User's manual
FLIR ONE series

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1 Disclaimers

1.1 Legal disclaimer

All products manufactured by FLIR Systems are warranted against defective materials and workmanship for a period of one (1) year from the delivery date of the original purchase, provided such products have been under normal storage, use and service, and in accordance with FLIR Systems instruction.

Uncooled handheld infrared cameras manufactured by FLIR Systems are warranted against defective materials and workmanship for a period of two (2) years from the delivery date of the original purchase, provided such products have been under normal storage, use and service, and in accordance with FLIR Systems instruction, and provided that the camera has been registered within 60 days of original purchase.

Detectors for uncooled handheld infrared cameras manufactured by FLIR Systems are warranted against defective materials and workmanship for a period of ten (10) years from the delivery date of the original purchase, provided such products have been under normal storage, use and service, and in accordance with FLIR Systems instruction, and provided that the camera has been registered within 60 days of original purchase.

Products which are not manufactured by FLIR Systems but included in systems delivered by FLIR Systems to the original purchaser, carry the warranty, if any, of the particular supplier only. FLIR Systems has no responsibility whatsoever for such products.

The warranty extends only to the original purchaser and is not transferable. It is not applicable to any product which has been subjected to misuse, neglect, accident or abnormal conditions of operation. Expendable parts are excluded from the warranty.

In the case of a defect in a product covered by this warranty the product must not be further used in order to prevent additional damage. The purchaser shall promptly report any defect to FLIR Systems or this warranty will not apply.

FLIR Systems will, at its option, repair or replace any such defective product free of charge if, upon inspection, it proves to be defective in material or workmanship and provided that it is returned to FLIR Systems within the said one-year period.

FLIR Systems has no other obligation or liability for defects than those set forth above.

No other warranty is expressed or implied. FLIR Systems specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

FLIR Systems shall not be liable for any direct, indirect, special, incidental or consequential loss or damage, whether based on contract, tort or any other legal theory.

This warranty shall be governed by Swedish law.

Any dispute, controversy or claim arising out of or in connection with this warranty, shall be finally settled by arbitration in accordance with the Rules of the Arbitration Institute of the Stockholm Chamber of Commerce. The place of arbitration shall be Stockholm. The language to be used in the arbitral proceedings shall be English.

1.2 Usage statistics

FLIR Systems reserves the right to gather anonymous usage statistics to help maintain and improve the quality of our software and services.

1.3 Changes to registry

The registry entry HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa\LmCompatibilityLevel will be automatically changed to level 2 if the FLIR Camera Monitor service detects a FLIR camera connected to the computer with a USB cable. The modification will only be executed if the camera device implements a remote network service that supports network logons.

1.4 U.S. Government Regulations

This product may be subject to U.S. Export Regulations. Please send any inquiries to exportquestions@flir.com.

1.5 Copyright

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1.6 Quality assurance

The Quality Management System under which these products are developed and manufactured has been certified in accordance with the ISO 9001 standard.

FLIR Systems is committed to a policy of continuous development; therefore we reserve the right to make changes and improvements on any of the products without prior notice.

