Landport Europe is an all-round, internationally-operating, trading company, mainly specialized in batteries of the most versatile applications. With over 25 years purchasing experience in the Far East, Landport is in position to be able to satisfy its clients’ most diverse requirements.

Thanks to its direct cooperation with manufacturers, Landport can supply the products required with the right quality at the right price. Using its extensive network in the world, Landport can also play an important role in meeting the demand for other automotive and two-wheel related products. The young and enthusiastic team is always ready to satisfy the wishes of its most demanding clients. The long-term relationships that have been built up with both customers and manufacturers are proof of the professional and particularly service-oriented approach.

Landport guarantees its quality through constant monitoring during the production process and also thereafter. As an Original Equipment supplier, Landport works exclusively with carefully selected and ISO certified partners on the basis of a “joint venture” structure. Flexibility, product knowledge, customer friendliness and service orientation are all qualities that are of paramount importance to every Landport employee. Registered trademarks and private labels are also daily concepts for them.

Alongside the extensive product information available in catalogues, the website (www.landportbv.com) is updated on a daily basis in order to provide both the trade sector and the end user with up-to-date information.
LANDPORT VRLA-AGM BATTERY FEATURES

APPLICATIONS
Landport VRLA-AGM Batteries are designed and categorized into seven series for different applications as below:

- LP series, General Purpose Applications
  - All-Purpose Battery Needs
  - UPS / EPS
  - Emergency Light
  - Signal + Security System
  - Electronic Equipment
  - DC Power Supply
  - Tele-communication
  - Power System
  - Network Communication
- LPC series, Deep Cycle Applications:
  - Electric Tools
  - Lawn Equipment
  - Golf Trolleys
  - Portable Apparatus
  - Electric Toys
  - Illumination Light
  - Wheel chairs
  - Medical Equipments
- LPS series, General Purpose Application
  - Golf trolleys
  - Solar and wind mill units
  - Portable equipments
  - Emergency lights signal systems
  - Power plants
  - Computer back-up
  - Radar and satellite stations
  - Wheel chair
  - Medical Equipments
- LPS series, Solar /Wind /Hydro Power System Applications:
  - Green Energy Systems (solar, wind, hydro, etc)
  - Measurement Stations
  - Pump Systems
  - Signal Station
  - Emergency Lighting
  - Railway Crossing
  - Traffic Lights
  - Street Lighting
  - Lawn Lamp
  - SOS-Pilars
  - Camping
  - Boats or Buoys
  - Communication Systems
- LPX series, Long Life Standby Applications:
  - UPS
  - EPS
  - Emergency Light
  - Railway Signal
  - Electronic Apparatus
  - Communication DC Power
  - Tele-Communication
  - Power System Communication
  - Network Communication
  - Marine
- LPX series, High Rate Discharging (UPS) Applications:
  - UPS
  - High Power Backup
  - Starting System
  - Power Tools
  - Emergency Lighting
  - Electric Startin
- LP series, Front Terminal /Telecom Applications:
  - For Standard 19 Inch or 23 Inch Power Cabinets
  - Network Connection Equipment
  - UPS
  - Power Station Systems
  - Railway and Marine Systems

DEFINITIONS OF VRLA-AGM BATTERY
A VRLA-AGM Battery is an electric storage lead-acid battery

- Sealed with special compound epoxy and using pressure controlled vent valves.
- Starved electrolyte design - acid solution is absorbed in separators.
- Non spillable - can be operated in any position.
- Non corrodes - installation vertically or horizontally
- Low gassing (unless overcharged)
- Good cycling and stationary performance
- Good high rate discharges
- Long shelf life
- Rugged and vibration-resistant
- Maintenance-free, no water adding required
- Sealed Valve-Regulated
- High Power Backup Starting System
- Power Tools
- UPS

FEATURES
- Maintenance-free, no water adding required
- Sealed Valve-Regulated
- Spill proof / leak proof
- Deep discharge protection
- Plate grids from lead-calcium alloy, free of antimony
- No corrosion
- Installation vertically or horizontally
- Low gassing (unless overcharged)
- Good cycling and stationary performance
- Good high rate discharges
- Long shelf life
- Rugged and vibration-resistant

BATTERY OPERATION THEORY

<table>
<thead>
<tr>
<th>STATE OF CHARGE</th>
<th>OCPV1</th>
<th>OCPV2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10%</td>
<td>2.07</td>
<td>2.23</td>
</tr>
<tr>
<td>10-20%</td>
<td>2.00</td>
<td>2.14</td>
</tr>
<tr>
<td>20-30%</td>
<td>1.86</td>
<td>2.07</td>
</tr>
<tr>
<td>30-40%</td>
<td>2.00</td>
<td>2.14</td>
</tr>
<tr>
<td>40-50%</td>
<td>1.86</td>
<td>2.07</td>
</tr>
<tr>
<td>50-60%</td>
<td>2.00</td>
<td>2.14</td>
</tr>
<tr>
<td>60-70%</td>
<td>1.86</td>
<td>2.07</td>
</tr>
<tr>
<td>70-80%</td>
<td>2.00</td>
<td>2.14</td>
</tr>
<tr>
<td>80-90%</td>
<td>1.86</td>
<td>2.07</td>
</tr>
<tr>
<td>90-100%</td>
<td>2.00</td>
<td>2.14</td>
</tr>
</tbody>
</table>

Charge Voltages and Temperature Ranges

<table>
<thead>
<tr>
<th>Temp (°C)</th>
<th>Boost Charge (V/cell)</th>
<th>Float Charge (V/cell)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-20</td>
<td>2.58</td>
<td>2.53</td>
</tr>
<tr>
<td>20-30</td>
<td>2.54</td>
<td>2.51</td>
</tr>
<tr>
<td>30-40</td>
<td>2.51</td>
<td>2.48</td>
</tr>
<tr>
<td>40-50</td>
<td>2.48</td>
<td>2.45</td>
</tr>
<tr>
<td>50-60</td>
<td>2.45</td>
<td>2.43</td>
</tr>
<tr>
<td>60-70</td>
<td>2.43</td>
<td>2.41</td>
</tr>
<tr>
<td>70-80</td>
<td>2.41</td>
<td>2.39</td>
</tr>
<tr>
<td>80-90</td>
<td>2.39</td>
<td>2.37</td>
</tr>
<tr>
<td>90-100</td>
<td>2.37</td>
<td>2.35</td>
</tr>
<tr>
<td>100-110</td>
<td>2.35</td>
<td>2.33</td>
</tr>
<tr>
<td>110-120</td>
<td>2.33</td>
<td>2.31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STATE OF CHARGE</th>
<th>OCPV1</th>
<th>OCPV2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10%</td>
<td>2.07</td>
<td>2.23</td>
</tr>
<tr>
<td>10-20%</td>
<td>2.00</td>
<td>2.14</td>
</tr>
<tr>
<td>20-30%</td>
<td>1.86</td>
<td>2.07</td>
</tr>
<tr>
<td>30-40%</td>
<td>2.00</td>
<td>2.14</td>
</tr>
<tr>
<td>40-50%</td>
<td>1.86</td>
<td>2.07</td>
</tr>
<tr>
<td>50-60%</td>
<td>2.00</td>
<td>2.14</td>
</tr>
<tr>
<td>60-70%</td>
<td>1.86</td>
<td>2.07</td>
</tr>
<tr>
<td>70-80%</td>
<td>2.00</td>
<td>2.14</td>
</tr>
<tr>
<td>80-90%</td>
<td>1.86</td>
<td>2.07</td>
</tr>
<tr>
<td>90-100%</td>
<td>2.00</td>
<td>2.14</td>
</tr>
</tbody>
</table>

VRLA BATTERY CONSTRUCTION

1. Negative Terminal Post
2. Safe Vent Valve
3. Inter-called Connector
4. Positive Terminal Post
5. Sealing Compound Epoxy
6. Container Cover
7. Sealing O-Ring
8. Positive Plate
9. AGM Separator
10. Negative Plate
11. Case

Airport / runway emergency illumination
FUNDAMENTAL BASICS OF VRLA GEL BATTERIES:

What is gel?

