Super Electric™

TFT320 display specification

Product:	TFT LCD Display
Model	TFT 320
Client:	
Client audit:	

Supplier:	Zhejiang Super Electric Tech. Co., Ltd.
Address:	Cangyan, Shengzhou, Zhejiang Prov. China.312400
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1. Product Name

- ✧ TFT LCD display
- ✧ Model : TFT320

2. Supplier

- ✧ Zhejiang Chaoji Electric Tech. Co., Ltd

3. Electrical Parameters

- ✧ 3.2inch IPS screen
- ✧ 24V/33V/36V/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 : -20～70℃, Storage temperature : -30～80℃

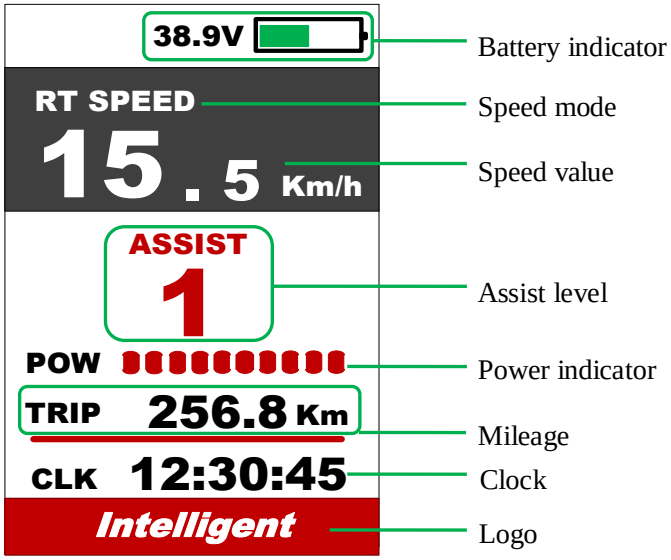
4. Dimensions & Material

- ✧ Product shell is ABS, transparent window is made with high strength Acrylic and its hardness value is equivalent to tempered glass
- ✧ Dimensions : host/L92mm*W60mm*H14mm

5. Features

- ✧ High-contrast 3.2inch IPS colorful matrix screen.
- ✧ Suitable for low temperature，Max -20℃.
- ✧ Ergonomic external button design, easy to operate.
- ✧ **Speed display :** AVG SPEED, MAX SPEED, SPEED(Real-time).
- ✧ **Kilometer / Mile :** Can be set according to customers' habits.
- ✧ **Smart battery indicator :** Provide a stable power prompt through an optimized algorithm, and the power is not affected by motor start-stop fluctuations. If the system supports battery communication, it can display an accurate percentage of power.
- ✧ **5-level backlight brightness adjustment**: according to customer preferences set the backlight brightness, level 1 is the darkest, level 5 is the brightest.
- ✧ **9-level Assist :** 3-level/5-level/9-level optional.
- ✧ **Mileage indicator :** Odometer/Trip distance/ Riding time/Continuous mileage (with battery communication function)..
- ✧ **Time indicator:** built-in battery, provide a time indicator.
- ✧ **Power indicator :** real time power indicator, digital or analog.
- ✧ **Error code indicator:** provide text description
- ✧ **Software upgrade :** Software can be upgraded through UART.
- ✧ **USB charging port :** 5V/500mA

6. TFT screen instructions



Battery indicator: 5 levels of power indication, the voltage value of each segment can be set according to customer's need

Speed mode: average speed, maximum speed, real-time speed

Speed value: display speed value, Km / h kilometers per hour, MPH miles per hour

Headlight indicator: display when headlight is on

Brake tips: display sign ⓘ when the brake is off

Assist level: display the current power-assisted gear, 0 ~ 9, where 0 is neutral without assistance, and 1-9 corresponds to power-assisted gear.

