



**Patton-S**

**User Manual**

# Catalogue

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## 1. Overview of the User Manual

Thanks for purchasing LeaperKim electric unicycle. We will wholeheartedly provide you with satisfactory products and services.

This vehicle is strictly prohibited to drive on the motorway. It must be confirmed that it fits to the requirements of local laws and regulations. Do not use this product in the areas prohibited by laws and regulations. Do not use this product at the speed specified by local laws and regulations.

In order that you can ride LeaperKim electric unicycle more safely, please carefully read and understand all the product information and precautions listed in this manual before riding, and refer to the instruction to use LeaperKim electric unicycle.

Please maintain the vehicle regularly, which will help to keep the performance and resale value of the vehicle product.

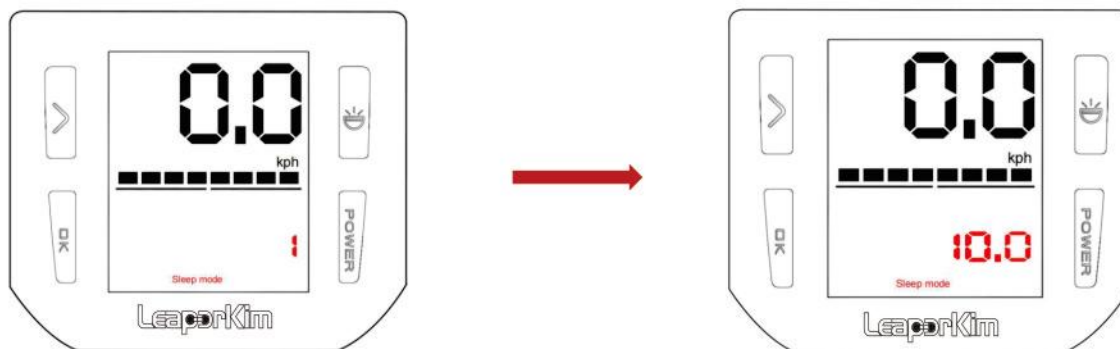
Please keep this manual for future after-sales use.

Your satisfaction with LeaperKim electric unicycles is our driving force!

Guangzhou Coyote Intelligent Equipment Co., Ltd

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## 2. Unlocking Sleep Mode



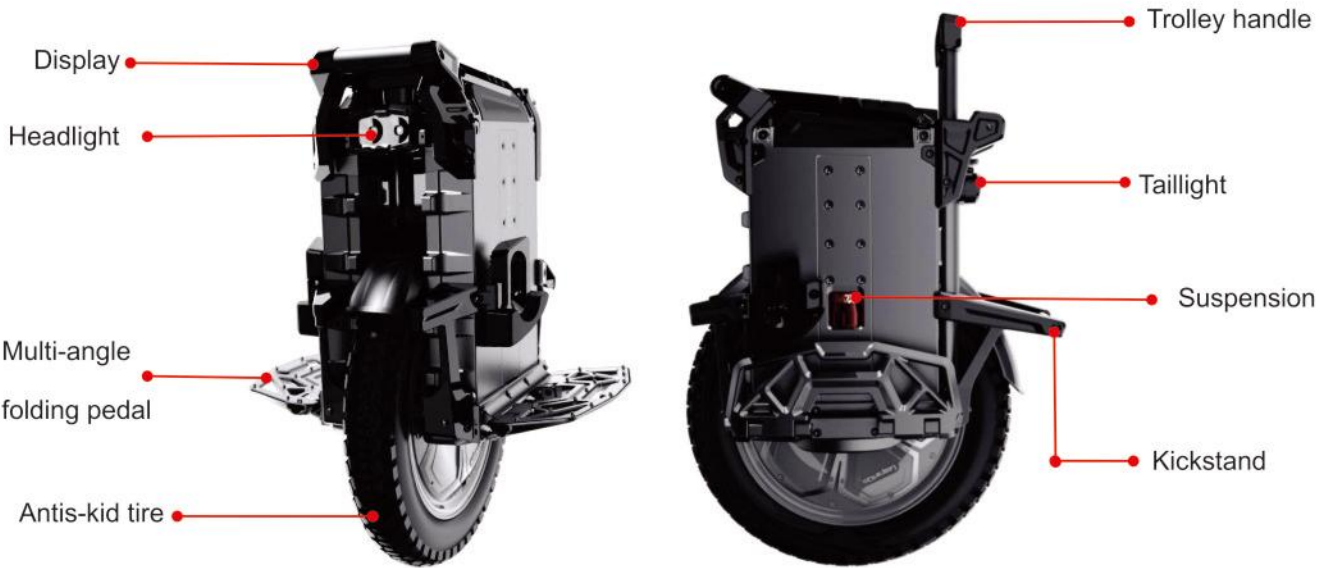
- Long press and hold 'POWER' button for 10s, number on display will change from 1 to 10, the vehicle will make a long beep and release button to unlock Sleep Mode;
- Connecting charger will allow you to unlock Sleep Mode directly;

