

# DUALTRON II

The dream of electric technology

PERSONAL MOBILITY

User Manual



## Brand Introduction

'DUALTRON' brand is a worldwide electric scooter brand name that Minimotors Co. LTD., is manufacturing.



## Company Introduction

**Minimotors Co., LTD. is a personal mobility manufacturing and distributing company with a professional production system that has been out of personal mobility since 1999.**

Minimotors Co., LTD. has been making the electric mobility brand [DUALTRON] to meet the people of the world with the aim of making more innovative, more sensuous, and more convenient personal mobility from 1999 to the present and making a product that is loved by people in the world. Minimotors Co.,LTD. Is doing its best to become the world best electric mobility company.



## Before Reading Manual

**01** This manual contains important information to help you use your product more safely. Failure to follow these instructions could be the cause of property damage and serious injury. For safe use, it is marked as 'Danger', 'Caution' and 'Warning' depending on the degree of danger and the meaning is as below.



Danger

Indicates a hazardous situation that could be a result of serious injury.



Caution

Indicates a potentially hazardous situation that could be a result in serious injury.



Warning

Indicates a potentially hazardous situation that could be a result in light injury.

**02** Please read this manual carefully before using this product. If you have any problems with your product, you can get technical support from our head office or a seller. ([www.dual-tron.com](http://www.dual-tron.com))

# Dualtron2

## User Manual Contents



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## General safety guidelines and restrictions



### 1. Be careful of water!

Dualtron2 is not waterproof product. Never use when it is rainy or snowy and if the road is wet or icy. Electric device, motor, battery and the other parts can be damaged and it can be the reason of the malfunction or fire. The damage from the water is not free even though it is in warranty period.



### 2. Be careful the point can be caught in as a folding parts and spinning parts!

If a part of the body as a finger or hair touch or be caught in the spinning parts as a tire and wheel disc or folding part and handle parts it can be a cause of the big problem of the body. Before driving, make sure the cloth or shoes rope doesn't meet or caught in the spinning parts.



### 3. Don't tune by yourself. Electric shock can be occurred!

Don't open or tune the electric parts(controller, battery and motor system). It can be the cause of malfunction and fire. And then, You will be charged when you repair your scooter even though it is in warranty period.



### 4. Be sure to wear safety equipment before use and comply with the Road Traffic Law.

All vehicles involve risks and requires the ability to cope with safety. For the safety of passengers, be sure to wear a helmet and protective gear(knee guards, etc.) and follow the Road traffic law.

5. For safety, beginners should practice in the wide area in slow start mode in advance.
6. This product is for one person and it is prohibited by law to drive with an infant or drive with the two passengers. It can be cause of product breakdown and accidents.
7. Standing products must be handled securely with both hands as it is not safe to drive with one hand.
8. Do not use if the braking force is abnormal after checking the operating condition of the brake.
9. If the obstacle appears suddenly, be careful to do not stop the scooter with your foot without using the brakes.
10. Stop the vehicle by stopping the rear brakes properly when stopping, and be careful as there is a risk of overturning if the front brake is applied suddenly while driving.

11. In case of high speed driving, braking distance is longer than low speed.
12. Never use in a slippery place.
13. Never use in an unsafe place such as a driveway, a crowded area, or on a steep slope.
14. Never use on pavements or roads where has a risk of accident of the passenger or the other people.
15. Never use on uneven surfaces.
16. When you pass the speed bump or obstacles, you should slow down. If you don't slow down, it can be a cause of product malfunction and accident.
17. As handlebar is designed to change direction and balance, do not push or pull it with excessive force. If there is a large play on the handle bar, stop the driving and check the head bearing. If the bolt or nut is loosened, you have to drive after fastening it..
18. Please be sure to charge with the dedicated charger provided. If you use a non-compliant charger, be careful because it is fatal to the circuit or battery.
19. Problems caused by using non-compliant chargers and abnormal methods are not covered under warranty.
20. If the product is flooded, disconnect the power supply from the battery and have it serviced by the place of purchase. (In case of flooding or malfunction due to the user, it is not covered under warranty.)
21. Please note that if you set the kickstand up and drive or apply excessive force to the kickstand, it will be broken.
22. Children's use is prohibited and should be used safely under the care of the guardian if they should use.
23. Before use, be sure to check the normal operation of the brake. If the braking force is weak, make sure to adjust it before using.
24. If tire pressure is low, puncture may occur while driving. Be sure to replenish air pressure before use it.
25. When crossing a crosswalk, please get off and carry the product and do not park on the pedestrian road for the pedestrian safety.

