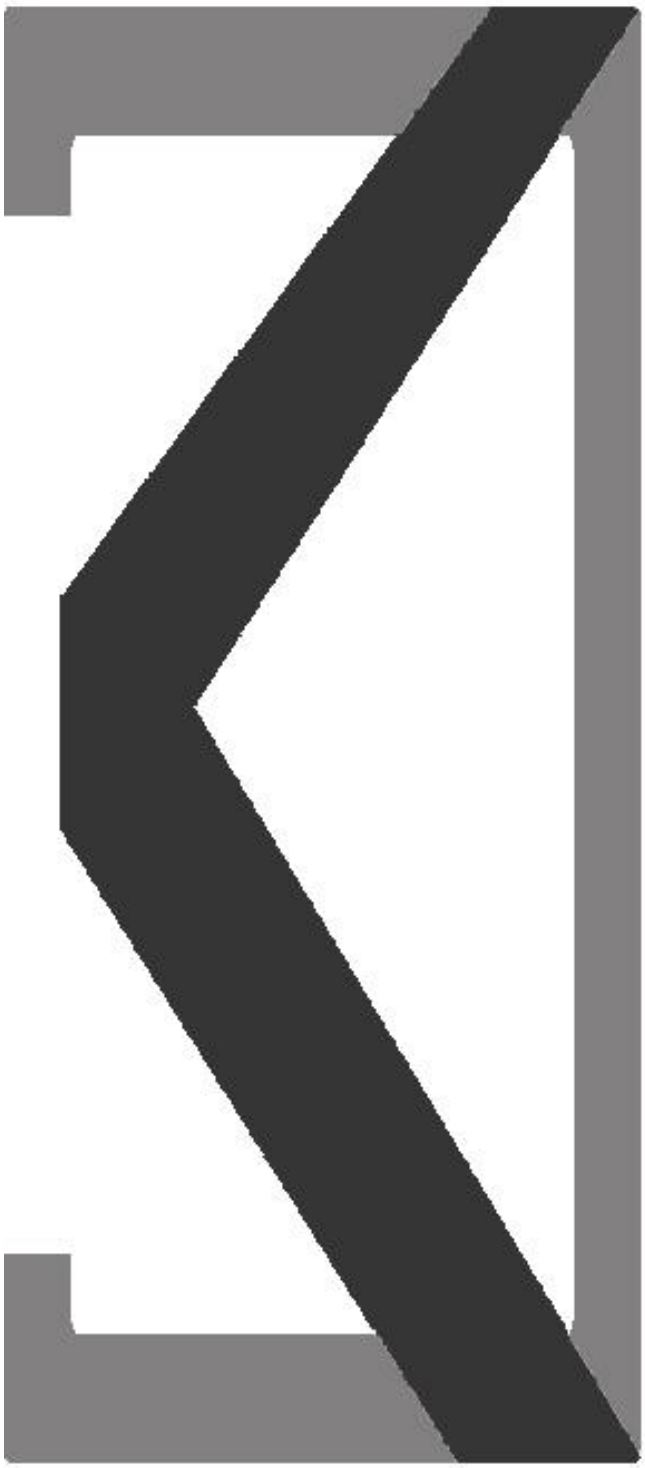


KEY-DISP

The eBike Display

Users Manual

KD21C

Content

Product name and model

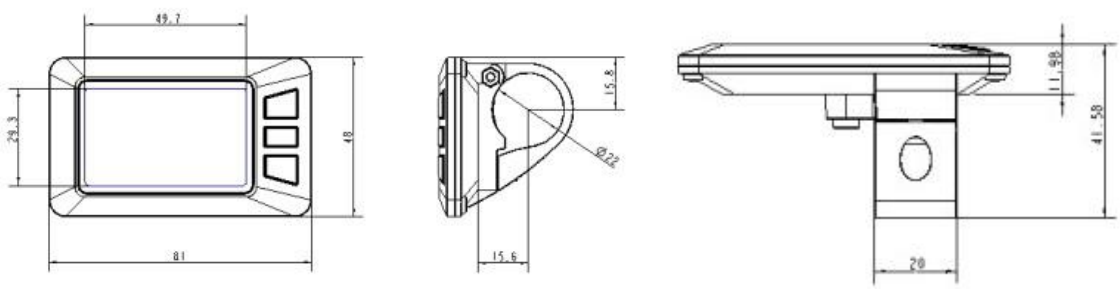
Intelligent LCD display of E-bike; model: KD21C.

Specifications

- ●24V/36V/48V Power Supply
- ●Rated working current: 10mA
- ●The maximum working current: 30mA
- ●Off leakage current: <1uA
- ●The supply controller working current: 50mA
- ●Working temperature:-20℃~ 60℃
- ●Storage temperature: -30℃~ 70℃

Appearance and Size

Display appearance and dimension figure (unit: mm)



◆Color categories

The cover of the display is two color options, black and white, and down shell of the display is only one black.

