WORKSMAN CYCLES

LIGHTNING SERIES E-TRIKE

Powered by Lithium Batteries

Owner's Manual

CAUTION

Before installing battery, and riding, make certain to read this manual thoroughly. Proper use of this cycle and care for the battery is critical for your enjoyment and safety.

IMPORTANT

Settings on your dashboard are preconfigured at the factory. However, once you install the battery, after checking levels, you can check that all presets are correct.

SCAN ME

For install Help

Updated: 5/16/2022

Thank you for purchasing a Worksman Cycles Lightning Series E-Trike!

Our cycles are proudly made in Conway, SC using imported and domestic components and we take pride in bringing you a quality American Made product that will offer years of enjoyment. To ensure your safety, please fully read and understand this manual before assembling and riding your new cycle.

If you have questions after reading this manual, please don't hesitate to check out our Website, contact us by email, and/or give us a call on the phone.

We are here to help!

- **Worksman Cycles Product Support:** https://www.worksmancycles.com/owners-manuals.html
- **Email:** cycles@worksman.com
- **Phone:** 1-800-962-CYCLE (2453)

Thanks for supporting American factory workers and riding Worksman Cycles!

Using This Manual

This manual contains details of the product, its equipment, and information on operation, maintenance, and other helpful tips for owners. Read it carefully and familiarize yourself with the Lightning Series E-Trike before using it to ensure safe use and prevent accidents. This manual contains many warnings and cautions concerning the safe operation and consequences if proper setup, operation, and maintenance are not performed. All information in this manual should be carefully reviewed and if you have any questions you should contact Worksman Cycles immediately.

The notes, warnings, and cautions contained within the manual and marked by the triangular Caution Symbol, should be given special care. Users should also pay special attention to information marked in this manual beginning with ***NOTICE.***

Keep this manual, along with any other documents that were included with your cycles, for future reference, however all content in this manual is subject to change or withdrawal without notice. Visit https://www.worksmancycles.com/owners-manuals.html to view and download the latest version. Worksman Cycles makes every effort to ensure the accuracy of its documentation and assumes no responsibility of liability if any errors or inaccuracies appear within.

Most of the assembly and initial settings and adjustments of your Lighting Cycle have been done in the factory but should always be checked before riding. Some adjustments may require special tools and skills and it is recommended that this should be done by a certified, reputable cycle mechanic if possible.

Because it is impossible to anticipate every situation or condition which can occur while riding, this manual makes no representations about the safe use of cycles under all conditions. There are risks associated with the use of any cycle which cannot be predicted or avoided and are the sole responsibility of the rider.

Worksman Cycles Lightning Series E-Trike

Worksman is proud to have the opportunity to provide you with Electric Versions of the Worksman Tricycle line.

WARNING: As with any Bicycle or Tricycle failure to have your cycle properly or professionally assembled could result in injury or death. An assembly or maintenance manual is not intended to be a comprehensive or complete manual covering all areas of cycle ownership. We recommend that you consult a bicycle mechanic regarding any questions you may have regarding assembly and maintenance of any cycle.

NEW from e-WORKSMAN:
Worksman has recently added some additional new features for our Adult Recreational Cycles;

> **Forward Speed** – The maximum recommended speed is 10mph. Just as an automobile has the capabilities of speeds far greater than you are allowed to drive by law or should ride for safety, your Electric trike also has greater speed potential than you should ever ride. We recommend keeping your speed at 10MPH or less. Use the throttle accordingly, just like you would the accelerator pedal in your car. The higher speed comes in handy for hill climbing to give more power. But operating over 10MPH is not ever recommended.

CAUTION: See directional label for forward and reverse. **Do Not** press Red Button to Reverse when going Forward. **Cycle must come to a complete stop before you press the reverse button to change directional polarity**. And only use reverse for very short distances, like backing out of a parking area. The tricycle is **not** intended to be ridden in reverse. The reverse function is strictly for short back up situations and requires that you use the hand brake to stop the cycle.

WARNING: The Coaster Break **DOES NOT** work in Reverse

WARNING: When riding in reverse you may turn your head slightly backwards to see where you are going, however as you turn your head you may also be turning your handlebar use EXTREME CAUTION. Use your brakes to help control your speed. Only use Reverse for extremely short distance backwards motion to assist in turning around.

This is a Direct Drive System for more lower end torque power.

CAUTION: This may cause a slight initial jerking motion with this lower initial power.

Brushless technology
Brake Lever also acts as a Motor Cut Off - When you pull on the brake lever you will start braking your front wheel caliper brake and this action will slow down the motor until you release the brake lever and resume on the throttle. LED Display shows approximate amount of remaining battery power Charger is designed to run automatically and will keep your battery charged without overcharging.

CAUTION: Please be advised that Worksman had used several brands of front electric motor wheels on their cycles over the years. Your manual may be generic, please see separate additional addendum instructions that may pertain to the particular model provided on your cycle.

WARNING: Specifications for a model Electric Wheel may not be the same as that of another supplier. Follow the guidelines provided for the motor wheel you have.

WARNING: With anything new there is some time that is needed to get used to new product & modifications. Ride slowly and cautiously until you are comfortable. **ALWAYS RIDE USING CAUTION REGARDING ALL NECESSARY SAFETY**

WARNING: Read all instruction manuals provided prior to riding, wear the necessary safety equipment such as helmets and other safety equipment

WARNING: Always ride on paved surfaces as these cycles are not intended or to be used off road.

WARNING: Always select routes to ride that are safe, free of automotive traffic and do not ride in congested environments. Ride where it is safe and appropriate.

WARNING: e-WORKSMAN is designed to be an electric assist for those that have a certain amount of difficulty pedaling all the time.

NOTE: e-WORKSMAN is not designed for speed. It is only a motorized assist.

CAUTION: Follow all Rules of the Road as may be prescribed in your locality & State.

NOTICE: It is the purchasers' responsibility to make sure that your e-WORKSMAN conforms to any, and all, regulations in your State. While Worksman may be permitted to sell a product, it is the responsibility of the ultimate user to abide by cycling rules and regulations as they may apply to all cycles regardless if pedal driven or electric.

WARNING: Always ride in the same direction as traffic. Keep as far to the right as possible. Cycle has been designed for low traffic routes. **DO NOT** ride on any main roads. Ride on flat road surfaces, do not ride on inclines more than a couple degrees. Slow down and use caution making all turns

WARNING: All persons using, assembling and maintaining a cycle must read and understand all warnings, cautions and cautions.

WARNING: e-cycles should not be used by any child unless they are of proper age requirement by your state and they have been fully and properly instructed on their use.

CAUTION: All components, especially brakes must be checked every time you ride to ensure safety. Replace any damaged, worn or broken parts immediately. Do not ride cycle unless it is in proper riding condition.

WARNING: Modifications will void your warranty. Worksman makes no warranties expressed or implied as to the goodness of fit of this product for your intended purpose.

RIDE SAFELY AND ENJOY YOUR WORKSMAN LIGHTNING E-TRIKE!

General Info

Assembly and Fit

Correct assembly and fit are essential elements of ensuring your cycling safety, performance, and comfort. While most of the assembly has been done in the factory, you should check your cycle for assembly and fit. Even if you have the experience, skill, and tools to complete these essential steps before your first ride, Worksman Cycles recommends having a certified, reputable cycle mechanic check your work.

NOTICE: If you do not have the experience, skill, and tools to complete assembly and fit, Worksman Cycles highly recommends having a certified, reputable cycle mechanic complete these procedures as well as any future adjustments or tuning.

NOTICE: A critical aspect of assembling your cycle from Worksman Cycles may include securing the front wheel and will include checking the tightness of the front and rear wheel axle nuts. These mechanisms may become loose or unsecured during shipment or over time. The torque and security of all wheel mounting hardware should be inspected upon arrival and on a regular basis. All three (3) wheels need to be properly secured before operating your cycle.

Mandatory Equipment and Use Locations

Before all rides, ensure you have all required and recommended safety equipment and are following all laws pertaining to using an electric cycle in your region. For example, these laws may specify the need for mandatory equipment, use of hand signals, and where you can ride.

Changing Components or Attaching Accessories

The use of non-original components or spare parts can jeopardize the safety of your Lighting Cycle, void your warranty and, in some cases, cause your Lighting Cycle to not conform with laws pertaining to your cycle.

The replacement of original components or installation of third-party accessories or accessories from Worksman Cycles not explicitly recommended for your cycle model is at your own risk. Using aftermarket accessories or components that have not been tested by Worksman Cycles for safety and compatibility with your cycle model may void your warranty, create an unsafe riding condition, damage to property or your bike by Rad Power Bikes, or result in serious injury and/or death

Safety Check Before Each Ride

Always check the condition of your cycle before you ride in addition to having regular maintenance performed. If you are unsure of how to conduct a complete check of the condition of your cycle before every ride, you should consult a certified bike mechanic for assistance. See the Pre-Ride Safety Checklist for more information.

Electrical System

The electrical system on your Lightning Series E-Trike offers various levels of power assistance and lighting for different operating conditions and user preferences. It is critical that you familiarize yourself with all aspects of your Lightning Series E-Trike electrical system and check to see that it is working correctly before every ride. The brake lever contains a safety power cutoff switch, which disables the hub motor's assistance when applied, and should be checked for correct operation. The throttle should provide smooth acceleration when gradually applied. If the throttle, brake lever cutoff switches, pedal assistance, or lighting is not functioning normally, intermittent, or not working, please discontinue using your Lightning Series E-Trike immediately and contact the Worksman Cycles Technical Support team for assistance.

Brakes

Ensure brakes are working correctly, all braking system components are free from damage, and properly secured. When you fully squeeze the hand brake lever, ensure the brake lever doesn't touch the handlebar. Take your cycle to a certified, reputable bike mechanic to have the brakes checked and repaired if you find a problem.

CAUTION: The front hand brake (Caliper or Disk) should only be used to slow down and is **NOT** designed to stop your trike. Use the Coaster Break, back pedal, to stop.

Tires and Wheels

Your wheels should always spin straight and must be repaired or replaced if they wobble side to side or up and down when spinning. If your wheels become untrue or spokes loosen, which can happen with normal use, we recommend that a certified, reputable bike mechanic performs all wheel tuning and truing operations on your cycle from Worksman Cycles. Do not attempt to true wheels or tighten spokes unless you have adequate knowledge, tools, and experience. Ensure the tires and inner tubes are in good working condition without any visual damage and have the correct amount of air pressure. Always replace tires and inner tubes with punctures, cuts, or damage before you ride. Tires without the correct amount of air pressure can reduce performance, increase tire and component wear, and make riding your bike unsafe.

Quick Release Levers

Your Lightning Series E-Trike may be equipped with quick release levers for securing the seat post and the handlebar. These provide convenience to the user since they allow for quick adjustments to the handlebar and the seat post without tools. Since quick release levers can be loosened during transportation, or accidentally between or during rides, it is important that you regularly check to ensure these components are properly secured.

Accessories, Straps, and Hardware

Ensure all hardware is secured and all approved accessories are properly attached per the specific component manufacturer's instructions. It is good practice to look over all hardware, straps, and accessories before each ride and if you do discover something is wrong or find something you are not sure about, have it checked by a certified, reputable bike mechanic.

Handlebar, Grips, and Seat Adjustments

Ensure the handlebar and handlebar stem are properly aligned, fitted to the user, and secured to their recommended torque values. Handlebar grips should not move easily on the handlebar end. Loose, worn, or damaged handlebar grips should be replaced before you ride and can be purchased from www.worksmancycles.com. The bolts securing the seat to the seat post should be properly secured to recommended torque values. The seat and seat post should be properly aligned, fitted to the user, and the seat post quick release should be properly tightened, fully closed, and secured before riding.

Battery Charged, Secured, and Unplugged

Ensure the battery is fully charged and operating properly. The battery gauge on the display and charge status indicator on the battery should read similarly. Ensure the battery charger is unplugged from the outlet, battery, then stored in a safe location before you ride. The battery **MUST** be locked onto the frame battery mount properly before use. Do not operate the electrical system if the battery is removed.