1.7 Patents

000439161; 000653423; 000726344; 000859020; 001707738; 001707746; 001707787; 001776519; 001954074; 002021543; 002021543-0002; 002058180; 002249953; 002531178; 002816785; 002816793; 011200326; 014347553; 057692; 061609; 07002405; 100414275; 101796816; 101796817; 101796818; 102334141; 1062100; 11063060001; 11517895; 1226865; 12300216; 12300224; 1285345; 1299699; 1325808; 1336775; 1391114; 1402918; 1404291; 1411581; 1415075; 1421497; 1458284; 1678485; 1732314; 17399650; 1880950; 1886650; 2007301511414; 2007303395047; 2008301285812; 2009301900619; 20100060357; 2010301761271; 2010301761303; 2010301761572; 2010305959313; 2011304423549; 2012304717443; 2012306207318; 2013302676195; 2015202354035; 2015304259171; 204465713; 204967995; 2106017; 2107799; 2115696; 2172004; 2315433; 2381417; 2794760001; 3006596; 3006597; 303330211; 4358936; 483782; 484155; 4889913; 4937897; 4995790001; 5177595; 540838; 579475; 584755; 599392; 60122153; 6020040116815; 602006006500.0; 6020080347796; 6020110003453; 615113; 615116; 664580; 664581; 665004; 665440; 67023029; 6707044; 677298; 68657; 69036179; 70022216; 70028915; 70028923; 70057990; 7034300; 710424; 7110035; 7154093; 7157705; 718801; 723605; 7237946; 7312822; 7332716; 7336823; 734803; 7544944; 7606484; 7634157; 7667198; 7809258; 7826736; 8018649; 8153971; 8212210; 8289372; 8340414; 8354639; 8384783; 8520970; 8565547; 8595689; 8599262; 8654239; 8680468; 8803093; 8823803; 8853631; 8933403; 9171361; 9191583; 9279728; 9280812; 9338352; 9423940; 9471970; 9595087; D549758.

1.8 EULA Terms

- You have acquired a device (“INFRARED CAMERA”) that includes software licensed by FLIR Systems AB from Microsoft Licensing, GP or its affiliates (“MS”). Those installed software products of MS origin, as well as associated media, printed materials, and “online” or electronic documentation (“SOFTWARE”) are protected by international intellectual property laws and treaties. The SOFTWARE is licensed, not sold. All rights reserved.
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1.9 EULA Terms

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2 Safety information

⚠ **CAUTION**
The FLIR ONEcamera is not waterproof.

⚠ **CAUTION**
Be careful if you use the camera to observe very hot objects such as fire and molten metal.

3 Notice to user

3.1 User-to-user forums

Exchange ideas, problems, and infrared solutions with fellow thermographers around the world in our user-to-user forums. To go to the forums, visit:

http://forum.infraredtraining.com/

3.2 Disposal of electronic waste

Electrical and electronic equipment (EEE) contains materials, components and substances that may be hazardous and present a risk to human health and the environment when waste electrical and electronic equipment (WEEE) is not handled correctly.

Equipment marked with the below crossed-out wheeled bin is electrical and electronic equipment. The crossed-out wheeled bin symbol indicates that waste electrical and electronic equipment should not be discarded together with unseparated household waste, but must be collected separately.

For this purpose all local authorities have established collection schemes under which residents can dispose waste electrical and electronic equipment at a recycling centre or other collection points, or WEEE will be collected directly from households. More detailed information is available from the technical administration of the relevant local authority.

3.3 Training

To read about infrared training, visit:

- http://www.infraredtraining.com
- http://www.irtraining.com
- http://www.irtraining.eu

3.4 Documentation updates

Our manuals are updated several times per year, and we also issue product-critical notifications of changes on a regular basis.

To access the latest manuals, translations of manuals, and notifications, go to the Download tab at:

http://support.flir.com

It only takes a few minutes to register online. In the download area you will also find the latest releases of manuals for our other products, as well as manuals for our historical and obsolete products.

3.5 Important note about this manual

FLIR Systems issues generic manuals that cover several cameras within a model line.

