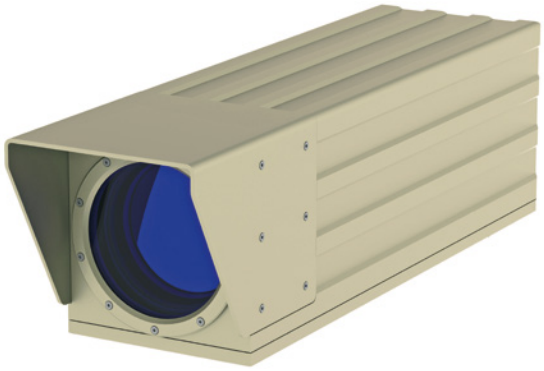
Visix LR-750

LRS long-range surveillance

Built for Border Control and Homeland Security

Features

- High-sensitivity colour CCD camera
- Zoom lens 30mm to 750mm (25×)
- Excellent Detection, Recognition & ID range
- Precise bore sighting through zoom range
- Day/night mode with moveable IR-cut filter
- Graphical overlays
- Configuration by serial interface



VISIX LR-750 is an integrated unit, based on a highly sensitive colour CCD camera and a powerful zoom lens, ideal for day/night coastal surveillance, border control, camp perimeter protection, protection of sensitive infrastructures and similar applications. The VISIX LR-750 is designed to deliver high-performance images, even under the harshest conditions, in temperatures ranging from -40°C to +70°C.

Optical system

The optical system was developed specifically for use in long-range surveillance. The lens is military grade quality offering outstanding clarity and sensitivity to light. It features continuous zoom, with a powerful zoom ratio of 30mm to 750mm, plus auto-iris and focus adjustment from 2.5 m to infinity.

The “Auto-Focus on Demand” allows the camera to control the focus at the push of a button.

The lens design incorporates oil-free, low-friction surfaces with special coatings, high-speed motors with zero back-lash and high-precision feedback potentiometers. This camera is designed to meet the highest standards for precision and accuracy, with minimal failure rates. All lens elements are surface coated for high response throughout the visible spectrum.

Bore sighted

The VISIX LR-750 has factory pre-aligned bore sighting, aligned in parallel with the optical reference axis of the system. This makes for easy on-site installation. Typical bore sighting deviation is ±0.2 milliradians, the equivalent to staying within a target area of ±20 cm, at a distance of 1 km. The bore- sighting specification also applies to the whole zoom range - going from wide FOV to narrow FOW, within the operating temperature range.

External video input

In order to reduce the number of channels required for slip- ring transmission, the system can support input from an external camera, such as a thermal imaging camera. Switching between the daytime VISIX camera and an external thermal camera can be manual or automatic.

Graphic overlays

The system has a built-in graphic overlay generator that allows arbitrary graphic overlays to be inserted into the image output. Typical overlays are text strings, showing azimuth, elevation, GPS data, or status of weapon systems and symbols, such as hair crosses or other reticles. Programming the graphic overlay engine is done via the RS-422 (or optional CAN-BUS) interface. Graphic overlays can be customised to suit specific user requirements.

Below is a typical example of graphic overlay:

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Expanded Hi-Dynamic Range (XDR)

XDR is useful in conditions where there are large variations in brightness of the picture with very dark and very bright areas. XDR amplifies the signal level in dark areas and reduces the signal in very bright areas, thereby improving the visibility of the picture.

