evve
LONG RANGE

MEDIUM & LONG RANGE CAMERA SOLUTIONS
MK-SERIE

Evve Long Range B.V. (ELR) is manufacturer of medium and long range multi sensor solutions with visual cameras, thermal cameras, laser range finders and/or search lights. ELR offers state-of-the-art cameras with superior sensors, setting high standards in the market for Detection, Recognition and Identification (DRI) performance.

ELR creates and manufactures it's own solutions, specifically designed to meet the costumer's requirements, whether it considers a product or a total integrated system. The MK-serie camera systems comes with an extensive option list.

All cameras are turn-key solutions, completely pre-assembled and set-up at the factory. This will reduce the installation time to an absolute minimum.

The cameras use an open protocol, like ONVIF S and Pelco D Extened and are fully integrated with radar systems and Vessel Tracking Monitoring & Information System (VTMIS).

All the ELR products are build according to the MIL-810 standards and are suitable for all weather conditions and harsh environments.

APPLICATIONS

- ✓ MEDIUM & LONG RANGE SURVEILLANCE
- ✓ PORT PROTECTION - VESSEL TRAFIC MONITORING (VTMIS)
- ✓ BORDER PROTECTION
- ✓ CRITICAL INFRASTRUCTURE PROTECTION
- ✓ AIRPORT PERIMETER SURVEILLANCE
- ✓ PIPELINE SECURITY

MARITIME SOLUTIONS (VTMIS)

The VTMIS is a proven solution for safe, efficient and secure flow of traffic in ports, waterways and coastal regions. Easily scalable from single radar, single camera, single display solutions to multiple traffic centers with extensive radar and AIS networks at national levels.

The VTMIS provides authorities with the means to guide, assist and manage all shipping within their areas of interest. High availability redundant configurations, integrated recording & replay, training simulator and unparalleled target tracking make the VTMIS the most complete system on the market.

ELR camera systems provide the software with eyes to observe traffic on long distances. The VTIMS will pass along the command to the camera systems in order to follow the vessels when they enter and leave the harbour.
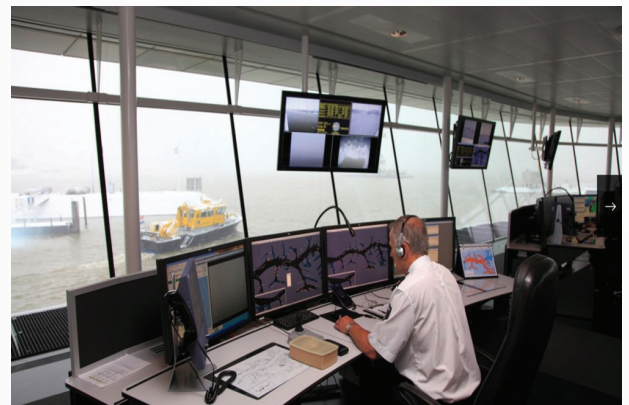
→ The information is transferred by the radars and cameras to the operator.

→ For ISPS certification of a port, long range cameras are required.

→ The camera systems are adjustable to your integration requirements

BORDER PROTECTION

Securing land and coastal borders requires round-the-clock, all weather, long distance surveillance technology. Border protection systems need to scan wide areas and identify targets in real time, assessing whether the intruders are illegal immigrants or refugees, smugglers, terrorists or enemy forces.

The ability of our camera systems to detect human-sized targets many km/miles away makes them ideal for land and coastal border surveillance and protection. ELR has developed the systems so that a critical application as the border can be provided with a reliable turn-key solution.

KEY FEATURES MK-SERIE

- ✓ Ranges up to 23 km for human detection and 27 km for vehicle detection
- ✓ Long range thermal camera options (up to 1,500 mm) including HD thermal
- ✓ Long range lenses (up to 2,066 mm), including HD
- ✓ Integrated with multi-sensors and radars
- ✓ Anti fog and image stabilization capabilities
- ✓ Absolute positioning feedback for radar control
- ✓ 360° continuous rotation for pan and 180 ° for tilt
- ✓ Virtually zero backlash with automatic self position correction
- ✓ Optical encoders for preset accuracy (0.015° repeatability)
- ✓ Unique foresight positioning for fast alignment
- ✓ Ultra slow pan / tilt speeds down to 0.01° per second (and up to 9.8° per second)
- ✓ Unique rapid release mechanism allows cameras to be quickly changed in the field
- ✓ ONVIF Profile S compliant
- ✓ Highly ruggedised for extreme and marine environments: housing made of carbon fiber
- ✓ Wiper option available on the video camera

