

# Design and Implementation of an Optical Power Meter Based on C8051F Microcontroller



## Overview

This paper introduces the hardware design of digital optical power meters and the algorithm flow. The power meter detector, with InGaAs-PIN photodiode and LTC6078, is used as a preamplifier for the measurement of micro-current; Silicon Labs C8051F410 are selected as the. An optical power meter which is used to measure the power of laser. it is developed in c running on a C8051 MCU. - Optical-Power-Meter/source/c8051F350. Comparator converts the enter signal into a square wave signal for the microcontroller count, TFT LCD screen display measurement frequency. Because they are often used outdoors, such instruments need to meet the key characteristics of low power consumption, high. For the oscilloscope, spectrum analyzer and other analog circuit equipment measured characteristics of the narrow frequency range, slow frequency measurement, the design of the digital frequency based on a C8051F020 microcontroller.



## Article Content

Dec 31, 2025

### Low-Power Flow Meter Design Using Optical Sensors

Low-Power Flow Meter Design Using Optical Sensors TI Designs TI Designs provide the foundation that you need including methodology, testing and design files to quickly evaluate and customize the

May 25, 2026

### Design of an intelligent embedded optical power meter system

At present, there is a big gap between domestic portable optical power meters and foreign ones. In view of this situation, this paper proposes a low-cost, portable intelligent embedded optical

Jul 31, 2025

### Kinetis-M One-Phase Power Meter Reference Design

This design reference manual describes a solution for a one-phase electronic power meter based on the MKM34Z128CLL5 microcontroller. This microcontroller is part of the Freescale Kinetis-M

Jul 03, 2025

### Design and Implementation of High Precision Digital

Abstract For the oscilloscope, spectrum analyzer and other analog circuit equipment measured characteristics of the narrow frequency range, slow frequency measurement, the design of the digital

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### Design and Linear Fitting of High Sensitive Optical

Abstract: This paper introduces the hardware design of digital optical power meters and the algorithm flow. The power meter detector, with InGaAs-PIN photodiode

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(PDF) An advanced energy/power meter based on ARM

So, in this paper the design and implementation of a wattmeter for single phase electrical systems based on an ARM microcontroller is presented.

Apr 10, 2026

Microcontroller Based Digital Power Factor and Phase Angle Meter

Abstract: This paper deals with the development of an electronic power factor and phase angle meter using pic Microcontroller. The design is based on generating two signal values, the first is

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In response to the problems of low accuracy, high radiation, and high power consumption in industrial UV power detection, the author proposes a design scheme based on a low-power

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For the oscilloscope, spectrum analyzer and other analog circuit equipment measured characteristics of the narrow frequency range, slow frequency measurement, the design of the digital frequency based

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This paper designs a digital frequency meter based on C8051F020 single chip microcomputer. The frequency measurement method of digital frequency meter adopts the direct frequency...

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(PDF) Design of multi-wavelength optical power meter

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Optical-Power-Meter/README.md at master

An optical power meter which is used to measure the power of laser. it is developed in c running on a C8051 MCU.

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METER USING 8051 MICROCONTROLLER

This project presents the design and implementation of an electronic meter system based on the 8051 microcontroller. The aim is to create a digital measuring system capable of accurately...

Feb 03, 2026

### Design and Implementation of High Precision Digital

In this study, an all-digital 6- to 16-bit adaptive sensor-interface ADC is experimentally evaluated for high-resolution and low-power operation along with

Mar 14, 2026

### High-precision Frequency meter Design based on Microcontroller and

In this study, we propose a novel design scheme for high-precision frequency meters based on a combination of microcontroller and FPGA technologies. Traditional frequency meters often face

Apr 02, 2026

### Design and Implementation of IoT Based Smart Meter

An IoT-based smart meter is an advanced type of energy meter that is capable of measuring and transmitting energy consumption data in real-time.

May 22, 2026

### Design and research of wireless optical power meter based on IoT big ...

The author aims to combine microcontroller technology and narrowband IoT communication technology to design a remotely detectable optical power meter, reducing tedious

Mar 22, 2026

### Optical-Power-Meter/README.md at master · Borrk/Optical-Power

The device is almost as same as the following one, it can measure the power of laser for different wave length, like 850 nm, 1310 nm, 1590 nm. This is a Silicon IDE project, Silicon Labs or Keil uVision is

Apr 02, 2026

### Design of an intelligent embedded optical power meter system

Portable optical power meter is one of the most common test equipment in the field of optical fiber communication, especially widely used in optical fiber construction. Because they are

Apr 25, 2026

### Design and Implementation of IoT Based Smart Meter

Three-phase electricity is commonly used in industrial and commercial settings, and a three-phase smart meter can provide more accurate energy usage data than a single-phase meter. This project aims to

Mar 20, 2026

Design and Implementation of High Precision Digital

Figure 4. AS1117-3.3 V power supply - "Design and Implementation of High Precision Digital Frequency Meter Based on C8051F020 Microcontroller"

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IoT-Based Energy Meter Using 8051 Microcontroller

An IoT-based energy meter allows for real-time monitoring of energy consumption over the internet, providing insights and control that traditional meters lack. This article describes how to

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The Design and Implementation of a C8051F-Based Embedded Image ...

This article presents a new design and implementation of a robust and efficient embedded image system which can perform image acquisition, data saving and communication.

Nov 06, 2025

Design and implementation of photon correlator based on C8051F

Within the photon correlation system, the correlating operation must work at a high speed. In this paper, a photon correlator based on microcontroller C8051F was developed.

Nov 26, 2025

Optical-Power-Meter/source/c8051F350.h at master

An optical power meter which is used to measure the power of laser. it is developed in c running on a C8051 MCU. - Optical-Power-Meter/source/c8051F350.h at master · Borrk/Optical-Power-Meter.

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