Using Reverse (Red Button)

Pressing the Red Button to switch to reverse should only be used for short distances (less than 20 feet) and on level ground to allow for steering corrections. The coaster break will not work while going backwards.

BICYCLE SAFETY

1. Obey all rules of the road and all local traffic laws.
2. Always wear a helmet.
3. You are sharing the road or the path with other motorists, pedestrians and cyclists. Respect their rights.
4. Ride defensively, always assume that others do not see you.
5. Look ahead and be ready to avoid:
• Vehicles that are slow or turning, entering the road or your lane ahead of you, or behind you.
• Doors opening from parked cars.
• Pedestrians stepping out.
• Children or pets playing near the road.
• Potholes, sewer grates, gravel, railroad tracks, expansion joints, road or sidewalk construction, debris and other obstructions that could cause you to swerve into traffic, catch your wheel or otherwise cause you to lose control and have an accident.
• The many other hazards and distractions which can occur on an e-bike ride.
6. Ride in designated bike lanes, on designated bike paths or as close to the edge of the road as possible, in the direction of traffic flow or as directed by local governing laws.
7. Stop at stop signs and traffic lights; slow down and look both ways at street intersections. Remember that a bicycle always loses in a collision with a motor vehicle, so be prepared to yield even if you have the right of way.
8. Never ride with headphones. They mask traffic sounds and emergency vehicle sirens, distract you from concentrating on what's going on around you.
9. Don't do stunts, wheelies or jumps. Think carefully about your skills before deciding to take theses larger risks.
10. Don't weave through traffic or make any moves that may surprise people with whom you are sharing the road.
11. Observe and yield the right of way.
12. Never ride your e-bike while under the influence of alcohol or drugs.
13. If possible, avoid riding in bad weather, when visibility is obscured, at dawn, dusk or in the dark, or when extremely tired. Each of these conditions increase the risk of accident.

LIABILTY

- The operator (rider) is solely responsible for obeying all federal, state, and local traffic laws and any other law related to electric bicycles or other vehicles, Worksman Cycles Co., Inc. assumes no legal responsibility for the operation of its products on public or private property.
- Worksman Cycles Co., Inc. cannot offer any legal advice on the operation of electric bicycles or tricycles in a particular area and does not guarantee that an electric bicycle or tricycle is legal for you to operate.
- Electric bicycles and tricycles may be restricted in speed or power output in your area. It is your responsibility as the operator (rider) to research, understand, and obey all applicable laws.
- Please only ride within your ability. Do not exceed safe speeds, corner quickly, or attempt to ride over
- uneven terrain. Failure to ride safely may result in serious injury or death.
- Do not operate your bicycle or tricycle when weather, road conditions, or traffic make it unsafe to do so.
- Maintain your bicycle or tricycle. Service all parts regularly and inspect them carefully before operation.
- Have tune-ups performed by a qualified mechanic. Do not ride, if any part is mis-adjusted or broken.
- Riding a bicycle or tricycle can result in serious injury or death.

MAINTENANCE

All bicycles require regular maintenance to ensure safety and performance. Electric bikes require more care since they are ridden further and faster than a conventional bike. This schedule is recommended to ensure that your Worksman Lightning Series Trike remains safe and reliable. If you're not comfortable performing this maintenance, then you should visit a bike shop for assistance or call us at 1-800-962-CYCLE (2453) and we'll find you a bike shop that can help.

WHEEL TUNE-UP

• **First 50-100 Miles**–Should be tuned up by a bicycle mechanic. The first 50-100 miles of a wheel's life will stretch and settle.
• **Every 3 Months or 400 Miles**–The wheels should be serviced again by a qualified bicycle mechanic.
• **And Beyond**–The wheels will last much longer and break fewer spokes if they are inspected often.

PRIOR TO EACH RIDE

• **Check Your Wheels**–Especially the hub motor. The spokes should be tight, and the wheels should not have any side-to-side play.
• **Check the Frame**–The frame dropouts and torque arm should be tight and secure.
• **Inflate the Tires**–To the recommended PSI. Under inflated tires can cause damage to the rims. Don't add more air than what the tire recommends.
• **Check the Cables**, Wires and Brakes–They are all working correctly. Working brakes are crucial, and the brake cables are just as important. Lift the wheel off the ground and run the throttle. Then squeeze the e-brake lever, to make sure it cuts the power.
• **Check the Battery**–To be secured and that the connections are tight.

AFTER EACH RIDE

• **Turn it Off**–Press and hold the power button, to shut the e-bike off.
• **Check for Damages**–Check the tires, wheels, and frame for any damages.
• **Charge the Battery**–Fully charge the battery after every ride.
• **Clean the Bike**–Don't let the parts and frame get dirty or grimy.

EVERY WEEK

• **Chain**–Clean and oil the chain by using a high-quality bicycle chain lube. There are two types of bicycle lube, dry and wet lube. Dry lube is ideal for dry and dusty conditions and it doesn't attract dirt or grime. Wet lube is superior for water resistance and it's ideal for wet weather riding.
• **Bolts–**Check for loose bolts. Bolts may loosen to due to vibration.
Here's a list of bolts to check:

- ◆ Rear Rack
- ◆ E-Brake and Brake Levers
- ◆ Brake Cable Anchors
- ◆ Brake Centering
- ◆ Brake Pads
- ◆ Throttle Clamp
- ◆ Shift Lever Mounts
- ◆ Seat post Clamp

MAINTENANCE

EVERY THREE MONTHS

• **Frame and Fork**–Inspect the frame and fork for paint cracks, blisters, gouges or bulges that might indicate damage to the frame or fork.
• **Components**–Check the seat post, rack, seat, stem, handlebars, cranks, and brakes, to make sure that nothing is bent or loose.
• **Wiring**–Check the connectors, that they are rust free and don't look burnt or corrosive

EVERY SIX MONTHS

• **Bearings**–Inspect the bearings in the headset, non-electric hub, pedals, and bottom bracket. These bearings may need to be periodically adjusted, lubricated, and replaced.

Be sure that these items are addressed immediately. **Do not** ride your trike with loose fasteners or damaged components.

TAKE CARE OF YOUR WORKSMAN LIGHTNING SERIES TRIKE AND IT WILL TAKE CARE OF YOU!

Battery Safety

Lithium ion batteries supply power to many kinds of devices including smart phones, laptops, scooters, e-cigarettes, smoke alarms, toys, and even cars. Take care when using them. In rare cases, they can cause a fire or explosion.

Become familiar with safety and use of Lithium Ion Batteries. For proper battery life, follow these temperature guidelines and storage instructions

Charging temperature:	**0° to +45°C**	**32°F to 113°F**
Operation temperature:	**-10° to +50°C**	**14°F to 122°F**
Storage temperature:	**+5° to +25°C**	**41°F to 77°F**

Warnings and instructions:

- **Do** use only with recommended battery charger
- **Do not** dismantle or short circuit the battery
- **Do not** place the battery near resources of heat such as heating, direct sunlight or open flame
- **Do not** place battery in fluids such as (salt) water, acid or alkaline
- If stored for a long time, keep battery cool and dry and fully charge the battery every 3 months
- If the battery housing is damaged, don't use the battery
- **Do** disconnect the battery from the charger when charging is complete
- **Do not** leaving the battery connected to the charger over night

Signs of a Problem

- Stop using the battery if you notice these problems: odor, change in color, too much heat, change in shape, leaking, odd noises.
- If it is safe to do so, move the device away from anything that can catch fire. Call 9-1-1.

Battery Disposal

- **DO NOT** put lithium ion batteries in the trash.
- Recycling is always the best option.
- Take them to a battery recycling location or contact your community for disposal instructions.
- Do not put discarded batteries in piles

E-Dashboard Intelligent Instructions

(We may use alternate brand, with similar programming & operation)

1. Electrical Parameters

- ✧ 3.2inch IPS screen
- ✧ 24V/36V/48V battery supply
- ✧ Rated operating current: 40mA
- ✧ Max operating current: 100mA (36V battery, with USB equipment changed)
- ✧ USB changing port: 5V 500mA
- ✧ Off leakage current < 1uA
- ✧ Max output current to controller: 100mA
- ✧ Operating temperature: -4°F～158°F (-20℃～70℃), Storage temperature: -22°F～176°F (-30℃～80℃)

2. Dimensions & Material

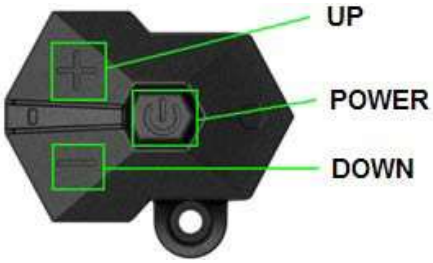
- ✧ Product shell is ABS, transparent window is made with high strengthAcrylic.
- ✧ Dimensions: host/L92mm*W60mm*H14mm

3. Features

- ✧ Suitable for low temperature -4°F (-20℃)
- ✧ High-contrast 3.2inch IPS colorful matrix screen.
- ✧ Ergonomic external button design, easy to operate.
- ✧ **Speed display:** AVG SPEED, MAX SPEED, SPEED(Real-time).
- ✧ **Kilometer / Mile:** Can be set according to user preference
- ✧ **Smart battery indicator:** Provide a reliable battery indicator.
- ✧ **9-level Assist:** 3-level/5-level/9-level optional.
- ✧ **Mileage indicator:** Odometer/Trip distance/ Clock/ Riding time.
- ✧ **Power indicator:** real time power indicator, digital or analog.
- ✧ **Battery information**（needs to be supported by battery communication）
- ✧ DST indicator（needs to be supported by battery communication）
- ✧ **Self-Testing**
- ✧ **Error code indicator.**
- ✧ **Software upgraded:** Software can be upgraded through UART.
- ✧ **USB charging port :** 5V/500mA

4. TFT Screen Instructions

5. Functional Description



5.1 Power On/Off

Press and hold Power button for 1 second can turn on/off the display. The Display can automatically shut down when there is no operate & ride for X minutes (X could be 0~9).

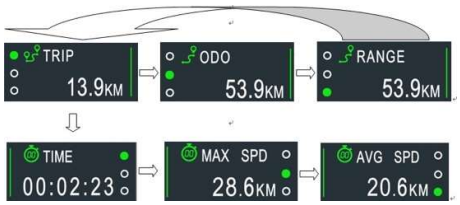
*If the display has been set password power on, you need to input the right password before start.

5.2 Assist level operating

Short press UP/DOWN button can change the assist level. Top assist level is 5, 0 for neutral. Level quantities can be adjusted according to the customer requirements.

5.3 Speed & Mileage mode switch

Short press POWER button can change the speed and mileage mode, TRIP->ODO->RANGE-> TRIP -> TIME -> MAX SPD->AVG SPD.



****If there is no operation for 10 seconds, display will return Speed (Real-Time) display automatically**

5.4 Headlight/backlight On/Off

Press and hold UP button for 1 second will turn on/off the headlight, and the screen will switch to the corresponding mode.

*The motor does not work when the battery voltage is low, the Display can still keep the headlight on for a while when E-bike is in operation.

Daytime mode night mode

5.5 Walking mode (6km)

Press and hold DOWN button for 2 second will put the display into walking mode, out of the mode when release the button.

* This feature needs to be supported by controller.

6. Parameter setting

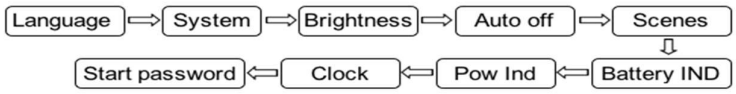
Double press POWER button (press interval less than 0.3 second) can get into setting menus, press UP/DOWN buttons to change the parameter setting, press POWER button can switch to next item. Double press POWER button will exit from menu.

* Display will automatically quit menu when there is no operation for 30 seconds.

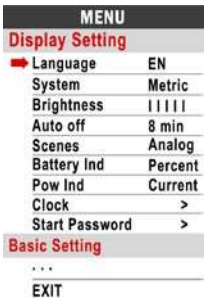
* For safety reasons, display can't get into MENU when riding.

