Linux optical module I2C

Overview

Linux provides a standardized interface for accessing I²C buses directly from userspace, through device files exposed under /dev/. These interfaces allow developers to communicate with bus-attached devices using standard read() / write() / ioctl() calls, without the need to. This is a small guide for those who want to write kernel drivers for I2C or SMBus devices, using Linux as the protocol host/master (not slave). To set up a driver, you need to do several things. Some are optional, and some things can be done slightly or completely different. Use this as a guide. Welcome to my guide on leveraging the handy I2C utilities included with Linux to communicate with sensors, microcontrollers, and other devices using the I2C serial interface. For short-distance communication between integrated circuits and peripherals, the Inter-Integrated Circuit (I2C) protocol is. The I²C (Inter-Integrated Circuit) subsystem in Linux provides a structured way for the kernel to communicate with I²C devices—peripherals that share a common two-wire bus consisting of data (SDA) and clock (SCL) lines.

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Article Content

Nov 21, 2025

12.8. Example I²C code for Linux in C

This code only works on Linux. If you are using a Raspberry Pi, please note that the Raspberry Pi''s hardware I²C module has a bug that causes this code to not work reliably. As a workaround, we

Jun 20, 2026

Mastering I2C Linux Device Drivers: A Comprehensive Guide

This blog post aims to provide a detailed overview of I2C Linux device drivers, including fundamental concepts, usage methods, common practices, and best practices.

Feb 14, 2026

6.5. I²C drivers — The Linux Kernel documentation

6.5. I²C drivers ¶ The I²C (Inter-Integrated Circuit) bus is a three-wires bus used internally at the media cards for communication between different chips. While the bus is not visible to the Linux Kernel,

Jan 08, 2026

Introduction to Linux kernel driver programming + i2c drivers

Introduction to Linux kernel driver programming: i2c drivers The Linux kernel device model

Aug 29, 2025

linux-driver-examples/i2c/README.md at master

Developers can add new I²C devices through board files, device trees, or dynamically at runtime via sysfs, as long as the correct driver is registered with the subsystem. In the sections below, you''ll

May 21, 2026

Basics of I2C on Linux

The SMBus protocol Designed for chip communication on PC motherboards Mostly a subset of I2C Defines several commands

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I2C Device Interface — The Linux Kernel documentation

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I2C Device Interface ¶ Usually, i2c devices are controlled by a kernel driver. But it is also possible to access all devices on an adapter from userspace, through the /dev interface. You need to load

Aug 10, 2025

SFP Management

Change the control signal status Enable TX_DISABLE Disable LP_MODE Generic Read/Write Operations Perform I2C byte and word reads on the given module (any device address). SFP

Mar 03, 2026

Mastering I2C Linux Device Drivers: A Comprehensive Guide

In the realm of embedded systems and Linux-based hardware, the Inter-Integrated Circuit (I2C) bus is a widely used serial communication protocol. It allows multiple devices to

Dec 30, 2025

Implementing I2C device drivers — The Linux Kernel documentation

Implementing I2C device drivers ¶ This is a small guide for those who want to write kernel drivers for I2C or SMBus devices, using Linux as the protocol host/master (not slave). To set up a driver, you need

Feb 06, 2026

Developing I2C Drivers on Embedded Linux: A Hands

In this post, we''ll walk through how to write a basic I2C Linux kernel driver from scratch, discuss real-world challenges, and provide tips for integrating

Dec 20, 2025

Using the I2C Bus with Linux

The chips available for the bus cover a wide range of needs. Originally the bus was designed for computer-controlled TV sets, resulting in a wide range of tuning circuits, colour

Jan 31, 2026

linux-driver-examples/i2c/README.md at master

Multiple I²C buses may exist on a system. Each one is represented by a struct i2c_adapter (see include/linux/i2c.h). Each adapter is identified by a bus number and implements the I²C algorithm

Jun 29, 2025

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Using Linux I2C Tools with HID FT260

This document shows the user how to use the HID-FT260 driver in Linux to implement a USB to I2C Master bridge using Linux I2C tools. Other FT260 features such as UART and GPIO are not covered

Nov 11, 2025

hardware

But the SFP module properties can be get only through driver of NIC, because these values are gotten through internal i2c bus on NIC. So details of this process is implemented in the

May 19, 2026

Implementing I2C device drivers in userspace — The Linux Kernel ...

You can think of i2c-dev as a generic I2C chip driver that can be programmed from user-space. Some ioctl () calls are for administrative tasks and are handled by i2c-dev directly.

Oct 20, 2025

Using I²C Sensors With Any Linux Via USB And IIO

Hooking up I2C sensors is something which is generally associated with microcontrollers and SBCs, yet it''s very easy to use such I2C sensors from

Oct 12, 2025

Use ''i2c-tools'' to read/write to I2C devices programmatically

This article explains how to utilize ''i2c-tools'' for managing I2C devices on Linux systems. It begins with an introduction to the importance of ''i2c-tools'' for debugging I2C buses and devices, followed by

Aug 29, 2025

Accessing I2C devices from userspace in Linux

This C program demonstrates how to communicate with an I²C device by opening the appropriate bus file (/dev/i2c-0), using an ioctl() call to select the device

Jun 02, 2026

I2C Programming in Embedded Linux – EmbeddedCraft

This tutorial is about Signals.This tutorial is about using I2C device on Embedded Linux. We will interface I2C EEPROM with a board running Embedded Linux. We will use a Beaglebone board, but

Apr 02, 2026

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LXR / The Linux Cross Reference

Welcome to lxr.linux.no LXR (formerly "the Linux Cross Referencer") is a software toolset for indexing and presenting source code repositories. LXR was initially targeted at the Linux source code, but has

Mar 07, 2026

Optical Transceiver Support | sonic-net/sonic-linux-kernel | DeepWiki

Optical Transceiver Support Relevant source files Purpose and Scope This document describes the optical transceiver support in the SONiC Linux kernel, focusing on the optoe driver

Feb 07, 2026

Interfacing with I2C Devices using Linux Utilities

Welcome to my guide on leveraging the handy I2C utilities included with Linux to communicate with sensors, microcontrollers, and other devices using the I2C

Dec 25, 2025

Using Linux I2C Tools with HID FT260

In this document, a simple way of sending I2C data using our FT260 IC has been demonstrated for Linux using the new HID-FT260 kernel driver and the built-in Linux I2C commands.

Contact Us

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