Voktta VKXN0029

Voktta PWM DC Motor Speed Controller (Model VKXN0029) - Instruction Manual

Introduction

This manual provides comprehensive instructions for the Voktta PWM DC Motor Speed Controller, Model VKXN0029. This device is designed to regulate the speed of DC motors by adjusting the Pulse Width Modulation (PWM) signal. It is suitable for DC motors operating within a voltage range of 9V to 60V and a maximum power output of 500W. Key features include soft start protection, a digital encoder knob for precise control, and adjustable duty cycle and frequency settings.
Please read this manual thoroughly before installation and operation to ensure safe and efficient use of the product.

Safety Information

- Ensure the power supply voltage is within the specified range (DC 9V-60V) to prevent damage to the controller and motor.
- Always disconnect power before making any wiring connections or disconnections.
- Observe correct polarity when connecting the power supply and motor. Reverse polarity can cause irreversible damage.
- Do not exceed the maximum rated current of 20A or maximum power of 500W.
- Keep the device away from moisture, dust, and extreme temperatures.
- This product is intended for industrial and hobbyist use. Professional installation is recommended if you are unfamiliar with electrical wiring.

Product Overview

The Voktta PWM DC Motor Speed Controller features a compact design with a digital display and an encoder knob for user interaction. The unit's dimensions are 79mm x 43mm x 26mm.

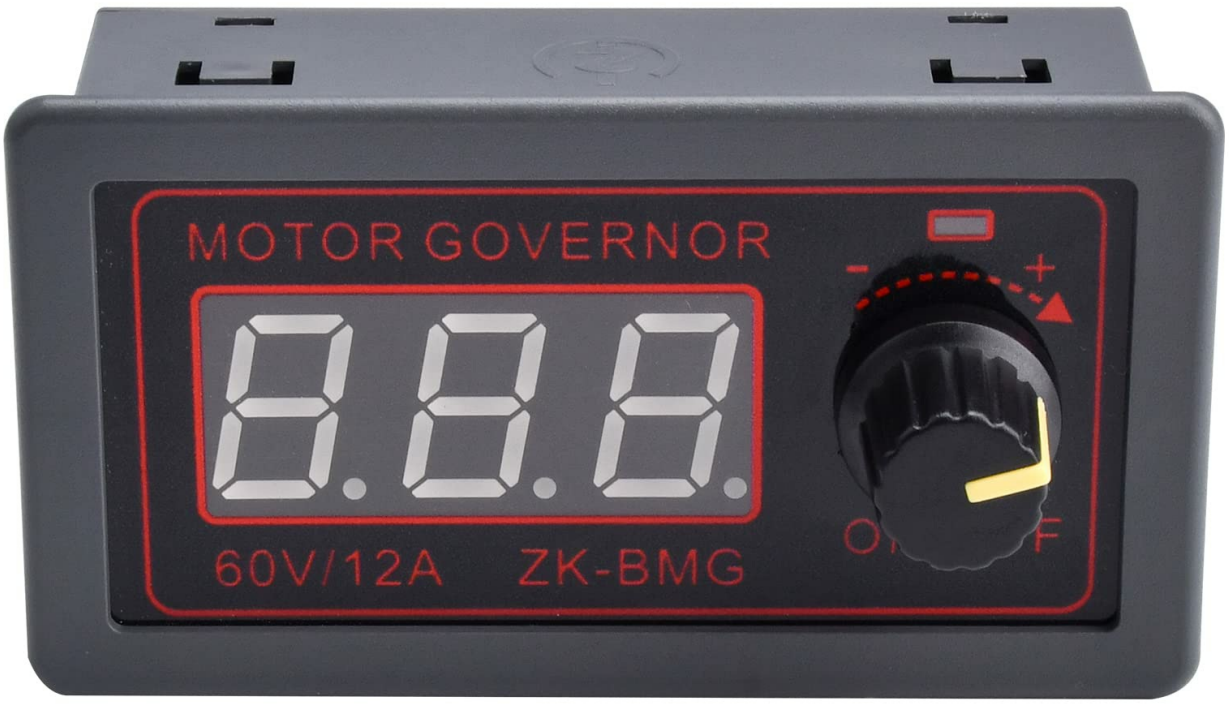

Figure 1: Front view of the Voktta PWM DC Motor Speed Controller.

