ance

IG60S系列

一体式伺服电机硬件手册

Catalogue

1、 Product Presentation

Thank you for choosing the IG60S series integrated motor. This innovative solution seamlessly combines drive and stepper motor technologies, integrating brushless motor and servo drive systems. It optimizes installation space while simplifying wiring, effectively reducing design and production costs. As the ideal choice for stepper system applications, the IG60S series delivers outstanding control-drive integration.

1.1 Product Features

Operating voltage: DC48V

※Output current: 0.2A to 10A

※Control mode: RS485/pulse + direction

※Encoder mode: 14-bit absolute value (16384 lines)

Note: Output torque: 0.2NM~1.27NM

※Communication method: RS485

Features: 3-channel digital input (high-level signal supports 3.3-24V DC), 1 independent digital output with collector open-collector (OC) output, 300kHz maximum frequency, 30V maximum withstand voltage, and 50mA maximum input/output current.

1.2 Safety Guidelines

Note: The transportation, installation, use, or maintenance of this product must be performed by qualified personnel who are familiar with the aforementioned operations.

To minimize potential security risks, you must follow all local and national security regulations when using this device. Different regions have different security rules, so ensure your device installation and usage comply with local regulations.

System errors may also cause equipment damage or personal injury. We do not guarantee that this product is suitable for your specific application, nor can we be held responsible for the reliability of the system design.

*Before installation and use, please read all relevant documentation. Improper use may cause equipment damage or personal injury. Strictly follow the requirements before installation.

*Ensure all system devices are properly grounded. Ungrounded systems cannot guarantee electrical safety.

Some internal components of this device may be damaged by external static electricity. Before handling the product, the operator should ensure they are free of static electricity and avoid contact with static-prone objects (such as chemical fibers or plastic films). Place the device on a conductive surface.

If your equipment is placed in a control cabinet, close the cabinet door or cover during operation to prevent equipment damage or personal injury.

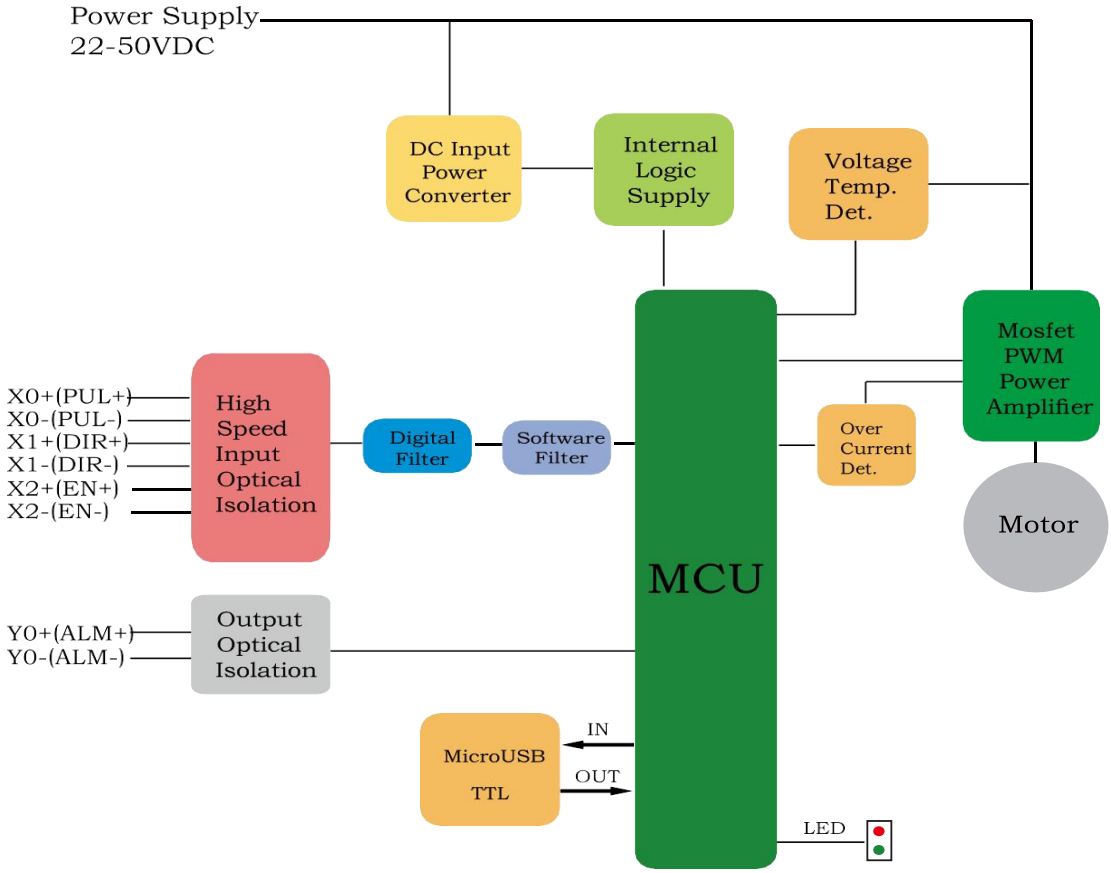
※During operation, depending on the protection level of surrounding equipment, the product may experience complete aging or significant surface heating. Even when the motor is not running, the power and control cables may still carry high voltage.

