FLIR

Álava Ingenieros
GRUPO ÁLAVA

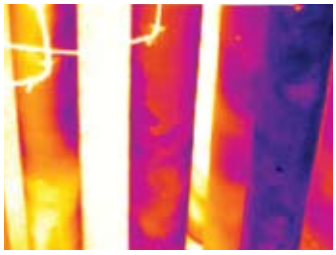
FLIR GF-Series

FLIR GF309

Infrared camera for furnace and electrical inspections

FLIR GF309 is used for high temperature industrial furnace applications. FLIR GF309 is designed to "see through flames" in all types of gas-fired furnaces, chemical heaters, coal-fired boilers. As the camera has an exceptionally wide span of temperature range it will also perform high accuracy electrical and mechanical inspections, making it a very useful instrument for its owner.

- *Measures temperatures from -40 °C to +1500 °C with high accuracy*
- *Dual-use camera: Furnace and ambient temperatures*
- *Excellent Thermal Sensitivity (<25 mK)*
- *High performance LCD & Tiltable high resolution viewfinder delivers a bright and vivid image in poor lighting environment or under sunlight*
- *User-inspired Ergonomics: Rotating Handle, Direct Access Buttons*
- *Embedded GPS Data and Digital images allow you to identify precise locations of inspected area.*
- *Compatible with FLIR QuickReport and FLIR Reporter software for professional inspection report*



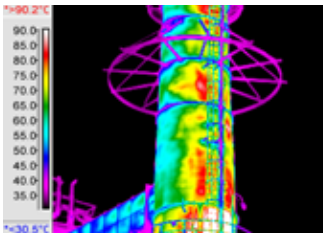
The infrared image shows isolated areas of tube overheating which are not being detected by the temperature thermocouples. This situation typically results in a localized tube failure. Coking and patchy scale are present.

Visualized gas leak in real-time
The FLIR GF309 is designed for high temperature industrial furnace applications. These cameras are ideal for monitoring all types of furnaces, heaters and boilers, particularly in the chemical, petrochemical and utility industries. Custom-built to see through flames, the GF309 also features a detachable heat-shield designed to reflect heat away from the camera and camera operator, providing increased protection.

Multi-purposes in gas leak detection
The FLIR GF309 infrared camera provides temperature readings across the entire surface of your heater/boiler/furnace and will help you to inspect faster, work safer and avert unscheduled shutdowns and, worse, catastrophic failures.

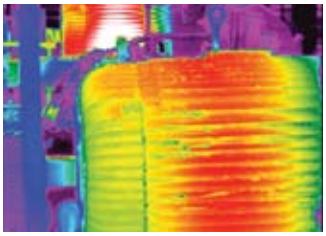
Tiltable, Flip-out 4.3" High Contrast Color LCD helps you view targets more safely from many angles, and avoid eye strain after long time.

Applications:

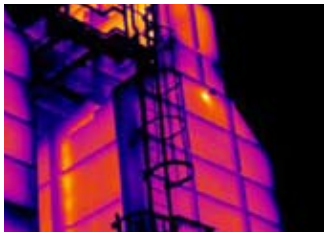


Gas leak detection in oil refineries

Natural gas



Power generation



Petrochemical & chemical industries

The new GF309 is equipped with a special midwave "flame filter" for high temperature (up to 1500°C) furnace inspections and boiler inspections. Additionally, the nickel coated heat shield contoured to improve worker safety and comfort during inspection.

FLIR GF309 (Furnace) Technical Specifications

Imaging and optical data	
Field of view (FOV) / Minimum focus distance	24° x 18° / 0.3 m
Lens identification	Automatic
F-number	1.5
Thermal sensitivity/NETD	<25 mK @ +30°C
Focus	Automatic (one touch) or manual (electric or on the lens)
Zoom	1–8× continuous, digital zoom
Digital image enhancement	Noise reduction filter, scene based NUC
Focal Plane Array (FPA) / Spectral range	Cooled InSb / 3–5 µm
IR resolution	320 × 240 pixels
Detector pitch	30 µm
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 × 480 pixels
Viewfinder	Built-in, tiltable OLED, 800 × 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
Accuracy	±1°C for temperature range or ±2% of reading for temperature range
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	Local adaptation of units, language, date and 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	> 5000 images (JPEG) with post process capability (4 GB SDHC card)
Image storage mode	IR/visual images. Visual image is automatically associated with corresponding IR image.
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	7 Hz direct to memory card
Non radiometric IR-video recording	H.264 (60 minutes/clip) to memory card
Digital camera video recording	H.264 (25 minutes/clip) to memory card
Non radiometric IR-video streaming	H.264 and MPEG-4
Digital camera	
Built-in digital camera	3.2 Mpixel, auto focus, and two video lamps
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 2.0 High Speed
Video	HDMI
Power system	
Battery type	Rechargeable Li Ion battery
Battery voltage	7.2 V
Battery operating time	> 3 hours at 25°C and typical use
Charging system	In camera (AC adapater or 12 V from a vehicle) or 2 bay charger
Charging time	2.5 h to 95% capacity, charging status indicated by LED's
External power operation	AC adapter 90–260 VAC, 50/60 Hz or 12 V from a vehicle (cable with standard plug, optional)
DC operation	10.8 to 16V DC, Polarity protected (proprietary protected)
Power	8 W typically
Start-up time	Stirling cool down: < 5 min. @ 25ºC

Environmental data	
Operating temperature range	–20°C to +50°C
Storage temperature range	–30°C to +60°C
Humidity (operating and storage)	IEC 68-2-30/24 h 95% relative humidity +25°C to +40°C (2 cycl)
Directives	73/23EEC, 89/336/EEC, 2002/95/EC, 2002/96/EC
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
Encapsulation	IP 54 (IEC 60529)
Bump	25 g (IEC 60068-2-29)
Vibration	2 g (IEC 60068-2-6)
Physical data	
Camera weight, incl. lens and battery	2.4 kg
Battery weight	0.24 kg
Cameras size, incl. lens (L × W × H)	305 × 169 × 161 mm
Tripod mounting	Standard, 1/4"-20
Housing material	Aluminium, Magnesium
Grip material	TPE Thermoplastic Elastomers

Scope of delivery
Packaging, contents
Infrared camera
Standard Lens, 24° (Si)
Shipping case
Lens cap (mounted on lens)
Lens cap (2 ea.,backside of lens and opening on camera body)
Lens cap strap, 2 ea.
Shoulder strap
Batteries 2 ea. (1 of the batteries inside camera)
Charger
Power supply
Power supply cord
HDMI cable
USB cable
SD card
SD card adapter (connects via USB to PC)
Getting Started Guide (printed)
Manual for GF-series on CD
FLIR Quick report on CD
System Calibration Certificate
Lens Cleaning Cloth
Heat shield

FLIR – US
Phone + 197 8901 8000
Email moreinfo@flir.com
www.FLIR.com/THG

FLIR – EMEA
Phone + 46 8753 2500
Email sales@flir.se
www.FLIR.com/THG

FLIR – APAC
Phone + 852 2792 8955
Email flir@flir.com.hk
www.FLIR.com/THG

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