KEY-DISP

User Manual

KD86

Content

Product Model

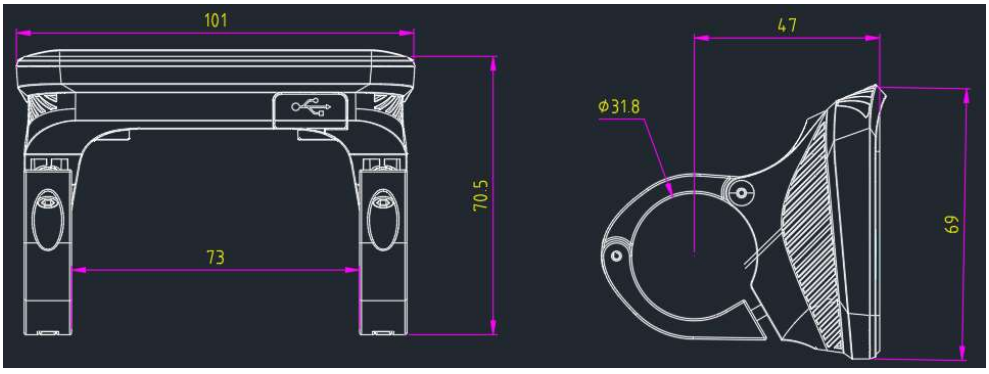
Intelligent TFT display for E-bike; model: KD86

Specifications

- 36V/48V/52V Power Supply
- Rated working current:： 50mA
- The maximum working current： 200mA
- Off leakage current： <1μA
- Operating temperature：-20～60℃
- Storage temperature：-30～70℃

Appearance and Size

Display appearance and dimension drawing (unit: mm)



Function Summary

KD86 can provide a lot of functions to fit your needs. The indicating contents are as follows:

- Battery indicator

●Motor power indicator
●PAS level adjustment and indicator
●Speed function (incl. real speed, Max. speed and Avg. speed)
●Distance（Trip and ODO）
●6km/h push assistance
●Trip time
●Backlight
●Error code
●USB connection
● Various Parameters Settings (e.g., wheel size, speed-limited, battery capacity setting, assistance level etc.)

General Operation

◆Definition of Button

KD86 display matches K41-N/K42/K43/K5 buttons.

K41-N/K42/K43 has 4 buttons: including on/off, i key, plus key, minus key/boost key; in the subsequent description, the on/off button is replaced by the word "ON/OFF"; i The key is replaced with the word "i"; the plus key is replaced with the word "UP"; the minus/boost key is replaced with the word "DOWN".

K5 has 5 buttons: including on/off, i key, plus key, headlight key, minus key/boost key; in the subsequent description, the on/off key is replaced by the word "ON/OFF"; the i key is The word "i" is replaced; the plus key is replaced with the word "UP"; the minus/boost key is replaced with the word "DOWN".

◆Power on/off

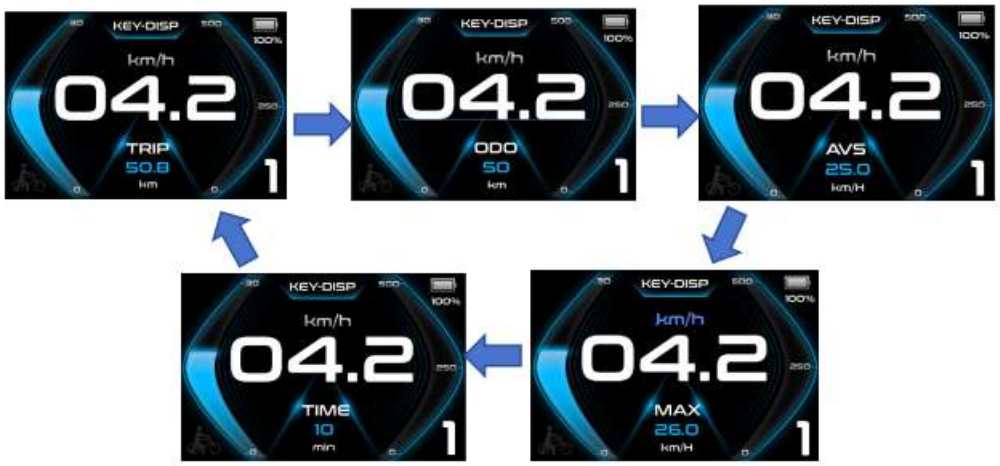
After long pressing the "ON/OFF" button for 2 seconds, the display turns on and the entire system works normally. In the power-on state, long press the "ON/OFF" button to turn off the power of the e-bike In the shutdown state, the display no longer uses battery power, and the leakage current of the meter is less than 1uA.