Function Summary and Button Definition

◆Function Summary

KD21C can provide a lot of functions to meet the users' needs. The

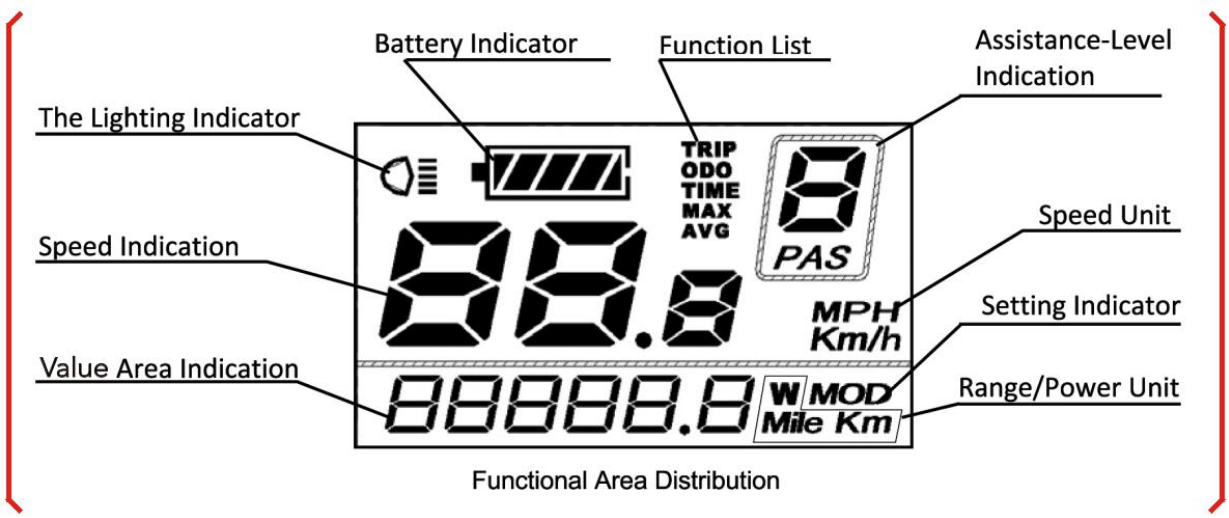
indicating contents are as follows,

- ●Battery level indicator
- ●Motor output indication
- ●Assistance level indication
- ●Speed indication (incl. current speed, Max. speed and Avg. speed)
- ●Trip distance and total distance
- ●The push-assistance function
- ●Trip time
- ●The lighting On/Off
- ●Error code indication
- ●Various Parameters Settings (e.g. wheel diameter, speed limit, battery level bar, assistance level, current limit, maximum speed, password enable, etc.)
- ●Recover Default Settings

Assembly

The KD21C display should be mounted on the left handlebar of the Ebike at a comfortable angle. Cut off the power supply before connecting the display to the controller.

◆Functional Area Distribution



Functional Area Distribution

◆Button Definition

There are three buttons (M , + , −) on the KD21C

display that represented by the following functions respectively: **MODE, UP, DOWN**.

General Operation

◆Switching the E-bike System On/Off

To switch on the E-bike system, hold the **MODE** button for 2s.

In the same way to hold the **MODE** button for 2s again, the E-bike system will be switched off.

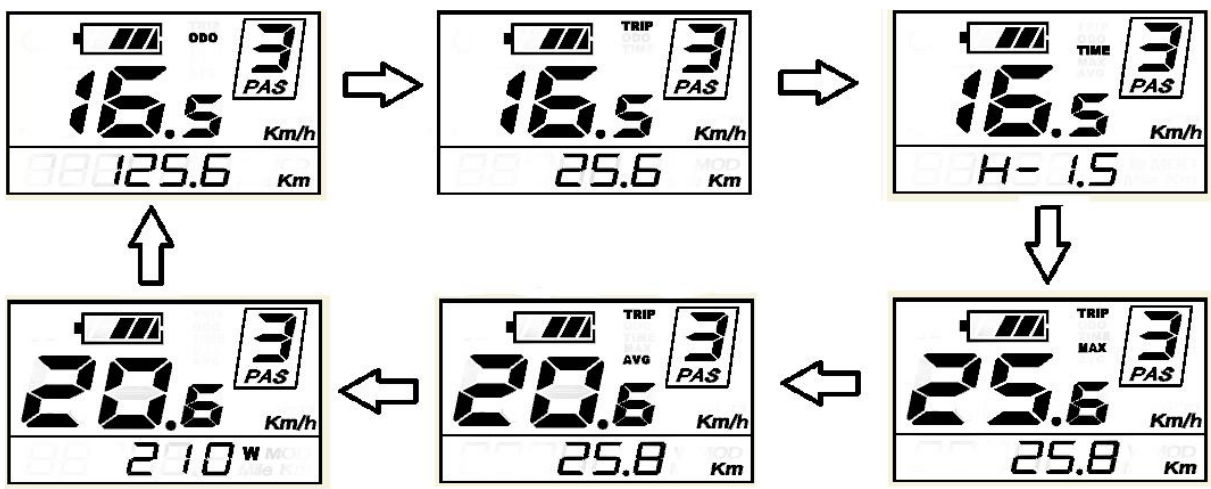
When switching off the E-bike system the leakage current is less than 1 uA.

■When parking the E-bike for more than 10 minutes, the E-bike system switches off automatically.

◆Display Interface

After switching on the E-bike system, the display shows current speed and total distance except battery indicator and assistance level.

