Relay Protection Optical Coupler Standard

Overview

Design Guidelines for Optocoupler Safety Agency ComplianceFor the most part, this document will deal with standards exclusively dealing with the manufactur.

Key Takeaways

Relay protection optical couplers are primarily governed by IEC 60747-5-5 for traditional optocouplers and IEC 60747-17 for digital isolators, with additional safety certifications from UL, CSA, BSI, and VDE. International StandardsIEC 60747-5-5 is the international standard for LED-based optocouplers, specifying isolation requirements, electrical performance, and safety testing. This standard has been active since 2007, with the latest 2.

0 edition released in 2020, ensuring that optocouplers provide reliable galvanic isolation for sensitive electronics in relay protection systems.

IE

C 60747-17 applies to modern digital isolators and opto-emulators that use silicon dioxide (SiO2) isolation technology. This standard, effective from September 2020, includes more stringent and detailed test requirements than IEC 60747-5-5, covering isolation performance in both air and oil, and providing a comprehensive evaluation of device reliability and long-term performance.

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

Safety Certifications

In addition to IEC standards, optical couplers used in relay protection often require approvals from recognized safety agencies: UL (Underwriters Laboratories): Ensures compliance with North American safety requirements.

CS

A (Canadian Standards Association): Certifies products for Canadian electrical safety.

BS

I (British Standards Institution): Provides UK safety compliance.

VD

E (Verband der Elektrotechnik): Certifies products for German and European safety standards. These certifications confirm that the optocoupler meets insulation, voltage withstand, and environmental safety requirements, which are critical in high-voltage relay protection applications.

Key Considerations for Relay Protection

Galvanic Isolation: Ensures that high-voltage circuits are electrically isolated from control and monitoring systems, protecting PLCs and sensitive electronics. Voltage and Current Ratings: Must comply with the rated isolation voltage specified in IEC standards. Environmental Compliance: Modern optocouplers are often RoHS-compliant, cadmium-free, and lead-free, suitable for industrial environments.

Application-

Specific Types: Options include pluggable interface relays, miniature relays, and solid-state relays, each designed for specific relay protection scenarios.

Summary

For relay protection applications, LED-based optocouplers should comply with IEC 60747-5-5, while digital isolators and opto-emulators should follow IEC 60747-17. Additionally, obtaining UL, CSA, BSI, and VDE certifications ensures compliance with regional safety standards, providing reliable isolation and protection in high-voltage environments.

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

Article Content

Design Guidelines for Optocoupler Safety Agency Compliance

For the most part, this document will deal with standards exclusively dealing with the manufacture and testing of optocouplers. These are covered under two standards, UL1577 and IEC 60747-5-1, which

Demystifying Isolation Certification Standards: Optocouplers vs Opto ...

Traditional optocouplers provide isolation using an LED and a photodiode. LED-based optocouplers are certified according to IEC 60747-5-5, which is the international optocoupler standard that has been

Relays and Optocouplers

This interfacing is possible thanks to ABB''s relays and optocouplers ranges, which offer wide adaptation in both voltage (from 5 to 400 V) and current (from 10-7 to 16 A) as well as high isolation between

How to Connect a Relay through an Opto-Coupler

The following concepts show how a relay driver can be configured with an optocoupler using transistors. As shown in the following circuit diagrams, the relay driver may consist a NPN transistor or a PNP

Interface relays and optocouplers

Environmentally friendly, cadmium-free and lead-free, ABB interface relays and optocouplers meet RoHS requirements. Complete versions consisting of a relay, socket, holder, marker and function

Building Safe and Reliable Electrical Systems with Optocouplers

It is therefore clear that optocouplers provide the highest levels of protection and reliability in electrical system. They generate the least EMI and are most resistant to EMI of all the isolation technologies.

Design Guidelines for Optocoupler Safety Agency

This test is performed on all Vishay optocoupler parts, whether or not they are required to meet the DIN EN 60747-5-5 standard, because it is a test also required for UL 1577.

Optocouplers, Optoisolators | Isolators | DigiKey

Optocouplers are essential in feedback loops, signal isolation, and safety-critical applications, particularly in switch-mode power supplies, PLC inputs, and motor drive circuits. Optocouplers are

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

Stop Relay Failures: The Engineer''s Guide to Choosing

Learn how to avoid relay failures in control systems by understanding the differences between optocouplers, mechanical relays, and solid-state relays

Safety Considerations When Using Optocouplers and ...

This standard has subsequently been developed into the international optocoupler safety standard IEC60747-5-5. Optocouplers are effectively a hybrid construction consisting of an optically

Optocouplers 101: A Comprehensive Guide for PCB

For instance, if you''re designing a PCB for a slow-switching industrial relay system, a phototransistor optocoupler like the popular 4N25 might

Digital Protection Coupler Specifications | PDF | Power Supply | Relay

This document provides a technical specification for a digital protection coupler. It will be used to transfer trip commands from one end of an EHV line to the other through fiber optic cables. The coupler

Weidmuller Optocouplers

High-voltage testing, a standard proce-dure for relays, is not possible with semi-conductors because it may actually destroy them. In the case of coupler modules with integrated optocouplers, “protective

How to Use Relay with optocoupler: Examples, Pinouts,

Learn how to use the Relay with optocoupler with detailed documentation, including pinouts, usage guides, and example projects. Perfect for students, hobbyists,

Isolators and Solid State Relays

Isolators and solid state relays from Toshiba include photocouplers, photorelays, and fiber optic modules for safer, efficient circuit design.

Optocoupler Tutorial and Optocoupler Application

What is an Optocoupler? An optocoupler (also called an opto-isolator, photo-coupler, or optical isolator) is a solid-state semiconductor device that transfers electrical signals between two

What Is Optocoupler and Its Application with Examples

Solid State Relays: High power. They contain an optocoupler plus the high-power switching components and protection circuitry inside a single, larger

DIGITIAL PROTECTION

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved

DIGITIAL PROTECTION COUPLER Digital protection coupler for protection signalling through optical fibre cable system. The Digital protection signalling equipment is required to transfer the trip

Contact Us

Continue your research online:

Website: https://alfa-pro.co.za
Technical inquiry: https://alfa-pro.co.za/contact.html

This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

© 2026 ALFA PRO COMMUNICATION SYSTEMS (Pty) Ltd - All rights reserved