

D410 Specification

Ananda Protocol



	Signature	Date
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Revision History

Version	Revised by	Date	Content	Page
A01	Fan Yang	2025-12-18		

bigstone	南京大石动力科技有限公司 Nanjing Bigstone Power Technology Co., Ltd	文件编号	QD-JS-D410-002
		版本号	A01

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 Error 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 Electronic & Technology Co., Ltd

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		版本号	A01

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A. Product introduction

1. Product name and model

LCD Instrument Panel for Electric Assist Bicycles

Product model: D410-CAN

2. Product description

- ✧ The screen employs a full-lamination manufacturing process to maintain long-term cleanliness.
- ✧ External four-button design with ergonomically shaped buttons
- ✧ Static Display Segment Code Screen
- ✧ Option USB function
- ✧ Option NFC unlock function
- ✧ Excellent outdoor waterproof design, in line with IP65 waterproof capability
- ✧ Support firmware upgrade function, can quickly realize firmware upgrade and parameter setting, convenient maintenance service

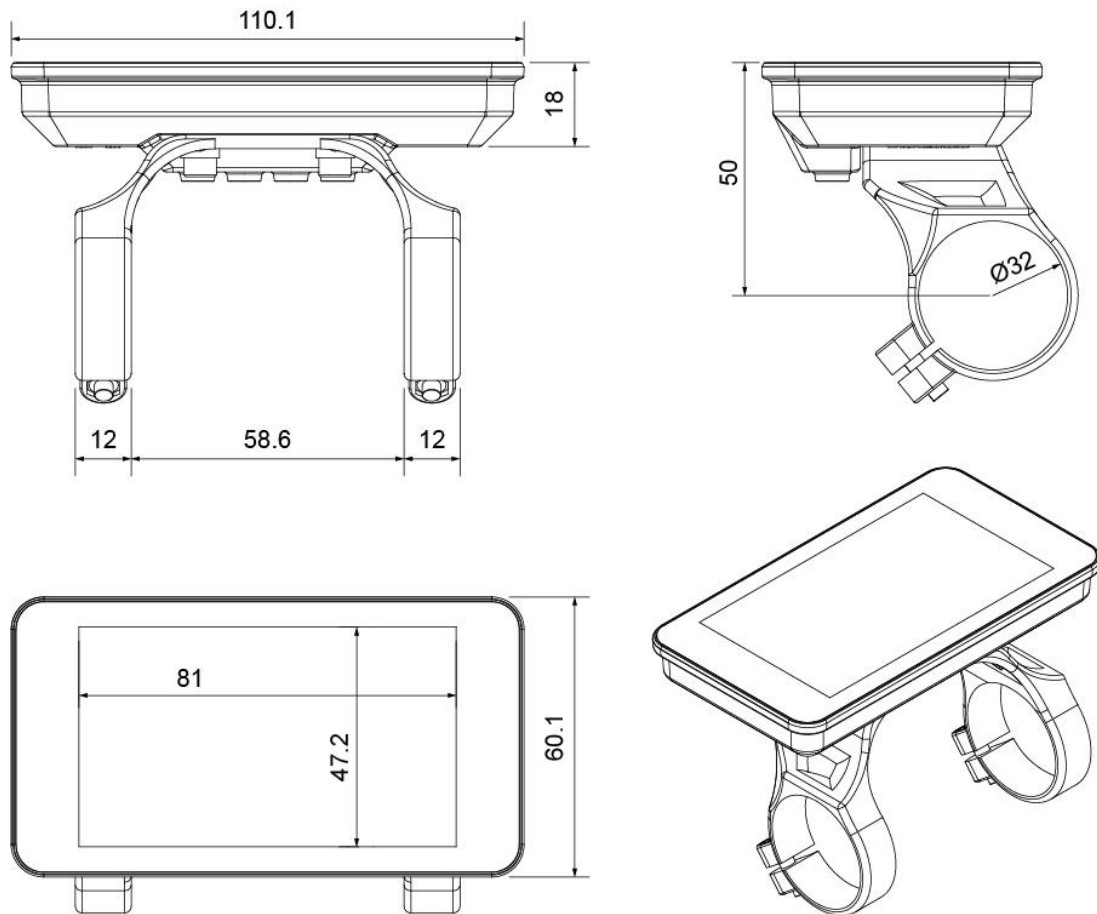
3. Scope of use

Suitable for electrically assisted bicycles that comply with the EN15194:2017 regulatory standard

4. Appearance and dimension

The D410 product housing is made of PC+ABS, while the bracket is manufactured from nylon material. The housing material permits normal operation within a temperature range of -20°C to 60°C and ensures excellent mechanical properties.

