

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 15.4-2075mm 135X zoom 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 135X
- › Visible/NIR Field of View Options from 75° to 0.2°
- › 12µm 640×512 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 system is shown in a white, rugged housing. The main camera unit is mounted on a base, and a secondary camera unit is visible to the right. The background is a scenic view of snow-capped mountains.

14.8mm- 875 59X 2MP			
15mm- 800 53X 8MP	30mm- 430 MWIR	1km ZLID™	
10mm- 955 95X 4MP	38mm- 875 MWIR	2km ZLID™	
15.5mm- 1235 79X 2MP	46mm- 1100 MWIR	3km ZLID™	Military Connectors
10.6mm- 1015 95X 8MP	31mm- 310 LWIR	5km ZLID™	PTZ Controls
15.4mm- 2075 135X 2MP	30mm- 415 LWIR	6km ZLID™	Waterproof

Multiple Zoom Lens Options up to 2075mm Uncooled Thermal Zoom up to 415mm 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

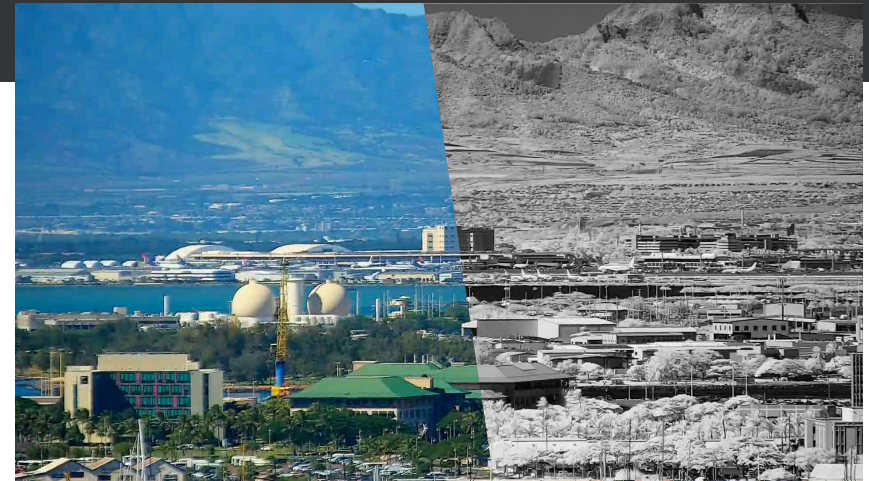
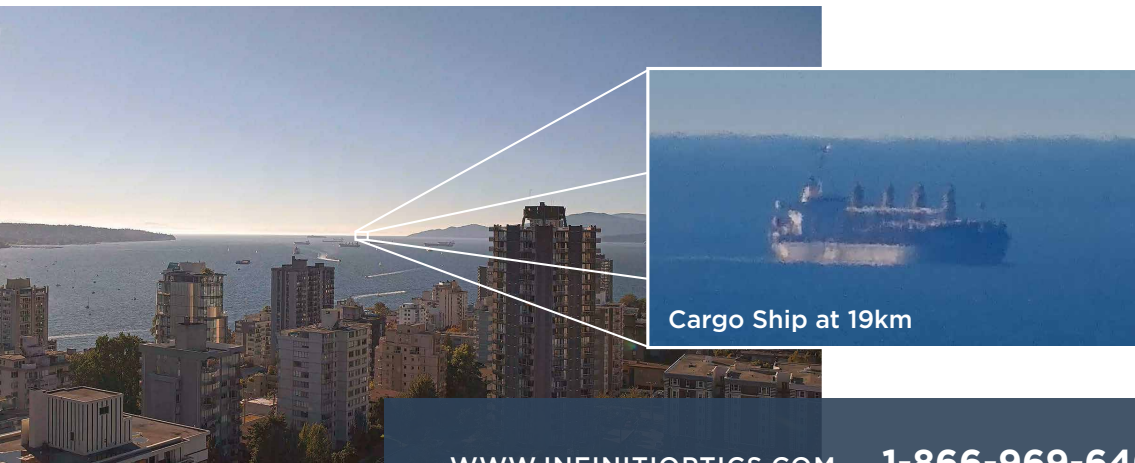


VIS/NIR Optical Camera

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 135X 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 a cutting-edge 12µm LWIR VOx uncooled thermal sensor with resolutions of 384x288 up to 1024x768 HD. The 12µm pixel pitch gives the camera a narrower field of view without changing the lens. This means we are able to achieve 40% further range than 17µm and 25% further range than 15µm sensors while delivering a sensitivity of 0.05°C.

