KEY-DISP

E-bike Display User Manual

CM13

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Product Name and Model

Intelligent TFT display for E-bike; model: CM13

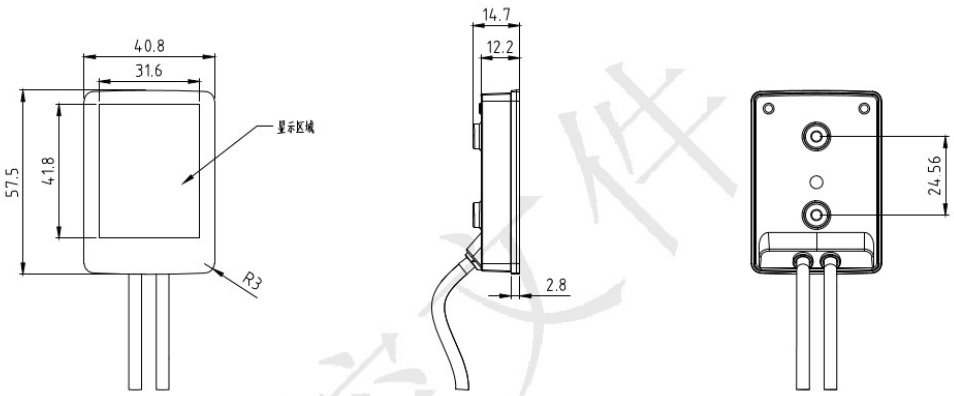
Specifications

- 48V 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

CM13 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 indicator (incl. real speed, Max. speed and Avg. speed)
- ●Distance（Trip and ODO）
- ●6km/h push assistance
- ●Trip time
- ●Backlight
- ●Error code
- ●Various Parameters Settings (e.g., wheel size, speed-limited, battery capacity setting, assistance level etc.)

General Operation

◆Definition of Button

The CM13 display matches the K43 button and has 4 buttons: including on/off, i key, plus key/headlight key, minus key/boost key; in the subsequent description, the on/off button uses the word "ON/OFF" Replace; the i button is replaced with the word "i"; the plus button/headlight button is replaced with the word "UP"; the minus button/boost button 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.

When the display is powered on, the microcontroller will always work. First power-on: After initialization is completed, turn off KP and enter the cycle detection button state until the "ON/OFF" button is pressed. The program continues to run, open KP, turn on the logo, and enter the main interface. Shutdown: The display shuts down KP, restarts through software reset, restarts the display program, enters the initial power-on state and waits for the button to be pressed again.

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

◆Display Interface

After the display is turned on, the display shows real-time speed and ODO (kilometers) by default. Short press the "i" button to display information on Trip (kilometers), maximum speed (kilometers/hour), and average speed (kilometers/hour). hours), Trip time, then short press the "i" button to display the MOTOR POWER information interface, CURRENT, watt, AVG, watt, MAX, watt, then short press the "i" button to display the RIDING MOOE USAGE interface percentage of each level



Display Interface

◆6km/h Push-assistance

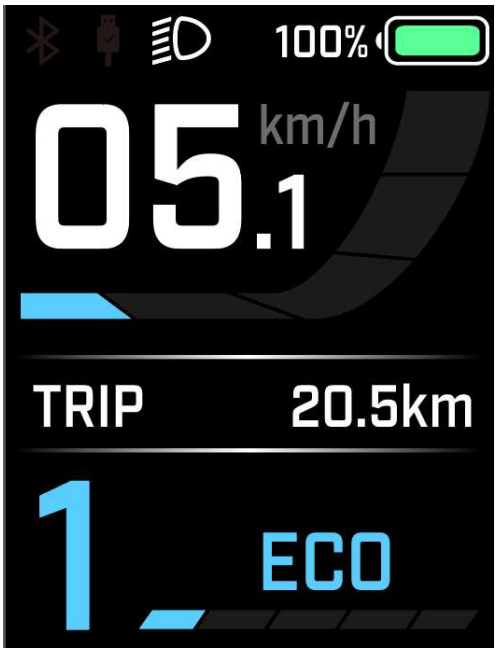
Hold the “DOWN” button will activate the push-assistance function, after 2s, the E-bike will travel at a uniform speed of 6 km/h while the screen displays “”. The push-assistance function is switched off as soon as you release the “DOWN” button. The E-bike system stops the power output immediately, and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



