



FLIR ONE™

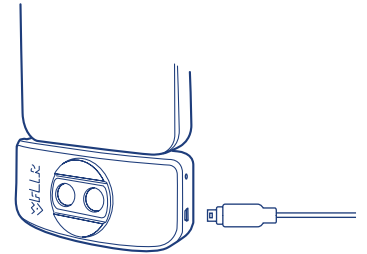
USER GUIDE
Second Generation
For Apple iOS

FLIR ONE QUICK START

STEP 1

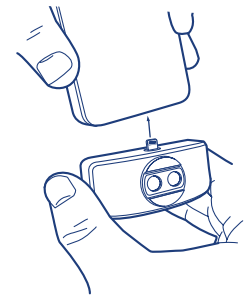
Charge the FLIR ONE™ with the included USB power cable. The LED next to the USB connection blinks on and off while the FLIR ONE is charging and stays on continuously when it is fully charged.

Note (iOS) model: The power cable for the iPhone (with a Lightning connector) will not work with the FLIR ONE. Ensure the FLIR ONE is fully charged before using it the first time. A charging cycle takes approximately one hour.



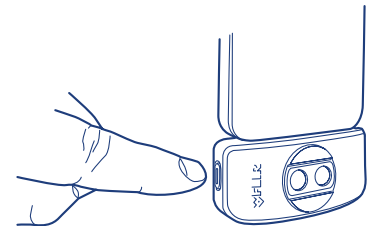
STEP 2

Download and install the FLIR ONE app, which is available on the Apple App StoreSM and on Google PlayTM. Start the FLIR ONE app. Initially a short tutorial will be displayed to help you get started with the FLIR ONE. Once the FLIR ONE is charged, attach it to the phone.



STEP 3

Press the power button on the side of the FLIR ONE to turn it on. Initially the indicator light will turn orange, and then it will flash green when the device is ready. When the camera first turns on, and periodically thereafter, the app will perform an automatic calibration to provide an optimal image.



STEP 4

Once an image is displayed tap the **color palette icon**¹ in the lower right to change how the image is displayed. Select one of the displayed color or grayscale palettes.

The camera is in photo mode as indicated just below the image. Tap the **round blue icon**² at the bottom of the screen to save a photo image. On the display, swipe left or right to select a different mode (Video, Pano, or Time-Lapse). These modes are described in a later section of the manual.

The image that displays in the app is a unique combination of a thermal image and a daylight image through a unique process called MSX. The FLIR ONE thermal camera can produce an image even in total darkness. When visible light is available, the FLIR ONE daylight camera is used to enhance the detail of the FLIR ONE thermal camera.

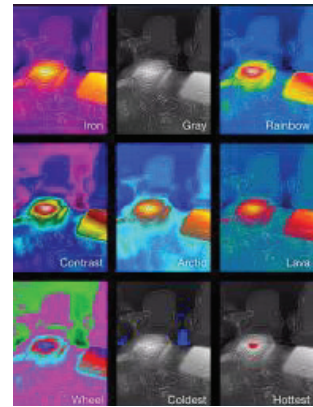
For close up scenes, it is possible to optimize the way the daylight and thermal images are blended. Tap and hold the image to bring up a slider control at the bottom of the image. Moving the slider left or right changes the way the visible and thermal images are aligned. Optimizing the image is described in more detail in section XYZ.

Refer to the following sections in this guide for additional information on using the FLIR ONE.

More detailed information is also available in the Help & Support feature within the FLIR ONE app. The FLIR ONE Reference Manual is available from the FLIR web site: <http://www.flir.com/flirone>



PALETTE SCREEN



WARNING

The FLIR ONE is not waterproof. Use caution if the FLIR ONE is used to observe very hot objects like fire or molten metal.

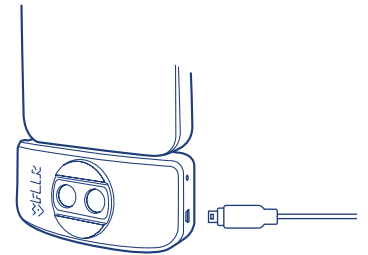
FLIR ONE USER GUIDE

The FLIR ONE allows you to see the world in a whole new way, with a unique blend of thermal and visible imaging. This user guide provides brief information on how to use the FLIR ONE. Additional information is available directly from the FLIR ONE app in the Settings menu.



