DS103 Display technical specifications

Product Name：Intelligent LCD display

Part Number：DS103

Content

A. Introduction

1 Product name and model

Intelligent LCD display, model: DS103

2 Product Introduction

Simple and lightweight, separate installation bracket design.
High brightness, high contrast 3.5-inch colored TFT screen.
Clock function (clock is on when the display shutdown).
Excellent outdoor design with IP65 level waterproofing.
Micro USB serial communication port, convenient maintenance services.
Bluetooth function is optional, applied be used with mobile phone APP.
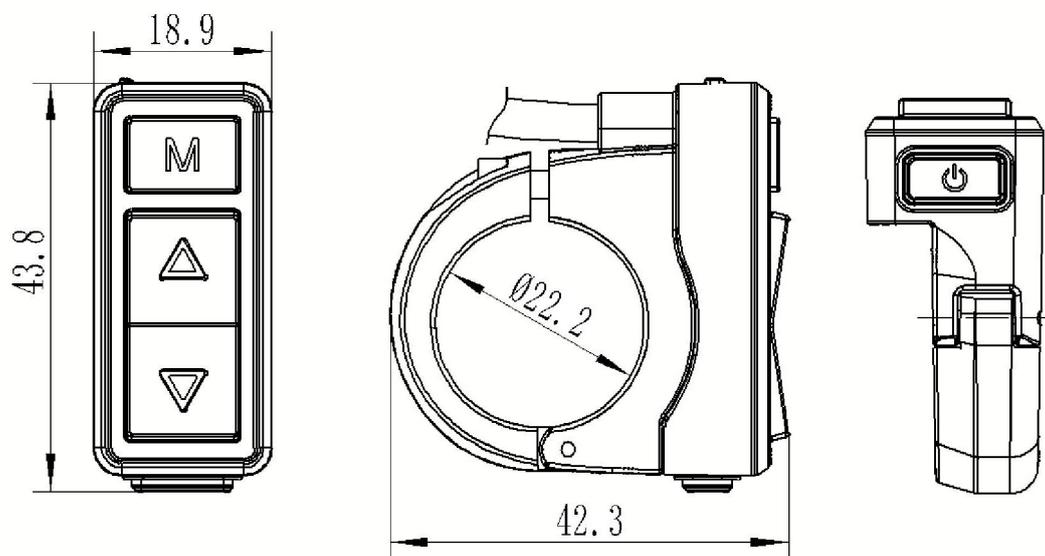
3 Range of application

Suitable for electric power assist bicycle in accordance with the standard of EN15194
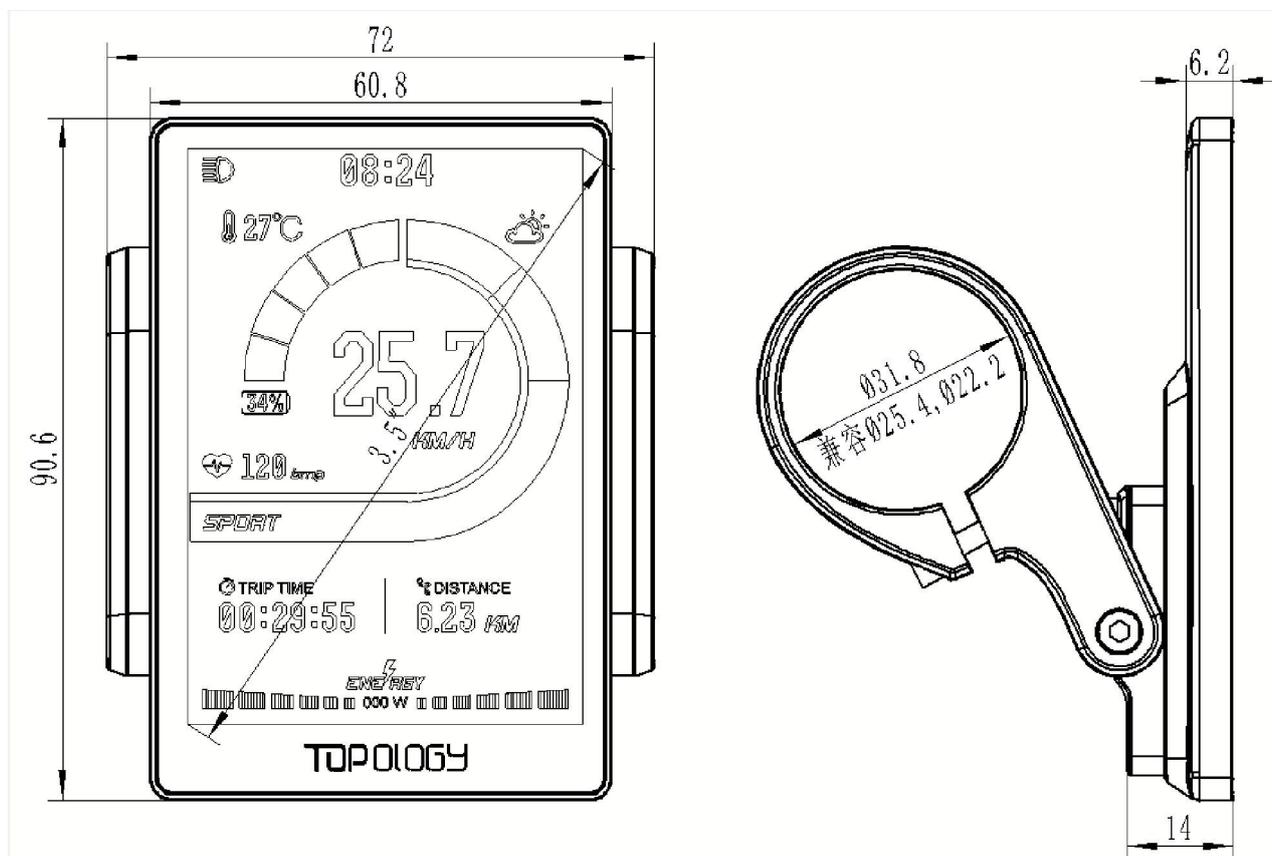
4 Appearance and size

The material of product shell is ABS + PC. And the material of the window is tempered glass.

