

## MSP430-EasyWeb3 development board

## Users Manual



All boards produced by Olimex are ROHS compliant

Rev. Initial, May 2011

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## **INTRODUCTION:**

**MSP430-EasyWeb3** is TCP/IP board with MSP430F149 based on Andreas Dannenberg easyWeb TCP/IP.

On the board, there are JTAG connector, two extension connectors, two UART interfaces terminated to extension connector EXT2, LAN connector and status leds. All this allows you to build an applications to be used in a different situations.

## **BOARD FEATURES:**

- MSP430F149 running Andreas' open source TCPIP stack
- CS8900 LAN controller + LAN transformer and RJ45 LAN connector
- three status LEDs for the LAN
- JTAG connector for MSP430F149 programming
- low power RS232 driver MAX3232
- two extension headers for MSP320F149 ports
- 8Mhz oscillator crystal
- PCB: FR-4, 1.5 mm (0,062"), soldermask, silkscreen component print
- Dimensions: 76x60 mm (3x2.4")

## **ELECTROSTATIC WARNING:**

The MSP430-EasyWeb3 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:**

**Cables:** The cable you will need depends on the programmer/debugger you use. If you use MSP430-JTAG, you will need LPT cable, if you use MSP430-JTAG-TINY or MSP-JTAG-ISO, you will need 1.8m A-B USB cable, if you use MSP430-JTAG-RF, you can connect it to the USB port of your computer, or via USB cable type A - female.

**Hardware:** Programmer/Debugger - one of our Programmers - [MSP430-JTAG](#), [MSP430-JTAG-TINY](#), [MSP430-JTAG-ISO](#), or [MSP430-JTAG-RF](#).

