



FLIR GF309

- Engineered to “See Through Flames”
- Inspects “Fired Tubes” for Coking and Scaling
- Sees Inside Boilers for Slag or Ash Build-up
- Checks Burner Alignment and Flame Impingement
- Dual Use: Ideal for External Fire Box Inspections
- Built-in Video Records Furnace Start-up, Decoking Operations

- Extreme Temperature Measurement Accuracy: $\pm 1\%$
- Automatic (One-Touch) & Manual Thermal Focus w/ 8 to 1 Continuous Digital Zoom
- Flip-out, Tilttable 4.3” High Contrast Color LCD
- High Resolution (800 x 480), Tilttable Viewfinder
- User-inspired Ergonomics: Rotating Handle, Direct Access Buttons



Engineered to “See Through Flames”

The new GF309 is equipped with a special midwave “flame filter” that was specifically engineered for high temperature (up to 1500°C) industrial furnace inspections and boiler inspections. Built with extensive



end-user feedback, the GF309 comes with a high-tech, detachable heat shield that reflects heat away from the operator.

Inspects “Fired Tubes” for Coking and Scaling — Custom-built to deliver a clear and precise thermal image of “fired tubes,” the GF309 can easily highlight the presence of “coking” or “scaling.”

Sees Inside Boilers for Slag or Ash Build-up — Ideal for internal boiler inspection to detect areas of slag build-up (clinkers) that can hinder heat transfer and potentially cause mechanical damage if they fall.

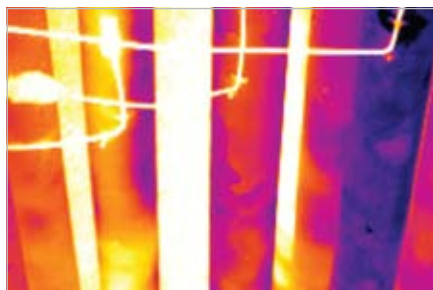
Checks Burner Alignment and Flame Impingement — The GF309 can easily scan for “burner alignment” or “flame impingement,” identifying if the flame pattern is causing localized overheating of the tubes.

Dual Use: Ideal for External Fire Box Inspections — While the GF309 is ideal for very high temperature applications, it also performs well in relatively lower temperature applications, such as external firebox inspections. In this application, the GF309 will detect hot spots on the outside

of the firebox, showing where insulating blankets or refractory bricks are disrupted on the inside.

Built-in Video Records Furnace Start-up, Decoking Operations

By storing radiometric (i.e. temperature measurement data) sequences, the GF309 allows you to capture your full inspection of dynamic events, such as a furnace start-up or de-coking operation for further analysis and/or reporting later.



The infrared image shows isolated areas of tube overheating which are not being detected by the temperature thermocouples. This situation typically results in a localized tube failure. Coking and patchy scale are present.

Tilttable, Flip-out 4.3” High Contrast Color LCD — Based on extensive end-user feedback, the new color LCD delivers a bright and vivid image in a widescreen format. It “flips-out” of the camera housing and then swivels and tilts to help you view targets more safely



from any angle — helping to avoid eye strain when using the camera for extended periods of time.

High Resolution (800 x 480), Tilttable Viewfinder

Use of a viewfinder is sometimes preferred, especially in extremely bright conditions that cause a glare on LCD panels. The new tilttable, color viewfinder on the GF309 is high quality, high resolution and highly ergonomic — improving your safety and performance.



User-inspired Ergonomics: Rotating Handle, Direct Access Buttons

Designed from the end-user’s perspective, the new FLIR GF309 offers advanced ergonomics to improve worker safety and individual performance, not to mention reducing back and arm strain. The user interface is both smart and intuitive: it



even allows you to customize your own direct access buttons for the features you use most!