4.1 Switch appearance and dimensions

4.2 Display, appearance and dimensions

5 Display coding rules

S/N:C11701A0010001

As shown as above picture, C1 is the manufacture factory code

1701 is the manufacture year and week number

A means the hardware version

001 is the firmware version number

0001 is the product serial number

B. Product manual

1 Specifications

① Power supply: DC 24V/36V/48V

② Rated current: 30ma/36V

③ Shutdown leakage current: <1uA

④ Screen specification: 3.5" colored TFT（480*320pixels）

⑤ Communication method: UART (default)

⑥ Operating temperature: -20°C ~ 60°C

⑦ Storage temperature: -30°C ~ 80°C

⑧ Waterproof level: IP65

2 Functional overview

① Four buttons, easy to operate

② Use password to turn on

③ Mileage display: Subtotal mileage (TRIP), total mileage (ODO)

④ Speed display: Real-time speed (SPEED), maximum speed (MAX) average speed (AVG)

⑤ Five stalls of power assist control：0-4level (OFF-ECO-TOUR-SPORT-TURBO)

⑥ Six levels of electricity instructions：1-5 level power, and under voltage prompts, show the percentage of the battery power

⑦ Km / miles

⑧ Riding time (TRIP TIME) display

⑨ Adjust the brightness of the backlight

⑩ 6KM /H walk assist function

⑪ Remaining mileage display (requires BMS support)

⑫ Real time power display (Segment display, real-time numerical display)

⑬ Real time display (time is on when display shutdown)

⑭ System maintenance instructions: Advice maintenance information based on riding distance and charge cycles
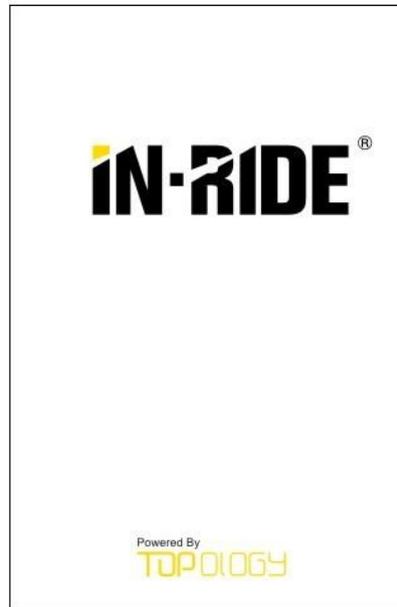
⑯ Error code
indicator

3 Installation

① Determine if you need to select the corresponding mounting clamp and rubber clip ring according to the diameter of the handlebar Applicable handlebar specifications： (Φ22.2, Φ25.4, Φ31.8). Open the display lock clamp and insert the rubber clip into the correct position of the lock clamp.

② Set the rubber ring in the bracket then assemble on the middle of the handlebar, adjust the angle of the display make it easier to see the display screen when riding. After fixing the tightening torque is 1N.m.

③ Open the lock ring of the switch and set it in position on the left side of the handlebar. Adjust the angle of the switch, so that rider can see the switch and operate easily. (Applicable handlebar dimension is Φ22.2)

④ Fix and tighten the handlebar fixing screw with M3Hex wrench, locking torque is 0.8Nm

⑤ Connect the display connector to the controller connector according to the label.

Note: Damage caused by excessive torque is not covered by the warranty.

4 Interface

4.1 Boot interface (Can be customized as required)

① Boot interface, 2 seconds show when turning on the display.

4.2 Basic interface

Headlight icon		08:24
Battery		06.1 KM/H
Heart rate monitor		120 bmp
	TOUR	Assistance level
Trip time	TRIP TIME 00:29	DISTANCE 6.23 KM — Trip distance
	ENERGY 000 W	Energy Meter
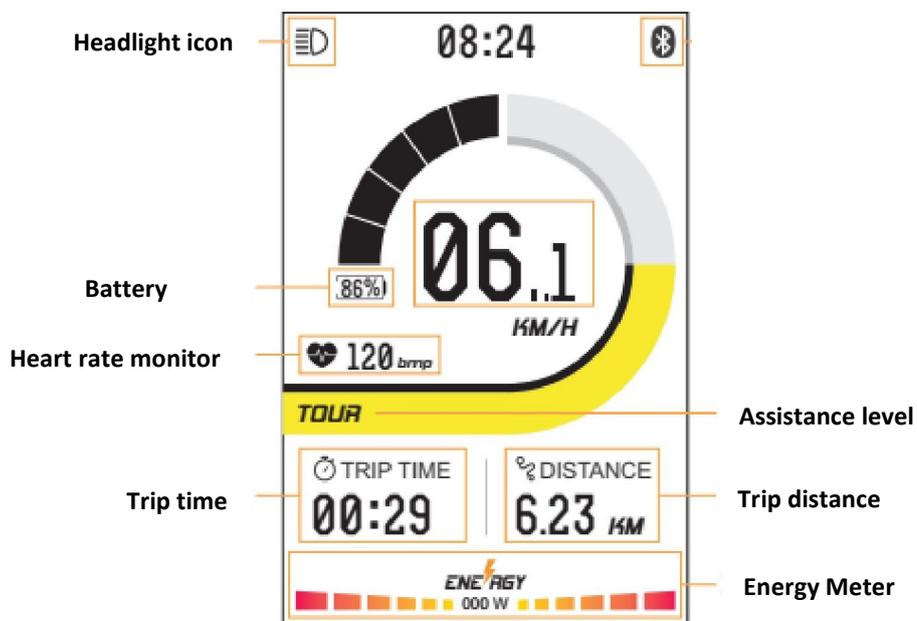
① Headlight: Shows when the headlight is on. When the headlight is off or without this function, this icon

   will not show.

