

M210C Specification

Ananda CAN Protocol



	Signature	Date
Drafted by	Fan Yang	2025-11-22
Checked by	Tfyang	2025-11-22

Revision History

Version	Revised by	Date	Content	Page
A01	Fan Yang	2025-11-22	First version	

Statement

This product function specification is the standard function definition description of our products and is a part of the technical archives of our products.

All instrument products of our company are allowed to adjust their function definitions according to customer needs. This document is a reference for product function definitions, operation instructions and fault analysis. The product function status you get will be subject to the confirmation and communication of actual customer needs. As a component unit of human-computer interaction of electric vehicle, the instrument plays a role in the interaction between the whole vehicle and users. However, all interaction functions depend on the function definition and data support of the overall electrical system, and the realization of some functions will depend on your vehicle system definition.

If you have any questions about the understanding of this product specification, please consult our sales or technical support personnel in time.

(BigStone ®) We reserve the right to interpret and explain this product function specification.

Nanjing Bigstone Power Technology Co., Ltd

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A. Product introduction

1. Product name and model

- LCD Instrument Panel for Electric Assist Bicycles.

Product model : M210C

- The M210C is available in two versions: UART communication and CAN communication. The M210C corresponds to the UART communication version; The M210C-CAN corresponds to the CAN communication version.

2. Product brief

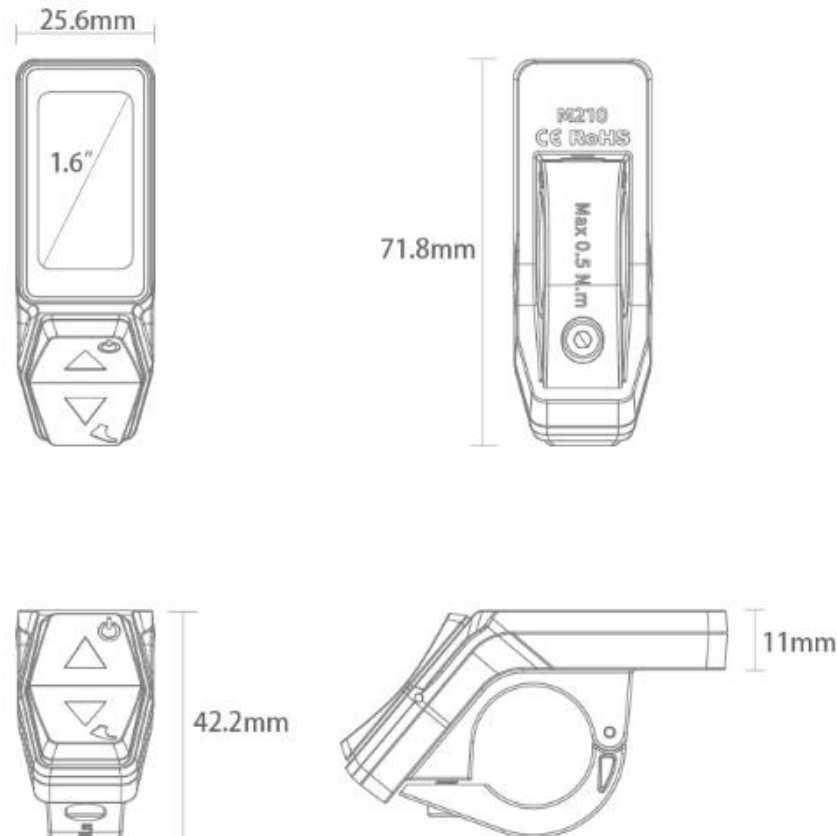
- ✧ Screen with imported tempered glass.
- ✧ Can be used for UART or CAN communication.
- ✧ Two-button design with ergonomically designed button
- ✧ 1.6 inch TFT LCD with 172*320 resolution.
- ✧ Excellent outdoor waterproof design, in line with IP65 waterproof capability
- ✧ Support firmware upgrade function, can quickly achieve firmware upgrade and parameter setting, convenient maintenance service.

