

# Product Specification

06/2018

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**Product** TFT LCD Display

**Mode** APT TFT500C

**Abbreviation** 500C

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**Client**

**Customer**

**audit**

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**Supplier** Tianjin APT Science and Technology Co., Ltd.

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## 1. Product Name

- ◇ TFT LCD display
- ◇ Model : APT TFT 500C

## 2. Suppliers

- ◇ Tianjin APT Science and Technology Co., Ltd.
- ◇ Email : [yzhao@aptdevelop.com](mailto:yzhao@aptdevelop.com) [apt@aptdevelop.com](mailto:apt@aptdevelop.com)

## 3. Electrical Parameters

- ◇ 2.2inch IPS screen
- ◇ 24V/36V/48V battery supply
- ◇ Rated operating current : 40mA
- ◇ 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/L79mm\*W40mm\*H18mm



## 5. Features

- ◇ Suitable for low temperature, Max -20°C.
- ◇ High-contrast 2.2inch 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.
- ✧ **Speed limit value indicator**
- ✧ **Error code indicator.**
- ✧ **Software upgraded** : Software can be upgraded through UART.

## 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. Top assist level is 9, 0 for neutral. Level quantities can be adjusted according to the customer requirements.



### 7.3 Speed & Mileage mode switch

Short press **POWER** button can change the speed and mileage mode, TRIP→TIME →ODO→AVG SPEED→MAX SPEED.

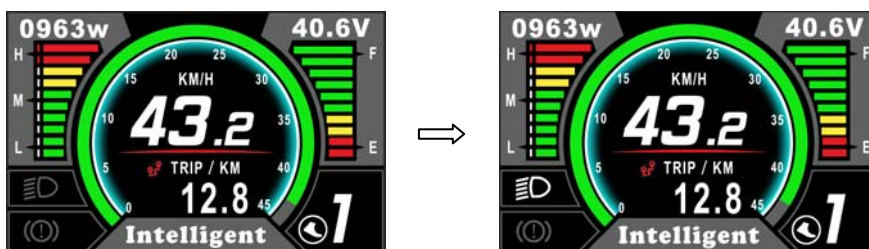


\*\*If there is no operation for 5 seconds, display will return Speed (Real-Time) display automatically.

### 7.4 Headlight/backlight On/Off

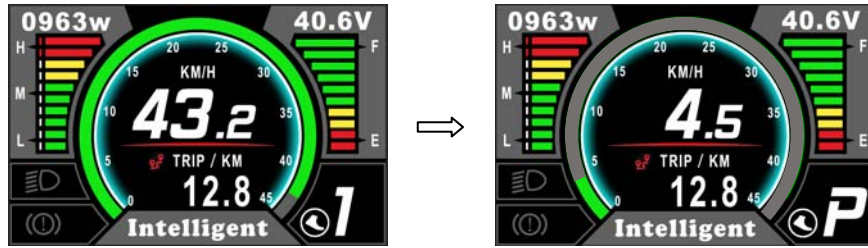
Press and hold **UP** button for 1 second can turn on/off the headlight.

\*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.



### 7.5 Walking mode (6km)

Press and hold **DOWN** button for 2 second can get into walking mode, out of the mode when release the button.



\* This feature needs to be supported by controller.

## 7.6 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**.

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

## 8. Parameter setting

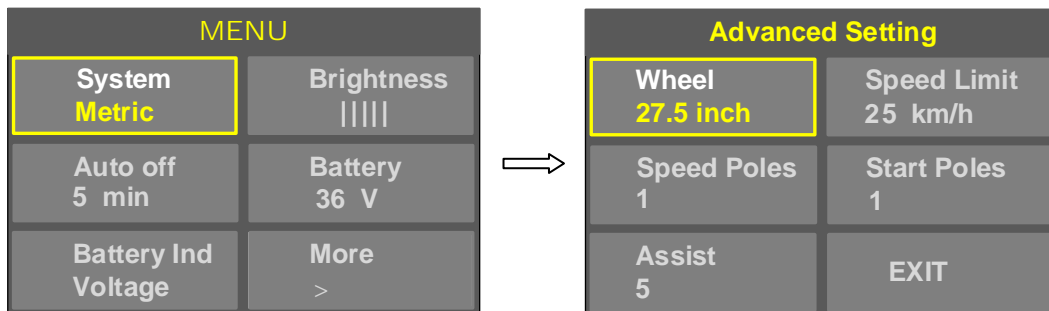
Press **M** button (press no less than 2second) can get into setting menus, press **UP/DOWN** buttons to change the parameter setting, press **M** button can switch to next item. Press **M** (press no less than 2second) button will exit from menu.

