

## MOD-ENC624J600 development board

## Users Manual



All boards produced by Olimex are ROHS compliant

Rev. A, June 2011

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## **INTRODUCTION**

**MOD-ENC624J600** is development board with UEXT connector and 100 Mbit ENC624J600 ethernet controller from Microchip Technology Inc.

## **BOARD FEATURES**

- MOD-ENC624J600 is the easiest way to add 100 Mbit ethernet connectivity to any of our boards with UEXT connector
- ENC624J600 Ethernet controller with UEXT connector for easy connection to our other development boards with UEXT connector
- LAN connector with build in transformer
- two status LEDs on LAN connector
- SPI/PARALLEL port interface to add Ethernet interface to your microcontroller project
- UEXT 10 pin interface on 0.1" row pins header
- PCB: FR-4, 1.5 mm (0,062"), soldermask, white silkscreen component print
- Dimensions: 46.99x36.83 mm (1.85 x 1.45")

## **ELECTROSTATIC WARNING**

The MOD-ENC624J600 board is shipped in protective anti-static packaging. The board must not be subject to high electrostatic potentials. General practice for working with static sensitive devices should be applied when working with this board.

## **BOARD USE REQUIREMENTS**

**Hardware:** Our development board PIC 32-WEB use ENC624J600

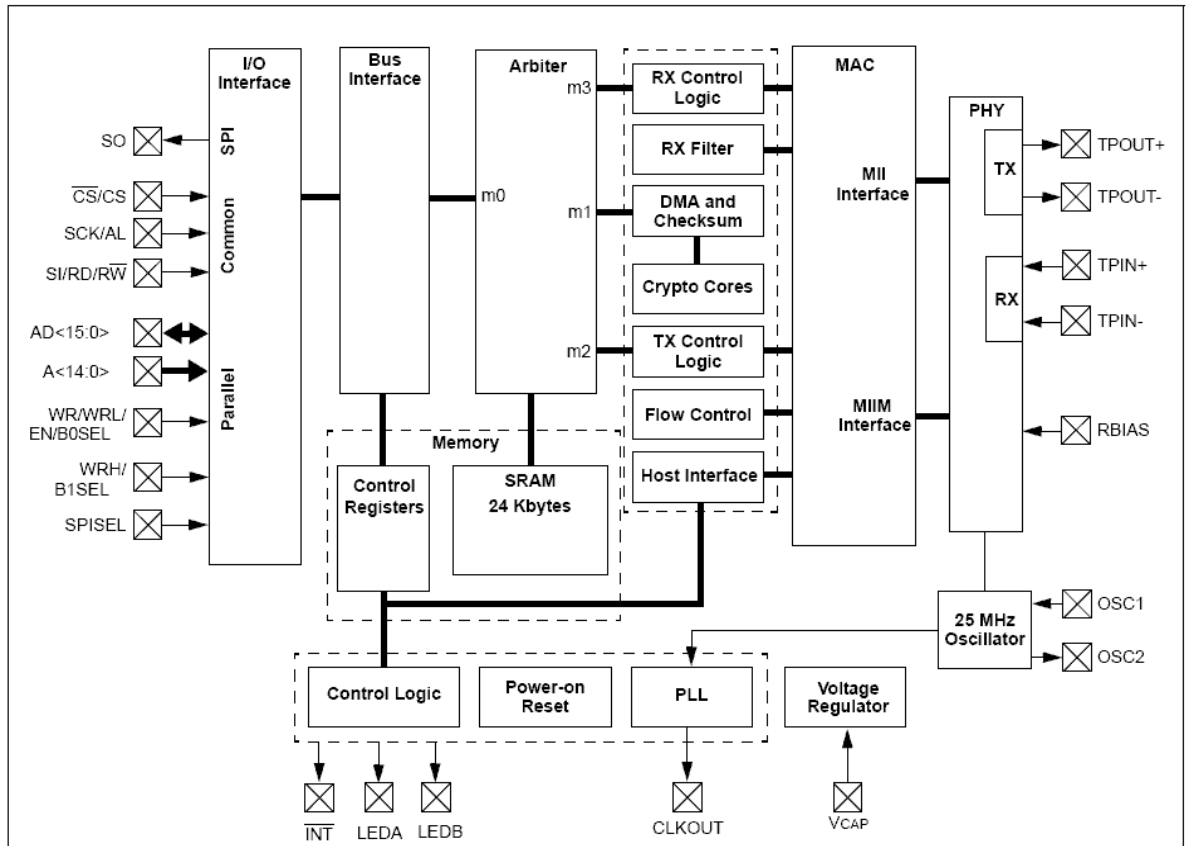
## ETHERNET CONTROLLER FEATURES

**MOD-ENC28J60** board use ENC624J600 stand-alone ethernet controller with these features:

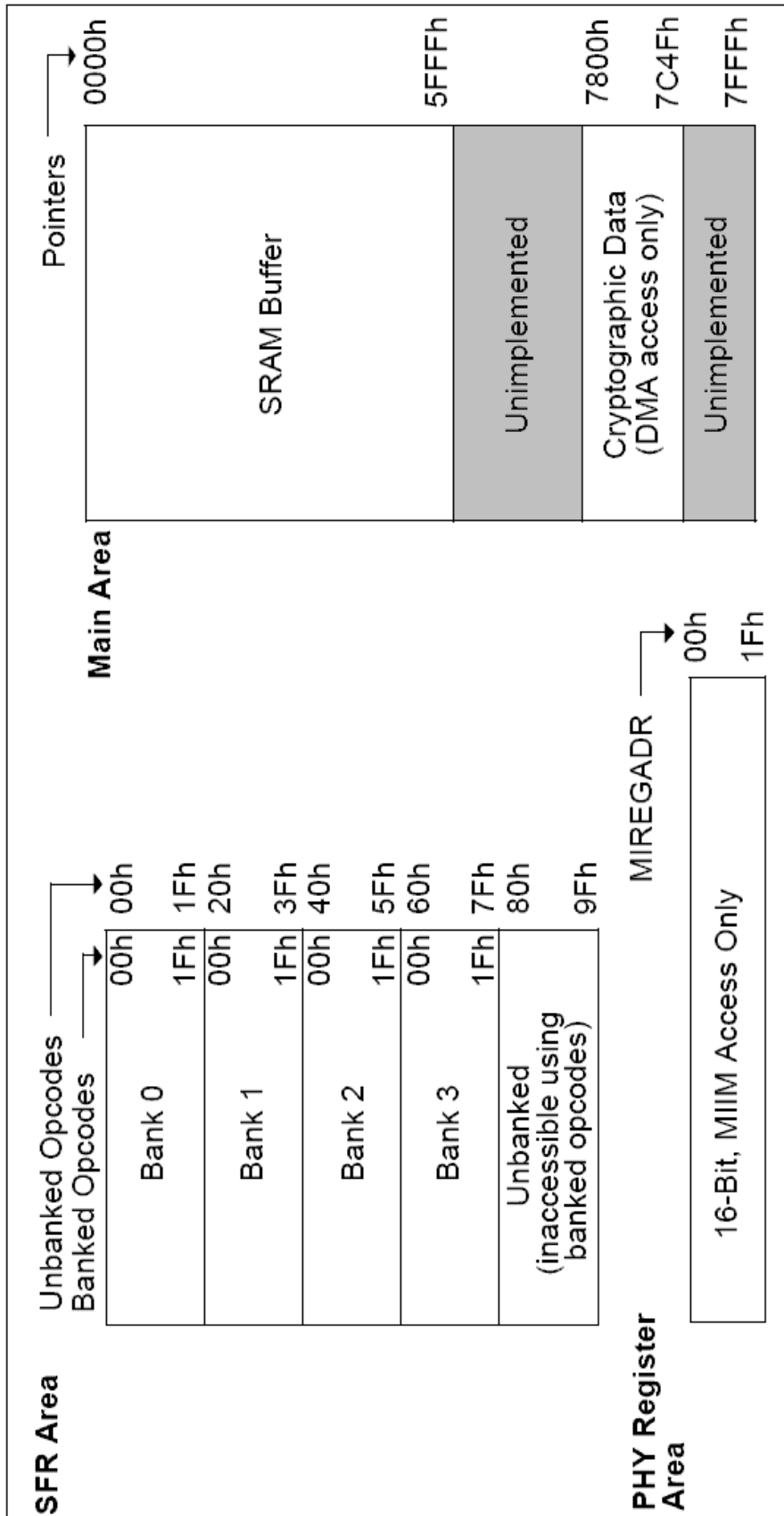
