

# AVR-P40-8515 development board \_\_\_\_\_

## Users Manual



All boards produced by Olimex are ROHS compliant

Revision A, January 2002  
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## **INTRODUCTION:**

The **AVR Microcontroller** are low-power CMOS 8-bit controller based on the RISC architecture. The AVR core combines a rich instruction set with general purpose working registers. All the registers are directly connected to the Arithmetic Logic Unit (ALU), allowing two independent registers to be accessed in one single instruction executed in one clock cycle. The resulting architecture is more code efficient while achieving throughputs up to ten times faster than conventional CISC microcontrollers.

AVR-P40-8515 is prototype board for 40 pin AVR microcontrollers with STKxxx compatible 10 pin ICSP connector. Supported diveces are AT90S8515 and pin compatible microcontrollers.

## **BOARD FEATURES:**

- ICSP 5x2 pin connector for in-circuit programming with AVR-ISP500xxx, AVR-PG1 or AVR-PG2
- Voltage regulator +5V, 7805 and filtering capacitors
- Quartz crystall oscilator circuit 8Mhz
- reset IC ZM33064
- status LED connected to PB0 via removable jumper
- Power plug-in jack
- DIL40 microcontroller socket
- RS232 DB9 female connector
- RS232 MAX232 interface circuit with Tx, Rx, CTS, DTR/RTS signals
- Extension slot on every uC pin
- Grid 100 mils
- GND bus
- Vcc bus
- FR-4, 1.5 mm (0.062"), green soldermask, white silkscreen component print
- four mounting holes 3.3 mm (0.13")
- dimensions 100x80 mm (3.9x3.15")

## **ELECTROSTATIC WARNING:**

The AVR-P40-8515 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.

