INFINITI
ELECTRO-OPTICS

LWIR & MWIR Cameras Brochure

Infiniti's Thermal Imaging Camera Options

TECHNOLOGY

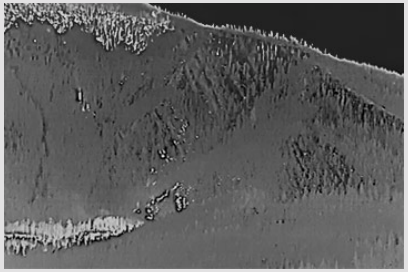
Thermal Imaging Advantages

Infiniti offers both cooled MWIR and uncooled LWIR thermal imaging cameras. These cameras are called thermal cameras because they produce an image using naturally radiated thermal energy (heat) from objects rather than reflected light like a visible/NIR camera. This can provide great advantages in surveillance, as no illumination is needed to see in complete darkness, and it is possible to achieve long-range detection of potential threats.

With thermal imaging, warm objects like humans, vehicles and animals become clearly visible against a colder background. Warmer objects like these can be easily located and tracked with thermal imaging cameras regardless of lighting conditions. This makes thermal imaging an excellent solution for detection of threats at long distances, even at night.

Another advantage of thermal cameras over visible cameras is their immunity to bright lights. When using standard visible or NIR camera systems at night, bright lights from vehicle headlights or even a flashlight can cause overexposures and light flares on the images, making it difficult or impossible to see details and activities around those lights. Thermal imaging is unaffected in these scenarios and maintains a clear and detailed image even around bright light sources.

Standard Visible+NIR
Forest fires with smoke



LWIR Thermal Image
Same scene, sees through smoke

Standard Visible+NIR Image
Vis+NIR scene

LWIR Thermal Image
Same scene, see video on our website for full example:
https://infti.ca/whythermal

TECHNOLOGY

Cooled vs Uncooled

Long Wave Infrared (LWIR)

Infiniti uses cutting-edge 12µm LWIR VOx uncooled thermal sensors with resolutions up to 1280×1024 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 640×480 InSb or MCT sensors are comparable to the standard MWIR offerings in the industry. Our 10µm 1280×1024 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 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.

Our wide variety of MWIR sensors and lenses range from a 19–275mm f/5.5 zoom (28.4°–2.0° HFOV) with SD resolution to a 100–1215mm f/4.0 zoom lens (33.9–1.71° HFOV) with HD resolution, capable of human detection at over 50km based on DRI ratings in ideal conditions.

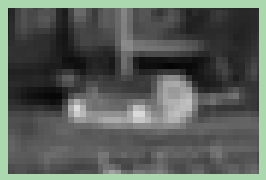
RATING STANDARDS

DRI Ratings

Thermal camera performance is often measured in DRI, which stands for Detection, Recognition and Identification. While some military personnel will understand these ratings, it is important to note that many end users are not familiar with what these ratings actually mean, and it is likely to be different than expected.

DRI: A misleading specification

DRI ratings are based on a specification from the 1950s called the Johnson Criteria which was developed around older sensor technology being displayed on low resolution CRT screens. The images on this page show the approximate level of detail required by the Johnson Criteria. If you show them to most end users, it is unlikely they will agree that these images represent their expectations of Detection, Recognition, and Identification. Infiniti lists these DRI numbers to offer simple comparisons with competing products; however our recommendation is to define thermal detail using Pixels Per Meter (PPM).

	Detection	Recognition	Identification
Human (1.8m × 0.5m)	 **3.5 × 1 pixels / 2.1 ppm** (Something is there)	 **11 × 3 pixels / 6.3 ppm** (A person is there)	 **23 × 6 pixels / 12.6 ppm** (The person looks like a civilian)
Vehicle (2.3m × 2.3m)	 **2 × 2 pixels / 0.9 ppm** (Something is there)	 **6 × 6 pixels / 2.6 ppm** (A vehicle is there)	 **12 × 12 pixels / 5.2 ppm** (The vehicle looks like a minivan)

PPM: A better specification

PPM takes several factors into account to provide a single benchmark for the amount of detail provided by a camera which can be applied to any brand or model. Infiniti has developed a tool which simulates different lens and sensor combinations to display various PPM levels; this allows us to ensure our customers are getting the level of detail they require.

