# DP C18.UART

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INTRODUCTION

- Name: Intelligent display
- Model: DP C18.UART
- Scope: electrical power assistance cycle
- Appearance: the housing is made of PC; The liquid crystal display is made of hardened PMMA

- Laser numbering on the back of the display
  Number in the middle of display back, number is divided into two lines:

  A. First line (as below)
  DP C18.U 1.0
  ① DP C18.U: BAFANG display model
  ② 1.0: hardware version number

  B. Second line (as below)
  605P1QB220003
  ① 605: Wire length and connector type is 230mm M5.2
  ② P1: Internal Identity number
  ③ QB220003: Production date is 21st Nov. 2016; SN is 0003

- P type cable label number rule
  Number is divided into two lines and QR code is at right side (as shown in the below figure)

  Content of QR code:
  DPC18P10101.0
  PD2528051505
  DPC18P10101.0 - Software version
  PD2528051505 - Parameter code
  DP C18.U 1.0 / 605P1QB220003 - SN
APPEARANCE OVERVIEW
SPECIFICATIONS

- Rated voltage: 36V/43V/48V DC
- Rated current: 10mA (as shown in the figure)
- Maximum operating current: 30mA
- When power off, leak current is: ≤1μA
- Operating current supplied to controller: 50mA

- Operation temperature: -20°C ~ 45°C
- Storage temperature: -30°C ~ 70°C
- IP level: IP65
- Storage humidity: 30%-70%
FUNCTIONS OVERVIEW

- Use of a two-way serial communication protocol, simple operation via the additional 5-button keypad.
- Speed indication: Indicate the real-time speed as SPEED, the maximum speed as MAXS and the average speed as AVG.
- Km or mile: The user can choose between km and mile.
- Intelligent battery capacity indication: With an optimization algorithm, a stable display of the battery level is ensured, and the problem of fluctuant battery level indication common with other displays is avoided. The user can define display mode of battery level as voltage or percentage.
- Automatic light-sensitive lights: The headlight, taillight and display backlight will be automatically turned on/off depending on lighting conditions.
- 5 levels of backlighting: 10% is most dark, 100% is highest light.
- Trip distance indication: The maximum distance displayed is 99999. Single-trip distances TRIP or the total distance TOTAL can be displayed.
- Indication of error messages
- Push assistance
- Two support Mode option: "ECO/SPORT"
- Intelligent display: including motor’s output power W for riding, output current A, Remaining miles RANGE, consumption of energy CALORIES.
- Set access password: user can set access password by himself.
- Set parameters: Power assistance level, wheel diameter, speed limit etc., can be set on the computer via a communication cable. Please see the detailed in the description of the computer parameter configuration.
NORMAL INDICATION AREA

1. **Time indication:**
   The time is represented in the 24-hour system and show the current time, time can be set in the “Set clock”.

2. **USB charge indication:**
   When external connect into the display, it display the symbol.

3. **Headlight indication:**
   Only shows when headlight is on.

4. **Speed scale display:**
   the scale value is in accordance with the digital value.

5. **Mode selection:**
   single-trip distance (TRIP) → total distance ODO → maximum speed (MAX) → average speed (AVG) → remaining distance (RANGE) → energy consumption (CALORIES) → time (TIME).

6. **Battery indication:**
   Indicate current battery level value.

7. **Voltage indication/percentage indication:**
   Indicate actual battery level value, display mode can be set in the “Soc View”.

8. **Speed digital indication:**
   Display current speed value, speed unit can be set in “Unit”.

9. **Power scale indication/current scale indication:**
   Display current output value, output unit can be set in “Power View”.

10. **Power assistantance level indication/push assistance:**
    Briefly press (0.5S) or to switch the level. Touch and hold (2S) to start the mode “ push assistance”, display symbol.

11. **Mode data indication:**
    Display current data corresponding to the mode.

12. **Support mode option:**
    Indicate the current riding mode: SPORT/ ECO
### NORMAL OPERATION

- **ON/OFF switch**
  
  Turn on the power, press and hold (>2S) to power on the display, the display begin to operate. Press and hold (>2S) again to power off the display. If the bike is not used, after 5 minutes (time can be set in “Auto Off”) the display will be automatically turned off. If the password function of the display is activated, need to input the correct password to enter into the normal display interface.

