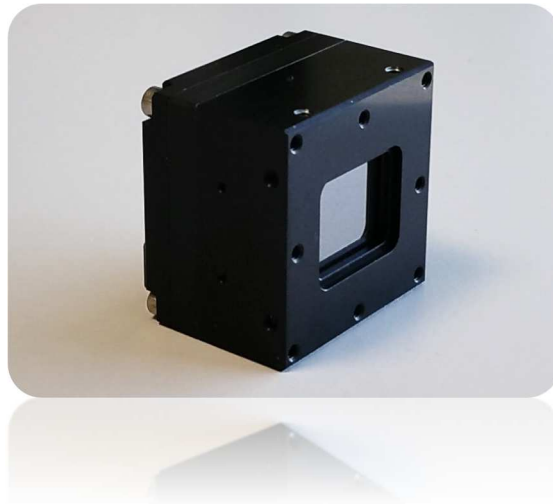


VGA Smart Thermal Imaging Camera Modules One of the Most Compact and Lightest High Resolution of Uncooled InfraRed OEM Camera in the World

- Best Embedded Solution for Core Engine Camera Integrator -



SmartIR640E is an affordable compact and a featherweight thermal imaging camera module especially designed for simply being integrated into the customer sub-system, enabling a high image quality with low-power consumption, providing an agility of configurations and addressing the medium volumes application makers

SmartIR640E is the plug and play perfect core engine, thanks to **easy to use video digital standards, from BT656** with 8 bits streaming video to 3G-SDI or CameraLink with 16 bits. This thermal imaging camera includes the software that performs image processing and control

SmartIR640E is ready to integrate in your application thanks to a GUI providing high level services (Configuration and control)

SCOPE OF USE

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



KEY TECHNICAL SPECIFICATIONS OF ENGINE CORE MODEL

FEATURES	SmartIR640E	DESCRIPTION
Camera resolution	640x480 pixels	Micro-bolometer technology with 17µm pixel pitch
Spectral response (LWIR) NETD (F/1 ; 300K ; @30 Hz)	8 – 14 µm < 50 mK < 40 mK or < 30 mK	SmartIR640E fits to PICO640-046; PICO640-046+; PICO640S+ detectors Without optics Standard performance grade Can be optimized on demand, with dedicated P/N. Refer to Performance Grade section
Power consumption	< 1.30 W	@ 30 Hz Frame rate with Shutter-Less mode set OFF
Interface connector: Video: Format	DF40C-60DP (Header) BT656 (8 bits) YCbCr (10 bits) Mono16 (16bits)	Only NUC and BPC treatment available in this mode
External Pixel Clock Synchronization	Yes	
Digital output/input: Control Upgrade	UART UART	
Electrical digital output/Input: Power Supply Voltage	3.3V (Standard) or 1.8V (optional) 5.0V +-10%	Optional on demand
External Frame trigger	Yes	Free run software frame trigger; External hardware frame trigger Frame trigger replication
No Shutter	Standard	
Mechanical Shutter management	Yes	Trigger of external shutter
Shutter-Less	Optional	Two points Shutter-less (optional on demand)
User Configuration Storage	1	On module
Storage Calibration Table	Up to 8	On module
Time to image	< 6 s	Time from power on at power supply
Image Processing: Calibration	Yes	Configuration dependence Two point calibration (software triggered) One point calibration (software and hardware triggered)
Image Optimization	NUC; BPC; AGC (Brightness, Contrast)	AGC: Linear 1%; Enhanced; Manual, ROI, Smooth
Rescale	x1 to x4	Continuous zoom, depending on configuration
Color Rendering	Yes	White Hot; Black Hot; Glow; Fire; Iron; Rainbow; Custom
Symbology (OSD)	16 areas	Configurable Position, Size, Alpha, Color, Content
Image Flip	Yes	
Full Frame Rate	120 Hz 60 Hz	Full Frame rate on demand only
Nominal Frame Rate	30 Hz (standard)	
Exportable Frame Rate	9 Hz	
Qualification grade	Industrial (Standard grade) Extended or Military (MIL-STD-810E)	For Military grade only with selective sorting test concerning climatic stress screening based on MIL-HDBK-2164A
Mechanical Shock (TWS)	1000g, 0.4ms, ½ sine X & Y axis 700g, 0.3ms, ½ sine Z axis	For only configuration of module without shutter
Operating temperature range	-20°C ; +60°C (Standard grade) -40°C; +70°C (Extended or Military grade)	
Size: Length x Width x Height	30.0 x 30.0 x 23 mm ³	With mechanical encased, excluding optic and mechanical Shutter
Weight	< 38 g	With mechanical encased, excluding optic and mechanical Shutter
Storage Data Retention	> 20 years	
Customer configurations available on demand for following interfaces: SDI; Camera-Link; Analog video output (PAL-NTSC) with specific power supply		