Hot plugging cables is strictly prohibited during system operation, as the resulting electric arc may cause hazards to both operators and equipment.

After power-off, wait at least 10 seconds before touching or removing the wiring. Capacitive components may still store dangerous electrical energy after power-off and need time to discharge. For safety, use a multimeter to check before touching the product.

Please strictly follow the safety guidelines in this manual, including the clear warning symbols indicating potential hazards. Before installation, operation, or maintenance, you must read and fully understand these instructions. This section aims to provide users with essential safety information and minimize risks of harm and personal injury. Misjudging the importance of safety precautions may result in severe losses or equipment malfunction.

2、 Product Structure Block Diagram

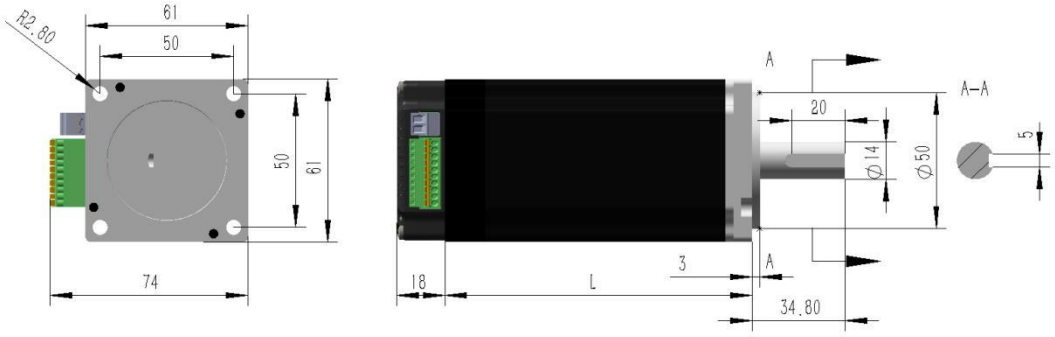


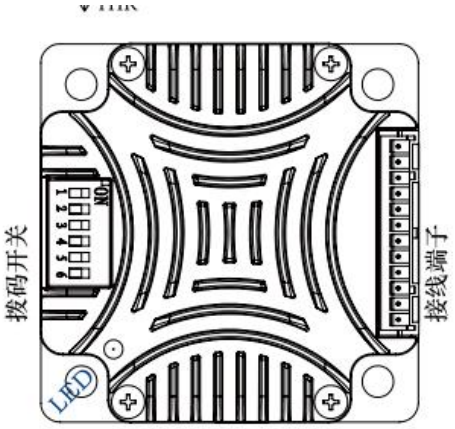
3、 Driving Parameters and Product Selection

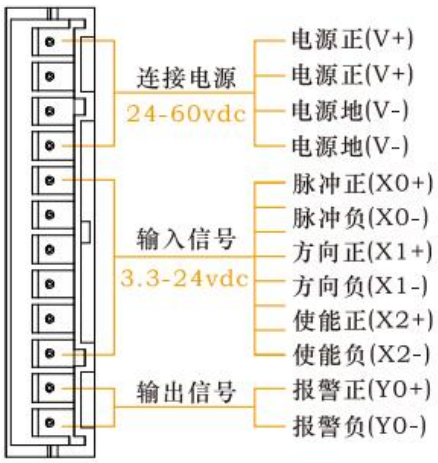
model	voltage	current	import	output	communication mode	communication interface	work pattern
IG60S-100W	DC48V	10A	3.3~2 4V compatible Rong	Maximum voltage: 30V,50 mA	RS485	RS485	Pulse + Direction RS485
IG60S-200W							
IG60S-300W							
IG60S-400W							

