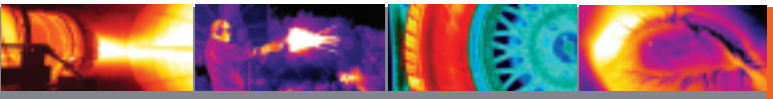
The Global Leader in Infrared Cameras

FLIR® Titanium

INFRARED CAMERA FOR RESEARCH & DEVELOPEMENT



The FLIR Titanium Series is specifically designed for academic and industrial R&D applications as well as integrators who need to have a flexible camera, with the highest sensitivity, accuracy, spatial resolution and speed at an affordable cost.

- Multiple Detector Options
- 1.5-5 µm & 8-12 µm Spectral Range
- 320x256 or 640x512 Format
- 380 & 100 Hz Full Frame Rates
- 14 bits Dynamic Range
- Advanced Triggering Capabilities
- Hypercal™ for Full Thermographic Measurement
- Motorized Filter Wheel
- Plug & Play Interface with GigE / Camera Link
- Orion Multispectral Option

Multiple Detector Options

The Titanium Series is available with a wide range of detectors to address any application in single and multispectral analysis. Each of them has a programmable frame rate and integration time.

Accurate Temperature Measurement with FLIR Hypercal™

Factory set temperature ranges are a thing of the past with the FLIR exclusive Hypercal™. The end user simply defines the lower and upper limits of the desired temperatures to measure. The camera automatically adjusts to the appropriate integration (exposure) time to ensure accurate full range temperature measurement.

Temperature Range Extension

Temperature Range Extension (TRE) allows the Titanium camera to acquire thermal data from up to four user defined temperature ranges simultaneously. The data can then be merged into a single data stream in real-time that spans all four temperature ranges.TRE effectively extends the dynamic range from 14-bit to a 16-bit image!

Advanced Triggering Capabilities

External triggering allows synchronization of the image capture to the most fleeting events with 3 external analog signals.

Fast Frame Rates

Our Mid-Wave InSb focal plane array delivers 320x256 or 640x512 pixels at an outstanding 380 or 100 Hz frame rate respectively while keeping extraordinary linearity and sensitivity. The use of our latest read out integrated circuit technology provides low noise and high pixel rate without compromising sensitivity.

Frame Rate and Sub Array Windowing Modes

The frame rate is programmable from 1 Hz to full frame. Sub array windowing modes are user friendly and flexible. Integration time is adjustable in 1 µs increments.

Motorized Filter Wheel

The Titanium Camera incorporates a 4 x position filter wheel for neutral density and spectral filtering applications. The active filter selection is remotely controlled via camera control software. Additional filters can be deployed to increase the camera filtering options.

Built-in IRIG-B Timing Option

IRIG-B timing is built directly into the Titanium camera providing onboard deterministic time stamping of each frame of data.

Multiple Video Outputs

The Titanium features multiple independent digital and analog video outputs to include:

- Analog – S-Video
- Analog - Composite
- Digital – Camera Link
- Digital – Gigabit Ethernet

Plug & Play Interfaces

The Titanium Series is truly plug & play using either GigE or Camera Link interfaces to transmit both commands and full dynamic range digital video. Using the Camera Link interface gives access to third party off the shelf frame grabber cards.

Software and SDK

The Titanium is compatible with FLIR AltaIR and ExaminIR Software for data acquisition, analysis, and reporting. Additionally, FLIR offers a powerful software developers kit (SDK) for customer programming.

Orion Mutispectral Option

The Orion option includes a high speed 2x4 position filter wheel with rotation driven synchronously with the FPA clocking. The Orion is capable of capturing up to 400 frames per second, each frame linked to a specific filter for true multispectral imaging.

