Mercury LW

High Performance IR Detector for Long Wave Infrared Imaging
480x6 HgCdTe LWIR

- High Resolution 2nd Generation Scanning System
- Low Power
- High Sensitivity
- Lightweight

The Sofradir 480x6 Long Wave Infrared (LWIR), Time Delay and Integration (TDI), focal plane assembly is offered to answer the requirements of band III (8-12µm) detection of high resolution (FLIR, IRST, surveillance, etc.) military scanning systems. 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).

This detector is offered in long vacuum-life dewar with split Stirling Coolers, in order to meet the mechanical and cooling needs of the systems.

STANDARD CONFIGURATION:
- Integrated Detector Dewar Cooler Assembly (IDDCA) with 1W LS10-11i split Stirling-cycle linear cooler

ROIC FEATURES

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection</td>
<td>Parallel or serial electrical interface</td>
</tr>
<tr>
<td>Modes</td>
<td>Snapshot operation, direct injection input circuit, simultaneous mode (integrate-while-read), programmable integration time, bi-directional TDI scanning, programmable pixel deselection</td>
</tr>
<tr>
<td>Charge Handling Capacity</td>
<td>Eight gains from 0.6 to 12.5 million e⁻ (for 100% well fill)</td>
</tr>
<tr>
<td>Electrical Dynamic Range</td>
<td>&gt; 74 dB</td>
</tr>
<tr>
<td>Signal Outputs</td>
<td>16</td>
</tr>
<tr>
<td>Pixel Output Rate</td>
<td>up to 4MHz per output</td>
</tr>
<tr>
<td>Integration Time</td>
<td>20µs typical (selectable, depending on frame/output rate)</td>
</tr>
</tbody>
</table>

ARRAY FEATURES

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Format</td>
<td>480 lines with TDI on 6 elements</td>
</tr>
<tr>
<td>Detector Pitch</td>
<td>49.8µm x 25.4µm</td>
</tr>
<tr>
<td>Detector Size</td>
<td>38µm x 28µm</td>
</tr>
<tr>
<td>Detector Spectral Response</td>
<td>7.7µm up to material cut-off</td>
</tr>
<tr>
<td>FPA Operating Temperature</td>
<td>77K to 80K</td>
</tr>
</tbody>
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Security Defense Soldier Systems

www.sofradir-ec.com (973) 882-0211
**TYPICAL PERFORMANCE**

- $D^* \text{ peak RMS / } T_{\text{peak}} \text{ (average)} > 2.6 \times 10^{11} \text{ (cm/√Hz.W)}$ at 300K
- Residual Fixed Pattern Noise: low and stable (< NETD)
- Non-uniformity: < 5% RMS (σ/mean, 300K uncorrected performance)
- Array Operability: > 99% typical (NETD < 2x NETD average)

**OPTIONS**

- LW Engine
- Complete LW Camera

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**STANDARD CONFIGURATIONS**

**Mercury LW-LS10**

- **LS10**
- FOV: f/2.6
- Weight: < 2.1 kg (4.7 lb)
- Operating Temperature: -55°C / +71°C
- Power Supply: 13.5V

Typical Characteristics at 20°C, 77K:
- Cool down input power: 60 W<sub>AC</sub> (*)
- Regulated input power: 25 W<sub>AC</sub>
- Cool down time: 4 min., 30 sec.

(*) W<sub>AC</sub> - at cooler pins AC input

**Mercury LW-SL150**

- **SL150**
- FOV: f/2.6
- Weight: < 2.7 kg (5.95 lb)
- Operating Temperature: -55°C / +71°C
- Power Supply: 24-32 V

Typical Characteristics at 20°C, 77K:
- Cool down input power: 90 W<sub>AC</sub> (*)
- Regulated input power: 30 W<sub>DC</sub>
- Cool down time: 4 min.

(*) W<sub>AC</sub> - at cooler C&C DC input

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Technical characteristics described in this data sheet are for information only and are not contractual. Because of ongoing product enhancements, specifications are subject to change without notice. Export of these products from the United States is controlled by the US Government. Prior authorization is required for re-export or transfer.