

VUMiDiscoverii
see. interpret. respond.



Vumii's has established itself as a globally recognized leader in visualization technology by leveraging electro-optics and image processing expertise to deliver advanced night vision surveillance and graphical user control systems to the defense and physical security markets. Vumii directs its efforts at creating unique investigative technologies that enhance users' ability to see, interpret, and respond to potential security threats.

Discoverii represents Vumii's day/night vision technology platform that combines an innovative, near infra-red, continuous-wave laser illumination beam with an automatically synchronized CCD imager enabling unsurpassed details and clarity at night while leveraging the same optics capabilities during the day. This versatile surveillance assessment tool delivers high resolution, continuous zoomable, glass penetrating, natural contrast video in any lighting condition, including zero light. Vumii has released multiple Discoverii models to address different magnification and range requirements for border, perimeter, and investigative surveillance applications. Discoverii's hardware and software architecture enable rapid integration with many related technologies including: intrusion sensors, thermal imaging sensors, ground and marine radars, and access control points.



250 meters



2,700 meters



1,200 meters



1,400 meters

**Natural Contrast
High Resolution**

Clearly view targets with high quality 640x480 natural contrast imagery in zero light; People and written text are discernable. Discoverii video is legal court admissible.

**Long Range
Continuous Zoom**

Assess potential threats at long distances (up to 3000 meters in zero light) with continuous zoom (26x for Discoverii 1000; 60x for Discoverii 3000). Ideal for efficiently covering borders and perimeters

Through Glass

Human recognition and identification through normal and tinted glass is invaluable to investigative services and border and perimeter applications

No Blooming

No image over-saturation for existing light in scene; Discoverii models can handle a wide dynamic range of light in the field of view.

24 hour versatility

Single surveillance system for day and night operation; same resolution, same zoom, same camera controls

Ease of Use

Intuitive user operation and rapid training; no eye fatigue common with thermal IR systems

Ease of Support

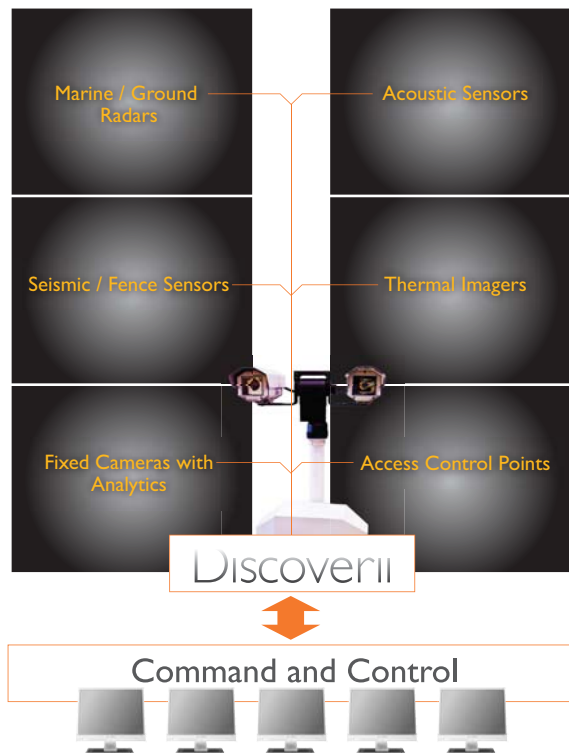
Minimal maintenance and support required; highly accurate and environmentally durable housings and motors, laser module has a 24,000 hour MTBF

Ease of Integration

Analog or IP connectivity for controls and video. API development kit and industry protocols enable efficient integration to detection sensors such as radar, fence sensors, and proximity sensors and to almost any user control video interface.

Detection Sensors

As the ultimate surveillance assessment tool, Discoverii is ideally part of a broader facility protection system. Discoverii is easily integrated with multiple types of detection sensors to provide security personnel with immediate alarm verification, intruder identification, and security breach analysis.



Discoverii easily can be positioned to view a location based on GPS coordinates or sensor to PTZ lookup table.

Command and Control Systems

Utilizing the Pelco-D protocol or an easy to use SDK from Vumii, Discoverii illumination optics and pan-tilt functions can be easily integrated into third party front end systems.

