**BAFANG**

POWER YOUR LIFE

# Product Specification



**Product category: HMI**

**Product line: DP C080**

**Product model: DP C080.CB**

| | | | | | |
|---|---|---|---|---|---|
| Prepared by: | Wang Chao | Reviewed by: | Liu Yanxia | Approved by: | Chen Xi |
| Prepared on: | 2024-04-20 | Reviewed on: | 2024-04-22 | Approved on: | 2024-04-23 |

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Prepared on:   2024-04-20        Reviewed on:   2024-04-22        Approved on:   2024-04-23

# 1.  Product introduction:

## 1.1   Name:

HMI

## 1.2   Model:

DP C080.CB

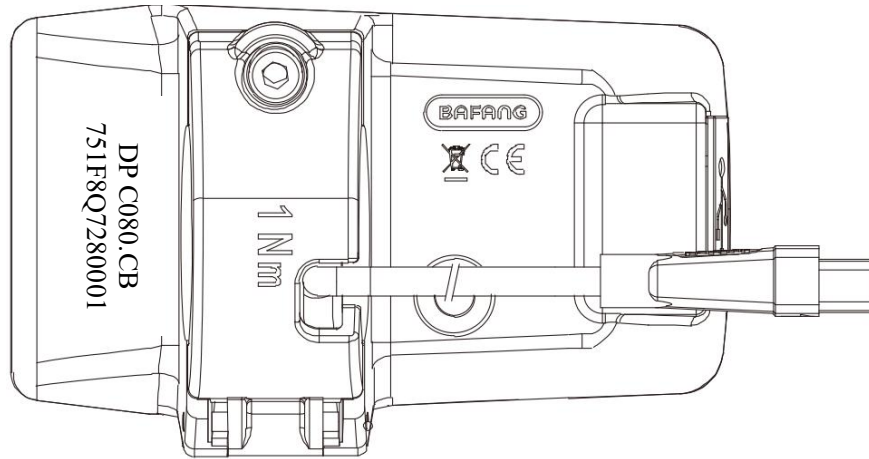## 1.3   Scope of application:

EN 15194 EPAC

## 1.4   Appearance:

The product shell is made of PC/ABS and the LCD screen is made of aluminosilicate glass. (as shown in the figure):

## 1.5 Numbering on the back of the product:

Numbering is centered on the back of the display in two lines.



A、 First line:

DP C080.CB

① DP C080.CB: Bafang HMI model;

B、 Second line:

751F8Q7280001

① 751: cable length & connector Key 300;
② F8: Design code;
③ Q7280001: The production date is July 28, 2016, and the serial number is 0001;

For additional marking details, refer to HMI Marking Rules, BF-TS-753-C 0 - 02II.

## 2. Product Description:

### 2.1 Overall dimensions:



### 2.2 Technical parameters:

1) 36 V/48 V/52 V DC power supply;
2) HMI rated power consumption 0.29W;
3) Power OFF leakage current < 1uA;
4) Operating temperature: -20℃~45℃;
5) Storage temperature: -20℃~60℃;
6) Protection rating: IPX7;
7) Storage Humidity: 30%-70%

## 2.3　HMI connector definition:



For the communication protocol, please refer to the description in the HMI section of Bafang's CAN communication protocol.
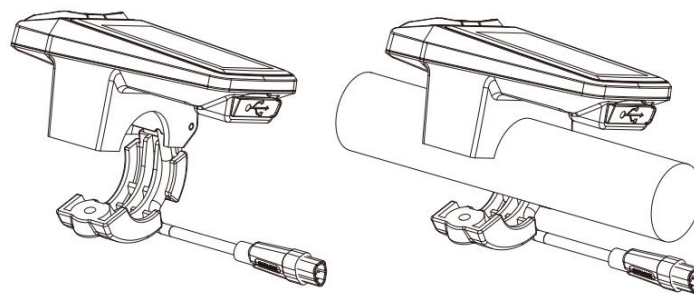
## 2.4　Functional Overview:

