

Thermal Imaging Camera Lending Scheme -

Supporting Information

What is heat loss and why does it matter?

Undertaking a thermal imaging heat loss self-survey could help provide you with the answers as to why your property might be cold, where it is costing you money, as well as also wasting energy!

You may have noticed that parts of your property feel cold, or you may be planning specific refurbishments and feel the thermal imaging camera could help you with prioritising what to improve, and where.

Whatever your reason, it is important to understand the areas of heat loss within a room or property before looking to making changes to reduce your energy consumption and heat loss.

What is a thermal image?

A thermal image is a digital representation of a scene and a measure of the thermal (heat) radiation emitted by the pictured objects. The thermal image allows us to remotely sense the temperature of an object or at least accurately tell its temperature relative to its environment.

How to use the Thermal Imaging Camera - *Top Tips:*

Full details of how to use the camera and the FLIR One app are provided in **Appendix A: 'How to Guide'**. Remember to:

- 1) Charge the FLIR One thermal imaging camera before use;
- 2) Download and install the app to your phone or tablet;
- 3) Connect the FLIR One to your smart phone and start the app;
- 4) Check out the app's Home Screen to access your saved gallery and get the latest tips;
- 5) Point your smart phone and take photos, measuring the temperature of different surfaces as you go.



Some top tips to be aware of when using the camera:

- **#1 Tip: Outside temperature:** it's best to self-survey your property when the outside temperature is lower, such as in the evening or on a colder day so that the difference in temperature between your property and the outside is greater. However, it does not need to be dark for the thermal camera to work!
- **#2 Tip: Warming your home:** Aim to get your home as warm as you can by increasing your heating, this way the contrast between your home and the outside temperature will be far greater resulting in better images.

- **#3 Tip: Check the weather:** Check the weather forecast in advance of receiving the camera to ensure you have the best opportunity for surveying, trying to avoid rainy, sunny or unusually warm days as they can negatively affect the readings.
- **#4 Tip: Identifying key areas:** Whilst using the camera look for areas both inside and outside your home that are likely to require improvements from insulation and draft proofing, such as doorways, windows and roofs. Remember some areas of controlled ventilation are needed such as in bathrooms and kitchens so they will be the exception when assessing your home. See *Appendix B* for a list of things to be aware of when using the camera.
- **#5 Tip: Using this information:** if you would like you can take the information and progress it further by speaking with the Centre for Sustainable Energy (CSE) who will be able to support you in improving the energy efficiency of your home (see further details below). We have also provided a list of handy tips on reducing heat loss and energy consumption in *Appendix C*.

Energy advice – see SSDC’s Energy Saving Tips & Actions webpage:

www.southsomersetenvironment.co.uk/energysavingtips

CSE Safe and Warm Somerset:

The Centre for Sustainable Energy (CSE) provide a free advisory service supporting residents (including landlords) across Somerset with reducing energy bills and keeping warm at home. CSE can help you:

- Keep warm at home with advice on insulation, heating and draft proofing;
- Lower your energy bills through guidance on your fuel bill, heating systems and controls, switching tariff or supplier and making simple behavioural changes;
- Make home energy improvements to tackle issues with damp and condensation, like installing insulation;
- Review and access potential grants and benefits; and
- (for landlords) improve the energy efficiency of your property, supporting you to understand what is needed to meet the Minimum Energy Efficiency Standards (MEES), and make the necessary changes to improve your property (e.g. heating or insulation measures) without breaking the bank.

To speak to one of CSE’s experienced advisors:

- Call 0800 082 2234 (Monday-Friday, 9am-5pm);
- Submit the form on their website: www.cse.org.uk/contact-us; or
- Email: home.energy@cse.org.uk



Finally, if you would like to refer someone who you think needs support you can fill out CSE’s referral form: www.cse.org.uk/referral

Example images:

The following are some example images of what you will likely see when using the thermal imaging cameras. As you can see, the temperature heat spot will automatically locate either the hottest or the coldest point within the image (depending on the temperature setting you have chosen within the FLIR One app). You will then be able to save the image directly to your smartphone or tablet:



Health and Safety:

Please look out for trip hazards and remove from around you before using the camera. Ensure if you are outside your home to be aware of any other pedestrians and potential risks such as cars and bicycles.

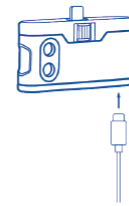
Appendix A

FLIR ONE QUICK START GUIDE

STEP 1

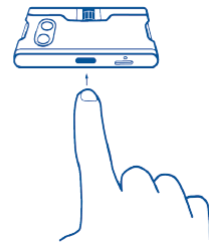
Charge the FLIR ONE with the included USB-C power cable connected to a 1A power source. The Charge Indicator LED next to the USB-C connection blinks on and off while the FLIR ONE is charging and stays on continuously when it is fully charged. It will take about an hour to completely charge your FLIR ONE. Ensure the FLIR ONE is fully charged before using it the first time.

Note: The power cable for the iPhone (with a Lightning connector) will not work to charge the FLIR ONE iOS model.



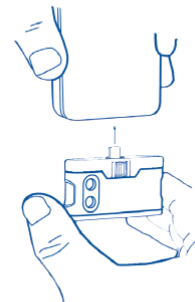
STEP 2

Download and install the FLIR ONE app, which is available on the Apple App Store and Google Play Store. When you start the FLIR ONE app, the first-time User Guide will help you get started with the FLIR ONE.