- IEEE 802.3™ Compliant Fast Ethernet Controller
- Integrated MAC and 10/100Base-T PHY
- Hardware Security Acceleration Engines
- 24-Kbyte Transmit/Receive Packet Buffer SRAM
- Supports one 10/100Base-T Port with Automatic Polarity Detection and Correction
- Supports Auto-Negotiation
- Support for Pause Control Frames, including Automatic Transmit and Receive Flow Control
- Supports Half and Full-Duplex Operation
- Programmable Automatic Retransmit on Collision
- Programmable Padding and CRC Generation
- Programmable Automatic Rejection of Erroneous and Runt Packets
- Factory Preprogrammed Unique MAC Address
- MAC:
  - Support for Unicast, Multicast and Broadcast packets
  - Supports promiscuous reception
  - Programmable pattern matching
  - Programmable filtering on multiple packet formats, including Magic Packet™, Unicast, Multicast, Broadcast, specific packet match, destination address hash match or any packet
- PHY:
  - Wave shaping output filter
  - Internal Loopback mode
  - Energy Detect Power-Down mode
- Security Engines:
  - High-performance, modular exponentiation engine with up to 1024-bit operands
  - Supports RSA® and Diffie-Hellman key exchange algorithms
  - High-performance AES encrypt/decrypt engine with 128-bit, 192-bit or 256-bit key
  - Hardware AES ECB, CBC, CFB and OFB mode capability
  - Software AES CTR mode capability
  - Fast MD5 hash computations
  - Fast SHA-1 hash computations

