DP C240.CAN

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INTRODUCTION

• Name: Intelligent display
• Model: DP C240.CAN
• Scope: EN15194 electrical power assistance cycle
• Appearance: Black ABS housing body, acrylic top cover, silicon rubber button.

- Number rule on the back of the display
  Number on the middle of display back, number is divided into two lines:
  A. Up line (as below)
     DP C240.C  1.0
     ① DP C240.C: BAFANG display mode
     ② 1.0: Hardware version number
  B. Down line (as below)
     607K1Q7280001
     ① 607: Wire length and connector model is 750mm M5.2
     ② K1: Internal identity number

- Q7280001: Production date is 28st July, 2016; SN is 0001
- Display P type wire label number rule:
  Number on the middle of P type label, number is divided into up row and down row and QR code is at right side (as shown in the below figure)

Content of QR code:
DPC240I110101.0
PD2526051205
DP C240.C 1.0
607K1Q7280001
The first line:
DPC240I110101.0 - Software version
The second line:
PD2526051205 - Parameter code
The last two lines:
DP C240.C 1.0 / 607K1Q7280001 - SN
OVERVIEW DRAWING
SPECIFICATIONS

- Rated voltage: 36V/43V/48V DC
- Rated current: 10mA
- Maximum operating current: 30mA
- Power-off leakage current: <1uA
- Operating current supplied to controller: 50mA
- Operation temperature: -20°C ~ 45°C
- Storage temperature: -30°C ~ 70°C
- IP level: IP65
- Storage ambient humidity: 30%-70%
FUNCTIONS OVERVIEW

- CAN bus communication platform, Three-button console which is with BOOST mode is more user-friendly.
- Speed indication: Includes maximum speed, average speed.
- Unit switch between imperial and metric.
- Intelligent battery capacity indication.
- Control and indication for the headlight.
- 5 levels of backlight brightness setting.
- Indication for power assistance level with 6 levels: 0/1/2/3/4/5.
- Indication for trip: To indicate single-trip distance, total distance and remaining distance.
- Multiple data indication: Indication for the remaining distance, Indication for the consumption of energy CALORIES. (Note: If the display has this function.)
- Record and indication for the error information.
- Button with feedback of haptic vibration.
- Control and indication for push assistance.
- Parameters resettable with BESST BOX.
- USB charging port: ≤5V, ≤1A.
- Dual Bluetooth integrated.
NORMAL INDICATION AREA

1. Headlight indication:
   Indicate the working status of headlight.

2. USB connection indication:
   Indicate the status of USB connection to peripheral device.

3. Battery capacity indication:
   Indicate the current remaining capacity.

4. Real-time speed indication:
   To indicate the real-time speed.

5. Multiple data indication:
   To indicate single (TRIP), Total range (ODO), max speed (MAX), average speed (AVG), remaining distance (RANGE), output power (POWER), energy consumption (Cal), riding time (TIME); (Notice: Calory data will only come out when the display recognize the sensor as torque sensor or the signal of torque in 10s after switch on; Remaining distance will only come out when the display get the data of range.)

6. Assistance level indication:
   To indicate the current support level, this display has 0/1/2/3/4/5 mode, the chosen level will be indicated in amplifying and reverse color Arabic number; No chosen level indication means level 0, no power assistance, 🔴 means push assistance mode.
BUTTON DEFINITION

NORMAL OPERATION

“Press and hold” means press and hold for more than two seconds, briefly press means press for less than 0.5 second.

- **ON/OFF:**
  Press and hold “ON/OFF” button, then display is working and offering power to controller; On the contrary, press and hold this button, then display is off and the current consumption is less than 1µA.
• **Power assistance level switch:**

After switching on the display, briefly press “+” or “-” to switch the level to change the assistance output power. The weakest level is 0, the most powerful level is 5. When the display is on, the default mode is level 1, here “0” means no power assistance. (as shown in the figure below)

![Power assistance level switch](image)

• **Multiple function interfaces switch:**

Briefly press “BOOST” button to switch to different data interfaces, then circularly to show single trip distance (Trip, km) → total distance (ODO, km) → maximum speed (MAX, km/h) → average speed (AVG, km/h) → remaining distance (RANGE, km) → energy consumption (CALORIES/CAL, KCal) → riding time (TIME, min) → real-time output power (POWER, w).

