



OEM Products

Designed for Your Wavelength on
the Electromagnetic Spectrum

- Longwave, Midwave and Shortwave IR and Low-Light Visible Cameras
- Laser Pointers, Rangefinders and Illuminators
- ROIC Design
- High-Performance Pan/Tilts
- FPA Production

Ride a Wavelength with FLIR



Tau CNV™

Tau CNV is a mil-spec, ultra-low light color or monochrome OEM camera designed for military electro-optical systems and high-end security systems.



ROICs

FLIR's standard Readout Integrated Circuit (ROIC) products provide an off-the-shelf solution for the most demanding vision system applications. Our ROICs are compatible with infrared, visible, ultraviolet, and x-ray detectors.

Partner With FLIR OEM

The OEM group at FLIR Systems is ready with products that can be "designed in," whether your application needs longwave, midwave, shortwave, near infrared or will cover the x-ray, ultraviolet or visible bands of the electromagnetic spectrum.

FLIR is a leading provider of uncooled cameras and lens-less cores for integration into systems for automotive night driving, unmanned vehicle IR payloads, thermal sights, firefighting, security/surveillance and other high-volume applications. FLIR also manufactures the following components for customers around the world:

- **Mixed-Signal VLSI & ROIC:** With more than 100 completed designs, FLIR's ROIC products are widely recognized as industry standards and are used in IR, x-ray and ultraviolet systems worldwide.
- **Vanadium oxide (VOx):** If you're creating your own thermal imaging module or camera, then start with a high-performance FLIR microbolometer sensor.
- **Laser rangefinders:** FLIR laser rangefinders, as well as the diodes and software that make up laser rangefinders, are available for the tiniest platforms.
- **High-Performance Pan/Tilts:** Control your payload remotely and in real time on a FLIR tracking pan/tilt that offers unparalleled performance in accuracy, speed, ruggedness and reliability.

FLIR.com/OEM



Rangefinders, Illuminators & Pointers

FLIR offers solid state laser-based rangefinders that offer best-in-class performance for SWAP-centric applications and VCSEL-based IR illuminators that deliver speckle-free, highly efficient NIR/SWIR lighting.



Tau SWIR

Tau SWIR incorporates high-performance InGaAs FPAs with 600 - 1,700 nm spectral response. A variety of resolution models are available; all of them feature exposure control, sub-windowing and much more. InGaAs FPAs in formats between 128 x 128 and 1920 x 1080 pixels are also available.



Photon HRC, Mini-Core and μ Core

Photon HRC is one of the smallest high-resolution MWIR cooled camera cores available. FLIR also offers the Mini-Core and μ Core.



Quark, Tau & PathFindIR

Quark is the world's smallest thermal camera, available in 640 x 512 and 336 x 256 resolutions. FLIR also offers Tau 2, Tau and PathFindIR LWIR uncooled camera cores. FLIR has sold more LWIR cores than any other manufacturer. Ever.

MWIR

LWIR

Where There's Infrared, There's FLIR



OEM



The World's Leading Thermal Imaging Core Provider

FLIR OEM offers commercial, off-the-shelf thermal imaging camera cores and other components to a multitude of industries. As thermal imaging becomes more affordable it becomes more prevalent. FLIR continues to invest in innovation, as is evidenced by the fact that FLIR Quark is the smallest thermal camera in existence. FLIR OEM solutions are used in the following industries and many more:

- Military & Defense
- Medical Imaging
- Law Enforcement
- Emergency Services
- Research & Development
- Robotics
- Communications
- Manufacturing
- Agriculture
- Astronomy

There are more FLIR thermal imaging camera cores in the field than every other manufacturer combined.

Macro Thermal Performance for



Clockwise, from upper left corner: FLIR Quark, AeroVironment Switchblade UAV, Switchblade launch, man crossing road, bus depot and man crossing a landing strip.

Thermal Imaging Multi-Tool

Tau 2

Tau 2 is the latest generation product in FLIR's Tau series of longwave infrared (LWIR) uncooled thermal imaging camera cores. While the form and fit remain unchanged between the two Tau generations, Tau 2's electronics allow for simple upgrades in features and functionality as they come online.

Tau 2 is available in four resolutions and multiple configurations:

- The high-resolution 640 x 512, 17 μm -pitch version provides full frame rates of 30 Hz (NTSC) and 25 Hz (PAL).
- The 336 x 256, 17 μm -pitch and 324 x 256, 25 μm -pitch sensor formats provide full frame rates up to 60 Hz (NTSC) and 50 Hz (PAL).
- FLIR also offers a low-cost Tau 2 160 x 120 option for applications that do not require high-resolution imaging.