■When parking the E-bike for more than 5 minutes, the E-bike system switches off automatically.

◆Display Interface

After switching on the E-bike system, the display will show Real Speed and Trip Distance (KM) as default. Pressing the “i” button to switch between following items:

Trip (Km) →ODO (Km) → Avg. Speed (Km/h)→Max. Speed (Km/h)→Trip Time (Min.)



Display interface

◆6km/h Push-assistance

Hold the “DOWN” button will activate the push-assistance function, after 2s, the E-bike will travel at a uniform speed of 6 Km/h while the screen displays “”. The push-assistance function is switched off as soon as you release the “DOWN” button. The E-bike system stops the power output immediately, and back to the status before push-assistance mode.

Push-assistance Mode

◆Headlight

K5 button Press and hold the " " button for more than 2 seconds to turn on the headlights. After turning on the headlights, the backlight brightness decreases. Press and hold the " " key again for more than 2 seconds to turn off the headlights and restore the backlight brightness.

K41-N/K42/K43 Button Press and hold the "UP" button for more than 2 seconds to turn on the headlights. After turning on the headlights, the backlight brightness

decreases. Press and hold the "UP" button again for more than 2 seconds to turn off the headlights and restore the backlight brightness.

Headlight Interface

◆PAS level

Short press the "UP" or "DOWN" button to switch the power assist gear of the electric vehicle and change the output power of the motor. The default output power range of the display is PAS level 0-5. PAS level 0 stop power output, PAS level1 is the minimum power, PAS level 5 is the maximum power. As shown in the figure, it is PAS level 1.

Assist Level Interface

◆Motor Power

The power of the motor can be read via the interface, like the following picture.

Motor Power Display Interface

◆USB connection

When the display is plugged into a USB external device, the meter will display the interface as shown in the figure below.

USB Connection Interface

◆ Error code

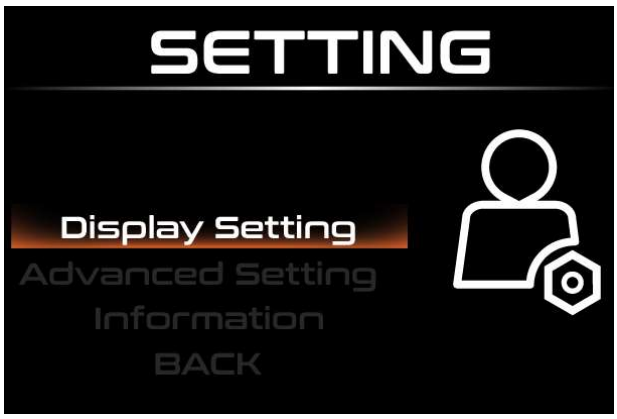
When the electronic control system fails, it will automatically display the error code. Here is the detailed message of the error code in **Attached list 1.**

Error Code Interface

■When an error code is displayed, please remove the fault in time, the e-bike will not be able to run normally after a fault occurs

Parameter setting

In the power-on state, when the vehicle is stationary, press and hold the "UP" and "DOWN" buttons simultaneously for more than 2 seconds, and the display will enter the setting state. Including Display setting (instrument settings), Advanced settings (advanced settings) and Information (software information).