The examples here simulate the amount of detail if you were to digitally zoom into the image. **Please note that these image simulations assume optimum imaging conditions, however many factors such as atmospheric conditions, heat waves, available light, subject motion or camera shake can degrade image clarity, and most of these issues are amplified at longer distances.** Also note that the Johnson Criteria specification is based on a 50% probability that an object would be detected, recognized or identified at these distances (ignoring atmospheric factors).

For more information, please see our whitepaper about understanding DRI measurements at: www.infinitioptics.com/dri

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LWIR FIXED CAMERA OPTIONS

Specifications

INFINITI ELECTRO-OPTICS

		4TI	6TI	9TI	13TI	19TI	25TI
Image Sensor		Uncooled Vanadium Oxide Microbolometer, 30Hz					
Resolution		384×288, 640×512 or 1280×1024 pixels					
Pixel Pitch		12µm (40% further range than 17µm sensors)					
Focal Length		4mm f/1.2	5.75mm f/1.2	9mm f/1.2	13mm f/1.2	19mm f/1.0	25mm f/1.0
Pixels Per Meter @ 1km		0.33ppm	0.42ppm	0.75ppm	1.08ppm	1.58ppm	2.08ppm
Field of View	384×288	59.9° Horizontal FOV	49.5° Horizontal FOV	28.7° Horizontal FOV	20.1° Horizontal FOV	13.8° Horizontal FOV	10.5° Horizontal FOV
	640×512	87.7° Horizontal FOV	75° Horizontal FOV	46.2° Horizontal FOV	32.9° Horizontal FOV	22.9° Horizontal FOV	17.5° Horizontal FOV
	1280×1024	125° Horizontal FOV	114° Horizontal FOV	81° Horizontal FOV	61.1° Horizontal FOV	44° Horizontal FOV	34.2° Horizontal FOV
Human DRI*	Detection	158m (519ft)	227m (746ft)	356m (1,167ft)	514m (1,685ft)	751m (2,463ft)	988m (3,241ft)
	Recognition	53m (173ft)	76m (249ft)	119m (389ft)	171m (562ft)	250m (821ft)	329m (1,080ft)
	Identification	26m (86ft)	38m (124ft)	59m (194ft)	86m (281ft)	125m (411ft)	165m (540ft)
Vehicle DRI*	Detection	383m (1,257ft)	551m (1,807ft)	863m (2,829ft)	1,246m (4,086ft)	1,821m (5,972ft)	2,396m (7,858ft)
	Recognition	128m (419ft)	184m (602ft)	288m (943ft)	415m (1,362ft)	607m (1,991ft)	799m (2,619ft)
	Identification	64m (210ft)	92m (301ft)	144m (472ft)	208m (681ft)	303m (995ft)	399m (1,310ft)
Drone DRI** (Small/Lrg)	Detection	41m / 211m	59m / 303m	92m / 474m	133m / 685m	194m / 1,000m	255m / 1,318m
	Recognition	14m / 70m	20m / 101m	31m / 158m	44m / 228m	65m / 334m	85m / 439m
	Identification	7m / 35m	10m / 51m	15m / 79m	22m / 114m	32m / 167m	43m / 220m
Focus		Athermalized	Athermalized	Athermalized	Athermalized	Athermalized	Athermalized
Spectral Range		7,000–14,000nm					
Thermal Sensitivity		20–30mK					
Image Display Modes		White Hot, other color palettes available upon request					
Digital Zoom		1–8X Digital Zoom (depending on system)					
Video Output		CVBS (Analog) Output, optional IP encoders available					
Pan/Tilt Compatibility		Any system					

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

** See DRI rating disclaimer above; Small distance based on 0.3m×0.2m target size (dimensions of a DJI Phantom), Large distance based on 2m×0.8m target size (dimensions of a DJI Agras T40/T30).