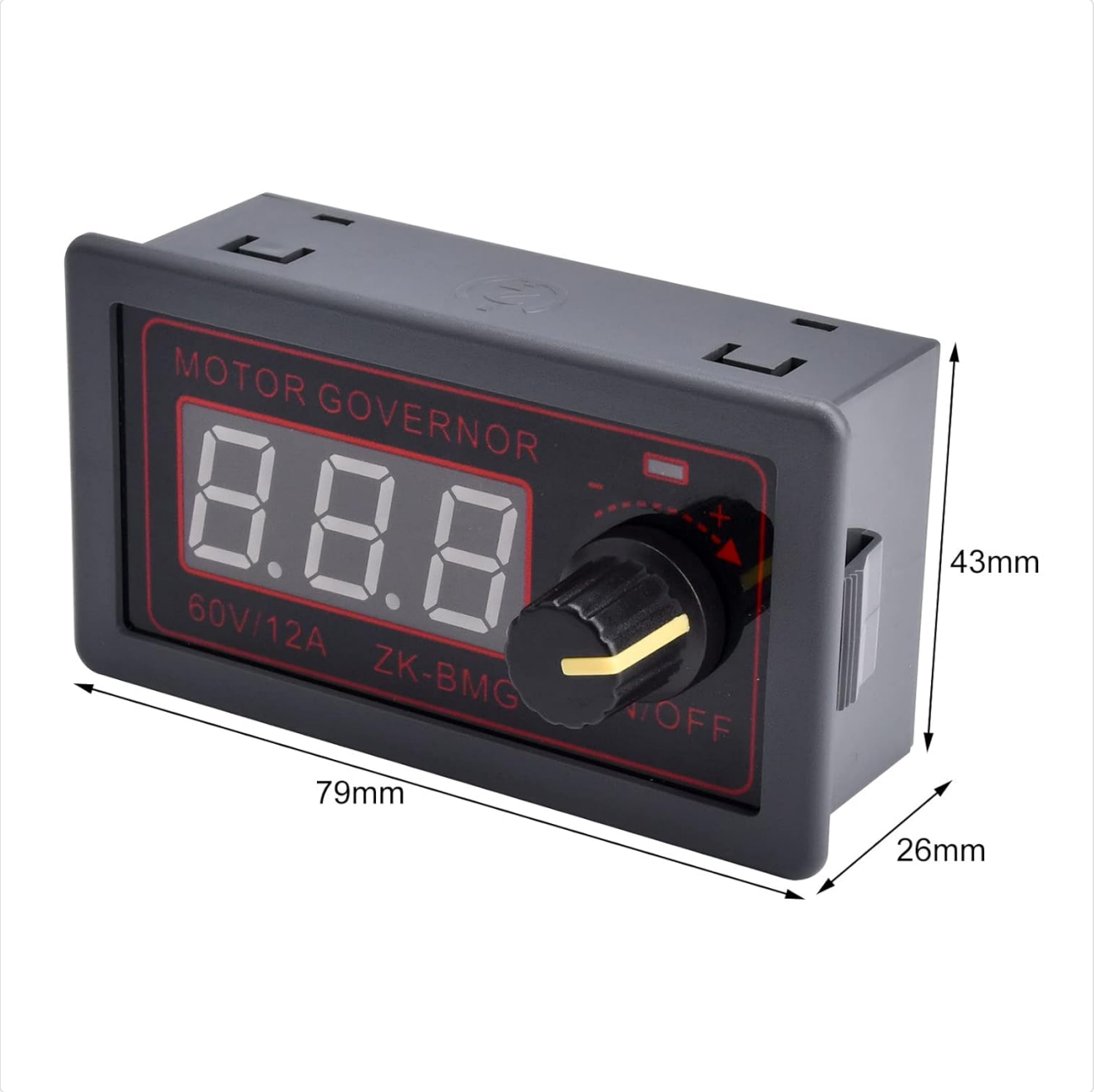

Figure 2: Dimensions of the Voktta PWM DC Motor Speed Controller (79mm x 43mm x 26mm).

