

SIGMA

All-Weather Long-Range PTZ Camera

INFINITI ELECTRO OPTICS

The Sigma is a multi-sensor PTZ that can be configured with our longest range visible, ZLID™, and thermal camera options. These include our new 20-1255mm 61X zoom 8 megapixel day/night camera, thermal imaging cameras up to 1400mm, and up to 6km of ZLID™ illumination.

Combining these multiple sensors allows for accurate detection, recognition, and identification of potential threats. Active deterrence measures such as LRADs, spotlights, and laser dazzlers can also be integrated to ensure threats are not just detected, but mitigated.

The Sigma's strengthened aluminum construction and rugged IP66 housings use anti-corrosive coatings, allowing it to withstand the harshest climates for dependable perimeter security, homeland defense, and coastal protection.

Key Features:

- › Multi-Sensor Visible and Thermal Integrated PTZ System
- › Long-Range Visible Zoom Options from 49X to 95X
- › Visible/NIR Field of View Options from 75° to 0.36°
- › 12μm 1280×1024 VOx Uncooled Thermal Imager or Optional SD or HD Cooled Thermal Imager
- › Long-Range Thermal Germanium Lens Options available from 310mm to 1400mm
- › Up to 30+km Human Detection and 60+km Vehicle Detection with Thermal*
- › Self-Locking Worm Drive with 0.01°-30°/sec Pan Speed and 0.01°-15°/sec Tilt Speed
- › IP66 Military-Grade Design with Military Cable Connectors



The Sigma PTZ camera is shown in a white, rugged housing. It features a large lens assembly on the left and a smaller sensor unit on the right. The camera is mounted on a base with a pan/tilt mechanism. The background is a scenic view of snow-capped mountains.

Zoom Lens	Resolution	Thermal Imager	IR Illumination	Other Features
6mm-218	36X 8MP		2km ZLID™	
5.6mm-272	49X 8MP	60mm-705 MWIR ^{HD}	3km ZLID™	
15mm-800	53X 4MP	72mm-905 MWIR	4km ZLID™	Advanced Control
15mm-800	53X 8MP	Optional Telescope Optics	5km ZLID™	Military Connectors
10.6mm-1015	95X 8MP	31mm-310 LWIR ^{HD}	6km ZLID™	PTZ Controls
20mm-1225	61X 8MP	40mm-365 LWIR ^{HD}		Weatherproof
		Optional Cooled Thermal up to 1400mm Zoom		
			Optional IR Illumination up to 6km	

Multiple Zoom Lens Options up to 1225mm

Uncooled HD Thermal Zoom up to 365mm

Optional Cooled Thermal up to 1400mm Zoom

Optional IR Illumination up to 6km

View the Sigma on our website:



THE SIGMA'S Visible/NIR HD Zoom Camera

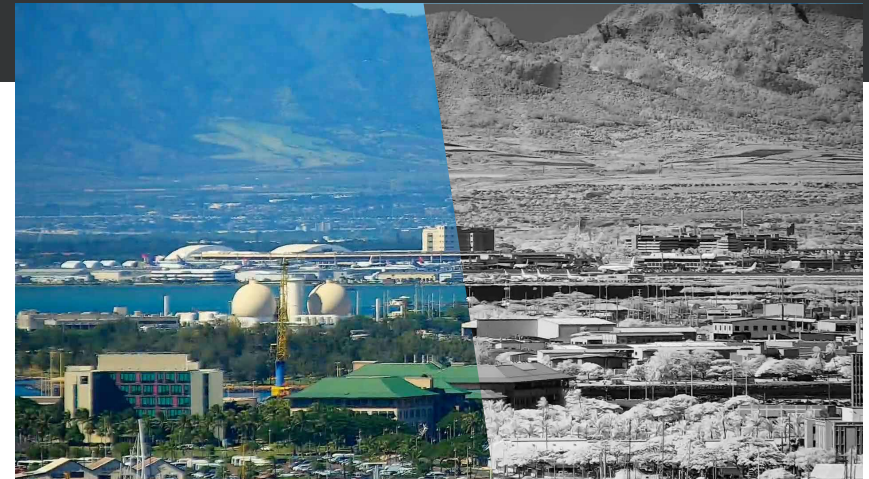
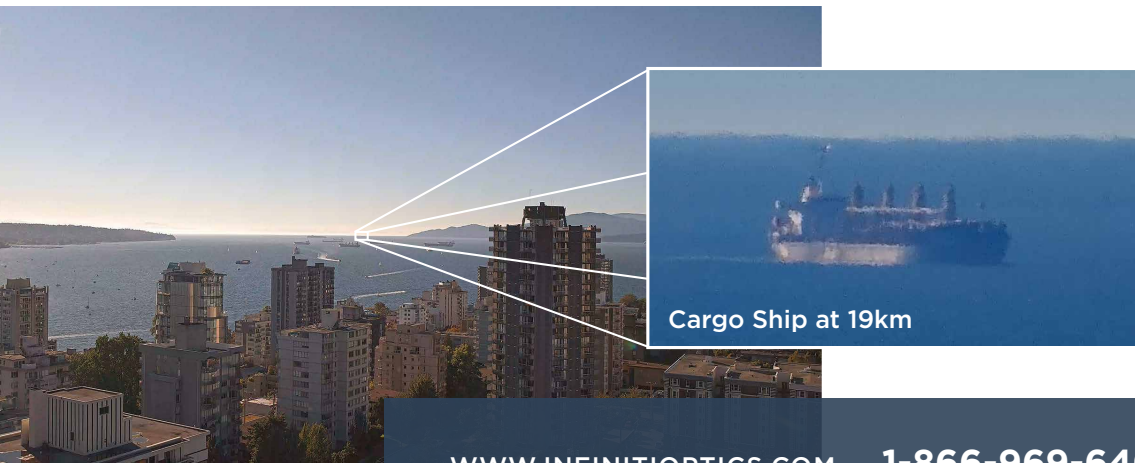


VIS/NIR Optical Camera

Infiniti's VIS/NIR zoom cameras utilize high-end CMOS sensors to offer excellent spectral sensitivity in the visible and near-infrared wavelengths of light, providing high-quality images optimized for long-range surveillance. They are designed to provide industry-leading performance and quality, with image resolutions ranging from 2MP (1080p HD) to 8MP (4K UHD) and 12MP. Precision engineered IR-corrected continuous zoom lens options offer a range of focal lengths with up to 95X optical zoom and integrated rapid autofocus to allow for long-range surveillance of targets without operator intervention.

Wide Angle Spotters

The Sigma PTZ can also support our optional wide angle spotter cameras for both visible and thermal. By integrating a second sensor with a wide angle lens, operators can maintain wide area situational awareness while simultaneously achieving detailed surveillance of targets at extreme long ranges.



Standard Color Visible Image
(Optical Fog Filter Disabled)

NIR Image
(Optical Fog Filter Enabled)

Optical Fog Filter (NIR Only Mode)

While most surveillance cameras offer a nighttime NIR + visible mode for optimized sensitivity in low light, the Sigma's cameras are also equipped with our NIR bandpass filter (also referred to as a "fog filter") allowing users to isolate the NIR (near-infrared) wavelength of light during the day for clearer long-range daytime imaging.

Long-range imaging needs to see through large amounts of atmosphere which often contains particulates like smoke, haze/fog, and other atmospheric distortions. Cutting out the visible wavelength and isolating the NIR can mitigate the effects of smoke, haze and light fog, producing an image with better contrast and less distortion. Our optical fog filter lenses incorporate a motorized filter that is used with the camera's monochrome mode and de-haze image processing to see through smoke, smog and haze.

THE SIGMA'S ZLID™ & Thermal Technologies

See in the Dark with ZLID™

IR illumination allows for detailed video when there isn't enough natural light, however common IR LED illuminators have very limited ranges. For long-range illumination, a laser is needed. Many laser illuminators overexpose the center of the screen and leave the edges dark. Infiniti's ZLID (Zoom Laser IR Diode) technology synchronizes the IR intensity and area illumination with the zoom lens for outstanding active IR performance, eliminating over-exposure, washout, and hot-spots for clear images in complete darkness.



