Spectrel 12220/340 HD open frame

Long-Range High Definition Camera System
Datasheet

Features

- Full HD-SDI Camera system
- Optical Zoom 7,5 to 220 mm (30x)
- HD-SDI digital video output
- Continuous 6x digital zoom
- Digital image stabilization
- Configuration by serial interface
- Extended Night mode

Description

The Spectrel 12220/340 is an integrated unit, based on a highly sensitive HD megapixel colour C-MOS camera and a powerful zoom lens, ideal for day and night coastal/border surveillance, camp perimeter protection or protecting critical infrastructure and similar 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 advanced optical system is developed specifically for use in long range surveillance. It features continuous zoom, with powerful zoom ratio of 7,5 to 220 mm, auto-iris and focus adjustment from 2.1 m to infinity.
The "Auto-Focus on Demand" lets the camera control the focus by the push of a button.

Boresight precision

Excellent boresight for high performance and precision to the target. Optical 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 zoom

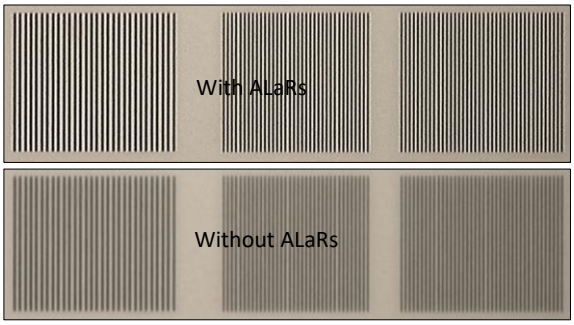
Digital zoom is provided as a continuous digital zoom with 6x range, selectable from the serial interface.

Digital image stabilization

Advanced image processing algorithms for stabilizing the image is integrated into the core of the camera to ensure the best performance without increased image delay.

Build in ALaRs

ALaRS is the abbreviation of Automatic Light and Resolution system, which optimizes the light regulation and resolution, resulting in an improved image quality



- A larger dynamic area
- No image 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

CMOS sensor with Global Shutter

Global shutter defines the way the image is handled from the sensor. Global shutter is preferable for applications on the move or where the target is moving. The Global Shutter ensures a stabile clear image on all moving objects.

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Digital Noise Reduction (DNR)

The Digital Noise Reduction is a series of 2-dimensional and 3-dimensional algorithm and analysis to filter and reduce noise, particularly in low-light conditions.

Fog penetration

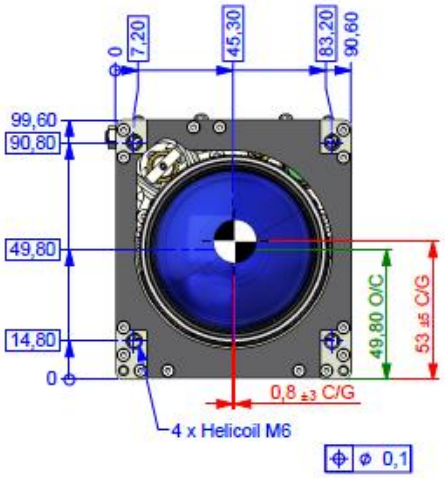
The fog penetration function is an adaptive algorithm that automatically increases visibility under conditions such as fog, haze and fire smoke. The camera continuously analyses the picture and once it detects a low-contrast condition, it will automatically enhance the contrast.

DRI calculation

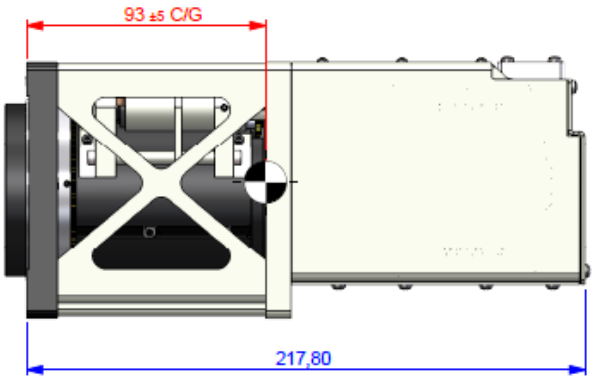
Conditions for SSIP CAM program: Visual band 400-1000nm, Contrast=30 %, Over cast daylight, Sky ratio=3, Visibility 80km, 50 % probability.
Full-HD 3G-SDI 1920x1080

NFOV 1.8° (H)	Man target (0,45 x 1,7 m)	Vehicle target (2,3 x 2,3 m)
Detection	14.7 km	35.3 km
Recognition	4.3 km	14.4 km
Identification	3.5 km	12.0 km

