



TECHNICAL SPECIFICATIONS

Evve Long Range - ELR

KVG – Mobile camera systems for border control (Moldolva)

EVVE LONG RANGE (ELR)

ELR camera configuration:

- > MONGOOSE-ER95-CTZ300CI-LRF10 (5 nos.)
- > VSD management software
- > Lifting system
- > In-vehicle pc & screen

1 GENERAL SPECIFICATIONS

The MONGOOSE-ER95-CTZ300CI-LRF10 is IP67 certified. This means the camera systems can operate in marine and desert environments. The systems are compatible with all IP communication protocols, including Onvif Profile T protocol.

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

The camera housings are made from carbon fibre and 6000-series aluminium, making it both robust and lightweight. Carbon fibre is highly resistant to salt and seawater, as it does not corrode through chemical reaction in harsh maritime environments.

All ELR cameras are DEKRA-certified for IP67. The test rapport is available on request.



SPECIFICATIONS OF THE SYSTEMS	
IP Rating (Dust & Water Ingress)	IP67
Operating Temperature Range	-40° C to +85°C
Active Internal Temperature Control (AICT)	Yes
Sealed	Yes
Connectors	Amphenol
Weight	< 11 kg
Input Voltage	12VDC - 48 VDC
Output	Data
Power Consumption	< 25 W

INCLUDED COMPONENTS		
2.2	PT-Unit Mongoose (Mongoose)	√
2.3	Sony FCB-ER9500 visual camera (ER95)	√
2.4	Cooled thermal camera (CTZ300CI)	√
2.5	Laser range finder (LRF10)	√
2.6	GPS Module (GPS)	√
2.7	Gyro Stabilization (G)	√
2.8	VDS Software	√
2.9	Lifting system	√
2.10	In-vehicle pc and screen	√
2.11	Vehicle	√

1.2 PT-UNIT MONGOOSE

The Mongoose PT-unit has a very precise actuator. It allows for pointing recall at 0.00167°, which is an exceptional level of accuracy. The Mongoose has 360° continuous rotation for the pan and 180° for the tilt.



Image 1 / ELR PT-Unit (in this example with long range camera, dual head)

SPECIFICATIONS PAN & TILT UNIT MONGOOSE	
Pan Angle	Continuous 360°
Pan Speed	0.00167° to 360°/sec.
Tilt Angle	180° (+/-90°)
Tilt Speed	0.0167° to 10°/sec.
Backlash	Zero backlash
Accuracy	Optical controlled

PAN-TILT DEVICE REQUIREMENTS		ELR
General	Must provide very precise orientation of attached surveillance / measurement sensors, reliable continuous management, and exact alignment of sensor axes	√
Azimuth speed range	Maximum 90°/sec; minimum 0.002°/sec	√ Max 360°/sec; min 0.00167°/sec
Azimuth motion	n x 360° continuous	√
Elevation speed range	Maximum 90°/sec; minimum 0.002°/sec	√
Position accuracy	0.001°	√ 0.00167°
Payload	15 kg	√
Power supply	24 VDC nominal, 20–30 VDC	√
Management	Up to 3 sensors	√
Operating temperature	At least -40°C to +70°C	√ -40 to 71°C
Storage temperature	At least -40°C to +70°C	√ -40 to 80°C
IP rating	IP65	√ IP67

1.3 SONY FCB-ER9500 VISUAL CAMERA (ER95)

The Sony FCB-ER9500 is Sony's first 4K/60 block camera, delivering stunning detail at 60fps. Powered by STARVIS 2, it ensures exceptional image quality from low light to bright scene, with wide to telephoto versatility and industry-leading WDR.

4K/60p allows for the capture of 60 frames per second, ensuring smooth footage even in fast-moving scenes. This allows for the clear capture of fine details and subtle movements. Because it captures in such fine detail, 4K/60p is useful for tasks that require inspection or detailed observation.

