

25-micron pixels



Tau 320™

Low Cost, High Volume
IR Camera Core

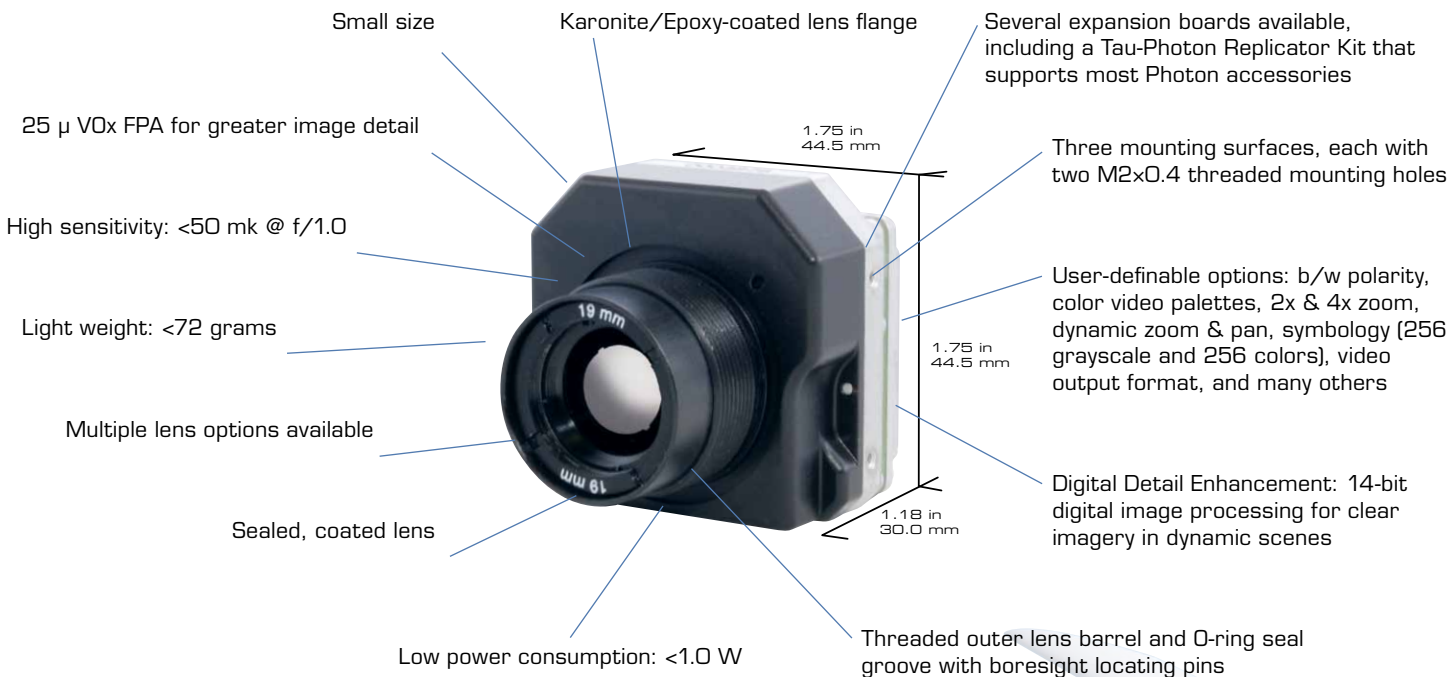


FLIR's Tau: a low-cost, high volume longwave thermal camera core

A fusion of small size, light weight, miniscule power consumption, and outstanding imaging performance makes Tau the ideal thermal camera core for many demanding applications.

From handheld thermal imagers to unmanned vehicle payload cameras, from firefighting instruments to thermal sights, Tau is the best choice for applications that demand a unique combination of light weight, small size, and low power.

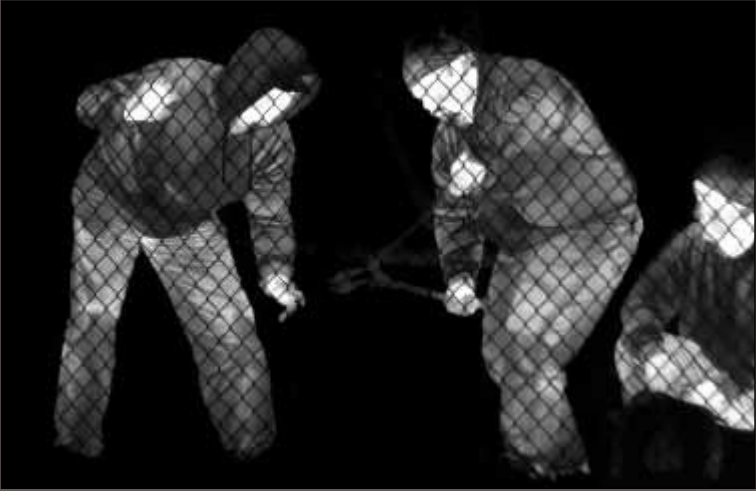
Tau is the first uncooled thermal camera core to combine all of these attributes into one affordable, high-performance package.



