



# Quark 2

## Longwave Infrared Thermal Core Camera

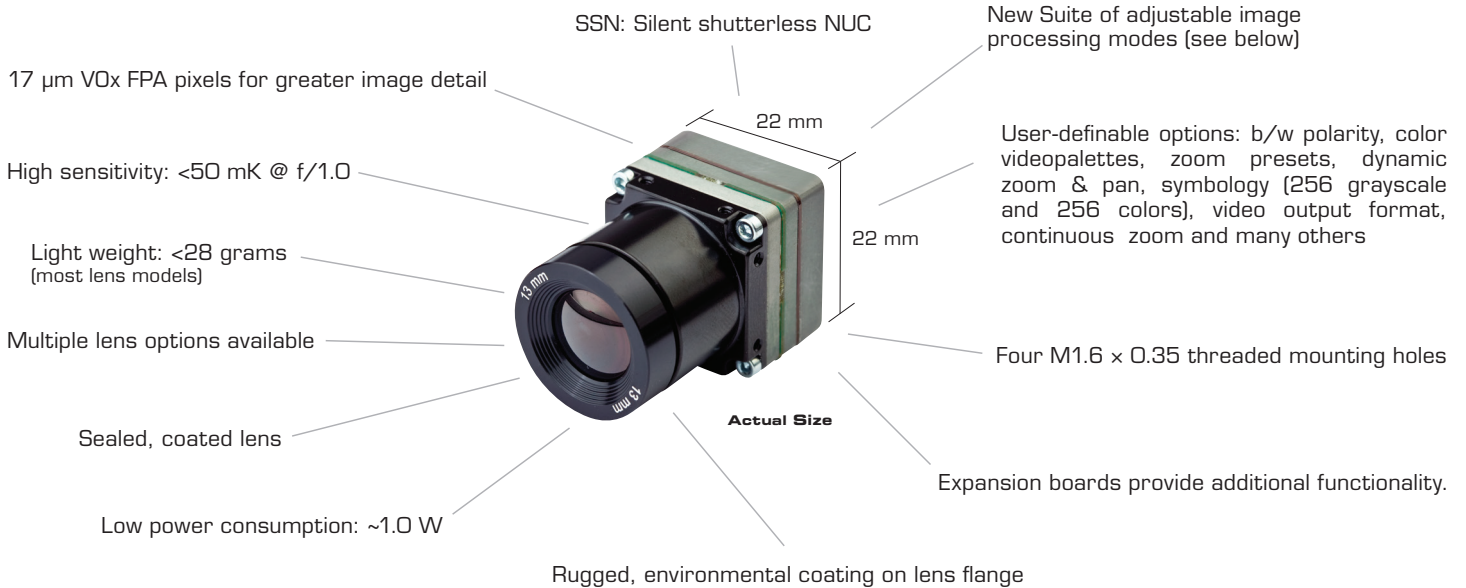
### Features:

- Smallest SWaP-C thermal camera in the industry, same size for 336 and 640 resolutions (17-micron pixels)
- New suite of user settable image processing modes
- SSN - Silent Shutterless NUC™ means no moving parts
- 640/60Hz frame rate
- Temperature measurement from the market leader

# Quark 2

## The World's Smallest Thermal Camera

FLIR® Quark™ is the smallest and lightest fully-integrated uncooled camera in existence. It is designed for thermal imaging applications that require minimum volume and weight, yet Quark is rated for extreme shock and operating temperature environments. Several lens options are available for Quark, as well as a lens-less camera body for OEM customers.



## Unrivaled Image Processing and Temperature Measurement

- 60Hz Frame rate now available for all resolutions
- Adjustable image processing modes to increase contrast and detail
  - Second generation DDE - **Digital Detail Enhancement™** for clearer imagery and edge sharpening
  - **ACE - Active Contrast Enhancement™** to dynamically adjust scene contrast for relative scene temperature
  - **SSO - Smart Scene Optimization™** to enhance extremes in a bi-modal scene
  - **IBHEQ - Information Based HEQ™** automatically adjusts AGC for what matters most in a scene
  - **SSN - Silent Shutterless NUC™** for continuous image uniformity improvement
- FLIR's experience and reputation to provide accurate per pixel temperature data for:
  - Video Analytics & Telemetry
  - Radiometry
  - Adjustable isotherm thresholds to colorize temperatures of interest in the grayscale



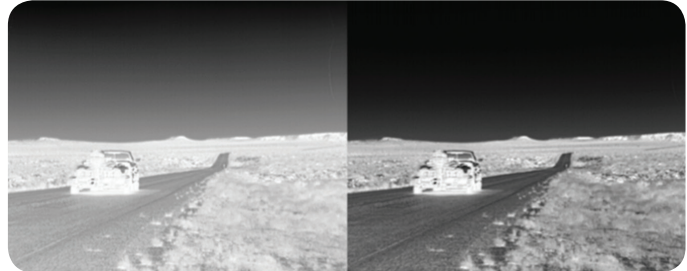
Manually set isotherm thresholds to colorize temperatures of interest (mid-range) in the grey scale

