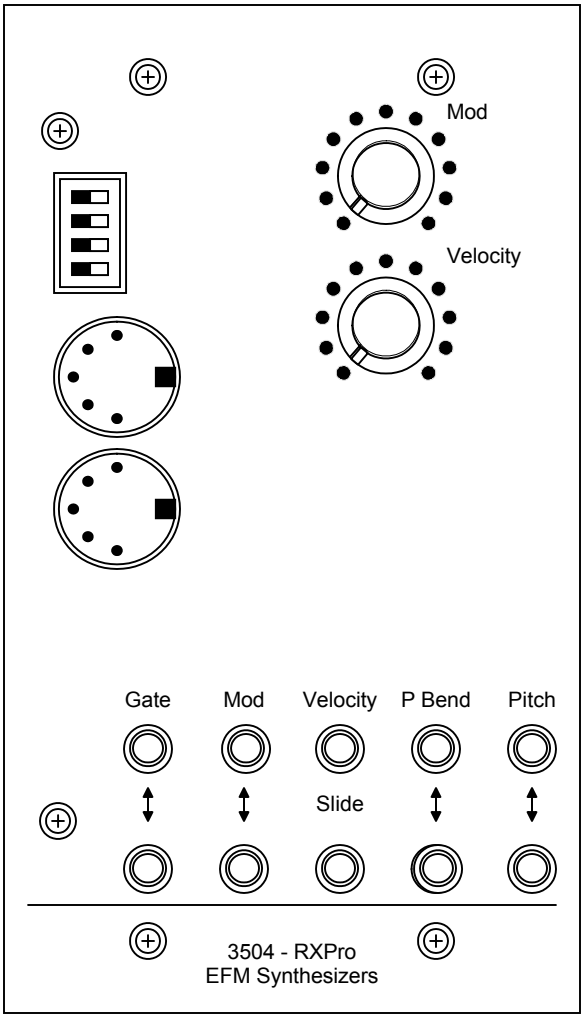
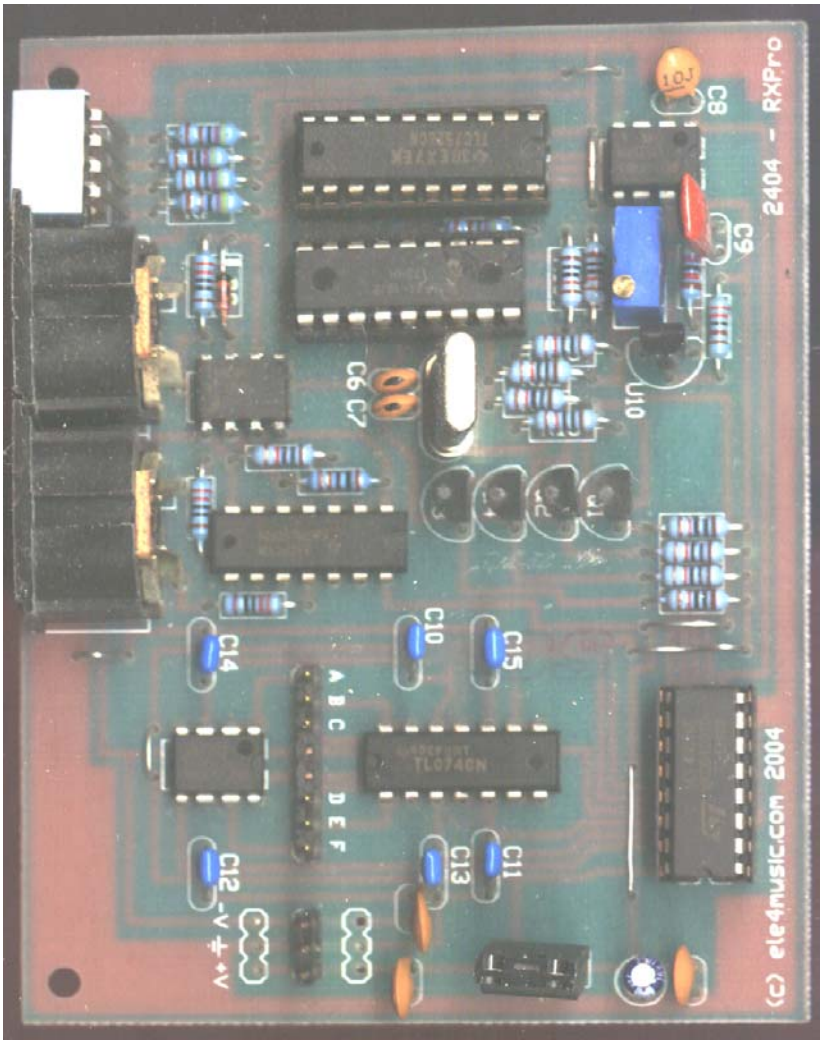
3504 Midi to CV Converter

- Pitch
- Pitch Bend
- Velocity
- Gate
- Mod
- Glide

The midi to CV converter uses a 7805 voltage regulator U1 for its +5V supply.

