DP C10.UART

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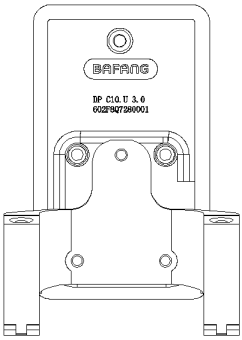
INTRODUCTION

- Name: Intelligent display HMI
- Model: DP C10.UART
- Scope: EN15194 electrical bicycle
- Appearance: the shell is made of PC; The liquid crystal display is made of hardened PMMA.

- Numbering on the back of HMI

  Number on the middle of display back, number is divided into up row and down row (as shown in the figure):



A. First line as below

DP C10.U 1.0

① DP C10.U : BAFANG Display model

② 1.0: Hardware version number

B. Second line as below

602F8Q7280001

① 602: Wire length and connector model 850 M5.2, keypad250

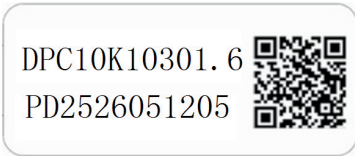
② F8: test device number

③ Q7280001:production date is July 28th ,2016, serial number is 0001.

please refer to <Instrument labelling rules> for other detailed description, the document number is BF-TS-753-C0-02II.

- Display HMI 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).



The first line:

DPC10F80201.1- Software version

The second line:

PD2526051205 - Parameter code

Content of QR code:

DPC10F80201.1

PD2526051205

DP C10.U 1.0

602F8Q7280001

APPEARANCES AND DIMENSIONS

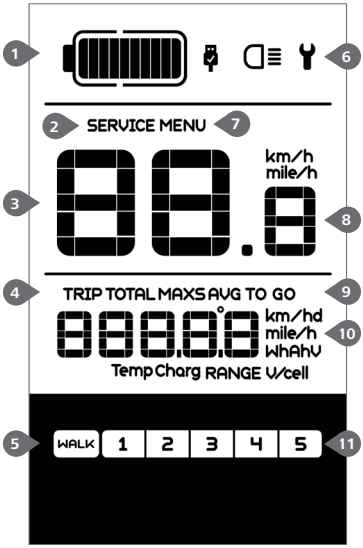
SPECIFICATIONS

- 36V/43V/48V DC power supply
- Rated current is 10mA
- Maximum operating current is 30mA
- Power-off leakage current is less than 1uA
- Operating current supplied to controller is 50mA
- Operation temperature: -20℃~45℃
- Storage temperature: -30℃~70℃
- IP level: IP65
- Storage humidity: 30%-70%

FUNCTIONAL OVERVIEW

- Use of a two-way serial communication protocol, simple operation of the display via the external 5-key keypad.
- Speed display: displaying 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 level 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.
- Automatic light-sensitive lights: The headlight, taillight and display backlight will be automatically turned on/ off depending on lighting conditions.
- 5 levels off display backlighting: Different levels, leave 1 is most dark, level 5 is highest light.
- 6-Level-Support: setting power Levels 0 to 5.
- Trip distance indication: The maximum distance displayed is 99999. Single-trip distances TRIP or the total distance TOTAL can be displayed.
- Intelligent display: including motor output power W for riding, Remaining miles TO GO, consumption of energy (calories) C.
- Display of error messages
- Walk assistance
- Settings: Various parameters, e.g. mode, wheel diameter, speed limit etc., can be set on the computer via a communication cable. See the setting.
- Maintenance warning (this function can be deactivated): Maintenance warning information is- dis played based on battery charge cycles and riding distance. The display automatically estimates the battery life and gives warnings when the number of charge cycles exceeds the set value. A warning will also be displayed when the accumulated total riding distance exceeds the set value.
- The maximum charging value is 5V&500mA through USB port.

NORMAL INDICATION AREA



1. Battery level
2. Maintenace warning
3. Headlight indication
4. Distance mode
5. Asisstance
6. Malfunction indication
7. Menu
8. Speed display
9. Speed model
10. Distance indication
11. Level indication

- Speed mode: average speed (AVG km/h), maximum speed (MAXS km/h).
- Speed display: display of the speed, km/h or mph.
- Battery level: 10-segment battery indication; the voltage that each segment represents can be customized.
- Headlight indication: only shows when headlight or backlight are on.
- Error display: When a fault is detected the symbol will be displayed.
- Maintenance warning: When there is a need for maintenance the symbol **SERVICE** will be displayed (riding distance or the number of battery charge cycles exceed the set value, function can be deactivated).
- Level indication: The chosen level 1–5 will be displayed; if there is no numeric display, it means that there is no assistance (by the motor). If the rider is walking and pushing the e-bike, WALK will be displayed.
- Distance mode: display of the maximum speed MXA, average speed AVG, the single-trip distance TRIP, the total distance TOTAL, remaining distance TO GO, power W, consume energy C.
- Distance indication: display of the distance depending on the setting.

BUTTON DEFINITION

NORMAL OPERATION

- **ON/OFF Switch**

  Turn on the device, press and hold for 2s to power on the display. Press and hold again for 2s to power off the display, If the bike is not used, after 5 minutes (time can be set) the display will be automatically turned off.