IR image through thick smoke.



Intruder placing a suspected explosive device under a fuel truck.



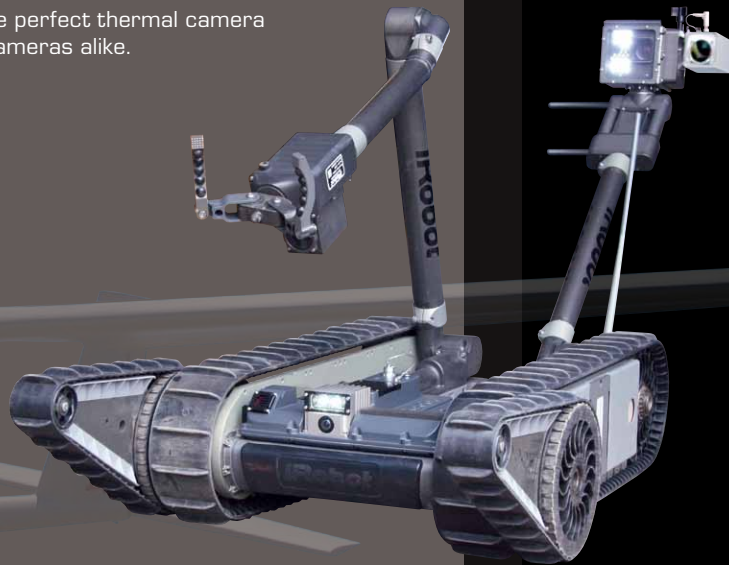
Tau's small size, light weight, lens options, and digital image processing allow crystal-clear imaging day and night.



Small, light, and easy to integrate, Tau is the perfect thermal camera core for unmanned vehicles and handheld cameras alike.



Easy integration, miniscule power consumption, and specialized imaging capabilities combine to make Tau the ideal firefighting thermal camera core. (WFOV lenses only)





5 mm
(Tau 160 only)



9 mm



13 mm



19 mm



25 mm



35 mm



50 mm



60 mm



100 mm

Tau 320 Features

Tau cameras provide all of the features and functions operators and integrators have come to expect from FLIR, and then some. Tau 320 features and improvements include:

- 25-micron pixel size
- Reduced time constant
- Lightweight – the four WFOV Tau models weigh less than 3 ounces
- Low volume
- Low power
- Field-switchable between NTSC and PAL video formats
- CMOS and BT.656 digital video options, as well as the legacy Photon serial LVDS
- High-speed camera communication up to 921,600 baud
- Improved GUI for camera configuration and backward compatibility with other Photon cameras
- Optional SDK offers access to Tau's complete feature set
- Relative temperature measurement (WFOV lenses only)
- On-board image capture and storage
- Camera power and control over USB XP board option
- Improved EMI suppression; Class B with rear cover installed, Class A without rear cover
- Discrete camera control functions available to OEMs

- Nine lens options available (4 WFOV; 5 NFOV)
- Wide field of view lenses sealed to IP-67
- Threaded WFOV lens barrel for external mounting attachment options
- Field-upgradable software/firmware
- Support for user-defined symbology
- Accessories available that provide electrical and mechanical interfacing for drop-in compatibility with Photon
- Supplemental FFC software allows users to calibrate out lens effects to improve image quality
- Customers can load their own start-up splash screens (10-camera minimum purchase required)

Alternate Configurations

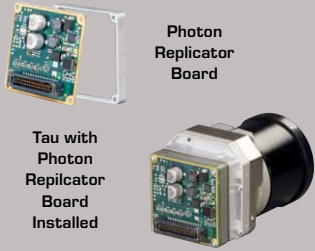

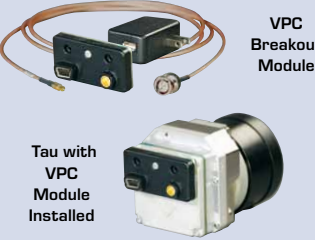


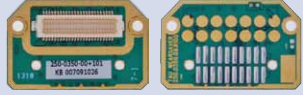
For OEM customers, Tau is available in several additional factory configurations:

- For applications with especially tight volume constraints, a shutterless version of Tau is available (1.5" x 1.5" x 1.18"); requires customer-supplied FFC.
- Tau is also available as a lens-less core.
- A lower priced, digital-only version of Tau is available for large volume OEMs.

