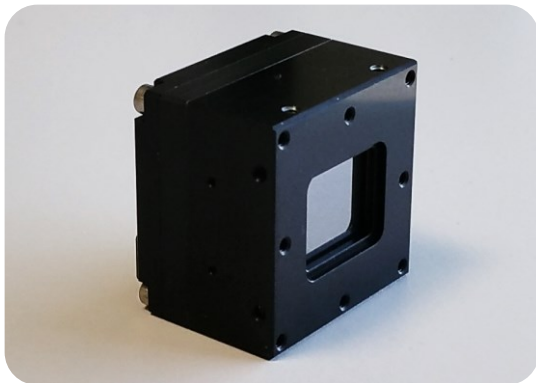


One of the most compact and lightest VGA 12 μm thermal imaging module in the world

Ready to integrate Shutterless-capable OEM Camera



IrLugX640™ is an affordable compact and a featherweight thermal imaging camera embedding the new generation of the 640 x 480 micro-bolometer **with 12 μm pixel** pitch in a ceramic package. This module is especially designed for simple integration into customer sub-system, enabling low-power consumption, providing an agility of configurations and addressing the medium and high volumes OEMs for **low-end markets**

IrLugX640™ is the plug and play perfect core engine, thanks to **easy to use USB 3.0 interface** with 16 bits video streaming. This thermal imaging camera includes the software that performs in real time recording sequence, single image capture and display and optional Shutterless function

IrLugX640™ is ready to integrate in your application thanks to the SDK providing high level services (Configuration, Control, Processing)

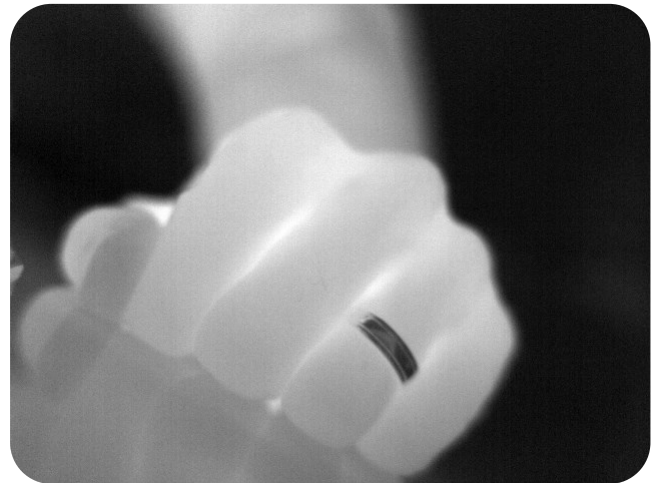
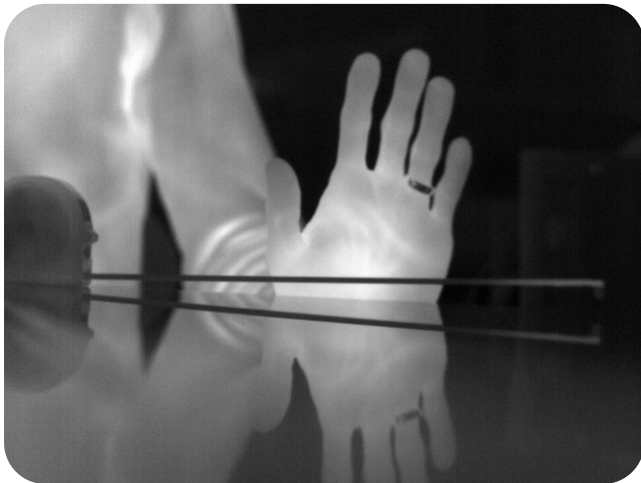
TYPICAL APPLICATIONS

SCOPE OF USE

UAVs, UGVs and Robotics
Handheld Thermal Imaging
Temperature Measurement
Surveillance, Security and Maritime Cameras
Night Vision Goggles and Sights
Automotive and Aircraft Safety Vision
Machine Vision Inspection
Medical Imaging



OUTSTANDING IMAGE QUALITY



IRLUGX VIEWER (GUI)

IrLugX Viewer 640 is a powerful user-friendly tool to manage and optimize the module settings:

Calibration wizard (up to 8 maps: gain and/or offset tables)

Easy and fast Import/Export of gain, offset & data to Matlab; ImageJ, Excel, ...