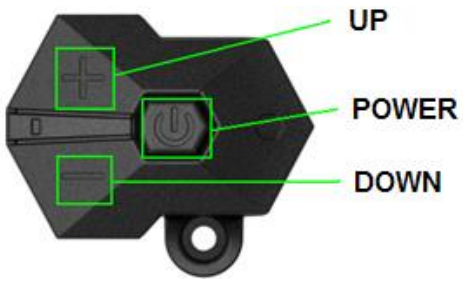
Fault prompt: display a sign when a fault is detected

Power indicator: display real-time power (digital or graphic mode is optional)

Mileage indicator: divided into single mileage, accumulated mileage, riding time

Clock display: display clock information

7. Functional Description



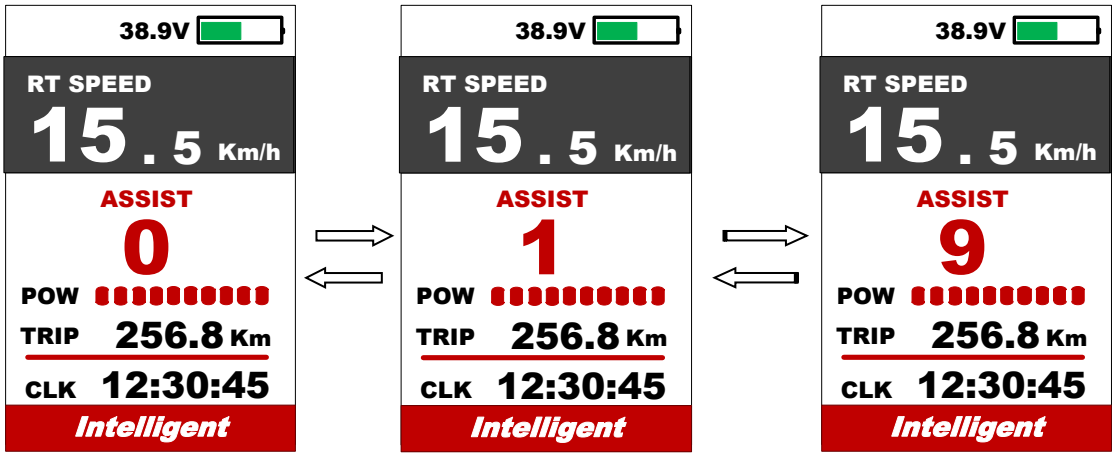
7.1 Power On/Off

When the display is off, press and hold Power button for 1 second, the display starts to work, and the motor power is turned on. In the power-on state, press and hold Power button for 1 second, the power of the display is turned off, and the power of the motor is also turned off. If you have ridden for 5 minutes (time can be set by the user) without operating the display, the display will automatically turn off.

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

7.2 Assist level operating

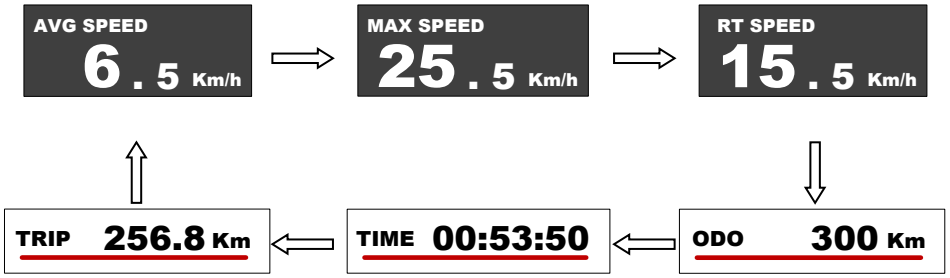
In manual shift mode, short press UP/DOWN button can change the assist level. The lowest assist level is 1, top assist level is 9, the display defaults to level 1 when it is turned on. 0 for neutral. Level quantities can be adjusted according to the customer requirements.



Assisted level selection display interface

7.3 Speed & Mileage mode switching

Short press POWER button can change the speed and mileage mode, AVG Speed→MAX Speed→RT Speed →ODO→ Time→ Trip.



