

SaturnVISIR

Very Large, High Performance IR Detectors for Visible and Short Wave Infrared Imaging 1000x256 HgCdTe SWIR (30µm Pitch)

- Very High Resolution Format
- Available in 0.4-2.5µm and 0.8-2.5µm versions
- High Sensitivity



The Sofradir 1000x256 Visible and Short Wave Infrared (VISIR) focal plane assembly is offered in the 0.4-2.5µm band for airborne and space applications (including hyperspectral missions, 2-D spectrometry, remote sensing). This detector takes advantage of the Sofradir high performance, stable, low defect density photo-voltaic HgCdTe technology, hybridized on a state-of-the-art CMOS Read-Out Integrated Circuit (ROIC). It is specially adapted for hyperspectral needs (high spectral resolution, large dynamic range and low noise, large format). This detector can be packaged in a long vacuum-life dewar in order to meet the different mechanical and cooling needs of the systems for which they are intended.

AVAILABLE CONFIGURATIONS:

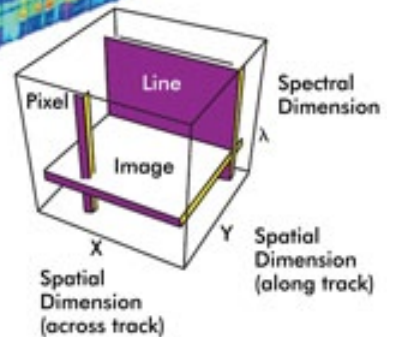
- Integrated Detector Dewar Cooler Assembly (IDDCA) with 1W Stirling-cycle cooler
- IDDCA with high reliability 1.5W linear split Stirling-cycle cooler

ARRAY FEATURES

Format	1000x256
Pixel Pitch	30µm x 30µm
Detector Spectral Response	0.4µm - 2.5µm
FPA Operating Temperature	up to 200K



Imaging Spectroscopy: Data Cube



ROIC FEATURES

Modes	Snapshot operation, integrate-while-read mode, programmable integration time, programmable gain, anti-blooming system
Input Stage	Capacitance TransImpedance Amplifier (CTIA)
Charge Handling Capacity	0.5x10 ⁶ / 2.5x10 ⁶ e ⁻ (for 100% well fill)
Electrical Dynamic Range	> 3V (> 79 dB)
Readout Noise	< 149 e ⁻ (for 0.5 Me ⁻ gain) and < 339 e ⁻ (for 2.5 Me ⁻ gain)
Signal Outputs	4 or 8 analog (user selectable)
Pixel Output Rate	up to 8MHz per output
Windowing	selectable lines to be read (user configurable)
Gain Selection	selectable by lines (user configurable)
Frame Rate	up to 250Hz full frame rate

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TYPICAL PERFORMANCE

Signal-to-noise Ratio (average)	> 1000 (for 2.5 Me gain, 50% well fill, 50Hz)
Signal Response Uniformity	< 7%
Linearity	> 99.5%
Array Operability	> 99.5% typical (SNR < 0.5*SNR _{average})
Quantum Efficiency	> 60% without anti-reflective coating
MTF	maximized

OPTIONS

VISIR Engine	Proximity Driving Electronics (including ADC)
Complete VISIR Camera	Configuration available with 1.5W split cooler with higher reliability (Saturn VISIR-LSF)

Proven FPA Architecture

- More than 1000 thermal cycles demonstrated
- FPA flatness < 10µm over 3cm demonstrated

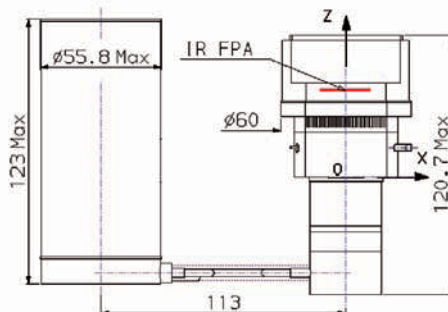
STANDARD CONFIGURATION

Saturn VISIR LS

Split Cooler



Weight: < 3 kg (6.55 lb)
 Operating Temperature: -40°C / +71°C
 Typical Characteristics at 20°C, 150 K:
 Cooldown input power: < 40 W_{DC} (*)
 Regulated input power: < 10 W_{DC}
 Cooldown time: < 8 min.
 (*) W_{DC} - at cooler regulation inputs

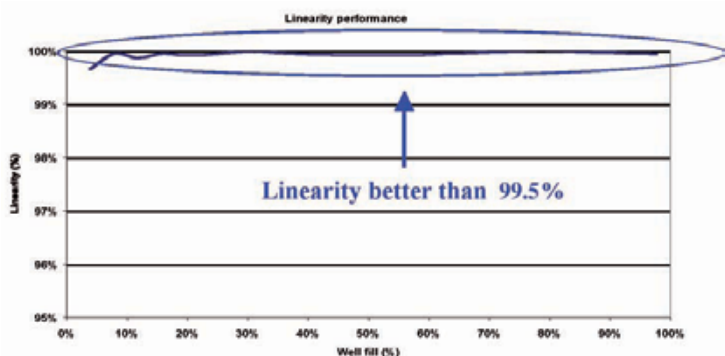


OPTIONAL CONFIGURATION

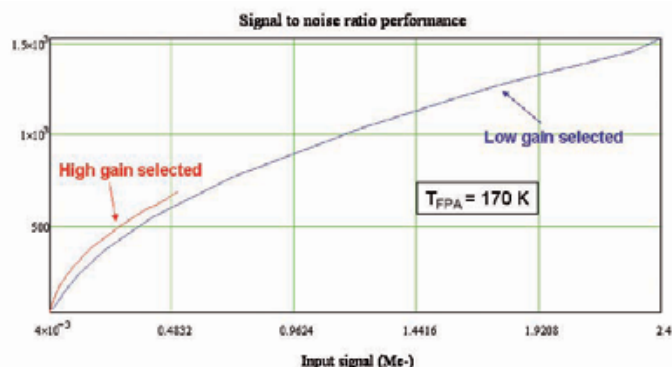
Saturn VISIR LSF

Configuration using a 1.5W split cooler with higher reliability

Outstanding Linearity



Low Readout Noise



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