**Software:** MSP430 KickStart software.

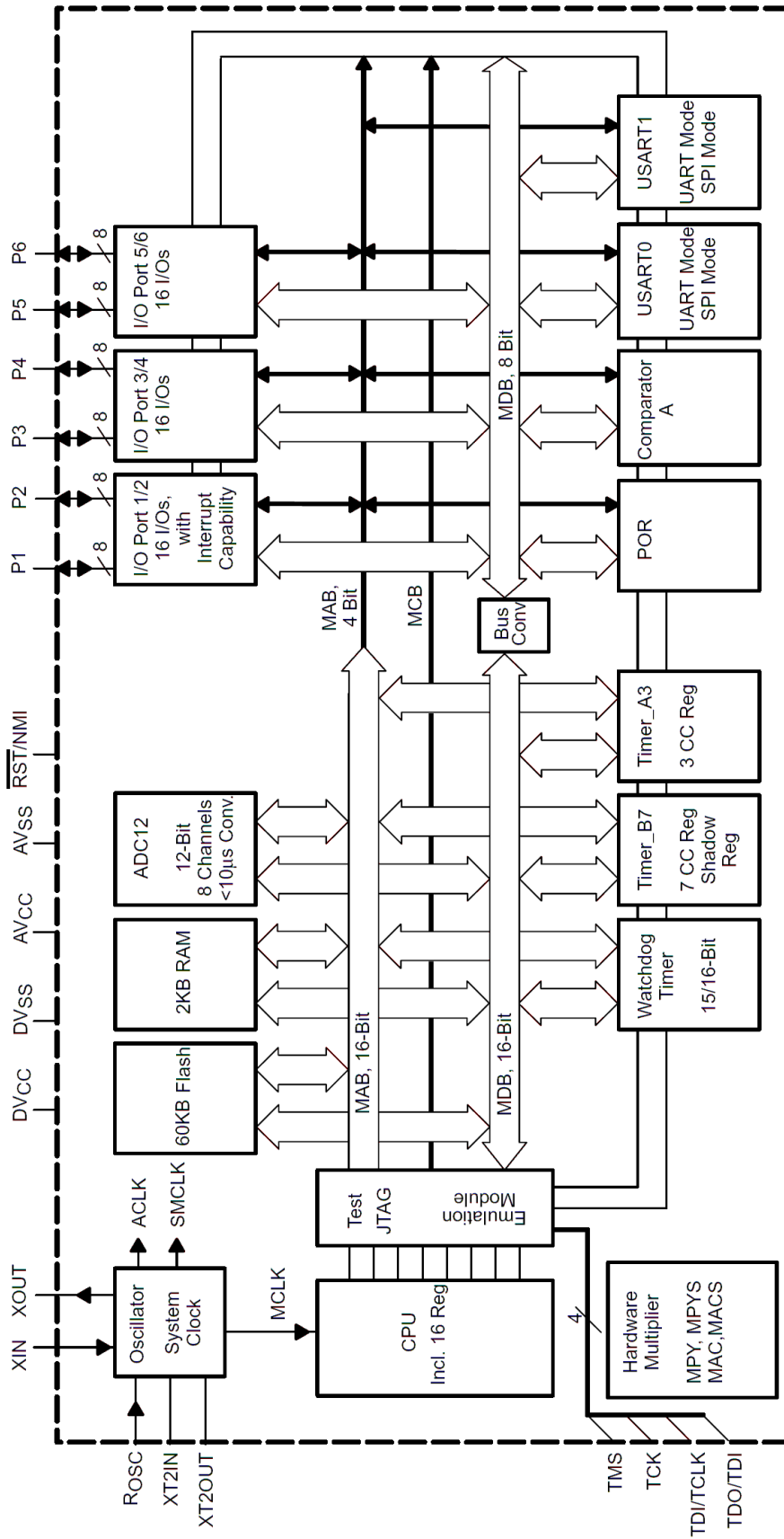
## **PROCESSOR FEATURES:**

**MSP430-EasyWeb3** board use ultralow-power consumption mixed signal microcontroller with these features:

- Low Supply-Voltage Range, 1.8 V . . . 3.6 V
- Ultralow-Power Consumption:
  - Active Mode: 280  $\mu$ A at 1 MHz, 2.2V
  - Standby Mode: 1.6  $\mu$ A
  - Off Mode (RAM Retention): 0.1  $\mu$ A
- Five Power-Saving Modes
- Wake-Up From Standby Mode in less than 6  $\mu$ s
- 16-Bit RISC Architecture, 125-ns Instruction Cycle Time
- 12-Bit A/D Converter With Internal Reference, Sample-and-Hold and Autoscan Feature
- 16-Bit Timer\_B With Seven Capture/Compare-With-Shadow Registers
- 16-Bit Timer\_A With Three Capture/Compare Registers
- On-Chip Comparator
- Serial Communication Interface (USART), Functions as Asynchronous UART or Synchronous SPI Interface
- Two USARTs (USART0, USART1)