## Safety precautions for Lithium-ion battery



### 1) Proper Lithium battery management tips

1. Only use the charger that was supplied with your product to charge lithium-ion battery. Use of an unauthorized charger could cause serious damage to the battery and can cause fire.
2. Charge lithium-ion battery within 0-45°C and discharge within -20-60°C. Charging and discharging the battery not within the appropriate temperature may damage the lithium-ion battery.
3. Do not leave lithium-ion battery in any place exposed to direct sunlight or high temperature. Do not store it in wet places. Always store it in dry places.
4. Charge lithium-ion battery in dry, open, and well-ventilated place. Do not charge the battery near inflammable goods.
5. In the winter, bring the battery from outside to inside, temperatures changed from low to high and this may cause dew condensation. In this case, do not charge the battery immediately, but charge it after reducing temperature difference.
6. If the battery protection circuit is damaged, the battery emits an unusual smell, or the battery leaks, contact the authorized service center immediately and get technical support.
7. Put lithium-ion battery in a safe place out of the reach of children and pets.
8. Do not reverse the polarity on a battery and short-circuit. Also exposing the battery to excessive shock can result in an explosion of the battery.
9. Do not do stunts or jumps on the product on bumpy surfaces. Exposing a battery pack to excessive shock can result in fire on the battery. If there are some crashes while driving, then you should remove it out of the product to check whether the battery is working well.
10. Connecting the charger when the product is waterlogged, the risk of electric shock and fire is very high. Do not charge the battery in this case and the battery should be checked by an expert before charging.
11. Do not disassemble or incinerate lithium-ion battery. To safely dispose of lithium-ion battery, put it as industrial waste and be careful not short-circuit occurs in the terminals.
12. If the battery requires replacement after long-term use, replace it with the new one through the authorized dealer. Normally, the discharge capacity of lithium-ion battery normally decreases more than 15% after 300 times of cycle use.

13. Do not use the battery if it leaks or gives off an odor, and short-circuit inside the battery pack. Lithium-ion is inflammable material. Avoid charging the battery without proper care. Be very alert to the time that you have charged the battery to prevent fire.
14. External temperature effects much on the battery. In winter, when the temperature is low, the performance of the battery degrades, driving distance and power are reduced, and when the weather gets warmer, it returns to its original state.
15. When the scooter needs to be stored longtime without using, keep it with charging around 70~80% from the max charging.
16. Use only with the authorized and recommended battery and charger. Manufacturer and distributor cannot be held responsible for any damage of your product by using unauthentic battery and charger.
17. If a product with a lithium-ion battery detects overheating, smoke, or ignition, you should stop charging and using it immediately, move the product outdoors as soon as possible, and then evolve using a fire extinguisher. As it is more dangerous, do not spill or immerse the water on the product to evolve.

## 2) Additional seasonal lithium battery management methods

### (1) Summer battery management

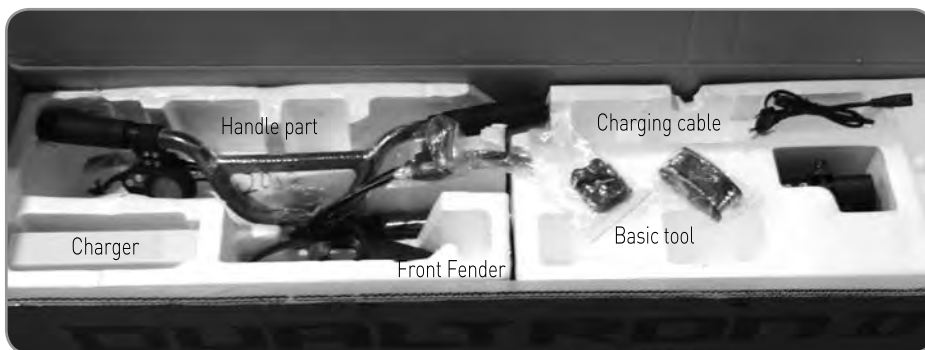
1. Avoid rainy or hail day or wet roads after rain. Battery and core components may be damaged by flooding, which cause malfunction or fire.
2. Avoid direct sunlight in summer and do not store or charge it in a car trunk or hot room.
3. If it suddenly rains while it is standing up, do not turn on the power or charge it.

### (2) Winter battery management

1. If you run on snowy or rainy days, or on frozen or wet roads, you may be injured by flooding the battery and core components, which cause malfunction or fire.
2. When storing the battery, keep it at room temperature(10~20°C) in a place where is not humid and can avoid snow, rain, direct sunlight.
3. In winter, do not charge the battery immediately after driving and wait 1 to 2 hours for charging.

