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## RANRAO B02N

# RANRAO B02N Color LCD Display User Manual

For BAFANG E-Bike Motors (BBS01, BBS02, BBSHD)

## 1. INTRODUCTION

Thank you for choosing the RANRAO B02N Color LCD Display for your e-bike. This manual provides essential information for the proper installation, operation, and maintenance of your display. Please read this manual thoroughly before using the product to ensure safe and efficient operation.

The RANRAO B02N display is designed to enhance your electric bicycle riding experience by providing clear, real-time data and advanced features such as navigation support and Bluetooth connectivity. It is specifically compatible with BAFANG e-bike motors using the UART protocol.

## 2. SAFETY INFORMATION

- Always ensure the display is securely mounted and all connections are firm before riding.
- Do not attempt to open or modify the display unit. This may void the warranty and cause damage.
- Keep the display clean and dry. While it is IP67 waterproof, avoid prolonged submersion.
- Do not operate the display in extreme temperatures outside the recommended range.
- Always prioritize road safety. Do not become distracted by the display while riding.
- If you encounter any issues, refer to the troubleshooting section or contact customer support.

## 3. PACKAGE CONTENTS

Please check the package for the following items:

- 1 x RANRAO B02N Color LCD Display
- 1 x Mounting Bracket (pre-attached or separate)
- 1 x Connection Cable (integrated)
- 1 x User Manual (this document)

## 4. PRODUCT OVERVIEW

The RANRAO B02N features a 2.4-inch color IPS display, intuitive control buttons, and a robust design suitable for e-bike use. Below are key components and their functions.



Figure 4.1: Front view of the RANRAO B02N Color LCD Display, showing the screen and control buttons (+, Power, -).



Figure 4.2: Detailed view of the RANRAO B02N display, highlighting the integrated USB-C port for charging or data transfer, and the 5-pin waterproof connector for motor communication.

### Display Elements:

- **Speed Indicator:** Displays current speed (km/h or mph).
- **Battery Level:** Graphical and percentage indication of remaining battery charge.
- **Power Output:** Shows real-time motor power (Watts).
- **Assistance Level:** Indicates the current pedal assist level.
- **Trip Distance (TRIP):** Distance covered during the current ride.
- **Odometer (ODO):** Total distance covered by the e-bike.
- **Voltage:** Current battery voltage.
- **Headlight Indicator:** Shows if headlights are on.
- **Bluetooth Indicator:** Shows Bluetooth connection status.
- **Error Codes:** Displays system error messages.

### Control Buttons:

- **+' Button:** Increase pedal assist level, navigate up in menus.
- **-' Button:** Decrease pedal assist level, navigate down in menus.
- **Power Button:** Power on/off, confirm selections, switch display modes.

## 5. COMPATIBILITY

The RANRAO B02N display is designed for specific BAFANG e-bike motor systems. Please verify your motor's compatibility before installation.

- **Compatible Motors:** BAFANG BBS01, BBS02, and BBSHD series motors.
- **Protocol:** Requires BAFANG motors with UART 5-pin protocol (version 5.0 ~ 5.8).
- **Connector Type:** 5-pin female round waterproof connector (M5 type).

**Important: This display is NOT compatible with CAN protocol 5-pin male triangular connectors or other brand mid-motors/hub motors.**



**Figure 5.1:** Visual guide illustrating compatible (UART 5-pin female round connector, BAFANG BBS series, BAFANG Hub Motor from seller's store) and incompatible (CAN protocol 5-pin male triangular connector, some special BAFANG models, other brand motors) motor types.

## 6. SETUP AND INSTALLATION

Follow these steps to correctly install your RANRAO B02N display on your e-bike.

### 6.1 Mounting the Display

1. Identify a suitable location on your handlebar, typically near the left grip, ensuring it does not obstruct braking or shifting controls.
2. Loosen the screws on the display's mounting bracket.
3. Position the display bracket around the handlebar and tighten the screws securely. Ensure the display is stable and does not rotate freely.
4. Adjust the angle of the display for optimal visibility while riding.



**Figure 6.1:** The RANRAO B02N display securely mounted on an e-bike handlebar, showing its position relative to other controls.

## 6.2 Wiring Connection

The display connects to your BAFANG motor controller via a dedicated cable.

1. Locate the 5-pin UART connector from your BAFANG motor system.
2. Align the 5-pin waterproof connector of the B02N display cable with the corresponding connector from your motor system.
3. Gently push the connectors together until they click into place, ensuring a secure and watertight seal.
4. Route the cable neatly along the handlebar and frame, securing it with cable ties if necessary, to prevent snagging or damage.



**Figure 6.2:** A detailed view of the 5-pin waterproof connector, which ensures a reliable connection between the display and the e-bike motor system.

## 7. OPERATING INSTRUCTIONS

### 7.1 Powering On/Off

- **To Power On:** Press and hold the Power button for approximately 2 seconds. The display will light up and show the main interface.
- **To Power Off:** Press and hold the Power button for approximately 2 seconds until the display turns off.

### 7.2 Basic Display Functions

- **Changing Assist Levels:** Use the '+' and '-' buttons to increase or decrease the motor's pedal assist level.
- **Switching Display Modes:** Short press the Power button to cycle through different display modes (e.g., current speed, average speed, max speed, trip distance, odometer).
- **Headlight Control:** Long press the '+' button to turn the e-bike's headlights on or off (if connected and supported by the motor system).

