

Product Information

- Product Name: ESP32-S3-Relay-6CH
- Model Number: ESP32-S3-Relay-6CH
- Brand Name: Waveshare

Intended Use Classification

This product is intended for professional, industrial, commercial, and engineering environments, including but not limited to:

- Industrial Factory machine control
- Industrial Remote equipment switching
- Industrial IoT monitoring and control

Specifications

Microcontroller	ESP32-S3-WROOM-1U	
Wireless communicatoin	2.4GHz WiFi (802.11 b/g/n)、BLE	
USB	Connector	USB Type-C
	Power supply	5V
	Functions	Power supply, USB communication, firmware downloading, etc.
ISOLATED RS485	Connector	Screw terminal
	Direction control	Hardware automatic control
	Protection	TVS diode, surge protection & ESD protection
	Resistor	Onboard reserved 120R matching resistor, NC by default, enabled via jumper
DO	Contact rating	≤10A 30VDC
	DO channels	6
	Contact form	1NO 1NC
	Isolation	Optocoupler isolation
LED indicators	RGB	RGB colorful LED, supports programmable control for display color
	PWR	Red power indicator, lights up when there is USB connection and voltage is detected
	TXD	Green TX indicator, lights up when the RS485 port sends data
	RXD	Blue RX indicator, lights up when the device port sends data back

power supply Screw terminal	Voltage range	7~36V
	Enclosure	Rail-mount ABS protective case
Appearance	Dimensions	145 × 90 × 40mm

Supporting Evidence of Industrial Use

1. Industrial DIN Rail Enclosure

The product is equipped with a standard DIN rail mount enclosure designed for installation inside industrial electrical cabinets, distribution panels, and automation control boxes. DIN rail mounting is commonly used in industrial environments rather than residential consumer installations.

Enclosure Design

Protection Enclosure With 35mm Rail-Mount Support, Easy To Install, Safe To Use

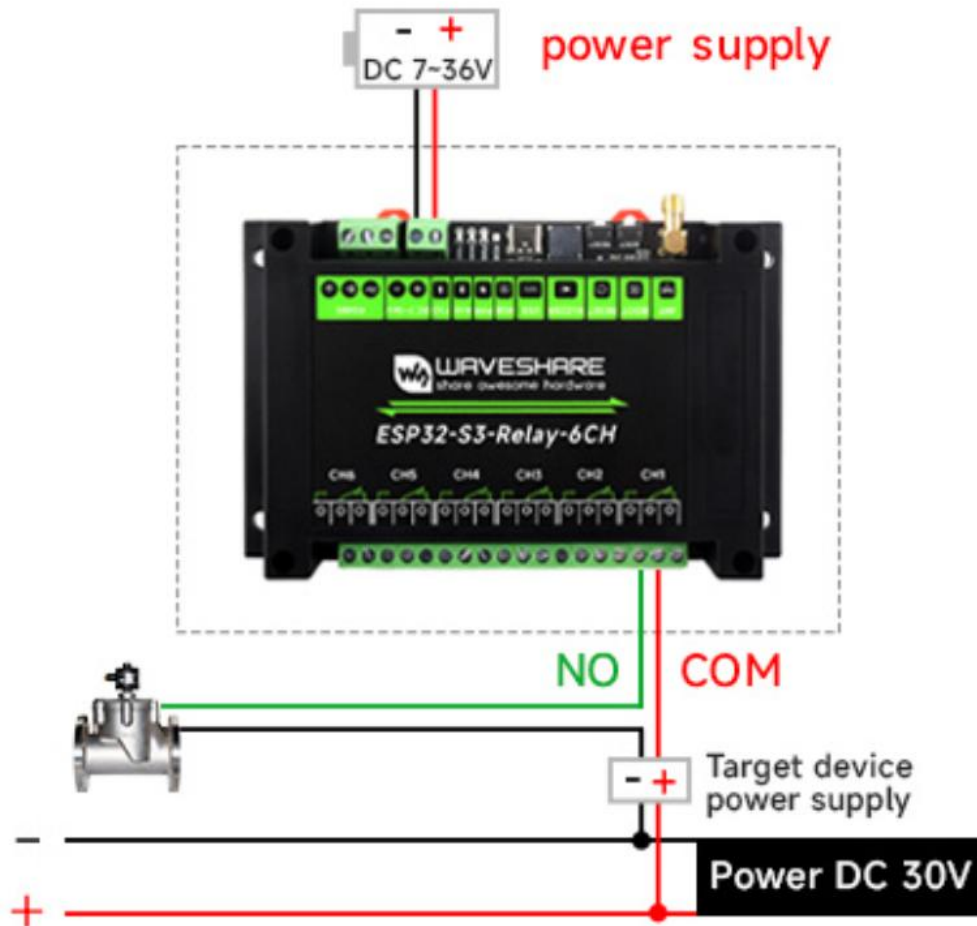




2. Wide Voltage DC Power Input (7~36V)

The device supports a 7V~36V DC input range, which is commonly required in industrial power systems, control cabinets, vehicles, and field automation applications. This differs from typical consumer products that generally use fixed low-voltage adapters or USB power.