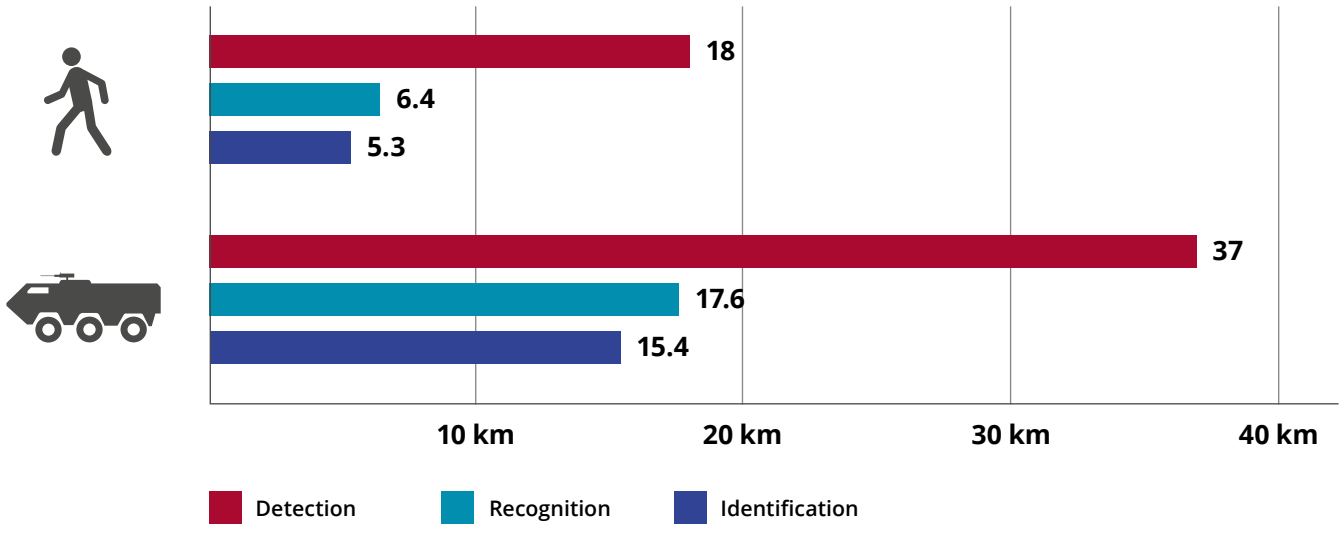
Fog penetration

The fog penetration function is designed to automatically increase visibility under conditions such as fog, haze and fire smoke. The camera continuously analyses the picture and once it detects a low-contrast condition, it will automatically enhance the contrast.

Digital Noise Reduction (DNR)

The Digital Noise Reduction in the VISIX LR-750 camera system is a function that analyses the video image and reduces the noise, particularly in low-light conditions. The analysis is based on a 2- and 3-dimensional algorithm.

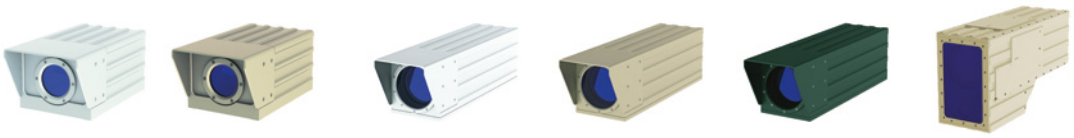
Visual Range Performance



Conditions for SSIP CAM program: Contrast 30%, Over cast daylight, Sky ratio 3, Visibility 80km, 50% probability, NFOV 0,4° (H), Dimensions Man: 0.45m × 1.7m. Vehicle dimensions NATO target 2.3m × 2.3m

Visix LRC Family

Comparison of key parameters for Visix family of medium-range and long-range zoom camera systems



Parameter	LR-165	LR-200	LR-375	LR-750	LR-1000 LR-1000-HD	LR-1000-DUO LR / SR
Resolution	976 × 582 px	976 × 582 px	976 × 582 px	976 × 582 px	976 × 582 px 1296 × 736 px	976 × 582 px
Video output	Composite video	Composite video	Composite video	Composite CVBS, 1 Vpp, 75 ohm	Composite video HD-SDI	Composite CVBS, 1 Vpp, 75 ohm
Optical zoom range	5.5-165 mm (30×)	11-200 mm (18×)	15-375 mm (25×)	30-750 mm (25×)	30-1000 mm (33×)	30-1000 mm (33×) 14 mm
HFOV range	47° to 1.7°	32° to 1.9°	17° to 0.7°	9° to 0.4°	9° to 0.3°	*
Detection distance (human)	4000 m	4800 m	9000 m	17000 m	18000 m	*
Recognition distance (human)	1000 m	1300 m	3500 m	6300 m	6500 m	*
Dimensions – mm (W×H×L) excl connectors	120 × 123 × 341	120 × 123 × 341	148 × 156 × 530.5	148 × 156 × 530.5	148 × 156 × 530.5	157 × 236 × 436.5
Graphical overlays	Yes	Yes	Yes	Yes	Yes	Yes

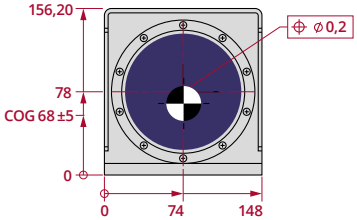
* see product datasheet for detailed features and specifications

Common features:

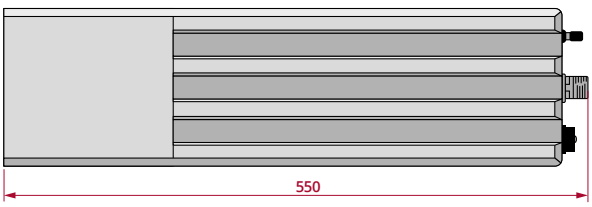
- All cameras are available in white, beige, green and black
- -40°C to+70°C operating temperature range
- True Day.Night Mode (switchable color/mono + Near-IR)
- High speed motorized zoom with Autofocus-On-Demand
- Hermetically sealed protective housing
- Highly accurate bore sight retention (line of sight stability)

Mechanical outline and dimensions

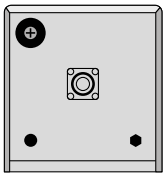
Front view



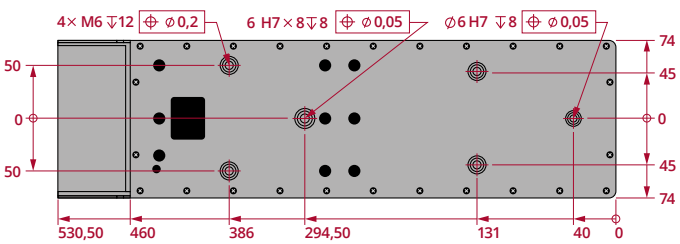
Top view



Rear view



Bottom view



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Technical Specifications

	PAL	NTSC
Visix LR-750 LRS long-range surveillance		
Sensor	High sensitivity 1/3" CCD sensor with complementary mosaic	
Effective pixels (H × V)	976 × 582	976 × 494
Aspect ratio	4:3	
Video output	Composite CVBS and YC, 1 Vpp, 75 ohm	
Video resolution, CVBS	≥ 540 TVL (15% video modulation, with lens in WFOV)	
Sensitivity	0,030 Lux, 25% video, F4.6, WFOV, No IR-cut filter	
Spectral response	Visible + Near-IR (Switchable)	
Signal to Noise ratio	> 52 dB, AGC off	
Scanning system	2:1 Interlace	
Horizontal frequency	15.625 kHz	15.734 kHz
Vertical frequency	50 Hz	59.94 Hz
Focal lengh	30 – 750 mm zoom (25×)	
Field of view	Wide: Horizontal 9°, Vertical 6,64° / Narrow: Horizontal 0.4°, Vertical 0.28°	
Focus range	2.5 m to ∞	
Iris range	f/4.6 to 1400 (including spot filter) at WFOV	
Zoom control, travel time	≤ 5 seconds (25°C, both ways, wide to narrow FOV)	
Focus control, travel time	≤ 12 seconds (25°C, both ways, 2.5 m to ∞)	
Functions		
Electronic shutter, fixed	1/50 to 1/40,000 seconds	1/60 to 1/40,000 seconds
Gamma correction	0.45 / 1.0	
Automatic Gain Control. range	Max 36 DB Analog + 6 DB DGC	
Continuous Digital Zoom	× 2	
White Balance	Automatic, Tracking	
True day/night mode	Movable IR-cut filter for true colour (day) and monochrome + NIR (night) rendering	
Lens Iris control	Automatic	
Integration mode	Up to 64 fields exposure time, for low light level imaging	
Noise reduction	2D and 3D Digital Noise Reduction 3 Levels	
Fog penetration	Image contrast enhancement 3 Levels	
Auto focus	On demand, Zoom-triggered	
Extern video input	CVBS	
Video overlays	On screen text and reticles (customizable)	
Configuration, serial interface	RS-422 interface(galvanic separation), VISCA/CST protocol (optional CAN-BUS with CST protocol)	
Mechanical		
Overall dimensions (W × H × L)	148 × 156.2 × 530.5 mm (not including connectors & mounting studs)	
Net weight	11,6 kg	
Housing material	Aluminium with corrosion protection coating	
Protective housing integrity	IP 65 (or higher)	
Connector (power, data, control)	22-pin circular – In accordance with MIL38999	
Bore-sighting retention	±0.2 milliradians (at the horizontal NFOV)	
Environmental		
Operating voltage	15 to 36 VDC (power supply ground isolated from camera housing)	
Power consumption	< 15 W	
Operating temperature	-40°C to +70°C	
Storage temperature	-40°C to +70°C	
Vibration	Wheeled vehicle MIL-STD 810G, method 514.6	
Shock	Transportation: 3 shocks in each direction, 25G @ 6ms	
Operating voltage	15 to 36 VDC (power supply ground isolated from camera housing)	

**Specifications are subject to change.*

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