

## NOYITO DFRobot DFR0914

# NOYITO 4-Channel Optocoupler Photoelectric Isolator Module (5V to 24V) User Manual

Model: DFRobot DFR0914

## 1. INTRODUCTION

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This manual provides detailed instructions for the NOYITO 4-Channel Optocoupler Photoelectric Isolator Module, model DFRobot DFR0914 (5V to 24V). This module is designed for signal isolation and voltage level conversion in industrial and electronic applications, ensuring reliable communication between systems with different voltage requirements or ground potentials.

## 2. PRODUCT OVERVIEW

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The NOYITO 4-Channel Optocoupler Photoelectric Isolator Module features high-quality optocouplers and individual LED patch indicators for each channel. It includes anti-connection protection for the power supply, enhancing operational safety. The module supports a limit conversion frequency of 20KHz. Its compact size (45x72x18mm LxWxH) and standard mounting hole dimensions (40x37mm LxW) make it suitable for various installations. This specific model converts 5V input signals to 24V output signals, supporting both NPN and PNP input types with a PNP output configuration.

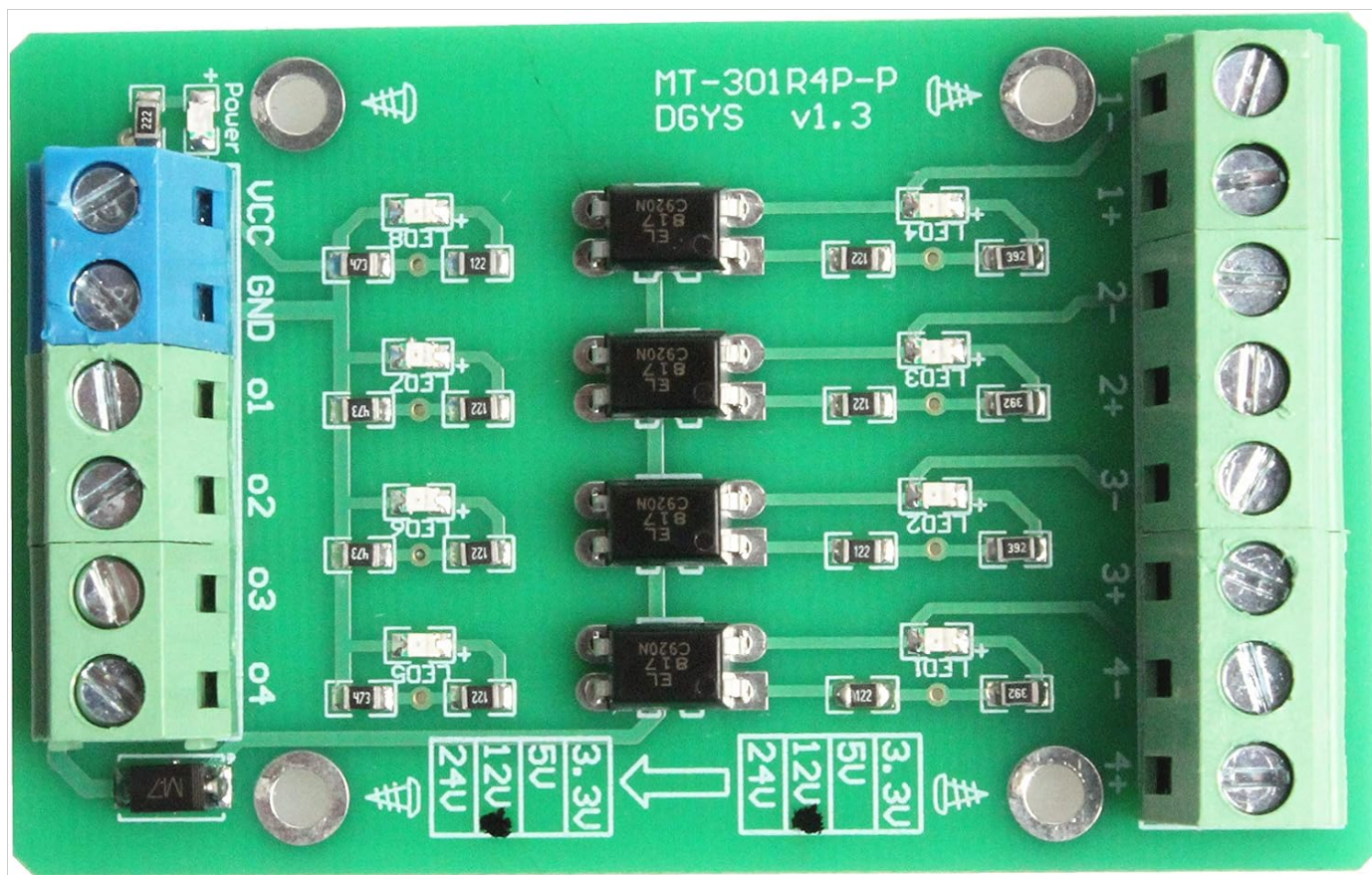


Figure 2.1: Top view of the NOYITO 4-Channel Optocoupler Module, highlighting the power, input, and output terminals, along with LED indicators.

