

9700 MIDI2CV8 checks/tests

MIDI2CV8 Channel/Mode DIP switch setting details

<http://www.paia.com/talk/viewtopic.php?f=22&t=260>

Double-check to be sure the 'conditional' steps weren't overlooked on page 11 (jumpers at Out-In and OctC-G, and, 5600 @ R28).

Be sure it is the Tip and Sleeve circuits you're using for the cv tests and not the Tip and Ring circuits. This would be with the black probe on ground and the red measuring the circuit points O1-O8. The G1-G8 circuits are 'open collectors' or points a voltage can be applied and 'switched' to ground (Switch-Triggers, etc).

The analog IC power supplies can be confirmed by testing for DC Volts using the red probe of the multimeter on pins 4 and 11 of the opamp ICs to be sure they're getting the positive and negative DC supplies. Measure this with the black probe touching the bare ground wire linking the panel connectors. These are the middle pins on each row (count up in a ccw direction around the part as viewed from the top). These will range from positive and negative 12 to 18 volts DC, dependent upon the load on the wall mount transformer.

Does the MIDI In LED flicker for MIDI Input? Operating a pitch wheel or modulation wheel sends lots of MIDI messages that would make the flickering more evident. If you're not getting this indication it might be the reason you're not getting the MIDI Test on/off flash indication (much more bright and noticeable than the MIDI pulsing). The LED polarity is important for the lighting of the part. The flat part of the round base should be in the hole nearest the MIDI In connector.

If you have a second device that responds to MIDI and another cable, it could connect on the MIDI Thru and should operate as if it were connected direct to the MIDI sender. The parts including the MIDI Input connector, the Resistors R16 R15 and R53, Diode D1, and IC5 are parts that change the MIDI current pulses to voltage switching to the uController (uC) pin 10. The concentrated wheel movement messages that make the MIDI In LED flickering more visible would make the 5v to 0v voltage pulsing on pin 10 of the uC noticeable on a dc voltage measurement at this pin. It would dip down from the at rest 5v level on a multimeter measurement and be thin downward pulses on an oscilloscope.

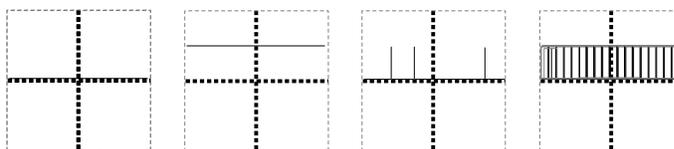
The IC3 and IC2 uC and EPROM Firmware sections of the board can be difficult to trouble-shoot but a 'scope can make it easier. Check IC3 pins 18 and 19 to see some oscillation in a 0 to 2-4v range that is the oscillator signals for the clocking. This clocking comes out of pin 30 and runs over to pin 11 of IC1. A momentary pulse up to 5v should occur on pin 9 of IC3 to reset the part as power is applied.

As the Self-test mode operates, the uC should be causing a ramping of the voltage that can be measured on the Out-In jumper link. Also, the demultiplexer select lines should be toggling and apparent on resistors R34-37 where they attach with transistors Q4-Q7. A simple mistake that can occur here and cause troubles is getting the installation of 47ohm and 100k resistors mixed-up: The yellow-violet-black-gold 47ohm colors are very similar to the brown-black-yellow-gold colors of the 100k.

Checks can be made of the pins on the EPROM firmware IC2 to get an idea of whether or not it's being accessed and if the uC is executing the program in it. Power-up in the Self-test Mode 8 with no MIDI connected. Look for a sign of a low 0V level, a high 5V level, dynamic switching that looks like noise between 0 and 5 v levels, and a periodic pulsing from 0 to 5 v.

Below is a list the pins of the part from 1 through 28 and their state (low, high, periodic, dynamic).

- 1 high
- 2 periodic
- 3 periodic
- 4 dynamic
- 5 periodic
- 6 - 13 dynamic
- 14 low (ground)
- 15 - 19 dynamic



- 20 low
- 21 periodic
- 22 dynamic
- 23 periodic
- 24 dynamic
- 25 low
- 26 low
- 27 high
- 28 high

Many of these lines have direct connections with IC3 the uController. It can sometimes reveal open circuits comparing the similar lines on the two different parts. The low-order address lines have IC1 between them though, so this will cause differences in the 'look' between the lines for them (AD0-7 and A0-7) on ICs 2 and 3.

-0-0-0-0-