3. Range of application

Suitable for electric power assist bicycle in accordance with the standard of EN15194:2017.

4. Appearance and Dimension

M210C is made of PC+ABS, the window is made of high hardness imported toughened glass. The product is suitable for left mounting $\phi 22.2\text{mm}$ handle bar.



5. Product coding rules

M210

C

-CAN

CAN communication, if it is CAN communication suffix, add -CAN

Product family name. If there is no suffix by default, it is serial port communication

B. Product Description

1. Specifications

- ① Waterproof level : IP65
- ② Shutdown current : <1uA
- ③ Rated current : <30 mA
- ④ Operating temperature : -20 ℃ ~ 60 ℃
- ⑤ Storage temperature : -30 ℃ ~ 80 ℃
- ⑥ Communication mode: UART./ CAN optional.
- ⑦ Power supply : DC 24V/36V/48V
- ⑧ Screen specification : 1.6" 172 * 320 resolution TFT LCD screen

2. Functional overview

- ① Walk assistance function
- ② Error code indication
- ③ Headlight control and status indication
- ④ Units: KMH / MPH switch
- ⑤ Two ergonomic buttons
- ⑥ Battery indicator combined percentage display

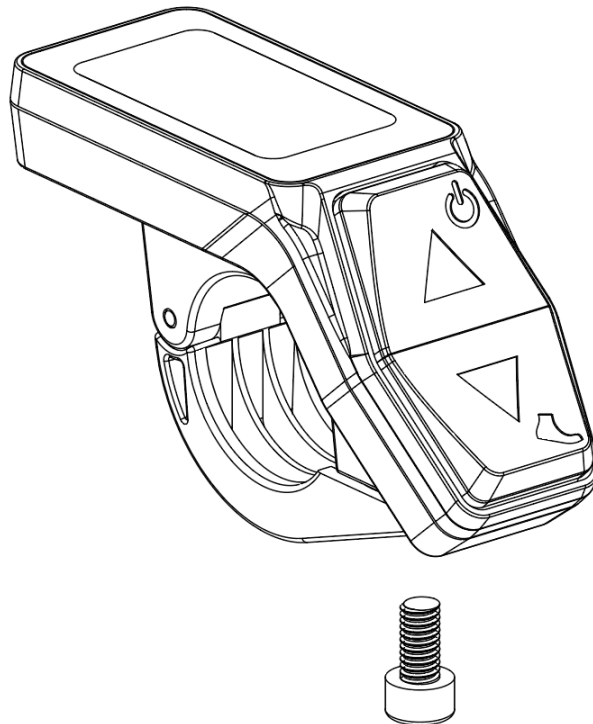
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- ⑦ Digital assisted level indication
- ⑧ Parameter setting function and advanced setting function
- ⑨ Speed display: Real-time speed
- ⑩ Ride information display: TRIP, ODO, TIME

3. Installation

Open the instrument clamp, attach it to the left handlebar (standard handlebar tube specification: $\Phi 22.2\text{mm}$), adjust to an easily accessible position, secure with an M4 hex socket screw, and tighten the fixing screw. Tightening torque: 0.5 N m.

* Damage caused by excessive torque is not covered by the warranty.



4. Interface

4.1 Startup screen



Upon startup, the device displays the boot logo screen for 2 seconds. After establishing communication, the instrument enters the basic function display state, displaying actual data obtained from the controller and BMS communication. (The displayed data follows the communication protocol provided by the customer.)

