Experience riding with comfort and ease

Since we established our bicycle manufacturing company in 1952, we have concentrated on bicycle research, development, manufacture, and sales. We have combined our bicycle technology with the latest electrical power technology as part of our dedication to providing a more comfortable life. This adds an extra dimension to your experience of cycling.
Our electric drive system has reached a new stage. This new technology expands the joy of bicycle riding.

**Multi Speed Assist System**

**WHAT IS “Multi Speed Assist System”?**

Panasonic’s whole new motor unit, which is an electric bicycle motor equipped with an internal two-speed gear.

**New technology**

**Assist Motor + Two speed = Wonders!**

Even though this is an electric bicycle motor, its internal two-speed gear serves as a two-speed front gear. In combination with the rear hub gears, it offers sportier riding than ever. The new gear feature also enhances the electric consumption efficiency of the motor. It can be used in a belt-driven electric bicycle.

**Electric shifting**

Riders can shift the gear using operation buttons on pedelecs.

- **Panasonic standard setting**
  - Press the button for:
  - Over 1 second: Assist mode change
  - Under 1 second: Upshift
  - Over 1 second: Assist mode change
  - Under 1 second: Downshift

**Smooth shifting**

The motor torque is adjusted during shift change, enabling a smoother shifting operation.

**Wide Gear Ratio**

The ratio of low gear is 1:1 and that of high gear is 1:1.415. There are two types of front gears that suit normal and speed pedelec functions.

<table>
<thead>
<tr>
<th>Gear teeth and gear ratio at each position</th>
</tr>
</thead>
<tbody>
<tr>
<td>29T</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>35T</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

*High gear teeth is calculated based on the gear ratio.*

**DUAL GEAR**

- Front mount motor unit (Inter 2)

<table>
<thead>
<tr>
<th>Voltage</th>
<th>36V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>Approx. 4.8kg</td>
</tr>
<tr>
<td>Output</td>
<td>250W (Pedelec)</td>
</tr>
<tr>
<td></td>
<td>300W (S-Pedelec)</td>
</tr>
<tr>
<td>Gear teeth</td>
<td>29T or 35T</td>
</tr>
</tbody>
</table>
**36V Center Motor Unit**

A midship design which takes the motor load balance into account.
A simple single gear design which looks smart and is easy to maintain.

**For comfort model**
A rear mount type for standard casual use pedelecs and speed pedelecs.

**For active model**
A slimmed-down, short-bodied front mount type, ideal for trekking or sports.

**Console**
**Center LCD Type**
The console provides full control
Designed to be visible in strong sunlight, and tough enough to withstand rain, wind, and dust.

**36V Center Motor Unit**
- Color: Silver / Black
- Voltage: 36V
- Weight: Approx. 4kg
- Output: 250W (Pedelec)
- Single Gear
- Assist mode select button
  - Multi speed assist system (Upshift)
  - Multi speed assist system (Downshift)
- Night mode button
- Walk-assistance button
- Assist power indicator
- Indication of the gear position
- Multi Speed Assist System

**Display Indications**
- Clock
- Light
- Micro USB connection mark
- Speed (km/h or mph)
- Assist power indicator
- Indication
- Assist mode
- Battery charge level with 5-segment bar
- Diagnosis at dealers

**Correspondence with Shimano Di2**
Our new motor is compatible with Shimano Di2 (Alfine, Nexus). The pedelec system supplies power to Di2 and indicates the shifting position on a console display.

**Dealers and users are not able to install Di2 on a pedelec that not installed Di2 originally.**

---

**For comfort model**
- Color: Silver / Black
- Voltage: 36V
- Weight: Approx. 4kg
- Output: 250W (Pedelec)
- Single Gear
- Assist mode select button
  - Multi speed assist system (Upshift)
  - Multi speed assist system (Downshift)
- Night mode button
- Walk-assistance button
- Assist power indicator
- Indication of the gear position
- Multi Speed Assist System

**For active model**
- Color: Silver / Black
- Voltage: 36V
- Weight: Approx. 4kg
- Output: 350W (S-Pedelec)
- Single Gear
- Assist mode select button
  - Multi speed assist system (Upshift)
  - Multi speed assist system (Downshift)
- Night mode button
- Walk-assistance button
- Assist power indicator
- Indication of the gear position
- Multi Speed Assist System

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**Correspondence with Shimano Di2**
Our new motor is compatible with Shimano Di2 (Alfine, Nexus). The pedelec system supplies power to Di2 and indicates the shifting position on a console display.