GENERAL SPECS

SYSTEM

IP Rating (dust & water ingress)	IP67
Operating temparature range	-40°C to +75°C
Active Internal Temperature Control	Optional
Sealed	Yes
Connectors	Amphenol
Weight	42 - 85 kg
Input Voltage	Selectable 24 / 110 / 230 VAC
Output	Data, Optional: Fiber Optic
Power Consumption	65 W

PAN & TILT UNIT

Pan angle	Continuous 360°; 0,01° to 9.8°/sec
Tilt angle	180°; 0,01° to 5.8°/sec with soft stops
Backlash	0,0015°
Control speed	0,01° to 9.8°/sec (Optional: 4 steps controlled)
Accuracy	Optical controlled

VISUAL CAMERA SPECS

The customer can choose between a standard visual camera and a hyper sensitivity visual camera.

STANDARD VISUAL CAMERA

Video type	Full HD-SDI, 1080P 50 frames/sec.
Sensor type	1/3" Progressive Scan CCD
Sensor illumination	Color : 0.02lx (F1.2 / AGC48dB) /0.007lx (F1.2 / AGC48dB / accumulation 60 times
	B/W : 0.002lx (F1.2 / AGC48dB) /0.0007lx (F1.2 / AGC48dB / accumulation 60 times
Fog filters	Yes
Day & Night (W/B Switching)	Color / B/W / Auto (ICR)
Video output	HD-SDI (BNC) x 1 and Analog Video (BNC) x 1
Menu	Through OSD, always available
File	5 Files selectable by presets camera settings
Noise reduction	Yes
Sens-up	Automatic

HYPER SENSITIVITY CAMERA

Video type	Full HD SDI, 1080P 60 frames/sec.
Sensor type	CMOS 2/3" size, color
Minimum subject illumination	0.005lx (F1.4, 1/30, +66 dB)
Fog & smoke elimination	EVVEfogTM - proprietary technology for enhanced visibility in fog/smoke
Day & Night (W/B Switching)	Color / B/W, Manually selectable
Video output	HD-SDI (BNC) x 1 and Analog (BNC) x 1
Menu	Not available
File	5 Files selectable by presets camera settings
Video noice control	EVVEnoiseTM - proprietary 2D/3D noise reduction
Pixel size	5.0 µm (H) × 5.0 µm (V)
Resolution - total	Approx. 2.6 Mpixles. 2.270 (H) × 1.144 (V) pixels
Sensitivity	F11 2000 lx
Spectral sensitivity	390-700 nm
Frame rate	60 fps. Progressive

LENS SPECS

The customer can choose between a medium zoom and a super zoom lens.

LENS TYPE	MEDIUM ZOOM	SUPER ZOOM
Zoom	33 x zoom, 12 - 500 mm	66 x zoom, 16 - 2.060 mm
Zoom speed	4 sec	6 sec
Internal extender	No	Yes
Day/night filter	No	Yes
F/Number	F 1.4	F 1.2
Auto focus	Yes: automatic (short/long) & manual	Yes: automatic (short/long) & manual

DRI RANGES VISUAL CAMERAS

JOHNSONS CRITERIA *

How far can the camera detect a target? This a good criterion to qualify one sensor from another, considering the final application. The answer to this question typically include "DRI ranges", which stands for Detection, Recognition and Identification, in this brochure expressed in meters.

In order to select the right sensor, meeting the application requirements, these DRI ranges have to be perfectly defined, but also assessed with regards to globally adopted industrial standards. Johnson's model provides definitive criteria for calculating the maximum range at which Detection, Recognition, and Identification could take place, with a 50% probability of success. Although newer methodologies for DRI exist today, the Johnson's Criteria system is still widely used in the security industry today.

