With Liquid Crystal Display Handle
Model: **KHZBLCD01**
Technical Requirement
Specification
V10

Version Number	Date	Description	Author
V01	November 17, 2015	Found	Jiangnan Cao
V02	January 8, 2016	Update the standard of electric quantity display	Jiangnan Cao
V03	April 20, 2016	Add parameter setting requirements	Jiangnan Cao
V04	April 16, 2017	Add parameter P07-P10	Jiangnan Cao
V05	May 16, 2017	Change to a special version of phase speed	Jiangnan Cao
V06	May 16, 2017	Increase Hall Speed and its Parameter Settings	Jiangnan Cao
V07	May 13, 2018	Increase battery voltage parameters - Gear control - Modify P01 parameter definition ,add parameter	Jiangnan Cao
V08	July 6, 2018	Parameter 1 - 9 is consistent with digital	Jiangnan Cao
V09	November 5, 2018	Increase 72V voltage	Jiangnan Cao
V10	December 7, 2018		

Catalogue

1. Instrument interface reference

2.Electrical performance

NO.	item	index
1.	Working voltage (nominal)	36V，48V, 60V，72V
2.	Ambient temperature	−30℃~70℃
3.	Speed indication accuracy	Hall speed (<3%) phase speed <1km / h (flat road)
4.	Battery indicator accuracy	±0.3V

3. Interface definition

Defined according to customer requirements

Pin number	Signal definition	description
1	Battery positive (input)	
2	Battery positive (input)	
3	Speed signal (input)	Hall speed measurement or phase speed measurement
4	Gear 1 output	Chip I/O control
5	Gear 2 output	Chip I/O control
6	Shifter signal	
7	Shifter 5V	

4. Interface explanation
4.1.Interface diagram
4.1.1. **LCD screen.**
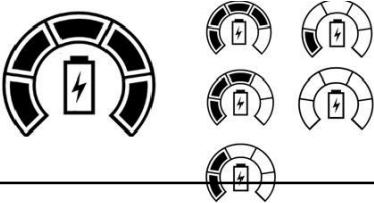
LCD size: about 40x25mmAdopt LCD screen with white backlight, the color of LCD is black words with white background

4.1.2. **Display content explanation**

Display Items	Display content	display usage
Current speed	**88.8** km/h mph	Displays current velocity information, in km/h or MPH The speed must change continuously, no jumping changes are allowed： For example, jump from 20km/h to 0km/h
Current power		Display power and battery voltage 5 grid display
battery voltage	BAT **888.8** V	Display the real-time battery voltage value in unit V
Total mileage ODO	ODO **888.8** mile km	Shows the total mileage accumulated, showing the unit of km or mile
Single mileage TRIP	TRIP **888.8** mile km	Show the mileage of this ride, show the unit of km or mile
gears	M1 M2 M3	Display 3 gears

5.Button description

When holding down the key, you can enter the parameter setting interface. When the parameter is set, the parameter value can be changed by pressing the key for a long time.

No third gear： Press the button for short time to switch single time/cumulative mileage/real-time battery voltage

M1 M2 M3

With third gear： Press the button to switch gears

Long press (>3 seconds) to switch single time/cumulative mileage/real-time battery voltage

6.Gear display

When the gear function is enabled, 3 gear positions can be switched by pressing the button.
The low level 0V is output through the chip pin, controlled by 2 pins (A, B), and the A and B pins are freely defined.

A=0V&B is free suspended: 1 gear

B=0V&A means free suspension: 3rd gear

A and B are in free suspension: 2nd gear

7.Speed representation

7.1. Representation

With a decimal point, three significant digits, in km/h or mph, with a display resolution of 0.1.

7.2.Display range

0.0~99.9。

The maximum display value is 99.9.

Below 0.5 keep the display 0.