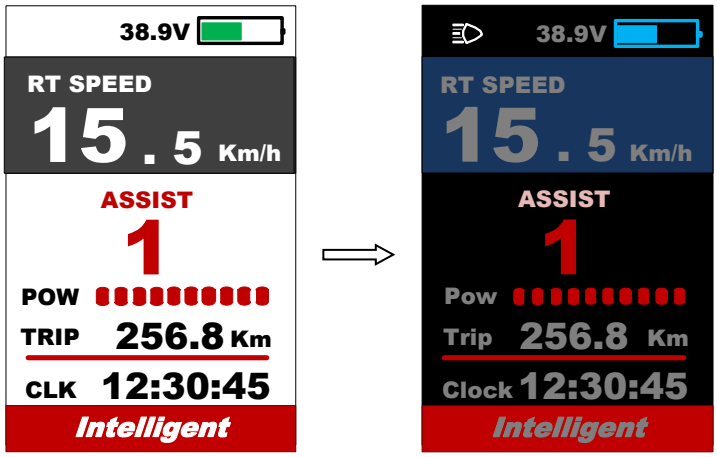
Speed mode and mileage mode switching display interface

**If there is no key operation for 5 seconds, the display will return to the Real-Time speed status automatically.

7.4 Display mode switching

Press and hold UP button for 1 second, the display will switch to day / night mode. Press and hold UP button again for 1 second, the display will switch the display mode.

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



Daytime mode night mode

The backlight brightness of the display can be adjusted in 5 levels. Users can set it according to their needs. For details, see 8.1-Backlight Brightness.

7.5 Data cleanup

Press and hold UP & DOWN buttons together for 1 second can reset several temporary data, temporary data include **AVG Speed / MAX Speed / Trip / Time**.

The temporary data will not be cleared when the display is turned off or the vehicle power is turned off.

7.6 USB charging port

This display provides USB charging port for mobile devices, with charging parameters of DC 5V 500mA.

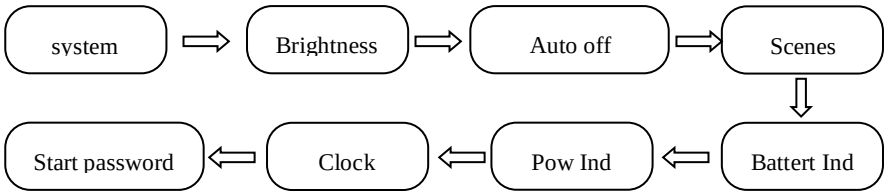
8. MENU parameter setting

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

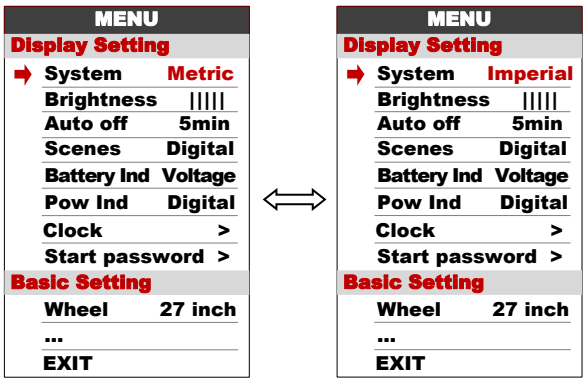
In the MENU setting state, press the UP/DOWN button to select the required adjustment item (the parameter changes to red in day mode and yellow in night mode), short press the POWER button to set the parameter to blink, and press the UP/DOWN button to adjust parameter setting value, short press the POWER button to save the setting, select BACK to return to the previous menu, select EXIT or press the POWER button twice consecutively to exit the MENU state.

*In the parameter setting state, if the key operation is not carried out for 30 seconds, the display will automatically exit the menu state. In the riding state (speed indication not available 0) cannot enter the menu interface. If start riding (speed is not 0) in menu interface, will exit menu automatically. In the advanced settings interface ,press the POWER button twice continuously, cannot exit menu.

