

Connect the embedded world to the internet

Internet

openPICUS

FLYPORT Ethernet

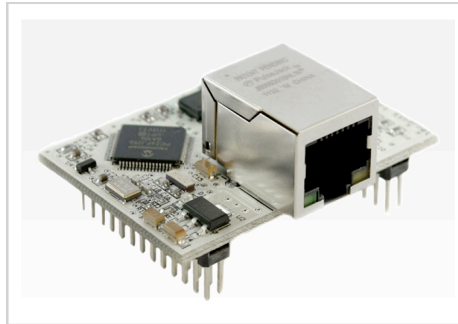
System on module

Introduction

FLYPORT Ethernet is a miniature **web server module** featuring a fully integrated 10/100 Base-T ethernet interface and several interfaces to the 'real world'.

The module integrates a powerful **16 bit processor** which runs custom applications and an **Ethernet interface controller** with integrated MAC & PHY, hardware cryptographic security and a unique MAC address. An RJ45 connector can be mounted on the module, or routed at external addons boards.

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

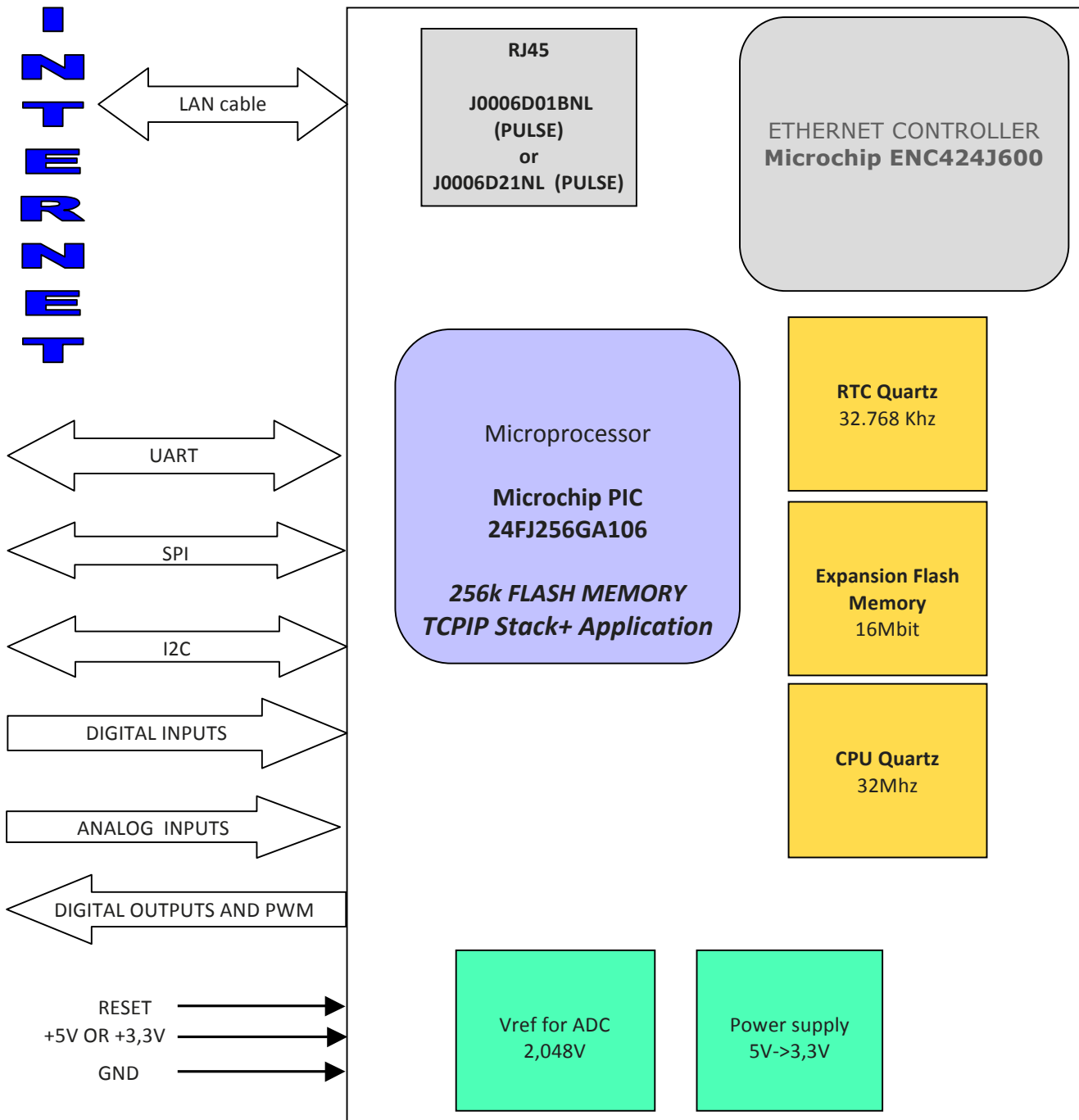
16 Bit Processor	PIC24FJ256,256K Flash,16K Ram,16Mips@32Mhz
Transceiver	ENC424J600 10/100 Base-T Ethernet controller
Power Supply	5V or 3,3V, integrated LDO
Integrated RTC	32,768 Khz quartz onboard
Digital I/O	up to 21, remappable at Runtime
Analog In	up to 4, 10bits ADC, Vref=2,048V
Communication	up to 4 UARTs, SPI, I2C
Flash Memory	SST25VF016B 16Mbit storage Flash memory
Connector	2x26 ways, 2 rows, standard 2.54mm male pin header compatible with SAMTEC ssw-113-01-t-d or FCI 65781-013
Dimensions	35 x 50 x 25 mm, 15 grams