† Dependent on full system configuration.

Brochure specifications subject to change.

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LWIR FIXED CAMERA OPTIONS

Specifications

INFINITI ELECTRO-OPTICS

		35TI	55TI	75TI	100TI	120TI
Image Sensor		Uncooled Vanadium Oxide Microbolometer, 30Hz				
Resolution		384×288, 640×512 or 1280×1024 pixels				
Pixel Pitch		12µm (40% further range than 17µm sensors)				
Focal Length		35mm f/1.0	55mm f/1.0	75mm f/1.2 or f/1.0	100mm f/1.0	120mm f/1.4
Pixels Per Meter @ 1km		2.92ppm	4.58ppm	6.25ppm	8.33ppm	10.0ppm
Field of View	384×288	7.53° Horizontal FOV	N/A	3.52° Horizontal FOV	2.64° Horizontal FOV	2.2° Horizontal FOV
	640×512	12.5° Horizontal FOV	7.99° Horizontal FOV	5.86° Horizontal FOV	4.4° Horizontal FOV	3.67° Horizontal FOV
	1280×1024	24.8° Horizontal FOV	15.9° Horizontal FOV	11.7° Horizontal FOV	8.78° Horizontal FOV	7.32° Horizontal FOV
Human DRI*	Detection	1,383 m (4,538 ft)	2,174 m (7,131 ft)	2,965 m (9,724 ft)	3,953 m (12,965 ft)	4,743 m (15,558 ft)
	Recognition	461 m (1,513 ft)	725 m (2,377 ft)	988 m (3,241 ft)	1,318 m (4,322 ft)	1,581 m (5,186 ft)
	Identification	231 m (756 ft)	362 m (1,188 ft)	494 m (1,621 ft)	659 m (2,161 ft)	791 m (2,593 ft)
Vehicle DRI*	Detection	3,354 m (11,002 ft)	5,271 m (17,288 ft)	7,188 m (23,575 ft)	9,583 m (31,433 ft)	11,500 m (36,720 ft)
	Recognition	1,118 m (3,667 ft)	1,757 m (5,763 ft)	2,396 m (7,858 ft)	3,194 m (10,478 ft)	3,833 m (12,573 ft)
	Identification	559 m (1,834 ft)	878 m (2,881 ft)	1,198 m (3,929 ft)	1,597 m (5,239 ft)	1,917 m (6,287 ft)
Drone DRI** (Small/Lrg)	Detection	357 m / 1,845 m	561 m / 2,899 m	765 m / 3,953 m	1,021 m / 5,270 m	1,225 m / 6,325 m
	Recognition	119 m / 615 m	187 m / 966 m	255 m / 1,318 m	340 m / 1,757 m	408 m / 2,108 m
	Identification	60 m / 307 m	94 m / 483 m	128 m / 659 m	170 m / 878 m	204 m / 1,054 m
Focus		Athermalized	Athermalized	Motorized (f/1.2) or Athermalized (f/1.0)	Motorized or Athermalized	Motorized
Spectral Range		7,000–14,000nm				
Thermal Sensitivity		20–30mK				
Image Display Modes		White Hot, other color palettes available upon request				
Digital Zoom		1–8X Digital Zoom (depending on system)				
Video Output		CVBS (Analog) Output, optional IP encoders available				
Pan/Tilt Compatibility		Rogue and up	Atlas and up	Neptune/Sentry and up		

