

P/N: 44601-0102

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Website

<http://www.flir.com>

Customer support

<http://support.flir.com>

Disclaimer

Specifications subject to change without further notice. Camera models and accessories subject to regional market considerations. License procedures may apply. Products described herein may be subject to US Export Regulations. Please refer to exportquestions@flir.com with any questions.



General description	
<p>The FLIR GF309 is an infrared camera for furnace and high temperature inspection (e.g., of industrial furnaces, chemical heaters, and coal-fired boilers), without the need to shut down the operation. The portable camera also greatly improves operator safety, by measuring through flames at a safe distance, for all types of furnaces. A good knowledge of the furnace condition can avert failures and unscheduled shutdowns</p> <p>Industrial furnaces, heaters, and boilers are found in the chemical, petrochemical, and utility industries.</p>	
Benefits:	
<ul style="list-style-type: none"> • Improved efficiency: The FLIR GF309 reduces inspection time by measuring the temperature through flames without the need to interrupt the industrial process or await scheduled service shutdowns. A furnace camera can help you to determine how to run a furnace/boiler efficiently to give the best fuel economy and maximize production output and quality. As the FLIR GF309 has a wide temperature range, high-accuracy electrical and mechanical inspections can be performed, which makes the camera even more useful for predictive maintenance. • The wireless connectivity of the camera allows you to connect to smart phones or tablet PCs for the wireless transfer of images or the remote control of the camera—a useful function if regulations require a second person to accompany the furnace inspector or thermal images needs to be sent quickly for a second opinion. • Increased worker safety: High-temperature measurement can be performed through flames in a non-contact mode, and from a safe distance. Custom-built, the FLIR GF309 also features a detachable heat-shield designed to reflect heat away from the camera and the camera operator, providing increased protection. The camera is ergonomically designed with a bright LCD and tiltable viewfinder, which facilitates its use over a full working day. • Increased furnace safety: Good knowledge of furnace/boiler condition and operating parameters can provide the information needed to avert catastrophic failures and prevent unscheduled shutdowns. 	
Licensing and classification	
License information	Interchangeable lens version of the FLIR GF3XX series requires US Department of State License and will be subject to limitations on resale, except inside US. Allow a minimum of 90 days after application submittal for approval.
Imaging and optical data	
IR resolution	320 × 240 pixels
Thermal sensitivity/NETD	<15 mK @ +30°C (+86°F)
Field of view (FOV)	24° × 18°
Minimum focus distance	0.3 m (1.0 ft.)
Focal length	23 mm (0.89 in.)
Lens identification	Automatic



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Imaging and optical data	
F-number	1.5
Focus	Automatic (one touch) or manual (electric or on the lens)
Zoom	1–8x continuous, digital zoom
Digital image enhancement	Noise reduction filter
Detector data	
Detector type	Focal plane array (FPA), cooled InSb
Spectral range	3.8–4.05 μm
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 presentation modes	
Image modes	IR image, visual image
Measurement	
Temperature range	–20°C to +1500°C (–4°F to +2732°F)
Accuracy	$\pm 1^\circ\text{C}$ ($\pm 1.8^\circ\text{F}$) for temperature range (0°C, to +100°C, +32°F to +212°F) or $\pm 2\%$ of reading for temperature range (>+100°C, >+212°F)
Measurement analysis	
Spotmeter	10
Area	5 boxes with max./min./average
Profile	1 live line (horizontal or vertical)
Isotherm	Above/below/interval
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

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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, local adaptation of units, language, date and time formats

Storage of images	
Storage media	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

Geographic Information System	
GPS	Location data automatically added to every image from built-in GPS

Video recording in camera	
Radiometric IR video recording	*.seq video clips to memory card (7.5 and 15 Hz).
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

Video streaming	
Radiometric IR video streaming	Full dynamic to PC using USB cable or to mobile devices using Wi-Fi. PC software capable of displaying the video stream include the following: <ul style="list-style-type: none"> • FLIR IR Camera Player • FLIR ResearchIR • FLIR Tools
Non-radiometric IR video streaming	RTP/MPEG4