*Display indication of gear position (> Page 06)*

**Dealers and users are not able to install Di2 on a pedelec that not installed Di2 originally.**
Li-ion Battery

A lithium-ion battery for optimum output on long journeys.

Based on research to develop the optimum battery, Panasonic has been integrating lithium-ion batteries into its pedelecs since 2002. We have just launched our latest cutting-edge battery model.

Integrated Design Battery

The battery technology for high capacity cells, optimum safety design, and our vast knowledge in the field of home appliances have resulted in the development of a sophisticated battery for pedelec by combining a sporty design and an electric assist function. The design has also achieved stability on the frame and user friendliness.

- SPEC
  - Voltage: 36 V
  - Capacity: 8 Ah
  - Energy: 288 Wh
  - Weight: Approx. 2.3 kg

- SPEC
  - Voltage: 36 V
  - Capacity: 12 Ah
  - Energy: 432 Wh
  - Weight: Approx. 3.3 kg

*The above developmental values are provided for information purposes only and subject to change.

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Down tube mount type battery

We are developing another type battery for sports e-bike for MY 2017.

Battery cell

This new type of battery cell, which was developed for a compact design, has been installed in such a integrated design battery for the first time.

Charger

Allows charging while the battery is still attached to the pedelec. Must be used under the cover of a roof.

Upright

Easily detachable standard type.

Rear Carrier

Ideal for both casual use and trekking.

Triangle

Sporty type that attaches to the down tube.

Battery Charging on Vehicle

Must be used under the cover of a roof.
Panasonic Premium Cycling Technology

**System Strengths**

Panasonic looks at the motor, controller, torque sensor, battery, and hand console as one single unit, and call this the Smart Integrated Management System. This consolidated system technology enables us to produce high-quality, high-efficiency pedelecs, giving our customers a premium cycling experience.

**New Motor Technology**

The resin gears of the centre motor have an efficient design that achieves both high precision and high strength for extremely quiet power assistance. Combination with a torque sensor achieves more comfortable and smoother riding. The internal two-speed gear called Multi Speed Assist System is one of our new technologies developed and refined through our experience.

**Battery Technology**

Our high-capacity cells have enabled us to produce a compact high-capacity battery. Optimum safety is achieved through our unique battery management technologies and knowhow in the field of home appliances. Based on our experience relating to home appliances we have selected the cells used in each type of battery depending on the voltage and capacity.

**Battery Management System**

One microcomputer and two voltage monitoring IC's have been mounted, and charging/discharging and temperature of cells are controlled. Also, overcharge/overdischarge and excessive temperature increase are prevented by communication control between the motor and the charger. Therefore, performance, safety and quality of the battery have been preserved. Moreover, a fuse has been mounted as a multiplex protection.

**Torque Sensor**

The high-precision torque sensor is responsive to changes in pedal power when starting, climbing, and accelerating. A detector coil measures pedaling torque and sends an output power signal to the controller, allowing the level of pedaling torque to be detected without contact or energy loss.

**Quality**

All designed products have been tested before mass production. Panasonic has a lot of testers for ensure the product quality. We are able to test not only each devices but also finished e-bike.

**Maintenance System**

A simple diagnosis is available at dealers that possess a special tool.

- **Frame fatigue tester**
- **Salt spray testing equipment**

**Flame-resistant resin**

Our original flame-resistant resin covers each battery cell to ensure integrity and a safe, flame-resistant lithium battery. This resin enables our lithium batteries to pass rigorous testing and operate safely.

**Waterproof**

To prevent against water, we pack all cells and circuit boards in vinyl. (Available and suitable design for outdoor use)

* Enables a diagnosis by connecting a PC and a key device.
* Provides information about riding distance, battery-charging times, and error logs.
* Enables problem details to be checked.
* Consult with a manufacturer doing business with you regarding the tool.