



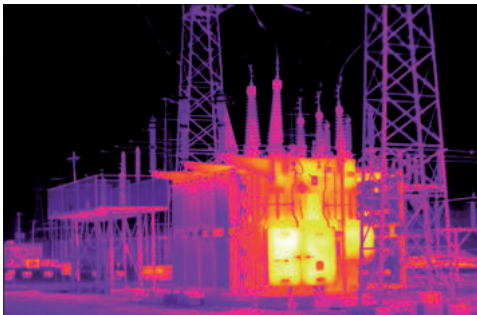
FIXED MOUNT THERMAL IMAGING CAMERA FOR CONDITION MONITORING AND FIRE PREVENTION

FLIR A310 f

FLIR A310 f thermal cameras can be installed almost anywhere to monitor the condition of your critical equipment and other valuable assets. Designed to help safeguard your plant and measure temperature differences, they allow you to see problems before they become costly failures -- preventing downtime and enhancing worker safety.

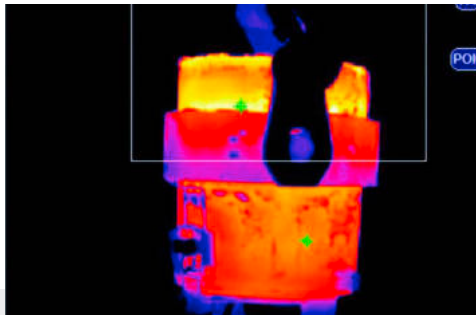
FLIR A310 f is ideal for various applications that require temperature measurement capabilities including: substation, transformer, waste bunker, and coal pile monitoring.

www.flir.com/automation



EXCELLENT IMAGE QUALITY

FLIR A310 f contains an uncooled Vanadium Oxide (VOx) microbolometer detector, producing crisp, 320 x 240 resolution thermal images and making small temperature differences clearly visible. The camera features a built-in lens with motorized focus, the ability to stream video over Ethernet to view live images on a PC, communication and power over Ethernet cable, and can be controlled remotely over the Web and TCP/IP protocol.



BUILT-IN ANALYSIS AND ALARM FUNCTIONS

FLIR A310 f comes standard with built-in analysis functions like spot, area measurement, and temperature difference. Alarms can be set to go off as function of analysis, internal temperature or digital input. The camera automatically sends analysis results, IR images, and more as an e-mail on schedule or at alarm. Autonomous dispatch of files or e-mails, acting as an FTP- or SMTP-client is possible. Since FLIR A310 f is Ethernet/IP and Modbus TCP compliant, analysis and alarm results can easily be shared to a PLC. Digital inputs/outputs are available for alarms and control of external equipment. An image masking function allows you to select only the relevant part of the image for your analysis.



DESIGNED FOR USE IN HARSH ENVIRONMENTS

A310 f is an extremely rugged system that meets IP66 requirements, protecting the camera from dust and water. Automatic heaters keep the camera window clear from ice so the system can continue working in temperatures down to -25°C (-13°F).