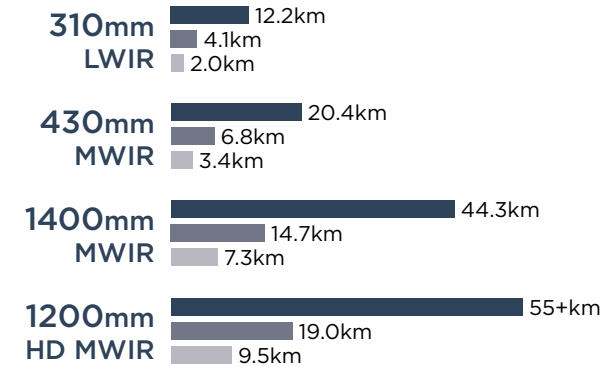
The Sigma pairs these sensors with precision-engineered continuous zoom germanium lenses such as the 10X zoom 31-310mm (14.1°-1.4° HFOV) to provide both long-range and wide-angle views. This lens has a large aperture of f/1.3 compared to the standard f/1.5-f/1.6 which allows up to 1.5 times more heat to reach the sensor. This results in higher sensitivity, sharper images, and longer range making it the most cost-effective long-range imaging solution.

Cooled Mid-Wave Infrared (MWIR)

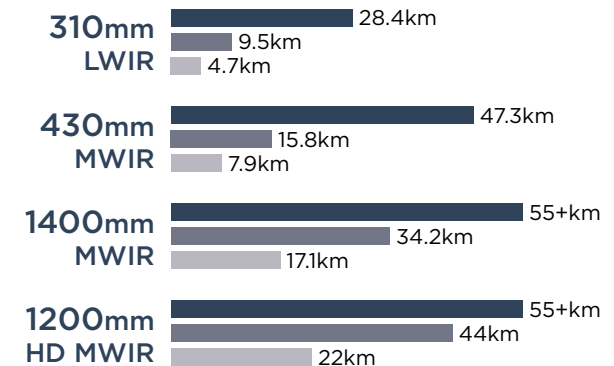
The Sigma also offers several cooled thermal sensor options: 15µm 640x480 InSb, 10µm 640x480 X-Hot or our 10µm 1024x1280 HD X-Hot sensor which is 400% higher resolution and provides 50% longer range than traditional 15µm sensors. This means a 1200mm lens on our X-Hot sensor is equivalent to a 1800mm lens on a traditional 15µm sensor allowing it provide a narrower angle for more detail at long distances. MWIR sensors use integrated cyro-coolers to cool the sensors down to -196°C (InSb) and -123°C (X-Hot). This exponentially increases the sensitivity of the thermal camera allowing it to use smaller and more powerful lenses than uncooled LWIR cameras.

The Sigma can be paired with various zoom lenses using the 640x480 InSb sensor with options ranging from 435mm to 1400mm, while the 1280x1024 HD X-Hot sensor can be paired with a lenses ranging from 410mm to 1200mm. This makes the Sigma capable of a vehicle detection rating of over 100km for vehicles and over 45km for humans, based on DRI ratings in perfect conditions. (Noting that atmospheric conditions for distances over 40km are never perfect, please see our DRI whitepaper for more information.)

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

		2075-LSM	8M-95X	8M-53X	79X	4M-95X	4M-53X	59X	8M-49X	
Simulated FOV @ 1km										
Pixels Per Meter @ 1km		553ppm	508ppm	400ppm	329ppm	327ppm	274ppm	214ppm	136ppm	
DORI	D: 25ppm	22,133m Detection	20,300m Detection	16,000m Detection	13,173m Detection	13,064m Detection	10,944m Detection	8,550m Detection	5,440m Detection	
	O: 62ppm	8,925m Observation	8,815m Observation	6,452m Observation	5,312m Observation	5,268m Observation	4,413m Observation	3,447m Observation	2,194m Observation	
	R: 125ppm	4,427m Recognition	4,060m Recognition	3,200m Recognition	2,635m Recognition	2,613m Recognition	2,189m Recognition	1,710m Recognition	1,088m Recognition	
	I: 250ppm	2,213m Identification	2,030m Identification	1,600m Identification	1,317m Identification	1,306m Identification	1,094m Identification	855m Identification	563m Identification	
Output Resolution		2MP/1080p @ 60fps (1920x1080)	8MP/4K @ 30fps (3840x2160)	8MP/4K @ 30fps (3840x2160)	2MP/1080p @ 60fps (1920x1080)	4MP @ 30fps (2688x1520)	4MP @ 30fps (2688x1520)	2MP/1080p @ 30fps (1920x1080)	4K @ 30fps (3840x2160)	
Image Sensor		2.0 Megapixel 1/2" W CMOS	8.4 Megapixel 1/1.8" W CMOS	8.4 Megapixel 1/1.8" W CMOS	4.1 Megapixel 1/2" W CMOS	4.1 Megapixel 1/1.7" W CMOS	4.1 Megapixel 1/1.7" W CMOS	4.1 Megapixel 1/1.7" W CMOS	8.4 Megapixel 1/1.8" W CMOS	
Lens*	Focal Length	15.4-2075mm	10.6-1015mm	15-800mm	15.5-1235mm	10-955mm	15-800mm	14.8-875mm	5.6-272mm f/1.4-4.5	
	Optical Zoom	135X Optical Zoom + 4X Digital Zoom	95X Optical Zoom + 16X Digital	53X Optical Zoom + 16X Digital	79X Optical Zoom + 16X Digital	95X Optical Zoom + 16X Digital	53X Optical Zoom + 16X Digital	59X Optical Zoom + 16X Digital	49X Optical Zoom + 16X Digital	
	Angle of View	27°-0.2° Horizontal	42°-0.43° Horizontal	28°-0.55° Horizontal	27°-0.33° Horizontal	43°-0.47° Horizontal	29°-0.56° Horizontal	30°-0.51° Horizontal	75°-1.62° Horizontal	
	Focus	Auto / Manual	Auto / Manual	Auto / Manual	Auto / Manual	Auto / Manual	Auto / Manual	Auto / Manual	Auto / Manual	
Minimum Illumination		Color: 0.006 Lux, B&W: 0.0006 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/2.1	Color: 0.05 Lux, B&W: 0.005 Lux @ f/2.1	Color: 0.05 Lux, B&W: 0.005 Lux @ f/2.8	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	Yes	Yes	
Heatwave Mitigation		No	Yes	Yes	Yes	Yes	Yes	Yes	No	
NDAA Compliant		Yes	No	Yes	Optional	No	No	Optional	Yes	
Video Network	Compression	H.265/H.264/MJPEG								
	Protocol	ONVIF, HTTP, RTSP, RTP, TCP, UDP								
Image Stabilization		Electronic Image Stabilization (EIS)					Optical Stabilization (optional) & EIS		EIS	
Image Enhancements		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.

