

Olmsted Quad Direct-Inject Amplifier (*Quad DI*)

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Input Impedance	1M ohm (unbalanced)
Output Impedance	approx. 150 Ohm (balanced, pin 2 hot)
Gain	40 db per channel
Output level (max)	approx. +27 (<i>pad disengaged</i>)
Frequency response	At 0db output: +/- 1db from 14 hz - 20k hz At +10db output: +/- 1db from 20 hz - 15k hz, -2db @20k hz
Pad switch	10 db

Functionality

The Quad DI is designed to accept any unbalanced input signal, apply up to 40db of gain (up to maximum output level of approx. +27), and provide a balanced output at approx. 150 ohms. Each channel has two input jacks: the rear inputs are designed to be permanently connected (to instruments, a patchbay, ETC), and the corresponding front panel input, upon insertion of a 1/4" jack, disables the rear input and takes priority. *The two input jacks do not mix.* Each channel has a single interstage gain control and a -10db pad following the output transformer. This pad value is carefully chosen to allow you to apply heavy gain (to the point that the signal becomes as distorted as you like) and then drop the level down to a safe value for direct input to A/D converters (approx. +17).

In order to allow for a very high input impedance and permit the use of multiple channel inputs with auto-priority jacks on the front panel, there is a consequential crosstalk that can result in adjacent *unused* channels. This should not cause any problems when the unit is used in normal operation, but if a miss-patch is made it could cause confusion and therefore warrants mentioning. For instance: if a signal is applied to input (1) and no signal is inserted at input (2), signal (1) will appear, heavily distorted and at -35db, at output (2), should the level pot for channel (2) be turned up. This is due to the fact that, without a signal present at tube input grid (2), there is nothing to load that stage's grid and consequently it is highly susceptible to interference from the other 1/2 of the tube. Once a signal (or ground reference) is introduced to input (2), the crosstalk will cease. Of course, by simply keeping the volume pot of unused channels turned down you will not hear any of this.

Suggestions to ensure continued health of the unit

*In order to ensure maximum life of the output tubes, it is highly recommended that the pad switches of unused channels be kept in the left (padded) position. This will ensure that a stable load remains present on the output stages when those outputs are unpatched.

*All components are used within their rated values. That being true, this is an all-tube unit with a tube power supply that runs at over 350 volts; like a tube guitar amp, it should not be left running constantly. Keep the power off when not in use in order to ensure maximum component life.

*The power transformer will become warm while in operation. This is to be expected.

*The tubes (especially the rectifier tube) will become extremely hot while in operation.

*Due to the fact that the inputs are unbalanced, do not apply any DC voltage (EG, phantom power) to the inputs or premature tube failure will result. Balanced DC voltage (EG, phantom power) applied to the outputs should not cause immediate harm but long-term exposure could damage the output transformers.

Service Data

For service contact Chris at 917-885-7300. If Chris is unavailable, you should be able to get the unit serviced at any reputable shop that repairs vacuum tube guitar amplifiers and hi-fi equipment. For speediest service provide the technician with a copy of this document.

Circuit description: unbalanced input signal enters 1/4" TS jack on the rear panel, unless overridden by corresponding front-panel priority input. Signal is referenced to ground by 1M resistor. Signal enters grid of 6SN7 stage via 68k grid-stop resistor

and exits to via 1uf coupling cap and 100k volume pot, then to 1/2 of 6SL7 via a 1K grid-stop resistor. Signal then goes to grid of 2nd 1/2 of 6SL7 (configured as cathode follower). Signal exits cathode of 2nd 1/2 of 6SL7 to output transformer via 1uf coupling cap, and then to pad enable/disable switch. Following pad switch signal exits via XLR jack on rear of unit.

Power supply description: Three filter LC stage (2 chokes) supplies B+ to each channel. Each channel has independent filtering stages for input and output amps. Filaments are DC for the input stages (and lamp), with 1uf shunt capacitors from each leg to ground. Filaments for output stages are AC, referenced to ground via 100 ohm resistors.

Tube compliment: input tubes (closest to front panel) are 6SN7. Output tubes are 6SL7. B+ rectifier is a 5Y3. You may substitute a 5V4 for the 5Y3, but do not use a 3A rectifier tube (e.g., 5U4, 5R4, or GZ34) as this will cause premature failure of the power transformer.

Test Voltages (VDC to ground)

5Y3 pin 8	367
Filtered B+ (red wire)	359
6SL7 pin 2	300
6SL7 pin 3	150
6SL7 pin 6	1.6
6SN7 plates (5, 2)	130
6SN7 cathodes (6, 3)	5

Useful Potential Modifications

*With a simple modification you can increase the gain of either pair (1,2 and/or 3,4) of channels approximately 9.5 db. Simply replace the 2700 ohm cathode resistors of the corresponding input stages with 1500 ohm 1/2w resistors and substitute a 6SL7 for the 6SN7 in that position. Please note that this will not increase the maximum output level of the unit, only the available gain.

*To change the value of the pad to -20db, simply replace the 270 ohm resistor on each pad switch with a 100 ohm resistor. Resistor values between 270 ohms and 100 ohms will yield predictable results.

*To use the unit as microphone preamplifiers, connect a microphone to the Low Z side of a direct box and then connect the Hi Z side of the direct box to any Quad DI input. This will provide a mic preamp with approximately 50db of gain.