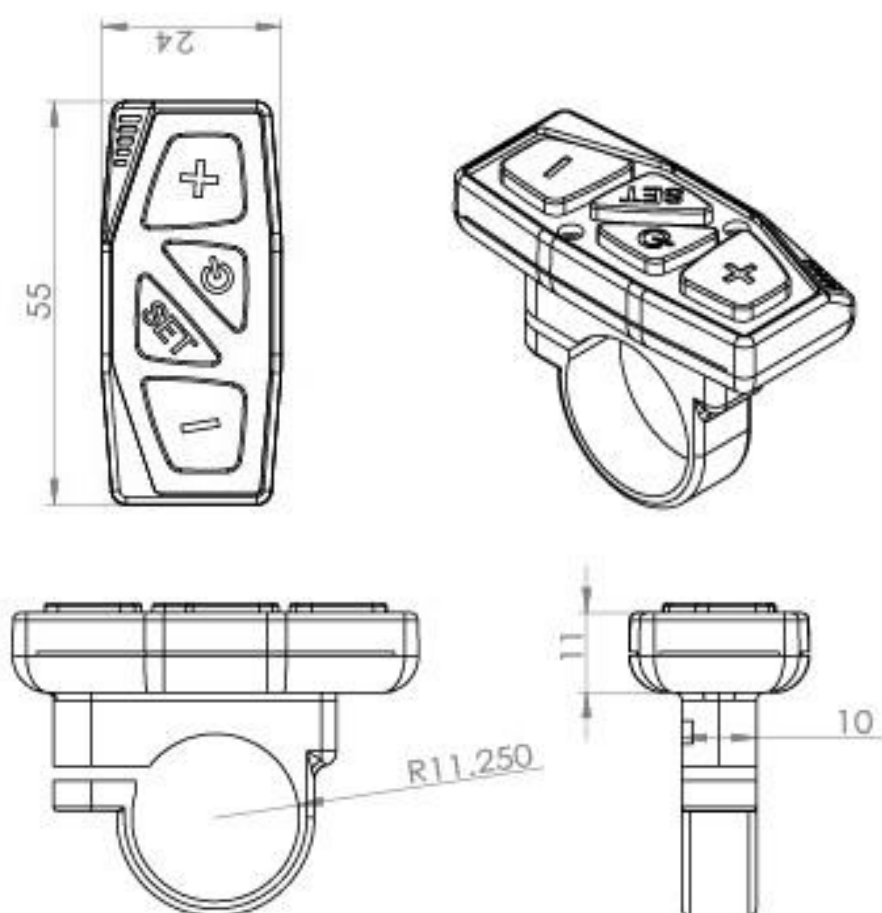
Dimensional drawing (unit: mm)



5. Button definition

The D410 instrument is equipped with four buttons: ON/OFF, SET, UP, and DOWN.

Dimensional drawing (unit: mm)



B. Product manual

1. Specifications

- ① Power supply : DC:36V/48V
- ② Rated work current : <25 mA
- ③ Shutdown leakage current : <1uA
- ④ Communication method : UART
- ⑤ Operating temperature : -20 ℃ ~ 60 ℃
- ⑥ Storage temperature : -30 ℃ ~ 70 ℃
- ⑦ Waterproof level : IP65

