

## P/N: 44401-0102

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### Website

<http://www.flir.com>

### Customer support

<http://support.flir.com>

### Disclaimer

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### General description

The FLIR GF320 is an infrared camera for optical gas imaging (OGI) that visualizes and pinpoints leaks of methane and other volatile organic compounds (VOCs), 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.

The FLIR GF320 is used in industrial settings such as oil refineries, natural gas processing plants, offshore platforms, chemical/petrochemical industries, and biogas and power generation plants.

### Benefits:

- Improved efficiency: The FLIR GF320 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 tablets for the wireless transfer of images or remote control of the camera. The FLIR GF320 is also used for temperature measurement, which makes it even more useful for predictive maintenance.
- Increased worker safety: OGI allows gas leaks to be detected in a non-contact mode and from a safe distance. This reduces the risk of the user being exposed to invisible and potentially harmful or explosive chemicals. With a FLIR GF320 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 VOCs are dangerous to human health or cause harm to the environment, and are usually governed by regulations. Even small leaks can be detected and documented using the FLIR GF320 camera.

Detects the following gases: benzene, ethanol, ethylbenzene, heptane, hexane, isoprene, methanol, MEK, MIBK, octane, pentane, 1-pentene, toluene, xylene, butane, ethane, methane, propane, ethylene, propylene.

### Imaging and optical data

|                          |                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IR resolution            | 320 × 240 pixels                                                                                                                                                                                                                                                                                                                               |
| Thermal sensitivity/NETD | <10 mK @ +30°C (+86°F)                                                                                                                                                                                                                                                                                                                         |
| Gas sensitivity (NECL)   | <ul style="list-style-type: none"> <li>• CH<sub>4</sub>: &lt; 13.0 ppm x m</li> <li>• C<sub>3</sub>H<sub>8</sub>: &lt; 3.0 ppm x m</li> <li>• C<sub>4</sub>H<sub>10</sub>: &lt; 2.0 ppm x m</li> <li>• C<sub>2</sub>H<sub>4</sub>: &lt; 15.3 ppm x m</li> <li>• Hydrocarbons (multiple): &lt; 4 ppm x m</li> </ul> (ΔT = 10°C, Distance = 1 m) |
| 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                                                                                                                                                                                                                                                                                                                                            |

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| Imaging and optical data                  |                                                                                                                                                                                    |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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)                                                                                                                                |
| Detector data                             |                                                                                                                                                                                    |
| Detector type                             | Focal plane array (FPA), cooled InSb                                                                                                                                               |
| Spectral range                            | 3.2–3.4 μm                                                                                                                                                                         |
| Detector pitch                            | 30 μm                                                                                                                                                                              |
| Sensor cooling                            | Stirling Microcooler (FLIR MC-3)                                                                                                                                                   |
| Detects following gases                   | Benzene, Ethanol, Ethylbenzene, Heptane, Hexane, Isoprene, Methanol, MEK, MIBK, Octane, Pentane, 1-Pentene, Toluene, Xylene, Butane, Ethane, Methane, Propane, Ethylene, Propylene |
| 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 +350°C (–4°F to +662°F)                                                                                                                                                   |
| Accuracy                                  | ±1°C (±1.8°F) for temperature range (0°C, to +100°C, +32°F to +212°F) or ±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)                                                                                                                                               |
| 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<br>Auto adjust continuous/manual/semi-automatic<br>Zoom<br>Palette<br>Start/stop recording<br>Store image<br>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<br>Visual image can automatically be associated with corresponding IR image                                                                                                                                                    |
| File formats                       | Standard JPEG, 14 bit measurement data included                                                                                                                                                                                                 |
| Geographic Information System      |                                                                                                                                                                                                                                                 |
| GPS                                | Location data automatically added to every image and video from built-in GPS                                                                                                                                                                    |
| GPS logging                        | Log file (csv) of GPS data in 10 second or 1 minute increments with date, time, latitude, longitude, altitude, state, DOP.                                                                                                                      |
| Video recording in camera          |                                                                                                                                                                                                                                                 |
| Radiometric IR video recording     | *.seq video clips to memory card (3.7 and 15 Hz).                                                                                                                                                                                               |
| Non-radiometric IR video recording | MPEG4 (up to 60 minutes/clip) to memory card.<br>Visual image can automatically be associated with corresponding recording of non-radiometric IR video.                                                                                         |
| Visual video recording             | MPEG4 (25 minutes/clip) to memory card                                                                                                                                                                                                          |
| Quantification mode                | Saves up to 500 image frames in a video sequence with quantification meta data embedded for post-processing with QL320.                                                                                                                         |
| 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"> <li>FLIR IR Camera Player</li> <li>FLIR ResearchIR</li> </ul> |
| Non-radiometric IR video streaming | RTP/MPEG4                                                                                                                                                                                                                                       |
| Digital camera                     |                                                                                                                                                                                                                                                 |
| Built-in digital camera            | 3.2 Mpixels, auto focus, and two video lamps                                                                                                                                                                                                    |