- Buffer:
  - Configurable transmit/receive buffer size
  - Hardware-managed circular receive FIFO
  - 8-bit or 16-bit random and sequential access
  - High-performance internal DMA for fast memory copying
  - High-performance hardware IP checksum calculations
  - Accessible in low-power modes
  - Space can be reserved for general purpose application usage in addition to transmit and receive packets
- Operational:
  - Outputs for two LED indicators with support for single and dual LED configurations
  - Transmit and receive interrupts
  - 25MHz clock
  - 5V tolerant inputs
  - Clock out pin with programmable frequencies from 50 kHz to 33.3 MHz
  - Operating voltage range of 3.0V to 3.6V
  - Temperature range: -40°C to +85°C industrial

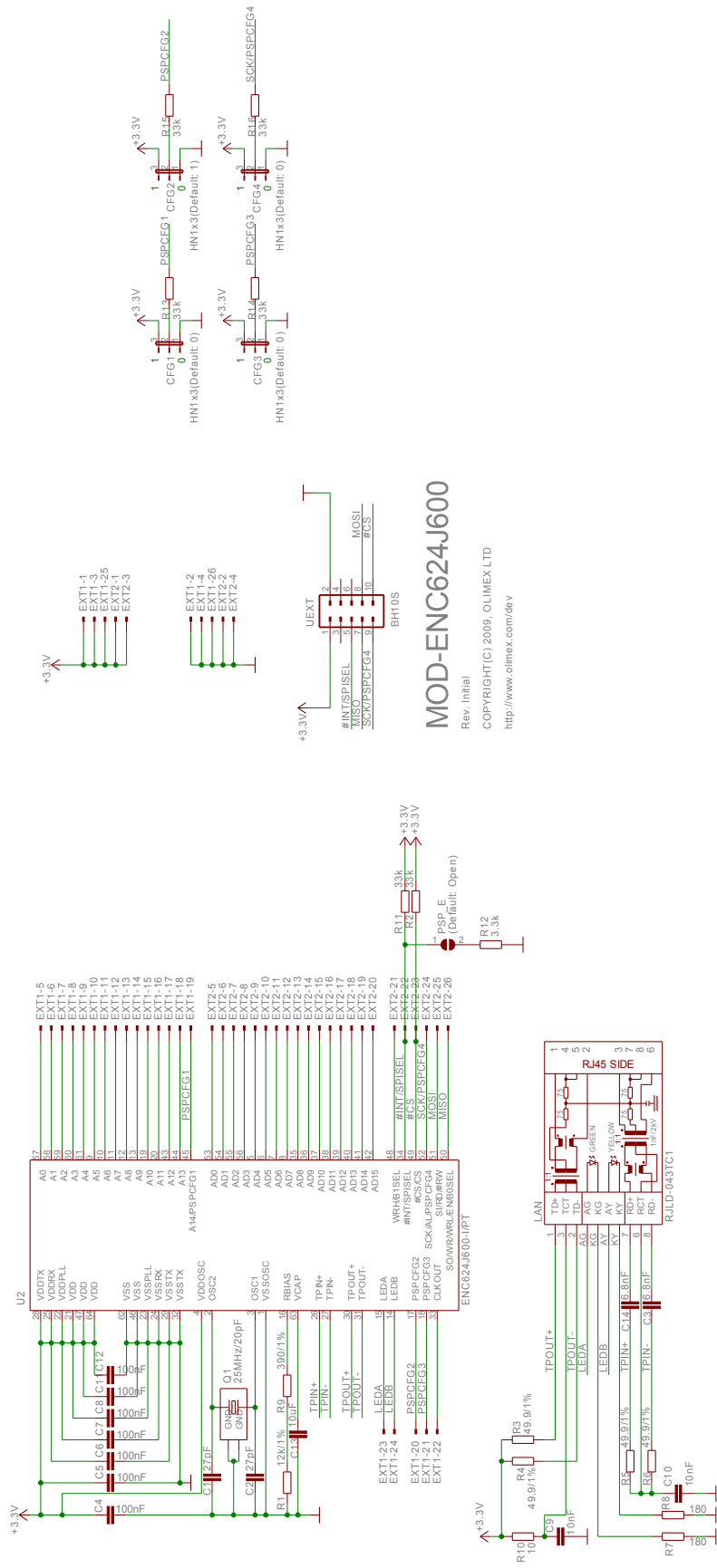
# BLOCK DIAGRAM



# MEMORY MAP



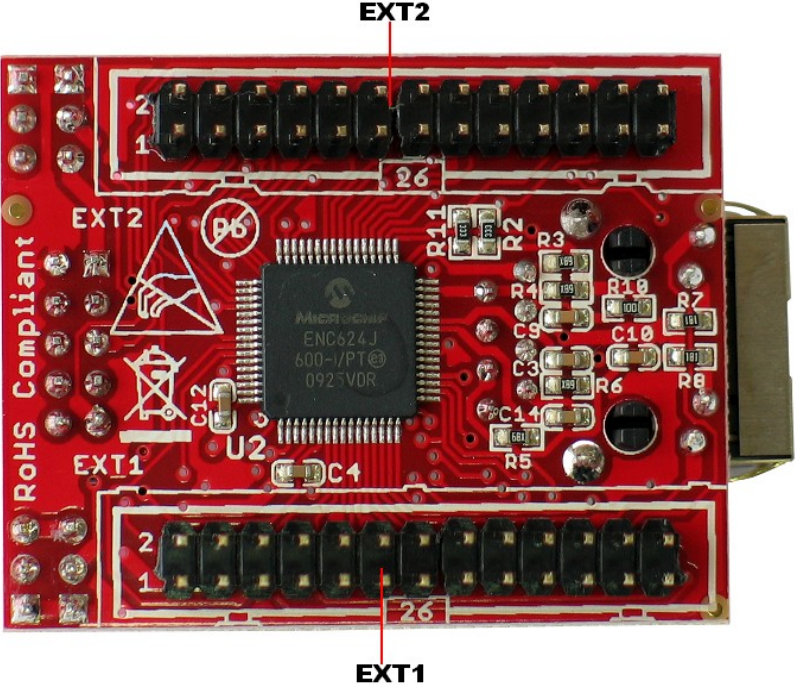
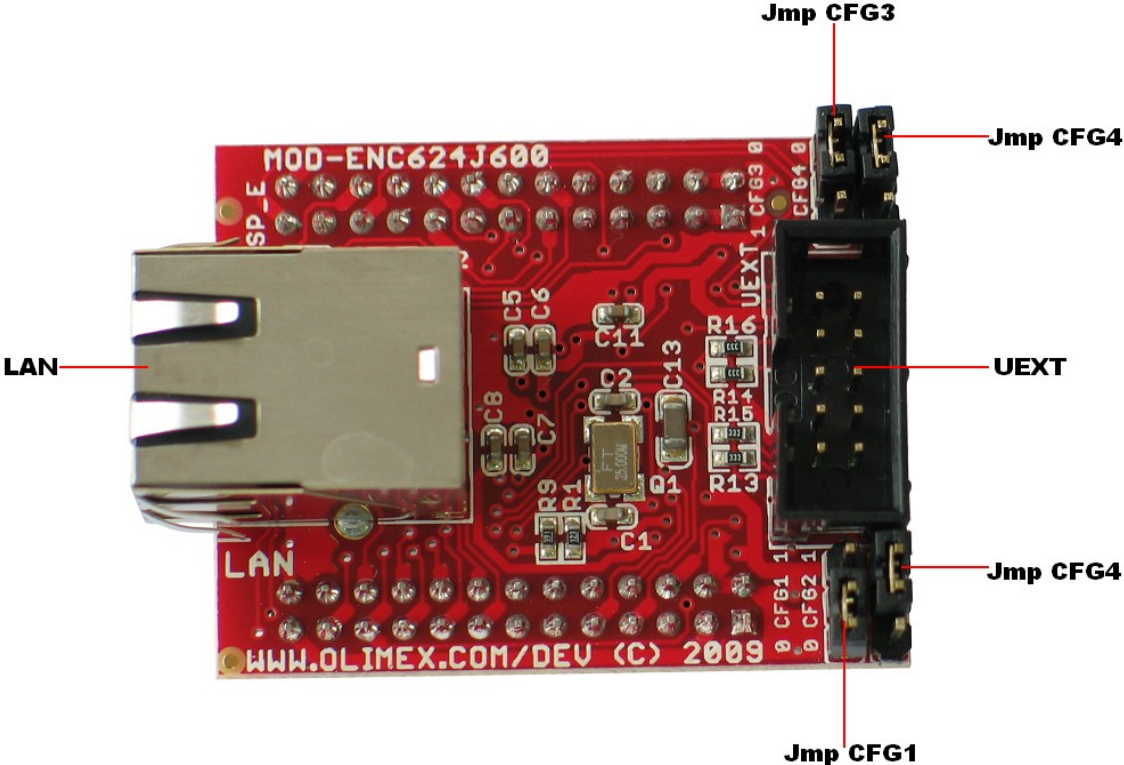
# SCHEMATIC