FEATURES:

- 4K 1/1.8-type high sensitivity image sensor
- Improved clarity and detail in low light conditions
- Smooth, high-definition image with 4K 60p output
- Reliable inner-zoom system with 4k 25x zoom lens
- Super image stabilizer
- ICR on color

TECHNICAL SPECIFICATIONS SONY ER95	
Resolution	Maximum resolution is 4K
Detector	1/1.8" high-sensitivity image sensor
SYSTEM INTERFACE	
Video Output	PAL
Communications	ELR PCB Board
POWER	
Input Power	24 VDC
Power Consumption	5 W typical @ 25°C
ENVIRONMENTAL	
Operating Temp	-40 to 71°C
Storage Temp	-40 to 80°C
Cooling	Internal cooler



Image 2 / Sony FCB-ER9500 visual camera

VISUAL CAMERA REQUIREMENTS		ELR
Type sensor	High-resolution color day/night camera suitable for outdoor integration without additional housing sealing.	√
Performance note	Detection and recognition distances must correspond to the distances of the thermal camera.	√
Resolution	Minimum 3,840 x 2,160 px	√ 3,840 x 2,160 px = 8.3 megapixels
Focus	Auto / manual	√
Optical zoom	Minimum 25x continuous	√ 25x Optical Zoom Lens f = 6.5 mm to 162.5 mm, F1.6 to 4.8
Horizontal FOV range	Minimum 58° to maximum 2.3°	√ Approx. 59.0° to approx. 2.3°
Video output	Ethernet, 2560 x 1440 @ 60 fps, H.264 / H.265 / MJPEG	√
Operating temperature	At least -25°C to +55°C	√
Storage temperature	At least -25°C to +55°C	√
Vehicle recognition range	Minimum 7,000 m	√
Operating temperature	-25°C to +55°C	√
Storage temperature	-25°C to +55°C	√
IP rating	IP67	√

1.4 COOLED THERMAL CAMERA (CTZ300CI)

The CTZ is the system of choice for all-weather security and surveillance. With advanced target detection and recognition capabilities, the CTZ combines high-end performance with reliability and ease of use.

The camera is designed for medium-range detection with a continuous zoom lens. The zoom lens provides a 32° horizontal field of view (HFOV) at wide angle and a 1.83° HFOV at narrow angle. In good conditions, the CTZ300CI can reliably detect humans at 10.5 km.

The cooled 640 x 512, 10µm MWIR detector is optimized for spectral response in the mid-wave infrared spectrum, commonly considered the best technology for imaging in marine and high humidity environments. The CTZ delivers in all conditions with its dry nitrogen backfilled enclosure that is rated IP67. The camera system produces analog or digital video and is controlled remotely via serial commands.

FEATURES OF THE CTZ300CI:

- Continuous Optical Zoom
- 32.0° - 1.83° Horizontal Field of View
- F/4.0 High Sensitivity Zoom Lens
- Auto Focus
- Cooled 3-5 µm Detector
- Long-life Cooler (10,000 hours)
- Environmentally sealed IP67 Housing
- Image Processing/ Edge Enhancement



Image 3 / Cooled thermal camera

TECHNICAL SPECIFICATIONS COOLED THERMAL CAMERA CTZ300CI	
Sensor	Cooled MWIR Thermal Imager
Detector	640 x 512, 10 µm pixels
Horizontal Field of View	Wide – 32.0°, Narrow – 1.83°
Spectral Range	3 – 5 µm
Pixel Size	10 µm
Digital zoom	4 x
Continuous Optical Zoom	18 x
F#	4.0
Video Output	Analog: PAL or NTSC, Digital: H.264 over IP (optional)
IP	IP67, dry nitrogen backfilled
Tests	Vibration test: IEC 60068-2-64, Shock test: IEC 60068-2-27 Icing test: NEMA 250, Salt fog test: IEC 60068-2-52

DRI-RANGES OF THE CTZ300CI:

TARGET	DETECTION	RECOGNITION
HUMAN:	10,500 m	5,300 m
VEHICLE:	25,000 m	13.000 m

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

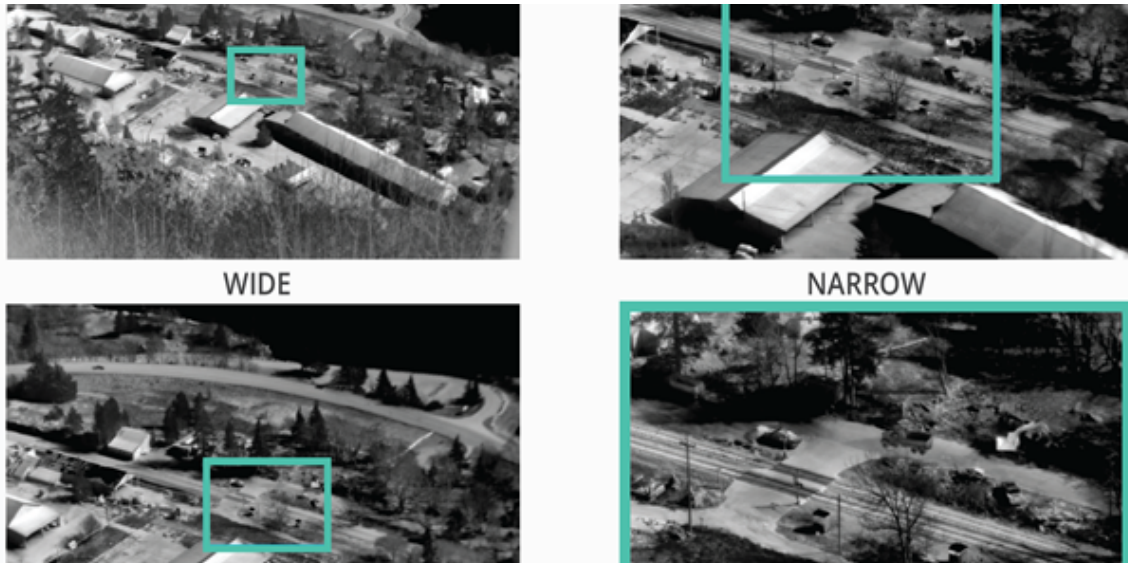


Image 4 / Thermal Camera Image

THERMAL CAMERA REQUIREMENTS		ELR
Type sensor	Long-range cooled thermal camera suitable for integration into surveillance systems; 24/7 operation in total darkness and difficult weather.	√
Resolution	640 x 512 px	√
Spectral response	3-5 μm	√
Brightness / contrast	Automatic image processing and enhancement	√
Image polarity	User-selectable white hot / black hot	√
Emission standard	Minimum EURO 6 or equivalent, acceptable for registration at delivery.	√
IFOV 25-225	0.489-0.033 mRad	0.898-0.050 mRad
NUC	Automatic / manual	√
Optical zoom	14x	√ 18x
Continuous FOV	28°-1.9°	√ 32°-1.83°
Digital zoom	x4	√
Power consumption	≤ 50 W	√
Voltage	24 VDC (18-32 VDC)	√
Human detection range	Minimum 9,000 m.	√ 10,500 m

Human recognition range	Minimum 2,000 m.	√ 5,300 m
Vehicle detection range	Minimum 16,000 m	√ 25,000
Vehicle recognition range	Minimum 7,000 m	√ 13,000
Operating temperature	-25°C to +55°C	√
Storage temperature	-25°C to +55°C	√
Weight	< 11 kg	√
IP rating	IP67	√

1.5 LASER RANGE FINDER (LRF10)

The proposed electro-optical system are equipped with a LRF10 diode laser rangefinder module capable of precise distance measurement to targets at range of up to 10 km, subject to target and environmental conditions.

The module operates at an eye-safe wavelength of 1.5 μm and provides a covert ranging capability, as the emitted wavelength is invisible to the human eye and not detectable by residual light amplification devices.

Owing to its compact dimensions, low weight, low power consumption, and robust design, the module is particularly suitable for integration into mobile, portable, and hand-held tactical observation systems.

Image 5 / Laser Range Finder

The laser range finder shall support continuous measurement up to 25 Hz, high shock resistance, wide temperature operation, and standardized interfacing across the product family, thereby ensuring operational effectiveness, integration flexibility, and reduced lifecycle cost.