* Display will quit MENU when start riding.

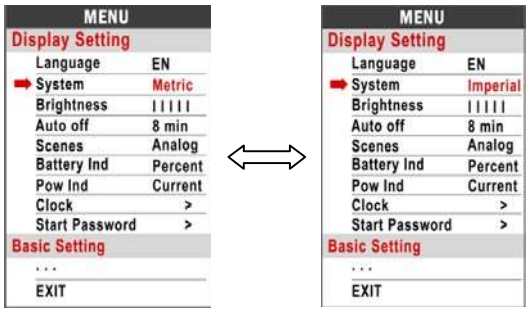
The order of parameters are as follow.



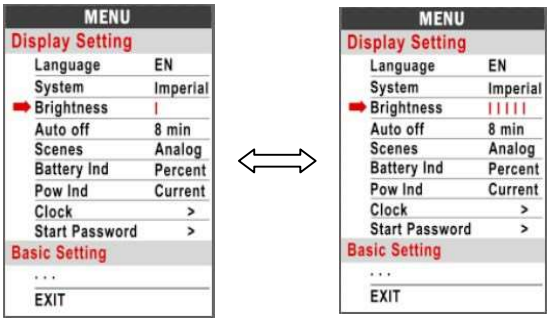
6.1 **Language**: Nonadjustable



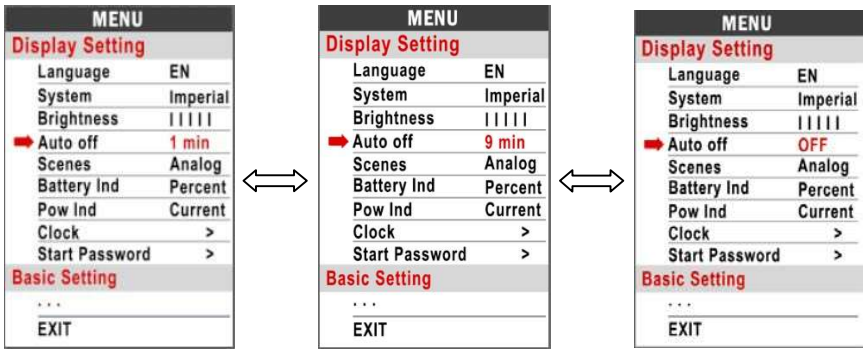
6.2 **System**: Press Up/Down Button to switch between Metric/Imperial



6.3 **Brightness**: Press Up / Down button to change the brightness of the backlight. I is darkness, IIIII is brightness. Daytime mode default IIIII, night mode default II.



6.4 **Auto off:** Press UP/DOWN button to change the auto power off time, from 1 to 9 and OFF, the number represent time (minutes) to shut down, default value is 5 minutes.



6.5 Scenes: Nonadjustable

6.6 Battery Ind: Press UP/DOWN button to change the battery indicator, Voltage/Percentage / OFF.

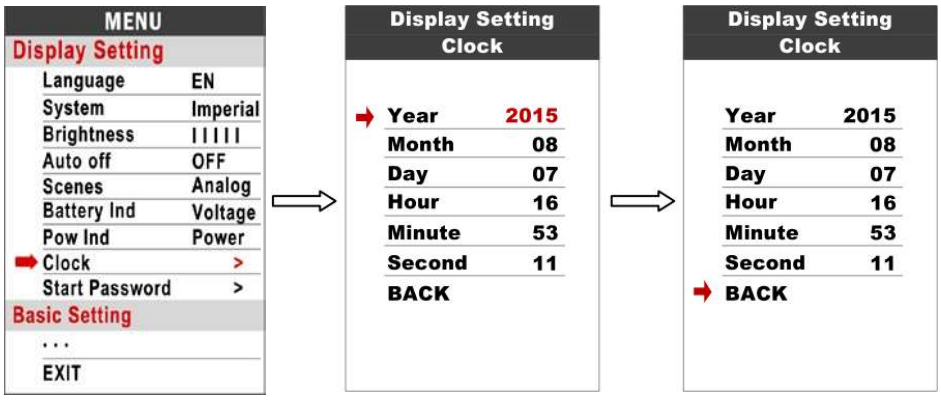
*Accurate percentage needs communication with battery

Voltage Percentage OFF

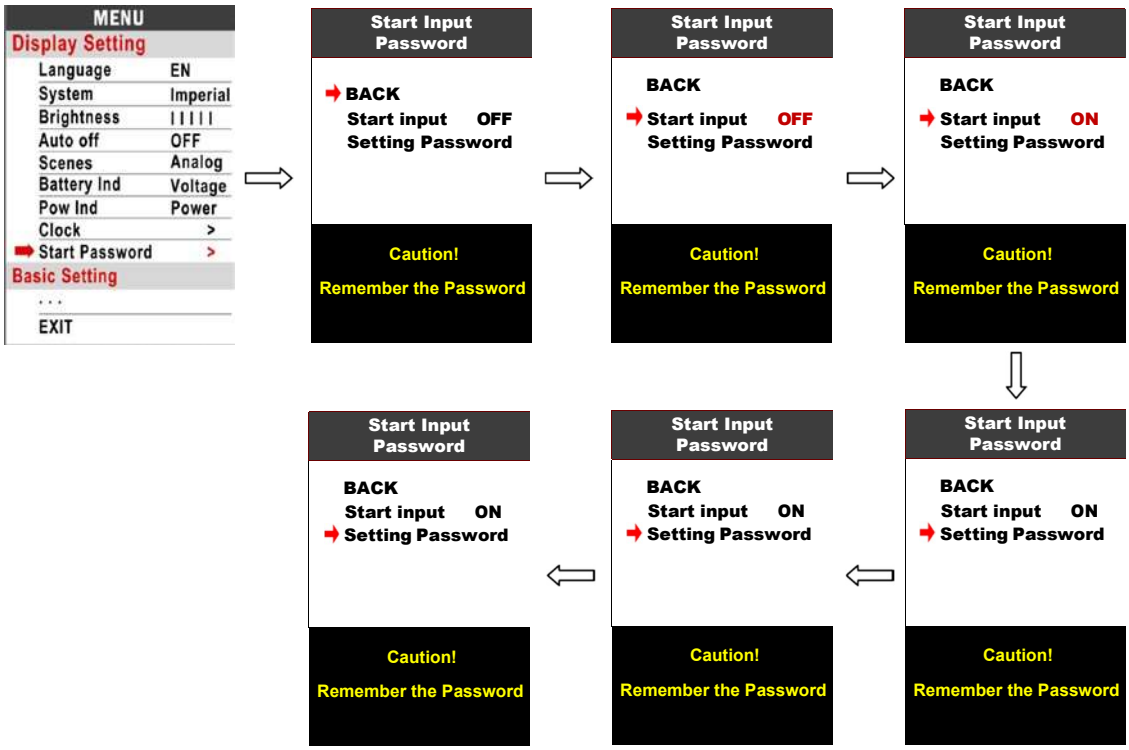
6.7 Power Ind: Press UP/DOWN button to change the Power Indicator, Power/Current

*This data represents power output of the battery, not the motor

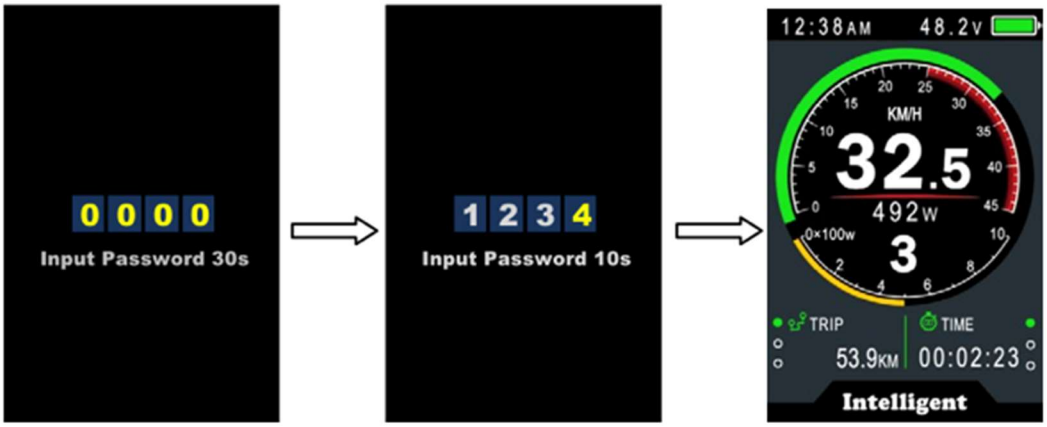
6.8 Clock: Clock setting, press POWER button to get into the clock setting menu, press UP/DOWN button to set Year/Month/Day/Hour/Min/Sec.



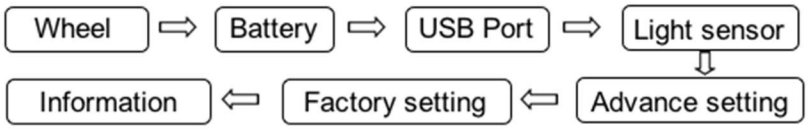
6.9 Start Password: Press POWER button to get into the password setting menu. If you had set Start Input ON, you must input the correct password before power on, password is according to your setting.



You need to input the right password before start with 30 seconds, display will power off automatically if the password was wrong.

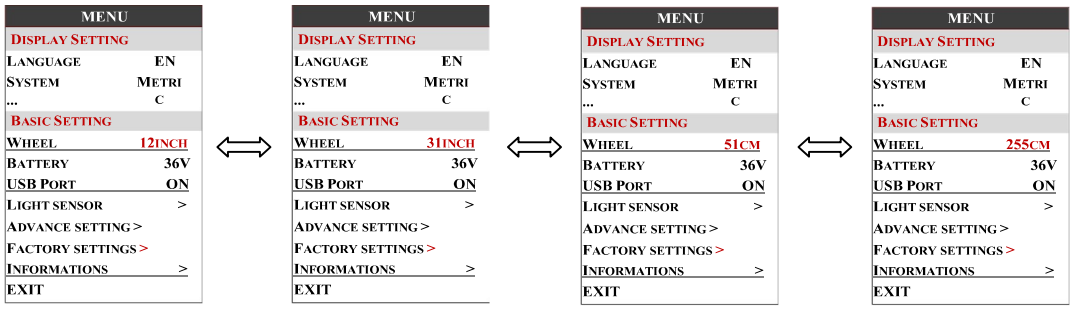


Basic Setting

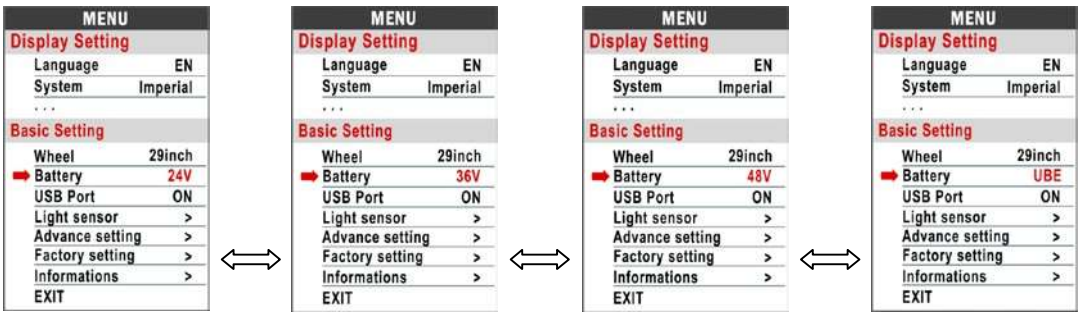


*Press DOWN button to move the red arrow to ➜ ···, press POWER button can show all items of the Basic Setting.