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| Laser pointer                    |                                                                                                                                                                                    |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Laser                            | Activated by dedicated button                                                                                                                                                      |
| Laser classification             | Class 2                                                                                                                                                                            |
| Laser type                       | Semiconductor AlGaInP diode laser, 1 mW, 635 nm (red)                                                                                                                              |
| USB                              |                                                                                                                                                                                    |
| USB                              | <ul style="list-style-type: none"> <li>USB-A: Connect external USB device</li> <li>USB Mini-B: Data transfer to and from PC</li> </ul>                                             |
| 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)                                                                                                                                                    |
| Battery documents                | For documents like MSDS and UN38.3 test reports/summaries, see: <a href="https://support.flir.com/resources/msds">https://support.flir.com/resources/msds</a>                      |
| 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"> <li>73/23EEC</li> <li>2004/108/EC</li> <li>2002/95/EC</li> <li>2002/96/EC</li> </ul>                                                            |
| EMC                              | <ul style="list-style-type: none"> <li>EN61000-6-4 (Emission)</li> <li>EN61000-6-2 (Immunity)</li> <li>FCC 47 CFR Part 15 class A (Emission)</li> <li>EN 61 000-4-8, L5</li> </ul> |
| 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                                                                                                                                                    |
| Declaration of conformity        | See: <a href="https://support.flir.com/resources/DoC">https://support.flir.com/resources/DoC</a>                                                                                   |

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| 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              |

| Shipping information |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Packaging, type      | Cardboard box                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| List of contents     | <ul style="list-style-type: none"> <li>• Infrared camera with lens</li> <li>• Battery charger</li> <li>• Battery, 2 ea.</li> <li>• Hard transport case</li> <li>• HDMI-DVI cable</li> <li>• HDMI-HDMI cable</li> <li>• Lens cap (2 ea.)</li> <li>• Lens cap (mounted on lens)</li> <li>• Memory card</li> <li>• Power supply, incl. multi-plugs</li> <li>• Printed documentation</li> <li>• Shoulder strap</li> <li>• USB cable</li> <li>• Wi-Fi USB micro adapter (depending on CE and FCC regulations regarding wireless equipment for your country)</li> </ul> |
| Packaging, weight    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Packaging, size      | 400 × 190 × 510 mm (15.7 × 7.5 × 20.1 in.)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## Supplies & accessories:

- T911881ACC; Camera bag and harness, G series
- T197387; IR lens, f=23 mm (24°) with case (for GF300, GF320)
- T197388; IR lens, f=92 mm (6°) with case (for GF300, GF309, GF320, GF346)
- T197385; IR lens, f=38 mm (14.5°) with case (for GF300, GF309, GF320)
- T197692; Battery charger, incl. power supply with multi plugs
- T910814; Power supply, incl. multi plugs
- T199367ACC; Battery Li-ion 7.2 V, 4.4 Ah, 32 Wh
- T199183ACC; Battery Li-ion 7.2 V, 4.4 Ah, 32 Wh
- T911975ACC; Memory card SD 16 GB
- 1910423; USB cable Std A <-> Mini-B
- T198509; Cigarette lighter adapter kit, 12 VDC, 1.2 m/3.9 ft.
- 1910423ACC; USB cable Std A <-> Mini-B
- T910815ACC; HDMI to HDMI cable 1.5 m
- T910816ACC; HDMI to DVI cable 1.5 m
- T197555; Hard transport case for FLIR GF3xx-Series
- QL320-FIELD-KIT; FLIR QL320 Accessory Field Kit
- 4224488; FLIR QL320 Quantitative OGI Tablet
- 4224489; FLIR QL320 Quantitative OGI Tablet (Regulatory pricing)