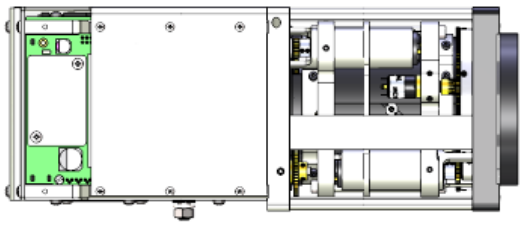
Mechanical outline and dimensions



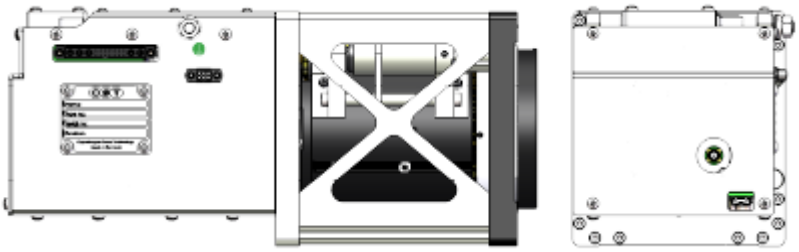
Front view



Side view



Top view



Side/rear connector view

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Specifications

Camera System	
Sensor	High resolution 3,2Mp, High-sensitivity 1/1,8" colour CMOS with Global shutter
Effective pixels (H x V)	1920 x 1080
Image format	16:9
Scanning system	Progressive/Interlaced
HD-SDI output 3G-SDI	1920 x 1080 50p/60p
HD-SDI output HD-SDI	1920x1080-60i/50i/30p/25p
Video resolution digital	>1000TVL
Video out analogue	CVBS, video 1Vpp *1
Ext. sync input (only for SDI output)	HD/VD LVDS differential, support frequency 50Hz/56,50kHz or 60Hz/67,50kHz
System video resolution analogue	Equivalent to 540 TVL 15% video modulation,
Sensitivity	0,010 lx, 25% video, F2.47, AGC on Full HD
Extended night mode	0,005 Lux at F2.6 VGA resolution (pixel binning)
Spectral response	400-700nm with IR-cut filter on
Signal to Noise ratio	> 50 dB, AGC off
Focal length	7,5 to 220 mm (30x)
Horizontal field of view	Wide: Hor. 46° / Narrow: Hor. 1.8° (16:9)
Focus range	2.1 m.(WFOV) to ∞
Iris range	f/2.47 to 22 at WFOV
Zoom control, travel time	≤ 5 sec. (25°C, both ways, Wide to Narrow FOV)
Focus control, travel time	≤ 6 sec. (25°C, both ways, 2.1 m to ∞)
Auto focus travel time	Approx. 4 sec (range from 30m to infinity)
Functions	
Gamma correction	0.45/1.0
Automatic Gain Control. range	Max 48db
White balance	AWB
Noise reduction	2D and 3D Digital Noise Reduction 3 Levels
Fog Penetration	Image contrast enhancement 3 Levels
Day/Night mode	Fixed filter (switch colour/black-White)
Auto focus	On demand, Zoom-triggered
Digital image stabilization	On/off (HD-SDI only)
Digital zoom	6x continuous digital zoom
Configuration, serial interface	RS-422 interface (galvanic separation), VISCA/CST protocol (optional CAN-BUS interface with CST protocol)
Mechanical	
Overall dimensions (W x H x L)	90,6 x 99,6 x 217,8 mm (not incl mounting studs)
Net weight	< 2 kg
Housing material	Aluminium with corrosion protection coating
Connector (PWR, control, analogue video)	Harwin M80 14p 3+2coax combo
HD-SDI output	MCX coax plug 75 Ω
External HD/VD input	Harwin M80 6pole
Bore-sighting retention	±0.2 milliradians @ NFOV
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	MIL STD 810F, tracked vehicle 5.7G-rms, 45 min each direction MIL STD 810F, method 514.5, procedure 6
Shock	3 shocks in each direction, 30G @ 11ms
MTBF	30 000 hours (MIL-HDBK-217-Fusing (GM) ground mobile environment @25ºC)

*1 Output are optimised to digital output.

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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 C-MOS 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 9001:2015, which applies to the whole process flow of design, development, manufacturing and testing. Furthermore, ISO 10007:2003 configuration management standards are used as a guideline for design and development activities. 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 C-MOS camera, or a complete system comprising of 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 high performance solutions that provide a significant benefit to both customer and end user.