KEY SPECIFICATIONS OF ANALOG CAMERA MODEL (PAL/NTSC)

FEATURES	PARAMETERS	DESCRIPTION
Base Camera Resolution	640 x 480 pixels	Micro-bolometer technology with 17µm pixel pitch
Spectral response (LWIR)	8 – 14 µm	SmartIR640E fits to PICO640-046; PICO640-046+; PICO640S+ detectors
NETD (F/1 ; 300K ; @30 Hz)	< 50 mK < 40 mK or < 30 mK	Without optics Standard performance grade Can be optimized on demand, with dedicated P/N. Refer to Performance Grade section
Video Standard	PAL/NTSC	Switch able via RS232 Control
Image Resolution of Video Standard	576i/480i	
Standard Frame rate	25.00Hz/29.97Hz	
Exportable Frame rate	8.33Hz/7.49Hz	
No Shutter	Standard	
Mechanical Shutter Management	Yes	Trigger of external shutter Activated Input
Shutter-Less	Optional	Two points Shutter-less (optional on demand)
User Configuration Storage	1	On module
Storage Calibration Table	Up to 8	On module
Time to image	< 6 s	Time from power on at power supply pin
Image Processing and calibration	Yes	Refer to Key Specification sheet of Engine Core Model
Video output 1 Connector	HD-BNC (Micro-BNC female)	
Video output 2 Connector	Samtec (TEM-110-02-03.0-G-D-L1)	20 pin Connector, Mapping part : Samtec ISDE-10-D-L
Video Output Impedance	75 Ohm	
Video Output Signal Level	1V p/p	CCIR Rec. 569 for PAL/ FCC for NTSC
Video Differential Gain and Phase	+3% / +3°max.	CCIR Rec. 569 for PAL/ FCC for NTSC
Video Signal to Noise ratio (Unweighted, 5 MHz activated Low Pass filter)	62 dB max. 59 dB max.	On one quiet line per CCIR Rec. 569 for PAL and @ Video output 1 On one quiet line per NTC-7 for NTSC and @ Video output 1
Video Group Delay and Gain	+0.05 µs/+1.0dB +0.1 µs/+1.0dB	Ref. at 0.24 MHz to 4.3 MHz for PAL and @ Video output 1 Ref. at 0.20 MHz to 4.0 MHz for NTSC and @ Video output 1
Power supply and digital signal Connector	Samtec (TEM-110-02-03.0-G-D-L1)	20 pin Connector
Positive Power Supply Voltage	4V to 14V max. DC	Polarity Reverse, Over and Under Supply protection and limitation
Power Consumption	< 1.7 W	@ 30 Hz Frame rate with Shutter-Less mode set OFF
Camera Communication and Control	RS232	Compliance with EIA/TIA-232E, IUT-T V.28, up to 460 kbps
External Trigger Input	3V3 or 5V0	Digital logic, 5 K Ohm pull-down internal resistor
Data CLK Output: PAL/NTSC	BT656, 3V3 CMOS	Digital BT656, 29.5 MHz/24.54 MHz
Video data Output (Data_0 to Data_7)	BT656, 8 bits, 3V3 CMOS	Digital BT656
Shutter Requested Output	Yes, 3V3 CMOS	Digital logic
Shutter Activated Input	Yes, 3V3 or 5V0	Digital logic
Qualification grade	Industrial (Standard grade) Extended or Military (MIL-STD-810E)	For Military grade only with selective sorting test concerning climatic stress screening based on MIL-HDBK-2164A
Mechanical Shock (TWS)	1000g, 0.4ms, ½ sine X & Y axis 700g, 0.3ms, ½ sine Z axis	For only configuration of module without shutter
Size: Length x Width x Height	30.0 x 30.0 x 39 mm ³	With mechanical encased & HD-BNC connector, excluding optic and mechanical Shutter
Weight	< 50g	With mechanical encased & HD-BNC connector, excluding optic and mechanical Shutter
Storage Data Retention	> 20 years	
Accessory for Evaluation:		
Camera Interface Cable with Unterminated leads (Samtec SESDT-10-32-G-20.0-L)		
HD-BNC to BNC 75 Ohm Cable		