BPR (Bad Pixel Replacement); NUC (Non-Uniformity Correction); AGC (Automatic Gain Correction) management can be done by just clicking

Free SDK (Software Design Kit): for easy integration into your applications

Compatible with **Windows 7 & 10 and Linux.**



KEY TECHNICAL SPECIFICATIONS

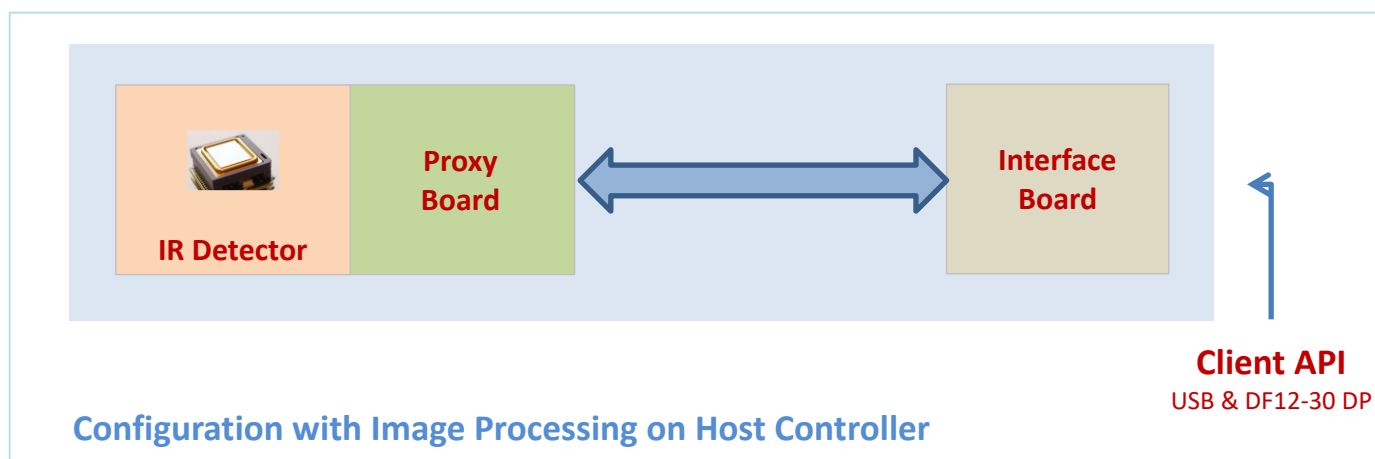
SYSTEM FEATURES	IrLugX640™	DESCRIPTION
Camera resolution	640x480 pixels	Micro-bolometer technology with 12µm pixel pitch : camera fits to ATTO640 detector
Spectral response (LWIR)	8 – 14 µm	
NETD (f/1; 300K; 30 Hz)	< 60 mK (as standard) < 50 mK or < 40 mK (on demand)	Refer to Performance Grade section for more details on Operability and NETD
Power consumption	< 0.9 W	@ 30 Fps
Interfaces: USB 3.0 (micro USB type B female, USB 2.0 compliance) Camera control: DF12-30 DP connector:	RAW 16 bits digital output Free run; External Trig Standby power mode Adjustable IR setting point (Integration time, AGC, Gain, NUC calibration....) Automatic management of shutter Enable external control of shutter External sync mode input : 3V3 CMOS	Plug & Play to any host controller system (PC or Computer Board) USB 2.0 compliant up to 50 Fps Exposure mode Video disable and wakeup for fast time to image.
Mechanical Shutter	Yes	
Shutterless	Optional	
User Configuration Storage	Up to 8	On module
Storage Calibration Table	Up to 8	On module
Time to image	< 3 s	Time from power on at USB power supply
Image Optimization	BPR, NUC, Image enhancement, AGC	Configuration dependant
Full Frame Rates	60 Hz	Adjustable frame rate: from 9 to 60Hz
Standard Frame Rates	30 Hz	
Exportable Frame Rates	9 Hz	
Image Flip	Yes	On module
Qualification grade	Industrial (Standard grade)	
Operating temperature range	-20°C; +60°C (Standard grade)	
Size: Length x Width x Height	30 x 30 x 30 mm ³	Excluding Optic & mechanical shutter
Weight	< 16g < 40g	Excluding Optics, Housing and mechanical shutter Excluding Optics
Demo GUI Graphical User Interface	Windows	IrLugX Viewer adjusts all image parameters in GUI. GUI compatible with Windows only SDK compatible with Windows and Linux Operating System
SDK (for USB)	Windows & Linux	

CONFIGURATION OF CAMERA MODULE

IrLugX640™ is developed using a modular concept and architecture.

Thanks to its SDK, IrLugX640™-USB consists in embedding the processing into the Host Controller mainly for UAVs, UGVs and Machine Vision applications.

For handheld and portable application, a Processing Board can be added to the previous stack (see figure below), allowing to embed the optimized and just needed processing to the aimed application.



PARTICULARITY OF CAMERA MODULE

IrLugX640™ is developed and optimized in particularly for the very low power and mobile applications thanks to its advanced technology bringing some important technical breakthroughs not yet used in infrared thermal imaging.

