



### Optical system

The optical system was developed specifically for use in vehicle mounted systems. It features continuous zoom, with powerful zoom range from 8 to 120 mm (15x), auto-iris and focus adjustment from 1.5 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.

### 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 Jaguar 12120/336 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.

### 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.

The **Jaguar - 12120/336** is an integrated unit, based on a highly sensitive colour CCD camera and a powerful zoom lens, ideal for day/night observation applications.

It is designed to deliver high-performance images, even under the harshest conditions, in temperatures ranging from -40°C to +70°C.

### Stay on target with precise boresight retention

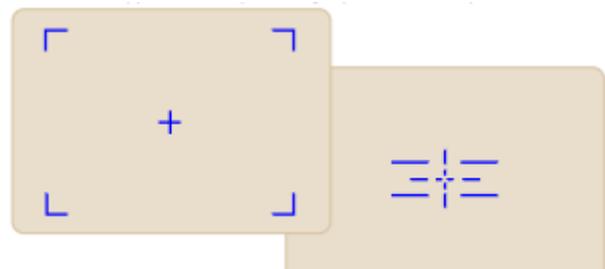
The factory pre-aligned boresight, is aligned in parallel with the optical reference axis of the system. This makes for easy on-site installation.

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

### Graphical overlays (optional)

The system can be delivered with built-in graphics overlay generator that allows arbitrary graphical 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 graphics overlay engine is done via the RS-422 interface. Graphical overlays can be customized to suit specific user requirements.

Below are typical examples of graphical overlays.



### 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.

### DRI calculation

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

NFOV 2.3° (H)	Man target (0,45 x 1,7 m)	Vehicle target (2,3 x 2,3 m)
Detection	6.4 km	20.9 km
Recognition	1.5 km	6.2 km
Identification	1.1 km	4.7 k

### Main features

- High sensitivity colour CCD camera
- Zoom lens 8 to 120 mm (15x)
- High shock and vibration tolerance
- Heat haze reduction
- Factory pre-aligned boresight retention
- User-defined graphic overlays
- Configuration by serial interface

	PAL	NTSC
<b>Camera system</b>		
Sensor	1/3" format high sensitivity colour CCD with complementary mosaic	
Effective pixels (H x V)	976 x 582	976 x 494
Aspect ratio	4:3	
Video output	Composite CVBS, 1 Vpp, 75 ohm or YC	
Video resolution, CVBS	> 560 TVL at prime focal length(25% video)	
Sensitivity	0.01 Lux, 25% video, F1.8, WFOV, AGC on	
Spectral response	Visible colour	
Signal to Noise ratio	> 50 dB, AGC off	
Scanning system	2:1 Interlace	
Horizontal frequency	15.625 kHz	15.734 kHz
Vertical frequency	50 Hz	59.94 Hz
Focal length	8 - 120 mm zoom (15x)	
Field of view	Narrow: Hor. 2.3°, Vert. 1.7° / Wide: Hor. 35°, Vert. 26°	
Focus range	1.5 m to ∞	
Iris range	f/1.8 to 22 @ WFOV	
Zoom control, travel time	≤ 5 sec. (25°C, both ways, Wide to Narrow FOV)	
Focus control, travel time	≤ 3 sec. (25°C, both ways, 2.5 m to ∞)	

	PAL	NTSC
<b>Mechanical</b>		
Overall dimensions (W x H x L)	130 x 105 x 200 mm (excl. connectors & sun visor)	
Net weight	< 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
<b>Functions</b>		
Electronic shutter, fixed	1/50 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	
True day/night mode	Movable IR-cut filter for proper colour (day) and Monochr. + 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 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
<b>Environmental</b>		
Operating voltage	18 to 32 VDC (power supply ground isolated from camera housing)	
Power consumption	< 15W at 24V DC	
Operating temperature /humidity	-40°C to +70°C	
Storage temperature	-40°C to +70°C	
Vibration	MIL-STD 810G	
Shock	Transportation: 3 shocks in each direction, 25G @ 3.05 grms	
Altitude	More than 10 km	
MTBF	30 000 hours (MIL-HDBK-217-F)	

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