GODIYMODULES ZK-SMC02

GODIYMODULES ZK-SMC02 DC 5-30V 4A Stepper Motor Driver and Controller User Manual

Model: ZK-SMC02

1. Introduction

This manual provides detailed instructions for the installation, operation, and maintenance of the GODIYMODULES ZK-SMC02 DC 5-30V 4A Stepper Motor Driver and Controller. This integrated unit combines a stepper motor controller and driver, offering features such as adjustable delay, speed regulation, angle adjustment, and distance control. It supports both automatic and manual operation, includes a physical button interface, an LCD display, and TTL serial communication capabilities.

Figure 1.1: GODIYMODULES ZK-SMC02 Stepper Motor Driver and Controller.

2. Safety Information

Please read and understand all safety instructions before operating this device. Failure to follow these instructions may result in electric shock, fire, or serious injury.

- Ensure the power supply voltage is within the specified range of DC 5-30V.
- Do not exceed the maximum current rating of 4A.
- Disconnect power before making any wiring connections or disconnections.
- Avoid exposing the device to moisture, extreme temperatures, or corrosive environments.
- Do not attempt to disassemble or modify the device. Refer all servicing to qualified personnel.
- Ensure proper ventilation to prevent overheating.

3. Package Contents

Verify that all items are present in the package:

- 1 x ZK-SMC02 Stepper Motor Driver and Controller

4. Specifications

Feature	Specification
Model	ZK-SMC02
Input Voltage	DC 5-30V
Max Current	4A
Display Type	LCD
Communication	TTL Serial Communication
Dimensions (Package)	5.51 x 3.74 x 2.28 inches
Item Weight	3.2 ounces
Material	Plastic

5. Product Overview

The ZK-SMC02 features an intuitive front panel with an LCD display, control buttons, and an encoder knob for easy operation and parameter adjustment.