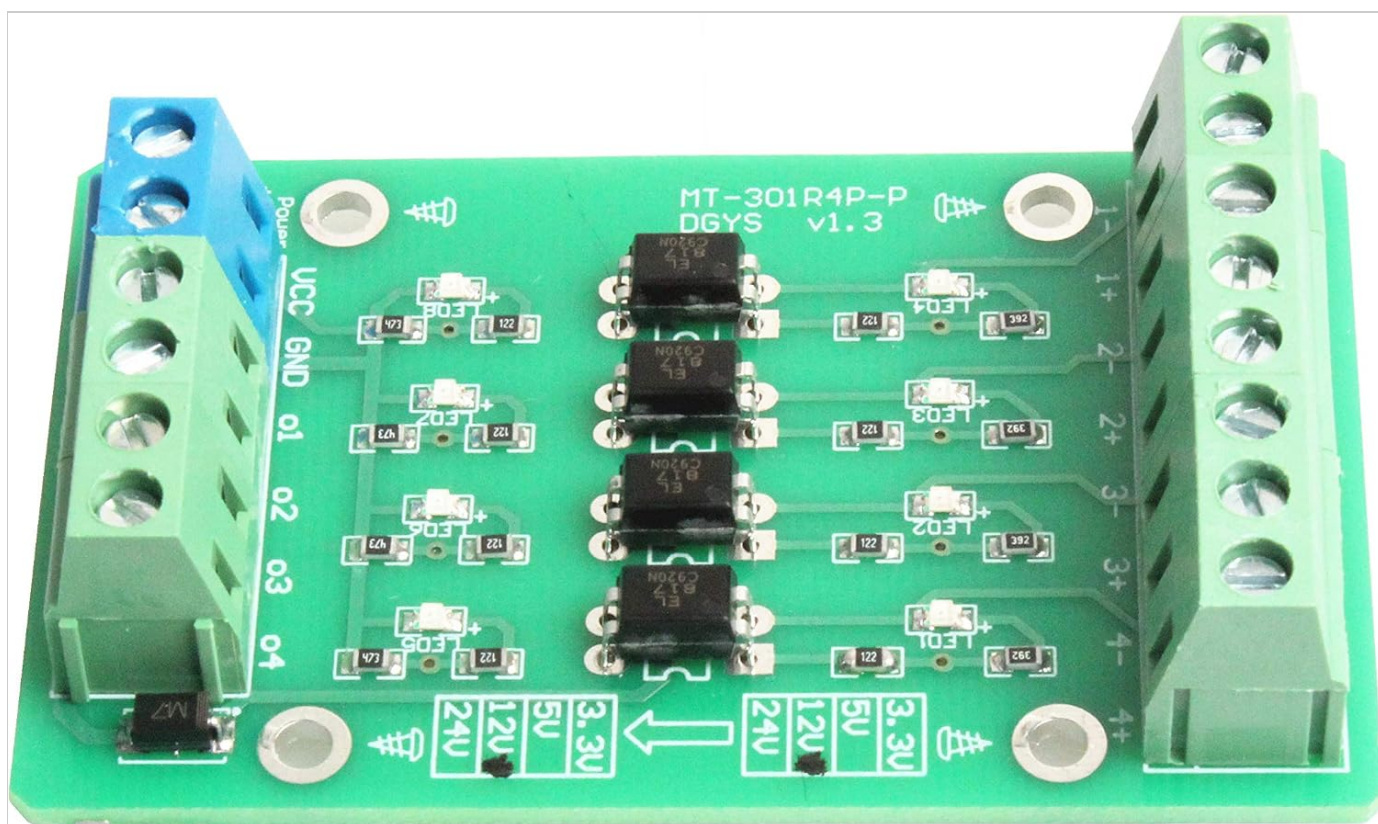


Figure 2.2: Angled view of the module, providing a perspective of the terminal blocks and component layout.

### 3. SPECIFICATIONS

| Feature                        | Description                                   |
|--------------------------------|-----------------------------------------------|
| Brand                          | NOYITO                                        |
| Model                          | DFRobot DFR0914                               |
| Input Voltage Range            | 5V (for input signals)                        |
| Output Voltage Range           | 24V (for output signals)                      |
| Maximum Supply Voltage         | 24 volts                                      |
| Minimum Supply Voltage         | 3.3 volts DC                                  |
| Number of Channels             | 4                                             |
| Input Signal Type              | NPN / PNP                                     |
| Output Signal Type             | PNP                                           |
| Limit Conversion Frequency     | 20KHz                                         |
| Module Dimensions (LxWxH)      | 45mm x 72mm x 18mm (1.77"L x 2.83"W x 0.71"H) |
| Mounting Hole Dimensions (LxW) | 40mm x 37mm                                   |
| Mounting Type                  | DIN Rail compatible                           |
| Interface                      | Parallel                                      |
| Material Type                  | Copper                                        |
