FLIR GF346 24°

P/N: 59801-0102

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General description
Optical gas imaging especially of carbon monoxide (CO) and other harmful gases
The FLIR GF346 is an IR camera for optical gas imaging (OGI) that visualizes and pinpoints gas leaks of CO, without the need to shut down the operation. The portable camera also greatly improves operator safety, by detecting emissions at a safe distance, and helps to protect the environment by tracing leaks of environmentally harmful gases.
CO is an industrial gas with applications in the steel industry and bulk chemicals manufacturing. It is also used for packaging systems for fresh meat and fish.
Benefits:
• Improved efficiency: The FLIR GF346 reduces revenue loss by pinpointing even small gas leaks quickly and efficiently, and from a distance. It also reduces the inspection time by allowing a broad area to be scanned rapidly and without the need to interrupt the industrial process. The wireless connectivity of the camera allows you to connect to smart phones or tablet PCs for the wireless transfer of images or remote control of the camera. The FLIR GF346 can also be used for temperature measurement, which makes it even more useful for predictive maintenance. • Increased worker safety: CO can be toxic to humans when encountered in higher concentrations. OGI allows gas leaks to be detected in a non-contact mode and from a safe distance. This reduces the risk of the inspector being exposed to invisible and highly toxic gases or explosive chemicals. With a GF346 gas imaging camera it is easy to scan areas of interest that are difficult to reach with conventional methods. The camera is ergonomically designed, with a bright LCD and tiltable viewfinder, which facilitates its use over a full working day. • Protecting the environment: Several gases, like CO, have a high global warming potential, and are usually governed by regulations. Even small leaks can be detected and documented using the FLIR GF346 camera.
Detects the following gases:
Carbon Monoxide, Nitrous Oxide, Ketene, Ethenone, Butyl Isocyanide, Hexyl Isocyanide, Cyanogen Bromide, Acetonitrile, Acetyl Cyanide, Chlorine Isocyanate, Bromine Isocyanate, Methyl Thiocyanate, Ethyl Thiocyanate, Chlorodimethylsilane, Dichloromethylsilane, Silane, Germane, Arsine

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
F-number	1.5
Focus	Automatic (one touch) or manual (electric or on the lens)

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Imaging and optical data	
Zoom	1–8× continuous, digital zoom
Digital image enhancement	Noise reduction filter, High Sensitivity Mode (HSM)

Detector data	
Detector type	Focal Plane Array (FPA), cooled InSb
Spectral range	Built-in cold band pass filter 4.52–4.67 µm
Detector pitch	30 µm
Sensor cooling	Stirling Microcooler (FLIR MC-3)
Detects following gases	Carbon Monoxide, Nitrous Oxide, Ketene, Ethenone, Butyl Isocyanide, Hexyl Isocyanide, Cyanogen Bromide, Acetonitrile, Acetyl Cyanide, Chlorine Isocyanate, Bromine Isocyanate, Methyl Thiocyanate, Ethyl Thiocyanate, Chlorodimethylsilane, Dichloromethylsilane, Silane, Germane, Arsine

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, High Sensitivity Mode (HSM)

Measurement	
Temperature range	–20°C to +300°C (–4°F to +572°F)
Accuracy	±1°C (±1.8°F) or ±1% of reading for temperature range 0°C to +300°C (+32°F to +572°F)

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
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, overlay recording mode, 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	
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	
Non-radiometric IR-video streaming	RTP/MPEG4

Digital camera	
Built-in digital camera	3.2 Mpixel, 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)

USB	
USB	• USB-A: Connect external USB device • USB Mini-B: Data transfer to and from PC
USB, standard	USB Mini-B: 2.0 High Speed

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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 (+68°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 16V 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 cycl)
Directives	• 73/23EEC • 2004/108/EC • 2002/95/EC • 2002/96/EC
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)
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.)
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.)
Battery size (L × W × H)	141 × 47 × 28 mm (5.5 × 1.8 × 1.1 in.)
Battery charger size (L × W × H)	158 × 122 × 25 mm (6.2 × 4.8 × 1.0 in.)
Tripod mounting	UNC ¼"-20
Housing material	Aluminum, Magnesium
Grip material	TPE Thermoplastic Elastomers

