**Product Specification**

11/2013

Product: Middle install intelligent LCD Display

Mode: APT13LCD450U

Appreviation: 450U

Client

Customer

Audit

Supplier: Tianjin APT Development Co., Ltd.

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**1 Product Name**

**1.1** The Middle install intelligent LCD Display

**1.2** Model: APT13LCD450U

**2 Suppliers**

**2.1** TianjinAPTDevelopmentCo.,Ltd.

**2.2** Email : yzhao@aptdevelop.com apt@aptdevelop.com

**3 Electrical Parameters**

4V/36V battery supply

Rated operating current 10mA

Max operating current 30mA

Off leakage current 1uA

Max output current to controller 50mA

Operating temperature -20~70°C

Storage temperature -30~70°C

**4 Dimensions & Material**

**4.1** Product shell is ABS, transparent window is made with high strength Acrylic, the stiffness equals the tempered glass.

**4.2** Dimensions : host/L78mm\*W46.8mm\*H12.7mm



1. **Features**
* Serial communications
* **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, it will not fluctuate with the motor on/off.
* **BMS support:** BMS indicator, battery percentage, indicating the mileage indicator (need access to BMS information system support)
* **Power indicator :** Real-time battery power indication
* **The brightness of the backlight adjustable :** 5-sections
* **9-level PAS :** 3-PAS/5-PAS/6-PAS/9-PAS... optional
* **Mileage indicator :** Odometer/Trip distance/ Riding time
* **Error code indicator**
* **Parameter settings :** Multiple parameter can be set through computer USB port, including PAS level / Wheel diameter / Voltage / Speed limit...

**6 LCD Instructions**

The figure of LCD display see below:



Lamp

Speed Mode

Mileage Information

Power Indicator

Speed Display

PAS Level

Undetermined

Error Code

Battery Indicator

Brake

BMS Indicator

Mileage Mode

**7 Functional Description**



Power

Up

Down

**7.1 PowerOn/Off**

Press and hold Power button for 1.5 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 PAS operating**

Short press UP/DOWN button can change the PAS level. Top PAS level is 9, 0 for neutral. Level quantities can be adjusted according to the customer requirements.





**7.3 Speedmodeswitch&Mileagemodeswitch**

Short press POWER Button can change the speed mode & the mileage mode

Speed 🡪 AVG Speed 🡪 Max Speed 🡪 Trip 🡪 ODO 🡪 Time











 

Speed mode switch& Mileage mode switch

**\*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/backlight.

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 6km walk**

Press and hold DOWN button for 2 seconds can get into walk mode, out of the mode when release the button.







**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**.

**8 Parameter setting**

Double press POWER button (press interval less than 0.3 second) can get into parameter setting state, the parameter twinkles.

Short press UP/DOWN buttons to change the parameter value, short press POWER button can switch to the next parameter.

Double press POWER button(press interval less than 0.3 second) can quit from the parameter setting state.

The display will automatically quit the parameter setting state when there is no operation for 10 seconds.

The order of parameters is as follows.



Wheel

diameter

Auto off time

Backlight/
Brighness

Kilometer/

Mile







Voltage set

Password

Speed limit set



**8.1 Kilometer / Mile** : The location of speed displays symbol S7, press UP/DOWN

button rotate display the symbol **km/h / MPH** (**Km** / **Mile**)





**8.2** .**Backlight brightness** : The location of speed displays symbol **bL1**, press

UP/DOWN button display symbol **1~5** to change the brightness of the backlight.







**8.3 Auto off time**

The location of speed displays symbol **OFF**, press **UP/DOWN** button to change the value from **1** to **9**, the number represent delay time (minutes) before display shutdown automatically, default value is **5** minutes.







**8.4 Wheel diameter**

The location of speed displays symbol **Wd**, press **UP/DOWN** button rotate display the symbol **16/18/20/22/24/26/700C/28/29**, value represents the diameter of the wheel (inch).

Wrong value for wheel diameter will cause speed&mileage abnormal.







**8.5** .**Voltage set** : The location of speed displays symbol **bU0**, press UP/DOWN button rotate display the symbol **24V/36V/UbE**

**UbE** means user-defined voltage setting, this parameter can be set through computer.





**8.6 Password / Speed limit set**

The location of speeds displays symbol **PSd**, require to input passwords, press **UP/DOWN** buttons to change the password value (**0~9**), short press **POWER** button to switch the password item, password is 4 digits, the default password is "**1919**". Press POWER button when password adjustment is completed.

Display will return to the **Voltage set** item if the password is incorrect. Correct password will enter the **Speed limit set** item.





**8.7 Speed limit set** : The location of speed displays symbol , the location of

mileage displays speed limit value, the default value is . Press

buttons to modify the value, the value can be set from 10 to 45km/h. Press button to confirm when you finish the adjustment.

**The maximum speed is restrict by the motor and controller, probably couldn’t reach the setting value.**







**9 Error Code define**

450U meter can give warning message when E-bike exist error, LCD display icon and the error code in speed position, error code is from 01 E~FF E, below.

Zhe definition see the table

|  |  |  |
| --- | --- | --- |
| Error Code  | Error description  | Handle  |
| 01  | Communication Error  | Check the cable connection  |
| 02  | Controller protection  | Check three-phase power line.  |
| 03  | three-phase power error  | Check three-phase power line connection  |
| 04  | Battery low  | Charge the battery  |
| 05  | Brake error  | Check the brake connection.  |
| 06  | Turn error  | Check turn to connect.  |
| 07  | Hall error  | Check the hall connection  |
| 08-99  | 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.



**11 Output wire instructions**



1. Red wire: Anode(24v/36v)

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 PAS level instructions**

PAS level can be customized, the highest level is 9, common used PAS level see the table below:

|  |  |  |  |
| --- | --- | --- | --- |
| 3 level | 5 level | 9 level |  |
| 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.

**14 Additional (default) Parameters, especially for the AM1**

Those parameters are only accessable after password input is correct entered

**A5** = 12

**HA** = 01

**CU** = 15

**SP** = 30 (max speed, I believe it's 30 Km/h), 25 Km/h e.g. for Germány

**Hd** = 0 (both of them are 0)

There is one with subscript 6

and another one with subscript P

**PA** = 5 (1-5 peddle assist settings)