Gel is a mixture produced by homogeneous dispersion of pyrogenic silica in dilute sulfuric acid. Pyrogenic silica is a form of powder of very well dispersed SiO₂, which absorbs more than 10 times its weight of water, producing gel. Because of the thermodynamic properties of gel (molten by stirring and solid by heating), after a certain cooling time, the gelatinized mass coagulates forming a network which holds the liquid inside and gives the gel structure. This form can be broken by stirring to single agglomerates giving again a slurry form.

Main difference from AGM batteries:

- Using gelSO₂, an electrolyte
- Using an extra microporous separator which can reduce the depolarization of the negative electrode and avoid the PCL effect (performance is expected to last due to less degradation of the cathode), significantly increases the life expectancy, during deep discharge or peak current load to prevent short circuit by dendrite growth between the plates.
- Plate thickness tolerance is not critical since the high compression of plate group assembly is not required.
- More electrolyte for better contact with a filter and also with materials like container walls, good for releasing internal heat and cooling battery temperature.
- Better vent valve design to lower gassing rate and water-baring ratio to extend battery lifetime.

ADVANTAGE OF GEL BATTERIES:

- No electrolyte adjustment needed.
- Can absorb quick recharging after discharging.
- Renewable to occasional deep discharge, deep discharging resistance is higher and much higher than in case of AGM in use.
- Additional electrolyte (about 6% in comparison to gel).
- Can operate in low gel realization during charging.
- Lower self-discharge (5% of the nominal capacity after a 12 month storage in open atmosphere).
- High charge acceptance.
- High energy at low temperature.
- Higher operating reliability and stronger battery life, an indicator due to wrong maintenance without acid.
- The tendency to thermal expansion effect is strongly reduced for gel batteries since the higher electrolyte current than AGM (in the contact between plates and container walls for heat expansion through the surrounding gel).
- Can be stored and used in upright or on side position (side position may gain loss expectancy).
- No delamination problems if container is damaged.
- Approve for all transport (IATA).
- Almost to avoid staling which can occur in AGM and conventional lead cells; especially in still batteries.
- Self-recovering valves with adapter to maintain reverse water-baring and extend battery life.
- Low cost rate (cost is life time and cost vs. Cycles).

VRLA GEL BATTERY CONSTRUCTION

1. Negative Terminal Post
2. Safe Vent Valve Design to reduce water losing significantly
3. Container Cover
4. Inter-cell Connector
5. Positive Terminal Post
6. Sealing Compound Epoxy
7. Sealing O-Ring
8. Positive Plate
9. GEL Separator
10. Negative Plate
11. Case

Change Voltages and Temperature Ranges

<table>
<thead>
<tr>
<th>Temp</th>
<th>P1</th>
<th>P2</th>
<th>P3</th>
<th>P4</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5°C</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>5-10°C</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>10-15°C</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>15-20°C</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>20-25°C</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>25-30°C</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>30-35°C</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>35-40°C</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
<td>0.15</td>
</tr>
</tbody>
</table>

General relation of Capacity vs. Storage Time

- No change in capacity in the initial period.
- Capacity decreases linearly with storage time.
**LANDPORT VRLA-AGM-GEL BATTERY TERMINAL OPTIONS**

Note: the figures below just show the appearance and dimensions. For the positioning on each battery model, please check the specification on [www.landportbv.com](http://www.landportbv.com).

**Valve Regulated Lead-Acid Battery, Rechargeable**

**Maintenance-Free, Sealed with AGM Separator**

- **T1 terminal**
  - Brass Coated with Tin
  - Lead
  - Torque: 3.9 ~ 5.4 N*m (34.39 ~ 47.75 in*lbs)

- **T2 terminal**
  - Brass Coated with Tin; Threaded Insert 6mm STUD
  - Lead
  - Torque: 3.9 ~ 5.4 N*m (34.39 ~ 47.75 in*lbs)

- **T3 terminal**
  - Brass Coated with Tin; Threaded Insert 6mm STUD
  - Lead
  - Torque: 3.9 ~ 5.4 N*m (34.39 ~ 47.75 in*lbs)

- **T4 terminal**
  - Brass Coated with Tin; Threaded Insert 6mm STUD
  - Lead
  - Torque: 3.9 ~ 5.4 N*m (34.39 ~ 47.75 in*lbs)

- **T5 terminal**
  - Brass Coated with Tin; Threaded Insert 5mm STUD
  - Lead
  - Torque: 2.0 ~ 3.0 N*m (17.69 ~ 26.53 in*lbs)

- **T6 terminal**
  - Brass Coated with Tin; Threaded Insert 6mm STUD
  - Lead
  - Torque: 3.9 ~ 5.4 N*m (34.39 ~ 47.75 in*lbs)

- **T7 terminal**
  - Brass Coated with Tin; Threaded Insert 5mm STUD
  - Lead
  - Torque: 2.0 ~ 3.0 N*m (17.69 ~ 26.53 in*lbs)

- **T8 terminal**
  - Brass Coated with Tin; Threaded Insert 6mm STUD
  - Lead
  - Torque: 3.9 ~ 5.4 N*m (34.39 ~ 47.75 in*lbs)

- **T9 terminal**
  - Brass Coated with Tin; Threaded Insert 6mm STUD
  - Lead
  - Torque: 3.9 ~ 5.4 N*m (34.39 ~ 47.75 in*lbs)

- **T10 terminal**
  - Brass Coated with Tin; Threaded Insert 8mm STUD
  - Lead
  - Torque: 11 ~ 14.7 N*m (97.28 ~ 130.0 in*lbs)

- **T11 terminal**
  - Brass Coated with Tin; Threaded Insert 8mm STUD
  - Lead
  - Torque: 11 ~ 14.7 N*m (97.28 ~ 130.0 in*lbs)

- **T12 terminal**
  - Brass Coated with Tin; Threaded Insert 8mm STUD
  - Lead
  - Torque: 11 ~ 14.7 N*m (97.28 ~ 130.0 in*lbs)

- **T13 terminal**
  - Brass Coated with Tin; Threaded Insert 8mm STUD
  - Lead
  - Torque: 11 ~ 14.7 N*m (97.28 ~ 130.0 in*lbs)

- **T14-1 Positive**
  - Steel
  - Torque: 15.9 ~ 22 N*m (139.97 ~ 194.25 in*lbs)

- **T14-2 Negative**
  - Steel
  - Torque: 15.9 ~ 22 N*m (139.97 ~ 194.25 in*lbs)

- **Spring Terminal**
  - Spring Steel
  - Fully Collapsible

- **Connector**
  - Toy Battery Connector
  - H-Connector
**LP SERIES - GENERAL PURPOSE**

### General Features
- Using oxygen recombination technology: maintenance-free
- PlC2Ni alloy for plate grids: less gassing, less self-discharging
- High quality AGM separator: extended cycle life and prevent micro short circuit
- ABS material: increase the strength of battery container. (Flame-retardant ABS is optional);
- High purity rare material: ensure low self discharge rate
- Silver-coated copper terminals (T1, T2 terminal), brass insert terminals and lead terminals improve the electric conductivity.