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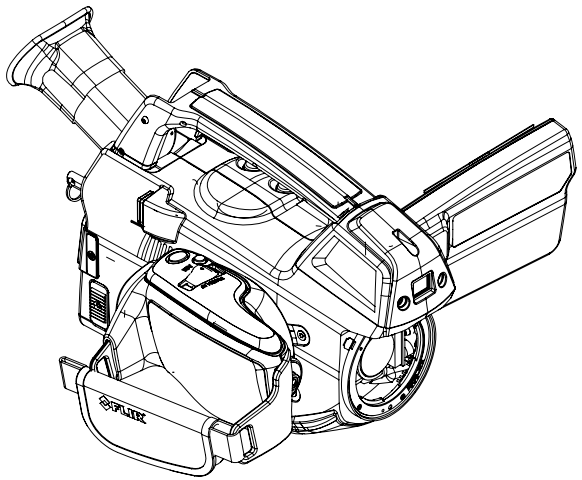
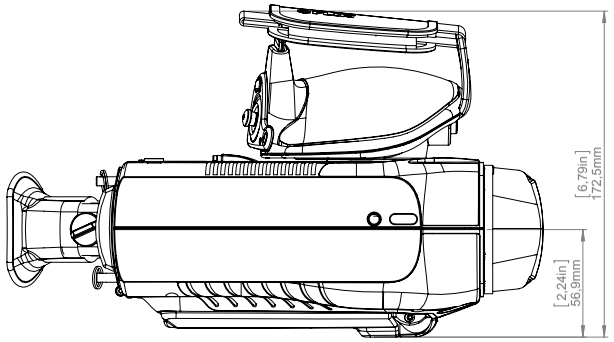
Shipping information	
List of contents	• Infrared camera with lens • Battery charger • Battery, 2 ea. • FLIR Tools download card • FLIR VideoReport PC software CD-ROM • Hard transport case • HDMI-DVI cable • HDMI-HDMI cable • Lens cap (2 ea.) • Lens cap (mounted on lens) • Memory card • Power supply, incl. multi-plugs • Printed documentation • 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)

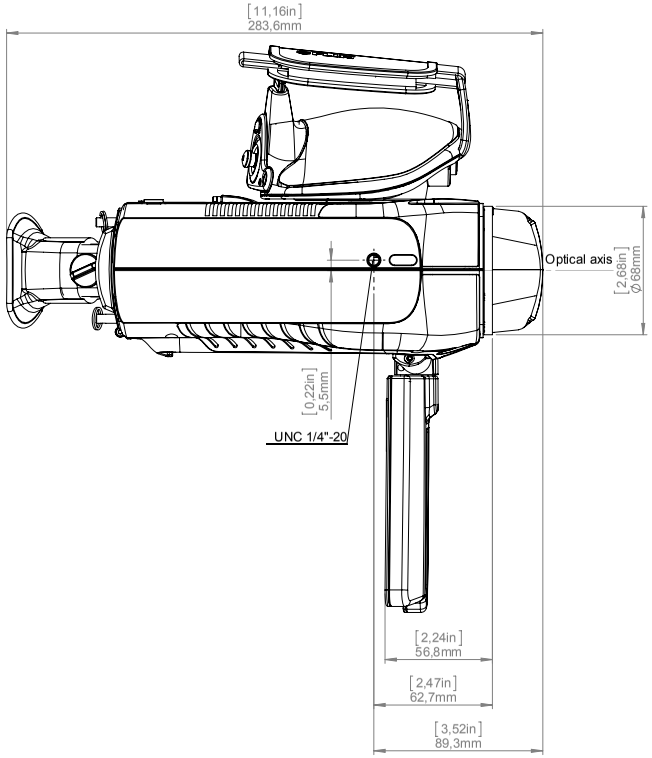
Supplies & accessories:

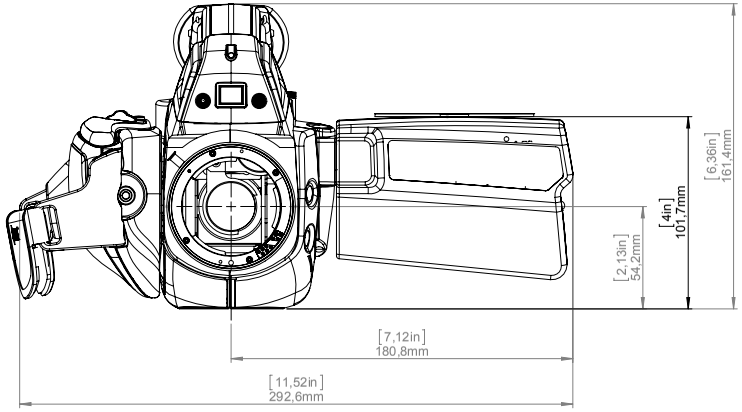
- T197388; IR lens, 6° with case for GF300, GF309, GF320, GF346.
- T198267; IR lens, 24° with case for GF335, GF346
- T198298; IR lens, 14.5° with case for GF335, GF346
- T197692; Battery charger, incl. power supply with multi plugs
- T910814; Power supply, incl. multi plugs
- T198511; Li-Ion Battery pack 7.4V 33Wh
- T911230ACC; Memory card SDHC 4 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
- T198586; FLIR Reporter Professional (license only)
- T198584; FLIR Tools
- T198583; FLIR Tools+ (license only)
- T198585; FLIR VideoReport
- DSW-10000; FLIR IR Camera Player
- APP-10002; FLIR Tools Mobile (Android Application)
- T198696; FLIR ResearchIR Max 4
- T198697; FLIR ResearchIR Max + HSDR 4
- T198578; FLIR ResearchIR 3 (license only)
- T198574; FLIR ResearchIR 3 Max (license only)
- T198731; FLIR ResearchIR Standard 4
- T198567; ThermoVision™ System Developers Kit Ver. 2.6
- T198566; ThermoVision™ LabVIEW® Digital Toolkit Ver. 3.3

