# TELEDYNE FLIR

FLIR X6980 SLS™

High-Speed LWIR Science-Grade Camera

The FLIR X6980 SLS is an extraordinarily fast, highly sensitive, 640 × 512 resolution longwave IR camera designed for scientists and engineers. It enables users to capture detailed imagery of fast events for accurate thermal analysis, perform custom radiometric measurements, or detect points of failure in composites, solar cells, and electronics. It is also a great tool for thermal mapping of stress in hypervelocity impact testing or other materials research.
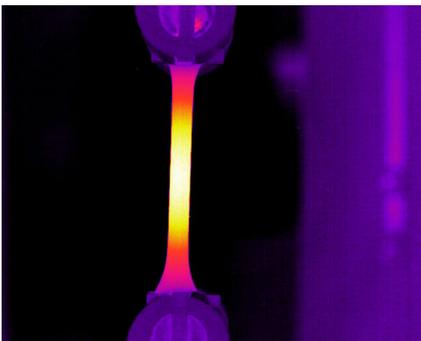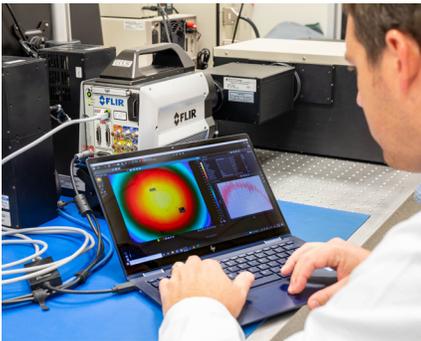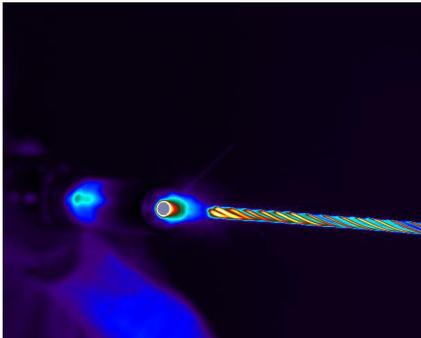
KEY APPLICATIONS

HIGH-SPEED THERMAL IMAGING
MUNITIONS RANGE TESTING
TARGET SIGNATURE
RADIOMETRY
NON-DESTRUCTIVE TESTING
STRESS MAPPING

As with the entire line of FLIR X-Series cameras, the X6980 SLS offers advanced recording, triggering, and synchronization capabilities, making it easy to configure and integrate for successful acquisitions in the most demanding applications. With a four-position motorized filter wheel and support for FLIR motorized focus lenses, the X6980 SLS will provide higher quality recordings, save time, and mitigate frustration in dynamic acquisition environments. Plus, by combining an SLS LWIR detector with the fastest high-speed frame rates, the X6980 SLS offers shorter snapshot speeds and wider temperature bands, enabling researchers to capture and stop motion the entire high-speed event—whether in the lab or on the test range.

HIGH SPEED, HIGH SENSITIVITY
Acquire crisp thermal images, even at high speeds
- Capture full 640 × 512 pixel resolution data at up to 1004 Hz or up to 29,134 Hz in subwindow mode
- Run 10X shorter integration times than MWIR InSb cameras when imaging ambient temperature scenes
- Detect temperature differences down to 40 mK over a wider dynamic range versus other cooled detector types
- Ensure crisp images by remotely focusing the camera using FLIR motorized lenses

ON-CAMERA RAM/SSD RECORDING
Record critical thermal data directly to on-camera memory
- Save up 26,000 frames of full-resolution data at 1 kHz to on-camera RAM with zero dropped frames
- Record up to 15 minutes of 640 × 512 resolution data at 800 Hz directly to the included 512 GB SSD
- Remotely playback and transfer recorded data directly from the SSD over GigE, Camera Link, or CoaXPress®
- Rapidly remove sensitive data from the camera with hot-swappable SSD

SYNCHRONIZATION AND TRIGGERING
Capture essential imagery by synchronizing with external events or instrumentation
- Initialize on-camera data recordings using an external record trigger or specific IRIG-B time
- Control precisely when an image frame is generated or synchronize it to other equipment
- Align image capture times with other data using TSPI-accurate IRIG-B time stamping

MULTIPLE SOFTWARE INTERFACES
View, record, 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 FLIR's free Research Studio Player