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LWIR ZOOM CAMERA OPTIONS

Specifications

INFINITI ELECTRO-OPTICS

		75TIZ	105TIZ	130TIZ	155TIZ
Image Sensor		Uncooled Vanadium Oxide Microbolometer, 30Hz			
Resolution		384×288, 640×512 or 1280×1024 pixels			
Pixel Pitch		12µm (40% further range than 17µm sensors)			
Focal Length		26–75mm f/1.0	20–105mm f/1.2 (f/1.6 optional)	25–130mm f/0.8–f/1.2	32–155mm f/1.2
Pixels Per Meter @ 1km		6.25ppm	8.75ppm	10.8ppm	12.9ppm
Field of View	384×288	10.1–3.52° Horizontal FOV	13.1–2.51° Horizontal FOV	10.5–2.03° Horizontal FOV	8.2–1.70° Horizontal FOV
	640×512	16.8–5.86° Horizontal FOV	21.7–4.19° Horizontal FOV	17.5–3.38° Horizontal FOV	13.7–2.84° Horizontal FOV
	1280×1024	32.9–11.7° Horizontal FOV	42.0–8.37° Horizontal FOV	34.2–6.76° Horizontal FOV	27.0–5.67° Horizontal FOV
Human DRI*	Detection	2,965m (1.84mi)	4,150m (2.58mi)	5,139m (3.19mi)	6,127m (3.81mi)
	Recognition	988m (0.61mi)	1,383m (0.86mi)	1,713m (1.06mi)	2,042m (1.27mi)
	Identification	494m (0.31mi)	692m (0.43mi)	856m (0.53mi)	1,021m (0.64mi)
Vehicle DRI*	Detection	7,188m (4.47mi)	10,063m (6.25mi)	12,458m (7.74mi)	14,854m (9.23mi)
	Recognition	2,396m (1.49mi)	3,354m (2.08mi)	4,153m (2.58mi)	4,951m (3.08mi)
	Identification	1,198m (0.74mi)	1,677m (1.04mi)	2,076m (1.29mi)	2,476m (1.54mi)
Drone DRI** (Small/Lrg)	Detection	765m / 3,953m	1,072m / 5,534m	1,327m / 6,852m	1,582m / 8,169m
	Recognition	255m / 1,318m	357m / 1,845m	442m / 2,284m	527m / 2,723m
	Identification	128m / 659m	179m / 922m	221m / 1,142m	264m / 1,362m
Focus		Motorized Autofocus			
Spectral Range		7,000–14,000nm			
Thermal Sensitivity		20–30mK			
Image Display Modes		White Hot, other color palettes available upon request			
Digital Zoom		1–8X Digital Zoom (16X optional)			
Video Output		CVBS (Analog) Output, optional IP encoders available			
Pan/Tilt Compatibility		Neptune/Sentry and up	Neptune†/Sentry and up	Sentry and up	

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** See DRI rating disclaimer above; Small distance based on 0.3m×0.2m target size (dimensions of a DJI Phantom), Large distance based on 2m×0.8m target size (dimensions of a DJI Agras T40/T30).

† Neptune must use f/1.6 variation of the 105TIZ module.

Brochure specifications subject to change.

