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# UNIO E20

# DAHON POWER SUPPORT TECHNOLOGY

## Unio E20 (Power Assist Technology) Driving System for pedal-activated bicycles

## Introduction

Congratulations on your purchase of a DAHON Pedelec, which will give you many kilometers of cycling pleasure and comfortable riding.

The DAHON Pedelec offers a perfect synergy between the cyclist's pedal input and additional motor support.

Please keep in mind that improper installation and operation of the Unio E20 can reduce the performance and the overall enjoyment of this product.

So before you start, please read the instruction manual carefully and follow each step in order to assure proper fit and installation of your Unio E20.

**Note: DAHON Pedelecs are designed for commuting /travel/urban area riding, and are not suitable for very rough or off-road use.**

Once again, we thank you for purchasing your DAHON Pedelec.

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## Specifications

| | |
|---|---|
| **Frame:** | Dalloy Aluminum w/Visegrip Technology |
| **Tires:** | DAHON custom 20" |
| **Gear Ratio:** | 9 speed |
| **Lighting System:** | 6V-48V Headlight 1W , Panasonic |
| **Rims:** | 20″ lightweight aluminum rims |
| **Motor:** | DAHON super light and powerful version<br>36V/ 200W 60N.m |
| **Battery Pack:** | Seatpost battery, 36V9.5Ah 15A Samsung<br>high quality cell |
| **Life Cycle:** | 500 charging cycles |
| **Charger:** | 100-240V, 50Hz/60Hz, 42V, 2A |

## Features

- Pedal Assist Concept.
- Motor support only switches on when you start pedaling and switches off when you stop pedaling.
- Perfect synergy between cyclist's pedal input & additional motor support.
- Direct relation between pedal force and motor support:
    1) Level 0: Normal function.
    2) Level 1: 0.3:1
    3) Level 2: 0.45:1
    4) Level 3: 0.65:1
    5) Level 4: 0.8:1
    6) Level 5: 1:1
- Very smooth riding feeling.
- High torque (rider's kick) while starting.
- High torque at low speeds.
- Strong power support during cruising speed (in sports mode).
- Gradual power support decrease at 25 km/hr.
- Complies with a European regulation (EN15194) and is still a bicycle, NOT a moped!
- Large LCD display with current speed, trip distance, battery life and riding program.
- The battery can be charged separately after being disassembled.

Sensor: Adjusts the amount of power from the motor in line with the amount of pressure by the rider, on the pedals.

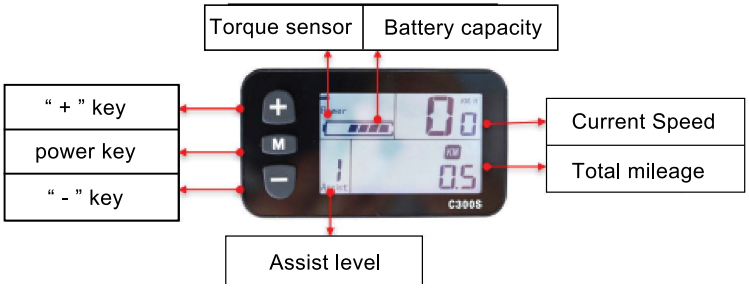
Range: 60km (36V)

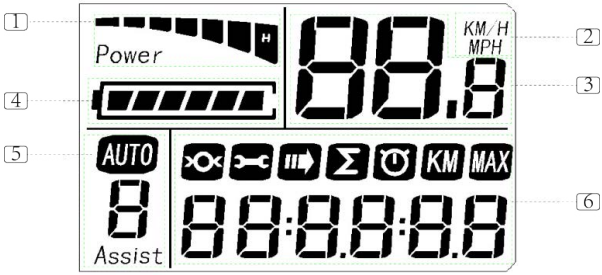
Functions:

- Boost: Long press the "-" assist key for 3 seconds to enter Boost mode. The pedelec can be ridden without pedaling and can travel at a low speed of 6 Km/h
- Normal
- Power assist




## Display Instructions



01. Power Button: Power ON/OFF switch function.

- Please confirm the battery is turned on before starting. Press the “**M**” key for 3 seconds and it will turn on, which means it is in power-on state.
- Press the “**M**” key for 3 seconds and it will turn off. Then press the battery power key to disconnect the power.