1) CAN communication protocol; Easy and user-friendly operation with three buttons.
2) Speed indication: including real-time speed, maximum speed "MAX" and average speed "AVG".
3) Km/mile selection: Mileage can be set according to user's habit.
4) Smart power indication: Provides stable battery percentage alerts through optimized algorithms.
5) Automatic control of light-sensing headlight: Automatically turn ON/OFF the HMI backlight and headlight when the environmental light changes.
6) Backlight brightness 4-level adjustment: The backlight brightness can be set according to the user's habits, 25% level the darkest, 100% level the brightest.
7) Gear control: 6 modes in total
8) Mileage indication: The maximum mileage can be displayed up to 99999. Single mileage can be shown as TRIP; accumulated mileage can be shown as ODO.
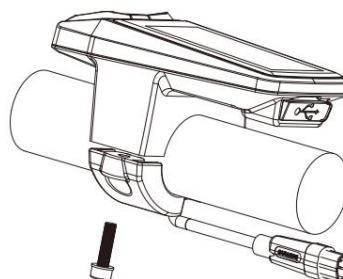9) Smart indication: remaining mileage can be shown as RANGE, energy consumed can be shown as Cal (calories).

10) Error code indication.

11) Walk assistance.

12) Type-C charging: Maximum charging voltage is 5V; maximum charging current is 500 mA.

13) Maintenance prompt.

14) Bluetooth.

15) Available in 6 languages: English, German, Dutch, French, Italian, Czech.

## 2.5  Install the HMI:

1)  Open the clamp band, put the cable into the slot, and adjust the HMI to the position suitable for operation. (Applicable to Φ22.2mm outer diameter handlebar)
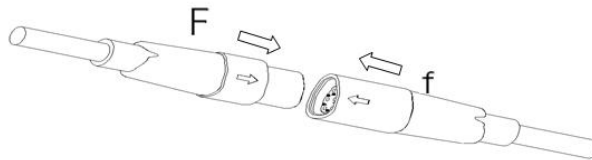
2)  Adjust the installation angle for better visibility of the HMI screen while riding. Tighten the screw (M3*12) to secure the HMI by M3 hex wrench. [Tightening torque: 1 N.m]
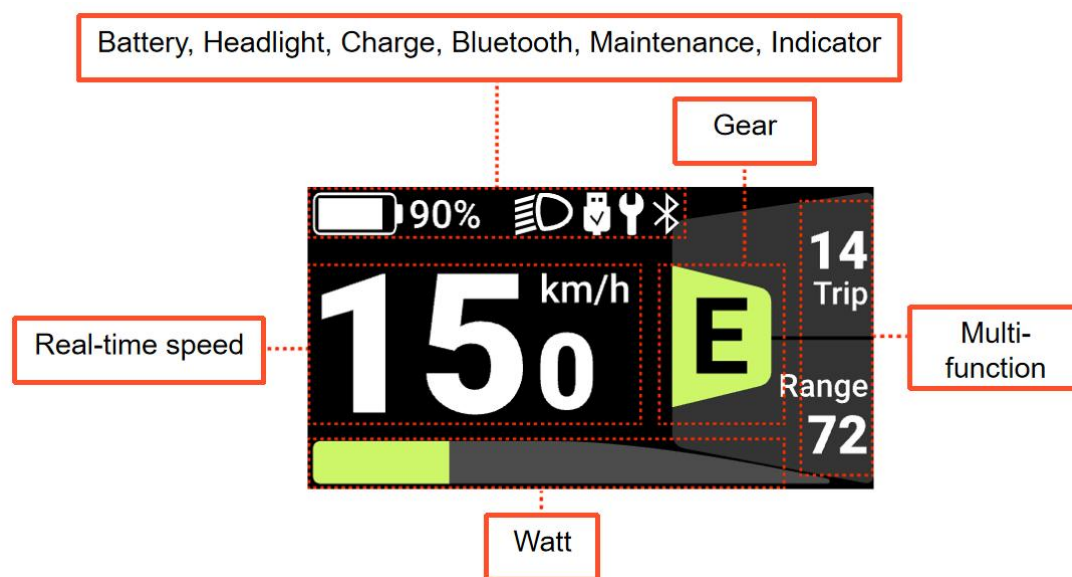
3)  Connect the HMI with EB-BUS according to the symbols: F. HMI male

connector; f. EB-BUS female connector.



## 2.6    Basic interface:



1) Multifunctional indication: single mileage "TRIP" and residual mileage "RANGE".

2) Gear indication: The current power assist mode shown, 0-E-T-S-S+-B.

3) Headlight indication: The symbol appears when the headlight is turned on, and disappears when the headlight is turned off.

4) Charging indication: The symbol appears when the USB port is charging.

5) Maintenance indication: The symbol appears when the riding mileage reaches 5000km.

6) Bluetooth indication: The symbol appears, when Bluetooth is connected.