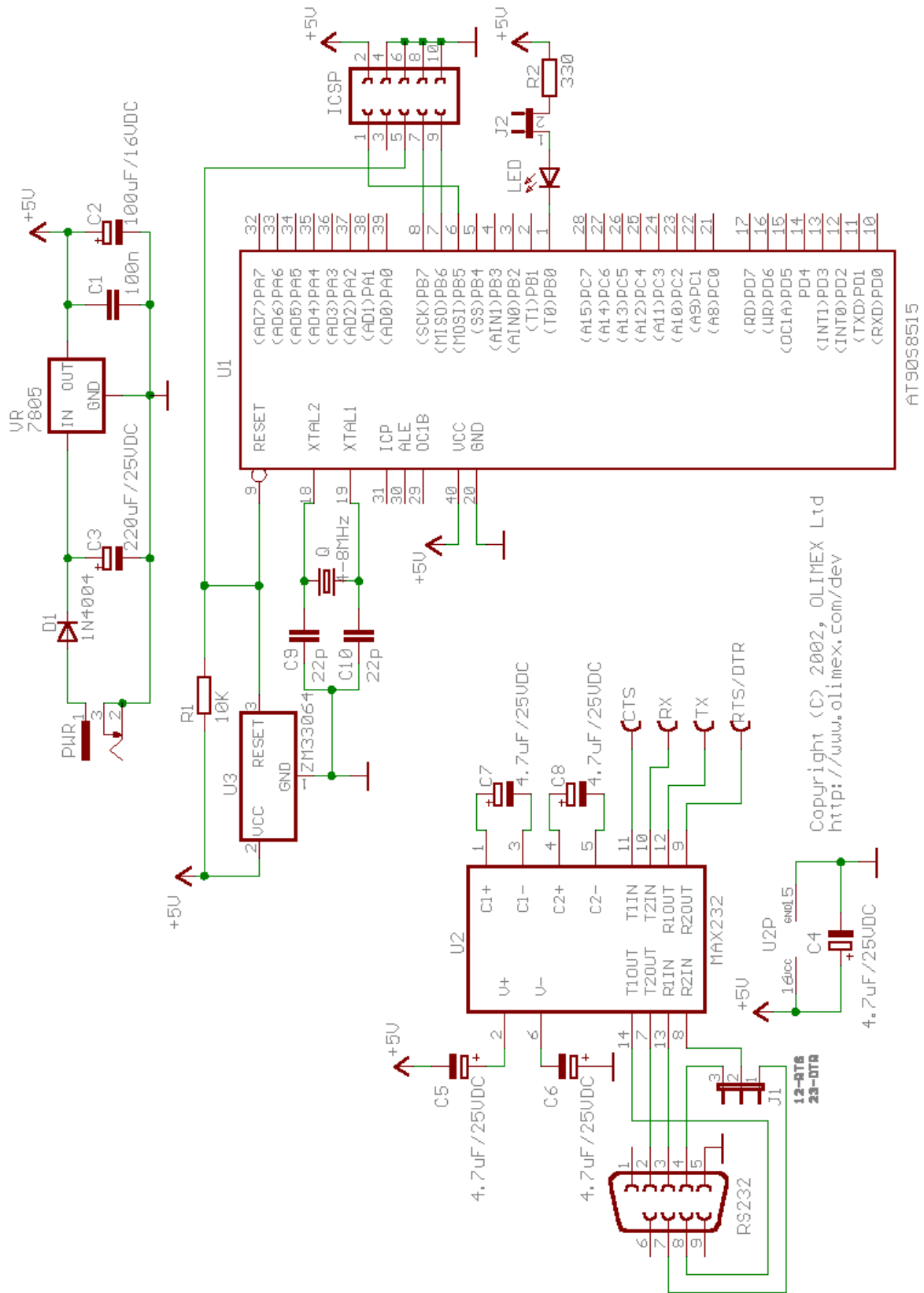
## **BOARD USE REQUIREMENTS:**

**Cables:** The cable you will need depends on the programmer/debugger you use. If you use [AVR-PG1](#), you will need RS232 cable, if you use [AVR-PG2](#), you will need LPT cable, if you use [AVR-ISP500](#), [AVR-ISP500-TINY](#) or [AVR-ISP500-ISO](#), you will need 1.8 meter USB A-B cable.

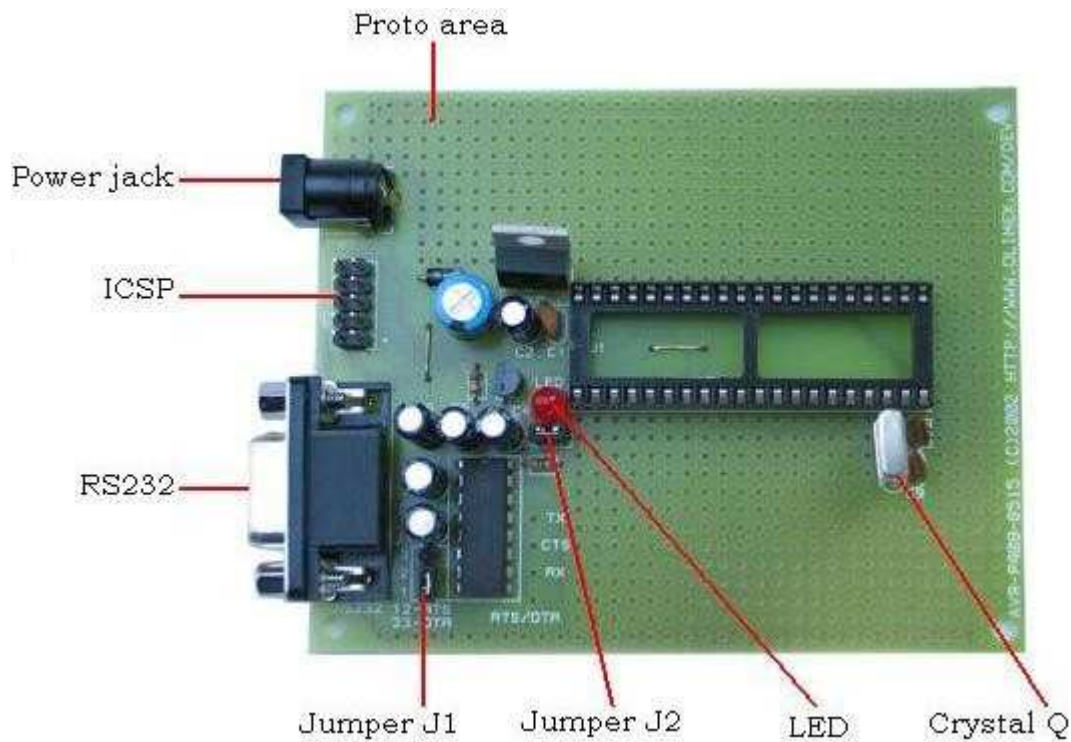
**Hardware:** Programmer/Debugger – one of the Olimex AVR Programmers: AVR-PG1, AVR-PG2, AVR-ISP500, AVR-ISP500-TINY, AVR-ISP500-ISO.