② Speed: Show current speed, KM/H or MPH

③ Power assist mode: Shows the level of assist power. Form low power assist to high power assist: ECO, TOUR, SPORT, TURBO. ECO is default when the display is on, OFF means no assist power.
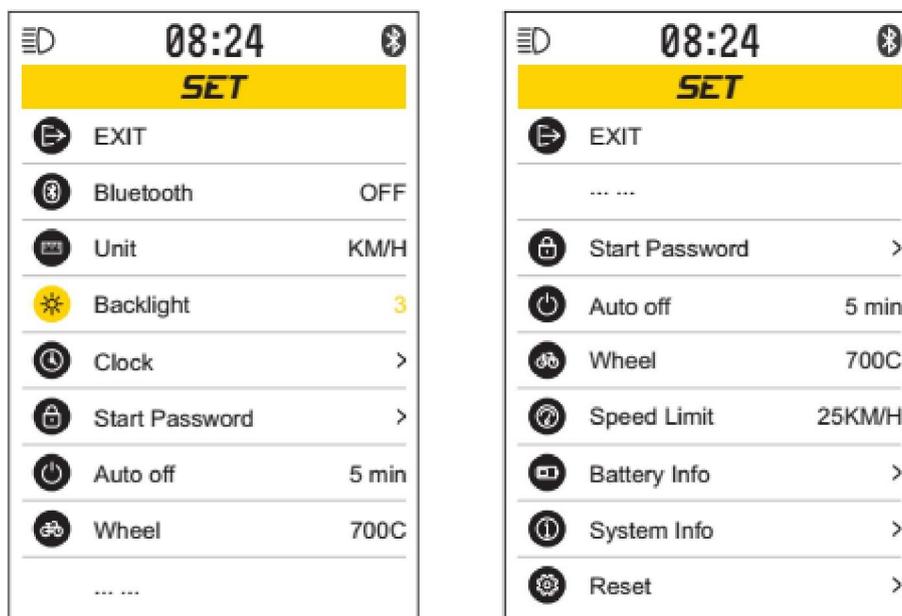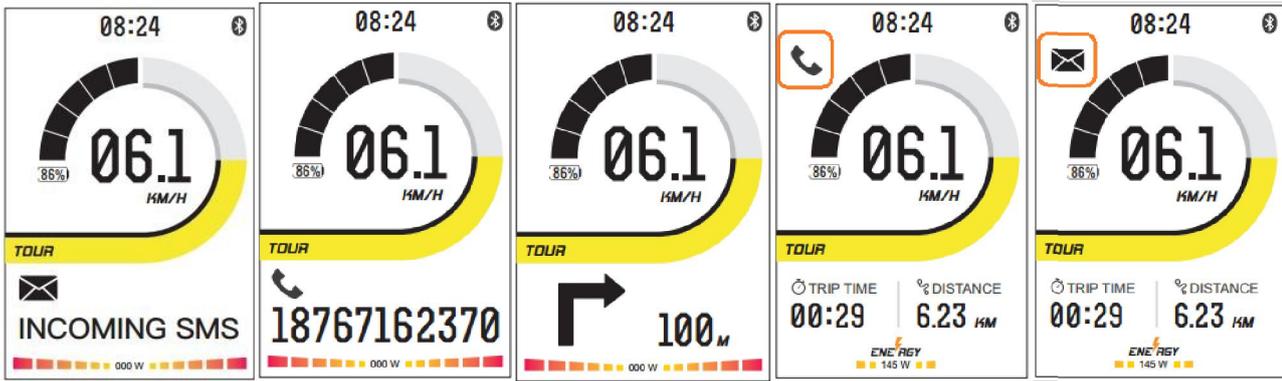
④ Power indicator: 5 level power indicator, percentage of the battery power.

⑤ Power: Shows current output power and 5 segments show the level of the motor power.

⑥ Riding time: Shows the hours and minutes of the riding time.

⑦ Trip mileage and unit: Show the trip mileage.

4.3 Setting interface

	08:24	
SET		
↪ EXIT		
⑧ Bluetooth		OFF
▭ Unit		KM/H
☀ Backlight		3
◎ Clock		>
⑥ Start Password		>
⏻ Auto off		5 min
◉ Wheel		700C
... ...		

	08:24	
SET		
↪ EXIT		
... ...		
⑥ Start Password		>
⏻ Auto off		5 min
◉ Wheel		700C
⊘ Speed Limit		25KM/H
▭ Battery Info		>
① System Info		>
⚙ Reset		>

① Setting the display parameter of the display through mobile phone APP.

② Call or SMS mapping to display (only show the caller number).

③ Navigation icon mapping display function.

08:24	08:24	08:24	08:24	08:24
06.1 KM/H	06.1 KM/H	06.1 KM/H	06.1 KM/H	06.1 KM/H
86% TOUR	86% TOUR	86% TOUR	86% TOUR	86% TOUR
✉ INCOMING SMS	✆ 18767162370	➦ 100 M	TRIP TIME 00:29 / DISTANCE 6.23 KM / ENERGY 145 W	TRIP TIME 00:29 / DISTANCE 6.23 KM / ENERGY 145 W

New SMS prompt   Call prompt   Navigation prompt missed calls prompt unread SMS prompt

5 Definition of buttons

ON / OFF

ADJUST UP +

ADJUST DOWN -

MODE BUTTON

 urn on/off: Function button: M adjust up and down using the up and down arrows

6 Operation

6.1 Turn on/off

 Maintain the connection of the display and the controller. Long press (2 seconds) ⏻ button when the display is off. Display shows the boot interface and enters the basic interface to start work. Long press (2 seconds) button when the display is on. Display closed. If no operation to the display and the speed is 0 for 5 minutes the display will turn off automatically.