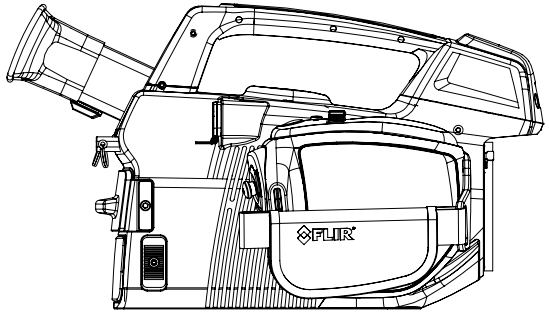
Camera housing











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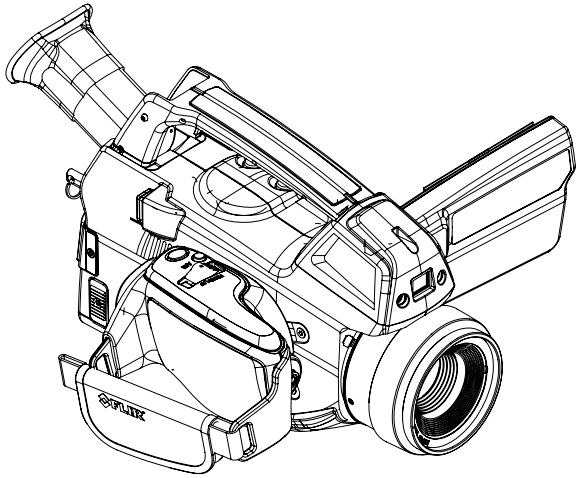
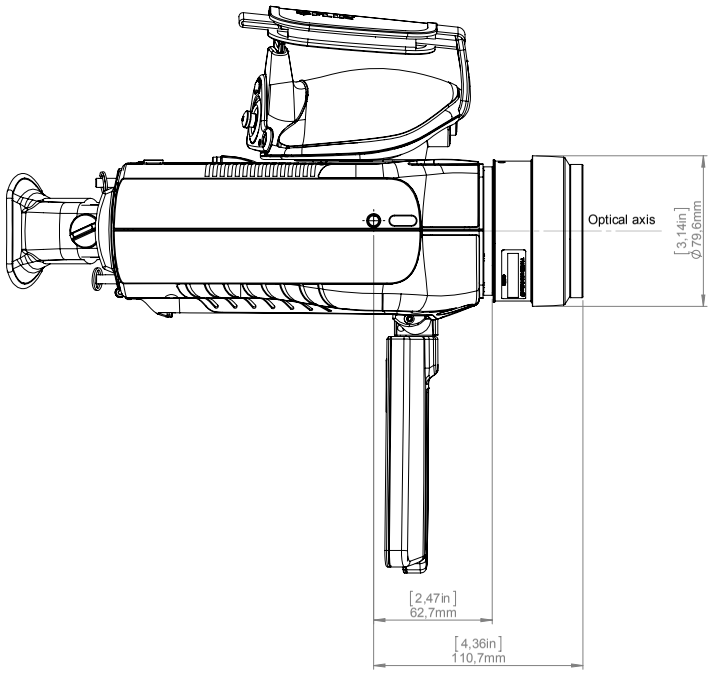
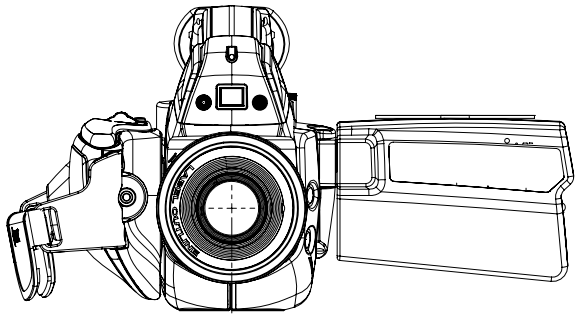
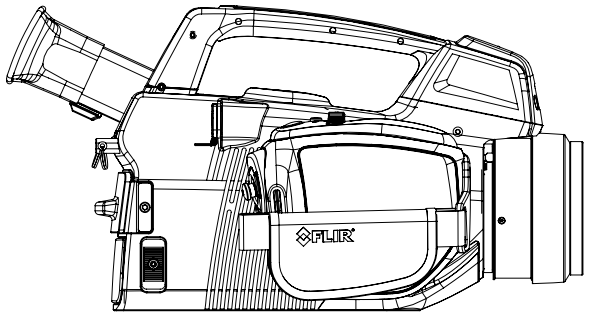
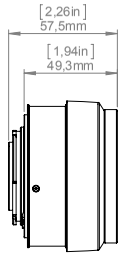
Camera with Lens IR f=23 mm (24°)
Camera with Lens IR f=38 mm (14,5°)











