



The eBike Display
User Manual

KD286

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Product name and Model

E-bike Intelligent LCD display
Model: KD286

Specifications

- 36V/48V Power Supply
- Rated working current: 10mA
- The maximum working current: 30mA
- Off-state leakage current: $<1\mu\text{A}$
- Operating temperature: $-20^{\circ}\text{C}\sim 60^{\circ}\text{C}$
- Storage temperature: $-30^{\circ}\text{C}\sim 70^{\circ}\text{C}$

Appearance and Size

Product appearance and dimensional drawing (unit: mm)



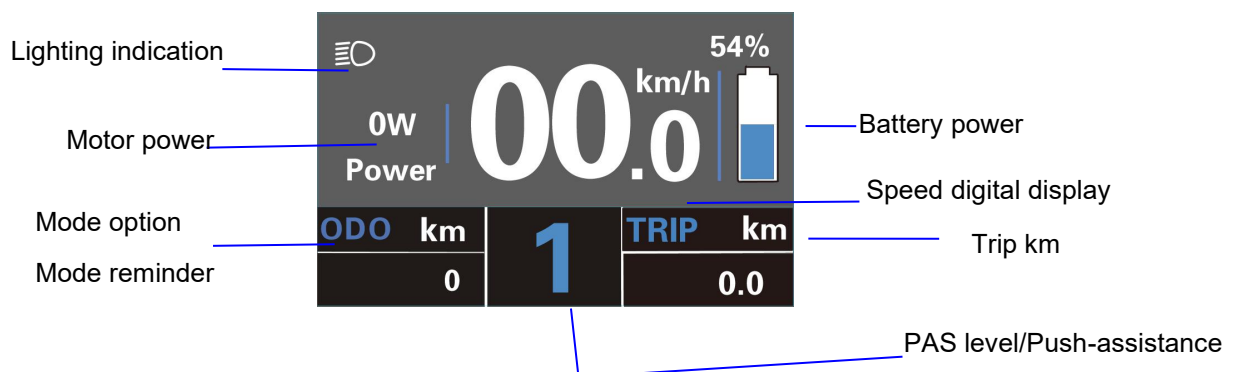
Functions and Button Definition

◆Function Summary


KD286 has many functions to meet riders' needs. A number of highlights are as follows:

- Bidirectional serial communication protocol.
- Speed indication including RT speed, Max.speed, AVG speed
- KM/MILE unit toggling as per user's preference.
- Intelligent battery SOC indicator: Stable SOC indication by optimization algorithm solves the problem of SOC indication fluctuating with start-stop of the motor.
- Brightness adjustment of 5 levels: users can set the brightness as per their habits. 10% is lowest brightness. 100% is highest.
- Mileage: the max. mileage can be displayed up to 99999 with Trip distance and ODO. The error code is automatically indicated.
- Push-assistance mode
- 8 optional max PAS level: 0~3/1~3/0~5/1~5/0~7/1~7/0~9/1~9
- Intelligent display: incl. Motor output W, speed Km/h and Trip distance
- Power-on password: users can set power-on passwords as per their preferences.
- Wheel diameter, speed limit can be set at display end.
- Recover Default Settings

◆Function Area Distribution:



Descriptions:

- ◆ Advanced Setting-LCD Luminance adjustment
- ◆ Lighting indicator- when turn on the E-bike lights
- ◆ Mode selection: ODO→ MAX. Speed → AVG.Speed →Ride Time
- ◆ Battery SOC display by percentage info-graphic
- ◆ Digital readout of current speed. Speed unit can be toggled
- ◆ Digital readout of motor power
- ◆ Assist level/Push-assistance- an indication of current assist level which can be increased and decreased by short pressing “+” or “-” buttons. The push-assistance function can be activated by long pressing “-” button for more than 2 seconds and symbol  is shown on the screen.

General Operations

◆ Switching the E-bike System On/Off

To switch on the E-bike system and provide the power supply to the controller, hold the On/Off button for 3s.

To switch off E-bike system, hold the On/Off button for 2s. The E-bike system no longer uses the battery power.

When E-bike system is switched off, the leakage current is less than 1 μ A.

■ When the E-bike is parked for approx. 10 minutes, the E-bike system switches off automatically.