Push-assistance Mode

◆Headlight

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

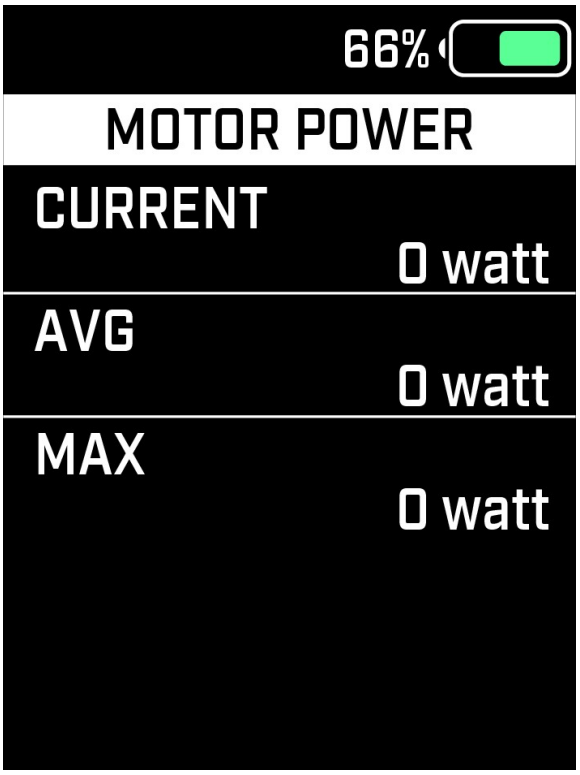
Short press the "UP" or "DOWN" button to switch the power assist level of the e-bike and change the output power of the motor. The default output power range of the display is PAS level 0-5. PAS level 0 stop power output, PAS level1 is the minimum power, PAS level 5 is the maximum power. As shown in the picture, it is PAS level 2.



PAS level interface

◆Motor Power

Short press the "i" button to display the MOTOR POWER information interface. CURRENT, watt, AVG, watt, MAX, and watt are displayed as shown in the figure below.



Motor Power Display 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.**

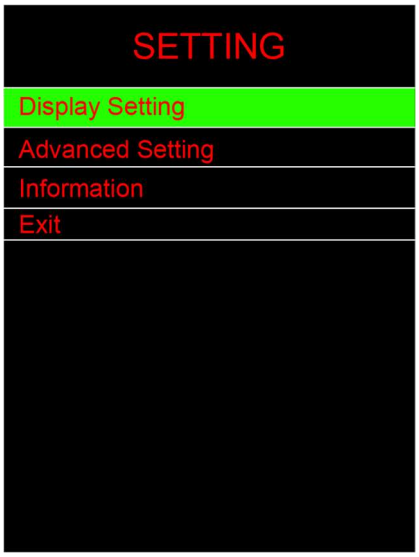


Error Code Interface

■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

pLong press the "ON/OFF" button to turn it on. In the power-on state, when the e-bike is stationary, press and hold the "i" button for more than 2 seconds, and the display will enter the setting state. Including Display setting (display settings), Advanced settings (advanced settings) and Information (software information)



Setting Interface

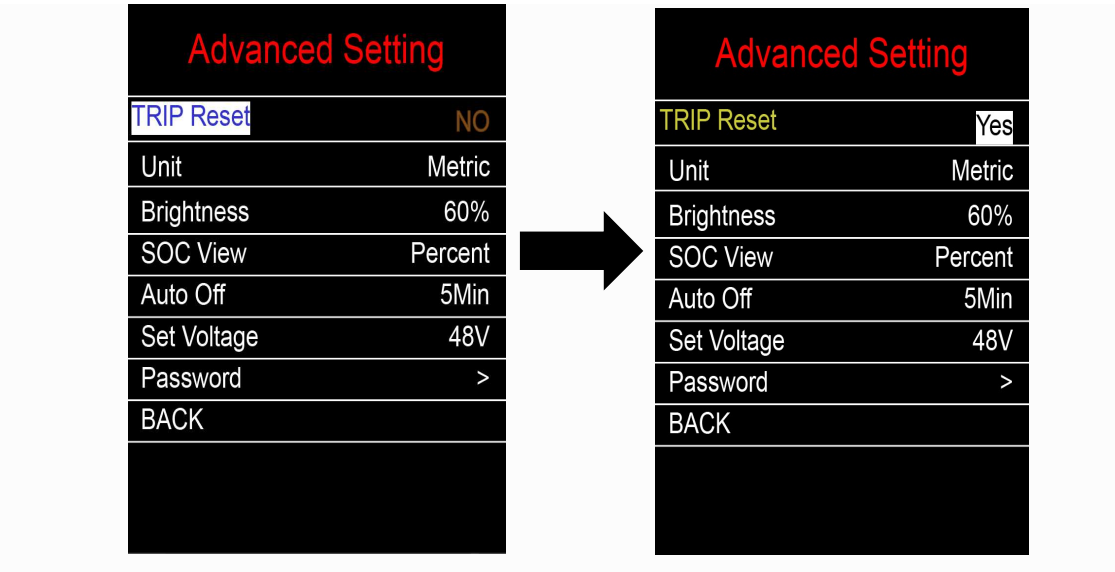
■All the settings are operated on a parked e-bike.

