Optocoupler Input Module



Overview

An optocoupler (or opto-isolator) is a component that transfer signals between circuits using light.

Key Takeaways

Optocoupler input modules provide electrically isolated digital inputs for safe and reliable signal acquisition in industrial and automation systems. OverviewOptocoupler-compatible input modules are designed to interface high-voltage or noisy signals with low-voltage control systems while providing galvanic isolation. They are commonly used in PLCs, SCADA systems, building automation, and industrial IoT applications.

The optocouplers protect controllers and peripherals from voltage spikes, noise, and ground loops, ensuring reliable operation.

Key Features

Voltage Range: Typically support 15–30 V AC/DC or ±5 V to ±30 V, accommodating standard PLC and sensor signals. Isolation: Electrical isolation up to 2. 5 kV between input channels and control circuits, enhancing safety and signal integrity.

Input Channels: Modules can have from 8 up to 128 optocoupler inputs, depending on the model. Counters and Filters: Many modules include 16-bit counters (up to 100 Hz) and configurable input filters (1–255 ms) to handle fast or noisy signals. Status Indicators: Individual LEDs for each input channel provide visual feedback for monitoring and troubleshooting.

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Connectivity: Integration via Ethernet, Wi-Fi, USB, and optional CAN or RS-232 interfaces allows flexible deployment in modern automation networks. Protocols: Support for Modbus TCP, TCP/IP, and HTTP ensures compatibility with PLCs, SCADA, and IoT systems.

Applications

Industrial Automation: Monitoring limit switches, machine states, and process signals. Building Automation: Door/window contact monitoring, lighting control, and energy management. Measurement Systems: Fast trigger signals, pulse counting, and event logging.

Io

T Integration: Remote monitoring and control via web interfaces or mobile apps.

Design Considerations

Source vs. Sink Configuration: Optocoupler inputs can be configured for sourcing or sinking current, depending on the connected sensor or switch. Polarity Handling: Some optocouplers, like the H11AA1, use dual back-to-back LEDs to simplify AC signal detection without worrying about input polarity.

Mounting: Most modules are DIN-rail mountable with robust aluminum or plastic housings for industrial environments. Example ModulesBS-WEU Series: Offers 16–128 optocoupler inputs, 24 V AC/DC, Ethernet/Wi-Fi/USB connectivity, 16-bit counters, input filters, and event control for automated monitoring.

TC

P Digital Input Modules: 8 galvanically isolated channels, ±5 V to ±30 V, Modbus TCP-compatible, with web interface and API support for remote configuration and monitoring. Optocoupler-compatible input modules are essential for safe, reliable, and flexible digital signal acquisition, particularly in environments with electrical noise or high-voltage sensors. They combine isolation, fast response, and network integration to support modern industrial and IoT automation systems.

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Article Content

Using Opto Couplers

The main purpose of an optocoupler interface is to completely isolate the input circuit from the output circuit, which normally means there will be two completely

Optocoupler module (859-740) | WAGO

Optocoupler module; Nominal input voltage: 24 VDC; Output voltage range: 3 30 VDC; Limiting continuous current: 5 A; 2-wire connection; Module width: 6 mm; gray

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In systems with multiple voltage rails (3.3V, 5V, 12V, 24V), use the optocoupler module to safely pass signals between voltage domains without

Arduino Tutorial: HY-M154 / 817 / PC817 Optocoupler

This tutorial gives an introduction to the HY-M154 / 817 optocoupler module. Moreover, a simple application is programmed that shows how to wire

Optocoupler Tutorial for Beginners

An optocoupler (or opto-isolator) is a component that transfer signals between circuits using light. In this guide, you''ll learn how they work and how you

PC817 4 Channel Optocoupler Isolation Opto Isolator

Home > Function Module > Motor Driver Module > PC817 4 Channel Optocoupler Isolation Opto Isolator Module Voltage Converter Module 3.6-30V

Industrial isolated 8-Channel ESP32-S3 WiFi Relay Module RS485

ESP32-S3-ETH-8DI-8RO is an industrial-grade 8-channel WiFi network relay based on ESP32-S3 main controller and supports WiFi, Bluetooth, RS485, network port and other peripheral interfaces. It has

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Relays are important part of any electrical and electronic circuits. We use relays in control applications, switching applications, circuit protection applications and

6-Channel 5V Relay Module with Optocoupler

Features Opto-Isolated InputsEach relay channel has an optocoupler for electrical isolation between the control circuit and the relay, reducing interference and improving stability. High/Low Level Trigger

8-Channel DC 5V Relay Module with Optocoupler | Manualsee

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Features Optocoupler IsolationThe module uses optocouplers to isolate the control signal from the relay switching circuit, reducing electrical interference and protecting the microcontroller. Standard Control

ESP32 RS485 Modbus Wifi 2-Way Relay Module Optocoupler

1. ESP32, with Wi-Fi and 2. 2-channel input optocoupler isolation 3. Built-in CH340 serial port chip, can be programmed with one click 4. 7~24VDC...

Opto-coupler Input Circuits for PLCs

Optocoupler Input Circuits for PLC All NPN Transistor H-Bridge Motor Control Photo Voltaic Tutorial MOSFET Output Solid State Relays Optical Isolation of H-Bridge Motor Controls Design 10-Amp

Optocouplers Desig

optocoupler. VCM represents a voltage spike across the optocoupler isolation path between the output-side ground (VG2) and input-side round (VG1). VDM repre-sents a signal voltage applied across th

PC817 Optocoupler Module User Guide | Wiring & Setup

□□ Module Overview These PC817 optocoupler isolation modules provide a convenient, pre-built breakout board that handles the supporting

Activity: Optocouplers. [Analog Devices Wiki]

An optocoupler, or optical isolator, is an electronic device designed to transfer electrical signals by light across an electrical isolation barrier between its input and output. The main purpose of an

Interfacing PC817 4-Channel Optocoupler Module with

PC817 Optocoupler Module Pinout Each PC817 channel has 4 pins: Input pins: IN: Input – 5 to 30 V GND: Ground Output pins: OUT: Phototransistor

4 Channel Optocoupler Isolation Module AC 220V

The 4-channel optocoupler isolation module features four independent ports for control signal isolation. Allows for interfacing devices to a microcontroller or other

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