

# Product Specification

2/2021

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**Product** LCD Display

**Mode** APT LCD 500S

**Abbreviation** 500S

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**Client**

**Customer**

**audit**

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**Supplier** APT(Tianjin) Develop Co., Ltd.

1001, Building 5 HuaDing, No.1 HuaKe 3 Road, Binhai hi-tech Industrial Development Zone, Tianjin, China

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## 1. Product Name

- ◇ LCD display
- ◇ Model : APT LCD 500S

## 2. Suppliers

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

## 3. Electrical Parameters

- ◇ 24V/36V/48V/52V/CO on 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

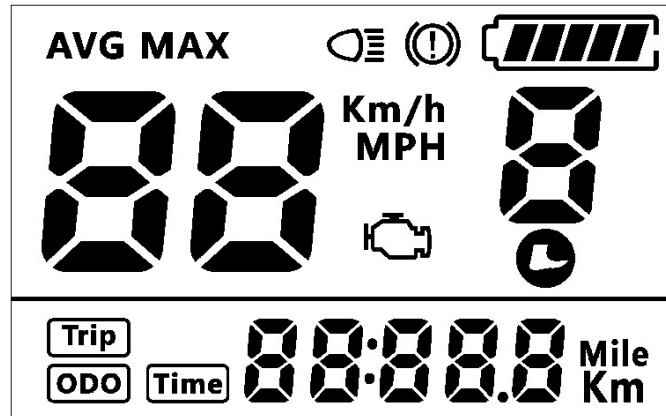


## 5. Features

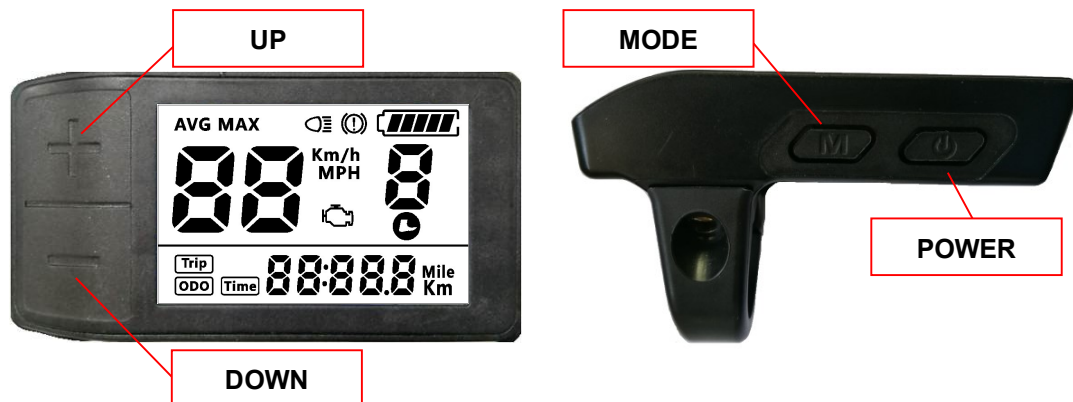
- ◇ Suitable for low temperature, Max -20℃.
- ◇ Ergonomic external button design, easy to operate.
- ◇ **Speed display:** AVG SPEED, MAX SPEED, SPEED (Real-time).
- ◇ **Kilometer / Mile :** Can be set according to customers' habits.

- ◇ **Assist level:** 3-level/5-level/9-level/UbE optional.
- ◇ **Mileage indicator:** Odometer/Trip distance/Riding time.
- ◇ **Error code indicator.**
- ◇ **Software upgraded:** Software can be upgraded through UART.