Display settings:

◆Trip reset

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

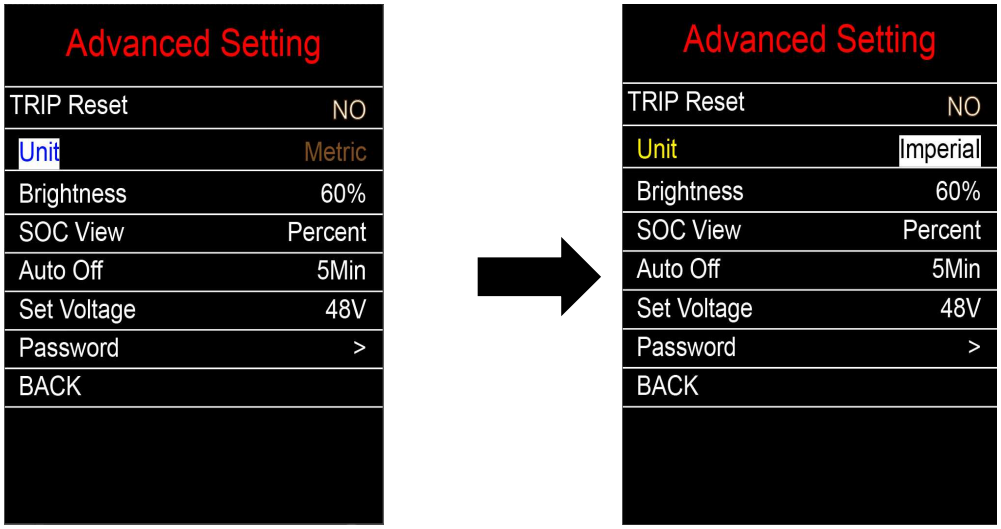
Press and hold the "i" key to exit to the main interface or press "BACK" → to exit to the main interface. The above data will not be automatically cleared when the display is turned off or the e-bike is powered off.



Trip reset interface

◆Unit

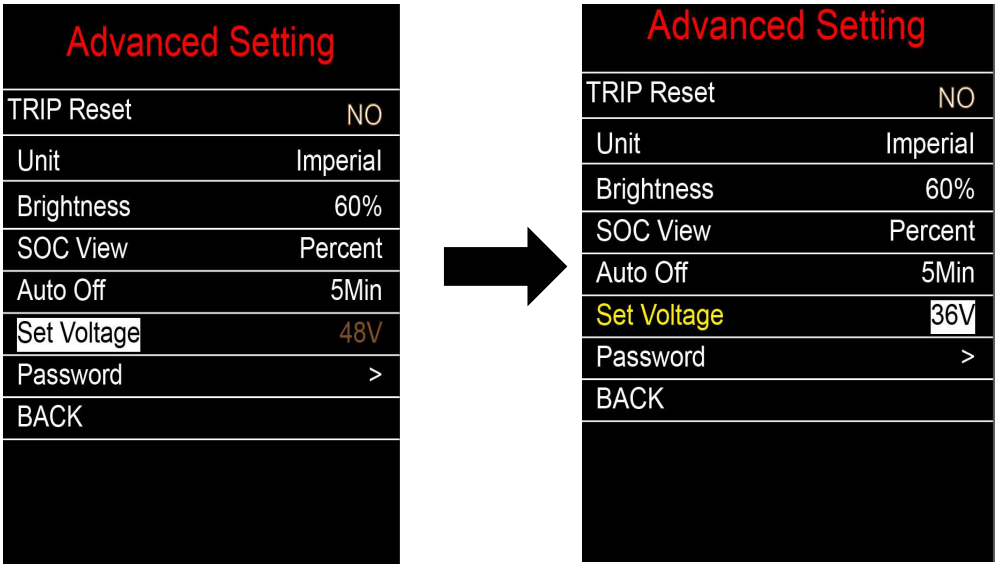
Short press "UP" or "DOWN" to select "Unit", short press "i" to enter settings, short press "UP" or "DOWN" to select "Metric" (kilometers)/"Imperial (miles)", short press " i" save and exit to "Unit". The default metric system of the display is Metric.