- 60KB+256B Flash Memory
- 2KB RAM

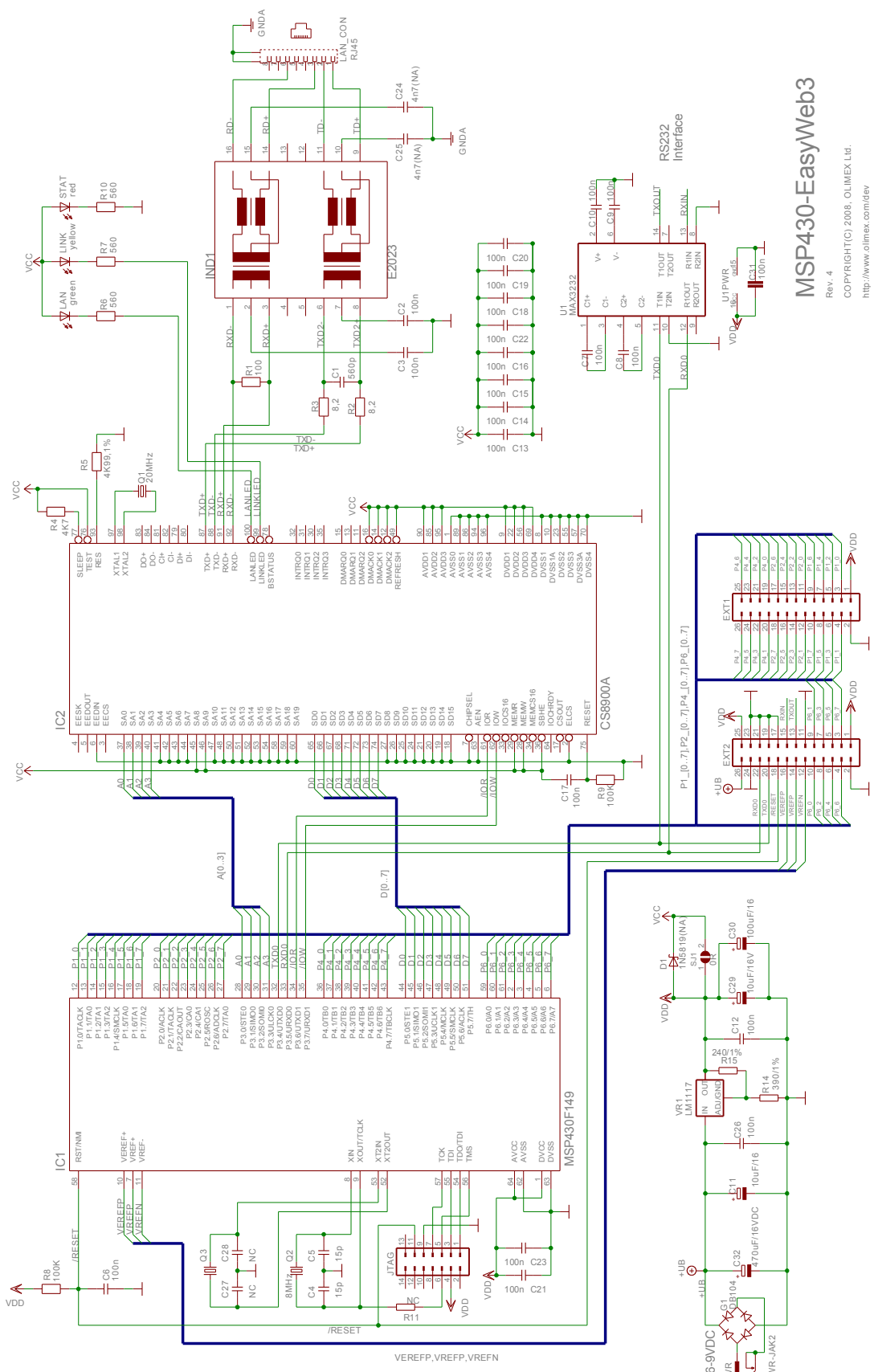
# BLOCK DIAGRAM:



**MEMORY ORGANIZATION:**

		<b>MSP430F149</b>
Memory Main: interrupt vector Main: code memory Information memory	Size Flash	60KB 0FFFFh – 0FFE0h
	Flash	0FFFFh – 01100h
	Size Flash	256 Byte 010FFh – 01000h
Boot memory	Size ROM	1KB 0FFFh – 0C00h
RAM	Size	2KB 09FFh – 0200h
Peripherals	16-bit	01FFh – 0100h
	8-bit	0FFh – 010h
	8-bit SFR	0Fh – 00h

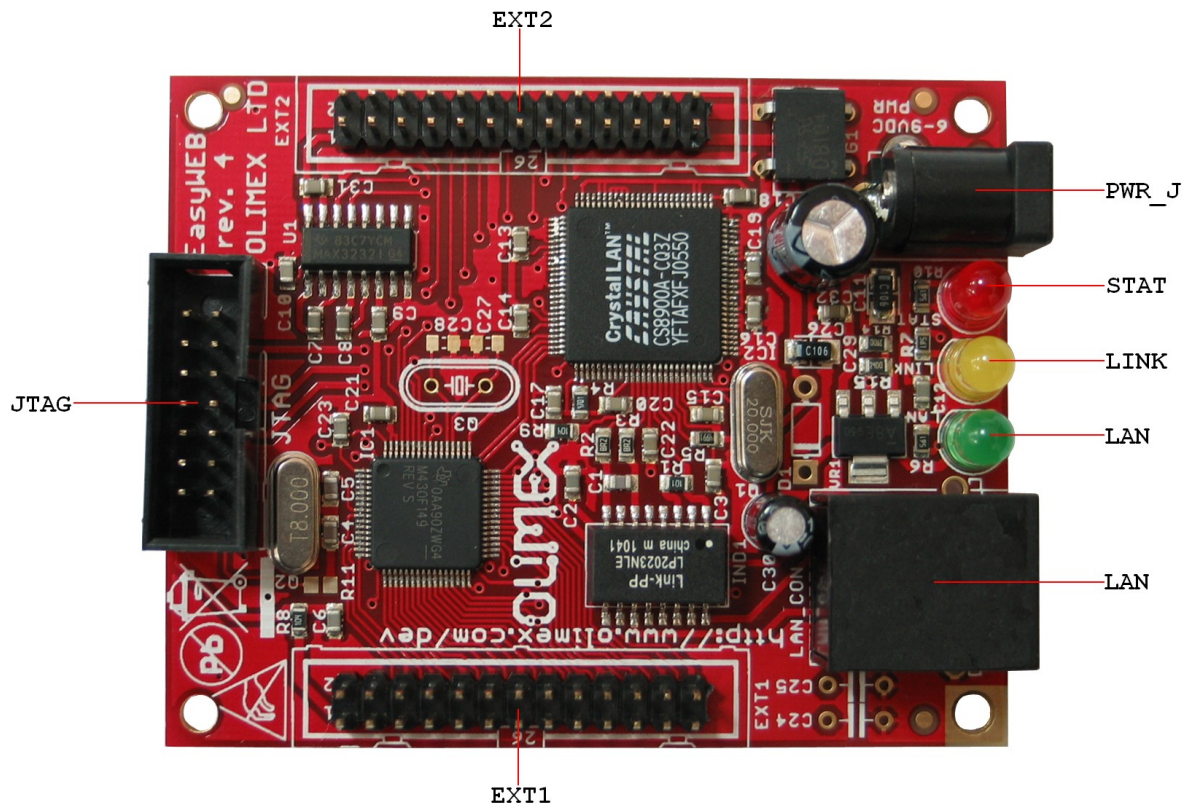
# SCHEMATIC:



**MSP430-EasyWeb3**

Rev. 4  
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## BOARD LAYOUT:



## POWER SUPPLY CIRCUIT:

MSP430-EasyWeb3 can take power from PWR connector, where 6 to 9 VDC is applied by external power source.

The board power consumption is: about 60 mA with all peripherals and microcontroller running at full speed.

## RESET CIRCUIT:

MSP430-EasyWeb3 reset circuit includes R8 (100k) and C6 (100n) and MSP430F149 pin 58 (RST/NMI).

## CLOCK CIRCUIT:

Quartz crystal (Q1) 20 MHz is connected to MSP430F149 pin 13 (P7.0/XIN) and pin 14 (P7.1/XOUT).

Quartz crystal (Q2) 8 MHz is connected to CS8900A pin 97 (XTAL1) and pin 98 (XTAL2).

## JUMPER DESCRIPTION:

There are no jumpers on this board.



## Input/Output:

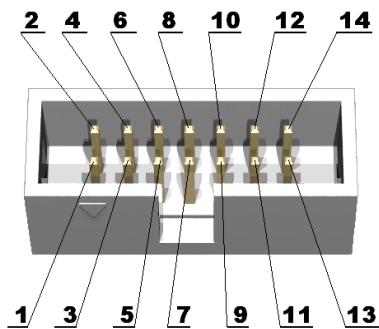
Status LED (green) with name LAN connected to CS8900A pin 100 (LANLED).

Status LED (yellow) with name LINK connected to CS8900A pin 99 (LINKLED).

Power supply LED (red) with name STAT - indicates that external power source is applied and board power supply is applied.

## CONNECTOR DESCRIPTIONS:

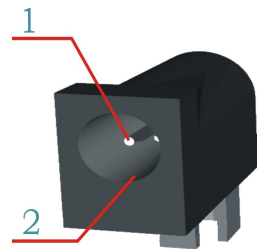
### JTAG:



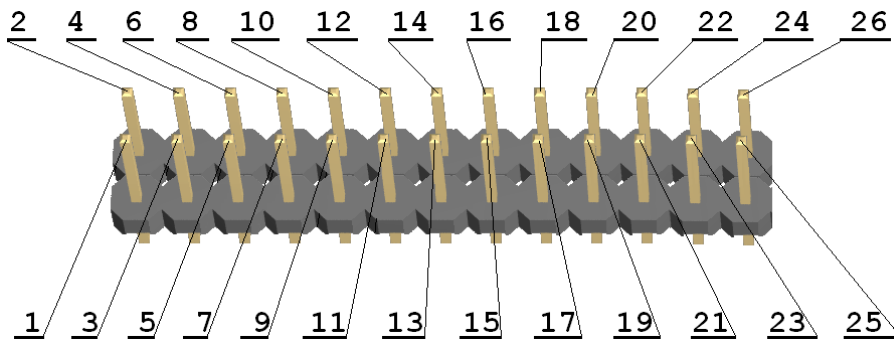
Pin #	Signal Name	Pin #	Signal Name
1	TDO/TDI	2	Not Connected
3	TDI	4	VDD
5	TMS	6	Not Connected
7	TCK	8	Not Connected
9	GND	10	Not Connected
11	/RESET	12	Not Connected
13	Not Connected	14	Not Connected