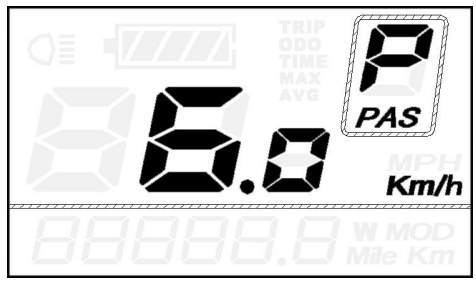
To change the indicated information, press the **MODE** button to show in turn as follows: Current Speed (Km/h) → Trip Distance (Km) →Trip Time (Hour) → Maximum Speed (Km/h) → Average Speed (Km/h) → Motor-output (W) →Current Speed (Km/h).



◆Switching Push-assistance mode On/Off

To access the push-assistance mode, hold the **DOWN** button

always, the E-bike will go on at a uniform speed of 6 Km/h, “P” is showed on the screen at the same time. The push-assistance function switches off as soon as you release the **DOWN** button.



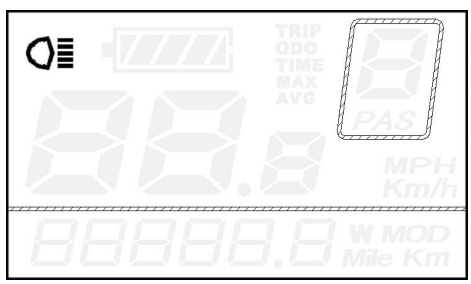
Push-assistance Mode

■**Push-assistance function may only be used when pushing the** E-**bike. Danger of injury when the wheels of the** E-**bike do not have ground contact while using the push-assistance function.**

◆**Switching the Lighting On/Off**

To switch on the display backlight and headlight of the E-bike, hold the **UP** button for 2s.

In the same way to hold the **UP** button for 2s again, the backlight and the headlight will be switched off.



Switch On/Off the Lighting

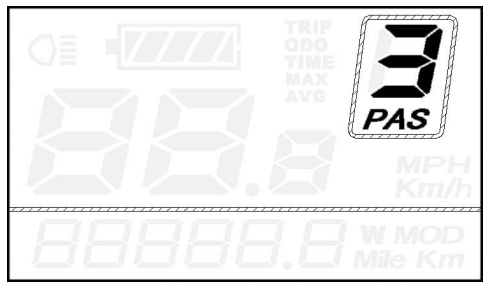
◆**Assistance Level Selection**

Assistance levels indicate the output power of the motor. The default value is level “1”.

The default power ranges from level “0” to level “5”.The output power is zero on Level “0”. Level “1” is the minimum power. Level “5” is the maximum power. Gear to level “5” and then press the **UP** button, the interface shows “5” still and “5” flashing prompts top. Gear to level “0” and then press the

DOWN button, the interface shows “0” still and “0” flashing prompts low.

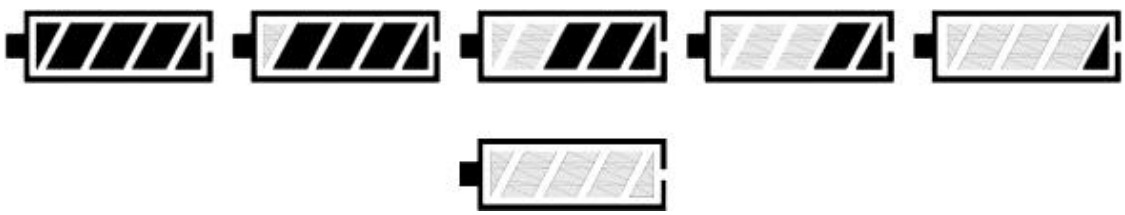
To change assistance level, press the **UP**/**DOWN** to increase or decrease until the desired assistance level is displayed.



Assistance Level “3”

◆Battery Indicator

The five battery bars represent the capacity of the battery. When the battery is in low voltage, battery frame will flash to notice that the battery needs to be recharged immediately.

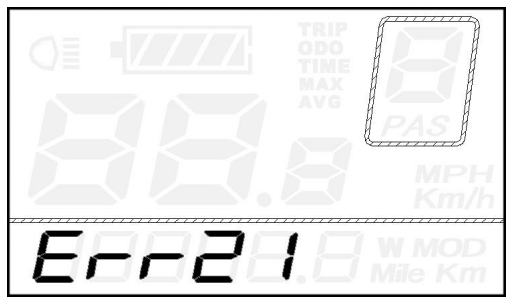


Low Voltage Flash
Battery Indicator

◆Error Code Indication

If there are errors about the electronic control system, the error code will appear automatically.

The messages of the error code are in **Attached list 1**.



Error Code Indication

■When an error code appears, please refer to an authorized E-bike dealer .

General Settings

After the E-bike system is switched on, to access general settings menu, hold both the **UP** and **DOWN** button for 2s.

■All the Settings are operated in the case of parking the E-bike**.**

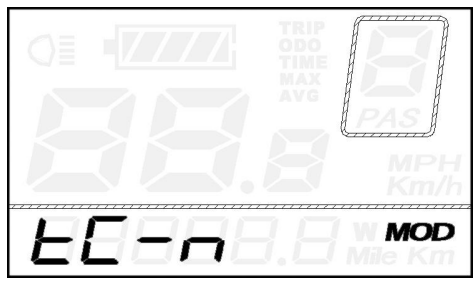
◆Trip Distance Clearance

TC represents trip distance clearance setting.

