

# Product Specification

04/2018

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**Product** TFT LCD Display

**Mode** APT TFT850C

**Abbreviation** 850C

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**Client**

**Customer**

**audit**

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### 3. 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 : -20~70°C, Storage temperature : -30~80°C

### 4. Dimensions & Material

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



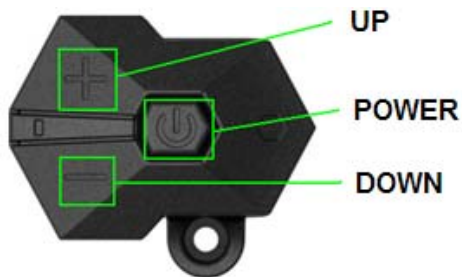
## 5. Features

- ✧ Suitable for low temperature, Max -20°C.
- ✧ 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 customers' habits.
- ✧ **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**
- ✧ **Speed limit value indicator**
- ✧ **Error code indicator.**
- ✧ **Light sensor (Optional )**
- ✧ **Software upgraded** : Software can be upgraded through UART.
- ✧ **USB charging port** : 5V/500mA

## 6. TFT screen instructions



## 7. Functional Description



### 7.1 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.

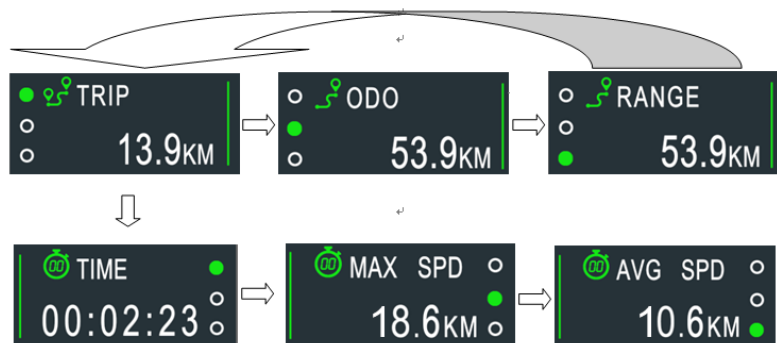
### 7.2 Assist level operating

Short press **UP/DOWN** button can change the assist level. Available assist levels can be set in the advanced setting. There are 5 assist levels by default.



### 7.3 Speed & Mileage mode switch

Short press **POWER** button can change between the speed and mileage info, **TRIP**→**ODO**→**RANGE**→**TRIP**→**TIME**→**MAX SPEED**→**AVG SPEED**



\*\*If there is no operation for 5 seconds, display will return Speed (Real-Time) display automatically.

### 7.4 Headlight/backlight On/Off

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

\*Although the motor does not work when the battery voltage is low, The headlight can still work for a while.

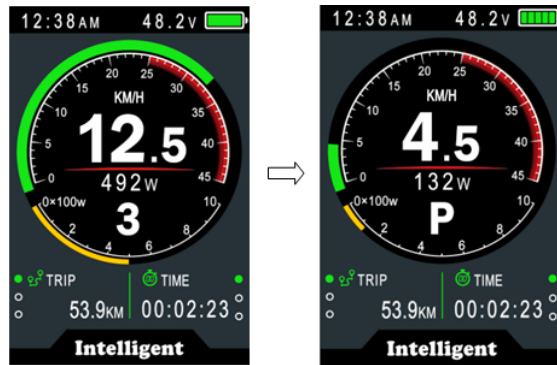


Daytime mode

night mode

## 7.5 Walking mode (6km/h)

Press and hold **DOWN** button can get into walking mode, quit the mode when the button is released.



\* This feature needs to be supported by controller.

## 7.6 Temporary data clearance

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

\* These temporary data can't be erased by powering off.

## 8. Parameter setting

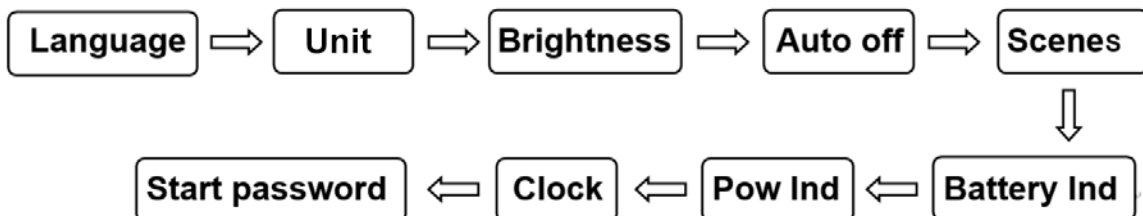
Double press **POWER** button (press interval less than 0.3 second) can get into setting menu, press **UP/DOWN** buttons to change the parameter setting, press **POWER** button can switch to next item. Double press **POWER** button will exit from the setting menu.

\* 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.