Setting it to Sleep Mode during transportation prevents 'POWER' button from being accidentally pressed to power it on;

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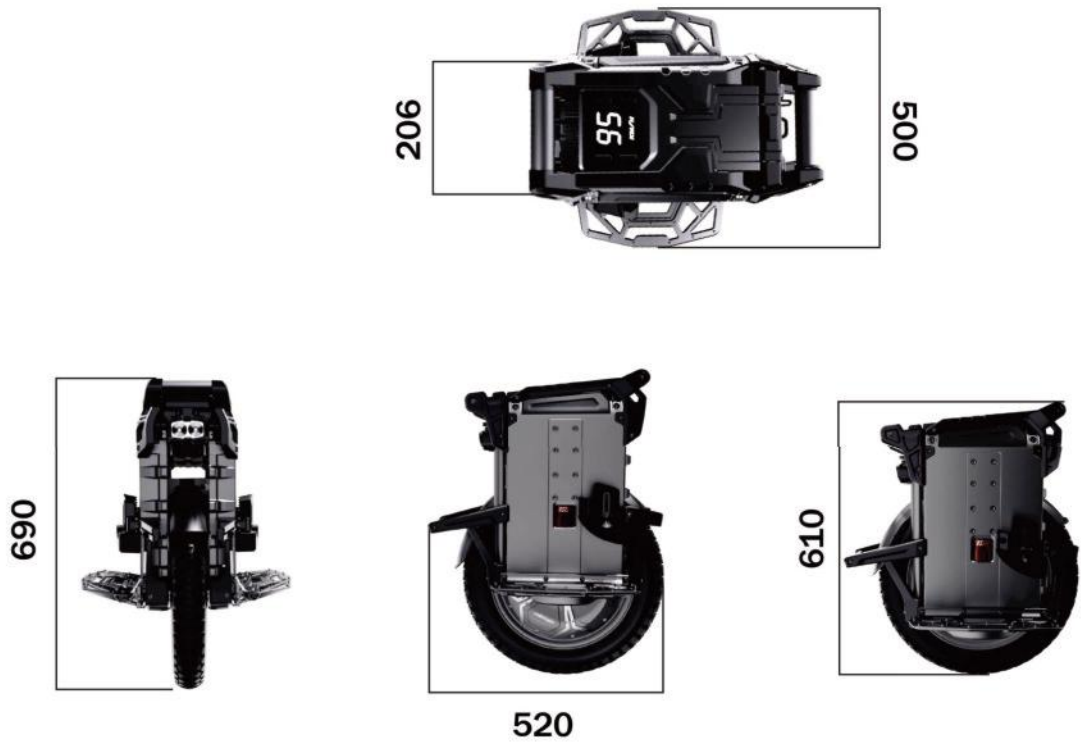
3.Description of Product

3.1 Function Schematic



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3.2 Product Size Drawing



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### 3.3 Product Specification

