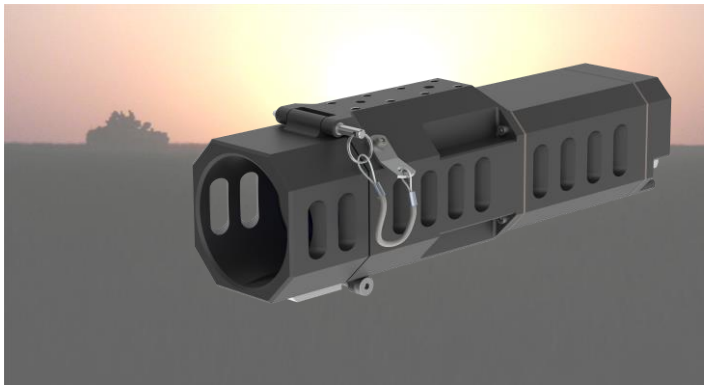


Spectrel Alignment Camera 12120/340 HD

Ruggedized camera system

Datasheet



Features

- High sensitivity colour or B/W camera
- High shock and vibration tolerance
- HD lens construction
- Mechanical pre-aligned bore sighting
- Configuration by serial interface
- Excellent boresight stability
- Anti-blast protection of camera window
- Dual output

Description

The Spectrel HD Alignment Camera 12120/340 is an integrated unit, based on a highly sensitive colour camera, ideal for day/night alignment and observation applications. It is designed to deliver high-performance images, even under the harshest conditions like severe shock and vibration and in temperatures ranging from -40°C to $+70^{\circ}\text{C}$.

Optical system

The optical HD system is developed specifically for use in vehicle mounted systems. It features a fixed lens with a customer specified field of view (FOV). The system can be supplied with a FOV ranging from 2.3° to 8.0° . For light regulation there is a auto-iris function and sensor protection integrated.

All lens elements are surface coated for high spectral response throughout the visible spectrum.

Anti-blast protection system.

To protect front section of the camera from blast particles the camera system has built in anti-blast protection in the front section to prevent degradation of optical performance of the front window.

Bore sighted

The Spectrel HD Alignment Camera 12120/340 has mechanical pre-aligned bore sighting, aligned in parallel with the optical reference axis of the system. This makes it easy for on-site installation.

Typical bore stability deviation is ± 0.1 milliradians, the equivalent to staying within a target area of ± 10 cm, at a distance of 1 km.

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.

Digital Noise Reduction (DNR)

The Digital Noise Reduction in the Spectrel HD Alignment Camera 12120/340 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.

Continuous digital zoom

The Spectrel HD 12120/340 provides continuous digital zoom with 6x range, selectable from the serial interface.

Low Light Level performance

The Spectrel HD Alignment Camera 12120/340 provides extraordinary performance down to a quarter moonlight with full resolution in real time.

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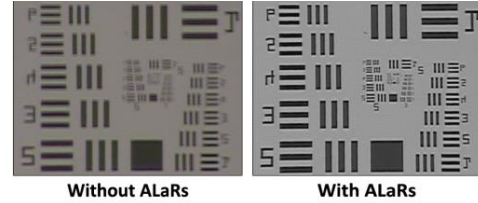
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ALaRs function

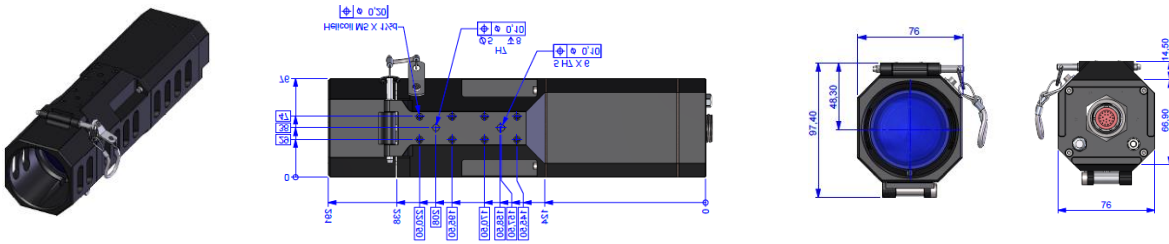
ALaRS is the abbreviation of Automatic Light and Resolution system, which optimizes the light regulation and resolution, in all light condition, the resulting in an improved image quality. CST has implemented ALaRS technology in the camera, to provide our solution with the best possible image quality.