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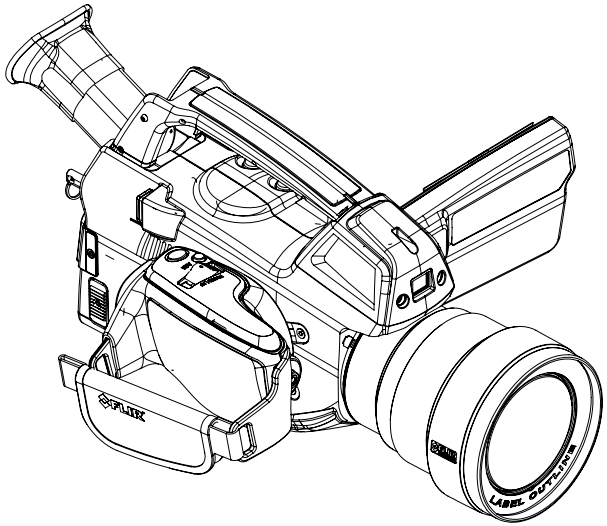
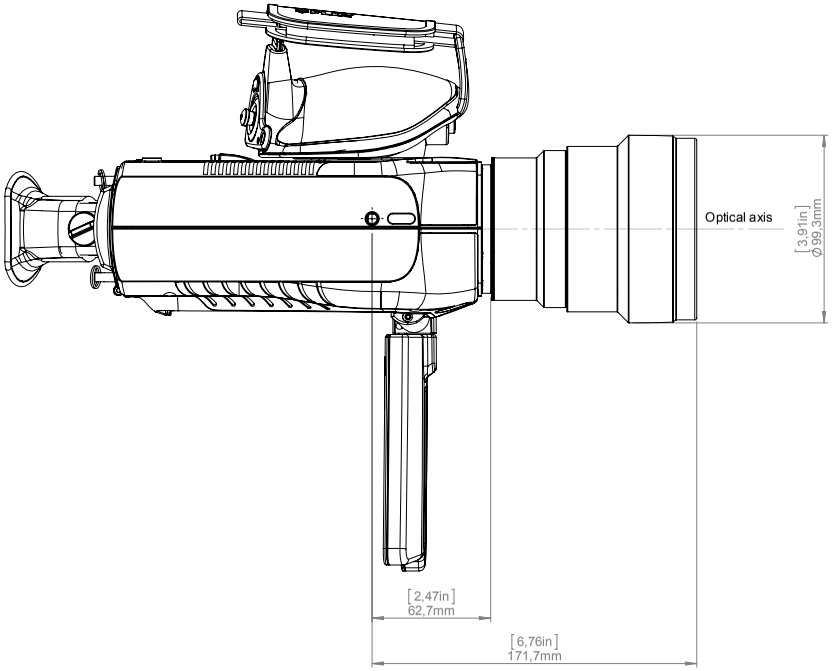
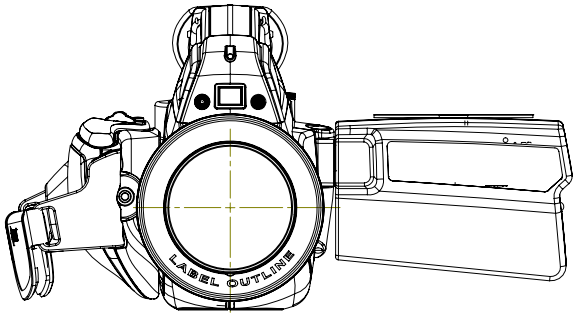
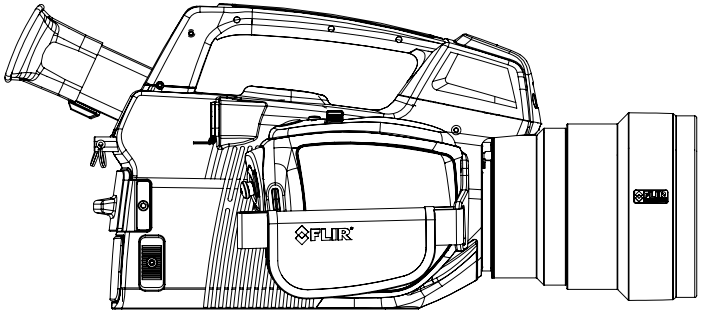
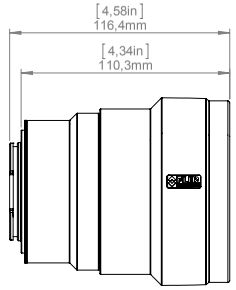
Camera with Lens IR f=92 mm (6°)











