Microcontroller Technical Notes ENEL300

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Introduction

The ATmega32u2 microcontroller supports In-System Programming (ISP) through USB.

Entering the Boot Loader mode

Please refer to the ATmega8U2, ATmega16U2, ATmega32U2 (Document number: 7799E–AVR–09/2012) datasheet for more details. The sections '23.6.3 External Hardware conditions' and '26.8 Hardware Boot Entrance Timing Characteristics' describe in detail the boot loader entry condition.

The boot loader pin is labelled 'HWB' (PD7). The boot loader is executed when the PD7/HWB pin is '0' during rising edge of the reset pin.

I do not recommend entering the boot loader mode automatically after a reset.

Departmental support

A page on the ecewiki has been created by Dr Hayes for this project with links to the microcontroller datasheet and other useful information (http://ecewiki.elec.canterbury.ac.nz/mediawiki/index.php/ENEL300_design_project). This is also a place where you can leave useful information of your own (as is the base purpose of a wiki).

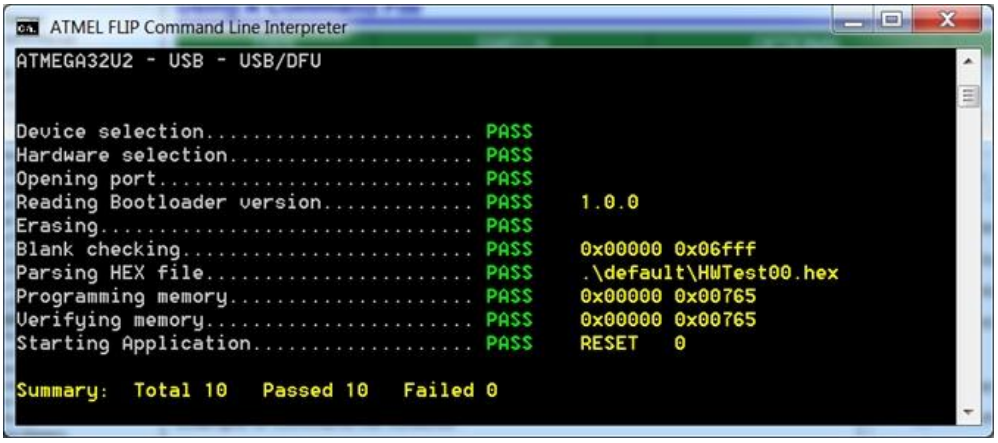
Windows (home use)

The avr-gcc compiler tool chain is part of Atmel Studio. Atmel Studio is available from here: http://www.atmel.com/studio.

In addition FLIP is required to flash the firmware via the built-in boot loader to the device: http://www.atmel.com/tools/FLIP.aspx

FLIP supports two modes of operation: GUI and command line (batchisp).

Below is an example output of the FLIP batchisp mode:



The example here was started on the command prompt with:

```
"path_to_batchisp\"batchisp -cmdfile command_file.txt
```