![Multiple function interfaces switch](image)

• **Headlight/Display backlight switch:**

Press and hold “+” to turn on the display backlight as well as headlight, this moment you will see the symbol of headlight in the screen; On the contrary, press and hold “+” again to turn off the display backlight and the headlight (If the display is turned on in a dark environment, the display backlight/headlight are turned off manually, they also need to be turned on manually afterwards).

![Headlight/Display backlight switch](image)

Interface of headlight and backlight
• **Push assistance mode:**
   Press and hold “-“ button to enter into push assistance mode, the symbol 🚴 is displayed, when release “-“ button, will exit the push assistance mode and go back to the current assistance level.

- **BOOST mode:**
  While riding and speed reaching to 25km/h, press and hold “ BOOST” button with 2 seconds to activate, then motor will give 100% output power and flowing without pedaling, it feels more like a constant strong push in the back; On the contrary, release the button and exit from BOOST mode.

- **Battery capacity indication:**
  The battery remaining capacity will be indicated as the exact percentage, in addition, the frame of the symbol will flash at 1Hz when capacity is less than 5%, means the battery needs to be charged.

- **USB charging:**
  Plug the USB cable to display and smart peripheral devices to charge, but the display must be switched on.(≤5V, ≤1A)

- **Bluetooth connection:**
  ① This display has Bluetooth module integrated and connectable to BAFANG's own smart phone application “BAFANG GO”. In addition, the SDK is open for customer to develop APP individually.
  ② This display is also connectable to the chest belt and catch real-time heart beat data from the chest belt and display it and send the data to smart phone.
  ③ The list of data transmit from display to smartphone as below:

<table>
<thead>
<tr>
<th>Item</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Speed</td>
</tr>
<tr>
<td>2</td>
<td>Capacity</td>
</tr>
<tr>
<td>3</td>
<td>Support level</td>
</tr>
<tr>
<td>4</td>
<td>Data of battery</td>
</tr>
<tr>
<td>5</td>
<td>Output of sensors</td>
</tr>
<tr>
<td>6</td>
<td>Remaining range</td>
</tr>
<tr>
<td>7</td>
<td>Calory</td>
</tr>
<tr>
<td>8</td>
<td>Component info.</td>
</tr>
<tr>
<td>9</td>
<td>Current</td>
</tr>
<tr>
<td>10</td>
<td>Heart beat</td>
</tr>
<tr>
<td>11</td>
<td>Trip</td>
</tr>
<tr>
<td>12</td>
<td>ODO</td>
</tr>
<tr>
<td>13</td>
<td>Headlight status</td>
</tr>
<tr>
<td>14</td>
<td>Error code</td>
</tr>
</tbody>
</table>
Press and hold “+” & “-” button synchronously to enter into Display Setting interface, and briefly press “+” or “-” to switch to from “Setting” to “EXIT” and then briefly press “ON/OFF” button to confirm the operation.
• **“Unit”-unit switch between imperial and metric**

Briefly press “+” or “-” to go to “UNIT”, and then briefly press “ON/OFF” to switch between “Metric”/ “Imperial”, then briefly press “ON/OFF” to confirm selection and save the setting and exit back to the “UNIT”. Press and hold “+” and “-” synchronously to save and exit back to the main interface, or you can also select “BACK” → “EXIT” to exit back to the main interface.

![Unit Metric/Imperial switch](image)

• **Auto Off**

Briefly press “+” or “-” to go to “Auto Off”, and then briefly press “ON/OFF” to select among “OFF”/“9”/“8”/“7”/“6”/“5”/“4”/“3”/“2”/“1” ten levels, then briefly press “ON/OFF” to confirm selection and save the setting and exit back to the “Auto Off”. Press and hold “+” and “-” synchronously to save and exit back to the main interface, or you can also select “BACK” → “EXIT” to exit back to the main interface.

Notice: “OFF” means this function is off, the unit is minute.

![Auto Off levels](image)

• **Brightness setting**

Briefly press “+” or “-” to go to “Brightness”, and then briefly press “ON/OFF” to select among “100%”/“75%”/“50%”/“30%”/“10%” five levels, then briefly press “ON/OFF” to confirm selection and save the setting and exit back to the “Brightness”. Press and hold “+” and “-” synchronously to save and exit back to the main interface, or you can also select “BACK” → “EXIT” to exit back to the main interface.

Notice: “10%” is the weakest brightness and “100%” is the strongest brightness.