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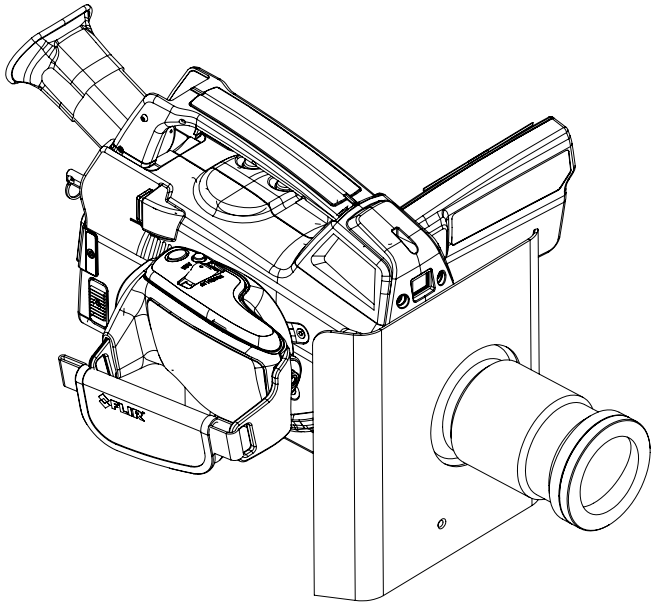
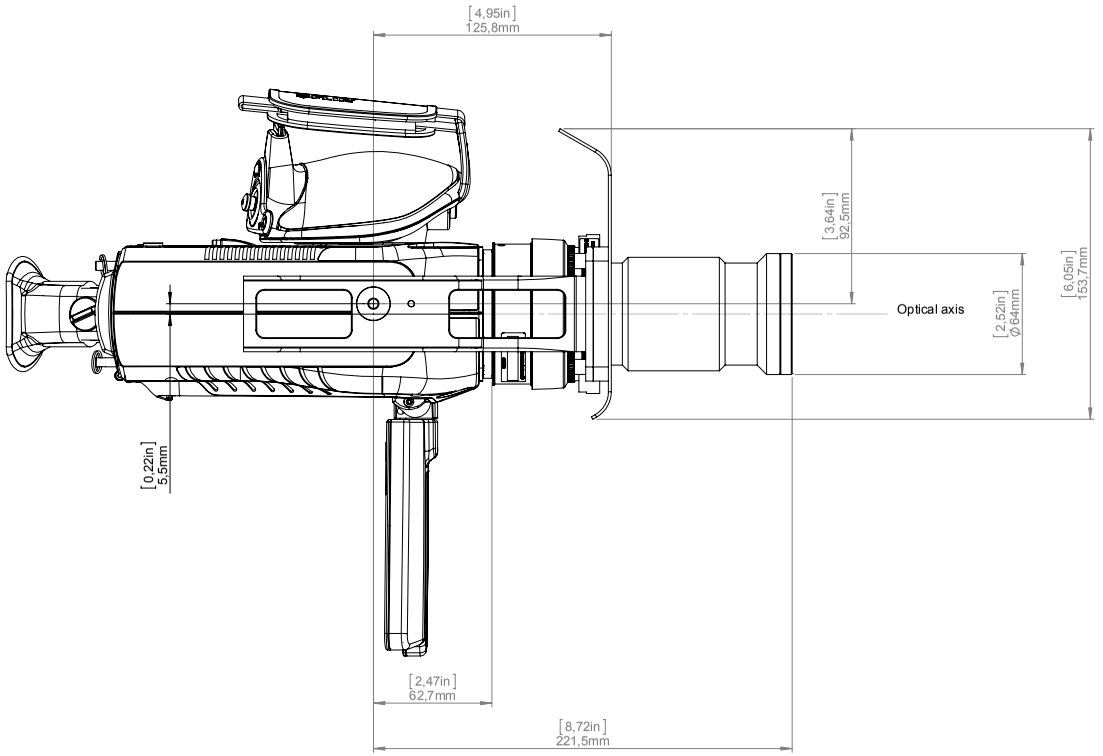
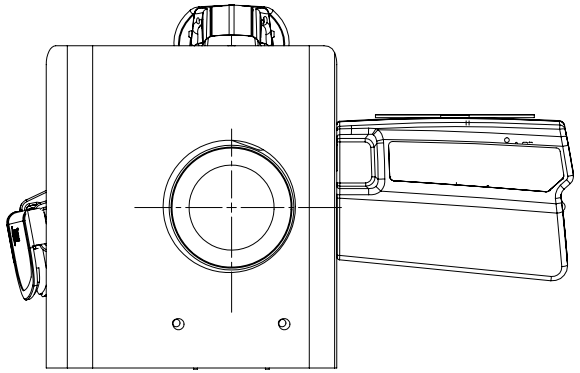
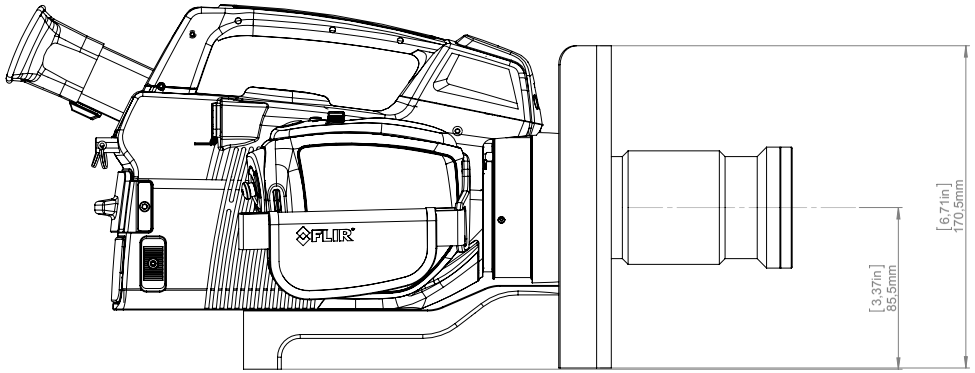
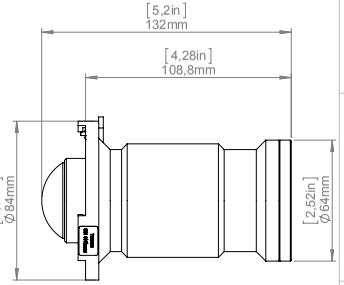
Camera with Lens f=23mm and extender