## 6. LCD screen instructions



## 7. Functional Description

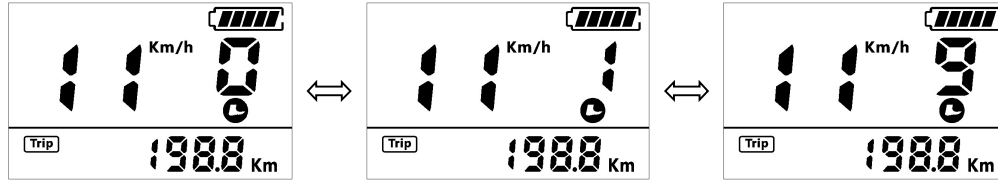


### 7.1 Power On/Off

Press and hold **Power** button for 2 seconds can turn on/off the display. The Display can automatically shut down when there is no operate & ride for X minutes (X could be 0~15) .

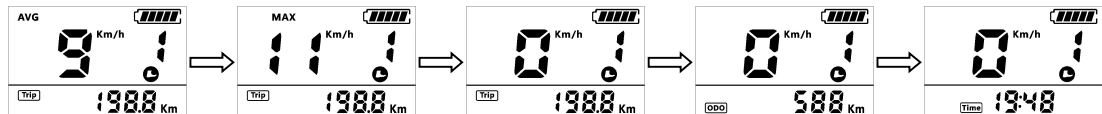
### 7.2 Assist level operating

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

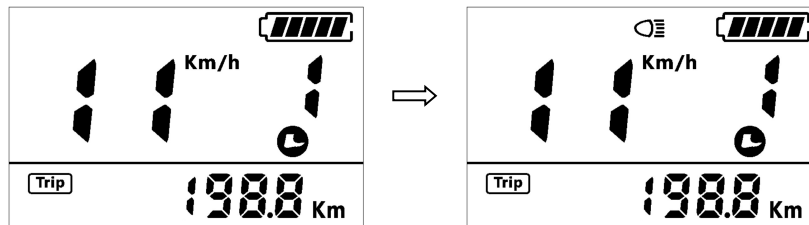


\*If there is no operation for 5 seconds, display will return Speed (Real-Time) display automatically.

### 7.4 Headlight/backlight On/Off

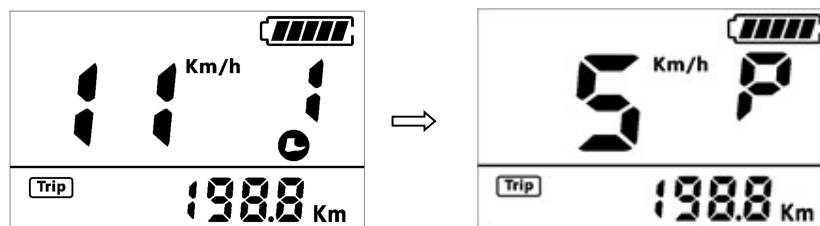
Press and hold **UP** button for 2 seconds can turn on/off the headlight.

\*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 seconds can get into walking mode, out of the mode when release the button.



\* This feature needs to be supported by controller.

## 8. Parameter setting

Press and hold **MODE** button for 2 seconds can get into/ exit setting menu, press **UP/DOWN** button to change the parameter setting, press **MODE** button can switch to next

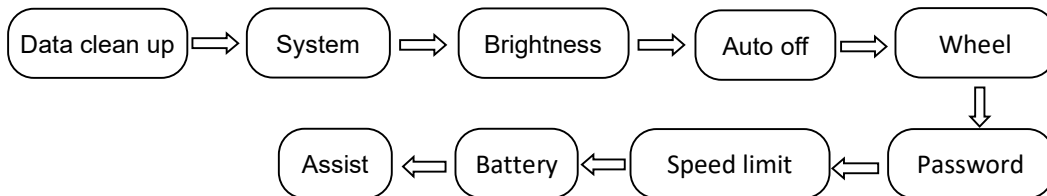
item.

\* Display will automatically quit menu when there is no operation for 10 seconds.