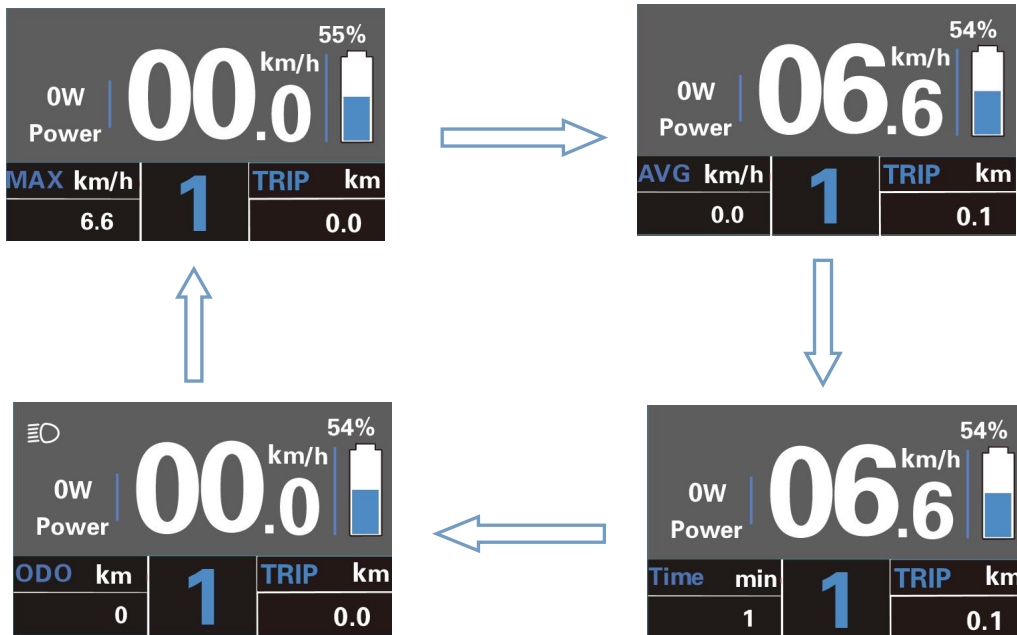
◆ Display Interface

After switching on the E-bike system, the display shows Current Speed, Trip Distance, ODO, Power output and Battery SOC by default.

Press the “ON/OFF” button to switch between indication functions below:


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

*It cycles back to Max.Speed again.

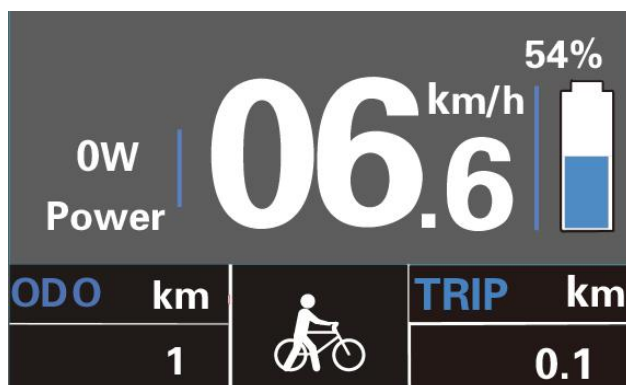


Display indication cycle interface

◆ Switching Push-assistance mode ON/OFF

To activate the push-assistance function, press and hold the “-” button. After 2 seconds, E-bike is activated to go at a uniform speed of 6 Km/h while the screen displays 


The push-assistance function will be switched off as soon as you release the “-” button.



Push-assistance mode

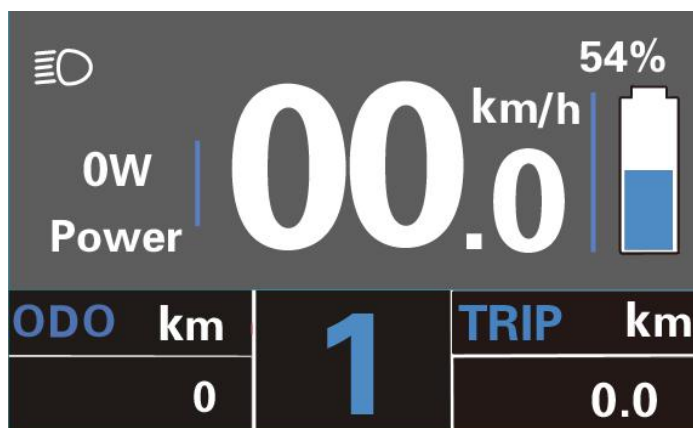
■ Push-assistance function may only be used when pushing the E-bike. Be aware of danger of injury when bike wheels do not have ground contact while using the push-assistance function.

◆ Switching the Lighting On/Off

To switch on E-bike lights, press the “+” button for 2s. The display backlight brightness is automatically reduced while the screen displays .

Likewise, press the “+” button for 2s again, the bike lights can be switched off and display backlight recover its brightness.