### 8.1 Language: Default EN, Unadjustable

MENU	
<b>Display Setting</b>	
Language	EN
System	Metric
Brightness	
Auto off	8 min
Scenes	Analog
Battery Ind	Percent
Pow Ind	Current
Clock	>
Start Password	>
<b>Basic Setting</b>	
...	
EXIT	

### 8.2 System unit: Press Up / Down button to switch between Metric / Imperial.

MENU		MENU	
<b>Display Setting</b>		<b>Display Setting</b>	
Language	EN	Language	EN
System	Metric	System	Imperial
Brightness		Brightness	
Auto off	8 min	Auto off	8 min
Scenes	Analog	Scenes	Analog
Battery Ind	Percent	Battery Ind	Percent
Pow Ind	Current	Pow Ind	Current
Clock	>	Clock	>
Start Password	>	Start Password	>
<b>Basic Setting</b>		<b>Basic Setting</b>	
...		...	
EXIT		EXIT	

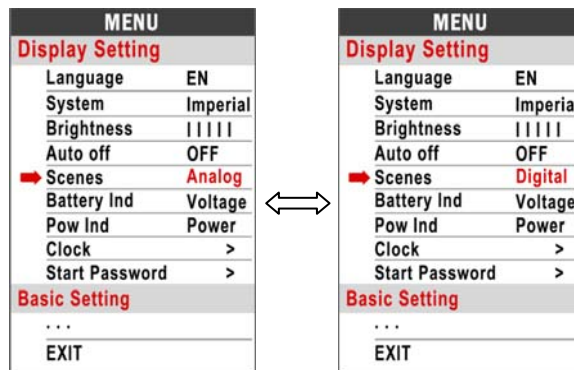
### 8.3 Brightness : Press Up / Down button to change the brightness of the backlight, | is the dimmest, ||||| is the brightest.

MENU		MENU	
<b>Display Setting</b>		<b>Display Setting</b>	
Language	EN	Language	EN
System	Imperial	System	Imperial
Brightness		Brightness	
Auto off	8 min	Auto off	8 min
Scenes	Analog	Scenes	Analog
Battery Ind	Percent	Battery Ind	Percent
Pow Ind	Current	Pow Ind	Current
Clock	>	Clock	>
Start Password	>	Start Password	>
<b>Basic Setting</b>		<b>Basic Setting</b>	
...		...	
EXIT		EXIT	

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

MENU		MENU		MENU	
<b>Display Setting</b>		<b>Display Setting</b>		<b>Display Setting</b>	
Language	EN	Language	EN	Language	EN
System	Imperial	System	Imperial	System	Imperial
Brightness		Brightness		Brightness	
Auto off	1 min	Auto off	9 min	Auto off	OFF
Scenes	Analog	Scenes	Analog	Scenes	Analog
Battery Ind	Percent	Battery Ind	Percent	Battery Ind	Percent
Pow Ind	Current	Pow Ind	Current	Pow Ind	Current
Clock	>	Clock	>	Clock	>
Start Password	>	Start Password	>	Start Password	>
<b>Basic Setting</b>		<b>Basic Setting</b>		<b>Basic Setting</b>	
...		...		...	
EXIT		EXIT		EXIT	

