

## 2.2 Filter Inverters

The filter inverter boards are custom designed assemblies located between the organ keys and the keyboard encoders. These boards serve two functions. First, they act as low pass filters and attenuate switching noise generated by the Moller keying system. Short inductive spikes from the Moller keying system inductively couple between key circuits because there is up to 50 feet of cable bundling all the keying circuits to the pipe chambers. These inductive spikes were of no consequence to the original Moller action. The digital system responds much faster however and the short coupled spikes cause spurious short staccato notes.

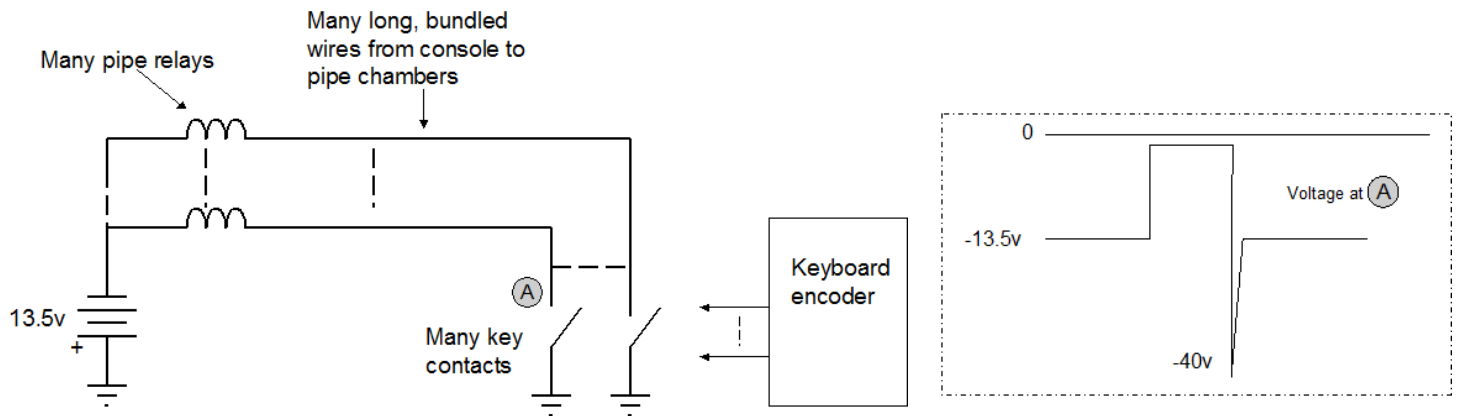


Figure 2.2-1 Keying a single pipe generates an inductive spike which couples to other circuits

The second function is to reverse the polarity of the keying voltage change. This required because of the very unfortunate negative polarity chosen by Moller when the organ was built. When the organ voltage is turned off for any reason, such as during shut-down, the keyboard encoders interpret this voltage change as key-down. The result would be a condition whereby all the digital keys would be down at once, with disastrous consequences. The inverter board reverses this condition to key-up, which is a safe condition.