Midi is transmitted and received on a closed current loop U2 is a optical coupling device that converts the I/O state on the current loop into serial data the PIC microprocessor U4 can understand. The PIC puts the serial data together and uses the instruction to do a couple of things seemingly simultaneously.



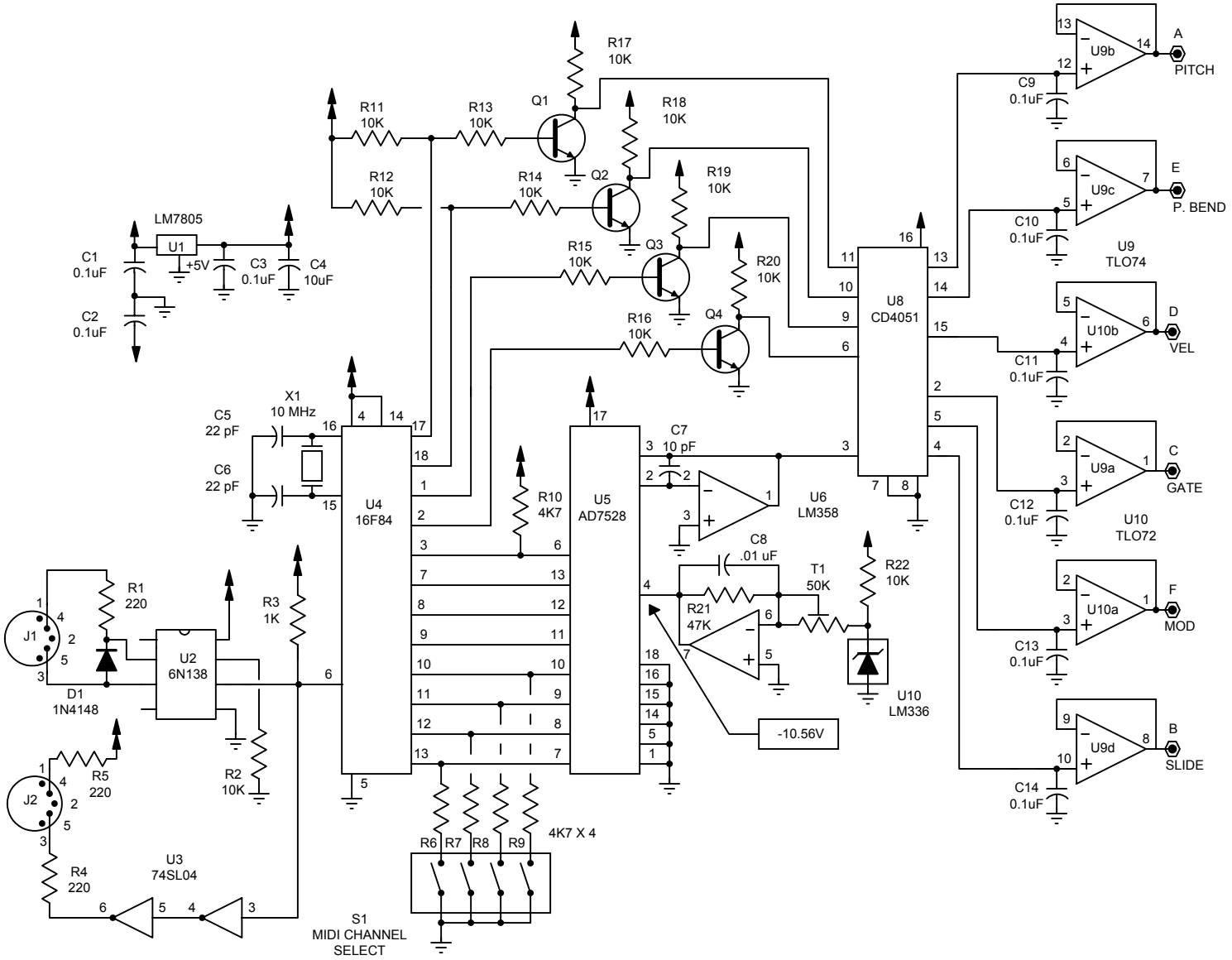


It seems simultaneous because the PIC is so fast however it does all of this one step at a time. U3 forms a non-inverting buffer that provides the midi-through signal. Midi data, depending of the transmitting device can handle a lot of information we don't necessarily need to control an analog synthesizer and that's good because it makes doing the job with a low cost PIC possible. We can get by with fairly minimal set of controls.