So what is improved compared to normal image regulation?

- No disruption or flashing when exposed of shock and vibration
- Fast exposure: Leading to a sharper image when there are moving objects
- Higher resolution during daylight conditions

Mechanical outline and dimensions



DRI calculation:

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

	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 km

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Specifications

	PAL/CCIR	NTSC/EIA
Camera System		
Sensor <i>Solution 1</i>	1/2" format high sensitivity color CMOS GS	
Sensor <i>Solution 2</i>	1/2" Format ultra-high sensitivity B/W CMOS GS	
Effective pixels (H x V)	1920x1080	1920x1080
Aspect ratio	4:3 analog and 16:9 HD-SDI	
Video output	Composite CVBS, 1 Vpp, 75 ohm	
HD-SDI out	Full HD 3G	
Video resolution, CVBS	> 600 TVL at prime focal length (25% video)	
Sensitivity <i>Solution 1</i>	0.01 Lux, 25% video, F2,6 at 3,5 degree, AGC on	
Sensitivity <i>Solution 2</i>	0.001 Lux, 25% video, F2,6 at 3,5 degree, AGC on	
Spectral response	400-700nm ore 400-980nm	
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	Up to 120 mm	
Field of view	Factory pre-installed FOV between 2.3° - 8.0°	
Focus range	3 m to ∞	
Iris range	f/1.8 to 22	
Functions		
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 6	
White balance	Automatic, Tracking	
Heat Haze reduction	On/Off	
Lens Iris control	Automatic	
Reticule	The position of the reticule, can be moved with ref. to the elevation	
Extended Night Mode	4 fields integration time, for low light level imaging (ON/OFF)	
Noise reduction	2D and 3D Digital Noise Reduction 3 Levels	
Fog Penetration	Image contrast enhancement 3 Levels	
Image stabilisation	On/off. The angel will be reduced with 10% in on mode	
Defroster	Automatic control by thermostat	
Configuration, serial interface	RS-422 interface (galvanic separated) or CAN-BUS with CST protocol	
Mechanical		
Overall dimensions (W x H x L)	76 x 97,4 x 291 mm (not incl. connector)	
Net weight	2,7 kg	
Housing material	Aluminium with corrosion protection coating Mil- DTL-5541	
Protective housing integrity	IP 67 (or better)	
Connector (<i>power, analog video, HD-SDI and CAN control</i>)	22-pin circular - In accordance with MIL 38999	
Bore-sighting stability	±0.1 milliradians at 25 degree	
Environmental		
Operating voltage	18 to 32 VDC (power supply ground isolated from camera housing)	
Power consumption	< 5W at 24V DC	
Power consumption with Heater on	< 15W at 24V DC	
Power protection	Mil std. 1275	
Operating temperature / humidity	-40°C to +70°C	
Storage temperature	-40°C to +70°C	
Vibration	MIL-STD 810G	
Shock	30G @ 11ms	
Pressure	30 to 300 kPa	

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Altitude	More than 10 km
MTBF	30 000 hours (MIL-HDBK-217-F)

About Us

CST - Copenhagen Sensor Technology A/S is a privately held Danish company specialising in the design and manufacture of high-performance electro-optical solutions for demanding battlefield and surveillance applications.

Founded in 2001, CST has rapidly grown to a mature organisation, capable of serving a global customer base. In modern facilities on the outskirts of Copenhagen, Denmark, CST houses R&D, production, QA and sales and marketing functions. With a collective experience in CCD camera, optics, electronics and software development, the highly skilled staff at CST is committed to creating rugged, durable and innovative electro-optical solutions.

CST is certified to ISO 9001:2008, which applies to the whole process flow of design, development, manufacturing and testing. Furthermore, design and development activities operate in accordance with the ISO 10007:2003 configuration management standard. CST products are not restricted by ITAR.

Customer and OEM solutions

CST has a long tradition of working closely with its customers, identifying unmet needs and creating solutions with sustainable value for the users.

With a strong R&D base at the headquarters in Denmark, CST is able to provide mechanical, optical, software and hardware customisations while meeting the toughest requirements for military, homeland security and high-end surveillance applications.

Whether the need calls for a ruggedized high-precision zoom lens or a highly sensitive CCD camera, or a complete system comprising lens, camera and advanced video processing, CST can offer a fast-track design process. Contact us to discuss your specific requirements. Together we can create a solution that provides the best price and performance ratio.

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