### LP Models and Parameters (Small size)

#### Typical Applications
- All purpose + Uninterruptible Power Supply (UPS) + Electric Power System (EPS)
- Emergency backup power supply + Emergency light + Railway signal + Aircraft signal
- Alarm and security system + Electronic apparatus and equipment + Communication power supply
- DC power supply + Auto control system

#### Model (ID) Num Volt Rated Capacity [Ah] Approx Dimension Approx Weight Terminal type

<table>
<thead>
<tr>
<th>Model</th>
<th>Vol (V)</th>
<th>Capacity [Ah]</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
<th>Weight</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP-6</td>
<td>6.00</td>
<td>9.00</td>
<td>4.05</td>
<td>4.50</td>
<td>7.00</td>
<td>5.00</td>
<td>T1</td>
</tr>
<tr>
<td>LP-6.0</td>
<td>6.00</td>
<td>9.00</td>
<td>4.05</td>
<td>4.50</td>
<td>7.00</td>
<td>5.00</td>
<td>T1</td>
</tr>
<tr>
<td>LP-6.5</td>
<td>6.00</td>
<td>9.00</td>
<td>4.05</td>
<td>4.50</td>
<td>7.00</td>
<td>5.00</td>
<td>T1</td>
</tr>
<tr>
<td>LP-7</td>
<td>6.00</td>
<td>9.00</td>
<td>4.05</td>
<td>4.50</td>
<td>7.00</td>
<td>5.00</td>
<td>T1</td>
</tr>
<tr>
<td>LP-8</td>
<td>6.00</td>
<td>9.00</td>
<td>4.05</td>
<td>4.50</td>
<td>7.00</td>
<td>5.00</td>
<td>T1</td>
</tr>
<tr>
<td>LP-9</td>
<td>6.00</td>
<td>9.00</td>
<td>4.05</td>
<td>4.50</td>
<td>7.00</td>
<td>5.00</td>
<td>T1</td>
</tr>
<tr>
<td>LP-10</td>
<td>6.00</td>
<td>9.00</td>
<td>4.05</td>
<td>4.50</td>
<td>7.00</td>
<td>5.00</td>
<td>T1</td>
</tr>
<tr>
<td>LP-12</td>
<td>6.00</td>
<td>9.00</td>
<td>4.05</td>
<td>4.50</td>
<td>7.00</td>
<td>5.00</td>
<td>T1</td>
</tr>
<tr>
<td>LP-16</td>
<td>6.00</td>
<td>9.00</td>
<td>4.05</td>
<td>4.50</td>
<td>7.00</td>
<td>5.00</td>
<td>T1</td>
</tr>
<tr>
<td>LP-20</td>
<td>6.00</td>
<td>9.00</td>
<td>4.05</td>
<td>4.50</td>
<td>7.00</td>
<td>5.00</td>
<td>T1</td>
</tr>
<tr>
<td>LP-25</td>
<td>6.00</td>
<td>9.00</td>
<td>4.05</td>
<td>4.50</td>
<td>7.00</td>
<td>5.00</td>
<td>T1</td>
</tr>
<tr>
<td>LP-30</td>
<td>6.00</td>
<td>9.00</td>
<td>4.05</td>
<td>4.50</td>
<td>7.00</td>
<td>5.00</td>
<td>T1</td>
</tr>
</tbody>
</table>

### Specifications subject to change without notice.
### LP Performance Characteristics (Small size)

**SELF DISCHARGE CHARACTERISTICS**

- Battery type: LP series - General Purpose
- Temperature range: 20°C to 25°C
- Terminal type: T11, T6/T12, T7
- DOD: 50%
- Discharging current: 0.17C (FV 1.7V/cell)

### Charging Characteristics (Battery type: LP)

- Terminal type: T11, T6/T12, T7
- DOD: 50%
- Discharging current: 0.17C (FV 1.7V/cell)

### Cycle Service Life in Relation to the Depth of Discharge

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage (V)</th>
<th>Capacity (Ah)</th>
<th>Length (mm)</th>
<th>Width (mm)</th>
<th>Height (mm)</th>
<th>Weight (kg)</th>
<th>Terminal type</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP12-250</td>
<td>12</td>
<td>225</td>
<td>247</td>
<td>214</td>
<td>103.2</td>
<td>10.24</td>
<td>T12/T3/T10</td>
</tr>
<tr>
<td>LP12-200</td>
<td>12</td>
<td>200</td>
<td>234</td>
<td>212.5</td>
<td>101</td>
<td>10.24</td>
<td>T12/T3/T10</td>
</tr>
<tr>
<td>LP12-150</td>
<td>12</td>
<td>150</td>
<td>220</td>
<td>203</td>
<td>91.5</td>
<td>9.96</td>
<td>T12/T3/T10</td>
</tr>
<tr>
<td>LP12-120</td>
<td>12</td>
<td>120</td>
<td>200</td>
<td>197</td>
<td>79.4</td>
<td>9.45</td>
<td>T12/T3/T10</td>
</tr>
<tr>
<td>LP12-100</td>
<td>12</td>
<td>100</td>
<td>180</td>
<td>180</td>
<td>60.2</td>
<td>9.05</td>
<td>T12/T3/T10</td>
</tr>
<tr>
<td>LP12-90</td>
<td>12</td>
<td>90</td>
<td>160</td>
<td>160</td>
<td>53.0</td>
<td>8.65</td>
<td>T12/T3/T10</td>
</tr>
<tr>
<td>LP12-75</td>
<td>12</td>
<td>75</td>
<td>140</td>
<td>140</td>
<td>47.3</td>
<td>8.25</td>
<td>T12/T3/T10</td>
</tr>
<tr>
<td>LP12-50</td>
<td>12</td>
<td>50</td>
<td>120</td>
<td>120</td>
<td>37.5</td>
<td>7.85</td>
<td>T12/T3/T10</td>
</tr>
<tr>
<td>LP6-200</td>
<td>6</td>
<td>200</td>
<td>156</td>
<td>140</td>
<td>91.5</td>
<td>9.96</td>
<td>T12/T3/T10</td>
</tr>
<tr>
<td>LP6-150</td>
<td>6</td>
<td>150</td>
<td>140</td>
<td>128</td>
<td>79.4</td>
<td>9.45</td>
<td>T12/T3/T10</td>
</tr>
<tr>
<td>LP6-120</td>
<td>6</td>
<td>120</td>
<td>120</td>
<td>108</td>
<td>61.8</td>
<td>8.05</td>
<td>T12/T3/T10</td>
</tr>
</tbody>
</table>
| **Typical Applications**

- All-purpose
- Uninterruptible Power Supply (UPS)
- Electric Power System (EPS)
- DC power supply
- Auto control system

### Specifications Subject to Change without Notice

- Specifications subject to change without notice.
The battery should never be left standing till this is reached. Supplementary charge may often fail to recover the capacity.