Setting Interface

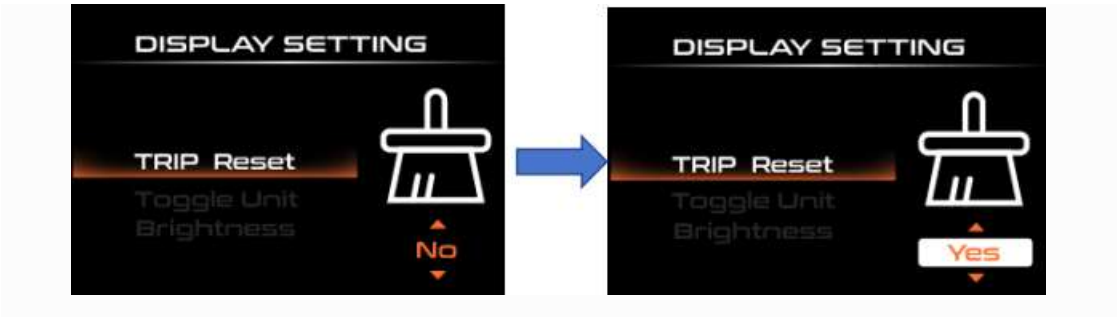
■All the settings are operated on a parked e-bike.

Display settings

◆Trip Reset

Short press "i" to confirm, short press "UP" or "DOWN" to switch between "NO (not clear)" and "YES (clear)"; (cleared data includes maximum speed (MAXS), average speed (AVG), Trip (TRIP), riding time (Time)), short press "i" again after confirmation, save and exit to "TRIP Reset".

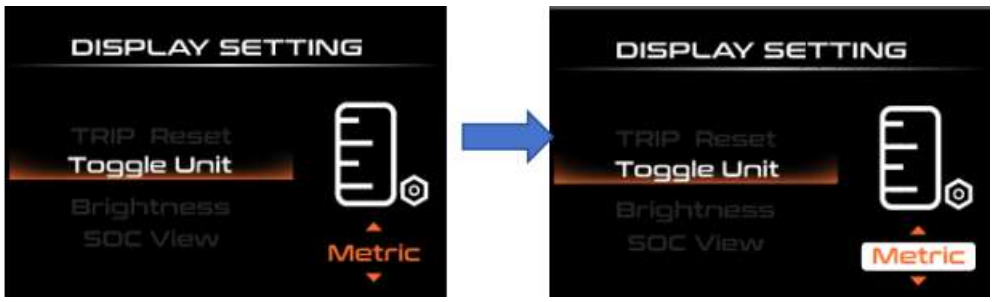
Press and hold the "i" key to exit to the main interface or press "BACK" → to exit to the main interface. The above data will not be automatically cleared when the instrument is turned off or the e-bike is powered off.



Trip Reset Interface

◆Toggle Unit

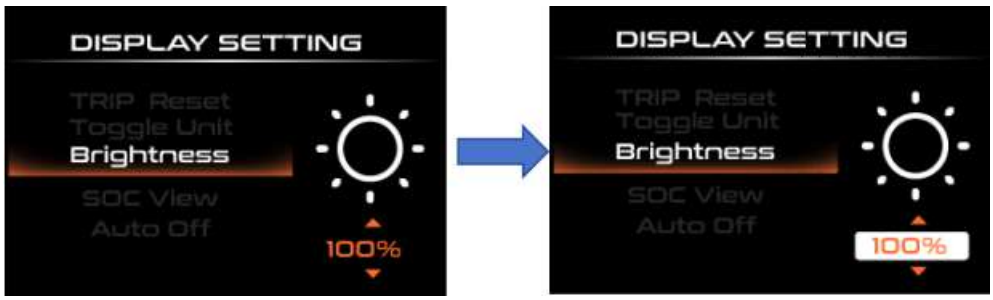
Press the “UP” button or the “DOWN” button to choose the “Toggle Unit”, and then press the “i” button to enter unit settings, press the “UP” button or the “DOWN” button to switch between “Metric” and “Imperial”, press the “i” button to save and exit “Toggle Unit”. The default value is “Metric”.



Toggle Unit Interface

◆Brightness

"Brightness" indicates the backlight brightness setting. Short press "i" to enter the settings. By short pressing "UP" or "DOWN", the backlight brightness range is "100%-75%-50%-30%-10%" 5 levels of brightness, 100% corresponds to the highest brightness, 10 % corresponds to the lowest brightness; short press "i" to save and exit to "Brightness".



Brightness setting interface

◆SOC settings

"SOC View" represents two display methods of remaining battery capacity. One is the percentage and the other is the voltage value. Select the desired display mode by briefly pressing the "UP" or "DOWN" button. Short press "UP" or "DOWN" to select voltage and percentage "Voltage"/"Percent" modes. Short press "i" to save and exit to "SOC View".

