# Jaguar - 121000/336
## Long-Range Camera System with HR-video

The **Jaguar - 121000/336** is an integrated unit, based on a highly sensitive HR-video colour CCD camera module and a powerful zoom lens, ideal for day/night surveillance for camp perimeter protection, homeland security, critical infrastructure protection (CIP) applications.

It 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. It features continuous zoom, with powerful zoom ratio of 30 to 1000 mm, auto-iris and focus adjustment from 3 m to infinity.

The "Auto-Focus on Demand" lets the camera control the focus by 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 design was chosen with the objective of meeting the highest standards for precision and accuracy and low failure rates. All lens elements are surface coated for high response throughout the visible spectrum.

### Stay on target with precise boresight retention

The factory pre-aligned boresight, is aligned in parallel with the optical reference axis of the system. This makes for easy on-site installation.

Typical boresight retention is ±0.2 milliradians, the equivalent to staying within a target area of 0.2 m, at a distance of 1 km in NFOV.

### Digital Noise Reduction (DNR)

The Digital Noise Reduction in the Spectrel 121000/336 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.

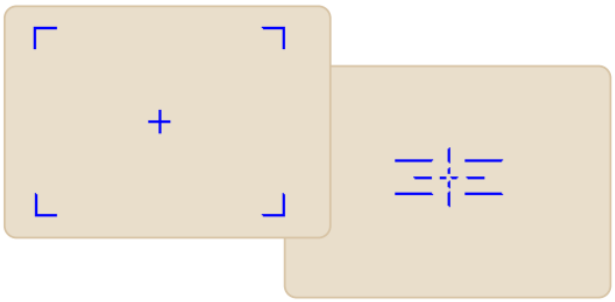
### Continuous digital zoom

The Jaguar - 121000/336 provides continuous digital zoom with 2x range, selectable from the serial interface.

### 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 customized to suit specific user requirements.

Below are typical examples of graphic overlays.



### Reduction of heat haze disturbance

With the Heat haze function turned on, you get a more stable and clear image since the function reduces the disturbance of heat waves that blurs the image.

### External video input

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

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### Expanded Hi-Dynamic Range (XDR)

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

## DRI calculation

Conditions for SSIP CAM program: Visual band 400-1000nm, Contrast=30 %, Over cast daylight, Sky ratio=3, Visibility 80km, 50 % probability

| NFOV 0.3° (H) | Man target (0,45 x 1,7 m) | Vehicle target (2,3 x 2,3 m) |
|---|---|---|
| Detection | 19 km | 37.9 km |
| Recognition | 7.5 km | 18.6 km |
| Identification | 6.3 km | 16.3 km |

## Main features

- Zoom lens 30 to 1000 mm (33x)
- High-sensitivity HR-video CCD camera
- Configuration by serial interface
- Adaptive fog penetration mode
- Excellent Detection, Recognition and ID range
- Graphical overlays
- Precise boresight retention

| | PAL | NTSC |
|---|---|---|
| **Camera system** | | |
| Sensor | High-sensitivity colour 1/3" CCD sensor with complementary mosaic | |
| Effective pixels (H x V) | 976 x 582 | 976 x 494 |
| Aspect ratio | 4:3 | |
| Video output | Composite CVBS and YC, 1 Vpp, 75 ohm | |
| System video resolution | ≥ 540 TVL (15% video modulation, with lens in WFOV) | |
| Sensitivity | 0.030 Lux, 25% video, F4.5 | |
| Spectral response | 400-700nm with IR-cut filter on (day mode)<br>400-950nm with IR-Cut filter off (night mode) | |
| Signal to Noise ratio | > 52 dB, AGC off | |
| Focal length | 30 – 1000 mm zoom (33x) | |
| Horizontal field of view | Wide: 9° /Narrow: 0.3° | |
| Focus range | 3 m to ∞ | |
| Iris range | f/4.5 to 22 @ WFOV | |
| Relative aperture | f/4.5 to 9.5 (breakpoint at f=150 mm. Linear between breakpoints) | |
| Zoom control, travel time | ≤ 8 sec. (25°C, both ways, Wide to Narrow FOV) | |
| Focus control, travel time | ≤ 10 sec. (25°C, both ways, 2.5 m to ∞) | |

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| **Functions** | | |
| Electronic shutter, fixed | 1/50 to 1/40,000 sec | 1/60 to 1/40,000 sec |
| Gamma correction | 0.45 / 1.0 | |
| Automatic Gain Control. Range | Max 36 DB Analog + 6 DB DGC | |
| Continuous Digital Zoom | x 2 | |
| White balance | Automatic, Tracking | |
| 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 2 Levels | |
| Heat haze reduction | On and off function | |
| 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/FET protocol (optional CAN-BUS with FET protocol) | |

| | PAL | NTSC |
|---|---|---|
| **Mechanical** | | |
| Overall dimensions (W x H x L) | 148 x 156.2 x 530.5 mm (not incl. connectors & mounting studs) | |
| Net weight | 11,3 kg | |
| Housing material | Aluminium with corrosion protection coating | |
| Protective housing integrity | IP 65 | |
| Connector (power, data, control) | 22-pin circular - In accordance with MIL 38999 | |
| Bore-sighting retention | ±0.2 milliradians @ NFOV | |

| | PAL | NTSC |
|---|---|---|
| **Environmental** | | |
| Operating voltage | 15 to 36VDC (power supply ground isolated from camera housing) | |
| Power consumption | < 15W | |
| Operating temperature | -40°C to +70°C | |
| Storage temperature | -40°C to +70°C | |
| Vibration | Wheeled vehicle MIL-STD 810G , method 514.6 - 3,05 grms | |
| Shock | Transportation: 3 shocks in each direction, 25G @ 11ms | |
| MTBF | 30 000 hours (MIL-HDBK-217-F) | |



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