2. Functional overview

- ① External four buttons, ergonomically designed buttons
- ② Digital power assisted level with strong visibility
- ③ Units: KMH / MPH switch
- ④ Speed display: Support real-time, average speed, maximum speed display
- ⑤ Turn signal function (*protocol required)
- ⑥ Range display (*supported when battery BMS provides margin information)
- ⑦ Motor drive mode selection (*Supported only when using dual-drive system)
- ⑧ Support dual battery display and display power information in percentage form
(*Supported when using dual battery system)

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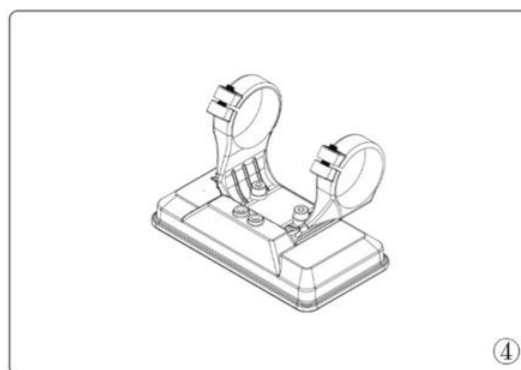
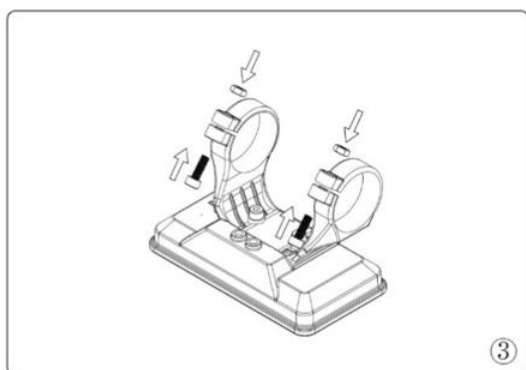
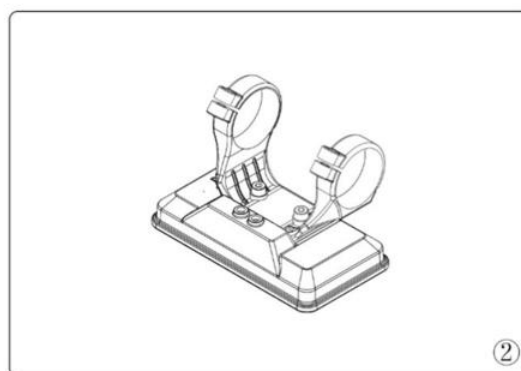
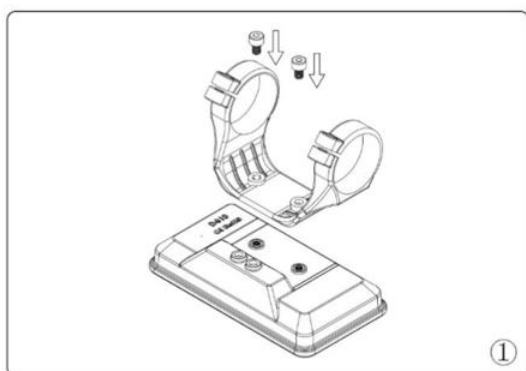
- ⑨ Light control and status indication
- ⑩ Mileage display: single mileage (TRIP), total mileage (ODO)
- ⑪ Walk assistance function
- ⑫ Parameter setting function and advanced setting function
- ⑬ Error code display function
- ⑭ USB display(need USB hardware support)
- ⑮ Bluetooth communication (*customer customization)
- ⑯ NFC unlock (*customer customization)

3. Installation

① During installation, first align the bracket with the screw holes, then secure it by tightening the M4*6 hex socket screws.

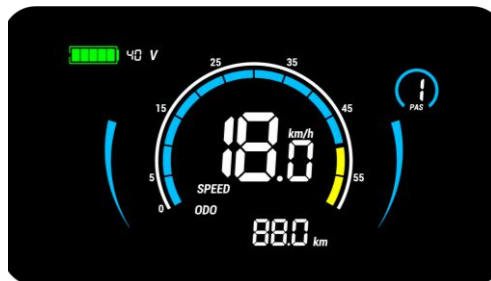
② Slide the bracket onto the frame tube. After confirming its position, secure it by tightening the M4*12 hex socket head cap screw.