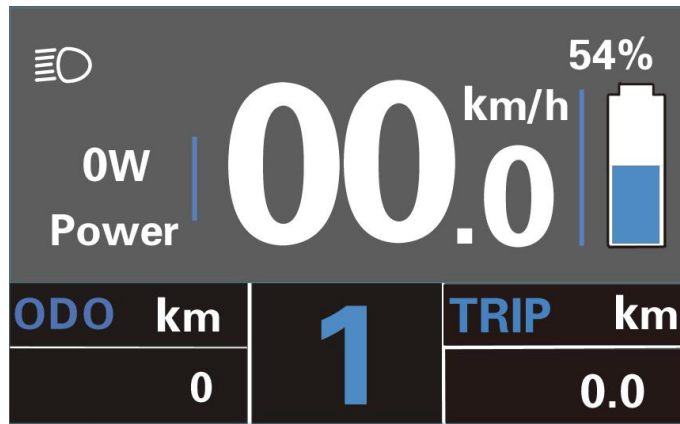
*If E-bike front light or rear light is independent of “+” button, the “+” button can only be used to switch on/off the display backlight.



Switching the Lighting On/Off Interface

◆ Assist Level Options

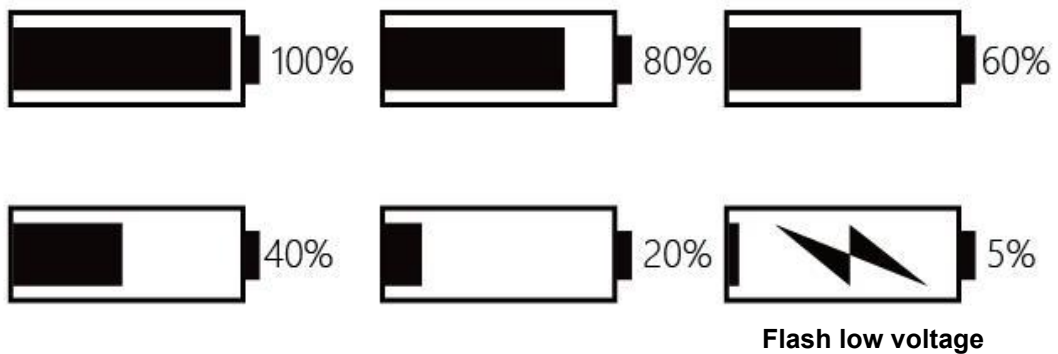
Press "+" or "-" button to change the E-bike system assist level and change the motor output power. The default assist level ranges from level "0" to level "5", The output power is zero on Level "0". Level "1" is the minimum output power. Level "5" is the maximum output power. When you reach "5", press the "+" button again, the interface still shows "5", and blinks at "5" to indicate the power maximum. When you are in level "0", press the "-" button again, the interface still shows "0" and blinks at "0" to indicate the power minimum. The default value is level "1".



Assist Level "1"

◆ Battery Power Indicator

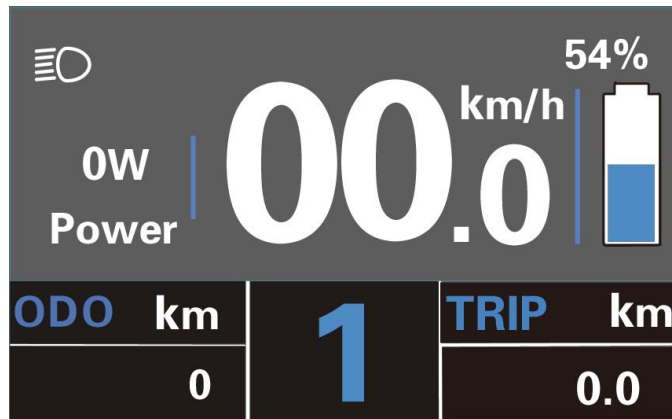
The battery percentage info-graphic indicates battery SOC. The battery frame is full of blue color when the battery is in high voltage. When the battery is in low voltage, battery frame will flash at the frequency of 1HZ to give a notice that the battery needs to be recharged immediately.



Battery Power Indicator

◆ **Motor Power Indicator**

The power of the motor can be read via interface below:



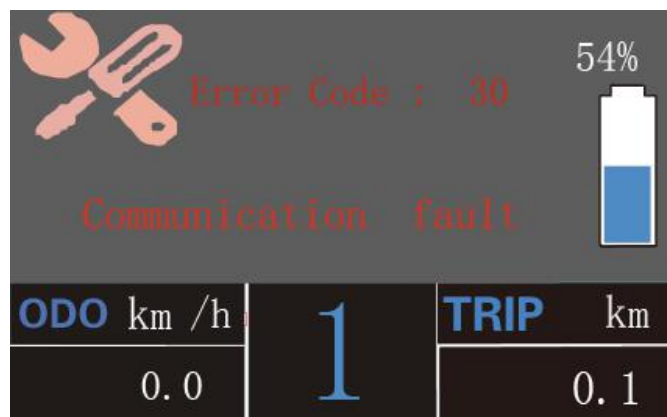
Motor Power Indication Interface

◆ **Error Code Indication**

The components of the E-bike system are continuously and automatically monitored.

