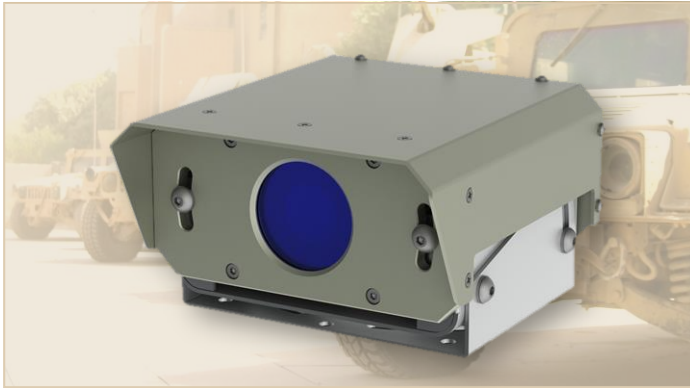


Citadel Versatile-II

Situation awareness camera for armoured vehicles
Datasheet

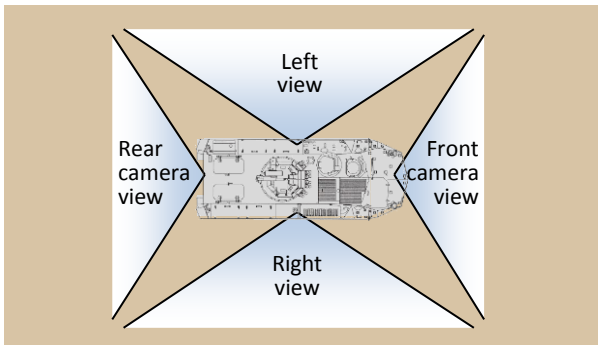


Features

- Up to 95° horizontal Field of View
- Wide temperature range, -40°C to +70°C
- Day / Extended Night modes
- Fog penetration
- Digital Noise Reduction, DNR
- 24V operating voltage
- 3 degrees of freedom mounting bracket

Description

Providing increased safety for the entire vehicle crew of armoured vehicles is of prime importance in the battlefield. Mounting several wide angle cameras on strategic positions on the vehicle provides an unobstructed view over the near surroundings, with all hatches closed.



Rugged design

The Citadel Versatile-II is encased in a rugged IP-65 housing, designed to withstand vibration in accordance with MIL STD 810G. It provides high-performance images, even under the harshest conditions, in temperatures ranging from -40°C to +70°C.

All electrical connections go through a MIL compliant 10-pin connector. The integrated mounting bracket allows precise alignment of the camera.

Configurable Field of View

The special distortion-free wide angle lens of the Citadel Versatile can be factory configured for a field of view (FOV) ranging from 47° up to 100°, allowing easy adaptation to the various on-vehicle visualization needs.

Day/Night operation

With the high sensitivity and automatic exposure modes of the Citadel Versatile-II, it can operate from dawn to dusk and even produce images in full moonlit conditions. The Extended Night Mode allows low light level operation with up to 4 seconds integration.

Conductive cooling

The Citadel Versatile uses conductive cooling to remove heat from the CCD sensors. This reduces random noise in the CCD sensors, resulting in improved image quality, particularly in low-light conditions.

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 function in the Citadel Versatile analyses the video image and reduces the noise, particularly in low-light conditions. The analysis is based on a 2- and 3-dimensional algorithm.

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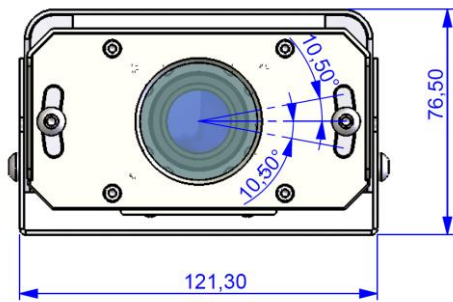
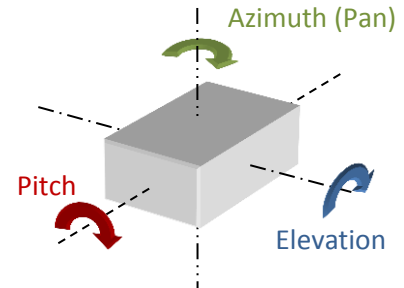
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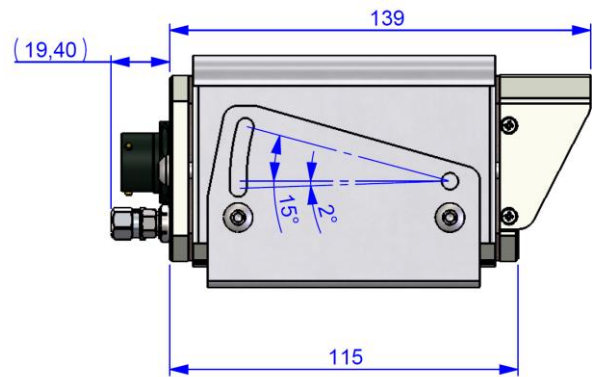
Mechanical outline and dimensions

