

## ENC28J60-H development board

## Users Manual



All boards produced by Olimex are ROHS compliant

Rev. A, September 2011  
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## **INTRODUCTION**

ENC28J60-H is world's smallest Ethernet controller development board with it's size of only 30x24 mm. It provides easy connection to any microcontroller with only few ports via SPI which makes it perfect for adding Ethernet connectivity to embedded applications.

## **BOARD FEATURES**

- ENC28J60 10 Mbit Ethernet controller
- on-board RJ45 connector with build in Ethernet transformer and two status LEDs
- easy interface to any microcontroller via SPI
- compact size in DIL 10 pin format, the distance between pin rows is 0.8"
- PCB: FR-4, 1.5 mm (0,062"), soldermask, white silkscreen component print
- Dimensions: 30x24 mm (1.18x0.95")

## **ELECTROSTATIC WARNING**

The ENC28J60-H 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.

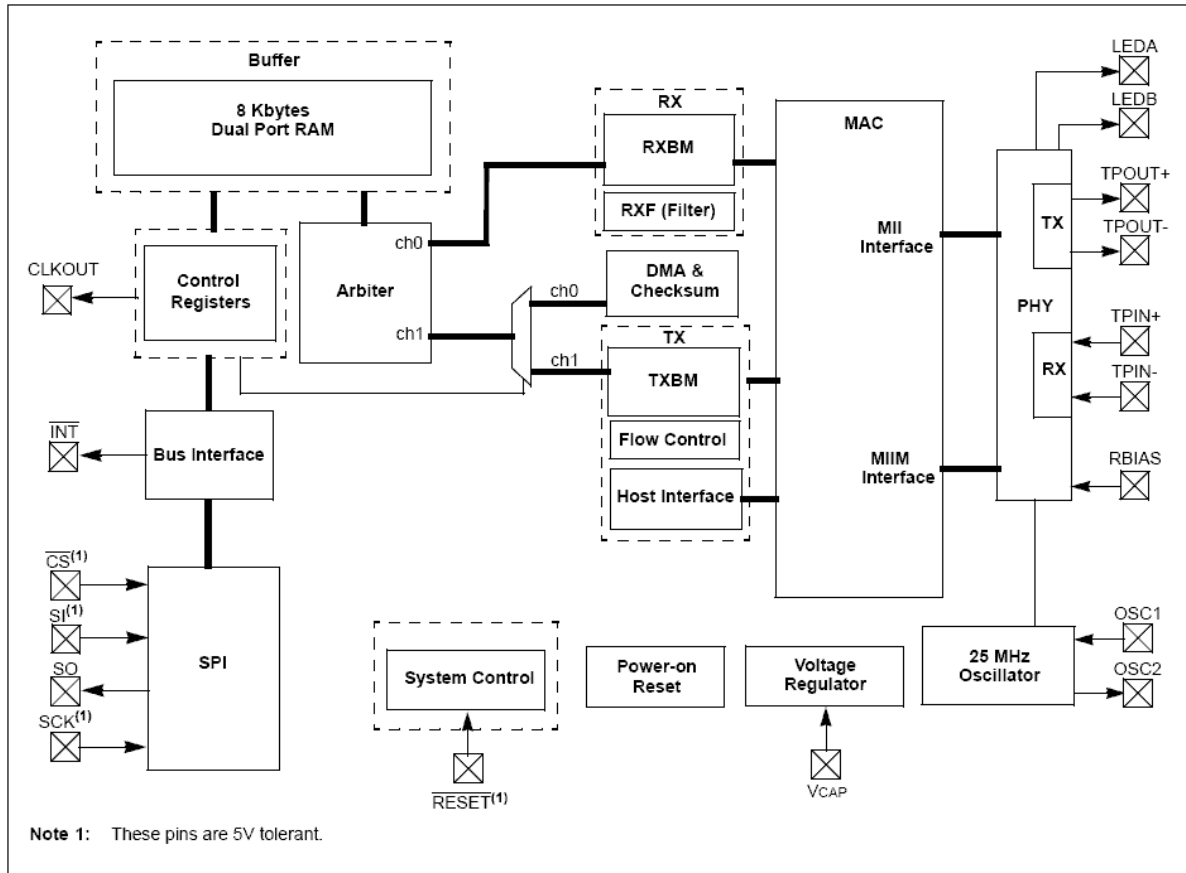
## **Ethernet Controller Features**

ENC28J60-H board use ENC28J60 stand-alone ethernet controller with these features:

- IEEE 802.3. Compatible Ethernet Controller
- Fully Compatible with 10/100/1000Base-T Networks
- Integrated MAC and 10Base-T PHY
- Supports One 10Base-T Port with Automatic Polarity Detection and Correction
- Supports Full and Half-Duplex modes
- Programmable Automatic Retransmit on Collision
- Programmable Padding and CRC Generation
- Programmable Automatic Rejection of Erroneous Packets
- SPI Interface with Clock Speeds Up to 20 MHz