- **Power assistance level selection**
  
  In the manual gearshift mode, briefly press (<0.5S) or to switch the level to change the assistance power. The lowest level is Level 0, the highest Level 5. When the display is on, the default mode is Level 1,"0" means no power assistance.
Multiple function interfaces switch

Briefly press (0.5s) to switch to different data interface, circularly show signal-trip distance (TRIP) → total distance (ODO) → maximum speed (MAX) → average speed (AVG) → remaining distance (RANGE) → energy consumption (CALORIES) → time (TIME). Energy consumption unit CALORIES means kCal.
• Headlight / Display Backlight Switch
Press and hold (>2S) to turn on the
display backlight as well as headlight. Press
and hold (>2S) again to turn off the
display backlight and the headlight. There
are 5 levels of backlight brightness that
can be selected by the user (can be set in
the “Brightness”). (If the display is turned on
in a dark environment, the display backlight/
headlight will be turned on automatically. If
the display backlight/headlight are turned
off manually, they also need to be turned on
manually afterwards)

• Push assistance mode
Press and hold (>2S) to enter into push
assistance mode, the symbol is displayed,
when release key , will exit the push as-
sistance the mode.

• Support mode switch
Press and hold (>2S) to switch riding
mode into “ECO” or “SPORT”.
• Operating process in the setting interface
Enter into “SETTING” interface.
After switching on the display, briefly press (<0.5S) + or − for two times to enter into the “SETTING” interface. The interface includes the three options as “Display setting”, “Information” and “EXIT”. Briefly press (<0.5S) + or − to switch the options and then briefly press (<0.5S) + to confirm and enter into the option. Select “EXIT” and briefly press (<0.5S) + for two times in any interface to exit the set interface. The set dates are saved for the two exit mode. If there is no any operation within 20s and then exit the set interface, no any dates are saved.

- Enter into”Display setting” interface
In “SETTING” interface, briefly press (<0.5S) + or − to select “Display setting” and then briefly press (<0.5S) + to confirm and enter into “Display setting”. There are thirteen set options in the interface.

1) “Unit” --- unit switch between the km and mile
Briefly press (<0.5S) + or − to select “Unit”, and then briefly press (<0.5S) + to enter into the set interface. Briefly press (<0.5S) + or − to select “Metric”/ “Imperial”, and then briefly press (<0.5S) + to save the set and exit back to “Unit” interface. Briefly press + for two times (interval time is less than 0.5S) to exit back to main interface, or select “BACK” → “EXIT” to exit back to the main interface.

(2) “Brightness” --- set display brightness
Briefly press (<0.5S) + or − to select “Brightness” and then briefly press (<0.5S) + . This moment, briefly press (<0.5S) + or − to switch the percentage as “100%”/“75%”/“50%”/“30%”/“10%”. 100% is the highest brightness, 10% is lowest brightness. After select the brightness percentage, briefly press + again to save the set and exit back to “Brightness”. Briefly press + for two times (interval time is less than 0.5S) to exit back to main interface, or select “BACK” → “EXIT” to back the main interface.
(3) “Auto Off”--- set automatic Off time
Briefly press (<0.5S) + or - to select “Auto Off”, and then briefly press (<0.5S) 1 . This moment, briefly press (<0.5S) + or - to switch automatic Off time as “OFF”/“9”/“8”/“7”/“6”/“5”/“4”/“3”/“2”/“1”. The unit is minute. After selection, briefly press (<0.5S) 1 to save the set and exit back to “Auto Off”. Briefly press 1 for two times (interval time is less than 0.5S) to exit back to main interface or select “BACK” → “EXIT” to exit back to main interface.

(4) “Power View”--- set output display mode
Briefly press (<0.5S) + or - to select “Power View”, and then briefly press (<0.5S) 1 . This moment, briefly press (<0.5S) + or - to switch the output display mode as “Power”/“Current”. After confirmation, briefly press (<0.5S) 1 again to save the set and exit back to “Power View”. Briefly press 1 for two times (interval time is less than 0.5S) to exit back to the main interface, or select “BACK” → “EXIT” to exit back to the main interface.