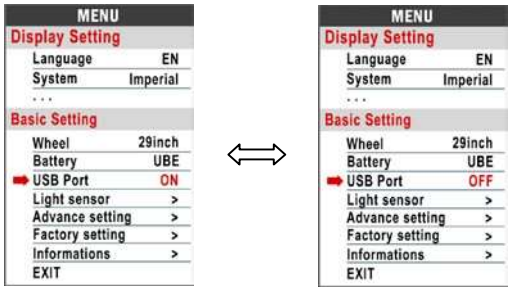
6.10 Wheel: Press UP/DOWN can change the wheel setting, optional wheel diameter is 12/14/16/18/20/22/24/26/27/27.5/28/29/30/31 inch, 51cm-255cm represents the wheel circumference (this needs controller support). The wrong value for the wheel diameter will cause speed and mileage to be abnormal.



6.11 Battery: Press UP/DOWN will change battery voltage setting, optional value is 24v/36V/48V/UBE, UBE means user defined value.

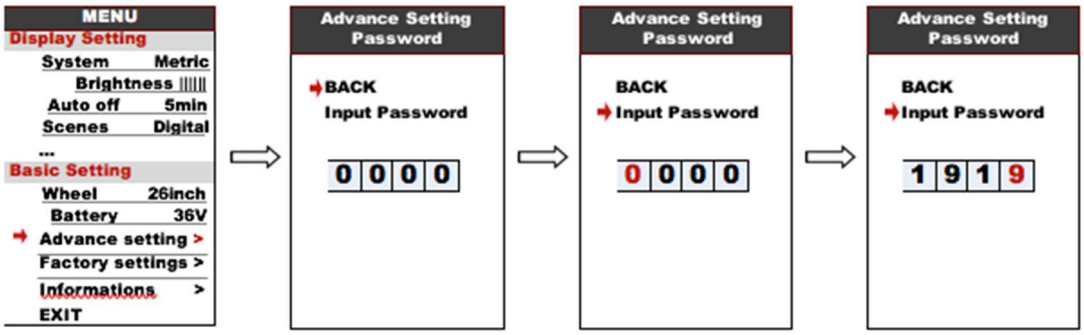


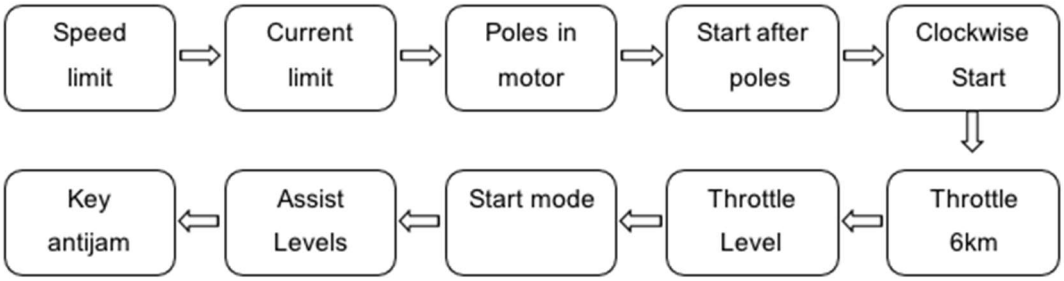
6.12 USB: Press UP/DOWN button, select press OFF/ON. There will be no Voltage/Current output to the USB port after switching off.



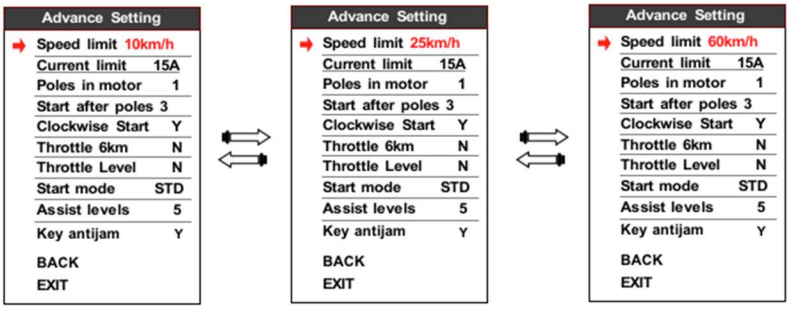
6.13 Light Sensor: If no light sensor is equipped, this item is nonadjustable. If light sensor is equipped, press POWER to enter into Light Sensor interface. Press UP/DOWN button, select On/OFF; select Sensitivity, press UP/DOWN to Select sensitivity of light sensation: HI/MID/LO.

8.14 Advance settings: Press POWER button to get into advance setting menu. Default password is: 1919

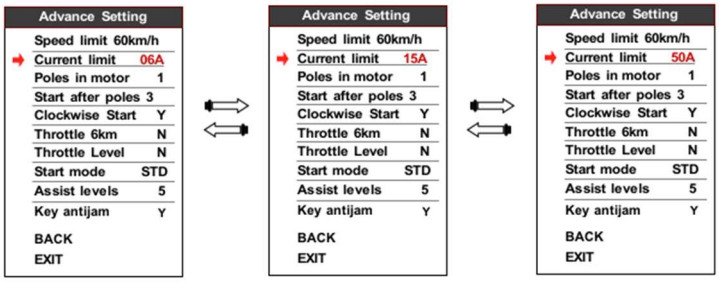




6.15 Speed Limit: Press UP/DOWN will change speed limit. Range is 6.2mph (10km/h) ~ 37.3mph (60km/h). Default value is 15.5mph (25km/h).

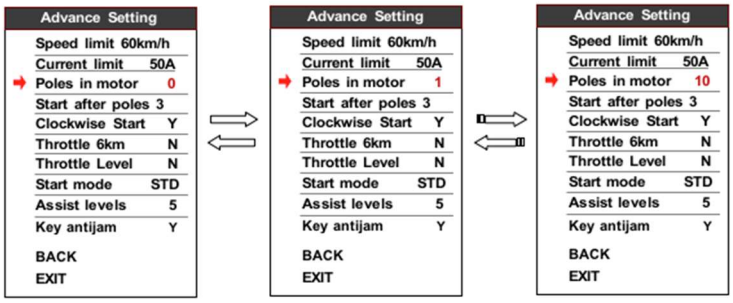


6.16 Current Limit: Press UP/DOWN will change current limit. The range is 6A~50A. The default value is 15A.

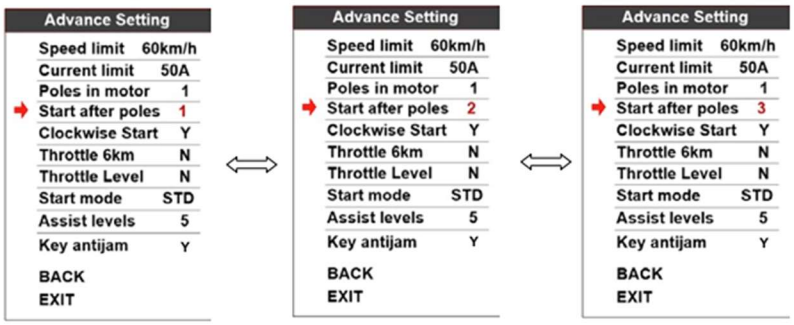


*Speed limit and current limit are restricted by the controller and motor, as well as set in the factory. Changing these factory settings is not recommended.

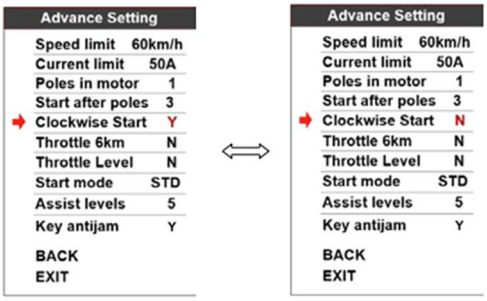
6.17 Poles in motor: Magnetic poles inside the motor, press UP/DOWN to change the pole number. Range is 1~10. Default value is 1.



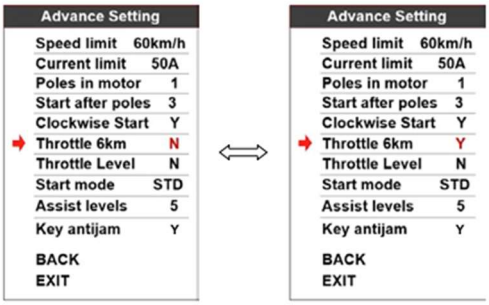
6.18 Start after poles: How many poles (speed sensor) need to be detected by the controller before starting the motor. Default value is 3.



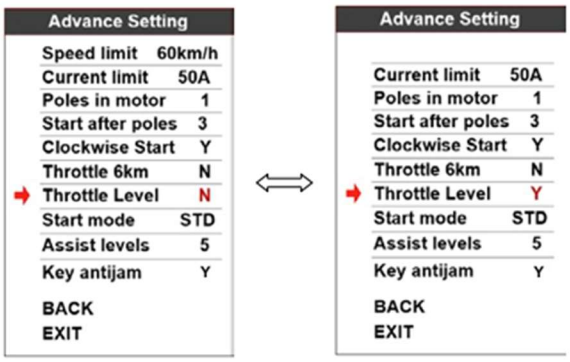
6.19 Clockwise Start: This parameter represents the speed sensor turn direction, the default value is Y (forward).



6.20 Throttle 6km: This parameter can set the throttle function. N represents max speed, Y represents 6km.

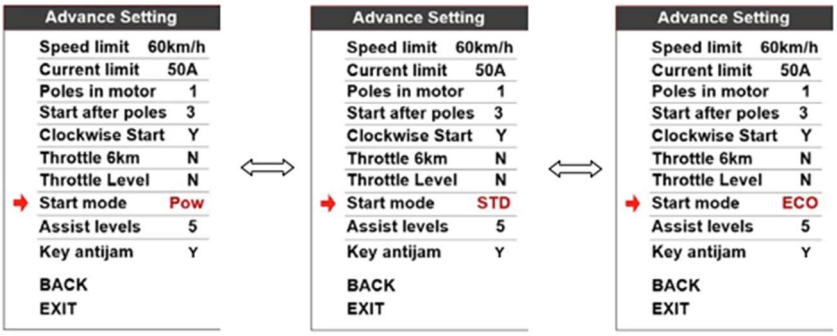


6.21 Throttle Level: This parameter is functional when Throttle 6km is set to N. Press UP/DOWN to change Y/N. N represents Throttle start max speed, Y represents throttle's speed is according to the assist level.

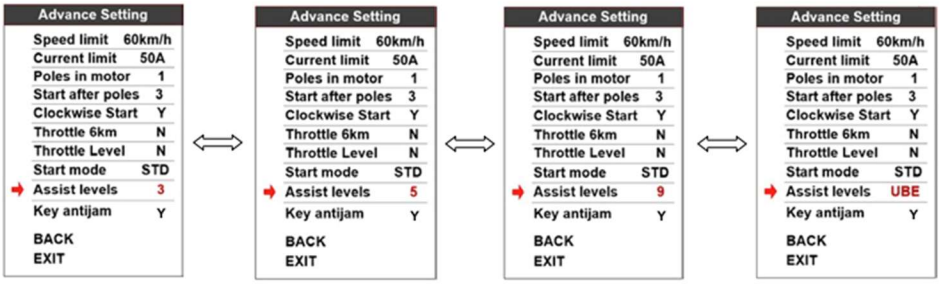


6.22 Start Mode: Pow/ECO/STD (default) represent Power/ECO/Standard. Power mode means use maximum current when speed up, ECO mode means us minimum current.

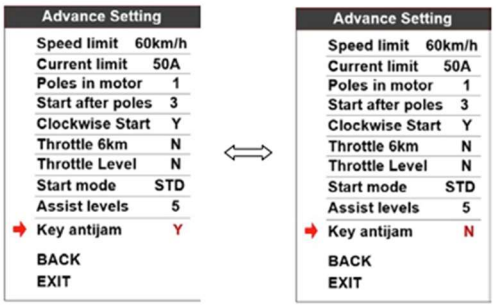
*This function is optional and may not be supported by each mode.



