

The most compact and lightest SXGA 12 μm thermal imaging module in the world Shutterless capable, ready to integrate in OEM Camera



IrLugX1M3™ is an affordable compact and a featherweight thermal imaging camera embedding the new generation of the **1280 x 1024 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 **professional markets**.

IrLugX1M3™ 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**.

IrLugX1M3™ 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
- Surveillance, Security and Maritime Cameras
- Night Vision Goggles
- Automotive and Aircraft Safety Vision
- Machine Vision Inspection
- Medical Imaging



OUTSTANDING IMAGE QUALITY



IRLUGX VIEWER (GUI)

IrLugX Viewer 1M3 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**



PRELIMINARY SPECIFICATIONS

Plug, Sense&Play the Heat

KEY TECHNICAL SPECIFICATIONS

SYSTEM FEATURES	IrLugX1M3™	DESCRIPTION
Camera resolution	1280x1024 pixels	Based on ATTO1280 (Micro-bolometer technology with 12 μm pixel pitch)
Spectral response (LWIR)	8 – 14 μm	
NETD (f/1; 300K; 30 Hz)	< 60 mK (standard) < 50 mK (on demand)	Refer to Performance Grade section for more details on Operability and NETD
Power consumption	< 1.7 W	@ 30 Fps
Interfaces: <u>Standard</u> USB 3.0 (USB type C female locking connector, USB 2.0 compliance)	RAW 16 bits digital output Camera control	Plug & Play to any host controller system (PC or Computer Board) USB 2.0 compliant up to 30 Fps
No Mechanical Shutter Mechanical Shutter Shutterless	Yes Optional Optional	On demand On demand
Camera control (both USB and UART on DF12-30 DP)	Free run External sync mode	Exposure mode
	Automatic management of shutter Enable external control of shutter Image tagged if shutter enabled	
	Adjustable IR setting point (Exposure time, Gain, ...)	
	Power consumption management: Standby power mode Deep standby power mode	Video disable and wakeup for fast time to image Video disable, detector powered off
User Configuration Storage	Up to 8	On module
Storage Calibration Table	Up to 8	On module
Time to image	< 6 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 (USB 3.0 required)
Standard Frame Rates	30 Hz	
Exportable Frame Rates	9 Hz	
Image Flip	Yes	On module
Qualification grade	Industrial (Standard grade) Military (MIL-STD-810E)	
Operating temperature range	-20°C; +60°C (Standard grade) -40°C; +70°C (Military grade)	
Size: Length x Width x Height	35 x 35 x 31 mm ³	Excluding Optics, Shutter and Housing
Weight	< 70g	Excluding Optics
Demo Graphical User Interface SDK (for USB)	Windows Windows/Linux	IrLugX Viewer adjusts all image parameters in GUI GUI compatible Windows only SDK compatible with Linux, Android Operating System

Technical characteristics described in this data sheet are for information only and are not contractual. Because of ongoing product enhancements, specifications are subject to change without notice. IrLugX1M3™ - Specs sheet rev4 © December 2021 - All rights reserved.

ORDER YOUR OWN AND GET IT!

SXGA Engine Core MODEL (With housing and standard grade)	VIDEO SPEED	LENS	DIMENSION/WEIGHT	PART NUMBER
IrLugX1M3™ No Shutter	30 Hz	60 mm; HFOV: 14.4°; F/1.25	62 x 62 x 91 mm ³ / 295 g	M1M3-0001ABEMI-CAUH3- <u>A0S</u>
IrLugX1M3™ No Shutter	30 Hz	35 mm; HFOV: 24.4°; F/1.10	37 x 37 x 70 mm ³ / 110 g	M1M3-0001ABKMI-CAUH3- <u>A0S</u>
IrLugX1M3™ No Shutter	30 Hz	19 mm; HFOV: 44.0°; F/1.05	47 x 47 x 100 mm ³ / 230 g	M1M3-0001AATMI-CAUH3- <u>A0S</u>
IrLugX1M3™ No Shutter	30 Hz	15 mm; HFOV: 60.4°; F/1.10	35 x 35 x 96 mm ³ / 215 g	M1M3-0001AAOMI-CAUH3- <u>A0S</u>
IrLugX1M3™ No Shutter	30 Hz	8.5 mm; HFOV: 84.5°; F/1.05	45 x 45 x 98 mm ³ / 250 g	M1M3-0001AAYMI-CAUH3- <u>A0S</u>
IrLugX1M3™ No Shutter	9 Hz	60 mm; HFOV: 14.4°; F/1.25	62 x 62 x 91 mm ³ / 295 g	M1M3-0001EBEMI-CAUH3- <u>A0S</u>
IrLugX1M3™ No Shutter	9 Hz	35 mm; HFOV: 24.4°; F/1.10	37 x 37 x 70 mm ³ / 110 g	M1M3-0001EBKMI-CAUH3- <u>A0S</u>
IrLugX1M3™ No Shutter	9 Hz	19 mm; HFOV: 44.0°; F/1.05	47 x 47 x 100 mm ³ / 230 g	M1M3-0001EATMI-CAUH3- <u>A0S</u>
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IrLugX1M3™ No Shutter	9 Hz	8.5 mm; HFOV: 84.5°; F/1.05	45 x 45 x 98 mm ³ / 250 g	M1M3-0001EAYMI-CAUH3- <u>A0S</u>
IrLugX1M3™ No Shutter	30 Hz	No	35 x 35 x 31 mm ³ / 70 g	M1M3-0001AXMI-CAUH3- <u>A0S</u>
IrLugX1M3™ No Shutter	9 Hz	No	35 x 35 x 31 mm ³ / 70 g	M1M3-0001EXMI-CAUH3- <u>A0S</u>

Note of Part numbering:

The two of three last digits A0 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** refers to **engineering Sample**.

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

PARTICULARITY OF CAMERA MODULE

IrLugX1M3™ 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 IrLugX1M3™, enabling to embed the customer optimized and just needed processing to the aimed application for saving power consumption of the system.

PERFORMANCE GRADE

IrLugX1M3™ offers a performance grade:

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

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