Unit interface

◆Set Voltage

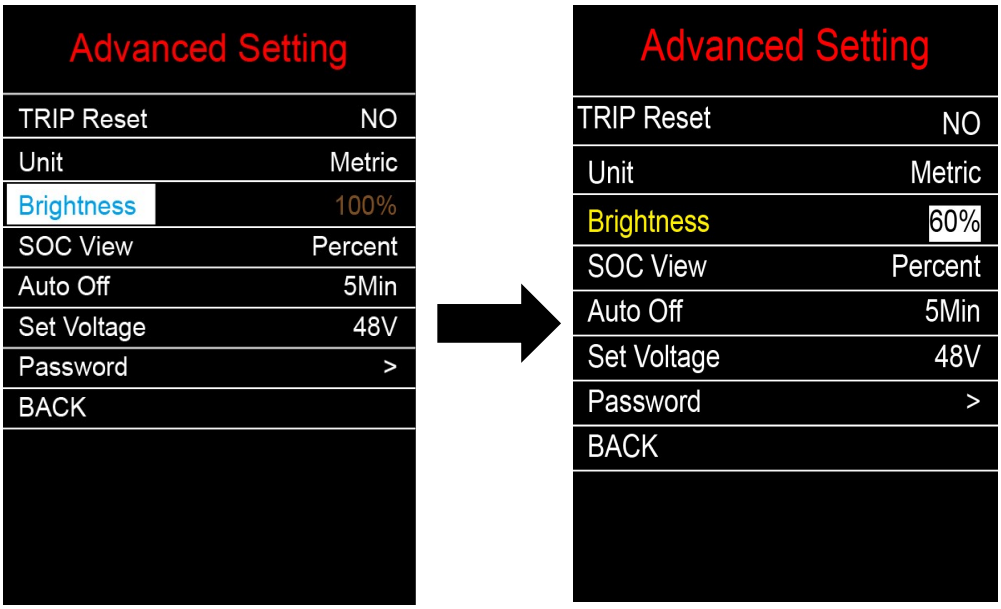
"Set Voltage" represents battery power setting. Short press the "i" key to enter the battery power setting interface. The voltage value is 48V and can be changed by switching to 36V.



Set Voltage interface

◆Backlight 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".

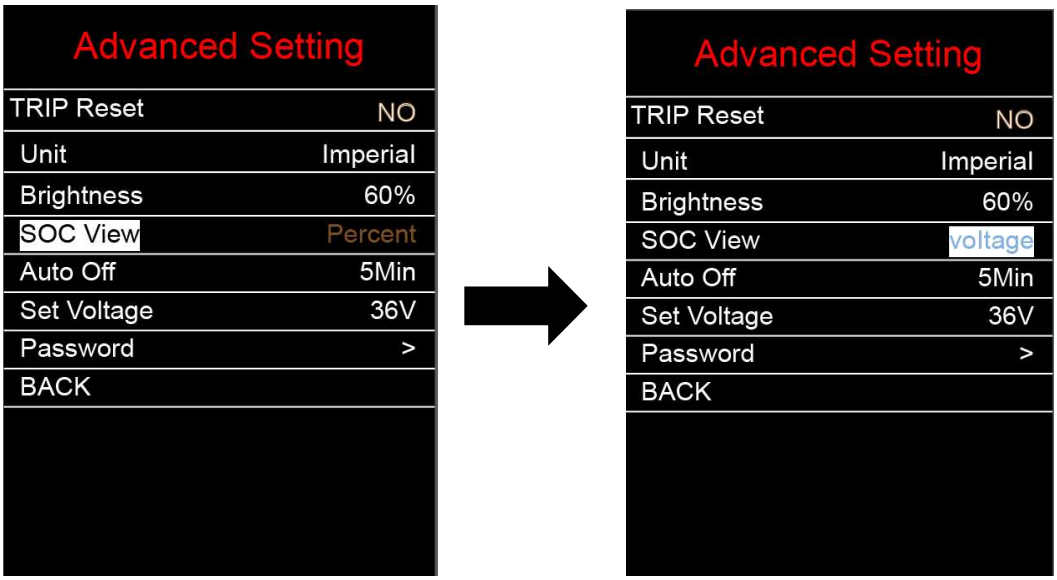


Backlight brightness setting interface

◆Soc view

"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".