![Brightness Levels](image)

• **Indication switch of output with current or power**

Briefly press “+” or “-” to go to “Power View”, and then briefly press “ON/OFF”, then briefly press “+” or “-” to switch between Power and Current, then briefly press “ON/OFF” to confirm selection and save the setting and exit back to the “Power View”. Press and hold “+” and “-” synchronously to save and exit back to the main interface, or you can also select “BACK” → “EXIT” to exit back to the main interface.

![Power View Switch](image)

• **Light sensitivity setting**

Briefly press “+” or “-” to go to “Sensitivity”, and then briefly press “ON/OFF” to select among “0”/“1”/“2”/“3”/“4”/“5” five levels, then briefly press “ON/OFF” to confirm selection and save the setting and exit back to the main interface.
to the “Sensitivity”. Press and hold “+” and “-” synchronously to save and exit back to the main interface, or you can also select “BACK” → “EXIT” to exit back to the main interface.

Notice: “0” means light sensor is off. Level 1 is the weakest sensitivity and level 5 is the strongest sensitivity.

• **Trip reset - to clear the single trip distance**

Briefly press “+” or “-” to go to “TRIP Reset”, and then briefly press “ON/OFF” to switch between NO”/”YES” (“YES”- to clear, “NO”- no operation), then briefly press “ON/OFF” to confirm selection; After confirmation, briefly press “ON/OFF” again to save the setting and exit back to the “TRIP Reset”. Press and hold “+” and “-” synchronously to save and exit back to the main interface, or you can also select “BACK” → “EXIT” to exit back to the main interface.

Notice: The riding time(TIME), average speed (AVG) and maximum speed (MAXS) will be reset simultaneously when you reset TRIP.

• **Vibration setting**

Briefly press “+” or “-” to go to “Vibration”, and then briefly press “ON/OFF” to select between ON and OFF (ON means vibration button is on; OFF means vibration button is off), then briefly press “ON/OFF” to confirm selection and save the setting and exit back to the “Vibration”. Press and hold “+” and “-” synchronously to save and exit back to the main interface, or you can also select “BACK” → “EXIT” to exit back to the main interface.

• **Wheel size review**

After entering into “Information” menu, then briefly press “+” or “-” to go to “Wheel Size”, and then briefly press “ON/OFF” to review the wheel size default, then briefly press “ON/OFF” to exit back to the “Wheel Size”. Press and hold “+” and “-” synchronously to exit back to the main interface, or you can also select “BACK” → “EXIT” to exit back to the main interface.

• **Speed limit review**

After entering into “Information” menu, then briefly press “+” or “-” to go to “Speed Limit”, and then briefly press “ON/OFF” to review the speed limit default, then briefly press “ON/OFF” to exit back to the “Speed Limit”.
Limit”. Press and hold “+” and “-” synchronously to exit back to the main interface, or you can also select “BACK” → “EXIT” to exit back to the main interface.

- **Check record of error code**

  After entering into “Information” menu, then briefly press “+” or “-” to go to “Error Code”, and then briefly press “ON/OFF” to review the last ten error codes record from “E-Code0” to “E-Code9”, then briefly press “ON/OFF” to exit back to the “Information”. Press and hold “+” and “-” synchronously to save and exit back to the main interface.

- **Battery data review**

  After entering into “Information” menu, then briefly press “+” or “-” to go to “Battery Info.”, and then briefly press “ON/OFF” to enter, then briefly press “+” to review the battery data from b01 → b04 → b06 → b07 → b08 → b09 → b10 → b11 → b12 → b13 → d00 → d01 → d02 → … → dn, then briefly press “ON/OFF” to exit back to the “Battery Info.”. Press and hold “+” and “-” synchronously to save and exit back to the main interface, or you can also select “BACK” → “EXIT” to exit back to the main interface.

Notice: If the the battery is not a smart battery, you won’t see any data from battery.