**Software:** The serial port ICSP programmer (AVR-PG1B) works with PonyProg software by from Claudio Lanconelli and the latest release may be download for free from <http://www.lancos.com>. The parallel port ICSP programmer (AVRPG2B) works with AVR ISP from Atmel and may be download for free from Atmel's web site.

# SCHEMATIC:



## **BOARD LAYOUT:**



## **POWER SUPPLY CIRCUIT:**

AVR-P40-8515 is typically power supplied with min 9.0V DC max 12.0V DC, or min 6.0V AC max 9.0V AC.

## **RESET CIRCUIT:**

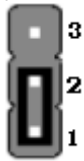
AVR-P40-8515 reset circuit includes pin 5 of ICSP connector, pin 9 of U1 and Reset scheme.

## **CLOCK CIRCUIT:**

Quartz crystal (4-8)MHz is connected to AVR Microcontroller pin 18 (XTAL2) and pin 19 (XTAL1).

## JUMPER DESCRIPTION:

### J1



When 1-2 are shorted - RTS is connected to terminal pin RTS/DTR.  
When 2-3 are shorted - DTR is connected to terminal pin RTS/DTR.  
Default state is 1-2.

### J2



When this jumper is open - LED is not on.  
When this jumper is closed - LED is on.  
Default state is closed.

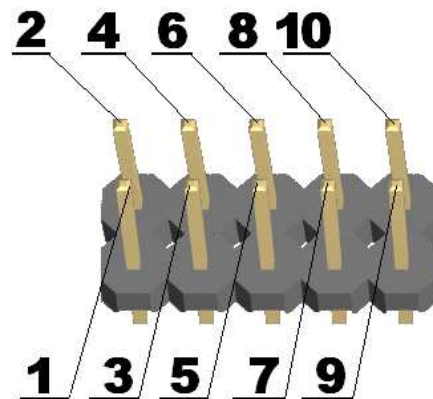
## INPUT/OUTPUT:

Status Led with name **LED (red)** - this led is connected to PIN11 (PB0/T0) .

## CONNECTOR DESCRIPTIONS:

### ICSP:

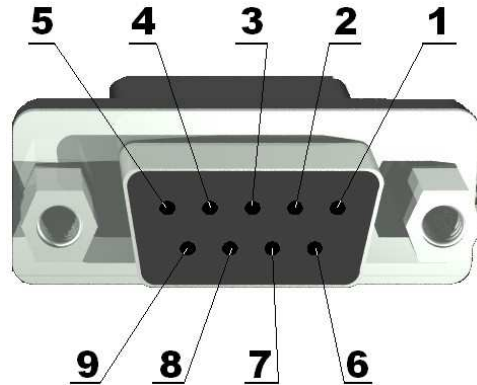
PIN #	Signal Name	Functionality
1	MOSI	PB5 / MOSI
2	+5V	Supply
3	Not connected	-
4	GND	Ground
5	RST	RESET
6	GND	Ground
7	SCK	PB7 / SCK
8	GND	Ground
9	MISO	PB6 / MISO
10	GND	Ground



The **ICSP** connector is 2x5 pin with 0,1" step and Atmel STKxxx compatible layout. The PIN.1 is marked with square pad on bottom and arrow on top.

### RS232:

PIN #	Signal Name
1	Not connected
2	RXD
3	TXD
4	DTR
5	GND
6	Not connected
7	RTS
8	CTS
9	Not connected

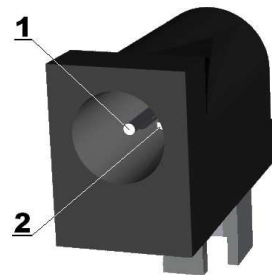


**Note1:** RTS and DTR is connected to terminal pins via jumper J1, which position was described above.

**Note2:** RX RS232 driver pins have to be connected to AVR microcontroller pin - TXD/PD1 (PIN 11).  
TX RS232 driver pins have to be connected to AVR microcontroller pin - RXD/PD0 (PIN 10).

### PWR:

PIN #	Signal Name
1	Power Input
2	GND



## **AVAILABLE DEMO SOFTWARE:**

- AVR-P40-8515 + AT90S8515 blink LED demo code ([C source](#) and [HEX](#))
- AVR-P40-8515 + AT90S8515 UART demo code ([C source](#) and [HEX](#))



## **ORDER CODE:**

AVR-P40-8515-8MHz completely assembled and tested with 8Mhz oscillator  
AVR-P40-8515/PCB ONLY

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.A            - created January 2002

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