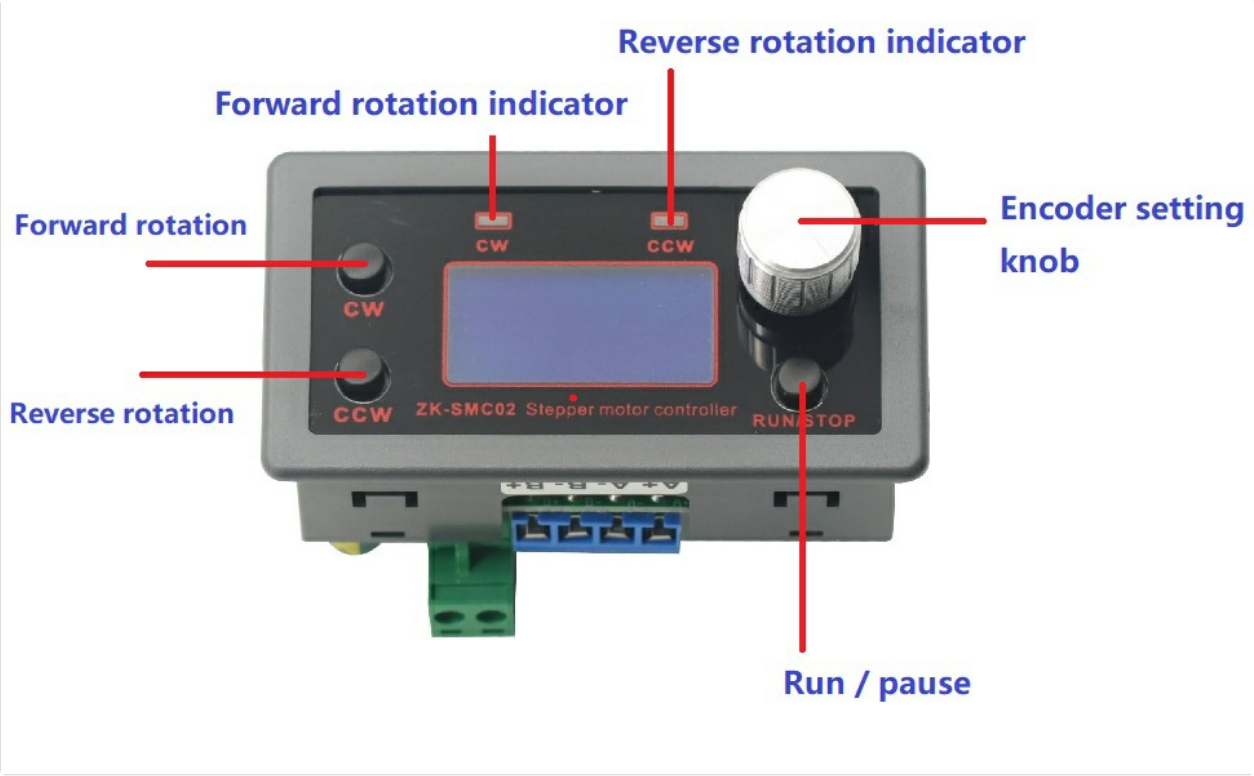


Figure 5.1: Front Panel Controls and Indicators.

- **CW Button:** Initiates forward (clockwise) rotation.
- **CCW Button:** Initiates reverse (counter-clockwise) rotation.
- **RUN/STOP Button:** Starts or stops the motor. Also used to exit menu settings.
- **Encoder Setting Knob:** Used to adjust speed, parameters, and navigate menus. Pressing the knob enters menu settings.
- **CW Indicator:** Lights up when the motor is rotating clockwise.
- **CCW Indicator:** Lights up when the motor is rotating counter-clockwise.

- **LCD Display:** Shows current speed, parameters, and menu options.

6. Setup and Wiring

Proper wiring is crucial for the correct operation of the ZK-SMC02. Refer to the diagram below for connection details.