## MOD-ENC624J600

Rev. Initial  
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**BOARD LAYOUT**





## POWER SUPPLY CIRCUIT

MOD-ENC624J600 is typically power supplied by UEXT pin 1 and pin 2, EXT1 - pins 1, 3, 25 and pins 2, 4, 26, EXT2 - pins 1, 3 and 2, 4.

## CLOCK CIRCUIT

Quartz crystal 25 MHz is connected to ENC624J600 pin 2 (OSC2) and pin3 (OSC1).

## JUMPER DESCRIPTION

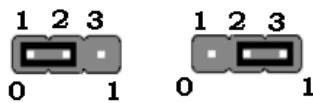
### PSP\_E



When is closed this jumper enables PSP mode.

Default state is open.

### CFG1, CFG2, CFG3, CFG4



MOD-ENC624J600 works in several modes. Jumpers position define the working mode :

#### **PSP Mode 9:**

CFG1 - in position "0"

CFG2 - in position "1"

CFG3 - in position "1"

CFG4 - in position "0"

#### **PSP Mode 3:**

CFG1 - in position "0"

CFG2 - in position "1"

CFG3 - in position "0"

CFG4 - in position "0"

#### **SPI Mode - connected to SPI2:**

CFG1 - doesn't matter

CFG2 - doesn't matter

CFG3 - doesn't matter

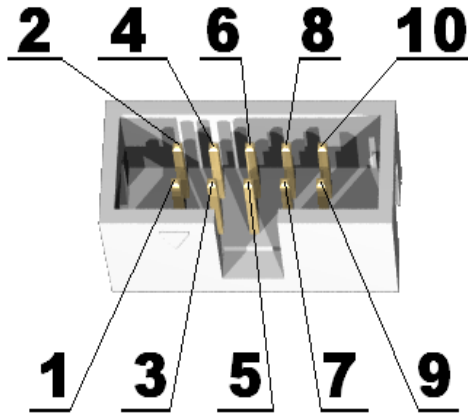
CFG4 - doesn't matter

PSP\_E - open

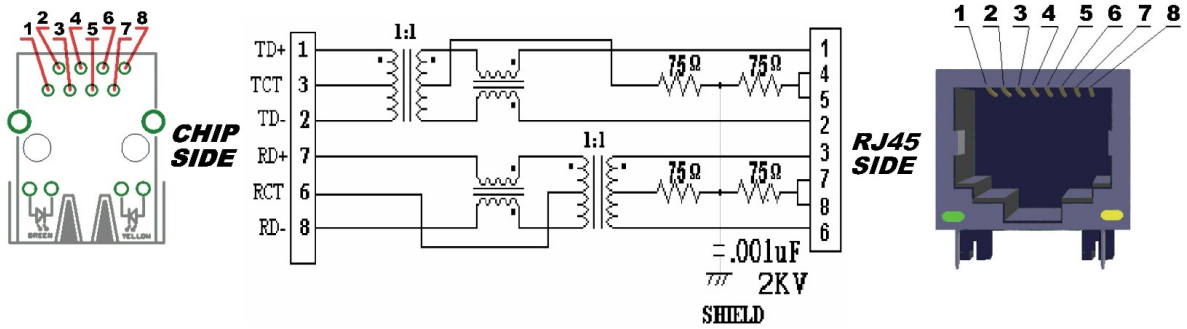
## CONNECTOR DESCRIPTION

### UEXT

Pin #	Signal Name
1	+3.3V
2	GND
3	NC
4	NC
5	#INT/SPISEL
6	NC
7	MISO
8	MOSI
9	SCK/PSPCFG4
10	#CS



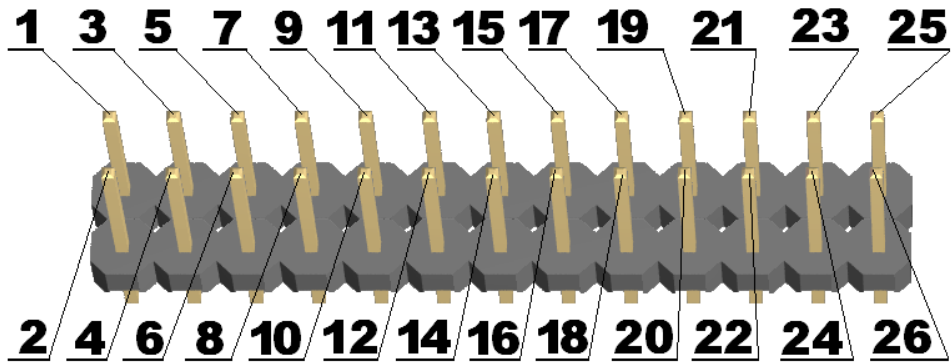
### LAN



Pin #	Signal Name Chip Side	Pin #	Signal Name Chip Side
1	TX+	5	Not Connected (NC)
2	TX-	6	VDD
3	VDD	7	RX+
4	Not Connected (NC)	8	RX-

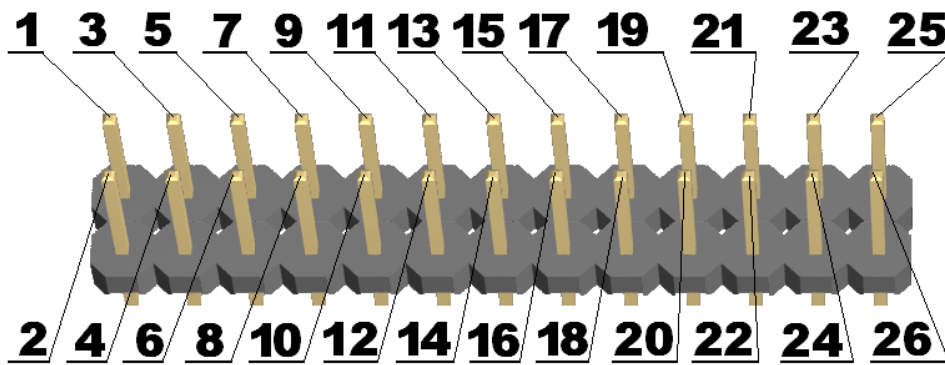
LED	Color	Usage
Right	Green	Link status
Left	Yellow	Activity status

