# Handling Precautions

> **Do not remove pyroelectric detectors from shipping boxes until you have read and are thoroughly familiar with the following instructions.**

1 Electrostatic Discharge (ESD) Sensitivity and Protection

All InfraTec detectors are shipped in boxes containing two types of foam:

Foam (soft)
antistatic

Foam (hard)
Surface impedance 10E3 - 10E5 Ohm
in cardboard box
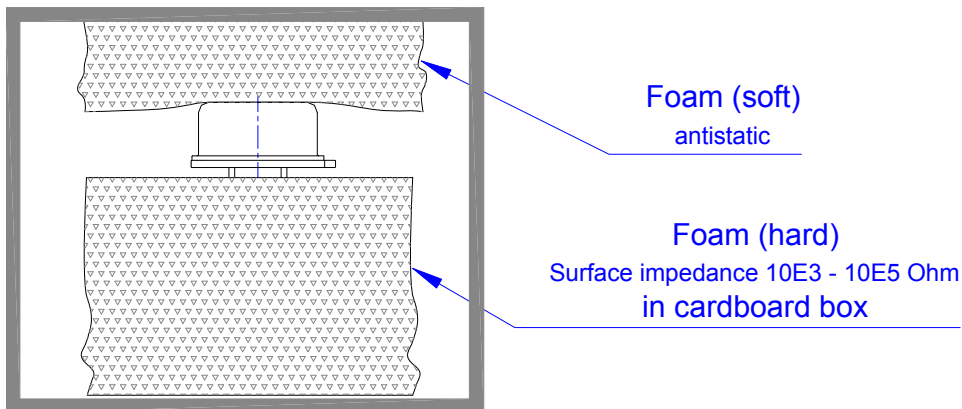
The reason such precautions are taken is that an open circuit pyroelectric chip can generate a voltage of 600 V from a temperature change of 50 °C. This is particularly true of detectors designed to operate in the current mode. Current mode detectors can produce high voltages between pins:
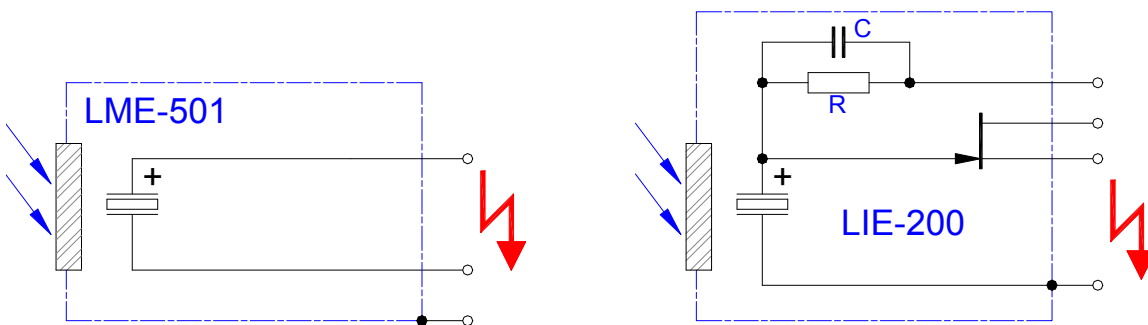
This internal charge and an additional static discharge by unsuitable handling can destroy the detector and/or other electronic devices of the circuitry.

- Handle detectors in an ESD Protected Area (EPA)
- Transport and store detectors in their original packaging, otherwise connect (< 10 MOhm) all leads of the unprocessed detectors during transport and storage.
- Avoid exposing unassembled detectors to temperature ramps > |1 K/s|. The resulting high voltage produced in the pyroelectric chip can damage the pyroelectric material.