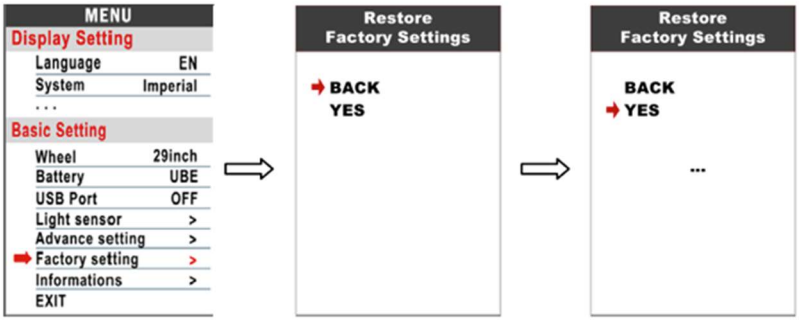
6.23 Assist Levels: This parameter can customize assist levels, options are 3/5/9/UBE. UBE represents factory default settings.



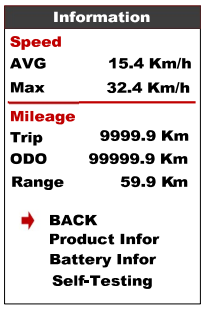
6.24 Key Antijam: Press UP/DOWN to select Y or N. Y indicates key antijam effectiveness.



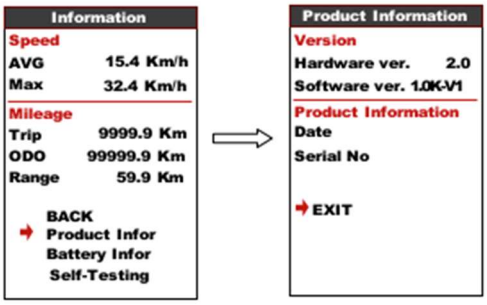
6.25 Factory Settings: Press POWER button to enter Restore Factory settings item. Select YES to restore all parameters to factory settings.



6.26 Information: Show information of the E-Bike



6.27 Product Info: Product information, such as hardware and software version are available

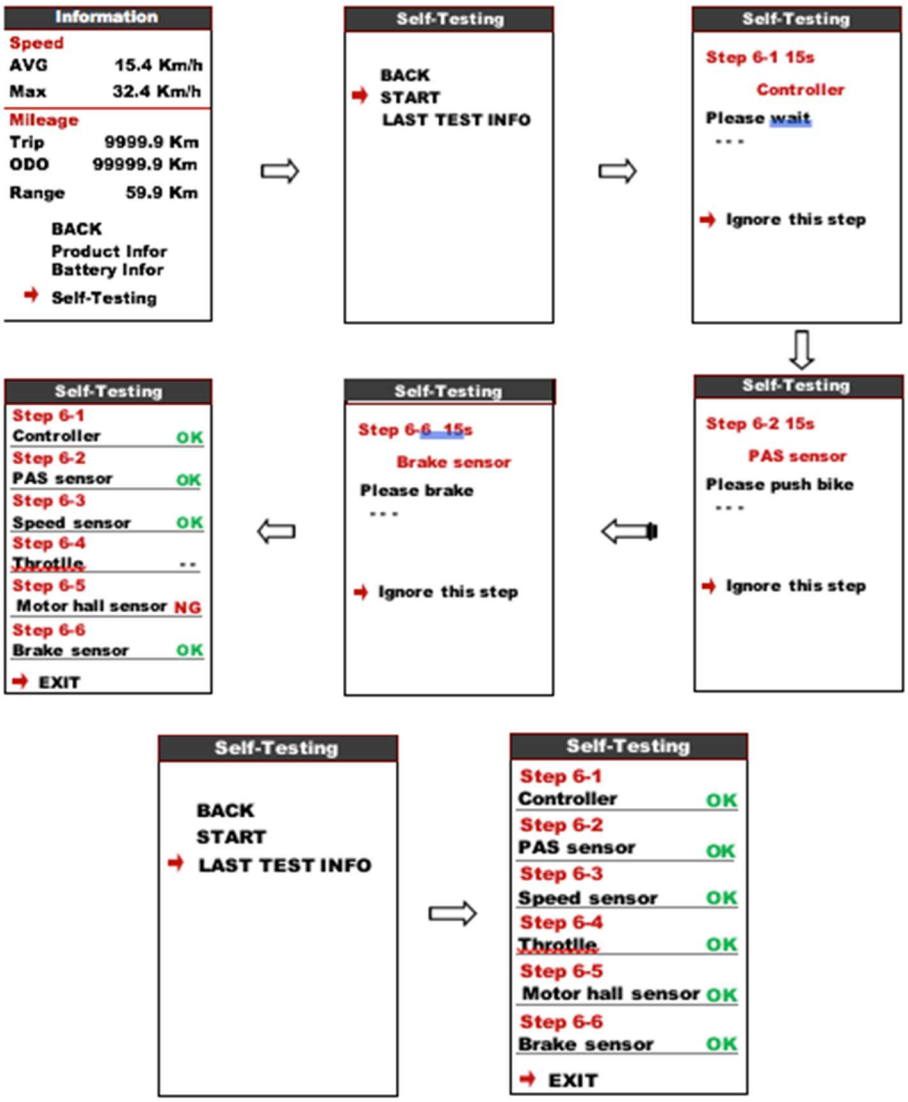


6.28 Battery Info: All battery information, including Voltage, Capacity, Cycle Times, Health, Temperature of batter, Remaining Capacity, Full Charge Capacity, Initial Capacity, and Max Charge Times.

*This information needs to be supported by battery communication

6.29 Self-Testing: This item is used for performing Self-Test features to show testing information of the Bike, including Controller, PAS Sensor, Speed Sensor, Throttle, Motor hall sensor, and Brake Sensor. Follow the prompts to complete the self-test.

*-- Indicates ignore detection, NG test will not pass



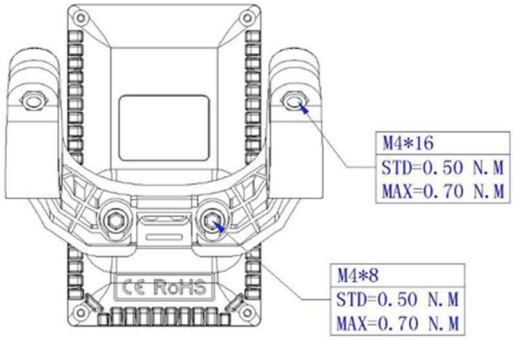
7. Error Code definition

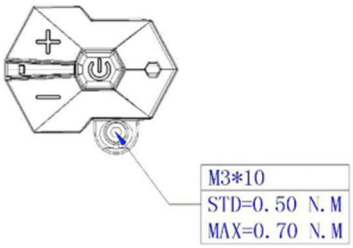
850C Can show warning messages, icon shows on the screen and will show an error code at the bottom of the screen. Error code 01~25 are defined in the table below.

Error Code	Error description	Handle
01H	Communication checksum error	Check the cable connection
02H	Controller protection	Check three-phase power line.
03H	three-phase power error	Check three-phase power line connection
04H	Battery low	Charge the battery
05H	Brake error	Check the brake connection.
06H	Turn error	Check throttle and connection.
07H	Hall error	Check the hall connection
08-FFH	Reserved	Please contact the controller's manufacturer for error definitions
30H	Communication Error	Check the cable connection

9. Assembly Instructions

Please pay attention to the screw's torque value, damaged cause by excessive torque is not within the scope of the warranty.

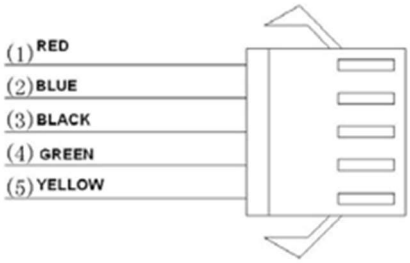




There are 2 directions for the clamp installation, forward or backward.

Clamps suit for 3 size of handlebar, 31.8mm, 25.4mm, 22.2mm, there are transfer rings for 25.4mm and 22.2mm, transfer ring must be assembled with the special directions, pay attention to the green arrow below.

10. Connector Descriptions



1、 Red wire: Anode(24v/36v/48V) ›
2、 Blue wire: Power cord to the controller
3、 Black wire: GND
4、 Green wire: RxD (controller -> display)
5、 Yellow wire: TxD (display -> controller)

11. Assist Level Instructions

Assist level can be customized, the highest level is 9, common used assist level is in the table below:

3 level	5 level	9 level	
0	0	0	No power assist
	1	1	
		2	
1	2	3	
		4	
	3	5	
2		6	
	4	7	
		8	
3	5	9	

12. Certification

CE/IP65 (waterproof) / ROHS

WARRANTY

LIMITED WARRANTY THIS CYCLE IS WARRANTIED AGAINST FAULTY PARTS UNDER THE FOLLOWING CONDITIONS: THIS WARRANTY DOES NOT COVER ANY FAILURE DUE TO ACCIDENT, ABUSE, MISUSE, NEGLECT OR AS THE RESULT OF NORMAL WEAR AND TEAR, OR IMPROPER ASSEMBLY. THE ENTIRE FRAME, INCLUDING ALL WELDED JOINTS, IS WARRANTED TO BE FREE FROM DEFECTS AND MATERIAL FOR ONE YEAR WHILE IN POSSESSION OF THE ORIGINAL PURCHASER. ALL OTHER PARTS ON THIS CYCLE, EXCEPT TIRES AND TUBES, ARE WARRANTIED FOR NINETY DAYS FROM THE DATE OF PURCHASE. REPAIR AND REPLACEMENT OF THESE PARTS IS TO BE ACCORDING THE WORKSMAN CYCLES PARTS AND SERVICE PROCEDURES AND MUST BE HANDLED DIRECTLY THROUGH THE SOURCE WHERE THE CYCLE WAS PURCHASED. IF UPON EXAMINATION OF THE PARTS IN QUESTION, THE WORKSMAN CYCLE DEALER DETERMINES THAT IT IS DEFECTIVE, EITHER REPAIR OR REPLACEMENT WILL BE MADE AT NO COST EXCEPT THE COST OF TRANSPORTATION AND LABOR CHARGES (IF ANY). UNAUTHORIZED REPAIRS OR REPLACEMENT AUTOMATICALLY VOIDS WARRANTY. PROPER MAINTENANCE IS REQUIRED FOR WARRANTY TO BE VALID. IN THE EVENT THAT IT WAS DETERMINED THAT THE WARRANTY CLAIM IS THE RESULT OF MISUSE, ABUSE, IMPROPER MAINTENANCE OR SIMPLY NOT DEFECTIVE OR BEYOND THE WARRANTY PERIOD, WORKSMAN CYCLES OR THE DEALER WILL ADVISE YOU AS TO THE COST OF REPAIR, REPLACEMENT OR LABOR PRIOR TO PERFORMING ANY WORK OR REPLACING ANY PARTS. IF YOU CHOOSE NOT TO HAVE THE DEALER OR WORKSMAN CYCLES PERFORM THE WORK, THE PARTS WILL BE RETURNED TO YOU AT YOUR EXPENSE OR DISCARDED IF NO REPLY IS RECEIVED WITHIN 2 WEEKS OF NOTIFICATION. THE SOLE RESPONSIBILITY OF THE MANUFACTURER TO THE TERMS OF THIS WARRANTY, IF ANY, SHALL BE THE REPAIR AND/OR REPLACEMENT OF THE PARTS AS INDICATED ABOVE. THE LIABILITY OF THE MANUFACTURER SHALL IN NO EVENT EXCEED THE ORIGINAL PURCHASE PRICE OF THE PRODUCT, AND THE MANUFACTURER SHALL NOT BE RESPONSIBLE FOR ANY CONSEQUENTIAL DAMAGES OF ANY NATURE, INCLUDING, BUT NOT BY WAY OF LIMITATION, DAMAGES FOR PERSONAL INJURY OR PROPERTY. THIS STATEMENT CONSTITUTES THE EXCLUSIVE EXPRESSION OF WARRANTIES BY THE MANUFACTURER AND IS IN LIEU OF ANY OR ALL OTHER WARRANTIES SUCH AS EXPRESSED WARRANTIES, IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO WARRANTIES OF MERCHANTABILITY, AND FITNESS OR PURPOSE, ARE LIMITED IN DURATION FOR ONE YEAR FROM THE DATE OF PURCHASE OF THE FRAME ONLY AND 90 DAYS FOR ALL OTHER PARTS, EXCEPT TIRES AND TUBES WHICH ARE NOT WARRANTED. WORKSMAN CYCLES CO., INC IS THE MANUFACTURER. MISUSE OF THE CYCLES INCLUDING OFF ROAD RIDING, INSTALLATION OF MOTORS OR POWER ASSISTS, ALTERATIONS, REPAIRS USING PARTS OTHER THAN GENUINE WORKSMAN CYCLE PARTS VOIDS WARRANTY. WORKSMAN TRADING CORPORATION IS NOT RESPONSIBLE FOR MAINTAINING RECORDS OF SERIAL NUMBERS. VOID WHERE PROHIBITED BY STATE LAW

WHAT'S NOT COVERED BY THE E-BIKEKIT WARRANTY

OVER VOLTAGE–Connecting a larger battery, that's larger than 48 nominal volts, that can damage the controller, wires and/or connectors. Damaging any kit component or motor by connecting the wrong battery type is not covered under our warranty. The E-Bike controller will work with an 48v battery pack. Using a controller with any battery larger than 48 nominal volts will void the warranty for your controller.