*Instrument damage caused by excessive torque is not covered by the warranty.



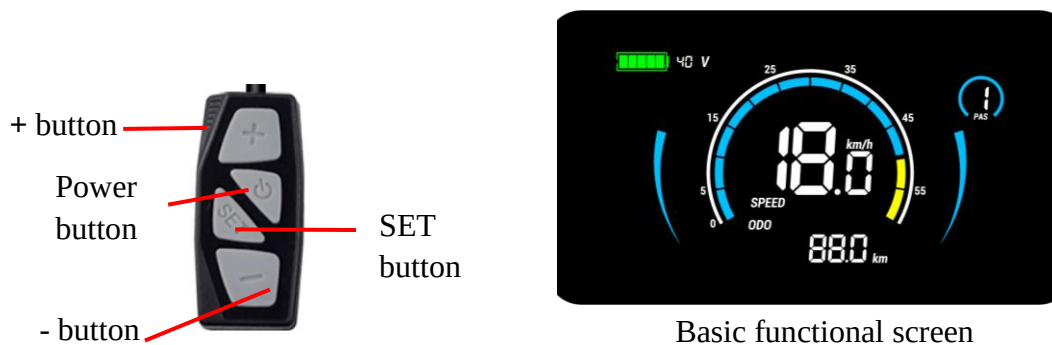
4. Display screen

4.1 Startup



Upon startup, the display shows the full-screen interface, then enters the basic function display state. The instrument displays actual information obtained through communication with the controller. (The displayed data information is executed according to the communication protocol provided by the customer.)

4.2 Basic function and button

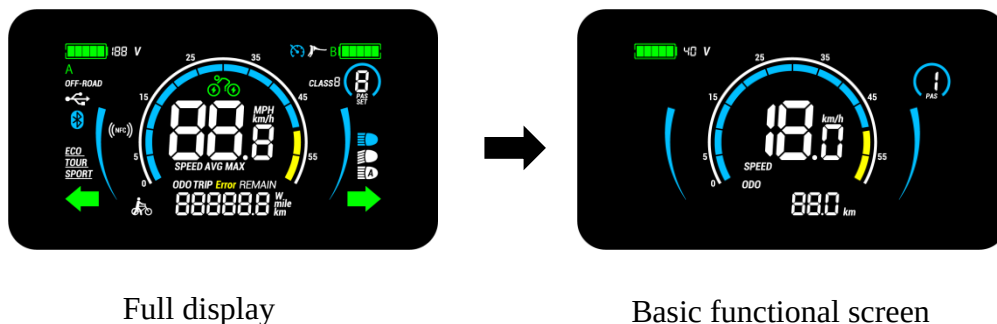


The instrument features external buttons: power button, settings button, plus button, and minus button.

The screen employs a static segment display.

4.3 Function introduction

Startup screen and basic function interface

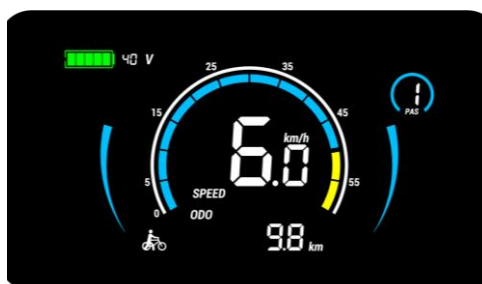


Upon startup, the full display interface appears, after which the instrument enters the basic function display state.

The instrument displays relevant information stored in the controller based on the communication protocol. It shows the battery charge level according to the battery's reported data, while other information is displayed in real time.

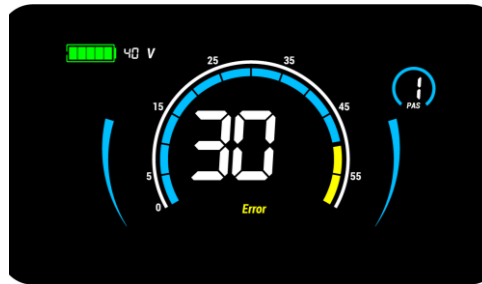
Walk-assistant function

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



Error code display

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



Setting function

Press and hold the “SET” button for 2 seconds in the basic functions interface to enter the general settings interface.