KEY SPECIFICATIONS OF CAMERA-LINK MODEL

FEATURES	PARAMETERS	DESCRIPTION
Base Camera Resolution	640 x 480 pixels	Micro-bolometer technology with 17µm pixel pitch
Spectral response (LWIR)	8 – 14 µm	SmartIR640E fits to PICO640-046; PICO640-046+; PICO640S+ detectors
NETD (F/1 ; 300K ; @30 Hz)	< 50 mK < 40 mK or < 30 mK	Without optics Standard performance grade Can be optimized on demand, with dedicated P/N. Refer Performance Grade section
Video Format	16 bits	Camera-Link Data
Standard Frame rate	30 Hz	
Maximum Frame rate	120 Hz	
Exportable Frame rate	9 Hz	
No Shutter	Standard	
Mechanical Shutter Management	Yes	Trigger of external shutter Activated Input
Shutter-Less	Optional	Two points Shutter-less (optional on demand)
User Configuration Storage	1	On module
Storage Calibration Table	Up to 8	On module
Time to image	< 6 s	Time from power on at power supply pin
Image Processing and calibration	Yes	Refer to Key Specification sheet of Engine Core Model
Camera-Link Connector	3M – SDR 26 pin	
PoCL (Power over Camera-Link)	12V	Standard Compliance of Camera-Link
External Trigger Input	Yes	100 Ohm terminated LVDS logic Standard
Camera Communication and Control	Via SerTFG, SerTC LVDS serial Interface	
HR10 Hirose – 6 pin Connector	HR10-7R-6PA	Mapping part : HR10A-7P-6S
Positive Power Supply	8V to 32V max. DC	Polarity Reverse Supply protection
Power Consumption	<1.7 W	@ 30 Hz Frame rate with Shutter-Less mode set OFF
Shutter Requested Output	3V3 CMOS	Digital logic, 330 Ohm in serial internal resistor
Shutter Activated Input	3V3 or 5V0	Digital logic
External Trigger Input	3V3 or 5V0	Digital logic
Qualification grade	Industrial (Standard grade) Extended or Military (MIL-STD-810E)	For Military grade only with selective sorting test concerning climatic stress screening based on MIL-HDBK-2164A
Operating temperature range	-20°C ; +60°C (Standard grade) -40°C; +70°C (Extended or Military grade)	
Size: Length x Width x Height	30 x 30 x 40 mm ³	With mechanical encased & connectors, excluding optic and mechanical Shutter
Weight	< 60g	With mechanical encased & connectors, excluding optic and mechanical Shutter
Storage Data Retention	> 20 years	
Accessory for Evaluation:		
Camera-Link Frame Grabber board		
Camera-Link Cable		

KEY SPECIFICATIONS OF SDI CAMERA MODEL

FEATURES	PARAMETERS	DESCRIPTION
Base Camera Resolution	640 x 480 pixels	Micro-bolometer technology with 17µm pixel pitch
Video Format	SD HD-3G	SmartIR640E fits to PICO640-046; PICO640-046+; PICO640S+ detectors Switchable via RS422/RS485 Control On demand only, with dedicated P/N
NETD (F/1 ; 300K ; @30 Hz)	< 50 mK < 40 mK or < 30 mK	Standard performance grade Can be optimized on demand, with dedicated P/N. Refer Performance Grade section
Image Resolution Standard/Standard		
Frame rate		
Interleaving mode (SD)	576i50-480i59.94	ANSI/SMPTE-294/ANSI/SMPTE
Progressive mode (HD-3G)	720p25, 720p29.97, 720p30, 720p50, 720p59.94, 720p60/ 1080p25, 1080p29.97, 1080p30 1080p50, 1080p59.94, 1080p60	ANSI/SMPTE-292 (HD-SDI ; 1.485Gbit/s) ANSI/SMPTE-424M (3G-SDI ; 2.97Gbits/s)
Exportable Frame rate	8.33Hz-7.49Hz	
No Shutter	Standard	
Mechanical Shutter Management	Yes	Trigger of external shutter Activated Input/Shutter Requested output
Shutter-Less	Optional	Two points Shutter-less (optional on demand)
User Configuration Storage	1	On module
Storage Calibration Table	Up to 8	On module
Time to image	< 6 s	Time from power on at power supply pin
Image Processing and calibration	Yes	Refer to Key Specification sheet of Engine Core Model with image processing for human vision
Video output Connector	HD-BNC (Micro-BNC female)	
Video Output Impedance	75 Ohm	ANSI/SMPTE (Compliance of 3G-SDI Standard)
Video Output Signal Level	Compliance of 3G-SDI Standard	ANSI/SMPTE
Error bit with CRC	Compliance of 3G-SDI Standard	ANSI/SMPTE including 100m max. length cable
Latency time	<1/4 of frame	
HR25 Hirose – 16 pin Connector	HR25-9TR-16PA	Mating part: HR25-9TP-6S
Camera Communication and Control	RS422/RS485	Full duplex mode , compliance with ANSI/TIA/EIA-422/EIA485, up to 500Kps
Positive Power Supply Voltage	8V to 32V max. DC	Polarity Reverse Supply protection
Power Supply status LED	Yes	Green color Led for Power on. Can be disabled
Power Supply Over Coax	12V to 14V @ <3.2W 12V to 14V @ <3.5W	@ 480i29.97 video format with Shutter-Less mode set OFF @ 720p30 video format with Shutter-Less mode set OFF
Power Consumption	< 3.2 W <3.5 W	@ 480i29.97 video format with Shutter-Less mode set OFF @ 720p30 video format with Shutter-Less mode set OFF
Output External		
GenLock (Synchronization)	CMOS 2V5	
Horizontal Synchronization/ Input	LVDS (+/-350 mV c/c) ECL logic	Differential signal (100 Ohm impedance matching)
External GenLock		
Vertical Synchronization	LVDS (+/-350 mV c/c) ECL logic	Differential signal (100 Ohm impedance matching)
Shutter Requested Output	CMOS 2V5	
Shutter Activated Input	CMOS 2V5, 3V3 or TLL 5V0	
Qualification grade	Industrial (Standard grade) Military (MIL-STD-810E)	
Operating temperature range	-20°C ; +60°C (Standard grade) -40°C ; +70°C (Extended or Military grade)	
Size: Length x Width x Height	30.0 x 30.0 x 36 mm ³	With mechanical encased & HD-BNC connector, excluding optic and mechanical Shutter
Weight	< 50g	With mechanical encased & HD-BNC connector, excluding optic and mechanical Shutter
Storage Data Retention	> 20 years	
Accessory for Evaluation:		
Camera Interface cable for camera control, power supply, other signals, PCIe SDI Video Capture board, HD-BNC to BNC 75 Ohm Cable		