4.2 Basic screen and button

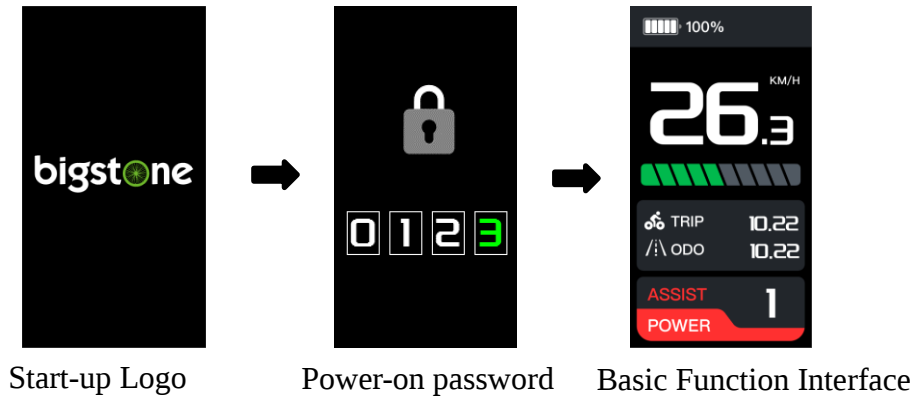


- ① The display adopts the form of 2 button, Δ , ∇ adjustment button.
- ② The screen features a 1.6-inch TFT display, supporting customization and modification of the startup interface and partial UI elements.

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4.3 Function introduction

Startup screen, password screen and basic function screen



After powering on, the startup logo screen displays for 2 seconds. If a password is enabled, the system enters the startup password screen; enter the password to access the basic function interface. If no password is enabled, the system directly enters the basic function interface. The logo can be customized.

The instrument displays relevant information stored in the controller based on the communication protocol, reads and displays battery BMS information (for systems without BMS information, the instrument displays voltage values), and displays all other information in real time.

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Other function

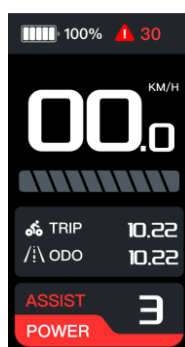
Walk assistant function

On the basic function interface, press and hold the ▼ button to enter the assist mode. The instrument display interface is as follows:



Error code indication on screen

Upon receiving fault information returned by the controller, the instrument will display a fault code at the instrument end, alerting the user to relevant electrical system faults. The fault code is displayed numerically. Refer to “9. Error Messages” for fault code details.

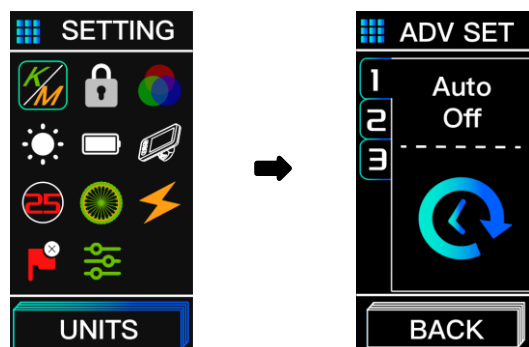


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Setting function

Press and hold both the Δ and ∇ buttons simultaneously on the basic function screen to access the settings menu.

Press and release the Δ and ∇ buttons to cycle through and select settings in sequence.



- UNITS: Unit setting, metric KMH, imperial MPH setting.
- PWD: Password setting, ENABLE, DISABLE.
- UI MODE: display mode setting, POSTIVE, NEGATIVE setting.
- BRIGHTNESS: backlight brightness setting, 1-5 adjustable.
- BMS INFO: Battery information setting, SOC,SOH,Voltage,Full Capacity,Remain Capacity,Cycles,SN.
- DIS VER.: Meter information setting, BOOT version BT, software version SW, hardware version HW.
- MAX SPEED: Speed limit setting,
- WHEEL SIZE: Wheel diameter setting.
- VOLTAGE: System voltage setting.
- TRIP CLEAR: Single Mileage Zero Setting.
- ADV.SET: Advanced settings include, sleep time setting, auto-brightness setting, and factory reset.

See Part 7 for the definition of detail set operations.

5. Buttons definition

5.1 Definition of buttons



Adjustment Button: Used for power on/off and function operations. During riding, adjust pedal assist levels and configure settings in conjunction with the function switch button. Press and hold the adjustment button to perform specific corresponding functions.

5.2 Button operation

Operation type	Description
Short press	A short press is when a button is pressed and then immediately released, triggering the corresponding function when the button pops up.
Long press	Long press means that the button is pressed and kept pressed, when the duration of the button press exceeds the long press setting time (usually 2s), the corresponding function is triggered.
Double Click	Double-tap means pressing the button then immediately releasing the button and immediately pressing the button again then immediately releasing the button, triggering the corresponding function when the button pops up for the second time.