- 4214231; FLIR QL320, Pouch
- 4225679; FLIR QL320, Extended high capacity battery (7.8 Ah)



## FLIR GF320 24°

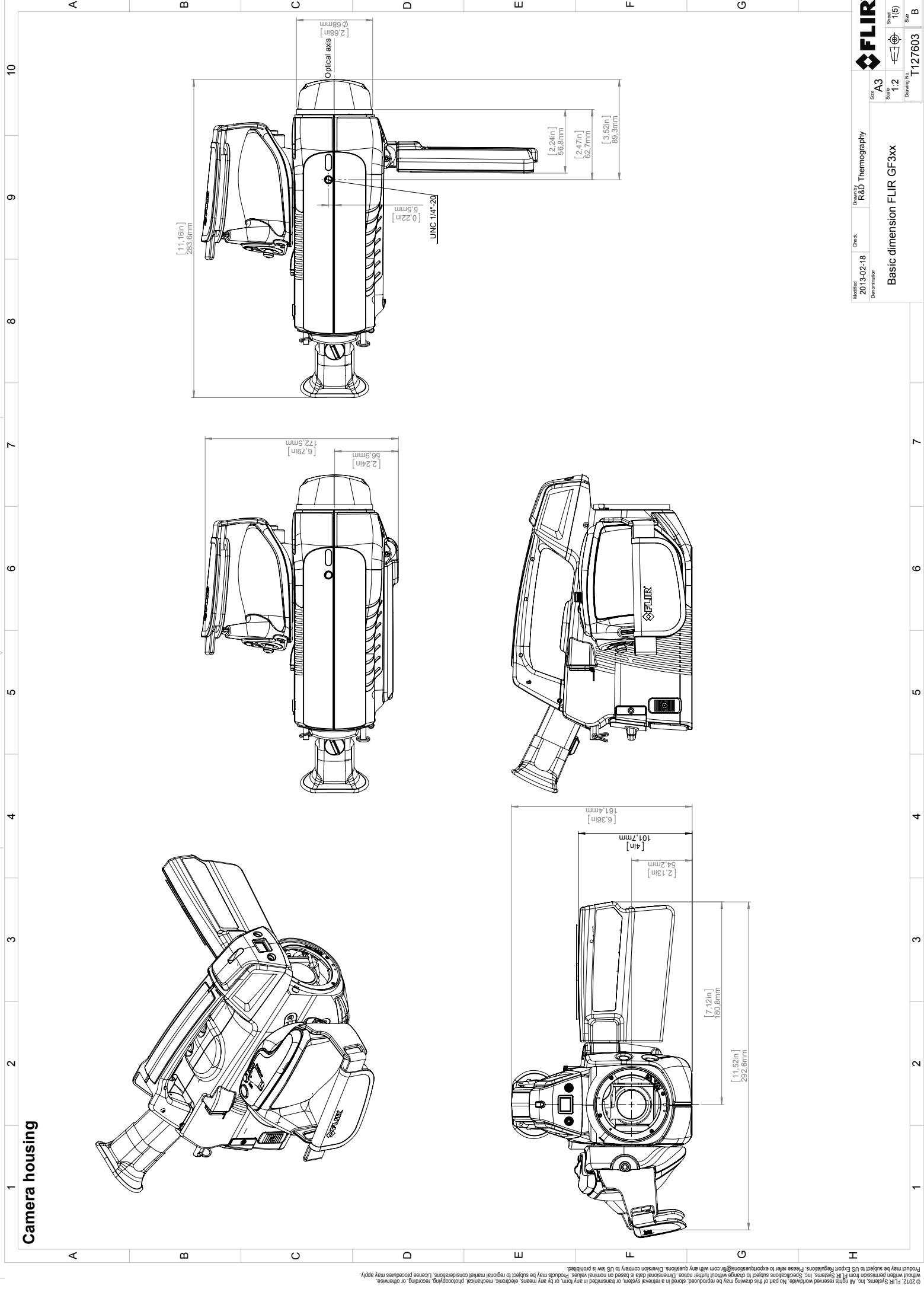
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- 4214168; FLIR QL320, Standard Battery (3.95 Ah)
- 4226768; FLIR QL320, X Strap
- T130007; Extended Calibration Certificate
- T198567; ThermoVision™ System Developers Kit Ver. 2.6
- T198566; ThermoVision™ LabVIEW® Digital Toolkit Ver. 3.3
- APP-10002; FLIR Tools Mobile (Android Application)
- T198586; FLIR Reporter Professional (license only)
- T300243; FLIR Thermal Studio Pro, 1 Year Subscription
- T300083; FLIR Thermal Studio Pro, Perpetual license
- T300341; FLIR Thermal Studio Standard, 1 Year Subscription
- T300258; FLIR Thermal Studio Standard, Perpetual license
- T199233; FLIR Atlas SDK for .NET
- 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)
- 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)