When an error is detected, the respective error code is indicated in text indication area.

Refer to detailed definition of the error codes in Attached list 1.



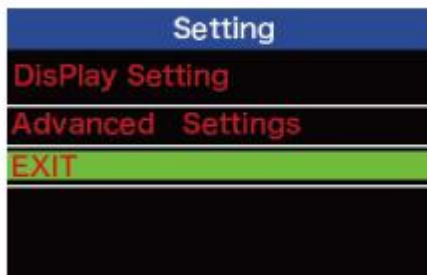
Error Code Indication

■ **Have the display inspected and repaired when an error code appears. Or else, you will not be able to ride the bike normally. Please always refer to an authorized bicycle dealer.**

DisPlay Setting

Press the **ON/OFF** button to switch on the display.

To access DisPlay Setting, hold both the "+" button and the "-" button simultaneously for 2s.



Setting interface

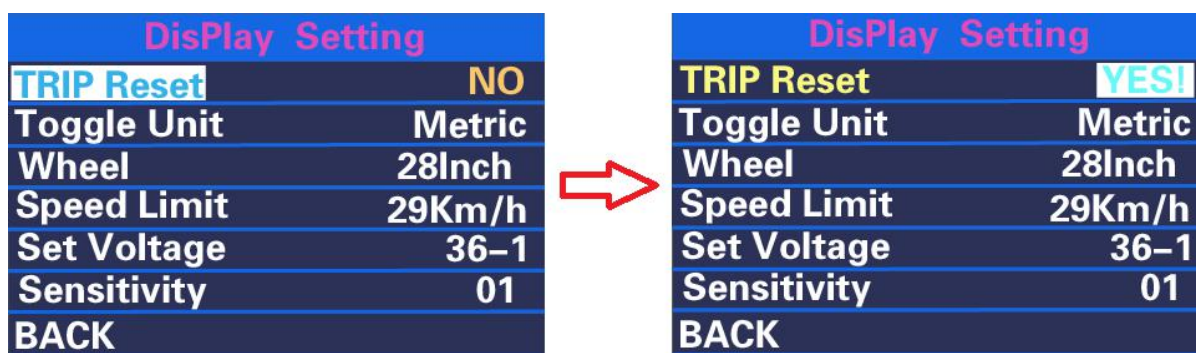
■ All the Settings are operated in the case of a parked E-bike.

◆ Trip Distance Clearance

Trip Reset represents trip distance clearance setting.

To clear trip distance, press "+" button or "-" button to select Yes or No. Yes represents clearing a single ride distance. No represents not clearing a single ride distance.

To store a changed setting, press "ON/OFF" button.



Trip Distance Clearance Settings Interface

◆ **Toggle Unit km/mile**

Toggle Unit represents unit settings. The default value is “Metric (km)”.

To toggle the unit, press the “+” button or the “-” button to choose the desired setting item.

To store a changed setting, press the "ON/OFF" button.

| DisPlay Setting | | |
|-----------------|--------|---|
| TRIP Reset | NO | |
| Toggle Unit | Metric | ➔ |
| Wheel | 28Inch | |
| Speed Limit | 29Km/h | |
| Set Voltage | 36-1 | |
| Sensitivity | 01 | |
| BACK | | |

| DisPlay Setting | | |
|-----------------|----------|--|
| TRIP Reset | NO | |
| Toggle Unit | Imperial | |
| Wheel | 28Inch | |
| Speed Limit | 29Km/h | |
| Set Voltage | 36-1 | |
| Sensitivity | 01 | |
| BACK | | |

Mile and Km Conversion Settings Interface

◆ **Wheel Diameter Settings**

Wheel represents wheel diameter settings. The default value is 26 inch.

To change basic settings, press the “+” or the “-” button to increase or decrease until the desired value is displayed.

To store a changed setting, press the "ON/OFF" button.

| DisPlay Setting | | |
|-----------------|--------|---|
| TRIP Reset | NO | |
| Toggle Unit | Metric | ➔ |
| Wheel | 18Inch | |
| Speed Limit | 29Km/h | |
| Set Voltage | 36-1 | |
| Sensitivity | 01 | |
| BACK | | |

| DisPlay Setting | | |
|-----------------|--------|--|
| TRIP Reset | NO | |
| Toggle Unit | Metric | |
| Wheel | 28Inch | |
| Speed Limit | 29Km/h | |
| Set Voltage | 36-1 | |
| Sensitivity | 01 | |
| BACK | | |

Wheel diameter settings interface

◆ **Speed-limit Settings**

Speed Limit represents the limit speed settings. When the current speed is faster than speed limit, the E-bike system will be switched off automatically. Speed limit range is 12Km/h to 40Km/h. The default value is 25Km/h.