Accessories

There are several Tau-specific accessories available. Individual components are also available; contact FLIR for details.

Visit www.flir.com/cvs/cores/uncooled/products/tau to browse the **Tau FAQ**, and download the **Tau GUI**, connector pin-out definition, **IDD interface**, and **User Guide**.

<ul style="list-style-type: none"> Photon Replicator Board (FLIR p/n: 421-0040-00) gives users backward compatibility with the Photon Accessory Kit (FLIR p/n: 421-0021-00). 	<ul style="list-style-type: none"> Photon Replicator Kit (FLIR p/n: 421-0045-00) provides full mechanical and electrical compatibility with Photon mounting hardware and accessories. 
<ul style="list-style-type: none"> VPC (video/power/communication) breakout module (FLIR p/n: 421-0039-00). 	<ul style="list-style-type: none"> Camera Link Expansion Board (FLIR p/n: 421-0046-00) furnishes 14-bit digital data. A separate MCX connector is provided for analog video. Input power and camera communication are enabled via the mini-USB port.[†] 
<ul style="list-style-type: none"> Tripod adapter (FLIR p/n: 261-2071-00). 	<ul style="list-style-type: none"> Tau PCB Wearsaver with Solder Pads – A low-profile adapter that attaches to the Tau's 50-pin Hirose connector, furnishing a solder pad interface. Schematic included. (FLIR p/n: 421-0047-00) 
<ul style="list-style-type: none"> Tau XP (expansion) board reference design module. Tau Software Developer's Kit (FLIR p/n: 110-0133-16). <p>[†] The Camera Link XP accessory provides access to Tau digital data only. Portions of the base Camera Link specifications are not met:</p> <ul style="list-style-type: none"> Power to the Tau camera is not supported via the Camera Link connector (the XP accessory does furnish a mini-USB port for power) Communication through the Camera Link connector is supported, but requires a minor modification by the user. Otherwise, communication is via USB. 	

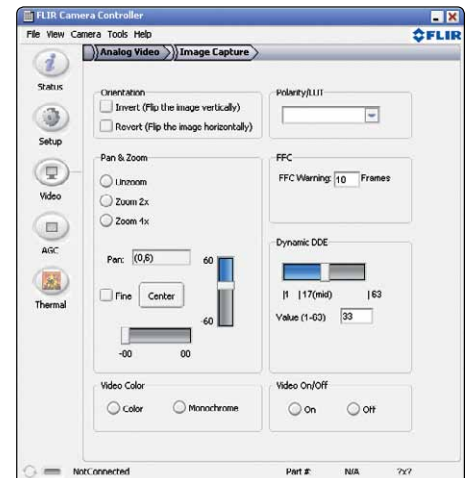
User Configurability

The Tau offers complete configuration and integration flexibility with the powerful Tau GUI. An optional SDK provides access to the complete set of commands available for the Tau camera.

Through our new XP bus interface, users can:

- Directly command the camera through configurable discrete inputs for such control as zoom, polarity, frame/video capture, etc. (up to eight commands selectable).
- Select composite video type – NTSC or PAL.
- Select the optimal digital data interface – 8/14-bit serial LVDS, 8/14-bit parallel CMOS, and BT.656 (now an input into many LCDs).
- Field-upgradeable to the latest versions of camera software and firmware.