| Compatible Devices             | PLC, single chip microcomputer                |
| UPC / GTIN                     | 680613662729                                  |

## 4. SETUP

Before connecting the module, ensure all power sources are disconnected to prevent electrical shock or damage to the module and connected devices. The module features screw terminals for secure and reliable connections.

### 4.1 Power Supply Connection

- Connect the positive terminal of your **24V DC power supply** to the terminal labeled **VCC**.
- Connect the negative/ground terminal of your **24V DC power supply** to the terminal labeled **GND**.
- Ensure the power supply voltage matches the module's output voltage requirement (24V for this model). The module has anti-connection protection for polarity.

### 4.2 Input Signal Connection

- Connect your **5V input signals** to the terminals labeled **1+**, **2+**, **3+**, and **4+**. Each terminal corresponds to a separate channel.
- These inputs are designed to accept both NPN and PNP signal types.

### 4.3 Output Signal Connection

- The module provides **PNP outputs**. Connect your load or the input of the next stage to the terminals labeled **O1**, **O2**, **O3**, and **O4**.

- When an input signal is active, the corresponding output will switch to the higher voltage level (24V).
- Ensure the load's common connection is appropriate for a PNP output configuration (typically connected to ground or the negative rail of the load's power supply).

Always double-check all connections for firmness and correct polarity before applying power to prevent damage to the module or connected equipment.