7) Smart SOC indication: The SOC percentage will be shown on the HMI.

8) Real-time speed indication: The real-time riding speed will be shown on the HMI.

9) Power indication bar: The current motor output power will be shown on the HMI.

## 2.7 Key definition:



"+" key/ Headlight

Power key

"-" key/ Walk assistance

## 2.8 Normal operation:

1) Power ON/OFF:

Power ON: Press and hold the power button (≥ 2s) when the HMI is OFF. The HMI will lights up and start to work, and the Bafang LOGO will be shown on the startup interface.

Power OFF: Press and hold the power button (≥ 2s) when the HMI is ON to power OFF the HMI. If the user does not operate the system for more than 5 minutes (which can be set by the user), the HMI will be automatically OFF.
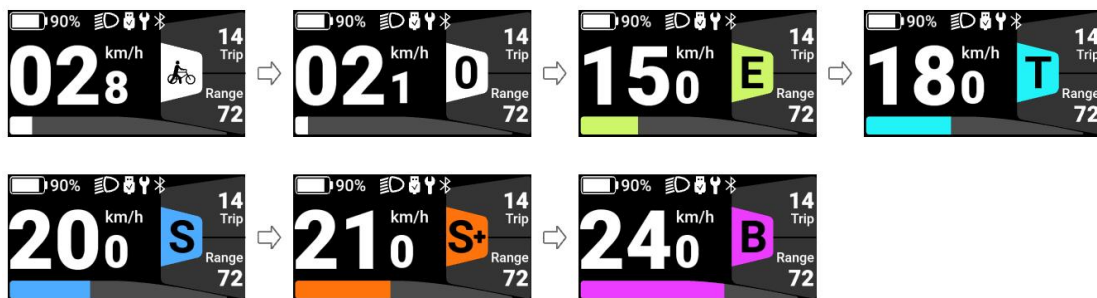


Startup interface

2) Power-assisted mode selection:

In the manual shift mode, press "+" or "-" to switch the power-assisted mode and change the power of the motor. The lowest gear is E, and the highest gear is B (user selectable). The default mode is E; 0

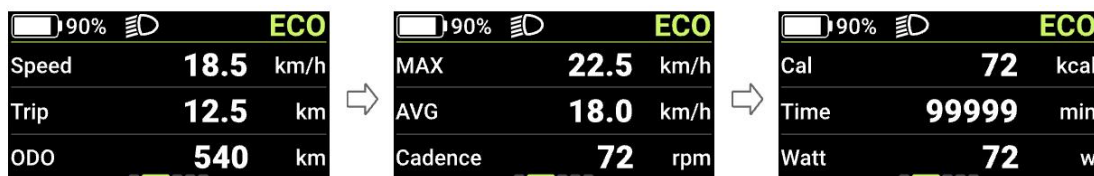means the e-bike is in neutral position. (as shown in the figure below)

| E (Eco): | Green | ECO mode |
|---|---|---|
| T (Tour): | Blue | TOUR mode |
| S (Sport): | Indigo | SPORT mode |
| S+ (Sport+): | Orange | SPORT+ mode |
| B (Boost): | Purple | BOOST mode |



Power-assisted mode selection interface:
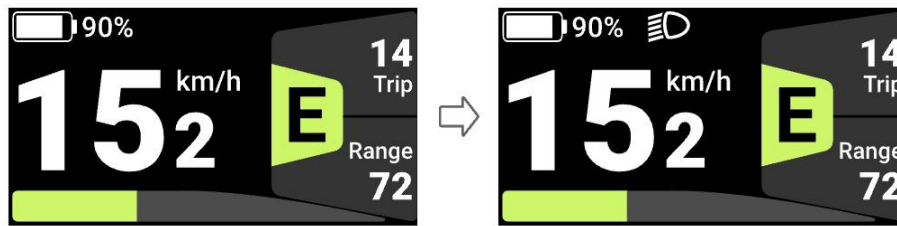
3) Data aggregation interface:

In the main interface, press the "power key" to enter the interface. Press the "power key" to switch data displays.