Key Components:

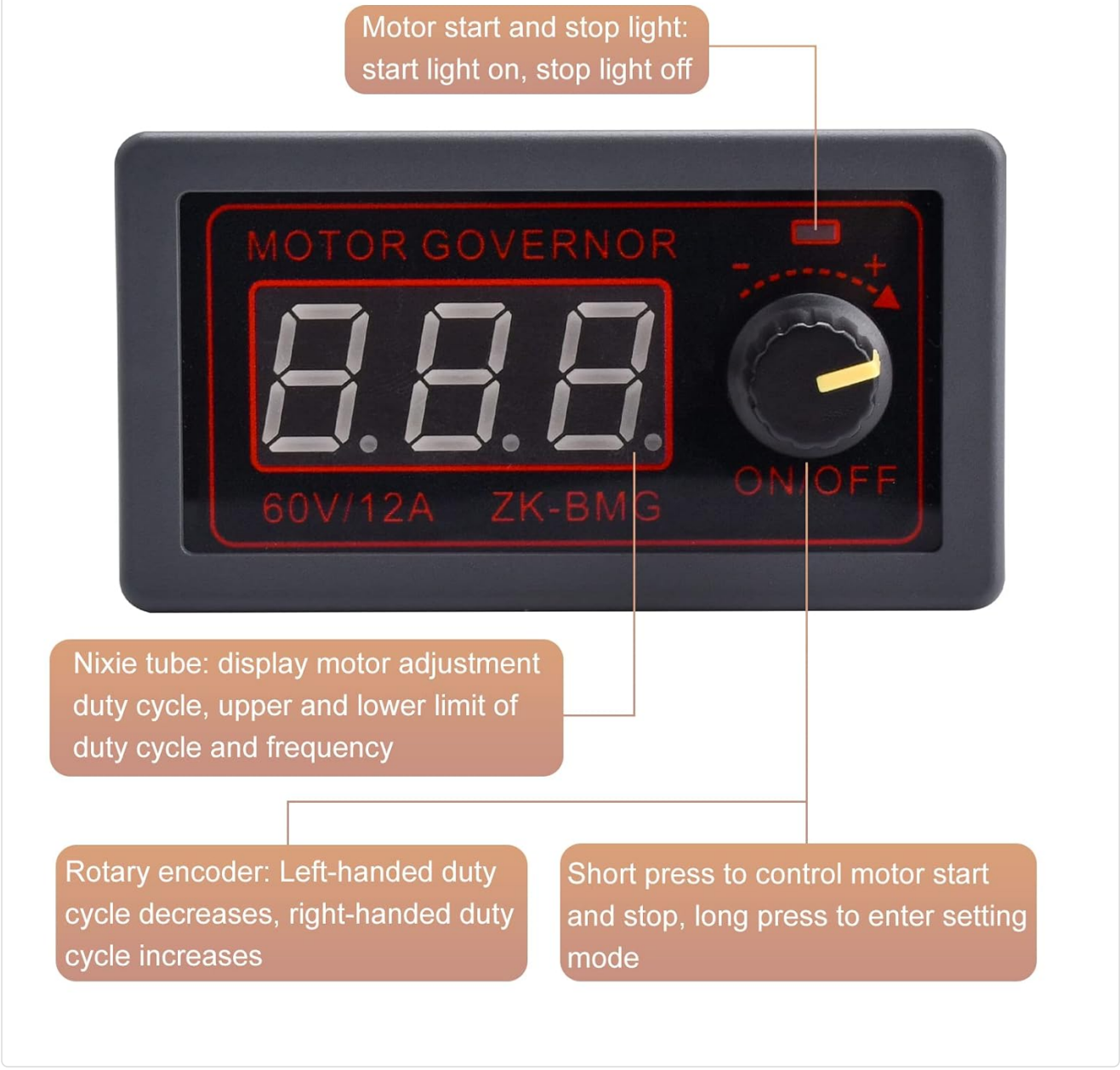

Figure 3: Front panel with labeled controls and display.

