yuandai Intelligent Brushless Controller

yuandai Intelligent Brushless Controller User Manual

Model: Intelligent Brushless Controller (48V-84V 2000W)

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of the yuandai Intelligent Brushless Controller. Designed for electric bicycles and scooters, this controller supports a wide voltage range and offers robust performance for brushless motors. Please read this manual thoroughly before installation and use to ensure proper function and safety.

2. Product Overview

The yuandai Intelligent Brushless Controller is a dual-mode controller compatible with both Hall sensor and sensorless brushless motors. It features an aluminum alloy casing for durability and efficient heat dissipation.

Key Features:

- **Voltage Compatibility:** 48V, 60V, 72V, 84V
- **Rated Power:** 2000W
- **Maximum Current:** 45A
- **Dual-Mode Operation:** Works with or without Hall sensors.
- **Material:** Durable Aluminum Alloy casing.
- **Integrated Functions:** Includes features for speed control, braking, cruise control, reverse, and anti-theft.

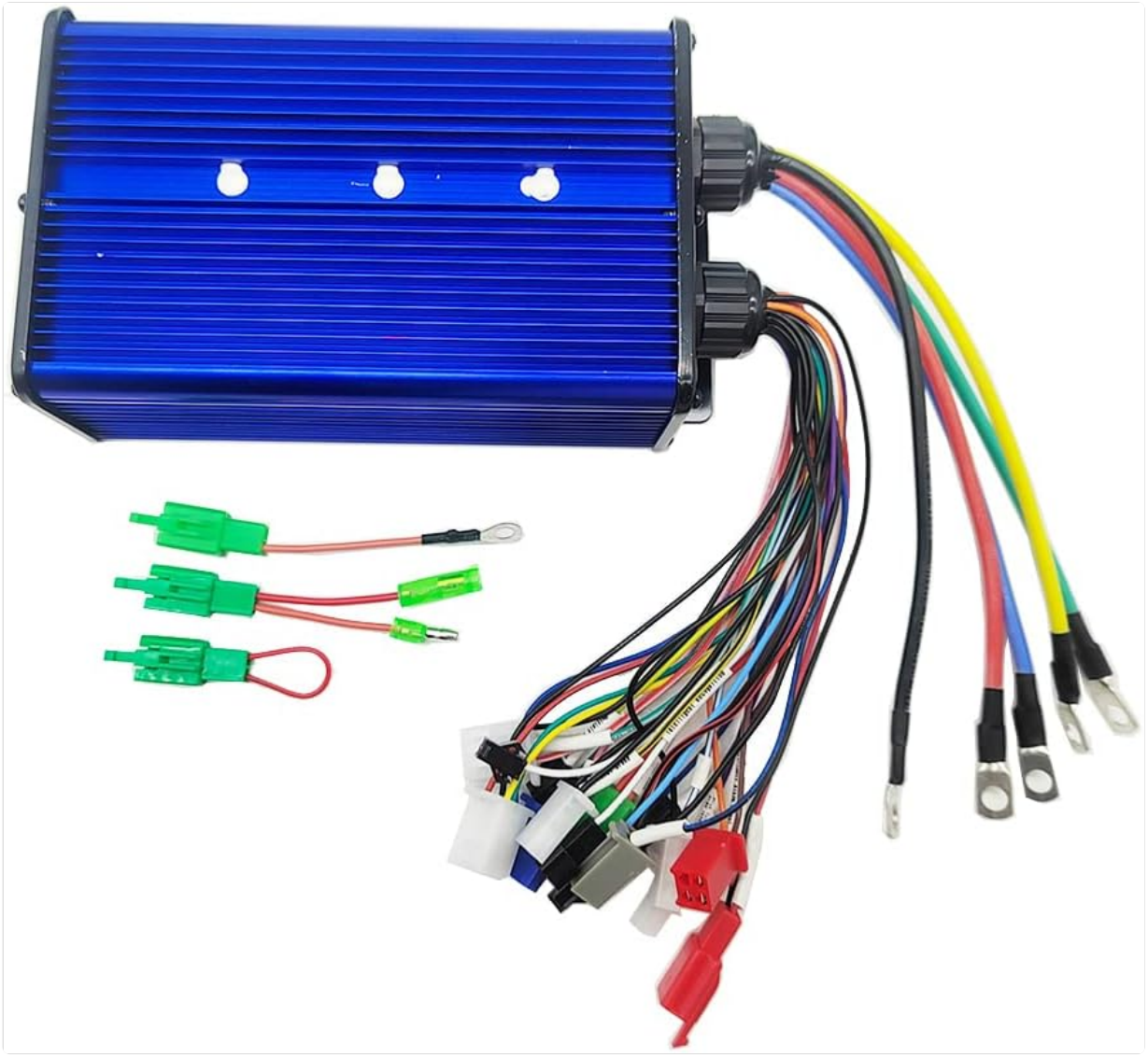

Figure 1: The yuandai Intelligent Brushless Controller, showcasing its blue aluminum casing and multiple wiring harnesses for various connections.

3. Specifications

Feature	Specification
Rated Voltage	48V-84V
Low Voltage Protection	41V
Rated Power	2000W
Limit Current	45A
Number of MOSFETs	18
Dimensions (L x W x H)	20 x 10 x 7 cm (7.87 x 3.94 x 2.76 inches)
Weight	1 kg (2.2 lbs)
Frame Material	Aluminum Alloy

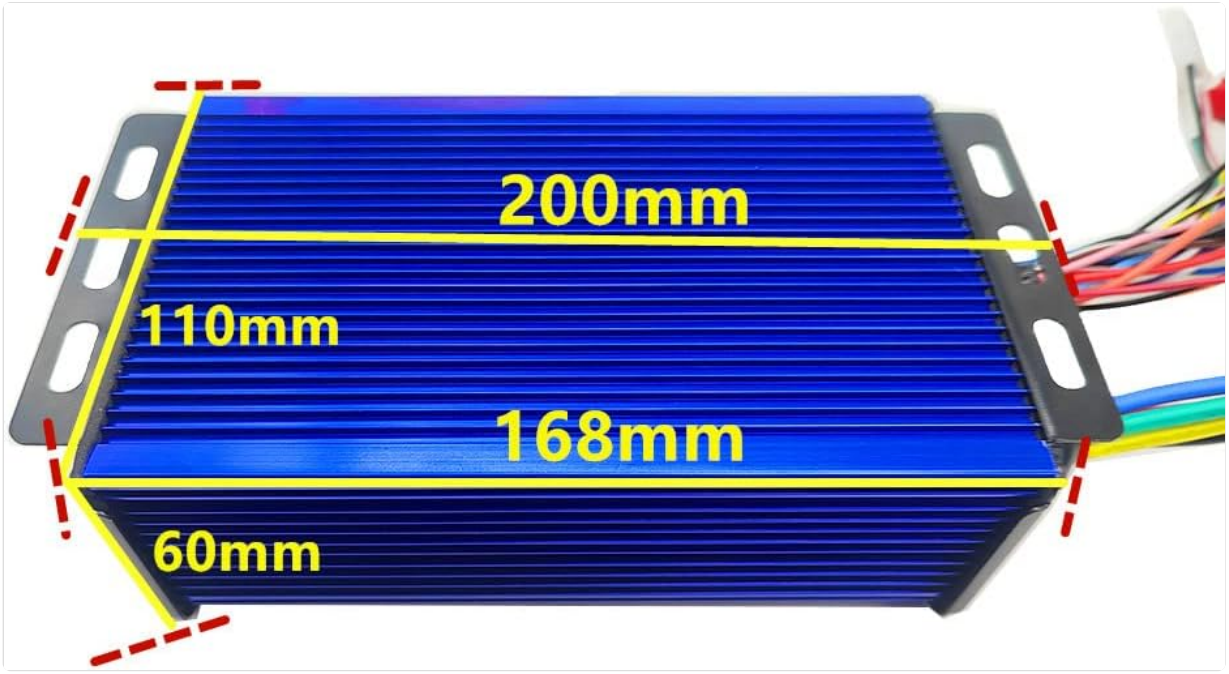

Figure 2: Physical dimensions of the controller, indicating its length, width, and height.

Figure 3: Product label detailing nominal voltage range (36V-84V), maximum current (45A-60A), and other technical specifications.

4. Installation and Wiring

Careful wiring is essential for the correct and safe operation of the controller. Refer to the wiring diagram and follow the steps below.