8.5 Scenes : Press UP/DOWN button to change the scenes, Digital / Analog ( default ) .



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



Voltage

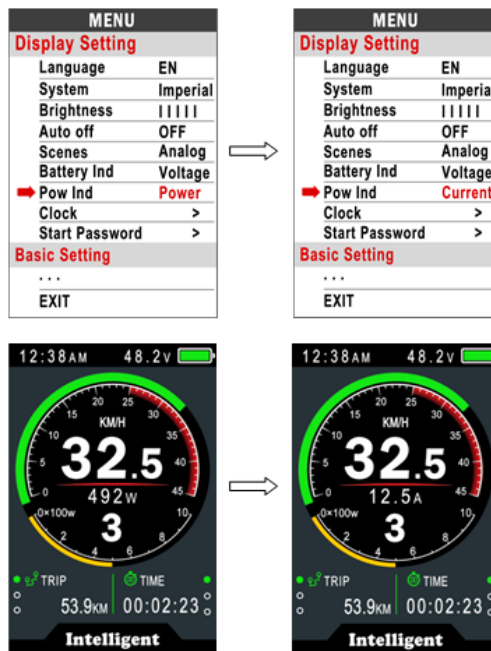
Percentage

OFF

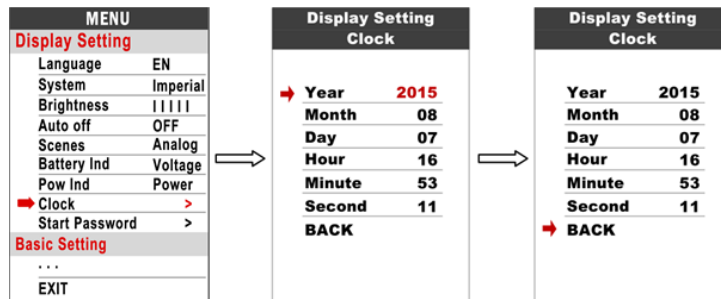


**8.7 Pow Ind** : Press UP/DOWN button to change the Power indicator, [Power](#) / [Current](#).

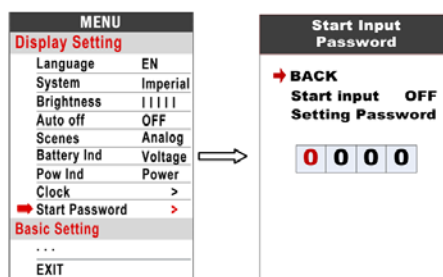
\* This data represent power output of the battery (not motor).

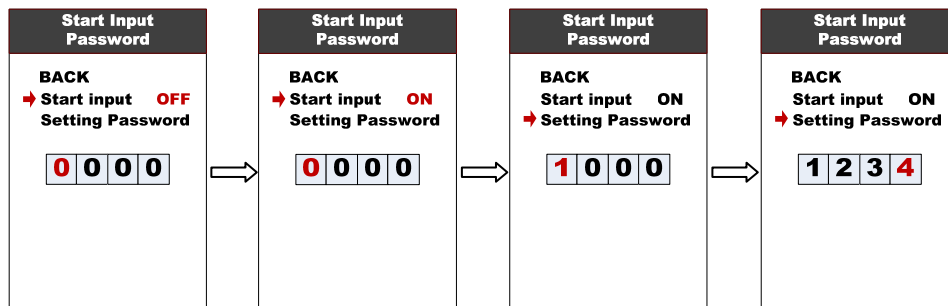


**8.8 Clock** : Clock setting, press POWER button get into the clock setting menu, press UP/DOWN button to set Year/Month/Day/Hour/Min/Sec.

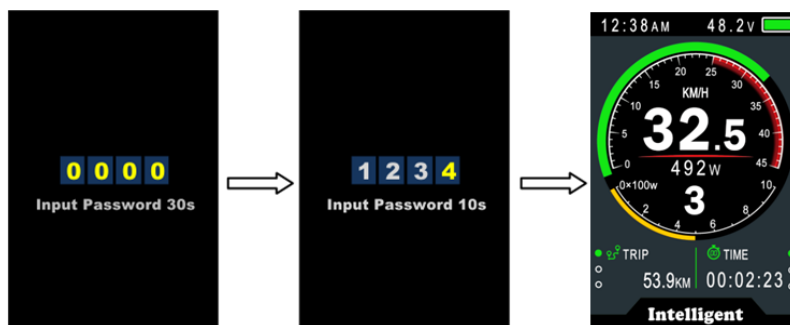


**8.9 Start password** : Press POWER button get into the password setting menu. If you turn it on, you must input right password before powering it on. To set the password, press UP/DOWN to change the number and press POWER to switch to the next digit.

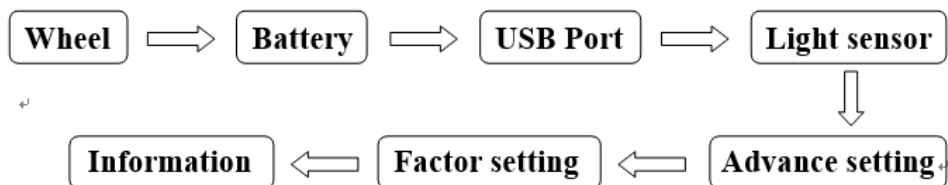




You need to input the correct password within 30 seconds, the display will power off automatically if the password is wrong.

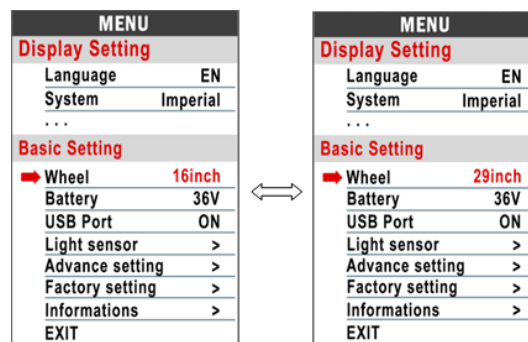


### Basic Setting

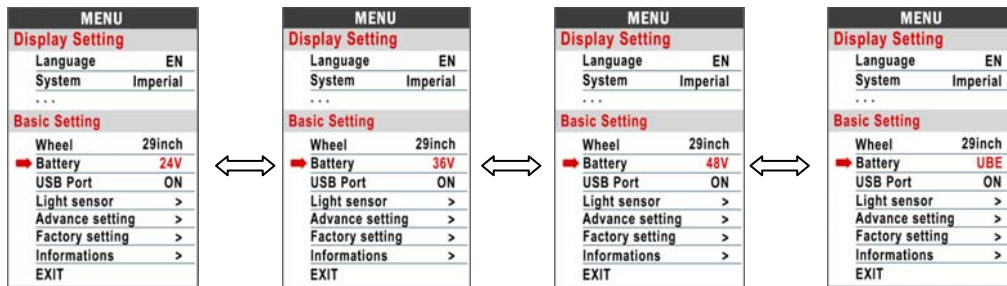


\*Press DOWN button to move the red arrow to <sup>Wheel</sup> ..., press POWER button can show all items of the Basic Setting.