Tau GUI

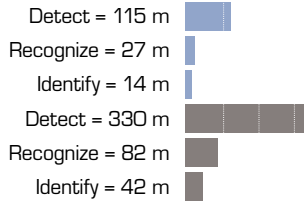


Tau 320 Range Chart

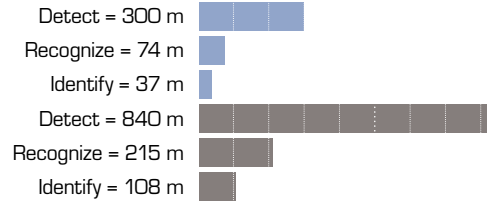
Man: 1.8 m x 0.5 m

Vehicle: 4 m x 1.5 m

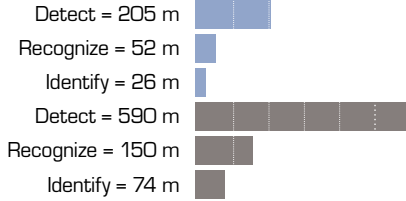
5 mm, f/1.25



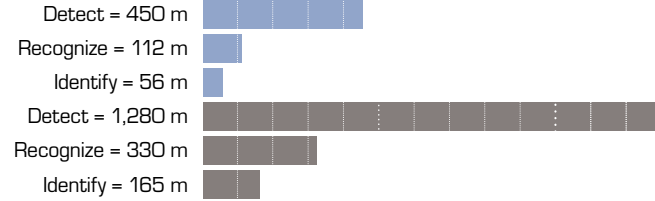
13 mm, f/1.25



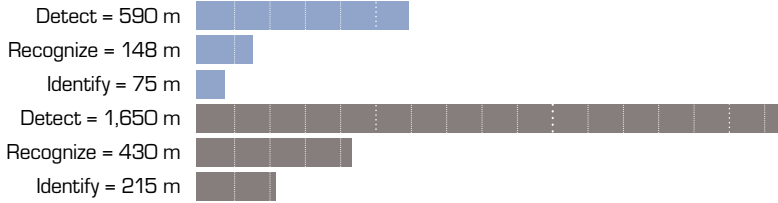
9 mm, f/1.25



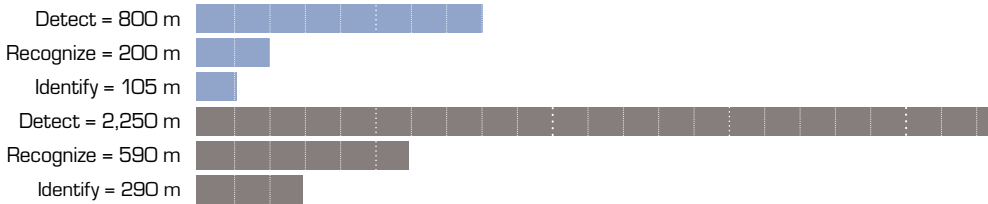
19 mm, f/1.25



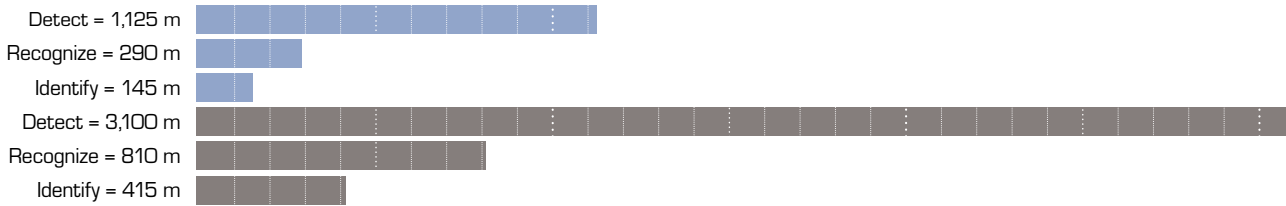
25 mm, f/1.1



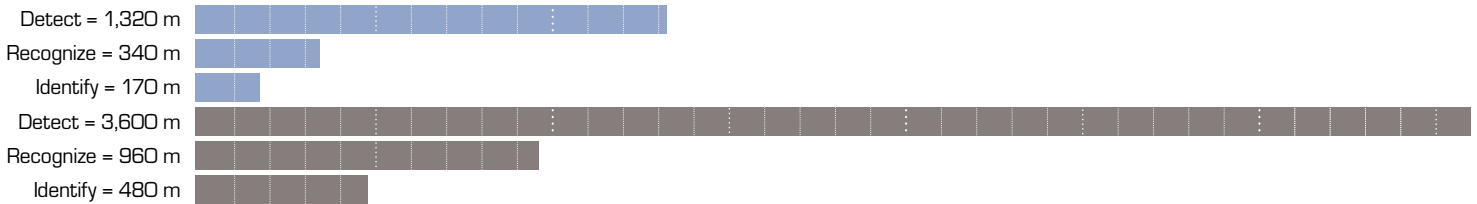
35 mm, f/1.2



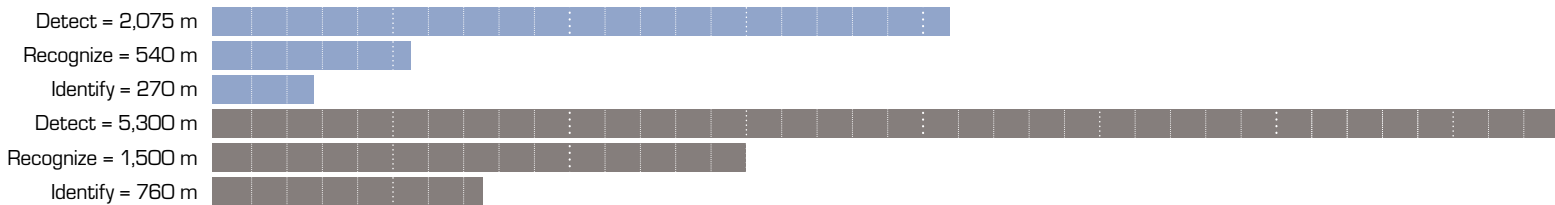
50 mm, f/1.2



60 mm, f/1.25



100 mm, f/1.6



Tau Lens Data

Tau cameras have nine lens choices available, giving integrators flexibility in designing installations. The four wide field of view lenses (5, 9, 13, and 19 mm) are integrated directly into the Tau's camera body for improved durability and performance. These lenses are sealed, meet IP-67, and have a hard carbon-like coating for long life. All Tau lenses are factory-focused to infinity with a collimator.

Tau Lens Data	Tau 320 Wide Field of View							Tau 320 Narrow Field of View						
	5 mm	9 mm		13 mm		19 mm		25 mm	35 mm	50 mm	60 mm	100 mm		
Resolution	160 x 120	160 x 120	320 x 240		160 x 120	320 x 240		320 x 240						
FOV (H x V)	43° x 35°	25° x 20°	48° x 37°		17° x 14°	34° x 26°		12° x 10°	24° x 18°	18° x 14°	13° x 10°	9.1° x 6.9°	7.6° x 5.7°	4.6° x 3.7°
f/#	1.25	1.25		1.25		1.25		1.1	1.2	1.2	1.25	1.6		
Weight (w/lens)	72 g	72 g		72 g		72 g		135 g	129 g	290 g	200 g	503 g		

Specifications

Tau 320 Feature	Tau 320 Performance
Overview	
Thermal Imager	Uncooled VOx Microbolometer
FPA Formats	324 x 256
Pixel Size	25-micron
Full Frame Rate	30 Hz (NTSC); 25 Hz (PAL)