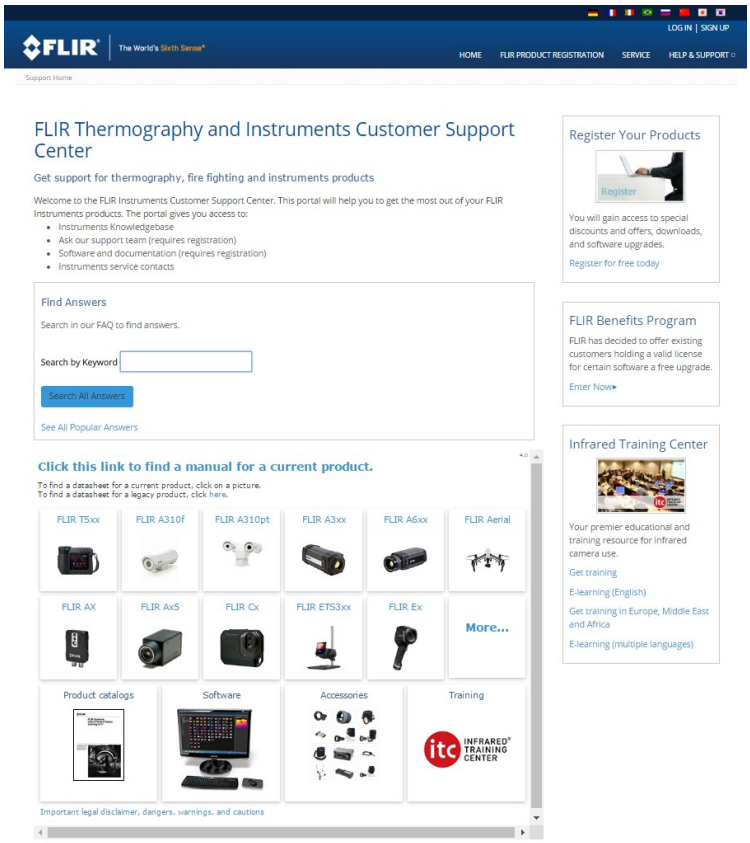
This means that this manual may contain descriptions and explanations that do not apply to your particular camera model.

3.6 Note about authoritative versions

The authoritative version of this publication is English. In the event of divergences due to translation errors, the English text has precedence.

Any late changes are first implemented in English.

4 Customer help



4.1 General

For customer help, visit:

http://support.flir.com

4.2 Submitting a question

To submit a question to the customer help team, you must be a registered user. It only takes a few minutes to register online. If you only want to search the knowledgebase for existing questions and answers, you do not need to be a registered user.

When you want to submit a question, make sure that you have the following information to hand:

- The camera model
- The camera serial number
- The communication protocol, or method, between the camera and your device (for example, SD card reader, HDMI, Ethernet, USB, or FireWire)
- Device type (PC/Mac/iPhone/iPad/Android device, etc.)
- Version of any programs from FLIR Systems
- Full name, publication number, and revision number of the manual

4.3 Downloads

On the customer help site you can also download the following, when applicable for the product:

- Firmware updates for your infrared camera.
- Program updates for your PC/Mac software.
- Freeware and evaluation versions of PC/Mac software.
- User documentation for current, obsolete, and historical products.
- Mechanical drawings (in *.dxf and *.pdf format).
- Cad data models (in *.stp format).
- Application stories.
- Technical datasheets.
- Product catalogs.

5 Quick Start Guide

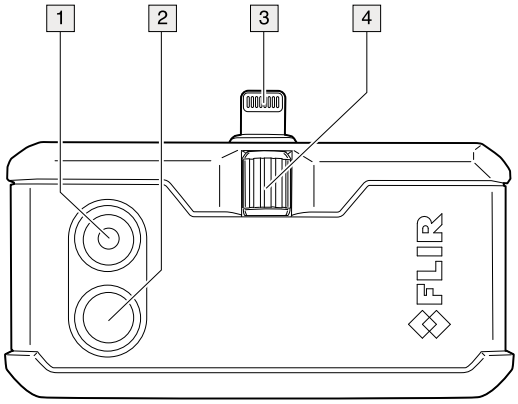
5.1 Procedure

Follow this procedure:

1. Charge the FLIR ONE camera for approximately 1 hour.
2. Download and install the FLIR ONE app on your phone. The app is available on the Apple App Store and Google Play Store.
3. Push the On/off button on the bottom of the FLIR ONE camera to turn it on. The indicator will flash green when the FLIR ONE camera is ready.
4. Connect the FLIR ONE camera to your phone. If needed, adjust the blue dial of the OneFit and extend the connector to the appropriate length to fit your phone's protective case.
5. Start the FLIR ONE app on your phone. You will be asked to create a user account with your e-mail address and a password.
6. At the bottom of the screen and on the black bar, swipe to select Photo mode.
7. At the bottom of the screen, tap the round white button to take a snapshot. The image is saved to the Gallery.
8. The camera automatically goes into sleep mode after 2 minutes of inactivity.
9. Push and hold the On/off button for more than 2 seconds to turn off the FLIR ONE camera.