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Size  
**A3**

Scale  
**1:2**

Sheet  
**1(5)**

Modified  
**2013-02-18**

Drawn by  
**R&D Thermography**

Check

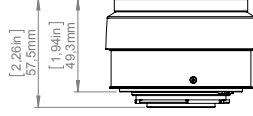
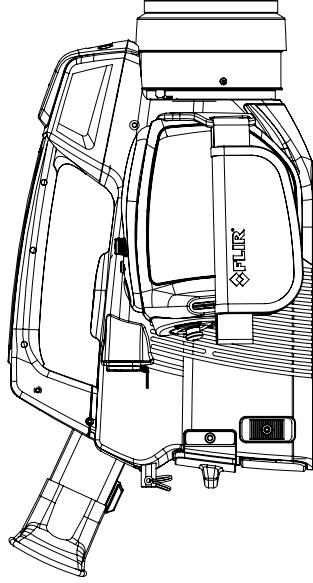
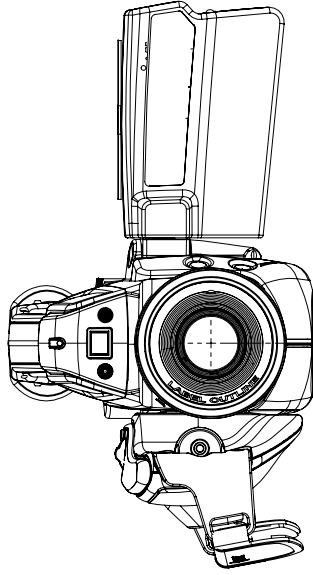
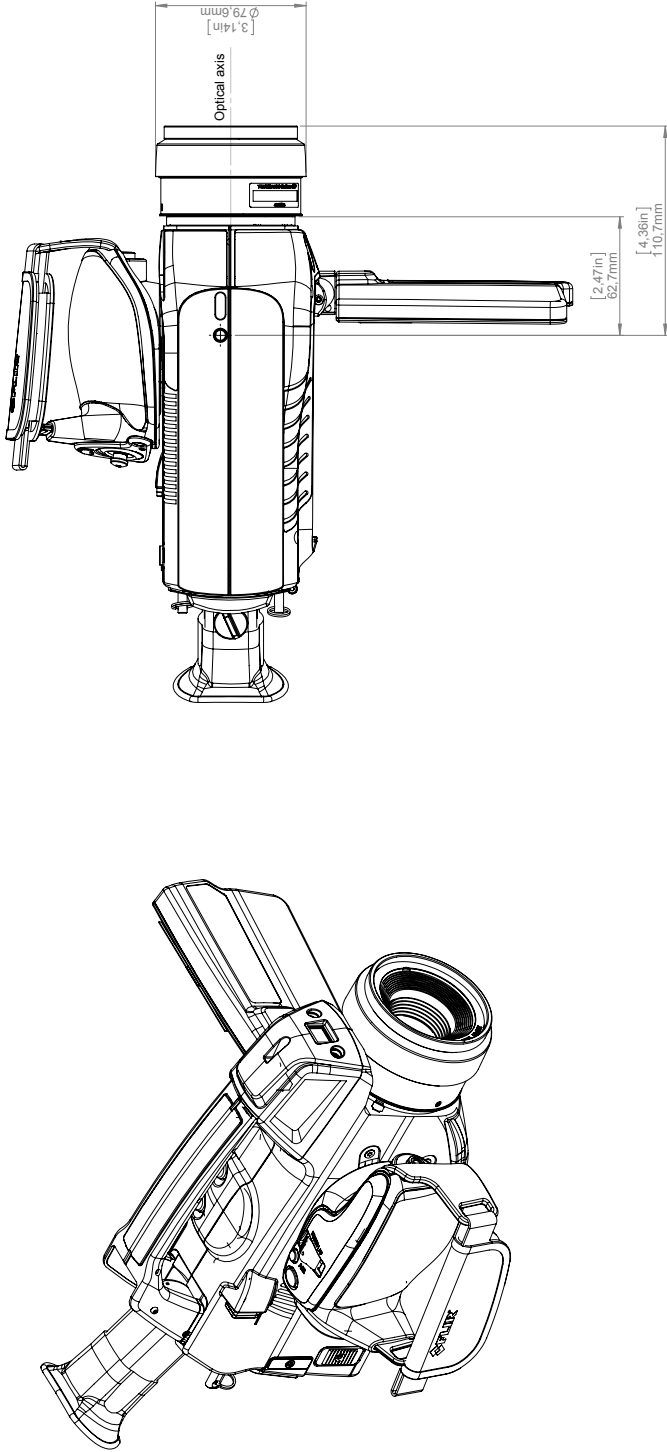
Drawn by  
**R&D Thermography**