EXAMPLES OF DRI RANGES (NARROW LENS)

CAMERA / LENS TYPE	BASIC VISUAL CAMERA WITH MEDIUM ZOOM LENS			HYPER SENSITIVITY VISUAL CAMERA WITH SUPER ZOOM LENS		
TARGET	D	R	I	D	R	I
Human	11,000 m	7,000 m	3,000 m	23,000 m	20,000 m	12,000 m
RIB Size	14,000 m	8,500 m	5,000 m	27,000 m	23,000 m	20,000 m

* Human 1.8 m², vehicle 2.3 m², Detection at 2 px, Recognition at 8 px and Identification at 13 px.
50% probability subject to environmental conditions.

IMAGE 18 KM

IMAGE WITH SUPER ZOOM LENS, EXTENDER ENABLED

NORMAL IMAGE WITH FOG

IMAGE WITH HYPER SENSITIVITY CAMERA

FURTHER OPTIONS MK-SERIE

LASER ILLUMINATOR

ELR has developed an advanced laser illumination system to light up objects. The laser light is invisible to the human eye. The system is designed so that the operator can adjust the power of the light beam from 6 watt to 25 watt.

Zoom laser infrared	20W lr diode
Distance	Up to 20 km

ACTIVE INTERNAL TEMPERATURE CONTROL

ELR cameras are specially built for surveillance in challenging environments. Our heat and cold technology without moving parts is unique and ensures that the temperature inside always stays between 20 and 25 °C. This is advantageous, i.e. in the desert border area. Our systems are the most rugged in the world.

VIDEO STABILIZATION & STREAMING

Our video enhancement and stabilization software will give a stable and enhanced picture because of adaptive, real-time, video enhancement and analysis technology. The ELR video streaming solution takes care of converting the HD SDI video signal into a compressed IP signal without losing the video resolution/quality.

SEARCH LIGHT

ELR produces the most advanced high-intensity search lights used in military, border and law enforcement applications globally. Our patented Galilean-telescope optical system is capable of uniform illumination of targets at over 5 km in visible light and over 2.4 km in invisible infrared for use with night vision devices. Our products have been independently certified as having best-in-class performance.

LASER RANGE FINDERS

The most reliable and powerful diode laser range finders (LRF) are ours. Our diode LRF modules efficiently measure distances to non-cooperative targets up to 5 km, 10 km or 20 km away (dependent on the type of LRF) with very high precision. With their compact and robust design and very low weight, starting at just 33 grams, they are the smallest and most lightweight modules in their performance class.

GYRO STABILIZATION

Gyro stabilization works by mounting a state-of-the-art FOG (Fiber Optic Gyroscope) or MEMS (micro-electro-mechanical systems) gyroscope to the camera base that measures any movements that might occur. When the gyroscope senses movement, it then sends a command to the pan/tilt unit to counteract that movement by applying the opposite rotation to the camera. This keeps the image on target, even with massive shifts in movement (up to the rotation limits of the pan/tilt). ELR custom configures the camera system for the needs of the specific situation.

OPTIONS SHORTLIST

|	
VC	Basic visual camera
HSVC	Hypersensitivity visual camera
MZ	Medium zoom lens
SZ	Super zoom lens
L	Laser Illuminator
T	Temperature control
V	Video enhancement & stabilization
S	Video streaming
SL	Search light
LRF	Laser range finder
G	Gyro stabilization
O	Optical tracking
UTF	Uncooled thermal camera - Fixed lens
UTZ	Uncooled thermal camera - Zoom lens
CTZ	Cooled thermal camera - Zoom lens

FURTHER OPTIONS MK-SERIE

OPTICAL TRACKING

Tracking functionalities need to be split into two categories:

1. Tracking of vessels or aircrafts that are sending a transmitting signal (AIS or ADS-b), which can be picked up by an AIS or ADS-b reciever. The reciever will detect the absolute position of the vessel or aircraft. Thereafter the converter can slew-to-cue the camera to the correct position. The transponder will automatically keep sending its information to the reciever so that the camera

2. Tracking of vessels or aircrafts that don't have such a transponder. These vehicles can be tracked manually (see further) or by means of a radar. When tracking manually, only limited information about the vehicle is available. When tracking by radar, the radar will detect the absolute position of the vehicle. Thereafter, the converter can slew-to-cue the camera to the the correct position so that the automatic object tracker

With the ELR optical tracking system, both categories can be tracked: automatic and manual.