See Further with Thermal

The Sigma boasts industry-leading thermal cameras with uncooled LWIR and cooled MWIR options from resolution of 640×480 up to 1280×1024 HD to ensure mission success.

Thermal cameras, unlike traditional visible cameras, use heat rather than light to see objects. Humans, animals, and vehicles are all quite hot in contrast to most surroundings, making intruders hiding in shadows or bushes easy to spot. Thermal images are also unaffected by bright lights and can see through atmospheric obstructions such as smoke, dust, and light fog. This makes thermal imaging an ideal technology for many applications including surveillance and security, search and rescue, fire fighting, marine and land navigation, wide area situational assessment, and much more.



Thermal Imaging Options: Cooled vs Uncooled

Uncooled Long Wave Infrared (LWIR)

Infiniti uses cutting-edge 12µm LWIR VOx uncooled thermal sensors with resolutions up to 1280x1024 HD. The 12µm pixel pitch provides a narrower field of view without changing the lens, allowing it to achieve 40% further range than 17µm sensors.

These sensors are paired with large aperture lenses of $f/1.0$ – $f/1.3$, compared to the standard $f/1.5$ – $f/1.6$, allowing up to 2.3 times more heat to reach the sensor. This results in higher sensitivity, sharper images, and longer ranges, making LWIR one of the most cost-effective long-range imaging solutions.

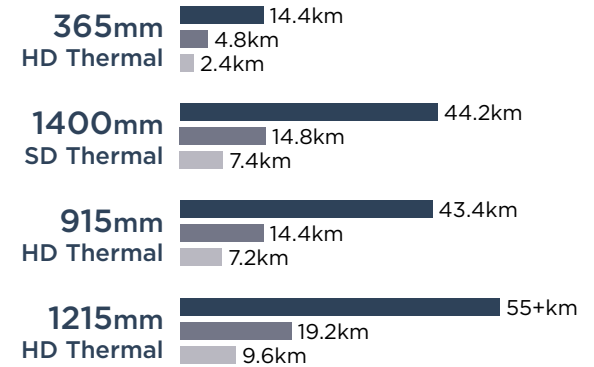
Cooled Mid-Wave Infrared (MWIR)

Infiniti offers cooled thermal in SD or HD options. Our 15µm 640x480 InSb or MCT sensors are comparable to the standard MWIR offerings in the industry. Our 10µm 1280x1024 HD X-Hot sensor provides 400% higher resolution and 50% longer range than traditional 15µm sensors. This means a 400mm lens on our X-Hot sensor is equivalent to a 600mm lens on a traditional 15µm sensor allowing it to provide a narrower angle (further zoom) for more detail at long distances.

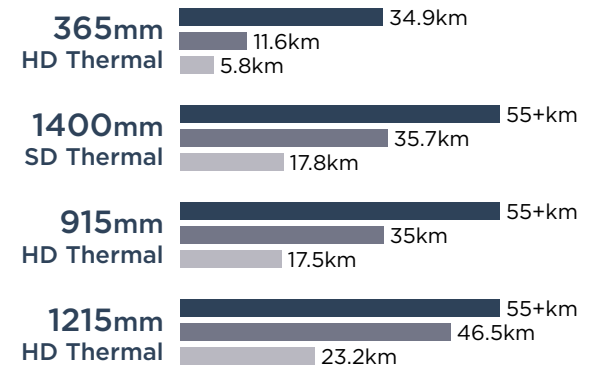
MWIR sensors use integrated cryo-coolers to cool the sensors down to -196°C (InSb) or -123°C (X-Hot). This exponentially increases the sensitivity of the thermal camera, allowing MWIR cameras to use smaller and more powerful lenses than uncooled LWIR cameras, however the cryo-coolers do require maintenance at intervals that vary depending on sensor type and environment.

Our new **Thermally Compensated Optics (TCO)** technology maintains MTF, back focal distance, and effective focal length across a wide range of operating temperatures. This TCO technology effectively mitigates challenges posed by thermal expansion. Paired with our HD InSb or X-HOT MWIR thermal cores, Infiniti's systems provide high contrast and ultra long distance infrared imaging for mission critical applications such as threat detection, surveillance, auto-tracking and targeting. With lens options capable of detection ratings* over 55km (based on DRI ratings in ideal conditions), the Sentry is a fantastic thermal surveillance platform.