\* 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.

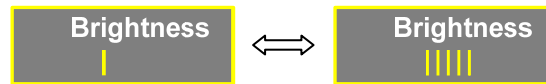
The order of parameters are as follow.



**8.1 System** : Press Up / Down button to switch between Metric / Imperial.



**8.2 Brightness** : Press Up / Down button to change the brightness of the backlight, **|** is darkness, **|||||** is brightness



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



**8.4 Battery** : Press UP/DOWN will change battery voltage setting, optional value is 24V/36V/48V.



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

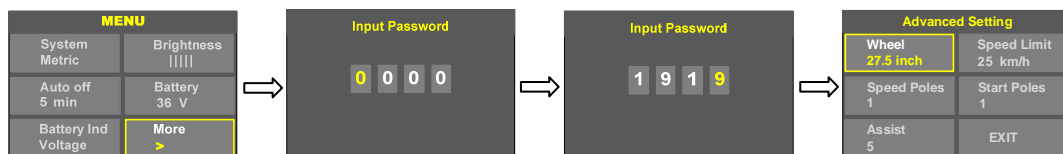
\*Accurate percentage needs communication with battery.



**8.6 Wheel** : Press UP/DOWN can change the wheel setting, optional wheel diameter is 12/14/16/18/20/22/24/26/27/27.5/28/29/30/31 inch.



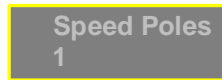
**8.7 Advance setting** : Press **M** button can get into the advance setting menu, default password is '1919'.



**8.8 Speed limit** : Press UP/DOWN will change speed limit, range 10km/h~60km/h. Default value is 25km/h.



8.9 **Poles in motor** : This item is invalid.



8.10 **Start after poles** : This item is invalid.



8.11 **Assist levels** : This parameter can customize assist levels, options are 3/5/9.



## 9. Error Code define

500C can show warning message, icon shows on the screen, and show error code at the bottom of the screen, error code is from 04H~30H, definition see the table below.

Error Code	Error description	Error display
0x01	Normal	No error
0x03	Brake signal	No error
0x04	Throttle on high position	Display <b>04H</b> on LOGO position
0x05	Throttle error	Display <b>05H</b> on LOGO position
0x06	Low voltage protection	Display <b>06H</b> on LOGO position
0x07	High voltage protection	Display <b>07H</b> on LOGO position
0x08	Motor's hall sensor error	Display <b>08H</b> on LOGO position
0x09	Phase line of motor error	Display <b>09H</b> on LOGO position
0x10	Controller over temperature	Display <b>10H</b> on LOGO position
0x11	Motor over temperature	Display <b>11H</b> on LOGO position
0x12	Current sensor error	Display <b>12H</b> on LOGO position
0x13	Battery's temperature sensor	Display <b>13H</b> on LOGO position
0x14	Motor's temperature sensor error	Display <b>14H</b> on LOGO position
0x15	Controller's temperature sensor error	Display <b>15H</b> on LOGO position
0x21	Speed sensor error	Display <b>21H</b> on LOGO position
0x22	BMS communication error	Display <b>22H</b> on LOGO position
0x23	Head light error	Display <b>23H</b> on LOGO position
0x24	Head light sensor error	Display <b>24H</b> on LOGO position
0x25	Torque sensor error-Torque	Display <b>25H</b> on LOGO position
0x26	Torque sensor error-speed	Display <b>26H</b> on LOGO position
0x30	Communication error	Display <b>30H</b> on LOGO position



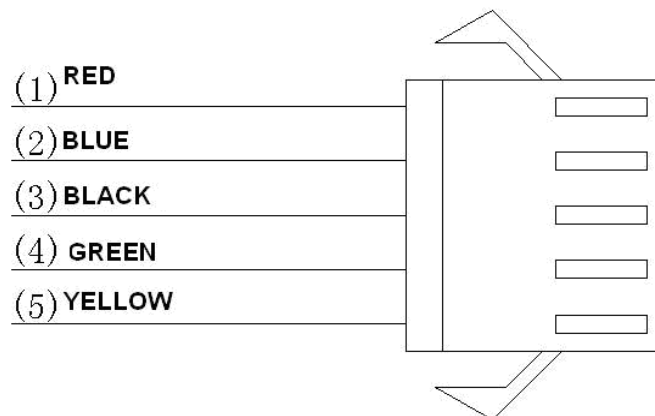


## 10. Assembly instructions



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

## 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.