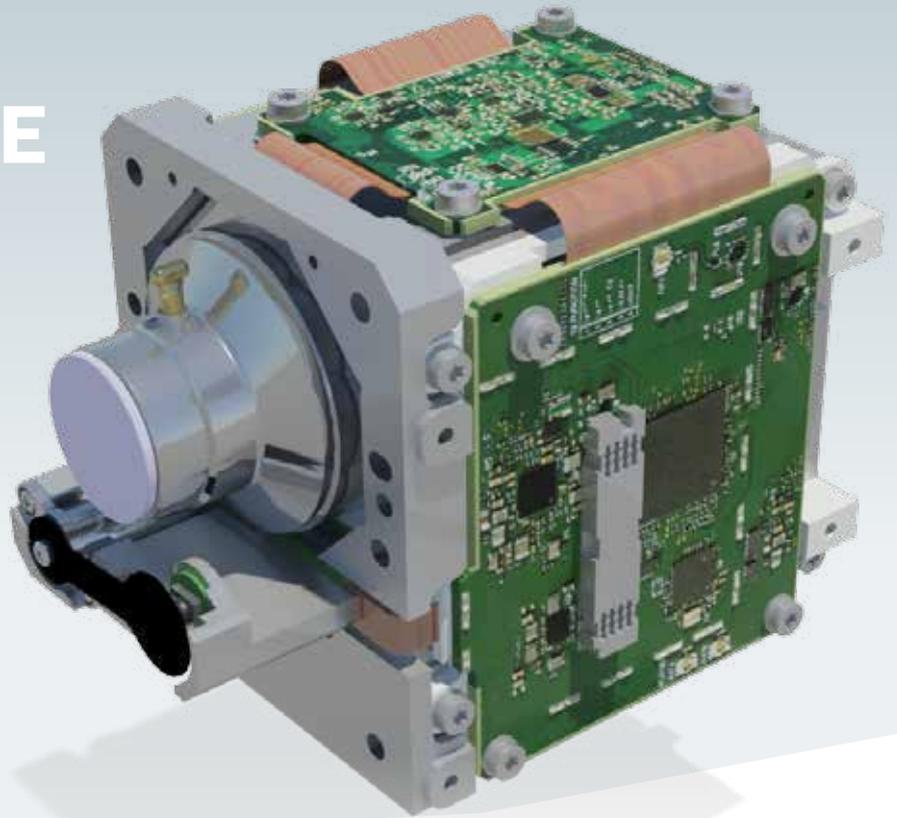

FIREFLY CAMERA CORE



HOT MWIR WITH ANDROID™

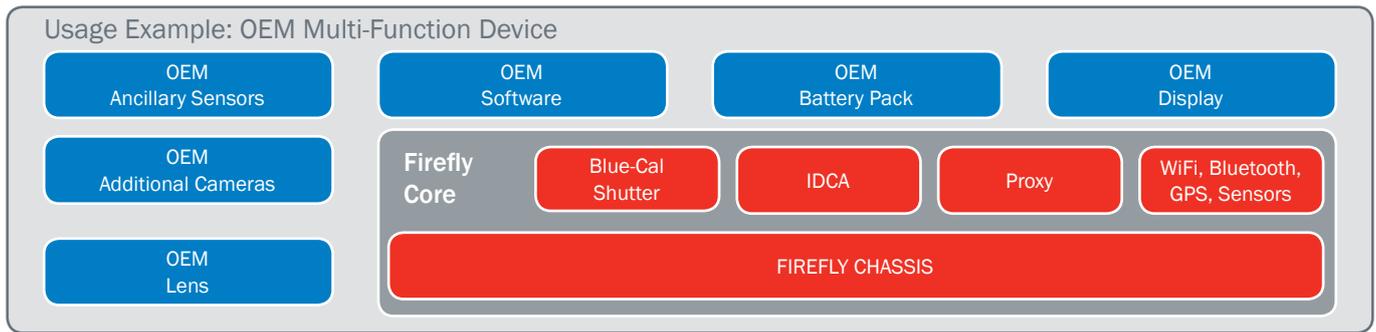
The Firefly Camera Core uses a high operating temperature (HOT) Mercury Cadmium Telluride (MCT) array with a resolution of 640 x 512 pixels on a 16µm pitch. Firefly provides all of the processing and interface requirements to drive a multi-functional hand held thermal imager, including additional camera channels, combined into an infrared camera core.