## Product Components

**DUALTRON II**



### Check the components inside of the box

**Top:** Handle part / Default charger(2A), Default tool, Front fender, Charging cable

**Bottom:** Body(Lithium battery included), User manual

As shown in the picture above, the box consists of two stages and contains the contents related to the product. Please check if the contents are the same as the picture when you open and please get the help of the service center if the user can not assemble it.

\* Battery pack of each model is installed with the product when it is shipped.



### How to check the product serial number



After open the box, of product, note serial numbers and keep for easy recognize.



## Name of each part

# DUALTRON II



### Important notice

**\*When turning on the product power** Turn on the 25) Main power switch in advance (Internal battery driving basis) and turn on the 1) LCD dashboard for starting driving. Turn off the power with reverse order after driving.

**\*Dualtron2 dashboard power** may be turned off automatically if it is not used for a few minutes. As the light is also turned off, turn on the dashboard and push the light button to turn the light on.

## How to use the product

### 1) How to assemble



#### (1) Product remove Danger

1. If the product is lifted with only handle bar, the inner shaft may be damaged due to the much load on the folding parts.
2. Therefore, when lifting the product, it is better to raise the handle bar first, then lift the body(deck part) of the product with both hands and lift it slowly to prevent damage to the folding part.



#### (2) Assembling handle bar

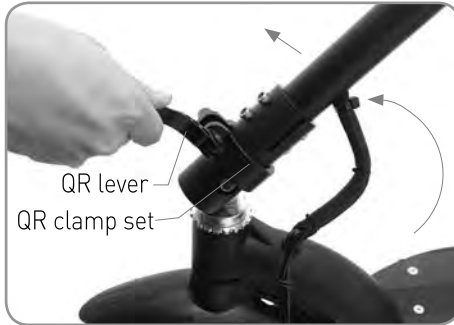
1. Loosen the screw on the handle mount with a 5mm hex wrench included in the basic tool. After aligning the handlebar with the center, cover the cover of the mount and tighten the fixing bolt.
2. Do not tighten all the bolts at once and tighten it in the order of 1~4 tightly.



#### (3) Assembling front fender

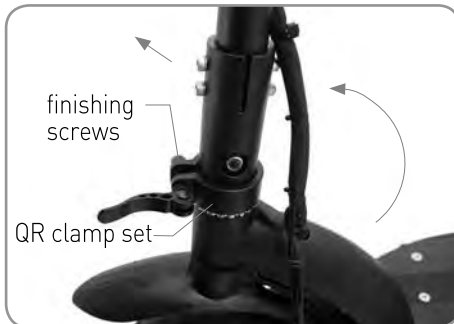
1. Loosen the fixing bolt of the front fender.
2. Put the front fender to swing arm.
3. Put the fixing bolt into the bolt hole again and turn it to clockwise.
4. When it gets into well, use a 4mm hex wrench to tighten the basic tool
5. Tighten fully until it doesn't turn any more.

## 2) How to unfold



### (1) Releasing QR lever

After unfolding the QR lever outward, pull up the clamp set and raise the handle post.



### (2) Raising handle post

When unfolding the handle post, raise the handlebar while pushing the deck with foot, and then lower the QR clamp set down completely and tighten the right finishing screws.

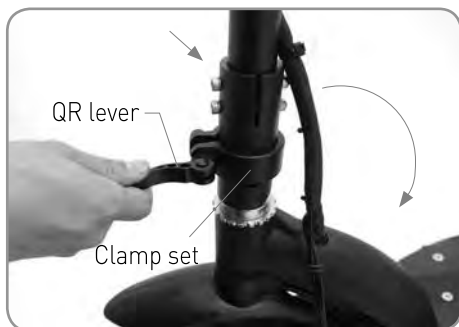


### (3) Fixing the folding part Caution

When the QR lever is locked inward as shown in the picture, the handle unfolding is completed. If the folding lever is not completely locked, a safety accident while driving can be occurred. Before and after running, always check if there is a play in the folding part, and a folding part or handle part, the bolt&nuts of all the fixing parts of the product are properly tightened and the fastened parts are not loosened.

## How to use the product

### 3) How to fold



#### (1) Releasing fixing folding part

Unfold the QR lever outwards and pull the clamp set up, and then lay the handle post in the direction of the arrow.



