MarsVLW

High Performance IR Detectors for Very Long Wave Infrared Imaging 320x256 HgCdTe VLWIR (30µm pitch)

- 320Hz Operation
- Low Power
- High Sensitivity
- Lightweight
- 30 micron Pixel Technology

Sofradir's Mars Very Long Wave Infrared (VLWIR) Integrated Detector Dewar Cooler Assembly (IDDCA) focal plane array features a staring, snapshot 320x256 Mercury Cadmium Telluride (HgCdTe or MCT) focal plane array in a compact dewar for long-wave (8-12 µm) infrared imaging. The Mars VLW is ideal for use in military and commercial systems having an 8-12 µm detection requirement. These detectors take advantage of Sofradir's process to optimize performance of photovoltaic HgCdTe technology, delivering stable, low defect density staring arrays with material bandgap adapted for VLW applications.

The Sofradir IRFPAs are hybridized on a state-of-the-art CMOS Read-Out Integrated Circuit (ROIC), and mounted in a long vacuum-life dewar and cooler configurations that meet various different mechanical and cooling requirements of the systems for which they are intended.

The Mars VLW IDDCA is available with separate proxy electronics (including A/D, drive and cooler control electronics), as a cooled infrared engine and as a calibrated, cooled infrared scientific camera.

STANDARD CONFIGURATION:
- 11.0µm IRFPA at 70K into IDDCA with 1W split Stirling-cycle linear cooler

ON-REQUEST CONFIGURATIONS:
- Custom dewar, cold filter, and cooler configurations

Surveillance Systems

Security

Soldier Systems

ROIC FEATURES

Selection	Parallel or serial electrical interface
Modes	Snapshot operation, direct injection input circuit, integrate-then-read mode, programmable integration time (≥ 3µs), anti-blooming
Window Modes	Fixed (320x256, 320x240, 256x256) or programmable (any size down to 64x1 anywhere in the 320x256 array)
Charge Handling Capacity	$12x10^6$ or $37x10^6$ e^- (for 100% well fill)
Electrical Dynamic Range	> 80dB
Readout Noise	1000 e^- (for highest gain)
Signal Outputs	1 or 4
Pixel Output Rate	up to 6.6MHz per output
Frame Rate	up to 320Hz full frame rate (320x256, 4 outputs)
Electrical Interface	14 inputs/outputs (default mode: 4 outputs, gain 1, 320x256) + 2 pins for regulation

ARRAY FEATURES

Pixel Pitch	30µm x 30µm
Detector Spectral Response	7.7µm - 11.5µm up to material cut-off (high pass cold filter)
FPA Operating Temperature	70K

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320x256 HgCdTe LWIR (30µm pitch)

TYPICAL PERFORMANCE

Non Uniformity	< 5% RMS (σ/mean, 300K uncorrected performance)
Array Operability	> 99% typical (NETD < 2xNETD$_{average}$)
Pixel NETD (average)	≤ 25mK (11.0µm, 37x10^6 e$^-$, 300K, 50% well fill, 200Hz)
Residual Fixed Pattern Noise	low and stable (< NETD)
MTF	maximized

OPTIONS

VLW Engine	Proximity Driving Electronics (including ADC)
Complete VLW Camera	

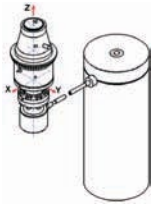
ORDERING INFORMATION

Mars VLW LS5-7i	914961

STANDARD CONFIGURATION

Mars VLW LS5-7i — **1W LS5-7i/09 Split Cooler**

- Weight: < 2.1kg (4.63 lb)
- Operating Temperature: -40°C / +71°C
- Power Supply: 13.5 V
- Typical Characteristics at 20°C, 70 K
  - Cooldown Input Power: 60 W_{AC} (*)
  - Regulated Input Power: 40 W_{AC}
  - Cooldown Time: < 9 min.



(*) W_{AC} – at cooler cable AC input

SOFRADIR-EC

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