CHARGING THE FLIR ONE

Plug the Micro USB end of the power cable into the FLIR ONE and plug the other end into a USB power source. The Power/Status indicator will blink while the device is charging. The FLIR ONE requires less than one hour for a full charge, depending on the power source. When the device is fully charged, the Power/Status indicator will be on continuously.



FLIR ONE APP

The latest version of the FLIR One app is available on the Apple App or Google Play Store. Download and install the app, then start it. If the FLIR ONE is turned off, the app will prompt you to attach your FLIR ONE camera and turn it on. The iPhone iOS version must be 8.2 or higher.

APP OVERVIEW

At the top of the screen there is a black bar that allows the user to access the Control Panel, the Spot Meter, and the shutter/tune activation. Below that is the live image, and at the bottom of the screen is another black bar with controls for the FLIR Library, Save Image, and Color Palette. At the top of the bar is an indication of the Mode (Video, Photo, Pano, or Time Lapse). The Save Image icon changes to other icons, depending on the Mode.

TAKING PICTURES

On the image, swipe right or left to select PHOTO mode. Tap the round blue button at the bottom of the screen to save a snapshot. The images are saved to the FLIR Library. In the App Settings, it is also possible to have the images saved to the phone's image library. To view the saved image, tap on the thumbnail image in the lower left to display the FLIR Library of saved images, and then select an image to display. When viewing an image, swipe up or down on the image to reveal the underlying image from the visible camera. It is not necessary to have the FLIR ONE camera attached to the phone to view saved images.

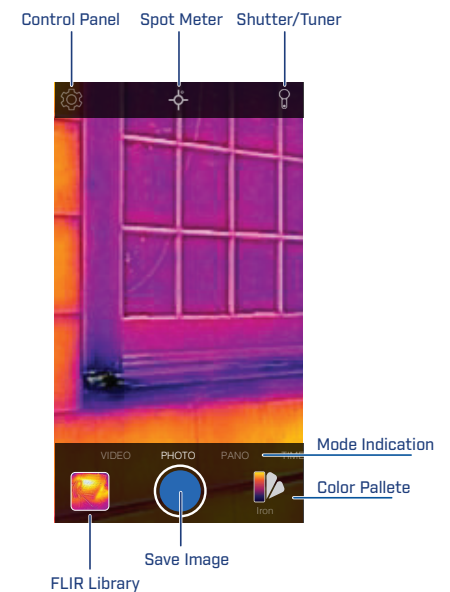
TAKING VIDEO

On the image, swipe right or left to select VIDEO mode. Then tap on the red button to begin video capture. Tap on the red button again to stop the video capture and save the video in the FLIR Library. To view the captured video, tap the thumbnail image in the lower left of the screen to access the FLIR Library.

PANORAMA MODE

On the image, swipe right or left to select PANO mode. Then tap on the blue button to begin the panorama capture. Move the camera horizontally to the right as indicated by the arrow on the screen. Tap on the blue button again to stop the panorama capture.

APP OVERVIEW



PANORAMA MODE



TIME-LAPSE VIDEO

On the image, swipe right or left to select TIME-LAPSE mode. Then tap on the red button to display the Time-Lapse options. Adjust the options as needed, and then tap the red button to begin video capture. Tap on the red button again to stop the video capture.

FLIR LIBRARY

Captured images and video may be viewed and edited by selecting the thumbnail image in the lower left corner of the screen. Images and videos may be shared through text messaging or email 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.

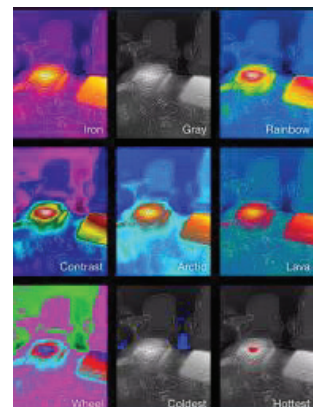
CHANGING COLOR PALETTES

On the display (the live image), displayed tap the color palette icon in the lower right to change how the image is displayed. Select one of the displayed color palettes. The color palettes are described in more detail in the Help and Support feature of the app (see Settings Menu). The app allows a choice from nine different palettes; some palettes are colors and some are grayscale or a combination of grayscale and color.