Press and release the “SET” button to cycle through the settings in sequence.



SET1: Trip clear.(Press and hold the SET and + buttons for 10 seconds to clear TRIP)

SET2: set maximum speed

SET3: wheel diameter setting

SET4: Unit setting

SET6: System voltage setting

SET7: Password setting

For the interface operation definition of the above function Settings, please refer to Section 7 Setting function operation instructions.

5. Definition of buttons

5.1 Definition of buttons name



Power button  :Perform power-on/off operations and functional operations.

Set button : Perform setup operations and coordinate with other buttons to execute specific functions..

+ -button: Adjust the assist mode while riding and configure settings using the setup button. Press and hold to perform specific functions..

5.2 Button operation definition

Operation	Describe
Short press	press down the button and then immediately release the button.
Long press	Press down the button and kept 2 second.

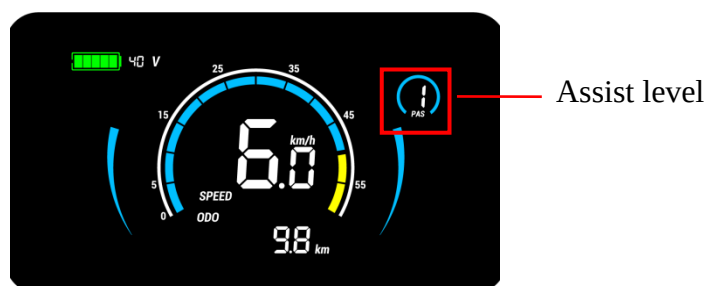
6. Operation

6.1 Turn on/off

Upon startup, the instrument displays the full-screen interface, then proceeds to the basic function interface and begins operation. When powered on, a long press will shut down the instrument.

6.2 Assistant level adjustment (PAS)

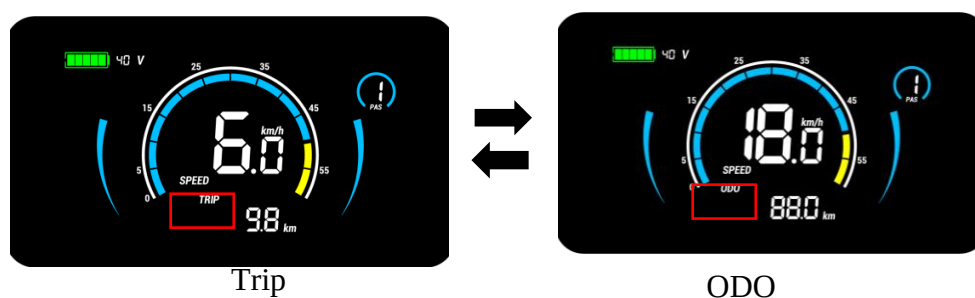
While the device is powered on, briefly press the “+” or “-” button to switch between assist levels. The adjustable range is from Level 0 to Level 5.



Press the “+” button briefly to increase the assist level; press the “-” button briefly to decrease the assist level. The assist levels do not cycle through.

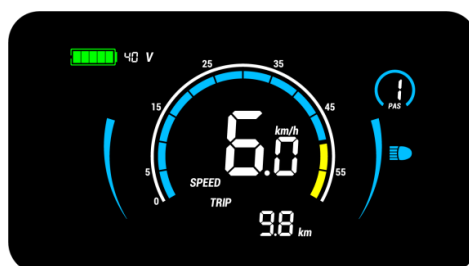
6.3 Display Information Switch

Press and release the “M” button on the basic function interface to toggle between display modes. This cycles through showing the distance of the current ride and the total distance. The interface switching process is illustrated below:



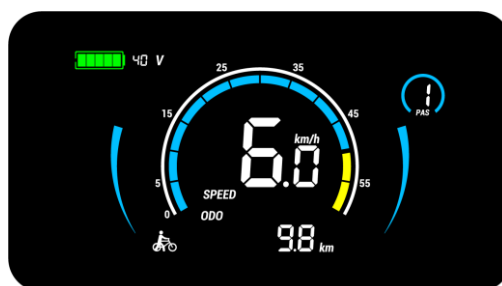
6.4 Light on/off

With the battery installed and the vehicle powered on, briefly press the headlight button on the basic function interface to turn on the headlights. Simultaneously, the headlight icon will appear on the right side of the instrument panel display.  Indicates headlight status; press the headlight button again briefly to turn off the headlights.