Addendum: Key-Disp User Manual

Product name and model

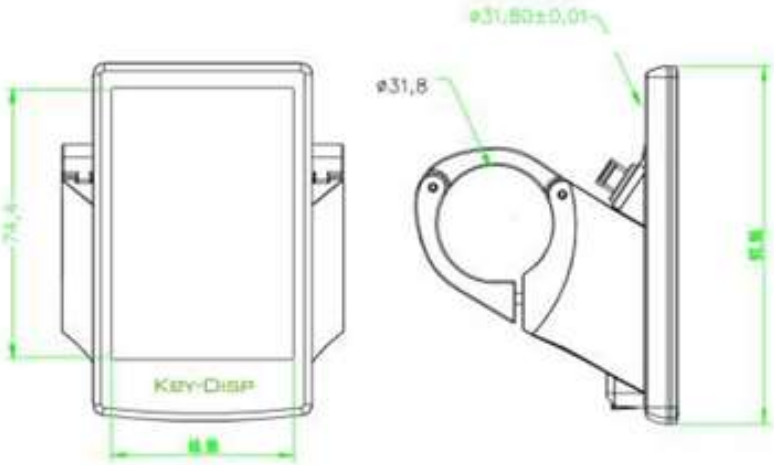
Name: Intelligent colored LCD display for E-bike
Model: KD718-X

Specifications

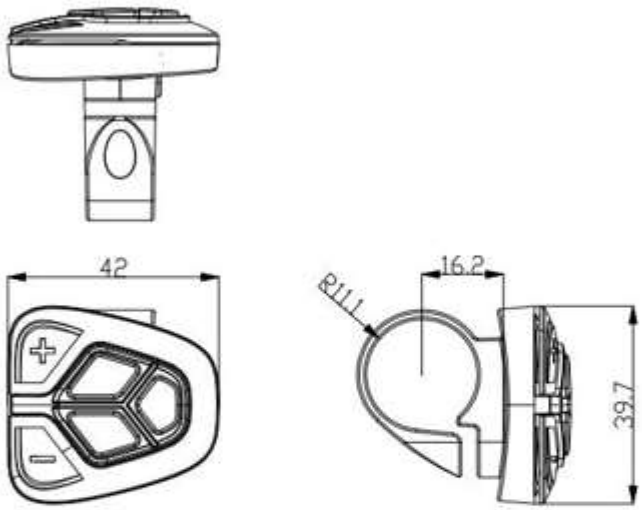
- 36V/48V Power Supply
- Rated working current: 10mA
- The maximum working current: 30mA
- Off-state leakage current: <1μA
- Operating temperature: -20℃~ 60℃
- Storage temperature: -30℃~ 70℃

Appearance and Size

♦ Display appearance and dimensional drawing (unit: mm)



♦ Remote control appearance and dimensional drawing (unit: mm)



Function Summary

KD718-X can provide a lot of functions to fit the Users needs. The indicating factors are as follows:

- Intelligent Battery SOC indication
- Motor Power indication
- Assist-level indication and selection
- Speed indication (incl. Real-time speed, Max. speed and Ave. speed)
- Odometer and trip distance
- Push-assistance control and indication
- Trip time indication
- Backlight On/Off and indication
- Error code indication
- USB connection indicator
- Various Parameters Settings (e.g., wheel size setting, speed limit setting, battery voltage segmented value setting, power assist parameters setting,etc.)

General Operation

♦ **Switching the E-bike System On/Off**

Briefly press the power button to switch on the E-bike system.

When display is on, hold the power button for 2s, the E-bike system will be switched off and no longer uses the battery power.

When switching off the E-bike system, the leakage current is less than 1 μA.

■ When parking the E-bike for more than 5 minutes, the E-bike system switches off automatically.

♦ **Display Interface**

After switching on the E-bike system, the display will show real-time Speed and Trip Distance by default. Press the "i" button to switch between following elements:

Trip (Km) →ODO (Km)→Max. Speed (Km/h)→ Avg. Speed (Km/h) →Time (Min.) .

Display Indication Cycle Interface

♦ **Switching Push-assistance Mode On/Off**

To activate the push-assistance function, keep holding the "-" button. After 2s, The E-bike's drive is activated at a speed of less than 6 Km/h while the screen displays "" . The push-assistance function is switched off as soon as you release the "-" button on the operating unit .The E-bike system stops the power output immediately.

Push-assistance Mode

■ Push-assistance function may only be used when pushing the E-bike.
Be aware of danger of injury when the wheels of the E-bike do not have ground contact while using the push-assistance function.

♦ **Switching the Lighting On/Off**

To switch on the bike light, hold the + button. The backlight brightness is automatically reduced. Hold the + button again, the lighting can be switched off.

Switching the Lighting Mode On/Off Interface

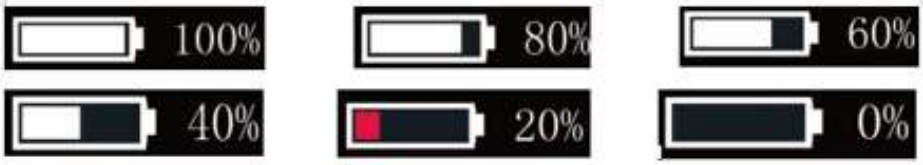
♦ **Assist Level Selection**

Briefly press "+" or "-" button to switch between assistance levels so as to change the motor output power, The default assistance level ranges from level "0" to level "5", The output power is zero on Level "0". Level "1" is the minimum power. Level "5" is the maximum power. When you reach "5", press the "+" button again, the interface still shows "5", and blinks at "5" to indicate the power highest. After the power downshift reaches "0", press the "-" button again, the interface still shows "0" and blinks at "0" to indicate the power minimum. The default value is level "1".

Assist Level Toggling Interface

♦ **Battery SOC Indicator**

The five battery bars represent battery SOC.The five battery segments are bright when the battery is in high voltage. When percentage is 0%, the battery needs to be recharged immediately.



Battery SOC Indication Interface

♦ **Motor Power Indicator**

The output power of the motor can be read via below interface

Motor Power Indication Interface

♦ **USB connection indication**

When the display is inserted into a USB external device, the display interface will show as below.

USB Connection Indication Interface

♦ **Error Code Indication**

The components of the E-bike system are continuously and automatically monitored. When an error is detected, the respective error code is indicated in text indication area.

Here is the detail message of the error code in **Attached list 1**.

Error Code Indication

■ Have the display repaired when error code appears. Otherwise, you will not be able to ride the bike normally. Please always refer to an authorized dealer.

Setting

Press the **On/Off** button to switch on the display on a stationary E-bike.
To access Setting page, hold both the "+" button and the "-" button for 2s.

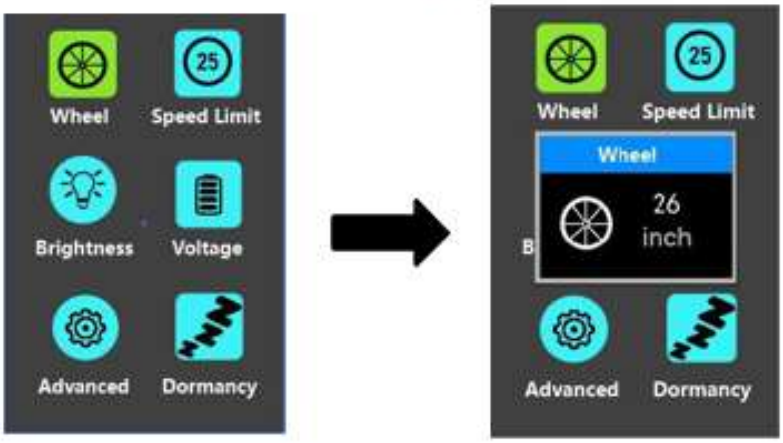
Setting interface

■All the Settings are operated on an E-bike of no speed.

◆Wheel Diameter Settings

Wheel represents wheel diameter settings. To change basic settings, press the "+" or the "-" button to increase or decrease until the desired value is displayed. The default value is 26 inch.

To store a changed setting, press the "i" button to confirm.



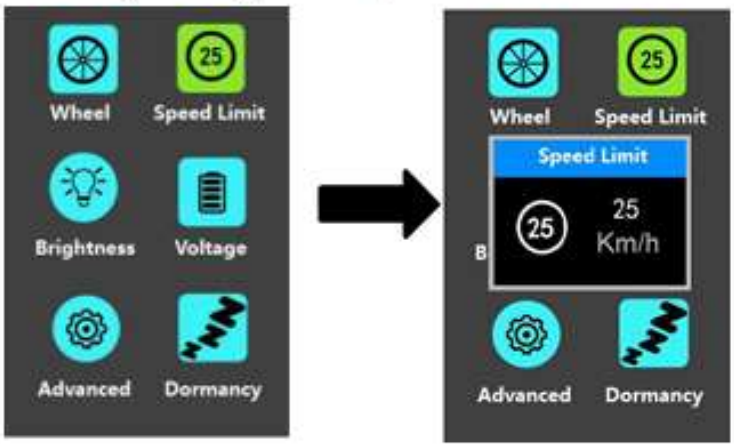
Wheel Diameter Settings Interface

◆ Speed-limit Settings

Speed Limit represents the limited speed settings. When the current speed is faster than speed limit, the E-bike system power output will be reduced. Speed limit range is 15Km/h to 40Km/h. The default value is 25Km/h.

To change basic settings, press the "+" or the "-" button to increase or decrease until the desired value is displayed.

To store a changed setting, press the "i" button to confirm.



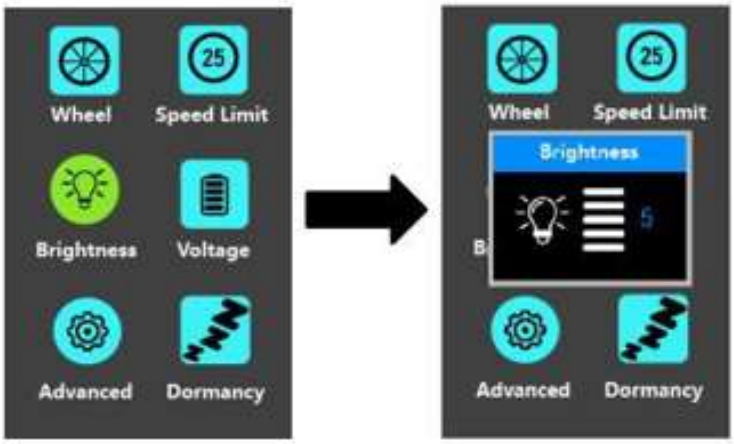
Speed limit settings interface

◆ Backlight Brightness Settings

Brightness represents backlight brightness settings. Level 5 is the highest brightness. The less the level value, the lower the backlight brightness.

To change the backlight brightness, press the "+" button or the "-" button to choose the desired percentage.

To store a changed setting, briefly press the "i" button to confirm.