POSSIBLE MODULARITY OF ENGINE CORE

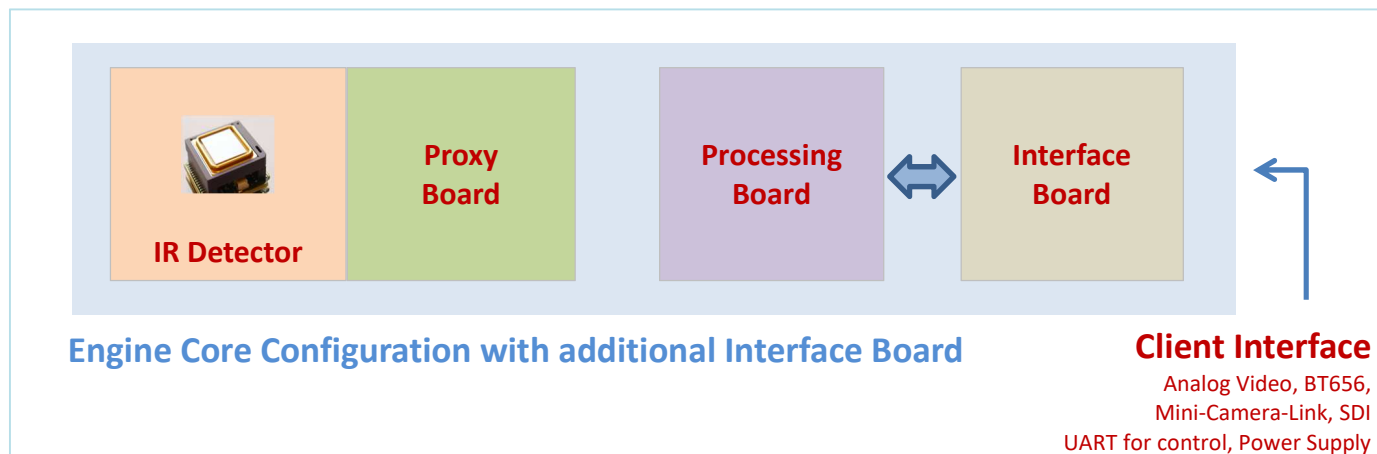
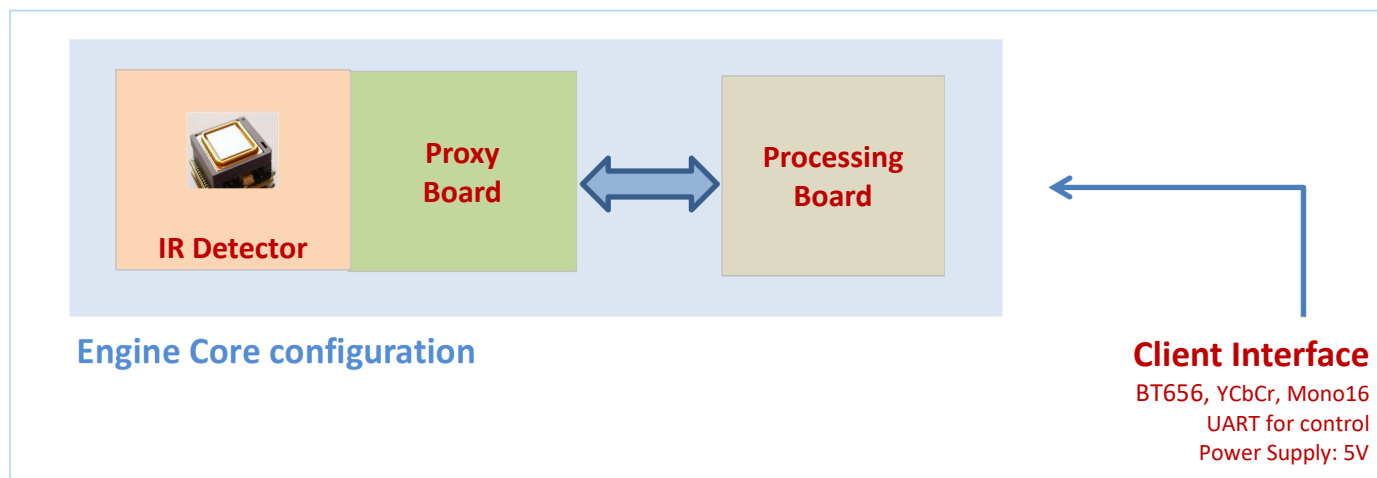
SmartIR640E is developed using a modular concept and architecture, enabling to embed the optimized and just needed interface to the aimed application.