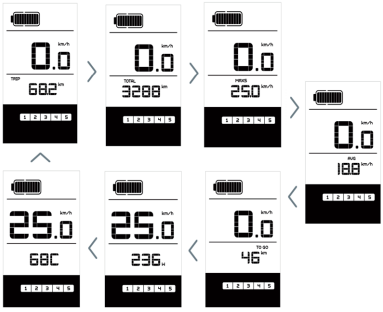
- **Assist Mode Selection**

  In the manual gearshift mode, press the or choose the desired level of support by the motor. The lowest level is Level 1, the highest Level 5. When the display is on, the default mode is Level 1. When there is no numeric mode display, there is no power assistance.

  (power assistance lever selection interface as below figure)

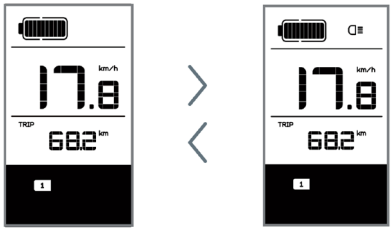
- **Switch between Distance Mode and Speed Mode**

  Briefly press i to switch between distance and speed. Single-trip distance (TRIP km) , total distance (TOTAL km) maximum speed (MAXS km/h) ,average riding speed (AVG km/h) , remaining distance(RANGE) and energy consumption (C) are displayed in successive order.(Switch mode interface as below)



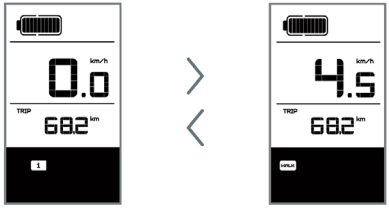
- **Headlight/ Display Backlight Switch**

  Press for 2 seconds. The backlight of the display as well as the headlight and taillight will be turned on. Press again for 2 seconds to power off the display backlight / headlight / taillight. There are 5 levels of backlight brightness that can be selected by the user. (If the display is turned on in a dark environment, the display backlight / headlight / taillight will be turned on automatically. If the display backlight / headlight / taillight are turned off manually, they also need to be turned on manually afterwards)



- **Walk Assistance**

  Press for 2 seconds. The e-bike enters the walk assistance mode, and the symbol WALK is displayed. Once the key is released, the e-bike will exit the walk assistance mode.



- **Battery Status Indication**

  When the battery status is normal, a certain number of the battery LCD segments as well as the border light up according to the actual quantity of charge. If all of the 10 segments will black out with the border blinking, the battery needs to be charged immediately.

- Battery status indication

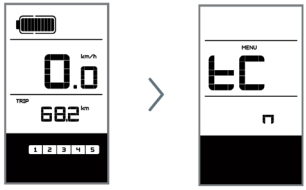
Number of Segments	Charge in Percentage	Number of Segments	Charge in Percentage	Number of Segments	Charge in Percentage
10	≥90%	6	50%≤C<60%	2	15%≤C<25%
9	80%≤C<90%	5	45%≤C<50%	1	5%≤C<15%
8	70%≤C<80%	4	35%≤C<45%	Border blinking	C<5%
7	60%≤C<70%	3	25%≤C<35%		

- When display turns off, connect the USB cable to the port of the display and then display turn on and begin charge. If display is being on, only connect the USB cable to the port to the display and display begin charge. Maximum charge voltage is 5V, maximum charge current is 500mA

PARAMETER SETTING

- **Items to be Set**
  1. Data reset
  2. Km/mile
  3. Light sensitivity
  4. Display backlight brightness
  5. Automatic off time
  6. Maintenance warning settings
  7. Check wheel diameter
  8. Speed Limit Setting
  9. Speed model
  10. Battery infromation10 error code
- **Setting Preparation**

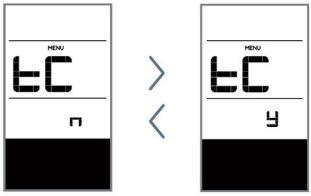
  1) When the display is active, press i twice (interval < 0.3 seconds). The system will enter the MENU parameter setting state, in which the display parameters can be set. Press i twice again (interval < 0.3 seconds) to return to the main menu.



  2) If no operation is performed for 10 seconds, the display will return to the normal riding display.

  3) In the parameter setting state, when the parameter you want to set begins to flash, press + / − to adjust the parameter value. Briefly press i to switch between the parameters to be set. Press i twice (interval < 0.3 seconds) to exit the submenu.
- **Data reset**

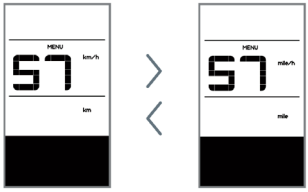
  Press i twice (interval < 0.3 seconds) – the display enters the MENU state. In the speed field tC is displayed. If you press , a "y" is also displayed. Now all temporary data, e.g. maximum speed (MAXS), average speed (AVG) and single trip distance (TRIP) can be cleared. Briefly press i (< 0.3 seconds) to enter the km/mile setting interface.



