

Product Specification

06/2018

Product TFT LCD Display

Mode APT TFT500C

Abbreviation 500C

Client

Customer

audit

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 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℃, Storage temperature : -30~80℃

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℃.
- ◇ 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/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.

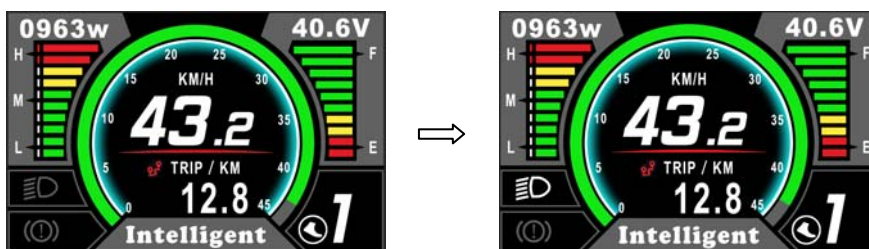


**If there is no operation for 5 seconds, display will return Speed (Real-Time) display automatically.

7.4 Headlight/backlight On/Off

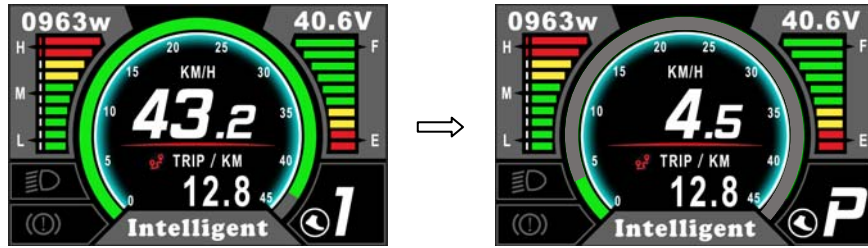
Press and hold **UP** button for 1 second can turn on/off the headlight.

*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

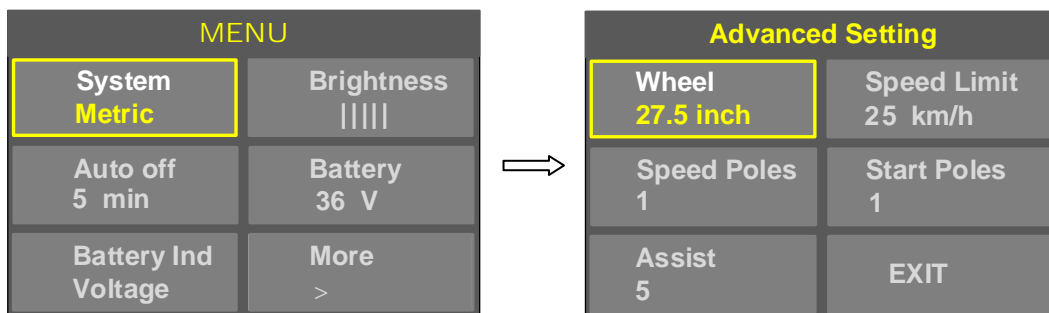
Press **M** button (press no less than 2second) can get into setting menus, press **UP/DOWN** buttons to change the parameter setting, press **M** button can switch to next item. Press **M** (press no less than 2second) button will exit from menu.

* 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.

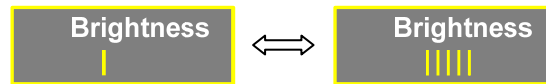
The order of parameters are as follow.



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.

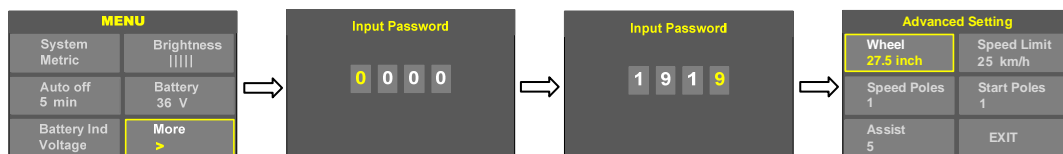
*Accurate percentage needs communication with battery.



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 04H on LOGO position
0x05	Throttle error	Display 05H on LOGO position
0x06	Low voltage protection	Display 06H on LOGO position
0x07	High voltage protection	Display 07H on LOGO position
0x08	Motor's hall sensor error	Display 08H on LOGO position
0x09	Phase line of motor error	Display 09H on LOGO position
0x10	Controller over temperature	Display 10H on LOGO position
0x11	Motor over temperature	Display 11H on LOGO position
0x12	Current sensor error	Display 12H on LOGO position
0x13	Battery's temperature sensor	Display 13H on LOGO position
0x14	Motor's temperature sensor error	Display 14H on LOGO position
0x15	Controller's temperature sensor error	Display 15H on LOGO position
0x21	Speed sensor error	Display 21H on LOGO position
0x22	BMS communication error	Display 22H on LOGO position
0x23	Head light error	Display 23H on LOGO position
0x24	Head light sensor error	Display 24H on LOGO position
0x25	Torque sensor error-Torque	Display 25H on LOGO position
0x26	Torque sensor error-speed	Display 26H on LOGO position
0x30	Communication error	Display 30H on LOGO position

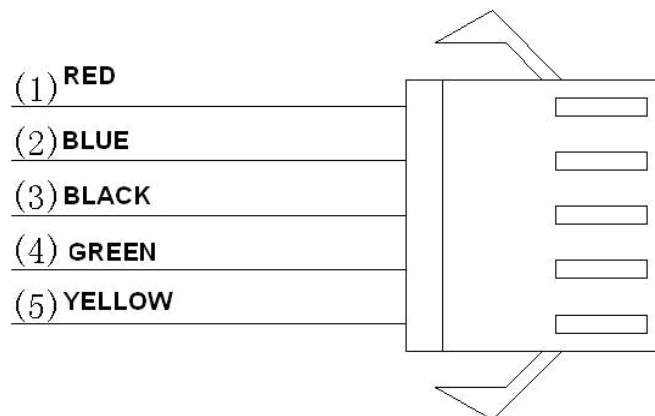


10. Assembly instructions



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.