SOC setting interface

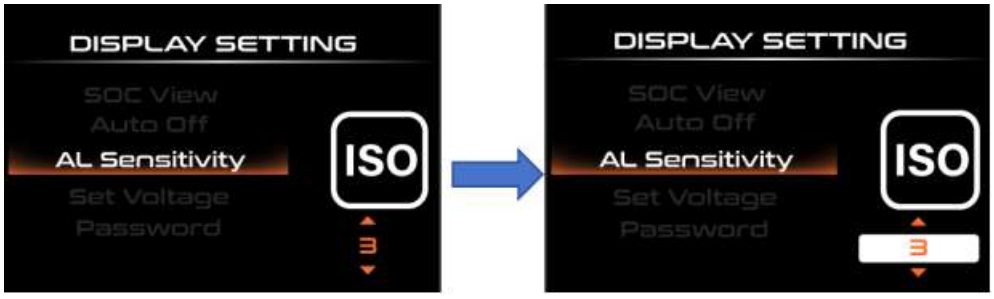
◆ Auto Power-off Time

“Auto Off” represents the automatic shutdown time of the display. Short press "UP" or "DOWN" to select "Auto Off", short press "i" to enter settings, and select the automatic shutdown time range by short pressing "UP" or "DOWN". The automatic shutdown time range is "9-8-7" -6-5-4-3-3-2-1-OFF” (min), short press “i” to save and exit to “Auto Off”.

Auto Power-off Time Setting Interface

◆AL Sensitivity Settings

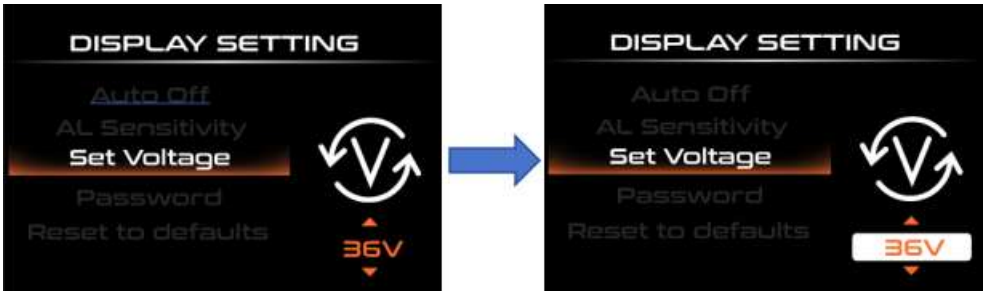
"AL Sensitivity" represents the sensitivity of light perception. To change the value, short press the "UP" or "DOWN" button to select the sensitivity value. The light sensitivity value range is "5-4-3-3-2-1-OFF", short press "i" to save and exit to "AL Sensitivity".



AL Sensitivity Setting Interface

◆Voltage Settings

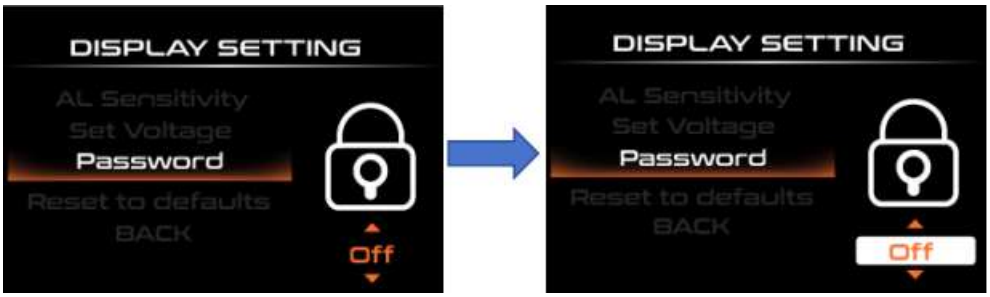
"Set Voltage" represents battery power setting. Short press the "i" key to enter the battery power setting interface. To change the value, press the "UP" or "DOWN" button briefly to select the voltage value. The voltage range is 36V-48V, short press "i" to save and exit to "Set Voltage".