7.3.Data Sources

Data from phase voltage or Hall signal

7.4.Reset mode

Turn off electricity=clean up

8.Mileage representation

8.1.Single subtotal mileage

(1) representation
With one decimal point, four significant digits, in km or mile, with a display resolution of 0.1.
(2) Display range
Data range 0.0~999.
(3) Data source
Calculated according to the display speed integral
(4)Reset method
Shut down=Clear

8.2.total mileage

(1) representation
Four significant digits, in mile or km, with a display resolution of 1
(2) Display range
Data range 0~9999
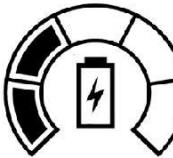**(3) Data source**
Accumulate all miles
(4)Reset method
Reset when the value exceeds 9999.
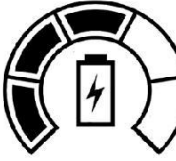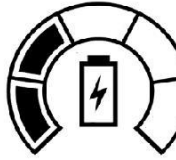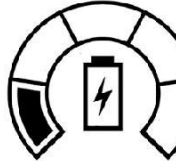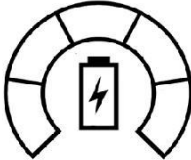
9. Electricity representation

The voltage display value is the real-time output voltage value of the battery. The power segmentation display does not change with the battery voltage in real time. The delay is used to prevent the voltage from jumping frequently during acceleration. It is recommended to add a 3-second delay when the voltage drops, and no delay when the power rises.

Electricity determination standard (48V)
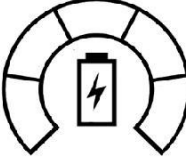
Level	Voltage	Show
Level Five	> 49V	
Level Four	>47V, < 49V	
Level Three	>45V, < 47V	
Level Two	>43V, < 45V	
LeveL One	>41V, < 43V	
under voltage	< 41V	The middle battery mark flashes (1 Hz) and the charging mark appears.

Electricity determination standard (36V)

Level	Voltage	Show
Level Five	> 38V	
Level Four	>36.25V，< 38V	
Level Three	>34.5V，< 36.25V	
Level Two	>36.25V，< 34.5V	
Level One	>31V，< 32.75V	
under voltage	< 31V	 The middle battery mark flashes (1 Hz) and the charging mark appears.

Electricity determination standard (60V)

Level	Voltage	Show
Level Five	> 64V	
Level Four	>60.5V, < 64V	
Level Three	>57V, < 60.5V	
Level Two	>53.5V, < 57V	
Level One	>50V, < 53.5V	
undervoltage	< 50V	The middle battery mark flashes (1 Hz) and the charging mark appears.

Electricity determination standard （72V）

Level	Voltage	Show
Level Five	> 79V	
Level Four	>74V, ＜79V	
Level Three	>69V, ＜74V	
Level Two	>64V, ＜69V	
Level One	>59V, ＜64V	
under voltage	＜59V	The middle battery mark flashes (1 Hz) and the charging mark appears.

10.Parameter settings

At power-on, press and hold the button to enter the parameter setting mode:
The parameter interface only displays two items.

- The first 2 digits of the velocity value show Px, which represents the xth argument.

- The 4-digit number below shows the value of this
parameter, and the decimal point is not displayed.

When entering the parameter mode, first display "P01":
There are 2 cases at this time

- Short press the button to quickly switch to "P02" and flash.
- Long press (3 seconds or more) button, the lower number flashes.

When the lower number is flashing, press the button to select the actual value of each parameter:

parameter	describe
P01	Voltage value: 36V, 48V, 60V, default value is 48V
P02	The velocity coefficient is between 0.1 and 1.5, and the default value is 1.0.
P03	Mileage coefficient between 1.0 ≤ 1.3, default value is 1.0
P04	Speed measurement mode, 1-Hall speed measurement, 2-phase speed measurement (HALL), default value is 1
P05	Wheel diameter, rim diameter selection: 8 inches, 10 inches, 14 inches, 16 inches, 18 inches, 20 inches, 22 inches, 24 inches, 26 Inch, 28", 29" (phase voltage speed does not work), default 14 inch
P06	The number of magnetic steels varies from 1 to 100. Each time you press +1, the cycle changes.
P07	Battery voltage coefficient
P08	3 file function enable/disable
P09	Cumulative mileage clear,reset
P10	Mile / kilometer switching

After the parameter selection, press and hold the button for 3 seconds to confirm and save the current parameter (stop flashing), and jump to the next parameter. At this time, the power is turned off. When the power is turned back on, the normal working interface is entered and the new parameter is enabled to enter the normal working interface.