To change basic settings, press the “+” or the “-” button to increase or decrease until the desired value is displayed. Press the "ON/OFF" button to save a changed setting.

| DisPlay Setting | | |
|-----------------|--------|---|
| TRIP Reset | NO | |
| Toggle Unit | Metric | ➔ |
| Wheel | 28Inch | |
| Speed Limit | 29Km/h | |
| Set Voltage | 36-1 | |
| Sensitivity | 01 | |
| BACK | | |

| DisPlay Setting | | |
|-----------------|--------|--|
| TRIP Reset | NO | |
| Toggle Unit | Metric | |
| Wheel | 28Inch | |
| Speed Limit | 30Km/h | |
| Set Voltage | 36-1 | |
| Sensitivity | 01 | |
| BACK | | |

Speed limit settings interface

◆ Battery Power Bar Settings

Set Voltage represents battery voltage settings. Short press + or - button to switch between different battery voltages: 24V, 36V and 48V and then press ON/OFF button to enter the corresponding voltage bar value settings. For example, VOL 1 is first bar voltage value. The default value is 31.5V.

To set battery power bar, press the “+” or the “-” button to increase or decrease the number. To store a changed setting and access the second bar, press "ON/OFF" button.

In the same manner, after 5 bars voltage values are entered, hold the "ON/OFF" button for 2s to confirm and save the settings and then return to the previous menu.


| DisPlay Setting | |
|-----------------|--------|
| TRIP Reset | NO |
| Toggle Unit | Metric |
| Wheel | 28Inch |
| Speed Limit | 29Km/h |
| Set Voltage | 24-1 |
| Sensitivity | 01 |
| BACK | |



| DisPlay Setting | |
|-----------------|--------|
| TRIP Reset | NO |
| Toggle Unit | Metric |
| Wheel | 28Inch |
| Speed Limit | 29Km/h |
| Set Voltage | 36-1 |
| Sensitivity | 01 |
| BACK | |

Battery power settings interface

| DisPlay Setting | |
|-----------------|--------|
| TRIP Reset | NO |
| Toggle Unit | Metric |
| 1 - | 31.5V |
| 2 - | 44.5V |
| 3 - | 46.5V |
| 4 - | 47.5V |
| 5 - | 49.0V |
| | 28Inch |
| | 29Km/h |
| | 48-1 |
| | 01 |



| DisPlay Setting | |
|-----------------|--------|
| TRIP Reset | NO |
| Toggle Unit | Metric |
| 1 - | 50.0V |
| 2 - | 80.0V |
| 3 - | 80.0V |
| 4 - | 80.0V |
| 5 - | 80.0V |
| | 28Inch |
| | 29Km/h |
| | 48-1 |
| | 01 |

Battery Voltage bar Setting Point

◆ **PAS Sensitivity Settings**

Sensitivity represents PAS sensitivity settings. The sensitivity value ranges from “1” to “5”.

“1” is the strongest, “5” is the weakest. The default value is “1”.

Press the +/- button to choose sensitivity value to change the PAS sensitivity settings.

To store a changed setting, press the **ON/OFF** button

| DisPlay Setting | |
|--------------------|-----------|
| TRIP Reset | NO |
| Toggle Unit | Metric |
| Wheel | 28Inch |
| Speed Limit | 29Km/h |
| Set Voltage | 36-1 |
| Sensitivity | 01 |
| BACK | |



| DisPlay Setting | |
|--------------------|-----------|
| TRIP Reset | NO |
| Toggle Unit | Metric |
| Wheel | 28Inch |
| Speed Limit | 29Km/h |
| Set Voltage | 36-1 |
| Sensitivity | 02 |
| BACK | |

Sensitivity settings interface

Advanced Settings

After DisPlay Setting is done, Press Back to return Setting page.

Press + or - button to choose Advanced Settings and press “**ON/OFF**” button to enter Advanced Settings page.

◆ **PAS level Settings**

PAS Level Mode Options

Power Set represents power assist level settings. In assist level settings, there are 8 modes for your choice: 0-3, 1-3, 0-5, 1-5, 0-7, 1-7, 0 -9, 1-9. The default value is 0-5.

To change the mode of assist level, press “+” or “-” button to choose the desired mode and press the “**ON/OFF**” button to confirm and access PAS level ratio settings automatically.

| Advanced Settings | |
|-------------------|------------|
| Power Set | 1-3 |
| Current Limit | 7A |
| Assistant Num | 10 |
| Speed sensor | 01 |
| Slow Start | -0- |
| LCD Luminance | 100% |
| Password | > |
| BACK | |



| Advanced Settings | |
|-------------------|------------|
| Power Set | 0-5 |
| Current Limit | 7A |
| Assistant Num | 12 |
| Speed sensor | 01 |
| Slow Start | -0- |
| LCD Luminance | 100% |
| Password | > |
| BACK | |

PAS level mode settings

PAS Level Ratio Settings

To change the ratio of a certain assist level, press the "+" button or "-" button to choose the desired ratio, and press the "ON/OFF" button to confirm.

