What is the current of the optocoupler module

Article Overview

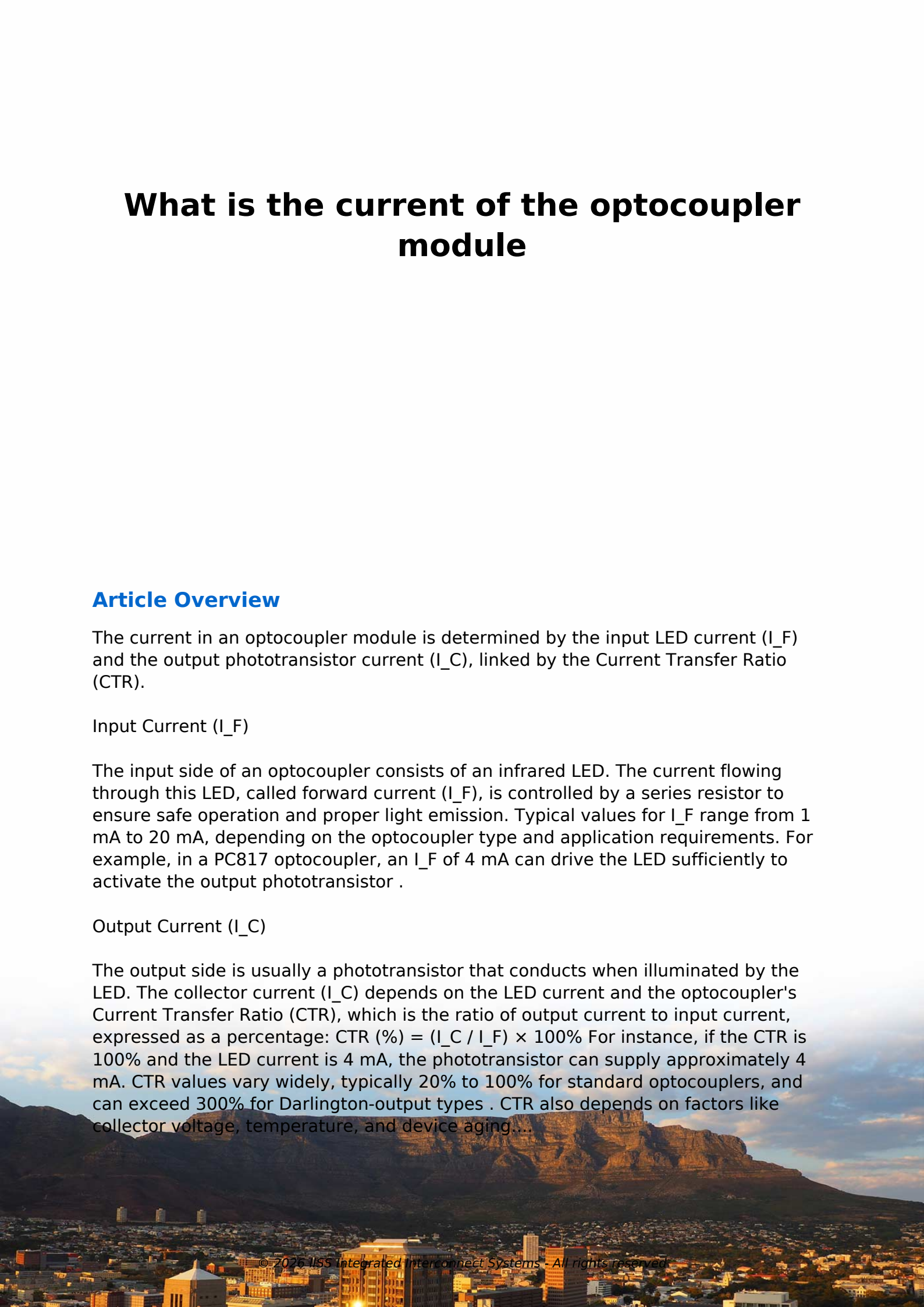
The current in an optocoupler module is determined by the input LED current (I_F) and the output phototransistor current (I_C), linked by the Current Transfer Ratio (CTR).

Input Current (I_F)

The input side of an optocoupler consists of an infrared LED. The current flowing through this LED, called forward current (I_F), is controlled by a series resistor to ensure safe operation and proper light emission. Typical values for I_F range from 1 mA to 20 mA, depending on the optocoupler type and application requirements. For example, in a PC817 optocoupler, an I_F of 4 mA can drive the LED sufficiently to activate the output phototransistor .