#### (2) Folding handle post

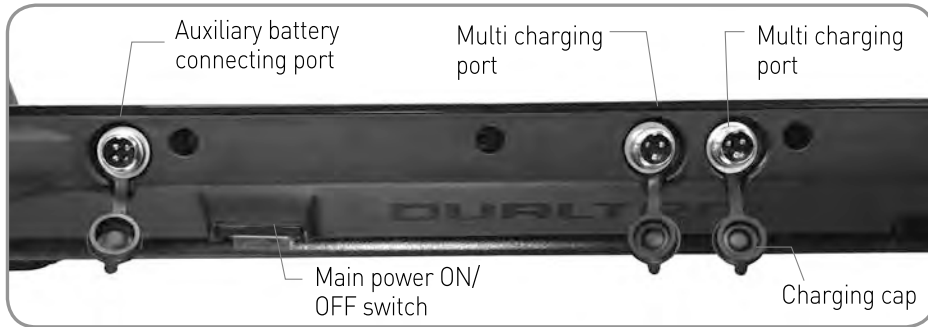
When folding the handle post, hold the post and lower it toward the deck. Raise the QR clamp set up and tighten the right finishing screws.



#### (3) Fixing folding part

Fold the QR lever inward as shown in the picture and fix it to complete the product folding.

## 4) How to charge



### (1) Standard charging method



Caution

1. As shown in the picture, you can open one of the two right-side charging ports and connect them to the charger's connector and connect them into a household outlet.
2. Charging status indicator, Red: not fully charged, Green: fully charged.
3. Be sure to close the charging port cap when driving and storing except when charging.
4. When connecting the connector to the charging port, metallic sparks due to the voltage difference may occur, but this is normal.



**\*CAUTION :** Do not multi charge the battery in case of quick charging. If you want to charge with the two chargers, you must use the 2A charger.

### (2) Charging method when using multi charging socket(Optional)



Caution

1. Make sure to use only the genuine 2A charger(It may cause electrical trouble when using non-standard charger and cause serious damage to the battery.)
2. All chargers connected to the socket should use the same charger only. (Do not mix different chargers with each other.)
3. Connect the charger connector to the main body first, then connect the charger to the charger connector before connecting the AC cord.
4. If the charger indicates green light, it is fully charged, so disconnect the AC cord of the charger and remove the socket from the main body.



**\* CAUTION:** Using multiple non-standard chargers or using different voltage chargers may be not max charged or fatal damage to the battery or electrical system

## How to use the product

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### (3) How to use the charger correctly

1. Do not use the charger and contact the service center if the lamp of the charger does not light, or if there is an external shock or damage on the cable cover.
2. Charging terminals should be firmly contacted when charging. Do not use if terminals are corroded.
3. Do not remove the terminal while charging. This can cause considerable stress on the charger's internal circuitry.
4. When using the charger, do not put any drink that can be spilled around and do not operate the machine with the motor.
5. This charger is prohibited in places with high humidity, heat, or flammable materials.
6. Do not modify the charger or use any other charger.
7. We recommend that you always use a dedicated charger. Performance and safety are not guaranteed when using a charger other than the dedicated charger.
8. Charger failure may cause a fire while charging. Be sure to disconnect the charger terminal when you leave the place for a long time.
9. If charging is not completed for a long time, do not use the charger and contact a service center.
10. If the child uses a charger, please use it under the supervision of a guardian.
11. Do not insert metal into the charging hole.
12. After unplugging the charger, do not touch the plug for about 10 seconds.
13. Do not attempt to disassemble, open, crush, bend, deform, perforate, shred or submerge the charger.
14. Be careful not to drop the charger or subject it to excessive shocks.
15. Before using the charger, carefully read and understand the instruction manual and use it safely.

### (4) Use of the auxiliary battery(optional) connecting port

1. To use the auxiliary battery, turn off the power switch of the dashboard and press the main power switch at the bottom of the deck to 'O' (OUT) to stop using the built-in battery.
2. Connect the auxiliary battery to the auxiliary battery connector and power on the dashboard.  
\* The official secondary battery for Dualtron 2 will be released later as an option.



## (5) Checklist before using

Caution

### Important notice

Be sure to check the normal operation of the front and rear brakes before use. If the brake operating is not good, be sure to adjust the brakes to ensure braking.

### 1. Safety equipment must be worn before use

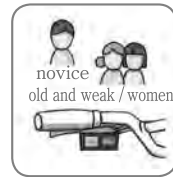
This product is a product that can be driven by two-wheel and high speed. All users must use the product after preparing as wearing a helmet on their head and additional protectors(knee, elbow, palm) before use.



### 2. Beginners, women, and elderly people Do not use high-speed mode or dual mode

Beginners and elderly people who have never used the product for the first time or have difficulty in speed control must use low speed mode (ECO) because of high risk of accidents when using high speed mode and dual mode. And single mode. For beginners, it is prohibited to use high speed mode (TURBO) and dual mode on the ground or downhill. Dual mode can be used only for the limited time.