For example, the ratio range is "45-55 percent" for level "1"; percentage can be changed and the default ratio value is 50 percent.

To store a changed ratio setting, press the "ON/OFF" button and move to the next level ratio setting.

After ratios of all assist levels are input, press the "ON/OFF" button to confirm.

Please refer to assist level ratio default values in **Attached list 2**.



PAS ratio settings interface

◆ Controller Over-current Cut Settings

Current Limit represents controller over-current cut settings. The current value can be changed from 7A to 22A.

To change basic settings, press the "+" or the "-" button to increase or decrease the value of the current.

To store a changed setting, hold the "ON/OFF" button.



Current Limit settings interface

◆ Power Assistant Sensor Settings

Assistant Num represents PAS magnet quantity settings. The setting value is "5" to "24" which refers to the number of magnets on PAS disk. The default value is 12.

To change the magnet quantity of PAS sensor, press the "+" or the "-" button to choose the desired number of PAS magnets.

To store a changed setting, press the "ON/OFF" button.

| Advanced Settings | | Advanced Settings | |
|-------------------|------|-------------------|------|
| Power Set | 0-5 | Power Set | 0-5 |
| Current Limit | 7A | Current Limit | 7A |
| Assistant Num | 48 | Assistant Num | 04 |
| Speed sensor | 01 | Speed sensor | 01 |
| Slow Start | -0- | Slow Start | -0- |
| LCD Luminance | 100% | LCD Luminance | 100% |
| Password | > | Password | > |
| BACK | | BACK | |

Assistant numbers settings interface

◆Speed Sensor

Speed Sensor represents speed sensor settings. The default value is 1.

To change speed sensor settings, press the “+” or the “-” button to select the corresponding quantity of magnet poles (the range is from 1 to 15).

To store a changed setting, press the “ON/OFF” button.

| Advanced Settings | | Advanced Settings | |
|-------------------|------|-------------------|------|
| Power Set | 0-5 | Power Set | 0-5 |
| Current Limit | 7A | Current Limit | 7A |
| Assistant Num | 12 | Assistant Num | 12 |
| Speed sensor | 01 | Speed sensor | 12 |
| Slow Start | -0- | Slow Start | -0- |
| LCD Luminance | 100% | LCD Luminance | 100% |
| Password | > | Password | > |
| BACK | | BACK | |

Speed sensor settings interface

◆Slow Start up Settings

Slow start represents slow start up settings. The range is “1-4”, “4” is the slowest. The default value is “1”.

To change slow start up settings, press the +/- button to choose the desired value.

To store a changed setting, press the **ON/OFF** button.

| Advanced Settings | | Advanced Settings | |
|-------------------|-----|-------------------|------|
| Power Set | 0-5 | Power Set | 0-5 |
| Current Limit | 7A | Current Limit | 7A |
| Assistant Num | 12 | Assistant Num | 12 |
| Speed sensor | 01 | Speed sensor | 08 |
| Slow Start | -0- | Slow Start | -3- |
| LCD Luminance | 50% | LCD Luminance | 100% |
| Password | > | Password | > |
| BACK | | BACK | |

Slow start up settings interface

◆Backlight Brightness Settings

LCD Luminance represents backlight brightness. 100% is the highest brightness. The less the percentage, the lower the backlight brightness.

To change the backlight brightness, press the “+” button or the “-” button to choose the desired percentage.

To store a changed setting, press the "ON/OFF" button.

| Advanced Settings | |
|-------------------|-----|
| Power Set | 0-5 |
| Current Limit | 7A |
| Assistant Num | 12 |
| Speed sensor | 01 |
| Slow Start | -0- |
| LCD Luminance | 50% |
| Password | > |
| BACK | |



| Advanced Settings | |
|-------------------|------|
| Power Set | 0-5 |
| Current Limit | 7A |
| Assistant Num | 12 |
| Speed sensor | 01 |
| Slow Start | -0- |
| LCD Luminance | 100% |
| Password | > |
| BACK | |

Backlight Brightness Settings Interface

◆Power-on password settings:

Press + or - button to choose ‘Password’ and press **ON/OFF** to confirm. Meanwhile press +/- button to choose ‘Start Password’ and press **ON/OFF** to confirm. Press + or - to shift from ‘OFF’ to ‘ON’.

