1. Exterior Parameters

**Casing Material:** ABS

**Display Material:** High Hardness Acrylic (the same hardness value as tempered glass).
2. Operating Voltage and Connections

a. Operating Voltage: DC24V / 36V Compatible, 36/48V Compatible (set by the control panel). Other operating voltage can be customized.

b. Connections:
   A. Standard Cabling Connection

<table>
<thead>
<tr>
<th>Sequence No.</th>
<th>Wire Colour</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brown (VCC)</td>
<td>Display Power Cable</td>
</tr>
<tr>
<td>2</td>
<td>Green (RX)</td>
<td>Data Receiving Cable</td>
</tr>
<tr>
<td>3</td>
<td>Black (GND)</td>
<td>Display Ground Cable</td>
</tr>
<tr>
<td>4</td>
<td>Orange (K)</td>
<td>Power Control Cable</td>
</tr>
<tr>
<td>5</td>
<td>White (TX)</td>
<td>Data Sending Cable</td>
</tr>
</tbody>
</table>

The extended cable will be waterproof type, whose color cannot be seen from exterior.

Extended Functions
Light: Brown (DD): The positive electrode of the light White (GND): The negative electrode of the light.
The wire colours of the PWM Voltage Motor Power Controller and the independent speed sensor will be defined otherwise. Note: Some products are equipped with waterproof connectors, whose internal wire colors cannot be determined from outside.

3. Functions
a. Display
   Speed Display, Motor Power Ratio Display, Battery Level Display, Error Indication, Total Mileage, Single Mileage, Cruise Control, Single Running Time, Light Signal
b. Control and Settings
   Power Switch, Front Light Control, 6km/h Inching Control, Wheel Diameter Setting, Top Speed Setting, Idleness Time Setting for AutoHibernation, Backlight Brightness Setting, Voltage Level Setting,
c. Communications Protocol: UART

Display Readings (display at start for 1 second)

Display Details
3.1 Light

3.2 Battery Level:

3.3 Multi-Functions Display
- Mileage: ODO
- Single Mileage: TRIP
- Error Code: Error
- Power: WATT
- Maintenance: Maintain
- DST TO GO: Unspecified

3.4 Vehicle Mode
- ECO: Economical Mode
- STD: Standard Mode
- POWER: Intensified Mode
- SPEEDHANDLE: Handle-controlled Speed Mode
- WALK: Walk and Push Mode
3.5 Speed Display

- Current Speed: CUR
- Maximum Speed: MAX
- Average Speed: AVG
- Measuring Unit: MPH or KM/H

The panel will calculate the actual travelling speed based on the wheel diameter and signal data (number of magnet steel is needed for Hall motors).

3.6 Vehicle Status

Error code and indication

<table>
<thead>
<tr>
<th>Error Code (decimal)</th>
<th>Indications</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x01</td>
<td>Normal condition</td>
<td>LED lighting</td>
</tr>
<tr>
<td>0x02</td>
<td>Brake problem (electromagnetism)</td>
<td>Check brake lever</td>
</tr>
<tr>
<td>0x03</td>
<td>Brake problem (power off)</td>
<td>Check brake lever</td>
</tr>
<tr>
<td>0x04</td>
<td>Throttle is not Initialization</td>
<td>Check the throttle</td>
</tr>
<tr>
<td>0x05</td>
<td>Throttle is damaged</td>
<td>Change the throttle</td>
</tr>
<tr>
<td>0x06</td>
<td>Battery low-voltage protection</td>
<td>Check the battery voltage and capacity</td>
</tr>
<tr>
<td>0x07</td>
<td>Battery high-voltage protection</td>
<td>Change the battery</td>
</tr>
<tr>
<td>0x08</td>
<td>Hall sensor problem</td>
<td>Check the hall sensor</td>
</tr>
<tr>
<td>0x09</td>
<td>Motor phase line problem</td>
<td>Change the motor</td>
</tr>
<tr>
<td>0x10</td>
<td>Controller Temperature protection</td>
<td>After cooling, motor will work again</td>
</tr>
<tr>
<td>0x11</td>
<td>Controller Temperature sensor problem</td>
<td>The motor can still work, better to repair controller</td>
</tr>
<tr>
<td>0x12</td>
<td>Current sensor problem</td>
<td>Change the motor</td>
</tr>
<tr>
<td>0x13</td>
<td>The temperature of the battery is problem</td>
<td>Check the battery</td>
</tr>
<tr>
<td>0x14</td>
<td>Motor temperature problem</td>
<td>Motor can still work, better to repair motor</td>
</tr>
<tr>
<td>0x21</td>
<td>Speed sensor problem</td>
<td>Check the speed sensor</td>
</tr>
<tr>
<td>0x22</td>
<td>BMS problem</td>
<td>Check BMS</td>
</tr>
<tr>
<td>0x23</td>
<td>Lighting problem</td>
<td>Check light</td>
</tr>
<tr>
<td>0x24</td>
<td>Lighting sensor problem</td>
<td>Check light</td>
</tr>
</tbody>
</table>
0x30 Communication problem