### 7.3 Navigation and Bluetooth Features

The B02N display supports navigation functions and Bluetooth connectivity, allowing you to connect to your smartphone for enhanced features.

- **Bluetooth Pairing:** Access the display's settings menu to enable Bluetooth and pair with your smartphone. Refer to the display's on-screen instructions for specific pairing steps.
- **Navigation:** Once paired with a compatible smartphone application, the display can show navigation directions and map information directly on its screen, reducing the need to check your phone while riding.

- **Data Tracking:** The display can record and track your riding data, which can then be synchronized with your smartphone application for analysis and sharing.



**Figure 7.1:** The RANRAO B02N display connected via USB-C to a smartphone, demonstrating its capability to display navigation information from a paired mobile application.

## 7.4 Language Settings

The display supports multi-language switching for user convenience.

1. Navigate to the 'Settings' menu on the display.
2. Select 'Language' from the options.
3. Choose your preferred language from the list (e.g., English, German, Dutch, French, Italian, Spanish, Polish).
4. Confirm your selection to apply the new language.



Figure 7.2: The display's settings menu, illustrating the 'Language' option and a list of supported languages for user selection.

## 8. MAINTENANCE

Proper maintenance ensures the longevity and optimal performance of your display.

- **Cleaning:** Use a soft, damp cloth to wipe the display screen and body. Avoid abrasive cleaners or solvents that could damage the surface.
- **Waterproofing:** The display is rated IP67 waterproof, meaning it is protected against dust ingress and immersion in water up to 1 meter for 30 minutes. However, it is recommended to avoid high-pressure washing directly on the display and prolonged submersion. Ensure the USB-C port cover is securely closed when not in use.
- **Storage:** When not in use for extended periods, store the e-bike and display in a cool, dry place away from direct sunlight.

## 9. TROUBLESHOOTING

If you encounter issues with your RANRAO B02N display, refer to the following common problems and

solutions:

Problem	Possible Cause	Solution
Display does not power on.	Low or dead e-bike battery. Loose or disconnected cable. Faulty display or motor controller.	Check e-bike battery charge. Ensure all connections are secure, especially the 5-pin motor cable. If problem persists, contact customer support.
Incorrect speed or distance readings.	Incorrect wheel size setting. Sensor malfunction.	Check and adjust wheel size settings in the display menu (refer to motor controller manual for specific instructions). Inspect speed sensor and magnet for proper alignment and damage.
Display shows an error code.	Motor or controller fault. Sensor issue.	Refer to your BAFANG motor controller manual for specific error code meanings. Perform basic checks (connections, battery). Contact customer support with the error code.
Bluetooth connection issues.	Bluetooth not enabled on display or phone. Interference. Incompatible app.	Ensure Bluetooth is active on both devices. Move closer to the display. Verify you are using a compatible e-bike app. Try restarting both devices.

If the problem persists after attempting these solutions, please contact RANRAO customer support for further assistance.

## 10. SPECIFICATIONS

Feature	Detail
Model	B02N
Display Type	2.4-inch Color IPS LCD
Resolution	320*240 PX
Material	Acrylonitrile Butadiene Styrene (ABS)
Dimensions (L*W*H)	86.8 x 50.5 x 12.5 mm
Weight	Approximately 120 g
Voltage Compatibility	12V / 32V / 48V / 60V
Communication Protocol	UART (5-pin connector)
Waterproof Rating	IP67
Bluetooth	Yes

Feature	Detail
USB Interface	Type-C (Support)

## 11. WARRANTY AND SUPPORT

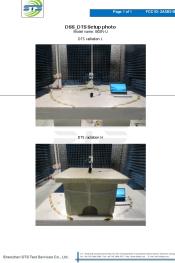
RANRAO products are manufactured to high-quality standards. This product comes with a standard manufacturer's warranty against defects in materials and workmanship. Please retain your proof of purchase for warranty claims.

For technical support, warranty inquiries, or any questions regarding your RANRAO B02N display, please contact your retailer or RANRAO customer service through the official website or contact channels provided at the point of purchase.

Please note that the warranty does not cover damage caused by improper installation, misuse, unauthorized modifications, or normal wear and tear.

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### Related Documents - B02N

	<p><a href="#"><u>HUIYE B02U-N E-bike LCD Display: Features and Specifications</u></a></p> <p>Explore the HUIYE B02U-N, a robust LCD display designed for e-bikes. This document details its key features like IPS screen, IP67 waterproofing, Bluetooth connectivity, UART/CAN protocol, and comprehensive parameter settings.</p>
	<p><a href="#"><u>DTS Setup Photo B02N-US - Chongqing Huiye IoT Technology Co., Ltd.</u></a></p> <p>Official DTS setup photos for the B02N-US model by Chongqing Huiye IoT Technology Co., Ltd., detailing radiation test configurations for FCC compliance.</p>
	<p><a href="#"><u>B02N-U DTS Radiation Setup and Photos</u></a></p> <p>Photos and setup details for the B02N-U model, focusing on DTS radiation testing. Includes FCC ID and manufacturer information.</p>