6.2 Password
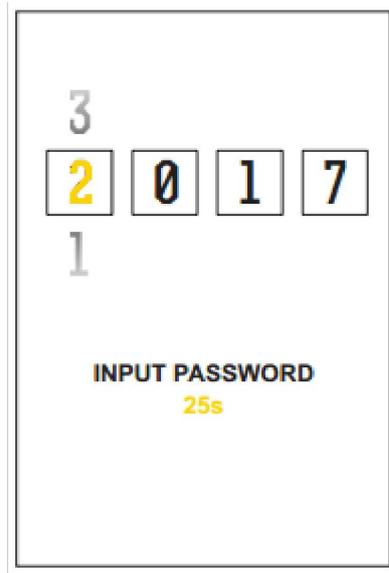
After the start up of the interface display it will default to password, enter password, the display will then shutdown in 30 seconds if not entered correctly. When the password is entered correctly, the display will turn to the riding interface.

(the default password is 8888).

Press **M** to select the password character from left to right, press ∧ ∨ to select the password numbers. Press **M** after entering to complete. When the password is correct the display will then turn to the operational display. Just re-enter the password if incorrect.

Password function can be enabled or disabled in the interface settings, it can also be changed from here.

6.3 Assist mode select

Press up or down to change the assistance mode and the output power of the motor. ECO is the lowest power assist level, Turbo is the highest power assist level. ECO is the default level and OFF means that there is no assistance level selected.
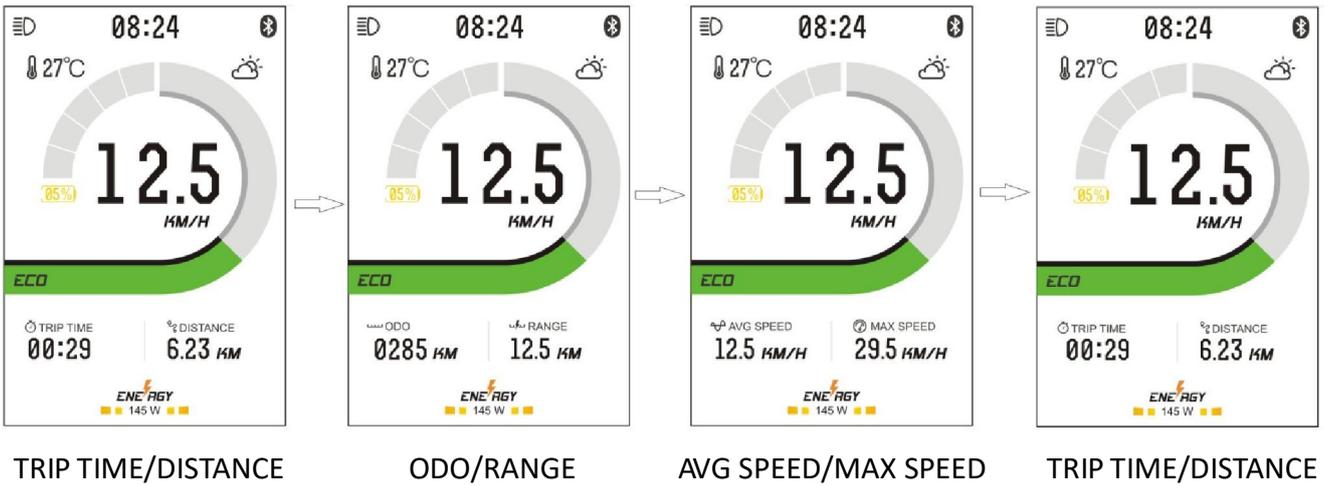
Assist mode select interface shown as below:

OFF (grey)   ECO(green)   TOUR (yellow)   SPORT (orange)   TURBO (red)
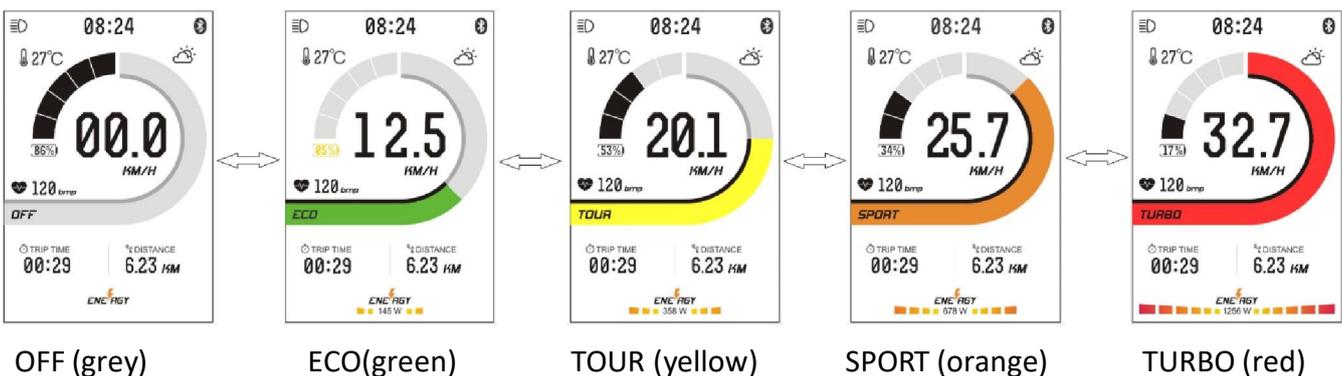
6.4 Speed, mileage shown switch

Short press M to loop shown information from: TRIP TIME/DISTANCE-> ODO/RANGE-> AVG SPEED/

