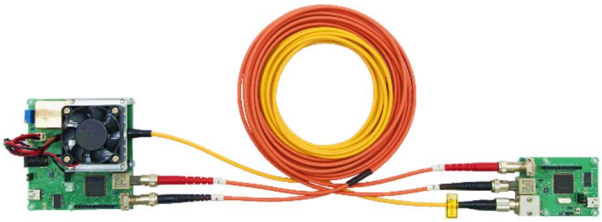
MIH® Sensing Platform

PoFS Series **Datasheet**



Key Features:

- STM32F4 MCU based platform
- Provides voltage isolated power
- Bidirectional noise free communication
- Plug and play interface
- Class 1 laser safety compliant
- ADC up to 750 kSPS
- 12 bit FFT converter
- 200mW electrical output at 3.3V or 5V from the SIM

Applications:

- PoF sensor system development
- PoF robotic system development
- PoF remote devices development
- PoF data communication system development

Power over Fiber (PoF) is the delivery of power via laser light through a fiber optic cable, where the delivered light is converted to electricity by a PV cell on the receiving end, also known as photovoltaic power converter (PPC). Targeting the utility, electric vehicle, renewable, rail traction, and other industries, MHGP's innovative PoF solution provides three major benefits: **(1) noise immunity, (2) voltage isolation,** and **(3) spark free operation**.

Sensing Platform (PoFS)

The Sensing Platform (PoFS) is a development platform to help designers build their own PoF based product for unique sensing and monitoring applications. It incorporates STMicroelectronics™ STM32F407 microcontroller, within an easy-to-use hardware and software platform, containing a power interface module (PIM) and a sensor interface module (SIM, which includes a PPC for converting the laser light to electricity). The PIM sends laser power to the SIM, and communicates with the SIM optically via a transmitter and receiver. The PPC on the SIM powers the communications and conditioning electronics on the SIM. The SIM provides a completely voltage isolated conditioned DC power output of 200mW at 3.3V or 5V to customer electronics, like sensors or probes. With 750kSPS (thousands of samples per second) ADC capability at the SIM, analog signals can be converted into digital signals and sent back to the PIM optically.

The PoFS aims to make PoF more accessible to inventors, makers and research teams. In doing so, new applications for PoF will proliferate, as new products get to market faster, and at lower cost. PoFS provides a turnkey PoF solution enabling rapid integration of application specific features, thus dramatically reducing development timelines, budgets, and technical risk for innovative PoF products.

The PIM module requires an external DC power source to drive a 2.5W laser. The laser power is transmitted through the fiber to a PPC placed on the SIM to generate electric power for the SIM and customer electronics. Tx and Rx devices on both the PIM and SIM allow for bidirectional communication via fiber between the PIM and SIM.

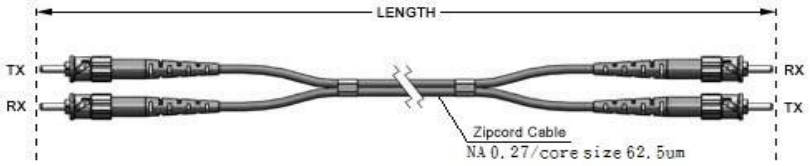
The SIM also includes 750kSPS ADC capability and standard analog and digital data interfaces for receiving data from customer electronics, which it then transmits optically to the PIM.

PIM Technology Specifications

Microcontroller	STMicroelectronics™ STM32F407
Operation Voltage	5V
Input Voltage (recommend)	6V
Input Voltage (Limit)	5~6V
Laser Output Power	0~2.5W
Laser Output Fiber core/ NA/ diameter	62.5um/ 0.22/ 3mm
PC Interface	Mini USB
Digital I/O Pins	2
PWM Digital I/O Pins	1
I^2C Digital I/O Pins	3
Analog Input Pins	3, 10 bits resolution ADC
DC Current per Pin	5mA (I/O pins) under steady state
Output Voltages	3.3V (limited to 120mA),
Data Fiber Optic Connector	ST/ST
PCB Dimensions	75mm x 80mm
Module Dimensions (L) x (W) x (H)	90mm x 82mm x 53mm
Weight	172g
Operating Environment	RT, 0% ~ 80% RH

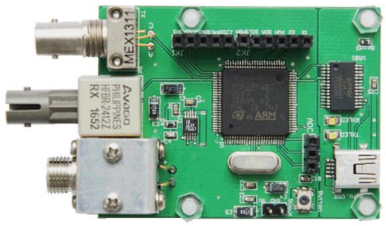
Fiber Patch Cord (FPC)

Connectors	One zip-cord FPC with ST connectors for data transfer
Fiber Core/ NA/ Cable Diameter	62.5um/ 0.22/ 3mm
Length (L)	3m
Weight	60g
Operating Environment	RT, 0% ~ 80% RH



SIM Technology Specifications

Microcontroller	STMicroelectronics™ STM32F407
Operation Voltage	5V
SIM DC Power Output	200mW
PC Interface	Mini USB
Digital I/O Pins	2
PWM Digital I/O Pins	1
I^2C Digital I/O Pins	3
Analog Input Pins	3,10 bits resolution ADC
DC Current per Pin	5mA (I/O pins) under steady state
Output Voltages	3.3V (limited to 60mA), 5V (limited to 40mA)
Power Fiber Optic Connector	FC
Data Fiber Optic Connector	ST/ST
PCB Dimensions	58mm x 44mm
Module Dimensions (L) x (W) x (H)	75mm x 46mm x 25mm
Weight	38g
Operating Environment	RT, 0% ~ 80% RH



MAKE it HAPPEN

MIH®

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