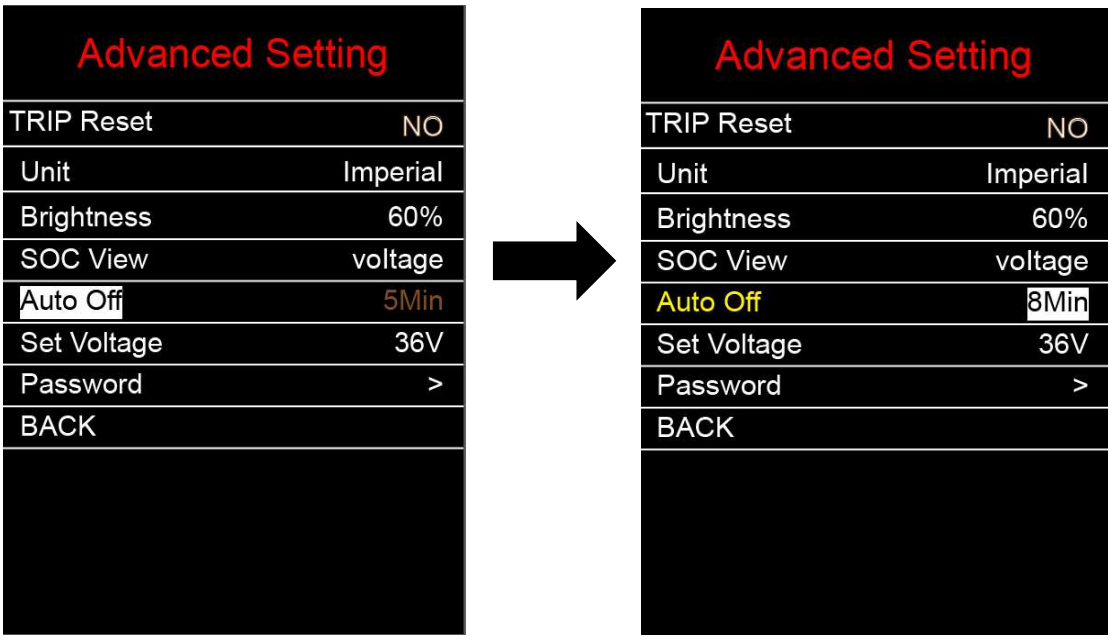
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Soc View setting interface

◆ Auto 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”.

