

NIGHTFALCON II

The NightFalcon II utilizes a custom-engineered 400/1500 mm dual field of view telescope to produce unprecedented IR imagery for all weather, 24-hour, ultra long-range surveillance and reconnaissance. It can be utilized in urban, rural, and remote situations where there are extreme climatic and terrain conditions. In addition to enabling the user to view a nighttime or environmentally degraded daytime scene at extremely long ranges, the ultra long range produced by the NightFalcon II reduces the number of cameras required to cover vast areas.



OVERVIEW

- The NightFalcon II is delivered ready for installation into high-performance multi-sensor suites and is easily integrated to provide wide area surveillance and tracking.
- Advanced environmental enclosure with superior ruggedization of camera ensures continuous operation in the harshest of vibration and temperature environments.
- Remote operation using RS-422 or RS-232 serial ports.
- Multiple temperature ranges available for optimal scene quality.
- Non-uniformity corrections (NUC) are internally supported for both scene and 3-point, operator guided self-calibration.
- CE's proven technology significantly lowers total life cycle costs.



NIGHTFALCON II

ULTRA LONG RANGE THERMAL IMAGER

CAMERA SYSTEM PARAMETERS

Sensor Type: MWIR InSb Reticulated
 Sensor Size: 256 x 256 Pixels, 30 μ m Pitch
 Cold Shield: f/6
 Spectral Band: 3.6-5.0 μ m with CO₂ Notch
 System Control: Hand Controller or RS-422/232
 Serial Interface
 Video Format: RS-170/CCIR Interlaced

LENS PARAMETERS

F/Number: 6.0
 Dual Field of View
 Effective Focal Length:
 Wide FOV: 400 mm (1.1° x 1.0°)
 Narrow FOV: 1500 mm (0.3° x 0.3°)
 Electronic Zoom: Continuous
 FOV Change Time: 2 sec.

POWER REQUIREMENTS

Power Source: 110/220 VAC 47-440 Hz
 Or +12 VDC
 Power at Steady State: 30 Watts

MECHANICAL / ENVIRONMENTAL

Weight: 64.0 lbs.
 Size (inches): 36.3 L x 12.4 H x 11.2 W
 Operating Temperature: -32°C to 55°C

TYPICAL PERFORMANCE

Cool-Down Time: 7 minutes typical
 Noise Equivalent Temp Difference @ 25°C: 22 mK

FEATURES AND CAPABILITIES

The NightFalcon II Ultra Long Range Thermal Imager 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.

400/1500 mm DFOV	Tank		Man		Fields of View	
	400/1500 mm DFOV Lens	400/1500 mm DFOV Lens	400/1500 mm DFOV Lens	400/1500 mm DFOV Lens	Full FOV	Instant FOV
Lens	Good Tx ⁽²⁾	Limited Tx	Good Tx ⁽²⁾	Limited Tx	Full FOV	Instant FOV
Atmosphere	Good Tx ⁽²⁾	Limited Tx	Good Tx ⁽²⁾	Limited Tx	Full FOV	Instant FOV
Target Detection ⁽¹⁾ (NFOV)	47.6 km	39.9 km	25.4 km	23.7 km	0.3° x 0.3°	0.02 mrad
Target Detection ⁽¹⁾ (WFOV)	24.7 km	22.8 km	9.6 km	9.2 km	1.1° x 1.0°	0.08 mrad
Target Recognition (NFOV)	20.6 km	19.2 km	8.2 km	7.9 km	0.3° x 0.3°	0.02 mrad
Target Identification (NFOV)	11.5 km	10.8 km	4.3 km	4.2 km	0.3° x 0.3°	0.02 mrad

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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