

FLIR X8500sc MWIR



High-Speed, High Definition Thermal Cameras

The FLIR X8500sc is a highly sensitive, high-speed, high definition MWIR camera designed for scientists, researchers, and engineers. It has all the features needed for research and science: from on-camera RAM/SSD recording to a four-position motorized filter wheel. Plus, by combining HD resolution with high-speed frame rates, the X8500sc allows researchers to fully image the scene and stop motion on high-speed events – whether they're in the lab or on the test range.

High-Speed HD Recording

The X8500sc can record 180 frames per second at a full 1280 x 1024 pixel resolution, for true HD high-speed thermal imaging. Windowing allows for even faster frame rates, up to 29,134 Hz. Integration times down to 270 ns at full frame allow for stop-motion action on fast moving and ensure accurate measurements. The X8500sc records up to 36 seconds to on-camera RAM with zero dropped frames. Playback from RAM or save to the removable FLIR DVIR solid-state drive in just 90 seconds, and be ready to begin a new recording.

Advanced Spectral Filtering Options

The FLIR X8500sc incorporates an easy access, four-position motorized filter wheel that permits filter exchange in any environment. The camera automatically determines filter ID and corresponding calibrations. Add custom cold filters for more tailored spectral filtering requirements.

Streaming, Synchronizing, and Triggering

The X8500sc streams high-speed 14-bit data simultaneously over Gigabit Ethernet, Camera Link, and CoaXpress for live viewing, analysis, or recording. Trigger options such as the external BNC connector input make the X8500sc ideal for high-speed, high sensitivity applications. Sync In/Out allows for precisely coordinated image capture of each frame of data.

Software

The X8500sc camera works seamlessly with FLIR ResearchIR Max software, enabling intuitive viewing and recording, and advanced processing of the thermal data. The GigE Vision®/GenICam compliant Ethernet allows you to plug and play with ResearchIR or third-party software programs, such as Mathworks® MATLAB. An optional Software Developers Kit (SDK) is available, or use industry-standard GigE Vision toolkits.

Key Features

- 180 Hz, 1280 x 1024 resolution high-speed imaging

- Up to 36 seconds of on-camera RAM recording with FLIR DVIR
- Synchronization with other instruments and events
- Full GenICam support over GigE, CXP, and Camera Link interfaces
- Four-position motorized filter wheel with automatic filter recognition

Specifications

Detector Type: FLIR indium antimonide (InSb)

Spectral Range: 3.0 – 5.0 μm or 1.5 – 5.0 μm

Resolution: 1280 x 1024

Detector Pitch: 12 μm

Thermal Sensitivity/NE Δ T: < 20 mK*

Well Capacity: 3 M electrons/11.5 M electrons

Operability: > 99.5% (> 99.95% typical)

Sensor Cooling: Closed cycle linear

Electronics/Imaging

Readout: Snapshot

Readout Modes: Asynchronous integrate while read - Asynchronous integrate then read

Synchronization Modes: Genlock, Sync-in, Sync-out

Image Time Stamp: Internal IRIG-B decoder clock TSPI accurate time stamp

Minimum Integration Time: 270 ns

Pixel Clock: 355 MHz

Frame Rate: (Full Window) Programmable; 0.0015 Hz to 180 Hz

Subwindow Mode: Flexible windowing down to 64 x 4 (steps of 32 columns, 4 rows)

Dynamic Range: 14-bit

On-Camera Image Storage: RAM (volatile): 16 GB, up to 6500 frames, full frame SSD(non-volatile): >4 TB

Radiometric Data Streaming: Simultaneous Gigabit Ethernet (GigE Vision®), Camera Link, CoaXPress (CXP)

Standard Video: HDMI, SDI, NTSC, PAL

Command and Control: GigE, RS-232, Camera Link, CXP (GenICam protocol supported over GigE, CXP, or Camera Link)

Temperature Measurement

Standard Temperature Range: -20°C to 350°C (-4°F to 662°F)

Optional Temperature Range: Up to 3000°C (5,432°F)

Accuracy: $\pm 2^\circ\text{C}$ or $\pm 2\%$ of reading

Optics

Camera f/Number: f/2.5 or f/4

Available Lenses (Uses FLIR HDC Optics): 3-5 μm : 17 mm, 25 mm, 50 mm, 100 mm, 200 mm, Broadband (1.5-5 μm): 25 mm, 50 mm, 100 mm

Close-up Lenses/Microscopes: 1x, 4x (3–5 μm , requires f/4.1 camera)

Lens Interface: FLIR HDC (4-tab bayonet)

Focus: Manual

Filtering: Filter wheel, standard 1-inch filters (2 filters/wheel position)

Image/Video Presentation

Palettes: Selectable 8-bit

Automatic Gain Control: Manual, Linear, Plateau equalization, ROI, DDE

Overlay: Customizable (IRIG-B, Date, Integration time, Internal temp, Frame rate, Sync mode, Cooler hours)

Video Modes: HDMI/HD-SDI: 720p/25/29.9/50/59.9 Hz, 1080p/25/29.9 Hz

Composite: NTSC, PAL

Digital Zoom: 1x, 4x, 4:3

General

Operating Temperature Range: -20°C to 50°C (-4°F to 122°F)

Shock / Vibration: 40 g, 11 msec $\frac{1}{2}$ sine pulse/4.3 g RMS random vibration all 3 axes

Weight w/Handle, w/o Lens: 6.35 kg (14 lbs)

Size (L x W x H) w/o Lens, Handle: 249 x 158 x 147 mm (9.8 x 6.2 x 5.8 in.)

Mounting: 2 x 1/4-20 tapped holes, 1 x 3/8-16 taped holes, 4 x 10-24 tapped holes, Side: 3x 1/4-20 tapped holes

Tekniske Data: