FLIR GF-Series

Ergonomically designed and full featured

All FLIR GF-Series thermal imaging cameras are designed to be used several hours per day. They all contain a number of useful features that will help you to do your inspections more efficiently and to detect the smallest of gas leaks or thermal anomaly.

High sensitivity
The GF-Series allow you to see temperature differences as small as 0.015°C. Ideal for detecting the smallest anomalies in electrical or other industrial installations.

Tiltable viewfinder
The high-resolution viewfinder is tiltable and can be adapted to the individual user. It is ideal for outdoor use or when the LCD screen is not used.

Large LCD screen
Super size 4.3" foldable high-quality LCD screen allows you to see the smallest details and temperature differences.

Multi-angle handle with integrated direct access buttons
A turnable control grip allows you to use the camera in the most comfortable position. The buttons and joystick to control the camera are integrated in this handle and always stay right underneath your fingertips.

Programmable direct access button
For increased flexibility the operator can program a button located on the top of the camera for direct access to favorite functions.

Large number of analysis tools
Movable spotmeters, line profiles, areas and many more allow for detailed thermal analysis.

MPEG-4 video
Create visual and infrared non radiometric MPEG-4 video files.

High quality visual camera
An integrated 3.2 megapixel visual camera for generating crisp visual images in all conditions.

Laser Pointer
Helps you associate the hot or cold spot in the IR image with the real physical target in the field.

Flexible interfaces
Easy access to digital video connection, USB, and a direct connection to charge the battery inside the camera.

Built-in GPS
GPS allows to georeference infrared images to determine their geographic location.

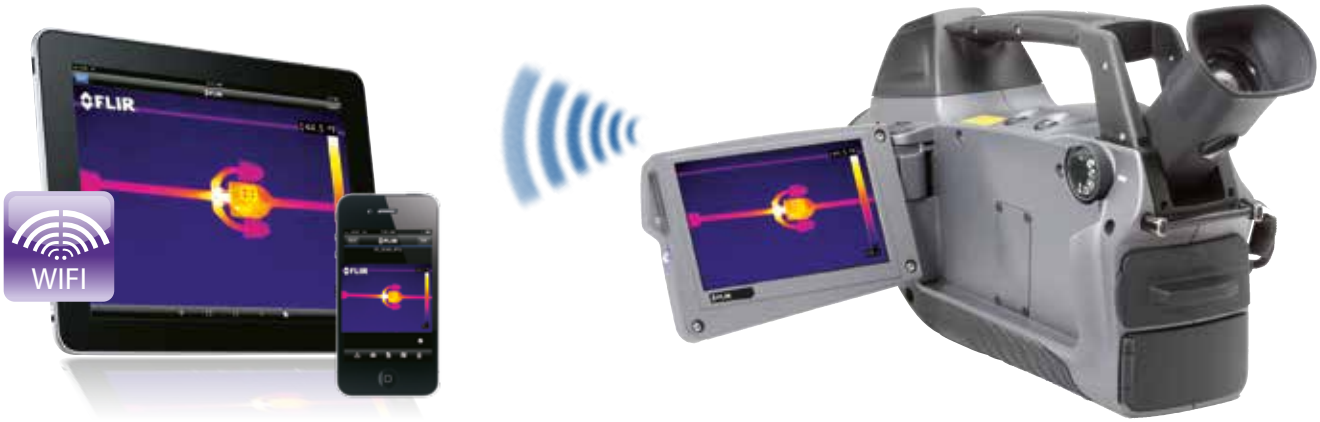
Wireless connectivity
Connect to smartphone or tablet via a Wi-Fi USB adapter, use the FLIR Tools mobile app (Apple iOS and Android) for processing and sharing results as well as for remote control.

Radiometric IR video streaming
16 bit radiometric IR video can be streamed to a PC (via USB) running the FLIR software.

High Sensitivity Mode (HSM)
Further enhances the sensitivity of the camera so that the smallest gas leaks can be detected (FLIR GF304, GF306, FLIR GF320 and FLIR GF346).

Gas leak in a petrochemical plant

High Sensitivity Mode On



Connect to smartphone or tablet via a Wi-Fi USB adapter and use the FLIR Tools mobile app (Apple iOS and Android) for processing and sharing results as well as for remote control.

FLIR GF304

Optical gas imaging of refrigerant gases

The FLIR GF304 is a gas imaging camera which was especially developed for the detection of refrigerant gases without the need to shut down the operation.

Refrigerant gases are used worldwide in industrial refrigeration systems for production, storage and retailing of food. Refrigerant gas is also used in the chemical, pharmaceutical and automotive industries and in air conditioning systems. Keeping an industrial refrigeration system running is of great importance due to the value of the cooled goods.

Furthermore, replacing or recharging gas can be a costly exercise. Although refrigerant gases are vital for many industries they can also be dangerous for the environment and may be governed by local regulations. That is why it is of the utmost importance to find leaks quickly and easy.

Cooled detector
The FLIR GF304 contains a cooled Quantum Well Infrared Photodetector (QWIP) and a cold band pass filter that allow to visualize gases in the 8.0-8.6 micrometer waveband. It will not only make refrigerant gases, but also the smallest of temperature differences, clearly visible.

Temperature range
The FLIR GF304 visualizes temperatures from -20°C to +500°C.

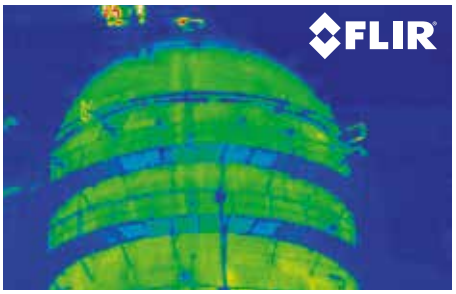
Dual use
The FLIR GF304 can be used both for finding gas leaks and maintenance inspections. High voltage, low voltage, mechanical and many other inspections can all be easily done with the FLIR GF304.

Available lenses
The FLIR GF304 comes either with a fixed 14.5° lens or with a fixed 24° lens. A version with interchangeable lenses is also available but requires a US Department of State license.

The FLIR GF304 detects the following refrigerant gases:

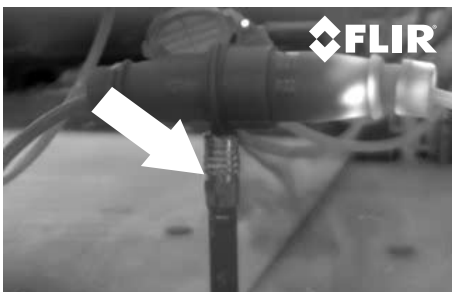
- R404A
- R407C
- R410A
- R134A
- R417A
- R422A
- R507A
- R143A
- R125
- R245fa

Industries:

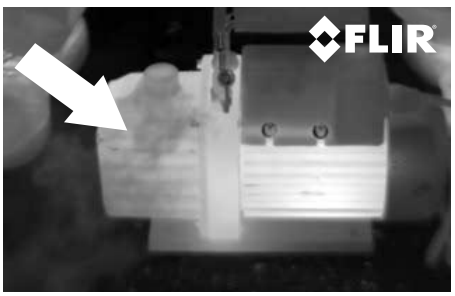


Petrochemical & chemical industries

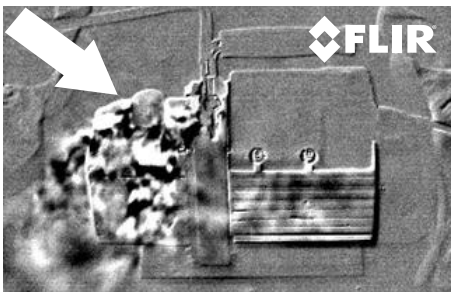
Food industry



Leak from electrical 415V connector



Leaking car airconditioning



Leaking car airconditioning in HSM mode

FLIR GF304 / GF306 / GF320 / GF346

Technical specifications

Camera specific

	GF304	GF306	GF320	GF346
Imaging and optical data				
Focal Plane Array (FPA) / Spectral range	Cooled QWIP / 8.0–8.6 µm	Cooled QWIP / 10.3–10.7 µm	Cooled InSb / 3.2–3.4 µm	Cooled InSb / Built-in cold band pass filter 4.52 - 4.67 µm
Measurement				
Accuracy	±1°C for temperature range (0-100 °C) or ±2% of reading for temperature range (> +100 °C)	±1°C for temperature range (0-100 °C) or ±2% of reading for temperature range (> +100 °C)	±1°C for temperature range (0-100 °C) or ±2% of reading for temperature range (> +100 °C)	+/- 1 °C or +/- 1% of reading for temperature range 0° C to +300 °C
Measurement range	-20°C to +500°C	-40°C to +500°C	-40°C to +350°C	-20°C to +300°C
Power system				
Battery operating time	> 3 hours at 25°C and typical use	> 2 hours at 25°C and typical use	> 3 hours at 25°C and typical use	> 3 hours at 25°C and typical use
Start-up time	Typically 8 min. @ 25°C	Typically 10 min. @ 25°C	Typically 7 min. @ 25°C	Typically 7 min. @ 25°C
Environmental data				
Operating temperature range	–20°C to +40°C	–20°C to +40°C	–20°C to +50°C	–20°C to +50°C
Gas detection				
Gases	• R404A • R407C • R410A • R134A • R417A • R422A • R507A • R143A • R125 • R245fa	• Sulfur Hexafluoride (SF_6) • Acetyl Chloride • Acetic Acid • Allyl Bromide • Allyl Chloride • Allyl Fluoride • Ammonia (NH3) • Bromomethane • Chloride Dioxide • Ethyl Cyanoacrylate • Ethylene • Furan • Hydrazine • Methylsilane • Methyl Ethyl Ketone • Methyl Vinyl Ketone • Propenal • Propene • Tetrahydrofuran • Trichloroethylene • Uranyl Fluoride • Vinyl Chloride • Vinyl Cyanide • Vinyl Ether	• Benzene • Ethanol • Ethylbenzene • Heptane • Hexane • Isoprene • Methanol • MEK • MIBK • Octane • Pentane • 1-Pentene • Toluene • Xylene • Butane • Ethane • Methane • Propane • Ethylene • Propylene	• Acetonitrile • Acetyl cyanide • Arsine • Bromine isocyanate • Butyl isocyanide • Carbon monoxide • Chlorine isocyanate • Chlorodimethylsilane • Cyanogen bromide • Dichloromethylsilane • Ethenone • Ethyl thiocyanate • Germane • Hexyl isocyanide • Ketene • Methyl thiocyanate • Nitrous oxide • Silane

Automatic (one Touch) and Manual Focus w/ 1 to 8 Continuous Digital Zoom helps you to deliver the perfect picture at ease.

Tiltable, flip-out 4.3" High Contrast Color LCD allows you to view targets more safely from any angle.

