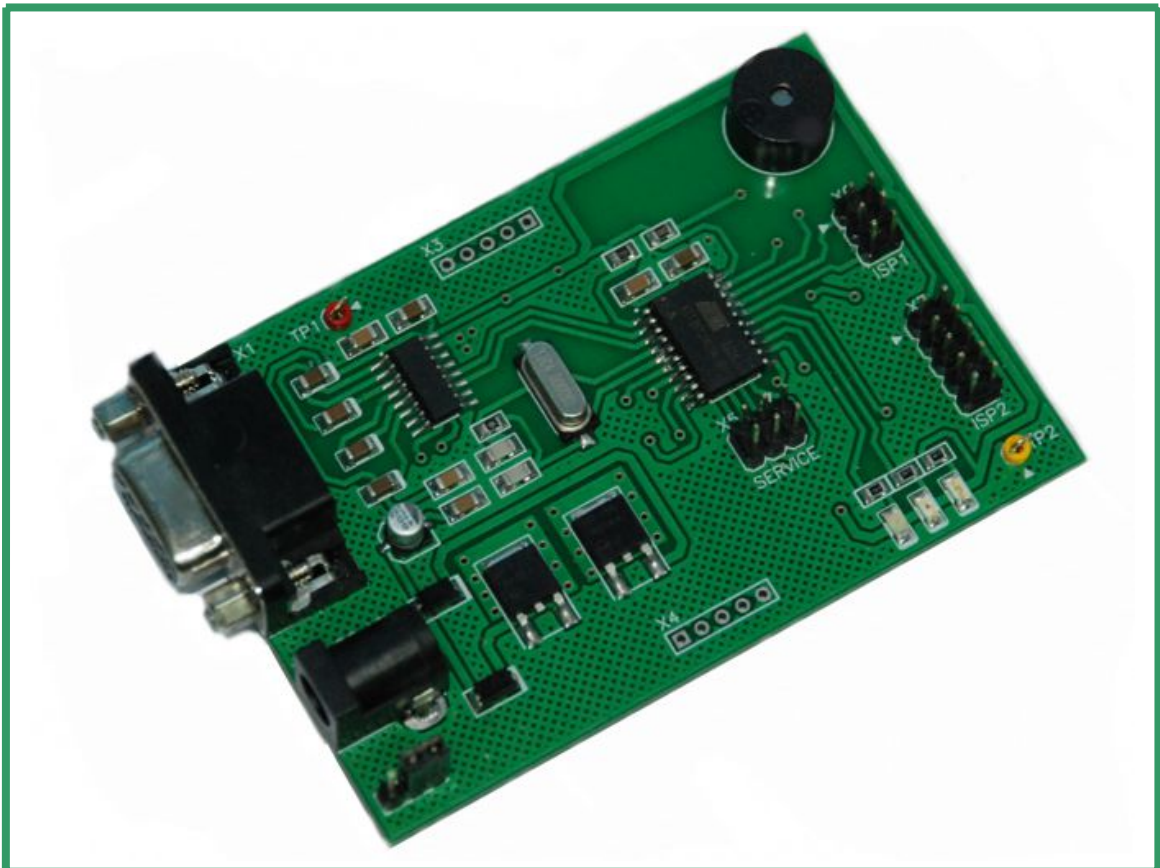


**CPL-AVR-910 PROGRAMMER**

**User's Guide**

## TABLE OF CONTENTS

1. INTRODUCTION.....	3
2. SYSTEM REQUIREMENTS .....	3
3. PROGRAMMER OVERVIEW AND FEATURES .....	4
4. GETTING STARTED .....	7
4.1 CONNECTING THE HARDWARE .....	7
4.2 START THE SOFTWARE .....	8
5. APPENDIX .....	10



## 1. INTRODUCTION

The CPL-AVR-910 Programmer designed as low-cost alternative for Atmel AVRISP In-System Programmer. The programmer software controlled from AVR Studio and a MS-DOS command line interface. On-board standard ISP6/ISP10 connectors compatible with STK500, STK600 development boards.