Voltage setting interface

◆Password Setting

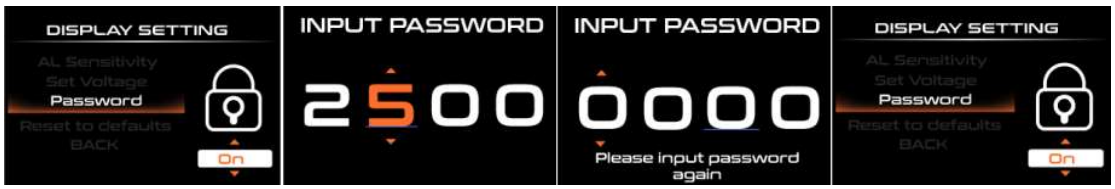
Short press the "UP" or "DOWN" key to select "Password", short press the "i" key to enter settings, and then short press the "i" key to select Start PassWord; by short pressing the "UP" or "DOWN" key, switch " OFF"/"ON", the following is the specific switching method.



Password setting interface

◆Start PassWord Setting

After selecting "ON" in the "Start PassWord" interface, short press "i" to confirm, the interface prompts to enter the password, short press the "UP" or "DOWN" key to enter the value, short press the "i" key to shift, 4 digits After entering the password, short press the "i" key to confirm; the interface prompts to enter the password again. After the two inputs are consistent, the system prompts that the password is set successfully. If the two inputs are inconsistent, you need to repeat the first step and enter the new password and confirm. The password is set successfully. The rear 2S interface automatically jumps to the original setting interface.



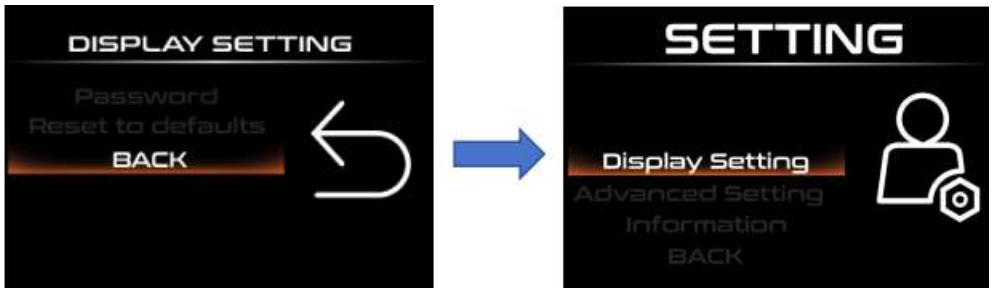
◆Reset to default Setting

Short press "UP" or "DOWN" to select "Reset to defaults", short press "i" to enter settings, and short press "UP" or "DOWN" to switch between "YES" (restore factory settings) / "NO" (do not restore) Factory settings), short press "i" to save and exit to "Reset to defaults".

Reset to default setting interface

◆Back to Display Setting

Short press "UP" or "DOWN" to select "BACK", and short press "i" to exit to "Display setting".

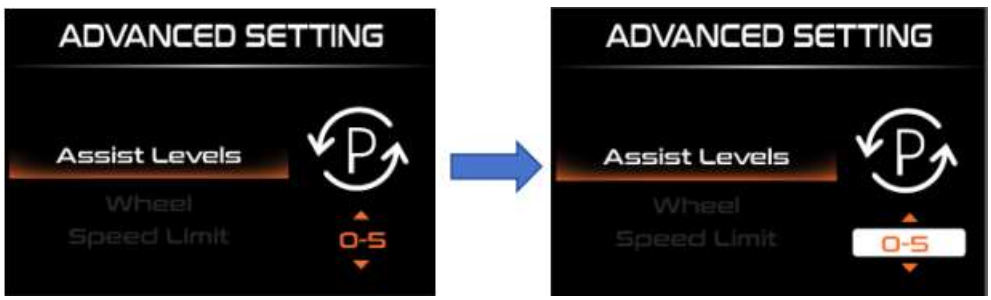


Advanced settings:

◆Power assist level selection and power assist ratio Setting

"Power Set" represents power assist gear mode. There are 8 modes available: 0-3, 1-3, 0-5, 1-5, 0-7, 1-7, 0 -9, 1-9. Short press "UP" or "DOWN" to change the assist level range, short press "i" to enter the assist ratio setting, short press "UP" or "DOWN" to change the level assist ratio parameter, short press "i" to enter the next level assist ratio, after setting the 5th level assist ratio, short press "i" to save and exit to "Assist levels".