1. Charged for above 3 days at limited current 0.25CA and constant voltage 2.25V/cell. (Carry out supplementary charge before use if 100% capacity is required.)

### LP Performance Characteristics (Middle size)

**Discharge Characteristics**

![Graph showing discharge characteristics, likely including key metrics such as voltage, capacity, and time.]

**Charge Characteristics/Standby Use**

![Graph showing charge characteristics, likely including key metrics such as voltage, capacity, and time.]

**Temperature Effects On Relation To Battery Capacity**

![Graph showing temperature effects on battery capacity, likely including key metrics such as temperature and capacity.]  
- The graph illustrates how temperature affects battery capacity, demonstrating the importance of maintaining optimal operating conditions.

**Cycle Service Life On Relation To The Depth Of Discharge**

![Graph showing cycle service life in relation to the depth of discharge, likely including key metrics such as discharge depth and number of cycles.]  
- The graph helps in understanding the trade-off between cycle life and the depth of discharge, providing insights for effective battery management.

**Self-Discharge Characteristics**

![Graph showing self-discharge characteristics, likely including key metrics such as time and voltage.]  
- The graph depicts the rate of self-discharge over time, indicating the importance of minimizing self-discharge to maintain battery health.

**Effect Of Temperature On Long Term Plant Discharge Life**

![Graph showing the effect of temperature on long-term plant discharge life, likely including key metrics such as temperature and discharge life.]  
- The graph highlights the significant impact of temperature on discharge life, emphasizing the need for temperature control during storage.

### LP II Models and Parameters (2V Series)

#### Typical Applications
- Tele-communication central station (airfield or cellular)
- Power system communication, military communication, etc.
- Network communication including: data transmission, television signal transmission, etc.
- Uninterruptable Power System (UPS: For Telecom)

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Voltage (V)</th>
<th>Rated Capacity (Ah)</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
<th>Total</th>
<th>Approx Weight</th>
<th>Terminal Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>LP-65</td>
<td>6.00</td>
<td>500</td>
<td>300</td>
<td>250</td>
<td>180</td>
<td>600</td>
<td>15.0</td>
<td>70</td>
</tr>
<tr>
<td>LP-72</td>
<td>6.00</td>
<td>700</td>
<td>350</td>
<td>300</td>
<td>220</td>
<td>900</td>
<td>21.0</td>
<td>70</td>
</tr>
<tr>
<td>LP-110</td>
<td>11.00</td>
<td>1000</td>
<td>450</td>
<td>400</td>
<td>250</td>
<td>1300</td>
<td>30.0</td>
<td>70</td>
</tr>
<tr>
<td>LP-150</td>
<td>15.00</td>
<td>1500</td>
<td>550</td>
<td>500</td>
<td>300</td>
<td>2000</td>
<td>45.0</td>
<td>70</td>
</tr>
<tr>
<td>LP-200</td>
<td>20.00</td>
<td>2000</td>
<td>650</td>
<td>600</td>
<td>350</td>
<td>3000</td>
<td>60.0</td>
<td>70</td>
</tr>
<tr>
<td>LP-250</td>
<td>25.00</td>
<td>2500</td>
<td>750</td>
<td>700</td>
<td>400</td>
<td>3500</td>
<td>75.0</td>
<td>70</td>
</tr>
</tbody>
</table>

### LP Series - General Purpose
- Specifications subject to change without notice.
### Power on Command

#### DISCHARGE CHARACTERISTICS

- **Remaining Capacity (%)**
  - 10.0
  - 12.0
  - 11.0
  - 10.0
  - 9.0

#### CHARGING CHARACTERISTICS (STANDARD USE)

- **Battery**
  - 12V
  - 6V
  - 4V

- **Supplementary charge**
  - May often fail to recover the capacity.

- **Charged for 8~10 hours at limited current 0.05CA**

- **No supplementary charge required**

#### SELF DISCHARGE CHARACTERISTICS

- **Battery**
  - 6.5
  - 5.5
  - 5.0
  - 4.5

#### TEMPERATURE EFFECTS IN RELATION TO THE DEPTH OF DISCHARGE

- **LP II Performance Characteristics**

- **Discharge Time**
  - 0.6C
  - 1C
  - 2C

- **Charge**
  - 0.05C
  - 0.25C

- **LP II Series - Deep Cycle**

- **Typical Applications**
  - Electric tools
  - Vehicle in place of walk
  - Lawn mowers
  - Golf trolleys and golf cart
  - Portable apparatus, lights and instruments
  - Electric toys
  - Illumination light

- **Fire alarms**
- **Portable power**
- **Wheelchairs**
- **Medical equipments.**

- **LPC Models and Parameters**

- **ABS material:** increase the strength of battery container. (Flame-retardant ABS is optional)

- **Special anti-vibration design** (optional)

- **Thermal management system** (optional)

- **For longer cycle life:** special paste formula, over dimensioned negative plate, optimised special grid alloy: less gassing, less self-discharging

- **Specifications subject to change without notice.**

### General Features

- Using oxygen recombination technology: maintenance-free
- Special grid alloy: less gassing, less self-discharging
- For longer cycle life: special paste formula, over dimensioned negative plate and optimised manufacturing process, additives for deep discharge
- Thermal management system (optional)
- Special anti-vibration design (optional)
- High quality ACR separator: extend cycle life and prevent micro short circuit
- ABS material: increase the strength of battery container. (Flame-retardant ABS is optional)
**LPC Performance Characteristics**

### Discharge Characteristics

<table>
<thead>
<tr>
<th>Capacity (%)</th>
<th>Voltage (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>3.8</td>
</tr>
<tr>
<td>50</td>
<td>3.5</td>
</tr>
<tr>
<td>60</td>
<td>3.3</td>
</tr>
<tr>
<td>70</td>
<td>3.1</td>
</tr>
<tr>
<td>80</td>
<td>2.8</td>
</tr>
</tbody>
</table>

### Charging Characteristics

<table>
<thead>
<tr>
<th>Charging Duration (h)</th>
<th>Temperature (°C)</th>
<th>Output Voltage (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>50</td>
<td>2.4</td>
</tr>
<tr>
<td>4</td>
<td>25</td>
<td>2.4</td>
</tr>
<tr>
<td>6</td>
<td>15</td>
<td>2.4</td>
</tr>
</tbody>
</table>

### Self-Discharge Characteristics

<table>
<thead>
<tr>
<th>Number of Days</th>
<th>Temperature (°C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>42</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
</tr>
</tbody>
</table>

**LPG SERIES - GENERAL PURPOSE GEL**

### General Features

- Long discharge time
- Suitable for standby power and energy storage power use
- Special plate design, long cycle lifetime
- Using special lead-calcium alloy to boost up the grid anti-corrosive performance and extend the battery using lifetime
- Special separator to boost up the battery internal performance
- High thermal capacity, reduce the risk of thermal runaway and drying up, can be used in poor environment
- High gas recombinant efficiency
- Little water losing, no electrolyte stratification phenomenon
- Long storage time
- Good deep discharge resilience performance
- Using nano-fumed silica, with small particle size, and big specific surface area.

