA/ICAO Special Provision A67.
- UL-recognized component.
- Can be mounted in any orientation.
- Computer designed lead, calcium tin alloy grid for high power density.
- Long service life, float or cyclic applications.
- Maintenance-free operation.
- Low self-discharge.
- Case and cover available in both standard and flame retardant ABS.

Battery Specification

Performance Characteristics
- Nominal Voltage: 12V
- Number of cell: 6
- Design Life: 5 years
- Nominal Capacity: 177°F (25°C)
  - 20 hour rate (2.1 A, 10.5V): 42Ah
  - 10 hour rate (4.0 A, 10.5V): 40.0Ah
  - 5 hour rate (7.51A, 10.5V): 37.55Ah
  - 1 hour rate (25.9A, 9.6V): 25.9Ah
- Internal Resistance: Fully Charged battery: ≤9 mOhms
- Self-Discharge: 3% of capacity declined per month at 20°C (average)
- Operating Temperature Range:
  - Discharge: -20~60°C
  - Charge: -10~60°C
  - Storage: -20~60°C
- Max. Discharge Current: 400A (5s)
- Short Circuit Current: 950A
- Charge Methods: Constant Voltage Charge 77°F (25°C)
- Cycle use: 2.40~2.45V/PC
- Maximum charging current: 16.0A
- Temperature compensation: -30mV/℃
- Standby use: 2.20~2.28V/PC
- Temperature compensation: -20mV/℃

Discharge Constant Current (Amperes at 77°F/25°C)

<table>
<thead>
<tr>
<th>Voltage</th>
<th>5min</th>
<th>10min</th>
<th>15min</th>
<th>30min</th>
<th>1h</th>
<th>3h</th>
<th>5h</th>
<th>10h</th>
<th>20h</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.60V</td>
<td>190</td>
<td>130</td>
<td>90.5</td>
<td>72.7</td>
<td>41.9</td>
<td>25.9</td>
<td>11.3</td>
<td>7.56</td>
<td>4.20</td>
</tr>
<tr>
<td>1.65V</td>
<td>122</td>
<td>86.2</td>
<td>69.1</td>
<td>40.6</td>
<td>25.4</td>
<td>11.1</td>
<td>7.81</td>
<td>4.15</td>
<td>2.22</td>
</tr>
<tr>
<td>1.70V</td>
<td>114</td>
<td>81.8</td>
<td>66.5</td>
<td>39.2</td>
<td>24.8</td>
<td>10.9</td>
<td>7.67</td>
<td>4.10</td>
<td>2.18</td>
</tr>
<tr>
<td>1.75V</td>
<td>106</td>
<td>77.6</td>
<td>63.0</td>
<td>37.7</td>
<td>24.2</td>
<td>10.6</td>
<td>7.51</td>
<td>4.06</td>
<td>2.14</td>
</tr>
<tr>
<td>1.80V</td>
<td>97</td>
<td>73.9</td>
<td>59.2</td>
<td>36.2</td>
<td>23.5</td>
<td>10.4</td>
<td>7.35</td>
<td>4.00</td>
<td>2.10</td>
</tr>
</tbody>
</table>

Discharge Constant Power (Watts at 77°F/25°C)

<table>
<thead>
<tr>
<th>Voltage</th>
<th>5min</th>
<th>10min</th>
<th>15min</th>
<th>30min</th>
<th>1h</th>
<th>3h</th>
<th>5h</th>
<th>10h</th>
<th>20h</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.60V</td>
<td>296</td>
<td>200</td>
<td>163</td>
<td>127</td>
<td>83.2</td>
<td>50.9</td>
<td>25.9</td>
<td>13.8</td>
<td>21.5</td>
</tr>
<tr>
<td>1.65V</td>
<td>220</td>
<td>157</td>
<td>124</td>
<td>81.8</td>
<td>50.2</td>
<td>27.6</td>
<td>12.2</td>
<td>13.8</td>
<td></td>
</tr>
<tr>
<td>1.70V</td>
<td>204</td>
<td>150</td>
<td>121</td>
<td>79.3</td>
<td>49.3</td>
<td>27.1</td>
<td>20.8</td>
<td>13.8</td>
<td></td>
</tr>
<tr>
<td>1.75V</td>
<td>186</td>
<td>143</td>
<td>117</td>
<td>76.8</td>
<td>48.5</td>
<td>26.7</td>
<td>20.5</td>
<td>13.4</td>
<td></td>
</tr>
<tr>
<td>1.80V</td>
<td>177</td>
<td>135</td>
<td>113</td>
<td>74.3</td>
<td>47.7</td>
<td>26.3</td>
<td>20.1</td>
<td>13.3</td>
<td></td>
</tr>
</tbody>
</table>

(Note) The above characteristics data are average values obtained within three charge/discharge cycles not the minimum values. All data shall be changed without notice. Vision reserves the right to explain and update the information contained hereinto.
## CP12400F-X

### 12V 40Ah (20hr)

**Discharge characteristic (25°C)**

![Discharge Characteristic](image)

- **Battery Voltage (V)** vs **Discharge time**
- **Voltage** varies from 12.5 to 9.5 V
- **Discharge Currents**: 0A, 20A, 40A, 60A, 80A
- **Discharge Time**: 0 to 20 min

**Constant voltage charging characteristic (0.25CA, 25°C)**

![Charging Characteristic](image)

- **Charged Volume (%)** vs **Charging Time (hours)**
- **Charging Current** varies from 0 to 150 A
- **Voltage** varies from 12.0 to 13.0 V

### Relationship between charging voltage and temperature

![Relationship](image)

- **Voltage (V)** vs **Ambient temperature (°C)**
- **Cycle life** vs **Ambient temperature (°C)**
- **Capacity (%)** vs **Storage time (months)**

### Life characteristics of Standby use

![Life Characteristics](image)

- **Capacity (%)** vs **Life year**
- **Testing conditions**: floating voltage: 2.27 to 2.30 V
- **Cell ambient temperature**: 25°C (77°F)

### Self-discharge characteristic

![Self-Discharge](image)

- **Capacity (%)** vs **Storage time (months)**
- **Number of cycles** vs **Depth of discharge**

### Temperature effects on float life

![Temperature Effects](image)

- **Capacity (%)** vs **Temperature (°C)**
- **Temperature** varies from 0°C to 40°C

### Temperature effects on capacit

![Temperature Effects](image)

- **Capacity (%)** vs **Temperature (°C)**
- **Temperature** varies from 0°C to 50°C

---

**Shenzhen Center Power Tech. Co., Ltd.**

**STOCK CODE: 002733**

www.vision-batt.com