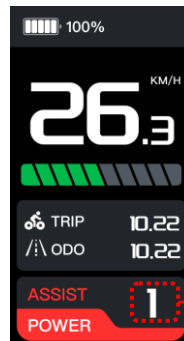
6. Operation

6.1 Turn on/off

When the meter is off, press and hold the Δ button to turn it on. The meter will display the startup logo screen, then proceed to the basic function interface and begin operation. When the meter is on, press and hold the Δ button to turn it off. If the rider does not perform any operation on the instrument within the set shutdown time, and the speed is 0 with the bus current below 1A, the instrument will automatically shut down within the preset shutdown time. The shutdown time can be customized by the user in Advanced Settings

6.2 Assist level switch

On the basic function interface, briefly press the Δ or ∇ button to switch between assist levels, adjustable from 0 to 5. The interface displays as follows:



Assist level

Press the Δ button briefly to increase assist levels; press the ∇ button briefly to decrease assist levels. Assist levels do not cycle through all settings.

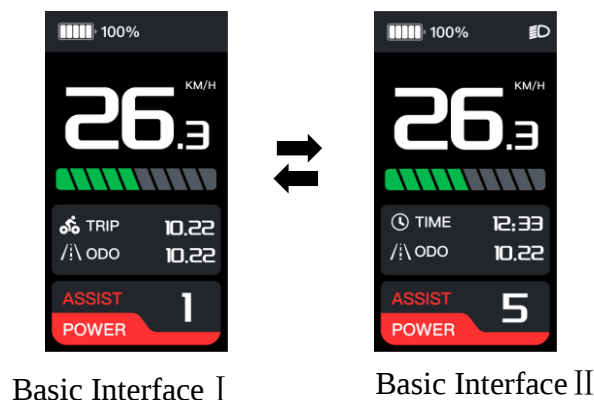
6.3 Ride information switching

On the basic function interface, double-click the ▾ button to cycle through riding information. This alternates between Function Display Interface I and Function Display Interface II.

Basic Interface I displays the distance of a single ride and the total distance during a single ride;

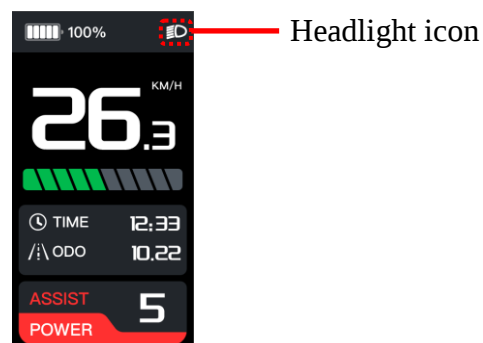
Basic Interface II displays riding time and total distance.

The interface switching process is shown in the figure below:



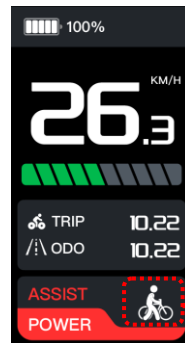
6.4 Headlight Control Function

On the basic functions interface, double-click the △ button to turn on the headlights. The headlight icon will appear in the upper-right corner of the instrument panel to indicate the lights are on. Double-click the △ button again to turn off the headlights. The interface will display as follows:



6.5 Assist in implementation

While in the basic function interface and with the gear not set to 0, press and hold the ▽ button to enter the push assist mode. The motor will output power according to the preset push assist speed value and control the actual pushing speed. The instrument panel will display the push assist icon and the actual pushing speed, while the assist gear display area will show the push icon. . Releasing the ▽ button or pressing any other button during the push process disengages the push assist mode. The motor output is cut off, and the instrument returns to normal display mode. The display interface is as follows:



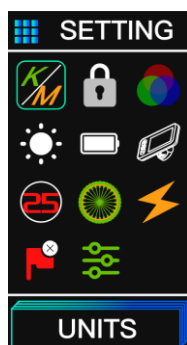
Walk assist icon

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7. Basic Setting Functions

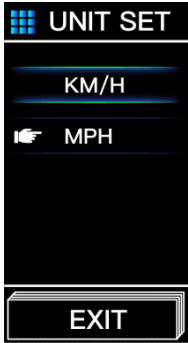
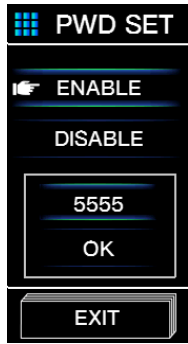
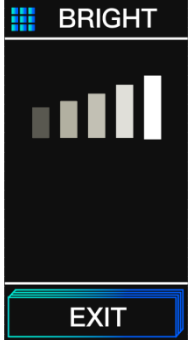
The instrument provides specific parameter setting functions, with optional settings subject to reduction based on different markets and product standards. The following describes the complete parameter setting and information reading functions in the instrument's default state. Should any discrepancies arise with the physical unit, please promptly contact our sales and technical support teams for verification and confirmation..

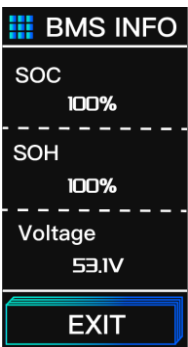
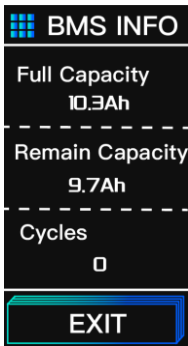
After powering on, press and hold both the Δ and ∇ buttons simultaneously on the basic function interface to enter the settings menu, as shown in the figure:

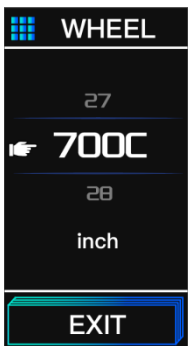
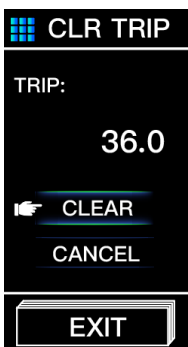


Press Δ or ∇ briefly to select a settings icon. Double-click Δ on the selected icon to enter the corresponding sub-settings interface. In the sub-interface, press Δ or ∇ briefly to select a parameter. Double-click Δ on the selected parameter to confirm the setting. Select EXIT to exit the current configuration interface and return to the upper-level menu interface. In the menu interface, press and hold Δ or ∇ to return to the basic function interface.

Setting function and each parameter setting is described as follows:

Setting items	Detail screen	Setting parameter	Parameter values	Remarks
UNIT SET			Parameter values: KM/H, MPH	
PWD SET			parameter values: ENABLE-enabl e DISABLE- Password disable	
UI MODE			parameter value: POSTIVE NEGATIVE	
BRIGHT			Parameter values: 1-5	5 brightest

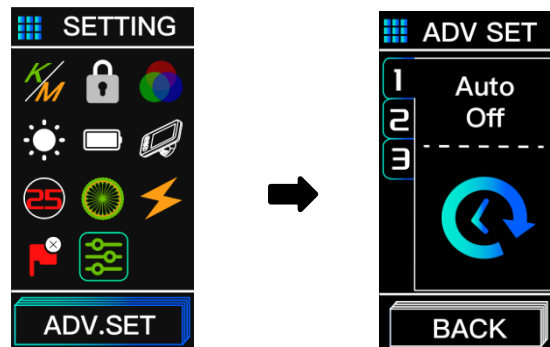
BMS INFO	  	Parameter Value Definitions: SOC: Percentage of power SOH: Battery health Voltage Full Capacity Remain Capacity Cycles SN: Battery Serial Number		
DIS VER		Parameter value definition: BT: BOOT version SW: Software version HW: Hardware version		

MAX SPD			Non-modifiable	Unit: KM/H
WHEEL			Non-modifiable	Unit: inch
SYS VOL			Non-modifiable	Unit: V
CLR TRIP			Parameter value: CLEAR-clear Trip CANCEL-save Trip	

8. Advance setting

* Warning

Advanced settings functionality, based on specific protocol content, enables modification and configuration of controller and system parameters via the dashboard. This feature is recommended for use by qualified professionals, such as vehicle manufacturers, dealers, and other entities possessing specialized technical expertise. It permits necessary system debugging and maintenance through advanced settings. Improper parameter configuration or other configuration issues may cause the entire vehicle system to malfunction or result in other faults.