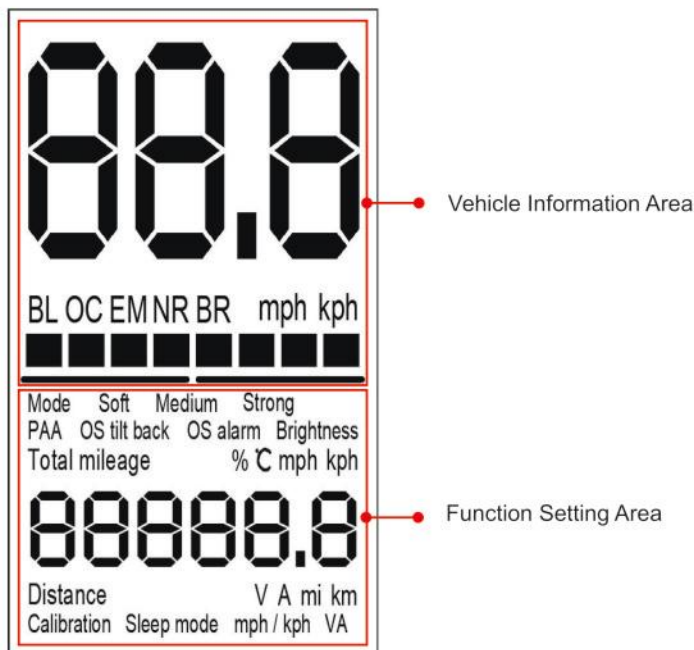
|                                     |                                                                                                                                                                                                                               |                                   |                                                                                                                                                                                     |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model Name                          | Patton-s                                                                                                                                                                                                                      | Charge Port                       | Dual charging ports Support up to 20A                                                                                                                                               |
| Safe Speed                          | 19kmh                                                                                                                                                                                                                         | Headlight                         | 20W, 2500lm double lens headlight.                                                                                                                                                  |
| Motor Power                         | Rated Power3000W Peak power7000W                                                                                                                                                                                              | Taillight                         | Turning, braking warning light.                                                                                                                                                     |
| Operating Temperature               | -10℃~80℃                                                                                                                                                                                                                      | Software                          |                                                                                                                                                                                     |
| Battery                             | Samsung INR21700-50G/Samsung INR21700-50S,2 groups of batteries, 30 in series and 2 in parallel ( 126V )                                                                                                                      | Fault Self-Inspection             | High temperature, over-discharge, over-voltage of left and right battery packs, charging current exceeding the set value, motor hall abnormality, high temperature of vehicle, etc. |
| Max Load                            | 120kg                                                                                                                                                                                                                         | Angle Protection                  | Front and back tilt to 68°,the left and right tilt can be set to 35°~75° through display.                                                                                           |
| Charger                             | 126V,5A                                                                                                                                                                                                                       | Riding Model                      | Riding hardness value could be set from 0%—100% through display.                                                                                                                    |
| Charger Time                        | 4.5h ( 5A ) , 2.25h ( 10A )                                                                                                                                                                                                   | PWM Tilt-back                     | PWM tilt-back value could be set from 30%—100%through display.                                                                                                                      |
| Color                               | Black                                                                                                                                                                                                                         | Speed Tilt-back                   | Speed tilt-back value could be set from 10kph-200kph through display.                                                                                                               |
| Dimension and Weight                |                                                                                                                                                                                                                               | Speed Alarm                       | Speed alarm value could be set from 10kph 200kph through display.                                                                                                                   |
| Dimension                           | 520mm*206mm*690mm                                                                                                                                                                                                             | Button Volume                     | Button volume value could be set from 0-100% through display.                                                                                                                       |
| Net Weight                          | ≈36.5kg                                                                                                                                                                                                                       | Low Battery Mode                  | Could be switch on through display.                                                                                                                                                 |
| Pedal Dimensions                    | 120mm*300mm                                                                                                                                                                                                                   | High Speed Mode                   | Could be switch on through display.                                                                                                                                                 |
| Height of the Pedals from the Floor | 220mm                                                                                                                                                                                                                         | Low Voltage Protection            | Alarm at 97.5V,tilt back at 94.5V,Alarm at 91.5V ,tilt back at 88.5V.                                                                                                               |
| Hardware                            |                                                                                                                                                                                                                               | Temperature Alarm                 | 80°C.                                                                                                                                                                               |
| Shock Absorption                    | Fastace mid-mount normal damping,preload adjustable,travel range 80mm.                                                                                                                                                        | Other Functions                   | Multiple functions adjustable, supports data log.                                                                                                                                   |
| Pedal                               | Magnesium alloy material.                                                                                                                                                                                                     | Hall Error Fixment Algorithm      | Smart Field Weakening to speed up.                                                                                                                                                  |
| Intelligent Protection Board        | Monitoring of each voltage string, with 6 different zones for temperature monitoring, current display, etc.                                                                                                                   | No Hall Emergency Mode            | Even without Hall it can be continue riding in city road.                                                                                                                           |
| Control Board                       | Double layer control board;aluminum substrate thermal conductivity, the use of copper strips and columns to accelerate the conductivity and heat dissipation, 24 high-voltage resistant 150V mos, support up to 660A current. | Smart Field Weakening to Speed up | Increase speed safety margin through software algorithm.                                                                                                                            |
| Motor                               | Magnesium alloy rim, wider and thicker side cover.                                                                                                                                                                            | Motor Anti Blocking Rotation      | Blocking motor rotation will not damage motor or controller.                                                                                                                        |
| Tire Size                           | 3.0-12 ( 460mm)                                                                                                                                                                                                               | APP                               |                                                                                                                                                                                     |
| Trolley Handle                      | Magnesium alloy hidden trolley handle.                                                                                                                                                                                        | Vehicle Information               | Vehicle speed, voltage, distance and battery information viewable.                                                                                                                  |
| Display                             | Displays speed, voltage, mileage, mode switching, calibration, battery status, etc.                                                                                                                                           | Vehicle Setting                   | Vehicle mode changing, calibration, power tilt-back setting, speed tilt-back setting, speed alarm setting ect.                                                                      |