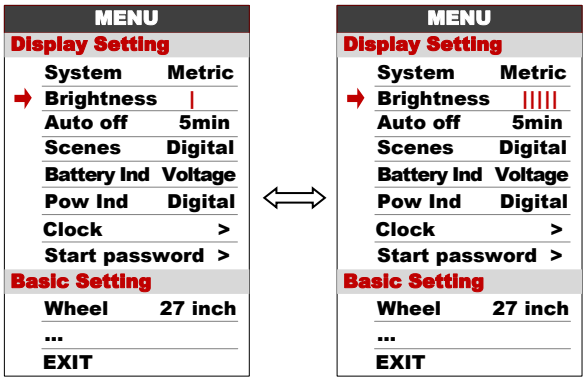
8.1 The display setting parameter are as follows:



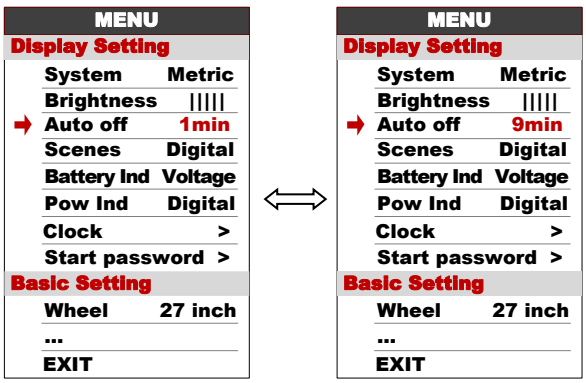
✧ **System metric / imperial** : Press UP/DOWN button to switch between Metric / Imperial.



✧ **Backlight brightness** : Press UP/DOWN button to change the brightness of the backlight I~IIIII , I is the darkest，IIIII is the brightest

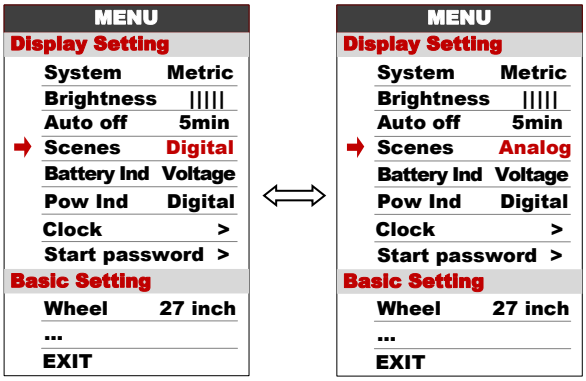


✧ **Auto off :** Press UP/DOWN button to change the auto power off time, from 1 to 9min, the number represent time (minutes) to shutdown, default value is 5 min.



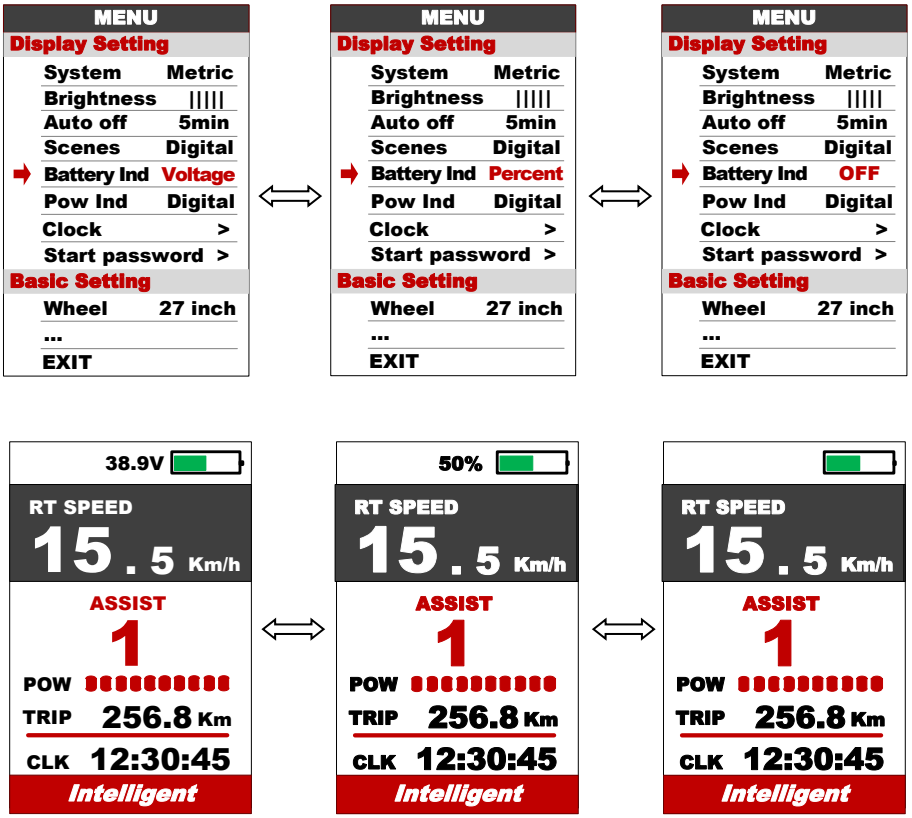
✧ **Scenes** : Press UP/DOWN button to select Digital / Analog to set digital scene or analog scene display.

