

HANDLING PRECAUTIONS FOR FLAT PLATE INFRARED DETECTORS



Note: For optimum lifetime and consistent performance Infrared Materials recommends that detectors are sealed in hermetic packages. Infrared Materials does not recommend the use of flat plate detectors due to the potential exposure to environmental variables which are known to degrade the detector performance. Therefore Infrared Materials, Inc. cannot warranty flat plate detectors.

1. **HANDLING:** Plastic tweezers are recommended in the handling of all detectors. Most PbS flat plate detectors have a cover window to provide protection of the active area. Standard PbSe flat plate detectors do not have a protective cover over the active area, but an evaporated coating can be applied for protection and response enhancement upon request.

2. **CLEANING:** The detector chip may be cleaned with laboratory grade acetone followed with dry nitrogen to avoid moisture accumulation. NEVER use an ULTRASONIC CLEANER to clean detectors or detector assemblies.

3. **SOLDERING:** Lead wires on flat plate detectors are generally tinned copper. Observe the following precautions when hand soldering leads:

- Use a low wattage microelectronic soldering iron.
- Use heat sink clips or pliers on lead wires between the solder joint and the detector.
- Use solder/flux combinations compatible with the recommendations for cleaning.

4. **DETECTOR POWER DISSIPATION:** Detectors are typically biased with a series load resistor. As a rule of thumb, detectors will not dissipate more than $10E^{-5}$ watts per square centimeter of sensitive area. See detector linearity on website.

5. **ESD SENSITIVITY:** Photo detectors 1x1mm in area or larger are not particularly sensitive to Electro-Static Discharge. However, the same cautions should be taken as in handling other electronic components. Detectors are not immune from ESD damage. Detectors smaller than 1x1mm in area are quite vulnerable to ESD damage and full ESD precautions should be taken at all times when handling small area detectors or detector arrays.

6. **DETECTOR MOUNTING:** Use a flexible, low stress, thermally conductive epoxy or other similar type adhesive material. A material with 100% solids is preferred in order to minimize the occurrence of voids between detector substrate and mounting surface. Flexible adhesives reduce or eliminate problems with mismatched coefficients of thermal expansion. Bond line thickness should not exceed 2-3 mils in order to maximize thermal transfer and temperature uniformity.

7. **STORAGE:** The detectors can be damaged, or have their characteristics changed by exposure to light, moisture or heat. They should be stored in a dark, dry environment at a temperature between +25°C and +50°C. PbS detectors that have changed in performance due to moisture absorption may be baked in an oven at +70-85°C for 3-6 hours followed by a stabilization period of 7-10 days in an IR dark, dry environment. Please note that this procedure will not recover the detector performance if the cause is due to exposure to conditions other than moisture alone.