

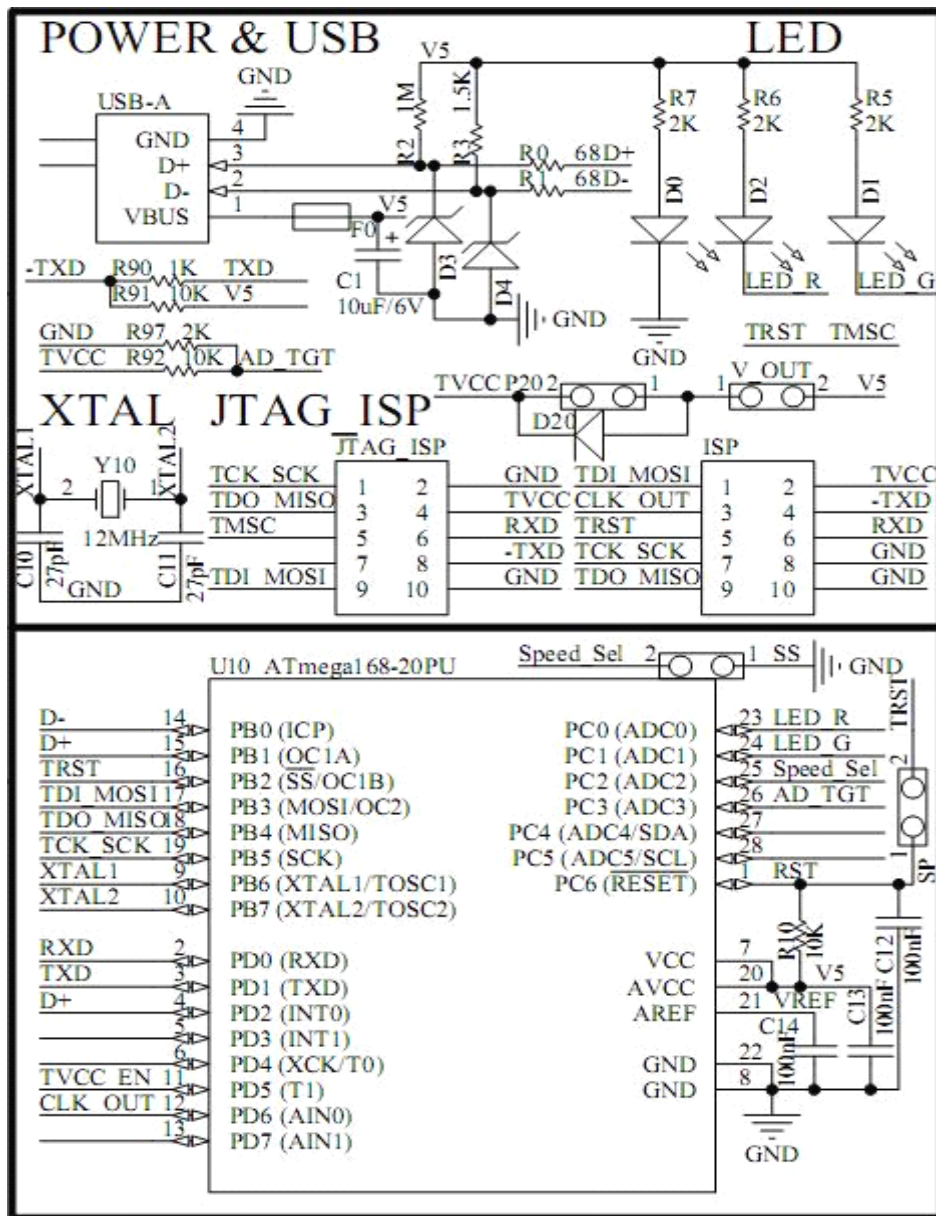
AVRminiProg Guide

1. Interduction

AVRminiProg is a programming tool emulating tools from Atmel with a license under GPLv2. It can currently emulate AVRISP mkII, JTAGICE mkII and AVRDragon. When emulating AVRDragon, it can support all programming interfaces of AVR including ISP, JTAG, HVSP and HVPP. AVRStudio or avrdude can be used as user interface.

2. How to build hardware

2 recommended Schematics:



It is recommended to use the default Schematics. The first Schematics is compatible with USBasp, another AVR programming tool. The second supports all programming interfaces of AVR. Of course, you can use hardware defined by yourself, but only if you are sure of the hardware limitations and know clearly how to configure AVRminiProg.

Firmware of AVRminiProg_Full is about 13.5K bytes in size(-Oz), if a 2K-Byte bootloader is used, there will be about only 0.5K bytes left if Mega16 is used. So Mega32 is recommended for future functions, and you can also use -O2 while compiling.

