

CamSight® AI

Ultra-Low SWaP on-board artificial intelligence camera module

Key features

- Detection and recognition of humans and vehicles at < 4H
- Objects overlaid in the image or serial link metadata
- Very low size, weight and power (SWaP) LYNRED ATTO thermal sensor: 1280 x 1024 @ 12µ
 - Patented shutterless technology
 - Small pixel size for reduced lens size
- Low latency
- Designed and manufactured in France using French thermal sensors



Information in the CamSight® AI video stream

CamSight®AI (Artificial Intelligence) is a digital camera developed by Bertin Technologies for original equipment manufacturers (OEMs).

To meet user requirements, the camera has been designed to be easily integrated into complex optronic systems, such as vehicles or UAVs requiring automatic threat detection and recognition in a low SWaP (Size, Weight & Power Consumption).

CamSight®AI features an uncooled LYNRED ATTO infrared sensor designed for harsh applications. CamSight®AI can display objects (rectangles for vehicles, crosses for humans) superimposed on the image and/or send metadata via a serial link to a computer to alert the crew and display the image from the camera that triggered the alert.

Based on patented shutterless technology, the thermal channel offers a smooth, low-latency image flow. Lightweight, ultra-compact and extremely energy-efficient, the CamSight®AI thermal imaging camera module can be used in constrained environments. Thanks to its ergonomic design and high performance, the camera can be used for most day and night observation and surveillance missions.

CamSight®AI is also available in a Plug&Play version for end-users. The camera is available in two versions : CamSight®AI+ (NETD < 40 mK F#/1.0) and CamSight®AI (NETD < 50 mK F#/1.0).



CamSight AI with 28° field of view

CamSight® AI

SENSORS

	CamSight® AI+	CamSight® AI
Model	LYNRED ATTO640D-02 (+)	LYNRED ATTO640D-02 (+)
Type	Uncooled micro-bolometer	Uncooled micro-bolometer
Resolution, pitch	640 x 480 pixels (VGA) @ 12µm (under development)	640 x 480 pixels (VGA) @ 12µm (under development)
Spectral band	8µm – 12µm (LWIR)	8µm – 12µm (LWIR)
NETD (25Hz, 25°C)	< 40mK @ F1/1.0	< 50mK @ F1/1.0

PHYSICAL CHARACTERISTICS

	OEM version	Quick connect version (with connectors)
Weight	83g	128g
Dimensions	31.5 x 40 x 40mm	58.3 x 40 x 40mm

INTERFACES

Video	HD-SDI
Frequency	25Hz with no latency AI frequency with overlay: < 4Hz
Metadata	RS232 3.3V TTL Specific protocol
Communication	RS-232 TTL, MAVLINK protocol

ELECTRICAL CHARACTERISTICS

	Version OEM	Version QuickConnect
Connectors	Samtec MMCX7-J-P-GF-ST-TH1 for video Molex 53398-0271 for power supply Molex 53398-0371 for serial link	Amphenol 034-1018 for video Hirose HR10A-7R-6P for power supply and serial link
Tension	4.5 – 5.1 VDC	4.5 – 5.1 VDC
Consumption	< 4.5 W @25°C	< 4.5 W @25°C
Display time	< 4 sec (from stop to object display)	< 4 sec (from stop to object display)

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OPERATION & CONTROL

Calibration	Without shutter (factory calibration / no periodic maintenance required)
Camera control	Gamma correction Image polarity inversion Selection of contrast enhancement algorithm CLHE / CLAHE LUT Region of interest for CLHE Histogram equalisation
AI control	Degree of confidence Maximum number of detections Reduction of multiple detections Ratio of image sent to kernel (Resize 1280, Resize 1024, Crop kernel) AI mode (overlay, metadata, all, none)
Tools	SDK (MAVLINK) GUI (Companion)

ENVIRONMENTAL CHARACTERISTICS

Operating temperature	- 40°C / + 70°C
Storage temperature	- 40°C / + 85° C
Shock resistance	Pre-compliant with MIL STD 883K
Humidity	5-95% condensation-free
Environment	CE, RoHS, REACH

QUALIFIED THERMAL LENSES

								
Focal length (mm)	8.5	12	15	19	32	35	60	100
F# (f/)	1.0	1.0	1.1	1.05	1.05	1.2	0.95	1.0
FoV (°)	95 x 76	74 x 59	56 x 45	46 x 37	28 x 22	25 x 20	15 x 12	9 x 7
DRI Vehicle (m)	950 320 160	1580 530 290	1740 610 310	2380 830 450	3600 1330 670	5640 2120 1070	6460 2630 1390	8900 3880 2160
DRI Infantry (m)	490 170 80	680 230 120	740 250 130	1010 360 180	1610 550 280	2580 880 440	3220 1130 570	4590 1740 930
Diameter (mm)	45	42	46	75	45	54	61	105
Length (mm)	65	53	65	67	56	45	59	116
Weight (g)	135	110	135	150	150	108	211	660