To clear trip distance, press the **UP**/**DOWN** button to choose Y or N. The default value is N.

To store a changed setting, press the **MODE** button and then access backlight contrast settings.

Various symbol definitions please refer to **Attached list 4.**



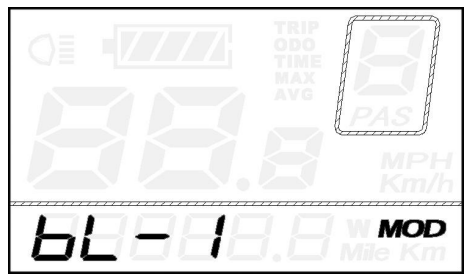
Trip Distance Clearance Settings Interface

◆Backlight Contrast settings

bL represents backlight contrast settings. Level “1” is the lowest brightness. Level “2” is the middle brightness. Level “3” is the highest brightness. The default value is “1”.

To change the backlight brightness, press the **UP/DOWN** button to increase or decrease until the desired setting is displayed.

To store a changed setting, press the **MODE** button and then access unit conversion settings.



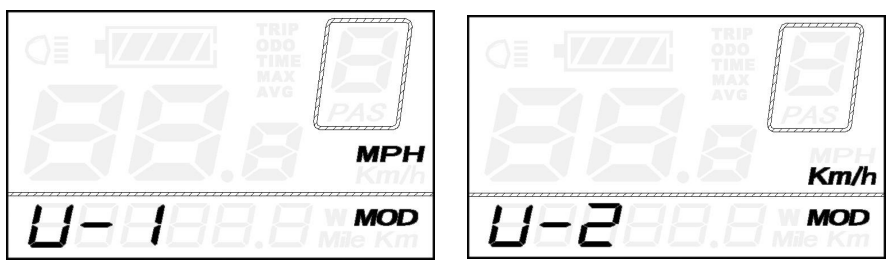
Backlight Brightness Settings Interface

◆Unit km/mi Conversion

U represents unit settings, “1” is mile, “2” is kilometer. The default value is “2”.

To convert unit, press the **UP/DOWN** button to increase or decrease until the desired setting is displayed.

Briefly press the **MODE** button, and then circularly access trip distance clearance settings again. Or hold the **MODE** button for 2s and then exit general settings.



Mile and Kilometer Conversion Settings Interface

General Parameter Settings

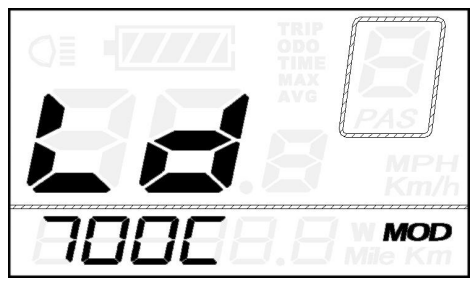
To access general parameter settings interface, hold both the **UP** and the **DOWN** button for 2s, then hold both the **DOWN** and **MODE** button for 2s again.

◆Wheel Diameter Settings

Ld represents wheel diameter settings. In general electable values are 16, 18, 20, 22, 24, 26, 700C and 28. The default value is 20 inch.

To change basic settings, press the **UP**/**DOWN** button to increase or decrease until the desired value is displayed.

To store a changed setting and access speed-limit settings interface, press the **MODE** button.



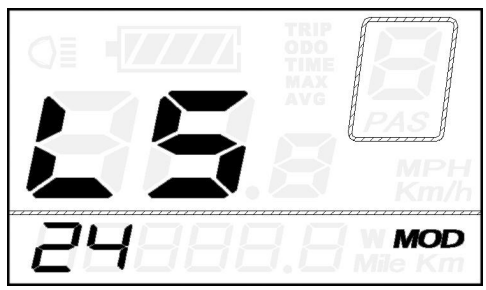
Wheel Diameter Settings Interface

◆**Speed-limit Settings**

LS represents the speed limit settings. When the current speed is faster than speed limit, the E-bike system will switch off automatically. Speed limit ranges from 12Km/h to 40Km/h. The default value is 25Km/h.

To change basic settings, press the **UP**/**DOWN** button to increase or decrease until the desired value is displayed.

Hold the **MODE** button for 2s and then exit General Parameter Settings.



Limit Speed Settings Interface

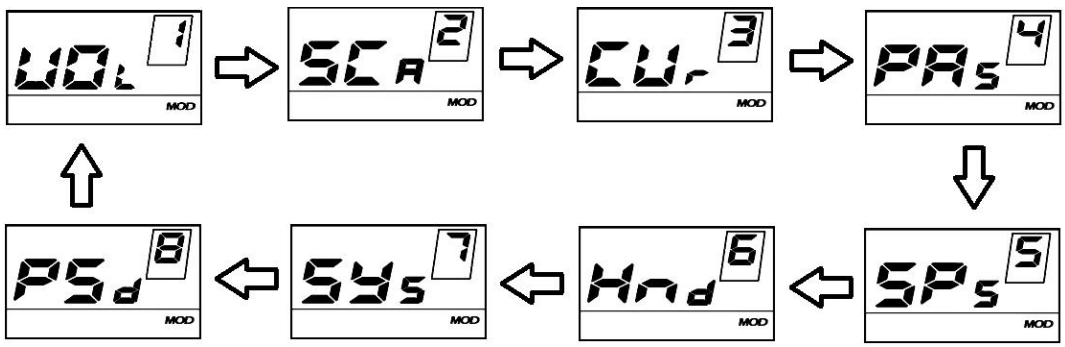
Personalized Parameter Settings

Personalized Parameter Settings can meet a variety of requirements in use. There are 8 settings items, such as Battery Power Bar Settings, Power assistant level Settings, Over-current Cut Settings, Power