For detailed assist ratio parameters, please refer to Appendix 2.

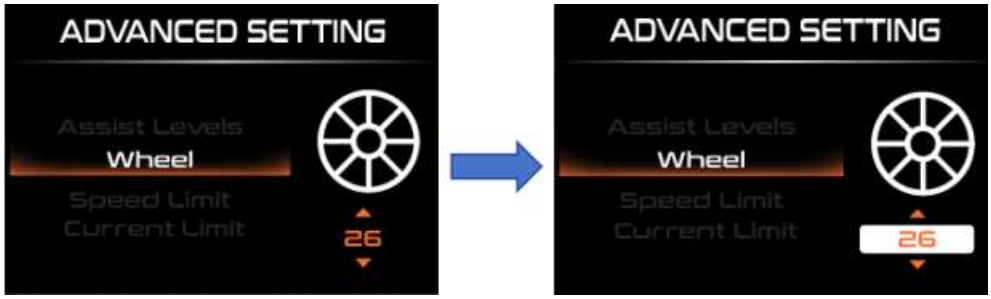


Assist level setting interface

Assist ratio setting

◆Wheel diameter Setting

"Wheel" represents the wheel diameter setting. Short press the "i" key to enter the wheel diameter setting interface. Change by pressing "UP" or "DOWN". By short pressing "UP" or "DOWN", you can select the wheel diameter "16"/"18"/"20"/"22"/"24"/"26"/"700c"/"28", select and confirm Short press the "i" key to save and exit to "Wheel".



Wheel diameter setting interface

◆Speed Limit Setting

"Speed Limit" represents the speed limit setting. Short press the "i" key to enter the speed limit setting interface. Change by pressing "UP" or "DOWN". The speed limit range is "12-40km/h", and the default is "25km/h". After selecting and confirming, press the "i" key to save and exit to "Speed Limit".

Speed limit setting inertace

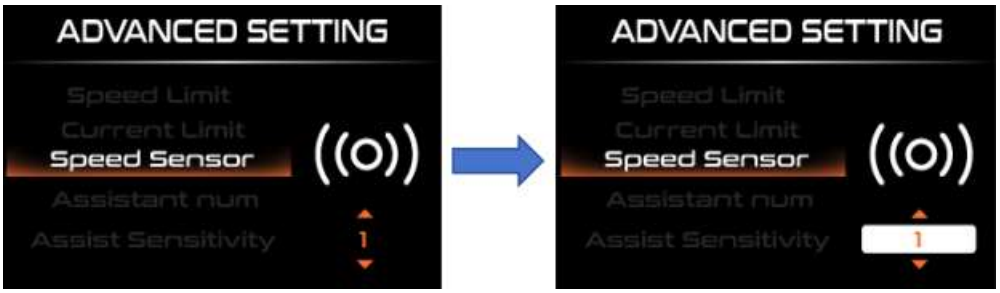
◆Current Limit Setting

“Current Limit” represents the current limit value setting. The adjustable range is 7A-25A. Change the maximum current value of the controller by short pressing the "UP" or "DOWN" key. Short press "i" to save and exit to "Current Limit".

Current limit setting interface

◆Speed Sensor Setting

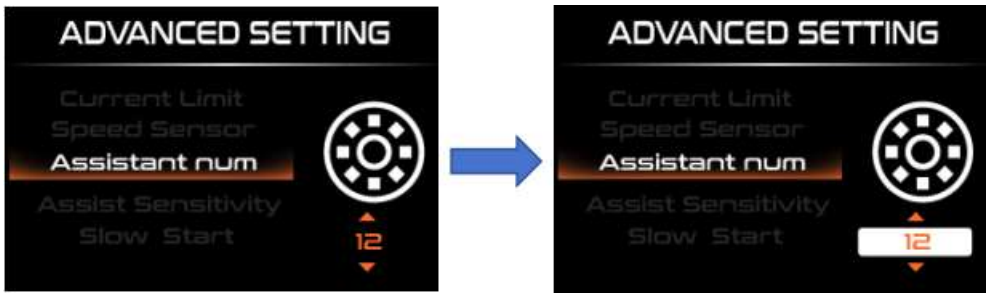
"Speed Sensor" represents the speed sensor setting. Select the number of magnetic heads by short pressing the "UP" or "DOWN" key, and the setting range is "01-12". Press "i" to save and exit to "Speed Sensor"