*Current display only support Digital scenes for now, Analog scenes will be supported for future.



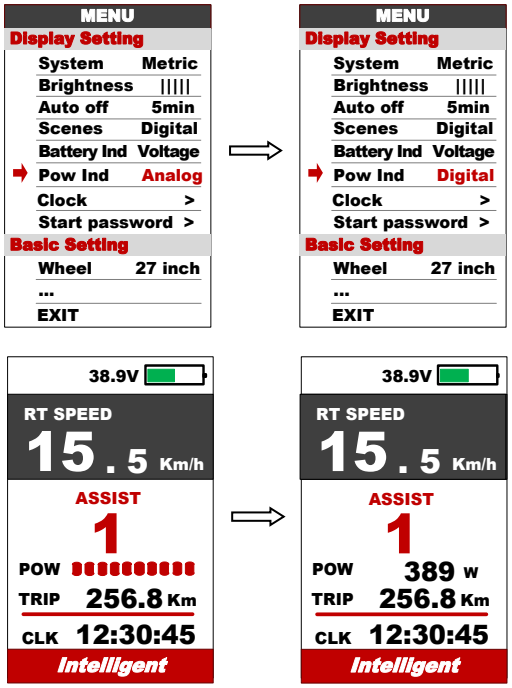
✧ **Battery Ind** : Press UP/DOWN button to select Voltage / Percentage / OFF, the power position of the display correspondingly refers to voltage value / power percentage / off display .

* Power percentage display requires system to connect battery communication.

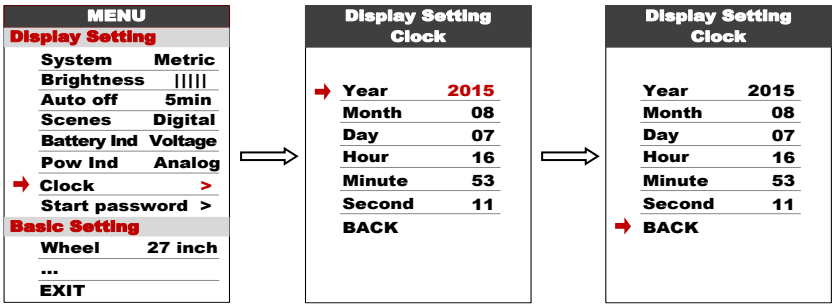


Voltage Percentage OFF

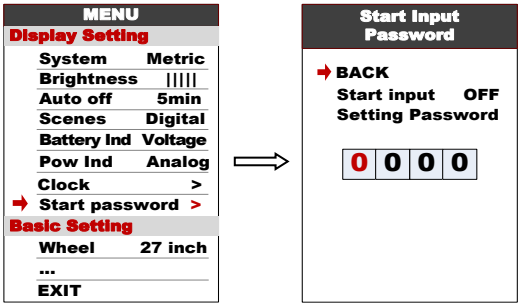
✧ **Pow Ind (battery output power)** : Press UP/DOWN button to select Analog / Digital , the power indicator position corresponds to the power indicator bar / power value.