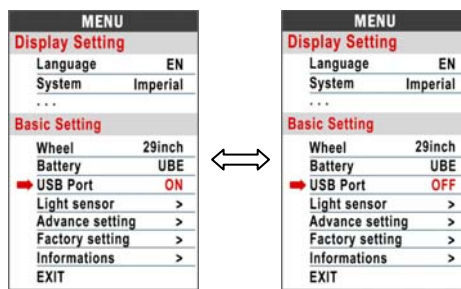
**8.10 Wheel** : Press UP/DOWN can change the wheel setting, optional wheel diameter is 16/18/20/22/24/26/27/27.5/28/29 inch.



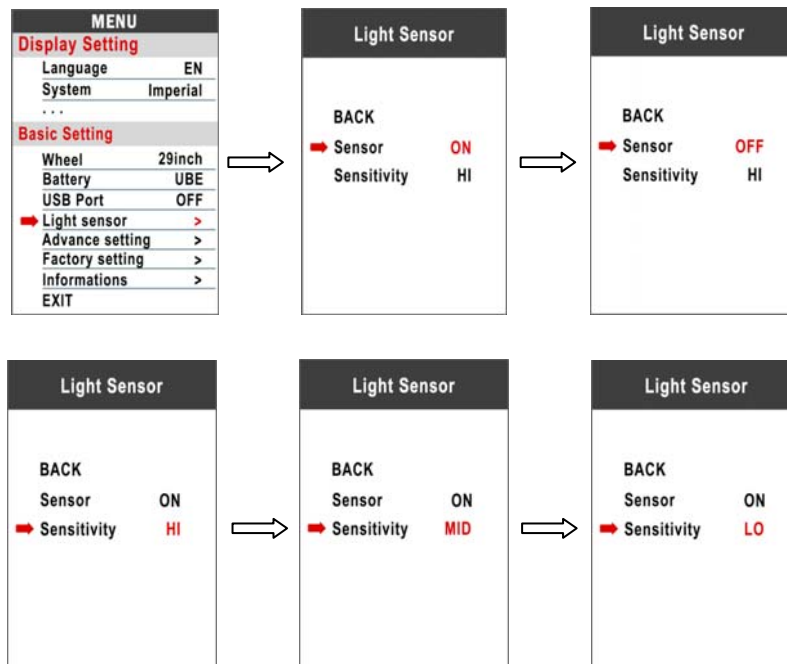
**8.11 Battery:** Press UP/DOWN will change battery voltage setting, optional value is 24V/36V/48V/UBE, UBE means user define value.



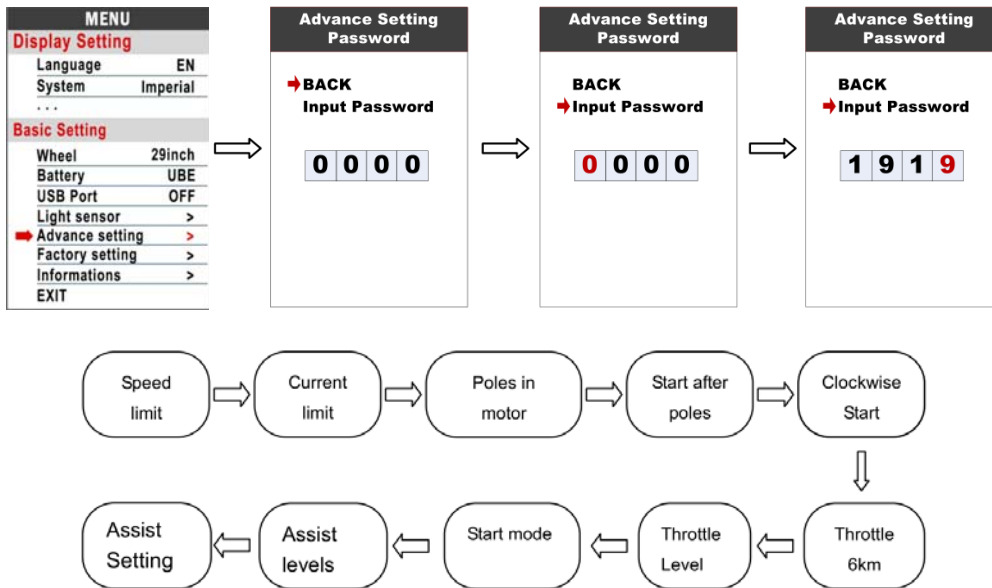
**8.12 USB Port:** Press **UP/DOWN** button to change the setting. OFF means no power on the USB port when the bike is off.



