Libra Display User's Manual

Product Name and Model

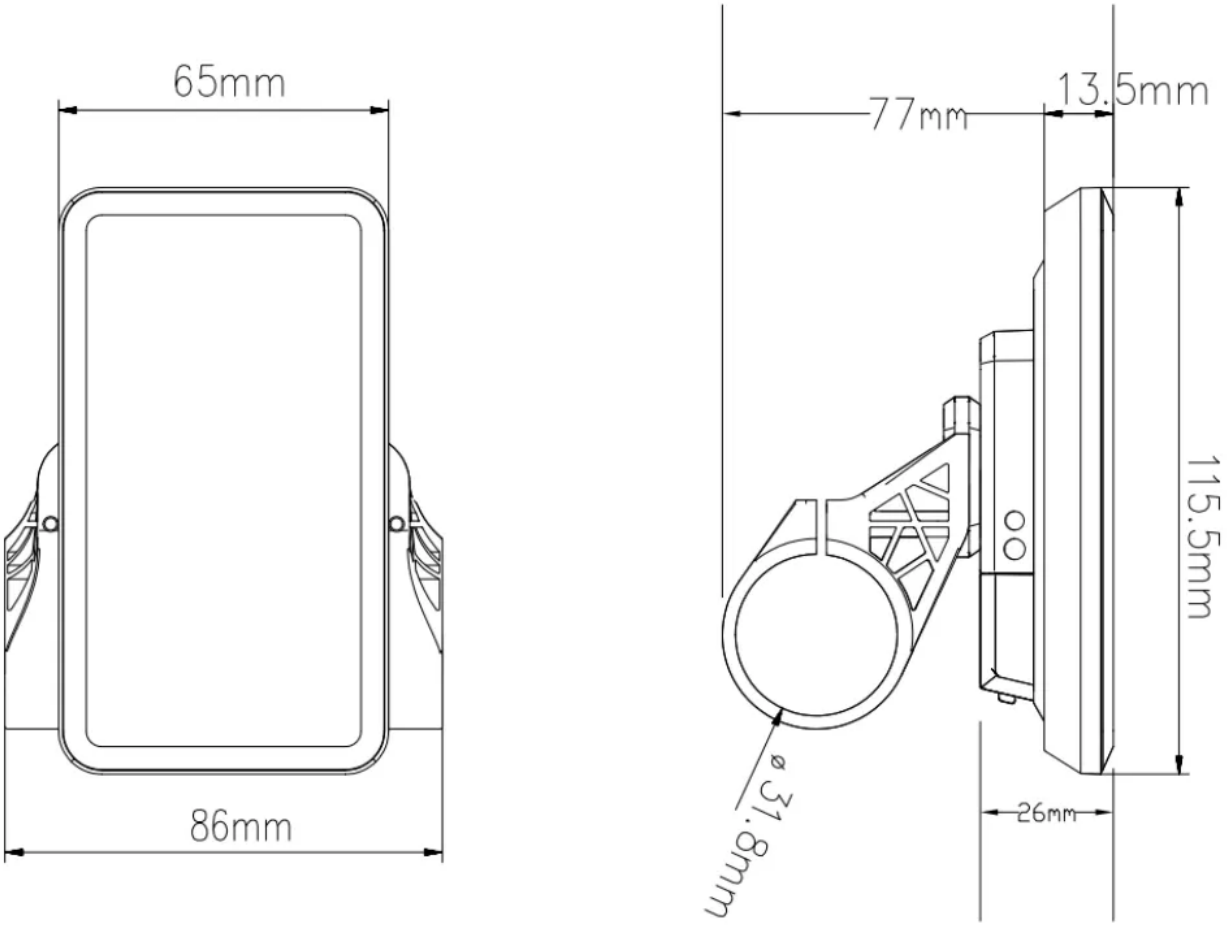
Smart LCD Display for Electric Bike

Display Model: YL9F–V

Specifications

- **Power Supply**: 48V
- **Rated Working Current of Display**: 15mA
- **Maximum Working Current of Display**: 30mA
- **Shutdown Leakage Current**: <1uA
- **Working Current of Controller Supply**: 50mA
- **Working Temperature**: –10 to 60℃
- **Storage Temperature**: –30 to 70℃