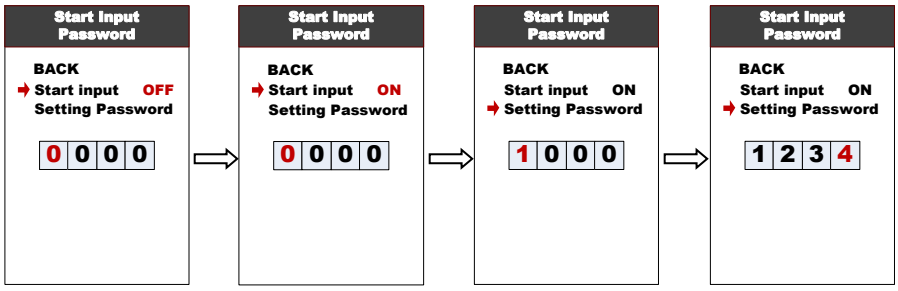


✧ **Clock setting** : press POWER button to get into the clock setting menu, press UP/DOWN button to set Year/Month/Day/Hour/Min/Sec. After setting, select BACK to return to the previous level.

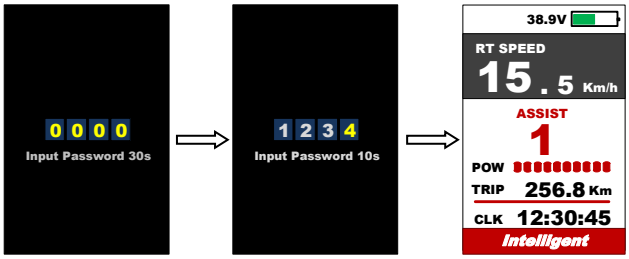


✧ **Start password setting** : Short press POWER button to enter the power-on setting password interface, press UP/DOWN button to turn on the Start input option and select OFF / ON, that is, turn off the password or turn on the password. If you need to turn on the password, select ON to set the password value. Take 1234 as an example to set the power-on password. Press the UP/DOWN button to adjust the value. Select BACK and press the key to return to the previous level.

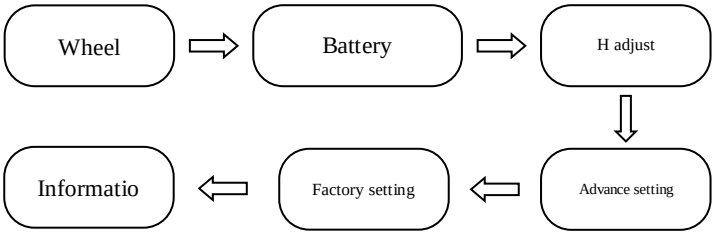




You need to input the right password before start within 30 seconds, display will power off automatically if the password was wrong.