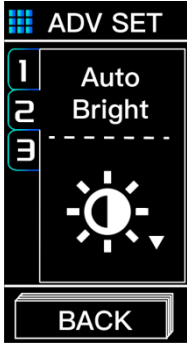
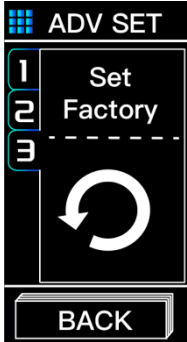
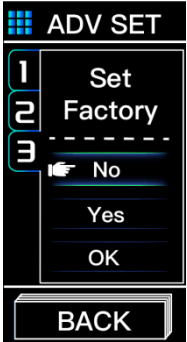


Enter the Advanced Settings interface. Press the Δ or ∇ button briefly to select a setting item. Double-press the Δ button to select the item and enter the sub-interface. Press the Δ or ∇ button briefly to select a sub-interface parameter. Double-press the Δ button to select the parameter. Press the Δ or ∇ button briefly to select the OK confirmation icon. Double-press the Δ button to save and return to the previous level. Press the Δ or ∇ button briefly to select the EXIT icon. Double-press the Δ button to save and return to the Basic Settings interface.

Advanced Settings Function Operation Guide

The following describes the parameters for each function in the Advanced

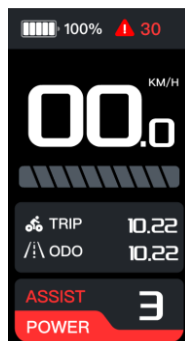
Settings interface:

Set items	Screen Content	sub-interface display	Parameter values	Remarks
Sleep Time Settings			Parameter values: 5, 10, 15, 20, 25, 30	Unit: Minutes
Auto Brightness Setting			Parameter Value: Yes - Enabled No - Disabled	Screen brightness will decrease after 1 minute of inactivity.
Restore factory settings			Parameter values: No-keep current setting Yes-factory settings restored	

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9. Error Message.

The error code screen is displayed as follows:



(Note: Fault codes may vary across different system protocols. If a fault code appears on the instrument display, please promptly contact our sales and technical support teams for verification and confirmation!)

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10. Wire definition

Table 1 cable color and function

No.	Color	Function
1	Red	Battery+
2	Blue	Electrical lock wire
3	Black	Power Supply-
4	Yellow	CAN-L
5	Green	CAN-H

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C. Packing specification

Standard shipment, according to three layers of corrugated box packing plus pearl cotton packaging bag packaging products; there are 20 small grids in each layer of corrugated grid.

Box specification: 452mm * 407mm * 379mm

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D. Notes

- ✧ In the use of the display, pay attention to the security, do not plug the display in and out the when the power is on.
- ✧ Try to avoid use exposure in harsh environments like heavy rain, heavy snow, and strong sunlight.
- ✧ When the display can't be used normally, it should be send to repair as soon as possible, Otherwise it will affect the normal operation of the system.

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E. Quality & Warranty

Under normal use conditions, the company will be responsible for the limited warranty during the warranty period for the failure caused by the quality of the product itself.

The warranty period is 18 months from the date of purchase of our products.

The following conditions are not covered by warranty:

1. Dismantling and refitting without authorization.
2. Fault or damage caused by user or third-party misuse or incorrect installation and debugging.
3. The outer shell of the instrument is scratched or damaged after leaving the factory.
4. The meter cable is scratched or broken.
5. Faults or damages caused by natural disasters, such as fire, earthquake, lightning strike, etc.
6. The product is beyond the warranty period.