Appearance and Dimensions



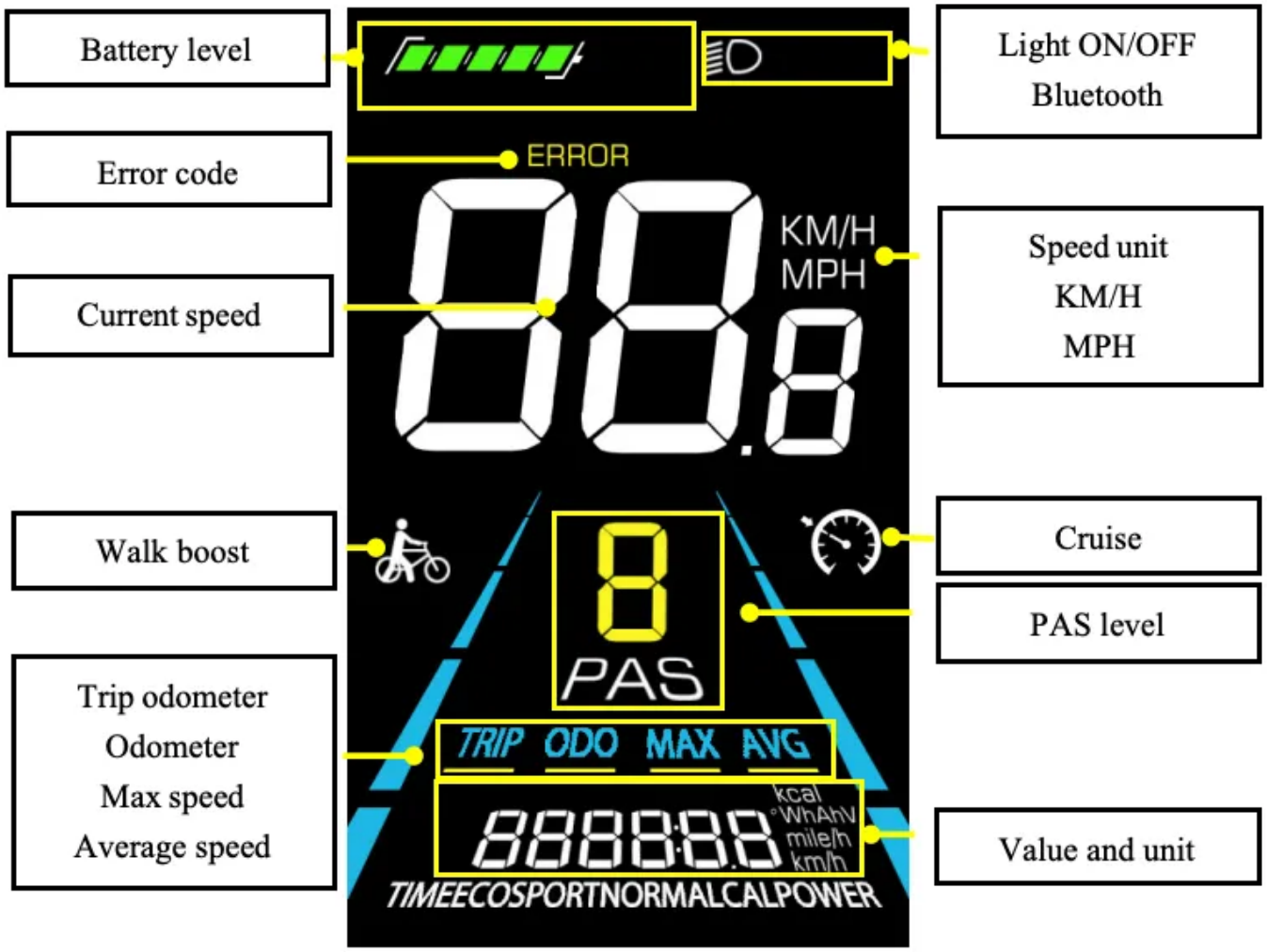
Function Overview and Functional Area Distribution

4.1 Function Overview

The YL90T display is designed to cater to a variety of riding needs, offering the following features:

- Battery Display
- Assist Level Adjustment and Indication
- Speed Display (including real-time speed, maximum speed, average speed)
- Mileage Display (including single trip mileage and total mileage)
- Assisted Walking Control and Indication
- Headlight Control and Indication
- Error Code Display
- Motor Power Indication (optional)
- Cruise Indication (optional)
- Personalized Parameter Settings (e.g., wheel diameter, speed limit, etc.)
- Factory Default Parameter Restore Function

4.2 Functional Area Distribution



4.3 Button Definitions

The YL90T–H display features five buttons on the operation unit, each serving a specific function to ensure efficient and intuitive operation: Power On/Off, Increase, Decrease, Headlight, and Switch.

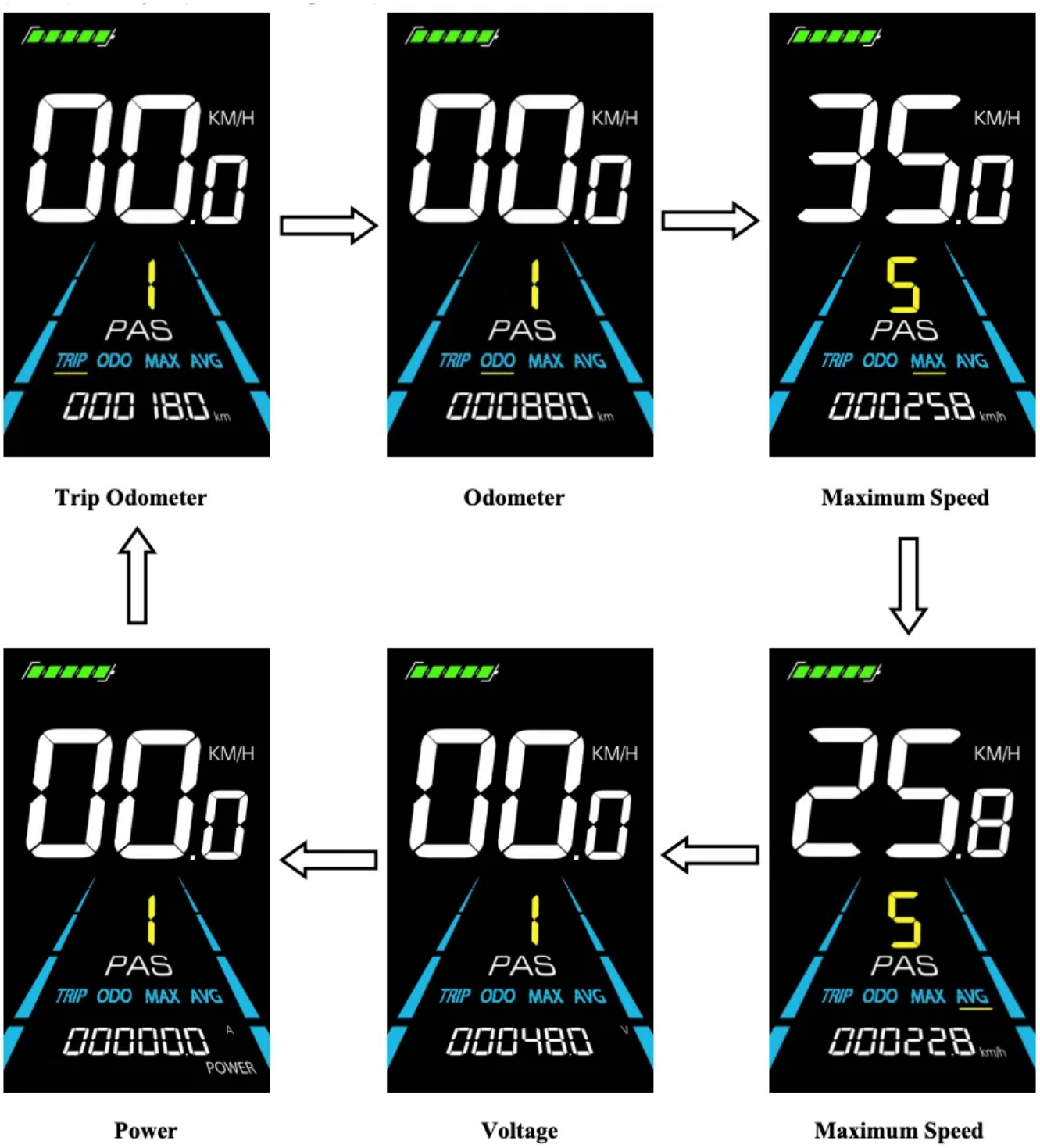
Regular Operations

5.1 Power On/Off

To power on the display, press and hold the Power button. This action will also connect the controller's power supply. To turn off the electric bike's power, press and hold the Power button again. When the display is off, it stops using battery power, with a leakage current of less than 1uA. Additionally, if the electric bike is not used for more than 10 minutes, the display will automatically shut down to conserve battery life.

5.2 Display Interface Switching

Upon powering on, the display defaults to showing real-time speed (MPH) and total mileage (miles). To cycle through the various display interfaces, short press the i button. The available interfaces include: Total mileage (miles), Single trip mileage (miles), Maximum speed (MPH), Average speed (MPH), Voltage (volts), and Power (watts).



5.3 Assisted Walking

To activate the assisted walking mode, press and hold the **– button**. This action will enable the electric bike to enter the assisted walking state, moving at a constant speed. During this mode, the display will show the walk assist icon. To exit the assisted walking mode, simply release the Decrease button. The bike will then stop the power output and return to its previous state prior to assisted walking.

Important: The assisted walking function should only be used when pushing the electric bike. Do not use this function while riding.

