

17-micron



Tau™ 640

The World's First Commercial 17-micron
Thermal Imager



Introducing Tau 640: small camera, tiny pixel pitch, VGA resolution

With the introduction of the Tau 640, FLIR demonstrates once again why it is the forward-looking infrared company. This amazing uncooled camera is almost 25% smaller than the Tau 320 and has four times as many pixels for unmatched image quality in a small, lightweight package.

The Tau 640's 2.6 in³ volume is enabled through a combination of FLIR's 17-micron pixel focal plane array, as well as an advanced iris shutter that fits within the 1.5 in² camera cross-section.

Since the electronics are common between the Tau 640 and Tau 320, integrators have immediate, direct compatibility between cameras, and both Tau camera versions share several lens designs.

Tau 640 Features

Besides being small, light, and easy on power consumption, Tau 640 provides many capabilities exclusively available from FLIR:

- 17-micron pixel size
- Field switchable between NTSC and PAL video formats
- CMOS and BT.656 digital video options, as well as the legacy Photon LVDS
- High-speed serial camera communication up to 921,600 baud (via the Tau VPC serial-to-USB Accessory)
- Advanced, user-friendly interface for camera control and configuration
- On-board image capture and storage
- Camera power and communication over USB option (via the Tau VPC serial-to-USB Accessory)
- EMI suppression to Class B with rear cover installed, and Class A without rear cover
- Up to 200g shock tolerance
- Discrete camera control functions available to OEMs
- Multiple lens options available in wide and narrow fields of view
- Wide field of view lenses sealed to IP-67
- Threaded WFOV lens barrel for bulkhead mounting or external attachment options
- Field-upgradable software/firmware
- Support for user-defined symbology
- Supplemental FFC software feature allows OEMs 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 640 is available in several additional factory configurations:

- Tau 640 is available as a lens-less core
- OEM-specific configurations and volume pricing are available

User configurability

The Tau 640 offers complete configuration and integration flexibility with the powerful Tau GUI and optional SDK. Through our XP bus interface, users can:

- 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)
 - Convert the digital output of Tau to Camera Link format data (this is a planned option – contact FLIR concerning availability)
 - Directly command the camera through configurable discrete inputs to control digital zoom, polarity, frame/video capture, etc. (up to eight commands selectable*)
- *Use of CMOS interface limits users to one discrete function

Visit www.flir.com/cvs/tau to browse the Tau 640 FAQ, and download the Tau GUI, connector pin-out definition, IDD interface, and User's Guide.

Accessories

There are several Tau-specific accessories:

- VPC (video/power/communication) breakout module (FLIR p/n: 421-0039-00)
- A tripod adapter (FLIR p/n: 261-2071-00)
- The Tau XP (expansion) board reference design
- The software SDK (FLIR p/n: 110-0133-16)



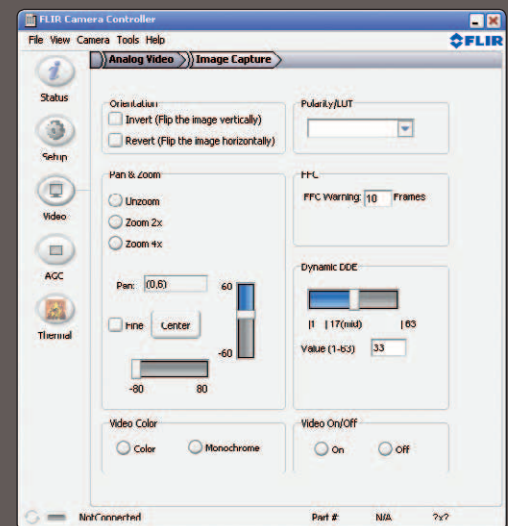
VPC Breakout Module



Tripod Adapter



Tau Inverted with Tripod Adapter Installed



Tau GUI



Tau 640 Lens Data

Focal Length	13 mm	19 mm	25 mm	35 mm	60 mm	100 mm
f/number	1.25	1.25	1.1	1.2	1.25	1.6
Field of View	45° x 37°	32° x 26°	25° x 20°	18° x 14°	10.4° x 8.3°	6.2° x 5.0°
IFoV (milliradians)	1.308	0.895	0.680	0.486	0.283	0.170

Tau 640 Feature	Tau 640 Performance
Imaging	
Thermal Imager	Uncooled VOx Microbolometer
Display Formats	640 x 480 (NTSC); 640 x 512 (PAL)
Pixel Size	17µm
Spectral Band	7.5 – 13.5 µm
Full Frame Rate	30 Hz (NTSC); 25 Hz (PAL)
Exportable Frame Rates	7.5 Hz (NTSC); 8.3 Hz (PAL)
Input Power	4.4 - 6.0 VDC
Power Dissipation	<1.2 W
Sensitivity (NEΔT)	<50 mK at f/1.0 w/FLIR Proprietary Noise Reduction
Scene Range	-40°C to +160°C
Time to Image	<3.5 sec
Image Optimization (BPR, NUC, & AGC'd video) Factory Set, User Selectable	Y
Digital Detail Enhancement	Y
Physical Attributes	
Size (w/o lens)	1.5" x 1.5" x 1.16"
WFOV Lens Options (sealed, iDLC coating)	13 mm (45°), 19 mm (32°)
WFOV Option Average Mass	72 grams
NFOV Lens Options	25 mm (25°), 35 mm (18°), 60 mm (10°), 100 mm (6°)
Lensless 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, REACH, and WEEE Compliant	Y
Interfaces and Controls	
CMOS (14-bit or 8-bit)	Y
BT.656 (8-bit)	Y
Legacy Photon LVDS (30Hz, 14-bit or 8-bit)	Y
NTSC (30 Hz)/PAL (25 Hz) (field switchable)	Y
Slow Video (7.5 Hz NTSC/8.3 Hz PAL) (factory set)	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	Y
Temperature Isotherms	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 (4.3g three axis, 8 hr each)	Y
Shock (200g shock pulse w/ 11 msec sawtooth)	Y
EMC Radiation FCC/CE Class B (w/rear cover installed)	Y



SANTA BARBARA

FLIR Systems, Inc.
70 Castilian Drive.
Goleta, CA 93117
USA
PH: +1 805.964.9797
FX: +1 805.685.2711

PORTLAND

Corporate Headquarters
FLIR Systems, Inc.
27700 SW Parkway Avenue
Wilsonville, OR 97070
USA
PH: +1 877.773.3547
FX: +1 503.498.3153

EUROPE

FLIR Systems CVBS BV
Charles Petitweg 21
4847 NW Teteringen - Breda
The Netherlands
PH: +31 (0) 765 79 41 94
FX: +31 (0) 765 79 41 99

www.flir.com

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