STEP 3

Press the power button on the bottom of the FLIR ONE to turn it on. The indicator light will turn orange. It will flash green when the device is ready. If needed, adjust the blue dial of the OneFit™ and extend the connector to the appropriate length to fit through your smartphone's protective case. Connect the FLIR ONE to your smartphone and start the FLIR ONE app. You will be asked to create a user account with your email address and a password.



STEP 4

Check out the app's Home screen to access your gallery, get the latest Tips & Tricks for using your FLIR ONE, share your photos and videos with the FLIR ONE community, and stay up to date with all the latest news and promotions from FLIR.

STEP 5

Explore all the Camera features on the FLIR ONE.

COLOR PALETTES

- Tap on the Features icon in the bottom right of the screen
- Choose between 9 different color palettes

SPOT METER

- Tap on the Spot Meter icon in the top left corner to get exact temperature measurement on the center of the screen

TIMER

- Set a timer for 3 or 5 seconds

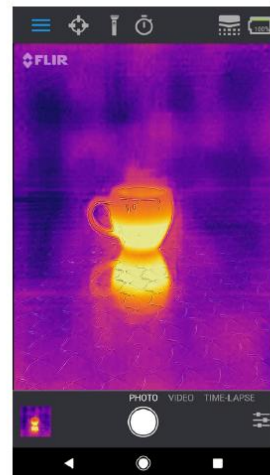
CHANGE CAMERA MODES

- Select Video, Photo or Time Lapse

MSX® PARALLAX

- The image that displays in the app is a combination of a thermal image and a visible-light image through a unique process called FLIR MSX. The FLIR ONE thermal camera can produce an image even in total darkness. When visible light is available, the FLIR ONE visible-light camera is used to enhance the detail of the FLIR ONE thermal camera.
- When looking at an image up close or far away, you can adjust the MSX alignment for the object to align the thermal and visible-light images. Tap on the features button on the bottom right corner, tap MSX Distance, and adjust as needed.

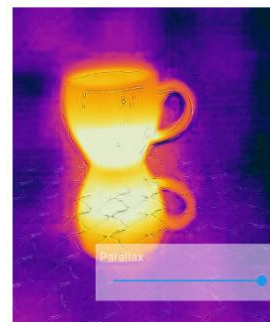
MODE SCREEN



MSX DISTANCE SLIDER



ALIGNED



WARNING

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

Appendix B

Common mistakes to be aware of when using the camera:

- **Misinterpreting Images:** while viewing your property, you will likely see cold spots, hot spots, and patterns that might not make sense and aren't entirely easy to interpret. It is important to remember that not all cold or hot spots are problems. Be cautious before making a judgement and remember that some 'cold' ventilation spots may be important for health and safety (such as air-bricks);
- **Temperature Measurement Errors:** it's easy to make mistakes when it comes to getting an accurate temperature reading. The thermal imaging camera provides a +/- 2 degree accuracy temperature range, but certain materials (like shiny metal) can influence the temperature your camera shows. Be aware that the temperature of shiny objects, like polished metal, will not be accurately measured by your thermal image due to their low emissivity (in relation to say wood) – therefore two objects side-by-side may appear to be emitting different temperatures!
- **Know the limitations of the camera:** Certain applications, such as detecting moisture issues with thermal imaging, will require a higher-performance camera that can detect very subtle temperature differences. The FLIR One Thermal Imaging camera is useful for providing a high-level understanding of thermal (heat) radiation emitted by your property and can help guide you to understand where improvements might be required.

Appendix C

Tips on Reducing Heat Loss and Energy Consumption

Once you have identified areas of heat-loss within your property, there are several ways that could help you reduce energy consumption and heat loss. These include:

- Improving the insulation of the property, especially through roof or wall insulation, as well as double glazed windows;
- Reducing air leakage, for example around door and window frames, or letter-boxes; and
- Reducing energy consumption by using efficient heating methods such as air or ground source heat pumps.

Although the above options may require professional inputs, there are also some simple (and cheap) DIY options to reducing heat loss:

- use heat reflective aluminium foil behind the radiator to reduce heat loss;
- use thick curtains, with a thermal lining, to reduce heat loss through the windows (but let the sunlight in during the day to use as much natural – and free – heat);
- stop heat being lost up the chimney when not in use by using a chimney balloon or woollen chimney insulator (www.chimneysheep.co.uk); *but remember to remove them before starting any fires!*
- watch out for mini-draughts, such as letterboxes or cat flaps - its worthwhile putting an extra barrier there in the form of a "brush";
- use draught excluders along the base of doors;
- cover bare floors, which account for as much as 10% of heat loss if they're not insulated; and
- Insulate your house with DIY loft insulation and ensure the loft hatch is also insulated.

Appendix D

Data Protection Statement

South Somerset District Council is committed to protecting your privacy when you use our services. Our Privacy Policy can be found at the link below and explains how SSDC uses information about you and how we protect your privacy:

<https://www.southsomerset.gov.uk/your-council/data-protection-and-freedom-of-information/privacy-and-data-protection/>

For the purpose of the *Thermal Imaging Camera Lending Scheme*, we will compile a register of users data for the purpose of administering the cameras on a lending scheme basis. Your details will be kept for a maximum of 3 years; if you wish to exercise any of your rights, they can be done so through our privacy policy above.

Your personal details will only be used for administering the *Thermal Camera Lending Scheme*, as well as periodically to keep you informed about opportunities arising from the scheme in relation to retrofit schemes and funding. Your information will never be sold or transmitted to a third party beyond those mentioned in this statement.