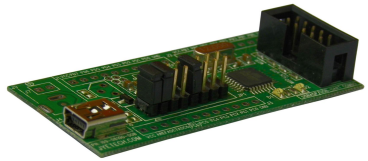
USBASP/USB-UART COMBO
AVR DEVELOPMENT BOARD

Use Guide

Applicable Model: 08101



1. Understand Jumper JP1 Settings

081 board can be used for three major purposes:

1) USB-UART converter
2) USBASP programmer for AVR MCUs
3) General AVR development board with USB connection

It is important to correctly understand JP1 setting for respective purpose. Fig.1 below is the simplified schematic. Detailed schematic is available at www.jyetech.com.

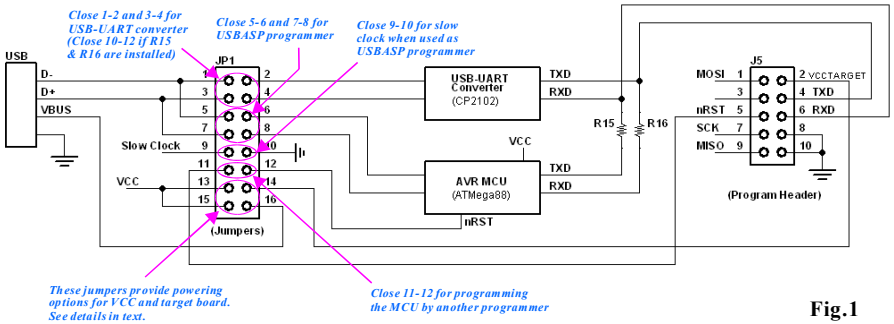


Fig.1

2. Use as USB-UART Converter [Fig.2]

1) Close JP1 pin 1-2 and pin 3-4 so as USB is connected to the USB-UART bridge chip CP2102 (U3).
2) Close JP1 pin 10 - 12 to keep MCU in RESET state if R15 & R16 are installed and MCU is not used for other purposes. Otherwise MCU could interfere with CP2102 's TXD/ RXD signals.
3) If MCU is used for other purpose at the same time then remove R15 and R16 (see schematic and assembly drawing).
4) The UART side interface is at 3.3V logic level.
5) You may need to install PC driver for the converter. Visit link below for Windows or Linux drivers..

http://www.silabs.com/products/mcu/pages/usbtouartbridgevcpdrivers.aspx.

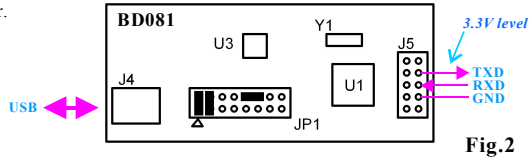


Fig.2

3. Use as USBASP Programmer [Fig.3]

1) Close JP1 pin 5-6 and pin 7-8 so as USB is connected to the MCU ATMega88 (U1).
2) Exprience shown that slow clock is more stable for the programmer so close JP1 pin 9-10 to selec the option.
3) The MCU (U1) must be pre-programmed with USBASP firmware. This firmware can be downloaded at http://www.fischl.de/usbasp/ or http://www.jyetech.com .
4) Select power options for target board.
Target board can be powered from USB but USB power is limited. To reduce the risk of damage USB it is recommended to have your target board self-powered. If you are sure your target board power comsuption is small enough and want to use USB as power for the programming then you can select jumper settings to choose voltage that matches your board. See details in Fig.3.
5) Connect to target board (see Fig. 4)..
6) You also need a supporting PC application to use the programmer. Search the net by "eXtreme Burner" or "progisp". Or visit http://www.fischl.de/usbasp/

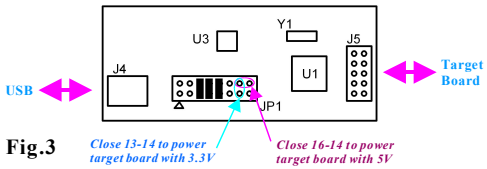


Fig.3

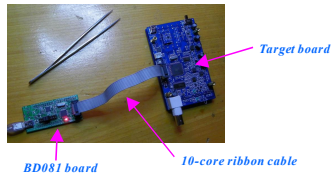


Fig.4

4. Use as AVR Development Board

1) Power Options
As a general AVR development board it can be powered from USB. Alternatively it can also be powered separately. To do so install U2 (LM78L05, a commonly available low cost regulator) and apply power supply (7 - 20V range) from J7 or J9 .

2) MCU Programming
There are two ways to program the MCU. One is by the pre-loaded Bootloader. The other is by another programmer.

Program by Bootloader

BD081 is pre-loaded with Bootloader so as the MCU can be programmed without a programmer. To do so

A. Set jumper as in Fig. 5
B. Refer to the document *How to Program the Scope* for detailed steps. (http://www.jyetech.com/Support/HowToUpgradefirmwareByBootloader.pdf)
C. Short JP1 pin10-12 briefly to enter the Bootloader. LED D1 will be blinking when the Bootloader is running.

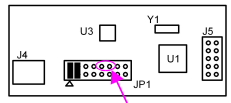


Fig.5

Program by Another Programmer

A. The same header J5 will be used for the programming. Make sure pinout is compatible.
B. Close JP1 pin 11-12 so that the MCU is accessable by programmer..
C. Select power supply for the MCU. It can be powered from USB or programmer. Close JP1 pin 13-14 if powered from programmer.

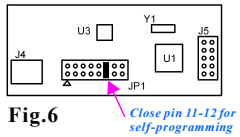


Fig.6

3) USB Connection
Set jumpers as Fig.5 and install R15 & R16 will allow the development board have USB feature. This is similar to Arduino boards.

4) Make Use All I/O Ports
Referring to schematic removing R3, R4, R7, R11, R12, R15, and R16 will make all I/O pins free from interference.

5. Assembly Drawing

See Fig.7 for comonent locations.

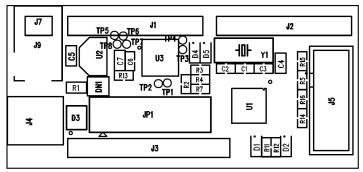


Fig.7

Please Note:
Header J1 and J2 were mistakenly labelled. J1 should be PORTB and J2 should be PORTD. See Fig.8 below.

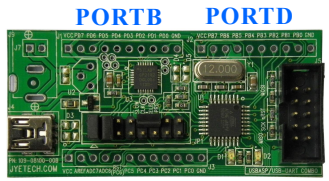


Fig.8

Please visit ***www.jyetech.com*** for detailed manual and related documents