A Processing Board embeds the image processing into the module.

An Interface Board can be added to the previous stack (see figure below).

Many different standard outputs are available on demand: SDI, Camera-Link, BT656, Analog Video output (PAL-NTSC) interface with specific Power Supply. Such a wide choice of variants perfectly serves the designers of electrooptical systems in Surveillance and Security, UAVs, UGVs and Machine Vision applications.

As for handheld and portable devices, SmartIR640E also fits as the fundamental Infrared stack. However, the “Platform” is an alternative to be seriously considered (refer to dedicated SmartIR640P specsheet). It natively features a microcontroller, power management and video stack, which secures and smoothens device integration.



ORDER YOUR OWN AND GET IT! (1/2)

Engine Core VGA MODEL (With housing and standard qualification and standard performance grade)	VIDEO SPEED	LENS	DIMENSION/WEIGHT	PART NUMBER
SmartIR640E No Shutter	30 Hz	35 mm; HFOV: 16.9°; F/1.14	38 x 38 x 57 mm ³ / 86 g	E640-1401AVAI-CAHB1- <u>10</u> M
SmartIR640E No Shutter	30 Hz	25 mm; HFOV: 25°; F/1.20	30 x 30 x 57 mm ³ / 96 g	E640-1401AIAI-CAHB1- <u>10</u> M
SmartIR640E No Shutter	30 Hz	19 mm; HFOV: 32.3°; F/1.03	30 x 30 x 45 mm ³ / 72 g	E640-1401AQAI-CAHB1- <u>10</u> M
SmartIR640E No Shutter	30 Hz	16.7 mm; HFOV: 37.5°; F/1.25	30 x 30 x 45 mm ³ / 70 g	E640-1401AHAI-CAHB1- <u>10</u> M
SmartIR640E No Shutter	30 Hz	7.5 mm; HFOV: 90°; F/1.40	30 x 30 x 56 mm ³ / 60 g	E640-1401AGAI-CAHB1- <u>10</u> M
SmartIR640E No Shutter	9 Hz	35 mm; HFOV: 16.9°; F/1.14	38 x 38 x 57 mm ³ / 86 g	E640-1401EVAI-CAHB1- <u>10</u> M
SmartIR640E No Shutter	9 Hz	25 mm; HFOV: 25°; F/1.20	30 x 30 x 57 mm ³ / 96 g	E640-1401EIAI-CAHB1- <u>10</u> M
SmartIR640E No Shutter	9 Hz	19 mm; HFOV: 32.3°; F/1.03	30x 30 x 45 mm ³ / 72 g	E640-1401EQAI-CAHB1- <u>10</u> M
SmartIR640E No Shutter	9 Hz	16.7 mm; HFOV: 37.5°; F/1.25	30 x 30 x 45 mm ³ / 70 g	E640-1401EHAI-CAHB1- <u>10</u> M
SmartIR640E No Shutter	9 Hz	7.5 mm; HFOV: 90°; F/1.40	30 x 30 x 56 mm ³ / 60 g	E640-1401EGAI-CAHB1- <u>10</u> M
SmartIR640E No Shutter	30 Hz	No	30 x 30 x 23 mm ³ / 38 g	E640-1401AXAI-CAHB1- <u>10</u> M
SmartIR640E No Shutter	9 Hz	No	30 x 30 x 23 mm ³ / 38 g	E640-1401EXAI-CAHB1- <u>10</u> M