### Typical Applications

1. **Cycle applications**
   - Golf course, Garden equipments, Portable equipments, Wheelchairs, Solar and wind mill units
   - Medical equipments, Used unit also for mining (head lights), Portable video/voice, Military, Railway crossing
   - Traffic lights, Mobile signs, Island or Swamp, Cottage camping, AIDS plants, Toys and hobby applications
   - Portable equipments for communication, testing, distance measuring, etc. - Pryo system

2. **Standby applications**
   - Telecommunication backup - Power plants, Burglar alarms, Medical equipments ( stationary and portable i.e., X ray, computer back-up, high power), Communication systems, Fire alarm systems, Traffic control systems
   - Cash register equipments, Emergency lights signal systems, Telephones systems, Clocks systems, Light interrupted power supply, Elevators emergency power supply (emergency), Door closer applications, Motive stations
   - Airport / runway emergency illumination, Emergency power supply for hospitals, - Rover and satellite stations

### LPG Models and Parameters

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Voltage (V)</th>
<th>Rated Capacity (Ah)</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
<th>Total Weight</th>
<th>Approx. Weight</th>
<th>Terminal type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NARGP0421-10</td>
<td>12</td>
<td>20.9</td>
<td>16.0</td>
<td>4.0</td>
<td>19.7</td>
<td>7.02</td>
<td>9.75</td>
<td>161.0</td>
</tr>
<tr>
<td>NARGP0421-12</td>
<td>12</td>
<td>30.6</td>
<td>16.0</td>
<td>4.0</td>
<td>19.7</td>
<td>7.02</td>
<td>9.75</td>
<td>161.0</td>
</tr>
<tr>
<td>NARGP0421-16</td>
<td>12</td>
<td>40.9</td>
<td>16.0</td>
<td>4.0</td>
<td>19.7</td>
<td>7.02</td>
<td>9.75</td>
<td>161.0</td>
</tr>
<tr>
<td>NARGP0421-18</td>
<td>12</td>
<td>50.5</td>
<td>16.0</td>
<td>4.0</td>
<td>19.7</td>
<td>7.02</td>
<td>9.75</td>
<td>161.0</td>
</tr>
</tbody>
</table>

---

**L16 Landport B.V.**

**Power on Command**

**LPRC-GPM GEL BATTERIES**

---

**LP**
### LPS SERIES - SOLAR POWER

#### General Features
- Good cyclic property. Enhanced overcharge endurance and overdischarge recovery property
- High purity raw material: ensure low self-discharge rate
- Using oxygen recombination technology: maintenance-free
- Lower acid density, excess of electrolyte and larger distance between plates to keep battery at low temperature and slow down plate grid corrosion speed
- ABS material: Increase the strength of battery container. (Flame-retardant ABS is optional)
- Unique plate group configuration, high quality AGM separator and battery management system ensure battery with a longer service life
- Special vent valve design: control water losing, prevent air and spark going inside

### LPS Models and Parameters (6V, 12V Series)

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Voltage (V)</th>
<th>Approx Capacity (Ahr)</th>
<th>Length (mm)</th>
<th>Width (mm)</th>
<th>Height (mm)</th>
<th>Approx Weight (kg)</th>
<th>Approx Dimension (lbs)</th>
<th>Terminal type</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPS12-7.5</td>
<td>12</td>
<td>12</td>
<td>197</td>
<td>277</td>
<td>348</td>
<td>94.5</td>
<td>200</td>
<td>T1/T2</td>
</tr>
<tr>
<td>LPS12-15</td>
<td>12</td>
<td>18</td>
<td>187.5</td>
<td>257</td>
<td>348</td>
<td>167.5</td>
<td>352</td>
<td>T1/T2</td>
</tr>
<tr>
<td>LPS12-20</td>
<td>12</td>
<td>20</td>
<td>197</td>
<td>277</td>
<td>348</td>
<td>175</td>
<td>372</td>
<td>T1/T2</td>
</tr>
<tr>
<td>LPS12-30</td>
<td>12</td>
<td>30</td>
<td>197</td>
<td>277</td>
<td>348</td>
<td>180</td>
<td>372</td>
<td>T1/T2</td>
</tr>
<tr>
<td>LPS12-36</td>
<td>12</td>
<td>36</td>
<td>197</td>
<td>277</td>
<td>348</td>
<td>180</td>
<td>372</td>
<td>T1/T2</td>
</tr>
<tr>
<td>LPS6-115</td>
<td>6</td>
<td>115</td>
<td>206.5</td>
<td>268.5</td>
<td>348</td>
<td>50.7</td>
<td>111</td>
<td>T1/T2</td>
</tr>
<tr>
<td>LPS6-170</td>
<td>6</td>
<td>170</td>
<td>212.5</td>
<td>284.5</td>
<td>348</td>
<td>63.3</td>
<td>130</td>
<td>T1/T2</td>
</tr>
</tbody>
</table>

#### Typical Applications
- Green energy systems (solar, wind, hydro, etc) • Solar power stations
- Telecommunications installations • Measurement stations • Pump systems • Signal station
- Survey and Mapping system • Emergency lighting • Railway crossing • Traffic lights
- Street lightening • Lawn lamp • Street signs • SOS pillars • Alarm installations
- Weekend cottage camping • Caravans • Boats or buoys

### Specifications
- Power on Command
- Good cyclic property. Enhanced overcharge endurance and overdischarge recovery property
- High purity raw material: ensure low self-discharge rate
- Using oxygen recombination technology: maintenance-free
- Lower acid density, excess of electrolyte and larger distance between plates to keep battery at low temperature and slow down plate grid corrosion speed
- ABS material: Increase the strength of battery container. (Flame-retardant ABS is optional)
- Unique plate group configuration, high quality AGM separator and battery management system ensure battery with a longer service life
- Special vent valve design: control water losing, prevent air and spark going inside

- Good cyclic property. Enhanced overcharge endurance and overdischarge recovery property
- High purity raw material: ensure low self-discharge rate
- Using oxygen recombination technology: maintenance-free
- Lower acid density, excess of electrolyte and larger distance between plates to keep battery at low temperature and slow down plate grid corrosion speed
- ABS material: Increase the strength of battery container. (Flame-retardant ABS is optional)
- Unique plate group configuration, high quality AGM separator and battery management system ensure battery with a longer service life
- Special vent valve design: control water losing, prevent air and spark going inside
### LPS II Models and Parameters (6V, 12V Series)

