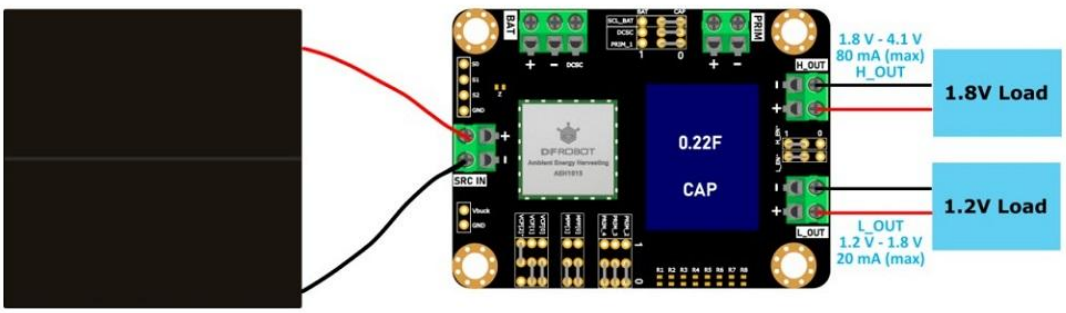
Introduction

Harnessing the abundant sources of energy in the natural environment, such as **mechanical, thermal, solar, and radio frequency energy**, can provide a continuous flow of power to devices. The DFM8001 Ambient Energy Harvesting Kit is a complete solution designed to streamline the construction of Indoor ambient energy power systems. This kit includes the DFM8001 energy harvesting evaluation board, amorphous silicon photovoltaic panels, and a supercapacitor energy storage module, allowing users to easily assemble the components.

The DFM8001 module is an affordable and cost-effective power solution for indoor sensor nodes. It efficiently collects and stores energy ranging from weak to microwatt levels, making it a versatile choice for various applications. The module features **dynamic MPPT tracking**, which regularly monitors the status of input sources and adjusts to the maximum power point to ensure efficient collection of weak energy. Moreover, the module integrates functions including charge and discharge management, energy storage management, and dual-channel voltage stabilization output.

In addition to the basic amorphous silicon photovoltaic panel provided in the kit, users have the option to choose higher efficiency photovoltaic panels, such as organic or dye-sensitized solar panels, according to their needs. This flexibility enhances the kit's adaptability to different energy harvesting scenarios, making it a versatile solution for various ambient energy power systems.

The DFM8001 module is designed with multiple output voltages and selectable collection voltage thresholds, offering flexibility for different user requirements. In the future, it can be combined with the BLE Beacon series to create a wireless sensor node ecosystem, making it a comprehensive solution for various ambient energy power systems.



Connection Diagram of DFM8001 Indoor Ambient Energy Harvesting Kit

Features

Harnesses mechanical, thermal, solar, radio frequency energy.

Efficiently collects and stores weak to microwatt energy.

Features dynamic Maximum Power Point Tracking (MPPT).

Integrates charge, discharge, and energy storage management.

Provides dual-channel voltage stabilization output.

Includes DFM8001 evaluation board, photovoltaic panels, supercapacitor.

Applications

Indoor light energy harvesting

Self-powered Internet of Things (IoT) nodes

Smart home systems

Industrial monitoring

Asset management

Ambient IoT

Specification

Operating voltage: 3.3V-5.5V DC

Cold start condition: Input ⩾ 400mV 15uW

The sustaining voltage after cold start: 150mV.

Input voltage range: 150mV-5V

MPPT ratio: 70%, 75%, 85%, 90% (adjustable)

MPPT automatic detection frequency: 5 times per second

Dual LDO voltage regulation output:

- Low voltage：1.2-1.8V 20mA (with switch)
- High voltage：1.8-4.1V 80mA (with switch)

Energy storage management:

- Adjustable overcharge protection:2.7V-4.5V
- Adjustable overdischarge protection:2.2V-3.6V
- Suitable for any type of rechargeable battery or capacitor
- Low battery warning
- LDO output available indication

Supports disposable backup battery

Amorphous silicon light energy panel maximum power point: 70%

Amorphous silicon light energy panel maximum power: 90uW@200Lux

Module dimensions: 15x15x3.5 mm

Amorphous silicon light energy board size: 45*45mm

Documents

Product wiki

Pinout

Quick Application Block Diagram

Shipping List

Ambient Energy Harvesting Evaluation Board- DFM8001 x1

0.22F Supercapacitor Module x1

1.5F Supercapacitor Module x1

Amorphous silicon light energy board x1