Change the display

3.7 Power Status

Power Status (Gear 0-9)

Cruise Mark

WALK

8. Settings

P01: Backlight Brightness (1: darkest; 3: brightest)
P02: Mileage Unit (0: KM; 1: MILE)
P03: Voltage Class: 24V (default) /36V / 48V
04: Hibernation Time (0: never, other figures refer to the hibernation time)
Unit: minute
P05: Power Gear – 0/3 Gear Mode: Gear 1: 2V Gear 2: 3V Gear 3: 4V 1/5
    Gear Mode: Gear 1: 2V Gear 2: 2.5V Gear 3: 4V
    Gear 4: 3.5V Gear 5: 4V
P06: Wheel Diameter Unit: inch Precision: 0.1
P07: Magnet Steel Number for Speed Test Range: 1-100
P08: Speed Limit
    Range: 0-50km/h, parameter 50 indicates no speed limit.
    1. Non-communications status (panel-controlled)
       When the current speed exceeds the speed limit, the PWM output will
       be shut down; when the current speed falls to lower than the speed limit, the
       PWM output will be activated and the driving speed will be set as the current
       speed ±1km/h (only applies to assist power speed, not applicable to the
       handlebar speed).
    2. Communications status (controller-controlled)
       The driving speed will be kept constant as the limited value.
       Error Value: ±1km/h (applicable to both the assist power/handlebar
       speed)

Note: The above-mentioned values are measured by metric unit
(kilometers). When the measuring unit is switched to imperial unit (mile), the
speed value displayed on the panel will be automatically switched to
corresponding imperial unit, however the speed limit value in the imperial unit interface won't change accordingly.
P09: Zero / Non-zero Start Setting:
c. Zero Start
d. Non-zero Start

P10: Drive Mode Setting
3.4 Power Drive – The specific gear of the assist drive decides the assist power value. In this status the handlebar does not work.
3.5 Electric Drive – The vehicle is driven by the handlebar. In this status the power gear does not work.
3.6 Power Drive + Electric Drive – Electric drive does not work in zero start status.

P12: Assist Power Intensity Range: 0-5
P13: Power Magnet Steel Number: 5 / 8 / 12pcs
P14: Current Limit Value: 12A by default; Range: 1-20A
P15: Unspecified
P16: ODO Zero-Out: Long press the upper key for 5 seconds and ODO will zero out.
P17: Power choice function from 250W-1000W.

4. Keys

Arrangement of keys on the panel:

Introduction of Keys
Key operations involve short press, long press and long press of combination keys.
Short press is used for short/frequent operations as:

1. Short press the two keys to change assist power/speed during riding.
2. Short press this key to switch the readings in the multi-function display section.
   Long press on a single key is used to switch mode/on/off status.
   Long press on combination keys to set parameters, which can avoid misoperations (short press on combination keys is disabled, for it's easy to induce misoperation and hard to manipulate).

Detailed Instructions
1. Change Assist Power/ Electric Gear
   In assist power mode
   a. Short press assist power +1.
   b. Short press assist power -1.

2. Switch Speed Display
   Long press to switch speed display type.

3. Enable / Disable 6km/h cruise, set real-time cruise and turn on/off the lights
   When the vehicle is parked, long press to enter 6km/h cruise mode.
   When the vehicle is travelling, long press to enter real-time cruise mode.
   Long press to exit the cruise mode when the vehicle is in cruise mode.
   Long press to turn on/off the lights.

4. Turn on/off the LCD Panel
   When the display panel is operating, long press and it will be turned off, otherwise it will be turned on.
5. Switch Displayed Readings in Multi-Functions Section

Short press to switch readings shown in the multi-functions section.

6. Set Parameters

Long press to enter the setting interface.

Customizable parameters include:
- Wheel Diameter (unit: inch);
- Magnet Steel Number;
- Backlight Brightness;
- Low Voltage Threshold (refer to setting: P01-P14)

In the setting interface, short press or to add/minus value to the parameter, which will blink after modified. After selecting the parameter that needs to be set,

I. a. Long press to save the current value, and the parameter will stop blinking;
   
   b. Short press to switch to the next parameter and the previously set value will be saved at the same time.

II. Press to exit the setting and save the parameters.

Without this operation, the system will automatically exit and save the modified parameters after 10 seconds.

Note: Due to product upgrade, the product you purchased may be slightly different from the descriptions in this user manual, and this won’t affect normal usage.