#### Typical Applications
- Green energy systems
- Communication systems

#### LPS II Models and Parameters (2V Series)

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Voltage (V)</th>
<th>Rated Capacity (Ah)</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
<th>Total Weight</th>
<th>Approx Weight</th>
<th>Terminal Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPS2-1000</td>
<td>2000</td>
<td>1000</td>
<td>300</td>
<td>300</td>
<td>200</td>
<td>200</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>LPS2-1100</td>
<td>2000</td>
<td>1100</td>
<td>300</td>
<td>300</td>
<td>200</td>
<td>200</td>
<td>110</td>
<td>110</td>
</tr>
<tr>
<td>LPS2-1200</td>
<td>2000</td>
<td>1200</td>
<td>300</td>
<td>300</td>
<td>200</td>
<td>200</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>LPS2-1300</td>
<td>2000</td>
<td>1300</td>
<td>300</td>
<td>300</td>
<td>200</td>
<td>200</td>
<td>130</td>
<td>130</td>
</tr>
<tr>
<td>LPS2-1400</td>
<td>2000</td>
<td>1400</td>
<td>300</td>
<td>300</td>
<td>200</td>
<td>200</td>
<td>140</td>
<td>140</td>
</tr>
</tbody>
</table>

#### Specifications subject to change without notice.

### LPS Performance Characteristics (6V, 12V Series)

#### CYCLE SERVICE LIFE

- Cycle service life: 200 cycles, 20% depth of discharge

#### SELF-DECHARGE AT DIFFERENT TEMPERATURES

- Self-discharge rate: 1% per month at 25°C

#### EFFECT OF TEMPERATURES ON LONG-TERM FLOAT-DISCONNECTED LIFE

- Battery life decreases with increasing temperature

#### CYCLIC APPLICATION CHARGE MODE

- Cyclic performance optimized for charge (or near-charge) voltage for each battery type to ensure maximum charge efficiency

- Cyclic charge performance optimized for charge (or near-charge) voltage for each battery type to ensure maximum charge efficiency
**LPSII Performance Characteristics**

![Graph showing performance characteristics](image)

**LPL SERIES - LONG LIFE STANDBY**

### General Features
- Special grid alloy and high purity raw material ensure less gassing, less self-discharging
- Grid refining technology and the thicker plates are used to extend the battery standby life and reduce the plate grid corrosion speed
- Lower acid density, excess of electrolyte and larger distance between plates to keep battery at low temperature and slow down plate grid corrosion speed
- Using oxygen recombination technology: maintenance-free
- ABS material: increase the strength of battery container. (Flame-retardant ABS is optional)
- Unique vent valve design: control water losing, prevent air and spark going inside

### LPL Models and Parameters

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Voltage (V)</th>
<th>Rated Capacity (Ah)</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
<th>Total Height</th>
<th>Approx Weight</th>
<th>Terminal type</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPL20-4.8</td>
<td>20.8</td>
<td>4.8</td>
<td>20.8</td>
<td>15.2</td>
<td>7.8</td>
<td>31.8</td>
<td>14.73</td>
<td>T7/T12</td>
</tr>
<tr>
<td>LPL20-6.0</td>
<td>20.8</td>
<td>6.0</td>
<td>20.8</td>
<td>15.2</td>
<td>7.8</td>
<td>31.8</td>
<td>14.73</td>
<td>T7/T12</td>
</tr>
<tr>
<td>LPL20-10.0</td>
<td>20.8</td>
<td>10.0</td>
<td>20.8</td>
<td>15.2</td>
<td>7.8</td>
<td>31.8</td>
<td>14.73</td>
<td>T7/T12</td>
</tr>
<tr>
<td>LPL20-12.0</td>
<td>20.8</td>
<td>12.0</td>
<td>20.8</td>
<td>15.2</td>
<td>7.8</td>
<td>31.8</td>
<td>14.73</td>
<td>T7/T12</td>
</tr>
<tr>
<td>LPL20-15.0</td>
<td>20.8</td>
<td>15.0</td>
<td>20.8</td>
<td>15.2</td>
<td>7.8</td>
<td>31.8</td>
<td>14.73</td>
<td>T7/T12</td>
</tr>
<tr>
<td>LPL20-20.0</td>
<td>20.8</td>
<td>20.0</td>
<td>20.8</td>
<td>15.2</td>
<td>7.8</td>
<td>31.8</td>
<td>14.73</td>
<td>T7/T12</td>
</tr>
<tr>
<td>LPL20-25.0</td>
<td>20.8</td>
<td>25.0</td>
<td>20.8</td>
<td>15.2</td>
<td>7.8</td>
<td>31.8</td>
<td>14.73</td>
<td>T7/T12</td>
</tr>
<tr>
<td>LPL20-30.0</td>
<td>20.8</td>
<td>30.0</td>
<td>20.8</td>
<td>15.2</td>
<td>7.8</td>
<td>31.8</td>
<td>14.73</td>
<td>T7/T12</td>
</tr>
<tr>
<td>LPL20-40.0</td>
<td>20.8</td>
<td>40.0</td>
<td>20.8</td>
<td>15.2</td>
<td>7.8</td>
<td>31.8</td>
<td>14.73</td>
<td>T7/T12</td>
</tr>
<tr>
<td>LPL20-60.0</td>
<td>20.8</td>
<td>60.0</td>
<td>20.8</td>
<td>15.2</td>
<td>7.8</td>
<td>31.8</td>
<td>14.73</td>
<td>T7/T12</td>
</tr>
</tbody>
</table>

**Typical Applications**
- UPS and EPS
- Emergency light
- Marine and power stations
- Alarm and security system
- Communication power supply, DC power supply
- Railway signal and aircraft signal system
- Electronic apparatus and equipment
- Storage Time (months)
- General Features
- LPL Models and Parameters (4V, 6V, 12V Series)

### Focusing on the environmental friendly development, Landport commits on the harmony between human being and the environment of the earth, and delivering rechargeable electricity storage products for green energy systems. We know that the earth we are living on is borrowed from the next generation...
LPL Performance Characteristics (4V, 6V, 12V Series)

### DISCHARGE CHARACTERISTICS

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Voltage (V)</th>
<th>Rated Capacity (Ah)</th>
<th>Approx Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Length</td>
</tr>
<tr>
<td>LPL12-75H</td>
<td></td>
<td></td>
<td>120.0</td>
</tr>
<tr>
<td>LPL12-60H</td>
<td></td>
<td></td>
<td>90.0</td>
</tr>
<tr>
<td>LPL12-45</td>
<td></td>
<td></td>
<td>60.0</td>
</tr>
<tr>
<td>LPL12-38</td>
<td></td>
<td></td>
<td>45.0</td>
</tr>
<tr>
<td>LPL12-120</td>
<td></td>
<td></td>
<td>120.0</td>
</tr>
<tr>
<td>LPL12-140</td>
<td></td>
<td></td>
<td>140.0</td>
</tr>
<tr>
<td>LPL12-200</td>
<td></td>
<td></td>
<td>200.0</td>
</tr>
<tr>
<td>LPL12-250</td>
<td></td>
<td></td>
<td>250.0</td>
</tr>
</tbody>
</table>

### CHARGING CHARACTERISTICS

- **Terminal Voltage (V):**
  - Discharge for 5~8 hours at limited current 0.05CA.