Features:

- ▶ Interface with AVR Studio 4.xx
- ▶ ISP Programming of various In System Programmable AT90/ATMEGA/ATtiny Devices
- ▶ Programs FLASH and EEPROM
- ▶ Advanced fuse and lock bits programming
- ▶ Serial interface\* to PC (see APPENDIX)
- ▶ Adjustable internal power supply source 3.3 V and 5 V
- ▶ Expansion boards as optional, as SD cards, debugging boards
- ▶ Upgradeable to support mode devices and functionality

\*Note: CPL USB-RS232 converter F-type makes it USB compatible

## 2. SYSTEM REQUIREMENTS

- ▶ Pentium-class CPU
- ▶ 100MB free hard disk space (For AVR Studio projects)
- ▶ 115200 baud RS-232 port (COM port)
- ▶ USB port \*
- ▶ 10-15V External DC power supply, 100mA min

### 3. PROGRAMMER OVERVIEW AND FEATURES

The CPL-AVR-910 Programmer must be connected to a host PC with a serial cable (pin-to-pin) or via USB-RS232 converter. Serial ports from 1 to 4 supported by AVRprog control program (version 1.40).

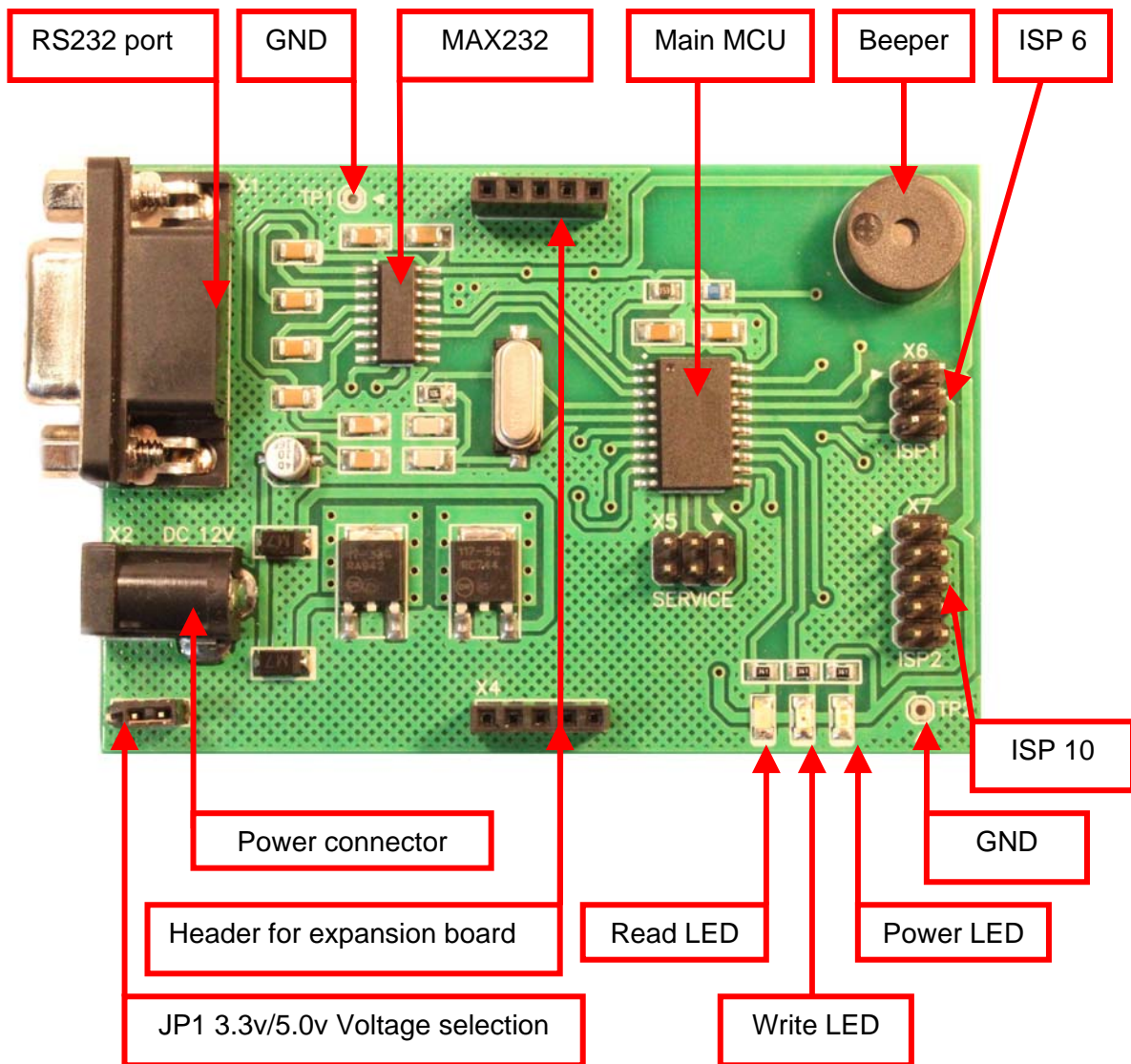


Figure 1

The main features of the AVRprog are shown in the Figure 1.

The CPL-AVR-910 Programmer must be connected to a target boards with a 6 or 10 pins ribbon flexible cable 100-200mm length.

Enumeration in series from left to right, top to bottom:

- RS232 Serial port connector (Female type)
- The GND point for oscilloscope “crocodile” clamp
- RS232 level translator
- Host microcontroller ATtiny2313
- Beeper (speaker)
- ISP 6-pin connector (pins-out)
- Power connector (2.1mm)
- 2 x 5 pins headers for expansion boards
- JP1 power supply voltage (see Figure 2)
- “Read” LED (green color)
- “Write” LED (red color)
- “Power” LED (blue color)
- The GND point for oscilloscope “crocodile” clamp
- ISP 10-pin connector (pins-out)

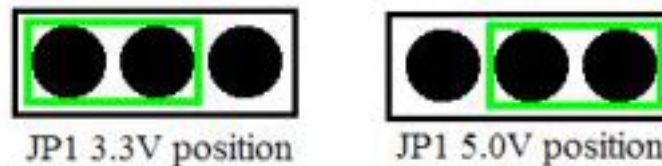


Figure 2

**CAUTION:** If the other application has its own power supply, the jumper JP1 must be removed before connecting AVRprog to the other application. AVRprog may be damaged if the jumper JP1 is not removed. To avoid damage of the host microcontroller external power supply voltage edge 6 Volt maximum.

Firmware upgrading is usually done via external utility supplied with programmer kit. Alternatively, an upgrade can be done via service ISP connector. The service ISP connector reserved for programming host MCU.