VGA MODEL with Analog Video (PAL/NTSC) (With housing and standard qualification and standard performance grade)	VIDEO SPEED	LENS	DIMENSION/WEIGHT	PART NUMBER
SmartIR640E-PAL/NTSC No Shutter	25/30 Hz	35 mm; HFOV: 16.9°; F/1.14	38 x 38 x 65 mm ³ / 98 g	E640-1101AVAI-CASM1- <u>10</u> M
SmartIR640E-PAL/NTSC No Shutter	25/30 Hz	25 mm; HFOV: 25°; F/1.20	30 x 30 x 65 mm ³ / 108 g	E640-1101AIAI-CASM1- <u>10</u> M
SmartIR640E-PAL/NTSC No Shutter	25/30 Hz	19 mm; HFOV: 32.3°; F/1.03	30 x 30 x 53 mm ³ / 84 g	E640-1101AQAI-CASM1- <u>10</u> M
SmartIR640E-PAL/NTSC No Shutter	25/30 Hz	16.7 mm; HFOV: 22.5°; F/1.25	30 x 30 x 53 mm ³ / 82 g	E640-1101AHAI-CASM1- <u>10</u> M
SmartIR640E-PAL/NTSC No Shutter	25/30 Hz	7.5 mm; HFOV: 90°; F/1.40	30 x 30 x 49 mm ³ / 72 g	E640-1101AGAI-CASM1- <u>10</u> M
SmartIR640E-PAL/NTSC No Shutter	8.33/7.49 Hz	35 mm; HFOV: 16.9°; F/1.14	38 x 38 x 65 mm ³ / 98 g	E640-1101EVAI-CASM1- <u>10</u> M
SmartIR640E-PAL/NTSC No Shutter	8.33/7.49 Hz	25 mm; HFOV: 25°; F/1.20	30 x 30 x 65 mm ³ / 108 g	E640-1101EIAI-CASM1- <u>10</u> M
SmartIR640E-PAL/NTSC No Shutter	8.33/7.49 Hz	19 mm; HFOV: 32.3°; F/1.03	30 x 30 x 53 mm ³ / 84 g	E640-1101EQAI-CASM1- <u>10</u> M
SmartIR640E-PAL/NTSC No Shutter	8.33/7.49 Hz	16.7 mm; HFOV: 22.5°; F/1.25	30 x 30 x 53 mm ³ / 82 g	E640-1101EHAI-CASM1- <u>10</u> M
SmartIR640E-PAL/NTSC No Shutter	8.33/7.49 Hz	7.5 mm; HFOV: 90°; F/1.40	30 x 30 x 49 mm ³ / 72 g	E640-1101EGAI-CASM1- <u>10</u> M
SmartIR640E-PAL/NTSC No Shutter	25/30 Hz	No	30 x 30 x 39 mm ³ / 50 g	E640-1101AXAI-CASM1- <u>10</u> M
SmartIR640E-PAL/NTSC No Shutter	8.33/7.49 Hz	No	30 x 30 x 39 mm ³ / 50 g	E640-1101EXAI-CASM1- <u>10</u> M