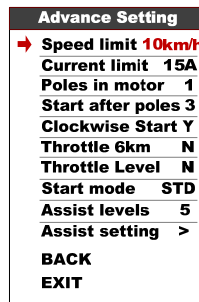
**8.13 Light sensor (Optional):** Press the UP/DOWN button to turn ON/OFF the sensor. Press the POWER button to switch to sensitivity setting. You can change between HI/MID/LO.



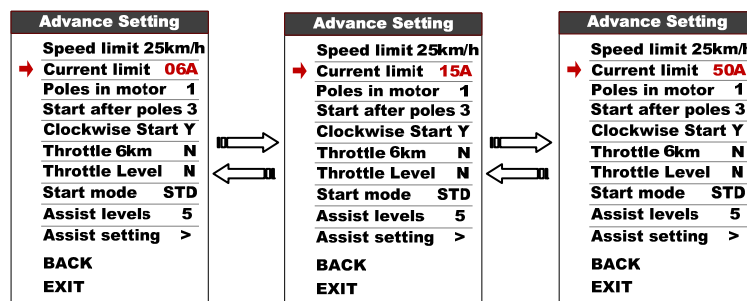
**8.14 Advance setting :** Press POWER button can get into the advance setting menu, default password is '1919'.



**8.15 Speed limit :** Press UP/DOWN will change the speed limit.

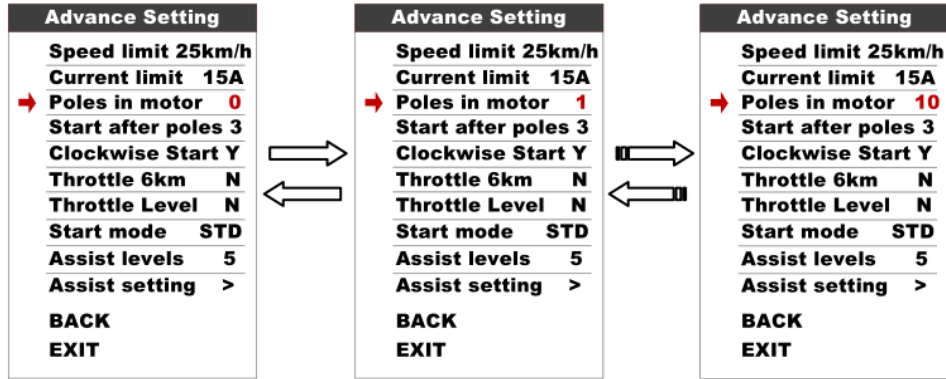


**8.16 Current limit :** Press UP/DOWN will change current limit, range 6A~50A. Default value is 15A.

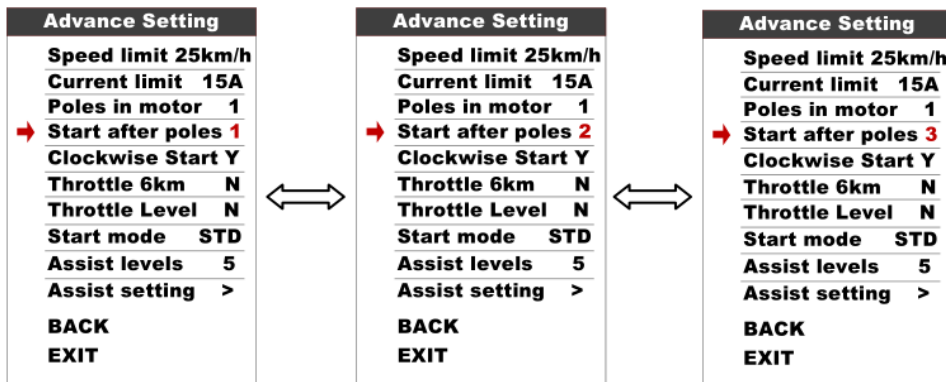


\*Speed limit and current limit are restricted by controller and motor.

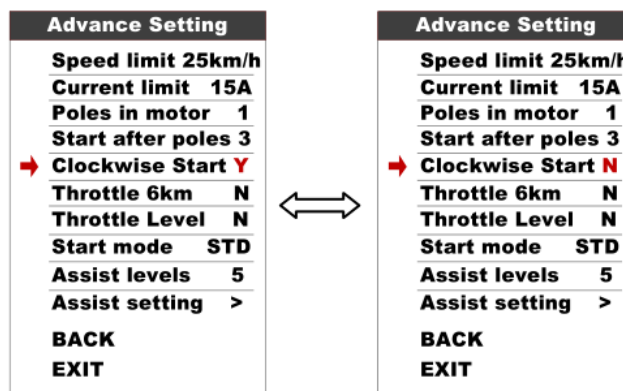
**8.17 Poles in motor** : Magnetic poles inside the motor, press UP/DOWN will change pole number, range 1~6. Default value is 1.