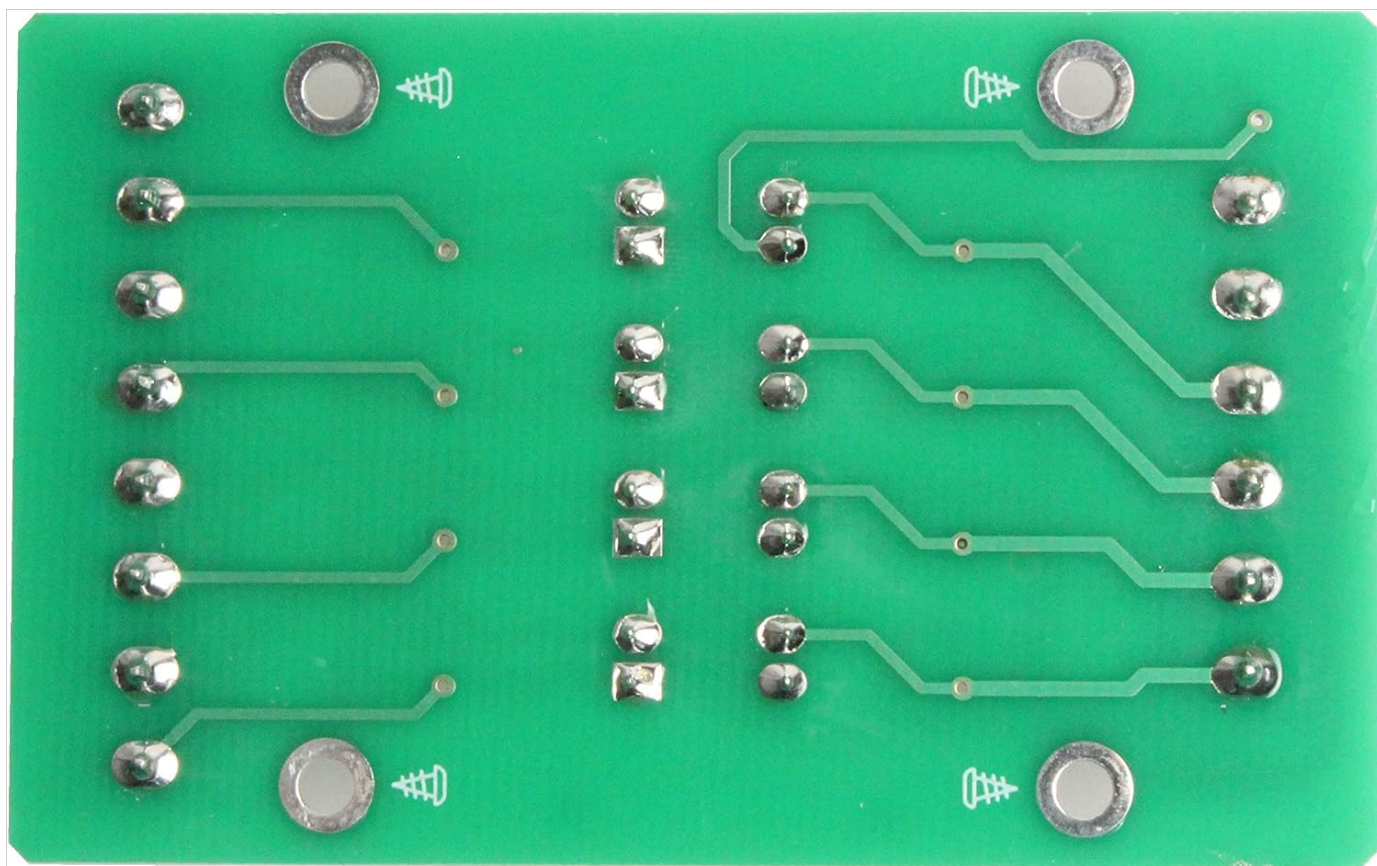


Figure 4.1: Bottom view of the module, illustrating mounting points and circuit board traces.