Assistant Sensor Settings, Speed Sensor Settings, Throttle Function Settings, System Settings and Power-on Password Settings. Please refer to the **Attached list 2**.

To access Personalized Parameter Settings items option page, hold both the **UP** and **DOWN** button for 2s, then hold both the **UP** and **DOWN** button again.

To access the corresponding settings page, press the **UP/DOWN** button to increase or decrease until the desired item is displayed, and press the **MODE** button again.



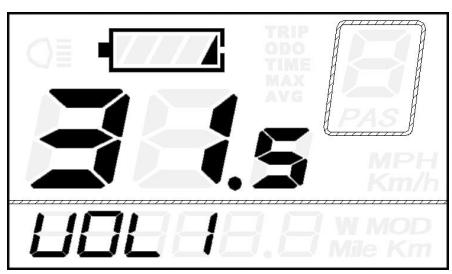
Options Selection Interface

◆Battery Power Bar Settings

VOL represents voltage settings. Each bar represents a voltage value. 5 bars voltage values must be entered one by one. For example, VOL 1 is first bar voltage value, the default value is 31.5.

To set battery power bar, press the **UP/DOWN** button to increase or decrease the number.

Briefly press the **MODE** button and access the second bar, by analogy**,** after 5 bars voltage values is entered, hold the **MODE** button to confirm and then return to the previous menu.



Battery Power Bar Settings

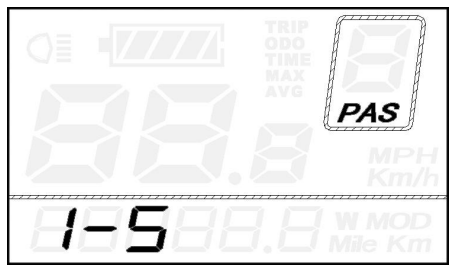
◆Assistance Level Settings

Assistance Level option

In assistance level settings, there are 8 modes to select: 0-3, 1-3, 0-5, 1-5, 0-7, 1-7, 0-9, 1-9. The default value is 0-5.

To select the mode of assistance level, press the **UP/DOWN** button to increase or decrease until the desired setting is displayed.

Briefly press the **MODE** button and access the PAS ratio settings page.



1-5 flash

PAS Mode Option Interface

PAS Ratio Settings

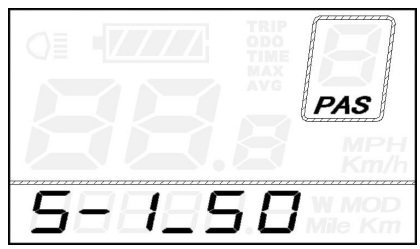
To modify the value of PAS ratio can match the different requirements.

For example, the range is “45-55 percent” of “1” level, bottom value can be modified, and the default value is 50 percent.

Briefly press the **MODE** button and turn to the next PAS ratio settings.

After all PAS ratio inputted, hold the **MODE** button for 2s to confirm and then return to previous menu.

Please refer to **Attached list 3**.



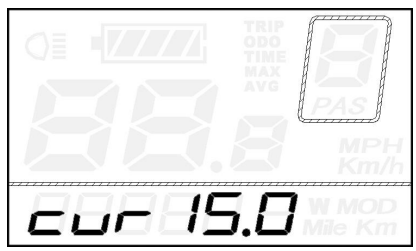
PAS Ratio Interface

◆Controller Over-Current Cut Settings

CUR represents controller over-current cut settings. CUR value can be changed from 7.0A to 22.0A. The default value is 15A.

To change basic settings, press the **UP/DOWN** button to increase or decrease the value of the current.

Hold the **MODE** button for 2s and then return to previous menu.



CUR Settings Interface

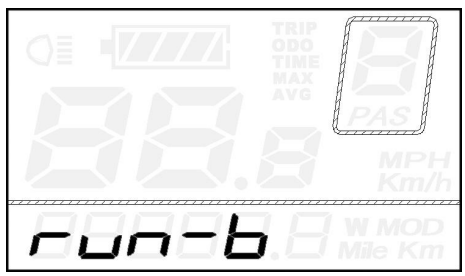
◆Power Assistant Sensor Settings

The Direction of Power Assistant Sensor Settings

PAS represents power assistant sensor settings. “run-F” means forward direction, while “run-b” means back direction. The default value is “run-F”.

To change The Direction of Power Assistant Sensor Settings, press the **UP**/**DOWN** button to select F or b.

Briefly press the **MODE** button and then access settings mode of PAS sensitivity.