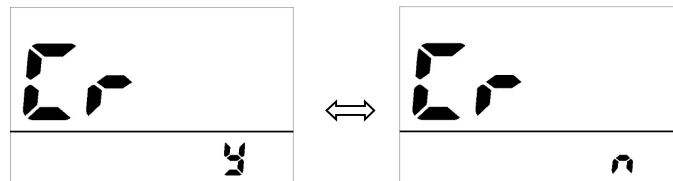
\* For safety reasons, display can't get into MENU when riding.

\* Display will quit MENU when start riding.

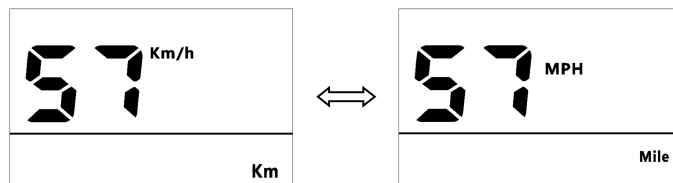
The order of parameters is as follow.



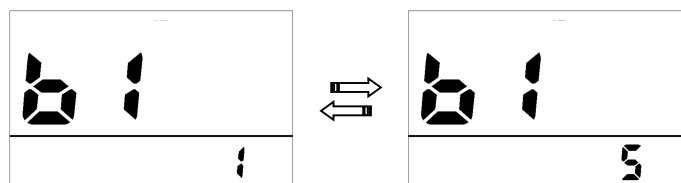
**8.1 Data clean up(Cr):** Press **Up/Down** button to change **no/yes**.



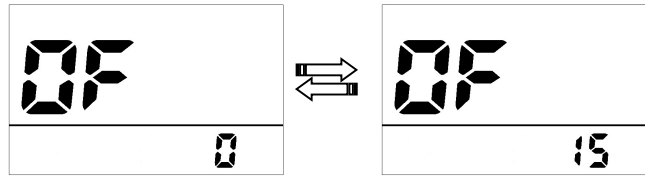
**8.2 System (S7):** Press **Up/Down** button to switch between **Metric/Imperial**.



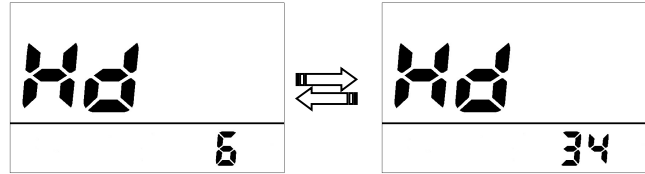
**8.3 Brightness (bl):** Press **Up/Down** button to change the brightness of the backlight, **1** is darkness, **5** is brightness.



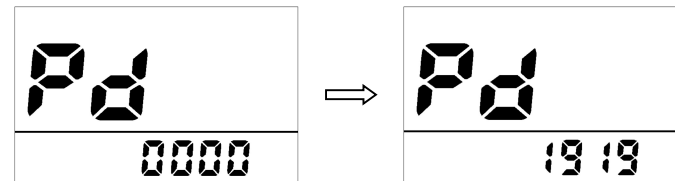
**8.4 Auto off (OF):** Press **Up/Down** button to change the auto power off time, from **0~15**, the number represent time (minutes) to shut down, 0 means disable auto off function, default value is 5 minutes.



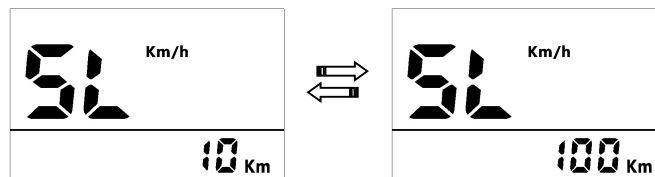
**8.5 Wheel (Hd):** Press **Up/Down** can change the wheel setting, optional wheel diameter is 6~34 inch.