- **Digital Display (Nixie tube):** Shows the motor adjustment duty cycle, and allows setting upper/lower limits and frequency.
- **Rotary Encoder Knob:** Used to adjust motor speed. Turning left decreases the duty cycle, turning right increases it.
- **Encoder Button:** A short press controls motor start and stop. A long press enters the setting mode for parameters.
- **Motor Start/Stop Light:** Indicates motor status (light on for start, off for stop).

Setup & Installation

Proper wiring is crucial for the safe and correct operation of the speed controller. Refer to the wiring diagram below.

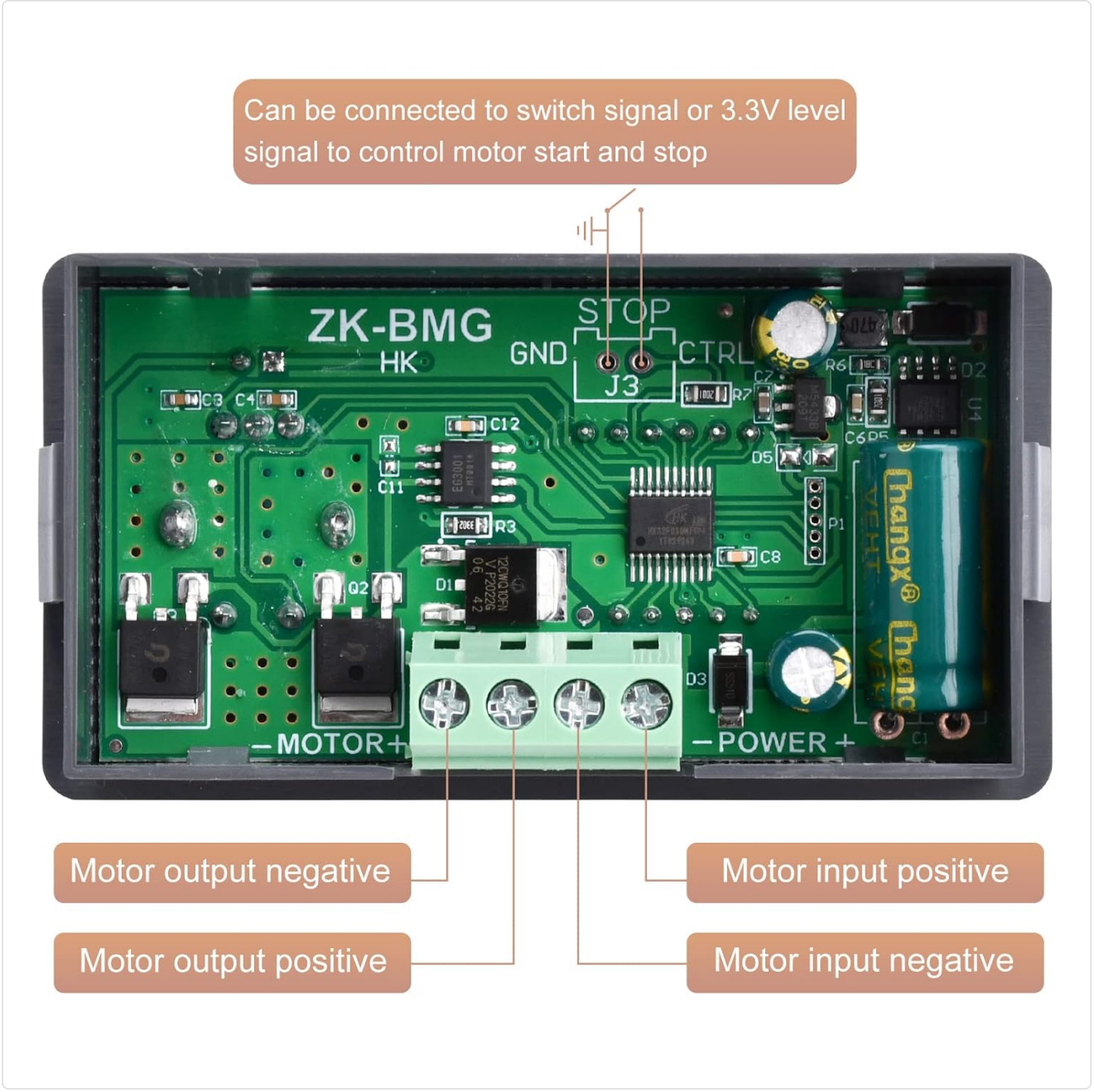

Figure 4: Wiring diagram for the Voktta PWM DC Motor Speed Controller.