Digital camera	
Built-in digital camera	3.2 Mpixels, auto focus, and two video lamps

Laser pointer	
Laser	Activated by dedicated button
Laser classification	Class 2
Laser type	Semiconductor AlGaInP diode laser, 1 mW, 635 nm (red)

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USB	
USB	<ul style="list-style-type: none"> • USB-A: Connect external USB device • USB Mini-B: Data transfer to and from PC
USB, standard	USB Mini-B: 2.0 high speed

Composite video	
Video out	Digital video output (image)

Power system	
Battery type	Rechargeable Li ion battery
Battery voltage	7.2 V
Battery capacity	4.4 Ah
Battery operating time	> 3 hours at 25°C (+77°F) and typical use
Charging system	In camera (AC adapter 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 16 V DC, polarity protected (proprietary protected)
Power	8.5 W typically
Start-up time	Typically 7 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 cycles)
Directives	<ul style="list-style-type: none"> • 73/23EEC • 2004/108/EC • 2002/95/EC • 2002/96/EC
EMC	<ul style="list-style-type: none"> • 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)
Shock	25 g (IEC 60068-2-27)
Vibration	2 g (IEC 60068-2-6)
Safety	Power supply: EN/UL/IEC 60950-1

Physical data	
Camera weight, excl. lens and battery	1.94 kg (4.27 lb.)
Camera weight, incl. lens and excl. battery	2.24 kg (4.94 lb.)
Camera weight, incl. lens and battery	2.48 kg (5.47 lb.)
Battery weight	0.24 kg (0.52 lb.)
Heat shield weight	0.50 kg (1.09 lb.)
Camera size, excl. lens (L × W × H)	284 × 169 × 161 mm (11.2 × 6.7 × 6.3 in.)
Cameras size, incl. lens (L × W × H)	306 × 169 × 161 mm (12.0 × 6.7 × 6.3 in.)

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Physical data	
Cameras size, incl. heat shield (L x W x H)	320 x 243 x 195 mm (12.6 x 9.6 x 7.7 in.)
Battery size (L x W x H)	141 x 47 x 28 mm (5.5 x 1.8 x 1.1 in.)
Battery charger size (L x W x H)	158 x 122 x 25 mm (6.2 x 4.8 x 1.0 in.)
Tripod mounting	UNC ¼"-20
Housing material	Aluminum, magnesium
Grip material	TPE thermoplastic elastomers
Shipping information	
Packaging, type	Cardboard box
List of contents	<ul style="list-style-type: none"> • Infrared camera with lens • Battery charger • Battery, 2 ea. • Hard transport case • HDMI-DVI cable • HDMI-HDMI cable • Heat shield • Lens cap (2 ea.) • Lens cap (mounted on lens) • Memory card • Power supply, incl. multi-plugs • Printed documentation • Shoulder strap • USB cable • Wi-Fi USB micro adapter (depending on CE and FCC regulations regarding wireless equipment for your country)
Packaging, weight	
Packaging, size	400 x 190 x 510 mm (15.7 x 7.5 x 20.1 in.)

Supplies & accessories:

- T197387; IR lens, 24° with case for GF300, GF309, GF320
- T197388; IR lens, 6° with case for GF300, GF309, GF320, GF346.
- T197385; IR lens, 14.5° with case for GF300, GF309, GF320
- T198360; Furnace IR lens extender, 24° with case for GF309
- T197692; Battery charger, incl. power supply with multi plugs
- T910814; Power supply, incl. multi plugs
- T198511; Li-Ion Battery pack 7.4V 33Wh
- T199367ACC; Battery Li-ion 7.2 V, 4.4 Ah, 32 Wh
- T199183ACC; Battery
- T911650ACC; Memory card SD Card 8 GB
- 1910423; USB cable Std A <-> Mini-B
- T198509; Cigarette lighter adapter kit, 12 VDC, 1.2 m/3.9 ft.
- T910815ACC; HDMI to HDMI cable 1.5 m
- T910816ACC; HDMI to DVI cable 1.5 m
- T197555; Hard transport case for FLIR GF3xx-Series
- T951387; Wi-Fi USB micro adapter
- T197482; Heat Shield for FLIR GF309
- T198586; FLIR Reporter Professional (license only)
- T198584; FLIR Tools
- T198583; FLIR Tools+ (download card incl. license key)
- DSW-10000; FLIR IR Camera Player
- APP-10002; FLIR Tools Mobile (Android Application)
- T198697; FLIR ResearchIR Max + HSDR 4 (hardware sec. dev.)
- T199014; FLIR ResearchIR Max + HSDR 4 (printed license key)
- T199044; FLIR ResearchIR Max + HSDR 4 Upgrade (printed license key)
- T198696; FLIR ResearchIR Max 4 (hardware sec. dev.)
- T199013; FLIR ResearchIR Max 4 (printed license key)