LASER RANGEFINDER REQUIREMENTS		ELR
Laser safety class	Class 1	✓
Measurement distance	Minimum 10,000 m	✓
Accuracy	±1 m	✓
Operating temperature	At least -25°C to +55°C	✓
IP rating	IP67	✓
Not asked	Multi beam and multi targets	✓ Yes, up to 10 targets

1.6 GPS MODULE (GPS)

The proposed system incorporates an integrated GPS module for continuous geo-referenced positioning for the camera unit within the operational environment. In combination with live pan-tilt telemetry, the system shall visualize the real-time pointing direction of each sensor on the operational map interface, including azimuth-based orientation and active observation sector.

This capability enables operators to identify immediately both the exact location of the sensor and the area under surveillance, thereby improving situational awareness, sensor coordination, target verification, and force protection. The GPS-referenced sensor layer will further support interoperability with external tactical inputs such as radar tracks, alarm zones, unmanned detections, and command-and-control systems, contributing to a coherent common operational picture.

1.7 GYRO STABILIZATION (G)

Our systems are equipped as standard with a gyro stabilization system. A state-of-the-art FOG (fiber-optic gyroscope) or MEMS (micro-electro-mechanical systems) gyroscope is mounted to the camera base to detect movement. When motion is sensed, the gyroscope commands the pan/tilt unit to compensate by applying an equal and opposite rotation. This keeps the image on target, even during substantial movement, within the rotational limits of the pan/tilt unit. Overall performance depends on gyroscope accuracy, system latency, and the speed and precision of the pan/tilt motors.

1.8 VDS SOFTWARE

VSD is Cambridge Pixel's highly cost-effective, customisable operator display software, which can be purposed for both military/defence command & control (C2) and security-based critical infrastructure protection applications. VSD interfaces to a wide range of supported cameras, video tracking systems, AI modules, ground-based radars and other C2 sensors and effectors.

VSD runs on standard Windows-based PC workstations, laptops or servers and can be deployed in both hierarchical C2 or edge network structures for both ground fixed and ground mobile applications. Deployed systems are easy-to-learn

and have a low overall training burden. The inherent flexibility of VSD allows new capabilities to be quickly integrated into a new bespoke solution.

VSD can be tailored to visualise both 2D and 3D sensor feeds and supports live camera video windows, fused PPI radar windows and both panoramic and 3D display windows. The position and size of all controls and windows can be customised and support is included for real-time overlaid symbology and background maps or charts. Support for multi-screen operator displays is also included.

In addition to locally networked sensor/effector control stations, wide area C2 is supported through the concept of tiered regional and/or central command centres. When deployed at these higher levels of hierarchy, VSD supports automatic discovery of subordinate control stations on the C2 network. Where required, VSD can also support both local and remote control of the sensors and effectors.

The proposed system shall support operator control via a USB joystick interface in order to provide direct, intuitive, and responsive manual control of the camera system. The joystick shall enable real-time operation of essential functions including pan, tilt, zoom, focus, and other assigned payload commands, depending on system configuration.

Further details of the video management software can be discussed following approval of this proposal.