Data aggregation interface shift

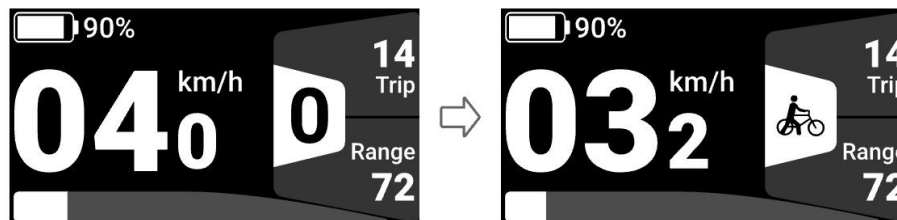4) Turn ON/OFF the headlight/backlight

Press and hold (≥2s) "+" to turn on the headlight, the backlight luminance of the HMI will decrease, and the light icon appears. Press and hold the "+" again to turn off the headlight, the HMI backlight luminance will increase, and the light icon will disappear. (as shown in the figure below)

Headlight ON/OFF interface
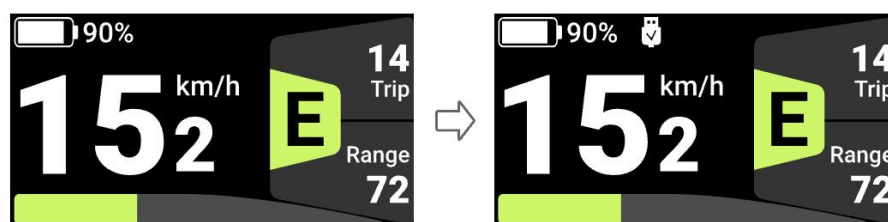
5) Walk assistance mode:

When the system not in operation, press the "-" to shift to 0, and then press the "-" again, and the symbol " 🚶 " will appear and be normally on. Press and hold the "-", the symbol " 🚶 " will flash (frequency 500ms), and the e-bike will go into walk assistance mode (If no speed signal is detected, the HMI will display a speed of 2.5 km/h). Release the "-" to exit from the walk assistance mode, and the symbol " 🚶 " will stop flashing and be will normally on. If no operation within 5s, the gear will be automatically reduced to 0. (as shown in the figure below)



Walk assistance mode shift interface

6) Type-C charging function (selected):

To charge the HMI, connect the Type-C cable with the HMI. If the HMI is OFF, connect the Type-C cable with the HMI and power ON the HMI. Maximum charging voltage is 5V; maximum charging current is 500 mA.
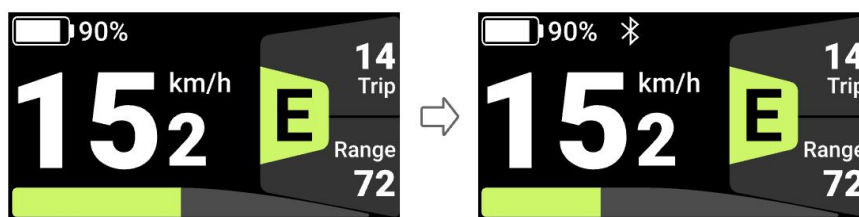
USB Disconnect/Connect

7) Bluetooth (selected)

Scan the QR code in the figure below to install the App; The HMI can be connected to Bafag Go APP developed by our company through Bluetooth, or customer's self-developed app according to SDK provided by our company. For specific APP functions, please refer to Bafang app specification.

See the table below for the functions of the HMI that can be uploaded to the app.

| No. | Function |
| --- | --- |
| 1 | Speed |
| 2 | SOC |
| 3 | Power-assisted modes |
| 4 | Battery info |
| 5 | Sensor signal |
| 6 | Remaining mileage |
| 7 | Energy consumed (Cal) |
| 8 | System component information |
| 9 | Current |
| 10 | Current power-assisted mode |
| 11 | One-way mileage |
| 12 | ODO |
| 13 | Headlight state |
| 14 | Error code |