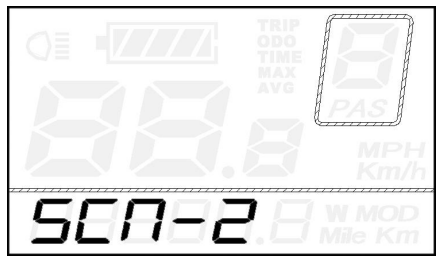
Direction of PAS Sensor Settings

The Sensitivity of PAS Settings

SCN represents the sensitivity of PAS settings. The sensitivity value ranges from “2” to “9”. “2” is the strongest, “9” is the weakest. The default value is “2”.

To change the sensitivity of PAS settings, press the **UP**/**DOWN** button to select sensitivity value.

Briefly press the **MODE** button and then access magnet disk settings mode.



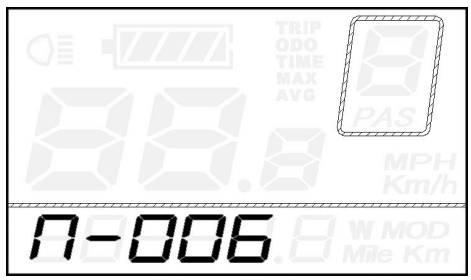
The Sensitivity of PAS Settings

Magnet quantity Settings

N represents magnet numbers of PAS disk. The default value is 6.

To change magnet numbers of PAS disk, press the **UP/DOWN** button to select quantity corresponding to PAS disk.

Hold the **MODE** button for 2s to confirm and then return to previous menu.



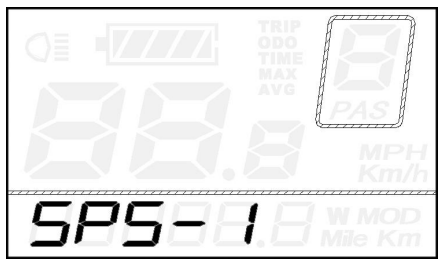
PAS Magnet Disk Settings

◆**Speed Sensor option**

SPS represents speed sensor settings. The default value is 1

To change speed sensor settings, press the **UP**/**DOWN** button to select the quantity of magnet head (the range is from 1 to 9).

Hold the **MODE** button for 2s to confirm and then return to previous menu.



Speed Sensor Selection

◆**Throttle Definition**

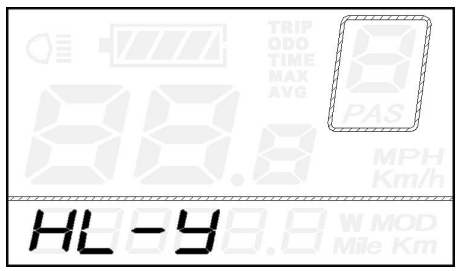
Throttle Push-assistance Enable/Disable

HL represents throttle push-assistance function. HL-N represents throttle assistance push function is disabled. HL-y represents throttle assistance push function is enabled. The default value is N.

To change throttle push-assistance function, press the **UP/DOWN** button to select Y or N.

Briefly press the **MODE** button.

Otherwise, to select N and then access Throttle Level Enable Settings.



Throttle Enable/Disable Interface

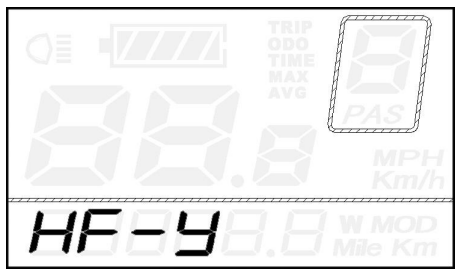
Throttle Level Enable/Disable

HF-y represents throttle level is enabled. HF-N represents throttle level is disabled. The default value is N.

To change throttle level function**,** press the **UP**/**DOWN** button to select Y or N.

Briefly press the **MODE** button and then access Throttle Enable Settings page.

Hold the **MODE** button for 2s to confirm and then return to previous menu.



Throttle Level Enable or Disable Interface

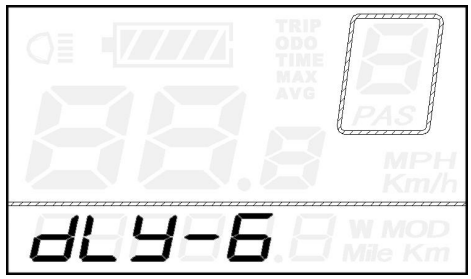
◆**System Settings**

Delay time settings of battery power

DLY represents delay time of battery power settings. The default value is 3s.

To change delay time settings, press the **UP**/**DOWN** button to select delay time 3s, 6s, 12s.

Briefly press the **MODE** button to confirm and then access the max speed limited**.**



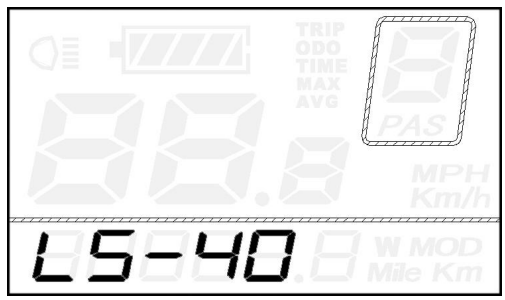
Delay Time of Battery Power Interface

Max speed limited

MAX SPD represents max speed limit settings. The default value is 40Km/h.