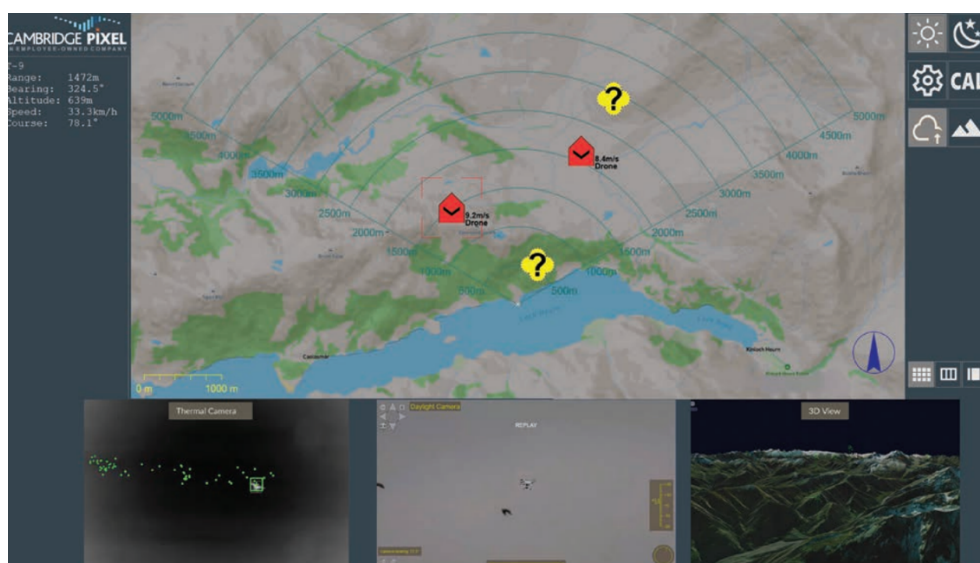


Image 6 | Screenshot VDS software

1.9 LIFTING SYSTEM

Our innovative system is the ultimate solution for secure, advanced observation. Equipped with a GPS module on the car roof, tracking remains operational at all times. The cameras lift seamlessly from within the vehicle, while the roof automatically slides open. Once the cameras are elevated, the roof fully closes again, maintaining an IP67 waterproof seal. This ensures continuous functionality and maximum protection under all conditions. By allowing the enclosure—where the camera is mounted—to be opened from the inside, it becomes possible to remove the camera from the enclosure and place it on a tripod. This flexibility allows users to deploy the camera both integrated into the vehicle or externally for enhanced, adaptable surveillance capabilities. Inside the vehicle, a control unit is installed with a 50-meter cable that can be deployed and connected to the camera. This allows the camera to be operated from inside the vehicle at a distance of up to 50 meters, ensuring safe and flexible remote operation for various surveillance scenarios. The cable is easily managed via a control system that allows it to be smoothly rolled in and out, making deployment and retraction both quick and efficient.

On the tripod, a dedicated connector is installed that allows the cable from the car to be securely attached, ensuring safe and stable operation when using the camera externally.

1.10 IN-VEHICLE PC & SCREEN

For our mobile solutions, we present the Evve Longrange Fanless Car PC: a robust and durable system designed for demanding applications. Housed in an IK BEN STIL Mini-ITX fanless case, it features an ASUS Q670EI industrial motherboard, paired with a powerful Intel Core i5 14500 with 14 cores.

With fast DDR5 memory modules and lightning-fast Samsung Gen5 NVMe SSDs, it delivers top performance. The industrial DC-DC power supply ensures broad compatibility in various vehicles, while the IP65 mounting guarantees durability. Including three years of warranty and remote assistance, this car PC delivers reliable, low-maintenance technology for any mission.



Image 7 | In-vehicle Fanless pc

1.11 VEHICLE

We offer the Ford Ranger MY2026.50XLT Double Cab 3.0 EcoBlue 176 kW/ 240 pk automatic.



Image 8 | Ford Ranger MY2026.50XLT (our proposal includes this type with hardtop)

VEHICLE / CHASSIS REQUIREMENTS		ELR
Vehicle type	4x4 vehicle, category N1, pick-up with double cabine	√
Condition/age	All elements including the vehicle must be new, unused, and not previously used for testing or demonstration. Vehicles must be manufactured no more than 12 months before the bid submission deadline.	√
Active Internal Temperature Control (AICT)	Yes	√
Payload	Minimum 1,000 kg payload according to the manufacturer's data.	√
Engine	Diesel or gasoline; minimum 170 HP; minimum 1,995 cc.	√
Emission standard	Minimum EURO 6 or equivalent, acceptable for registration at delivery.	√
Transmission	4WD with front and rear axle operating simultaneously; at least one differential lock or equivalent; manual gearbox with at least 6 gears plus reverse, or automatic. Continuously variable automatic transmission is not allowed	√
Steering / chassis	Left-hand drive; power steering; adjustable steering wheel height; traction control (ASR/TCS or equivalent); stability control (ESP or equivalent);	√