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LWIR ZOOM CAMERA OPTIONS

Specifications

INFINITI ELECTRO-OPTICS

		185TIZ	230TIZ	310TIZ	365TIZ-HD
Image Sensor		Uncooled Vanadium Oxide Microbolometer, 30Hz			
Resolution		384×288, 640×512 or 1280×1024 pixels			1280×1024 pixels
Pixel Pitch		12µm (40% further range than 17µm sensors)			
Focal Length		34–185mm f/1.2	26–230mm f/1.3	31–310mm f/1.3	40–365mm f/1.5
Pixels Per Meter @ 1km		15.4ppm	19.2ppm	25.8ppm	34.6ppm
Field of View	384×288	7.75–1.43° Horizontal FOV	10.1–1.15° Horizontal FOV	8.5–0.85° Horizontal FOV	N/A
	640×512	12.9–2.38° Horizontal FOV	16.8–1.91° Horizontal FOV	14.1–1.42° Horizontal FOV	N/A
	1280×1024	25.5–4.75° Horizontal FOV	32.9–3.82° Horizontal FOV	27.8–2.84° Horizontal FOV	21.7–2.41° Horizontal FOV
Human DRI*	Detection	7,313m (4.54mi)	9,092m (5.65mi)	12,254m (7.61mi)	14,428m (8.96mi)
	Recognition	2,438m (1.51mi)	3,031m (1.88mi)	4,085m (2.54mi)	4,809m (2.98mi)
	Identification	1,219m (0.76mi)	1,515m (0.94mi)	2,042m (1.27mi)	2,405m (1.49mi)
Vehicle DRI*	Detection	17,729m (11.02mi)	22,042m (13.7mi)	29,708m (18.46mi)	34,979m (21.74mi)
	Recognition	5,910m (3.67mi)	7,347m (4.57mi)	9,903m (6.15mi)	11,660m (7.25mi)
	Identification	2,955m (1.84mi)	3,674m (2.28mi)	4,951m (3.08mi)	5,830m (3.62mi)
Drone DRI** (Small/Lrg)	Detection	1,888m / 9,750m	2,347m / 12,122m	3,164m / 16,338m	3,725m / 19,237m
	Recognition	629m / 3,250m	782m / 4,041m	1,055m / 5,446m	1,242m / 6,412m
	Identification	315m / 1,625m	391m / 2,020m	527m / 2,723m	621m / 3,206m
Focus		Motorized Autofocus			
Spectral Range		7,000–14,000nm			
Thermal Sensitivity		20–30mK			
Image Display Modes		White Hot, other color palettes available upon request			
Digital Zoom		1–8X Digital Zoom (16X optional)			
Video Output		CVBS (Analog) Output, optional IP encoders available			
Pan/Tilt Compatibility		Sentry and up			Sigma and up

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** See DRI rating disclaimer above; Small distance based on 0.3m×0.2m target size (dimensions of a DJI Phantom), Large distance based on 2m×0.8m target size (dimensions of a DJI Agras T40/T30).
Brochure specifications subject to change.

MWIR SD CAMERA OPTIONS

Specifications

INFINITI ELECTRO-OPTICS

		275CTZ	715CTZ	875CTZ	1100CTZ	1400CTZ
Image Sensor		High-Sensitivity Cooled InSb or MCT Detector, 30Hz				
Resolution		640×480 or 640×512 pixels				
Pixel Pitch		15µm				
Focal Length		19–275mm f/5.5	50–715mm f/5.5	38–875mm f/5.5	46–1100mm f/5.5	85–1400mm f/5.5
Pixels Per Meter @ 1km		18.3ppm	47.7ppm	58.3ppm	73.3ppm	93.3ppm
Field of View		28.4–2.0° Horizontal FOV	11.0–0.77° Horizontal FOV	14.4–0.63° Horizontal FOV	11.9–0.5° Horizontal FOV	6.4–0.39° Horizontal FOV
Human DRI*	Detection	8.69 km (5.4 mi)	22.61 km (14.05 mi)	27.6 km (17.19 mi)	34.7 km (21.61 mi)	44.2 km (27.51 mi)
	Recognition	2.90 km (1.8 mi)	7.53 km (4.68 mi)	9.22 km (5.73 mi)	11.6 km (7.20 mi)	14.75 km (9.17 mi)
	Identification	1.45 km (0.9 mi)	3.76 km (2.34 mi)	4.61 km (2.87 mi)	5.8 km (3.60 mi)	7.38 km (4.58 mi)
Vehicle DRI*	Detection	21.08 km (13.10 mi)	54.81 km (34.06 mi)	55+ km (35+ mi)	55+ km (35+ mi)	55+ km (35+ mi)
	Recognition	7.02 km (4.37 mi)	18.27 km (11.35 mi)	22.36 km (13.89 mi)	28.1 km (17.47 mi)	35.7 km (22.23 mi)
	Identification	3.51 km (2.18 mi)	9.13 km (5.68 mi)	11.18 km (6.95 mi)	14.0 km (8.73 mi)	17.8 km (11.12 mi)
Drone DRI** (Small/Lrg)	Detection	2.2 km / 11.6 km	5.8 km / 30.1 km	7.14 km / 36.8 km	8.9 km / 46.3 km	11.4 km / 55+ km
	Recognition	748 m / 3.86 km	1.9 km / 10.0 km	2.4 km / 12.3 km	3.0 km / 15.4 km	3.8 km / 19.6 km
	Identification	374 m / 1.93 km	973 m / 5.0 km	1.19 km / 6.15 km	1.5 km / 7.73 km	1.9 km / 9.84 km
Focus		Motorized Autofocus				
Spectral Range		3,000–5,000nm				
Thermal Sensitivity		20–25mK				
Image Display Modes		White Hot, other color palettes available upon request				
NUC Tables		2 NUC Tables		5–7 NUC Tables		
Digital Zoom		4X Digital Zoom (16X optional)				
Video Output		CVBS (Analog) Output, optional IP encoders available				
Cooler Lifetime (@23°C)		20,000 Hour Rated MTBF				
Pan/Tilt Compatibility		Neptune/Sentry and up	Sentry and up	Sigma and up		Arc/Vega