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## 4.Setting Page

### 4.1 Introduction of Display Basic Page

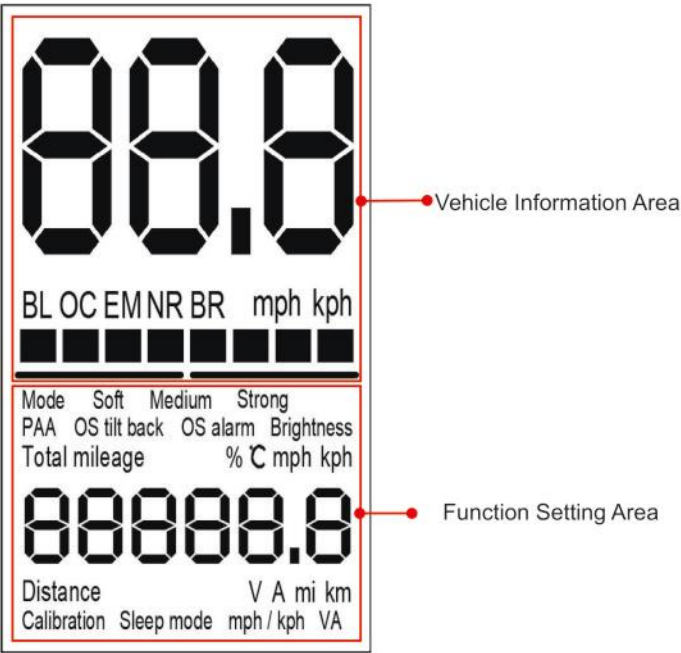
After powering on vehicle, press and hold 'OK' button for 2s, after 2 beeps you will enter setup page.



| Icon          | Name                     |
|---------------|--------------------------|
| Distance      | Short distance           |
| Total mileage | Total mileage            |
| °C            | Bottom board temperature |
| V             | Battery Voltage          |
| A             | Output Current           |
| V A           | Output Power             |

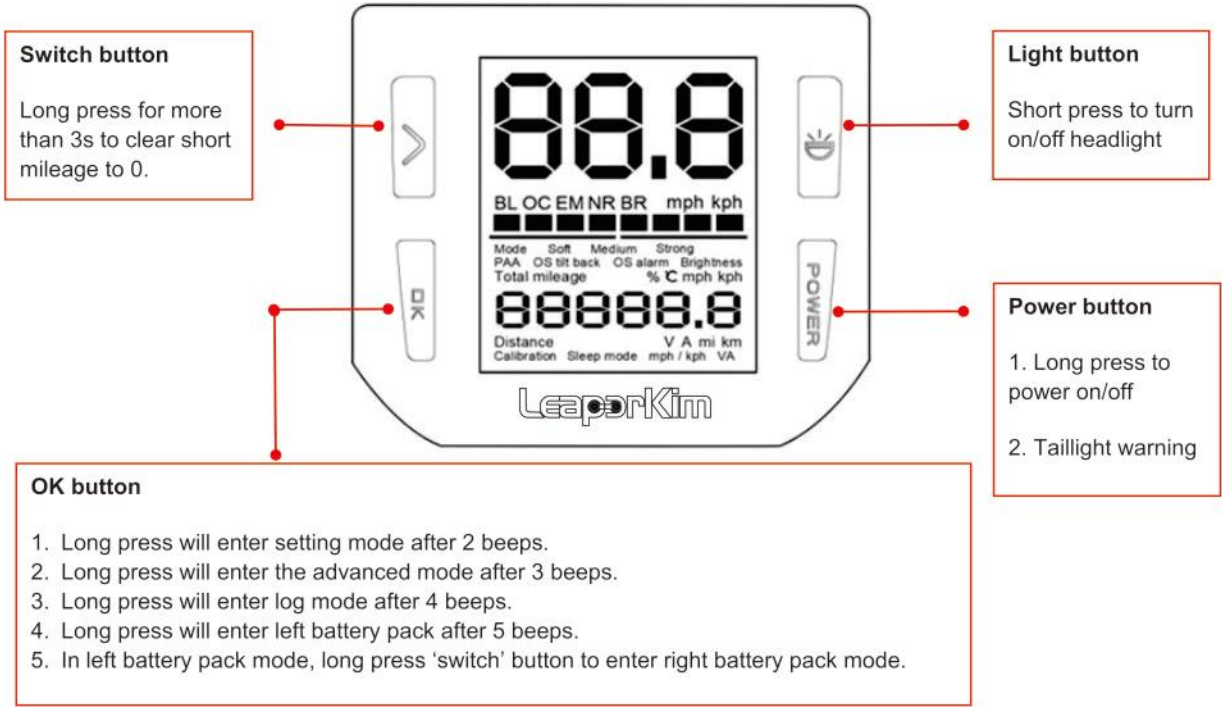
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4.2 Display Information



