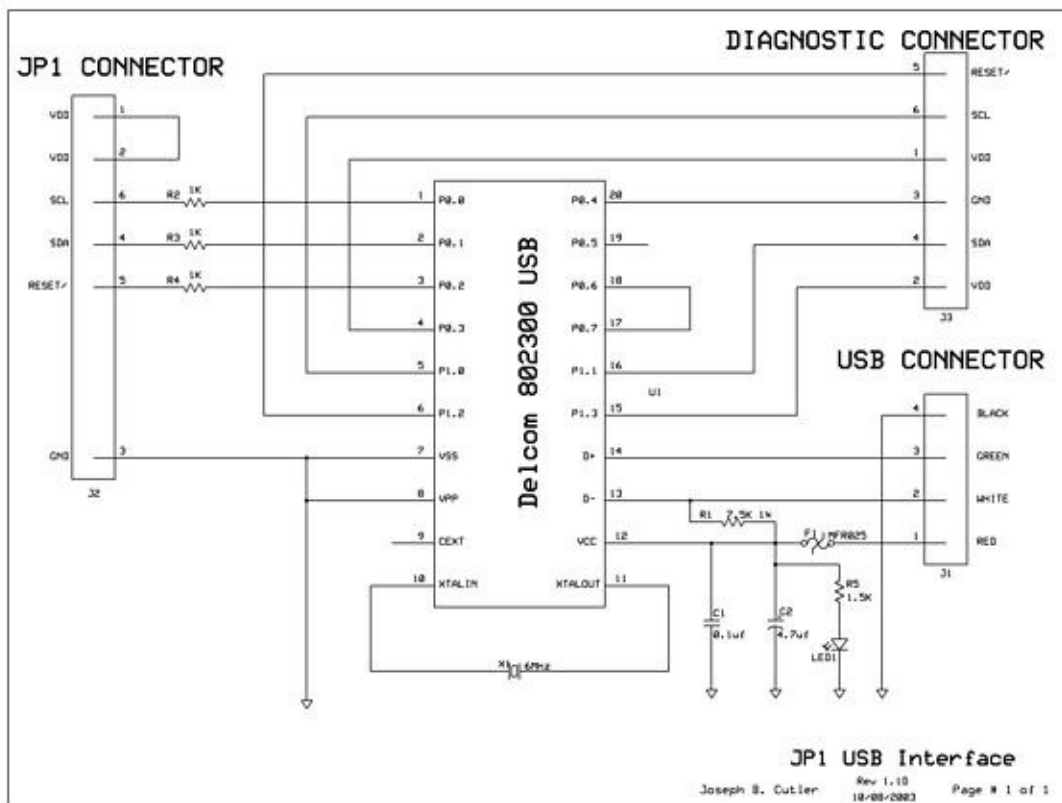


USB Interface for JP1

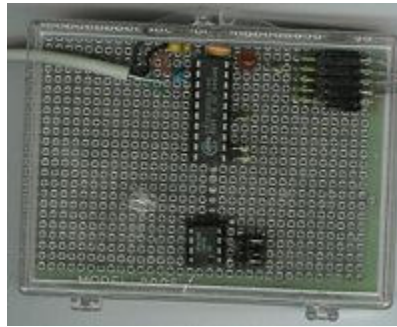
Thanks to Delcom Engineering, the USB interface is relatively simple. Delcom did the hard part with its hardware and software that interfaces USB to I2C devices. Their site has many things that are interesting for those who want to know more about the what's inside and the programming for their USB chip.

The USB interface only needs 8 components, 2 cables, and a board to mount it on. What I built only cost me \$24.02 for parts and shipping. I assembled the USB interface on a prototyping board to make sure the simplest would work. If a builder wants, they can purchase a full board (I think fully assembled), or parts and bare board, or parts and prototype it themselves. I added a power LED, a EEPROM with socket for testing to check this device without connecting up to a remote, and a connector for my JP1 cable. I thought I may need to have better grounding with the JP1 ribbon cable and might need to have alternate wires ground, but it worked fine with my 1994 remote. I used the limiting resistors (R2,R3,R4) connecting between the remote and the Delcom 802300 device copied from the SimpleRev5.pdf by Tommy N. Tyler.

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12/08/2003



The following image is my board. The 8 pin DIP is my test EEPROM and jumpers. These components are not needed for normal operation. I remove the EEPROM when I connect the the remote.



The lower 2 components (EEPROM and jumper header) were for my testing only. They are not needed for normal operation. The connector on the top right was for my caution if I needed to change the cable and add ground lines between the data lines. But this was not needed.

Construction Notes:

The 4.7uF Tantalum needs to be connected in correctly. It has a small + near the pin that connects VCC. If this Tantalum is reversed then you will probably have it burn out, pop, smoke, well lets say you won't like the result.

Since this USB board is connected to the USB port on your computer, any shorts between the 5VDC and Ground on this board could cause your computer problems. Make sure your USB board is disconnected from anything, I.E. Computer and Remote, before checking resistance. Check the 5VDC to Ground with an Ohm meter to make sure there is no short. Since there are semiconductors in circuit, I can't give you a definate reading. Basicly if you are getting a very low resitance, like touching your leads together low, then you have a short. I get 12kOhm one way (+lead on 5VDC) and 4kOhm the other(-lead on 5VDC). These are my reading with my digital Ohm meter, your readings will be different.


A resetable fuse is now added to the design. But care must still be taken to not short out the 5VDC to ground before this resetable fuse.

Parts List

From Delcom Engineering.

http://www.delcom-eng.com/products_USBIO.asp#DemoBrd

Qty	Item:	Price	Description
1	Item#802300	\$8.00	 USB Chip 12 Bit IO Package: 20 Pin DIP 0.100"

1	Item#803504	\$6.50	 USB Cable Plug A & Bare Wire End Length: 2 Meter Power Pair: 26AWG Signal Pair: 30AWG
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1	Item#803507	\$3.60	 USB Minimum Parts Kit Minimum required parts for the USB IO Chips. Includes: 7.5K 1% Resistor, 0.1uF Cap, 4.7uF Tantlun Cap, 6MHz Crystal.
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If you want to buy the bare board then also get the following. An easy way to go if you don't want to build your own board.

Item#803505	\$14.00	 Blank USB development board
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If you don't want to build very much, buy the following Delcom Complete Development board also 3 1k 1/8 watt resister, Cable and connector for JP1. It's more expensive though.



1	Item#802000	\$49.00	Complete USB development board With one 16 bit IO USB chip. 8 DipSwitches and 8 LED's Includes 2 Meter USB Cable.
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3			1k Ohm 1/8 watt resister.
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?? inches of 6 conductor for the JP1 connector.

The 6 pin JP1 Connector from Mouser Electronics:

<http://www.mouser.com>

1	649-71602-306	\$0.67	FEMALE ASSEMBLY 6P FCI Quickie III Connectors
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http://www.mouser.com/index.cfm?handler=productsearch._listproductsearch&criteria=649-71602-306&searchby=partnumber&partnumberprecision=exact

Thanks to Rob and <http://www.remotecentral.com> for the 6 pin connector information.

<http://www.remotecentral.com/cgi-bin/mboard/rc-one4all/thread.cgi?3038,4#119>

1	652-MFR025	\$0.51	Bourns Radial Lead Resetable Fuse
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http://www.mouser.com/index.cfm?handler=displayproduct&lstdispproductid=278801&_categoryid=21&_pcodeid=6521

Comments or questions please e-mail me:

jcutler@myrealbox.com

Thanks to Tommy Tyler for his much appreciated help with the hardware design.

Joe Cutler

Updated 10-03-2003