All formats deliver analog video display in 640 x 480 (NTSC) and 640 x 512 (PAL). Add in the fact that all of these formats are configurable with lenses ranging from 5 mm to 100 mm, and it's easy to see why integrators appreciate FLIR's effort to make compatibility a priority.

Tau 2 features enhanced electronics for improved image processing. A "slow video" option is available for each model that exempts the camera from export license requirements. The slow video rate is 7.5 fps for NTSC and 8.3 fps for PAL.

Micro Payloads

Quark

Design in FLIR Quark to your thermal sight, helmet or small UAV because it's the world's smallest longwave infrared camera. You'll deliver macro thermal imaging performance because Quark comes from FLIR - the industry leader in innovation, performance, reliability and price.

A quantum leap ahead in the design and capability of longwave thermal camera cores, Quark provides leading-edge imaging performance and reliability in a compact, lightweight package. Quark's innovative design is enabled by wafer-level packaging of the microbolometer sensor.

Key features include:

- Available in 336 and 640 resolution: Both with 17-micron pixels
- Ultra-Small Volume & Low Mass: Enables new applications in smaller packages
- Low Power Consumption
- High Shock And Vibration Tolerance: Designed for years of maintenance-free operation
- 30/60 Hz Field-Switchable Frame Rates (Quark 336 only): Versatility for a wide range of applications
- Affordable: Low prices in both large and small quantities

for Any System



Clockwise, from upper left corner: FLIR Tau 2, handheld thermal sight, firefighter (isotherm colorization shows extreme heat), aerial view of an intersection and ground-level view of traffic at an intersection.

LWIR Makes a Dependable Co-Pilot



Clockwise, from upper left corner: FLIR PathFindIR, in-dash display, PathFindIR grill mount, deer crossing a road and visible light image showing that headlights haven't yet detected the deer.

Keeping Your Cool in the Photon HRC

Photon HRC is one of the smallest high-resolution (640 x 512) MWIR cooled camera cores in the world. Based on our 15-micron pitch, high-performance, low-power, Indium Antimonide (InSb) focal plane array, the Photon HRC camera core consists of a detector/dewar/cooler assembly (DDCA) and the camera electronics.

μ Core-275Z and Mini-Core

The μ Core-275Z and Mini-Core have been especially designed for Original Equipment Manufacturers (OEM). They can easily be integrated into systems that require a small, compact and lightweight thermal imaging core with a cooled detector. They can be easily integrated in small airborne gimbals or in any other application.

The μ Core-275Z and Mini-Core are equipped with a cooled Mercury Cadmium Telluride (MCT) detector. This offers excellent range performance. The MCT detector produces crisp thermal images of 640x512 pixels on which the smallest of details can be seen. They operate in the mid-wave infrared band (3 - 5 μ m).