Backlight Brightness Settings Interface

◆Battery Power Bar Settings

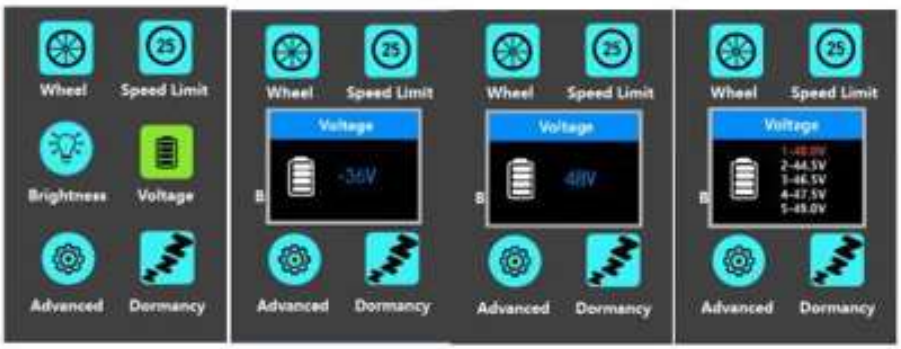
Voltage represents battery voltage segmented value settings. 36V/48V switchable.

5 bar-voltage values for 36V or 48V must be entered one by one. Take 48V for example, "1-" is the first bar voltage value and its default value is 41.2V.

To set battery power bar value, press the "+" or the "-" button to increase or decrease the voltage values.

To store a changed setting and access the next bar voltage setting, press the "i" button.

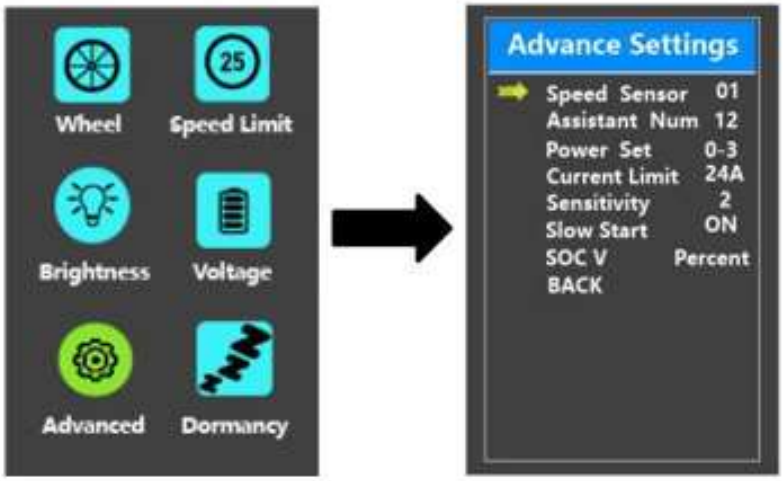
In the same manner, after 5 bar-voltage values are entered completely, press the "i" button to confirm.



Battery Voltage Settings Interface

◆Advanced settings

Advanced setting here deals with PAS parameters settings



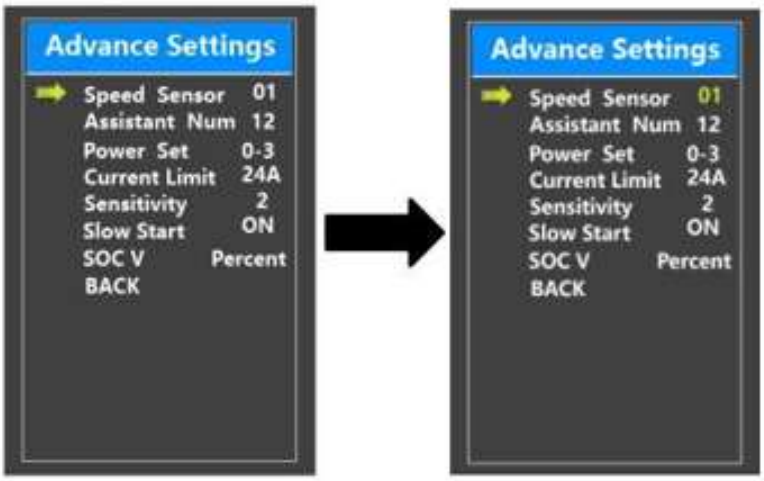
Advanced setting interface

◆ Speed Sensor

Speed Sensor represents speed sensor magnet numbers settings.

To change speed sensor settings, press the "+" or the "-" button to set the numbers of magnets on the e-bike spoke (the range is from 1 to 15). The default value is 1.

To store a changed setting, press the "i" button to confirm.



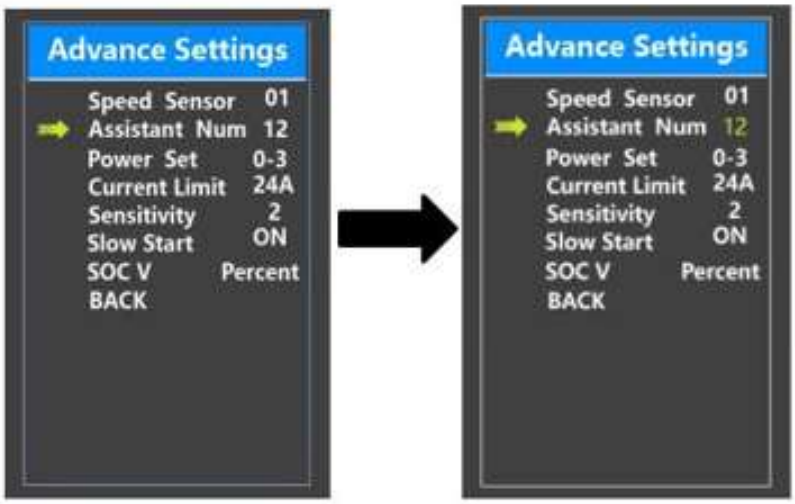
Speed sensor setting

◆ Power Assistant Sensor Magnets

Assistant Num represents the number of magnets on the PAS disk. The settable range is "5" to "24". The default value is 12.

To change the magnet numbers for the power assist sensor, press the "+" or the "-" button to choose the desired number.

To store a changed setting, press the "i" button to confirm



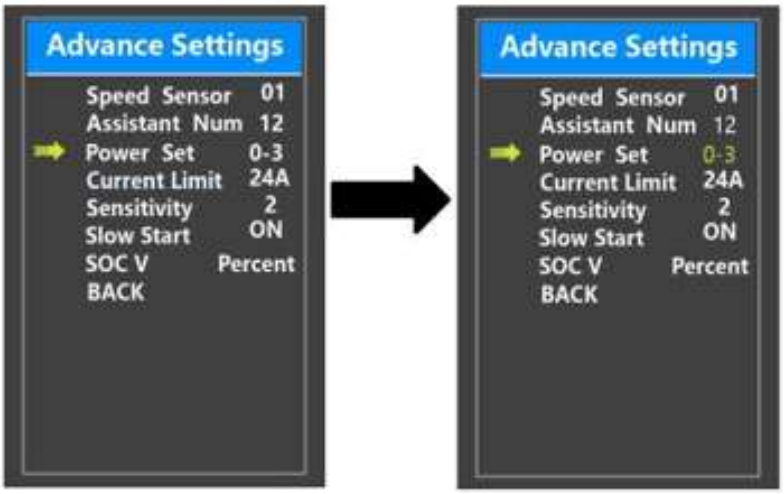
Assistant Num setting interface

◆Assist Level Settings

Assist Level Mode Options

Power Set represents assist level settings. In assist level mode settings, there are 8 modes for your choice: 0-3, 1-3, 0-5, 1-5, 0-7, 1-7, 0 -9, 1-9. The default mode is 0-5.

To change assist level mode, press the "+" or the "-" button to choose the desired mode and press the "i" button to confirm and access assist level ratio settings automatically.



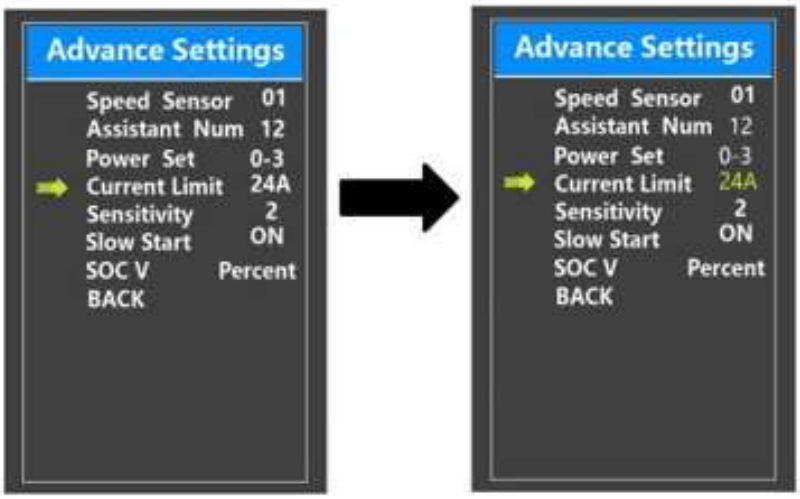
Assist Level Mode Settings Interface

◆Current limit Settings

Current Limit represents controller over-current cut settings. The current value can be changed from 7.0A to 25.0A. The default value is 15A.

To change basic settings, press the "+" or the "-" button to increase or decrease the value of the current.

To store a changed setting, press the "i" button to confirm.



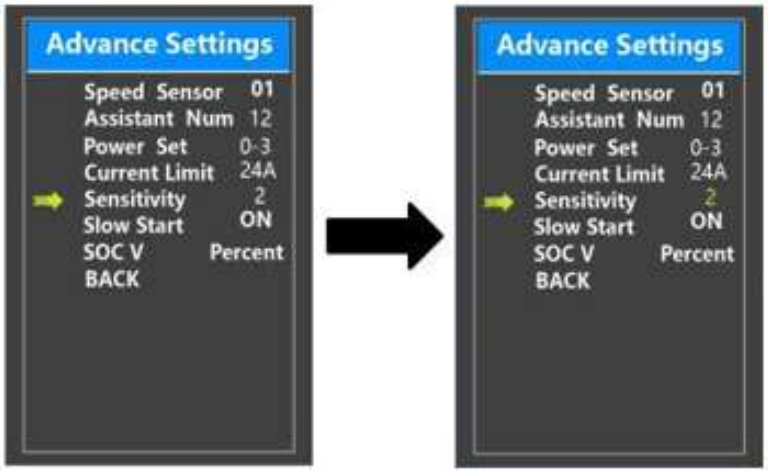
Current limit setting

◆ Sensitivity

Sensitivity represents the sensitivity of power assist sensor. It means the motor assist should start after a certain number of magnets are passing the power assist sensor.

To change the value, press the "+" or the "-" button to choose the sensitivity value. The default value can be customized.

To store a changed setting, press the "i" button to confirm

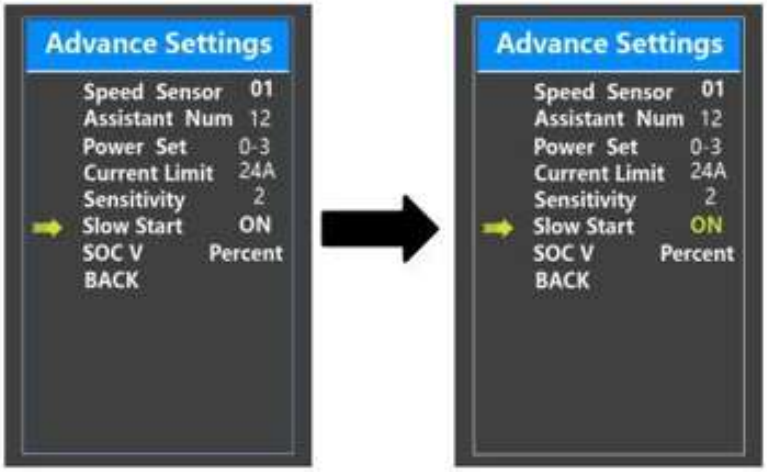


Sensitivity setting interface

◆ Slow start

Slow start represents slow start-up settings. It is a time duration before you get power assistance when stepping into the pedals. The range is "0-3". "3" is the slowest. The default value is "1".