DC 30V Device Connection

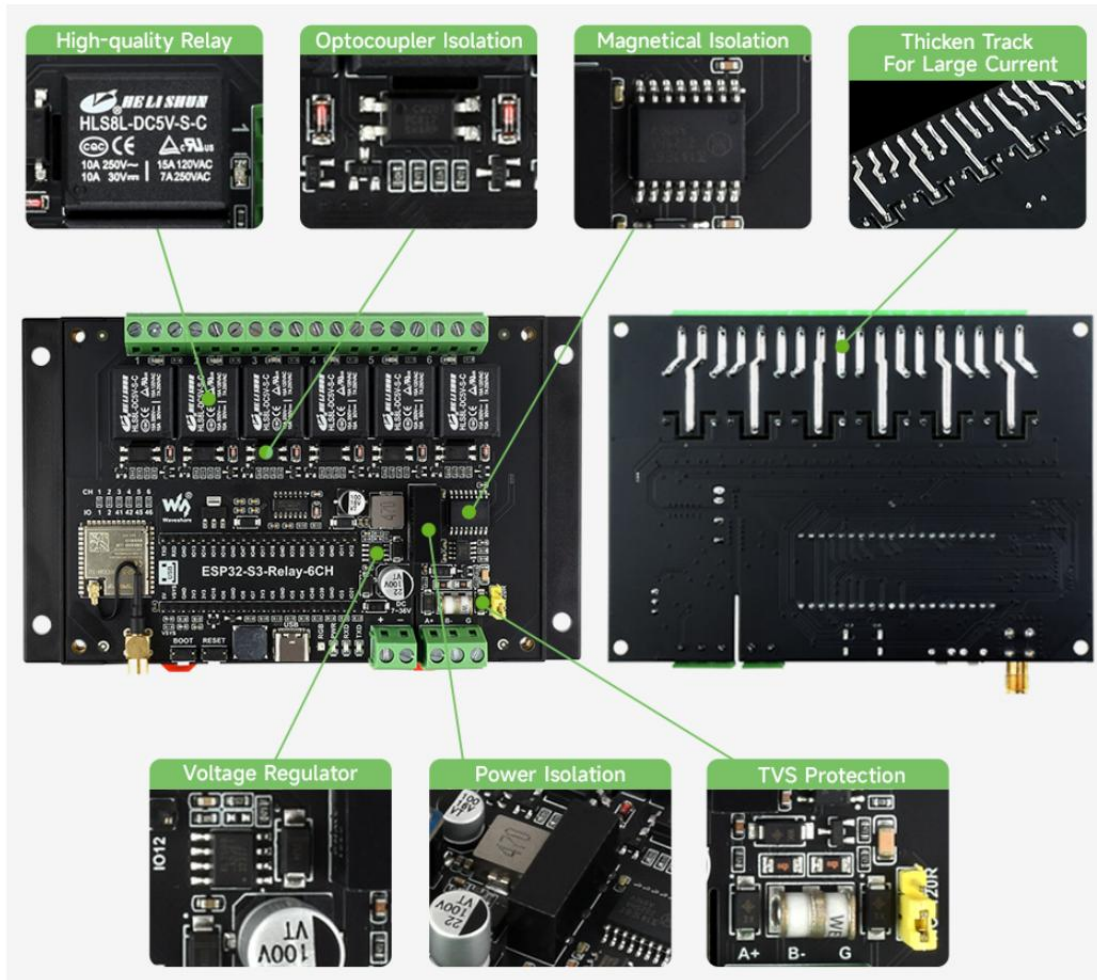


3. RS485 Interface for Modbus / PLC Systems

The product integrates an RS485 communication interface suitable for Modbus RTU networks, PLC systems, industrial sensors, and remote I/O control systems. RS485 is a standard industrial communication method widely used in automation systems.

4. Isolation Design for Industrial Environments

The device includes electrical isolation features such as optocoupler isolation, digital isolation, and/or power isolation to improve reliability in noisy electrical environments and to protect connected systems. Such protection is commonly required for industrial applications.



5. Professional Terminal Wiring Installation

The product uses terminal block wiring for relay outputs and power connections. Installation requires proper wiring knowledge and is intended to be performed by qualified personnel or professional integrators, rather than general consumers.

6. Typical Industrial / Commercial Applications

Typical applications include:

- Industrial Factory machine control
- Industrial Remote equipment switching
- Industrial IoT monitoring and control

Sales Channel Statement

This product is mainly supplied through B2B, industrial distribution, engineering projects, OEM/ODM customers, and system integrator channels. It is not promoted as a plug-and-play residential household consumer device.

Warning:

Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Statement:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The equipment complies with FCC Radiation exposure limit set forth for uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.