The Ranger HRC-MS is a high-resolution mid-wave thermal imaging system built around a large format 640 x 480 array and a choice of powerful continuous-zoom telescopes. Available in its standalone, environmentally hardened enclosure, the system can also integrate an optional high-magnification CCD-TV camera, laser rangefinder, digital magnetic compass and fast accurate pan/tilt mechanism for precise target geo-locating.

Tunable DDE digital image enhancement reveals scene details missed by systems offering only histogram or linear image processing. Designed to support missions for perimeter security, force protection and border surveillance Ranger HRC-MS’s cooled detector detects a man-sized target at 10 km and vehicle targets at 20 km. Because FLIR controls the entire supply chain on the critical technology inside, fast service and long-term support come standard.

**FEATURES**

**EXTRA SENSITIVITY FOR SHARPER IMAGERY**
Cooled 640 x 480 detector spots man-size targets above 10 km and vehicles above 20 km. Tunable DDE enhancement reveals finer details.

**12.5X CONTINUOUS ZOOM**
Zoom with autofocus provides sharp image over full continuous range so you never lose sight of the target.

**SCALABLE, MODULAR SYSTEM DESIGN**
Available with four different thermal imaging alternatives and two different color TV alternatives as well as a number of options such as a laser rangefinder, GPS, and digital magnetic compass.

**RUGGED & FIELD-TESTED**
Built to MIL-STD-810, Ranger HRC-MS is reliable and deployable in extreme environments, from deserts to arctic conditions.

**NETWORK ENABLED**
Supports Nexus™ and common Pelco® network control protocols for easy installation and integration into existing networks.

**APPLICATIONS**

**BORDER SECURITY**
**COASTAL SURVEILLANCE**
**FORCE PROTECTION**
**INDUSTRIAL FACILITY**
**CRITICAL INFRASTRUCTURE SECURITY**
**AIR & SEA PORTS**
**VEHICLE & MAN-PORTABLE CAPABILITIES**
## Specifications

<table>
<thead>
<tr>
<th>Thermal Imaging</th>
<th>Ranger HRC-E</th>
<th>Ranger HRC-S</th>
<th>Ranger HRC-U</th>
<th>Ranger HRC-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field of view: continuous optical zoom</td>
<td>2° (H) x 1.5° (V) to 2° (H) x 1.5° (V)</td>
<td>1.0° (H) x 0.84° (V) to 1.0° (H) x 0.84° (V)</td>
<td>0.75° (H) x 0.56° (V) to 0.75° (H) x 0.56° (V)</td>
<td>0.5° (H) x 0.38° (V) to 0.5° (H) x 0.38° (V)</td>
</tr>
<tr>
<td>Spatial resolution (IFOV)</td>
<td>0.67 mrad for 22 mm lens - 0.055 mrad for 275 mm lens</td>
<td>0.383 mrad for 39 mm lens - 0.031 mrad for 490 mm lens</td>
<td>0.256 mrad for 59 mm lens - 0.020 mrad for 735 mm lens</td>
<td>0.17 mrad for 88 mm lens - 0.014 mrad for 1100 mm lens</td>
</tr>
<tr>
<td>Focal length (Wide to Tele)</td>
<td>33.4 mm to 2000 mm (with 2x Extender)</td>
<td>16.7 mm to 1000 mm (with 2x Extender)</td>
<td>3.4 mm to 22.4 mm (with 2x Extender)</td>
<td>3.4 mm to 22.4 mm (with 2x Extender)</td>
</tr>
<tr>
<td>Field Of View (H) digital video</td>
<td>0.54° to 29° ±7° (with 2x Extender)</td>
<td>0.38° to 21° ±7° (with 2x Extender)</td>
<td>0.54° to 29° ±7° (with 2x Extender)</td>
<td>0.54° to 29° ±7° (with 2x Extender)</td>
</tr>
<tr>
<td>Field of view; (H) analog video</td>
<td>1.7° x 57.8°</td>
<td>0.54° to 29° ±7° (with 2x Extender)</td>
<td>0.54° to 29° ±7° (with 2x Extender)</td>
<td>0.54° to 29° ±7° (with 2x Extender)</td>
</tr>
<tr>
<td>Optical zoom</td>
<td>36x</td>
<td>60x (nominal)</td>
<td>60x (nominal)</td>
<td>60x (nominal)</td>
</tr>
<tr>
<td>Image sensor</td>
<td>NTSC 1/4&quot; Color CCD</td>
<td>PAL 1/4&quot; Color CCD</td>
<td>PAL 1/4&quot; Color CCD</td>
<td>PAL 1/4&quot; Color CCD</td>
</tr>
<tr>
<td>Image Processing</td>
<td>Tunable Digital Detail Enhancement (DDE), Histogram Equalization</td>
<td>PAL / NTSC selectable</td>
<td>PAL / NTSC selectable</td>
<td>PAL / NTSC selectable</td>
</tr>
<tr>
<td>System Features</td>
<td>Tomographic Search</td>
<td>Programmable Video Recording</td>
<td>Programmable Video Recording</td>
<td>Programmable Video Recording</td>
</tr>
<tr>
<td>Built-in test (BIT)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Continuous digital zoom</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Auto front lens cover when parked</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Remote control</td>
<td>RS-232, RS-485 and Ethernet</td>
<td>PAL / NTSC selectable</td>
<td>PAL / NTSC selectable</td>
<td>PAL / NTSC selectable</td>
</tr>
<tr>
<td>Power</td>
<td>Input voltage</td>
<td>28 V ± 4V</td>
<td>28 V ± 4V</td>
<td>28 V ± 4V</td>
</tr>
<tr>
<td>Power consumption</td>
<td>&lt;130 W (system start; no IR Camera) &lt;180 W (cool-down)</td>
<td>&lt;170 W (average)</td>
<td>&lt;170 W (average)</td>
<td>&lt;170 W (average)</td>
</tr>
<tr>
<td>Environmental</td>
<td>Operating temperature range</td>
<td>-32°C to 55°C</td>
<td>-45°C to 70°C</td>
<td>-45°C to 70°C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-45°C to 70°C</td>
<td>-45°C to 70°C</td>
<td>-45°C to 70°C</td>
<td>-45°C to 70°C</td>
</tr>
</tbody>
</table>

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