Output Current (I_C)

The output side is usually a phototransistor that conducts when illuminated by the LED. The collector current (I_C) depends on the LED current and the optocoupler's Current Transfer Ratio (CTR), which is the ratio of output current to input current, expressed as a percentage: CTR (%) = (I_C / I_F) × 100% For instance, if the CTR is 100% and the LED current is 4 mA, the phototransistor can supply approximately 4 mA. CTR values vary widely, typically 20% to 100% for standard optocouplers, and can exceed 300% for Darlington-output types . CTR also depends on factors like collector voltage, temperature, and device aging....



Article Content

Oct 13, 2025

Guidelines for reading an optocoupler datasheet

It consists of collector-emitter voltage (VCE) and collector current (IC) as a function of the base current (IBASE). With optocouplers,

Sep 30, 2025

Opto-isolator

Schematic diagram of an opto-isolator showing source of light (LED) on the left, dielectric barrier in the center, and sensor

Dec 09, 2025

Transistor Output Optocouplers Frequently Asked Questions (FAQs)

It describes the two main parameters of optocouplers and is obtained by dividing the output current of the transistor by the forward

Jul 24, 2026

How Optocouplers Work

FREE COURSE!! Learn about optocouplers. We''ll look at how they are used to control circuits, how they work and

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PC817 Optocoupler Module User Guide | Wiring & Setup

The OUT pin on this module is an open-collector output — it acts as a current sink, pulling

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What is Optocoupler and How it works?

They use light to pass signals between circuits. What is Optocoupler and How It Works As we have already learnt

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Optocouplers, Part 1: Principles and usefulness FAQ

An optocoupler must have current flow in its output, and it cannot provide what is called a simple “dry circuit” contact

Feb 12, 2026

Optocoupler Tutorial and Optocoupler Application

When current flows through the Light Emitting Diode, on the input side (Transmitter) it emits infrared light. However, a

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Optocoupler modules in interface electronics

Here, optocoupler modules can serve as isolating barriers between the industrial controllers and any field sensors exposed to surges

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Optocoupler | Explore Our Workshop | Jameco Electronics

Understand what an optocoupler is and how it works at our electronics workshop at Jameco Electronics. Explore tutorials on how

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Guidelines for reading an optocoupler datasheet

As an isolator, an optocoupler can prevent high voltages from affecting the side of the circuit receiving the signal. Transferring signals

Oct 29, 2025

ANO007 | Understanding Phototransistor Optocouplers

The ratio between the phototransistor collector current (IC) and the IR-LED current (IF) represents the main optocoupler parameter:

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Optocoupler

This handbook begins with a selection guide followed by sections discussing critical optocoupler design parameters such as

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Optocoupler Circuits | Nuts & Volts Magazine

Most modern optocoupler devices use a phototransistor as their Rx unit; such a device is known simply as an ''optocoupler,'' since the

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Optocoupler Circuits, Working, Characteristics, Interfacing

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

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Optocoupler: Its Types and Various Application in

Applications of Optocoupler As discussed before few Optocoupler used in DC circuit and

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Optocoupler

Optocoupler Optocouplers are an important application of LEDs. An LED and a phototransistor are sealed in a light-proof plastic

Mar 12, 2026

Optocoupler Circuits, Working, Characteristics, Interfacing

Optocoupler Characteristics Optocoupler exhibit one very useful characteristic and that is its light coupling efficiency

Aug 03, 2025

What Is Optocoupler and Its Application with Examples

An optocoupler is a semiconductor device that transmits an electrical signal between two

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What Is an Optocoupler? Types, Working Principles, and Applications

An optocoupler uses light to transfer signals between circuits, keeping them electrically isolated. This protects

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Optocoupler Tutorial and Optocoupler Application

The opto-coupled triac such as the MOC3020, have voltage ratings of about 400 volts making them ideal for direct

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Activity: Optocouplers. [Analog Devices Wiki]

Activity: Optocouplers. Objective: In this activity you will construct an optocoupler from an infra-red LED and an NPN photo transistor.

May 18, 2026

Optocouplers Desig

Insulation Defined The electrical insulating capabil-ity of an optocoupler, sometimes referred to as withstand voltage, is determined

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Optocoupler

This block represents an optocoupler using a model that consists of the following components: An exponential light-emitting diode in

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Understanding Phototransistor Optocouplers

Understanding Phototransistor Optocouplers An optocoupler, also known as photo-coupler or opto-isolator, is a

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Optocoupler Operation

Saturation Mode In saturation mode, the optocoupler output transistor is either turned fully ''on'' (saturation conditions), or fully ''off''

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Everything You Need to Know About Optocouplers in Electronics

As with successful board design, putting an optocoupler circuit diagram into production will depend on proper

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Opto Coupled Devices

The output current available from a HCT gate to drive the optocoupler input is limited to 4mA, which is quite low for driving an

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