for Driving Applications

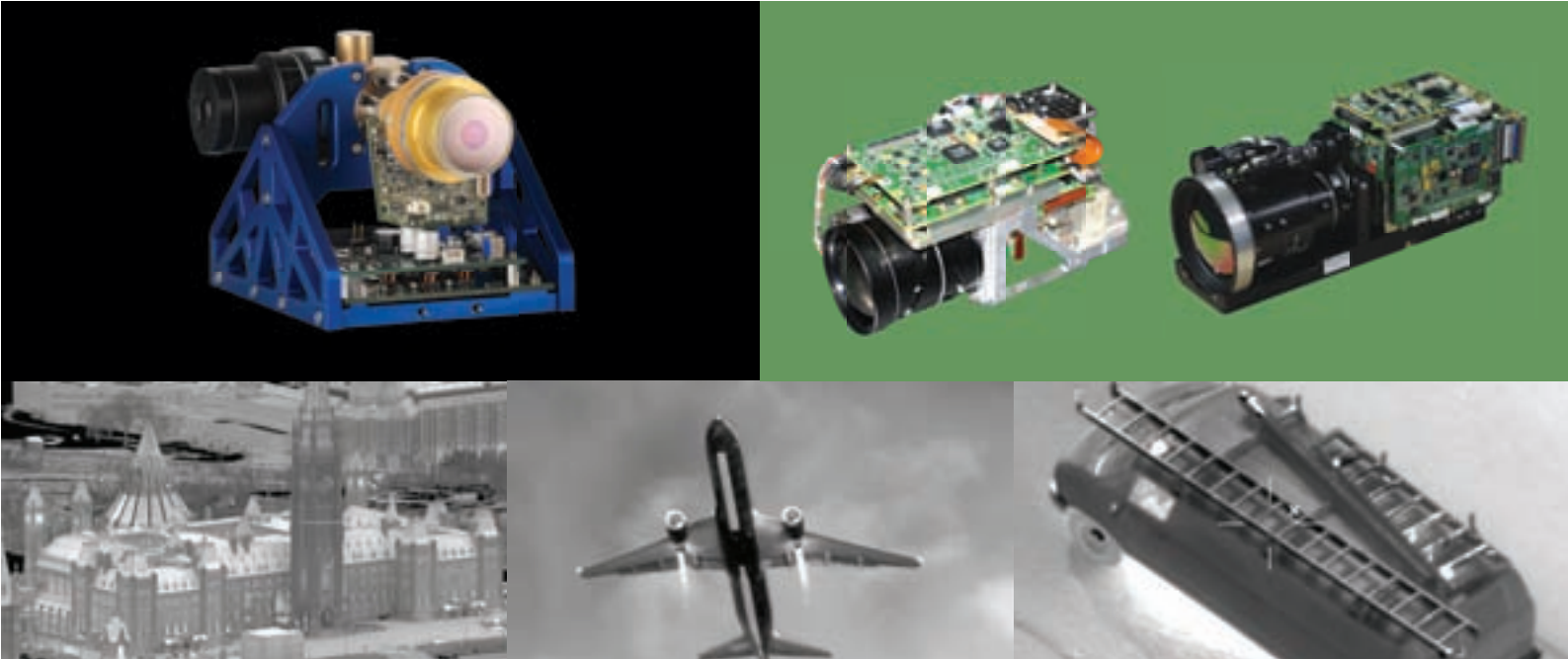
PathFindIR

PathFindIR is an automotive-qualified system designed primarily for driving vision enhancement (DVE) applications. PathFindIR is based on a 320 x 240 thermal camera system with a 38-micron pixel pitch and integral 19mm lens. PathFindIR is a hermetically sealed system, rated to IP-67, with an integrated, automatic window heater using a 12VDC input power source. Standard NTSC or PAL video is output for compatibility with most monitors or displays.

Due to its size, performance, low cost, and high reliability, PathFindIR is the ideal thermal camera for OEM customers who need an easy-to-integrate, high-resolution sealed thermal imager. More than 50,000 PathFindIRs in the field is reason enough to consider it for:

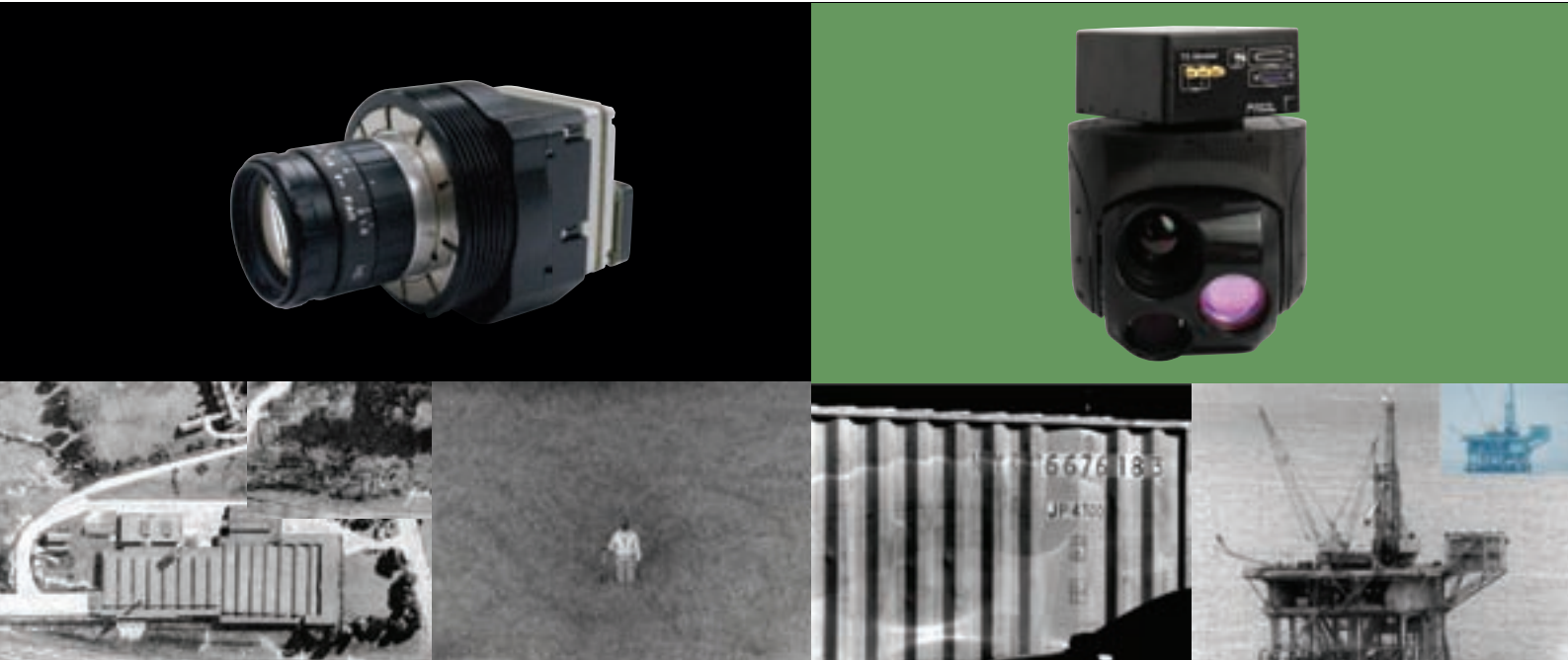
- Heavy vehicles
- Fire rescue vehicles
- Mining haul trucks
- Unmanned ground vehicles (UGVs)
- Any recreational, commercial or passenger vehicle that would benefit from the ability to see more and react sooner to obstacles in their path at night