| Icon          | Name                      |
|---------------|---------------------------|
| 88.8          | Speed per hour            |
| BL            | Left battery pack status  |
| OC            | —                         |
| EM            | —                         |
| NR            | —                         |
| BR            | Right battery pack status |
| mph           | Miles per hour            |
| kph           | Kilometer per hour        |
| ■ ■ ■ ■ ■ ■ ■ | Vehicle power             |
| — —           | Left battery pack signal  |
| — —           | Right battery pack signal |

4.3 Button Settings Introduction



### 4.3 Button Settings Introduction



1. Power on wheel to enter basic page, long press 'OK' button on the basic page, release it until hearing two beeps to enter setting page;
2. On setting page, press 'Switch' button to select setting item, press 'OK' button to adjust the specific value of the setting item;
3. Short press 'OK' button is for forward settings; Long press 'OK' button for 0.5s and release it immediately after hearing one beep is backward settings;
4. After completed settings, press and hold the 'OK' button for 1s, release it until hearing the beep and display returning to basic page; Wait for 20s, it will save settings automatically; or power off it and re-power on will save it automatically. In these two ways to finish settings.

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### 4.4 Pedals Settings



Pedal softness settings:

- Long press 'OK' button to enter the first page of setting mode page;
- Short press 'OK' button to adjust the value;
- Adjust the value from 0 to 32% as Soft; 34% to 66% as Medium; 68% to 100% as Strong;



Pedal angle adjustment:

- Short press 'Switch' button to enter the second page;
- Short press 'OK' button to adjust the angle value ,  $\pm 8^\circ$  can be adjusted;
- Pedals tilt angle, according to the user's personal habits and preferences to adjust it;

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## 4.5 Tilt-back Settings



### Speed tilt-back settings:

- Short press 'Switch' button to enter the third page ;
- Short press 'OK' button to adjust the speed value, the adjustable range is 10kph to 200kph, set it to 200kph is to disable speed tilt-back;
- For example: adjusting the speed value to 20kph, when vehicle's speed reaches 20kph, pedals will be slightly tilt-back to warn user it has reached limit speed;



### Power tilt-back settings:

- Short press 'Switch' button to enter the forth page;
- Short press 'OK' button to adjust the power value, the adjustable range is from 30% to 200%, set it to 200% is to disable power tilt-back settings;
- For example: adjust the power value to 65%, when vehicle driving power reaches 65%, pedals will be slightly tilt-back to warn user, it has reached limit power;

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## 4.6 Over-speed Alarm Settings



### Function introduction:

- Short press 'Switch' button to enter the fifth page;
- Short press 'OK' button to adjust the speed value, adjustable range of 10kph ~ 200kph, set it to 200kph is to cancel the speeding alarm;
- Buzzer beep reminder, when the vehicle reaches the speed that the user set, buzzer will beep to warn user about the over-speed ;

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#### 4.7 Screen Brightness Settings



Function introduction:

- Short press 'Switch' button to enter the sixth page;
- Short press 'OK' button to adjust the brightness of the screen backlight, the adjustment range is 0-100%;

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#### 4.8 Vehicle Balance Calibration

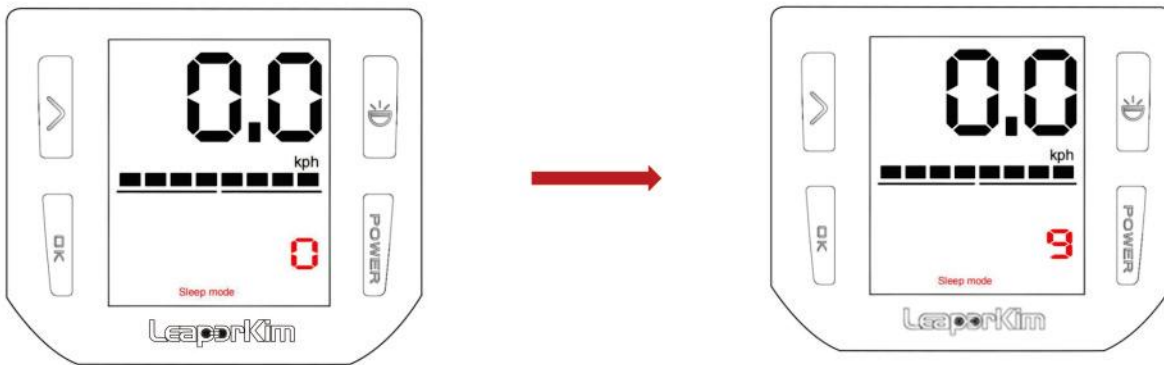


Function introduction:

- Short press 'Switch' button to enter the seventh page;
- Vehicle leveling settings;
- Horizontally stand up the vehicle, when display shows '0', press 'OK' button, number '1' will appears on display, then vehicle power off, adjust the horizontal position of the vehicle to complete the horizontal angle adjustment. Keeping the vehicle stationary, press 'OK' button again, Number '3' will appears on display then wheel makes two beeps. Vehicle completed the horizontal calibration setting;

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#### 4.9 Sleep Mode Setting



Function introduction:

- Short press 'Switch' button to enter the eighth page;
- Short press 'OK' button, screen will show 0 to 9, the vehicle will make a long beep then enter the sleep mode;
- Press 'POWER' button to power off vehicle to finish sleep mode setting;

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#### 4.10 Kilometers/Miles Unit Switching



Switch speed unit:

- Short press 'Switch' button to enter the ninth page;
- Short press 'OK' button to switch the vehicle speed unit from mph to kph;

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#### 4.11 Voltage Adjustment

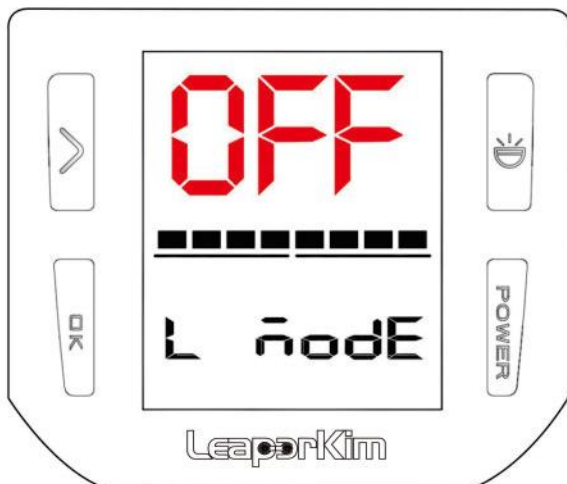


Voltage adjustment:

- Short press 'Switch' button to enter the tenth page;
- Different environment temperature, and different resistance of electronic components will make voltage float. Users can slightly adjust voltage by enter this page and press 'OK' button to set it;

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#### 4.12 Low Battery Mode Setting



Function introduction:

- Short press 'Switch' button to enter the eleventh page;
- OFF mode: alarm when voltage is lower than 97.5V, tilt-back when voltage is lower than 94.5V;
- ON mode: alarm when voltage is lower than 91.5V, tilt-back when voltage is lower than 88.5V;
- Low battery mode is a power emergency mode, use it too often shorten battery life, so it is not recommended to use is at normal situation;
- When the vehicle voltage lower than 97.5V and starts to tilt-back, turn on this mode will have 5km range for emergency;
- Do not ride it too fast, and do not accelerate or decelerate rapidly in this mode;

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#### 4.13 High Speed Mode



Function introduction:

- Short press 'Switch' button to enter the twelfth page;
- OFF mode: Max free-load speed is 85km/h;
- ON mode: Max free-load speed is 105km/h;

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#### 4.14 Angle Protection Settings



Angle protection settings:

- Short press 'Switch' button to enter the thirteenth page;
- 35°~75° set-able;
- The higher the value set, the greater angle can be inclined;
- When the incline angle of the vehicle is greater than the set value, the vehicle will enter the Angle protection mode and be power off subsequently;

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#### 4.15 Button Volume Settings



Function introduction:

- Short press 'Switch' button to enter the 14th page;
- Short press 'OK' button, volume can be set between 0-100;
- The lower the value, the lower the volume of the button;

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#### 4.16 Charging Voltage Settings

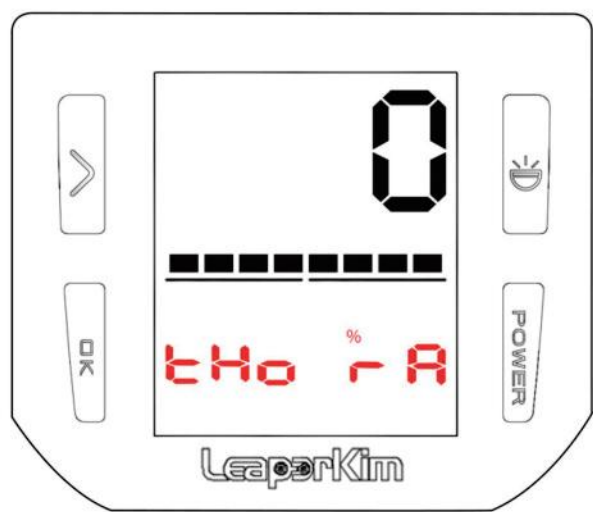


Charging voltage setting :

- Short press 'Switch' button to enter the fifteenth page;
- Limit charging voltage can be set;
- Rated voltage of charger is 126.0V. Users can set vehicle charging voltage from 122V to 126.4V;
- If limit charging voltage is set to 122V, the maximum voltage to complete charging will be 122V;

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4.17 Acceleration Assist Settings



- Function introduction:
- Short press 'Switch' button to enter the sixteenth page;
  - Acceleration assist enables faster accelerating, more powerful braking;
  - Short press 'OK' button 5 times to unlock acceleration assist settings;
  - Value from 0 to 100% set-able;

5.Error Codes and Causes

| NO. | Code   | Cause                                    |
|-----|--------|------------------------------------------|
| 1   | br tEā | Right battery high temperature alarm     |
| 2   | bl tEā | Left battery high temperature alarm      |
| 3   | bt LoY | Battery pack over-discharge alarm        |
| 4   | u HCGH | Battery pack over-voltage alarm          |
| 5   | E CHAr | Charging current exceeds set value alarm |
| 6   | E HALL | Motor Hall error alarm                   |
| 7   | t HCGH | Controller high temperature alarm        |
| 8   | Er obt | Generator power failure protection       |
| 9   | FULL " | Over 3s downhill on full charge          |

## 6.Mid-mounted Normal Suspension



1. S-C-F Adjust compression damping;
2. S-R-F Adjust rebound damping;

Rotate the slotted screwdriver in the direction of "+" to increase the damping, compression 18 clicks and rebound 18 clicks;

1. The 18mm wrench is rotated in the "+" direction to increase the preload;
- 12mm preload adjustable, the left and right tick marks should be consistent;

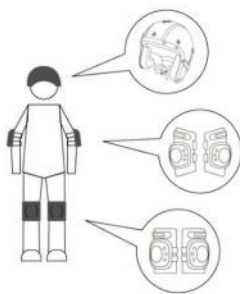
1. Release the pressure relief valve removes negative pressure from the shock cylinder;
2. After the negative pressure is removed from the shock cylinder, the pressure relief valve should be tightened to avoid water ingressing and shock absorbing oil spraying out;

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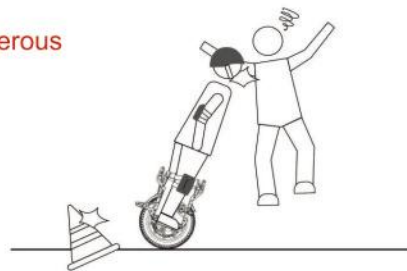
## 7.Usage Notice

The following persons are prohibited from riding this product:

1. Persons who are under the influence of drugs or alcohol and have limited mobility and reaction ability. Or people with hypertension, cardiovascular and cerebrovascular diseases or other high-risk diseases.
2. Minors under 14 years old, pregnant women, mentally ill and the elderly over 60 years old.
3. Do not use this product in darkness or where vision is obstructed, or on slippery, waterlogged or potholed surfaces.

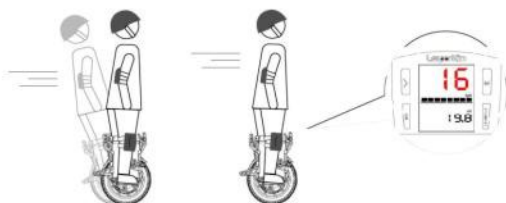


**Do not carry out any dangerous**

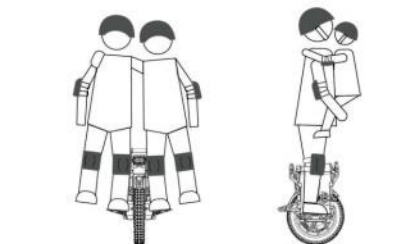


Please wear helmet, knee pads, elbow protectors, gloves and other protective equipment before using this product.

Please control the speed reasonably where there are people or obstacles, and no over-speed riding.



No reversing or over-speed riding.

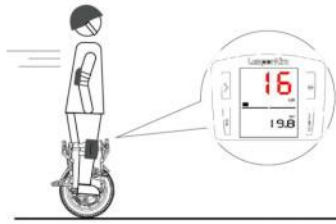


Do not take anyone with rider.

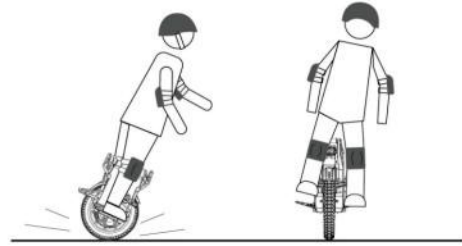
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## 7.Usage Notice

Do not carry out any dangerous



Do not drive at high speed or accelerate sharply when the battery is low.



No jumping or riding with one foot.

This product is not allowed to be disassembled or repaired by non-professional personnel. If the machine is disassembled by oneself, the product warranty service will no longer be covered.

If the vehicle makes alarms, please stop riding it immediately and sent to the professional service center for maintenance in time.

Please carefully read and understand all the product information and precautions listed in this manual and follow the use behavior suggested in this manual to avoid unnecessary loss and injury, otherwise you need to bear all the consequences arising therefrom.

During the production or sales of this product, design changes and further improvement will be carried out continuously. In case of any discrepancy with this manual, please refer to the actual product.

The production is strictly prohibited to drive on the motorway. It must be confirmed that it fits to the requirements of local laws and regulations. Do not use this product in the areas prohibited by laws and regulations. Do not use this product over the speed specified by local laws and regulations.

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## 8.Maintenance

- Use this product frequently, and check whether the screws are loose on time.
- Check the tire pressure on time. The suggested pressure is 2.5-3.0bar.
- Better to put the vehicle in the dry area.
- Charge the battery to full charge at least once every two months if the vehicle is infrequently utilized.
- Avoid recharging when the battery is completely discharged.
- Avoid placing the vehicle in the environment which temperature is above 50 °C or below - 20 °C.
- Do not use chargers other than the standard charger for charging.
- Do not immerse this product in water and wash it with high-pressure water gun.

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## 9.Warranty

| NO. | Type       | Items             | Warranty time |
|-----|------------|-------------------|---------------|
| 1   | Controller | Controller, motor | 24 months     |
| 2   | Battery    | Battery packs     | 18 months     |
| 3   | Charger    | Charger           | 12 months     |

The following conditions are not covered by the warranty and need to pay for maintenance :

- The validity period of three guarantees has expired.
- Damage caused by human factors.
- Damage caused by force majeure.
- All kinds of damage caused by failure to use, maintain and transform according to the requirements of the user manual.
- Failure or damage caused by forced use of this product beyond normal conditions.
- The product has been disassembled or maintained by personnel without authorized by our company.
- Malicious damage to warranty content and vehicle body information.
- Other faults or damages not caused by the design, technology, quality, manufacturing and other problems of the product itself.
- Natural wear and tear that does not affect the function.

## 10.Packing List

| Packing list |                             |      |     |      |
|--------------|-----------------------------|------|-----|------|
| No.          | Description                 | Unit | Qty | Note |
| 1            | Unicycle                    | PCS  | 1   |      |
| 2            | Charger                     | PCS  | 1   |      |
| 3            | User Manual                 | PCS  | 1   |      |
| 4            | Vehicle<br>Information Card | PCS  | 1   |      |





Manufacturer: Guangzhou Coyote Intelligent Equipment Co., Ltd.

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