11.Parameter explanation

11.1. Battery voltage

PP01 is the battery voltage, you can choose 36V/48V / 60V, the default is 48V

11.2. Speed compensation coefficient setting

The P02 parameter is used to correct the currently displayed speed value. This parameter works regardless of the phase voltage speed or the Hall speed. The purpose is to correct the current speed display value. The coefficient value is between 0.20-1.50 (actual display 20-150), each time the button jumps the value 5, the actual corresponds to 0.05, the value changes as follows: 10->15->20->....100->105-> 110->....->150->10

For example: suppose the current speed is 35km/h. If the actual GPS navigation is only 32km/h, then divide 32 by 35 and get 0.91. Set this parameter to 0.90, so that the speed error is only 1%.

Phase voltage speed measurement：

For the 36V model, the default reference speed is 30km/h when the phase voltage is 18V.
For the 48V model, the default reference speed is 35km/h when the phase voltage is 24V.
For 60V models, the default reference speed is 40km/h when the phase voltage is 30V.

Hall speed：

Calculate the speed according to the number of magnets and the diameter of the wheel set. If the display speed is deviated, correct this parameter.

Note: Single/accumulated mileage needs to be calculated based on the corrected speed

11.3. Mileage compensation coefficient
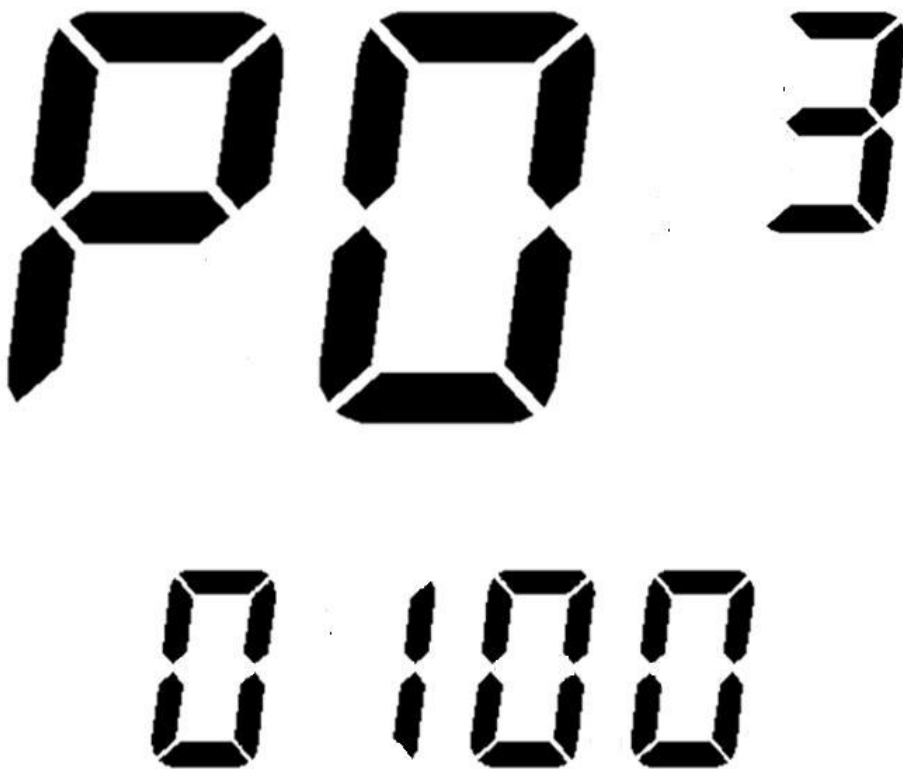
P03, because the battery life is sensitive, the OEM may need to manually enlarge the mileage data. This parameter is used for this purpose. The parameter can be between 1.00-1.30 (display 100 to 130), and each time the button is pressed, 5 is added. (actually 0.05), 1.00->1.05->1.10->1.15->.1.20->1.25->1.30->1.00, multiply the currently displayed mileage (single and cumulative) values by this parameter. Get the displayed mileage of the virtual standard.