Speed sensor setting interface

◆Number of magnets for PAS sensor Setting

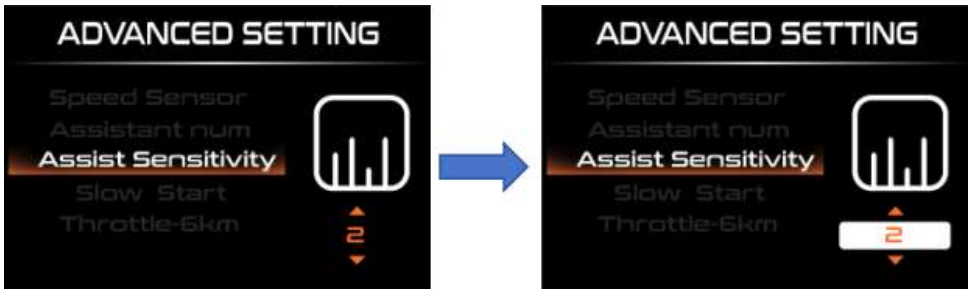
“Assistant Num” represents the sensor magnet number setting. Modify the settings by short pressing the "UP" or "DOWN" button. The number of magnets in the power sensor is in the range of "04, 05, 06, 07, 08, 09, 12, 24, 32". Short press "i" to save and exit. to "Assistant Num".



Number of magnets for PAS sensor setting interface

◆Assistant Sensitivity Setting

“Assistant Sensitivity” represents the assist sensitivity setting. Modify the settings by short pressing the "UP" or "DOWN" button. The boost sensitivity range is "0-5" and the default sensitivity is "2". Short press the "i" key to save and exit to "Assistant Sensitivity"



Assistant sensitivity setting

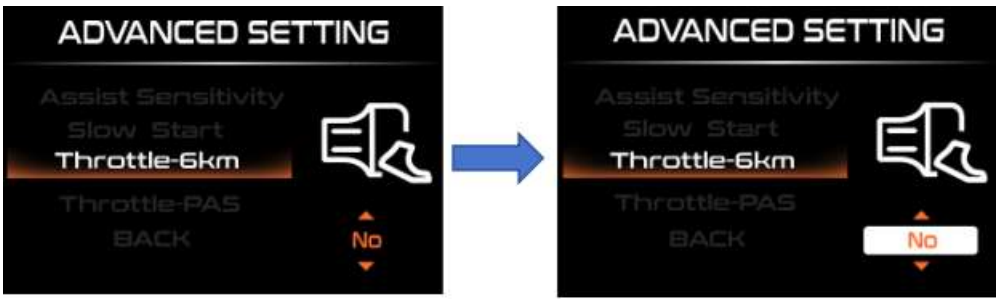
◆Slow Start Setting

"Slow Start" means slow start setting. When you press the pedal, it takes a while before you get boost. The range is "1-4". "4" is the slowest. Select the desired value by briefly pressing the "UP" or "DOWN" key. Short press "i" to save and exit to "Slow Start".

Slow start setting interface

◆Throttle-6km/h Setting

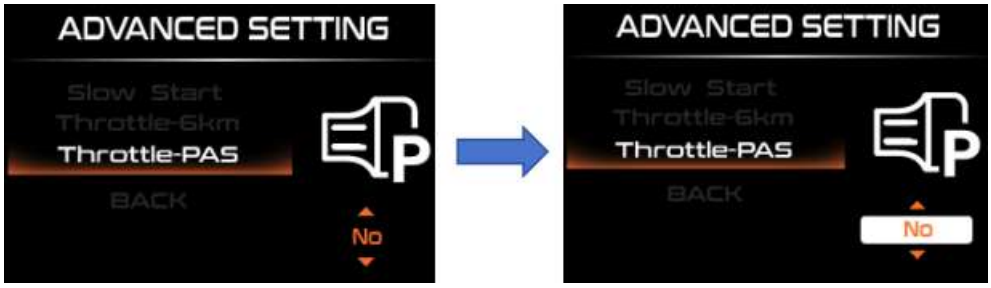
"Therottle-6km/h" means turning the handlebar and the e-bike moves forward at boost speed. Select the handlebar working mode by short pressing the "UP" or "DOWN" button, short pressing "i" to save and exit to "Therottle-6km/h"



