

CamSight LS(+)

Ultra Low SWaP Thermal Camera (high sensitivity)

Key features

- Ultra low Size, Weight and Power (SWaP)
- LYNRED ATTO sensor: 640 x 480 @ 12µm
- Low latency
- Patented shutterless technology
- Thin pitch camera allowing lens size decrease
- Designed and manufactured in France with French thermal sensors



Image captured by CamSight LS with a 13,6mm lens

CamSight LS is the newest Original Equipment Manufacturer (OEM) digital core camera developed by Bertin Photonics.

To comply with users' requirements, the camera has been designed to be easily integrated within complex optronic systems, such as rifle sights, ground or aerial drones and every equipment requiring ultra low SWaP. Based on a patented Bertin Photonics' shutterless technology, it allows for low latency and freeze-free image delivery in real-time. CamSight LS features an uncooled LYNRED ATTO infrared sensor designed for challenging applications.

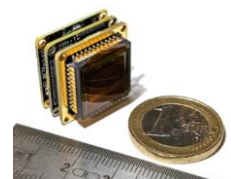
Lightweight, ultra-compact and very low-consuming, CamSight LS can be implemented in very constrained environments. Indeed, thanks to its ergonomic design and high-performance, the camera fulfills most night and day surveillance, observation and infantry missions.

CamSight LS also exists in a Plug & Play version dedicated to end-users.

The camera is available in two different versions: CamSight LS+ (NETD sensor* < 40mK) and CamSight LS (NETD sensor* < 50mK).

SENSOR

	CamSight LS+	CamSight LS
Model	LYNRED ATTO640D-02 (+)	LYNRED ATTO640D-02 (+)
Type	Uncooled microbolometer	Uncooled microbolometer
Resolution, Pixel size	640 x 480 pixels (VGA), 12µm	640 x 480 pixels (VGA), 12µm
Spectral band	8µm – 12µm (LWIR)	8µm – 12µm (LWIR)
NETD sensor*	< 40mK @ f 1/1.0	< 50mK @ f 1/1.0
* F#/1.0 – 300K – 30Hz		



CamSight LS OEM module

CamSight LS(+)

PHYSICAL CHARACTERISTICS (without lens)

	OEM version	OEM+ version	Casing version with connector
Weight	10g	12g	30g
Dimensions	22 x 22 x 15.5mm	22 x 22 x 21.65mm	24 x 24 x 38mm

INTERFACES

	OEM version	OEM+ version & casing version
Video	Parallel 14 bits / SD-SDI / MIPI CSI2 / USB Video stream : 9/25/30/60Hz	SD-SDI / PAL / MIPI CSI2 / GigE Vision / USB Video stream : 9/25/30/60Hz
Frequency	<i>Option : 50Hz on demand</i> (>9Hz requires a license delivered by the French government)	<i>Option : 25Hz on demand,</i> (>9Hz requires a license delivered by the French government)
Communication	RS-232, 3.3V TTL	RS-232, 3.3V TTL

ELECTRICAL CHARACTERISTICS

	OEM version	OEM+ version	Casing version with connector
Connectors	Hirose DF40C-60DP-0.4V	MMCX7-SM, BM12B-SURS, LSHM-110, M06B-SURS-TF	Hirose FL10WB
Input voltage	4.5 – 5.1VDC	4.5 – 5.1VDC	4.5 – 5.1VDC
Consumption	< 0,75W* *Parallel Bus 25°C & 25Hz	< 0,75W* *Parallel Bus 25°C & 25Hz	< 0,75W* *Parallel Bus 25°C & 25Hz
Time to image	< 1 sec (from off to on)	< 1 sec (from off to on)	< 1 sec (from off to on)

OPERATION & CONTROL

Calibration	Shutterless (single factory calibration / no periodic maintenance needed)
Camera Control	Gamma correction Algorithm selection CLHE / CLAHE Histogram equalization Sharpening algorithm / Contouring Filter LUT Region of interest Image polarity inversion Continuous zoom 1x to 8x relocatable Column Noise Correction Flattening Filter Colorization
Tools	SDK (MAVLINK) GUI (Companion)

ENVIRONMENTAL CHARACTERISTICS

Operating temp	-40°C / +70°C
Storage temp	-40°C / +85°C
Shock	Pre compliance to MIL STD 883K
Humidity	5-95% non-condensing
Environnement	CE, RoHS, REACH

CamSight LS(+)

CAMSIGHT LS PHOTOS



OEM version



Casing version



OEM version with 13,6mm lens

QUALIFIED LENSES



4,3mm & F/1.2
FoV: 112°x84°
 DRI (V): 420/140/70
 DRI (S): 200/70/30
 Size: \varnothing 20 x 15
 Weight: 12g



5,5mm & F/1.2
FoV: 86°x64°
 DRI (V): 600/210/100
 DRI (S): 250/80/40
 Size: \varnothing 20 x 16
 Weight: 13g



7,5mm & F/1.2
FoV: 61°x46°
 DRI (V): 820/280/140
 DRI (S): 340/110/60
 Size: \varnothing 25 x 19
 Weight: 25g



9,2mm & F/1.0
FoV: 50°x38°
 DRI (V): 1300/410/210
 DRI (S): 500/170/80
 Size: \varnothing 26 x 25
 Weight: 29g



13,6mm & F/1.0
FoV: 32°x27°
 DRI (V): 1740/620/310
 DRI (S): 770/260/130
 Size: \varnothing 21 x 18
 Weight: 13g



24mm & F/1.0
FoV: 18°x14°
 DRI (V): 3100/1140/580
 DRI (S): 1350/480/240
 Size: \varnothing 34 x 29
 Weight: 37g



40mm & F/1.0
FoV: 11°x8°
 DRI (V): 5330/2010/1020
 DRI (S): 2560/860/430
 Size: \varnothing 21 x 18
 Weight: 13g



55mm & F/1.0
FoV: 8°x6°
 DRI (V): 6800/2730/1390
 DRI (S): 3510/1180/590
 Size: \varnothing 21 x 18
 Weight: 13g

This list does not represent all compatible lenses. It is therefore possible to add lenses according to your needs.

DRI's were calculate with TRM4. DRI (V) = DRI vehicle. DRI (S) = DRI soldier with NATO standard. Unity : meter.

To calculate the overall weight of the CamSight LS with the lens, a mechanical interface (lens - core) must be added. Its weight depends on the lens and is about 10 grams.