Drawing No.  
**T127603**

Size  
**B**

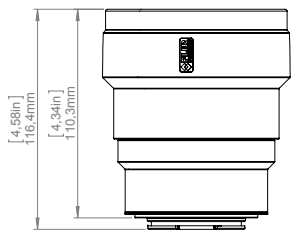
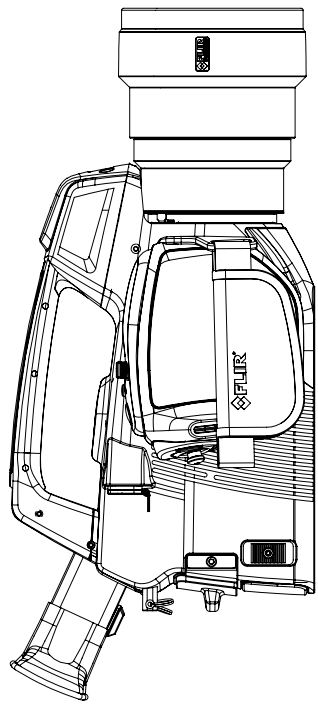
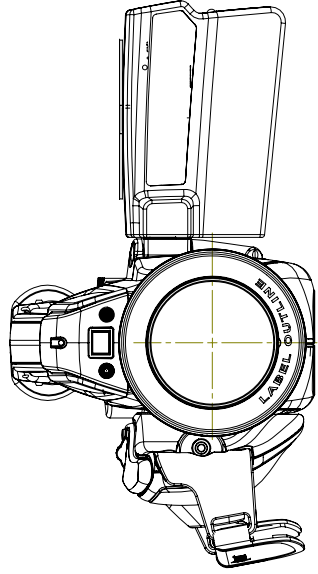
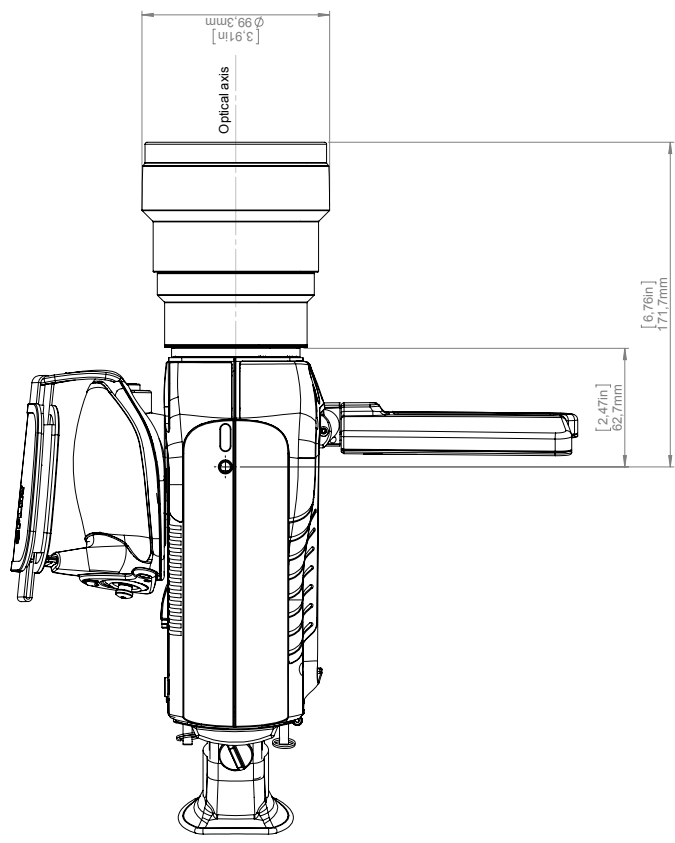
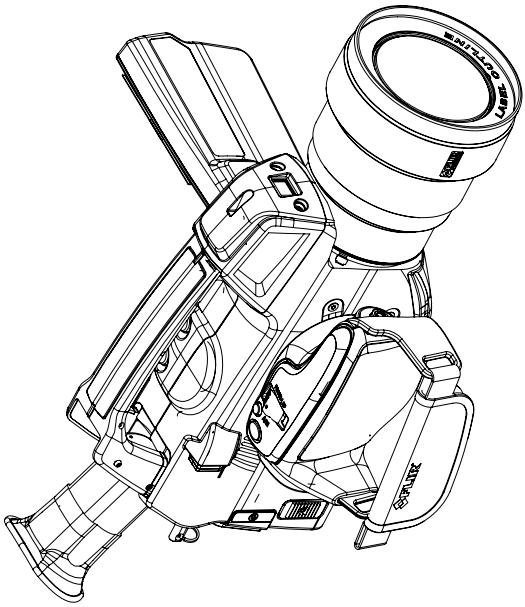
Basic dimension FLIR GF3xx

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





Camera with Lens IR f=92 mm (6°)



For additional dimensions see page 1

|                            |         |                              |            |               |              |                        |   |
|----------------------------|---------|------------------------------|------------|---------------|--------------|------------------------|---|
| Modified<br>2013-02-18     | Checked | Drawn by<br>R&D Thermography | Size<br>A3 | Sheet<br>3(5) | Scale<br>1:2 | Drawing No.<br>T127603 | B |
| Basic dimension FLIR GF3xx |         |                              |            |               |              |                        |   |