### PWR\_J:

Pin #	Signal Name
1	Power Input
2	GND

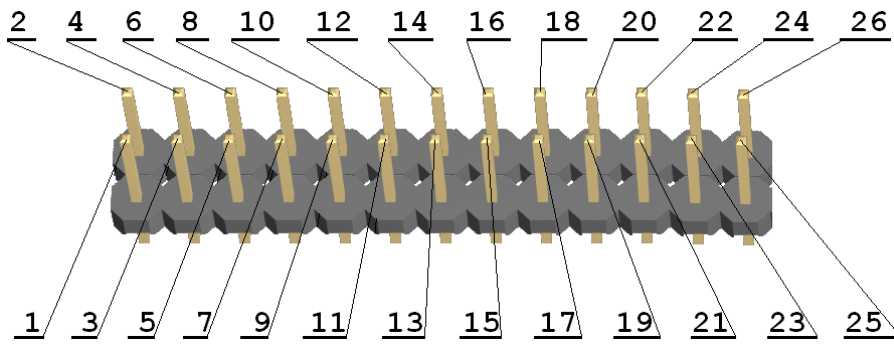


**EXT1:**



Pin #	Signal Name	Pin #	Signal Name
1	VDD	2	GND
3	P1_0	4	P1_1
5	P1_2	6	P1_3
7	P1_4	8	P1_5
9	P1_6	10	P1_7
11	P2_0	12	P2_1
13	P2_2	14	P2_3
15	P2_4	16	P2_5
17	P2_6	18	P2_7
19	P4_0	20	P4_1
21	P4_2	22	P4_3
23	P4_4	24	P4_5
25	P4_6	26	P4_7