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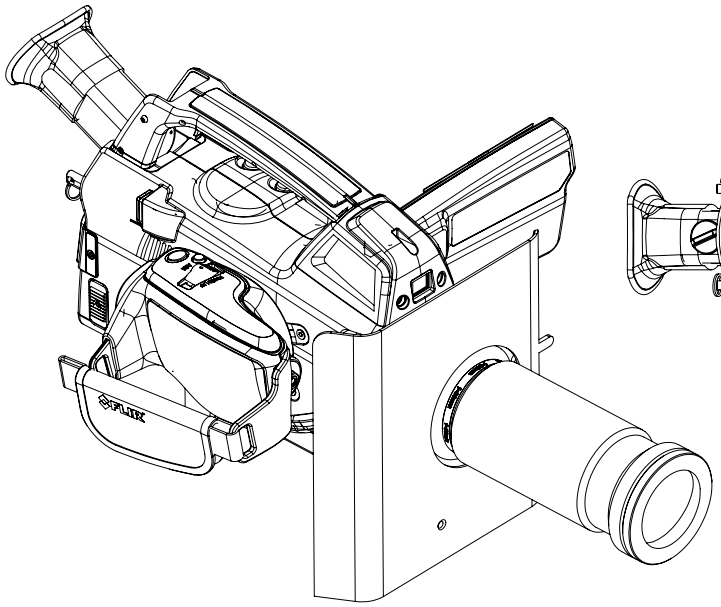
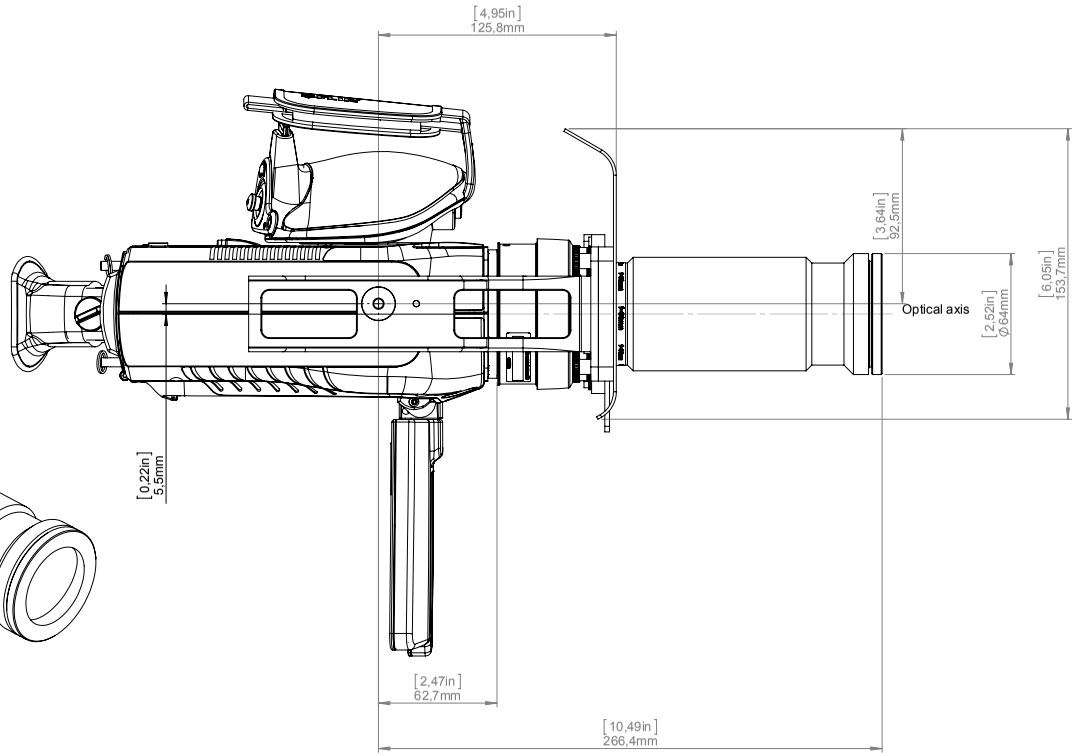
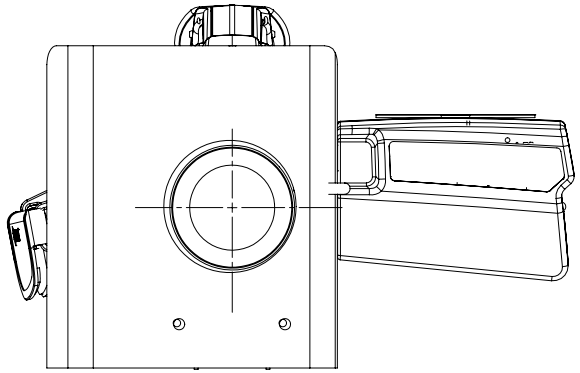