To change Max speed limit setting, press the **UP/DOWN** button to set the max speed from 25Km/h to 40 Km/h.

Briefly press the **MODE** button to confirm and then access Button PAS Settings.



Interface of Max Speed Limited Settings

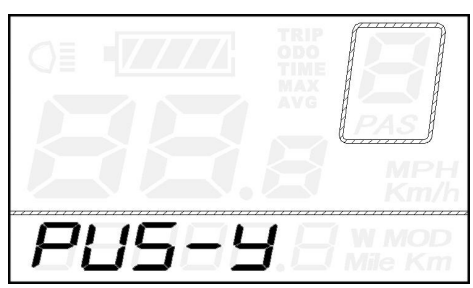
■**This setting is the priority version. The speed is the maximum set by manufacturer.**

Button Push-assistance Enable/Disable

PUS represents button push-assistance settings. Y represents button push is enabled, N represents button push-assistance is disabled. The default value is Y.

To change button push-assistance settings, press the **UP/DOWN** button to choose Y or N.

Briefly press the **MODE** button to confirm and then access PAS speed settings.



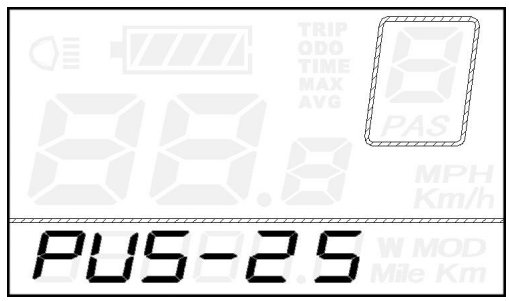
Interface of Push-assistance

PAS Speed Settings

To change PAS speed settings, press the **UP/DOWN** button to adjust from 20% to 35%**,**

Briefly press the **MODE** button to confirm and then access slowly start up.

The default value is 25%.



Interface of PAS Speed Settings

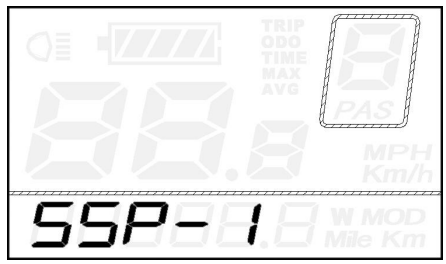
Slowly Start up Settings

SSP represents slowly start up. The range is “1-4”, “4” is the slowest. The default value is “1”.

To change slowly start up settings, press the **UP/DOWN** button to select the desired value.

Briefly press the **MODE** button and then circularly turn to Delay time settings of battery power page.

To return to previous menu, hold the **MODE** button for 2s.

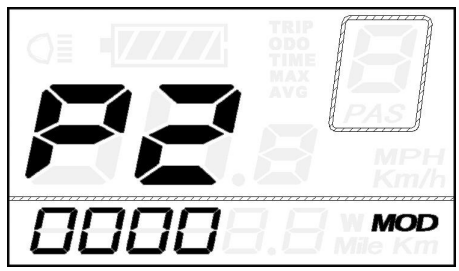


Interface of Slowly Settings Up

◆**Power-on Password Settings**

P2, 0000 on the screen means power-on password settings. The default value is 1212.

To access the power-on password settings, press the **UP/DOWN** button to modify the value and then press the **MODE** button to confirm digit one by one until the correct 4-digit password is completed, and then press the **MODE** button to access power-on password enable settings interface, otherwise stay on the password input state.



Power-on Password Entering Interface

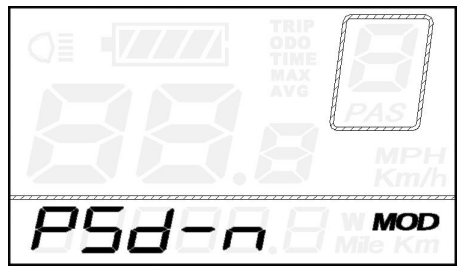
Power-on Password Enable/Disable

To change power-on password enable/disable settings, press the **UP**/**DOWN** button to select Y or N.

If it is Y, press the **MODE** button and then access power-on password modifying interface, otherwise exit the power-on password settings interface. The default value is N.

Y is power-on password enable

N is power-on password disable



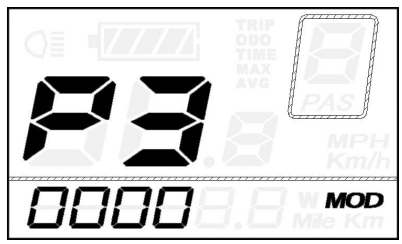
Power-on Password Disable Interface

Power-on Password Modifying

When the display shows P3, 0000, to set new power-on password, press the **UP**/**DOWN** button to modify the value and then press the **MODE** button to confirm digit one by one until the new 4-digit password is completed.

To store the new power-on password, hold the **MODE** button for 2s and then exit settings.

When switching the E-bike system on next time, the display will show P1, 0000, please input the new password to power on.



Power-on Password Modifying Interface

◆**Exit settings**

In the settings state, briefly press the **MODE** button is to confirm the input. Holding the **MODE** button is to store the settings, and then exit the current settings. Holding the **DOWN** button is to cancel the operating but not storing settings data, and then return to previous menu.