	minimum ground clearance 200 mm without additional lift systems.	
Tyres / wheels	Tubeless all-terrain tyres or equivalent on steel rims; full-size spare wheel of the same type on steel rim.	√
Braking	Front disc brakes and rear disc/drum brakes with ABS, brake force distribution and/or brake assist, or equivalent.	√
Body	Pick-up with double cab and rigid glazed rear compartment/canopy for system equipment; rigid upper and side surfaces; rigid rear closure. Outer top surface of the rear compartment may not exceed the cab roof height by more than 500 mm.	√
Doors	4 passenger-compartment doors and 1 or 2 baggage-compartment doors.	√
Protection	Body, baggage compartment and vehicle assemblies must be protected against corrosion and water ingress.	√
Color	Green or equivalent dark color available in the manufacturer's range.	√
Seats	Front seats configuration 1+1; height-adjustable; adjustable distance to the operator console; adjustable while seated; durable wear-resistant material.	√
Cab equipment	Vehicle floor mats from the manufacturer, plus 2 rubber tray-type mats; air conditioning; cabin heating; color touch screen of at least 8" for rear camera image; radio with RDS, USB and integrated audio; central locking and immobilizer; front power windows; electrically controlled mirrors; front and rear fog lights; daytime running lights.	√
Safety equipment	3-point seat belts for all seats; at least 2 SRS airbags including front driver and passenger airbags, plus side airbags and/or curtain airbags according to vehicle configuration or equivalent; emergency tool kit supplied by the manufacturer; road kit including warning triangle, first aid kit, fire extinguisher and reflective vest; vehicle delivered serviced, filled with required fluids and with a full fuel tank.	√
Vehicle documents	All supporting documents required for vehicle registration / re-registration	√

	under national legislation must be provided.	
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POWER SUPPLY SYSTEMS REQUIREMENTS		ELR
Protection	Must be resistant to short circuits, reverse polarity, power drop to 0 V, overload, overheating, and deep discharge of internal batteries.	√
Alarm	Audible alarm at least 30 minutes before reaching the maximum permissible discharge level of the internal batteries.	√
Displayed information	Selected power source; present state of power sources including voltage, charging/discharging current, power consumption, estimated internal battery capacity, and estimated operating time on internal batteries.	√
Internal batteries	Maintenance-free gel technology; independent from the vehicle battery; internal capacity at least 25% greater than the maximum connected load during at least 10 hours of continuous observation at 20°C.	√
Vehicle generator	User-selectable white hot / black hot	√
Emission standard	Must be usable as a power source for the internal battery charger.	√
External source	230 V / 50 Hz external power source capability.	√
Charging time	Full charging time of depleted batteries must not exceed 12 hours.	√
Charger	Must allow direct charging from the national grid (230 V AC, 50 Hz).	√
Charging cable	Minimum 10 m, rubber-insulated, suitable for outdoor use, 3-wire; reliable grounding of the mobile system must be ensured during charging.°	√
Vendor disclosure	Bidder must indicate the specific parameters and number of batteries, as well as the total power consumption of the supplied equipment, according to its technical solution.	√

SPECIFICATIONS ELECTRO-OPTICAL PACKAGE AND LIFTING MECHANISM		ELR
Transport / deployment	All equipment must be stored inside the vehicle in transport mode. Changeover from transport mode to roof-mounted operating mode must be automatic from the operator's seat.	√
Operational robustness	All equipment must be protected against vibration and impacts while the vehicle is moving.	√
Orientation indication	Current horizontal orientation of the equipment must be indicated at the operator station.	√
Operation while moving	Surveillance equipment must remain functional at vehicle speed up to 60 km/h, with automatic image stabilization.	√
Independent operation	The optical sensor unit must also be deployable on a tripod and operable independently from the main vehicle / command platform via a cable up to 50 m long.	√
Lifting mechanism	Must raise the tilt device and mounted equipment above the vehicle roof into operating position; raise/lower while vehicle is moving up to 60 km/h; controlled from operator station; automatic stop at upper and lower positions; manual emergency retraction to transport position; mounted in the technical compartment; must provide enough payload for EO equipment with at least 20% spare reserve of max capacity; must provide stable optical platform while driving up to 60 km/h	√
Weather protection statement	The bidder must describe the technical solution that protects installed equipment against adverse weather when the lifting mechanism is in the raised working position.	√



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