EXAMPLE SYSTEM
DIAGRAM TRACKING
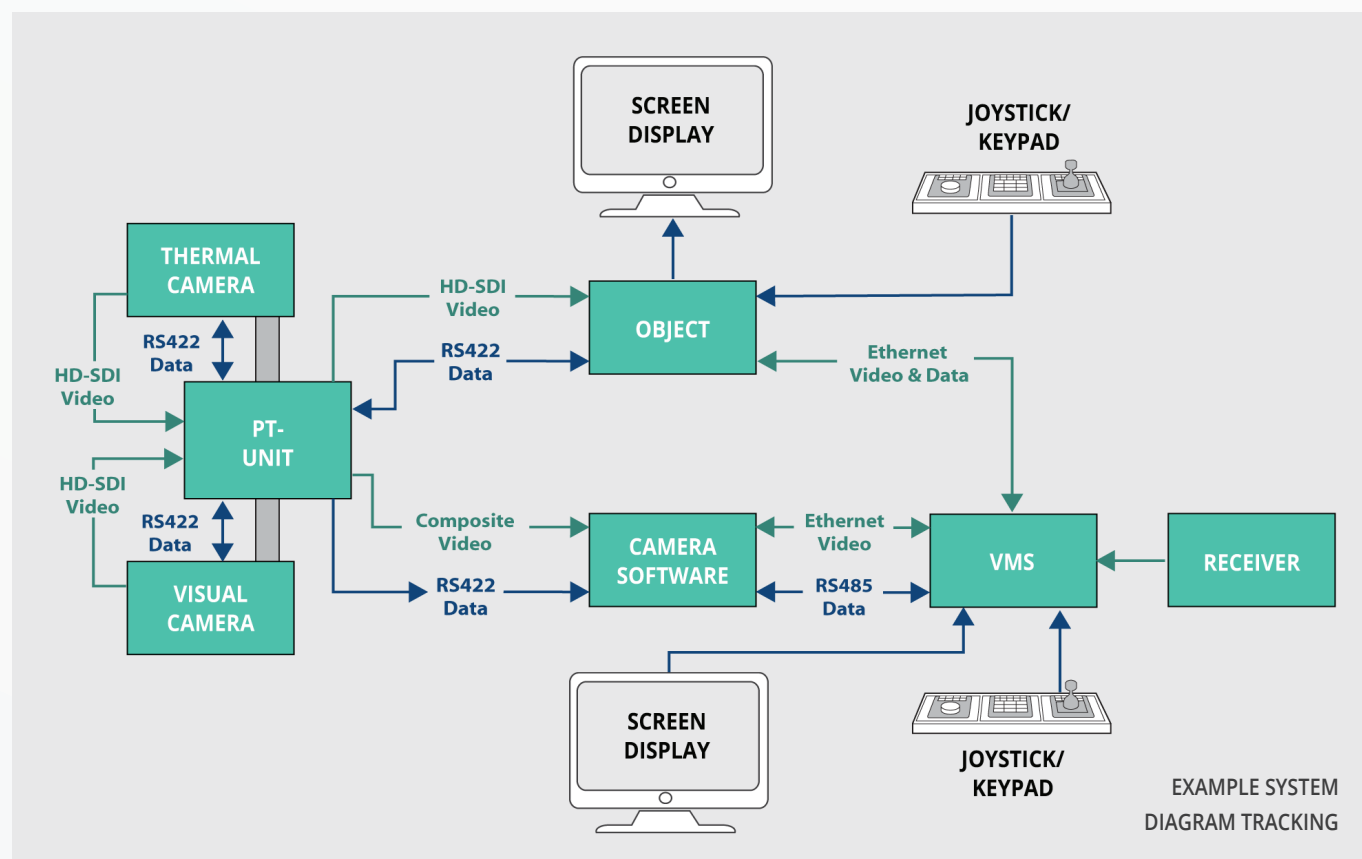
THERMAL CAMERAS

ELR makes use of the best partners for our thermal cameras, together with them developing the best thermal solution for the end user.

- ✓ Cooled and uncooled thermal cameras for medium and long range distances.
- ✓ Different detectors and lense sizes.
- ✓ ITAR/ETAR controlled cameras or only EXPORT LICENSE controlled cameras, cooled and uncooled.
- ✓ Technology for long life coolers up to 50.000 hours.
- ✓ The menu is controlled by a standard Pelco D keyboard.
- ✓ ELR writes all interfaces and develops its own software for controling the cameras and all their options inhouse.