SPECIFICATIONS

System Overview	FLIR A310 f	Ethernet	
IR resolution	320 × 240 pixels	Ethernet	Control, result and image
Thermal sensitivity/NETD	< 0.05°C @ +30°C (+86°F) / 50 mK	Ethernet, type	100 Mbps
Field of view (FOV)	FLIR A310f 15°: 15° × 11.25° FLIR A310f 25°: 25° × 18.8° FLIR A310f 45°: 45° × 33.8° FLIR A310f 6°: 6° × 4.5° FLIR A310f 90°: 90° × 73°	Ethernet, standard	IEEE 802.3
Minimum focus distance	FLIR A310f 15°: 1.2 m (3.93 ft.) FLIR A310f 25°: 0.4 m (1.31 ft.) FLIR A310f 45°: 0.20 m (0.66 ft.) FLIR A310f 6°: 6° × 4.5° FLIR A310f 90°: 20 mm (0.79 in.)	Ethernet, connector type	RJ-45
Focal length	FLIR A310f 15°: 30.38 mm (1.2 in.) FLIR A310f 25°: 18 mm (0.7 in.) FLIR A310f 45°: 9.66 mm (0.38 in.) FLIR A310f 6°: 76 mm (3.0 in.) FLIR A310f 90°: 4 mm (0.157 in.)	Ethernet, communication	TCP/IP socket-based FLIR proprietary
Spatial resolution (IFOV)	FLIR A310f 15°: 0.82 mrad FLIR A310f 25°: 1.36 mrad FLIR A310f 45°: 2.45 mrad FLIR A310f 6°: 0.33 mrad FLIR A310f 90°: 6.3 mrad	Ethernet, video streaming	MPEG-4, ISO/IEC 14496-1 MPEG-4 ASP@L5
Lens identification	Automatic	Ethernet, image streaming	16-bit 320 × 240 pixels @ 7-8 Hz- Radiometric
F-number	1.3	Ethernet, power	Power over Ethernet, PoE IEEE 802.3af class 0
Imaging and optical data		Ethernet, protocols	Ethernet/IP, Modbus TCP, TCP, UDP, SNMP, RTSP, RTP, HTTP, ICMP, IGMP, ftp, SMTP, SMB (CIFS), DHCP, MDNS (Bonjour), uPnP
Image frequency	30 Hz	Set-up	
Focus	Automatic or manual (built in motor)	Color palettes	Color palettes (BW, BW inv, Iron, Rain)
Zoom	1–8× continuous, digital, interpolating zooming on images	Set-up commands	Date/time, Temperature°C/°F
Detector data		Storage of images	
Detector type	Focal Plane Array (FPA), uncooled microbolometer	Storage media	Built-in memory for image storage
Spectral range	7.5–13 µm	File formats	Standard JPEG, 16-bit measurement data included
Detector pitch	25 µm	Digital input/output	
Detector time constant	Typical 12 ms	Digital input, purpose	Image tag (start/stop/general), Input ext. device (programmatically read)
Measurement		Digital input	2 opto-isolated, 10–30 VDC
Object temperature range	–20 to +120°C (–4 to +248°F) 0 to +350°C (+32 to +662°F)	Digital output, purpose	As function of ALARM, Output to ext. device (programmatically set)
Accuracy	±4°C (±7.2°F) or ±4% of reading	Digital output	2 opto-isolated, 10–30 VDC, max 100 mA
Measurement analysis		Digital I/O, isolation voltage	500 VRMS
Spotmeter	10	Digital I/O, supply voltage	12/24 VDC, max 200 mA
Area	10 boxes with max./min./average/position	Digital I/O, connector type	6-pole jackable screw terminal
Isotherm	1 with above/below/interval	Power system	
Measurement option	Measurement Mask / Filter Schedule response: File sending (ftp), email (SMTP)	External power operation	The camera operates on 12/24 VDC, 9 W max. (allowed range: 10-30 VDC) and heaters on 24 VDC, 25 W max. In total: 34 W.
Difference temperature	Delta temperature between measurement functions or reference temperature	External power, connector type	2-pole jackable screw terminal
Reference temperature	Manually set or captured from any measurement function	Voltage	Allowed range 10–30 VDC
Atmospheric transmission correction	Automatic, based on inputs for distance, atmospheric temperature and relative humidity	Environmental data	
Optics transmission correction	Automatic, based on signals from internal sensors	Operating temperature range	–25°C to +50°C (–13°F to +122°F)
Emissivity correction	Variable from 0.01 to 1.0	Storage temperature range	–40°C to +70°C (–40°F to +158°F)
Reflected apparent temperature correction	Automatic, based on input of reflected temperature	Humidity (operating and storage)	IEC 60068-2-30/24 h 95% relative humidity +25°C to +40°C (+77°F to +104°F)
External optics/windows correction	Automatic, based on input of optics/window transmission and temperature	EMC	<ul style="list-style-type: none"> EN 61000-6-2 (Immunity) EN 61000-6-3 (Emission) FCC 47 CFR Part 15 Class B (Emission)
Measurement corrections	Global and individual object parameters	Encapsulation	IP 66 (IEC 60529)
Alarm		Bump	5 g, 11 ms (IEC 60068-2-27)
Alarm functions	6 automatic alarms on any selected measurement function, Digital In, Camera temperature, timer	Vibration	2 g (IEC 60068-2-6)
Alarm output	Digital Out, log, store image, file sending (ftp), email (SMTP), notification	Physical data	
		Weight	5 kg (11.0 lb.)
		Size (L × W × H)	460 × 140 × 159 mm (18.1 × 5.5 × 6.3 in.)
		Housing material	Aluminum
		System features	
		External power operation (heater)	24 VDC, 25 W max.
		External power, connector type (heater)	2-pole jackable screw terminal
		Voltage (heater)	Allowed range 21-30 VDC
		Automatic heaters	Clears window from ice
		Shipping information	
		List of contents	Cardboard box, Infrared camera with lens and environmental, housing, FLIR Sensors Manager download card, FLIR Tools & Utilities CD-ROM, Lens cap, Printed documentation, Small accessories kit, User documentation CD-ROM

Specifications are subject to change without notice. For the most up-to-date specs, go to www.flir.com

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