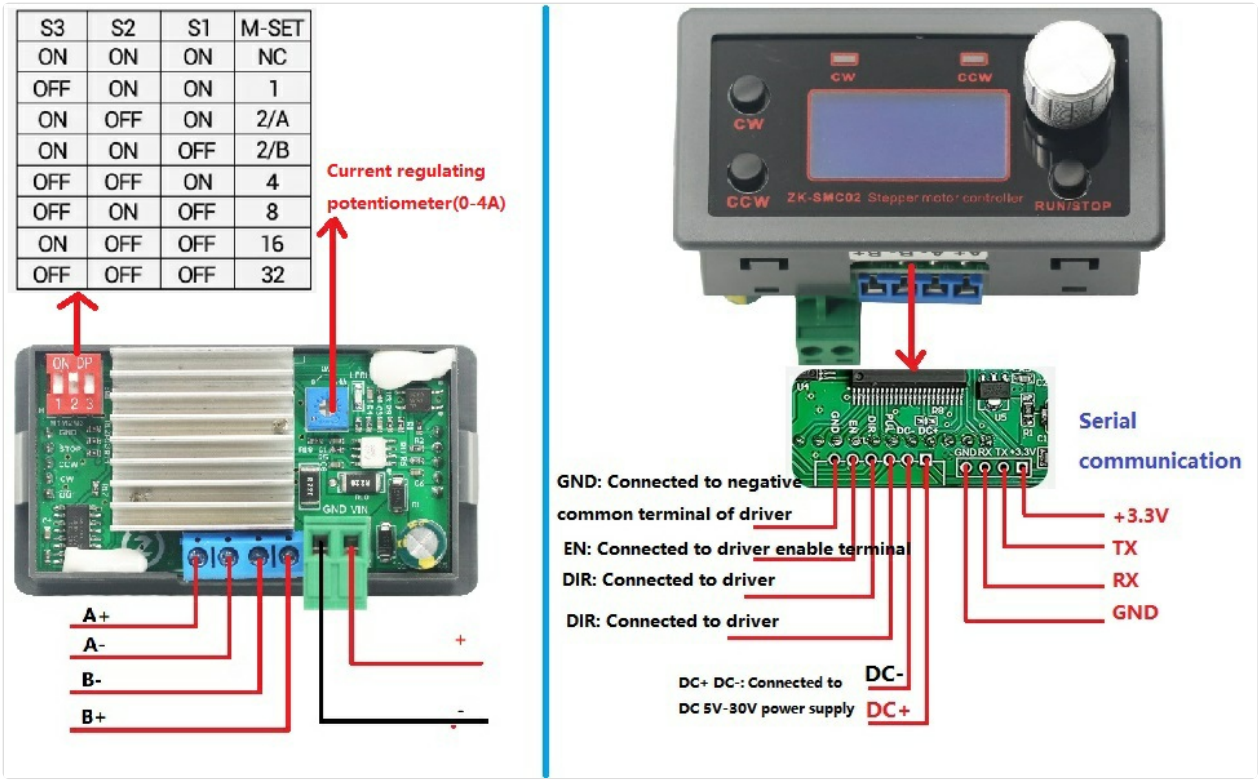


Figure 6.1: Wiring Diagram for ZK-SMC02.

6.1 Power Supply Connection

- Connect the DC 5-30V power supply to the**DC+** and **DC-** terminals. Ensure correct polarity.

6.2 Stepper Motor Connection

Connect your stepper motor to the A+, A-, B+, B- terminals. Refer to your stepper motor's datasheet for correct phase connections.

6.3 Serial Communication (Optional)

For TTL serial communication, connect as follows:

- **GND:** Connected to negative common terminal of driver.
- **EN:** Connected to driver enable terminal.
- **DIR:** Connected to driver direction input.
- **TX:** Transmit data.
- **RX:** Receive data.
- **+3.3V:** Power output for external modules (if applicable).