Firmware of AVRminiProg_USBasp with ISP only is about 5.7K bytes in size(-O2), if a 2K-Byte bootloader is used, there will be only 0.3K bytes left if Mega8 or Mega88 is used. So Mega168 is recommended, and it is enough if compiled with AVR_PROG_JTAG_EN(will be about 9.5K bytes in size).

3.How to configure the Firmware

You can configure the firmware in Makefile and app_cfg[_XXX].h file.

In makefile, you can choose the AVR you use as controller and the frequency of the oscillator. And of course, you can choose the optimization level.

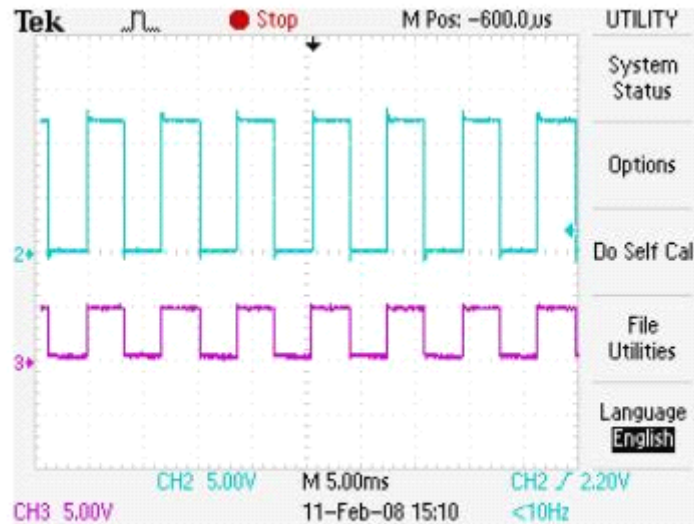
In app_cfg[_XXX].h file, you can configure the hardware you defined. If you build AVRminiProg according to the first Schematics, include "app_cfg_USBasp.h" just at the beginning of app_cfg.h, if the second Schematics is used, include "app_cfg_Full.h".

There is enough information in app_cfg.h I think. If you have any problem with it, no hesitate to email me: webmaster@SimonQian.com

4.How to debug

First, check the USB interface. Download a USB bootloader for AVR, any one you like, you can also find one on my website. The bootloader condition can be PIN 8 on JTAG interface or IRIN with a pullup 10K resistor added. There is already a pullup resistor on PIN 8 in the Schematics above. AVRminiProg firmware is recommended to be downloaded thru the bootloader. The information about configuring the Fuse bits can be found in readme.txt file.

Second, if HV programming is implemented, you must make sure the 12V is OK, as well as the control over PP_RST and PP_VCC. Define HV_Test_TVCC_12V to 1, and test the waveform on PP_RST and PP_VCC, PP_VCC should toggle from about 4.8V to 0V, and PP_RST from 12V to 0V. The waveform should be like:



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After make sure all the hardware definations in app_cfg.h are OK. AVRminiProg should work.

5.need to know

JTAG and ISP can be on one interface, TDI for JTAG is MOSI for ISP, TDO is MISO, TCK is SCK, TMS is RESET. A simple converter can be used as JTAGICE mkII.

The Speed-Sel jumper is for USBasp, AVRminiProg will not use that.

IR_Key and Dataflash sections on the second Schematics is used for Off-line programming, which is NOT supported currently, you can safely remove them.

P100 on the second Schematics is used to provide more power connections, the same did the AVRDragon. Difference is that in AVRDragon, they are connected to 5V and GND directly; while in AVRminiProg, TVCC is controlled by AVRminiProg.

If you need power on ISP/JTAG interface, use V_OUT_5V or V_OUT_VCC, the former is controlled by yourself, the lator is controlled by AVRminiProg(see ISP_JTAG_AutoPower_En and ISP_JTAG_FourcePower_En in app_cfg[_XXXX].h). V_OUT_5V is recommended.

AVRminiProg_Full is operated just as AVRDragon, so just use the "Device Connection Sheet" in the help file of AVRDragon in AVRStudio.

Short circuit will not a big problem as a resettablefuse(about 160 mA) is used, in fact I will short circuit AVRminiProg to perform a reset instead of replugging it, but you shall not make it short-circuited for too long time, and most important, you SHALL NOT short circuit the resettablefuse. If C0(Schematics 2) generates too much heat and no LED is lighted when power on, maybe there is a short circuit.

I've tested all target chips I have and found no problem. If you find any problem, please mail me.