VGA MODEL with Camera-Link (With housing and standard qualification and standard performance grade)	VIDEO SPEED	LENS	DIMENSION/WEIGHT	PART NUMBER
SmartIR640E-CL No Shutter	30 Hz	35 mm; HFOV: 16.9°; F/1.14	38 x 38 x 74 mm ³ / 108 g	E640-1501AVAI-CACL1- <u>11</u> M
SmartIR640E-CL No Shutter	30 Hz	25 mm; HFOV: 25°; F/1.20	30 x 30 x 74 mm ³ / 118 g	E640-1501AIAI-CACL1- <u>11</u> M
SmartIR640E-CL No Shutter	30 Hz	19 mm; HFOV: 32.3°; F/1.03	30 x 30 x 62 mm ³ / 94 g	E640-1501AQAI-CACL1- <u>11</u> M
SmartIR640E-CL No Shutter	30 Hz	16.7 mm; HFOV: 37.5°; F/1.25	30 x 30 x 62 mm ³ / 92 g	E640-1501AHAI-CACL1- <u>11</u> M
SmartIR640E-CL No Shutter	30 Hz	7.5 mm; HFOV: 90°; F/1.40	30 x 30 x 50 mm ³ / 82 g	E640-1501AGAI-CACL1- <u>11</u> M
SmartIR640E-CL No Shutter	9 Hz	35 mm; HFOV: 16.9°; F/1.14	38 x 38 x 74 mm ³ / 108 g	E640-1501EVAI-CACL1- <u>11</u> M
SmartIR640E-CL No Shutter	9 Hz	25 mm; HFOV: 25°; F/1.20	30 x 30 x 62 mm ³ / 94 g	E640-1501EIAI-CACL1- <u>11</u> M
SmartIR640E-CL No Shutter	9 Hz	19 mm; HFOV: 32.3°; F/1.03	30 x 30 x 74 mm ³ / 118 g	E640-1501EQAI-CACL1- <u>11</u> M
SmartIR640E-CL No Shutter	9 Hz	16.7 mm; HFOV: 37.5°; F/1.25	30 x 30 x 62 mm ³ / 92 g	E640-1501EHAI-CACL1- <u>11</u> M
SmartIR640E-CL No Shutter	9 Hz	7.5 mm; HFOV: 90°; F/1.40	30 x 30 x 50 mm ³ / 82 g	E640-1501EGAI-CACL1- <u>11</u> M
SmartIR640E-CL No Shutter	30 Hz	No	30 x 30 x 40 mm ³ / 60 g	E640-1501AXAI-CACL1- <u>11</u> M
SmartIR640E-CL No Shutter	9 Hz	No	30 x 30 x 40 mm ³ / 60 g	E640-1501EXAI-CACL1- <u>11</u> M

Note of Part numbering:

The two of three last digits 10 or 11 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** is meaning the mass production device

ORDER YOUR OWN AND GET IT! (2/2)

VGA MODEL with SD SDI (With housing and standard qualification and standard performance grade)	VIDEO SPEED	LENS	DIMENSION/WEIGHT	PART NUMBER
SmartIR640E-SDI (SD) No Shutter	50/59.94 Hz	35 mm; HFOV: 16.9°; F/1.14	38 x 38 x 63 mm ³ / 98 g	E640-1801AVAI-CASD4- <u>12</u> M
SmartIR640E-SDI (SD) No Shutter	50/59.94 Hz	25 mm; HFOV: 25°; F/1.20	30 x 30 x 63 mm ³ / 108 g	E640-1801AIAI-CASD4- <u>12</u> M
SmartIR640E-SDI (SD) No Shutter	50/59.94 Hz	19 mm; HFOV: 32.3°; F/1.03	30 x 30 x 51 mm ³ / 84 g	E640-1801AQAI-CASD4- <u>12</u> M
SmartIR640E-SDI (SD) No Shutter	50/59.94 Hz	16.7 mm; HFOV: 22.5°; F/1.25	30 x 30 x 51 mm ³ / 82 g	E640-1801AHAI-CASD4- <u>12</u> M
SmartIR640E-SDI (SD) No Shutter	50/59.94 Hz	7.5 mm; HFOV: 90°; F/1.40	30 x 30 x 47 mm ³ / 72 g	E640-1801AGAI-CASD4- <u>12</u> M
SmartIR640E-SDI (SD) No Shutter	8.33/7.49 Hz	35 mm; HFOV: 16.9°; F/1.14	38 x 38 x 63 mm ³ / 98 g	E640-1801EVAI-CASD4- <u>12</u> M
SmartIR640E-SDI (SD) No Shutter	8.33/7.49 Hz	25 mm; HFOV: 25°; F/1.20	30 x 30 x 63 mm ³ / 108 g	E640-1801EIAI-CASD4- <u>12</u> M
SmartIR640E-SDI (SD) No Shutter	8.33/7.49 Hz	19 mm; HFOV: 32.3°; F/1.03	30 x 30 x 51 mm ³ / 84 g	E640-1801EQAI-CASD4- <u>12</u> M
SmartIR640E-SDI (SD) No Shutter	8.33/7.49 Hz	16.7 mm; HFOV: 22.5°; F/1.25	30 x 30 x 51 mm ³ / 82 g	E640-1801EHAI-CASD4- <u>12</u> M
SmartIR640E-SDI (SD) No Shutter	8.33/7.49 Hz	7.5 mm; HFOV: 90°; F/1.40	30 x 30 x 47 mm ³ / 72 g	E640-1801EGAI-CASD4- <u>12</u> M
SmartIR640E-SDI (SD) No Shutter	50/59.94 Hz	No	30 x 30 x 36 mm ³ / 50 g	E640-1801AXAI-CASD4- <u>12</u> M
SmartIR640E-SDI (SD) No Shutter	8.33/7.49 Hz	No	30 x 30 x 36 mm ³ / 50 g	E640-1801EXAI-CASD4- <u>12</u> M