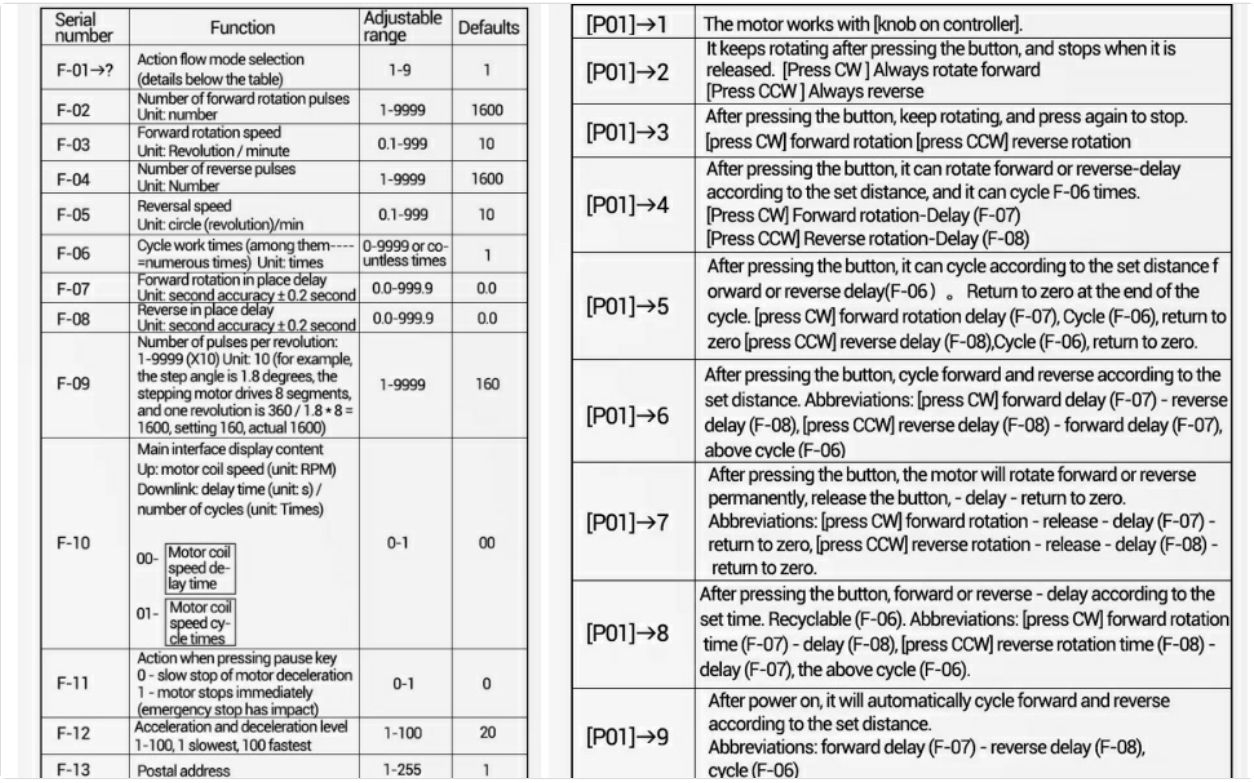
7. Operating Instructions

7.1 Basic Operation

- **Power On:** Connect the power supply. The LCD will display the current operating mode or speed.
- **Adjust Speed:** In the operation interface, rotate the encoder knob to adjust the motor speed.
- **Forward Rotation (CW):** Press the **CW** button. The CW indicator will light up.
- **Reverse Rotation (CCW):** Press the **CCW** button. The CCW indicator will light up.
- **Start/Stop:** Press the **RUN/STOP** button to start or pause the motor.

7.2 Menu Settings

To access and adjust advanced parameters, follow these steps:



Serial number	Function	Adjustable range	Defaults
F-01→?	Action flow mode selection (details below the table)	1-9	1
F-02	Number of forward rotation pulses Unit: number	1-9999	1600
F-03	Forward rotation speed Unit: Revolution / minute	0.1-999	10
F-04	Number of reverse pulses Unit: Number	1-9999	1600
F-05	Reversal speed Unit: circle (revolution)/min	0.1-999	10
F-06	Cycle work times (among them----=numerous times) Unit: times	0-9999 or co-untless times	1
F-07	Forward rotation in place delay Unit: second accuracy ± 0.2 second	0.0-999.9	0.0
F-08	Reverse in place delay Unit: second accuracy ± 0.2 second	0.0-999.9	0.0
F-09	Number of pulses per revolution: 1-9999 (X10) Unit: 10 (for example, the step angle is 1.8 degrees, the stepping motor drives 8 segments, and one revolution is 360 / 1.8 * 8 = 1600, setting 160, actual 1600)	1-9999	160
F-10	Main interface display content Up: motor coil speed (unit: RPM) Downlink: delay time (unit: s) / number of cycles (unit: Times) 00- Motor coil speed de-lay time 01- Motor coil speed cy-cle times	0-1	00
F-11	Action when pressing pause key 0 - slow stop of motor deceleration 1 - motor stops immediately (emergency stop has impact)	0-1	0
F-12	Acceleration and deceleration level 1-100, 1 slowest, 100 fastest	1-100	20
F-13	Postal address	1-255	1

[P01]→1	The motor works with [knob on controller].
[P01]→2	It keeps rotating after pressing the button, and stops when it is released. [Press CW] Always rotate forward [Press CCW] Always reverse
[P01]→3	After pressing the button, keep rotating, and press again to stop. [press CW] forward rotation [press CCW] reverse rotation
[P01]→4	After pressing the button, it can rotate forward or reverse-delay according to the set distance, and it can cycle F-06 times. [Press CW] Forward rotation-Delay (F-07) [Press CCW] Reverse rotation-Delay (F-08)
[P01]→5	After pressing the button, it can cycle according to the set distance f orward or reverse delay(F-06) 。 Return to zero at the end of the cycle. [press CW] forward rotation delay (F-07), Cycle (F-06), return to zero [press CCW] reverse delay (F-08),Cycle (F-06), return to zero.
[P01]→6	After pressing the button, cycle forward and reverse according to the set distance. Abbreviations: [press CW] forward delay (F-07) - reverse delay (F-08), [press CCW] reverse delay (F-08) - forward delay (F-07), above cycle (F-06)
[P01]→7	After pressing the button, the motor will rotate forward or reverse permanently, release the button, - delay - return to zero. Abbreviations: [press CW] forward rotation - release - delay (F-07) - return to zero, [press CCW] reverse rotation - release - delay (F-08) - return to zero.
[P01]→8	After pressing the button, forward or reverse - delay according to the set time. Recyclable (F-06). Abbreviations: [press CW] forward rotation time (F-07) - delay (F-08), [press CCW] reverse rotation time (F-08) - delay (F-07), the above cycle (F-06).
[P01]→9	After power on, it will automatically cycle forward and reverse according to the set distance. Abbreviations: forward delay (F-07) - reverse delay (F-08), cycle (F-06)

Figure 7.1: Menu Navigation and Parameter Adjustment.