**WARNING:** Firmware upgrade procedure very critical to the power supply voltage. Fail-safe power supply source required. ATtiny2313A microcontroller don't include boot loader section, that's RAM residential subroutine control upgrade procedure. To make it's absolutely safe, please pay attention to the power supply voltage during the upgrade procedure.

The device list CPL-AVRprog supported:

NUM.:	DEVICE:	NOTE:
1.	ATtiny10	
2.	ATtiny12	
3.	ATtiny15	
4.	ATtiny26	
5.	AT90S1200	
6.	AT90S2313	
7.	ATmega8(A)	BOOT**
8.	ATmega16(A)	BOOT**
9.	ATmega32(A)	BOOT**
10.	ATmega64(A)	BOOT**
11.	ATmega128(A)	BOOT**

\*\*NOTE: The Flash memory of ATMEGA8/16/32/64/128 is divided into two sections, one Application section and one Boot Loader section. The Application section contains the main code for the application, while the Boot Loader section contains the code for the actual Self-programming. The SPM instruction can only be executed from the Boot Loader section.

The boot loader size can be determinate inside of the Advanced window.

The fuses BOOTRST enable and Boot block size must set according to an users application requirements. The user can select:

- To protect the entire flash from a software update by MCU
- To protect only the Boot Loader Section from a software update by MCU
- To protect only the Application Flash Section from a software update by MCU
- Allow software update in the entire Flash
- Boot loader Flash Section size according to particular MCU specifications

## 4. GETTING STARTED

### 4.1 CONNECTING THE HARDWARE

Attach serial cable and power jack plug to the CPL-AVR-910 programmer. Select target power voltage by JP1. When JP1 mounted to the left position: 3.3 Volts supplied to programmer card and target device. When JP1 mounted to the right position: 5.0 Volts supplied to the programmer card and target device. For example: Power jack is plugged in and JP1 mounted to the left position, 3.3 Volts applied to the programmer card and target device:

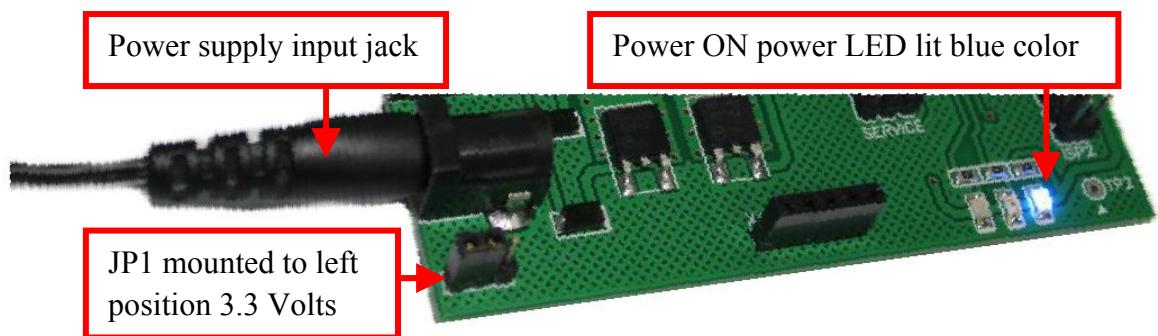


Figure 3

Attach ISP connector to the target device. CLP-AVR-910 programmer ISP6 and ISP 10 connectors signals (view from the top) you'll see on Figure 4.

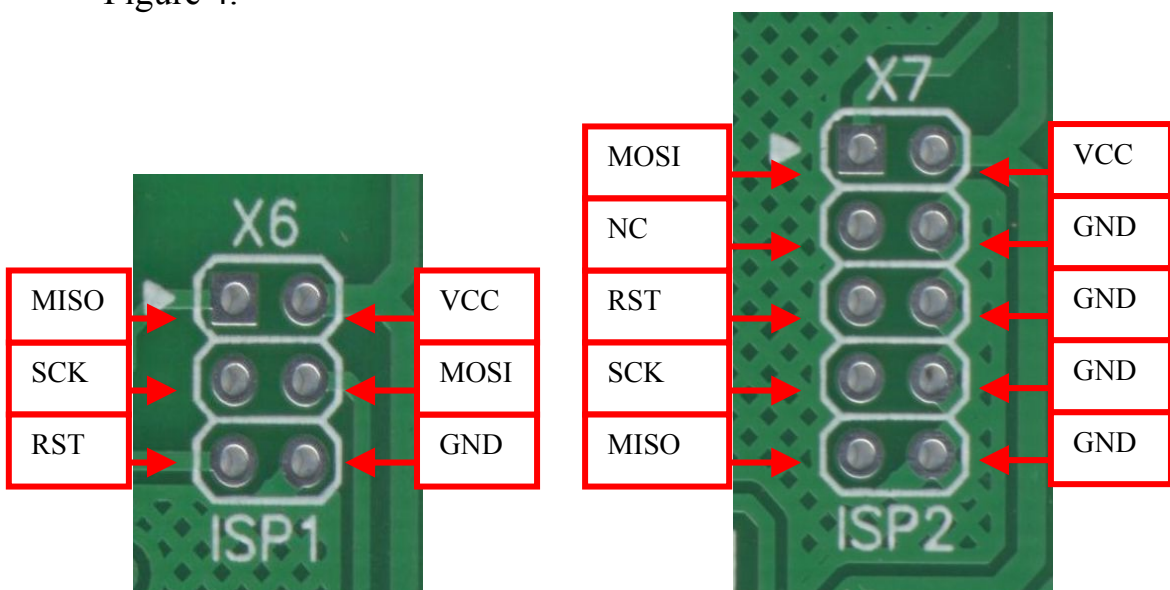


Figure 4

## 4.2 START THE SOFTWARE

AVRProg is started by double clicking the AVRProg icon:



Or AVRProg is started by clicking the AVR Prog... menu from AVR Studio:

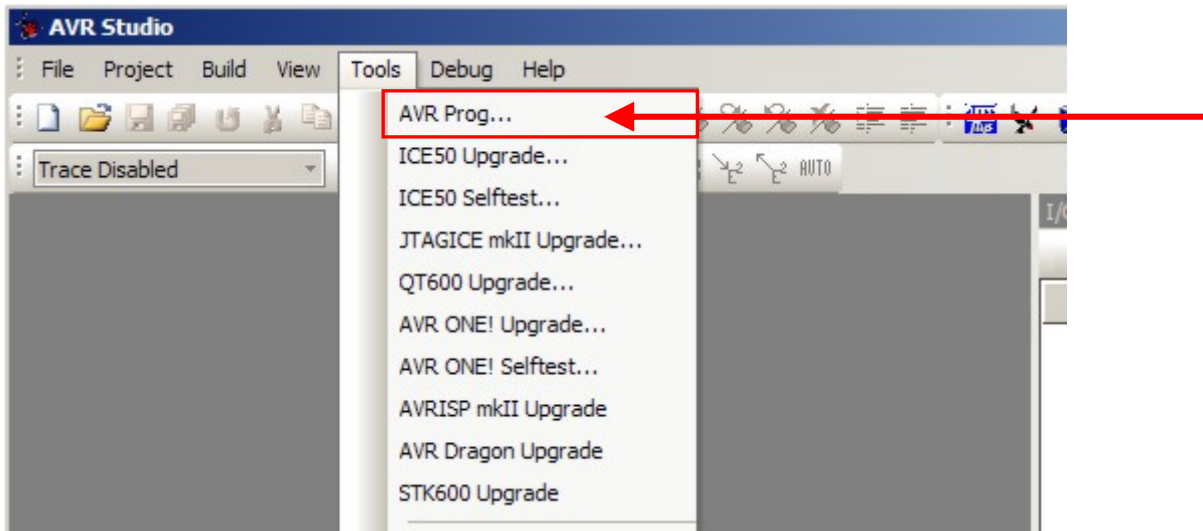


Figure 5

If no valid programmer are found on any serial ports, the following message will display on the screen:



Figure 6

If valid programmer is connected and turned on, the following window will appear on screen (see Figure 7). The window consist of from four sections. The first one section is called Hex file, the section allow to download an Intel hex files into the AVRProg's buffer. The two next sections called Flash (second one) and EEPROM (third one). Those sections are used to read, program and verify Flash or the EEPROM memory of the target device. The last one section is called Device and it's located at the bottom of the window. This is the device selection menu determinate which one particular device to be programmed. At the lower button of the window marked Advanced. Click on this button (see Figure 8). The upper section is for lock bit programming. The middle section is for fuse bits programming. The lower section shows status device information.



