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IR Sources for Pyroelectric and Lead Selenide (PbSe) Detectors

Pyroelectric detectors require a changing or pulsed signal to generate a signal since they are capacitive devices. Lead selenide (PbSe) detectors require modulation up to 100 Hz. This can be accomplished by two ways:

- Pulsed IR source

- CW IR source with a chopper mechanism

The Pulsed IR source is simple. The CW IR source and chopper mechanism is a mechanical solution that adds cost and complexity.

INTEX offers a series of miniature pulsed infrared (IR) light sources with high intensity and ability to pulse at high frequencies. Their emission spectrum is that of a gray body. The INTEX IR sources use patented a-CNC films as multilayer thermoresistive elements (see below). The a-CNC's durability makes it possible to have a 2 micron thick element with very low thermal mass that allows rapid heating and cooling for pulsing at higher frequencies than any other technology can do. The key advantages of these pulsed sources are:

Wide Spectral Output

1 - 20 μm provides the widest emission spectrum

Fast Response

These IR sources can be modulated at a frequency of over 100 Hz because the sources' membranes are only 2 microns thick with very low thermal mass. This gives you 100% modulation depths up to 20 Hz and the ability to modulate up to 100 Hz with steep on and off slopes. This improves the performance (signal response) of pyroelectric and lead selenide (PbSe) detectors.

High Efficiency

With emissivity of >0.8 the spectrum is close to that of a black body

Operates at Higher Temperatures

Achieves its efficiency by operating at a higher temperature than competing technologies

Long Life and Cost Effective

With a lifetime of up to 25,000 hours and absence of any need for separate modulation, maintenance and product cost are reduced