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Brochure specifications subject to change.

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MWIR SD CAMERA OPTIONS

Specifications

INFINITI ELECTRO-OPTICS

		120CTZ	180CTZ	235CTZ	430CTZ	700CTZ
Image Sensor		High-Sensitivity Cooled X-Hot Detector, 30Hz				
Resolution		640×480 or 640×512 pixels				
Pixel Pitch		10µm (50% further range than 15µm sensors)				
Focal Length		15–120mm f/3.6	25–180mm f/3.6	15–235mm f/3.6	30–430mm f/3.6	36–700mm f/3.6
Pixels Per Meter @ 1km		12ppm	18ppm	23.5ppm	43ppm	70ppm
Field of View		24.1–3.06° Horizontal FOV	14.6–2.04° Horizontal FOV	24.1–1.56° Horizontal FOV	12.2–0.85° Horizontal FOV	10.2–0.52° Horizontal FOV
Human DRI*	Detection	5.7km (3.54 mi)	8.54 km (5.31 mi)	11.14 km (6.93 mi)	20.4 km (12.67 mi)	33.2 km (20.63 mi)
	Recognition	1.9 km (1.18 mi)	2.84 km (1.77 mi)	3.71 km (2.31 mi)	6.8 km (4.22 mi)	11.0 km (6.88 mi)
	Identification	949 m (0.59 mi)	1.42 km (0.88 mi)	1.86 km (1.15 mi)	3.4 km (2.11 mi)	5.5 km (3.44 mi)
Vehicle DRI*	Detection	13.8 km (8.57 mi)	20.7 km (12.86 mi)	27.0 km (16.79 mi)	49.4 km (30.73 mi)	55+ km (35+ mi)
	Recognition	4.6 km (2.86 mi)	6.9 km (4.29 mi)	9.0 km (5.6 mi)	16.48 km (10.24 mi)	26.8 km (16.67 mi)
	Identification	2.3 km (1.43 mi)	3.45 km (2.14 mi)	4.5 km (2.8 mi)	8.24 km (5.12 mi)	13.41 km (8.34 mi)
Drone DRI** (Small/Lrg)	Detection	1.47 km / 7.59 km	2.2 km / 11.3 km	2.88 km / 14.8 km	5.26 km / 27.2 km	8.57 km / 44.2 km
	Recognition	490 m / 2.53 km	735 m / 3.8 km	959 m / 4.9 km	1.75 km / 9.0 km	2.86 km / 14.8 km
	Identification	245 m / 1.26 km	367 m / 1.9 km	480 m / 2.5 km	878 m / 4.5 km	1.43 km / 7.4 km
Focus		Motorized Autofocus				
Spectral Range		3,000–5,000nm				
Thermal Sensitivity		20–25mK				
Image Display Modes		White Hot, other color palettes available upon request				
Digital Zoom		4X Digital Zoom (16X optional)				
Video Output		CVBS (Analog) Output, optional IP encoders available				
Cooler Lifetime (@23°C)		30,000 Hour Rated MTBF				
Pan/Tilt Compatibility		Neptune/Sentry and up			Sentry and up	Sigma and up