For handheld and portable application, an image processing and camera control can be added to the host controller (PC or processor board) thanks to the SDK of IrLugX640™, enabling to embed the customer optimized and just needed processing to the aimed application for saving power consumption of the system.

ORDER YOUR OWN AND GET IT!

The following list is not comprehensive. Many other configurations may be ordered (e.g. alternative lens, higher frame rate, etc...)

VGA MODEL (With housing and standard qualification and standard performance grade)	VIDEO SPEED	LENS	DIMENSION/WEIGHT	PART NUMBER (Configuration with image processing on Host Controller)
IrLugX640™-USB No Shutter	30 Hz	60 mm; HFOV: 7.3°; F/1.25	38 x 38 x 90 mm ³ / 282 g	M640-0001ABEMI-CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	30 Hz	35 mm; HFOV: 12.2°; F/1.14	38 x 38 x 64 mm ³ / 88 g	M640-1401AVMI- CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	30 Hz	25 mm; HFOV: 17.3°; F/1.20	30 x 30 x 64 mm ³ / 92 g	M640-1401AALMI- CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	30 Hz	19 mm; HFOV: 23.0°; F/1.03	30 x 30 x 52 mm ³ / 74 g	M640-1401AQMII- CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	30 Hz	16.7 mm; HFOV: 26.4°; F/1.25	30 x 30 x 52 mm ³ / 72 g	M640-1401AHMI- CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	30 Hz	7.5 mm; HFOV: 60.6°; F/1.40	30 x 30 x 63 mm ³ / 62 g	M640-1401AGMI- CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	9 Hz	4.9 mm; HFOV: 95°; F/1.10	32 x 32 x 65 mm ³ / 94 g	M640-1401ABLMI- CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	9 Hz	60 mm; HFOV: 7.3°; F/1.25	38 x 38 x 90 mm ³ / 282 g	M640-0001EBEMI-CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	9 Hz	35 mm; HFOV: 12.2°; F/1.14	38 x 38 x 64 mm ³ / 88 g	M640-1401EVMI- CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	9 Hz	25 mm; HFOV: 17.3°; F/1.20	30 x 30 x 64 mm ³ / 92 g	M640-1401EALMI- CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	9 Hz	19 mm; HFOV: 23.0°; F/1.03	30 x 30 x 52 mm ³ / 74 g	M640-1401EQMI- CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	9 Hz	16.7 mm; HFOV: 26.4°; F/1.25	30 x 30 x 52 mm ³ / 72 g	M640-1401EHMI- CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	9 Hz	7.5 mm; HFOV: 60.6°; F/1.40	30 x 30 x 63 mm ³ / 62 g	M640-1401EGMI- CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	9 Hz	4.9 mm; HFOV: 95°; F/1.10	32 x 32 x 65 mm ³ / 94 g	M640-1401EBLMI- CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	30 Hz	No	30 x 30 x 30 mm ³ / 40 g	M640-0001AXMI-CAUH3- <u>A0S</u>
IrLugX640™-USB No Shutter	9 Hz	No	30 x 30 x 30 mm ³ / 40 g	M640-0001EXMI- CAUH3- <u>A0S</u>

Note of Part numbering:

The two of three last digits **12** means different product versions. These are summarized in table of **compatibility version**.

The last digit means the maturity level of the device. For example: **S** is meaning an engineering sample device.

M refers to Mass production unit which is **MIL-STD-810G qualified**.

PERFORMANCE GRADE

IrLugX640™ offers a performance grade:

FEATURES	Standard Grade	High Grade	Ultra-High Grade
NETD	<60mK	<50mK	<40mK
Operability	>99.5%	>99.8%	>99.8%
Bad line	<=1 outside 320x240 central area	0	0
Bad column	<=1 outside 320x240 central area	0	0

Operability is the number of valid pixels, including defective line or column.

Theses defects are corrected by the core but can appear during operation depending on conditions.

COMPATIBILITY VERSION OF OPERATING SYSTEM

RELEASE VERSION	RELEASE DATE	NEW FEATURES
A0	May 2021	Operating Systems ⁽¹⁾ : Windows & Linux

Note:

(1) Windows (x86; x64) and Linux on Embedded Platform (ARM9, Libc 2.x with x>=13)

WHAT'S IN THE BOX

Module of Thermal Imaging Camera

IrLugX Viewer (GUI)

ICD (mechanical drawings)

SDK for developers

Documentation (user's guide)

Downloadable on Device-ALab website through customer access

General Notices:

This OEM module is intended only for product evaluation, development or incorporation into other product or sub-system. It is not a finished end-product fit for general consumer use. As such, this module is without the scope of the European Union (EU) directives concerning electromagnetic compatibility (EMC).

The products described herein are subject to French Government Export Controls except the products of lower than or equal to 9 Hz frame rates.