6.5 Walk assist mode

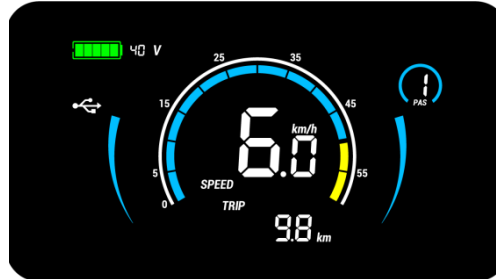
In the basic function interface, press and hold the “-” button to enter the push assist mode. The motor outputs power according to the preset push assist speed value and controls the actual pushing speed; the instrument panel displays the push assist icon.  When the actual pushing speed reaches the threshold, the gear display area shows the push icon. Releasing the “-” key or pressing any other button during pushing disengages the push assist mode, cutting off motor output and restoring the instrument to normal display mode. The push assist display interface is as follows:



6.6 USB function (Option)

On the instrument's main startup screen, plug in the USB-powered device. The instrument will display the USB icon. . If the load is disconnected, the USB

icon will not display. If the USB voltage is normal, it will display normally. If the voltage is less than 2V or greater than 5.8V, the USB function is considered abnormal. The icon will flash at 1Hz, and USB functionality will be disabled simultaneously.



6.7 Battery capacity indicator

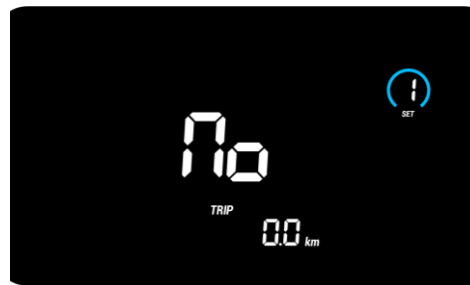
When the battery voltage falls below the under-voltage threshold, the meter displays an under-voltage warning, the battery level indicator shows 0 bars, and the battery casing flashes at 1Hz. The battery charge level is displayed based on the meter's voltage sampling range:

36V battery	48V battery	Battery bar indication	Description
$39 \leq \text{Vol}$	$51 \leq \text{Vol}$		Display full 5
$38 \leq \text{Vol} < 39$	$49 \leq \text{Vol} < 51$		Display 4
$37 \leq \text{Vol} < 38$	$48 \leq \text{Vol} < 49$		Display 3
$36 \leq \text{Vol} < 37$	$47 \leq \text{Vol} < 48$		Display 2
$33 \leq \text{Vol} < 36$	$44 \leq \text{Vol} < 47$		Display 1
$34 > \text{Vol}$	$44 > \text{Vol}$		Display 0, And the battery symbol flickers at 1Hz

7. Basis settings

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 under 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.

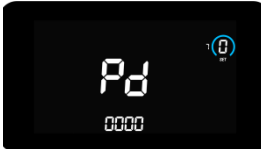
After powering on, press and hold the “SET” button for 2 seconds on the basic function interface to enter the general settings interface, as shown in the figure:



At this point, briefly press the “SET” button to select a setting option. Briefly press the “+” or “-” buttons to modify the parameter value of the selected setting. While in the settings interface, press and hold the “SET” button for 2 seconds to return to the basic function interface.