\* Pregnant women are prohibited from using.



### 3. Do not accelerate downhill

If you accelerate downhill, the braking distance is too long to be dangerous. If necessary, use the brakes properly. On very long downhill roads, the brakes may overheat and may not work.



### 4. Motor and brake burns Caution

Since the temperature of the motor and brake (especially the disc rotor) increases after running, there is a risk of burns when.



### 5. When lifting the product after folding the handle

When folding the handle and lifting the product by lifting the handle, the load of the main body may be concentrated on the folding part, which may damage the folding part. When folding the handle and lifting the product, Hold the body(Deck) with both hands as shown in the picture.



## How to use the product

### 6. Be careful when reassembles the bolt after removing the side cover

If you reassemble after removing the side cover for LED tuning or inspection, make sure that the spring washer is inserted into the bolt. If you assemble without a spring washer or use a bolt longer than the standard, the bolt will penetrate the battery, which cause a serious damage to the battery and serious safety problems such as fire.



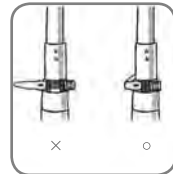
### 7. Checking of main fixing parts before driving

Always check if the bolts and nuts fastened to the fixing parts are loosened due to the vibration from continuous driving or if some parts are lost, it may occurs safety accidents. Check the tightening of the nut and use it after self-maintenance or visit the nearest repair shop after stop using it immediately if there is any problem. In particular, make sure that the steering bolt at the bottom of the front fenders that connects the handle to the front wheel is well tightened.



### 8. Fixed state of the QR lever before driving.

Make sure if the QR lever is correctly fixed when the handle is extended. If the QR lever is not fixed correctly, the steering wheel may fold while driving, which may be causing an accident, so make sure that the QR lever is correctly tilted inward as shown in the picture before driving





## 6) Safe driving tips

1. Read the instruction manual that came with the product to understand the features of the product you are using.
2. To prevent a safety accident, wear safety gears such as comfortable shoes, knee protector, helmet and elbow protector.
3. Find a space no pedestrians and cars where is flat and not wet that good to practice for a novice.
4. Hold the foot in the most comfortable position on the deck with no power applied.
5. Take the proper foot position to do not place weight on the handle, and practice to look around the front and back sides when driving.
6. Check where the power supply and accelerating and decelerating devices are located. (Brake position, Acceleration throttle position)
7. For night driving, check the position of the light and the state of the taillight when you hold the brake.
8. Turn on the product and check if it is the speed mode for beginners(beginners should start in safe mode).
9. Check the battery level to make sure if it is enough for driving.
10. Take a look at the various functions of the dashboard and make the appropriate settings for the user. Do not change settings other than the dashboard settings displayed in the user manual(including fixed values). Changing the settings may result in a safety hazard, which is the user's responsibility.
11. Please start and end first driving where there are no obstacles such as people and loads.
12. Hold your feet in a comfortable position on the deck and control comfortably and smoothly.
13. Practice to slow down and stop to cope with various factors that may occur when driving.
14. When turning left and right, make sure that there are no obstacles and then turn slowly with keeping a wide turning radius.
15. If movement to backward is required, it is safe to move down from the product after decelerating and stopping.



### \* In this case, stop driving immediately.



1. If the product is noisy while driving, stop driving immediately and consult with the nearest repair shop. (If you prepare a video for checking the noise, much better to consult)
2. If you feel that there is a problem with the operation such as the error message on the dashboard, the heat of the motor, the incomplete operation of the brake and etc., stop and consult with nearest repair shop.

## How to use the product

### 7) How to start



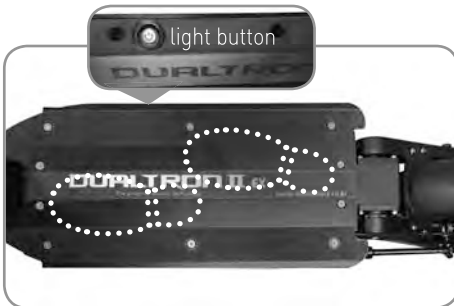
#### (1) Turning on the main switch

When the button of the main power switch is set to 'I'(IN), the built-in battery and the BMS are activated and ready to start driving. When driving is finished, press 'O'(out) of the main switch to prevent battery consumption.



#### (2) Turning on the dashboard

After turning on the main power switch, press the power button on the dashboard for 2 seconds to turn on the dashboard. Users can determine the appropriate departure speed for users, using the cruise mode and using the electric brake, etc. in the detailed mode.