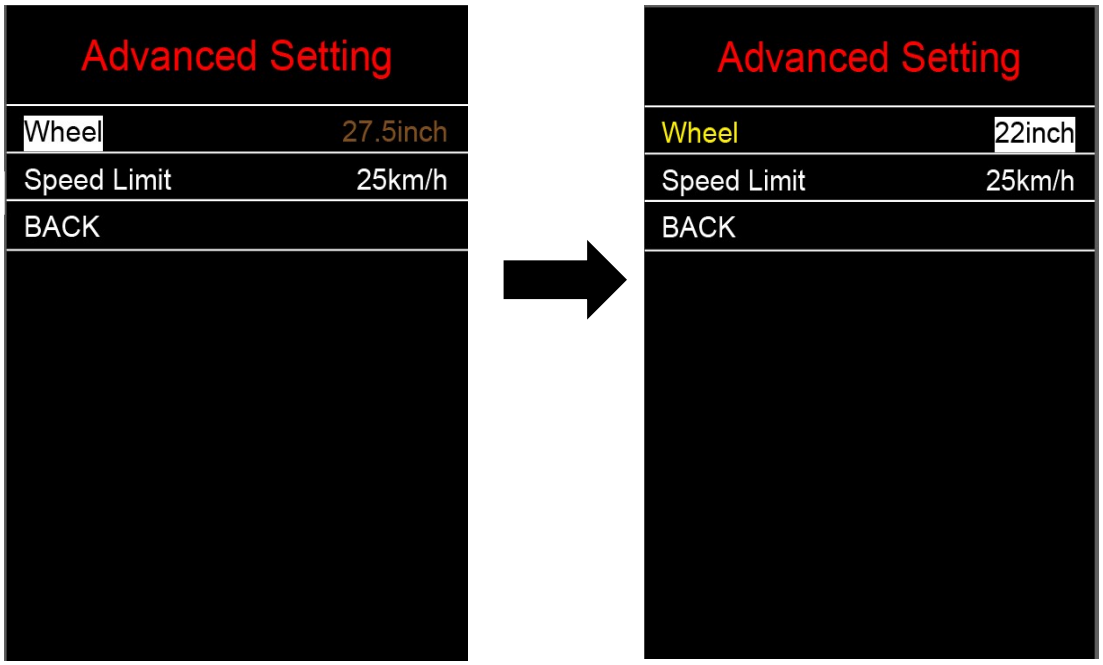


Auto Off time setting interface

Advanced settings

◆Wheel Diameter setting

Wheel" represents the wheel diameter setting. Short press the "i" key to enter the wheel diameter setting interface. Short press "UP" or "DOWN" to change. Short press "UP" or "DOWN" to select the wheel diameter "16"/ "18"/"20"/"22"/"24"/"26"/"27.5c"/"28", select and confirm, press the "i" key to save and exit to "Wheel".

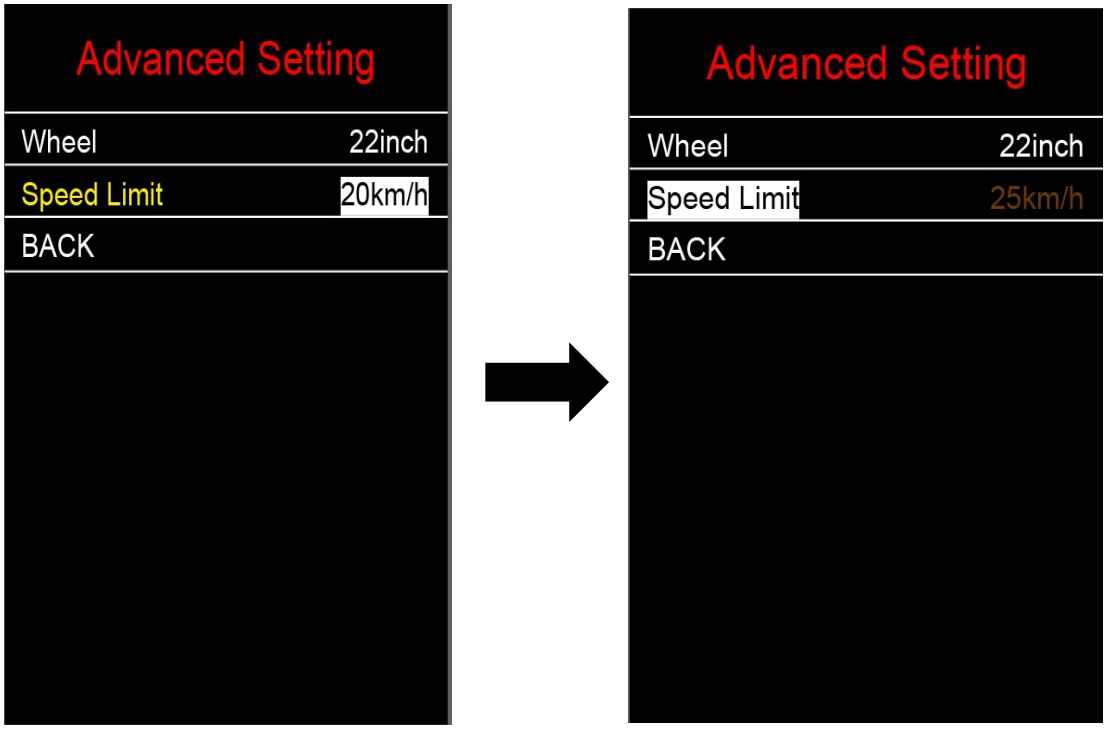


Wheel diameter setting interface

◆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", the default is "25km/h", after selecting and confirming, press the "i" key to