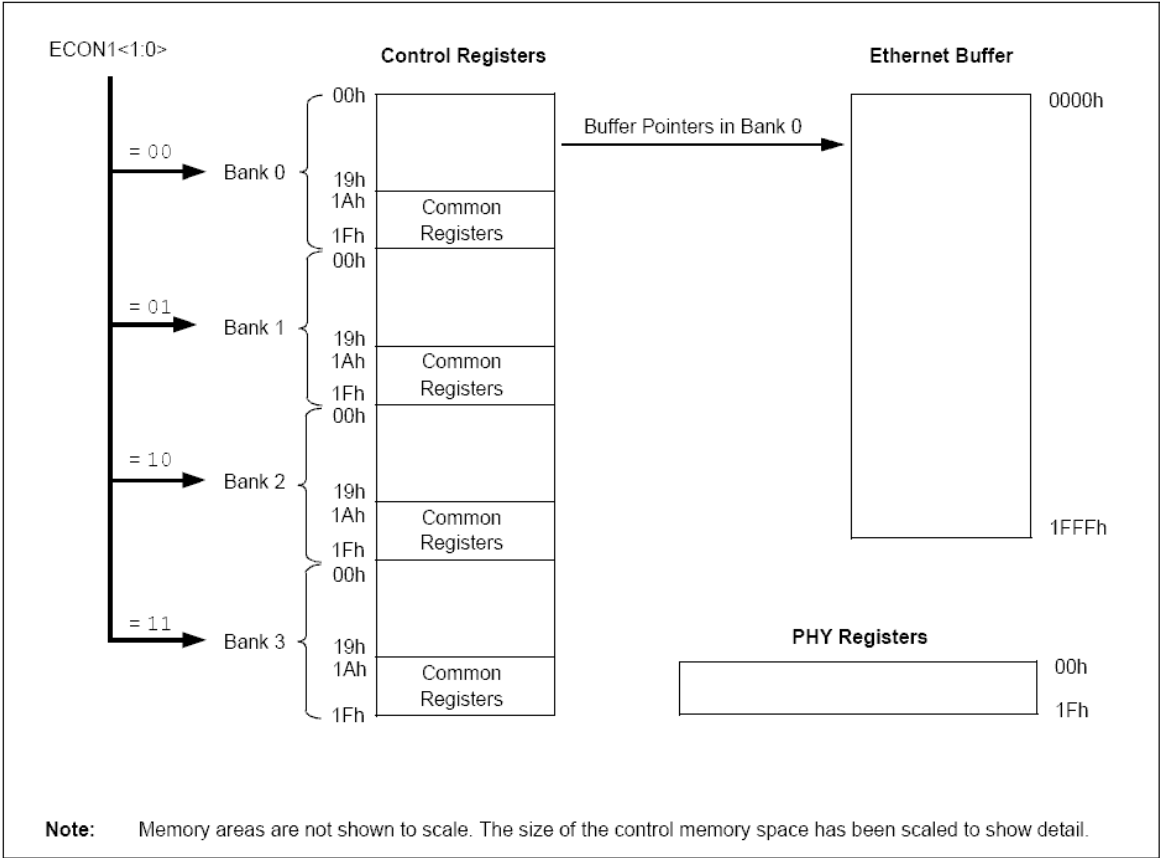
# BLOCK DIAGRAM

ENC28J60 BLOCK DIAGRAM

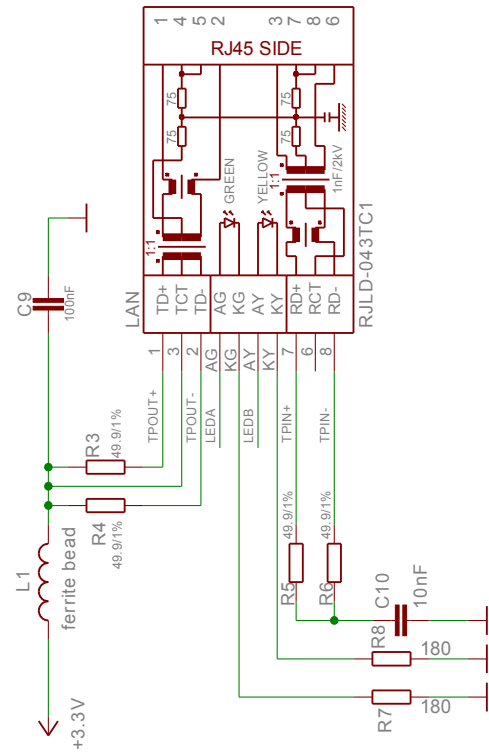


# MEMORY MAP

## ENC28J60 MEMORY ORGANIZATION

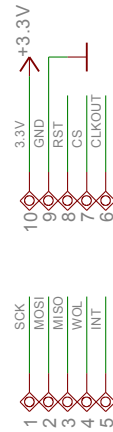
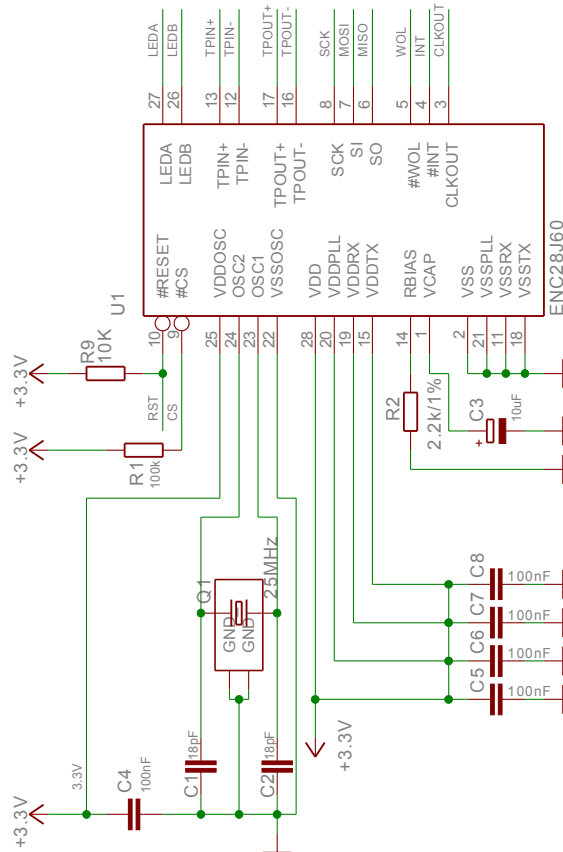


# SCHEMATIC



**ENC28J60-H**

Rev. B  
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## POWER SUPPLY CIRCUIT