# New Suite of Adjustable Image Processing Modes:

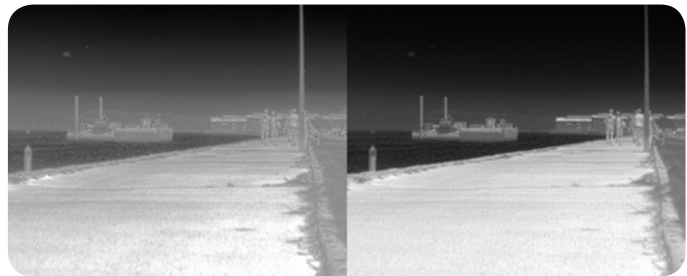
- Second Generation **DDE – Digital Detail Enhancement™** for clearer imagery and edge sharpening



- **“ACE” – Active Contrast Enhancement™** to dynamically adjust contrast for relative scene temperature



- **“IBHEQ” – Information Based Histogram Equalization™** automatically adjusts AGC for what matters in a scene



## Choose Your FOV

<b>LENS DATA</b>								
<b>Focal Length</b>	<b>6.3 mm</b>	<b>9 mm</b>	<b>13 mm</b>	<b>14 mm</b>	<b>17 mm</b>	<b>19 mm</b>	<b>25 mm</b>	<b>35 mm</b>
<b>f/ number</b>	1.4	1.4	1.25	1.25	1.25	1.25	1.2	1.5
<b>Quark 640 FOV</b>	N/A	69° x 56°	45° x 37°	43° x 35°	36° x 29°	32° x 26°	25° x 20°	18° x 14°
<b>Quark 336 FOV</b>	50° x 40°	35° x 27°	24° x 19°	23° x 18°	19° x 15°	16° x 13°	13° x 10°	9.3° x 7.1°
<b>IFOV (milliradians)</b>	N/A	1.889	1.308	1.214	1.000	0.895	0.680	0.496
<b>Min Focus</b>	5 cm	9 cm	15 cm	20 cm	5 cm	30 cm	20 cm	2 m
<b>Weight (Lens &amp; Mount Only)</b>	8.2 g	17.2 g	15 g	13.5 g	15 g	15 g	34 g	20 g
<b>Weight (Lens + Camera)</b>	18.3 g	27.3 g	23 g	21.5 g	22.5 g	23 g	44.1 g	28 g
<b>Diameter (max)</b>	20.6 mm	20.6 mm	20.6 mm	20.6 mm	20.6 mm	20.6 mm	28v mm	26.9 mm
<b>Lens Coating</b>	Diamond-like coated for superior abrasion resistance							

For DRI information, please visit [www.FLIR.com/Quark](http://www.FLIR.com/Quark)

# Specifications



## SYSTEM OVERVIEW

<b>System Type</b>	Uncooled LWIR Thermal Imager
<b>Quark 640:</b>	640 x 512 VOx Microbolometer
<b>Quark 336:</b>	336 x 256 VOx Microbolometer
<b>Pixel Size</b>	17 $\mu\text{m}$
<b>Spectral Band</b>	7.5 - 13.5 $\mu\text{m}$
<b>Performance</b>	<50 mK @ f/1.0

## OUTPUTS

<b>Analog Video</b>	Field-switchable between NTSC and PAL
<b>Quark 640:</b>	30 Hz (NTSC); 25 Hz (PAL); <9Hz option for export
<b>Quark 336:</b>	S/B 30/60Hz (NTSC); 25Hz/60Hz (PAL); <9Hz export option
<b>Digital Video</b>	8- or 14-bit serial LVDS; 8- or 14-bit parallel CMOS; 8-bit BT.656

## OPERATION & CONTROL

<b>Non Uniformity Correction (NUC)</b>	Silent Shutterless NUC (TM)
<b>Image Control</b>	Invert, revert, continuous digital zoom, dynamic zoom & pan, digital zoom presets, polarity, false color or monochrome, isotherms, AGC, second generation digital detail enhancement (DDE), image optimization (BPR, NUC & AGC'd video), Active Contrast Enhancement (ACE), Information Based Histogram Equalization (IBHEQ), Smart Scene Optimization (SSO), settable splash screens
<b>Camera Control</b>	Autonomous; Manual via GUI or serial command
<b>Signal Interface</b>	60-pin SAMTEC connector: power, comm., video, digital data, external sync, discrete commands
<b>Accessories</b>	Video, Power & Communication (VPC) expansion board

## PHYSICAL ATTRIBUTES

<b>Size / Weight</b>	22 x 22 x 12 mm (less lens) / 8 g (camera body only)
<b>Mounting Interface</b>	4 M1.6 x 0.35 on rear of camera frame

## POWER

<b>Input Voltage</b>	3.3 +/- 0.1 VDC
<b>Power Dissipation</b>	<1.0 W (Quark 336); <1.3W Quark 640/60Hz
<b>Time to Image</b>	<4 seconds (Quark 336); <5 seconds (Quark 640)

## ENVIRONMENTAL

<b>Operating Temperature Range</b>	-40° C to +80° C external temp
<b>Storage Temperature Range</b>	-55° C to +105° C external temp
<b>Scene Temp Range</b>	To 150° C standard
<b>Shock / Temperature Shock</b>	500 g; 0.8 msec shock pulse (all axes)/5/min
<b>Vibration</b>	4.3 g 3 axes, 8 hours each
<b>Humidity</b>	5 - 95% non-condensing
<b>Operational Altitude</b>	+40,000 feet
<b>ROHS, REACH, and WEEE</b>	Compliant



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[www.flir.com/Quark](http://www.flir.com/Quark)

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