



# LGV Thermal Imaging Camera Instructions



The camera is controlled from the phone using the FLIR ONE app which is on the home screen and also the app display screen. This app does the basic camera control and lets you take pictures. It does have some facility to edit the images, but it is fairly basic. The FLIR Tools app cannot control the camera, but has a bit more functionality to manipulate the images.





## FLIR ONE App


To use the camera, start the FLIR ONE app, plug the camera into the bottom socket of the phone and press the power button at the bottom of the camera. The button should flash red for about 20-30secs while the camera links to the phone. You just have to wait. When it is ready, the light on the button should go green. When it has linked you will see the false colour thermal image with the outline optical image overlaid.


You can take pictures by simply pressing the big round button at the bottom, . You can change it to record video by tapping the  symbol.


The  symbol takes you to the image gallery, where the snapshots and videos are saved. Tap the  symbol to go back to the camera.

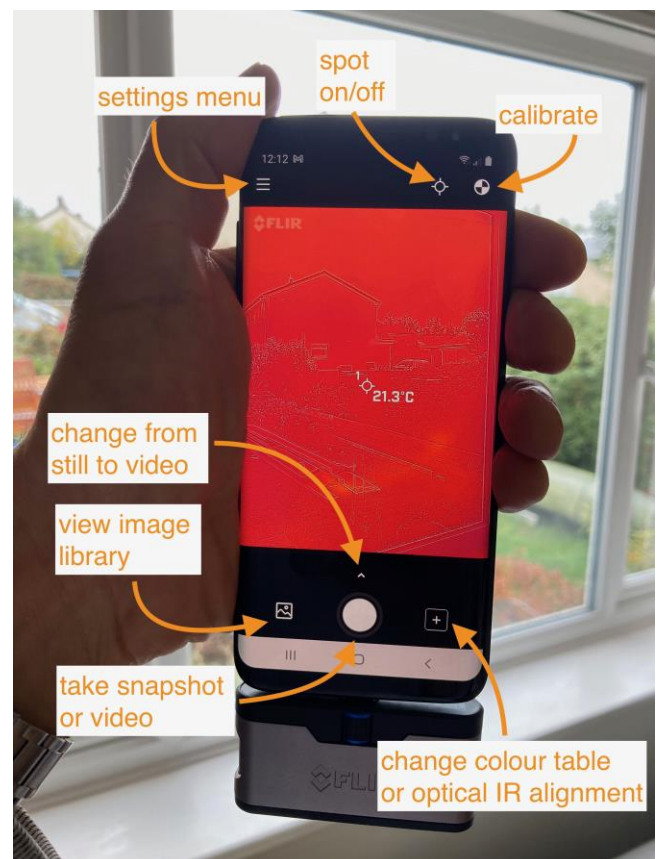
The  symbol lets you change the colour table and the alignment between the optical and IR images.

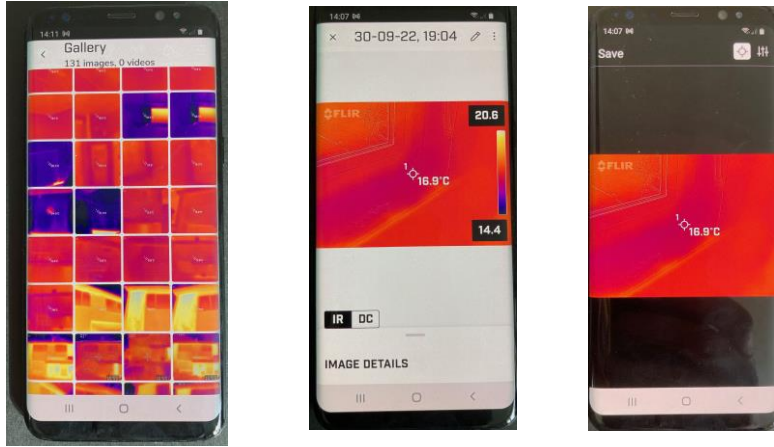
The  symbol makes it do a temperature calibration.

The  symbol turns the spot temperature reading on and off.

The settings menu,  lets you change the emissivity and units.


When you press  it will go to the gallery and you will see all the saved images.


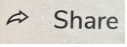




You can tap an image to find more details about the spot temperature emissivity used, time, date and the GPS location.

By tapping on 'IR' or 'DC' you can swap between the IR and optical images.

The  button lets you adjust the colour scale for the IR image and move the spot measurement point around the image.

To share the image you are looking at, tap the  button and then the  button.

## FLIR Tools App


This is the 'old' FLIR Tools app. The new 2021 version for FLIR Tools does not seem to be able to access any of the images, so I've left it using the old version. The app opens by showing the folder tree. The default folder is not where the FLIR ONE images are saved, so you need to navigate to /storage/emulated/0/DCIM/FLIROne. You will then see the library of images.