1. **Enter Menu:** Press and hold the encoder knob to enter the menu settings interface. The display will show 'F-01'.
2. **Navigate Parameters:** In the menu settings interface, rotate the encoder knob to change the parameter codes from F-01 to F-13.
3. **Select Parameter for Adjustment:** Short press the encoder knob to enter the F-XX corresponding menu parameter setting state. The parameter value will flash.
4. **Adjust Parameter Value:** Rotate the encoder knob to adjust the flashing parameter value.
5. **Save and Exit:** Long press the encoder knob to save the parameters and exit to the running interface.
6. **Exit Parameter Settings:** Short press the **RUN/STOP** button to exit parameter settings and return to the main menu number adjustment interface.

7.3 Parameter Descriptions

The following table details the available parameters and their functions. Please note that the image for this table was not provided with a distinct URL in the JSON, so the content is transcribed for clarity.

Serial Number	Function	Adjustable Range	Defaults	Action Mode Selection (P01)

Serial Number	Function	Adjustable Range	Defaults	Action Mode Selection (P01)
F-01	Action mode selection	1-9	1	• **[P01]->1:** Motor works with knob on controller. It keeps rotating after pressing the button, and stops when it is released. [Press CW] Always rotate forward. [Press CCW] Always reverse. • **[P01]->2:** After pressing the button, keep rotating, and press again to stop. [Press CW] Forward rotation. [Press CCW] Reverse rotation. • **[P01]->3:** After pressing the button, it can rotate forward or reverse-delay according to the set distance, and it can cycle F-06 times. [Press CW] Forward rotation-Delay (F-07). [Press CCW] Reverse rotation-Delay (F-08). • **[P01]->4:** After pressing the button, it can cycle according to the set distance f onward or reverse-delay (F-06). Return to zero at the end of the cycle. [Press CW] Forward rotation delay (F-07), Cycle (F-06), return to zero. [Press CCW] Reverse rotation-Delay (F-08), Cycle (F-06), return to zero. • **[P01]->5:** After pressing the button, cycle forward and reverse according to the set distance. Abbreviations: [Press CW] forward delay (F-07) - reverse delay (F-08), [press CCW] reverse delay (F-08) - forward delay (F-07), above cycle (F-06). • **[P01]->6:** After pressing the button, the motor will rotate forward or reverse permanently, release the button - delay - return to zero. Abbreviations: [press CW] forward rotation - release - delay (F-07) - return to zero. [Press CCW] reverse rotation - release - delay (F-08) - return to zero. • **[P01]->7:** After pressing the button, forward or reverse - delay according to the set time. Recyclable (F-06). Abbreviations: [press CW] forward rotation time (F-07) - delay (F-08), [press CCW] reverse rotation time (F-08) - delay (F-07), the above cycle (F-06). • **[P01]->8:** After power on, it will automatically cycle forward and reverse according to the set distance. Abbreviations: forward delay (F-07) - reverse delay (F-08), cycle (F-06). • **[P01]->9:** After power on, it will automatically cycle forward and reverse according to the set distance. Abbreviations: forward delay (F-07) - reverse delay (F-08), cycle (F-06).