Note: This parameter only applies to single and cumulative mileage, regardless of speed.

11.4. Speed measurement method

P04, 1 represents the phase voltage speed measurement, 2 represents the Hall speed measurement. This parameter is used to distinguish the phase voltage speed measurement and the Hall speed measurement parameter. When the phase voltage is measured, the subsequent wheel diameter and magnet steel parameters will not work.

11.5. Wheel diameter setting
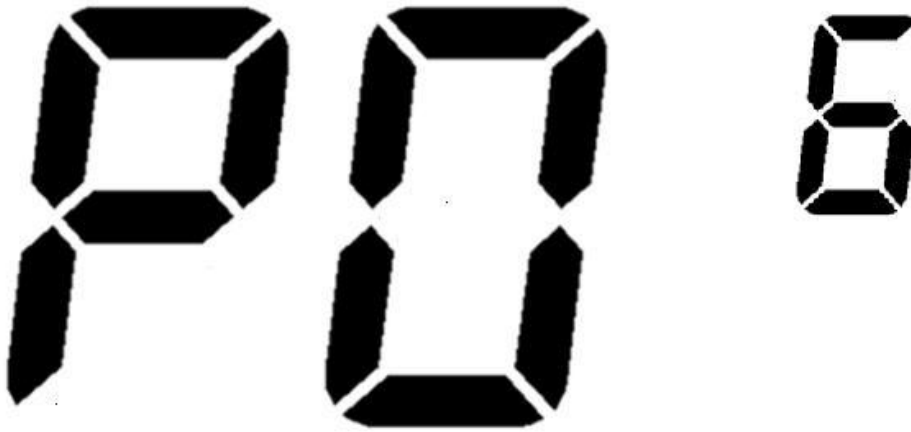
P05 is the rim size, you can choose the rim diameter: 8 inch, 10 inch, 12 inch, 14 inch, 16 inch, 18 inch, 20 inch, 22 inch, 24 inch, 26 inch, 28 inch, 29 inch (phase voltage Does not work when measuring speed), the default value is 14 inches

11.6. **Magnetic steel number setting**

P04, pay attention here

- When the motor is equipped with an external speed sensing Hall (separate Hall is used for speed measurement), here = 1, indicating that there is only a single piece of magnetic steel, generally 1 to 6 magnets.

- When using the built-in Hall speed measurement of the motor, the number of magnetic steel

pieces is shown here, for example, 10, which means 10 pairs. The value changes from 1 to 100.

The starting value of this parameter is 1. When the button is pressed, the value changes as

follows: 1-> 2->3->4->5....->100->1, the default value is 1

Note: When this parameter is the value between 1-6, it is the external speed measurement. When it is greater than 6, it is the internal speed measurement. At this time, it represents the internal speed of the motor, indicating the logarithm of the magnetic steel.

11.7. **Bkm mile switch**

P07

99.8

This parameter is similar to the speed coefficient. The customer feedback battery voltage measurement value is not accurate. This parameter is used to correct the battery voltage value. The value of this parameter is from 95.0% to 105.0%, and each press of the button increases 0.2%.

95.0%->95.2%->95.4%->95.6->…..->104.6%->104.8%->105.0%

Note: The 5 grid segment is also calculated based on the corrected voltage value.