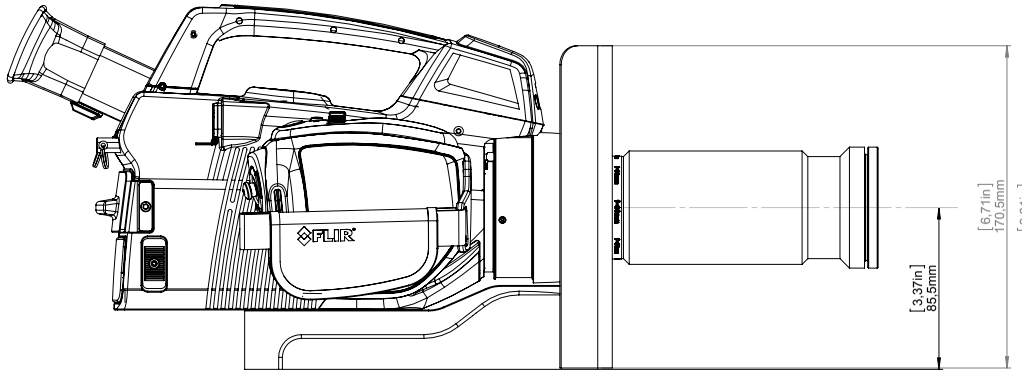
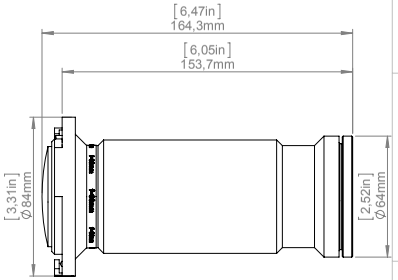
Camera with Lens f=38mm and extender











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