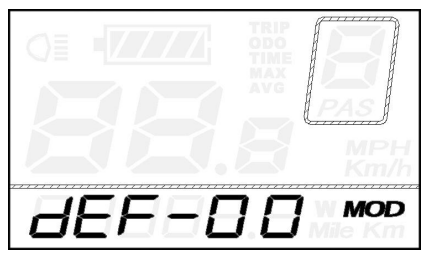
■**If there is not any operations in one minute, the display will exit the settings state.**

Recover default settings

dEF represents recover default settings. The default value is N.

To access recover default settings, hold both the **UP** and **MODE** button for 2s and then access selecting interface, to press the **UP**/**DOWN** button to choose Y or N again. N means that do not recover default settings. Y means that recovers default settings.

When it is Y, hold the **MODE** button for 2s to recover default settings, the display shows DEF-00 at the same time**,** and then return to general display state.



Recover Default Settings Interface

Operation Cautions

Be careful of safe use. Don't attempt to release the connector when battery is on power.

◆ Try to avoid hitting.

◆ Make the display repaired when error code appears.

Quality assurance and warranty scope

Ⅰ Warranty

1) The warranty will be valid only for products used in normal usage and conditions.

2) The warranty is valid for 24 months after the shipment or delivery to the customer.

Ⅱ Other items

The following items do not belong to warranty scope:

1) The display is demolished.

2) The damage of the display is caused by wrong installation or operation.

3) The shell of the display is broken after the display is out of the factory.

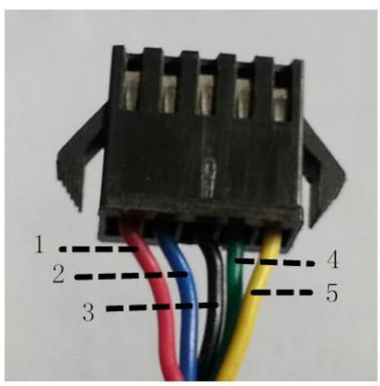
4) The cable of the display is broken.

5) Beyond warranty period.

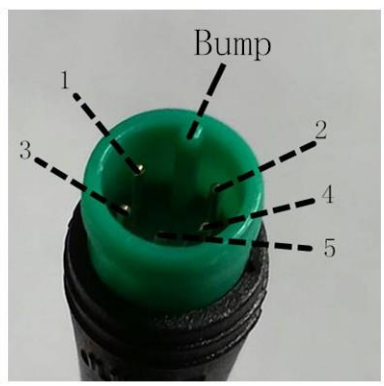
6) The fault or damage of the display is caused by the force majeure (e.g., fire, earthquake, etc.).

Connection layout

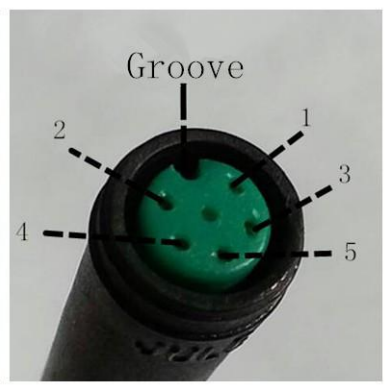
Connector line sequence



Display-side connector



Display-side adapter



Switch cable

Line sequence table

Line sequence	Color	Function
1	Red(VCC)	+
2	Blue(K)	Lock
3	Black(GND)	-
4	Green(RX)	RX
5	Yellow(TX)	TX

■Some cable use the water-proof connector, users can not see the inside color.

Attached list 1：Error code definition

Error Code	Definition
21	Current Abnormality
22	Throttle Abnormality
23	Motor Abnormality
24	Motor Hall Signal Abnormality
25	Brake Abnormality
30	Communication Abnormality

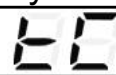
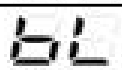
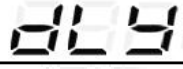
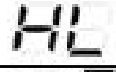
Attached list 2: Personality Parameter settings

No.	Settings item	Screen display
1	Battery Power Bar Settings	
2	Power assistant level Settings	
3	Over-current Cut Settings	
4	Power Assistant Sensor Settings	
5	Speed Sensor Settings	
6	Throttle Function Settings	
7	System Settings	
8	Power-on Password Settings	

Attached list 3：Power assist table

Level / Level Item	1	2	3	4	5	6	7	8	9
0-3/ 1-3	50%	74%	92%	—	—	—	—	—	—
0-5/ 1-5	50%	61%	73%	85%	96%	—	—	—	—
0-7/ 1-7	40%	50%	60%	70%	80%	90%	96%	—	—
0-9/ 1-9	25%	34%	43%	52%	61%	70%	79%	88%	96%

Attached list 4：symbol definition

No.	Symbol	Definition
1		Trip distance clearance
2		Backlight
3		Unit
4		Voltage
5		Wheel diameter
6		Speed limit
7		Controller over-current cut
8		Backward
9		Forward
10		Sensitivity of PAS
11		Speed sensor
12		Power delayed time
13		Throttle power assist walk
14		Throttle-changing
15		Button push
16		Slowly start up
17		Password
18		Recover default
19		Yes
20		No