(5) “SOC View”--- set indication mode for battery capacity
Briefly press (<0.5S) + or - to select “SOC View”, and then briefly press (<0.5S) 1 . This moment, briefly press (<0.5S) + or - to switch display mode for output as “Percent”/“Voltage”. After confirmation, briefly press (<0.5S) 1 to save the set and exit back to “SOC View”. Briefly press 1 for two times (interval time is less than 0.5S) to exit back to the main interface, or select “BACK” → “EXIT” to exit back to the main menu.
(6) “TRIP Reset” --- set reset function for single-trip distance
Briefly press (<0.5S) + or — to select “TRIP Reset”, and then briefly press (<0.5S) 1 . This moment, briefly press (<0.5S) + or — to switch between “NO” and “YES”. TRIP Reset includes maximum speed (MAXS), average speed (AVG), single-trip distance (TRIP). After confirmation, briefly press (<0.5S) 1 again to save the set and exit back to the “TRIP Reset”. Briefly press 1 for two times (interval time is less than 0.5S) to exit the main interface, or select “BACK” → “EXIT” to exit back to the main interface. The data is not reset automatically when turn off the display or turn off the power of the bicycle.

(7) “AL Sensitivity” --- set light sensitivity
Briefly press (<0.5S) + or — to select “AL Sensitivity”, and then briefly press (<0.5S) 1 . This moment, briefly press (<0.5S) + or — to switch level of the light sensitivity between “0” / “1” / “2” / “3” / “4” / “5” / “OFF”. “OFF” means close the function. Level 1 is the weakest light sensitivity and level 5 is the strongest light sensitivity. Select the level desired and briefly press (<0.5S) 1 again to save the setting and exit back to “AL Sensitivity”. Briefly press 1 for two times (interval time is less than 0.5S) to exit back to main interface or select “BACK” → “EXIT” to exit back to main interface.

(8) “Password” --- access password setting
Briefly press (<0.5S) + or — to select “Password” and then briefly press (<0.5S) 1 . This moment, briefly press (<0.5S) + or — to select “Start PassWord” and then briefly press (<0.5S) 1 again. Briefly press (<0.5S) 1 or to switch between “OFF” / “ON”, the below is the specific way of switching.
Starting password:
Enter into “Start PassWord” interface and select “ON”. Briefly press (<0.5S) 1 , and then it show input password in the interface. This moment, briefly press (<0.5S) + or — to switch numbers “0-9”, and then briefly press (<0.5S) 1 to confirm input number. After input, it show input password again in the interface. Repeat the above step to input password again. If the password is same with the previous time, the system will prompt it is successful to set password, otherwise it need to repeat the first step to input the new password and then re-confirm.
After setting the password, the interface exit back automatically to original interface within two seconds. Briefly press 1 for two times (interval time is less than 0.5S) to exit back to main interface or select “BACK” → “EXIT” to exit back to main interface.
Reset password:

After setting the password, the interface “Password” will add option “Reset Password”. Briefly press (<0.5S) or to select “Reset Password”, and then briefly press (<0.5S). This time it prompt input current password in the interface. If inputing wrong password for ten times, the display will turn off automatically. When inputing right password, it prompt input new password in the interface. The following step is same with starting password. After changing the password, it will exit automatically back to the original interface within two seconds.

Briefly press two times (interval time is less than 0.5S) to exit back to the main interface or select “BACK” to “EXIT” to exit back to main interface.
Cancel password access:

Enter into “Start PassWord” interface to select “OFF” and then briefly press (<0.5S) 
. This moment, it prompt input password in the interface. If inputing wrong pass-
word for ten times, the display will turn off automatically. After inputing right password,
it prompt it is successful to close password in the interface. Two seconds later, it exit back
automatically to the original interface. Briefly press 
for two times (interval time is less
than 0.5S) to exit back to the main interface or select “BACK” → “EXIT” to exit the main
interface.