02. Km/mile

03. Current Speed – Displays current riding speed.

04. Battery Capacity Indicator

- Each block (  ) shows the battery capacity.
- Five blocks (  ) indicates the battery is fully charged.

05. The last block will start blinking when the charge is less than 10%. When the battery icon is empty (  ), this means the battery has no power remaining, please charge the battery immediately.

06. Riding information (press M key to display items)

07. Riding time: display the time information of a single ride.

08. Single riding mileage: display the user's single riding mileage information.

09. LCD display backlight: In the power-on state, press and hold the “+” button for 2 seconds to light up the LCD display backlight and the headlights.

10. Maximum speed: When this signal is displayed, it means that the current speed has reached the maximum speed.

11. Error code: When the system fails, the icon and code will be displayed at a frequency of 1HZ.

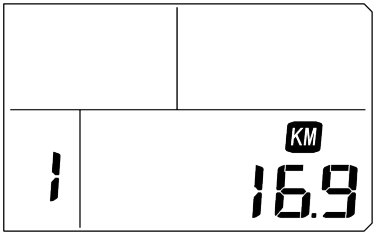
12. Total distance / Trip distance

- Total mileage will show when no speed is detected.
- Trip mileage will show when the bicycle is being ridden.
- When the bicycle is attached to an external charger the trip distance will be reset to 0.
- If the maximum total distance of 65535 km is reached, the total distance will be reset to zero.

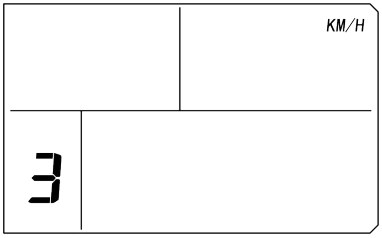
13. Riding information settings:

Press the “+” and “-” keys at the same time for 2S to enter the setting interface, press the M key to switch, press the “+” and “-” keys to select the parameter, and press the “+” and “-” keys at the same time to exit setting.

• After entering the setting, the single mileage can be cleared by pressing the DOWN key.




• Mileage unit options (KM/H or MPH)




14. Normal function / Boost function – Use for normal and flat road surfaces.

15. Power assists function – Use for extra support with hills and/or strong headwinds/ Use for strong support with very steep slopes.

16. Sleep Mode

    • The display will switch to Sleep Mode automatically when the bike is not used over 5 minutes.

    • In the sleep mode, press the M key again to release it.

17. Error Code – The Error Code icon and Service icon will appear on the LCD when malfunctions are detected. Please refer to the following error code numbers and descriptions and check with your dealer for more information.

## Error Code icon

| *Error Code No.* | *DESCRIPTION* |
|---|---|
| 2 Code | Excessive electric current is detected inside the controller, and a protection mechanism is implemented.<br>Check whether the three-phase power cable terminal connector is short-circuited.<br>If there is no short-circuit, restart it.<br>If this state still occurs, means the internal power device of the controller is damaged. |
| 3 Code | The motor's three-phase power cable has fallen off, loosened, or the motor has stopped operating for more than 2 seconds, or the load is too heavy and the motor cannot operate normally, or the power input isn't connect properly.<br>If this state still occurs after restarting, it is the reason for the poor connection of the three-phase wires of the motor. |
| 4 Code | The voltage of battery is excessively low; the battery is under voltage protection. |
| 5 Code | This error code can detect whether the brake lever is damaged under normal conditions.<br>The error code should disappear after the brake is released. |
| 6 Code | The power system detects whether the torque signal is faulty on the system. |
| 8 Code | The electric circuit system detects whether the internal electric current loop components of the controller are damaged, or the 5V loop is short-circuited, and if there is, the status will be displayed. |
| 9 Code | The battery voltage needs to be checked at all times when the circuit system is operating.<br>If the battery voltage is >43.5V, it means that high voltage protection occurs, or the cable sequence of the sensor is connected incorrectly, and the system will stop operating and display this status. |

## ❊ Final Check

After completion of assembly, please perform a final check and make sure that:

1. Every bolt and screw is tightened properly.
2. Tires are inflated to the recommended tire pressure.
3. Brakes are functioning properly.