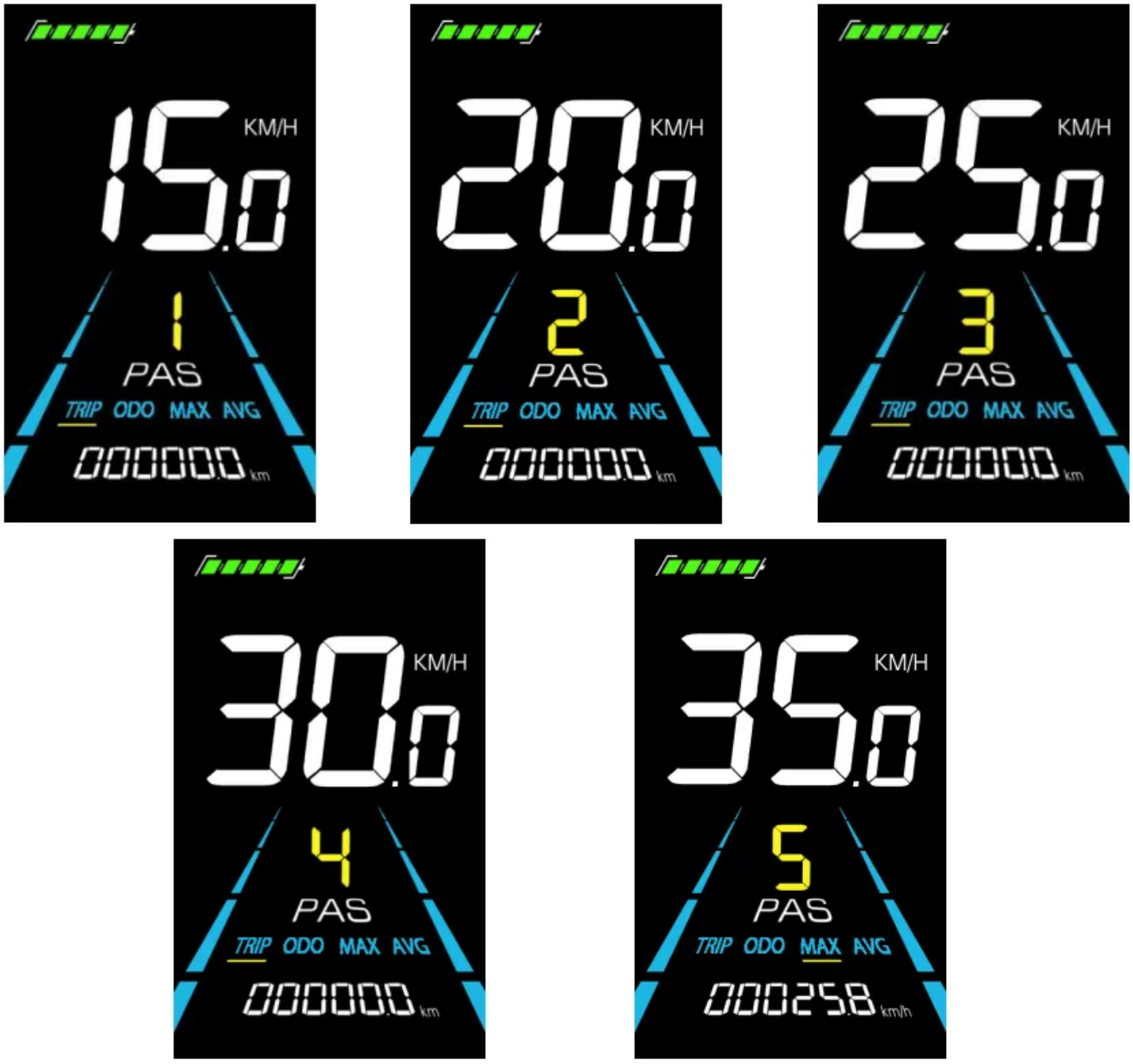
5.4 Turning Headlight On/Off

To turn on the headlight, short press the **Headlight** button. When the headlight is activated, the display backlight will dim. To turn off the headlight, short press the Headlight button again. The display backlight will return to its original brightness when the headlight is turned off.

5.5 Assist Level Selection

To switch the assist level of the electric bike, short press the **+ or –** buttons. This action will change the motor output power, adjusting the level of assistance provided. (The images below

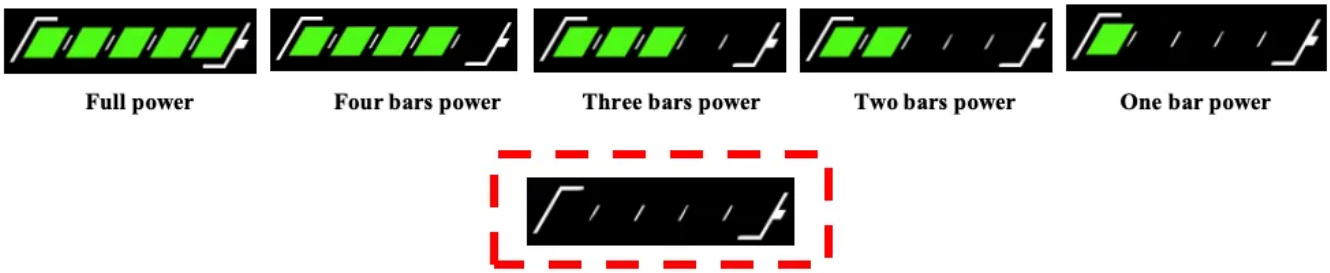
are indicative of different speeds at various assist levels; actual speed may vary.)



5.6 Battery Display

The battery level is indicated by a five-segment display. When the battery is fully charged, all five bars will be illuminated. As the battery depletes, fewer bars will remain lit. When the battery is nearly empty, the bars will begin to flash, indicating that the battery should be charged as soon

as possible.



5.7 Error Code Display

When the electric bike control system experiences a malfunction, the display will automatically show error codes. Refer to **Appendix 1** for detailed definitions of each error code.

When error codes appear on the display, it is essential to troubleshoot promptly. The electric bike cannot function normally when errors are present.

Personalized Parameter Settings

Parameter settings should be performed when the electric bike is stationary. Follow these steps to set personalized parameters:

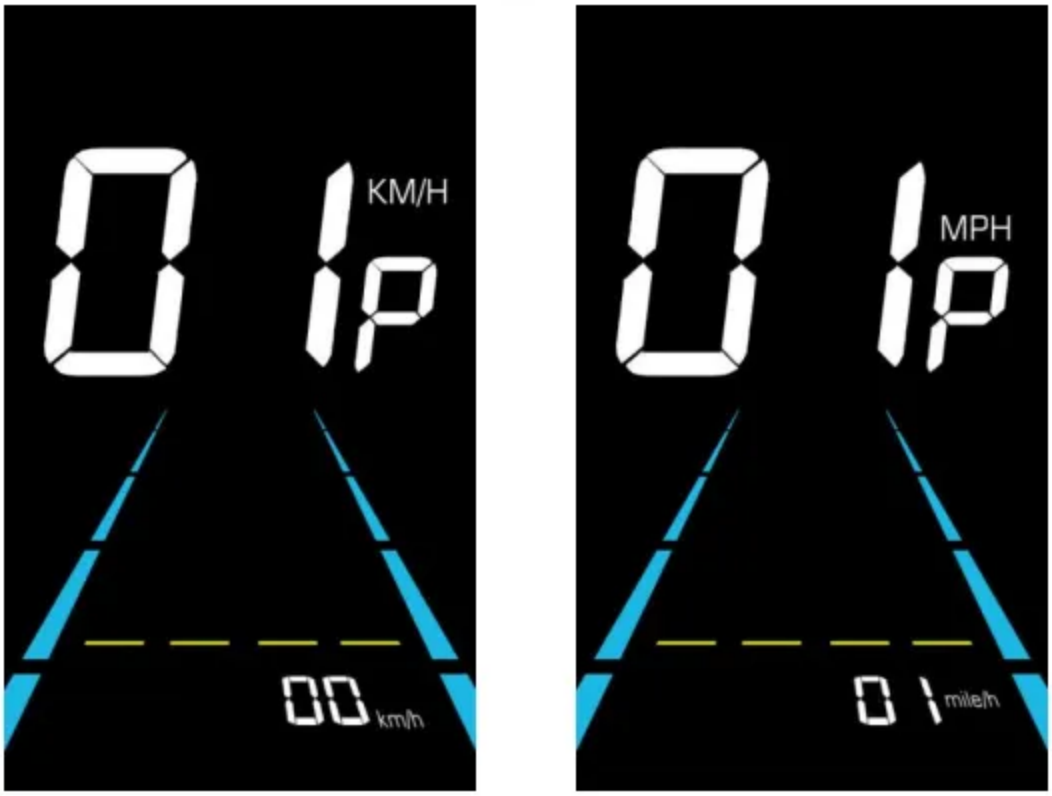
1. Ensure the electric bike is powered on and stationary with a display speed of 0.
2. Press and hold the +/– buttons simultaneously for more than 2 seconds to enter the personalized parameter setting selection interface.
3. Use the +/– buttons to navigate through parameter setting options. Press the i button to enter the parameter change state.
4. Use the +/– buttons to adjust parameters. Press and hold the + button for continuous increment operation, and hold the – button for continuous decrement operation.
5. Press the i button to save the parameter settings and return to the parameter setting selection interface.
6. Press and hold the i button for an extended period to save the parameter settings and exit the parameter setting selection interface.

6.1 Metric and Imperial Units Setting

Option 01P is used to select between metric and imperial units:

- **00**: Metric units
- **01**: Imperial units

Short press the i button to enter the parameter change state. Use the +/– buttons to select the parameter (00 for metric, 01 for imperial). Short press the i button to save the setting and return to the parameter setting selection interface.



6.2 Assist Level Range Setting

Option 02P is used to set the assist level range. The available assist levels are: 03, 13, 05, 15, 07, 17, 09, 19.

Short press the i button to enter the parameter change state. Use the +/– buttons to select the desired assist level. Short press the i button to save the setting and enter the assist ratio value setting option (refer to section 6.2.1), or long press the i button to confirm and return to the parameter setting selection interface.

6.2.1 Assist Ratio Value Setting

The assist ratio value allows adjustment of speed at each level to accommodate different riders' needs. Refer to **Appendix 2** for detailed information. For example, for level 1, the assist ratio range is "10~45%", with a default value of "30%".

Use the +/– buttons to change the parameter for each level. Short press the i button to confirm and proceed to the next level parameter setting interface. After setting all levels, short press the i button to return to the parameter setting selection interface.

