

PHOTONICS spectra

WHITE PAPERS & APPLICATION NOTES

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ImageIR® – High Dynamic Range (HDR)

How it works and what the benefits are



Why Does InfraTec Introduce HDR Capability?

Thermography systems with cooled detectors offer excellent measurement accuracy. When calibrating these cameras, the integration time and aperture filters are optimized to provide the best results within a certain temperature range. The span of the temperature range is partly defined by the properties of the thermography system, but even more so by the physical laws underlying the measurement principle.

To measure temperatures spanning more than one calibration range requires the acquisition of multiple thermograms with different calibrations. This can be achieved by using our Multi-Integration-Time feature (MIT). It combines images of several integration times into one image data set. However, MIT is limited to a temperature range defined by the calibrations with the same filter settings. The HDR feature breaks free of those limitations, changing the filters on a frame-to-frame basis with up to 350 Hz. Thus, calibration ranges spanning more than 1,000 °C can be realized.

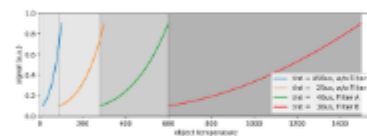


Fig. 1: The ratio of characteristic calibration curves, reducing the measured signal to object temperature. Due to the high resolution filter, filters are required to measure high object temperatures. HDR combines between the individual calibrations, enabling the measurement into a single thermogram, up to 1000°C.

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Product	Model	Resolution	Frame Rate	Filter	Integration Time	Temperature Range	Pixel Size	Weight	Dimensions
ImageIR 3000	3000	640 x 512	350 Hz	10 μm	100 μs	-20 to 1500 °C	17 μm	1.2 kg	100 x 100 x 100 mm
ImageIR 3000	3000	640 x 512	350 Hz	10 μm	100 μs	-20 to 1500 °C	17 μm	1.2 kg	100 x 100 x 100 mm
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ImageIR® – High Dynamic Range (HDR): How it works and what the benefits are

The ImageIR® infrared camera series from InfraTec is available with a new function: HDR. The High Dynamic Range (HDR) function enables the analysis of objects with large temperature gradients in a thermal image that shows a very high dynamic range. Large temperature changes can therefore be recorded in a sequence without changing the measurement range. Advantages of HDR Thermal Imaging -

- Measurement range with span selectable up to 1,500 K - Full-screen recording with (640 × 512) IR pixels and a frame rate of 350 Hz -
- Continuous measurement of highly dynamic processes with very large temperature changes without switching the measurement range -
- Thermography of measurement scenes with particularly large temperature gradients - High-contrast images in a wide temperature range with high measurement accuracy

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