**Note:**

**1. Fold your DAHON E-bike according to the manual.**

**2. When folding and unfolding please take care to check that the internal cables are not caught. Should this occur, simply push the two cables back inside the frame.**

## ❊ Folding & Unfolding

**Folding:**

(1) Adjust seatpost and crank: loosen seatpost clamp lever, lower the seatpost, then lock the seatpost clamp, and adjust the left crank to 9 o'clock position.

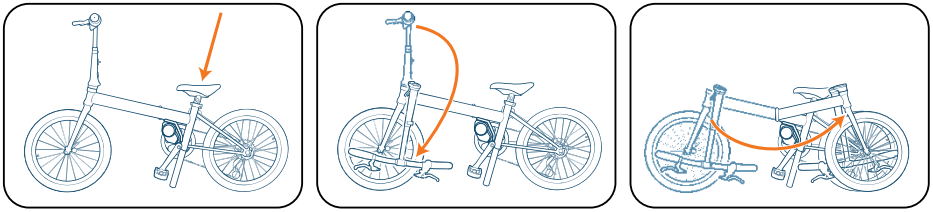
(2) Folding the handlebar assembly: loosen the safety catch on the stem, pull the stem hinge handle down, and then fold the stem down to align the whole handlebar parallel to the front wheel.

(3) Folding the frame: open the frame safety hook, open the frame hinge lever, put your knees against the frame folding joint, and bring the front and rear wheels of the pedelec backward to make the front and rear wheels merge and align parallel.

(4) Please be aware: Do not fold the bike when the battery is removed for charging.

**Unfolding:**

Reverse the operation sequence from back to front (expand the frame → lift the folding stem→ raise the seatpost to an appropriate height → tighten relevant latches and safety hook) to achieve full unfolding.

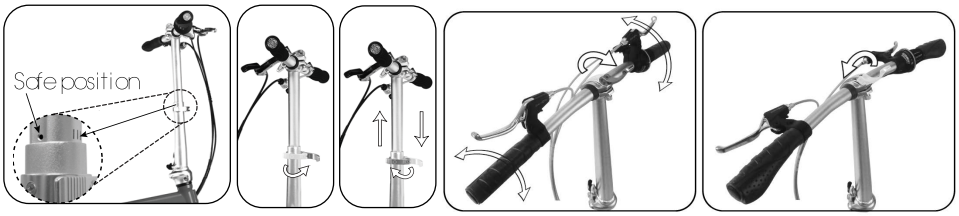


❶ Lower the seatpost ❷ Fold down the stem ❸ Fold the frame in half

## Handlebar adjustment

(1) Loosen the handlepost quick release and adjust the handlepost to an appropriate height (the safety scale line must not be exposed outside the tube), and then lock the handle.

(2) Loosen the stem handle and adjust the handlebar to a proper angle.




## Seatpost and saddle adjustment

(1) Loosen the seatpost clamp and adjust the seatpost to an appropriate height (the safety line should not be visible outside of the pedelec )

(2) Loosen the locking bolt at the bottom of the saddle, adjust the saddle to an appropriate angle and tighten the bolt (recommended force moment is 18N•m).



## Adjustment of the brakes and derailleur

(1) Brake adjustment:

In the case of improper adjustment of brakes, or serious wearing of brake pads, it will pose a threat to the safety of riders. Please adjust or replace relevant accessories on time. The brake on the wheel rim of a pedelec functions via friction between the brake surfaces. The brake structure depends on the friction between the brake pad and the wheel rim or disc to ensure maximum friction. Please keep rims or discs and brake pads clean, free of dirt, lubricants, waxes or polishing agents that may reduce the efficiency of friction. The brake is designed to control the speed of the bike, not just to stop it. Brake pads are fragile parts. Please adjust the brake and brake pads properly according to wear and conditions.

## ❊ Cautions regarding rim and disc brakes

Riding with brakes that aren't adjusted properly or have worn-out brake rotors is dangerous and could result in serious injury.

