FLIR ONE™

USER GUIDE

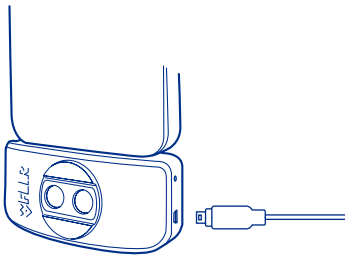
Second Generation

For Android

FLIR ONE QUICK START

STEP 1

Charge the FLIR ONE with the included USB power cable connected to a 1A power source. The Charge Indicator 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. Once the FLIR ONE is charged, attach it to the phone.

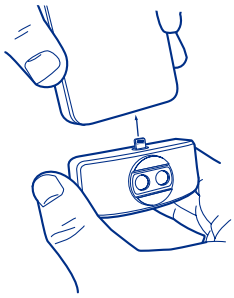


Android Spacer: *For users that do not have a case on their Android, a provided spacer can be attached to the FLIR ONE to create a snug fit and finish.* *See page 9 for more information.*

STEP 2

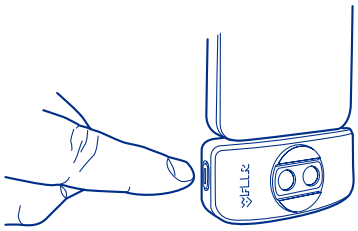
Download and install the FLIR ONE app, which is available on Google Play™. When you start the FLIR ONE app, a short tutorial will be displayed to help you get started with the FLIR ONE.

ANDROID APP ON Google play



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.



STEP 4

Once an image is displayed, tap the **color palette icon** in the lower left 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 **camera icon** to capture an image. At the bottom of the display, select the Mode button (a circle with "Mode") to bring up a screen that lets you select another 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 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.

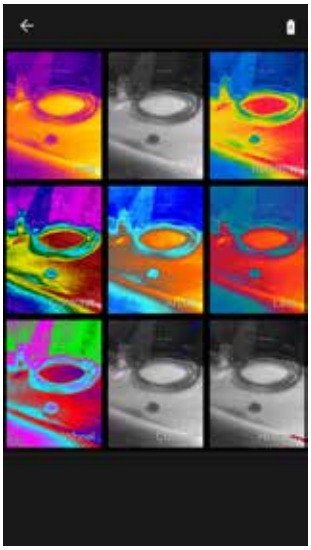
For close-up scenes, it is possible to optimize the way the daylight and thermal images are blended. In the Control Panel, you can enable/disable this mode by clicking on the Close-Up Mode button, represented by a flower. When Close-Up Mode is enabled, you can control the image optimization (the alignment of the thermal and visible image) by adjusting the Optimization slider. Optimizing the image is described in more detail on page 8.

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**

APP OVERVIEW

PALETTE SCREEN



WARNING

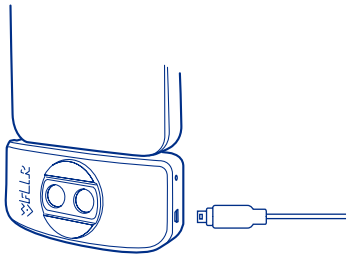
The FLIR ONE is not waterproof. Use caution if the FLIR ONE is used to observe very hot objects like fire or molten metal.

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 Help section of 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 1A power source. The Charge Indicator LED will blink while the device is charging. The FLIR ONE requires less than one hour for a full charge (with a 1A source). When the device is fully charged, the Charge Indicator LED will be on continuously.



FLIR ONE APP

The latest version of the FLIR ONE app is available on the 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.

APP OVERVIEW

At the top of the screen there is a black bar with icons for the Control Panel, Spot Meter, Battery Level, and Calibration. Below that is the live image, and at the bottom of the screen is another black bar with icons for the Color Palette, Mode (Photo, Video, Panorama, or Time-Lapse), Camera, and FLIR Library.

TAKING PICTURES

At the bottom of the screen, select the Mode button and then select Photo mode. Tap the camera button at the bottom of the screen to save a snapshot. The images are saved to the FLIR Library. To view the most recent saved image, tap on the thumbnail in the lower right. It is not necessary to have the FLIR ONE camera attached to the phone to view saved images.

TAKING VIDEO

At the bottom of the screen, select the Mode button and then select Video mode. Then tap on the video icon to begin video capture. Tap on the video icon 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 right of the screen to access the FLIR Library.

PANORAMA MODE

At the bottom of the screen, select the Mode button and then select Panorama mode. Tap on the panorama icon to begin the image capture. The camera will detect if you move left or right, and will capture images until you move 90 degrees or hit the stop icon. Panorama mode requires portrait orientation.

APP OVERVIEW

MODE SCREEN

PANORAMA MODE

TIME-LAPSE VIDEO

At the bottom of the screen, select the Mode button and then select Time-Lapse mode. Then tap on the video icon to display the Time-Lapse options. Adjust the options as needed, and then tap the video icon to begin video capture. Tap on the video icon again to stop the video capture.