FLIR GF309 Specifications

Imaging and Optical Data	
Field of view/min focus distance	24° x 18° / 0.3 m (1.0 ft.)
Lens identification	Automatic
F-number	1.5
Thermal sensitivity/NETD	<25 mK @ +30°C (+86°F)
Focus	Automatic (one touch) or manual (electric or on the lens)
Zoom	1–8x continuous, digital zoom
Digital image enhancement	Noise reduction filter, scene based NUC
Focal Plane Array (FPA) / Spectral range	Cooled InSb / 3.8–4.05 µm
IR resolution	320 x 240 pixels
Sensor cooling	Stirling Microcooler (FLIR MC-3)
Electronics and Data Rate	
Full frame rate	60 Hz
Image Presentation	
Display	Built-in widescreen, 4.3 in. LCD, 800 x 480 pixels
Viewfinder	Built-in, tilttable OLED, 800 x 480 pixels
Automatic image adjustment	Continuous/manual; linear or histogram based
Manual image adjustment	Level/span
Image modes	IR-image, visual image
Measurement	
Temperature range	–40 to +1500°C (–40 to +2732°F)
Accuracy	±1°C (±1.8°F) for temperature range (0 to +100°C, +32 to +212°F) or ±2% of reading for temperature range (>+100°C, >+212°F)
Measurement Analysis	
Spotmeter	3
Area	1 box
Profile	1 live line (horizontal or vertical)
Difference temperature	Delta temperature between measurement functions or reference temperature
Reference temperature	Manually set or captured from any measurement function
Emissivity correction	Variable from 0.01 to 1.0 or selected from editable materials list
Reflected apparent temperature correction	Automatic, based on input of reflected temperature
Measurement corrections	Reflected temperature, distance, atmospheric transmission, humidity, external optics
Set-up	
Menu commands	Level & span, Auto adjust continuous/manual/semi-automatic, Zoom, Palette, Start/stop recording, Store image, Playback/recall image
Set-up commands	1 programmable button, local adaptation of units, language, date & time formats
Web interface	Admin camera setup and viewing IR images
Storage of images	
Image storage type	Removable SD or SDHC Memory Card, two card slots
Image storage capacity	> 1200 images (JPEG) with post process capability per GB on memory card
Image storage mode	IR/visual images. Visual image is automatically associated with corresponding IR image.
Periodic image storage	Every 10 seconds up to 24 hours
File formats	Standard JPEG, 14 bit measurement data included
GPS	Location data automatically added to every image from built-in GPS
Video Recording and Streaming	
Radiometric IR-video recording	15 Hz direct to memory card
Non radiometric IR-video recording	MPEG/H.264 (60 minutes/clip) to memory card Visual image can automatically be associated with corresponding recording of non-radiometric IR video
Non radiometric IR-video streaming	RTP/H.264
Digital Camera	
Built-in digital camera	3.2 Mpixel, auto focus, and two video lamps
Digital camera video recording	MPEG4/H.264 (25 minutes/clip) to memory card
Laser Pointer	
Laser	Activated by dedicated button
Data Communication Interfaces	
USB	USB-A: Connect external USB device (e.g. memory stick) USB Mini-B: Data transfer to and from PC
USB, standard	USB Mini-B: 2.0 High Speed
Video	HDMI (image)
Power System	
Battery type / voltage	Rechargeable Li Ion battery / 7.2 V
Battery capacity	4.4Ah
Battery operating time	> 3 hours at 25°C (+68°F) and typical use
Charging system	In camera (AC adapter or 12 V from a vehicle) or 2 bay charger
External power operation	AC adapter 90–260 VAC, 50/60 Hz or 12 V from a vehicle (cable with standard plug, optional)
Power	8 W typically
Start-up time	< 5 min. @ 25°C (+77°F)

Environmental Data	
Operating temperature range	–20°C to +50°C (–4°F to +122°F)
Storage temperature range	–30°C to +60°C (–22°F to +140°F)
Humidity (operating and storage)	IEC 68-2-30/24 h 95% relative humidity +25°C to +40°C (+77°F to +104°F) (2 cycl)
EMC	
	EN61000-6-3 (Emission)
	EN61000-6-2 (Immunity)
	FCC 47 CFR Part 15 class B (Emission)
	EN 61 000-4-8, L5
	EN/UL/CSA 60950-1
Physical Data	
Camera weight, incl. lens and battery	2.48 kg (5.47 lb.)
Cameras size, incl. lens (L x W x H)	306 x 169 x 161 mm (12.0 x 6.7 x 6.3 in.)
Tripod mounting	Standard, 1/4"–20

Scope of Delivery	
Packaging / Contents	
Batteries	2 ea. (1 of the batteries inside camera)
Battery charger	
FLIR QuickReport™ PC software	CD-ROM
Hard transport case	
HDMI-DVI cable	
HDMI-HDMI cable	
Heat shield	
Infrared camera with Lens	
Lens cap (2 ea.)	
Lens cap (mounted on lens)	
Memory card	
Memory card adapter	
Power supply	
Power supply cable	
Printed Getting Started Guide	
Shoulder strap	
Strap for lens cap, 2 ea.	
System Calibration Certificate	
USB cable	
User documentation CD-ROM	
Warranty extension card or Registration card	

Accessory Optics	
Lens MWB 24°, f=23mm	
Lens MWB 14.5°, f=38mm	
Lens MWB 6°, f=92mm	



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1 978 901 8000

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