DIMENSIONS

652.9

356.4

511

392

FRONT VIEW
VISUAL CAMERA SYSTEM

696.3

379.5

511

392
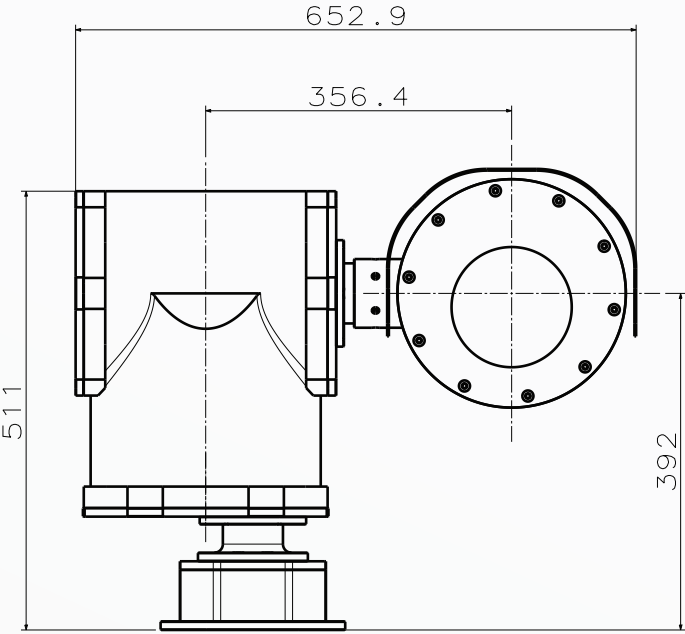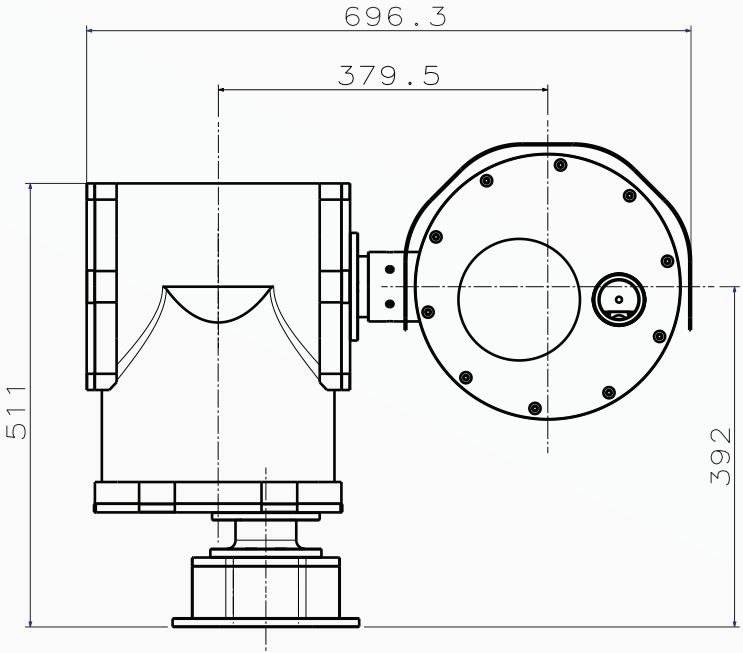
FRONT VIEW
VISUAL CAMERA SYSTEM
WITH LASER ILLUMINATOR

860

R520.8

Ø268

SIDE VIEW
VISUAL CAMERA SYSTEM

THERMAL CAMERAS

EXPLANATION OF WAVE LENGTH (PIXEL PITCH):