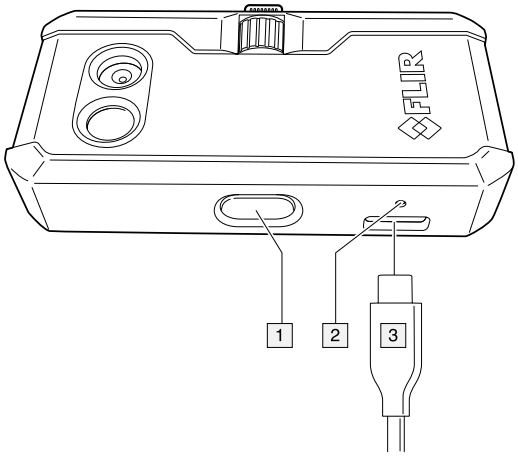
6 Description

6.1 View from the front



1. Visual camera.
2. Thermal camera.
3. Phone connect.
4. OneFit height control.

6.2 View from the bottom



1. On/off switch and Power indicator.
2. Charge indicator LED.
3. USB-C power connector.

6.3 The FLIR ONE App

6.3.1 Installation

The latest version of the FLIR ONE app is available on the Apple App Store for iOS devices and the Google Play Store for Android devices. Download and install the app on your device.

6.3.2 The FLIR Cloud account

The first time you start the FLIR ONE app, you will be asked to create a user account with your e-mail address and a password. A wizard will start that guides you through the registration.

The account can also be created at a later stage through the Control Panel. Follow this procedure:

1. In the top bar, tap the Control Panel icon.
2. Tap *Create your FLIR Cloud account*.
3. Type the information needed for the account, and then tap *CREATE*.
4. Follow the displayed instructions, and then tap *SIGN IN*.
5. Tap *FINISH*.

6.3.3 Bars and views

- Top bar
  At the top of the screen there is a black bar with icons for the Control Panel (slide-out menu), Spot Meter, Torch, Self-timer, and Calibration, and a battery indicator for the FLIR ONE camera.
- Live image view
  In the center of the screen the Live image view is shown. Depending on the Imaging Control settings, the presented image is either from the visual camera or the infrared camera, or is a combination of them both, a so-called MSX image.
- Bottom bar
  At the bottom of the screen there is a black bar with icons for the FLIR ONE Gallery, Image Mode (Photo, Video, or Time-Lapse), and Imaging Control.

6.3.4 Imaging Control

The following settings are available in the Imaging Control:

- Visible / MSX / Thermal (the current mode of the Live image view)
- Palettes
- MSX Distance
- Temperature Range
- IR Scale
- Lock Span
- Selfie Mode

Click a setting in the list to see more information.

7 Operation

7.1 Charging the battery

⚠ WARNING
Make sure that you install the socket-outlet near the equipment and that it is easy to get access to.

Follow this procedure:

- Connect a power supply to a wall outlet.
- Connect the power supply to the USB-C connector power on the FLIR ONE camera.
- Let the battery charge for approximately 1 hour.
- Do not use the FLIR ONE camera when the battery is charging.