| PassWord Set | |
|----------------|-----|
| BACK | |
| Start PassWord | OFF |



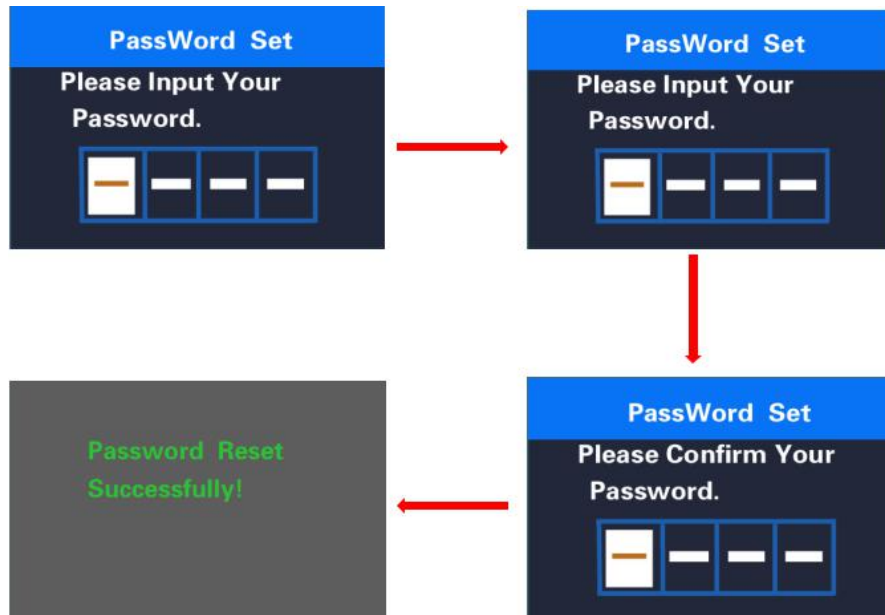
| PassWord Set | |
|----------------|----|
| BACK | |
| Start PassWord | ON |
| Reset PassWord | |

Power-on password settings interface

◆Power-on password enable/disable

In “Start PassWord” interface, choose ‘ON’ and short press(less than 0.5S) **ON/OFF** to confirm. Meanwhile, display interface prompts for a password. Press + or - button to shift numbers from 0 to 9 and press ON/OFF to confirm and input the next digit. After the input is done, the interface will prompt for entering the password again. If two inputs are consistent, the system prompts that the password is set successfully. If two inputs are inconsistent, the first input is to be repeated and confirm the new password again. The interface will be redirected to original settings page 2 seconds after the password is set successfully. Hold **ON/OFF** button for more

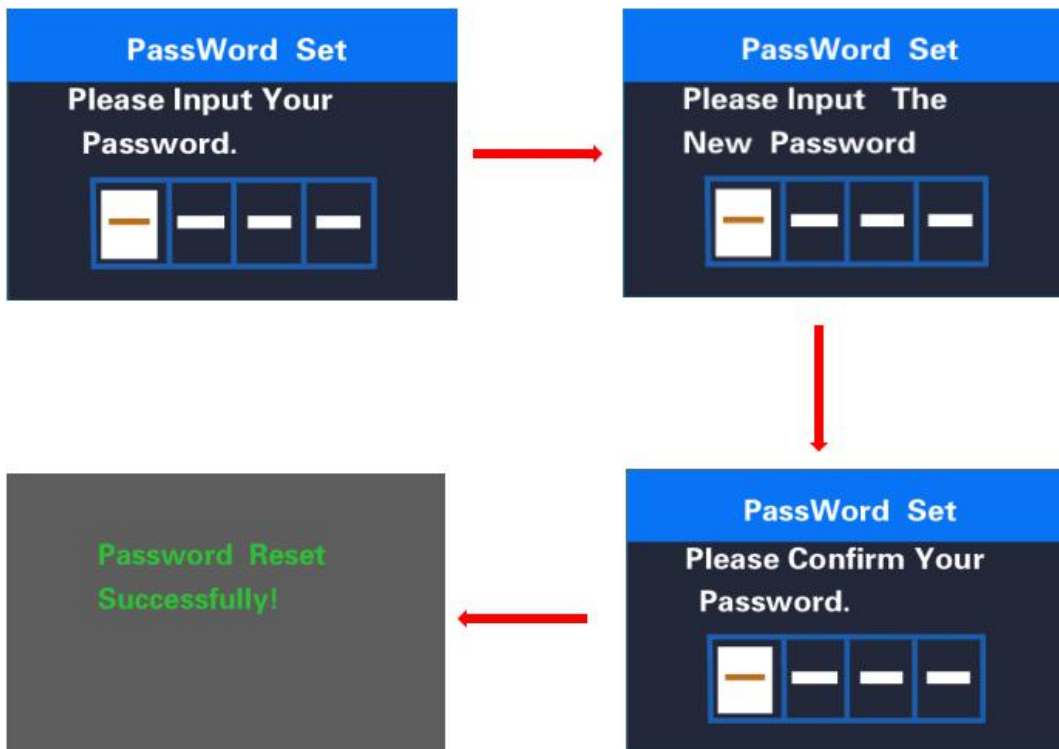
than 2 seconds to exit to the main page or by route 'BACK' → 'EXIT'. The operation steps are as follows:



Password enable/disable interface

◆ Password Reset.