Midwave IR Spectrum



Clockwise, from upper left corner: FLIR Photon HRC, FLIR Apache, top of a maintenance vehicle, passenger jet and the Ottawa Peace Tower.

Shortwave IR Advantages: Long on



Clockwise, from upper left corner: FLIR Tau SWIR, gimbal containing a Tau SWIR, oil platform through haze with inset image from a visible light camera, details behind paint, passive night vision and an example of camouflage rendered useless.

NIR & Visible Combine for Tau CNV™

Highly sensitive Tau CNV™ (color night vision) cameras incorporate state-of-the-art CMOS technology. Offering up to 10x better low-light performance than block cameras, CNV is ideal for defense electro-optical OEMs and commercial security system integrators.

Key features include:

- 25,000:1 dynamic range (true 16-bit performance)
- $2e$ (rms) read noise (lowest available)
- Low power: <math><4</math> Watts
- 1280 x 960 and 1280 x 720 formats
- Optional integrated day/night filter
- Camera Link or LVCMOS digital video output
- Color or monochrome sensors
- Advanced image processing (e.g., auto white balance and automatic gain control)
- Rolling and global (future release) shutter models available
- 2/3 image format and C-mount lens interface

Weighing approximately 150 grams and measuring only 38 x 38 x 48 mm Tau CNV is the highest performance low-light camera available today.