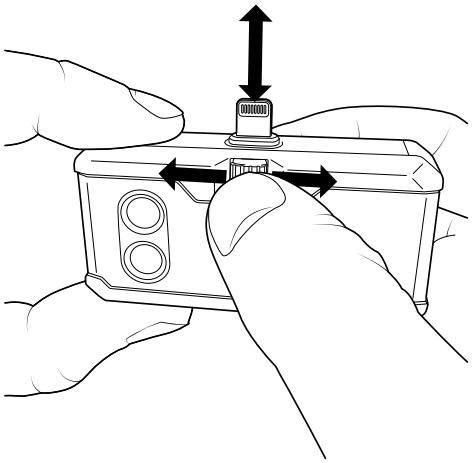
7.2 Turning the FLIR ONE camera on and off

- Push the On/off button on the bottom of the FLIR ONE camera to turn it on. The indicator will flash green when the FLIR ONE camera is ready.
- The camera automatically goes into sleep mode after 2 minutes of inactivity.
- Push and hold the On/off button for more than 2 seconds to turn off the FLIR ONE camera.

7.3 Connecting the FLIR ONE camera to your phone

Download and install the FLIR ONE app on your phone, and then start it.

Turn on the FLIR ONE camera and connect it to your phone. If needed, adjust the blue dial of the OneFit and extend the connector to the appropriate length to fit your phone's protective case.



If the FLIR ONE camera is turned off when you connect it to your phone, the app will prompt you to attach your FLIR ONE camera before you can view the camera features.

7.4 Saving an image

7.4.1 General

The images are saved to the FLIR ONE Gallery. To also have the images saved to the photo gallery of your phone, go to Settings in the Control Panel.

It is not necessary to have the FLIR ONE camera attached to the phone to view saved images.

7.4.2 Procedure

Follow this procedure:

1. In the bottom bar, swipe to select Photo mode.
2. To save an image, tap the white button.
3. To view the most recent saved image, tap the thumbnail image in the bottom bar to access the FLIR ONE Gallery.
4. When viewing an image, swipe up or down on the image to reveal the underlying image from the visible camera.

7.5 Recording a video

7.5.1 General

The videos are saved to the FLIR ONE Gallery.

7.5.2 Procedure

Follow this procedure:

1. In the bottom bar, swipe to select Video mode.
2. To begin a video recording, tap the red button.
3. To stop and save the video recording, tap the red button again.
4. To view the recorded video, tap the thumbnail image in the bottom bar to access the FLIR ONE Gallery.

7.6 Recording a time-lapse video

7.6.1 General

Use the Time-Lapse mode to save images according to a specified time interval. The images are then combined into a video that is saved to the FLIR ONE Gallery.

7.6.2 Procedure

Follow this procedure:

1. In the bottom bar, swipe to select Time-Lapse mode.
2. To display the time-lapse options, tap the red button and then adjust the options as needed.
3. To begin a video recording, tap the red button.
4. To stop and save the video recording, tap the red button again.
5. To view the recorded video, tap the thumbnail image in the bottom bar to access the FLIR ONE Gallery.

7.7 My Gallery

7.7.1 General

To view and edit captured images and recorded videos, tap the thumbnail image in the bottom bar to access the FLIR ONE Gallery. Images and videos may be shared through text messaging or e-mail, and may be edited by changing the color palette or the temperature scale. While an image is being viewed, it is possible to swipe up or down to reveal the visible image that is used for MSX blending.

7.8 Palettes

7.8.1 General

The FLIR ONE app allows a choice from nine different palettes, including color, gray-scale, or a combination of both.

7.8.2 Change settings

Follow this procedure:

1. In the bottom bar, tap the Imaging Control.
2. Tap the Palettes icon.
3. Select one of the available color palettes.

7.9 MSX Distance

7.9.1 General

The FLIR ONE camera is tuned to align thermal and visual images for an object distance of 3 m. For images taken at a shorter distance, use the MSX Distance control slider to adjust the alignment.

7.9.2 Change settings

Follow this procedure:

1. In the bottom bar, tap the Imaging Control.
2. Tap the MSX Distance icon.
3. Use the slider bar to adjust the outlines of the visual image until they are aligned with the edges of the thermal image.
4. To exit, tap the MSX Distance icon again.

7.10 Temperature Range

7.10.1 General

All of the cameras in the FLIR ONE series can measure temperatures between –20°C and +120°C (–4 to +248°F).