#### (3) Stance for driving

After tilting the kick stand, find a stable position on the deck and then hold the handle grip comfortably. (Be sure to turn on the light button when driving at night.) Be careful not to raise your foot on the rear fender. Excessive load can cause malfunction due to overheating of the motor.



#### (4) Change of acceleration, deceleration and driving method

Acceleration can be performed by using the throttle of the dashboard while driving, and the deceleration or stop can be performed by holding the brakes on both handles. Yellow is the drive mode selection button, and red is the motor system selection button to select the appropriate driving for user.

## 8) How to stop



### (1) Decelerate with rear brake

When stopping while driving, use the rear brake to decelerate slowly. There is a risk of overturning when braking suddenly with front brake. It is necessary to practice to stop after decelerating safely with the rear brake.



### (2) Stop safely

Always use the front and rear brake levers together to stop smoothly and safely after decelerating with the rear brake.



### (3) Deceleration and brake with electric brake

Be sure to set whether or not to use and strength of the electric brake among the detail functions of the dashboard beforehand. If the use of the electric brake is set, the electric brake works together with the brake lever when driving to increase the braking power.



### (4) Check for safe braking

For safe braking, be sure to check for any external changes (bending, exfoliation, disconnection, etc.) on the brake cables and lines before driving. If the braking force of the brake drops considerably even during use, it should be used after the inspection and repair.

## How to use the product

### 9) How to control dashboard



#### (1) Dashboard main screen- Adjusting the speed step

To adjust the speed level in the main screen while the dashboard is on, press to display the currently set speed level. At this time, press the button to set the speed step(L1 - low speed, L2 - medium speed, L3 - high speed). Press to confirm the set speed step value and finish setting.

#### Information

\* When L1 (low speed) is selected, slow start does not work even if P7 (start mode) is set to slow start in the detail function.

#### (2) Mode functions and setting method of main screen

Each time you press the button briefly on the main screen, the mode changes to the next mode.

Mode	Description
TRIP	Current mileage (Press and hold the mode button to set "0")
ODO	Accumulate mileage
CHA	Not used
VOL	Current voltage(Volt)
DST	Not used
TIME1	Power ON time

\* Note : The voltage displayed in VOL mode has about 1V ~ 2V difference from actual battery voltage.

#### (3) Returning to the main screen after setting details

Press again to finish all settings and return to the main screen

#### (4) Setting detail functions of the dashboard

Model	Display values and settings
P0	9[Can not change]
P1	48[Can not change]
P2	10[Can not change]
P3	0[Fixed]
P4	Speed display / Km/h(0), mp/h(1)
P5	Start mode / Accelerator start(0), Kick start(1)
P6	Cruise mode(Auto driving) /Off(0), On(1)
P7	Start speed / Power start(0), Slow start(1)
P8	Start speed / Power start(0), Slow start(1)
P9	Electric brake power / Off(0), Medium(1), Hard(2)

\* Press to move between P0 mode and P9 mode, and press to change the setting value.

## (5) How to enter or return to the detail function setting screen from the main screen



You can return to the normal screen or entering the function setting of the dash board by pressing the power button together with the mode button to the right index finger and the left index finger on the main screen.

Press MODE and POWER button for about 2~3 seconds to enter P0 mode. → Press once to change set value. →



Ex) P0 default value setting

The setting value is blinking and displayed below. At this time, press the button to change the setting value. → Press the button to increase the setting value, and press to decrease the setting value.

\* When the setting is finished, press the button for 2~3 seconds to activate the setting value.

## (6) Features of cruise mode

The cruise control function allows you to maintain the driving speed automatically. The advantage of using the cruise function is that you can reduce fatigue during long distance driving and fuel consumption.

### 1. Starting the Cruise function

- Select the Cruise function part of the dashboard as 'Settings'.
- If the throttle is kept at the same acceleration for about 7 seconds, the cruise function starts.

### 2. Ending the cruise function

When you hold and release the brake while the cruise mode is running, the cruise mode is automatically canceled.

### 3. Precautions when using the cruise function



In order to release the cruise function in response to the safety situation while driving the cruise function, **be sure to travel in a position where the brake can be used immediately so that the brake can be applied. When switching single**

**mode to dual drive mode in a cruise mode, cruise mode can not be released with using throttle and can only be released via brakes.**

## (7) Intensity adjustment of electronic brake

The Dualtron2 is equipped with a physical brake that brakes the front and rear wheels and can be braked by pulling the physical brake lever on the handle. If '1' is selected for P9 of detail function setting of the dashboard, it is medium intensity and if '2' is selected, it is a hard intensity which the maximum braking force. If '0' is selected, the electric brake operation will be off.