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	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)	30-415mm (-415TIZ)	30-430mm (-430CTZ)	36-700mm (-700CTZ)	38-875mm (-875CTZ)	46-1100mm (-1100CTZ)	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	640x512/640x480 pixels (1280x1024 optional)		640x480 pixels (NTSC) / 640x512 pixels (PAL)		640x480 pixels (NTSC) / 640x512 pixels (PAL)																
Pixel Pitch	12µm (40% further range than 17µm sensors)		10µm (50% further range than 15µm sensors)		15µm																
Lens (Motorized Zoom)	31-310mm f/1.3	30-415mm f/1.5	30-430mm f/3.6	36-700mm f/3.6	38-875mm f/5.5	46-1100mm f/5.5	85-1400mm f/5.5														
Focus	Motorized Autofocus	Motorized Autofocus	Motorized Autofocus	Motorized Autofocus	Motorized Autofocus	Motorized Autofocus	Motorized Autofocus														
Field of View	14.1°-1.4° HFOV	14.6°-1.06° HFOV	12.2-0.85° HFOV	10.2°-0.52° HFOV	14°-0.65° HFOV	11.9°-0.5° HFOV	6.4°-0.39° HFOV														
Pixels Per Meter @ 1km	26ppm	34ppm	43ppm	70ppm	58ppm	73ppm	93ppm														
Human DRI Ratings*	12 km	4.0 km	2.0 km	16 km	5.4 km	2.7 km	20 km	6.8 km	3.4 km	33 km	11.1 km	5.5 km	27 km	9.2 km	4.6 km	34 km	11.6 km	5.8 km	44 km	14 km	7.3 km
Vehicle DRI Ratings*	28 km	9.4 km	4.7 km	38 km	12 km	6.3 km	47 km	15 km	7.8 km	55+ km	25 km	12 km	55+ km	21 km	10 km	55+ km	26 km	13 km	55+ km	34 km	17.1 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 Hour 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

	18-410mm HD (-410CTZ-HD)			36-700mm HD (-700CTZ-HD)			55-1015mm HD (-1015CTZ-HD)			92-1200mm HD (-1200CTZ-HD)		
Image Sensor	High Sensitivity Cooled X-Hot Sensor, 30Hz											
Resolution	1280x1024 pixels											
Pixel Pitch	10µm (50% further range than 15µm sensors)											
Lens	18-410mm f/4.0 Motorized Zoom			36-700mm f/4.0 Motorized Zoom			55-1015mm f/4.0 Motorized Zoom			92-1200mm f/4.0 Motorized Zoom		
Focus	Motorized Autofocus			Motorized Autofocus			Motorized Autofocus			Motorized Autofocus		
Field of View	39.1°-1.8° Horizontal FOV			20.2°-1.05° Horizontal FOV			13.3°-0.72° Horizontal FOV			7.96°-0.61° Horizontal FOV		
Pixels Per Meter @ 1km	41ppm			70ppm			102ppm			120ppm		
Human DRI Ratings*	19.4 km	6.4 km	3.2 km	33.1 km	11.0 km	5.5 km	48.1 km	16.0 km	8.0 km	55 km	18.9 km	9.5 km
Vehicle DRI Ratings*	45.0 km	15.0 km	7.5 km	55+ km	25.6 km	12.8 km	55+ km	37.1 km	18.6 km	55+ km	43.9 km	22 km
Digital Zoom	4X Digital Zoom (16X optional)											
Spectral Range	3,000-5,000nm (MWIR)											
Thermal Sensitivity	20-25mK											
Cooler Lifetime	20,000+ Hour Rated MTBF											

* **D R I** 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.infiniioptics.com/dri

Other Specifications

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

Physical

Construction	High Strength Aluminum Alloy with Anti-Corrosion Finish
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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
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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.