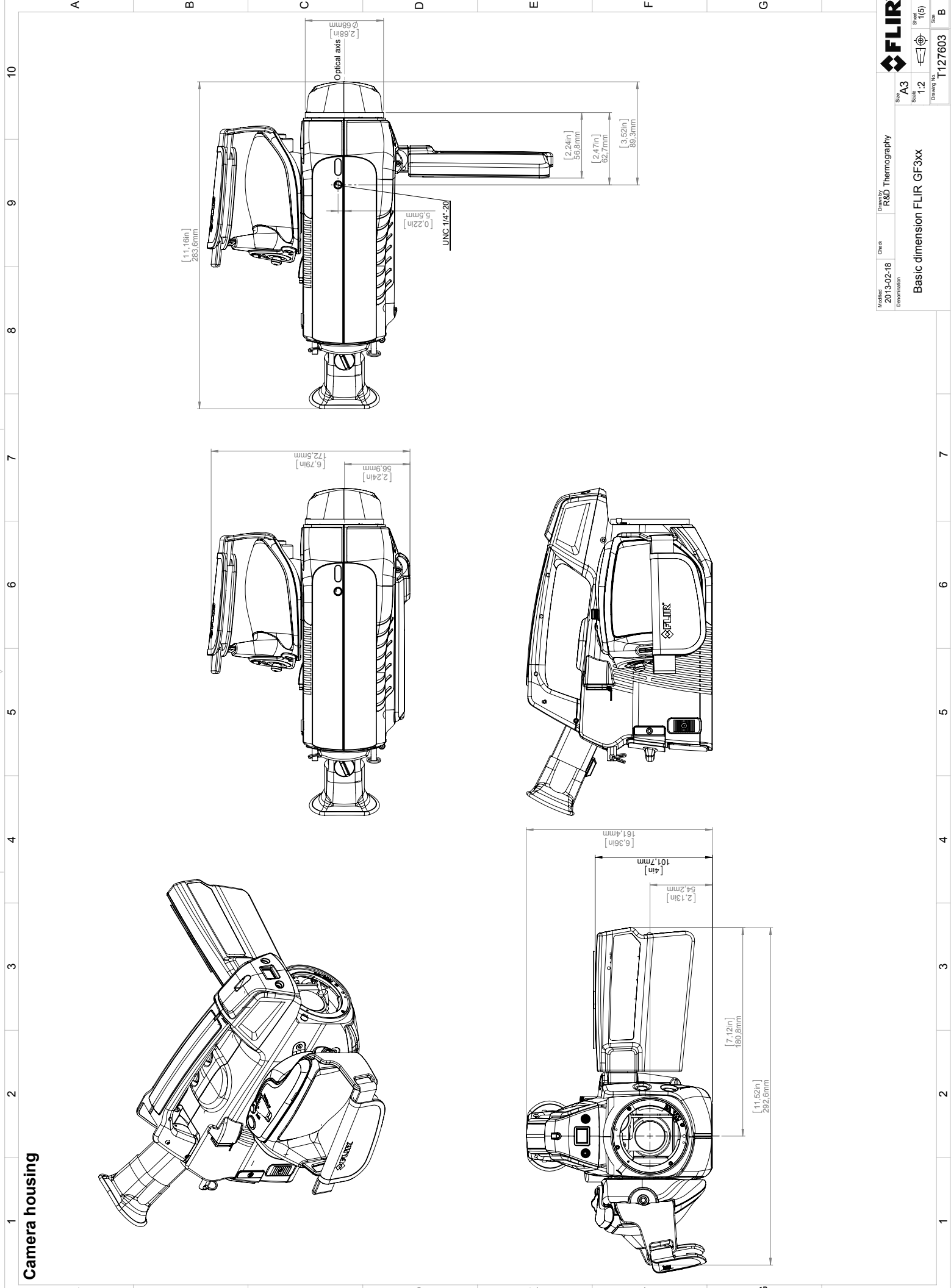
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- T199043; FLIR ResearchIR Max 4 Upgrade (printed license key)
- T198731; FLIR ResearchIR Standard 4 (hardware sec. dev.)
- T199012; FLIR ResearchIR Standard 4 (printed license key)
- T199042; FLIR ResearchIR Standard 4 Upgrade (printed license key)
- T199233; FLIR Atlas SDK for .NET
- T199234; FLIR Atlas SDK for MATLAB
- T198567; ThermoVision™ System Developers Kit Ver. 2.6
- T198566; ThermoVision™ LabVIEW® Digital Toolkit Ver. 3.3