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

** See DRI rating disclaimer above; Small distance based on 0.3m×0.2m target size (dimensions of a DJI Phantom), Large distance based on 2m×0.8m target size (dimensions of a DJI Agras T40/T30).

Brochure specifications subject to change.

MWIR HD CAMERA OPTIONS

Specifications

INFINITI ELECTRO-OPTICS

		230CTZ-HD	305CTZ-HD	430CTZ-HD	460CTZ-HD
Image Sensor		High-Sensitivity Cooled InSb or X-Hot Detector, 30Hz			
Resolution		1280×1024 pixels			
Pixel Pitch		10µm (50% further range than 15µm sensors)			
Focal Length†		18–230mm f/4.0	16–305mm f/4.0	21–430mm f/4.0	30–460mm f/4.0
Pixels Per Meter @ 1 km		23ppm	30ppm	43ppm	46ppm
Field of View‡		39.1–3.19° Horizontal FOV	43.6–2.4° Horizontal FOV	33.9–1.71° Horizontal FOV	24.1–1.59° Horizontal FOV
Human DRI*	Detection	10.9 km (6.7 mi)	14.4 km (8.9 mi)	20.4 km (12.6 mi)	21.8 km (13.5 mi)
	Recognition	3.6 km (2.2 mi)	4.8 km (3.0 mi)	6.8 km (4.2 mi)	7.2 km (4.5 mi)
	Identification	1.8 km (1.1 mi)	2.4 km (1.5 mi)	3.4 km (2.1 mi)	3.6 km (2.2 mi)
Vehicle DRI*	Detection	26.4 km (16.4 mi)	35.0 km (21.7 mi)	49.4 km (30.7 mi)	52.9 km (32.8 mi)
	Recognition	8.8 km (5.4 mi)	11.7 km (7.2 mi)	16.4 km (10.2 mi)	17.6 km (10.9 mi)
	Identification	4.4 km (2.7 mi)	5.8 km (3.6 mi)	8.2 km (5.1 mi)	8.8 km (5.4 mi)
Drone DRI** (Small/Lrg)	Detection	2.8 km (7.7 mi) / 14.5 km (9.0 mi)	3.7 km (2.3 mi) / 19.2 km (11.9 mi)	5.2 km (3.2 mi) / 27.2 km (16.9 mi)	5.6 km (3.5 mi) / 29.0 km (18.0 mi)
	Recognition	939 m (0.5 mi) / 4.8 km (3.0 mi)	1.2 km (0.7 mi) / 6.4 km (4.0 mi)	1.7 km (1.1 mi) / 9.0 km (5.6 mi)	1.8 km (1.1 mi) / 31.8 km (6.0 mi)
	Identification	469 m (0.29 mi) / 2.4 km (1.5 mi)	623 m (0.38 mi) / 3.2 km (2.0 mi)	878 m (0.55 mi) / 4.5 km (2.8 mi)	939 m (0.58 mi) / 15.9 km (3.0 mi)
Focus		Motorized Autofocus			
Spectral Range		3,000–5,000nm			
Thermal Sensitivity		20–25mK			
Image Display Modes		White Hot, other color palettes available upon request			
Digital Zoom		4X Digital Zoom (16X optional)			
Video Output		CVBS (Analog) Output, optional IP encoders available			
Cooler Lifetime (@23°C)		20,000 Hour Rated MTBF (InSb) / 30,000 Hour Rated MTBF (X-Hot)			
Special Features		Thermally Compensated Optics (TCO)			
Pan/Tilt Compatibility		Neptune/Sentry and up		Sentry and up	

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

** See DRI rating disclaimer above; Small distance based on 0.3m×0.2m target size (dimensions of a DJI Phantom), Large distance based on 2m×0.8m target size (dimensions of a DJI Agras T40/T30).

