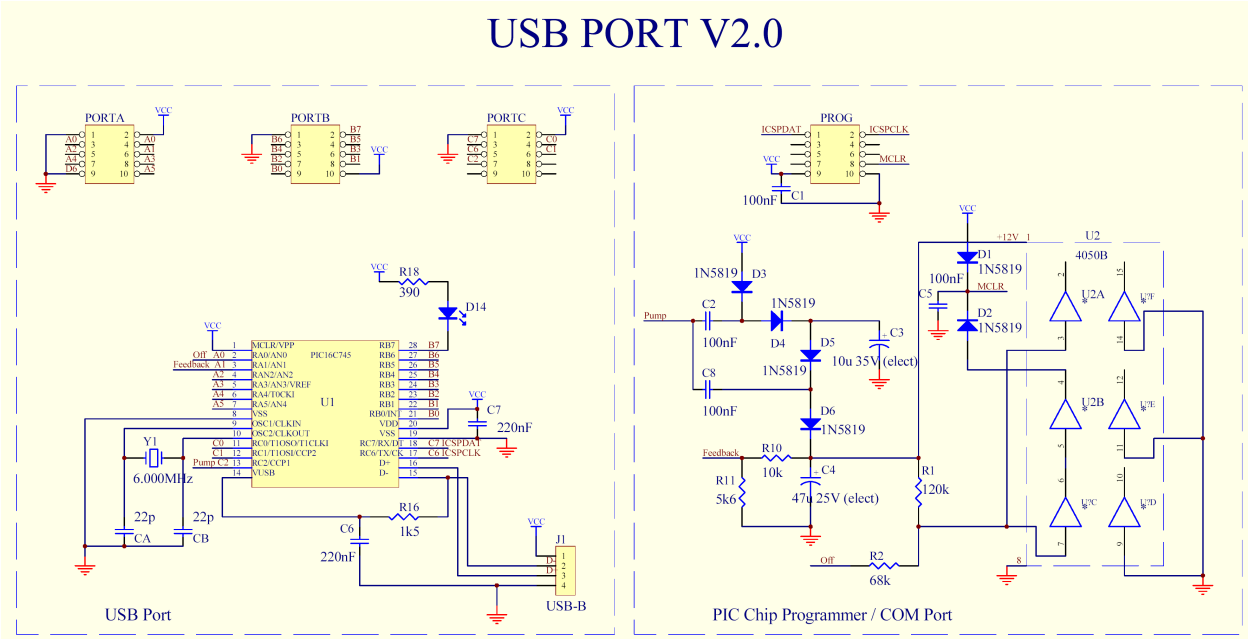
USB PORT Module Circuit Description

A scaleable (you can zoom and see details) schematic is in the “PCB and Kit Construction” File Folder in the USB PORT Module CD.



At the heart of the USB PORT Module circuit is the PIC16C745 microcontroller chip. This chip contains all the necessary hardware to implement USB (Version 1.1) Protocol. The chip firmware takes care of all the USB transfers and interprets the commands sent from the PC. The yellow LED (D14) indicates if the USB is active.

For example a ‘write’ command to the PORTB will change the number in the chip PORTB register. This register in turn physically controls the PORTB pins on the chip. Hence the user can control devices connected to these pins. Note the PORT connections carefully since the allocation of pins is different for each PORT connection.

Some of the PIC microcontroller pins also control the PIC Chip programmer circuit. A diode / capacitor pump circuit (D3, D4, D5 and D6 with C2, C8, C3 and C4) converts the 5V p/p square wave pulses at “Pump” to +12V DC. This voltage runs the 4050 Buffer IC. A voltage divider at “Feedback” controls the input of the 4050 from the PIC chip. Thus a +12V / +5V signal can be switched to the ‘Program’ pin of a PIC chip to place it in or out of program mode. The ICSPDAT (data) and ICSPCLK (clock) signals transfer the data in and out (for verification) of the Programmed PIC chip.