Human DRI:



Vehicle DRI:



■ **DETECTION***
■ **RECOGNITION***
■ **IDENTIFICATION***

*DRI detection ratings are based on industry-wide standards (Johnson's Criteria) that can be misleading if not properly understood. For more information, please see our whitepaper about understanding DRI measurements at: www.infinitioptics.com/dri

Visible/NIR Camera Options

		8M-2050	8M-61X-OS	8M-95X	8M-53X (-OS)	4M-53X (-OS)	8M-49X
Simulated FOV @ 1km							
Pixels Per Meter @ 1km		1025ppm	612ppm	508ppm	400ppm	274ppm	136ppm
DORI	D: 25ppm	41,000m Detection	24,500m Detection	20,300m Detection	16,000m Detection	10,944m Detection	5,440m Detection
	O: 62ppm	16,532m Observation	9,879m Observation	8,815m Observation	6,452m Observation	4,413m Observation	2,194m Observation
	R: 125ppm	8,200m Recognition	4,900m Recognition	4,060m Recognition	3,200m Recognition	2,189m Recognition	1,088m Recognition
	I: 250ppm	4,100m Identification	2,450m Identification	2,030m Identification	1,600m Identification	1,094m Identification	563m Identification
Output Resolution		4K @ 30fps (3840x2160)	4K @ 30fps (3840x2160)	4K @ 30fps (3840x2160)	4K @ 30fps (3840x2160)	4MP @ 30fps (2688x1520)	4K @ 30fps (3840x2160)
Image Sensor		8.4 Megapixel 1/1.8" W CMOS	8.4 Megapixel 1/1.8" W CMOS	8.4 Megapixel 1/1.8" W CMOS	8.4 Megapixel 1/1.8" W CMOS	4.1 Megapixel 1/1.7" W CMOS	8.4 Megapixel 1/1.8" W CMOS
Lens*	Focal Length	2050mm	20-1225mm	10.6-1015mm	15-800mm	15-800mm	5.6-272mm
	Optical Zoom	No Optical Zoom, 16X Digital Zoom	61X Optical Zoom x 16X Digital Zoom	95X Optical Zoom x 16X Digital Zoom	53X Optical Zoom x 16X Digital Zoom	53X Optical Zoom x 16X Digital Zoom	49X Optical Zoom x 16X Digital Zoom
	Angle of View	0.21° Horizontal	21°-0.36° Horizontal	42°-0.43° Horizontal	28°-0.55° Horizontal	29°-0.56° Horizontal	75°-1.62° Horizontal
	1080p Equiv.†	2X, 0.11° HFOV	122X, 0.18° HFOV	190X, 0.22° HFOV	106X, 0.28° HFOV	74X, 0.4° HOV	98X, 0.81° HFOV
	Focus	Manual	Auto / Manual	Auto / Manual	Auto / Manual	Auto / Manual	Auto / Manual
Minimum Illumination		Color: 0.03 Lux, B&W: 0.003 Lux @ f/1.2	Color: 0.1 Lux, B&W: 0.01 Lux @ f/2.1	Color: 0.1 Lux, B&W: 0.01 Lux @ f/2.1	Color: 0.1 Lux, B&W: 0.01 Lux @ f/1.5	Color: 0.05 Lux, B&W: 0.005 Lux @ f/2.8	Color: 0.05 Lux, B&W: 0.005 Lux @ f/1.4
Optical Fog Filter (NIR)		Yes	Yes	Yes	Yes	Yes	Yes
Heatwave Mitigation		No	Yes	Yes	Yes	Yes	No
NDAA Compliant		Yes	Yes	No	Yes	No	Yes
Video Network	Compression	H.265/H.264/MJPEG					
	Protocol	ONVIF, HTTP, RTSP, RTP, TCP, UDP					
Image Stabilization		Electronic Stabilization (EIS)	Optical Stabilization & EIS	Electronic Stabilization (EIS)	EIS, Optional Optical Stabilization	Electronic Stabilization (EIS)	
Image Enhancements		AWB, BLC, WDR, DNR		White Balance, WDR, 2D/3D DNR, BLC, HLC, Digital Defog			
Edge Storage		Supports MicroSD Card up to 256GB					

*Lens measurements, angle of view and PPM/DORI numbers are accurate to ±10% due to back focus distances, sensor sizes, lens manufacturing, etc. †Zoom ratio and FOV equivalent if zooming into a 1080p crop of the video output. ††Global shutter.