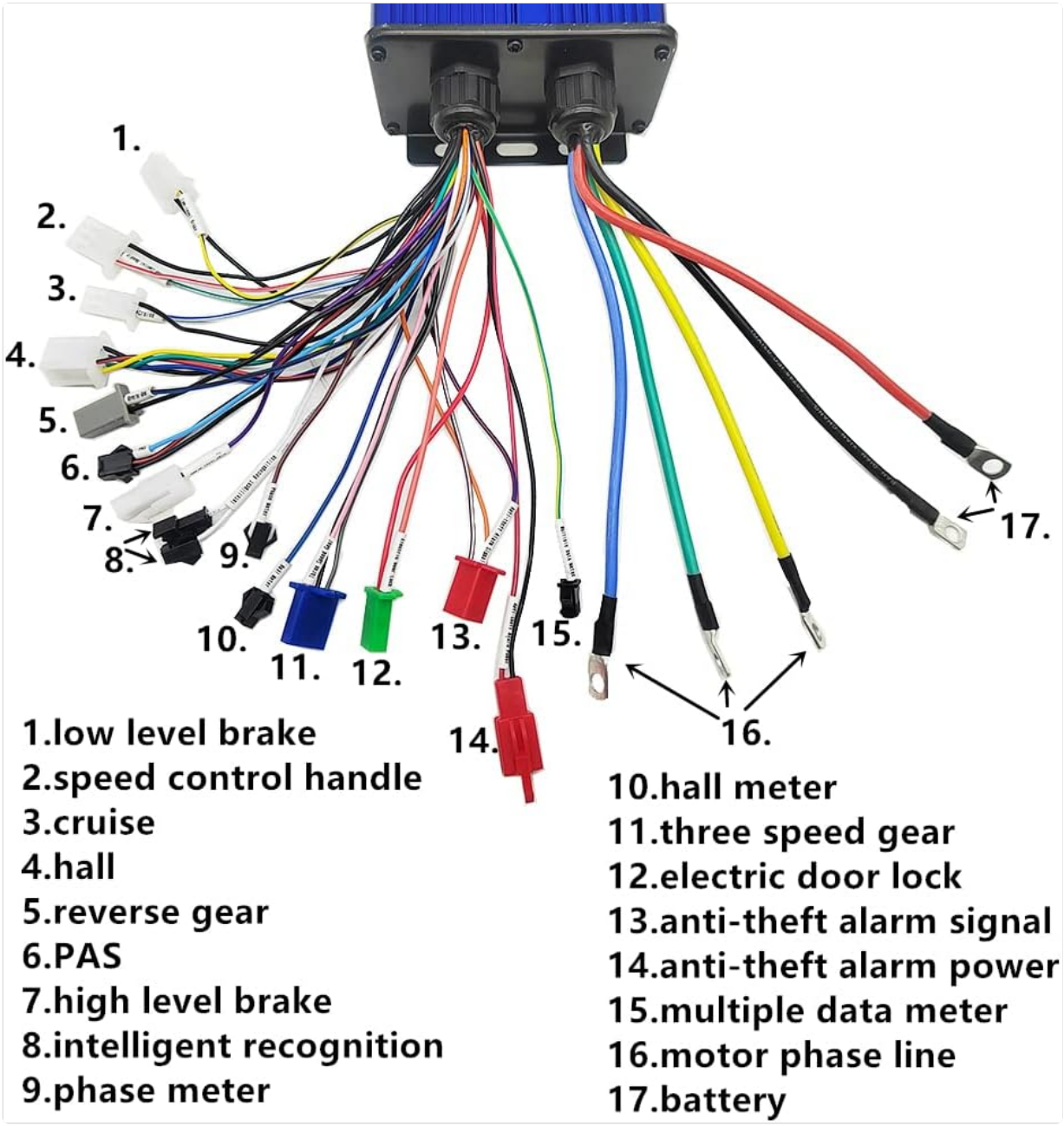

Figure 4: Comprehensive wiring diagram illustrating each connector and its corresponding function for the controller.

Wiring Steps:

1. **Motor Line Connection:** Connect the motor lines, ensuring that colors match (e.g., blue to blue, green to green, yellow to yellow).
2. **Battery Line Connection:** Connect the battery lines. The red wire is for positive (+), and the black wire is for negative (-).
3. **Throttle and Electric Lock Connection:** Connect the controller's throttle line. If your throttle does not have an electric lock, connect the controller's electric lock wire directly to the battery's positive (+) terminal.
4. **Hall Line Connection:** Connect the Hall sensor lines. If your motor does not have Hall sensors, this connection is not required.
5. **Self-Learning Line (Intelligent Recognition):**
    - Connect the two self-learning lines (often labeled "intelligent recognition" or "self-study").
    - The wheel will either rotate forward or in reverse.
    - If the wheel rotates forward, separate the self-learning lines.