MAX SPEED。

Interface shown as below：

| TRIP TIME/DISTANCE | ODO/RANGE | AVG SPEED/MAX SPEED | TRIP TIME/DISTANCE |

6.5 Walk assist mode

Hold down ⌄ button for 2 seconds to access walk assist mode. When " 🐾 WALK " is shown, press ⌄

button to exit walk assist mode and move to the riding interface. Walk assist mode pictured below:

Walk assist mode   Normal mode
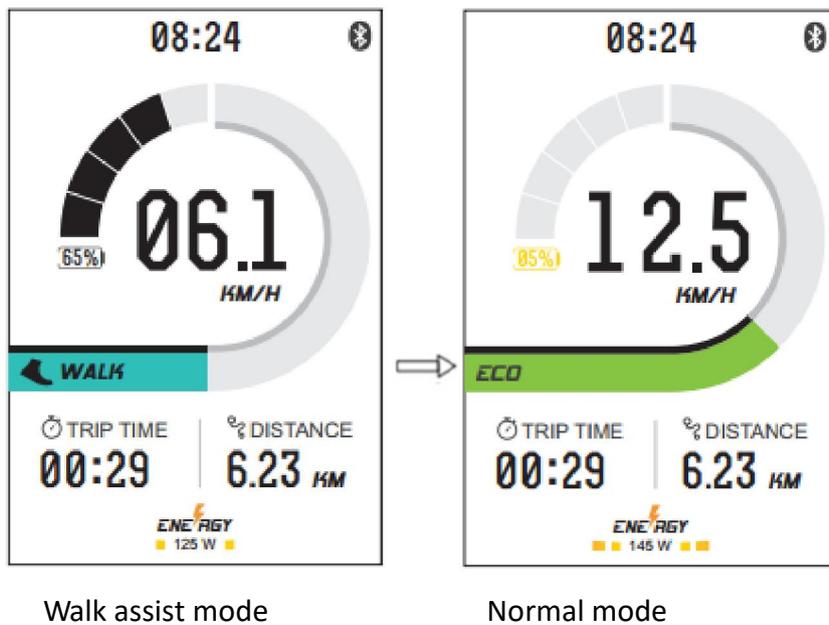
6.6 Headlight on/off (day and night mode switch)

Hold down the up button for 1 second to activate the headlight. The Interface of the display will turn to night mode, and the headlight icon will turn on. Hold down the up button for 1 second again to turn the headlight off. The interface of the display will turn to day mode and the headlight icon will now be off.

Day mode and night mode of the interface are shown as below:
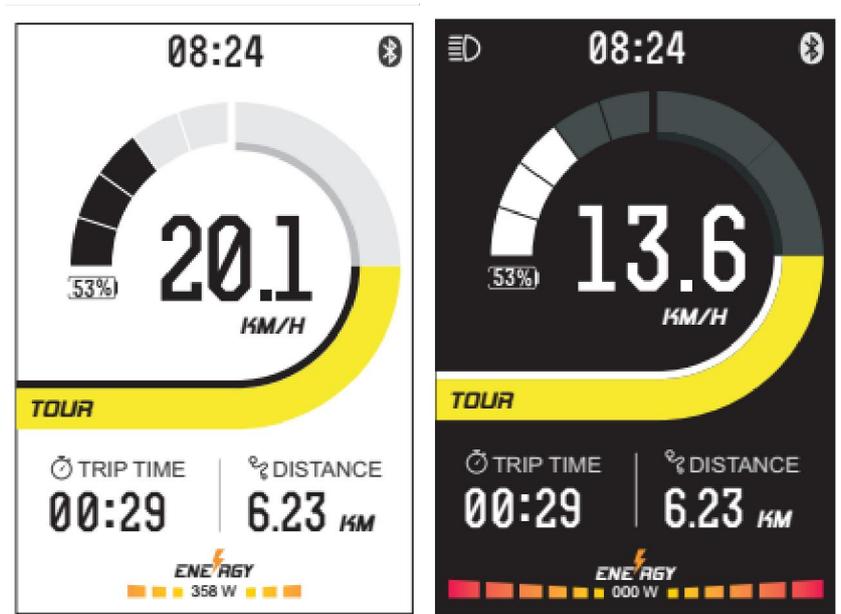
6.7 Power indicator

The battery power should show 5 levels according to the battery capacity.

When the battery power is less than 5%, it shows level 0, the icon of the battery will turn to yellow and blink to remind the user to charge the battery immediately.

The battery power is shown as below:
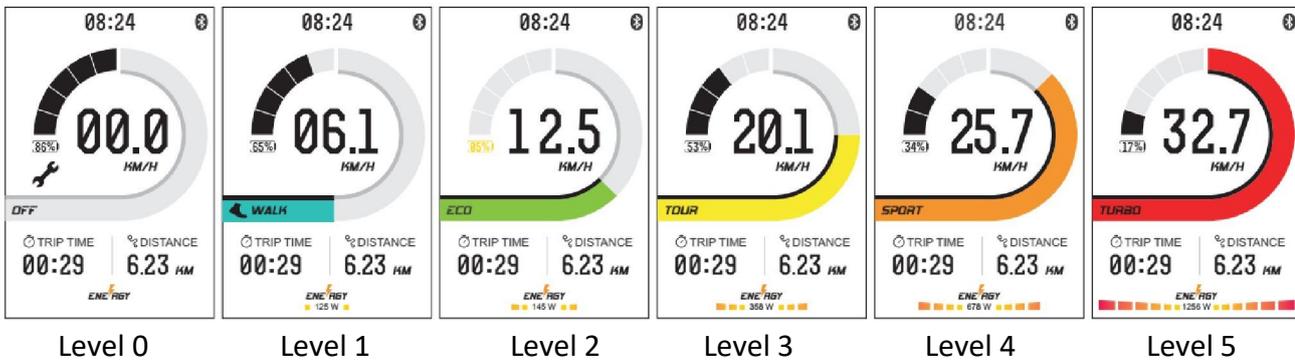

| Level 0 | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |

6.8 power indicate

Whilst riding, the display will show the current power value and 5 levels to indicate the level of the power.