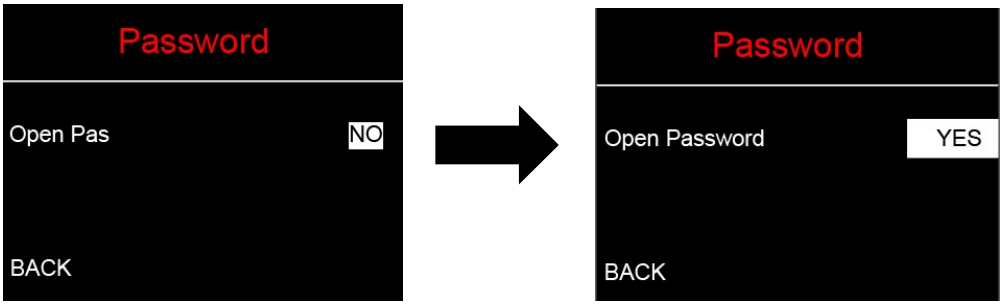
save and exit to "Speed Limit"



Speed limit setting interface

◆Password

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

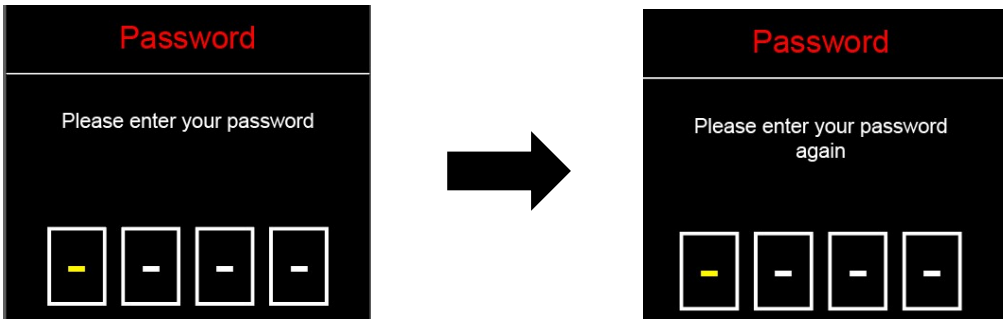


Password setting interface

◆Start PassWord

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

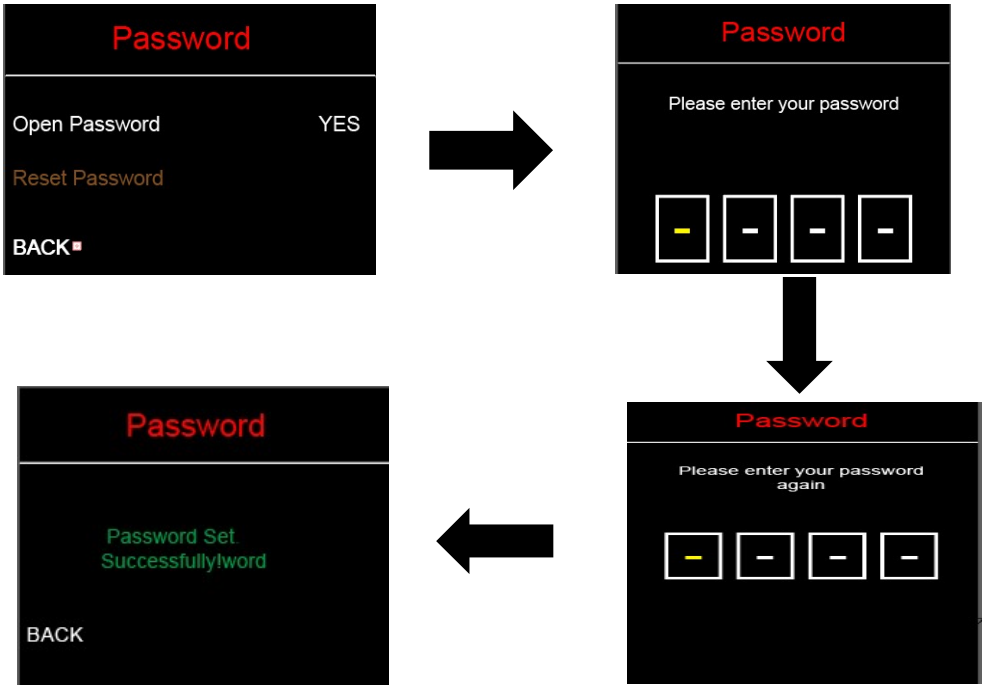
confirm. The password is set successfully. After 2S interface automatically jumps to the original setting interface.