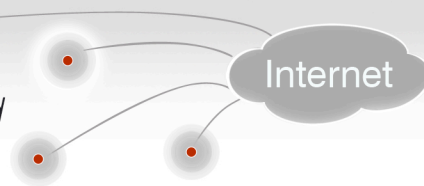
- Microchip PIC 24F 16bit processor
- 16Mbit Flash Memory for web pages
- Firmware upgrade over Internet
- ENC424J600 10/100 Base-T Ethernet
- Available with or without RJ45 connector onboard
- Easy development with openPicus free IDE
- openPicus framework is based on freeRTOS
- Serial bootloader onboard
- 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

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

Block Diagram





JP1 Connector

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

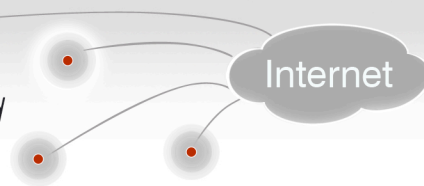
FLYPORT modules are based on Microchip PIC processor and offer **remappable pins function**. User can customize the hardware configuration by firmware. It means that you can have up to 4 UARTs , up to 18 Digital I/Os and 9 independent PWMs.

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 (<i>note 1</i>)	-	-
17	p17	GPIO (output by default)	No	Yes
18	p18	Analog input #4 (<i>note 2</i>)	No	Yes
19	p19	GPIO (output by default - connected on red Led OUT4)	No	Yes
20	p20	Analog input #3 (<i>note 2</i>)	No	Yes
21	p21	GPIO (output by default - connected on red Led OUT5)	No	No
22	p22	GND (<i>ground</i>)	-	-
23	p23	Analog input #1 (<i>note 2</i>)	No	Yes
24	p24	+3.3V (<i>see note 1</i>)	-	-
25	p25	Analog input #2 (<i>note 2</i>)	No	Yes
26	p26	Reset (<i>Active Low</i>)	No	Yes

Note 1. FLYPORT 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



JP2 Connector

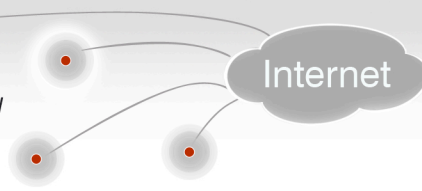
JP2 is not available on FLYPORT WI-FI. FLYPORT Ethernet provides some add-on pins on this connector. The signals routed on this connector are coming directly from the microcontroller (to expand number of available I/O pins) and from Ethernet transceiver, **to use an external RJ45 connector on your expansion board.**

Pin	Pin Name	Description (default setting)	5V Tolerant	Remappable
1	p27	Digital output	No	No
2	p28	Digital input	No	No
3	p29	Digital output	No	No
4	p30	Digital input	No	No
5	p31	Digital output	No	No
6	p32	Digital input	No	No
7	p33	Digital output	No	No
8	p34	Digital input	Yes	No
9	-	Not connected	-	-
10	-	Not connected	-	-
11	-	Not connected	-	-
12	-	Not connected	-	-
13	-	Not connected	-	-
14	-	Not connected	-	-
15	-	Not connected	-	-
16	-	Not connected	-	-
17	-	Ethernet signal TD-	-	-
18	-	Ethernet signal TD+	-	-
19	-	Ethernet signal TCT	-	-
20	-	Ethernet signal RD+	-	-
21	-	Ethernet signal RCT	-	-
22	-	Ethernet signal RD-	-	-
23	-	RJ45 connector pins 7-8	-	-
24	-	RJ45 connector pins 4-5	-	-
25	-	RJ45 connector LED2	-	-
26	-	RJ45 connector LED1	-	-

Note. FLYPORT Ethernet comes in 2 version: with RJ45 connector onboard (default) and without RJ connector.

