



CBx capacitors:
Decoupling or bypass capacitors. The AN2519 [2] indicates that the typical decoupling capacitor values are 100nF for analog voltage. It also recommends that the main VCC voltage be decoupled, but does not recommend a value for this. The value used was 1uF.

CU1
CU1: this is the UCAP pin capacitor.
The MCU datasheet [1] specifies
that this pin should be connected to an
external 1uF capacitor.

RESET NETWORK
The reset network added was taken directly from Application Note [2]. See section 3 for details.

RHWB1
Datasheet [1] recommends that the HWB pin be connected to GND through a 1k resistor.

- [1] **ATMEGA32U4 datasheet**
https://www.1mcrochip.com/downloads/en/DeviceDoc/Atmel-7766-B-bit-AVR-ATmega16U4-32U4_Datasheet.pdf
- [2] **AN2519 Application Note: AVR® Microcontroller Hardware Design Considerations**
<https://www.1mcrochip.com/downloads/en/AppNotes/AN2519-AVR-Microcontroller-Hardware-Design-Considerations-00002519B.pdf>
- [3] **NX5032GC 16MHz crystal datasheet**
https://www.ndk.com/images/products/catalog/c_NX5032GC-STD-CSK-6_e.pdf
- [4] **AN232B-06 Application Note**
https://www.ftdichip.com/Support/Documents/AppNotes/AN232B-06_11.pdf
- [5] **USBL6C-2 Datasheet**
<https://www.st.com/resource/en/datasheet/usbl6c-2.pdf>