![InfraTec]
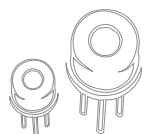
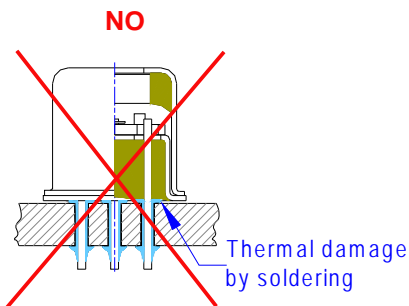# Handling Precautions

2   Soldering

Inadequate heat sinking during soldering operations can damage a pyroelectric detector.
For our detectors typically hand soldering is applied. This should only be carried out by skilled and specifically trained employees.

To minimize the risks during soldering we recommend:

- To use temperature controlled soldering stations
- To fix the detector without mechanical stress before soldering
- To avoid any contact of housing and soldering tip during soldering
- To use sink clips or flat pliers between soldering point and detector base for heat dissipation
- To not exceed the following maximum soldering times (in s) depending on the soldering tip temperature (in °C) and the distance (in mm) between the PCB and detector base

Soldering tip temperature [°C]	Maximum soldering time [s] for a distance PCB-detector socket of > 4 mm
240	10
260	8
280	6
300	4
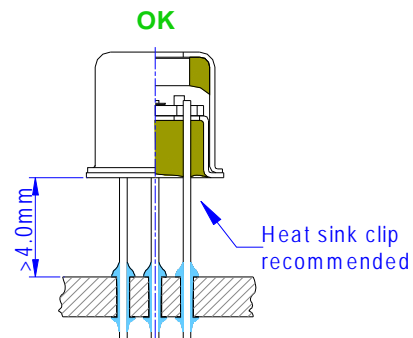
3   Mechanical Stress

All detector packages are hermetically sealed and bending or inducing a stress at the pin feed throughs will damage the glass seals in these areas.
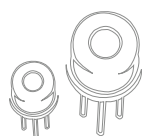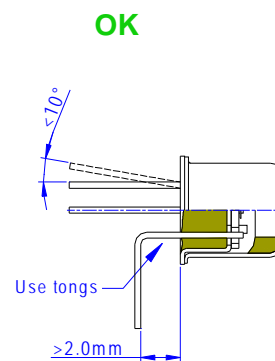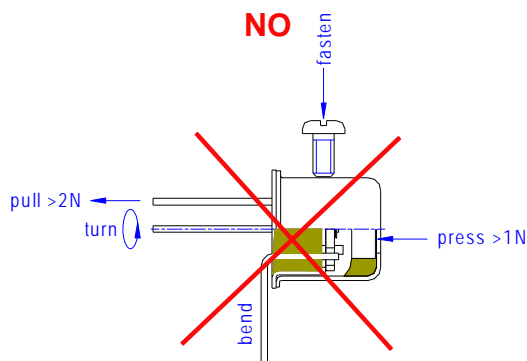
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4 Cleaning

■ Clean the package window with pure isopropyl alcohol or with a 50/50 mixture of isopropyl alcohol and water.

■ Either rinse the package gently or use light strokes with a cotton tipped applicator. Avoid pressing on the window as this may damage or destroy the hermetic seal.

■ DO NOT USE acetone, benzene or halogenated solvents and NEVER use an ultrasonic cleaner.

5 Simple functional test

Nearly all detectors supplied by InfraTec contain a preamplifier composed of a JFET source follower or a CMOS-OpAmp. In both configurations an easy test of the functionality is to check the DC output voltage of the detector. In a thermal steady state with a load resistor (47 kΩ in voltage mode, 470 kΩ in current mode) but without an IR source the measured DC output voltage shall agree with the offset voltage displayed in the measurement report supplied together with the detector.

In addition when heating the detector carefully with the finger or a hot air stream a clear changing of the DC output voltage should arise.

When illuminating the detector the signal form of the detector can be observed if additionally an oscilloscope is added. Together with a modulated IR source signals as displayed in chapter "*Pyroelectric detectors with JFET source follower or integrated CMOS-OpAmp – A Comparison*" *(Page 124)* should be seen*.