    - If the wheel rotates in reverse, separate the self-learning lines, then dock them again. The wheel should now rotate forward. Once it rotates forward, separate the self-learning lines. This completes the motor phase learning process.

6. **Additional Functions:** Connect other functions as needed, referring to the list below and the wiring diagram (Figure 4).

Controller Function Connections:

- **Jog 3-speed** / **4-speed:** (Generally not used)
- **3-speed:** For speed selection.
- **Throttle:** Connects to the speed control handle.
- **Low Brake:** For low-level braking signal.
- **Cruise:** For cruise control function.
- **Reverse:** For reverse gear function.
- **Instrument Line:** Connects to display driving speed, power, and mileage.
- **Self-Learning Line:** Used for motor phase recognition (as described in step 5 above).
- **High Brake:** If your brake lever has two wires, connect the black wire to the high brake input. The red wire connects to the controller's 12V converter. The high brake may not always be used depending on your setup.
- **Hall:** For Hall sensor input.
- **First-line General LCD Instrument Line:** For general LCD display connection.
- **Anti-theft Signal:** For anti-theft alarm signal input.
- **Anti-theft Power Supply:** For anti-theft system power.
- **Electric Door Lock:** Connects to the throttle's electric lock. If the throttle lacks an electric lock, connect this to the battery's positive (+) terminal.
- **Power Cord:** Main power input.
- **Motor Line:** Connects to the motor phases.