Therottle-6km/h setting interface

◆Throttle-PAS Setting

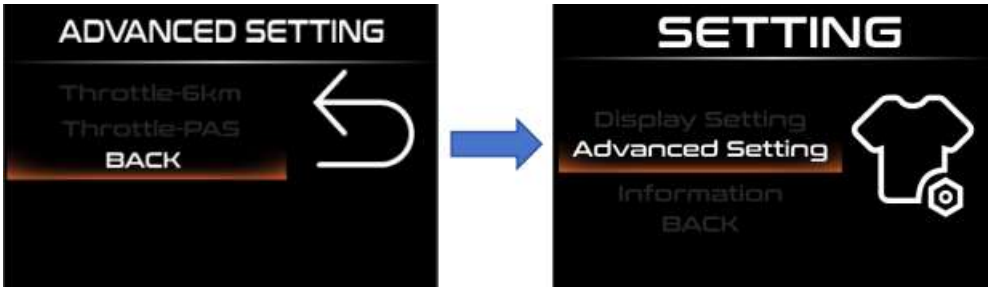
"Therottle-PAS" stands for turning the handlebar, and the speed that the e-bike can achieve in each level is the same as the power assist. Select the handlebar working mode by short pressing the "UP" or "DOWN" button, short pressing "i" to save and exit to "Therottle-PAS"



Throttle-PAS setting interface

◆Exit Display Setting

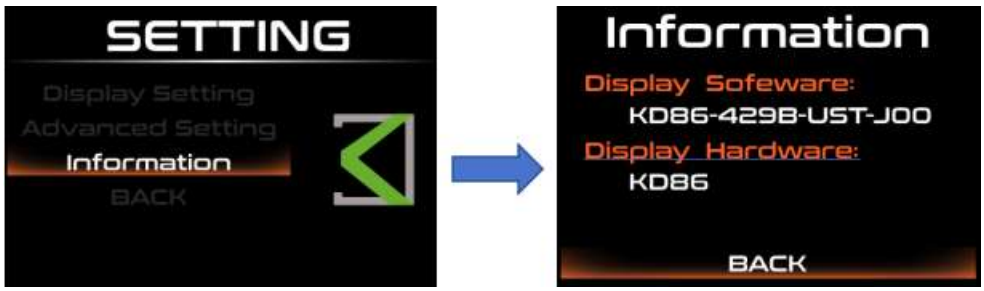
Short press "UP" or "DOWN" to select "BACK", short press "i" to exit to "Advanced settings



Exit display setting interface

Information（Software information）:

Short press the "i" key to enter "Information" to view software information. Long press the "i" key to exit to the setting interface or press "BACK" to exit to the setting interface.



Software information interface

Note: The software version number is only used for Kds internal traceability.

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 Others

The following items do not belong to our warranty scope.

（1）The display is demolished.

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

（3）Shell of the display is broken when the display is out of the factory.

（4）Wire of the display is broken.

（5）The fault or damage of the display is caused by the force majeure (e.g., Fire, Earthquake, etc.).

（6）Beyond Warranty period.

Connection Layout

Connector line sequence

Line sequence table

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

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

Operation Cautions

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

●Try to avoid hitting.

●Do not modify system parameters to avoid parameters disorder.

●Make the display repaired when error code appears.

This operating instruction is a general-purpose version. Some of the version for the display software will be different from the specification, which should depend on the actual use version.

■If no operation is performed within one minute, the display will automatically exit the setting state.

Attached list 1：Error code definition

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

Attached list 2：Default value table of power assist level ratio

PAS Level / PAS Level selection	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%