FLYPORT Wi-Fi
System on module

- 802.11 b/g/n WIFI

- Microchip PIC 24F 16 bit processor

- Wi-Fi Module Microchip MRF24WB0MA/RM with Pcb Antenna or uFL connector

- Easy development with openPicus free IDE

- Open source openPicus based on freeRTOS

- Serial bootloader onboard

- Webserver (customizable)
  TCP Socket
  UDP Socket
  SNTP
  SMTP

- 5V or 3.3V power supply

- RTCC onboard

- Remappable pins at runtime

- Digital I/O

- Analog Inputs

- 4 UARTs, 1 SPI,1 I2C

- 35*48*15mm (11 gr)

Introduction

FLYPORT Wi-Fi is a miniature **web server module** featuring a fully integrated 802.11 b/g/n Wi-Fi interface and several interfaces to the 'real world'.

The module integrates a powerful **16 bit processor** which runs custom applications and a **Wi-Fi certified transceiver** which handles the connectivity. 2 versions are available: one with PCB antenna and the other with uFL connector for an external antenna.

The module provides the embedded world with a powerful 'Internet engine' to a browser-based interface over Internet, in a small footprint, at low power and low cost. Real time data can be both displayed and/or updated from a standard web browser, even on smartphone or tablets, because FLYPORT supports dynamic web pages.
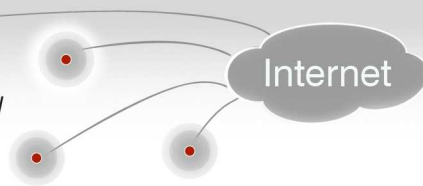

FLYPORT is powered by openPicus framework based on FreeRTOS. The free IDE allows to create applications, to import web pages and to compile and download code to the module.

Features

16 Bit Processor	PIC24FJ256,256K Flash,16K Ram,16Mips@32Mhz
Transceiver	802.11 b/g/n Wi-Fi certified MRF24WB0MB
Power Supply	5V or 3,3V, integrated LDO
Integrated RTC	32,768 Khz quartz onboard
Digital I/O	up to 18, remappable at Runtime
Analog In	up to 4, 10bits ADC, Vref=2,048V
Communication	up to 4 UARTs, SPI, I2C
Connector	26 ways, 2 rows, standard 2.54mm male pin header
Dimensions	35 x 48 x 15 mm, 11 grams

Applications

- Webserver based user interfaces to the embedded
- Sensors and automation
- Internet of Things
- Audio over IP
- Building automation and remote control
- Industrial/process management

Introduction

FLYPORT Wi-Fi is powered by openPicus framework and mounts a 256K Flash 16bit processor from Microchip that runs the Wireless Stack and the application layer. This means that you have full control of the connectivity (extremely important for energy saving) and the application (for ex. the PIC microcontroller onboard can process data coming from an analog sensor and display these data on the integrated webserver, or send by email or save to a remote FTP server).

Flyport Wi-Fi works in 2 ways:
- It provides you a Wi-Fi network (Ad Hoc mode) - NOTE: it's not compatible with Android and other systems.
- It connects to your existing Wi-Fi network (infrastructure mode)
Flyport Wi-Fi cannot act as Access Point!

Available pins:
SPI, I2C, UART and embedded Real Time clock.
I/O : analog and digital and PWM.
Most of pins are remappable at runtime.

Programming:
C programming skills are needed. No expansive programmer is needed since a serial bootloader on module allows you to download the firmware using just a serial cable.