Reliability

Tau SWIR

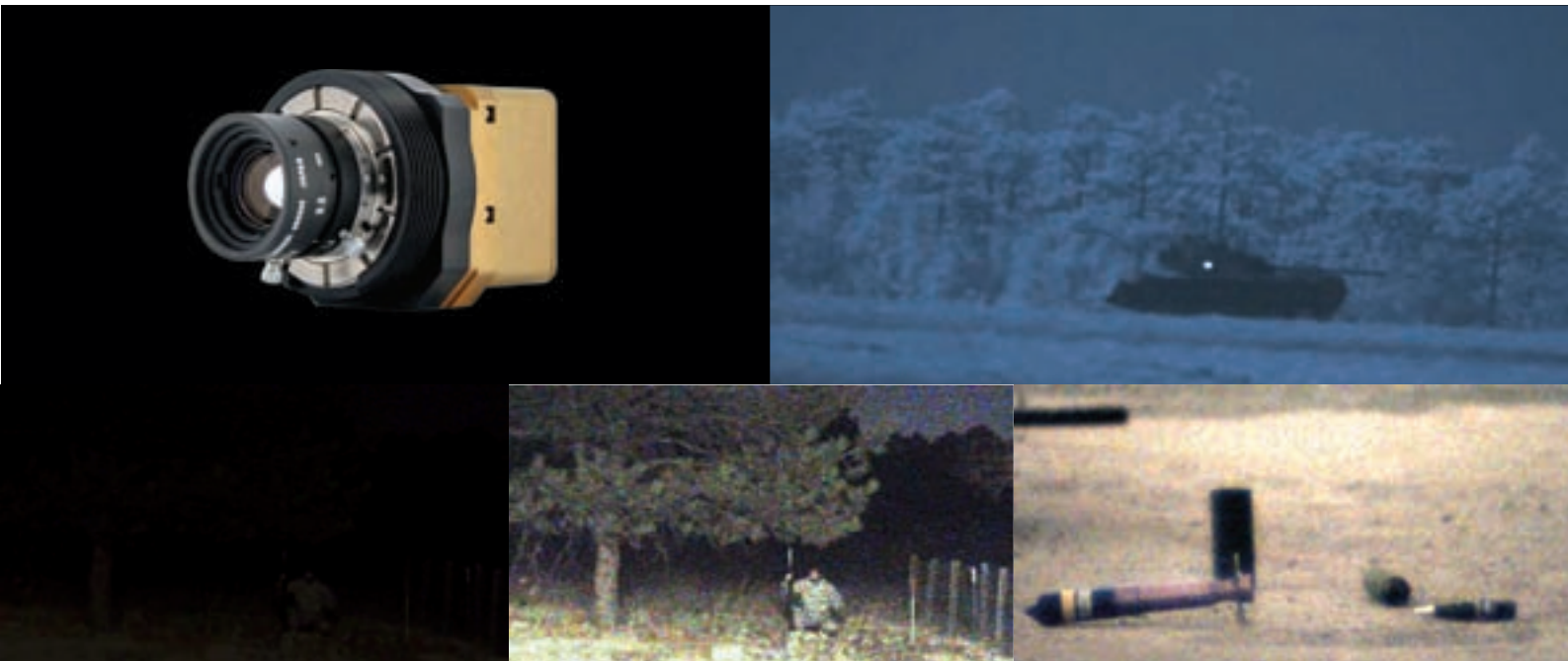
Tau SWIR is a family of miniature shortwave camera cores designed for easy integration into electro-optical payloads, including stabilized camera turrets, next-generation weapon sights, targeting systems, UAV/UGV platforms and night vision devices.

Key features include:

- Thinned high-performance InGaAs (Indium Gallium Arsenide) FPA greatly reduces bright light source image artifacts
- 600 - 1,700 nm spectral response (most models)
- No image latency - ideal for working with laser pointers
- SWAP+C optimized design
- Variable frame rate control
- Camera Link, low-voltage CMOS digital and analog video outputs
- Triggering options

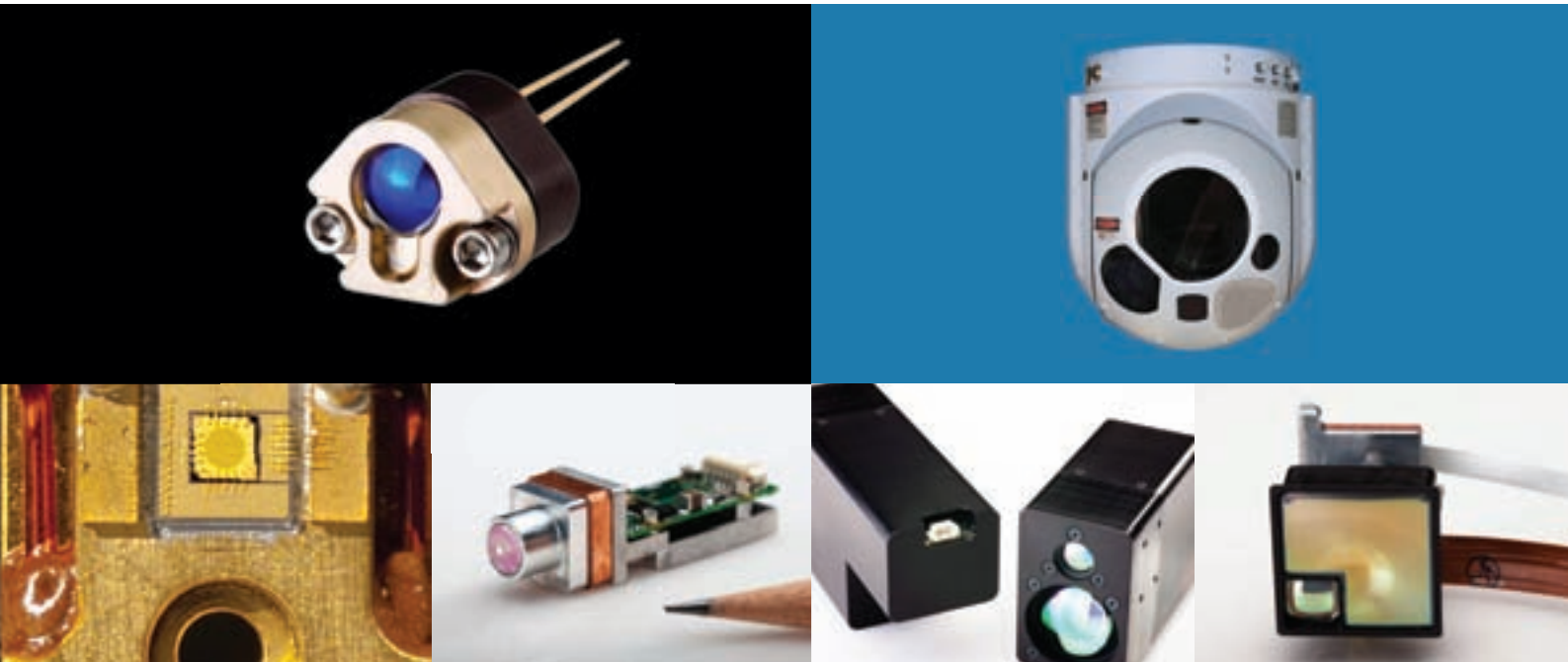
Weighing only 130 grams and measuring only 38 x 38 x 48 mm Tau SWIR consumes less than 4 Watts (at 20°C case temperature).