0-5 level from low to high. Level 0 means no assist power.

| Level 0 | Level 1 | Level 2 | Level 3 | Level 4 | Level 5 |

7 User settings

Setting items: Unit setting, backlight setting, clock setting, password setting, time period of automatic shutdown, wheel diameter, speed limitation information, battery information, system information, reset to factory settings.

7.1 Enter setting interface

Within 10 seconds of the display being turned on, press M (for 3 seconds), the system enters the data setting interface. On this status users can set and view the parameters of the display.
Hold down the **M** button (for 3 seconds) press and save the user settings, if nothing happens for 10 seconds, the display returns to the normal riding state, do not save the parameter settings.

On the user setting interface press **M** to confirm, use the up and down arrows to switch the setting items.

7.2 Exit Settings

Select exit and press the M button to save the setting parameter and exit setting interface.

7.4 Unit setting

Unit: Metric/inch

To enter the unit setting interface, press the up and down arrows to
select Km/H or Mph.
To save your desired unit measurement press the M button.

Screen shown below.

7.5 Back light setting

Interface Brightness

Brightness: There are 5 adjustable backlight levels. Level 1 is the darkest level, Level 5 is the brightest level. Select the chosen level of the backlight, press select to confirm and turn back to backlight setting interface.
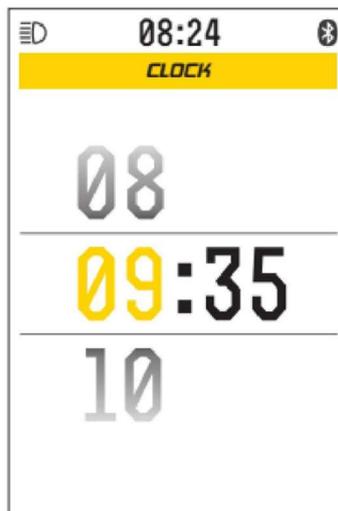
Interface shown as below:

7.6 Clock Settings
Time Format: Hour, Minute.

Enter clock setting interface, choose "Hour" automatically, use the up and down arrows to set the hour, press M to change the setting from hours to minutes. A short press on the M button will exit the settings menu.

Interface shown below:

7.7 Password Setting

Exit: exit START PASSWORD interface
Start Password: ON/OFF
Password Function: ON/OFF
Setting Password: Setting password

Use the up and down arrows to select exit or set the password. Press the M button to exit and set the interface.
Choose "start password" press the M button to switch on or off.
Choose "setting password" press the M button to select the digit of the password from left to right, use the up and down arrow to change the password number of the selected digit.
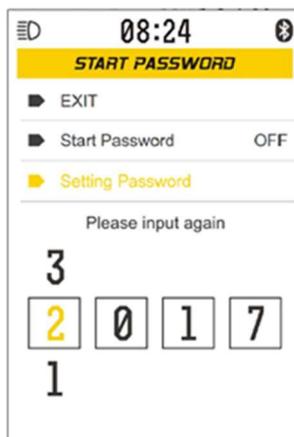Press the M button to verify the original password after the 4-digit password is selected if the original password is not correct. Display exit to SET the interface.

When the original password is entered correctly, change to new password interface to enter the new password.
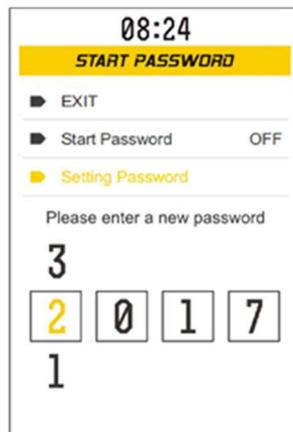
When the new password is entered correctly, prompt to enter again.

Confirm new password is correct, the display will revert to the password input interface, you then need to enter your password to revert to riding interface.
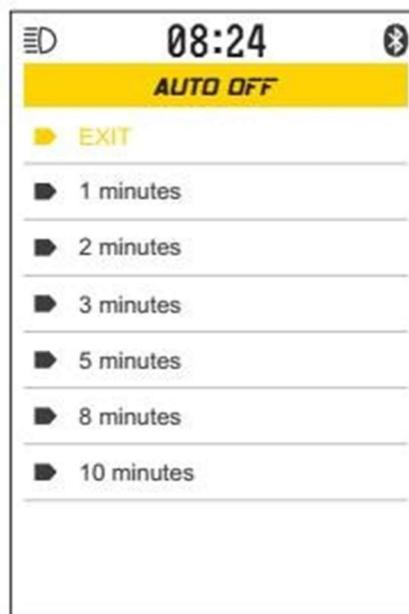
7.8 Automatic shutdown timing setting

Exit: Exit AUTO/OFF Interface:

An automatic shutdown will occur if the bike is not being used after a time set.
Use the up and down arrows to select EXIT or an auto shut off time, either 1 minute, 2 minutes, 3 minutes, 5 minutes, 8 minutes or 10 minutes. Select EXIT and a press he M button which will return the display to the SET interface.
After the setting is completed, on the riding interface, when the speed is 0 and there has been no use of the bike, it will shutdown automatically.
The display can only be turned on using the power button.