- \* The electronic brakes will not operated when the battery is fully charged.



Caution

**Do not use electric brakes immediately after full charging. For your safety, it is recommended that you do not use the electric brake in a fully charged condition, but use the electric brake only when more than 5% of the battery capacity is used.**

## How to use the product

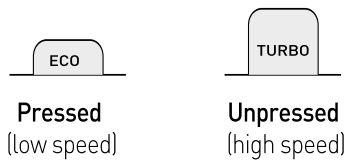
**DUALTRON II**

### 10) How to control drive mode



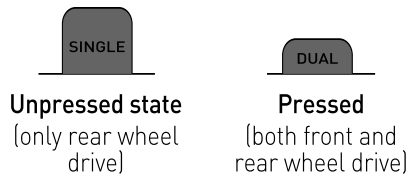
#### (1) Using the driving mode selection button (yellow)

You can select between low speed and high speed driving mode according to your environment before driving with yellow driving mode selection button. Use as shown



#### (2) Using the motor system selection button (red)

The red motor system selection button is a selection button that determines whether to use only one motor or two motors. Single drive is recommended when efficient energy travel is needed.



## How to maintenance

# DUALTRON II

### 1. Self-diagnosis through instrument panel

Fault type	Diagnosis	Solution
②	System error	* If the fault information display appears, please contact the service center quickly. Stop using the product immediately. You can avoid damage to people and products.
③	Motor error	
④	Accelerator error	
⑤	Controller error	
⑥⑦⑧⑨	Not applicable	



\* The number ① is displayed when the cruise function is run at a constant speed.

### 2. How to check the product daily before and after driving



#### (1) Check brake and cable

- Before driving, make sure that the braking force is sufficient and the operation is good.
- If the braking force of the brake drops considerably even during use, it should be used immediately after the inspection and action.
- When checking, make sure that the brake pad is not worn, the cable is not loose, and the cable is not damaged.
- Brake cable is a consumable item depending on the user's driving environment. When operating the brake lever, if there is a feeling of being caught unusually or when operating noise is occurring, check if the inner wire of the cable is partially broken, worn or deformed. If you do not pay attention to repetitive handle folding, the brake cable may be broken or deformed, which may cause the operation to be ineffective or the wire may be broken unexpectedly due to damage of the inner wire. Be sure to check before you drive to decide whether to replace or drive.
- Make sure that the bolts, nuts and the various fixing parts of the brake are not loose, and the disc is not deformed or damaged.



#### (2) Tire pressure check and uneven wear caution

- Check the condition of the front and rear tires. Check the condition of wear and puncture and keep tire pressure (proper air pressure 45) properly. When the air pressure is insufficient, the travel distance becomes shorter and the possibility of puncture increases.
- It may cause uneven wear of tires when the tire is suddenly stopped and which makes dangerous situation. Therefore, it is necessary to judge the replacement time by observing the appearance of the tire.



## How to maintenance

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### (3) Tightening check such as folding part and handle part

- Check the product thoroughly before use.
- Always check that there are play in each part, that the bolts and nuts of the folding or handle parts, the whole fixing parts of the product are properly tightened and that the fastened parts are not loosened.



### (4) Checking when to replace consumable parts

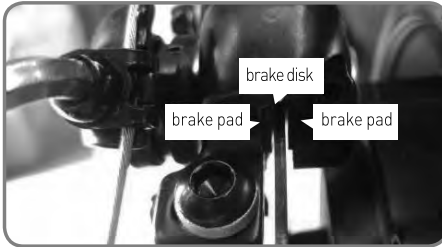
- The rubber inside the Dualtron2 rubber suspension is cured as the product is used as a consumable part, and the elasticity is reduced, resulting in a slight reduction in the performance of the suspension. If the suspension is not functioning well, you should visit your nearest service center and replace the rubber.
- Spare parts such as tires, tubes, disks, pads, cables and brackets, forks, etc. which require periodic inspection and replacement are subject to replacement at different times. Therefore, periodic inspection and maintenance is required.

### (5) Electric products can be damaged by various factors!

- As with all machines, this product may also fail due to a number of factors. The life of each part can be different depending on the driving habits. Parts exceeding the durability of the product may be damaged and cause accidents. Brake cables and various cables as well as forks or brackets on the car are consumables that can become worn or bent depending on the external driving environment. Therefore, it is recommended to visit the repair shop for replacing and safety inspection as the basic shape deformation, cracking due to compression, crack or discoloration which shows durability of the product is low.



## 3. Brake adjustment method



As you continue to use the brakes, the brake pads become worn out and the gap between the pads and the brake disc becomes wider. When the braking power drops, it can be adjusted simply as shown in the picture below.



