Microcontroller

DTR will spike high the other side of the capacitor on a low -> high edge if the microcontroller is on, which results in a Reset pin voltage of Vcc + the DTR signal voltage. The Reset pin is 12V tolerant, so this should be okay as long as both Vcc and DTR signals are TTL compliant. When the microcontroller is on, the opposite side of the DTR capacitor will be at Vcc. On a high -> low transition of DTR, the capacitor voltage must not change instantaneously, which means that the opposite side of the DTR capacitor will also be pulled low. Since there is no current flowing into the Reset pin, the voltage on the RESET pin is pulled down to the DTR logic level. The capacitor then slowly fills and the Reset pin voltage increases as a result of the RC time constant. Minimum Reset pull time must be 2.5us and the current time constant is equal to 1ms, so there should be plenty of time for the microcontroller to detect the reset.

Indicator LEDs

Decoupling Capacitors

Place decoupling capacitors as close to power inputs on microcontroller as possible.