VGA MODEL with HD-3G SDI (With housing and standard qualification and standard performance grade)	VIDEO SPEED	LENS	DIMENSION/WEIGHT	PART NUMBER
SmartIR640E-SDI (HD) No Shutter	30/25 Hz	35 mm; HFOV: 16.9°; F/1.14	38 x 38 x 63 mm ³ / 98 g	E640-1801AVAI-CASD2- <u>12</u> S
SmartIR640E-SDI (HD) No Shutter	30/25 Hz	25 mm; HFOV: 25°; F/1.20	30 x 30 x 63 mm ³ / 108 g	E640-1801AIAI-CASD2- <u>12</u> S
SmartIR640E-SDI (HD) No Shutter	30/25 Hz	19 mm; HFOV: 32.3°; F/1.03	30 x 30 x 51 mm ³ / 84 g	E640-1801AQAI-CASD2- <u>12</u> S
SmartIR640E-SDI (HD) No Shutter	30/25 Hz	16.7 mm; HFOV: 22.5°; F/1.25	30 x 30 x 51 mm ³ / 82 g	E640-1801AHAI-CASD2- <u>12</u> S
SmartIR640E-SDI (HD) No Shutter	30/25 Hz	7.5 mm; HFOV: 90°; F/1.40	30 x 30 x 47 mm ³ / 72 g	E640-1801AGAI-CASD2- <u>12</u> S
SmartIR640E-SDI (HD) No Shutter	8.33/7.49 Hz	35 mm; HFOV: 16.9°; F/1.14	38 x 38 x 63 mm ³ / 98 g	E640-1801EVAI-CASD2- <u>12</u> S
SmartIR640E-SDI (HD) No Shutter	8.33/7.49 Hz	25 mm; HFOV: 25°; F/1.20	30 x 30 x 63 mm ³ / 108 g	E640-1801EIAI-CASD2- <u>12</u> S
SmartIR640E-SDI (HD) No Shutter	8.33/7.49 Hz	19 mm; HFOV: 32.3°; F/1.03	30 x 30 x 51 mm ³ / 84 g	E640-1801EQAI-CASD2- <u>12</u> S
SmartIR640E-SDI (HD) No Shutter	8.33/7.49 Hz	16.7 mm; HFOV: 22.5°; F/1.25	30 x 30 x 51 mm ³ / 82 g	E640-1801EHAI-CASD2- <u>12</u> S
SmartIR640E-SDI (HD) No Shutter	8.33/7.49 Hz	7.5 mm; HFOV: 90°; F/1.40	30 x 30 x 47 mm ³ / 72 g	E640-1801EGAI-CASD2- <u>12</u> S
SmartIR640E-SDI (HD) No Shutter	30/25 Hz	No	30 x 30 x 36 mm ³ / 50 g	E640-1801AXAI-CASD2- <u>12</u> S
SmartIR640E-SDI (HD) No Shutter	8.33/7.49 Hz	No	30 x 30 x 36 mm ³ / 50 g	E640-1801EXAI-CASD2- <u>12</u> S

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** refers to engineering Sample.

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

PERFORMANCE GRADE

SmartIR640E offers three performance grades:

FEATURES	Standard Grade	High Grade	Ultra-High Grade
NETD	<50mK	<40mK	<30mK
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.

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

COMPATIBILITY VERSION OF CAMERA MODEL VERSUS THE HOST CONTROLLER INTERFACE

RELEASE VERSION	RELEASE DATE	NEW FEATURES
<u>10</u>	June 2017	Engine Core independing on customer operating system
<u>11</u>	July 2019	Camera-Link Frame Grabber ⁽¹⁾
<u>12</u>	May 2020	SDI Frame Grabber ⁽²⁾

- (1) Compatible with the frame grabber boards:
- 1624 Grablink Base of EURESYS manufacturer
 - 1433 of National Instrument manufacturer
 - Xcelera-CL PX4 of Teledyne manufacturer

- (2) Compatible with the frame grabber boards:
- Grabber DeckLink Duo 2 of BlackMagic

WHAT'S IN THE BOX

Module of Thermal Imaging Camera

ICD (mechanical drawings)	}	Downloadable on Device-ALab website through customer access
GUI		
Documentation (user's guide)		

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 or equal than 9 Hz frame rates.