ZLID™ Illumination Options

	500m IR LED	1km ZLID		1.5km ZLID		2km ZLID		3km ZLID		4km ZLID		5km ZLID		6km ZLID	
Illumination Distance	500m	1000m		1500m		2000m		3000m		4000m		5000m		6000m	
Wavelength	808nm	808nm	940nm	808nm	940nm	808nm	940nm	808nm	940nm	808nm	940nm	808nm	940nm	808nm	940nm
NOHD	0m (eye safe)	50m	36.6m	56.4m	45.2m	69m	51m	238m	175m	266m	196m	376m	752m	555m	

Thermal Camera Options

SD Thermal Camera Options

	31-310mm (-310TIZ-HD)	40-365mm (-365TIZ-HD)	15-235mm (-235CTZ)	30-430mm (-430CTZ)	36-700mm (-700CTZ)	72-905mm (-905CTZ)	85-1400mm (-1400CTZ)														
Image Sensor	Uncooled VOx Microbolometer, 30Hz			High Sensitivity Cooled X-Hot Detector, 30Hz		High Sensitivity Cooled InSb or X-Hot, 30Hz															
Resolution	1280x1024 pixels			640x480 pixels (NTSC) / 640x512 pixels (PAL)																	
Pixel Pitch	12µm (40% further range than 17µm sensors)			10µm		15µm															
Lens (Motorized Zoom)	31-310mm f/1.3	40-365mm f/1.5	15-235mm f/3.6	30-430mm f/3.6	36-700mm f/4.0	72-905mm f/4.0	85-1400mm f/5.5														
Focus	Motorized Autofocus	Motorized Autofocus	Motorized Autofocus	Motorized Autofocus	Motorized Autofocus	Motorized Autofocus	Motorized Autofocus														
Field of View	27.8-2.84° HFOV	21.7-2.41° HFOV	12.2-0.85° HFOV	12.2-0.85° HFOV	15.2-0.79° HFOV	7.6-0.61° HFOV	6.4°-0.39° HFOV														
Pixels Per Meter @ 1km	25.8ppm	34.6ppm	23.5ppm	43ppm	46.7ppm	60ppm	93ppm														
Human DRI Ratings*	12 km	4.0 km	2.0 km	14 km	4.8 km	2.4 km	11.1 km	3.7 km	1.8 km	20 km	6.8 km	3.4 km	22.1 km	7.3 km	3.6 km	28 km	9.5 km	4.7 km	44 km	14 km	7.3 km
Vehicle DRI Ratings*	29 km	9.9 km	4.9 km	34 km	11.6 km	5.8 km	27 km	9 km	4.5 km	49 km	16 km	8.2 km	53 km	17.8 km	8.9 km	55+ km	23 km	11.5 km	55+ km	35 km	17.8 km
Image Optimizations	DICE, BPR, NUC, & AGC user configurable via API																				
Digital Zoom	2X & 4X dynamic zoom/pan with range switching																				
Spectral Range	LWIR (7,000-14,000nm)			MWIR (3,000-5,000nm)																	
Thermal Sensitivity	50mK			20-25mK																	
Cooler Lifetime (@23°C)	No cooler required			35,000 Hr Rated MTBF			20,000 Hour Rated MTBF (InSb) / 25,000 Hour Rated MTBF (X-Hot)														
Image Display Modes	White Hot, other color palettes available upon request																				

