

Microcontroller Optical Coupler



Overview

Here I'll introduce programmable logic controller (PLC) input circuits using optocouplers. How can you interface AVR, PIC, and 8051 microcontrollers with an optocoupler?

What exactly is an optocoupler?

What are the fundamental principles of an optocoupler?

Power electronics projects, such as firing angle. 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 can use one in your own projects. In this comprehensive blog, we'll dive deep into optocoupler basics, their working principle, types, applications. Last Updated on March 15, 2025 by Swagatam 51 Comments
OPTOCOUPERS OR OPTOISOLATORS are devices that enable efficient transmission of DC signal and other data across two circuit stages, and also simultaneously maintain an excellent level of electrical isolation between them. This device protects electronics from voltage spikes. Optocouplers are used in areas where safety and. emperature sensing is a classic example. The complete sensing and post-processing are integrated into a single device with a ditional features such as alert signals.



Article Content

Jul 08, 2025

Application Examples

INTRODUCTION Optocouplers are used to isolate signals for protection and safety between a safe and a potentially hazardous or electrically noisy environment. The interfacing of the optocoupler between

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Optocoupler Circuits, Working, Characteristics, Interfacing

Optocouplers are also the favorites when it comes to interfacing personal computers or microcontrollers with other mainframe computers, or loads

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Optocoupler

Optical sensor and graphical LCD are the additional accessories used in this device. The microcontroller read the command from the membrane, i.e., keypad (4 × 4) as the input. The output device used to

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Insulated Shields with Optocouplers (I) (MIC005E)

4. Optical Shield with the 4093 The sensor is an optical coupler with a LED and a phototransistor. In a shield the LED is driven by the microcontroller and not as it

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6N139 Optocoupler Datasheet : Working & Its Applications

Alternate names of an optocoupler are; a photocoupler, an optical coupler & an optocoupler. This article discusses an overview of the 6N139 optocoupler and its

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Interfacing Optocoupler with Arduino

Today in this tutorial we will see the interfacing optocoupler with Arduino (4N35 or MCT2E). Optocoupler is also called an optoisolator. But before

Feb 26, 2026

10 MBd High-Speed Optocoupler Design Guide

A high-speed coupler is a very compact and simplified solution in comparison to the discrete approach. Vishay's 10-Mbd couplers are built using an over/under double-molded construction technique, which

Mar 28, 2026

PC817 Optocoupler: Pinout, Specifications, Circuits and

The PC817 optocoupler is a fundamental component in electronic circuits, seamlessly integrating an infrared emitting diode (IR LED) and a

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Optocouplers: Defending Your Microcontroller, MIDI,

Deep in the heart of your latest project lies a little silicon brain. Much like the brain inside your own bone-plated noggin, your microcontroller needs

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Isolated digital input to microcontroller using optocoupler

I am designing an I/O logic controller with multiple digital inputs. I am using an optocoupler (PC817) to provide isolation between sensor pulse output

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Optocoupler Circuits, Working, Characteristics, Interfacing

The above figure shows how to interface a microcontroller or Arduino output signal (5 volts, 5 mA) with a relatively high current load through an

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Opto-coupler Input Circuits for PLCs

Here I'll introduce programmable logic controller (PLC) input circuits using optocouplers. We use these devices to interface high voltage sensors to low voltage

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PCB Design: An Optocoupler Tutorial for Your PCB Layout

Learn how to effectively use optoisolators in your PCB layout with our comprehensive tutorial. Discover the benefits and practical applications of

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microcontroller

What's the proper schematic for driving this IRL520NPbF MOSFET from a microcontroller pin through this CNY17F or this SFH6206 optocoupler?

Aug 17, 2025

optocouplers for industrial applications

between the components of power systems. Because of the broad range of support, from peripheral devices to microcontrollers (MCU), along with its versatility, I2C is useful when communicating with

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A Review of Optical Coupler Theory, Techniques, and Applications

The theory of coupling between different media is well-established, however the field of coupler design is perpetually adapting and developing to meet the evolving demands of optical communication ...

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Isolating Circuits From Your Arduino With Optocouplers

Isolating Circuits From Your Arduino With Optocouplers: A Optocoupler also called a photocoupler, optical isolator or opto-isolator is a small chip that transfers signals

Nov 20, 2025

Optocouplers 101: A Comprehensive Guide for PCB

Imagine designing a circuit where a microcontroller operating at 5V needs to communicate with a high-voltage system running at 230V AC. Directly

Oct 13, 2025

What Is Optocoupler and Its Application with Examples

I Introduction This article focuses on the electronic component known as the Optocoupler. (For the fiber-optic networking component, please

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Optocoupler

Optocoupler An optocoupler can be used to control a circuit that's completely isolated from your microcontroller. In this case, imagine that the LED and battery pack are a hacked toy which you're

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What Is an Optocoupler | ODG

Learn about optocoupler types, working principles, and applications in microcontrollers, AC control, and automation systems. Improve safety and signal

Aug 15, 2025

A Review of Optical Coupler Theory, Techniques, and Applications

The objective of this paper is to provide a review of the theory, techniques, and applications of optical couplers.

May 27, 2026

Opto-isolator

An opto-isolator contains a source (emitter) of light, almost always a near infrared light-emitting diode (LED), that converts electrical input signal into light, a closed

Apr 19, 2026

What is PC817 Optocoupler : Working & Its Applications

What is PC817 Optocoupler : Working & Its Applications An optocoupler is also called an optoisolator, photo-coupler & optical isolator is one kind of

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Optically Isolated 8 Digital Input Arduino Shield

Build your own Optically Isolated 8 Digital input Arduino shield, capable of accepting inputs between 3.0v and 32.0v DC By Maker and IoT Ideas.

Jan 30, 2026

What Is Optocoupler | Opto-coupler Working And

Opto-coupler is also called photocoupler, optoisolator or optical isolator. An optocoupler is mainly used to prevent an electrical collision by isolating the circuit.

Feb 08, 2026

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

Mar 04, 2026

Optical Coupler

Optical coupler is a semiconductor device, which is designed to transfer electrical signals by using light waves in order to provide coupling with electrical isolation between circuits or systems.

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://www.moletenare-ew.co.za>

Email: info@moletenare-ew.co.za

Phone: +86 138 1658 3346

Address: Ningbo, China

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