The FLIR ONE PRO camera has an extended temperature range, and can measure up to +400°C (+752°F). High temperature is the standard mode.

7.10.2 Change settings

Follow this procedure:

1. In the bottom bar, tap the Imaging Control.
2. Tap the Temperature Range mode icon.
3. Select the Low temperature option, and then use the spot meters as you would in the standard mode.

7.11 IR Scale

7.11.1 General

The FLIR ONE camera will show you the temperature range of the current scene, and will readjust the range automatically when the scene changes. By using the feature IR Scale, it is possible to manually set the temperature range and consequently permit adjustment of the color mapping.

7.11.2 Change settings

Follow this procedure:

1. In the bottom bar, tap the Imaging Control.
2. Tap the IR Scale icon. The scale will appear on the left side of the screen, with the high and low temperatures labeled.
3. To adjust the color mapping, press and hold the bar and slide it up or down. You can also tap the measurements and then manually type in your selected limits.

7.12 Lock Span

7.12.1 General

The Lock Span function locks the temperature range of colors in the display to the scene you are currently looking at. This can be useful when you, for example, want to compare the temperature of two objects: lock the span when looking at one of the objects, and then move the focus to the other object to see any differences in color.

7.12.2 Change settings

Follow this procedure:

1. In the bottom bar, tap the Imaging Control.
2. To hold the temperature range of the scene, tap the Lock Span icon.
3. To return to auto-scaling of the scene, tap the Lock Span icon again.

7.13 Selfie Mode

It is possible to use the FLIR ONE camera in Selfie Mode.

7.13.1 Change settings

Follow this procedure:

1. In the bottom bar, tap the Imaging Control.
2. Tap the Selfie Mode icon.
3. On the phone, change the position of the FLIR ONE camera so that it is facing you.

7.14 Measuring

7.14.1 General

You can place a spot or an area on the screen that measures the surface temperature of any object in the scene. Up to three spots, three rectangles, and three circles can be used at the same time in the Live image view.

The accuracy depends on many factors, including the distance from the object, the ambient temperature, and the emissivity of the material being observed. Users are encouraged to learn more about the science of thermography from www.infraredtraining.com.

7.14.2 Add a spot meter or an area of interest

Follow this procedure:

1. In the top bar, tap the Spot Meter icon. A list of Spots, Rectangles, and Circles appears.
2. Tap the plus sign.
3. In the Live image view:
   - Tap and hold the spot or area to move it around the screen.
   - Pinch to adjust the size of the areas.

7.15 Torch

7.15.1 General

FLIR MSX is a patented technology that makes use of the visible camera in the FLIR ONE to maximize detail and image sharpness. This feature requires some visible light, so in dark environments turn on your phone's flashlight to enhance the image details. This feature makes use of the light that is built into the phone.

7.15.2 Use the torch

Follow this procedure:

1. To turn on the flashlight of the phone, tap the Torch icon in the top bar.
2. To turn off the flashlight of the phone, tap the Torch icon once again.

7.16 Self-timer

7.16.1 General

The Self-timer option allows the user to set a time delay before an image is saved.

7.16.2 Use the self-timer

Follow this procedure:

1. To enable the time delay option, tap the Self-timer icon in the top bar.
2. Tap again to select the desired time delay.
3. To save an image, tap the white button in the bottom bar. A timer displays the count-down on the screen.
4. To turn off the time delay option, tap the Self-timer icon once again.

7.17 Automatic calibration

7.17.1 General

The FLIR ONE camera has a mechanical shutter inside that periodically activates and allows the thermal camera to do a calibration or image refresh. When the shutter activates, the image will freeze for a brief period. When the camera first turns on, and periodically thereafter, the FLIR ONE app will perform an automatic calibration to provide an optimal image. It is also possible to manually activate the shutter by tapping the Calibration icon in the top bar.

To turn off automatic calibration and switch to manual calibration, go to Settings in the Control Panel.