Special Thanks:

This product would not be possible without Trevor Page's midi code. Thanks Trevor.

This is the 2400 version. The 3500 versionis the identical except it has a standard power connector.



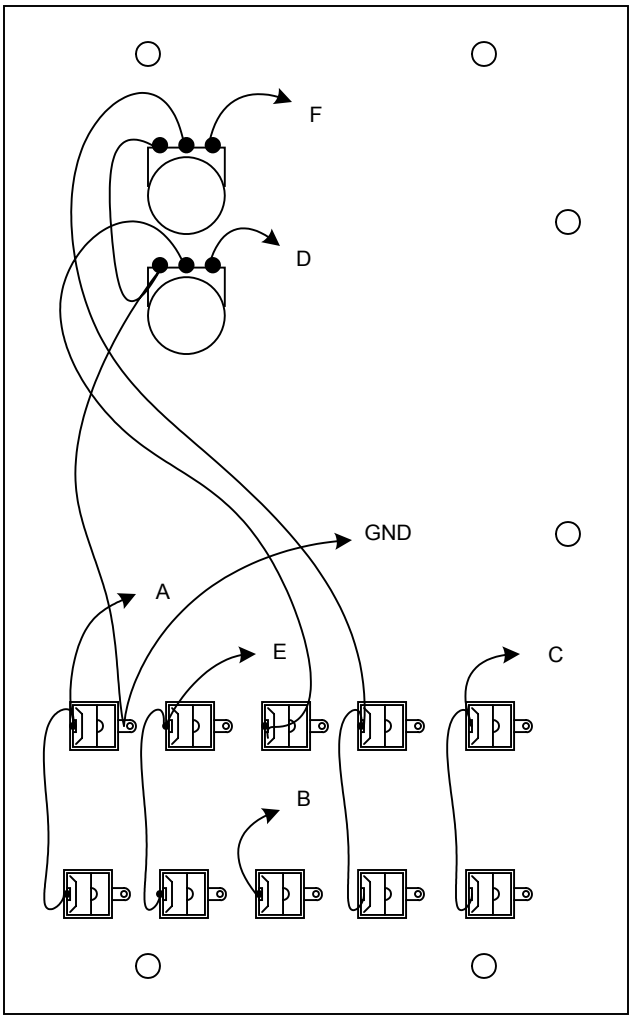
Small Parts

PCB	PC Board	1
C1-3	0.1uF Ceramic	3
C4	10uF Ele	1
C5,6	22pF Ceramic	2
C7	10pF Ceramic	1
C8	0.01uF Ceramic	1
C9-14	0.1uF Mono	6
R1,4,5	220 Ohm	3
R3	1K	1
R6-10	4.7K	5
R2,11-20,24,22	10K	12
R21	47K	1
D1	1N4148	1
Q1-4	2N3904	4
U1	LM7805	1
U2	6N138	1
U3	74SL04	1
U4	16F84	1
U5	TLC7528	1
U6	LM358	1
U7	LM336	1
U8	CD4051	1
U9	TLO74	1
U10	TLO72	1
X1	10 MHz Crystal	1

Full Parts

P1-2	50K	2
Knobs		2
T1	50K Trimmer	1
S2	4 Position DIP	1
J1,2	5 Pin DIN	2
Jacks	1/8 Mini Jack	10
L Bracket w/hardware		2
Header		1
Panel		1
Overlay		1

The PIC loads the correct number into the DAC digital to analog converter U5 to generate a voltage that corresponds to the midi message received. Then selects which output is active by strobing the demux U8's select pins through the Q1-Q4 inverter-buffers. When one of the outputs goes high the voltage is sampled and held by capacitors C9-C14 until it is refreshed. U6a is the DAC output amp and U6b is the DAC voltage reference amplifier.



Midi Channel Select