ENC28J60-H is typically power supplied by EXT pin 10 and pin 9.

## RESET CIRCUIT

ENC28J60-H reset circuit includes EXT connector pin 8, U1 pin 10 and R9 (10k).

## CLOCK CIRCUIT

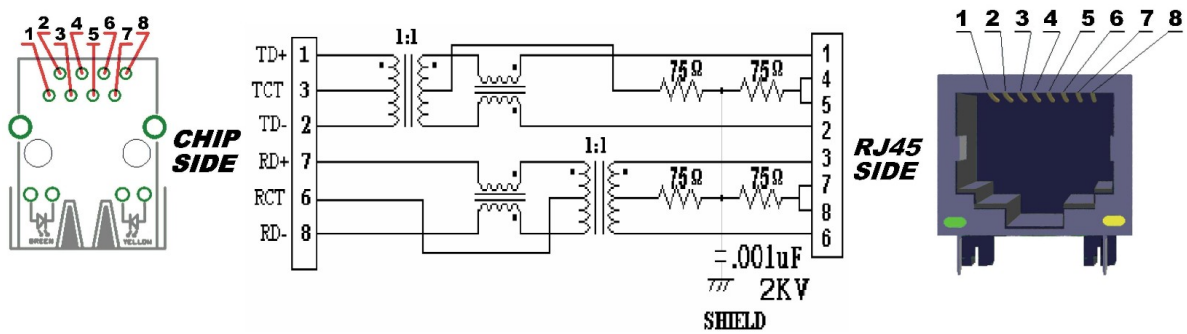
Quartz crystal 25 MHz is connected to ENC28J60 pin 23 (OSC1) and pin24 (OSC2).

## JUMPER DESCRIPTION

There are no jumpers on this board.