SPOT METER

When the Spot Meter is enabled (indicated by the center of the icon filled in with white), the FLIR ONE will display a temperature estimate (in degrees C or F) on the image. The accuracy of the Spot Meter depends on a great 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. To switch between Fahrenheit to Celsius, use the Settings option in the Control Panel, described in the next page.

PALETTE SCREEN



TUNING

The 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. The purpose of the shutter is to allow the camera to provide an improved image. The FLIR ONE performs the tuning operation automatically on a periodic basis. When the Spot Meter is turned on, the tuning will occur more often.

CONTROL PANEL

Select the gear icon in the upper left to open the Control Panel. The Control Panel allows the user turn on or off the Light, access the self-timer settings, or access the Settings menu. It also provides an indication of the battery charge level. Tap the gear icon to close the panel.

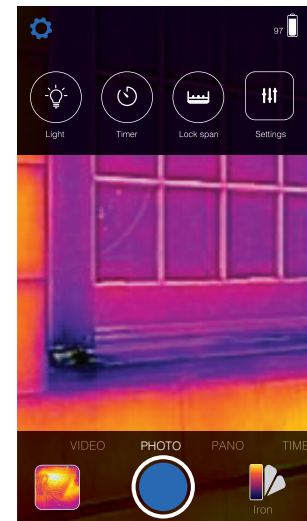
LIGHT

Multi Spectral Imaging (MSX) is a patented technology which makes use of the visible camera in the FLIR ONE to maximize detail and image sharpness. This feature requires some amount of visible light, so in dark environments turn on the light to enhance the image detail. This feature makes use of the light that is built into the iPhone.

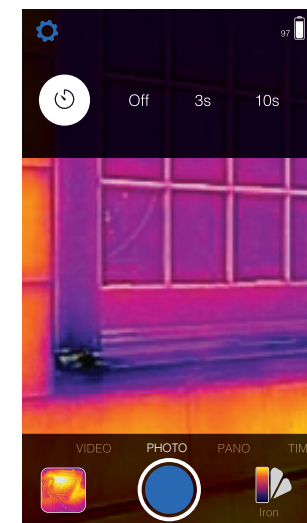
TIMER

The Timer option allows the user to set a time delay before an image is saved. When the Timer icon is selected, the Timer control panel is displayed. The user can set the time delay to 3 or 10 seconds or turn off the time delay option. When the Timer delay is enabled, the user saves an image by tapping the round blue button at the bottom of the screen, and then a timer displays the countdown.

CONTROL PANEL



TIMER CONTROL PANEL



LOCK SPAN

Ordinarily, the camera uses an Automatic Gain Control (AGC) process to automatically adjust the image based on the range of temperatures that are in the scene. The camera detects the range or span of temperatures, and maps the temperatures to colors in the color palette dynamically. As a result, the color of an object at a certain temperature can vary, depending on the other temperatures in the scene. When measuring temperatures with the Spot Meter, sometimes it may be desirable to temporarily lock the range of temperatures to a certain range, so that it is possible to compare multiple images taken at different times and of different scenes. Tap the Lock Span button to set the span or range of temperatures based on the current image.

SETTINGS MENU

The Settings Menu allows the user to configure additional features on the FLIR ONE, as described below.

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 like metals tend to be poor emitters. For most materials, the default “matte” setting is a fair approximation.

SAVE LOCATION

If a mobile phone signal is available, the location will be added to captured images. This makes it possible to see images on a map. Save to Photos Turn this on to save a copy of your images and videos in the phone’s photo gallery. Images will always be stored in the FLIR ONE camera regardless of this setting. Items already captured will not be copied.

TEMPERATURE UNIT

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

HELP

Much more information about the FLIR ONE is described in the Help feature within the FLIR ONE app. It is also possible to access the Tutorials from the Help menu.

ABOUT FLIR ONE

The About FLIR ONE 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. Adjusting for Close Up (or Optimizing the Image) FLIR One uses two camera sensors (a thermal camera and a visible light camera) and an exclusive image blending process called MSX to create a detailed image. By default the camera should be at least one meter (about an arm's length) away from the subject in the image for the blending to work optimally. For closer subjects, it is possible to tap and hold the live view, then adjust the alignment of the thermal and visible with the slider at the bottom of the image.