Exportable Frame Rates (non-military applications only)	7.5 Hz (NTSC); 8.3 Hz (PAL)
Input Power	4.0 - 6.0 VDC
Power Dissipation	<1 W
Sensitivity	<50 mk f/1.0 (w/FLIR's proprietary noise reduction)
Time to Image, FFC Interval	<3.5 sec, <0.5 sec
Image Optimization (BPR, NUC, & AGC'd video); Factory Set, User-selectable	Y
Digital Detail Enhancement (DDE)	Y
Physical Attributes	
Size	1.75" x 1.75" x 1.18" (44.5 x 44.5 x 30.0 mm)
Lens-less Configurations Available	Y
Precision Mounting Holes (M2X0.4) on 3 Sides (2 per side)	Y
Sealable Bulkhead Mounting Feature on Lens Barrel (M29X1.0), WFOV only	Y
ROHS, RECH, and WEEE Compliant	Y
Interfaces and Controls	
CMOS (14-bit or 8-bit)	Y
BT.656 (8-bit)	Y
Legacy Photon LVDS (30 Hz, 14-bit or 8-bit)	Y
Slow Video (factory set)	Y
NTSC/PAL, Field-switchable	Y
Invert/Revert (analog and 8-bit digital)	Y
Polarity Control	Y
2x & 4x Digital Zoom	Y
Dynamic Range Switching	Y
Temperature Measurement/Spot Meter (WFOV lenses only)	Y
Temperature Isotherms (WFOV lenses only)	Y
Symbology (256 Gray & 256 Color)	Y
Color Palettes (LUTs)	Y
Gamma Correction	Y
Connectivity	
Pseudo RS-232, High Speed Camera Communication	Y
User-Configurability via SDK & GUI	Y
External Sync	Y
Discrete I/O Controls	Y
Snapshot Frame Capture	Y
Environmental	
Operating Temperature Range	-40°C to +80°C
Non-Operating Temperature Range	-55°C to +105°C
Temperature Shock (5°/min)	Y
Operational Altitude (up to 40,000 feet)	Y
Humidity (non-condensing between 5% and 95%)	Y
Vibration (4.3 gs three axis, 8 hrs each)	Y
Shock (200 g shock pulse w/ 11 msec sawtooth)	Y
EMC Radiation FCC/CE Class B	Y



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