(1) As shown in the picture, if you release it with a 5mm hexagon wrench, the caliper will be detached.



(2) Caliper will be separated as the picture



(3) A small set screw hole is shown in the picture. The role of this bolt is to keep the brake pads on the motor stationary. So, after adjusting the pad, you have to lock it again



(4) Release the set screw with a 2mm hex wrench in this way.



(5) Next, turn the pad clockwise with a 5mm hexagon wrench to make the pad closer to the disk, and turn it counterclockwise to move the pad away from the disk.



(6) Turn it clockwise in this state.



(7) It will enter as shown in the picture.



(8) When reassembling, the left and right alignment may not match. In this case, the two upper bolts are loosened as shown in the picture to adjust the calipers' body to the left and right.

### 4. Causes and Countermeasures for Noise of Disc Brake

The disc braking system has a good braking power, so many electric scooters use disc braking. However, if you get a sharp chirping sound when you take a disc brake, you can make a simple correction in the following way. Most of the causes of disc brake noise are dust or sand scattered on the ground during driving, which caused foreign substances to adhere to the brake pad or disc surface.



(1) It is a common disc pad and caliper.



(2) There is a stripe on the part where the pad touches, but it does not look dirty when you see it with your eyes.



(3) Prepare a clean dry cloth.



(4) Prepare a clean dry cloth.



(5) Turn it several times and wipe.



(6) Brake sound is simply eliminated.

#### Note:

If you can't solve it with the method above, visit the nearest repair shop and take a safety check. There may be another problem.

## Product specification

# DUALTRON II

Product Name	Dualtron II (Electric Scooter)				
Motor	Max 3,600W BLDC DUAL HUB MOTOR				Note
Battery type	MX	EX	EX+	LTD	Li-ion battery (Samsung or LG or PANASONIC high discharging cell)
Battery capacity	1,077Wh	1,202Wh	1,450Wh	1,657Wh	60V, 18A / 20A / 24.5A / 28A
Weight	Around 28kg	Around 28kg	Around 28kg	Around 30kg	Battery included weight Body: 23.3kg / battery: 6.7kg(LTD)
Charging time (2A)	8hr+	9hr+	10hr+	12hr+	When using default charger(2A)
Charging time (4A)	5hr+	6hr+	7hr+	9hr+	When using 2EA of default charger(2A)
Charging time (6.5A)	2.8hr+	3.3hr+	3.7hr+	4.3hr+	When using quick charger (6.5A)
Max speed (Sin)	Around 50km/h				75kg, 67.2V max charging flat load continuous riding basis *Max distance can be shorter due to the riding environment Dashboard has 3step speed adjust function, Handle bar has eco, turbo 2step adjust button. (Motors Single, Dual mode & ECO, Turbo & Dashboard 3step, Total 12type speed mode can be selected)
Max speed (Du)	Around 65km/h				
Distance (ECO)	Around 70~90km	Around 80~100km	Around 90~110km	Around 100~120km	
Gradeability	Around 47% (25°)				Weight, load condition, battery status, temperature can affect to the gradeability
Max load	120kg				
Folding	Handle post two touch double folding				Patent pending
Unfolded size	1125(LTD 1185) x 600 x 1200mm				Length x width x height Deck width 240mm
Folded size	1125(LTD 1185) x 600 x 505mm				Length x width x height Handle width 600mm
Dashboard	Multi function smart LCD dashboard (Index finger) Remained battery, TRIP, ODO, Time, Speed, and Voltage is displaying. Cruise mode can be selected.				Electric brake power can be adjusted and turn on/off The speed will be almost same as GPS speed if the P0 is set to 9
Light	Dual LED headlight & taillight, brake light				DC to DC converter is built in(12V 3A output)
Suspension	Dual full suspension unit applied (rubber type)				Patented
Brake	Dual disc brake and electric brake (Two functions work together when brake lever works)				Front and rear tire common use Auto recovery charging system is applied when brake lever works : 15A charging capability of max charging current
Tire	10inch(10x2.5) 4PR wide tire				Tire width 6.5cm
Material	Frame and handle : Aviation aluminum forging alloy, 6082-T6, Shafts : SCM440, Covers : Polypropylene				

\* The specification can be changed by manufacturer without notice to improve the quality and safety for users.

\* The distance on the specification is 75kg load, flat road 20km/h constant speed riding basis and the driving distance can be shortened by the driving environment and the driving way of user.

\* The distance can be affected by loaded weight, wind direct (wind speed), road condition, slope and tire condition.



**DUALTRON II**  
Electric Scooter  
User Manual