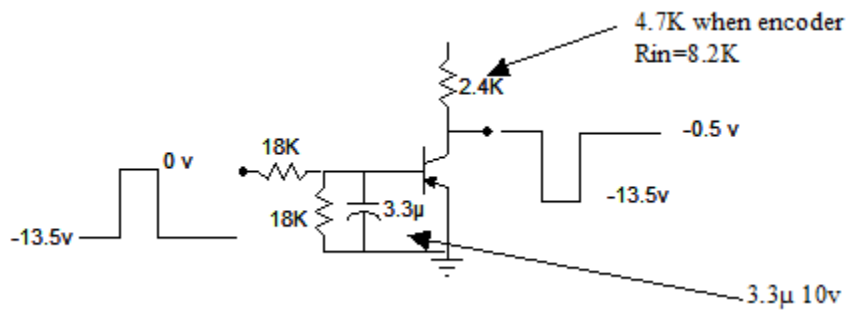
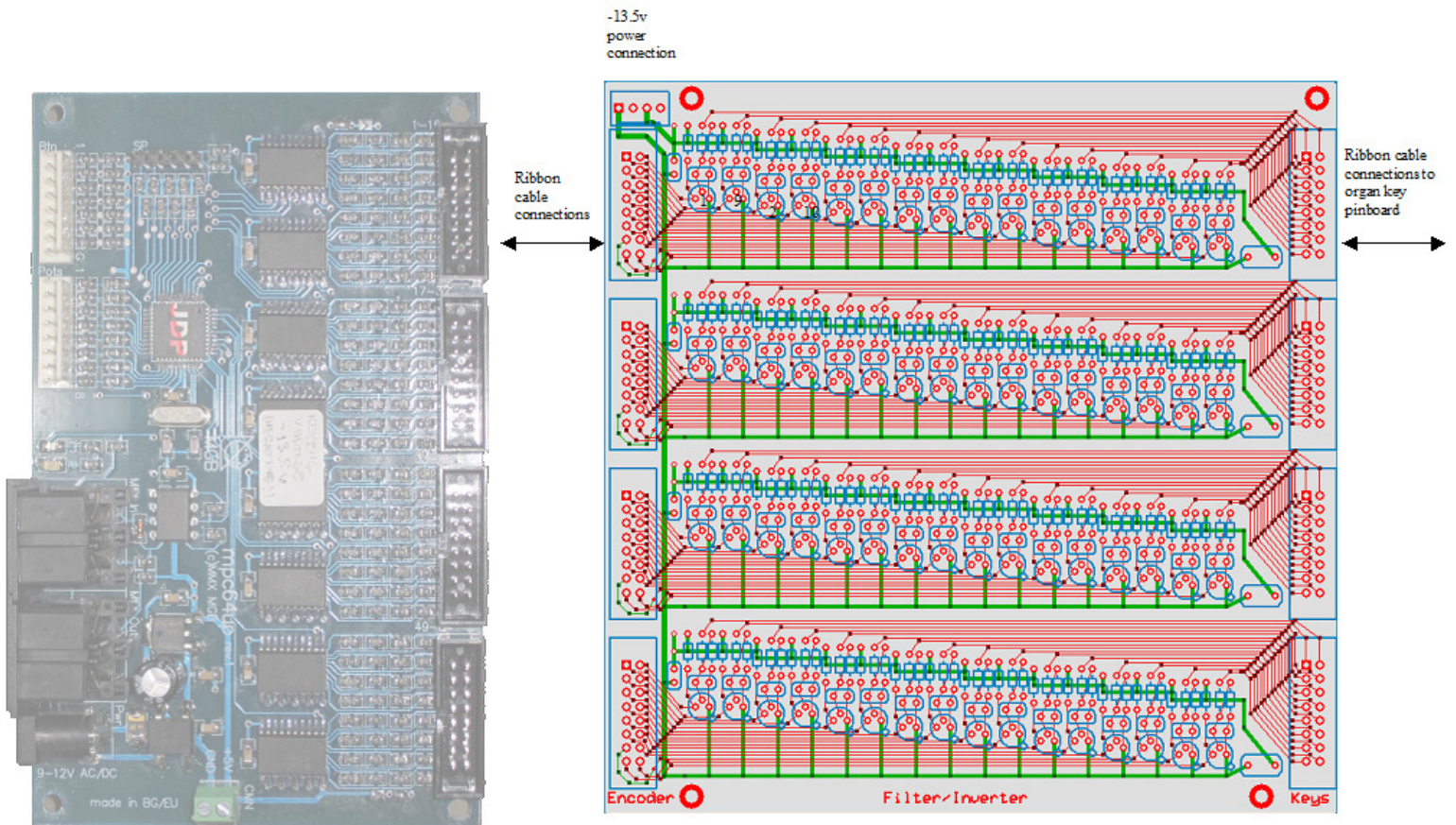
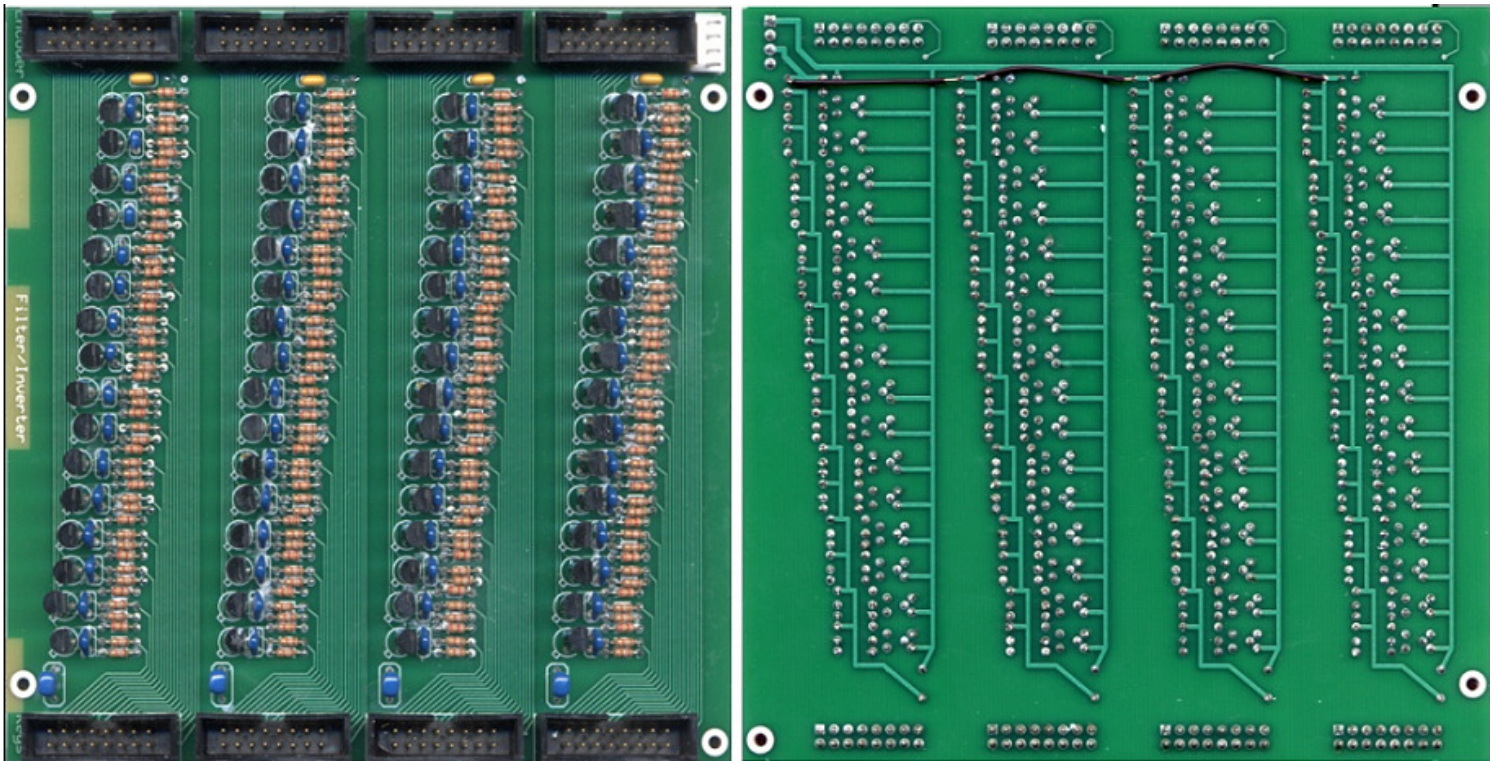


Figure 2.2-2 Filter-Inverter board circuit (typical)

Note that when an organ key is down (shorts to ground) the voltage is positive going at the input to the inverter board and negative going at the board output (keyboard encoder input). The 3.3uF capacitor slows the response such that keying transients are suppressed. This circuit is repeated 64 times for each keyboard encoder.



Ribbon cables to keyboard encoders



Ribbon cables from organ key pinboard

Figure 2.2-3 Physical layout and connection of the Filter-Inverter boards