Braking too hard or suddenly locking the wheels can cause you to lose control of the bicycle and crash. Using the front brake too quickly or with too much force could make the rider hit the handlebars and cause injury.

Riders must ride with extreme caution, especially as some bikes have a powerful braking system, such as disc brakes and V-brakes.

Prolonged use of disc brakes can make the disc very hot. Please be careful not to touch the brake rotor until it's had enough time to cool down.

Please check the manufacturer's instruction manual for brake operation and maintenance. If it's not available, please contact your dealer or brake manufacturer for advice.

## Brake Control

It's very important to learn and remember which brake lever controls each brake. Your bike comes with a brake set that coordinates the right brake lever to control the rear brake, and the left brake lever to control the front brake. Make sure you can reach it by touching the brake lever with your hands.

**Note: Brake configuration is different for some countries, including the UK and Japan, where the right brake lever controls the front brake and the left brake lever controls the rear brake.**

## How the brakes function

The bicycle rim brake functions through friction between braking surfaces, which normally means the brake pads and the rim. To ensure maximum friction, keep your rims and brake pads clean and free of dirt, lubricant, wax or polish. Another important bicycle brake type is the disc brake. To install, please make sure you have a specific mount, fork and hub that is suitable for adding a disc brake onto your frame. These brakes are small sets that rely on brake pads pressing against the sides of small discs mounted on each wheel for braking. This kind of brake is less at risk of weather deterioration and gives strong stopping power on steep slopes or wet terrain, and it also makes them ideal for heavier riders.

Brakes are also designed to control your bicycle's speed, not just stop it. For each vehicle, maximum braking force occurs at the point just before the rear wheel starts lock up (I.e. stop spinning), making it skid.  When the tires skid, you will lose all control of your direction and most of your stopping power.

**WARNING: Please make sure that no oil or lubricant comes into contact with the brake pads or the bicycle rim’s braking surface.**

(2) Derailleur adjustment:

Adjust the "H" and" L" corresponding screws of the derailleur. The specific operation is as follows (loosen "H" screw when the chain can't reach the smallest gear. When the smallest gear drops, tighten" H" screw.

Loosen "L" screw when the chain can't reach the largest gear. When the largest gear drops, tight" L" screw): adjust the screw according to the specific conditions, then rotate the gears and adjust the speed until the chain and freewheel cooperate smoothly, without noise.

Micrometric Regulating Screws




## Battery Case Operation

**Attention: make sure the power is off before taking the battery out.**

Seatpost battery:

(1) Disconnect the power cord under the seatpost battery (unscrew the connector nut under the controller box, and pull out the connector of the power cord).

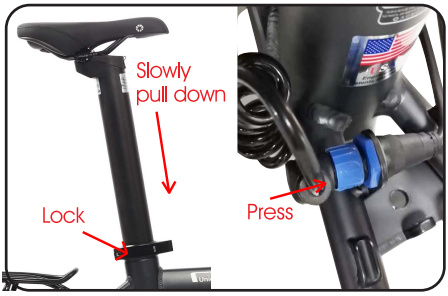
(2) Disassemble the seatpost clamp, and gently pull out the whole seatpost set.

(3) While assembling, open the seatpost clamp, insert the seat battery into the appropriate position, and lock the seat clamp.

(4) Then insert the power cord below into the connector of the controller (please align the groove on the joint), and then tighten the nut.




Remove




Assemble

## How to Charge the Battery

Only use the battery charger that was supplied with the Unio E20. Use of any other battery charger voids your warranty and may result in severe damage to the battery and electrical system of the bicycle, and may cause a fire hazard.

Make sure the voltage specification of the changer matches your local voltage.

Remove the cover of the connector and connect the battery charger. Fully charge the battery for at least 12 hours at the first time of purchase.

Charger LCD Indication: The Red light indicates that the battery is charging. The Green light indicates that the battery is fully charged.

**NOTE: While the seatpost battery is removed for charging, do not fold the Pedelec and use the kickstand to support it.**

## Charging Time

Remove the charger as shown in figure

1. Press the battery switch and turn off the power.
2. Connect the charger directly to the sub-line (both positive and negative can plug in) as shown in figure.
3. Pull the protective cap off the battery charging port under the rear tube of the pedelec frame as shown in figure.
4. Insert the charging port into the battery charging port, then insert the power plug into an electric outlet for charging. (A red indicator light means charging is in progress. A green indicator light means that it has been fully charged, or abnormal charging.)



