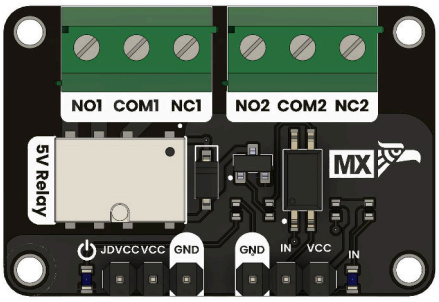
UNIT Relay Module Product Brief

This dual-channel relay module safely interfaces microcontrollers with higher-voltage or high-current loads by separating control from power.

Version: 1.0 Modified: 2025-05-02

Introduction



This dual-channel relay module safely interfaces microcontrollers with higher-voltage or high-current loads by separating control from power. It features a dedicated 5V rail for the relay coils labeled JDVCC, while the logic supply labeled VCC matches the MCU's operating voltage of 3.3V or 5V. Digital control signals applied to the IN pin trigger an optocoupler that activates the relay contacts. These contacts include normally open, normally closed, and common, labeled NO, NC, and COM respectively.Indicator LEDs labeled LED PWR and LED IN provide visual confirmation of the power and control signal status.

Designed for reliable switching in demanding applications, this two-channel relay module isolates high-power relay operations from sensitive MCU logic. It delivers a consistent +5V to the relay coils via JDVCC, while the logic supply labeled VCC provides the appropriate voltage level needed for input signal processing. When a digital high is applied at the IN pin, the module's optocoupler engages to close the relay contacts among NO, NC, and COM as required. Additionally, the onboard LEDs signal the presence of power and active control, ensuring clear operational feedback.

Functional Description

- The module includes two independent electromechanical relays, each controlled through optocouplers for complete electrical isolation between control logic and relay coil voltage.
- A dedicated power rail (JDVCC) provides 5V specifically to energize the relay coils, while a separate VCC pin supplies 3.3V or 5V to the optocoupler input stage.
- Each relay channel is triggered via an active-high digital input signal (IN1, IN2) from the microcontroller.
- The relay outputs provide access to a set of contacts: Normally Open (NO), Normally Closed (NC), and Common (COM).
- When triggered, the relay switches the contacts, allowing control of external AC/DC loads while protecting the MCU from high-voltage transients.
- LED indicators (LED$_{PWR}$ and LED$_{IN}$) provide immediate visual feedback of power and activation status.

Electrical Characteristics

- Operating voltage (logic side): 3.0 V – 5.5 V (via VCC pin)
- Relay coil voltage: 5 V nominal (via JDVCC)
- Trigger current per channel: 2–15 mA depending on input logic level
- Contact rating: Up to 10 A @ 250 VAC or 10 A @ 30 VDC
- Optocoupler logic threshold: Compatible with 3.3 V and 5 V logic
- Isolation resistance: 100 M @ 500 VDC between control and relay side

Features

- Dual-channel electromechanical relay outputs
- Optical isolation between control and power stages
- Dedicated 5V relay coil supply (JDVCC)
- 3.3V or 5V logic compatibility (VCC)
- LED indicators for control signal and power presence
- Breakout access to NO, NC, and COM terminals per channel
- Supports both AC and DC loads up to 10 A

Applications

- Home automation and IoT-based appliance control
- Industrial machinery switching
- Smart lighting systems
- Motor or actuator control
- Security and alarm systems
- HVAC and environmental controllers

Settings

Interface Overview

Interface	Signals / Pins	Typical Use
Power	JDVCC, VCC, GND	Power relay coils and optocoupler driver circuit
Control	IN1, IN2	Trigger signals from MCU
Output	NO1, COM1, NC1 / NO2, COM2, NC2	Switching terminals for AC/DC load
Indicators	LED$_{PWR}$, LED$_{IN}$	Visual status of power and input activation