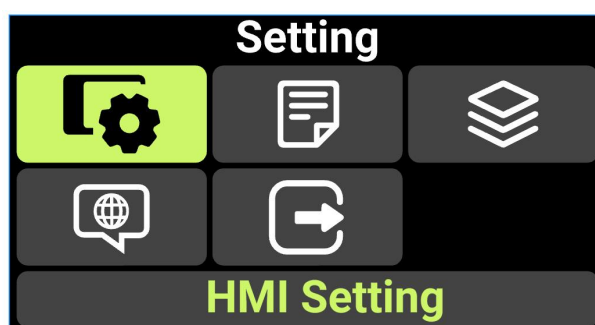Bluetooth Disconnect/Connect



Android                    IOS

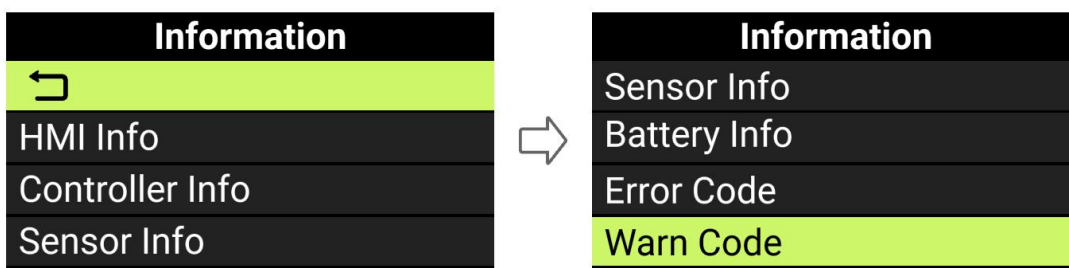### 2.9    **Information viewing and setting:**

Press and hold the "+"  and "-" simultaneously to enter "Setting". Press "+" or "-" to select "HMI Setting", "Information", "Themes", "Language" or "EXIT," and press the power button to enter.
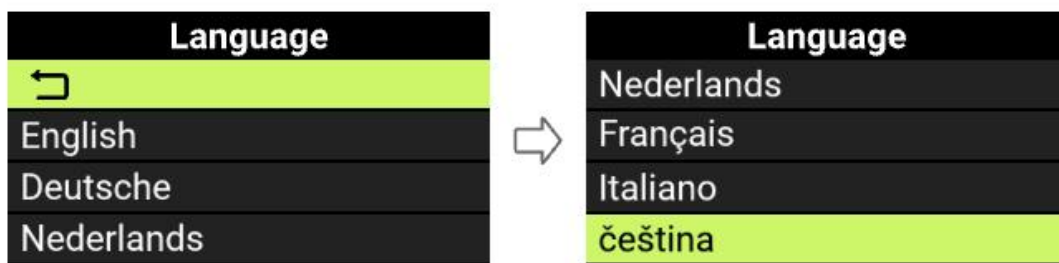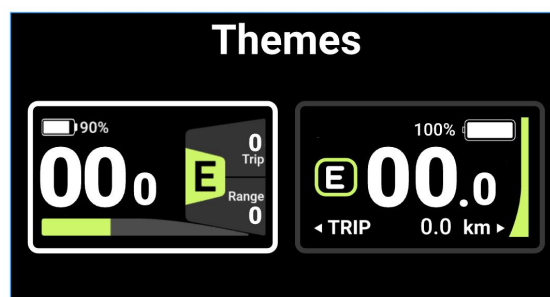


"Setting" interface

| HMI Setting | HMI Setting |
|---|---|
| ⮌ | Auto off |
| Unit | Trip reset |
| Service tips | Brightness |
| Auto off | AL sensitivity |

"HMI Setting" interface

| Information | Information |
|---|---|
| ⮌ | Sensor Info |
| HMI Info | Battery Info |
| Controller Info | Error Code |
| Sensor Info | Warn Code |

"Information" interface

| Language | Language |
|---|---|
| ⮌ | Nederlands |
| English | Français |
| Deutsche | Italiano |
| Nederlands | čeština |

"Language" interface
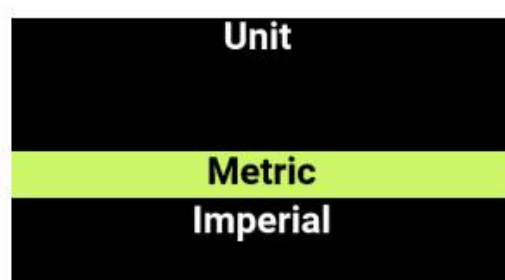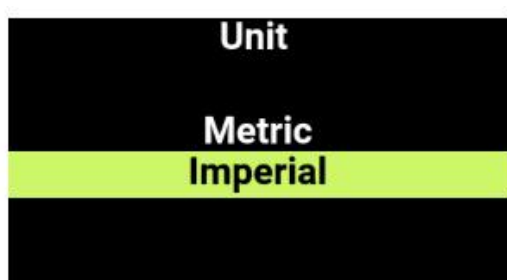
**Themes**

90% 00.0 E Trip 0 Range 0    100% E00.0 ◀ TRIP 0.0 km ▶

"Themes" interface
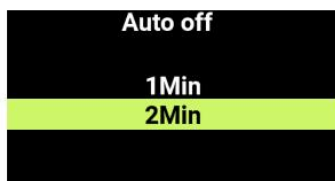
14

1) Imperial and metric units conversion:

Enter the "Setting", press "+" or "-" to select "Unit". Press "Power button" to enter the setting, press "+" or "-" to select "Metric"/"Imperial", and press the power button to save and return to "Unit." To save and return to the main interface, press and hold "+" and "-" at the same time, or press "BACK" → "EXIT". (Note: All information on the main interface of metric system is metric system, and the same for English system.)