7.18 Settings

The Settings menu allows the user to configure additional features on the FLIR ONE camera, as described below. These configurations are stored under FLIR ONE in the settings of the phone.

To open the Settings, tap the Control Panel icon and then tap Settings.

7.18.1 Location

If a mobile phone signal is available, the geographic location will be saved and added to captured images. This makes it possible to see images on a map.

7.18.2 Photos

Turn this on to save a copy of your images and videos in the photo gallery of the phone. Images will always be stored in the FLIR ONE camera regardless of this setting. Items already captured will not be copied.

7.18.3 Automatic Calibration

Use this setting to turn off (or turn on) automatic calibration and switch to manual calibration instead.

7.18.4 Temperature Unit

Use this setting to change the unit of the temperature scale between Celsius and the Fahrenheit.

7.18.5 Emissivity

When the Spot Meter is enabled, the temperature displayed is affected by many factors, including a property of the target material known as emissivity. This property is a relative rating of how well a material emits or radiates thermal energy. Some materials are more emissive than others: glossy or reflective materials such as metals tend to be poor emitters. For most materials, the default “matte” setting is a fair approximation.

7.19 Help

More information about the FLIR ONE camera is available through the Help section and the Tips and Tricks content in the FLIR ONE app.

7.20 About

The About menu option provides information about the FLIR ONE camera, the FLIR ONE app, our company FLIR Systems, Inc., and additional legal, licensing, and regulatory information.

8 Cleaning the camera

8.1 Camera housing, cables, and other items

8.1.1 Liquids

Use one of these liquids:

- Warm water
- A weak detergent solution

8.1.2 Equipment

A soft cloth

8.1.3 Procedure

Follow this procedure:

1. Soak the cloth in the liquid.
2. Twist the cloth to remove excess liquid.
3. Clean the part with the cloth.

CAUTION

Do not apply solvents or similar liquids to the camera, the cables, or other items. This can cause damage.

8.2 Infrared lens

8.2.1 Liquids

Use one of these liquids:

- A commercial lens cleaning liquid with more than 30% isopropyl alcohol.
- 96% ethyl alcohol (C_2H_5OH).

8.2.2 Equipment

Cotton wool

CAUTION

If you use a lens cleaning cloth it must be dry. Do not use a lens cleaning cloth with the liquids that are given in section 8.2.1 above. These liquids can cause material on the lens cleaning cloth to become loose. This material can have an unwanted effect on the surface of the lens.

8.2.3 Procedure

Follow this procedure:

1. Soak the cotton wool in the liquid.
2. Twist the cotton wool to remove excess liquid.
3. Clean the lens one time only and discard the cotton wool.

WARNING

Make sure that you read all applicable MSDS (Material Safety Data Sheets) and warning labels on containers before you use a liquid: the liquids can be dangerous.

CAUTION

- Be careful when you clean the infrared lens. The lens has a delicate anti-reflective coating.
- Do not clean the infrared lens too vigorously. This can damage the anti-reflective coating.

9 CE Declaration of conformity

[See next page]

March 22, 2018 Täby, Sweden AQ320287

CE Declaration of Conformity – EU Declaration of Conformity

Product: FLIR One -series

Name and address of the manufacturer:
FLIR Systems AB
PO Box 7376
SE-187 15 Täby, Sweden

This declaration of conformity is issued under the sole responsibility of the manufacturer.
The object of the declaration: FLIR One -series (FLIR part numbers 435-00xx-xx)
The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

Directives:

Directive:	2011/65/EU	RoHS
Directive	2014/30/EU	Electromagnetic Compability

Standards:

Emission:	EN 61000-3-2:2014	EMC Limits for harmonic current emissions
	EN 61000-3-3:2013	EMC Limitation of voltage changes
	EN 55032:2012	EMC of multimedia equipment - Emission requirements
Immunity:	EN 55024:2010	Information Tech Equipment Immunity characteristics

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Quality Assurance

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http://support.flir.com

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