Start PassWord setting interface

◆Reset Password

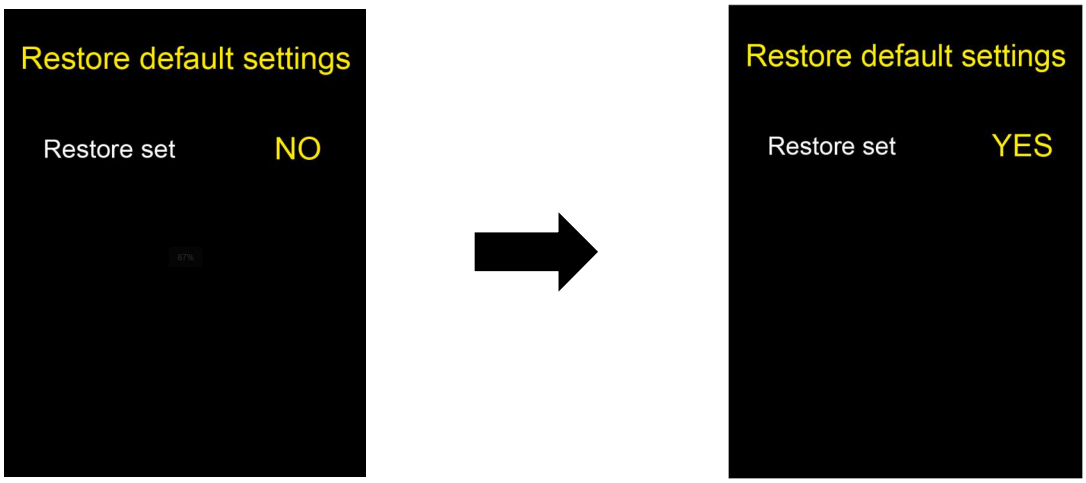
After turning on the password, a "Reset Password" option will be added to the "Pass word" interface. Short press "UP" or "DOWN" to select "Reset Password", and short press "i" again to confirm. At this time, the interface will prompt you to enter the current password. After the correct input, the interface prompts you to enter a new password. The subsequent operations are consistent with the new password. After the password is successfully modified, the 2S interface automatically jumps to the original setting interface.



Reset Password interface

◆Reset to defaults setting

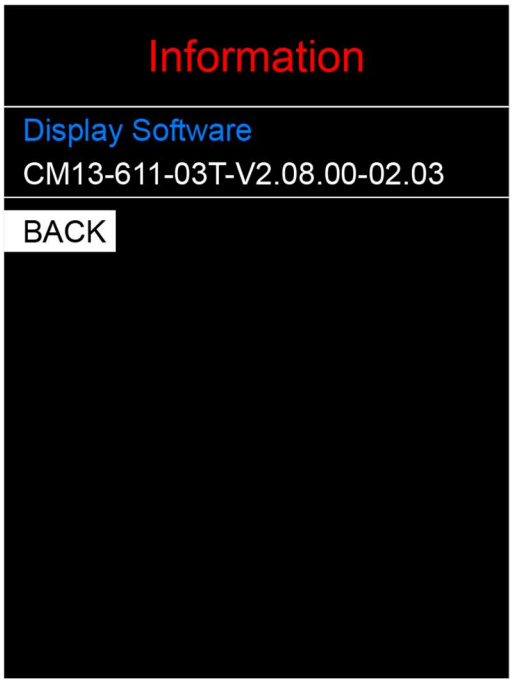
Short press "UP" or "DOWN" to select "Reset to defaults", short press "i" to enter settings, and short press "UP" or "DOWN" to switch between "YES" (restore factory settings) / "NO" (do not restore) Factory settings), short press "i" to save and exit to "Reset to defaults".



Reset to defaults 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.

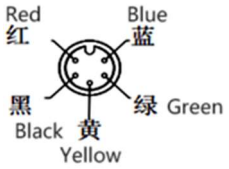
（3）Shell of the display is broken when the display is out of the factory.

（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



Line sequence table

Line	Color	Function
1	Red	VCC
2	Blue	K
3	Black	GND
4	Green	RX
5	Yellow	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 code	Definition
21	Current Abnormality
22	Throttle Abnormality
23	Motor phase
24	Motor Hall signal abnormality
25	Abnormal braking
30	Communication abnormality