Figure 1



Figure 2



Figure 3

## ❊ Charger & Battery Protection

The battery and charger unit have a built-in heat sensor. If the heat rises too much, it will automatically shut down the system before any damage can occur. The charger unit will automatically cut off the power supply after 12 hours of charging.

**NOTE:**
**Always remember to press the battery switch to turn off the power before parking your Unio or taking out the batterry.**

## ❊ Battery Maintenance

Have you recharged your battery pack lately?
If 3 months have passed without recharging, it's time to do it again. Charging your battery will help ensure maximum battery life and performance and will help to avoid battery damage.

## ❊ Storage Recommendations

Batteries must be charged prior to use. Do not incinerate or mutilate batteries. They may explode or release toxic material. Do not disassemble the battery. Return the bike to your authorized service dealer for service or repair.

Store the battery in a cool dry place. Please refer to your dealer regarding transport of the battery.

Cycle (charge and discharge) the battery every 3-6 months to maintain battery performance when being stored for an extended period of time.

In the case of any irregular noise, variant temperature, Or leakage from the battery, please stop using it immediately.

Always store and cool the battery in a well-ventilated place, out of direct sunlight.

## ❊ Terms of Warranty

The Dahon Unio E20 warranty period is 2 Years (24 months) according to the date of purchase.

For all electrical parts including charger, display (console), controller, BB sensor, electrical cables, carrier and motor, (Note: motor noise is not covered) the warranty period is 2 Years (24 months).

**NOTE:**

**Certain fitted parts of the bicycle can wear out at different rates depending on use, road condition, weather and so on. Typical items include tires, chains, sprockets, chain wheels, brake pads, grips etc.**

## Can the motor be overheated?

Yes. The motor can overheat on very steep hills and under heavy loads, but the built-in heat sensor will automatically shut down the system before any damage can occur.



**SAFETY WARNINGS:**

**THE PURPOSE OF SAFETY SYMBOLS IS TO ATTRACT YOUR ATTENTION TO POSSIBLE DANGERS. THE SAFETY SYMBOLS, AND THE EXPLANATIONS WITH THEM, DESERVE YOUR CAREFUL ATTENTION AND UNDERSTANDING. THE SAFETY WARNINGS BY THEMSELVES DO NOT ELIMINATE ANY DANGER. THE INSTRUCTIONS OR WARNINGS THEY GIVE ARE NOT SUBSTITUTES FOR PROPER ACCIDENT PREVENTION MEASURES.**



**WARNING:**

**Failure to obey a safety warning can result in injury to yourself or others.**

**Always follow the safety precautions to reduce the risk of fire, electric shock and personal injury.**

## PRE-OPERATIONAL SAFETY WARNINGS

01. Read and understand this instruction manual carefully before using this product. Be thoroughly familiar with the proper use of your Dahon E-Bike.

02. Thoroughly inspect your PST for loose or damaged parts before each use. If there are any loose or damaged parts, perform the needed adjustments or repairs before starting your Dahon E-Bike.

**NOTE:**
**The Limited Warranty will be void if the product is used in a manner other than for recreation or transportation, or modified in any way.**

03. Some countries require that all bicycle riders wear a safety helmet. It is recommended that this precaution be followed at all times for maximum safety and protection.

04. The manufacturer is not liable for incidental or consequential loss nor damage due directly or indirectly from the use of this product.

05. This Dahon pedelec carrier is not compatible with a rear baby seat.

06. As with all mechanical devices, the bicycle is subjected to wear and high stresses. Different materials and components may react to wear or stress fatigue in different ways. If the designated life of a component has been exceeded, it may suddenly fail, possibly causing injuries to the rider. Any form of crack, scratches or change of coloring in highly stressed areas may indicate that the life expectancy of the component has been reached and it should be replaced.

**IMPORTANT!**
**If you experience any problem with your Dahon E-Bike, please contact your local dealer directly.**

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