Model	Body length	Axial length	Diameter of axle	Phase current	Maintain torque
	mm	mm	mm	A	N. M
IG60S-100W	72	30	14	2	0. 35
IG60S-200W	92	30	14	4	0. 65
IG60S-300W	114	30	14	6	0. 95
IG60S-400W	135	30	14	8	1. 27

4、 Product Schematic Diagram and Mechanical Installation Diagram







5、 Preparations Before the Start

5.1 You Need to Prepare the Following:

A DC48V DC power supply

• One PC with Microsoft Windows operating system installed; • One RS485 debugger

5.2 Hardware Installation:

The installation environment of any model of IG60S integrated motor must have good heat dissipation and air circulation.

Do not use in environments without air convection or where the ambient temperature exceeds 40°C.

Do not use in humid environments

Do not use in environments that may cause short circuits

6、 Connect to Power:

6.1 Selecting the Power Supply Voltage

When selecting a power supply, the most critical factor is to properly account for the voltage and current requirements in practical applications. The IG60S integrated motor delivers optimal performance when powered by DC48V. Its maximum allowable operating voltage ranges from 48 VDC to 50VDC. If the DC power supply drops below 48V, the reduced power output may trigger the driver's alarm. Additionally, the voltage regulator capacitor can absorb voltage fluctuations on the power line.

To prevent driver overprotection, implement voltage clamping at the input when the driver operates on a regulated power supply with voltage approaching 50VDC. This safeguards the internal clamping diode from damage caused by input voltages exceeding 50V. For non-regulated power supplies, ensure the no-load output voltage does not exceed 50VDC.

6.2 Selecting the Power Supply Current

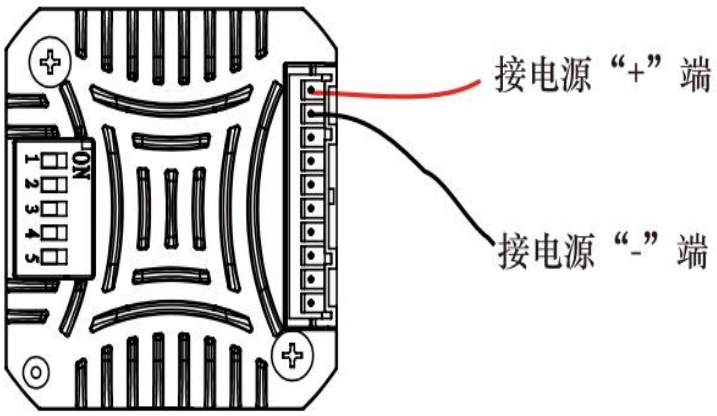
Typically, the input current of a driver's power supply is lower than that of the motor it drives. This is because the driver itself performs power conversion by amplifying a high-voltage, low-current signal through a power switch to generate a low-voltage, high-current signal. The rated voltage of a motor's windings is usually low, so the higher the driver's supply voltage exceeds this rating, the smaller the required input current becomes. Additionally, the input current size also depends on the motor's operating speed and load. Therefore, users must conduct specific analysis and estimation for particular applications.

7、 Installation and Wiring:

7.1 Connect to the Power Source

For optimal connection, use a 1mm² wire to link the IG60S with the power supply. Connect the power supply's "+" terminal to the "V+" port on the IG60S, and its "-" terminal to the "V-" port. Note that the IG60S has a fuse installed in series with the positive power input, but this fuse is

The household unit cannot replace the fuse independently. Alternatively, users can connect an additional 10A fast-acting fuse in series with the external positive terminal to enable replacement.



注意：电源正负极不要接反，否则将会损坏产品的内部电路，因此原因造成的产品损坏不在保修范围。

7.2 Input and Output

The IG60S integrated stepper motor features three high-speed input channels, capable of directly receiving high-level DC signals ranging from 3.3 to 24V, with a maximum output.