ADVANCED FILTERING OPTIONS
Maximize camera imagery to meet specific requirements
- Quickly switch between different filters using the easy access, four-position motorized filter wheel
- Easily install/remove spectral or neutral density filters in the field for optimal camera flexibility
- Ensure the correct filters and calibration association with automatic filter recognition
- Optimize the camera system for unique applications with custom cold filter options

For more information, visit: **flir.com/X6980_SLS**

www.teledyneflir.com

SPECIFICATIONS

System overview	X6980 SLS LWIR
Detector type	Strained layer superlattice (SLS)
Spectral range	7.5 µm (lower), 11.5–12.5 µm (upper)
Resolution	640 × 512
Detector pitch	25 µm
Thermal sensitivity/NETD	40 mK typical
Operability	99% typical
Sensor cooling	Closed cycle rotary
Electronics	
Readout type	Snapshot
Readout modes	Asynchronous integrate while read, Asynchronous integrate then read
Synchronization modes	Sync-in, Tri-Level Sync, Sync-out
Image time stamp	Internal precision timestamp, IRIG-B AM decoder, TSPI accurate
Trigger modes	Trigger In, Record Start, Header Based
Minimum integration time	270 ns
Pixel clock	355 MHz
Frame rate (full window)	Programmable; 0.0015 Hz to 1004 Hz
Subwindow mode	Flexible windowing down to 32 × 4 (steps of 32 columns, 4 rows)
Dynamic range	14-bit
On-camera image storage	RAM (volatile): 16 GB RAM included SSD (non-volatile): 512 GB included (compatible with 4 TB) Data transfer: SSD to Research Studio via data streaming buses
Radiometric data streaming	Simultaneous Gigabit Ethernet (GigE Vision), Camera Link, CoaXPress® 1.1, dual 5 Gb links
Standard video	HDMI, SDI
Command and control	GigE, USB, RS-232, Camera Link, CXP (GenICam protocol supported over GigE or CXP)
Temperature measurement	
Standard temperature range	-20°C to 350°C (-4°F to 662°F)
Optional temperature range	Up to 3,000°C (5,432°F)
Accuracy	≤100°C/212°F: ±2°C (±1°C typical) >100°C/212°F: ±2% of reading (±1% typical)

Optics	
Camera f/Number	f/2.5 or f/4.1
Motorized lenses	17 mm, 25 mm, 50 mm, 100 mm, 200 mm
Manual lenses	17 mm, 25 mm, 50 mm, 100 mm, 200 mm
Micro/Macro lenses	1x
Lens interface	FLIR FPO-M (4-tab bayonet, motorized)
Focus	Motorized (compatible with manual)
Filtering	4-Position warm filter wheel, standard 1-inch filters
Image/video presentation	
Palettes	Selectable 8-bit
Automatic gain control	Manual, Linear, Plateau equalization, ROI, DDE
Overlay	Customizable (ability to toggle off)
Video Modes	SDI: 720p@50/59.9, 1080p@25/29.97
Digital Zoom	1x, Auto (best fit)
General	
Operating temperature range	-20°C to 50°C (-4°F to 122°F)
Power	24 VDC (< 50 W steady state)
Weight w/handle, w/o lens	6.35 kg (14 lbs)
Size (L × W × H) w/o lens or handle	249 × 157 × 147 mm (9.8 × 6.2 × 5.8 in)
Mounting	2 x ¼ in. -20, 1 x 3/8 in. -16, 4 x #10 -24 Side: 3x ¼ in. -20 (each side)

Specifications are subject to change without notice. For the most up-to-date specifications, visit www.teledyneflir.com.
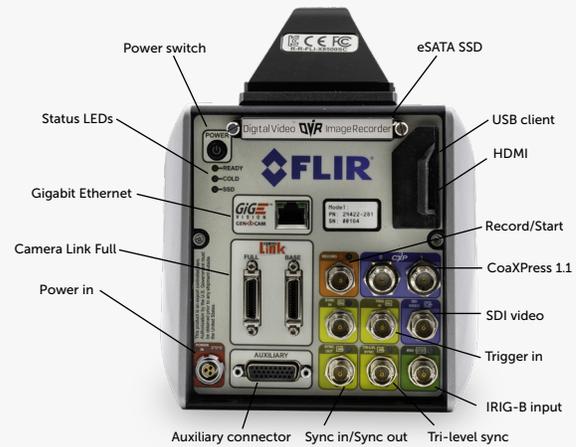
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