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PERSONAL E-MOBILITY DEVICES  
**User's Manual**

- Thank you for purchasing our PERSONAL E-MOBILITY DEVICES.
- The Device is a high-tech mini electric double-wheel device that can maintain balance automatically.
- Please read the User's Manual carefully in order to understand the safety warnings and precautions associated with riding the Device.
- The User's Manual will help you to use and maintain the Device.

**WARNING!**

- Before riding the Device, please read how to ride safely to avoid dangers like collisions, falling and losing control.
- You can learn how to ride safely with this User's Manual.
- This User's Manual contains all operating instructions and precautions. All users must carefully read and strictly abide by the requirements herein, otherwise our Company won't be responsible for any problems.
- For product related service support, please contact your local dealer or the Headquarters.

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# Chapter 1 Document Overview

## 1.1 About this Manual

To ensure riding safety, please carefully read this User's Manual in order to use the Device properly. Comprehending all safety warnings and precautions listed in this Manual will help you to ride the Device more effectively.

This Manual applies to all device series from our Company.

Please contact us if you have any question or can't find the information you need in this Manual.

## 1.2 Riding Risks

The Device is a smart transportation and recreational aid with an automatic balancing system. Its technology and production processes have been strictly inspected. However, failure to follow the safety warnings in this Manual may cause injury.

### **WARNING!**

This product may cause injury or even death due to falling, loss of control, collision or noncompliance with the requirements in this Manual. To reduce risks and avoid injury, please read this Manual carefully.

### **1.3 Preparation before Riding**

Before riding, first check to make sure that the battery voltage in the Device is adequate. See Chapter 7 of this Manual for more details.

Failure to follow the safety warnings in this Manual may cause injury.

### **1.4 Relevant Description**

The following description applies to this Manual. Please pay special attention to WARNINGS and NOTES.

**WARNING: Improper operation may cause risk to your safety.**

**WARNING: Risk of Fire – No User Serviceable Parts**

**NOTE: Matters and relevant operating procedures that users should pay attention to.**

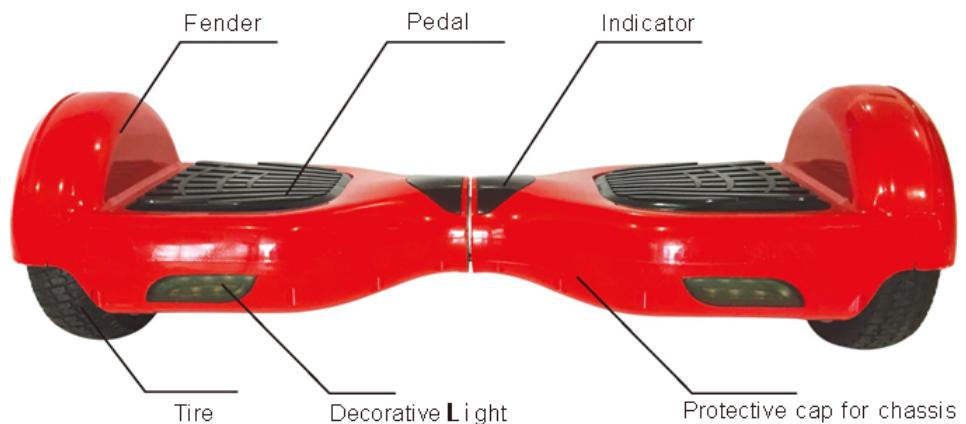
## Chapter 2 Product Overview

### 2.1 About the Device Model

The PERSONAL E-MOBILITY DEVICES is a high-tech mini electric double-wheel device that controls riding, reversing, steering and stopping through the dynamic stabilization principle. Featuring a fashionable and light shape, simple operation, flexible controls and environmental protection, the Device is your best partner for recreation, short distance transportation and other lifestyle applications.

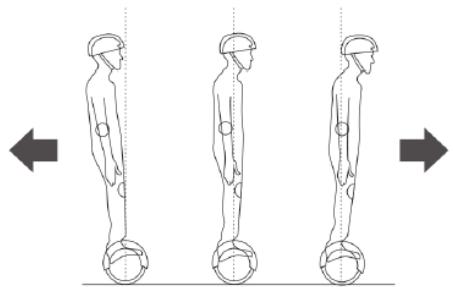


## 2.2 Device Components



## 2.3 Working Principle

- Through the dynamic stabilization principle, the Device uses a built-in gyro and acceleration sensors to detect changes in posture according to the changes in the center of gravity of your body. It accurately drives the motor to adjust properly through a servo control system. When the center of gravity tilts backwards, the wheels also move backwards; to make a turn, decelerate and control the forward/backward tilting of left/right foot as needed, make the center of gravity tilt to the left in order to turn left, and make the center of gravity tilt to the right to turn right.
- The built-in inertial dynamic stabilization system of the Device can maintain the horizontal front-rear direction, but it can't maintain the stability in left-right direction. The rider should decelerate before turning the Device in order to avoid injury due to centrifugal force.



## Chapter 3 Device Control and Info Display Device

### 3.1 Foot Sensor

The Device has four sensors under the foot pad. When you step on the foot pad, the Device automatically adjusts to the balance mode.

While riding the Device, be sure to step on the foot pad rather than any other part of the device.

Never place any objects on the foot pad, or the Device switch can't be turned off. This will increase the possibility of collision and could result in personal injury or Device damage.

### 3.2 Display Board

The display board is located in the middle part of the Device. It is used to display current operating information about the Device.

- Power display area: The green LED indicates fully charged batteries; the available capacity will have dropped to 20% when the green LED turns yellow, and you will need to charge it in a timely manner.
- Running LED: When you trigger the foot switch, the running LED turns on. This indicates that the system is running; when the system encounters an error, the LED turns red.

## Chapter 4 Safe Use

### About Safe Use

We hope that all riders will enjoy using these devices safely. Your experiences riding bicycles, driving automobiles, skiing and using other similar transportation means can be applied to our products and help you to ride better.

- Abiding by the User's Manual helps you ride safely. It is strongly recommended that you read the User's Manual carefully before riding the Device for the first time. Before each ride, please check to see if the tires are damaged and whether any components of the device have become loose. If there is

anything abnormal, please contact your local dealer.

- Please read the User 's Manual carefully to learn more about important safety information, including speed limits, LED warnings and safe shutdown procedures.
- Do not use the Device for any purposes that may endanger personal safety or cause property damage.
- Never retrofit any parts of the Device; this can degrade performance, damage the Device and potentially cause serious injury.

#### **4.1 Weight Limitation on Users**

- There are several reasons for weight limitations: 1. To ensure rider safety; 2. To avoid Device damage due to overloading.
- Maximum weight: 120kg
- Minimum weight: 20kg

WARNING! Overloading may cause the rider to fall over.

## 4.2 Maximum Riding Distance

The maximum riding distance of the Device varies with multiple factors, such as:

- Terrain: Smooth and flat ground will increase the riding distance; uphill travel reduces this distance.
- Body weight: The body weight of the rider affects riding distance.
- Ambient temperature: Storing and riding the Device at the recommended temperature can increase riding distance; using the Device outside these temperature parameters reduces the distance.
- Speed and riding habits: Medium operating speed will increase riding distance; on the contrary, frequent starting, stopping, acceleration and deceleration will shorten riding distance.

## 4.3 Speed Limit

- The maximum riding speed of the Device is 13km/h.
- When the riding speed exceeds this limit, the Device buzzer alarms.
- Riding at the regulated speed will help to maintain the rider's balance. If the riding speed exceeds the limit, the Device tilts up to limit the speed to a safer range.

## Chapter 5 Learn to Use the Device

Please read the User's Manual carefully in order to understand all safety warnings and precautions associated with riding the Device. This is very important for your safety.

### 5.1 Operating Steps

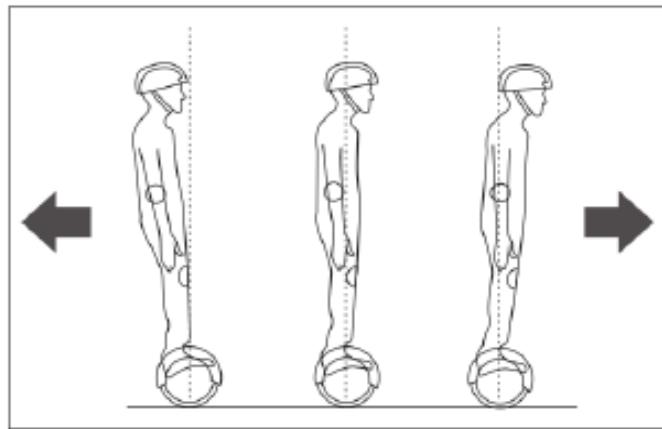
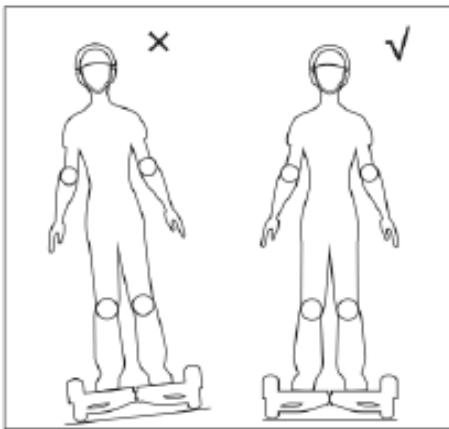
- Step 1: Start the Device and press the Power switch.
- Step 2: Place one foot on the pad and trigger the foot switch. This will turn on the running LED and the system will enter self-balancing state. Place the other foot on the Device when it has stabilized.
- Step 3: Control the Device in order to move forward or backward; remember to always avoid large ranges of motion.

NOTE: If the Device platform is not horizontal when the foot switch is triggered, the buzzer will alarm. The WARNING LED will turn on and the system will not be able to enter self-balancing state. Never operate the Device under these conditions.

- Step 4: Control the left-right direction of the Device.

- Step 5: Before getting off, stop the device and keep it balanced. Take one foot off first and then remove the second foot quickly.





Riding Diagrams

**WARNING!** To avoid danger, sharp turns should always be avoided while moving at high speed. Do not ride transversely or attempt to turn on slopes. This may cause an offset of the balancing angle and affect riding safety.

## 5.2 Protective Functions

If there is system error or illegal operation within the computer system, the Device will alert the rider using different method:

No riding, warning LED, buzzer intermittently ringing, and system unable to enter self-balancing mode.

These warnings may occur when:

- The platform is tilted forward or backward over 10° when you get on
- Battery voltage is too low
- Charging is in process
- The platform tilts up while riding
- The riding speed is too fast
- The Battery capacity is low
- The Device has been shaking for more than 30 seconds
- The system enters protection mode, the warning LED turns on, and the buzzer alarms at high frequency
- The platform tilts forward or backward over 35° and the Device is shut down automatically

- The tires stall and the Device will be shut down in two seconds
- The battery voltage is lower than the protective value and the Device is shut down in 15 seconds
- The Device is shut down in 15 seconds due to continuous and excessive current discharge (e.g. when climbing a long and steep slope)

#### WARNING!

The system will be locked automatically when the Device is shut down. You can press the Unlock button in order to unlock the system. Do not ride the Device when the battery power has been depleted or the system prompts a safe stop. At this point, the Device can't reach a balanced state due to the low battery. Riding the Device with low battery can result in injury. The battery life also will be shortened if you still ride the Device when the battery voltage is low.

### 5.3 Riding Practice

To ensure your safety, please make sure that you can ride the Device skillfully before attempting to ride outdoors.

- Please wear comfortable sportswear and flat shoes to help maintain your body flexibility
- Please practice how to ride the Device in an open space until you can get on the Device, move forward

- or backward, make turns and get off easily
- Pay attention to road conditions
- You can learn to ride on different terrain, but you must decelerate on unfamiliar surfaces. Never let the Device leave the ground
- The Device is designed to run on flat ground. Slow down if the ground is not flat
- If you can't ride the Device skillfully, do not ride in places with pedestrian or obstacles; watch your head when you pass through doors and make sure that you can pass under any obstacles safely
- Take all necessary safety measures whenever you are using the Device. Always wear a helmet, knee and elbow pads as well as gloves and other safety equipment.

## Chapter 6 Riding Safety Guidance

This section emphasizes safety knowledge and warnings. You should understand everything in this section before using the Device. To ensure safe riding, please read the User's Manual carefully and abide by all relevant safety instructions. Please pay attention to all safety warnings and precautions in the User's Manual in order to enhance your riding safety and pleasure.

**WARNING!**

- Remember that you may be hurt during loss of control, collisions or falling off the Device. To avoid danger, please read the User's Manual carefully and abide by relevant safety instructions. Make sure that the Device is in good condition, carefully read and understand all product information before using
- Take all necessary safety measures while you are learning to ride the Device. This includes such things as wearing a helmet, knee pads and elbow pads
- The Device is only intended for personal entertainment and should never be used for public transportation
- It is prohibited to ride the Device in lanes designated for motor vehicles
- Do not let children, elderly people or pregnant woman ride the Device
- Do not ride the Device after drinking alcohol or taking drugs or medicine that can impair your judgement or motor skills
- Do not carry any objects while riding
- Please abide by local traffic rules and give way to pedestrians while riding the Device
- Always Look where you are going; clear vision helps you to drive the Device safely
- Relax your legs and keep your knees slightly bent while riding, in order to maintain balance on uneven ground
- Always keep your feet on the foot pad while riding

- Wear comfortable sportswear so that you can handle emergencies more effectively
- The Device is only intended for riding by one person only.
- The weight of the rider and his or her belongings shouldn't exceed the maximum load stated in the Manual. Overloading may cause the rider to fall over or get hurt easily and damage the Device. Moreover, the rider's weight shouldn't be less than the stated minimum weight. Failure to abide by weight recommendations may cause the Device to lose its ability to decelerate or stop safely when going downhill
- Always keep the speed in a safe level so you can stop the Device at any time
- If any traffic accidents occur while riding the Device, please stay and wait for relevant personnel to handle the situation responsibly and legally
- When you are riding together with other people, please keep a safe distance between each other to avoid collisions
- Always remember that you are 10cm higher when you are riding the Device, and watch your head accordingly when passing through a door
- Maintain the balance of your body while making turns to avoid falling due to center of gravity shift or high speeds
- Stay focused while riding the Device, other activities such as making calls and listening to music are

prohibited

- Do not ride on wet roads during rainy days, do not ride backwards for long distances or at high speeds, do not make turns while riding backward, and do not travel at speeds that are unsafe for conditions
- Do not ride the Device in dim or dark places
- Do not ride the Device on roads with obstacles or those covered with slippery substances like snow, ice and water
- Avoid riding on roads with scattered objects like twigs, trash and small stones
- Avoid riding in small spaces or places with obstacles
- Please operate in any environment by complying with the operating conditions of Device; acquire permission as needed
- Do not start or stop suddenly
- Avoid riding on steep slopes
- Do not use the Device in an insecure environment, i.e. places with inflammables, steam, liquid, dust or fibers that may cause fire or explosion

# Chapter 7 Instructions for Battery Use

This section is about the charging method, battery maintenance, safety matters and battery specifications. To ensure the safety of you and others, maximize battery life and improve battery performance, please operate and use the battery as follows.

## 7.1 Low Battery Voltage

If the battery level LED turns from green to yellow and flashes, the voltage is low and the Device no longer has sufficient power for normal riding. Please stop riding, otherwise this may cause instability and it will shorten the battery life.

- Do not use the battery in the following cases:
  1. There is peculiar smell or overheating
  2. Battery liquid leaks
- Only use qualified personnel to remove the battery for maintenance
- Do not touch any substances leaking from the battery

- Do not let children or animals touch the battery. Unplug the charger before mounting the battery or riding. It is dangerous to operate the Device while charging
- The battery contains hazardous substances; do not disassemble the battery without permission from a qualified technician and do not insert any objects in the battery
- Only use the provided charger to charge the Device
- Never charge over-discharged lithium batteries; over-discharged batteries pose potential safety hazards and should be discarded
- Abide by all local laws related to the Device batteries

## 7.2 Charging Steps

- Make sure that the charging port is dry
- Open the charger lid located at the rear part of the Device
- Insert one end of the charger into the main power supply (100V~240V; 50/60 Hz), make sure that the green LED turns on, and then insert the other end into the Device
- When the red LED on the charger turns on, charging is normal; if the red LED fails to light up, check to ensure that the wires are connected properly
- When the LED on the charger turns from red to green, charging is completed. Please unplug the

charger; charging too long may shorten the battery life

- Check to make sure that the plug complies with local standards
- Please charge and store the battery as stated, otherwise this may shorten the battery life or even damage the battery
- Keep the charging environment clean and dry
- Do not charge if the charging port is wet

### 7.3 Extreme Temperatures

- To optimize device operations, the battery must be maintained at the temperature range stated in the battery specifications
- The battery must be maintained at the recommended range before and during charging. Charging efficiency is greatest at the recommended range, while extreme temperatures will extend charging or even cause a charging failure
- Do not use the Device in the following cases:
  1. If battery temperature reaches 60°C while the Device is operating, the alarm will sound and the Device will slow down; if the temperature reaches 70°C, the Device will shut down automatically
  2. If the motor temperature reaches 110°C while the Device is operating, an alarm will sound and the

Device will slow down; if the temperature reaches 130°C, the Device will shut down automatically

3. If the Device shuts down due to overheating, place it in a dry and cool place, and wait for the battery or motor to cool down before operating again.

#### 7.4 Detailed Battery Parameters

Name Parameters	
Battery Type	Lithium
Charging Time	2-3 hours
Voltage 36.5V	
Initial Capacity	4.3A
Operating Temperature	-20~60°C
Charging Temperature	0~45°C
Relative Humidity	5~95%

#### 7.5 Precautions for Battery Transportation

##### **WARNING!**

As a hazardous good, the transportation of lithium batteries is subject to local laws and regulations.

**NOTE:**

Please contact our Company or a designated dealer if you want to transport devices with built-in lithium batteries or transport lithium batteries separately using any type of transport means.

## Chapter 8 Daily Maintenance

The Device requires daily maintenance. This chapter describes the relevant steps and important prompts associated with device maintenance.

Make sure that the power supply and charging cable of the Device have been disconnected before attempting any of the following operations. Precautions before cleaning:

### 8.1 Cleaning

- Make sure that the power supply and charging cable of the Device have been disconnected
- Wipe the Device with soft cloth

**WARNING!**

- The designed waterproof and dustproof grade is IPX4, i.e. fine dust and splashing. Accordingly, never clean the Device with high pressure water jets or soak the Device in liquid

- Prevent water and other liquids from entering the Device, otherwise this may cause permanent damage to the electronic components

## 8.2 Storage

- Before storage, fully charge the Device to prevent battery over-discharge due to extended idle times
- If the Device will be stored for over a month, please take out the battery. Remember to fully discharge and charge the battery at least once every three months
- Do not charge the battery if the storage temperature is lower than 0°C; put the Device in warmer environment (above 10°C) before charging
- You should cover the Device to avoid performance degradation due to dust
- Store the Device indoors in a dry place with an appropriate temperature

### **WARNING!**

- To ensure your safety, never disassemble the Device without permission from an authorized technician, otherwise the warranty may be void.
- Prolonged Exposure to UV Rays, Rain and the Elements May Damage the Enclosure Materials, Store Indoors When Not in Use

| Caution: This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

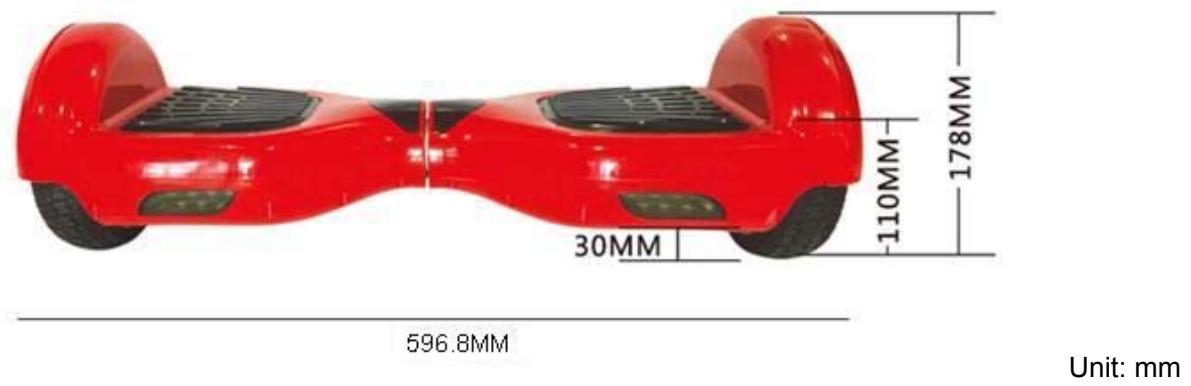
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

### **FCC Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

## Chapter 9 Parameters



Detailed Parameters		
Name Parameters		Remark
Minimum Load	20kg	
Maximum Load	120kg	
Maximum Speed	13km/h	
Maximum Riding Mileage	10-15km	Depending on terrain, riding habits and load
Charging Requirement	100-240V, 50-60Hz	Charger Model: HLT-180-4202000(E484089) Input: 100-240Vac, 50/60Hz, 2A. Output:42Vdc,2A
Dimensions (L*W*H)	596.8 mm L x 187.2 mm W x 178.1 mm H	
Tire Type	Non-pneumatic	
Battery 36.5V/4.3A		

## Chapter 10 Packing List

No.	Name	Quantity
1	Device	1 set
2	Char ger	1 piece
3	User's Manual	1 piece