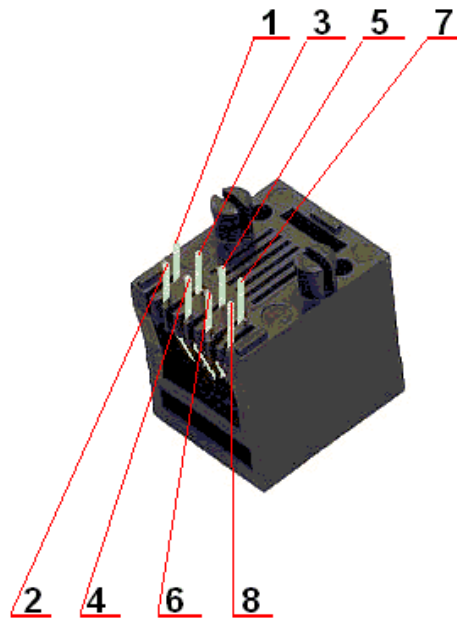
**EXT2:**



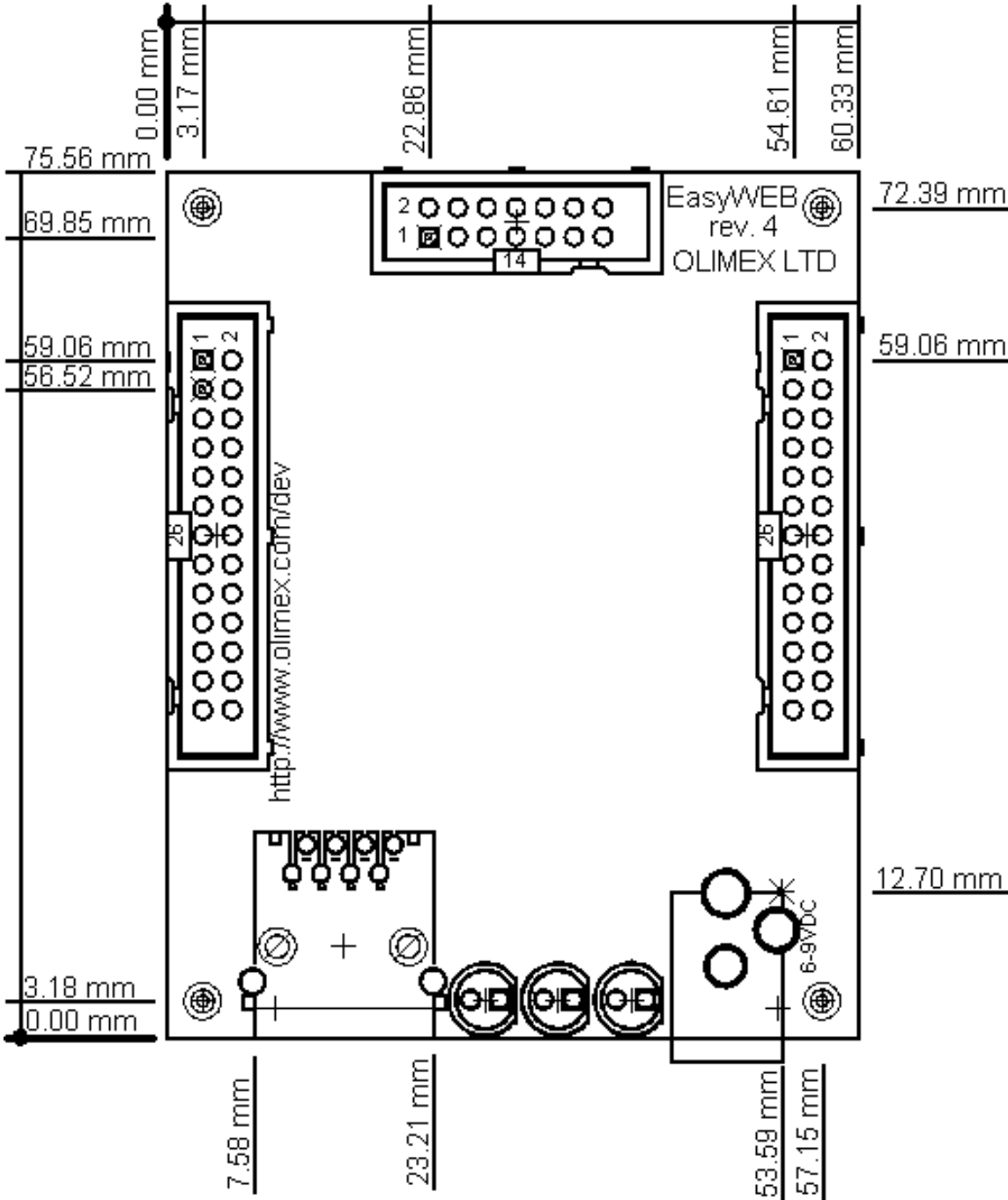
Pin #	Signal Name	Pin #	Signal Name
1	VDD	2	GND
3	P6_7	4	P6_6
5	P6_5	6	P6_4
7	P6_3	8	P6_2
9	P6_1	10	P6_0
11	GND	12	VREFN
13	TXOUT	14	VREFP
15	RXIN	16	VEREFP
17	GND	18	/RESET
19	GND	20	TXD0
21	GND	22	RXD0
23	GND	24	GND
25	VDD	26	+UB

**LAN:**

Pin #	Signal Name
1	TD+
2	TD-
3	RD+
4	Not Connected
5	Not Connected
6	RD-
7	Not Connected
8	Not Connected



**MECHANICAL DIMENSIONS:**



## AVAILABLE DEMO SOFTWARE:

- [MSP430-EasyWeb3 test software](#)
- [TCP/IP port of Adam Dunkel's uIP](#) made by Rowley Associates, UK
- [MSP430-EasyWeb3](#) modified by Paul Aguayo to work with new IAR EW-MSP430 version
- [MSP430-EasyWeb](#) modified by Bart van Deenen to work with MSP430GCC free compiler and changed default IP to 10.0.0.190
- [MSP430-EasyWeb3](#) port for MSPGCC

## **ORDER CODE:**

**MSP430-EasyWeb3** – assembled and tested (no kit, no soldering required)

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. 4            - created July 2008

Manual's revision:        Rev. Initial       - created May 2011

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