## EXT1



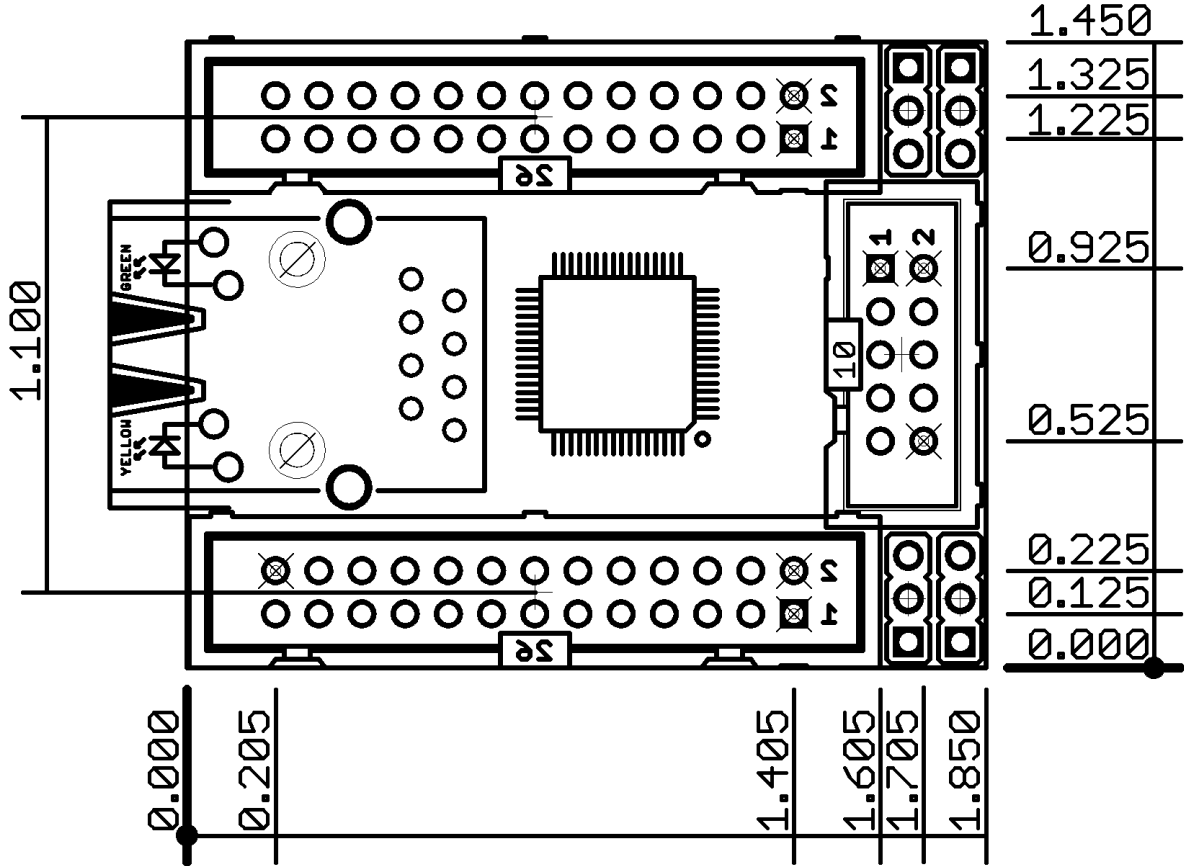
Pin #	Signal Name	Pin #	Signal Name
1	3.3V	2	GND
3	3.3V	4	GND
5	A0	6	A1
7	A2	8	A3
9	A4	10	A5
11	A6	12	A7
13	A8	14	A9
15	A10	16	A11
17	A12	18	A13
19	PSPCFG1	20	PSPCFG2
21	PSPCFG3	22	CLKOUT
23	LEDA	24	LEDB
25	3.3V	26	GND

## EXT2



Pin #	Signal Name	Pin #	Signal Name
1	3.3V	2	GND
3	3.3V	4	GND
5	AD0	6	AD1
7	AD2	8	AD3
9	AD4	10	AD5
11	AD6	12	AD7
13	AD8	14	AD9
15	AD10	16	AD11
17	AD12	18	AD13
19	AD14	20	AD15
21	WRH/B1SEL	22	#INT/SPISEL
23	#CS	24	SCK/PSPCFG4
25	MOSI	26	MISO

**MECHANICAL DIMENSIONS**



All measures are in inches.

## **AVAILABLE DEMO SOFTWARE**

- Microchip's TCP-IP stack full featured TCP-IP stack, very easy to configure and use with PIC microcontrollers.
- Demo code with PIC32-WEB board

## **ORDER CODE**

**MOD-ENC624J600** Completely assembled and tested, includes ENC624J600 Ethernet controller

How to order?

You can order to us directly or by any of our distributors.

Check our web [www.olimex.com/dev](http://www.olimex.com/dev) for more info.

### **Revision history:**

Rev. Initial	- create November 2009
Rev. A	- edited June 2011 - added more detailed mechanical dimensions

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