HD Thermal Camera Options

	30-460mm HD (-460CTZ-HD)	60-705mm HD (-705CTZ-HD)	73-915mm HD (-915CTZ-HD)	100-1215mm HD (-1215CTZ-HD)								
Image Sensor	High-Sensitivity Cooled InSb or X-Hot Detector, 30Hz											
Resolution	1280x1024 pixels											
Pixel Pitch	10µm (50% further range than 15µm sensors)											
Lens	30-460mm f/4.0 Motorized Zoom	60-705mm f/4.0 Motorized Zoom	73-915mm f/4.0 Motorized Zoom	100-1215mm f/4.0 Motorized Zoom								
Focus	Motorized Autofocus	Motorized Autofocus	Motorized Autofocus	Motorized Autofocus								
Field of View	24.1-1.59° Horizontal FOV	12.1-1.04° Horizontal FOV	10.0-0.8° Horizontal FOV	7.3-0.6° Horizontal FOV								
Pixels Per Meter @ 1km	46ppm	70.5ppm	91.5ppm	121ppm								
Human DRI Ratings*	21.8 km	7.2 km	3.6 km	33.4 km	11.1 km	5.5 km	43.4 km	14.4 km	7.2 km	55+ km	19.2 km	9.6 km
Vehicle DRI Ratings*	52.9 km	17.6 km	8.8 km	55+ km	27.0 km	13.5 km	55+ km	35.0 km	17.5 km	55+ km	46.5 km	23.2 km
Special Features	Digital Image Contrast Enhancement (DICE), Thermally Compensated Optics (TCO), 4X Digital Zoom (16X digital zoom optional)											
Spectral Range	3,000-5,000nm (MWIR)											
Thermal Sensitivity	20-25mK											
Cooler Lifetime	20,000 Hour Rated MTBF (InSb) / 30,000 Hour Rated MTBF (X-Hot)											

* **D R I** While DRI ratings are based on the industry-standard Johnson's Criteria, they represent theoretical maximums under ideal conditions that typically exceed real-world performance. Additionally, a "Detection" rating means that a target will appear only as a tiny speck of pixels, rather than as a clearly defined or recognizable object. For more info, please see our whitepaper about understanding DRI at: www.infiniioptics.com/dri

Other Specifications

Optional LRF	LRF4	LRF7	LRF20	LRF21	LRF25	LRF30
Extended Range	4.2km	7.1km	20km	21km	25km	30km
Range to NATO Vehicle*	3.5km	6km	8km	10km	12km	18km
Range to Human*	2km	3.8km	4km	5km	6km	9km
Wavelength	1530nm (±5)					
Precision**	0.1-1.5m		0.2-2.5m			

*Range performance is dependent on distance and target reflectivity. Calculated using NATO Vehicle size of 2.3x2.3m, Human size of 0.5x1.8m, with target visibility 25km, maximum measuring time, target reflectivity 30%, detection probability 90%. Depending on received signal level. Up to three (3) targets: First, Second and Third. See our LRF brochure for more information **LRF accuracy is based on ideal conditions. See our LRF brochure for more information.

Pan/Tilt Mechanical

Drive System	Self-Locking Worm Gear
Pan Angle	Endless 360° Continuous Rotation
Pan Speed	0.01° to 30°/s (speeds may differ depending on configuration)
Tilt Angle	-90° to +90° (full ±90° requires pedestal; tilt range needed determines the size of the pedestal)
Tilt Speed	0.01° to 15°/s (speeds may differ depending on configuration)
Proportional Pan/Tilt	Auto adjusts pan/tilt speed based on zoom level
Octagon Enabled	Infiniti's Octagon platform provides a unified API for integration with third party C2/VMS softwares, radar slew-to-cue, and our network-based PTZ control accessories.

Physical

Construction	High Strength Aluminum Alloy with Anti-Corrosion Finish
--------------	---------------------------------------------------------

Environmental

Operational Temperature	-20°C to +45°C with heaters, up to +65°C optional; <90% Relative Humidity
Environmental	IP66 Weatherproof Housing

Electrical

Input Voltage	24VDC
---------------	-------

Optional Features: 3km or 5km White Light Spotlight for sniper suppression, Vibration Mount for vehicle mounting, LRF (Laser Rangefinder), Wide-Angle 4K Spotter Camera, Reflective Paint or Customized Paint Finish, Joystick (Pelco-D or IP 3-axis joysticks), Wireless Analog or IP Radios P2P or mesh

Brochure specifications subject to change.