

## Preamplifier Replacement

### Tool List

1. 1x 1/8 inch hex key.
2. 1x 7/64 inch hex key.
3. 1x 3/32 inch hex key.
4. 1x 1/16 inch hex key.
5. Powder-free Latex or Nitrile gloves

### Instructions

1. Power down the counter via the power switch on the support box. Wait about 30 seconds for the high voltage to drain.
2. Using the 1/8" hex key, remove either the left or right side panel. If you are facing the front of the counter, the left panel is a slightly shorter distance to the preamplifiers. Identify and locate the preamplifier assembly that you intend to replace (see Figure 1).  
**NOTE: While the side panel is off, sensitive nodes are exposed! Try not to touch any PC boards or cable assemblies except those mentioned in these instructions.**
3. Using gloved hands and the 7/64" hex key, remove the screws and washers holding the preamplifier assembly to the preamp motherboard. Then, carefully pull the preamplifier assembly away from the preamp motherboard (see Figure 1) to eject it from its socket.
4. Using either the 3/32" or 1/16" hex key, as appropriate, remove the preamplifier PCB from its housing (see Figure 2). Carefully set aside the original preamplifier PCB.
5. Slide the new preamplifier PCB into the housing, being sure not to touch the signal input connectors (see Figure 2).
6. Insert the new preamplifier assembly back onto preamp motherboard, being careful to ensure that the assembly is seated appropriate in the preamp motherboard sockets. Re-install the screws/washers to secure the assembly to the preamp motherboard.
7. Put the side panel back on.

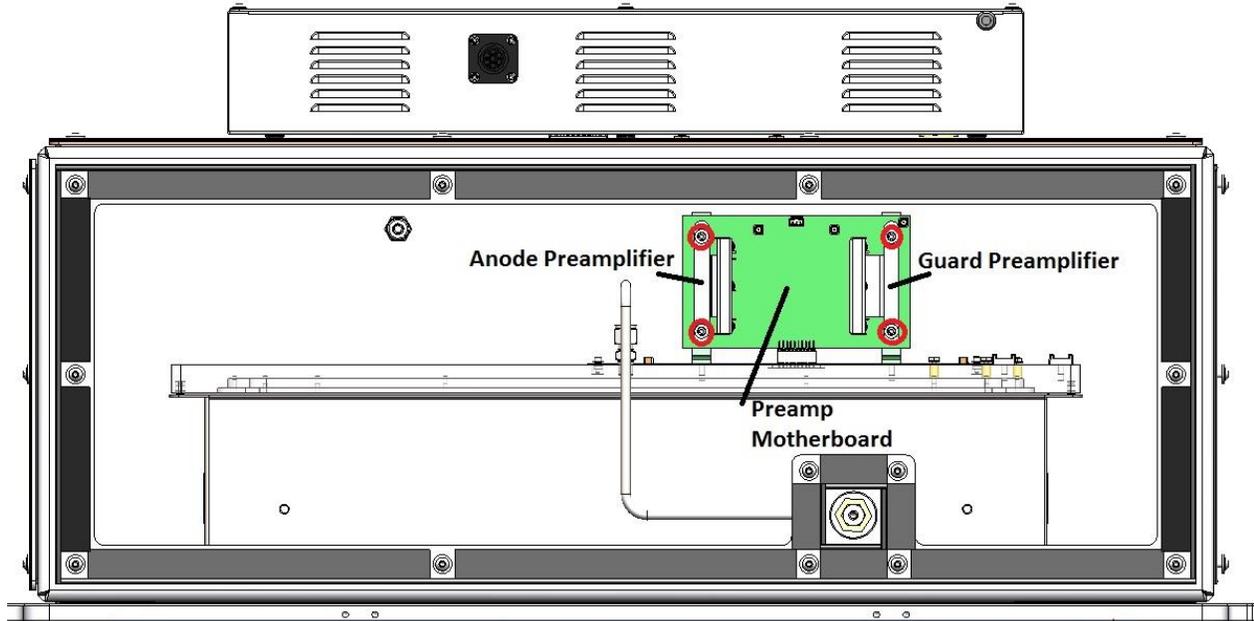


Figure 1: Schematic of UltraLo-1800 as seen from behind. The anode preamplifier assembly is on the left, the guard is on the right. Each assembly has two screws/washers that secure it to the preamp motherboard; these are circled in red.

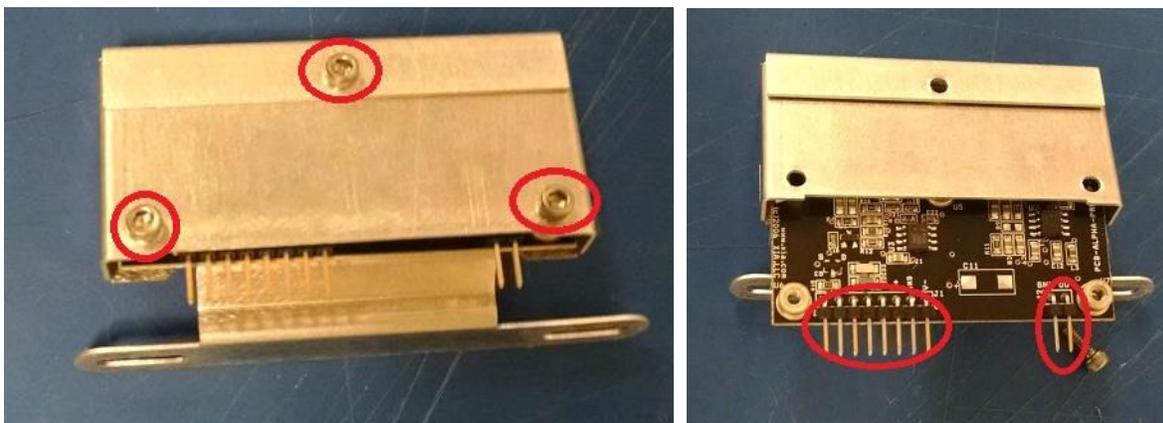


Figure 2: Left: screws to remove to take preamplifier PCB out of housing. Right: Do not touch the sensitive signal nodes circled in red.