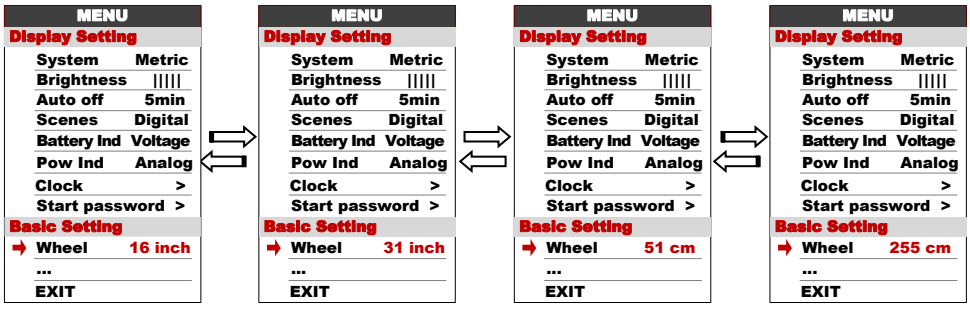


8.2 Basic Setting

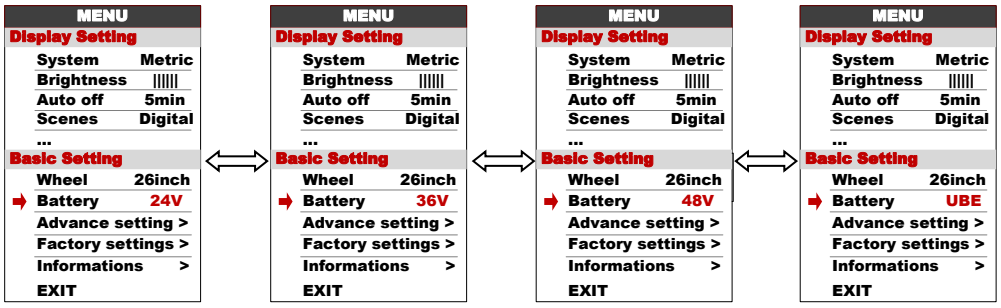


*Note: Press DOWN button to move the red arrow to Wheel ... ,short press POWER button ,can show all items of the Basic Setting.

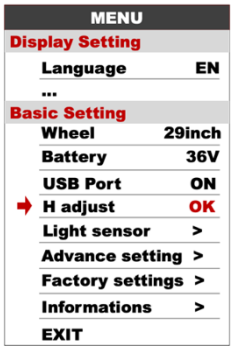
✧ **Wheel selection** : Press UP/DOWN button can change the wheel setting, optional wheel diameter is 16/18/20/22/24/26/27/27.5/28/29/30/31 inch, 51cm~255cm (represent wheel circumference ,this needs controller support); wrong wheel diameter selection will cause abnormal speed.



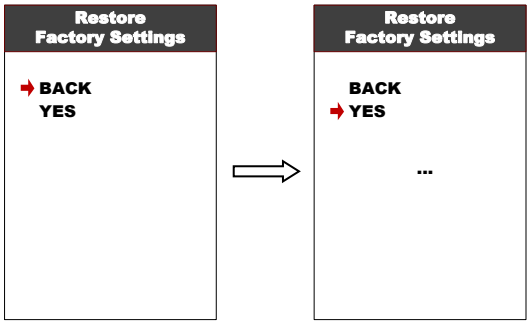
✧ **Voltage selection : battery** , Press UP/DOWN button will change battery voltage setting, optional value is 24V/36V/48V/UBE， UBE means user define value.



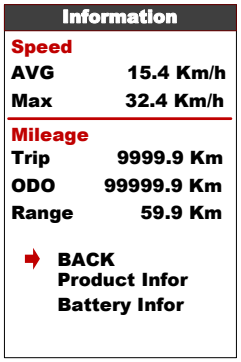
✧ **H adjust :** Press UP/DOWN button will adjust horizontal position, press POWER button will start adjustment. See the right side of the setting result, it will show the OK or Fail. (This setting is only suitable for TOR mode)



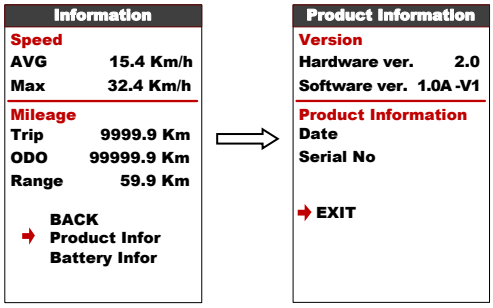
✧ **Factory setting** : Press POWER button enter Restore Factory settings interface, selecting YES will restore the factory settings. Selecting BACK to return to the previous menu



✧ **Information**: click to enter the information interface to display the speed mode and mileage mode value information.

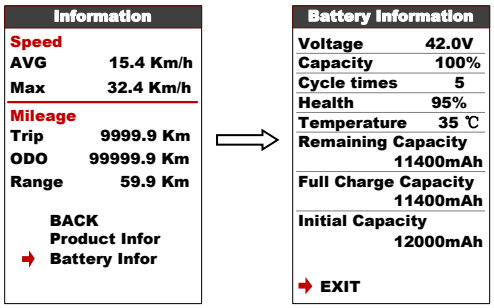


✧ **Product info** : Click to enter the product information interface, and the version hardware (Hardware ver.), software ver.(Software ver.), product date(Date) and Serial No.(Serial No.) will be displayed.