General specifications

Imaging and optical data	
Field of view (FOV) / Minimum focus distance	14.5° lens: 14.5° x 10.8° / 0.5m 24° lens: 24° × 18° / 0.3 m
F-number	1.5
Focus	Automatic (one touch) or manual (electric or on the lens)
Zoom	1–8× continuous, digital zoom
Digital image enhancement	Noise reduction filter, High Sensitivity Mode (HSM)
IR resolution	320 × 240 pixels
Thermal sensitivity / NETD	<15 mK @ +30°C
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, High Sensitivity Mode (HSM)
Measurement analysis	
Spotmeter	10
Area	5 boxes with max./min./average
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
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
Color palettes	Iron, Gray, Rainbow, Arctic, Lava, Rainbow HC
Set-up commands	1 programmable button, overlay recording mode, local adaptation of units, language, date and time formats
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 can automatically be 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	
Non radiometric IR-video recording	MPEG4 (up to 60 minutes/clip) to memory card. Visual image can automatically be associated with corresponding recording of non radiometric IR-video.
Visual video recording	MPEG4 (25 minutes/clip) to memory card
Radiometric IR-video streaming	Full dynamic to PC using USB or WLAN
Non radiometric IR-video streaming	RTP/MPEG4
Visual video streaming	MPEG4 using Wi-Fi Uncompressed colorized video using USB
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	
WLAN	Peer to peer (adhoc) for iOS or infrastructure (network) for Android
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	Digital Video Output (image)
Power system	
Battery type	Rechargeable Li Ion battery
Battery voltage	7.2 V
Charging system	In camera (AC adapter or 12 V from a vehicle) or 2-bay charger
Environmental data	
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)
EMC	EN61000-6-4 (Emission) EN61000-6-2 (Immunity) FCC 47 CFR Part 15 class A (Emission) EN 61 000-4-8, L5
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	2.48 kg
Battery weight	0.24 kg
Cameras size, incl. lens (L × W × H)	306 × 169 × 161 mm
Tripod mounting	Standard, ¼"-20
Housing material	Aluminium, Magnesium
Grip material	TPE Thermoplastic Elastomers

Scope of delivery

Thermal imaging camera, Hard transport case, Battery charger, Battery, 2 ea., Calibration Certificate, Downloads brochure, FLIR Tools PC software CD-ROM, FLIR VideoReport™ PC software CD-ROM, HDMI-DVI cable, HDMI-HDMI cable, Lens cap (mounted on lens), Memory card, Memory card adapter, Power supply, incl. multi-plugs, Printed Getting Started Guide, Printed important information guide, Registration card, Service & training brochure, Shoulder strap, USB cable, User documentation CD-ROM, Wi-Fi USB micro-adapter (depending on CE and FCC regulations regarding wireless equipment for your country)

Note: These specifications are for GF-Series with a fixed 14.5° or 24° lens.
Versions with an interchangeable lens are also available but these require a US Department of State Export license.

The following accessories are available for all GF-Series thermal imaging cameras

Power

Battery [1196209]
Extra high capacity battery for the thermal imaging camera.

Battery charger, incl. power supply with multi plugs [T197692]
Stand-alone 2-bay battery charger, including power supply with multi plugs.

Power supply, incl. multi plugs [T910814]
Power supply, including multiple plugs, to charge the battery when it is inside the camera or in the battery charger.

Cigarette lighter adapter kit, 12 VDC, 1.2 m. [1910490]
This cable is used to power the thermal imaging camera or to charge the battery from the cigarette lighter socket in a car.

Storage

Adapter, SD memory card to USB [1910475]
Easy to install and use; no additional driver installation required for Windows ME, 2000 and XP. Driver included for Windows 98SE.

Memory card micro-SD with adapters [T910737]
Micro-SD Card for data storage (e.g. images)

Cables

USB cable Std A <-> Mini-B [1910423]
This cable is used to connect the thermal imaging camera with a computer, using the USB protocol.

HDMI to DVI cable 1.5 m [T910816]
This cable is used to connect the thermal imaging camera with an external display.

HDMI to HDMI cable 1.5 m [T910815]
This cable is used to connect the thermal imaging camera with an external display.

Transport

Hard transport case for FLIR GF3xx-Series [T197555]
Hard transport case for FLIR GF3xx-Series

Miscellaneous

Heat Shield for FLIR GF309 only [T197482]
Heat shield for the FLIR GF309.

Wi-Fi USB adaptor [T951387]
Wi-Fi USB adaptor for wireless connection between the thermal imaging camera and external equipment.