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Scale: **1:2**

Sheet: **1(5)**

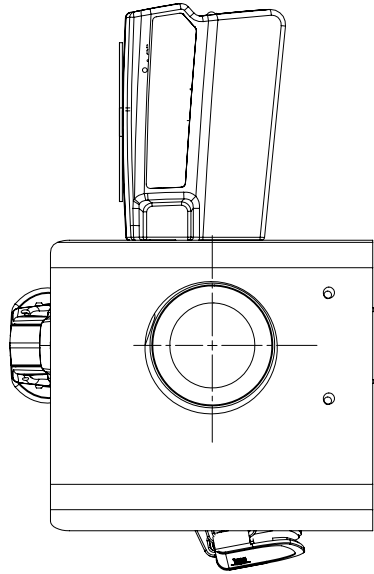
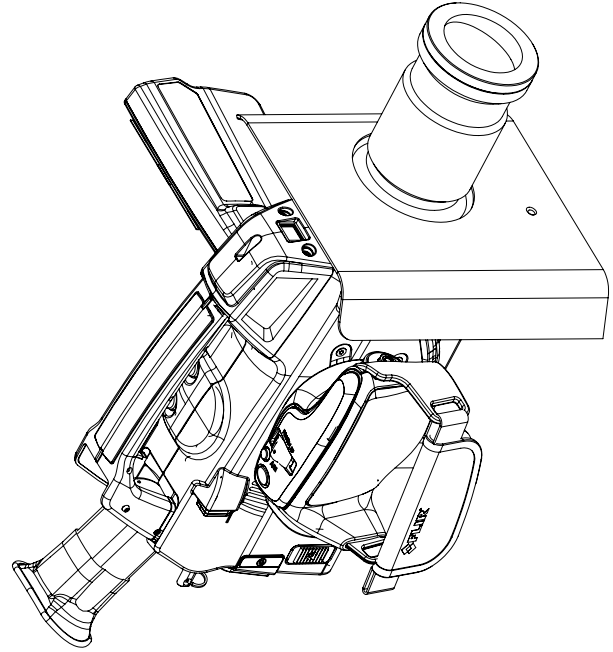
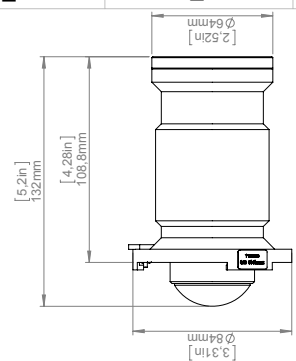
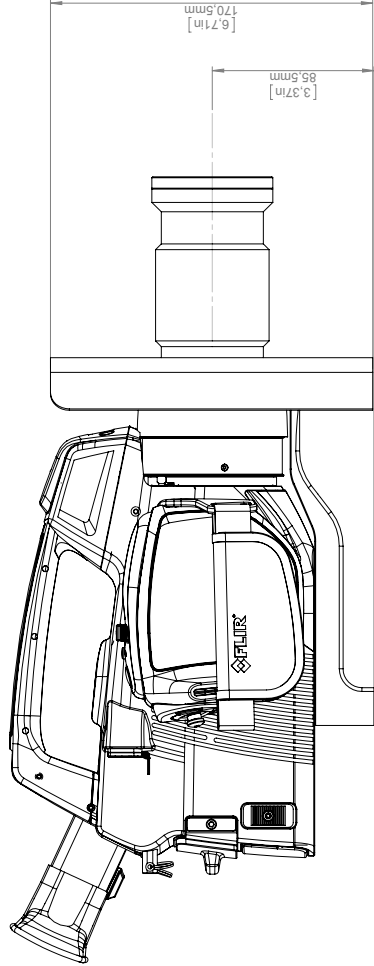
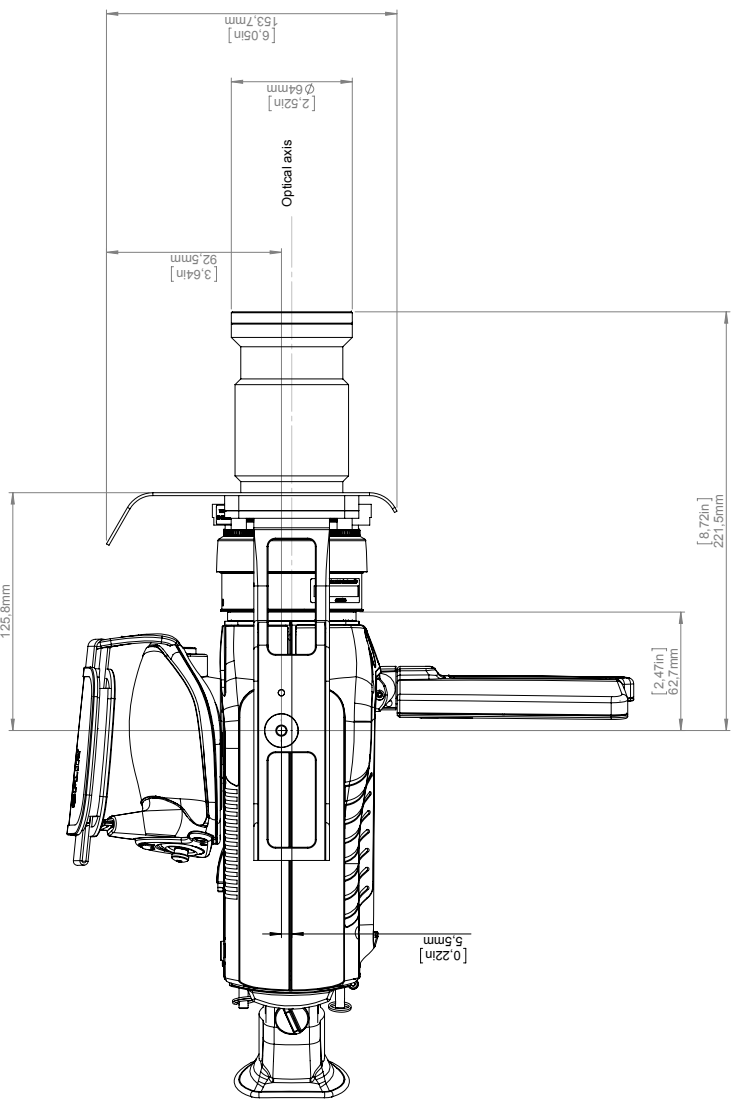
Drawing No.: **1127603**

Modified: **2013-02-18**

Check: **Drawn By: R&D Thermography**

Denomination: **Basic dimension FLIR GF3xx**

Camera with Lens f=23mm and extender



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For additional dimensions see page 1

Modified	2013-02-18	Checked	R&D Thermography	Drawn by	R&D Thermography
Denomination					
Size	A3	Scale	1:2	Sheet	4(5)
Drawing No.	T1127603	Size			

Basic dimension FLIR GF3xx