Tap an image to see more detail. Tap it again to edit the image. Double tap on the colour bar at the right side to auto adjust the IR colour map. Tap and hold to invert the colour map. Tap on either the max or min temps to fix it and then slide the other limit to adjust the contrast. (It seems to have a minimum range of 2 degrees). Slide a finger up/down on the colour bar to move the max/min temps up/down. Spread 2 fingers to extend the range. Bring 2 fingers together to reduce the range. These operations are easier to do with the phone in landscape mode, because the colour bar is wider than in the portrait mode version.


Spread two fingers in the main image to zoom in. Bring them together to zoom out. Use one finger to move around the zoomed image.


At the top in landscape mode, or the bottom in portrait mode there are options to edit the image.



The  button lets you change the way the optical and IR images are combined.

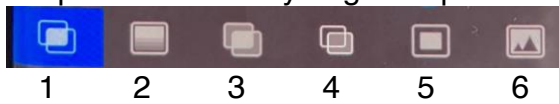
The  button lets you choose the colour table.

The  button lets you set and adjust areas of interest.

The  button lets you share the image and get more information.

## Optical/IR combinations

If you tap the  button you get 6 options.



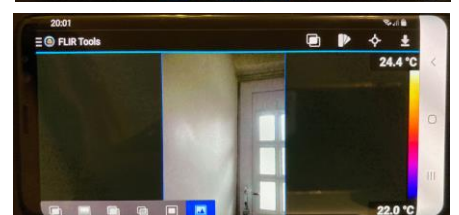
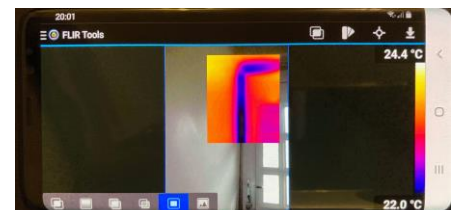
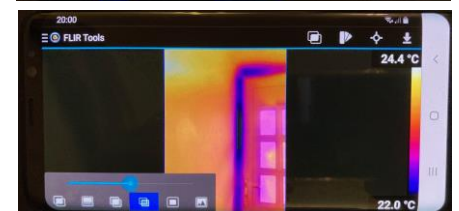
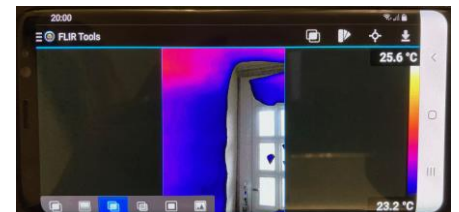
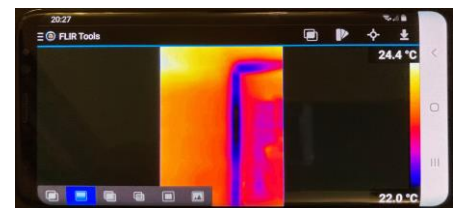
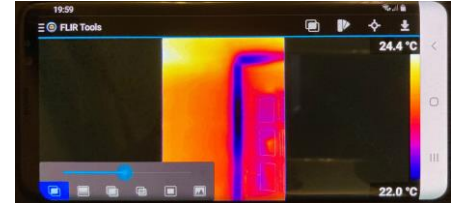
The first overlays the optical edges on the IR image. You can adjust the transparency of the optical overlay using the slider. The second shows the IR alone.

The third shows the IR for a narrow range of temperature, chosen by adjusting the colour bar. For temperatures outside that range, the optical image is shown.


The fourth is a blend of the IR over the optical image. There is a slider which lets you adjust the optical/IR balance.

The fifth shows the IR over a small rectangle of the full optical image. The size and position can be adjusted.


The sixth shows just the optical.



## Colour Maps

The colour maps button , lets you choose which false-colour scale to use for the IR image. The default is 'Iron'.


## Regions of interest


The  button lets you define spot points, rectangular and circular areas, and vertical or horizontal lines on the IR image. For the areas and lines it will display the maximum, minimum and average temperatures. To delete a region, tap and hold near the middle of the region. Then a menu will appear, including the option to delete it.


# Information and sharing images


The  button gives you more options




The  button creates a 'report' pdf file with the IR image, optical image and any information for regions of interest.

The  button lets you share the image in various ways.

The  button lets you delete the image.

The  button should show the locations of the images on a map, but it doesn't seem to work.

The  button gives a lot of information about the image.


## Sharing images




By default the images will appear in the Google photos library without any need to do anything. These can be viewed by anyone who logs onto Google using the [cameralgv@gmail.com](mailto:cameralgv@gmail.com) account.

Tapping the  button gives you several other options to share the images.



The  button lets you send the image by Gmail or save on Google Drive.

The  button has these as well as other options, including bluetooth, messages, and OneDrive. I have not set up any of these.

The options    are for box.net, Dropbox and FTP. None of these have been set up, and so they are all greyed out.

If you view the images in Google photos or any other simple image viewer, you will see the image as last edited by FLIR Tools, or FLIROne. Both the optical and IR image are still stored in the file, but you need a specialist program to see both. You can install 'FLIR Tools' or 'FLIR Thermal Studio Suite' on a windows PC, but they are not available for Macs. I can give you a simple python script which will let you access them directly.