HOT technology enables cooled medium wave imagers to offer far superior performance in a more compact solution than uncooled imagers for long range, hand held and weapon mounted applications. Firefly based systems will provide greater Detection, Recognition and Identification (DRI) ranges in a package with lower Size, Weight and Power (SWaP). The unique power saving features ensure an image is available instantly throughout the mission. The revolutionary electronic architecture of Firefly brings a wealth of features adding new capabilities for the system integrator and end user.

Firefly is a native Android™ device and all image processing is performed in software with GPU acceleration. Firefly's software can be customised to meet the requirements of specific applications, for example; customised image processing, machine vision algorithms, or integration of pre-existing Android software libraries for capabilities such as augmented reality. The software based architecture allows additional functionality to be developed quickly and rolled out to units in the field.

Firefly has all of the functionality expected in an Android device, including integrated 3-axis accelerometer and gyroscope, GPS, Wi-Fi, Bluetooth and USB 3.0. These interfaces allow real-time streaming of video between Firefly units or other suitable systems. In addition a large number of GPIO's which can be configured as button inputs, digital control lines or configured as a number of standard interfaces including; I2C, SPI and RS232. These interfaces allow Firefly to control a wide range of peripheral devices such as laser rangefinders.

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The presence of two additional camera channels allows Firefly to be used as the core of a multi-waveband imager. Combining multiple camera channels into one processing core allows image fusion and provides net SWaP-C savings. The combined software and hardware power management system allows Firefly to offer state of the art power efficiency.

Main features

- Medium waveband (3.7-4.95 μ m)
- 640 x 512 format
- 16 μ m x 16 μ m pixels
- Negligible pixel blur
- >160K operation
- Long life linear cooling engine
- 60 frames per second
- Software Extensible (including OpenCL)
- Android features
- GPIO interfaces to control peripheral devices
- 3 camera channels with image fusion
- Bidirectional video streaming
- WiFi, Bluetooth, Gigabit Ethernet, GPS

Key benefits

- Compact
- Low power
- Fast time to image
- Instant image from standby
- Rapid system development
- Reduced through-life costs
- All-in-one core for multi-function devices
- Ideal augmented reality platform

Physical characteristics

- Size 56 x 67 x 96mm (W x H x L)
- Mass 550g

TECHNICAL SPECIFICATION

IDCA (Integrated Detector Cooler Assembly)	
Spectral bandwidth	3.7 μ m - 4.95 μ m
f-number	f/4
Cold stop	19mm above FPA
NETD	25mK (typical)
Operating temperature	>160K
Readout modes	IWR
Charge handling capacity	7Me-
Frame rate	60Hz
ADC resolution	14 bits
Cooler operating life	>25,000h

Camera core	
Operating System	Android
Additional free camera channels	2
Video outputs	HDMI, DSI
Networking interfaces	WiFi, Bluetooth, USB 3.0, Gigabit Ethernet
Peripheral interfaces	I2C, SPI, RS232, UART, user defined
Video streaming codecs	H.264, JPEG, lossless
	All bidirectional, full screen or picture-in-picture display
Data storage	10GB internal + SD card interface
Integrated sensors	3-axis accelerometer and gyroscope, temperature, GPS
Man machine interface	Fully customisable by the system integrator
Power input	5V - 12V
Power consumption	5W steady state 1W instant image standby

Image processing	
Calibration	Integrated high-speed multi-point calibration
Automatic Gain and Offset (AGO)	Histogram based, user configurable
Enhancements	Edge enhancement, local contrast enhancement, tone mapping, electronic image stabilization
Colour palettes	User defined 24bit RGB
Iconography	Vector, bitmap, and text overlays with transparency Custom icons loaded from .png Scaling and rotation Network interface for displaying iconography
Distortion correction	Support for parametric correction of distortion in lens or display optics
Customisation	Proprietary processing algorithms can be provided by the system integrator

Android is a trademark of Google Inc.



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