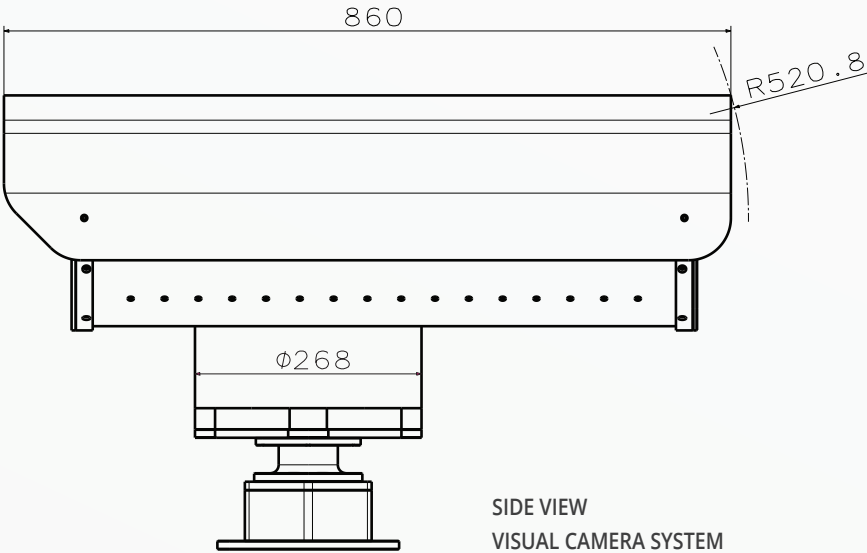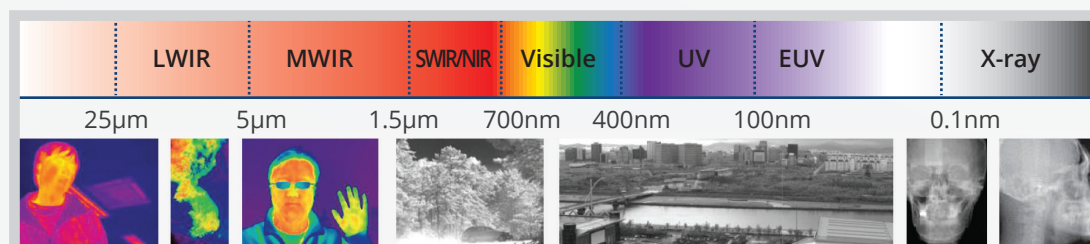| LWIR	MWIR	SWIR/NIR	Visible	UV	EUV	X-ray
25µm	5µm	1.5µm	700nm	400nm	100nm	0.1nm

UNCOOLED THERMAL CAMERAS - FIXED LENS (UTF):

	UTF-7.7	UTF-15
Pixel pitch	10µm	10µ
Sensor size	650 x 512	650 x 512
Camera type	Uncooled LWIR Camera Core w/ FB	Uncooled LWIR Camera Core w/ FB
Lens	7.7mm (50° HFOV)	15mm (25° HFOV)

UNCOOLED THERMAL CAMERAS - ZOOM LENS (UTZ):

		UTZ-75LR	UTZ-150LR	UTZ-225LR
Pixel pitch		12µ	12µ	12µ
Sensor size		640 x 480	640 x 480	640 x 480
Camera type		Uncooled LWIR continuous zoom	Uncooled LWIR continuous zoom	Uncooled LWIR continuous zoom
F/Number		F# 1.2	F# 1.4	F# 1.5
Lens		15-75mm (28.7° - 5.9°)	25-150mm (17.5° - 2.9°)	25-225mm (17.5° - 2.0°)
Vehicle	D	7,500 m	14,200 m	16,400 m
	R	3,100 m	6,200 m	8,500 m
	I	2,100 m	4,200 m	5,900 m
Human	D	3,900 m	7,800 m	10,100 m
	R	800 m	1,700 m	2,300 m
	I	500 m	1,000 m	1,400 m

		UTZ-300LR
Pixel pitch		12µ
Sensor size		640 x 480
Camera type		Uncooled LWIR continuous zoom
F/Number		F# 1.5
Lens		40-300mm (11° - 1.5°)
Vehicle	D	18,800 m
	R	11,000 m
	I	7,700 m
Human	D	12,000 m
	R	3,100 m
		1,900 m

THERMAL CAMERAS

COOLED THERMAL CAMERAS - ZOOM LENS (CTZ):

		CTZ-275	CTZ-300	CTZ-690
Pixel pitch		15μ	15μ	15μ
Sensor size		640 x 512	640 x 512	640 x 512
Camera type		Cooled MWIR continuous zoom	Cooled MWIR continuous zoom	Cooled MWIR continuous zoom
F/Number		F# 5.5	F# 4.0	F# 4.0
Lens		19-275 mm (28.4° - 2.0°)	15-300 mm (35.5° - 1.8°)	35-690 mm (15.6° - 0.8°)
Cooling		10.000 hrs. (optional: 20.000 hrs.)	10.000 hrs. (optional: 20.000 hrs.)	10.000 hrs. (optional: 20.000 hrs.)
Vehicle	D	16,500 m	20,100 m	29,400 m
	R	7,100 m	8,800 m	19,000 m
	I	4,900 m	6,000 m	13,300 m
Human	D	8,800 m	11,000 m	21,600 m
	R	1,900 m	2,400 m	5,400 m
	I	1,200 m	1,400 m	3,300 m