Hereafter please find some examples for a simple test setup for typical pyroelectric detectors.
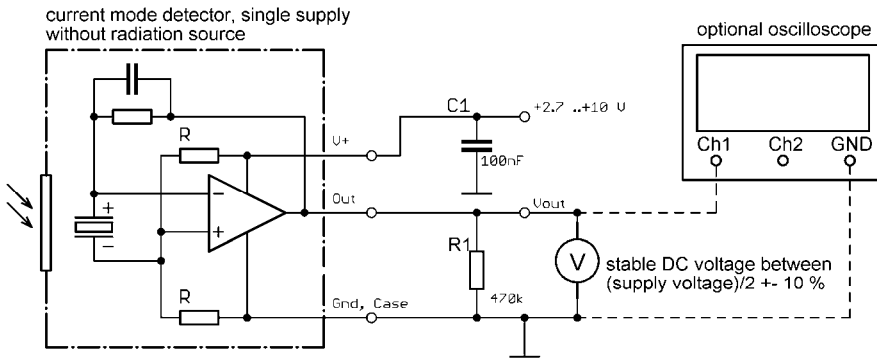
Voltage mode detector
For example LIE-202 (thermally uncompensated) as well as LIE-316 or LIM-222 (thermally compensated):
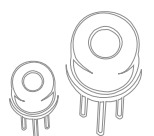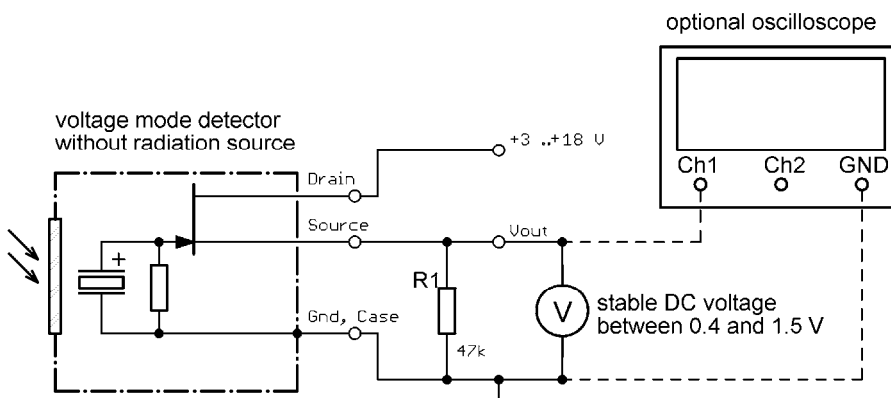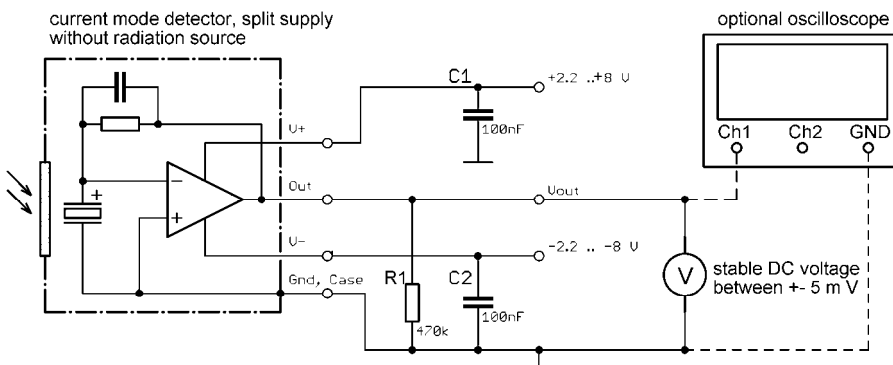
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Current mode detector/Single supply

For example LME-352 (thermally uncompensated) as well as LME-336 (thermally compensated):

Current mode detector/Split supply

For example LME-351 (thermally uncompensated) as well as, LIM-262 or LMM-244 (thermally compensated):

If you have any questions or need additional information, please contact us immediately.