

A Few Notes

Some of the circuits in the FBV designs use very high resistances. To minimize electrical noise from leakage currents over the surface of the board it needs to be kept clean and dry. Finger prints on the board leave traces of salt which will allow small amounts of leakage noise when the humidity is high, so it is always best to handle the boards by their edges or even to use gloves.

Similarly, the integrated circuits, the Integrator capacitors and high-value resistors should be kept clean and handled as little as possible.

When operating the seismometer in a humid environment it wouldn't be a bad idea to seal a desiccant packet containing silica gel or similar material inside the instrument's pressure case, which is almost always done in commercial instruments.

When soldering components, use solder having either no-clean or non-activated rosin flux. Highly activated fluxes and, even worse, water-washable fluxes will leave a conductive residue. In general, it is hard to completely clean a contaminated board, requiring the use of very pure solvents, ammonia and hot distilled water. High-resistance flux residues may just be left in place or they can be flaked off with the tip of a scribe if appearance is important.

All that being said, it is rare for electrical leakage problems to be so severe that they would significantly degrade the visible traces. Usually, leakage problems are only detectable through careful statistical analysis of the instrument's noise spectrum.

For ease of soldering we use tin-lead plating on the solder pads. Components which have lead-free leads, which now are most of them, can be slightly harder to solder and using a tin-lead solder will make it easier to get good joints. As I understand the rationale for the movement away from lead in solder, it is mainly to avoid putting more lead into the environment when large numbers of consumer products are scrapped. Don't eat lead solder.