Technical Data

FLIR GF346 14.5°

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, Ethene, 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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR resolution</td>
<td>320 x 240 pixels</td>
</tr>
<tr>
<td>Thermal sensitivity/NETD</td>
<td>&lt;15 mK @ +30°C (+86°F)</td>
</tr>
<tr>
<td>Field of view (FOV) / Minimum focus distance</td>
<td>14.5° x 10.8° / 0.5 m (1.64 ft.)</td>
</tr>
<tr>
<td>Focal length</td>
<td>38 mm (1.49 in.)</td>
</tr>
<tr>
<td>F-number</td>
<td>1.5</td>
</tr>
<tr>
<td>Focus</td>
<td>Automatic (one touch) or manual (electric or on the lens)</td>
</tr>
<tr>
<td>Zoom</td>
<td>1–8× continuous, digital zoom</td>
</tr>
<tr>
<td>Digital image enhancement</td>
<td>Noise reduction filter, High Sensitivity Mode (HSM)</td>
</tr>
</tbody>
</table>

Detector data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focal Plane Array (FPA) / Spectral range</td>
<td>Cooled InSb / Built-in cold band pass filter 4.52–4.67 µm</td>
</tr>
<tr>
<td>Sensor cooling</td>
<td>Stirling Microcooler (FLIR MC-3)</td>
</tr>
<tr>
<td>Detects following gases</td>
<td>Carbon Monoxide, Nitrous Oxide, Ketene, Ethene, Butyl Isocyanide, Hexyl Isocyanide, Cyanogen Bromide, Acetonitrile, Acetyl Cyanide, Chlorine Isocyanate, Bromine Isocyanate, Methyl Thiocyanate, Ethyl Thiocyanate, Chlorodimethylsilane, Dichloromethylsilane, Silane, Germane, Arsine</td>
</tr>
</tbody>
</table>

Electronics and data rate

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full frame rate</td>
<td>60 Hz</td>
</tr>
</tbody>
</table>
Image presentation

Display
Built-in widescreen, 4.3 in. LCD, 800 x 480 pixels

Viewfinder
Built-in, tiltable OLED, 800 x 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

Temperature range
–30°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

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

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

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

Video recording in camera and video 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
MPEG-4 using WLAN (using Wi-Fi USB micro adapter)
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

<table>
<thead>
<tr>
<th>Interface</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>WLAN</td>
<td>Peer to peer (adhoc) for iOS or infrastructure (network) for Android, using Wi-Fi USB micro adapter</td>
</tr>
</tbody>
</table>
| 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 |
| Video out       | Digital Video Output (image) |

## Power system

<table>
<thead>
<tr>
<th>Battery type</th>
<th>Rechargeable Li Ion battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery voltage</td>
<td>7.2 V</td>
</tr>
<tr>
<td>Battery capacity</td>
<td>4.4 Ah</td>
</tr>
<tr>
<td>Battery operating time</td>
<td>&gt; 3 hours at 25°C (+68°F) and typical use</td>
</tr>
<tr>
<td>Charging system</td>
<td>In camera (AC adapter or 12 V from a vehicle) or 2-bay charger</td>
</tr>
<tr>
<td>Start-up time</td>
<td>Typically 7 min. @ 25°C (+77°F)</td>
</tr>
</tbody>
</table>

## 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) |
| 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 (5.47 lb.) |
| Cameras size, incl. lens (L × W × H) | 305 × 169 × 161 mm (12.0 × 6.7 × 6.3 in.) |
| Tripod mounting                     | UNC ¼"-20 |

## Shipping information

- Hard transport case
- Infrared camera with lens
- Battery charger
- Battery, 2 ea.
- Calibration certificate
- Downloads brochure
- FLIR Tools software
- FLIR VideoReport™ PC software CD-ROM
- HDMI-DVI cable
- HDMI-HDMI cable
- Lens cap (2 ea.)
- Lens cap (mounted on lens)
- Memory card
- 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)
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°)
Camera with Lens f=23mm and extender
Camera with Lens f=38mm and extender