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Lithium Ion & NiMH Battery Packs for Notebook Computers
Li-ion & NiMH Battery Packs

Go for the Smart
GP Smart rechargeable batteries incorporate an innovative integrated circuit that monitors the power system, generating data on power usage, battery status and battery charging.
Design the smart feature into your portable computer to differentiate your product from the competition by offering advanced power management features that increase run time and enhance reliability and ease of use.

Major Features of Li-ion Batteries

- **High Energy Density**
  Greater than 300 Wh/L and 150 Wh/kg; about 25% better than NiMH and 50% better than NiCd.

- **High Voltage**
  Voltage per cell is 3.7 volt, 3 times that of NiMH batteries. It allows a simpler battery configuration and better space utilization for low cell voltages.

- **Superior Low Temperature Performance**
  All models can work at temperatures as low as -20°C. Some models can even work at -30°C.

- **Superior High Temperature Storage Performance**
  Loss of capacity is only 3% after storage at 60°C for 1 week at 0.2C discharge rate, or 4% at 1C discharge rate. This is essential for notebook computers as they run at high temperature.

- **Fast Charge Rate**
  Can be 80% charged in one hour and fully charged in 2.5 hours.

- **High Drain Rate**
  Can be used up to 2C drain rate.

- **Flat Discharge Characteristics**
  Graphite type negative electrode has steady discharge voltage essential for electronic equipment.

- **Reliable Safety Design**
  Designed and built with internal safety features to resist physical abuse and to prevent overcharge and over current.

- **Environmentally Friendly**
  Contain no toxic heavy metals such as mercury, cadmium or lead.

- **Low Self Discharge Rate**
  Low Internal Resistance

- **No Memory Effect**

**Lithium Ion 18650**
The heart of GP Smart Li-ion Battery Pack is the highest capacity GP Li-ion 18650 battery, the Milestone Cell of 2100mAh first launched by GP Batteries. Its ultra-high performance makes it the most logical power force for advanced portable devices.

**GP Smart Features**

- **Ultra-low power consumption**
  Draws less than 1 mA when active and 3µA when asleep, resulting in shelf life of up to two years.

- **Capacity learning algorithms**
  Measures and communicates full charge capacity over battery life.

- **High-precision circuitry**
  Better than 8000 to 1 dynamic range. Doesn’t miss high current pulses or low sleep currents.

- **Smart battery data**
  Support both SMBus 1.0 and 1.1a. OEMs can enable innovative GUIs to differentiate their products.

**GP Smart Communications Protocol**

GP Smart rechargeable batteries are built on open standard that will protect your investment in product design and power-related software. These standards can easily be adopted to new and emerging battery technologies, allowing you to deliver your state-of-the-art products to market faster.

- **Multiple Sourcing**
  Employing the smart function allows multiple sourcing of batteries irrespective of the subtle differences in battery characteristics.

- **Multiple Chemistry**
  Different types of battery chemistry can be used interchangeably.

- **Standardized Power Management Software**
  Support of the technology by the O/S through ACPI, simplifies power management software development. GP’s open system specifications are widely adopted by a number of leading software and component suppliers including the System Management Bus (SMBus) and Smart Battery Data (SBD).

  *SMBus* is a serial bus that provides the pathway for the battery to communicate with other components in the computer.

  *SBD* is a specification that defines the information accessible across the SMBus from 34 data points in the battery integrated circuit.

  GP also employs an advanced interconnect which is a self securing battery interconnection system that provides viable direction mating and voltage/form factor polarization for safe, consumer-friendly operation.
### Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Size</th>
<th>Voltage (V)</th>
<th>Capacity (mAh)</th>
<th>Dimension L x W x H (mm)</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Smart Chips</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DR201</td>
<td>Li-ion</td>
<td>9 x 17670</td>
<td>11.1</td>
<td>3900</td>
<td>215.8 x 53.0 x 19.3</td>
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<tr>
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<td>10 x 4/3A</td>
<td>12</td>
<td>3700</td>
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<tr>
<td>B905S</td>
<td>NiMH</td>
<td>10 x 4/3A</td>
<td>12</td>
<td>3800</td>
<td>149.5 x 69.3 x 20.0</td>
<td>585</td>
</tr>
</tbody>
</table>

| Without Smart Chips |
| DR17   | NiMH   | 6 x 4/5A      | 7.2         | 2100           | 145.0 x 35.8 x 19.3     | 220        |
| DR30   | NiMH   | 6 x 4/3A      | 7.2         | 3800           | 14.5 x 71.5 x 19.3      | 350        |
| DR31   | NiMH   | 9 x 4/3A      | 10.8        | 3700           | 209.0 x 52.5 x 18.5     | 465        |
| DR35   | NiMH   | 9 x 4/3A      | 10.8        | 3800           | 215.0 x 52.8 x 19.3     | 500        |
| DR36   | NiMH   | 10 x 4/3A     | 12          | 3700           | 149.0 x 89.0 x 19.7     | 590        |
| B905   | NiMH   | 10 x 4/3A     | 12          | 3800           | 149.5 x 89.3 x 20.0     | 585        |

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**GP Standard-Sized Batteries Built in a Smart Way**

- **GP standard-sized rechargeable batteries** will save you heavy investment in battery related engineering, inventory and after sales service.
- **Power up-front design and product life cycle costs**
  - GP standard-sized batteries and design-in assistance eliminate customized power sources, interconnects and chargers, reducing engineering costs and shortening time to market.
- **Design flexibility**
  - Available in sizes to match your energy requirements, from handheld computers to high performance notebooks.
- **Reduced inventory exposure**
  - Standard sizes minimise inventory requirements and avoid product obsolescence.

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**Work Effectively with GP Smart Batteries**

- Up to 20% longer run time than batteries without smarts
- Greater value in a compact size - Cost competitive and equal in size to batteries without smarts
- Accurate fuel gauge indicator on screen/on battery
- Predictable run time forecast - indicates remaining capacity and run time within an estimated 1%
- Replacement convenience through GP worldwide distribution

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**Guarantee**

GP computer packs have been tested by the industry and UL listed to guarantee the performance as specified. Every GP computer pack is fully guaranteed against defects in material and workmanship.

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**Retailers’ Preference**

Retailers will also benefit from GP’s standard-sized batteries with
- Fewer SKUs
- Reduced consumer confusion
- Easy & unassisted sales
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