POE: Pins 23, 24 can be used to power supply the module through the ethernet (it's not a real POE), but an external circuitry is needed.

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Technical Information

Electrical		Ethernet 10/100 Base-T	
Power supply	5V or 3.3V	Compatibility	10/100 Base-T
Current consumption	Ethernet cable not connected	Max Data Rate (Burst)	100 Mbit
	Ethernet cable connected	MAC	Preprogrammed unique MAC address
	98.2 mA		
	158.4mA		
Mechanical		Certifications	
Operating Temperature	-20°C...+85°C	CE, FCC in progress	
Dimensions	35*50*25mm	-	

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Mechanical Information

FLYPORT Ethernet has 2 connectors JP1 and JP2 and a RJ45 plug connector (a version without the RJ45 connector onboard is available).

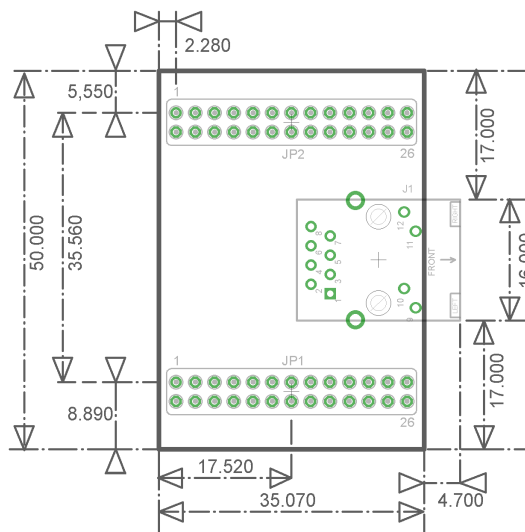
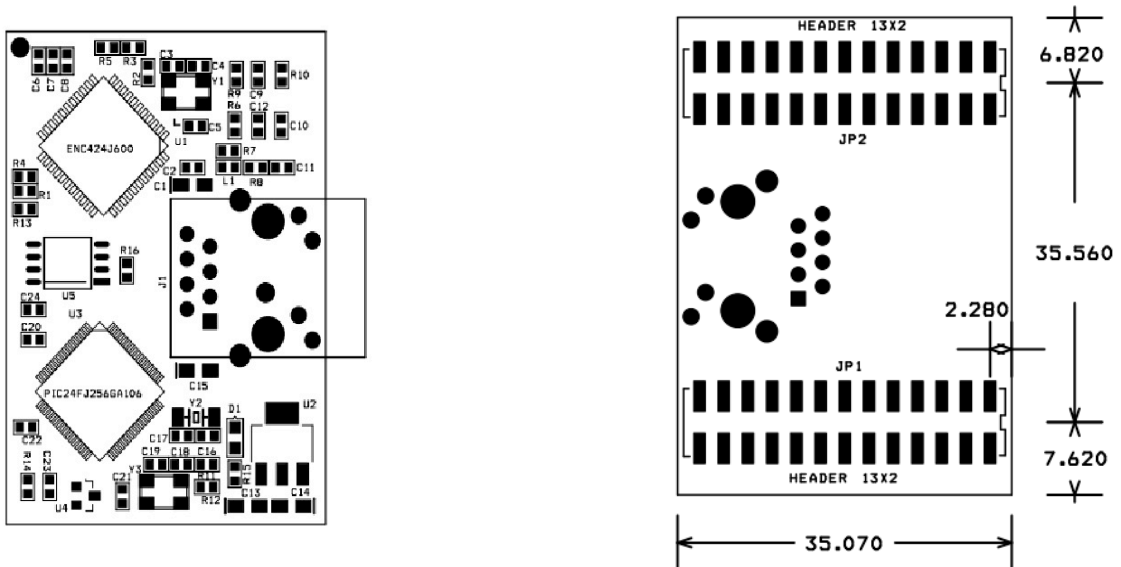
The connectors JP1 and JP2 are 2*13 ways 2.54mm male pinheader connectors compatible with standard female pinheaders or directly with IDC connector on flat cables.

Suggested pin header female connector:

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

Suggested RJ45 connector for expansion board:

PULSE J0006D21NL (with magnetics, no led)



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Ordering Information

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

Code 015356 FLYPORT Ethernet with RJ45 connector, 16Mbit Flash

Code 015357 FLYPORT Ethernet without RJ45 connector, 16Mbit Flash

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)
- Proto NEST
- FLYPORT Ethernet module

Code 015371

Code 015376

Code 015356 or Code 015357

Each FLYPORT Module has a serial bootloader onboard.