11.8. **Battery voltage display coefficient**

P08=0, which means that the 3rd function is disabled, in this case in normal mode (non-parameter setting mode)

- Short press the button to switch single/accumulated mileage/real time battery voltage

- Long press button without function

P08=1, which means that the 3rd function is enabled. The power-on default is 1st gear, and it is in normal mode (non-parameter setting mode).

- Short press button to switch 3 files, M1-M2-M3-M1

- Long press the button to switch single/accumulated mileage/real time battery voltage

P08=2, which means that the 3rd function is enabled. The power-on default is 2nd gear. In this case, it is in normal mode (non-parameter setting mode).

- Short press the button to switch 3 files, M2-M3-M1-M2

- Long press the button to switch single/accumulated mileage/real time battery voltage

P08=3, which means that the 3rd function is enabled. The power-on default is 3nd gear. In this case, it is in normal mode (non-parameter setting mode).
- Short press the button to switch 3 files, M3-M1-M2-M3

- Long press the button to switch single/accumulated mileage/real time battery voltage

11.9. **3 file function**

P09

8888 km
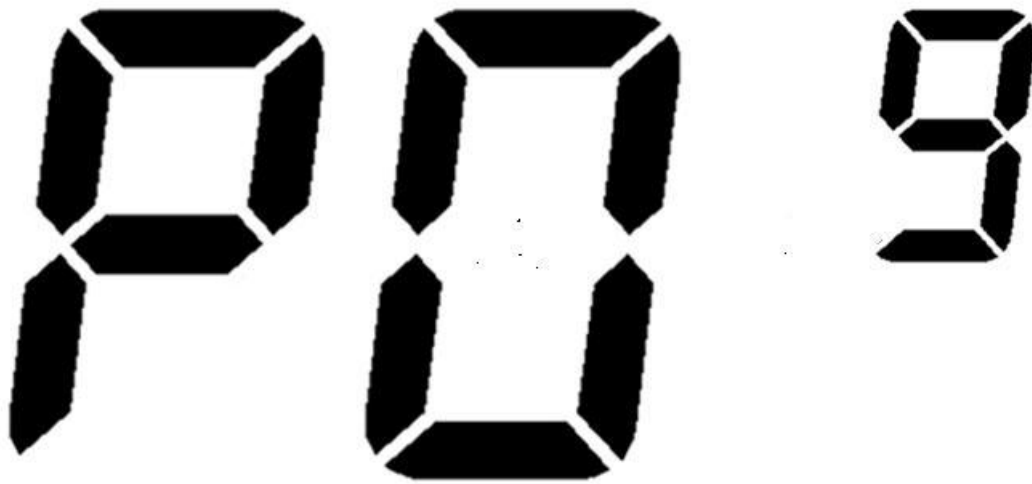
After entering the P09 parameter, press and hold the (>3 seconds) button to accumulate the mileage. At this time, press the button 10 times continuously to clear the accumulated mileage.

11.10. Kilometer miles switching
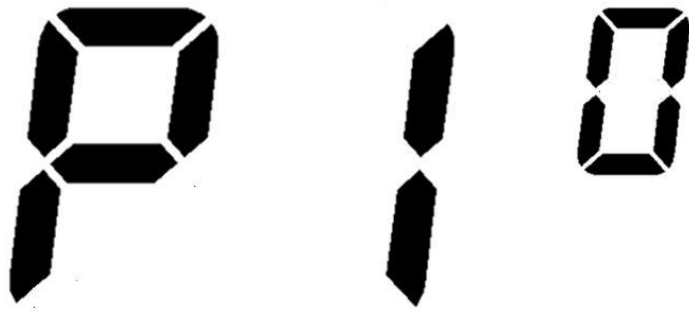
P10 is the unit of speed mileage, 1 for kilometers, 2 for miles, default is 1

Note: Speed, single mileage, cumulative mileage units need to be switched according to this parameter