an Ideal Low-Light Solution



Clockwise, from upper left corner: FLIR Tau CNV™; ability to see 1064 laser spot; see quality color imagery in low-light conditions; and CCD vs CNV's Advanced CMOS technology comparison of a man under a tree.

Zero In Your System with SWIR &



Clockwise, from upper left corner: NIR Laser Illuminator, gimbal system, Miniature Laser Rangefinder/Altimeter, MLR3K Laser Rangefinder, Miniature Laser Pointer and VCSEL Diode Pump.

Off-the-Shelf Compatibility

ROICs

FLIR OEM's standard Readout Integrated Circuit (ROIC) products provide an off-the-shelf solution for the most demanding vision system applications. Our ROICs are compatible with infrared, visible, ultraviolet and x-ray detectors. Standard ROICs are used in systems for digital mammography, near-infrared spectroscopy, near-, mid- and long-wavelength infrared imaging cameras, space-based imaging spectrometers, CMOS active pixel image sensors and astronomy telescopes.

Key features include:

- 2-D Formats: 320 x 256, 384 x 288, 640 x 512, 1K x 1K and 1344 x 784 elements
- Pixel pitch: 14 - 30 microns
- Applications: IR detectors including InSb, QWIP, MCT, SLS and InGaAs
- Common electrical interfaces and features
- Linear Array Formats: 128 x 1, 256 x 1 and 512 x 1
- Applications: X-ray detectors and photodiode arrays

Mixed-signal ROICs from FLIR feature low noise, variable charge storage capacitance, and selectable integration times, as well as adjustable gain and power settings. This device flexibility, combined with a simple user interface, provides a cost-effective alternative to a full-custom design without sacrificing performance.

NIR Laser Technology

Rangefinders, Illuminators & Pointers

FLIR is a leader in high-performance, low-power laser rangefinders and VCSEL (vertical cavity surface emitting laser) technology, which is integrated into advanced illuminator products. FLIR scientists and engineers collaborate with customers to model, develop and produce electro-optical transmitters and receivers that are SWAP-optimized. VCSEL technology delivers uniform, speckle-free, eye-safe illumination to tiny night vision products such as monocular scopes and cameras and UAVs.

Key features include:

- Solid state laser enables single shot ranging on moving targets
- High rep rate to update range information in real time
- Short-range performance to 0 meters for laser altimetry
- 1550 nm laser is more covert than NIR diode-based range finders
- Variety of pointer wavelengths available so you can select desired level of covertness

& Custom-Design Performance



Clockwise, from upper left corner: Megapixel format ROIC, Mid-format ROIC, Harrier jet (ISCO403-based camera), fish x-ray, storage tank (ISCO404-based camera) and a helicopter (ISCO403-based camera).

FLIR OEM: We Also Deliver Off the



Clockwise, from upper left corner: PTU D300 with two brackets, PTU D47 with single bracket and controls, tracking missile flight path, U.S. Army communications payload, airport security checkpoint and PTU-D300 with stabilization aboard Chilean Navy ship.