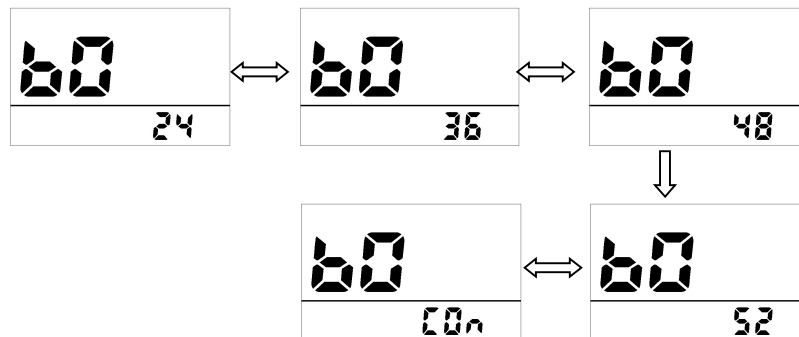
**8.6 Password (Pd):** Press **MODE** button can get into the advance setting menu, default password is '1919'.



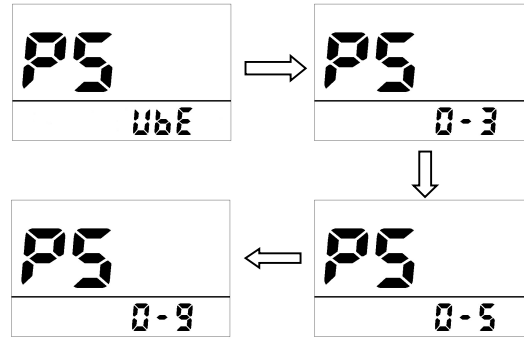
**8.7 Speed limit (SL):** Press **Up/Down** button will change speed limit, range 10km~100km.



**8.8 Battery (b0):** Press **Up/Down** button to switch between 24V/36V/48V/52V/CO<sub>n</sub>, Con means controller transfer voltage value.



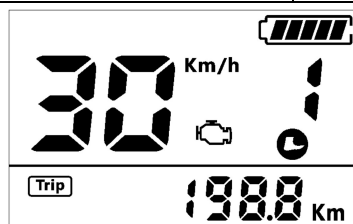
**8.9 Assist levels (PS):** This parameter can customize assist levels, options are **UbE/3/5/9**. UbE means user-defined assist levels setting.



## 9. Error Code define

500S can show warning message, icon shows on the screen, and show error code at the bottom of the screen, error code is from 01 E~0nE, and the definition see the table below.

Error Code	Error description	Handle
0x04	Throttle turn back fault	Check throttle and connection.
0x05	Throttle error	Check throttle and connection.
0x06	Under voltage protection	Charge the battery
0x07	Overvoltage protection	Charge the battery
0x08	Hall error	Check the hall connection
0x09	three-phase power error	Check three-phase power line connection
0x10	The controller is overheated	Stop using 10 minutes to restart
0x11	Motor overheating	Stop using 10 minutes to restart
0x12	Sensor error	Check the sensor connection
0x13	battery temperature abnormality	Stop using 10 minutes to restart
0x14	Motor temperature sensor is abnormal	Check the sensor
0x15	Controller temperature sensor failure	Check the sensor
0x21	Speed sensor fault	Check the sensor
0x22	BMS Communication Error	Check the cable connection
0x23	Headlight error	Check the cable connection
0x24	Headlight sensor error	Check the cable connection
0x25	Torque signal error	Contact the supplier
0x26	Torque sensor speed error	Contact the supplier
0x30	Communication Error	Check the cable connection

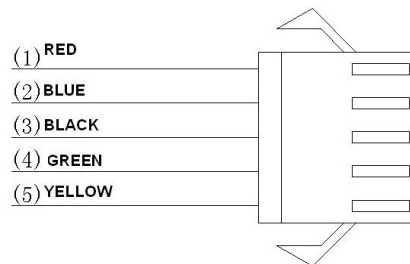


## 10. Assembly instructions



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/52V)
- 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. Certification

CE / IP65 (water proof) / ROHS.