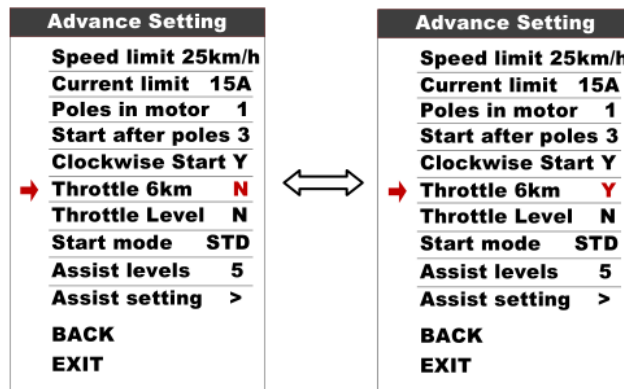
**8.18 Start after poles** : How many poles (speed sensor) need to be detected by controller before starting motor. Default value is 3.



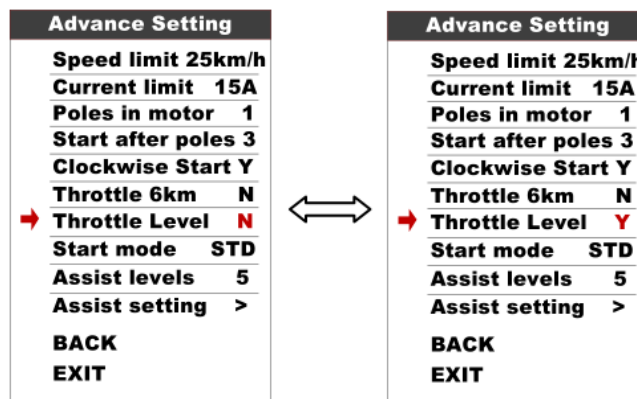
**8.19 Clockwise start** : This parameter represent speed sensor turning direction, default value is Y (forward).



8.20 **Throttle 6KM** : this parameter can set the throttle function, N represent max speed, Y represent 6km/h.

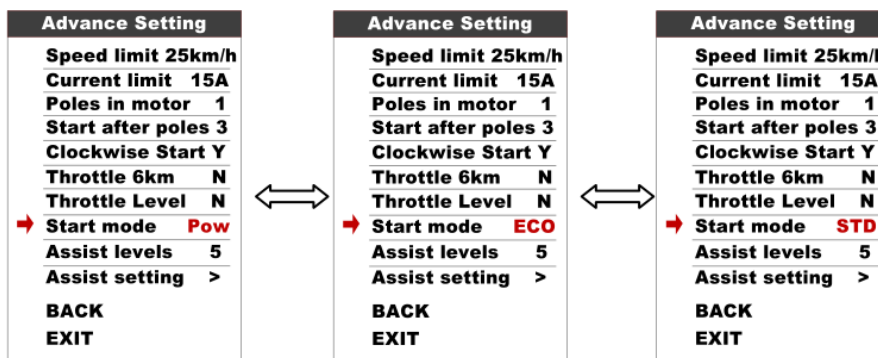


8.21 **Throttle Level** : This parameter is only valid when Throttle 6KM is set as N, Press UP/DOWN will change Y/N, N represent Throttle start max speed, Y represent throttle's speed is related to the assist level.

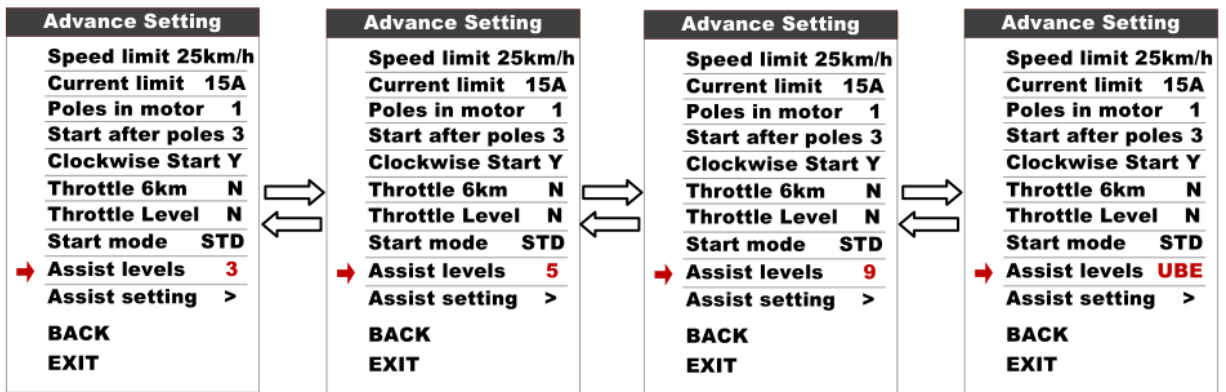


8.22 **Start mode** : Pow/ECO/STD(default) represent Power/ECO/Standard, Power mode means use maximum current when speed up, ECO mode means use minimum current.

