

# FLIR A310

## Thermal Imaging Camera For Critical Equipment Monitoring



Fixed-mounted thermal imaging cameras like the FLIR A310 can be installed almost anywhere to monitor your critical equipment and other valuable assets. It will safeguard your plant and measure temperature differences to assess the criticality of a given situation. This allows you to see problems before they become costly failures, preventing downtime and enhancing worker safety.

### EXCELLENT IMAGE QUALITY

Both thermal imaging cameras contain an uncooled Vanadium Oxide (VOx) microbolometer detector. They produce crisp thermal images of 320 x 240 pixel and detects temperature differences as small as 50 mK. They come with a built-in 25° lens with motorized focus. Other fields of view are available.

Stream MPEG-4 video over Ethernet to show live images on a PC. 640x480 with overlay up to 30 Hz. Ethernet-enabled, communication and power can be supplied with only one cable. Composite video outputs, PAL and NTSC compatible are available. Both cameras can be controlled remotely over the Web using TCP/IP protocol.

### INDUSTRIAL PROTOCOL

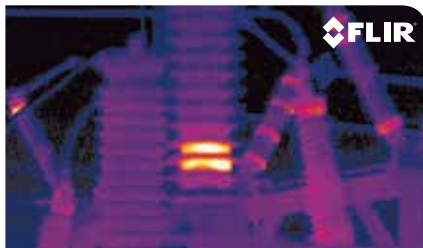
Since FLIR A310 is Ethernet/IP and Modbus TCP compliant analysis and alarm results can easily be shared to a PLC. Digital inputs/outputs are available for alarms and control of external equipment. An image masking function allows you to select only the relevant part of the image for your analysis.

### BUILT-IN ANALYSIS AND ALARM FUNCTIONS

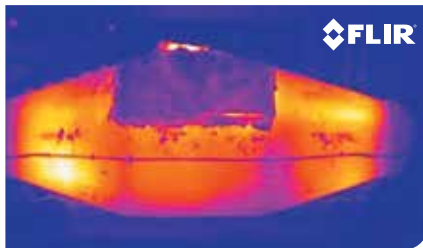
FLIR A310 comes standard with built-in analysis functions like spot, area measurement and difference temperature. Alarms can be set to go off as a function of analysis, internal temperature or digital input. The camera automatically sends analysis results, IR images and more as an e-mail on schedule or at alarm. Autonomous dispatch of files or e-mails, acting as an FTP- or SMTP-client is possible.

### PROTECTIVE HOUSING

The FLIR A310 can be ordered already built into an environmental housing. The housing increases the environmental specifications of the FLIR A310 to IP66, without affecting any of the camera's features. It is ideal when the camera needs to be installed in dusty or wet environments. The housing is available for A300 cameras that are equipped with 7, 15, 25, 45 or 90° FOV lenses. Users that want to build the camera within the housing themselves or that already have a FLIR A310 that needs extra protection against dust and water can order the housing separately as an accessory.



Thermal image of a substation.



Thermal image of a ladder.

## Imaging Specifications

System Overview		FLIR A310	
Spotmeter		10	
Area		10 boxes with max./min./average/position	
Isotherm		1 with above/below/interval	
Measurement option		Measurement Mask Filter Schedule response: File sending (ftp), email (SMTP)	
Difference temperature		Delta temperature between measurement functions or reference temperature	
Reference temperature		Manually set or captured from any measurement function	
Atmospheric transmission correction		Automatic, based on inputs for distance, atmospheric temperature and relative humidity	
Optics transmission correction		Automatic, based on signals from internal sensors	
Emissivity correction		Variable from 0.01 to 1.0	
Reflected apparent temperature correction		Automatic, based on input of reflected temperature	
External optics/windows correction		Automatic, based on input of optics/window transmission and temperature	
Measurement corrections		Global and individual object parameters	
Field of view (FOV) / Minimum focus distance		25° × 18.8° / 0.4 m (1.31 ft.)	
Lens identification		Automatic	
Thermal sensitivity/NETD		< 0.05°C at +30°C (86°F) (86°F) / 50 mK	
Focus		Automatic or manual (built in motor)	
F-number		1.3	
Image frequency		30 Hz	
Zoom		1–8× continuous, digital, interpolating zooming on images	
Alarm			
Alarm functions		6 automatic alarms on any selected measurement function, Digital In, Camera temperature, timer	
Alarm output		Digital Out, log, store image, file sending (ftp), email (SMTP), notification	
Detector data			
IR resolution		320 × 240 pixels	
Detector pitch		25 µm	
Detector time constant		Typical 12 ms	
Focal Plane Array (FPA) / Spectral range		Uncooled microbolometer / 7.5–13 µm	
Measurement			
Object temperature range		–20 to +120°C (–4 to 248°F) 0 to +350°C (32 to 662°F)	
Accuracy		±2°C (3.6°F) or ±2% of reading	
Set-up			
Color palettes		Color palettes (BW, BW inv, Iron, Rain)	
Set-up commands		Date/time, Temperature °C / °F	
Storage media			
Image storage type		Built-in memory for image storage	
File formats		Standard JPEG, 16-bit measurement data included	
Composite video			
Video out		Composite video output, PAL and NTSC compatible	
Video, standard		CVBS (ITU-R-BT.470 PAL/SMPTE 170M NTSC)	
Digital input/output			
Digital input		2 opto-isolated, 10–30 VDC	
Digital output, purpose		As function of ALARM, Output to ext. device (programmatically set)	
Digital output		2 opto-isolated, 10–30 VDC, max 100 mA	
Digital I/O, isolation voltage		500 VRMS	
Digital I/O, supply voltage		12/24 VDC, max 200 mA	
Digital I/O, connector type		6-pole jackable screw terminal	
Digital input, purpose		Image tag (start/stop/general), Input ext. device (programmatically read)	

Ethernet	
Ethernet, standard	IEEE 802.3
Ethernet, connector type	RJ-45
Ethernet, type	100 Mbps
Ethernet, communication	TCP/IP socket-based FLIR proprietary
Ethernet, power	Power over Ethernet, PoE IEEE 802.3af class 0
Ethernet	Control, result and image
Ethernet, protocols	Ethernet/IP, Modbus TCP, TCP, UDP, SNTP, RTSP, RTP, HTTP, ICMP, IGMP, ftp, SMTP, SMB (CIFS), DHCP, MDNS (Bonjour), uPnP
Ethernet, image streaming	16-bit 320 x 240 pixels at 7-8 Hz -Radiometric
Environmental data	
Storage temperature range	–40°C to +70°C (–40° to 158°F)
Humidity (operating and storage)	IEC 60068-2-30/24 h 95% relative humidity +25°C to +40°C (77 to 104°F)
EMC	<ul style="list-style-type: none"> <li>• EN 61000-6-2:2001 (Immunity)</li> <li>• EN 61000-6-3:2001 (Emission)</li> <li>• FCC 47 CFR Part 15 Class B (Emission)</li> </ul>
Vibration	2 g (IEC 60068-2-6)
Physical data	
Housing material	Aluminium
Scope of delivery	
Cardboard box, Infrared camera with lens, Ethernet cable, FLIR Tools download card, Mains cable, Power cable - pig-tailed, Power supply, Printed documentation, User documentation CD-ROM, Utility CD-ROM	

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