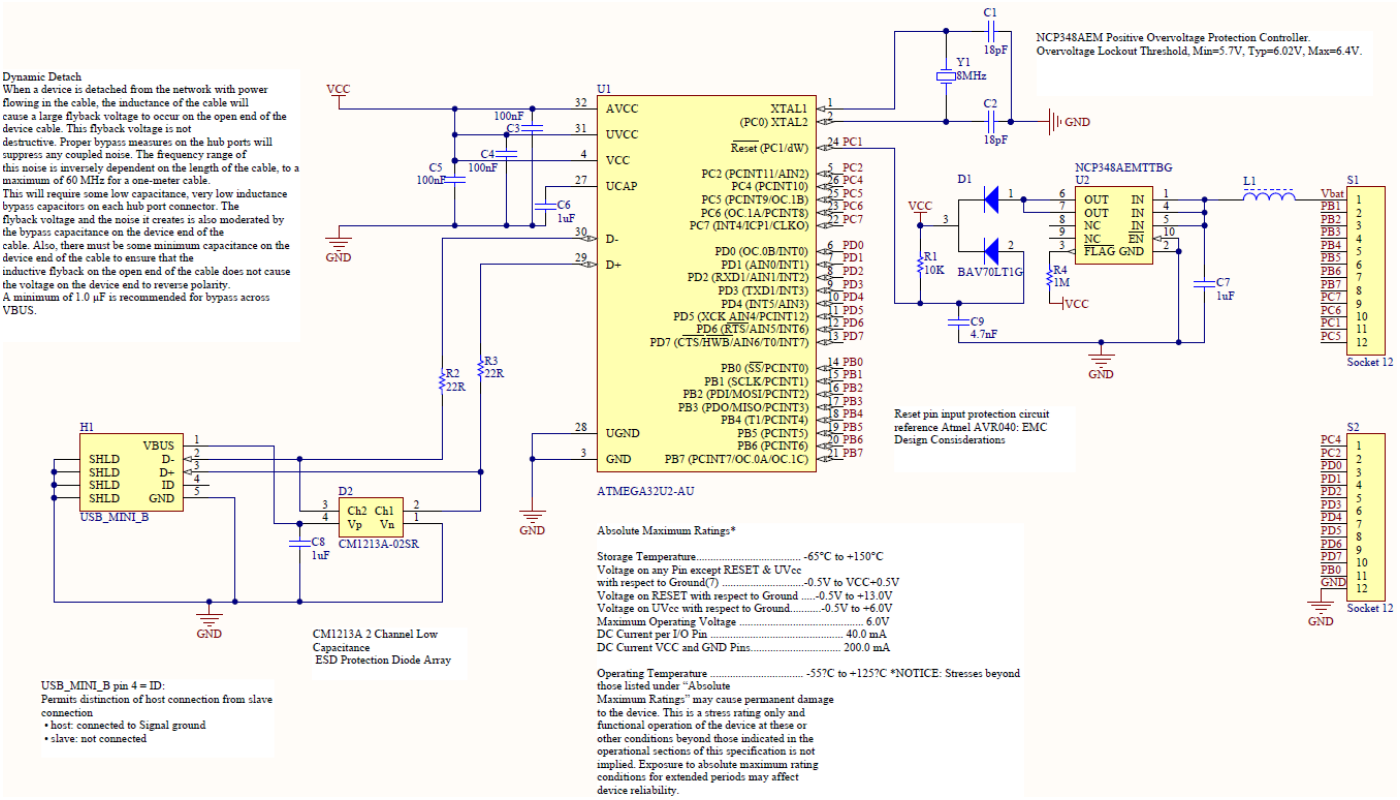
with the `command_file.txt` containing:

```
-device atmega32u2
-hardware USB
-operation
erase F onfail abort
blankcheck
loadbuffer ".\default\HWTest00.hex"
program onfail abort
verify
start reset 0
```

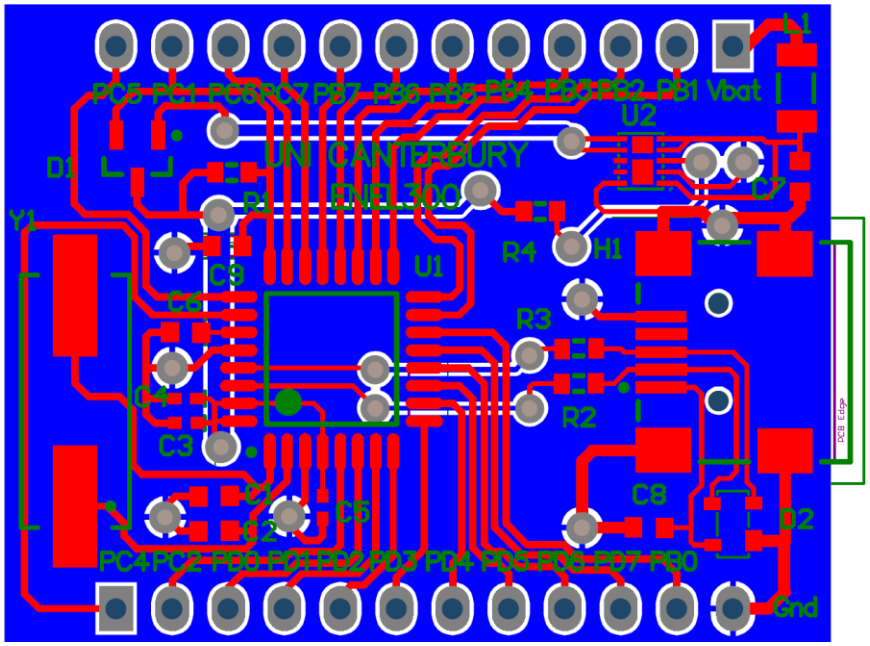
For further information, see the FLIP manual

Microcontroller Adapter Board

So that you do not have to attempt to solder on a tricky surface mount microcontroller IC, and to make sure some protection is included, a microcontroller adapter board has been produced for you. Headers have been used on the adapter board for you to use to connect to your vero-board design. The schematic and PCB layout are shown below.



Oversize PCB layout



Actual adapter board size.