OPTIMIZATION SLIDER CONTROL

Observe the right edge of the coffee cup below. The image on the left below shows the lines of the visible image offset from the thermal image, and the image on the right shows the visible image aligned with the thermal.

OPTIMIZATION SLIDER



TROUBLESHOOTING

FLIR ONE NOT DETECTED

If the FLIR ONE app is not able to detect the FLIR ONE camera, make sure the iPhone is properly attached to the FLIR ONE and fully engaged. Make sure the FLIR ONE is turned on with the power switch. When the FLIR ONE is turned on, the power indicator should be flashing green. Make sure the FLIR ONE is adequately charged up (when the device is plugged into a power source, the charge indicator on the side of the device near the micro USB connection will stay lit continuously if the device is fully charged).

TEMPERATURE READINGS NOT ACCURATE

The temperature indicated by the FLIR ONE is always a calculated estimate and never exact. The indicated temperature is affected by many factors, especially the emissivity of the object being observed and the distance to the object. The temperature may be influenced by the time of day, by weather conditions, or by other hot or cold objects in the vicinity that may be reflecting off the intended object.

TUNING THE FLIR ONE

Periodically it may be necessary to perform a Tuning operation on the FLIR ONE. This causes the device to do a self-calibration and allows the thermal imager to present an optimized image and a more accurate temperature calculation (see Spot Meter for additional information).

LEGAL DISCLAIMER

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

IC Statement

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

VCCI

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。 VCCI-B

Product and safety information

Battery and charger information

This device has an internal, non-removable, rechargeable battery. Do not attempt to remove the battery from the device as you may damage the device. The battery can be charged and discharged hundreds of times, but it will eventually wear out. Use and standby times are estimates only. Actual times are affected by, for example, device settings, features being used, battery condition, and temperature.

If the battery has not been used for a long time, to begin charging, you may need to connect the charger, then disconnect and reconnect it. If the battery is completely discharged, it may take several minutes before the charging indicator is displayed. When your charger is not in use, unplug it from the electrical plug and the device. Do not leave a fully charged battery connected to a charger, as overcharging may shorten the battery's lifetime. If left unused, a fully charged battery will lose its charge over time.

Always keep the battery between 15°C and 25°C (59°F and 77°F).

Extreme temperatures reduce the capacity and lifetime of the battery. A device with a hot or cold battery may not work temporarily.

Do not dispose of batteries in a fire as they may explode. Dispose of batteries according to local regulations. Recycle when possible. Do not dispose as household waste.

Use the charger for its intended purpose only. Improper use or use of unapproved chargers may present a risk of fire, explosion, or other hazard, and may invalidate any approval or warranty. If you believe the charger is damaged, take it to a service centre for inspection before continuing to use it. Never use a damaged charger. Only use the charger indoors.

Take care of your device

Handle your device, charger and accessories with care. The following suggestions help you protect your warranty coverage.

- Keep the device dry. Precipitation, humidity, and all types of liquids or moisture can contain minerals that corrode electronic circuits. If your device gets wet, allow the device to dry.
- Do not use or store the device in dusty or dirty areas. Moving parts and electronic components can be damaged.
- Do not store the device in cold temperatures. When the device warms to its normal temperature, moisture can form inside the device and damage electronic circuits.
- Do not attempt to open the device.
- Unauthorized modifications may damage the device and violate regulations governing radio devices.
- Do not drop, knock, or shake the device. Rough handling can break internal circuit boards and mechanics. • Use a soft, clean, dry cloth to clean the surface of the device

Recycle

Always return your used electronic products, batteries, and packaging materials to dedicated collection points. This way you help prevent uncontrolled waste disposal and promote the recycling of materials. Check how to recycle your FLIR ONE products at www.flir.com/flirone/. The crossed-out wheeled-bin symbol on your product, battery, literature, or packaging reminds you that all electrical and electronic products, batteries, and accumulators must be taken to separate collection at the end of their working life. This requirement applies in the European Union. Do not dispose of these products as unsorted municipal waste.