✧ **Battery info** : Click to enter the battery information interface ,it will display the actual battery voltage (Voltage), battery capacity percentage (Capacity), cycle times (Cycle times), battery health (Health), battery internal temperature (Temperature), remaining capacity (Remaining Capacity) , full charge capacity (Full Charge Capacity) and initial capacity (Initial Capacity) .

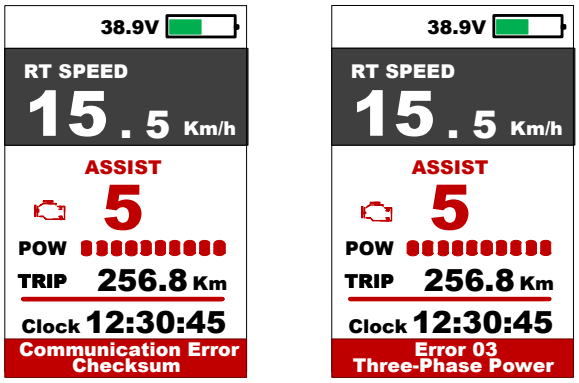
*****These information needs to be supported by battery communication.



9. Error Code define

TFT320 can show warning message, icon shows on the screen, and show error code at the bottom of the screen, error code from 01~07, definition see the table below.

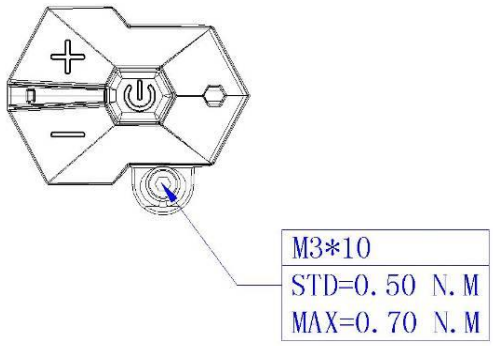
Error Code	Error description	Handle
0x01	High Voltage	Check if the battery voltage is too high
0x02	Low Voltage	Check if the battery voltage is too low
0x03	Over Current	Check if the motor load is too large
0x04	Motor Hall	pedal stall feedback failure
0x05	Hall Signal	Check if the sensor signal is normal
0x06	MOS	Check if the controller MOS is broken
0x07	Three-Phase Power	Check if the motor coil is normal
0x08	Reserved	
0x09	Reserved	
0x0A	High Temperature	Stop the motor and continue after the temperature has dropped.
	Communication Error	Reseat the motor connection cable



Fault prompt warning display interface

10. Assembly instructions

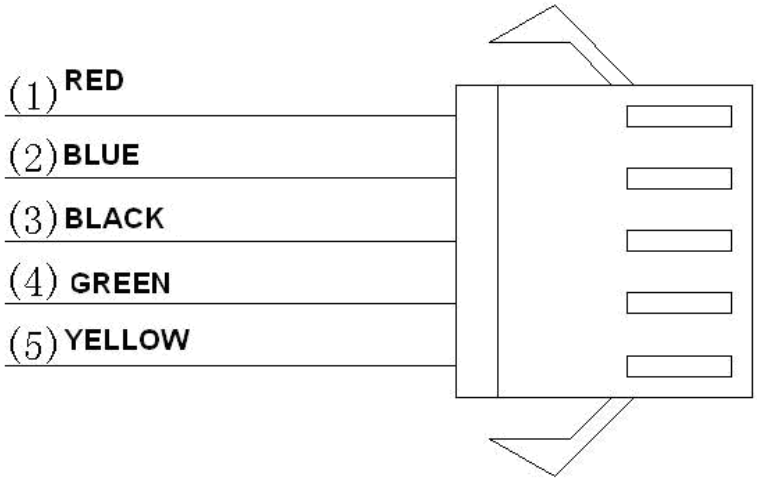
Please refer to the following figure for the assembly of instrument screws. Please pay attention to the screw's torque value, damage caused by excessive torque is not within the scope of the warranty.



Clamp is 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.

11. Outlet definition

The color of 5-core waterproof line is < red, blue, black, green and yellow > and the line sequence is defined as follows:



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