Cincinnati Electronics

AAV NIGHTCONQUEROR 640

CE's NightConqueror high-performance thermal imagers have been selected as the imager of choice for new platforms and as an upgrade to many existing legacy vehicles for U.S. and foreign militaries. The Assault Amphibious Vehicle (AAV) Thermal Sight System is designed as a "drop-in" replacement for the existing sight with improved capability in nighttime imaging, degraded daytime weather conditions, and battlefield obscurants. The proven system protects our troops and improves their ability to detect, identify, and destroy threats from much longer ranges than ever before.

OVERVIEW

- Superior IR imagery to dominate the littoral battle space.
- A 640 x 512 InSb FPA combined with the associated image enhancement techniques permit the gunner to easily discriminate the target from the clutter.
- Advanced environmental enclosure with superior ruggedization of camera ensures continuous operation in the harshest of vibration and temperature environments.
- Multiple temperature ranges available for optimal scene quality.
- CE's proven design extends operational life and significantly lowers total life cycle costs.

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C^{3}ISR > GOVERNMENT SERVICES > AM&M > **SPECIALIZED PRODUCTS**

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AAV NIGHTCONQUEROR 640

Upgraded Thermal Sight System for AAV

CAMERA SYSTEM PARAMETERS

Sensor Type: MWIR InSb Reticulated
Sensor Size: 640 x 512 Pixels, 28 µm Pitch
Cold Shield: f/4
Spectral Band: 3.6-5.0 µm with CO_2 Notch
System Control: RS-422
Video Format: RS-170A

LENS PARAMETERS

F/Number: 4.0
Dual Field of View
Effective Focal Length:
- Wide FOV: 100 mm (10.3° x 7.7°)
- Narrow FOV: 300 mm (3.4° x 2.6°)
- Electronic Zoom (2X): 342 mm (1.8° x 1.2°)

FOV Change Time: < 0.75 sec.

POWER REQUIREMENTS

Power Source: 16-40 VDC
Power at Steady State: < 60 Watts

MECHANICAL / ENVIRONMENTAL

Weight: 61.4 lbs.
Size (inches): 12.2 L x 20.3 H x 14.7 W
Operating Temperature: -40°C to 62°C

TYPICAL PERFORMANCE

Cool-Down Time: 4-5 minutes typical
Noise Equivalent Temp Difference @ 25°C: 40 mK

FEATURES AND CAPABILITIES

The AAV NightConqueror 640 Upgraded Thermal Sight has many advanced features including:

1) Local Area Processing: The camera automatically adjusts gain and level for each pixel in the image. No part of the scene will be over or under saturated.

2) Auto Focus: The IR imager computes a focus metric and determines a best fit within the local region of interest.

3) Electronic Stabilization: A programmable image filter detects sensor motion and eliminates image jitter while allowing normal pan and tilt of the imager.

4) E-Zoom: Interpolated electronic zoom is accomplished with an algorithm that interpolates between FPA detector signals to produce an image with enlarged detail and a more natural looking appearance.

5) Threshold Based Averaging: Reduces temporal noise that may be visible at increased gain settings - it eliminates the "blur" of other reduction algorithms.

100/300 mm DFOV	Tank		Man			
Lens	100/300 mm DFOV Lens		100/300 mm DFOV Lens		Fields of View	
Atmosphere	Good Tx[2]	Limited Tx	Good Tx[2]	Limited Tx	Full FOV	Instant FOV
Target Detection[1] (WFOV)	7.3 km	6.9 km	2.6 km	2.6 km	10.3° x 7.7°	0.28 mrad
Target Recognition (NFOV)	5.2 km	5.0 km	1.9 km	1.9 km	3.4° x 2.6°	0.093 mrad
Target Identification (NFOV)	2.7 km	2.7 km	0.9 km	0.9 km		

1. The standard target model is 2.3 x 2.3 meters NATO panel and 0.75 x 0.75 meters for a standing man. The panel target temperature delta is 1.25°C while the man target temperature delta is taken to be 2°C. 50% probability target detection criteria: 0.75 cycles for detection, 3 cycles for recognition, 6 cycles for identification.

2. The Good Tx atmospheric transmission is 1976 US Standard Model with Rural-Vis=23 km Aerosol and the Limited Tx is Tropical Model with Navy Maritime Aerosol per NVTherm-Sept 2002.

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