	Discoverii 1000		Discoverii 2000		Discoverii 3000	
	Day	Night	Day	Night	Day	Night
Human Detection:	3,000 meters	1,500 meters	6,000 meters	2,000 meters	10,000 meters	3,000 meters
Human Recognition:	750 meters	750 meters	1,250 meters	1,250 meters	2,500 meters	2,500 meters
Human Identification:	180 meters	180 meters	400 meters	400 meters	1,000 meters	1,000 meters
Range at which 1.8 meter human represents 10% of video screen	940 meters	940 meters	1,265 meters 2,530 meters**	1,265 meters 2,530 meters**	5,158 meters 10,315 meters**	5,158 meters 10,315 meters**
Range at which 1.8 meter human represents 20% of video screen	469 meters	469 meters	633 meters 1,265 meters**	633 meters 1,265 meters**	2,579 meters 5,158 meters**	2,579 meters 3,000+ meters**
Range at which 1.8 meter human represents 30% of video screen	314 meters	314 meters	421 meters 843 meters**	421 meters 843 meters**	1,720 meters 3,440 meters**	1,720 meters 3,000+ meters**
Imager	1/4" CCD	1/4" CCD	1/3" CCD	1/3" CCD	1/3" CCD	1/3" CCD
Continuous optical zoom	26x (3.5 mm - 91 mm)	26x (3.5 mm - 91 mm)	22x (11.5mm-253mm) or (23 mm-506 mm)**	22x (11.5mm-253mm) or (23 mm-506 mm)**	60x (12.5mm-750mm) or (25mm-1500mm)**	60x (12.5mm-750mm) or (25mm-1500mm)**
Imager Horizontal Angle of view	54.2° (Wide) to 2.2° (Narrow)	(H): 54.2° (Wide) to 2.2° (Narrow)	11.8° (Wide) to 0.54° (Narrow)**	11.8° (Wide) to 0.54° (Narrow)**	10.97° (Wide) to 0.18° (Narrow)**	10.97° (Wide) to 0.18° (Narrow)**

** Using 2x extender



VUMii Discoverii

Comparing Night Vision Technologies	Intensified CCD/EMCCD	Uncooled Thermal InfraRed (IR)	Cooled Thermal InfraRed (IR)	LED/Bulb NearIR illumination	Range-gated ICCD System	Discoverii Continuous Wave Laser CCD system
	PASSIVE ILLUMINATION			ACTIVE ILLUMINATION		
	SHORT RANGE		LONG RANGE	SHORT RANGE		LONG RANGE
Night Vision Method	Passive, ambient light reflection	Passive, ambient heat emissions	Passive, ambient heat emissions	Active Flood Near-IR reflection	Active Beam Near-IR reflection	Active Beam Near-IR reflection
Typical Range	0 - 200 meters	0-300 meters	0-5,000+ meters	0-200 meters	200 - 10,000 meters	50-3,000 meters
Image Contrasts	similar to visible contrasts	Thermal	Thermal	similar to visible contrasts	similar to visible contrasts	similar to visible contrasts
Dependence on Ambient Conditions	Ambient light reliant	Degrades as outdoor objects' thermal emissions become similar to background	Degrades as outdoor objects' thermal emissions become similar to background	None (due to active illumination)	None (due to active illumination)	None (due to active illumination)
Lens Optics and Magnification	Large due to imager size and light collection requirements; high cost; zoom is almost out of question	Large and expensive due to imager size and material requirement; zoom option very expensive	Large and expensive due to imager size and material requirement; zoom option very expensive	Small and low cost due to small imager and active illumination	Large and expensive due to imager size; zoom option costly	small and low cost
Illuminator Divergence Slaved to Camera Field of View	no	Not Applicable	Not Applicable	No	No	Yes
Glass Penetration	yes	no	no	Yes	Yes	Yes
Ability to Distinguish Text and Markings	yes	no	no	Yes	Yes	Yes
Daytime Effectiveness	Poor (2nd channel needed)	Good	Good	Good	Poor (2nd channel needed)	Excellent (single channel)
Ability to Cope with Artificial Light at Night ("blooming")	very poor, light sources cause image blooming	Good; ignores visible light	Good; ignores visible light	Moderate	very poor, light sources cause image blooming	Excellent; sophisticated filtering prevents blooming
Imager Burn-in Due to High Intensity Light Sources	Susceptible	Not Applicable	Not Applicable	No	Susceptible	No
Detection oriented	No	Yes	Yes	Partial	No	No
Assessment-oriented	Yes	No	No	Yes	Yes	Yes
Typical Resolution and Scalability	640x480 NTSC, not scalable	320x240 NTSC	320 x 240 NTSC	640x480 NTSC, scalable	640x480 NTSC, not easily scalable	640x480 NTSC, scalable to megapixel resolution
Legal Admissibility of Video	yes	No	No	Yes	Yes	Yes
License Plate Reading; Facial Recognition	yes	No	No	Yes	Yes	Yes
Man-portable	yes	Yes	Yes	No	In future versions	No
Usability in Rain	good	Poor	Moderate	Good	Good	Good
Usability in Fog	poor	Medium; Slightly better than visible and near IR	Good; better than visible and near IR	Poor	better than non gated	Poor unless illuminator separated from camera
Field of view	wide (=small magnification)	very wide	Wide	Wide	narrow, high magnification	narrow, high magnification
Operator Training Required	Moderate	High	High	Minimal	Extensive	Minimal
Critical Component(s)	Intensifying tube or EMCCD	Thermal IR Imager	Thermal IR Imager and Lens cooling system	Bulb or LED illuminator	Pulsing laser & gated imager	Continuous wave laser
Critical Component Complexity	Moderate	Moderate	High	Moderate	High	Moderate
Component Shelf-life	Stable	Stable	Degrades through time even if system not in use; yearly service required	Stable	Stable	Stable
Critical Component MTBF	30,000+ hours	30,000 + hours	8000 hours (shelf-life)	8,000 hours	12,000 hours	24,000 hours