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Detector Options influence on Detector Performance

By the change of various characteristics a thermopile is adjustable to special tasks and applications.

Detector chip

The chip determines the main properties of a thermopile. There are detector chips available up to 200 thermo pairs. Chips differ mainly in form and their area of active junctions, in sensitivity, in the time constant and the inner resistance.

Aperture

A big aperture creates a high signal voltage. In some cases this is not the goal. Often a smaller aperture is used to reduce the entry angle for analyzing a smaller measurement or for lower sensitize at a high power heat beam. A second inner aperture can reduce the entry angle supplementary for saving a special optic in many applications. Quad detectors are applied with a supplementary inner aperture to reduce the cross talk between the channels.

Backfill gas

The backfill gas has an important influence on the sensitivity and on the time constant of a thermopile. The following table shows data for some gases.

Gas time constant sensitivity:

N2 100% 100%
Kr 180% 180%
Ne 66% 66%

Windows and Filters

The optical window or Filter determines the frequency range where the thermopile has to detect the heat radiation. There are a variety of standard windows and filters available.