MOOV8 MODEL - X DISPLAY

1. Product Name

✧ LCD display

✧ Model : APT LCD 500S

2. Suppliers

✧ APT(Tianjin) Develop Co., Ltd.

3. Electrical Parameters

✧ 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.
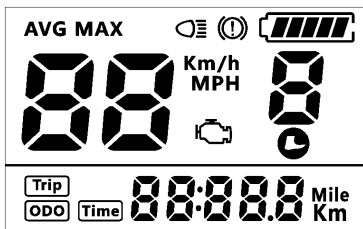
✧ Dimensions : host/L79mm*W40mm*H18mm

5. Features

✧ Suitable for low temperature，Max -20℃.

✧ 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 :** UBE/3-level/5-level/9-level optional.

❖ **Mileage indicator :** Odometer/Trip distance/Riding time.

❖ **Speed limit value indicator**

❖ **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 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）.

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

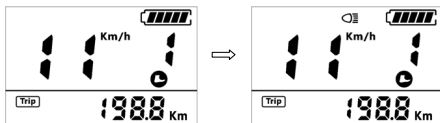Short press POWER button can change the speed and mileage mode, AVG SPEED→MAX SPEED→ TRIP→ODO→TIME.

**If there is no operation for 5 seconds, display will return Speed (Real-Time) display automatically.
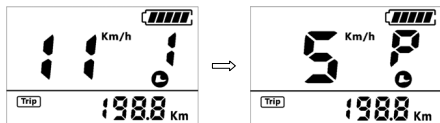
7.4 Headlight/backlight On/Off

Press and hold UP button for 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.
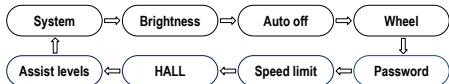
8.   Parameter setting

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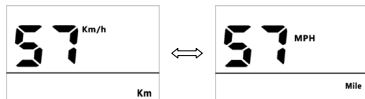
* For safety reasons, display can't get into MENU when riding.

* Display will quit MENU when start riding.
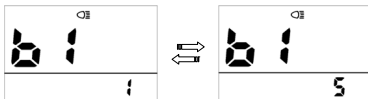
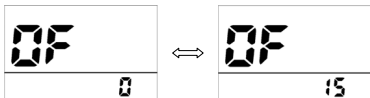The order of parameters are as follow.

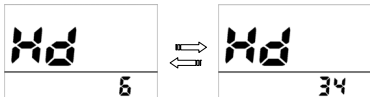**8.1 System (S7)**: Press Up / Down button to switch between Metric / Imperial.

8.2 Brightness (b1): Press Up / Down button to change the brightness of the backlight, 1 is darkness 5 is brightness.
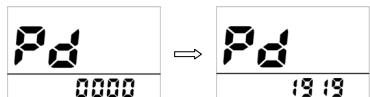

8.3 Auto off (OF): Press UP/DOWN button to change the auto power off time, from 0~15, the number represent time (minutes) to shutdown, OFF means disable auto off function, default value is 5 minutes.
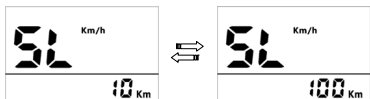
8.4 Wheel (Hd): Press UP/DOWN can change the wheel setting, optional wheel diameter is 6~34 inch.
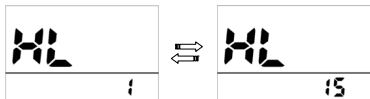

8.5 Password (Pd): Press M button can get into the advance setting menu, default password is '1919'.
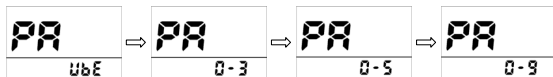

8.6 Speed limit (SL): Press UP/DOWN will change speed limit, range 10km/h~100km/h. Default value is 25km/h.

8.7 HALL (HL) : Magnetic poles inside the motor, press UP/DOWN will change pole number, range 1~15.

8.8 Assist levels (PA): This parameter can customize assist levels, options are UBE/3/5/9.
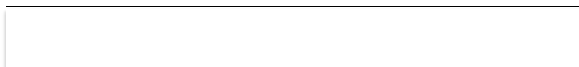
9. Error Code define

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.

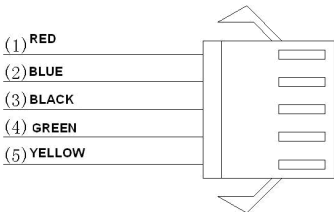| Error Code	Error description	Error display
0x01	Normal	No error
0x03	Brake signal	No error
~~0x04~~	~~Throttle on high position~~	~~Display 04H on speed position~~
0x06	Low voltage protection	Display 06H on speed position
0x07	High voltage protection	Display 07H on speed position
0x08	Motor's hall sensor error	Display 08H on speed position
0x09	Phase line of motor error	Display 09H on speed position
0x10	Controller over temperature	Display 10H on speed position
0x11	Motor over temperature	Display 11H on speed position
0x12	Current sensor error	Display 12H on speed position
0x13	Battery's temperature sensor error	Display 13H on speed position
0x14	Motor's temperature sensor error	Display 14H on speed position
0x21	Speed sensor error	Display 21H on speed position
0x22	BMS communication error	Display 22H on speed position
0x30	Communication error	Display **30H** on speed position

10. Assembly instructions

M4*10

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
(2) BLUE
(3) BLACK
(4) GREEN
(5) YELLOW

1、 Red wire :   Anode(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.