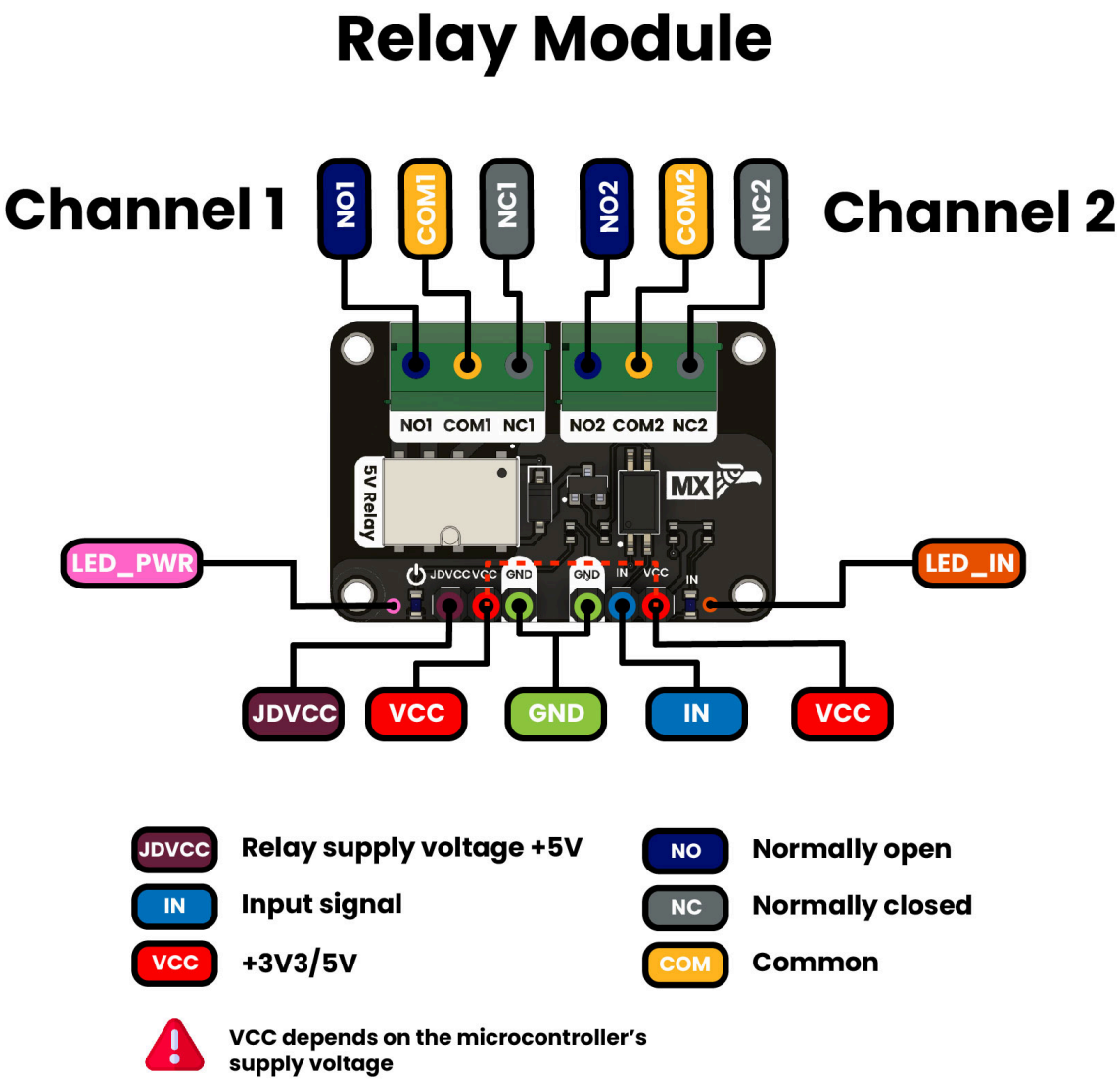
Supported Pins

Symbol	I/O	Description
JDVCC	Input	5V supply input for relay coil energization
VCC	Input	Logic voltage input (3.3V or 5V)
GND	Input	Shared ground for logic and relay power
IN1	Input	Control signal to activate relay 1
IN2	Input	Control signal to activate relay 2
NOx	Output	Normally open contact (connected when active)
NCx	Output	Normally closed contact (disconnected when active)
COMx	Output	Common terminal for relay switching