FLIR Titanium Technical Specifications

	Titanium SC7300 L	Titanium SC7500 MB	Titanium SC7600 MB	Titanium SC7700 L	Titanium SC7900 VL
Detector Specifications					
Detector	MCT	Indium Antimonide (InSb)	Indium Antimonide (InSb)	QWIP	MCT
Spectral Range	LW	MW	MW	LW	LW
Detector Response	7.7-9.3µm	1.5-5.1µm	1.5-5.1µm	8.1-8.7µm	7.7-11.5µm
Resolution	320x256	320x256	640x512	640x512	320x256
Pixel Pitch	30x30um	30x30um	15x15um	20x20um	30x30um
Electronics & Data Rate					
Integration Type	Snapshot	Snapshot	Snapshot	Snapshot	Snapshot
Integration Time (Electronic Shutter Speed)	10µs to 20ms	3µs to 10ms	3µs to 20ms	10µs to 30ms	10µs to 20ms
Read-out Modes	Asynchronous Integrate then read	Asynchronous Integrate while read Asynchronous Integrate then read	Asynchronous Integrate while read Asynchronous Integrate then read	Asynchronous Integrate while read Asynchronous Integrate then read	Asynchronous Integrate then read
Dynamic Range	14 bit	14 bit	14 bit	14 bit	14 bit
Full Frame Rate	Programmable 1Hz to 230Hz	Programmable 1Hz to 380Hz	Programmable 1Hz to 100Hz	Programmable 1Hz to 120Hz	Programmable 1Hz to 230 Hz
Subwindowing	Random size and location	Random size and location	Random size and location	Random size and location	Random size and location
Minimum Window Size	64 x 3	48 x 4	48 x 4	164 x 120	64x3
Temp Range Extension (Superframing)	Yes	Yes	Yes	Yes	Yes
Performance Specifications					
NETD @ 25°C	< 25mK (20 mK typical)	< 25mK (20 mK typical)	< 25mK (20 mK typical)	< 40mK@ 25°C	< 25mK @ 25°C
Well Capacity	37 Me- / 12 Me-	5 Me-	6.5 Me-	10.4 Me-	37 Me- / 12 Me-
Operability	99.5%	99.9%	99.9%	99.9%	99.5%
Measurement					
Standard Temperature Range	5°C-302°C (41°F-572°F)	5°C-300°C (41°F-572°F)	5°C-300°C (41°F-572°F)	5°C-300°C (41°F-572°F)	5°C- 300°C (41°F-572°F)
Optional Temperature Range	-20°C-50°C (-4°F-122°F) 150°C-500°C (302°F-932°F) 150°C-1500°C (302°F-2732°F)	-20°C-50°C (-4°F-122°F) 280°C-1500°C (536°F-2732°F) Up to 2500°C (4532°F) Up to 3000°C (5432°F)	-20°C-50°C (-4°F-122°F) 280°C-1500°C (536°F-2732°F) Up to 2500°C (4532°F) Up to 3000°C (5432°F)	-20°C-50°C (-4°F-122°F) 150°C-500°C (302°F-932°F) 150°C-1500°C (302°F-2732°F)	-20°C-50°C (-4°F-122°F) 150°C-500°C (302°F-932°F) 150°C-1500°C (302°F-2732°F)
Accuracy	+/- 1°C or +/- 1%	+/- 1°C or +/- 1%	+/- 1°C or +/- 1%	+/- 1°C or +/- 1%	+/- 1°C or +/- 1%
Camera Specifications					
Sensor Assembly f/#	f/2.0	f/3.0	f/3.0	f/2.2	f/2.0
Sensor Cooling	Stirling closed cycle cooler	Stirling closed cycle cooler	Stirling closed cycle cooler	Stirling closed cycle cooler	Stirling closed cycle cooler
Power	12 VDC	12 VDC	12 VDC	12 VDC	24 VDC
Dimensions LxWxH (mm) / Weight (kg)	253 x 130 x 168 (w/o lens) / 4.95	253 x 130 x 168 (w/o lens) / 4.95	253 x 130 x 168 (w/o lens) / 4.95	253 x 130 x 168 (w/o lens) / 4.95	403x130x168 (w/o lens) / 9.5
Advanced Communication & Data Transfer					
Data / Command and Control	Gigabit Ethernet, Camera Link	Gigabit Ethernet, Camera Link	Gigabit Ethernet, Camera Link	Gigabit Ethernet, Camera Link	Gigabit Ethernet, Camera Link
Lenses					
	LW/VLW 8-12µm 12mm (44°x 36°) 25mm (22°x 17°) 50mm (11°x 8.8°) 100mm (5.5°x4.4°) 200mm (2.75°x2.2°) Close-up x1 (30µm) Close-up x3 (5µm) Extender Rings	MW 2.5-5.0µm 12mm (44°x 36°) 25mm (22°x 17°) 50mm (11°x 8.8°) 100mm (5.5°x4.4°) 200mm (2.75°x2.2°) Close-up x1 (30µm) Close-up x3 (10µm) Extender Rings SWB 1.5-5.0µm 27mm (20°x 16°) 50mm (11°x 8°) 100mm (5.5°x 4.4°) 200mm (2.75°x2.2°)	MW 2.5-5.0µm 12mm (44°x 36°) 25mm (22°x 17°) 50mm (11°x 8.8°) 100mm (5.5°x4.4°) 200mm (2.75°x2.2°) Close-up x1 (7.2µm) Close-up x3 (5µm) Extender Rings SWB 1.5-5.0µm 27mm (20°x 16°) 50mm (11°x 8°) 100mm (5.5°x 4.4°) 200mm (2.75°x2.2°)	LW 8-12µm 50mm (11°x 8.8°) 100mm (5.5°x4.4°)	LW/VLW 8-12µm 12mm (44°x 36°) 25mm (22°x 17°) 50mm (11°x 8.8°) 100mm (5.5°x4.4°) 200mm (2.5°x2.2°) Close-up x1 (30µm) Close-up x3 (5µm) Extender Rings

**note – Please contact FLIR for additional optic options*

Available Packages
Titanium Camera Package
Titanium Camera, Power Supply, Trigger & Video Cables, VirCam drivers and Cirrus software, Camera Carrying Case
Titanium Camera R&D Package
Titanium Camera Package, Lens, Temperature Calibration, ExaminIR or Altair Software
Titanium Stress Analysis Package
Titanium Camera Package, Lockin Option, Lockin Cable, Lens, Temperature Calibration, Altair & TheSA Software

1. High performance FPA with high durability cooler
2. USB2.0 / GigE
3. CAMLINK interface to transfer digital video at faster frame rate
4. Removable Lens interface with embedded filter wheel
5. Smart trigger input with Ultra Low Jitter
6. Analog Signal Inputs
7. High quality S-Video
8. Rugged cast aluminum housing

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www.infraredresearchcameras.com

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