To change slow start up settings, press +/- button to choose the desired value. And press the **i** button to confirm and store a changed setting.

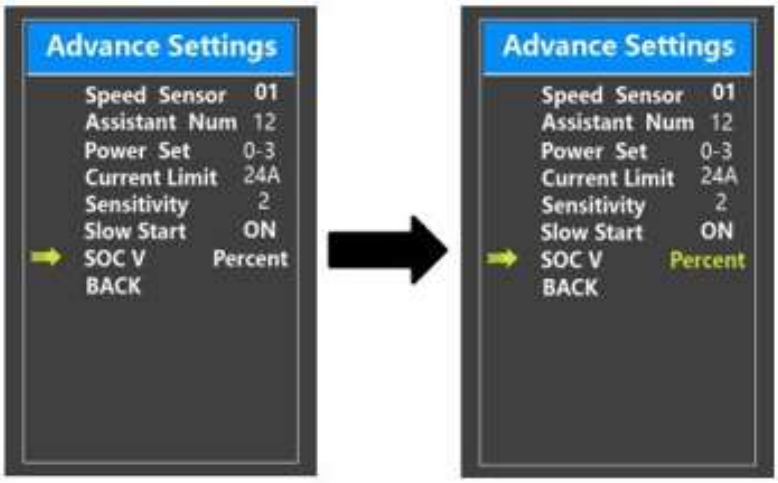


Slow start setting

◆ SOC View Settings

SOC V represents 2 display modes of battery SOC. One is by the percent value and the other is by the Voltage value. Press the "+" button or the "-" button to choose the desired display method. The default view method is by the percent.

To store a changed setting, briefly press the "i" button to confirm.



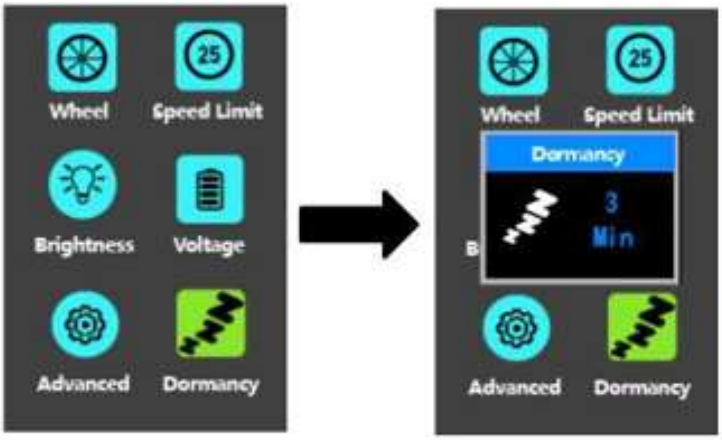
SOC view setting interface

◆ Auto-off Time Settings

Dormancy represents display auto-off time settings.

To change display automatic shutdown time, press Dormancy and press the "+" button or the "-" button to choose the desired duration. The default auto-off time is 5 minutes.

To store a changed setting, briefly press the "i" button.

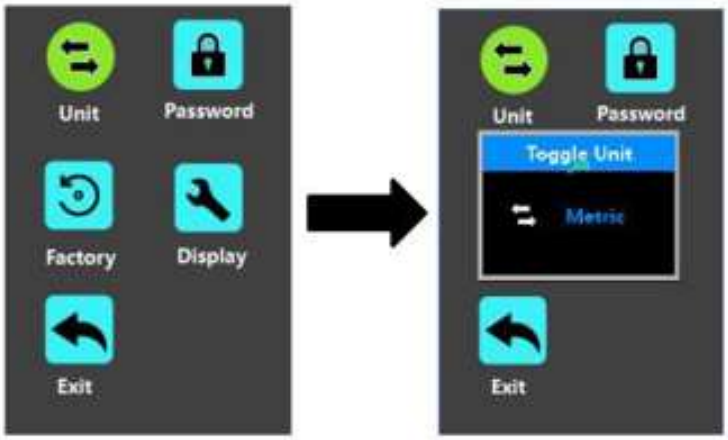


Auto-off time settings

♦ Unit km/mile toggling

Unit represents unit toggling settings.

To toggle the unit, press the "+" button or the "-" button to choose the desired unit and press the "i" button to confirm The default unit is "Metric (km)".
To store a changed setting, briefly press the "i" button to confirm.



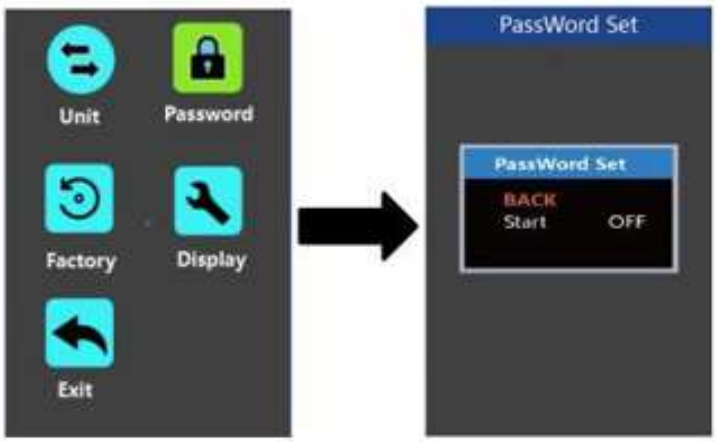
Mile and Kilometer Toggling Interface

♦ Password Settings

Password means display power-on password settings

To access the power-on password setting page, select '**Password**' in the menu and press "i" button to confirm.

PassWord Set means power-on password settings. Power-on password is a 4-digit code. The default password is '**1212**'.



Password Setting Interface

1. Power-on Password Disable/Enable

To enable or disable **Start PassWord** settings, press the "+" or the "-" button to select ON or OFF. ON means enabling a power-on password while OFF means disabling a power-on password. The default value is OFF.

To enable a power-on password, choose ON and press "i" button to confirm and input the current password or default password'1212'. Press the "+"or the "-"button to change the number and press the "i"button to confirm digits one by one until the correct password*(current password or default password'1212')* is completed.

To disable the current password, choose OFF and press "i" button to confirm and input the current password correctly. The screen displays 'PassWord Canceled Successfully'. ***Then the display password is restoring the default code '1212'.**

Password Enable/Disable Settings Interface

2. Power-on Password Reset

From the last interface above, press the "+" or the "-" button to select '**Reset PassWord**' and press the "i" button to confirm to access power-on password reset interface. There are 3 pages for setting up a new password:

In the **first** page, please enter the current password or default password '1212' correctly.

Then it moves to the **second** page for inputting a new password. Press the "+" or the "-" button to increase or decrease the number and then press the "i" button to confirm digits one by one until a new 4-digit password is completed.

Finally, it comes to the **third** page and reenter the new password again for confirmation. The screen displays ' PassWord Reset Successfully'

When switching on the E-bike system next time, please enter the new password to power on the display.

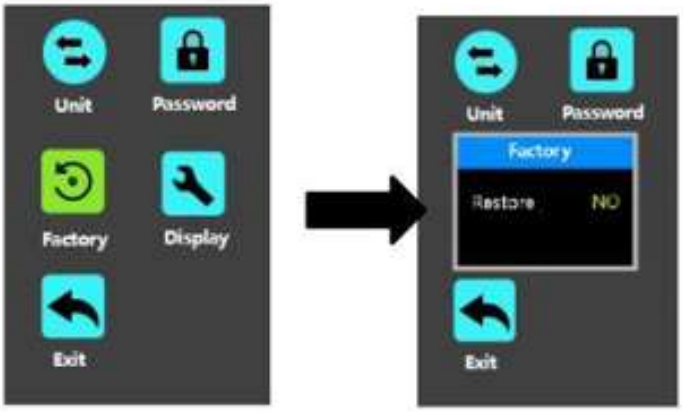
Password Change Interface

◆ Factory settings

Factory means restoring to default settings .

To reset to defaults, press the "+" or the "-" button to choose YES or NO. The default is NO.

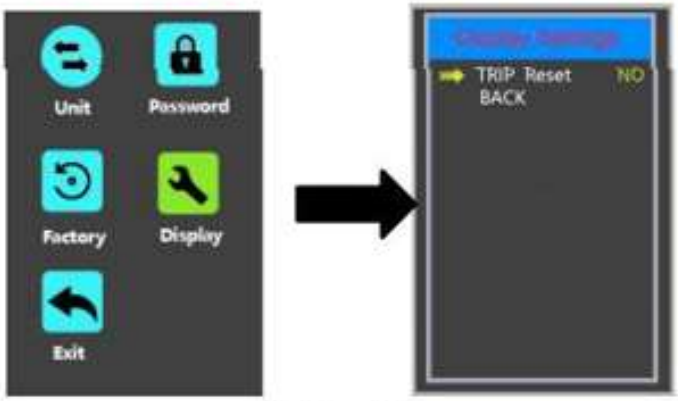
To store a changed setting, press the "i" button to confirm.



Factory settings

◆ Display settings

Display means display basic parameter settings, for example, trip reset etc..



Display settings

◆ Trip Distance Clearance

Trip Reset represents trip distance clearance setting.

To clear trip distance, press the "+" button or the "-" button to select Yes or No. Yes represents clearing a single ride distance. No represents not clearing a single ride distance.

To store a changed setting, briefly press the "i" button to confirm.

Trip Distance Clearance Settings Interface

◆Exit Settings

Exit means returo back to home screen from setting pages.

- **If there is no operations in one minute; the display will exit the settings state automatically.**

Quality Assurance and Warranty Scope

I **Warranty**

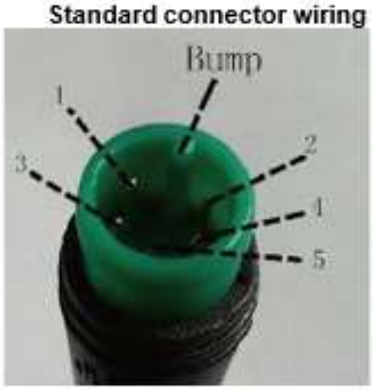
（1） The warranty will be valid only for products used in normal usage conditions.
（2） The warranty is valid for 24 months after the shipment or delivery to customers

II **The following cases do not belong to our warranty scope.**

1. The display is demolished.
2. The damage of the display is caused by wrong installation or operation.
3. Shell of the display is broken when the display is out of the factory.
4. Wire of the display is broken.
5. The fault or damage of the display is caused by the force majeure (e.g., fire, earthquake, etc.).
6. Beyond Warranty period.

Connection Layout

Standard connector wiring



Display-side connector

mating connector from controller side

wire sequence table

Wire no.	Color	Function
1	Red（VCC）	Display power cable
2	Blue（K）	Controller power control cable
3	Black（GND）	Ground/earth
4	Green（RX）	Display end- RX
5	Yellow（TX）	Display end-TX

▪ **Some displays have wire connection with water-proof connectors, users can not see the color of lead wires in the harness.**

Warnings:

- Use the display with caution. Don't attempt to release or link the connector when battery is on.
- Try to avoid hitting the display.
- Don't modify system parameters to avoid parameter disorder.
- Make the display repaired when error code appears.

This manual instruction is a universal version for **DISPLAY KD718-X. Some versions of this display may be different from specification to specification as to the software. Please always refer to an actual version.*

Attached list 1 : Error code definition

Error Code	Definition
21	Current Abnormality
22	Throttle Abnormality
23	Motor Phase Abnormality
24	Motor Hall Signal Abnormality
25	Brake Abnormality
30	Communication Abnormality

Lithium Ion Battery installation instructions

18ah Battery Show for illustration. 10ah Battery operates similarly

1. The battery will be in a separate box, with the basket. You will install the basket, next to the power module as shown	2. On the bottom of the batter, there are two switches: a. Main Power – Large red switch b. Safety Light – Small black switch
3. On the bottom of the batter, there are two switches: a. Main Power – Large red switch b. Safety Light – Small black switch	