ESP32 Optical Power Meter



Overview

The device measures photodiode current using an ESP32 microcontroller, displays real-time optical power on an SSD1306 OLED display, and features a MOSFET-based auto-ranging circuit for extended dynamic range. It was validated against a laboratory-grade Thorlabs PM100D reference. Read your home electricity meter's pulse LED with an ESP32 and ESPHome, then send real-time power and total kWh to Home Assistant. This guide covers optical sensor setup, pulse_meter configuration, conversion from imp/kWh to watts and kWh, Energy dashboard integration, calibration, and common fixes. A compact, portable optical power meter built from the ground up during an internship at Lasertex sp. Earlier we built IoT DC Energy Meter and GSM Prepaid Energy Meter. In this in-depth guide, you'll learn how IEC 62056-21 works, how to read meters using ESPHome, and why the Smart Gateways IEC 62056-21 TTL Optical Infrared Probe is the most reliable hardware choice for both professionals and enthusiasts. This article is written for: What is IEC 62056-21?

Why Use. In this article, we will see how you can make a simple power consumption monitoring device using ESP32 and some commonly available sensors.

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Article Content

ESP32 Electricity Meter Pulse Reader for Home

Read your home electricity meter''s pulse LED with an ESP32 and ESPHome, then send real-time power and total kWh to Home Assistant. This

AkcayFx/portable-optical-power-meter

The device measures photodiode current using an ESP32 microcontroller, displays real-time optical power on an SSD1306 OLED display, and features a MOSFET-based auto-ranging circuit for

Legolas-2025/esp32-energy-meter

This project provides a comprehensive energy monitoring solution that measures AC power consumption in real-time. The system displays power, voltage, and current on a local OLED

IoT Based Electricity Energy Meter using ESP32 & Blynk

In this project, we will learn how to make our own IoT Based Electricity Energy Meter using ESP32 & monitor data on the Blynk Application. Earlier we built IoT DC Energy Meter and

IEC 62056-21 Smart Meter Reading with ESPHome

This article covers ESPHome integration with IEC 62056-21 smart meters, explaining how to use an optical infrared probe for electricity, water, and

DIY Smart Power Consumption Meter using ESP32

In this comprehensive guide, we will demonstrate how to build a smart energy meter using ESP32. This DIY Smart energy meter, using an IoT project,

Smart Meter: Read Power Consumption and Feed-in

Read smart meter power data with ESP32-ETH01 and Tasmota SML: flash firmware, wire IR reading head, configure SML script. Works with

DIY IoT Smart Energy Meter With ESP32, LoRa

In this project, we build a long-range IoT energy monitoring system using ESP32, LoRa, and a custom web dashboard. It measures voltage, current,

ESP32-Based Energy Meter Project (Update 3):

Integrating the ESP32 Energy Meter with Home Assistant not only simplifies the process of monitoring energy usage but also unlocks a suite of

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Non-Invasive Power Meter

Hooking it all up is quite easy: Just buy a suitable photoresistor (make sure the wave length approximately matches the one from your power meter). Then connect it using a simple variable

Optical power meter

An optical power meter (OPM) is a device used to measure the power in an optical signal. The term usually refers to a device used for measuring the average power in fiber optic systems.

Optical Power Meters from AFL measures optical power i | AFL Global

Optical Power Meter (OPM) from AFL measures optical power in fiber optic networks, also measures insertion loss of MM or SM cables if used with Light Source.

Optical Power Meter: A Tool for Measuring Fiber Optic Power

An optical power meter is a device used to measure the power of an optical signal. It is a valuable tool for fiber optic technicians, as it can be used to measure the power of a variety of fiber optic devices,

Reading Electricity Meter with esp32 : r/esp32

ESP32 - WiFi-enabled microcontrollers from Espressif ESP32 is a series of low cost, low power system on a chip microcontrollers with integrated Wi-Fi and dual-mode Bluetooth. The ESP32 series

ESP32 / ESP8266 Smart Meter Reader for Wiener Netze

Setting up the ESP32 / ESP8266 To be able to use the optical user interface of the smart meter an IR reader with TTL-Interface is needed (I am using this one). This device reads the data from the optical

AkcayFx/portable-optical-power-meter

A compact, portable optical power meter built from the ground up during an internship at Lasertex sp. z o.o. The device measures photodiode current using an ESP32 microcontroller, displays real-time

ESP32 power meter for measuring power conversion

Note: This power meter is designed for DC circuits. If you are looking to measure AC current to calculated AC power efficiency you can check out the

ESP32 and Optical Pulse Counter

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Hi there, Out of curiosity, is it possible to interface the Optical Pulse Counter with an ESP32 or ESP8266 using the likes of esphome, espurna or another binary? Many thanks.

Related Video Reference

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

Contact Us

Continue your research online:

Website: https://kenhardtprimary.co.za
Technical inquiry: https://kenhardtprimary.co.za/project-desk.html
African project coordination: Century City, Cape Town, Western Cape, South Africa

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

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