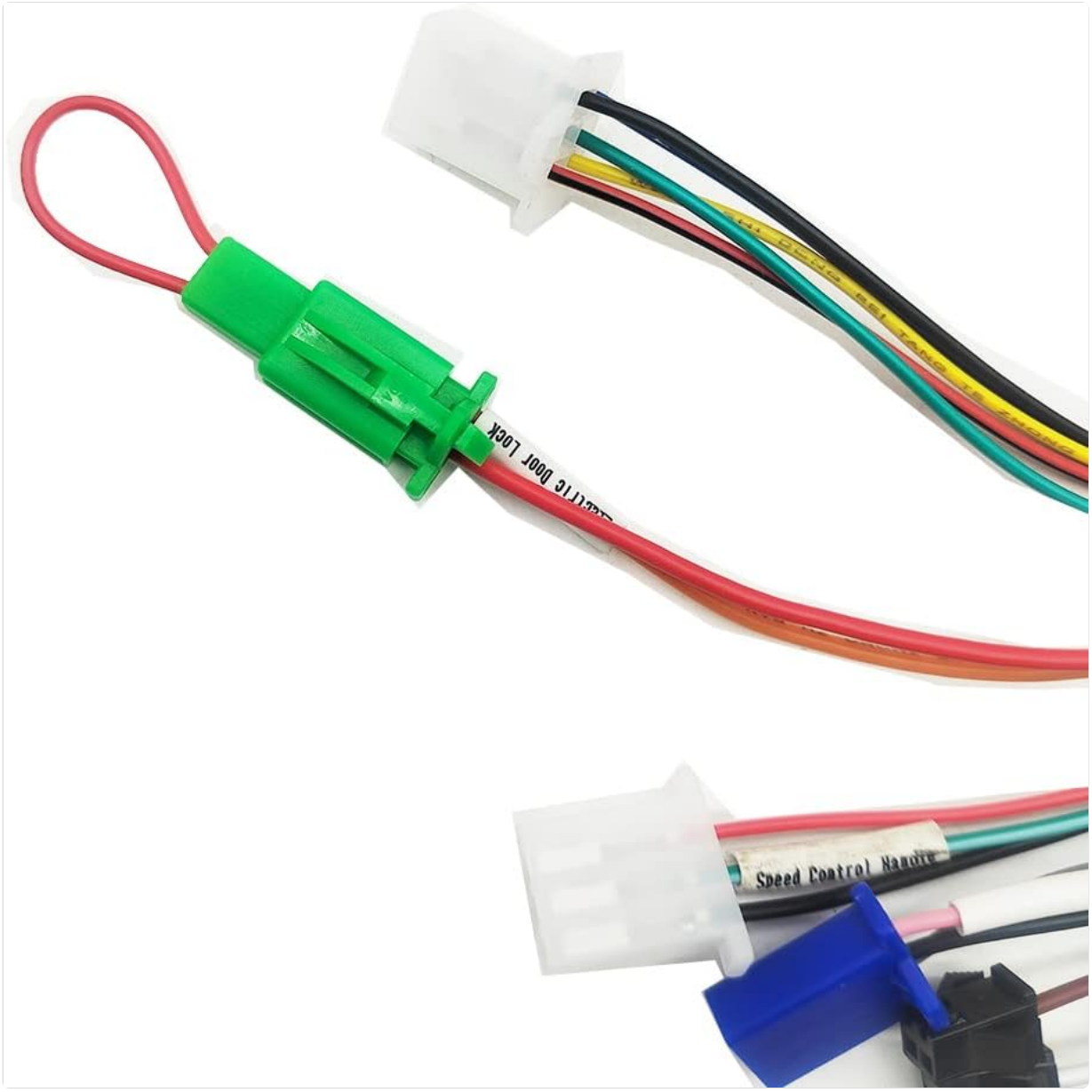

Figure 5: Close-up view of some key connectors, such as the electric door lock and speed control handle, for precise identification during wiring.

5. Operating Instructions

Once the controller is correctly installed and wired, follow these general operating guidelines:

- **Power On:** Ensure all connections are secure before turning on the main power supply to your electric bicycle or scooter.
- **Throttle Control:** Use the speed control handle (throttle) to regulate motor speed.
- **Speed Modes:** If connected, utilize the 3-speed function to select desired power output levels.
- **Braking:** Apply brakes as usual. The controller will cut power to the motor when a brake signal is detected (low or high brake).
- **Cruise Control:** Activate the cruise function for maintaining a constant speed, if connected.
- **Reverse:** Engage the reverse gear function when needed, if connected.
- **Display Information:** If an instrument line is connected, monitor your speed, power, and mileage on the display.

6. Troubleshooting

If you encounter issues with your yuandai Intelligent Brushless Controller, consider the following:

- **No Power:**
  - Check battery connections (red to +, black to -).
  - Verify the electric door lock connection.
  - Ensure the battery is charged.
- **Motor Not Running or Stuttering:**
  - Re-check motor phase line connections (color to color).
  - Perform the self-learning procedure again (Section 4, Step 5) to ensure correct motor phase recognition.
  - Verify Hall sensor connections if your motor uses them. If the motor does not have Hall sensors, ensure the Hall lines are disconnected.
- **Motor Runs in Reverse:**
  - Repeat the self-learning procedure (Section 4, Step 5) to correct motor direction.
- **Controller Overheating:**
  - Ensure the controller is mounted in a location with adequate airflow for cooling.
  - Verify that the motor is not drawing excessive current due to a fault or being undersized for the application.
- **Voltage Compatibility:**
  - This controller is rated for 48V-84V. Operating consistently at the absolute upper limit (e.g., 84V) may reduce its lifespan or cause failure under certain conditions. Ensure your battery voltage is within the recommended operating range and does not exceed the maximum voltage under full charge.

If problems persist, consult a qualified technician or contact yuandai customer support.

7. Maintenance

The yuandai Intelligent Brushless Controller is designed for durability and requires minimal maintenance. Follow these guidelines to ensure longevity:

- **Keep Clean:** Periodically clean the exterior of the controller to prevent dust and debris buildup, which can hinder heat dissipation.
- **Inspect Connections:** Regularly check all wiring connections to ensure they are secure and free from corrosion. Loose connections can lead to intermittent operation or damage.
- **Avoid Water Exposure:** While the aluminum casing offers some protection, avoid direct exposure to heavy rain or submersion in water to prevent internal damage.
- **Proper Mounting:** Ensure the controller is securely mounted to prevent vibrations and physical damage during operation.

8. Warranty and Support

The product comes with a limited warranty. For specific warranty terms and conditions, please refer to the

documentation provided at the time of purchase or contact yuandai customer service. For technical support or inquiries, please reach out to your retailer or the manufacturer directly.

Manufacturer: yuandai

Model Name: yuandai Intelligent Brushless Controller

ASIN: B09FHGP85F