On www.openpicus.com you can find examples, libraries and tools to start to develop immediately.
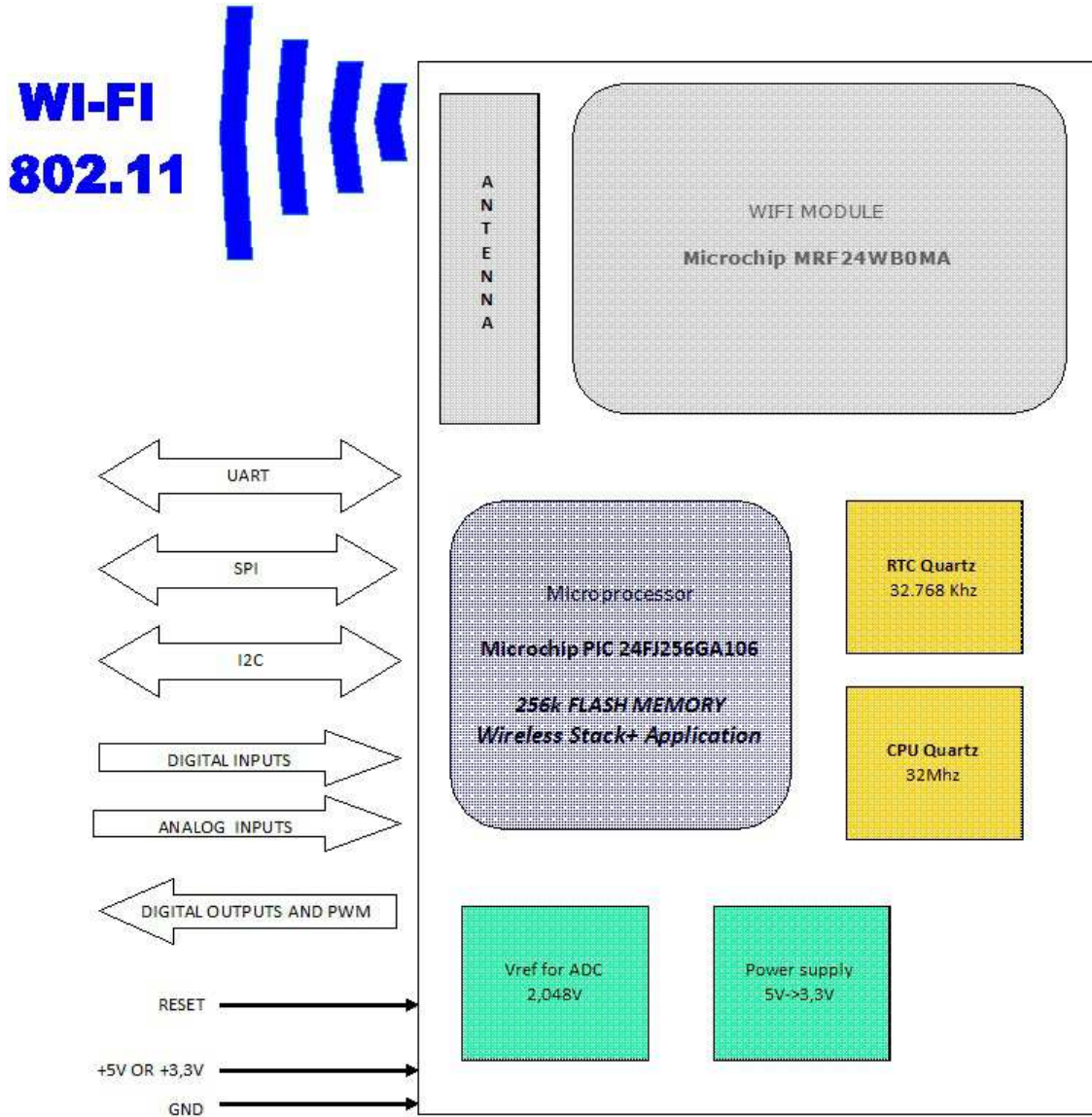
Technical Information

Electrical			802.11 WiFi	
Power supply	5V or 3.3V		**Compatibility**	b/g/n networks
Current consumption (External 3.3V supply And LDO not used)	**Wi-Fi connected** 127.5mA		**Output power**	10dBm
	HIBERNATION 38.5mA transceiver OFF		**Sensitivity**	-91dBm
	SLEEP 11uA PIC micro OFF Transceiver OFF Led and LDO OFF	LED current 7mA each LDO current 80uA	**Max Data Rate**	2 Mbit

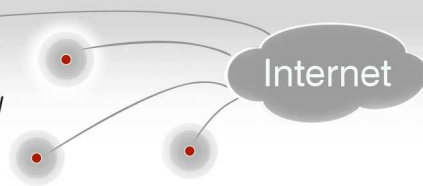| Mechanical		Certifications
Operating Temperature	-20..+85°C	Radio regulation certification for United States (FCC), Canada (IC), Europe (ETSI) and Japan (ARIB)
Dimensions	35*48*15mm	Wi-Fi® certified (WFA ID: WFA7150)

Block Diagram

WI-FI 802.11

ANTENNA

WIFI MODULE

Microchip MRF24WB0MA

UART

SPI

I2C

DIGITAL INPUTS

ANALOG INPUTS

DIGITAL OUTPUTS AND PWM

RESET

+5V OR +3,3V

GND

Microprocessor

Microchip PIC 24FJ256GA106

256k FLASH MEMORY
Wireless Stack+ Application

RTC Quartz
32.768 Khz

CPU Quartz
32Mhz

Vref for ADC
2,048V

Power supply
5V->3,3V

JP1 Connector

JP1 is the main and common connector of each module of the FLYPORT family (Wi-Fi, Ethernet).

FLYPORT modules are based on Microchip PIC processor and offer **remappable pins function.** User can customize the hardware configuration by firmware. It means that you can have up to 4 UARTs , up to 18 Digital I/Os and 9 independent PWMs.