7.8 Automatic shutdown time setting

Exit: exit AUTO OFF interface；

Short press ∧/∨ to select Exit, 1 minutes, 2 minutes、3 minutes、5minutes、8minutes、10 minutes，Choose Exit and short press M̄ to return to SET interface. Choose 1 minutes、2minutes、3 minutes、5 minutes、8 minutes、10 minutes save the settings and return to SET interface.
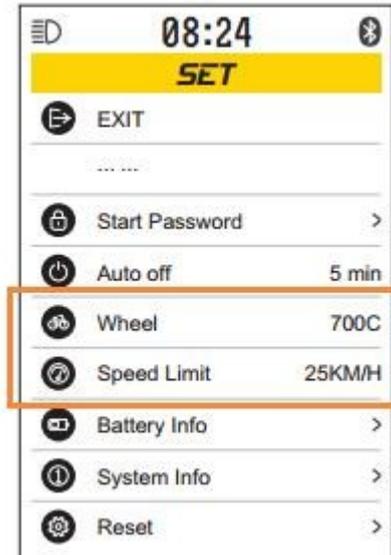
After setting is done, on the riding interface, when the speed is 0 and no operation of the display, time

reaches the setting, display will shut down automatically. Display can only be turned on by press the ⏻ button.
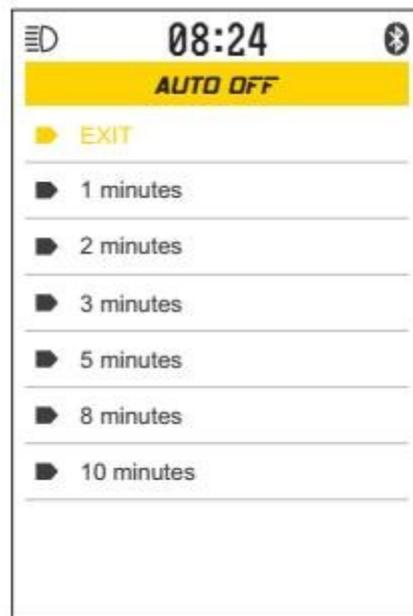
7.9 Wheel diameter and speed limitation information

Shown as below:

Wheel diameter and speed limitation formation can only set by the settings computer. Users can only

view without setting.

7.10 Battery information

Exit: Exit BATTERY INFO interface；
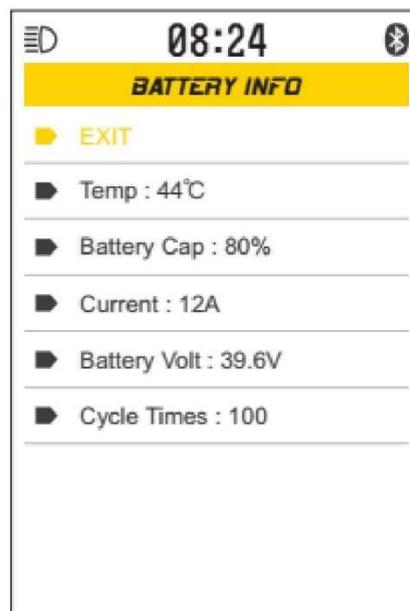
Temp: Temperature of the battery

Battery Cap: Capacity of the battery

Current: Current

Battery Volt: Voltage of the battery.

Cycle Times: Time of the battery recharges; Short press M, to return to user setting interface.

Interface shown as below:

7.11 System information review

S/N: Serial number of equipment

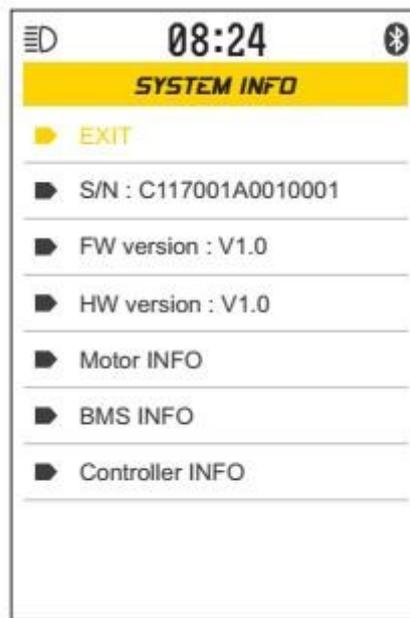FW version: Firmware version number

HW version: Hardware version number

*Motor INFO: (Need support from controller)

*BMSINFO: (Need support from controller)

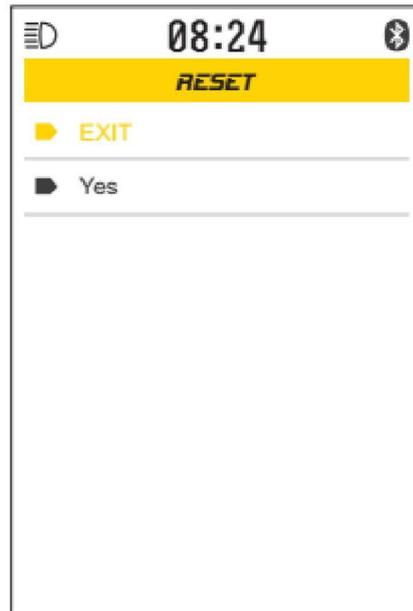*Controller INFO (Need support from controller)

Short press ∧/∨ to select Exit, then short press M to return to user setting interface.

To return to factory settings and return to user setting interface choose Exit and press SET interface.