### EFFECT OF TEMPERATURE ON LONG-TERM MEMORY CAPACITY

- **Life expectancy (year):**
  - 12V Series: 16 years

### EFFICIENCY OF TEMPERATURE ON LONG-TIME FLOAT-MAINTAINED LIFE

### LPL II Models and Parameters (2V Series)

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Voltage (V)</th>
<th>Rated Capacity (Ah)</th>
<th>Approx Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Length</td>
</tr>
<tr>
<td>LPL2-150</td>
<td></td>
<td></td>
<td>150.0</td>
</tr>
<tr>
<td>LPL2-174</td>
<td></td>
<td></td>
<td>174.0</td>
</tr>
<tr>
<td>LPL2-210</td>
<td></td>
<td></td>
<td>210.0</td>
</tr>
<tr>
<td>LPL2-274</td>
<td></td>
<td></td>
<td>274.0</td>
</tr>
<tr>
<td>LPL2-339</td>
<td></td>
<td></td>
<td>339.0</td>
</tr>
</tbody>
</table>

### Typical Applications

- Tele-communication central station (wired or cellular)
- Power system communication, military communication, etc.
- Network communication including data transmission, television signal transmission, etc.
- Uninterruptible Power System (UPS) for Telecom
- EPS

### NETWORK COMMUNICATION INCLUDING: DATA TRANSMISSION, TELEVISION SIGNAL TRANSMISSION, ETC.

- Telecommunication central station (wired or cellular)
- Power system communication, military communication, etc.
- Network communication including data transmission, television signal transmission, etc.

### TO BATTERY CAPACITY

- Rated Capacity (Ah)
- Length Width Height Total Weight Terminal Type
**LPX II Performance Characteristics**

### CHARGING CHARACTERISTICS

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Voltage (V)</th>
<th>Capacity (Ah)</th>
<th>Continuous Discharge Current (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPX12-12</td>
<td>12</td>
<td>100</td>
<td>20</td>
</tr>
<tr>
<td>LPX12-20</td>
<td>20</td>
<td>150</td>
<td>30</td>
</tr>
<tr>
<td>LPX12-30</td>
<td>30</td>
<td>200</td>
<td>40</td>
</tr>
<tr>
<td>LPX12-40</td>
<td>40</td>
<td>250</td>
<td>50</td>
</tr>
</tbody>
</table>

### DISCHARGE CHARACTERISTICS

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Voltage (V)</th>
<th>Capacity (Ah)</th>
<th>Continuous Discharge Current (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPX12-12</td>
<td>12</td>
<td>100</td>
<td>20</td>
</tr>
<tr>
<td>LPX12-20</td>
<td>20</td>
<td>150</td>
<td>30</td>
</tr>
<tr>
<td>LPX12-30</td>
<td>30</td>
<td>200</td>
<td>40</td>
</tr>
<tr>
<td>LPX12-40</td>
<td>40</td>
<td>250</td>
<td>50</td>
</tr>
</tbody>
</table>

**General Features**
- Silver-coated copper terminals (T1, T2 terminal), brass insert terminals and lead terminals improve the electric conductivity.
- Thin plate technology, special grid design, unique paste formula and plate curing technique ensure battery performance.
- High quality AGM separators with less electrical resistance improve high current discharging properties.
- Abs material: increase the strength of battery container (Flame-retardant ABS is optional).

**Typical Applications**
- UPS (High rate)
- High power backup supply
- Emergency power supply
- Starting system
- Power tools
- Emergency lighting
- Electric starting

### LPX Models and Parameters

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Voltage (V)</th>
<th>Capacity (Ah)</th>
<th>Continuous Discharge Current (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPX12-12</td>
<td>12</td>
<td>100</td>
<td>20</td>
</tr>
<tr>
<td>LPX12-20</td>
<td>20</td>
<td>150</td>
<td>30</td>
</tr>
<tr>
<td>LPX12-30</td>
<td>30</td>
<td>200</td>
<td>40</td>
</tr>
<tr>
<td>LPX12-40</td>
<td>40</td>
<td>250</td>
<td>50</td>
</tr>
</tbody>
</table>

### Specifics
- Nominal voltage: 12V or 24V
- Capacity: 10Ah to 200Ah
- Continuous discharge current: 20A to 50A
- Temperature: -20°C to 60°C

**LPX SERIES - HIGH RATE / UPS**

**General Features**
- High power backup supply
- Emergency power supply
- Starting system
- Power tools
- Emergency lighting
- Electric starting

**LPX Models and Parameters**

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Voltage (V)</th>
<th>Capacity (Ah)</th>
<th>Continuous Discharge Current (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPX12-12</td>
<td>12</td>
<td>100</td>
<td>20</td>
</tr>
<tr>
<td>LPX12-20</td>
<td>20</td>
<td>150</td>
<td>30</td>
</tr>
<tr>
<td>LPX12-30</td>
<td>30</td>
<td>200</td>
<td>40</td>
</tr>
<tr>
<td>LPX12-40</td>
<td>40</td>
<td>250</td>
<td>50</td>
</tr>
</tbody>
</table>

### Specifics
- Nominal voltage: 12V or 24V
- Capacity: 10Ah to 200Ah
- Continuous discharge current: 20A to 50A
- Temperature: -20°C to 60°C
LPX Performance Characteristics

### Discharge Characteristics

- **Temperature Effects on Capacity**
- **Temperature Effects on Long-Term Float Degradation**

### Charge Characteristics

- **Life expectancy (years)**
- **Effect of Temperature on Long-Term Charge**

### Charging Characteristics

- **Charging Time (Hours)**
- **Battery Temperature**
- **Charging Current**
- **Charging Voltage**
- **Charged Volume**
- **Charge Voltage**
- **Charged Time (Hours)**

### Other Features

- **General Features**
- **Typical Applications**

#### LPF Series - Front Terminal

- **Nominal Voltage (V)**
- **Rated Capacity (Ah)**
- **Length**
- **Width**
- **Height**
- **Total Height**
- **Approx Weight**
- **Terminal Type**

#### LPF Performance Characteristics

- **Rated Voltage (V)**
- **Rated Capacity (Ah)**
- **Self-Discharge Characteristics and Complementary Charge Methods**

#### Specifications

- **Weight**
- **Type**
- **Approximate Weight**
- **Self-Discharge Characteristics and Complementary Charge Methods**

---

**General Features**
- Specifically ideal for 19 inch or 23 inch power cabinets
- Front terminals make the installation, maintenance and supervision easy
- Shield designs protect terminals from short circuit and show good appearance
- Unique vent valve design: reduces water losing and prevent air/spark going inside
- Thick plates, special formula of paste and plate making process for a long service life
- ABS material: increase the strength of battery container (Flame-retardant ABS is optional)

**LPF Models and Parameters**
- For standard 19 inch or 23 inch power cabinets
- Network connection equipment of communication system
- Power system of special network or local area network
- LPF, stand-by power supply
- Power station systems
- Railway and marine systems

**Typical Applications**
- For standard 19 inch or 23 inch power cabinets
- Network connection equipment of communication system
- Power system of special network or local area network
- LPF, stand-by power supply
- Power station systems
- Railway and marine systems

Specifications subject to change without notice.
BATTERY CARE AND MAINTENANCE

Top-charge and precautions

Any VRLA-AGM battery will be damaged by continual undercharging or overcharging. (Capacity is reduced and life is shortened), although Landport batteries accept a charge very well due to their low internal resistance. Overcharging is extremely harmful to any VRLA battery because of the sealed design. Overcharging breaks down the electrolyte by driving the oxygen and hydrogen out of the battery through the pressure relief valves which will reach its low capacity and shorter lifetime. If a battery is continually undercharged, a barrier layer of sulfate will build up on the positive plate which will limit recharging acceptability. Premature plate shedding can also happen. Performance is reduced and life is shortened.