Mounting bracket with 3 DoF adjustment

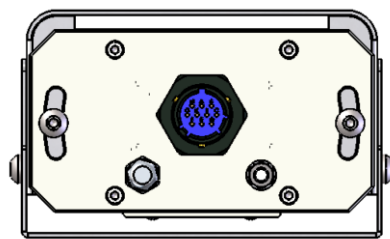
Designed with a mounting bracket that allows alignment of the camera within 3 degrees of freedom, for adjusting to the contours and slopes of the vehicle body.



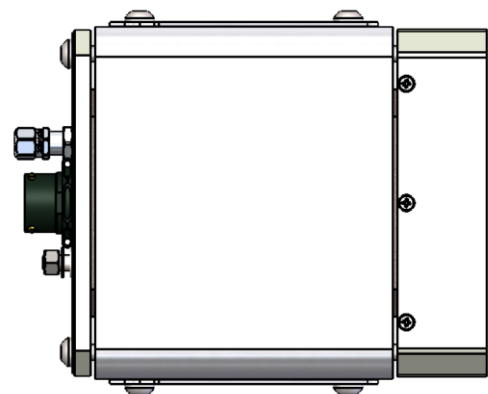
Front view



Side view (left side)



Rear view



Top view

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Specifications

	PAL	NTSC
Image system		
Sensor	High sensitivity 1/3" colour CCD with complementary mosaic	
Lens	Configurable Field of View (FOV), IR-corrected, f/1.6	
Effective pixels (H x V), per camera	976 x 582 (4:3 image format)	976 x 494 (4:3 image format)
Horizontal FOV	Configurable from 47° to 95° FOV (factory setting)	
Vertical FOV	Configurable from 35° to 84° FOV (factory setting)	
Scanning system	2:1 Interlace	
Horizontal frequency	15.625 kHz	15.734 kHz
Vertical frequency	50 Hz	59.94 Hz
Electrical specifications and functions		
Video output	Composite VBS, 1 Vpp, 75 ohm	
Horizontal resolution	> 540 TVL	
Sensitivity	0,007 lx, 25% video @ f/1.6, AGC on	
Spectral response	Visible	
Signal to noise ratio	> 52 dB, AGC Off	
Electronic shutter, fixed	1/50 to 1/10,000 sec.	1/60 to 1/10,000 sec.
Gamma correction	0.45 / 1.0	
Automatic Gain Control. range	0 to +36 dB 6 DB DGC	
Frame integration	Extended night mode, up to 4 sec.	
Day/Extended night mode switching	Via serial RS-422 interface	
Dynamic Range Enhancement	XDR-function	
Fog penetration	Adaptive image contrast enhancement 3 Levels	
White balance	Auto Tracking White Balance (ATW)	
Noise reduction	2D and 3D Digital Noise Reduction 3 Levels	
Image Mirroring	Horizontal and Vertical image flip	
Configuration, serial interface	RS-422, galvanic separation, CST protocol	
Mechanical		
Overall dimensions (W x H x L)	121.3 x 76.5 x 158.4 mm (incl. connectors/valves)	
Mounting plate footprint	90 x 121 mm	
Net weight	>3 kg	
Housing material	Aluminium with corrosion protection coating	
Housing alignment	Elevation, rotation & azimuth	
Protective housing integrity	IP-65, back-filled with dry nitrogen	
Camera window	Chemically strengthened, AR-coated BK7 glass.	
Connector (power, data, control)	10-pin round connector, aluminium (MIL-DTL-26482 series 1)	
Environmental		
Operating voltage	18 to 36VDC (1275B protection filter)	
Current consumption	Camera system: 12W	
Operating temperature	-40°C to +70°C	
Storage temperature	-40°C to +70°C	
Shock / Vibration	MIL STD 810F (Tracked vehicle profile)	
EMC	MIL STD 461F	
MTBF	30 000 hours	

Note 1: With 100° H-FOV configuration some vignetting from the sun visor will be seen. Default factory setting is 60° H-FOV

Note 2: Without optional defroster heater. Add approx. 12W for optional heater.

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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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