  If the user does not reset the data, the single trip distance and the accumulated total riding time will be automatically cleared when the accumulated total riding time exceeds 99 hours and 59 minutes.

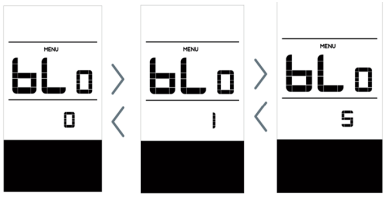
  * The data will not be cleared when the display's light-sensing function is set to 0 or when it is switched off!
- **Km/mile**

  When the speed field displays S7, press + / − to switch between km/h and mph, or to set km or mile. After this setting, briefly press i (< 0.3 seconds) to enter the setting interface of light sensitivity. Default display is km.



- **Light Sensitivity**

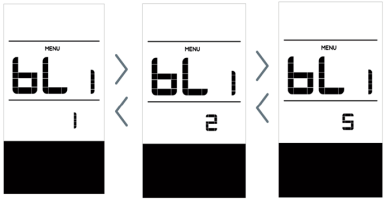
  When the speed field displays bL0, press + / − to choose a figure between 0 and 5. The higher the chosen figure, the higher the light sensitivity.



After this setting, briefly press i (< 0.3 seconds) to enter the setting interface of backlight brightness.

- **Display Backlight Brightness**

  When the speed field displays bL1, press + / − to choose a figure between 1 and 5. The figure 1 represents the lowest brightness while 5 indicates the highest display backlight brightness.



After this setting, briefly press i (< 0.3 seconds) to enter the setting interface of automatic off time.

- **Automatic Off Time**

  When the speed field displays OFF, press + / − to choose a figure between 1 and 9. The figures indicate the minutes that it takes to automatically shut down the display.

After this setting, briefly press i (< 0.3 seconds) to enter the setting interface of maintenance warning.

- **Maintenance Warning** (can be deactivated)

  When the speed field displays nnA, press + / − to choose either 0 or 1. 0 disables the function while 1 enables it.

1) The display will prompt maintenance necessity based on such information as the accumulated riding distance and the battery charge cycles.

2) When the accumulated total riding distance exceeds 5,000 km (can be customized by the manufacturer), the display will show the symbol **SERVICE** . When the display is started up, the sign for accumulated riding distance will flash for 4 seconds, indicating that maintenance is necessary.

3) When the number of battery charge cycles exceeds 100 (can be customized by the manufacturer), the display will the symbol **SERVICE** . When the display is started up, the sign for battery will flash for 4 seconds, indicating that maintenance is necessary.

4) The maintenance alert function can be disabled: settings ->maintenance alert (MA) -> 0. (Maintenance alert can also be set via a computer. This requires a USB connection. See also the parameter setting instructions).

- **Wheel Diameter check**

Speed position displays Wd, The measurements are in inches. A wrong wheel diameter can lead to speed anomalies.

After this setting, briefly press (< 0.3 seconds) to enter the setting interface of speed limit.

- **Speed Limit Setting**

When the speed field displays SPL, the distance field displays the value of the speed limit. Minimum speed limit is 12km/h, maximum speed limit is 60km/h.

After setting, Briefly Press i (< 0.3 seconds) to enter the menu of battery communication.

- **Battery Communication**

The speed field displays b01 and the distance field displays the speed limit. Press i (< 0.3 seconds) to cycle backward. After this setting, press i (< 0.3 seconds) to enter into the interface of memory for error code.

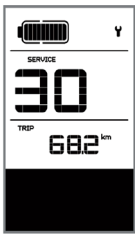
1) Only when communication has been established between the battery and the controller the following information will be displayed, otherwise the display will only show "- - - -".

2) Information on the battery menu:

The speed field displays	Definition	Unit
b01	Current temperature	℃
b04	Total voltage	V
b06	Average current	A
b07	Remaining capacity	Ah
b08	Full capacity	Ah
b09	Relative state of charge	
b10	Absolute state of charge	
b11	Charge/ discharge cycle	
b12	Longest period without charge	h
b13	Period since last charge	h
d00	Cell quantity	
d01	Voltage of cell 1	V
d02	Voltage of cell 2	V
……	……	
dn	Voltage of cell n	V

ERROR CODE DEFINITION

The DP C10.UART display can show e-bike faults. When a fault is detected, the icon will be displayed. In the speed field one of the following error codes will be displayed:



Hint warning interface

Error code	Error definition	Error-shooting method
“04”	The throttle has not returned home	Check if throttle has returned home
“05”	Throttle fault	Check the throttle
“07”	Overvoltage protection	Check the battery voltage
“08”	Motor hall signal cable fault	Check the motor module
“09”	Motor phase cable fault	Check the motor module
“11”	Controller temperature sensor failure	Check the controller
“12”	Current sensor failure	Check the controller
“13”	Battery temperature fault	Check the battery
“14”	Motor temperature fault	Check motor
“21”	Speed sensor fault	Check installation position of speed sensor
“22”	BMS communication fault	Replace the battery
“30”	Communication fault	Check the controller connection

NOTES

NOTES