It is critical that a charger be used that limits voltage. The charger must be temperature-compensated to prevent underor overcharging due to ambient temperature changes. (Please refer to the table titled as Charge Voltage and Temperature Ranges on Page 8). The warranty is void if improperly charged. Use a good constant potential, temperature-compensated, voltage-regulated charger. Constant current chargers should never be used on VRLA batteries. (Landport also manufactures chargers dedicated for VRLA batteries. For detailed information about Landport Lead Acid Battery Chargers, please contact with Landport sales.)

Battery storage

If the battery has high temperature or poor ventilation during storage and delivery, the self-discharge will increase. So, keep good ventilation and keep away from fire, flammable, explosive etc. When storing the battery, take it off from the charger and load and keep it in the dry and cool place. Please supplement charge before use when the battery has been kept for a long time.

Cautions:

1. Keep batteries in a place, where children can not reach.
2. Do not attempt to disassemble, rework, damage, impact, dispose batteries, otherwise the battery can leak, be overheated, or explode.
3. Do not dispose of the batteries in water, fire and do not heating the batteries.
4. Do not short circuit batteries.
5. Do not put your face near the top of batteries. Please wear gloves, eye protection when you move or repair batteries.
6. There is sulfuric acid in the battery. Do not make contact with sulfuric acid in skin, clothes, or especially in eyes. If eyes make contact with sulfuric acid, please wash with a lot of clean water, and consult a physician immediately.
7. The suitable temperature is -15ºC to +50ºC, but it will have longer life in the temperature from +20ºC to +30ºC.

The operation circumstances are defined as: discharging temperature: -15ºC to +50ºC; charging temperature range: -10ºC to +40ºC.

LANDPORT CUSTOMER CARE STATEMENT

We, at Landport Europe B.V, take great pride in serving our customers in a courteous and professional manner, while supplying a quality product at competitive prices, delivered in an efficient, timely manner. At Landport, we strongly feel that our customer care is one of our greatest strengths. We are in the business of fulfilling our customer’s “wants an needs”, whether that would be providing general information, or detailed order updates, and post order follow up. We are the “extra mile” to earn your business, transaction after transaction.

For more information, please visit our website www.landportbv.com
Handling precautions

1 Installation and Connection
(1) When the batteries are mounted in the equipment, exercise caution to ensure easy checking, maintenance and battery replacement ability. In addition, the batteries should be located in the lowest part of the equipment as possible.
(2) Study and test the material and shape of the battery connections with form the interface between the batteries and the application, including the lead wires.
(3) Set the batteries freely, so that they do not move freely in the equipment. This avoids unexpected vibration and/or shock.
(4) Do not locate the batteries near a device that may cause sparks (such as a switch and a fuse). And do not bring fire close to the batteries.
(5) In applications requiring more than one battery, make sure that the battery connections are correct and tighten the batteries into the charger or the load. Be careful to connect the + pole of the batteries to + terminal of either the charger or the load.
(6) Provide enough insulation about lead wires between the batteries and the application.

2 Daily Handling
2.1 Charge
(1) Study any new charging method and condition of the battery which is not written in this specification.
(2) Ensure that the battery is not overloaded during the charge.
(3) Do not charge the batteries in a place where there is direct sunlight.
(4) Do not charge the batteries inside the equipment or the like where food accumulation may occur.
(5) Charge the batteries for the time shown by the specification, or to the time when the charge indication lamp shows the end of charge.
(6) Avoid charging fully charged batteries frequently, it will shorten lifetime.
(7) Do not continue to charge the batteries over 24 hours in cyclic operation.
(8) Avoid parallel charge in cyclic operations.

2.2 Discharge
(1) The cut off voltage of discharge varies higher or lower depending upon the discharge current. The relationship between the discharge current and the recommended cut-off voltage is shown on page 3, Figure 1. Do not discharge the batteries lower than this recommended cut-off voltage.
(2) It is important to avoid over discharge, and charge the battery immediately after discharge. The OSM’s instruction manuals should show that over discharge should be avoided and that the battery should be charged immediately after discharge.

3 Exchange of the Batteries
(1) Exchange the batteries from current ones to the new ones, when there is any abnormality in appearance or characteristics of the batteries. When the batteries are connected in series, the batteries in one string should be exchanged at once.
(2) Exchange the batteries to new ones before they are used for the years shown on page 7 or 5.1 in trickle charge (or float charge) below 77ºF (25ºC) around them. The interval of this exchange should be shortened by temperature increase of ever 50ºF (10ºC).

4 Storage
(1) Store the batteries in a stable position, and away from any metallic or other conductive material including drooping material.
(2) Store the batteries starting from the fully charged state.
(3) Charge the batteries, at least once, every six months during storage below 77ºF (25ºC). Use the charging method which is shown on page 5.
(4) The interval of this charge must be shortened by half when temperature rises of every 50ºF (10ºC)
(5) Users are cautioned that the information in this book was the most current information provided to us at the time of publication. The information is subject to change without notice. Users should use the most current edition of the Landport VRLA Battery Replacement Information Book. Landport expressly denies any responsibility for the accuracy provided by this book. Landport denies any liability for damages as a consequence of using the information in this book. Users should attempt to obtain replacement battery information from the manufacturer or supplier of the equipment for their specific applications.

5 Transportation
(1) Handle the batteries carefully to avoid injuries. They are heavy and must be handled properly.
(2) Avoid moisture or rain on the batteries.
(3) Keep the batteries up in the upright position while in transportation. Avoid abnormal strong shock and/or vibration on the batteries.

6 Recycling
(1) Because of its importance, please consider placing written information of recycling the battery on the product/application, the package, the battery itself, especially in countries where there are legal or voluntary regulations on recycling of batteries.
(2) When designing the product, make the battery easily removable, and accessible in order to make its replacement and recycling or proper disposal easy for the customer.

Notice to readers
It is the responsibility of each user to ensure that each battery application system is adequately designed, safe and compatible with all conditions encountered during use, and in conformance with existing standards and requirements. The circuits are illustrative only and each user must ensure that each circuit is safe and otherwise completely appropriate of the desired application.

This technical handbook contain information concerning cells and batteries manufactured by Landport B.V.
This information is generally descriptive only and is not intended to make or imply any representation guarantee or warranty with respect to any cells and batteries. Cell and battery designs are subject to modification without notice. All descriptions and warranties are solely as contained in formal offers to sell or quotations made by Landport BV.

Handling precautions & Disclaimer