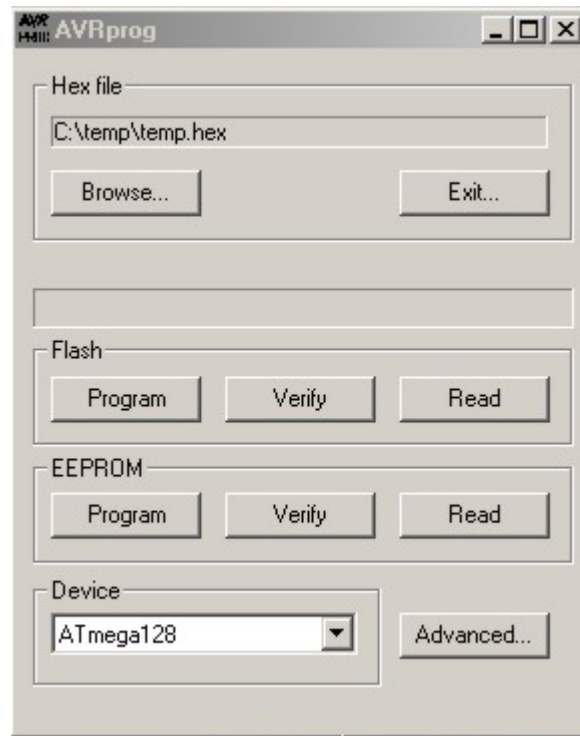


Figure 7

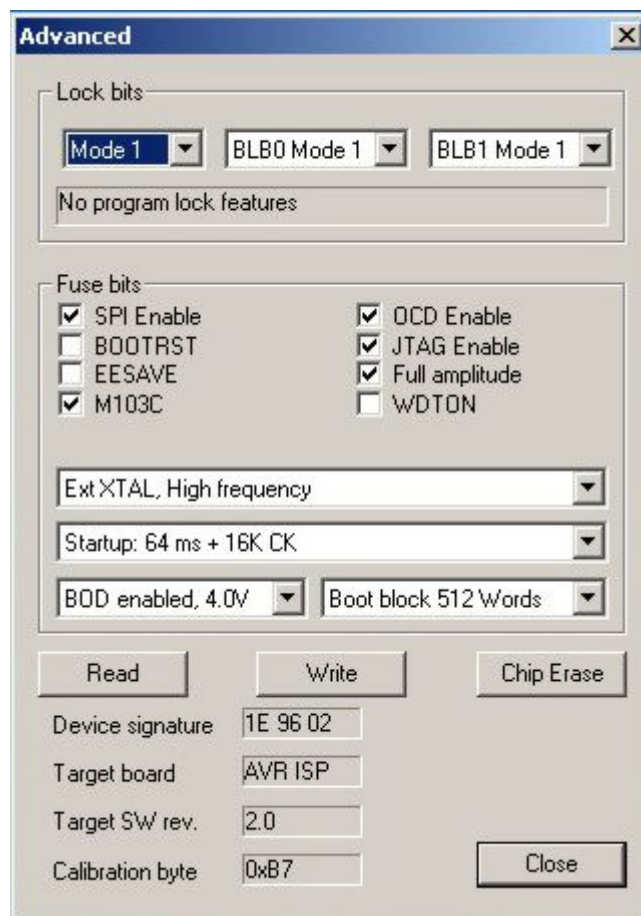


Figure 8

For more information see AVRProg User Guide (section 3)

Physical size of CLP-AVR-910 pcb

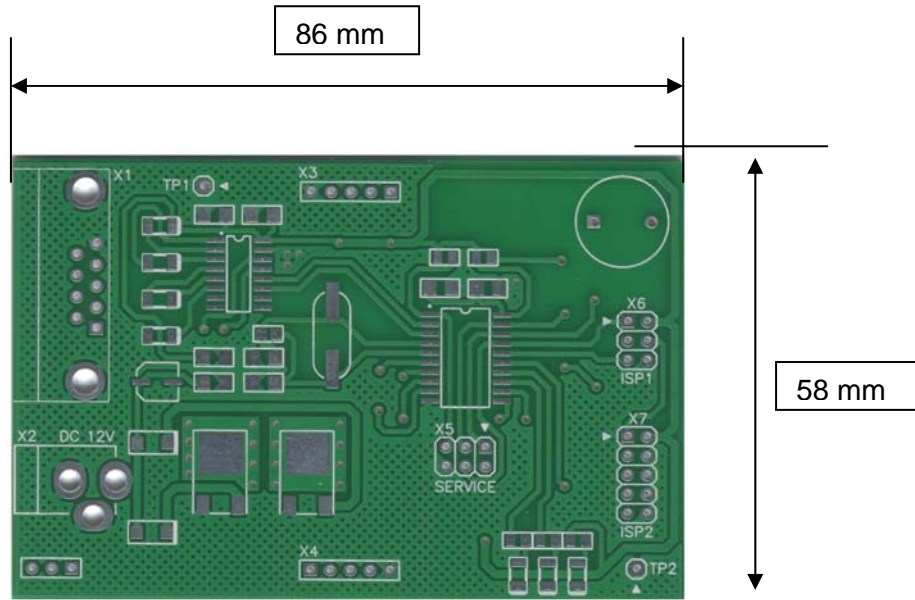


Figure 9

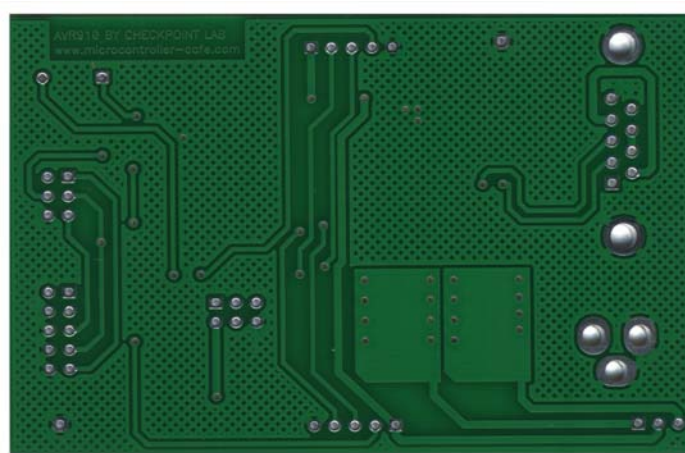


Figure 10

CPL USB-RS232 converter M-type makes CPL-AVR910 programmer USB compatible, external power supply required