Pin	Pin Name	Description (default setting)	5V Tolerant	Remappable
1	p1	GPIO (I2C bus Clock signal by default)	Yes	No
2	p2	GPIO (input by default)	Yes	Yes
3	p3	GPIO (I2C bus Data signal by default)	Yes	No
4	p4	GPIO (output by default)	Yes	Yes
5	p5	GPIO (input by default)	Yes	Yes
6	p6	GPIO (output by default)	Yes	Yes
7	p7	GPIO (input by default)	Yes	No
8	p8	GPIO (SPI bus Clock SCLK by default)	Yes	Yes
9	p9	GPIO (input by default)	Yes	Yes
10	p10	GPIO (SPI bus Out SDO by default)	Yes	Yes
11	p11	GPIO (input by default)	Yes	Yes
12	p12	GPIO (SPI bus In SDI by default)	Yes	Yes
13	p13	UART RX input	Yes	Yes
14	p14	GPIO (SPI bus chip select CS by default)	Yes	Yes
15	p15	UART TX output	Yes	Yes
16	p16	+5V Power supply input *(note 1)*	-	-
17	p17	GPIO (output by default)	No	Yes
18	p18	Analog input #4 *(note 2)*	No	Yes
19	p19	GPIO (output by default - connected on red Led OUT4)	No	Yes
20	p20	Analog input #3 *(note 2)*	No	Yes
21	p21	GPIO (output by default - connected on red Led OUT5)	No	No
22	p22	GND *(ground)*	-	-
23	p23	Analog input #1 *(note 2)*	No	Yes
24	p24	+3.3V *(see note 1)*	-	-
25	p25	Analog input #2 *(note 2)*	No	Yes
26	p26	Reset *(Active Low)*	No	Yes

Note 1. FLYPORT Wi-Fi can be powered at 5V or at 3.3V. If the module is powered by 5V on pin 16, pin 24 is the output of integrated LDO (max output current available:100mA). If powered using a single 3,3V on pin 24, leave pin 16 unconnected!

Note 2. FLYPORT has a precise voltage reference for analog 2,048V: this is the max voltage readable by these pins

Pins 16-18-20-22-24-26 are directly compatible with the Microchip Pickit programmer connector

Mechanical Information

The connector JP1 is on the bottom side and it's a standard 2*13 ways 2.54mm male pin header connector (SAMTEC TSM-113-01-F-DV). It is compatible with standard female pin headers or directly with a IDC connector on flat cable.
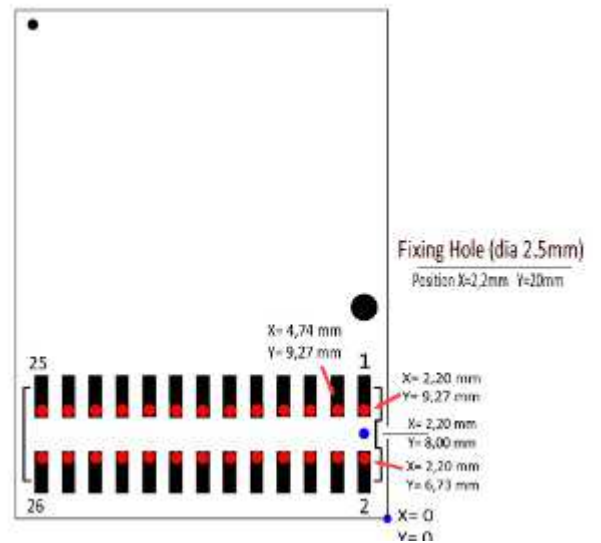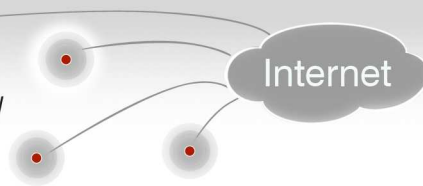
Suggested Female connector:

SAMTEC	SSW-113-01-T-D
FCI	65781-013

The 2.5mm diameter hole may be used for mechanical fastening.
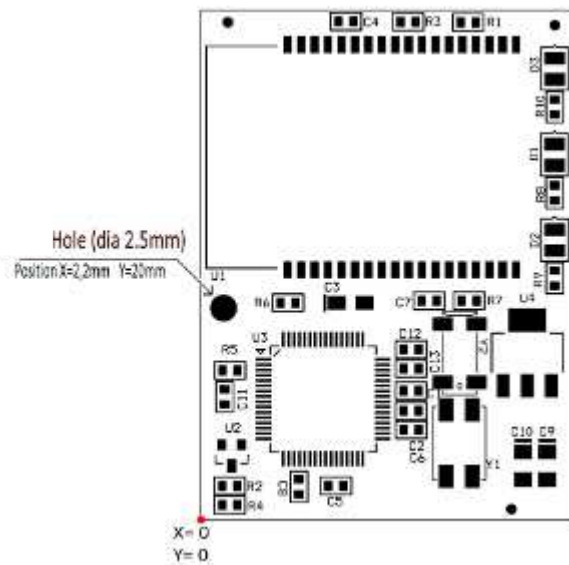
Bottom View

Ordering information

Buy online from our store or through our resellers and distributors.

Code 015350   FLYPORT Wi-Fi module with PCB Antenna
Code 015353   FLYPORT Wi-Fi module with uFL connector for external Antenna

How to start development

Visit our website **www.openpicus.com** to download the IDE, a getting started guide and application notes, examples and libraries.

The **suggested starter kit** is composed by:
- miniUSB PROGRAMMER (to download firmware)   Code 015371
- Proto NEST   Code 015376
- FLYPORT Wi-Fi module   Code 015350 or Code 015353

Each FLYPORT Module has a serial bootloader onboard.