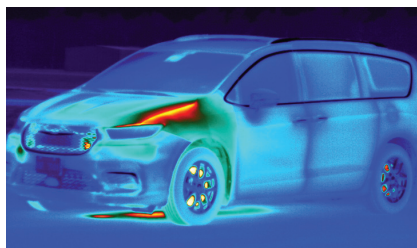


FLIR RS6780™

Range and Scientific MWIR Camera



The FLIR RS6780 offers advanced detector, triggering, and synchronization capabilities in an environmentally protected package, making it easy to configure and integrate for successful data acquisition in the most demanding R&D applications. With a three-position motorized filter wheel and continuous metric zoom (CZ) lens, the RS6780 records sharply focused, high-quality thermal images in long-range and tracking applications. The standard 50-250 mm CZ lens can be factory-calibrated for temperature and radiance measurements, allowing researchers to use the radiometric camera system without sacrificing the flexibility of the optics platform.



SUPERIOR MEASUREMENT ACCURACY

Acquire crisp thermal images, even at a long distance

- Maximize the number of pixels on any target with the 50 mm to 250 mm metric zoom lens and optional 3x afocal lens (150 mm to 750 mm)
- Capture full 640 × 512 pixel resolution data at up to 125 Hz or over 4,000 Hz in subwindow mode
- Accurately image high-temperature targets by applying neutral density filters with the integrated three-position filter wheel
- Optimize the camera system for unique applications with custom cold-filter options

ADVANCED FEATURES FOR OPTIMAL FLEXIBILITY

Capture essential imagery by synchronizing with external events or instrumentation

- Embed TSPI-accurate timestamping of lens and camera data into each image header
- Control precisely when an image frame is generated, or synchronize it to other equipment with advanced triggering
- Stream high-speed 14-bit data simultaneously over Gigabit Ethernet and CoaXPress (CXP)
- Ensure that correct filters are applied with automatic filter recognition

MULTIPLE SOFTWARE INTERFACES

View, acquire, analyze, and share important thermal data

- Stream thermal data directly to a computer running Windows, MacOS, or Linux
- Make critical decisions quickly using FLIR Research Studio's advanced analysis capabilities
- Integrate camera functionality and recording in third-party software via the FLIR Science Camera SDK
- Collaborate with colleagues by enabling local analysis of shared data with the free FLIR Research Studio Player

SMALL RUGGED FORM FACTOR

Designed for use in the most demanding applications

- IP65 tested for off-road trailering, allowing peace of mind in your application
- Lightweight system enabling easy integration
- Optics, detector, and camera all designed in-house for seamless system integration and future support
- Protect the camera in the harshest environments with the weatherproof enclosure and optional motorized lens cover

SPECIFICATIONS

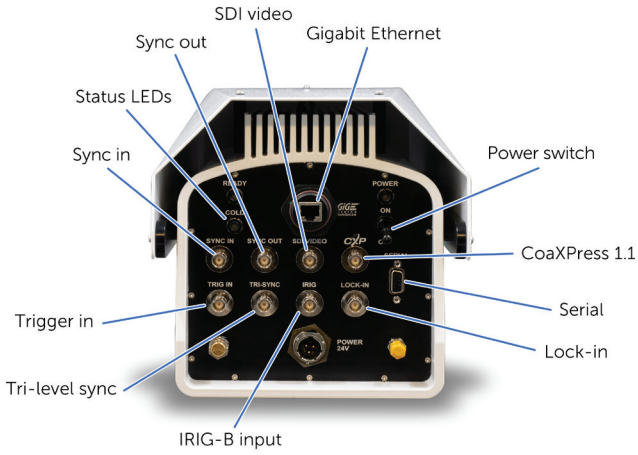
Imaging Data	
Detector	FLIR Indium Antimonide (InSb)
Spectral Range	3.0 – 5.0 μm
Resolution	640 × 512
Detector Pitch	15 μm
Thermal Sensitivity/NETD	27 mk typical
Operability	$\geq 99.95\%$ typical
Sensor Cooling	Closed-cycle rotary
Optical Data	
Camera f/number	f/4.0
Lens	50 mm – 250 mm continuous metric zoom – low latency metadata (with 3x afocal optional attachment – 150 mm – 750 mm)
Focus	Motorized FOV/focus
Lens Cover	Optional, motorized
ND Filter Wheel	3-position motorized filter wheel (1-inch diameter filters, factory installed)
Temperature Measurement	
Standard Temperature Range (50 mm - 250 mm lens only)	0°C to 350°C (32°F to 662°F)
Optional Temperature Range (50 mm - 250 mm lens only)	Using ND filters up to 3000°C
Accuracy	$\leq 100^\circ\text{C} \pm 2^\circ\text{C}$ ($\pm 1^\circ\text{C}$ typical), $>100^\circ\text{C} \pm 2\%$ of reading ($\pm 1\%$ typical)
Ambient Drift Compensation (with factory cal)	Yes

Electronics	
Readout Type	Snapshot
Readout Modes	Asynchronous integrate while read Asynchronous integrate then read
Synchronization Modes	Sync In, Sync Out, Tri-Level Sync, IRIG, Lock-In
Trigger Modes	Trigger in, header based
Image Time Stamp	Internal precision timestamp. IRIG-B AM decoder, TSPI accurate
Integration Time	480 ns to full frame
Pixel Clock	50 MHz
Frame Rate (Full Window)	Programmable; 0.0015 Hz to 125 Hz
Subwindow Mode	Flexible windowing down to 16 × 4 (steps of 16 columns, 4 rows)
Dynamic Range	14-bit
On-Camera Image Storage	None
Radiometric Data Streaming	Gigabit Ethernet (GigE Vision), CoaXPress Single Link 1.1
Standard Video	SDI
Command and Control	GigE, CoaXPress (GenICam protocol supported over GigE or CXP), RS-232

Image Presentation	
Palettes	Selectable 8-bit
Automatic Gain Control	Manual, Linear, Plateau equalization, DDE
Overlay	Customizable (ability to toggle off)
Video Modes	SDI: 720p @ 50/59.9, 1080p @ 25/29.9, 480i @ 60 Hz, 576i @ 50 Hz
Standard Video Zoom	1x, auto (best fit), off

Additional Data	
Operating Temperature Range	-20°C to 50°C (-4°F to 122°F)
IP Rating	IP65
Power	24 VDC (<24 W steady state)
Weight (without motorized lens cover)	Without 3x afocal – 12.7 kg (28 lb), with 3x afocal – 16.78 kg (37 lb)
Size (L × W × H)	544 mm × 177.8 mm × 213.9 mm (21.43 in × 7.00 in × 8.42 in) – (w/o 3x); 726.44 mm × 243.38 mm × 240.74 mm (28.6 in × 9.582 in × 9.478 in) – (w/3x)
Mounting	5 × ¼" –20 tapped holes, 2 × ¾" –16 tapped holes

For a complete list of specifications, go to www.flir.com/RS6780



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Revised on 02/16/22
RS6780_Datasheet-LTR