FLIR LIBRARY

A captured image or video may be viewed and edited by selecting the thumbnail image in the lower right corner of the screen. To view other images or videos, swipe left or right to access the previous or next image/video, or tap the Library icon to go to Library view. Images and videos may be shared through text messaging or email, and may be edited by changing the color palette, moving the location of the spot meter or turning the spot meter on/off. 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.

FLIR LIBRARY SCREEN

CHANGING COLOR PALETTES

On the display (the live image), tap the color palette icon in the lower left 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 include color, grayscale, or a combination of both. To change the color palette of a saved image, select the Edit Image icon (represented by a pencil) on the Image View screen.

SPOT METER

When the Spot Meter is enabled (a disabled Spot Meter will have a slash through the icon), 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.

Note: *When the Spot Meter is enabled and the Automatic Calibration is disabled, the Calibration icon in the upper right will turn red. Tap the icon to cause the camera to do a manual calibration.*

AUTOMATIC CALIBRATION

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. When the camera first turns on, and periodically thereafter, the 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 upper right on the main screen. Calibration can be switched to manual by turning off Automatic Calibration in the Settings Menu.

CONTROL PANEL

Select the gear icon in the upper left to open the Control Panel.
The Control Panel allows the user to turn on/off the Light, access the self-timer settings, enable/disable Close-Up mode, or access the Settings Menu. Tap the left arrow in the upper left to close the panel.

CONTROL 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 phone.

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 toggles between 0s (off), 3s and 10s. 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 Camera icon at the bottom of the screen, and then a countdown timer displays on the image.

CLOSE-UP MODE

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 adjust the alignment of the thermal and visible with the slider at the bottom of the image.

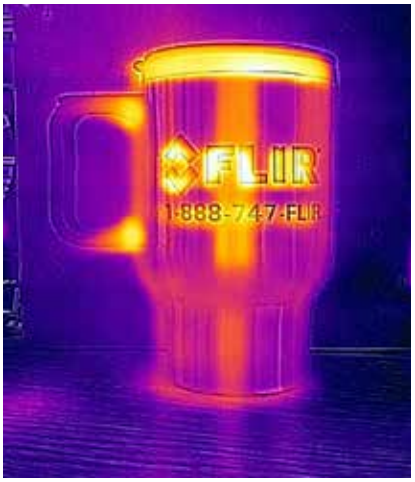
OPTIMIZATION SLIDER CONTROL

When Close-Up mode is enabled, a slider bar appears at the bottom of the image. For close objects, move the slider to the left to align the visible image with the thermal image. Observe the right edge of the coffee cup to the right. The image on top shows the lines of the visible image offset from the thermal image, and the image on bottom shows the visible image aligned with thermal.

OPTIMIZATION SLIDER

OFFSET

ALIGNED



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.

TEMPERATURE UNIT

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

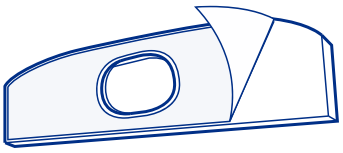
SAVE LOCATION

If a GPS signal is available, the location will be added to the 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.

ANDROID SPACER

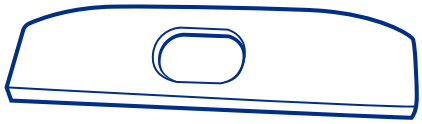


Included with your FLIR ONE are two spacer attachments that can be used to create a snug fit and finish for users who do not have a case on their phone.

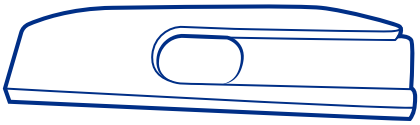
To assemble, remove the protective film revealing the adhesive on the underside of the spacer. Line up the straight edge of the spacer with the straight edge of your FLIR ONE. Once lined up properly, apply light pressure to ensure a complete seal.

***Note:** Once the spacer is attached, your FLIR ONE will no longer fit inside the supplied bumper.*

SPACER OPTIONS



ALL OTHER ANDROID MODELS



SAMSUNG GALAXY S5

There are two different spacer options depending on the phone model. The spacer with the U-shaped divot in the top should only be used for the Samsung Galaxy s5. All other Android models should use the spacer with the smooth top.

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.

TROUBLESHOOTING

FLIR ONE NOT DETECTED

If the FLIR ONE app is not able to detect the FLIR ONE camera, make sure the phone 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.

AUTOMATIC CALIBRATION

If Automatic Calibration is disabled, it may be necessary to manually perform a calibration operation on the FLIR ONE. This allows the thermal imager to present an optimized image and a more accurate temperature calculation (see Automatic Calibration on page 7 for more 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.