		CTZ-700	CTZ-900	CTZ-960
Pixel pitch		15μ	15μ	12μ
Sensor size		640 x 512	640 x 512	1280 x 720
Camera type		Cooled MWIR continuous zoom	Cooled MWIR continuous zoom	Cooled MWIR continuous zoom
F/Number		F# 5.5	F# 4.0	F# 4.0
Lens		48-700 mm (11.1° - 1.0°)	45-900 mm (12.2° - 0.6°)	80-960 mm (11.0° x 6.2° - 0.9° x 0.5°)
Cooling		10.000 hrs. (optional: 20.000 hrs.)	10.000 hrs. (optional: 20.000 hrs.)	50.000 hrs.
Vehicle	D	28,200 m	31,200 m	50,000 m
	R	17,300m	22,700 m	21,000 m
	I	12,100 m	16,800 m	16,000 m
Human	D	20,000 m	24,200 m	31,000 m
	R	4,400 m	7,000 m	9,000 m
	I	3,000 m	4,300 m	6,000 m

		CTZ-1200	CTZ-1500
Pixel pitch		15μ	15μ
Sensor size		640 x 512	1280 x 1024
Camera type		Cooled MWIR continuous zoom	Cooled MWIR continuous zoom
F/Number		F# 4.0	F# 4.0,
Lens		200-1200 mm	100-1500 mm
Cooling		10.000 hrs. (optional: 20.000 hrs.)	10.000 hrs. (optional: 20.000 hrs.)
Vehicle	D	*will folow shortly*	*will folow shortly*
	R	*will folow shortly*	*will folow shortly*
	I	*will folow shortly*	*will folow shortly*
Human	D	*will folow shortly*	*will folow shortly*
	R	*will folow shortly*	*will folow shortly*
	I	*will folow shortly*	*will folow shortly*

THERMAL CAMERA EXAMPLE

WIDE
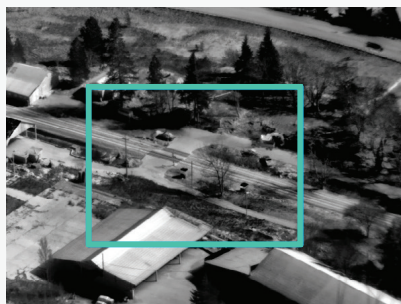
NARROW

OVERVIEW DRI RANGES

HSVC-SZ
D: 30,0 km
I: 17,0 km

VC-SZ
D: 14,0 km
I: 9,0 km

CTZ-275
D: 16,5 km
I: 4,9 km

CTZ-300
D: 20,1 km
I: 6,0 km

CTZ-690
D: 29,4 km
I: 13,4 km

CTZ-700
D: 28,2 km
I: 12,1 km

CTZ-900
D: 31,2 km
I: 16,8 km

CTZ-960
D: 50 km
I: 16 km

HSVC-MZ
D: 9,9 km
I: 5,5 km

VC-MZ
D: 7,0 km
I: 2,3 km

CTZ-1200
D: 65 km
I: 35 km

CTZ-1500
D: 80 km
I: 40 km

UTZ-300LR
D: 18,9 km
I: 7,8 km

UTZ-225LR
D: 16,4 km
I: 5,9 km

UTZ-75LR
D: 7,5 km
I: 2,1 km

UTZ-150LR
D: 14,2 km
I: 4,2 km

Visual Cameras (VC / HSVC):
MZ: Medium Zoom Lens, 33x zoom
SZ: Super Zoom Lens, 66x zoom

Uncooled Thermal Cameras (UTZ)

Cooled Thermal Cameras (CTZ)

CTZ with Detection > 50 km

D : Detection of a vehicle RIB Size
I : Identification of a vehicle RIB Size.