Trust Your Wavelength to About FLIR OEM

FLIR OEM products are designed and manufactured at facilities in Santa Barbara, Burlingame and Ventura, California, as well as Colorado Springs, Colorado. FLIR OEM is part of FLIR Systems, Inc. Founded in 1978, FLIR is one of the world leaders in the design, manufacture and marketing of sensor systems that enhance perception and awareness for a wide variety of users in the commercial, industrial and government markets, internationally as well as domestically.

FLIR is one of very few companies capable of producing both uncooled and cooled IR focal plane arrays (FPAs). FLIR has developed a number of proprietary FPA packaging systems which include low-cost, lightweight dewars, cold shields and related components. These capabilities enable leading designs of several of the world's smallest, lightest and lowest-power thermal cameras.

From the essential components to solid state devices to motion control systems, FLIR OEM delivers the end-to-end solution, service and support that will make your system effective, durable and ultimately successful.

Spectrum

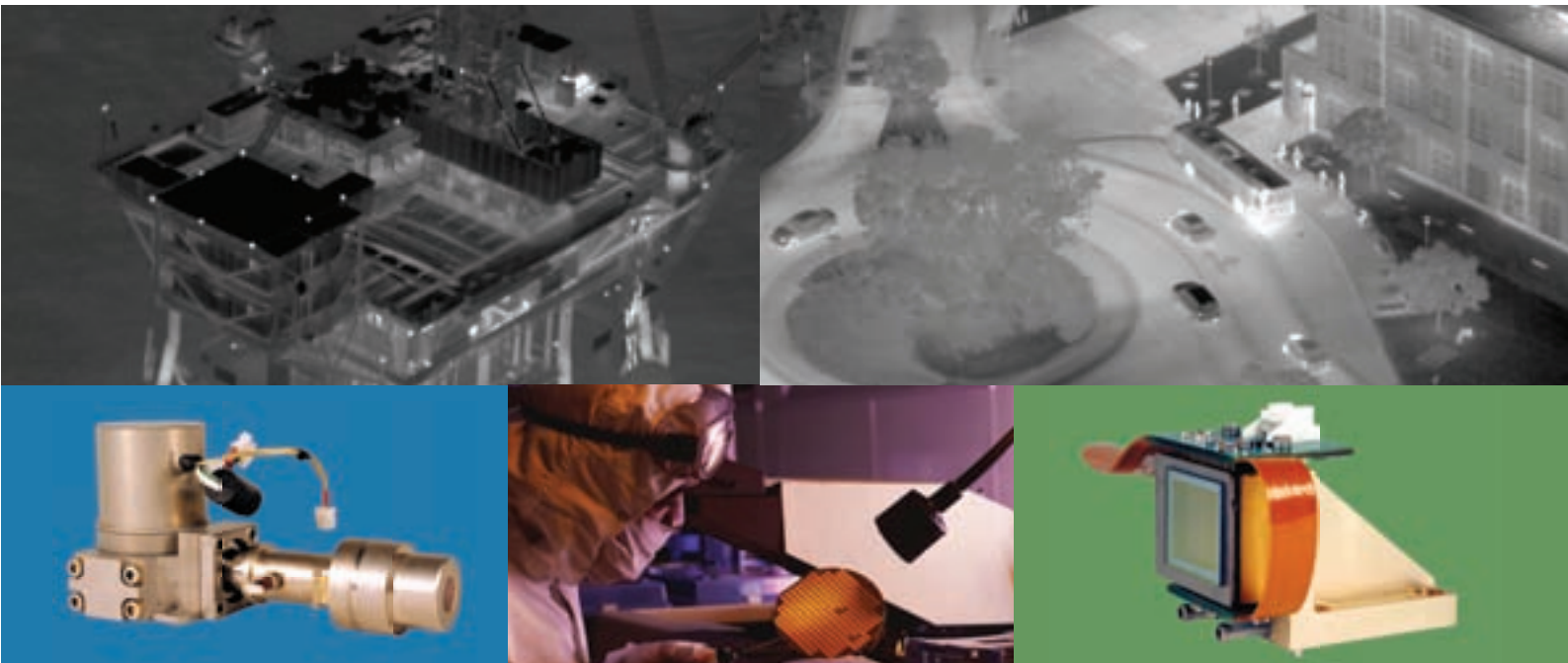
Motion Control Systems

When you work with FLIR OEM to build your system, you can also rely on us to take good care of your critical payload while enabling it to perform to your intended specifications. That's why FLIR OEM is a market leader in high-performance — or tracking — pan/tilt motion control systems. Tracking pan/tilts allow computer-controlled pointing of any type of sensor or other payload and are characterized by high accuracy, precise geometry, sophisticated electrical system, full programmability with real-time control, and durability and reliability.