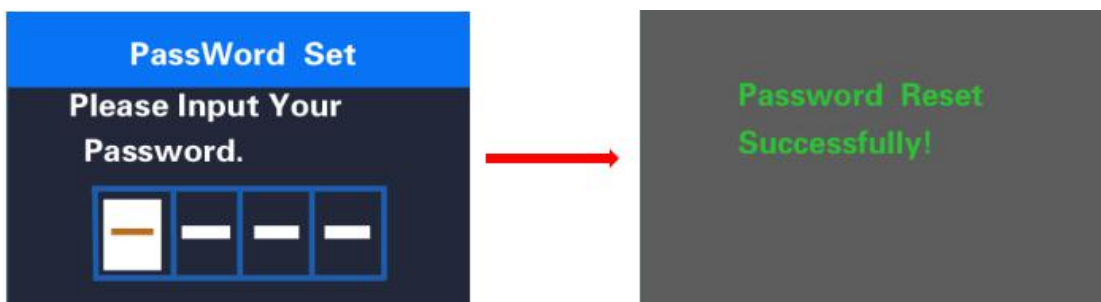
When password is enabled, 'Reset password' will add to Password interface. Press (less than 0.5s) +/- button to choose 'Reset Password' and press (less than 0.5s) **ON/OFF** to confirm. Meanwhile, the interface prompts for current password input. The display will be powered off automatically when the password is entered incorrectly after 10 inputs. When a correct password is input, the interface prompts for a new password. Then follow the operations of setting a new password. The interface will be redirected to original settings page 2 seconds after the password is reset successfully. Hold **ON/OFF** button for more than 2 seconds to exit to the main page or by route 'BACK' → 'EXIT'. The operation steps are as follows:



Password reset interface

◆ Password Disable

In “Start PassWord” interface, choose ‘OFF’ and short press (less than 0.5S) **ON/OFF** to confirm. Meanwhile, display interface prompts for a password. The display will be powered off automatically when the same password is entered incorrectly after 10 inputs. When a correct password is input, the display will give a prompt of ‘password function disabled’. After 2 seconds, the interface will be redirected to original settings page. Hold **ON/OFF** button for more than 2 seconds to exit to the main page or by route ‘BACK’ → ‘EXIT’. The operation steps are as follows:



■ If there is no operations in one minute; the display will exit the settings state.

Quality Assurance and Warranty Scope

I Warranty

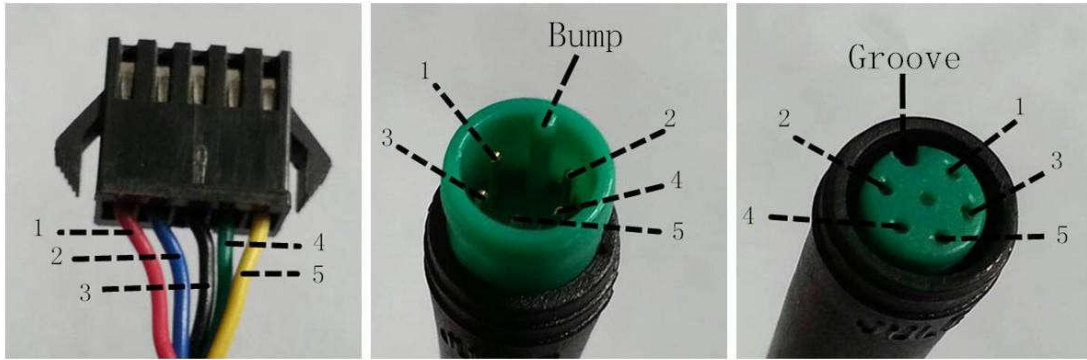
1. The warranty will be valid only for products used in normal usage conditions.
2. The warranty is valid for 24 months after the shipment or delivery to customers

II the following cases 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 wire sequence



Connector to controller

Display end

Connection wire end to display end

wire sequence table

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

■ Some products have wire connection with water-proof connectors; users can't see the color of lead wires in the harness.

Warnings:

1. Use the display with caution. Don't attempt to release or link the connector when battery is on power.
2. Try to avoid hitting the display.
3. Don't modify system parameters to avoid parameter disorder. Or else, you will not be able to ride the bike normally.
4. Make the display repaired when error code appears.

■ This manual instruction is a universal version for **DISPLAY KD286**. Some versions of this display may be different from specification to specification as to the software. Please always refer to an actual version.

Attached list 1: Error code definition

| Error Code | 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: Assist level ratio defaults

| Assist Level Mode | Level | 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% |