<table>
<thead>
<tr>
<th>Code</th>
<th>Code definition</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>b01</td>
<td>Current temperature</td>
<td>°C</td>
</tr>
<tr>
<td>b04</td>
<td>Total voltage</td>
<td>V</td>
</tr>
<tr>
<td>b06</td>
<td>Average current</td>
<td>A</td>
</tr>
<tr>
<td>b07</td>
<td>Remaining capacity</td>
<td>Ah</td>
</tr>
<tr>
<td>b08</td>
<td>Full charge capacity</td>
<td>Ah</td>
</tr>
<tr>
<td>b09</td>
<td>Relative SOC</td>
<td>%</td>
</tr>
<tr>
<td>b10</td>
<td>Absolute SOC</td>
<td>%</td>
</tr>
<tr>
<td>b11</td>
<td>Cycle</td>
<td>times</td>
</tr>
<tr>
<td>b12</td>
<td>Maximum not charg-  ing time</td>
<td>Hour</td>
</tr>
<tr>
<td>b13</td>
<td>Recently not charg-  ing time</td>
<td>Hour</td>
</tr>
<tr>
<td>d00</td>
<td>Cell quantity</td>
<td></td>
</tr>
<tr>
<td>d01</td>
<td>Voltage of cell 1</td>
<td>V</td>
</tr>
<tr>
<td>d02</td>
<td>Voltage of cell 2</td>
<td>V</td>
</tr>
<tr>
<td>…</td>
<td>…</td>
<td>V</td>
</tr>
<tr>
<td>dn</td>
<td>Voltage of cell n</td>
<td>V</td>
</tr>
</tbody>
</table>
BESST CONNECTION

• If it is successful for display to connect to BESST, the display will show: “Connected OK!”.

• If the display show “Read OK!” , it means it is successful for BESST BOX to read information from the display. The information includes customer’s number, display type, wheel size, speed limit, software number and hardware number.

• If the display show “Write OK”, it means it is successful for BESST BOX to write basic information into the display. The information includes customer’s number, wheel size, speed limit.

• When writing SN, if the display show “Write OK!”, it means it is successful for BESST BOX to write SN into the display.

• When reading SN, if the display show “Read OK”, it means it is successful for BESST BOX to read SN from the display.

• If the display enters into test mode, it will switch to normal operation interface.

• Firmware update.
## ERROR CODE DEFINITION

DP C240.CAN display can show e-bike faults. When a fault is detected, the icon 🔄 will be displayed. One of the following error codes will be displayed.

<table>
<thead>
<tr>
<th>Error</th>
<th>Explanation</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>03</td>
<td>Brakes enabled</td>
<td>Check whether a brake cable is stuck.</td>
</tr>
<tr>
<td>07</td>
<td>High voltage protection</td>
<td>Bring your Pedelec to your dealer or to a specialist to have the error fixed.</td>
</tr>
<tr>
<td>08</td>
<td>Fault with motor hall sensor inside</td>
<td>Bring your Pedelec to your dealer or to a specialist to have the error fixed.</td>
</tr>
<tr>
<td>10</td>
<td>The motor temperature reaches to the max protection value</td>
<td>Stop the e-bike for a rest.</td>
</tr>
<tr>
<td>12</td>
<td>Fault with current sensor inside controller</td>
<td>Bring your Pedelec to your dealer or to a specialist to have the error fixed.</td>
</tr>
<tr>
<td>13</td>
<td>Fault with temperature sensor inside battery</td>
<td>Bring your Pedelec to your dealer or to a specialist to have the error fixed.</td>
</tr>
<tr>
<td>21</td>
<td>Fault with wheel speed detecting sensor</td>
<td>Bring your Pedelec to your dealer or to a specialist to have the error fixed.</td>
</tr>
<tr>
<td>22</td>
<td>BMS communication fault</td>
<td>Bring your Pedelec to your dealer or to a specialist to have the error fixed.</td>
</tr>
<tr>
<td>25</td>
<td>Torque sensor torque signal fault</td>
<td>Bring your Pedelec to your dealer or to a specialist to have the error fixed.</td>
</tr>
<tr>
<td>26</td>
<td>Torque sensor speed signal fault</td>
<td>Bring your Pedelec to your dealer or to a specialist to have the error fixed.</td>
</tr>
<tr>
<td>30</td>
<td>Communication fault</td>
<td>Bring your Pedelec to your dealer or to a specialist to have the error fixed.</td>
</tr>
</tbody>
</table>

**Note:** Error Code 10 will probably appear on the display when the e-bike is climbing for a long time. This indicates that the motor temperature has reached the protection value, in which case the user needs to stop the e-bike for a rest. If the user continues to run the e-bike, the motor will automatically cut off the power.
INSTALLATION

• Fix the display unit onto the support bracket with M3 screw.

A. Display unit
B. Support bracket
C. M3 screw

• Pull out the clamp of the support bracket and put it around the handlebar and then fix it with M3 screw.(≤1N.m)

D. Clamp
E. Hex socket screw M3*30

• Plug 5-pin and 6-pin connectors into the display unit.

F. 5-pin IP connector
G. 6-pin IP connector