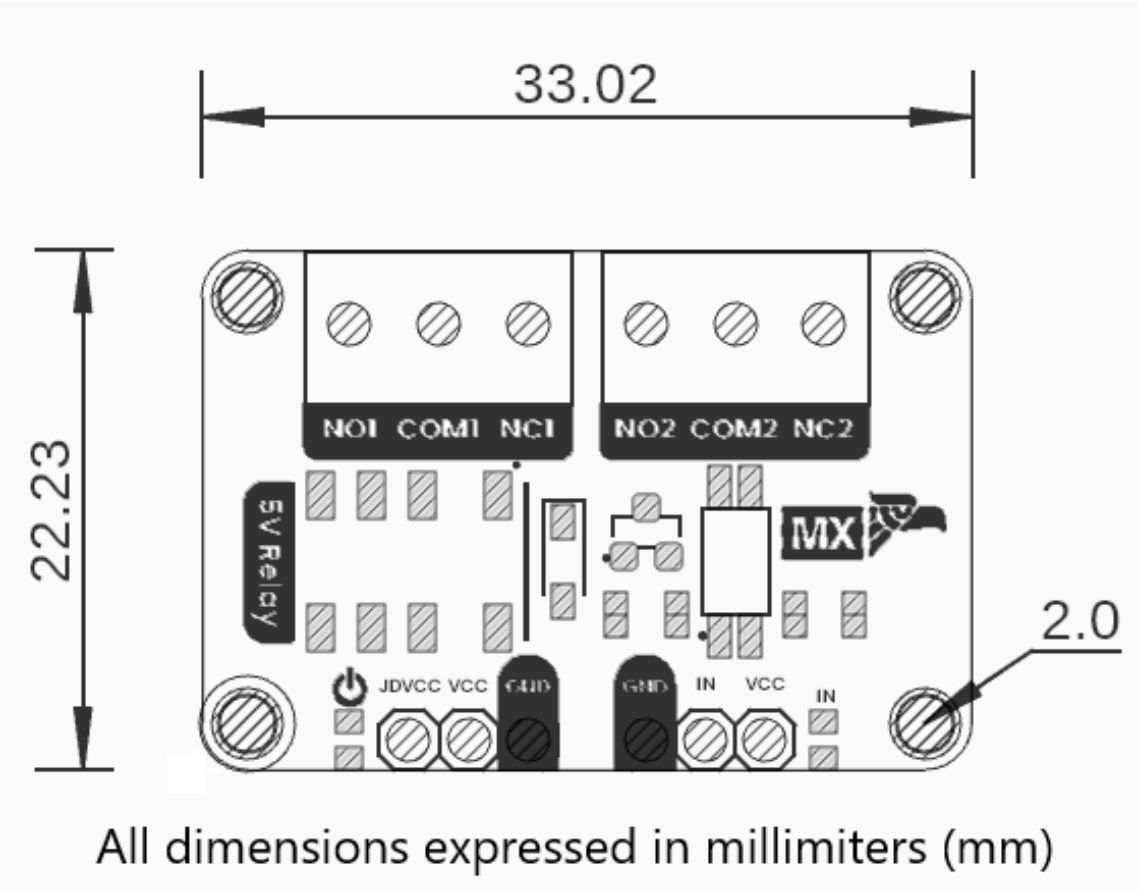
Pin & Connector Layout

Signal	Description
JDVCC	+5V supply to energize relay coils
VCC	MCU logic voltage (3.3V or 5V) for the optocoupler/driver circuit
IN	MCU input to activate relay channel 1
NO1	Relay 1 normally open contact
COM1	Relay 1 common terminal
NC1	Relay 1 normally closed contact
NO2	Relay 2 normally open contact
COM2	Relay 2 common terminal
NC2	Relay 2 normally closed contact
LED$_{PWR}$	Indicator LED for power (active when JDVCC is present)
LED$_{IN}$	Indicator LED showing active input from the MCU

Block Diagram



Dimensions



Usage

- Arduino AVR
- Raspberry Pi RP2040
- STM32
- NRF
- PY32
- MAX II

Downloads

- Schematic PDF

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