"Metric" means metric units/"Imperial" means English units

2) Automatic shutdown time:

Enter the "Setting", press "+" or "-" to select "Auto Off". Press the power button to enter the setting, press "+" or "-" to select "OFF" / "1 Min" / "2 Min" / "3 Min" / "4 Min" / "5 Min" / "6 Min" / "7 Min" / "8 Min" / "9 Min" / "10 Min", and press the "power key" to save and return to "Auto Off". To save and return to the main interface, press and hold "+" and "-" at the same time, or press "BACK" → "EXIT". OFF means to cancel the automatic shutdown function.



Automatic shutdown time setting interface

3) Backlight setting

Enter the "Setting", press "+" or "-" to select "Brightness". Press "Power button" to enter the setting, press "+" or "-" to select "100%"/"75%"/"50%"/"25%", and press "Power button" to save and

return to "Brightness". To save and return to the main interface, press and hold "+" and "-" at the same time , or press "BACK" → "EXIT".



Backlight level indication interface

4) Light sensitivity:

Enter the "Setting", press "+" or "-" to select "AL sensitivity". Press "Power button" to enter the setting, press "+" or "-" to adjust the light sensitivity, "OFF"/"1"/"2"/"3"/"4"/"5". "OFF" means to turn off the function. The numbers 1 through 5 correspond to different levels of light sensitivity, from weak to strong. Press the power button to save and return to "AL sensitivity". To save and return to the main interface, press and hold "+" and "-" at the same time, or press "BACK" → "EXIT".
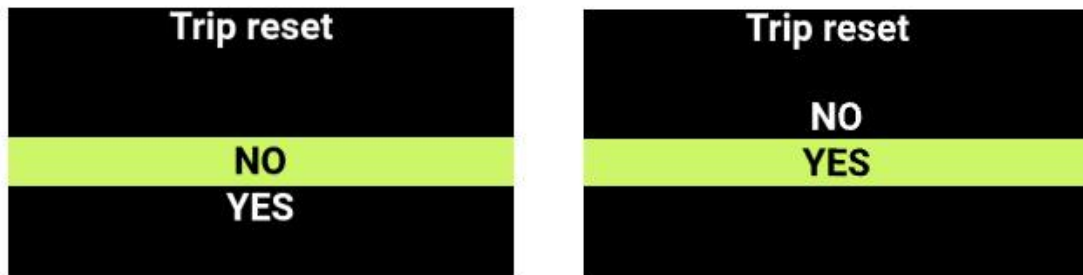


Light sensitivity setting interface

5) Single mileage reset (clear TIME data at the same time):

Enter the "Setting", press "+" or "-" to select "Trip reset". Press "Power

button" to enter the setting, press "+" or "-" to select "NO"/"YES" ("YES" means to clear, "NO" means not to clear), and press the power button to save and return to "Trip reset". To save and return to the main interface, press and hold "+" and "-" at the same time, or press "BACK" → "EXIT".



Single mileage clear selection interface:

6) Maintenance prompt

Enter the "Setting", press "+" or "-" to select "Service". Press the power button to enter the setting, press "+" or "-" to select "OFF"/"ON" ("OFF" means to turn off the function; "ON" means to turn on the function). Press "Power button" to save and return to "Service". To save and return to the main interface, press and hold "+" and "-" at the same time, or press "BACK" → "EXIT". (Note: The maintenance prompt function is turned off by default. When it is turned on and the accumulated mileage of the e-bike exceeds 5,000 km, the "Service" symbol will appear on the HMI.)
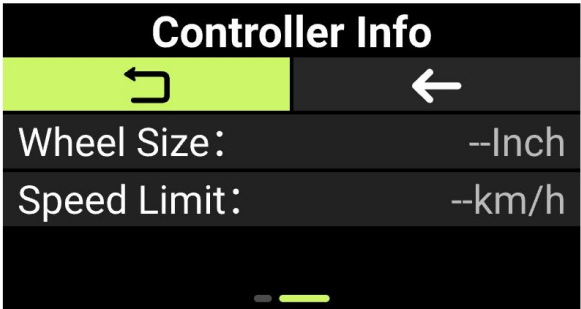