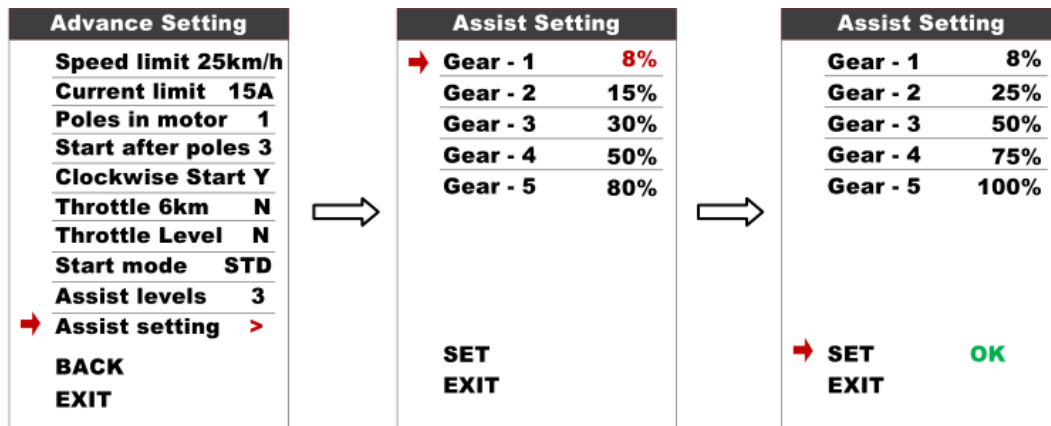
\*This function is optional, may not supported by the system.



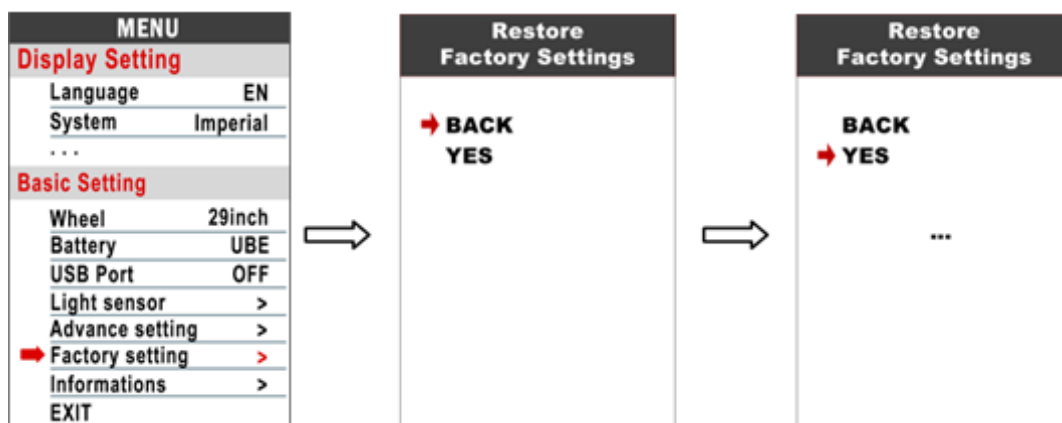
8.23 Assist levels : This parameter can customize assist levels, options are 3/5/9/UBE, UBE represent factory default settings.



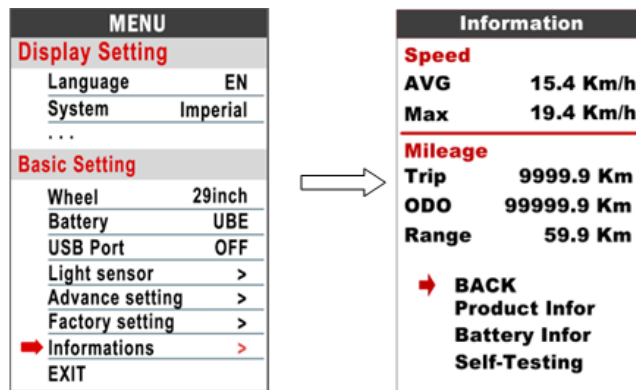
8.24 Assist Setting : This parameter can customize assist ratio.