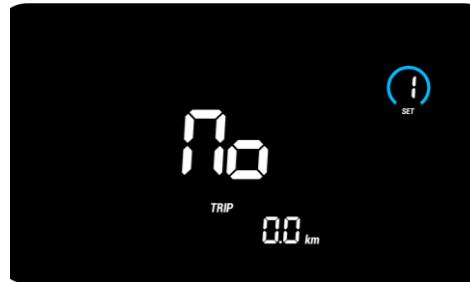
The parameters of each setting item are described as follows:

Set item description	Interface content	Definition of parameter values	Remarks
Trip clear			Clear Trip
Max speed setting		Speed limit display	DeError:25km/h

Wheel diameter		Wheel diameter display	
Unit setting		km/h-kilometer MPH-mile	DeError: km/h
System voltage setting		Parameter: 36V,48V	DeError:48V
Password setting		0000	DeError:0000
Password Enabled		OFF、ON	DeError:OFF

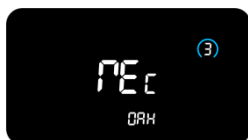
8. Battery Information Display Interface

On the standard settings interface, press and hold the “SET” and “-” buttons for 10 seconds to enter the battery information display screen, as shown in the figure:



Press the “SET” button briefly to view each piece of information. Press and hold the “SET” button for 2 seconds again to return to the basic function interface.

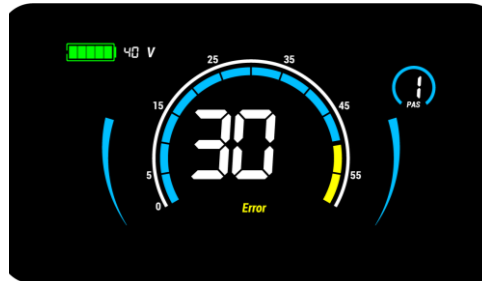
The parameters displayed on the battery information screen are described as follows:

Set item description	Interface content	Remarks
Battery voltage		Unit: V
Total battery capacity		Unit: AH
Remaining battery capacity		Unit: AH
Battery current		Unit: A

Battery Health		Unit: %
Battery SOC		Unit: %
Battery cycle count		Unit: Number of times
Battery Temperature		Unit: C
Battery Cell Voltage Display Interface		

9. Error information

After startup, in the basic function interface, an error code will be displayed when a Error occurs. The error code interface is shown below:



The following is the ANDA Protocol Error Code Reference Table:

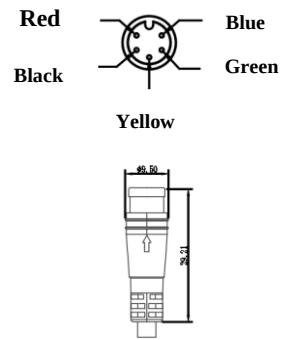
Error code	Definition
01	Controller Phase Over current error
02	Controller Busbar Over current Error
03	Controller HALL Sensor Error
04	Brake Error, Throttle Error
05	Controller Temperature Error
06	Motor Temperature Error
08	Controller Communication Error
09	Controller Over voltage/Under voltage
30	Instrument Communication Error

Error codes 31-50 indicate Errors displayed under the new European standard.	
31	MCU Error
36	Torque voltage Error
37	Brake Error
38	Temperature sensor Error
40	Current feedback circuit Error
41	Drive voltage Error
42	Current abnormality
43	Motor phase loss Error
50	Torque voltage detection circuit abnormality

(*The corresponding error codes of different system protocols are different. If the error codes of instruments are displayed, please promptly communicate with our sales and technical support team for verification and confirmation!)

10. Wire definition

Definition of standard cable



JL-F-Z509AG

Table 1 Standard cable Sequence Table

No.	Color	Function
1	Red	Battery+
2	Blue	Weak lock
3	Black	Battery-
4	Green	Instrument CH
5	Yellow	Instrument CL

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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. Warranty Information& Bail Clause

1.Warranty information

1.1 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.

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

2.Bail clause (The following conditions are not covered by warranty)

2.1 Dismantling and refitting without authorization.

2.2 Error or damage caused by user or third-party misuse or incorrect installation and debugging.

2.3 The outer shell of the instrument is scratched or damaged after leaving the factory.

2.4 The meter cable is scratched or broken.

2.5 Errors or damages caused by natural disasters, such as fire, earthquake, lightning strike, etc.

2.6 The product is beyond the warranty period.