## CONNECTOR DESCRIPTIONS

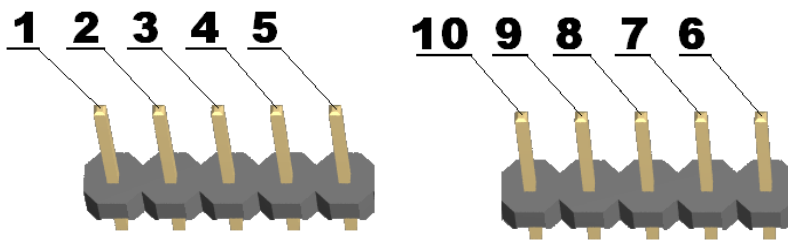
### LAN



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-

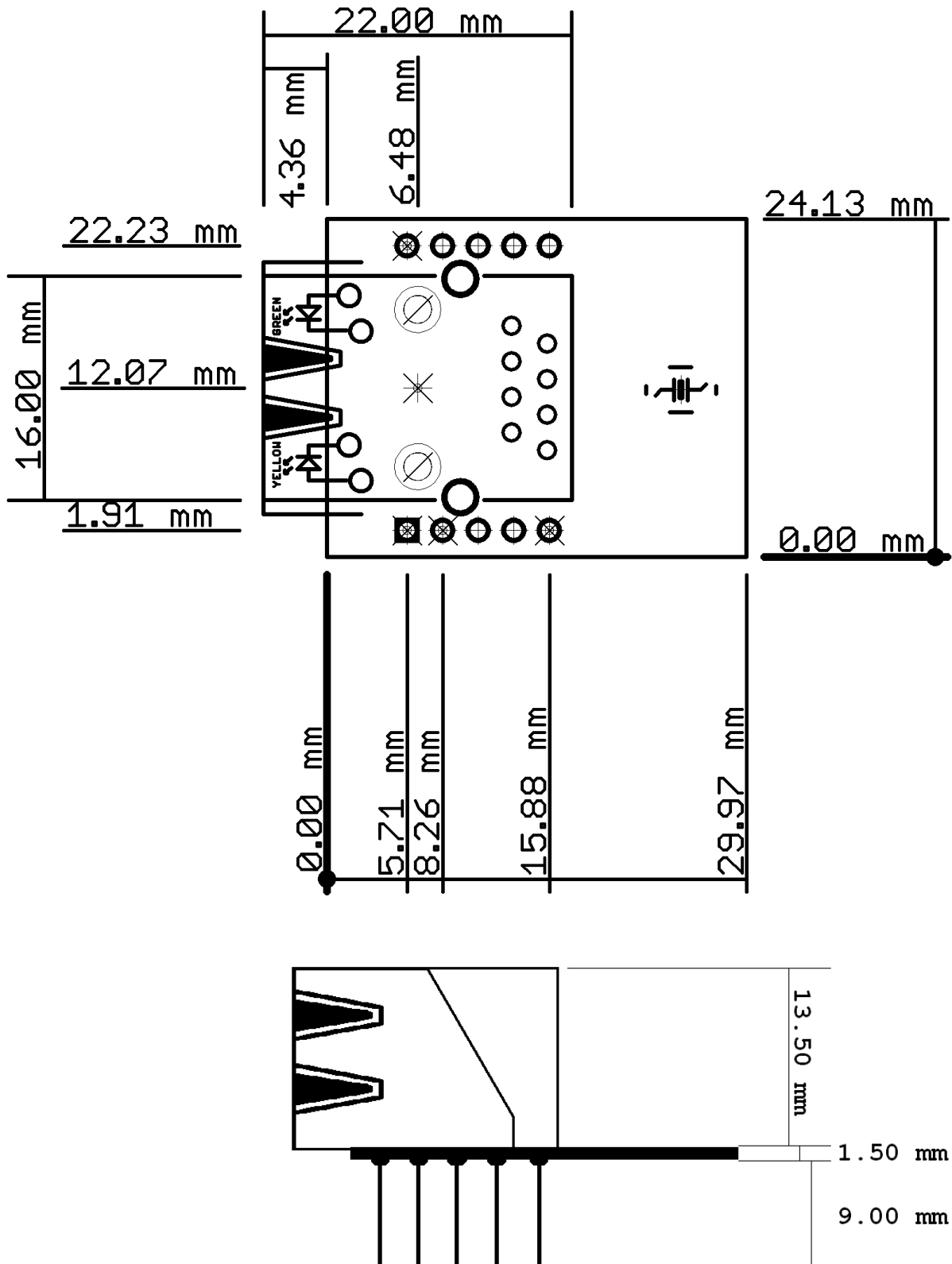
LED	Color	Usage
Right	Green	Link status
Left	Yellow	Activity status

## EXT



Pin#	Signal Name	Pin#	Signal Name
1	SCK	6	CLKOUT
2	MOSI	7	CS
3	MISO	8	RST
4	WOL	9	GND
5	INT	10	3.3V

# MECHANICAL DIMENSIONS





## AVAILABLE DEMO SOFTWARE

- [Microchip's TCP-IP stack](#) full featured TCP-IP stack, very easy to configure and use with PIC microcontrollers.
- AVR fans now have also demo code for [driving ENC28J60 with Bascom](#) thanks to Ben Zijlstra from Netherlands
- Our development boards [PIC-WEB](#) and [PIC-MINI-WEB](#) use ENC28J60
- [uIP1.0 demo code](#) with LPC-P2106 and ENC28J60-H for CrossWorks written by Iain Derrington

## **ORDER CODE**

**ENC28J60-H** – completely assembled and tested, includes ENC28J60 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:**

Board's revision:

Rev. B - create November 2008

Manual's revision:

Rev. A - added more detailed mechanical dimensions

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