Interface shown as below:
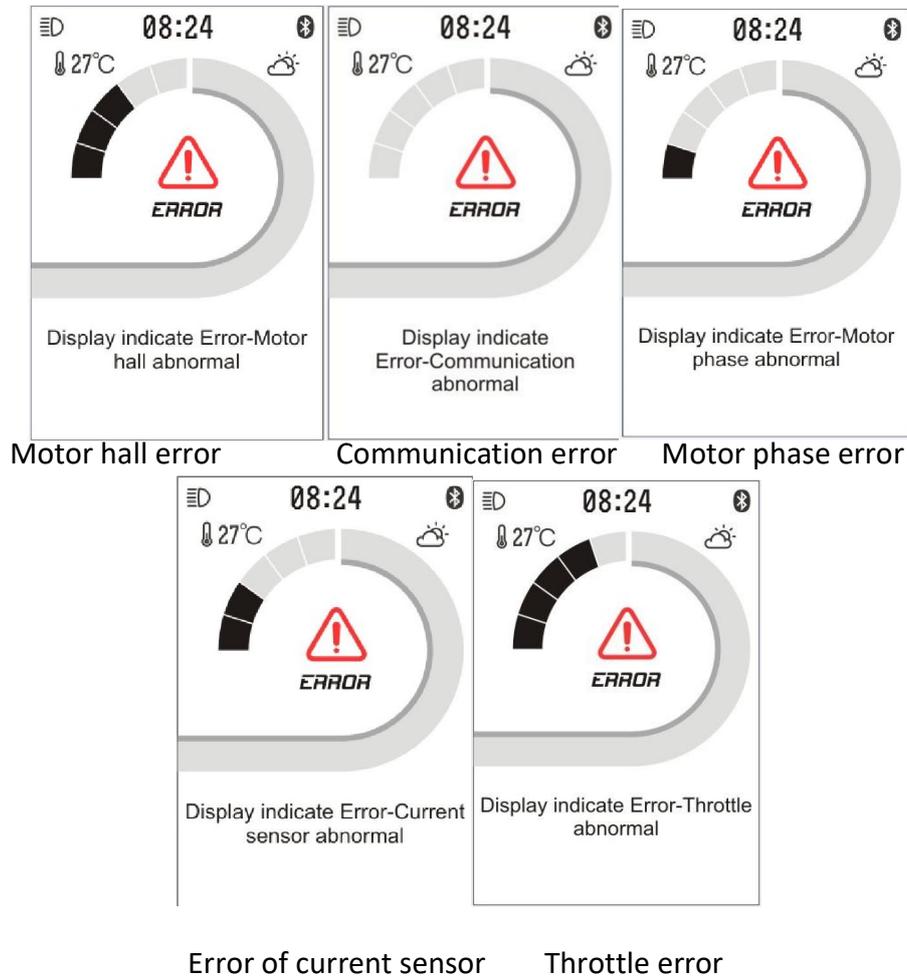
7.12 Reset

8 Data clearance

Within 10 seconds of turning on the display, hold down the M button to enter the data clearance interface, press to clear trip mileage (TRIP), riding speed (AVG) and maximum speed (MAX). Then the display will pop up again to clear all listed items. The display will return to riding interface without data clearance if no operation in 10 seconds.

Shown the data clearance interface as below:
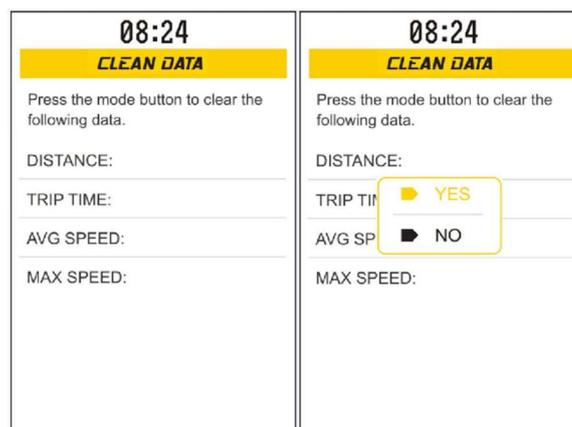
9 Error information

The display can alert the bike failure. If a failure is detected the display interface will show the error code. This is pictured below:

Motor hall error   Communication error   Motor phase error

Error of current sensor   Throttle error

Note: When the failure is clearing the display will turn to normal riding interface automatically.

10 Wire definition
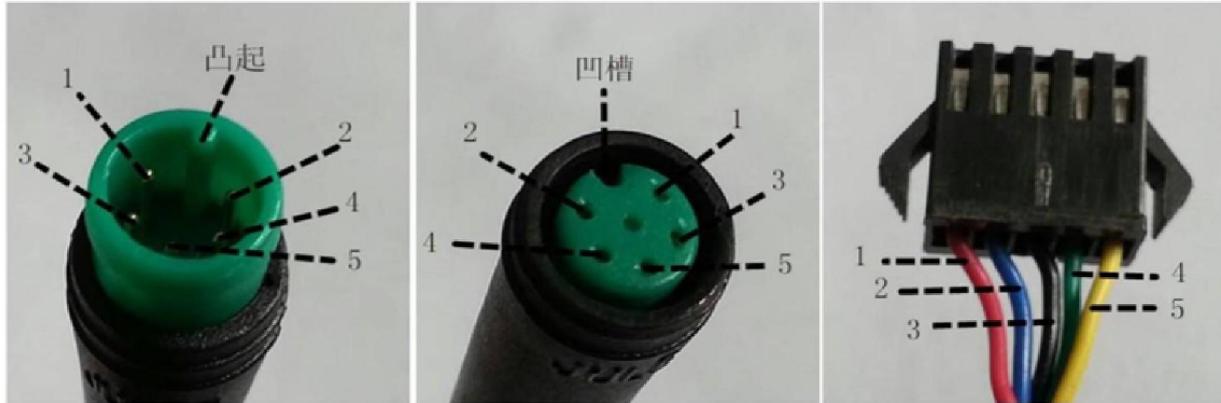
Wires out of the display   wires connect to the display   connector to controller

Table 1 wires definition

No.	Color	Function
1	Red(VCC)	VCC
2	Blue(Kp)	Power control wire of the controller
3	Black (GND)	GND of display
4	Green(RX)	Data receive of the display
5	Yellow(TX)	Data transmit of the display

C. Note

When using the display pay attention to the security. Do not plug the display in and out the when the power is on.

Try to avoid usage in harsh environments like heavy rain, heavy snow, and strong sunlight.

When the display cannot be used normally, it should be sent to repair as soon as possible.