6.3 Assist Sensitivity Setting

Option 03P is used to adjust the assist sensitivity, which determines how sensitively the controller detects the assist sensor magnets passing the sensor, thereby activating the motor. The adjustable range for assist sensitivity is 2 to 9, where:

- **2**: Highest sensitivity
- **9**: Lowest sensitivity

Short press the i button to enter the parameter change state. Use the +/– buttons to select the desired sensitivity level. Short press the i button to save the setting and return to the parameter setting selection interface.

6.4 Throttle Grading Setting

Option 04P is used to set the throttle grading:

- **00**: Throttle not graded
- **01**: Throttle graded

If the throttle is graded (01), the maximum speed attainable when using the throttle is limited by the current assist level displayed on the meter. If the throttle is not graded (00), the speed is not restricted by the assist level displayed on the meter and can reach the rated maximum speed.

Short press the i button to enter the parameter change state. Use the +/– buttons to select the desired parameter (00 or 01). Short press the i button to save the setting and return to the parameter setting selection interface.

6.5 Boot Password Setting

Option 05P is used to set the boot password:

- The display boot password function is generally disabled by default. Users can enable the display boot password by setting PSd–y.
- The factory default password is 1212, and users can change it to another four–digit password. Please remember the password after changing it; otherwise, you will not be able to use the display.

Short press the i button to enter the parameter change state. Use the +/– buttons to select PSd–y (enable boot password) or PSd–n (disable boot password). Short press the i button to confirm the mode and enter the four–digit boot password setting state or exit to the personalized settings selection interface.

When in the password setting state:

- The adjustable number position will flash.
- Short press the +/– buttons to select the number for each position.
- Short press the i button to save the number and move to the next number setting.
- After setting all four digits, short press the i button to save and return to the personalized parameter setting selection interface.

6.6 Automatic Shutdown Time Setting

Option 06P is used to set the automatic shutdown time:

- To conserve electric bike battery power and enhance endurance, the display features an automatic shutdown function after a period of inactivity.
- The automatic shutdown time can be set from 00 to 60 minutes, where:
  - **00**: No automatic shutdown (disabled)
  - **01 to 60**: Shutdown time in minutes. The factory default is 10 minutes.

Short press the i button to enter the parameter change state. Use the +/– buttons to select the desired shutdown time. Short press the i button to save the setting and return to the

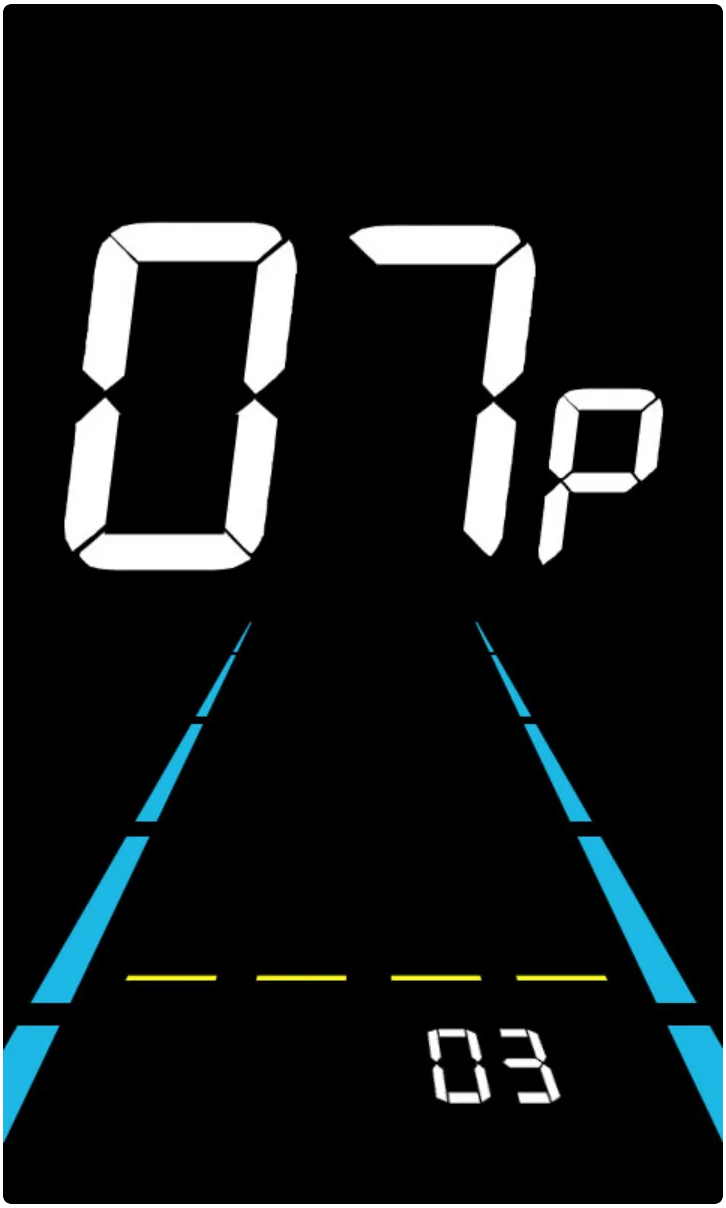
personalized parameter setting selection interface.