Vehicle 2.3 m², Detection at 2 px, Identification at 13 px.
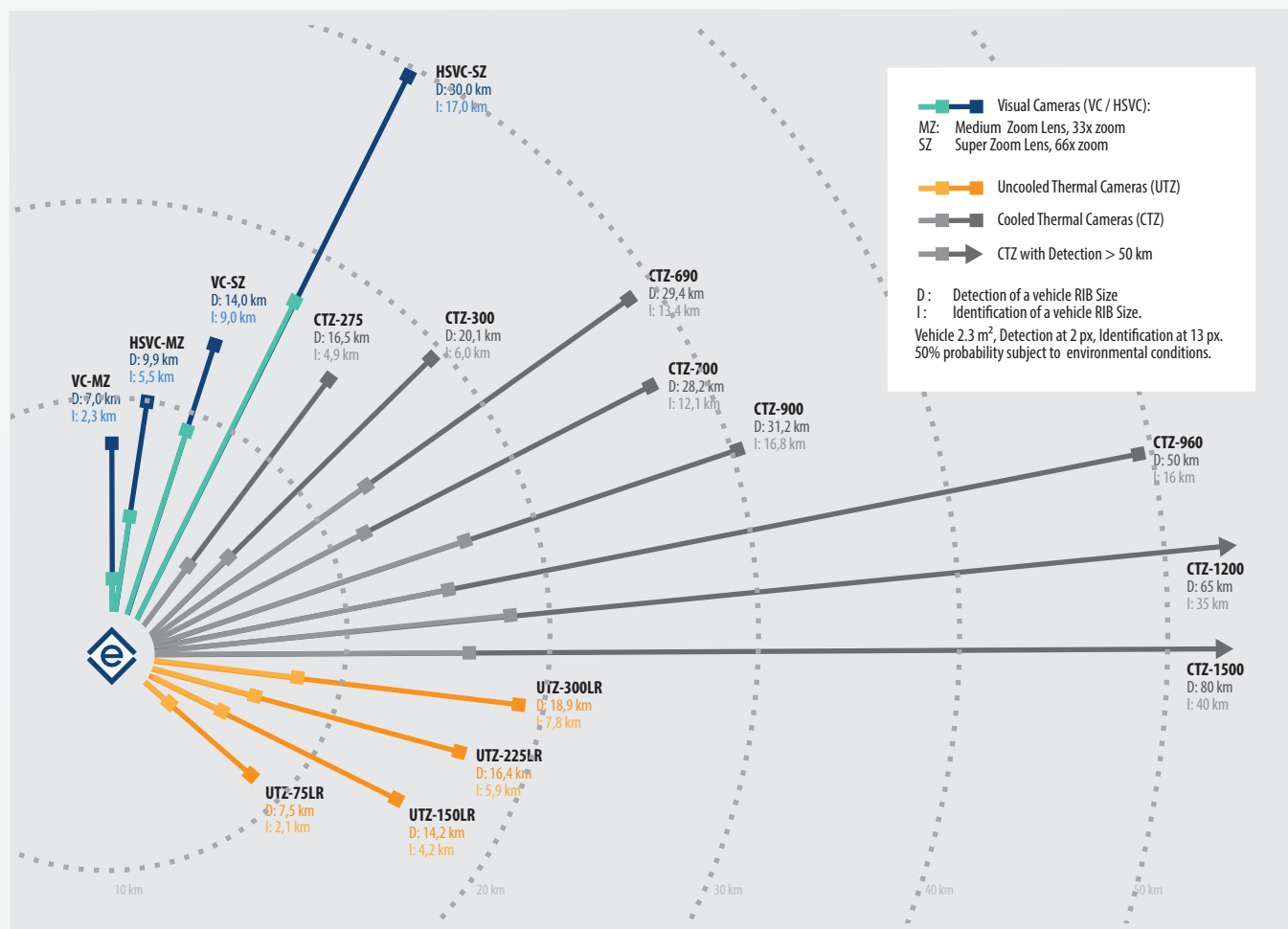50% probability subject to environmental conditions.

10 km   20 km   30 km   40 km   50 km

EVVE LONG RANGE B.V.

⊙ Vlierberg 06-A
   3755 BS Eemnes
   The Netherlands

📱 +31 (0) 85 044 18 55 (NL)

✉ info@evvelongrange.com

🌐 www.evvelongrange.com