

# 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.



## 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<sub>2</sub> 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		Fields of View	
	100/300 mm DFOV Lens	100/300 mm DFOV Lens	100/300 mm DFOV Lens	100/300 mm DFOV Lens	Full FOV	Instant FOV
Atmosphere	Good Tx <sup>(2)</sup>	Limited Tx	Good Tx <sup>(2)</sup>	Limited Tx	10.3° x 7.7°	0.28 mrad
Target Detection <sup>(1)</sup> (WFOV)	7.3 km	6.9 km	2.6 km	2.6 km	3.4° x 2.6°	0.093 mrad
Target Recognition (NFOV)	5.2 km	5.0 km	1.9 km	1.9 km		
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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