Serial Number	Function	Adjustable Range	Defaults	Action Mode Selection (P01)
F-02	Number of forward rotation pulses	1-9999	1600	Unit: Number
F-03	Forward rotation speed	1-999	1	Unit: Revolution / minute
F-04	Number of reverse pulses	1-9999	1600	Unit: Number
F-05	Reversal speed	0.1-999	10	Unit: Circle revolution/min
F-06	Cycle work times (among them - numerous times)	0-9999 or countless times	1	Unit: Times
F-07	Forward rotation in place delay	0.0-999.9	0.0	Unit: Second (accuracy ±0.2 second)
F-08	Reverse in place delay	0.0-999.9	0.0	Unit: Second (accuracy ±0.2 second)
F-09	Number of pulses per revolution	1-9999 (X10)	160	For example, the step angle is 1.8 degrees, the stepping motor drives 8 segments, and one revolution is 360 / 1.8 * 8 = 1600, setting 160, actual 1600.
F-10	Main interface display content	00-01	00	• **00:** Motor coil speed (unit: RPM) • **01:** Downlink delay time (unit: s) / number of cycles (unit: Times)
F-11	Action when pressing pause key	0-1	0	• **0:** Slow stop of motor deceleration • **1:** Motor stops immediately (emergency stop has impact)
F-12	Acceleration and deceleration level	1-100	20	1 slowest, 100 fastest

Serial Number	Function	Adjustable Range	Defaults	Action Mode Selection (P01)
F-13	Postal address	1-255	1	

8. Maintenance

To ensure the longevity and optimal performance of your ZK-SMC02 controller, follow these maintenance guidelines:

- Keep the device clean and free from dust and debris. Use a soft, dry cloth for cleaning.
- Avoid exposing the device to direct sunlight or high humidity.
- Regularly check all wiring connections to ensure they are secure.
- Do not use harsh chemicals or abrasive cleaners on the device.

9. Troubleshooting

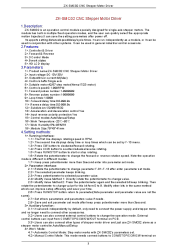
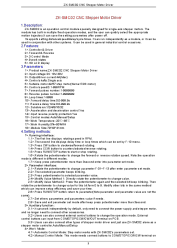
If you encounter issues with your ZK-SMC02, refer to the following common problems and solutions:

- **Motor not moving:**
  - Check power supply connections and ensure voltage is within 5-30V.
  - Verify stepper motor wiring (A+, A-, B+, B-).
  - Ensure the motor is not in a paused state (press RUN/STOP).
  - Check parameter F-01 for correct action mode selection.
- **Incorrect speed or direction:**
  - Adjust speed using the encoder knob.
  - Verify CW/CCW button presses.
  - Check parameters F-03 (forward speed) and F-05 (reversal speed).
  - Ensure F-09 (pulses per revolution) is set correctly for your motor.
- **Display not working:**
  - Check power supply.
  - Contact customer support if the issue persists.

10. Warranty and Support

For warranty information or technical support, please refer to the product's purchase platform or contact GODIYMODULES customer service directly. Keep your purchase receipt for warranty claims.

Related Documents - ZK-SMC02

	SMC02 Stepper Motor Controller + Driver Integrated Manual Comprehensive manual for the ZK-SMC02 Stepper Motor Controller + Driver, detailing product introduction, parameters, functions, wiring, operation, menu settings, and communication protocol.
	ZK-SMC02 CNC Stepper Motor Driver: Features, Parameters, and Operation Guide Detailed technical specification and operational guide for the ZK-SMC02 CNC Stepper Motor Driver. Learn about its features, parameters, setting methods, work modes, applications, and wiring.
	SMC02 Stepper Motor Controller + Driver Integrated Manual Comprehensive manual for the ZK-SMC02 Stepper Motor Controller + Driver, detailing product introduction, parameters, functions, wiring, operation, menu settings, and communication protocol.
	ZK-SMC02 CNC Stepper Motor Driver: Features, Parameters, and Operation Guide Detailed technical specification and operational guide for the ZK-SMC02 CNC Stepper Motor Driver. Learn about its features, parameters, setting methods, work modes, applications, and wiring.
	Manuál ZK-SMC02: Ovladač a Driver pro Krokové Motory Laskakit Podrobný manuál pro ovladač a driver krokových motorů ZK-SMC02 od Laskakit. Obsahuje popis produktu, parametry, funkce, zapojení, uživatelské rozhraní a komunikační protokol.
	CNC Stepper Motor Driver - Operation, Parameters, and Control Detailed guide for the CNC Stepper Motor Driver, covering its description, parameters, various setting methods, work modes, and MODBUS control. Includes parameter tables and application examples.