Briefly press (<0.5S) 
 or 
 to select “Set
Clock” and then briefly press (<0.5S) 
 . The time is represented in the 24-hour
system. Cursor stays at the first digit of the clock. Briefly press 
 or 
 to select “0-2” and then briefly press (<0.5S) 
 to confirm
the selection. This moment, the cursor switch to the second digit of the clock. Brief-
ly press 
 or 
 to select “0-9”, and then
briefly press (<0.5S) 
 to confirm the selection. And the cursor will switch to the first digit of the minute. Briefly press 
 or 
 to select “0-5”, and then briefly press (<0.5S) 
 to confirm the selection. The cursor will
switch the second digit of the minute, and then briefly press (<0.5S) 
 or 
 to select
“0-9”. Briefly press (<0.5S) 
 to save the
selection and exit back to “Set Clock”. Briefly
press 
 for two tiems (interval time is less
than 0.5S) to exit back to the main interface or select “BACK” → “EXIT” to exit back to the
main interface.

• Enter into “Information” interface

Enter into “SETTING” interface and briefly press (<0.5S) 
 or 
 to select “Informa-
tion” and briefly press (<0.5S) 
 to confirm
and enter into the interface. It can check all
content in the interface “Information”, but
can’t use the display to modify the content.

(1) “Wheel” and “Speed Limit” check

Enter into “Information” interface and it
display the data of “Wheel” and “Speed
Limit”. User can use BAFANG’s BESST tool
to connect the display and PC to modify the
data. Briefly press (interval time is less than
0.5S) 
 for two times to exit back to the
main interface or select “BACK” → “EXIT” to
exit back to the main interface.
(2) “Battery Info.” check
Briefly press (<0.5S) or to select “Battery Info.” and briefly press (<0.5S) to enter into information display interface. This moment, select “Next Page” and briefly press (<0.5S) to switch the display interface. If detecting no data, it display “--”. See the content and corresponding explanation shown in the table below:

<table>
<thead>
<tr>
<th>Display content</th>
<th>Explanation</th>
<th>Display content</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEMP</td>
<td>Current temperature</td>
<td>Cycle Times</td>
<td>Cycle Times</td>
</tr>
<tr>
<td>TotalVolt</td>
<td>Battery voltage</td>
<td>Max Uncharge Time</td>
<td>Max Uncharge Time</td>
</tr>
<tr>
<td>Current</td>
<td>current</td>
<td>Last Uncharge Time</td>
<td>Last Uncharge Time</td>
</tr>
<tr>
<td>Res Cap</td>
<td>remaining battery</td>
<td>Total Cell</td>
<td>The number of cell</td>
</tr>
<tr>
<td></td>
<td>capacity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Cap</td>
<td>Battery capacity of</td>
<td>Cell Voltage 1</td>
<td>Voltage Cell 1</td>
</tr>
<tr>
<td></td>
<td>Full charged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RelChargeState</td>
<td>Relative Charge in</td>
<td>Cell Voltage 2</td>
<td>Voltage Cell 2</td>
</tr>
<tr>
<td></td>
<td>percentage</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AbsChargeState</td>
<td>Absolute Charge in</td>
<td>Cell Voltage n</td>
<td>Voltage Cell n</td>
</tr>
<tr>
<td></td>
<td>percentage</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Briefly press for two times (interval time is less than 0.5S) to exit back to main interface or select “BACK” → “BACK” → “EXIT” to exit back to the main interface.

(3) “Error Code” history check
Briefly press (<0.5S) or to select “Error Code” and briefly press (<0.5S) to enter into the interface. “E-CODE” indicate the error information for last ten times. “E-CODE 1” represents the error content for the last time. “E-CODE 10” represents the error content up to the tenth time. The maximum ten records can be kept. Error code “00” means no error. Please see the error code table to know about the definition of the other codes.
## ERROR CODE DEFINITION

DP C18 UART display can show e-bike faults. When a fault is detected, the icon ![Alert](https://example.com/alert-icon) will be indicated. One of the following error codes will be indicated.

<table>
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<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.