† Focal length within ±3%. ‡ FOV within ±5%.

Brochure specifications subject to change.

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MWIR HD CAMERA OPTIONS

Specifications

INFINITI ELECTRO-OPTICS

		705CTZ-HD	915CTZ-HD	1215CTZ-HD
Image Sensor		High-Sensitivity Cooled InSb or X-Hot Detector, 30Hz		
Resolution		1280×1024 pixels		
Pixel Pitch		10µm (50% further range than 15µm sensors)		
Focal Length†		60–705mm f/4.0	73–915mm f/4.0	100–1215mm f/4.0
Pixels Per Meter @ 1 km		70.5ppm	91.5ppm	121.5ppm
Field of View‡		12.1–1.04° Horizontal FOV	10.0–0.8° Horizontal FOV	7.3–0.6° Horizontal FOV
Human DRI*	Detection	33.4 km (20.8 mi)	43.4 km (27.0 mi)	55+ km (35+ mi)
	Recognition	11.1 km (6.9 mi)	14.4 km (9.0 mi)	19.2 km (11.9 mi)
	Identification	5.5 km (3.4 mi)	7.2 km (4.5 mi)	9.6 km (5.9 mi)
Vehicle DRI*	Detection	55+ km (35+ mi)	55+ km (35+ mi)	55+ km (35+ mi)
	Recognition	27.0 km (16.7 mi)	35.0 km (21.7 mi)	46.5 km (28.9 mi)
	Identification	13.5 km (8.4 mi)	17.5 km (10.4 mi)	23.2 km (14.4 mi)
Drone DRI** (Small/Lrg)	Detection	8.6 km (5.3 mi) / 44.5 km (27.7 mi)	11.2 km (6.9 mi) / 55+ km (35+ mi)	14.8 km (9.2 mi) / 55+ km (35+ mi)
	Recognition	2.8 km (0.5 mi) / 14.8 km (9.2 mi)	3.7 km (2.3 mi) / 19.2 km (11.9 mi)	4.9 km (3.0 mi) / 25.6 km (15.9 mi)
	Identification	1.4 km (0.89 mi) / 7.4 km (4.6 mi)	1.8 km (1.16 mi) / 9.6 km (5.9 mi)	2.4 km (1.5 mi) / 12.8 km (7.9 mi)
Focus		Motorized Autofocus		
Spectral Range		3,000–5,000nm		
Thermal Sensitivity		20–25mK		
Image Display Modes		White Hot, other color palettes available upon request		
Digital Zoom		4X Digital Zoom (16X optional)		
Video Output		CVBS (Analog) Output, optional IP encoders available		
Cooler Lifetime (@23°C)		20,000 Hour Rated MTBF (InSb) / 30,000 Hour Rated MTBF (X-Hot)		
Special Features		Thermally Compensated Optics (TCO)		
Pan/Tilt Compatibility		Arc/Vega		

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** See DRI rating disclaimer above; Small distance based on 0.3m×0.2m target size (dimensions of a DJI Phantom), Large distance based on 2m×0.8m target size (dimensions of a DJI Agras T40/T30).
† Focal length within ±3%. ‡ FOV within ±5%.
Brochure specifications subject to change.

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RATING COMPARISONS

DRI Ratings

Human Detection Distances

*Please see page 4 for information on how these distances are calculated and what they mean.

Vehicle Detection Distances

*Please see page 4 for information on how these distances are calculated and what they mean.

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Version 3.01.250522