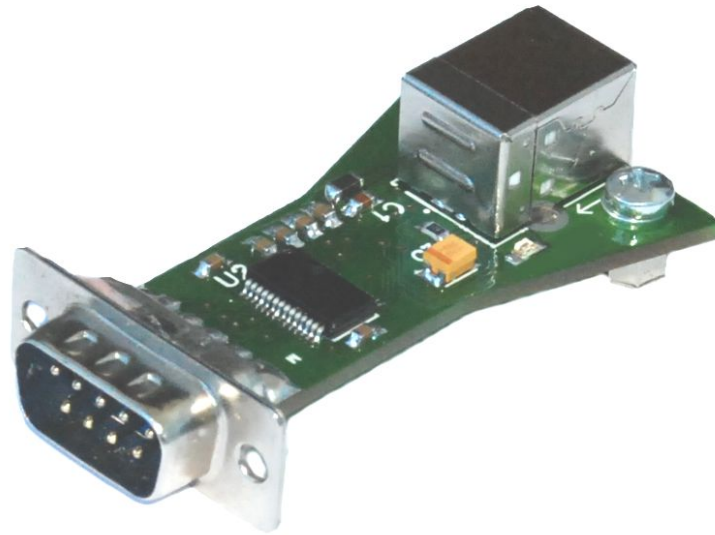


Figure 11

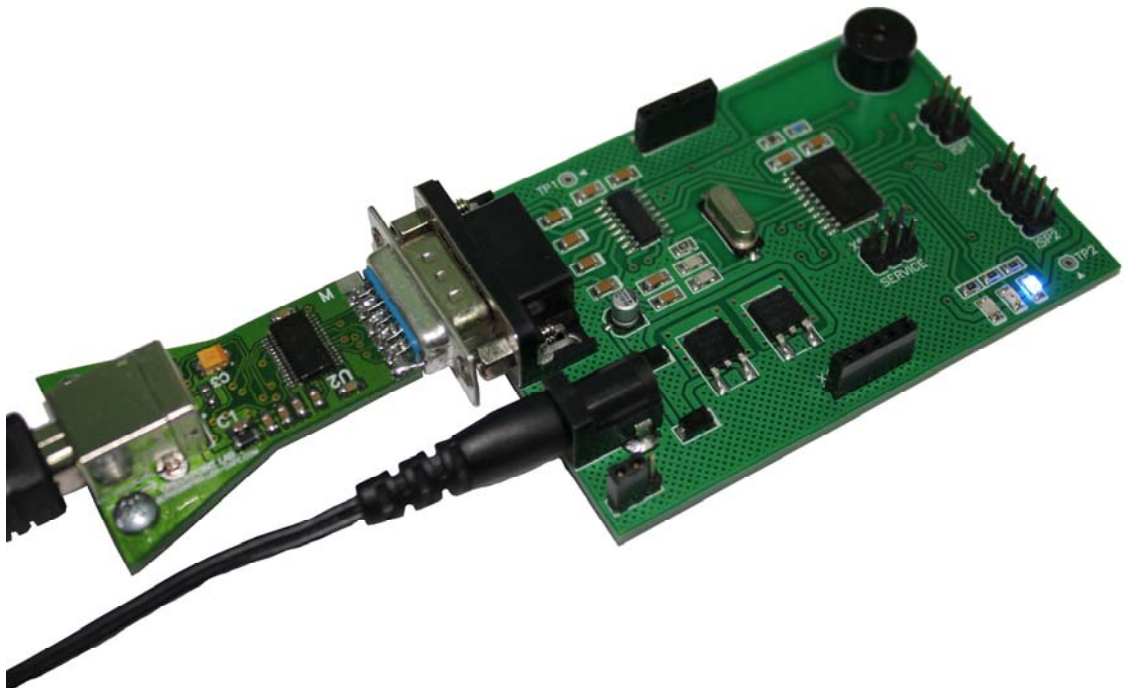


Figure 12