Wiring Instructions:

1. **Power Input:** Connect your DC power supply (9V-60V) to the "POWER+" and "POWER-" terminals. Ensure correct polarity.
2. **Motor Output:** Connect your DC motor to the "MOTOR+" and "MOTOR-" terminals. The motor's rotation direction can be reversed by swapping these connections.
3. **External Control (Optional):** The unit can be connected to a switch signal or a 3.3V level signal via the J3 terminals (STOP, GND, CTRL) to control motor start and stop.
4. **Mounting:** The controller is designed for panel mounting. Ensure adequate ventilation around the unit.

Warning: Double-check all connections before applying power to prevent damage.

Operating Instructions

1. Power On/Off

- After wiring, apply power to the controller. The digital display will light up.
- To start the motor, short press the rotary encoder knob. The motor start light will illuminate.
- To stop the motor, short press the rotary encoder knob again. The motor start light will turn off.

2. Adjusting Motor Speed

- With the motor running, turn the rotary encoder knob clockwise to increase the motor speed (increase duty cycle).
- Turn the rotary encoder knob counter-clockwise to decrease the motor speed (decrease duty cycle).
- The digital display shows the current duty cycle percentage.

3. Parameter Settings (Advanced)

To enter the parameter setting mode, long press the rotary encoder knob until the display changes.

1. **Setting Duty Cycle Limits:**
    - In setting mode, rotate the knob to select the parameter for minimum duty cycle (e.g., 'L00' for 0%). Press the knob to confirm.
    - Rotate the knob to adjust the value. Press again to save and move to the next parameter.
    - Repeat for maximum duty cycle (e.g., 'H100' for 100%).
2. **Setting PWM Output Frequency:**
    - In setting mode, rotate the knob to select the frequency parameter (e.g., 'F20' for 20 KHz). Press the knob to confirm.
    - Rotate the knob to adjust the frequency (1 KHz to 99 KHz). The default frequency is 20 KHz. Press again to save.
3. **Exiting Setting Mode:** Long press the rotary encoder knob again to exit the setting mode and return to normal operation.

The soft start protection feature automatically reduces the initial current surge, protecting the motor and extending its lifespan.

Specifications

Parameter	Value
Operating Voltage	DC 9V ~ 60V
Rated Current	12A
Maximum Current	20A
Maximum Power	500W
Operating Frequency	1 KHz ~ 99 KHz (Adjustable, Default 20 KHz)
Frequency Accuracy	1%
Duty Cycle Range	0% ~ 100% (1% step)
Product Dimensions	79 mm x 43 mm x 26 mm
Weight	60g
Model Number	VKXN0029

Maintenance

- Keep the controller clean and free from dust and debris. Use a soft, dry cloth for cleaning.
- Regularly check all wiring connections to ensure they are secure and free from corrosion.
- Avoid exposing the device to direct sunlight or high humidity for extended periods.
- Do not attempt to open the casing or modify the internal circuitry, as this will void any warranty and may cause damage or injury.

Troubleshooting

Problem	Possible Cause	Solution
Controller does not power on.	No power supply, incorrect wiring, or reverse polarity.	Check power supply connection and voltage. Verify wiring polarity.
Motor does not run.	Motor not connected, motor stop engaged, or duty cycle set to 0%.	Ensure motor is connected. Short press the knob to start the motor. Increase duty cycle.
Motor speed cannot be adjusted.	Knob malfunction or in setting mode.	Ensure not in setting mode (long press to exit). Check knob for physical damage.
Motor runs erratically.	Unstable power supply or loose connections.	Verify power supply stability. Check all wiring connections for tightness.

Warranty and Support

Voktta products are manufactured to high-quality standards. For any questions, technical support, or warranty inquiries, please contact your retailer or the manufacturer directly. Please refer to your purchase documentation for specific warranty terms and contact information.