Maintenance prompt setting interface

7) Wheel size and speed limit view:

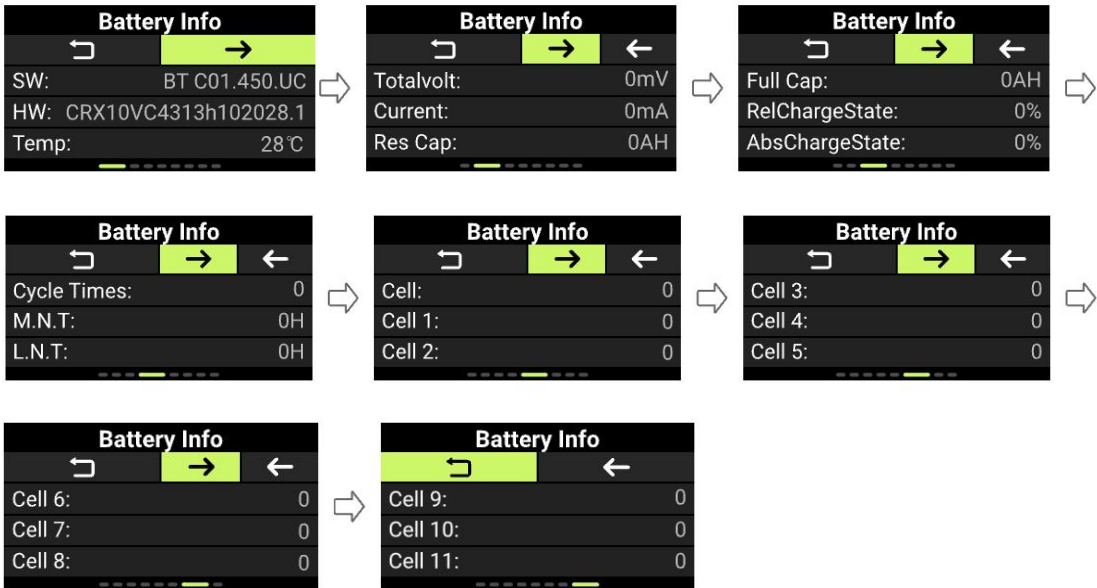Enter the "Information", select "Controller Info", and press the "power

key" to enter. Select the "→" icon, and press the "power key" to enter to view the "Wheel Size" and "Speed Limit" information. To save and return to the main interface, press and hold "+" and "-" at the same time, or press "BACK" → "EXIT".



Wheel size and speed limit view interface

8) Battery Info view:

Enter the "Information", press "+" or "-" to select "Battery Info". Press the "power key" to enter. Press "power key" to view the battery information. Select the "return" icon, and press the "power key" to return to "Battery Info". To save and return to the main interface, press and hold "+" and "-" at the same time, or press "BACK" → "EXIT".
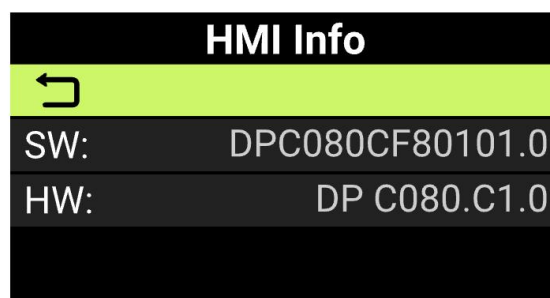


Battery software and hardware version number view interface/Battery information view interface