Key features include:

- Real-time computer control interface for fast reliable response
- Fully programmable high accuracy for payloads of up to 90 lbs.
- Reliable continuous operation in harsh, all-weather environments and 100% duty cycles to provide years of service without maintenance
- Built-in Ethernet and Web (as well as serial) interfaces (E-Series) for flexible integration
- Flexible mounting for easy integration of any payload

an End-to-End Partner



Clockwise, from upper left: Oil platform, UCSB campus, thermo-electric cooler, ROIC production and rotary cryogenic cooler.



SANTA BARBARA

FLIR Systems, Inc.
70 Castilian Drive
Goleta, CA 93117
PH: +1 805.690.5097
FX: +1 805.685.2711

INDIA

FLIR Systems India PVT. LTD.
1111, D Mall
Netaji Subhash Place
Pitampura
Delhi - 110 034
INDIA
PH: +91 11 4560 3555
FX: +91 11 4721 2006
email: flirindia@flir.com.hk

EUROPE

FLIR Commercial Systems AB
Luxemburgstraat 2
2321 Meer
Belgium
Tel. : +32 (0) 3665 5100
Fax : +32 (0) 3303 5624
e-mail: flir@flir.com

RUSSIA

6 bld.1, 1st Kozjevnichecky lane
115114 Moscow
Russia
Tel.: +7 495 669 70 76
Fax: +7 495 669 70 72
E-mail: flir@flir.com

FLIR FRANCE

Advanced Thermal Solutions
19, bld Bidault
77183 Croissy-Beaubourg
France
Tel.: +33 (0)1 60 37 01 00
Fax: +33 (0)1 64 11 37 55
E-mail : research@flir.com

北京第一分公司

地址: 北京市朝阳区门外大街甲6号
万通中心C座509室 (100020)
电话: +86 10 5979 7755
传真: +86 10 5907 3180
邮箱: info@flir.cn

FCC Notice. This device is a subassembly designed for incorporation into other products in order to provide thermal imaging capability. It is not an end-product fit for consumer use. When incorporated into a host device, the end-product will generate, use, and radiate radio frequency energy that may cause radio interference. As such, the end-product incorporating this subassembly must be tested and approved under the rules of the Federal Communications Commission (FCC) before the end-product may be offered for sale or lease, advertised, imported, sold, or leased in the United States. The FCC regulations are designed to provide reasonable protection against interference to radio communications. See 47 C.F.R. §§ 2.803 and 15.1 et seq.

Industry Canada Notice. This device is a subassembly designed for incorporation into other products in order to provide thermal imaging capability. It is not an end-product fit for consumer use. When incorporated into a host device, the end-product will generate, use, and radiate radio frequency energy that may cause radio interference. As such, the end-product incorporating this subassembly must be tested for compliance with the Interference-Causing Equipment Standard, Digital Apparatus, ICES-003, of Industry Canada before the product incorporating this device may be manufactured or offered for sale or lease, imported, sold, or leased in Canada.

Avis d'Industrie Canada. Cet appareil est un sous-ensemble conçu pour être intégré à d'autres produits afin de fournir une fonction d'imagerie thermique. Ce n'est pas un produit final destiné aux consommateurs. Une fois intégré à un dispositif hôte, le produit final va générer, utiliser et émettre de l'énergie radiofréquence qui pourrait provoquer de l'interférence radio. En tant que tel, le produit final intégrant ce sous-ensemble doit être testé pour en vérifier la conformité avec la Norme sur les appareils numériques causant des interférences (ICES-003) d'Industrie Canada avant que le produit intégrant ce dispositif puisse être fabriqué, mis en vente ou en location, importé, distribué, vendu ou loué au Canada.

EU Notice. This device is a subassembly or component intended only for product evaluation, development or incorporation into other products in order to provide thermal imaging capability. It is not a finished end-product fit for general consumer use. Persons handling this device must have appropriate electronics training and observe good engineering practice standards. As such, this product does not fall within the scope of the European Union (EU) directives regarding electromagnetic compatibility (EMC). Any end-product intended for general consumer use that incorporates this device must be tested in accordance and comply with all applicable EU EMC and other relevant directives.

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