6.7 Assist Soft Start Parameter Setting

Option 07P is used to set the assist soft start parameter:

- Assist soft start refers to the relative intensity of the controller's PWM (Pulse Width Modulation) signal output when the assist starts.
- The adjustable range is from 0 to 3, where:
  - **0**: Weakest soft start
  - **3**: Strongest soft start

Short press the i button to enter the parameter change state. Use the +/− buttons to select the desired parameter value. Short press the i button to save the setting and return to the personalized parameter setting selection interface.



6.8 Speed Limit Setting

In the personalized parameter setting selection interface, press and hold the Increase and Decrease buttons for more than 2 seconds to enter the speed limit adjustment mode. The adjustable range is SP–N and SP–S (45 km/h and 56 km/h). (The maximum adjustable speed limit varies with different protocols.)

1. Short press the i button to enter the parameter change state.
2. Use the +/− buttons to select the desired speed limit parameter.

3. Short press the i button to save the setting and return to the personalized parameter setting selection interface.

Shortcut Operations

7.1 Restore Factory Default Parameter Settings Operation

Option dEF is used to restore factory default parameter settings:

- **dEF–Y**: Restore default parameters
- **dEF–N**: Do not restore default parameters

1. Ensure the main interface speed is 0. Press and hold the Light and + buttons simultaneously for more than 2 seconds to enter the restore factory default parameter interface.
2. Short press the +/– buttons to switch between dEF–Y and dEF–N. If dEF–Y is selected, short press the i button to confirm. The display will show dEF–0 for a while and automatically start restoring factory default settings. After the restoration is completed, it will automatically exit and return to the normal display interface.

7.2 Clear Mileage Operation

The display can record both single trip mileage and total mileage. While total mileage cannot be cleared, single trip mileage does not automatically reset after the display is turned off and requires manual clearing.

Ensure the main interface speed is 0. Press and hold the – and i buttons simultaneously for more than 2 seconds to clear the single trip mileage. The main interface will flash once during the clearing process.

Quality Commitment and Warranty Scope

8.1 Warranty Information

- For any failure caused by the product's inherent quality issues under normal usage conditions, the company will provide a limited warranty within the warranty period.
- The product's warranty period is 12 months from the date of manufacture.

8.2 Non-Warranty Scope

- The casing has been opened.
- The connectors have been damaged.
- The casing has scratches or has been damaged after leaving the factory.
- The wires have been scratched or broken.
- Failures or damages caused by irresistible forces (e.g., fire, earthquake) or natural disasters (e.g., lightning).
- The product exceeds the warranty period.

Appendix 1: Error Code Definition Table

Error Code	Error Name
E021	Current Abnormal
E022	Throttle Fault
E023	Motor Phase Loss
E024	Hall Fault
E025	Brake Fault
E030	Communication Fault

Appendix 2: Default Values of Assist Level Ratio Table

Level	0–3/1–3	0–5/1–5	0–7/1–7	0–9/1–9
Level 1	50%	30%	40%	25%

Level 2	74%	45%	50%	34%
Level 3	92%	60%	60%	43%
Level 4	–	75%	70%	52%
Level 5	–	100%	80%	61%
Level 6	–	–	90%	70%
Level 7	–	–	96%	79%
Level 8	–	–	–	88%
Level 9	–	–	–	96%