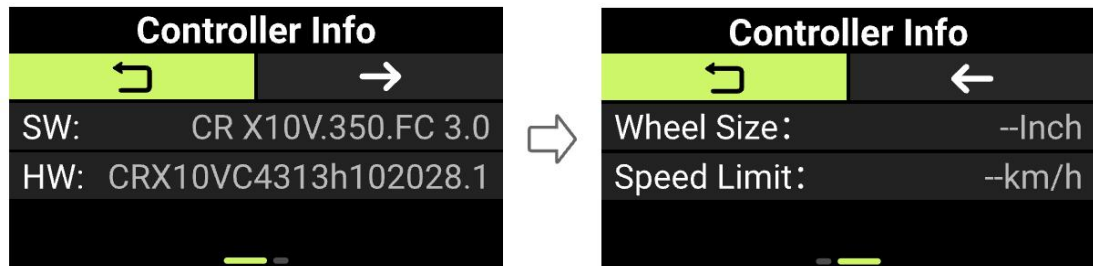| Show Code | Battery Information | Unit |
|---|---|---|
| Temp | Current temperature | ℃ |
| Totalvolt | Total voltage | mV |
| Current | Average current | mA |
| Res Cap | Remaining capacity | Ah |
| Full Cap | Full capacity | Ah |
| RelChargeState | Relative charge state | % |
| AbsChargeState | Absolute charge state | % |
| CycleTimes | Cycle times | times |
| M.N.T | Max. uncharged time | Hour |
| L.N.T | Last uncharged time | Hour |
| Cell | Qty. of battery cells | |
| Cell 1 | Cell 1 voltage | mV |
| Cell 2 | Cell 2 voltage | mV |
| ……… | ……… | mV |
| Cell n | Cell n voltage | mV |

9) HMI Info view:

Enter the "Information", press "+" or "-" to select "HMI Info". Press the power button to enter. The sequence is "SW: → HW:". Press the power button to return to "HMI Info". To return to the main interface, press and hold "+" and "-" at the same time, or press "BACK" → "EXIT".

**HMI Info**

SW:        DPC080CF80101.0
HW:           DP C080.C1.0

HMI Info view interface
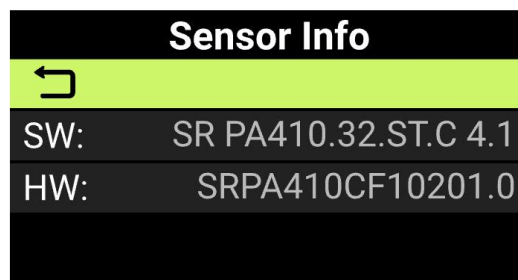
10) Controller information view:

Enter the "Information", press "+" or "-" to select "Controller Info". Press the "power key" to enter and press "+". The sequence is "SW: → HW:". Press the power button to return to "Controller Info". To return to the main interface, press and hold "+" and "-" at the same time, or press "BACK" → "EXIT".



Controller information view interface

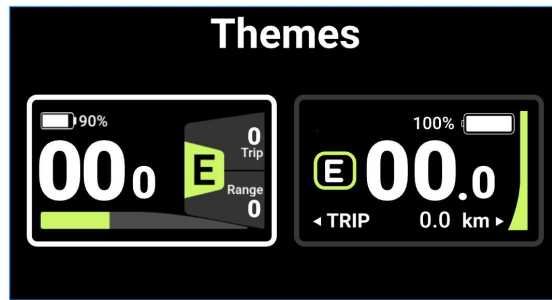11) Torque sensor information view:

Enter the "Information", press "+" or "-" to select "Sensor Info". Press the power button to enter. The sequence is "SW: → HW:". Press the power button to return to "Sensor Info". To return to the main interface, press and hold "+" and "-" at the same time, or press "BACK" → "EXIT".



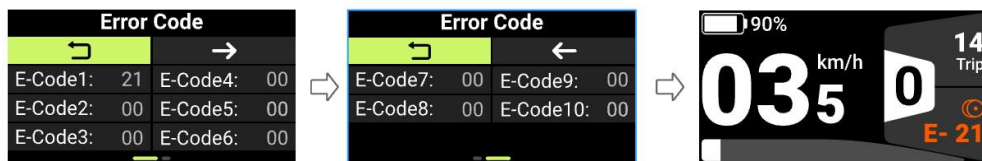Torque sensor information view:

12) UI themes setting:

Enter the "Setting", press "+" or "-" to select "Themes". Press the "power key" to enter it. Press "+" or "-" to select the UI theme you want. Press the "power key" to save and the HMI will be reset and restarted. If you do not want to change the theme, press and hold "+" and "-" at the same time to exit to the main interface.

UI themes setting interface

13) View historical error codes:

Enter the "Information", press "+" or "-" to select "Error Code". Press the power button to enter and press "+" to view the last 10 error messages, "E-Code1" to "E-Code10". Press the power button to return to "Information", or press and hold "+" and "-" at the same time to return to the main interface. (Note: Refer to the corresponding manual for definitions of error codes.)


Error code view interface / Error interface

# 3. Copyright Statement

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