The frequency is 300KHZ. The following is the detailed function description of these input and output signals:

- The X0/PUL has the following input functions: Pulse Input
- X1/DIR available input function direction input
- X2/ENABLE input function enables input
- YO/ALM supports alarm output and general output, with alarm output as the factory default.

7.3 Connector Pin Definitions

Order number	Name	Function
1	V+	Positive power supply voltage (DC48V)
2	V−	The power supply voltage is negative.
3	PUL+	Optical isolation, differential, and high-level signals can directly receive 3.3-24VDC with a minimum pulse width of 2 μs and a maximum pulse frequency of 300kHz, with pulse input as the default.
4	PUL−	
5	DIR+	Optical isolation, differential, and high-level signals can directly receive 3.3-24VDC with a minimum pulse width of 2 μs and a maximum pulse frequency of 300kHz. The default input is directional signal.
6	DIR−	
7	EN+	Optical isolation, differential, and high-level signals can directly receive 3.3-24VDC with a minimum pulse width of 100 μs and a maximum pulse frequency of 10kHz. The input port is enabled by default.
8	EN−	
9	ALM+	The alarm status output port detects the motor's alarm status. It defaults to normally closed and outputs normally. You can invert it or set it to other functions through software.
10	ALM−	

8、 Setting of a Dip Switch

8.1 Setting up the Subdivision

Mstep	SW1	SW2	SW3	SW4
400	ON	ON	ON	ON
800	OFF	ON	ON	ON
1600	ON	OFF	ON	ON
3200	OFF	OFF	ON	ON
6400	ON	ON	OFF	ON
12800	OFF	ON	OFF	ON
25600	ON	OFF	OFF	ON
51200	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
20000	ON	OFF	OFF	OFF
40000	OFF	OFF	OFF	OFF

8.2 Setting the direction of operation

SW5 forces the device to reset to factory settings, preventing users from forgetting modified baud rates and device addresses.

8.3 Selection of Terminal Resistors

SW6 controls the selection of the terminal resistor for RS485 communication. When SW6 is ON, the terminal resistor is set to 150Ω; when SW6 is OFF, the terminal resistor is disabled.

9、Communication parameters

1. Baud rate: 115200 by default
2. Data bits: 8 bits;
3. Stop bit: 1 bit;
4. Check digit: None.

10、 report to the police

The IG60S employs a dual-color surface-mount LED (red/green) for status indication. Normal operation is indicated by green LED flashing, while red LED flashing signals an alarm or error.

3.3.2 Y0数字输出信号

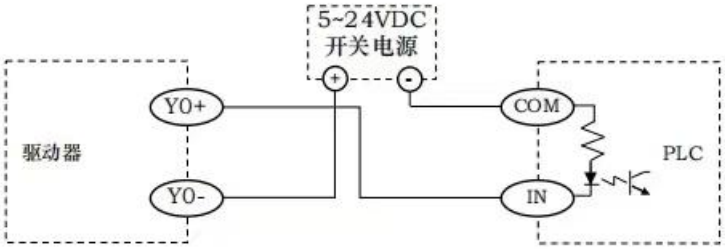
• Y0可做为报警状态输出或通用输出；出厂默认报警输出。

请在Leesn-Config软件中配置Y0的功能。

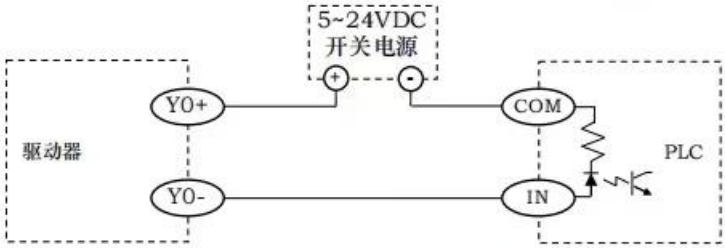
下面图表列举了Y0输出口的几种常用接线方式：

警告：请勿将输出端接至30V以上的直流电压，流入输出端的电流请勿超过50mA 。

将输出Y0接成sinking型输出



将输出Y0接成sinking型输出,与PLC的输入相连



将输出Y0接成sourcing型输出,与PLC的输入相连