## 5. OPERATING INSTRUCTIONS

Once the NOYITO 4-Channel Optocoupler Photoelectric Isolator Module is properly wired and powered, it will perform its intended function of signal isolation and voltage level conversion.

- **Signal Conversion:** When a 5V input signal is applied to any of the input channels (1+ to 4+), the module will convert this signal to a 24V PNP output signal on the corresponding output channel (O1 to O4). This allows devices operating at different voltage levels to communicate safely.
- **Electrical Isolation:** The optocouplers provide electrical isolation between the input and output circuits, protecting sensitive control systems from noise, ground loops, and voltage spikes originating from the load side.
- **LED Indicators:** Each channel is equipped with an LED patch indicator. This LED will illuminate when an active input signal is detected on its respective channel, providing a visual confirmation of signal presence and module operation.
- **Frequency Response:** The module is designed to handle signal conversion up to a limit frequency of 20KHz. Ensure your application's signal frequency does not exceed this limit for optimal performance.

## 6. MAINTENANCE

The NOYITO Optocoupler Module is engineered for reliable, long-term operation with minimal maintenance requirements. Adhering to the following guidelines will help ensure its continued performance:

- **Cleanliness:** Keep the module clean and free from dust, dirt, and debris. Use a soft, dry cloth for cleaning. Avoid using solvents or abrasive cleaners.
- **Environment:** Protect the module from moisture, humidity, and corrosive environments. Operate within specified temperature and humidity ranges.
- **Connections:** Periodically inspect all terminal connections to ensure they remain tight and secure, especially in environments subject to vibration. Loose connections can lead to intermittent operation or damage.
- **Static Electricity:** Handle the module with care, especially when not installed, to avoid damage from electrostatic discharge (ESD).

## 7. TROUBLESHOOTING

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If you encounter issues with your NOYITO 4-Channel Optocoupler Photoelectric Isolator Module, refer to the following troubleshooting steps:

### 7.1 No Output Signal

- **Check Power Supply:** Verify that the 24V DC power supply is correctly connected to the 'VCC' and 'GND' terminals and that the power supply is active.
- **Verify Input Signal:** Confirm that the 5V input signal is present at the '1+' to '4+' terminals. Observe the corresponding LED indicators; if an input LED is off when a signal is expected, check the input source.
- **Inspect Output Wiring:** Ensure the output load is correctly connected to the 'O1' to 'O4' terminals. Remember that this module provides **PNP outputs**, meaning the output switches to the positive supply voltage (24V) when active. For some loads, a pull-down resistor may be necessary if the load does not inherently provide one to ensure the output goes to 0V when inactive.
- **Input Signal Type:** Confirm that your input signal (NPN or PNP) is compatible with the module's input stage.

### 7.2 Distorted Output Signal at High Frequencies

- The module has a specified limit conversion frequency of 20KHz. If your application involves signals at or near this limit, or exceeding it, signal distortion may occur.
- **Solution:** Reduce the operating frequency of your input signal. If high-frequency operation is critical, consider a different module designed for higher frequency response.

### 7.3 Module Not Powering On

- **Power Supply Check:** Double-check the power supply voltage and polarity. Although the module has anti-connection protection, incorrect voltage levels can prevent proper operation.

## 8. WARRANTY AND SUPPORT

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This NOYITO 4-Channel Optocoupler Photoelectric Isolator Module comes with a **Manufacturer's One-year After-sale Warranty**. For technical support, warranty claims, or further assistance, please contact NOYITO customer service through your purchase channel or the official NOYITO website.

An electronic version of this user manual and additional resources may be available for download at the following link:

[NOYITO 4-Channel Optocoupler Module User Manual \(PDF\)](#)

### ASK A QUESTION ABOUT THIS MANUAL

Ask about setup, troubleshooting, compatibility, parts, safety, or missing instructions. Manuals+ will review the question

and use this page's manual context to help answer it.

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**Question**

Example: How do I reset this device or fix this error?

**Details**

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question