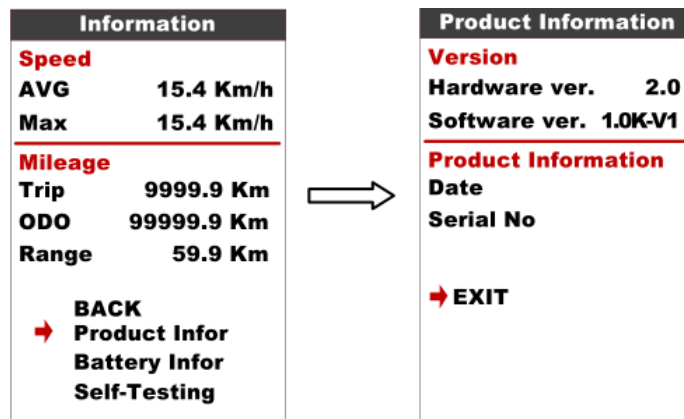
8.25 Factory setting : Press POWER button to enter Restore Factory Settings, set YES will restore all parameters to factory default values.



8.26 Information : Show information of the E-bike.



8.27 Product info : Get into this item can show hardware version software version...



8.28 Battery info : Get into this item can show all information of battery, including Voltage, Capacity, Cycle times, Health, Temperature of battery, Remaining Capacity, Full Charge Capacity, Initial Capacity, Max Charge Times.




\*These information needs to be supported by battery.





## 9. Error Code define

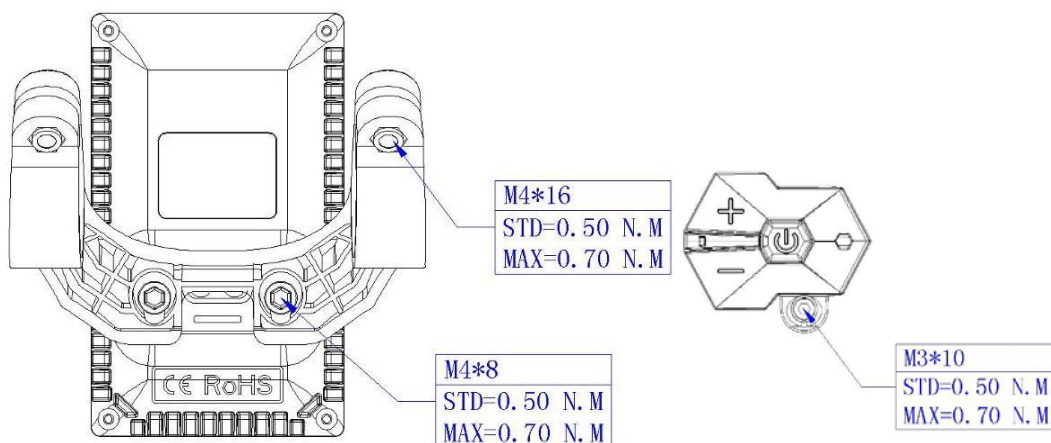
850C can show warning message,  icon shows on the screen, and show error code at the bottom of the screen, error code from 01~25, definition see the table below.

Error Code	Error description	Handle
01	Communication Error	Check the cable connection
21	Current protection	Check controller.
22	Throttle error	Check turn to connect.
23	three-phase power error	Check three-phase power line connection
24	Hall error	Check the hall connection
25	Brake error	Check the brake connection.
26-99	Reserved	Please contact the manufacturer for error definitions



## 10. Assembly instructions

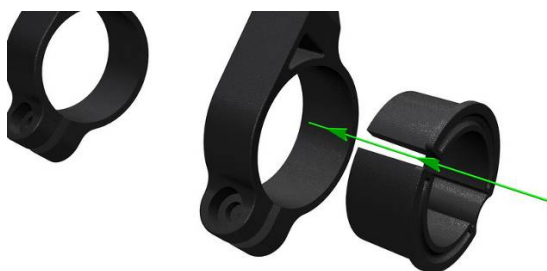
Please pay attention to the screw's torque value, damaged caused by excessive torque is not within the scope of the warranty.



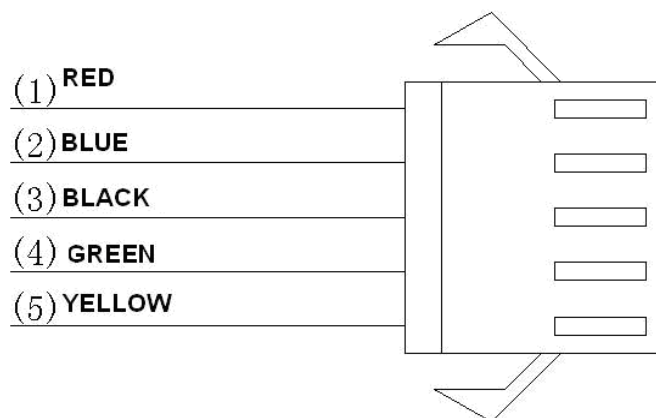
There are 2 directions for the clamp installation, forward or backward.



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.



## 11. 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)

## 12. Assist level instructions

Assist level can be customized, the highest level is 9, common used assist level see 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	

## 13. Certification

CE / IP65 (water proof) / ROHS.