Tallaght Business Park
Whitestown, Dublin 24,
Ireland
D24 RFK3

Quatro House, Frimley Road,
Camberley,
United Kingdom
GU16 7ER

Lab Unlimited
CARL STUART GROUP

Tel: (01) 4523432
Fax: (01) 4523967
E-mail: info@labunlimited.com
Web: www.labunlimited.com

Tel: 08452 30 40 30
Fax: 08452 30 50 30
E-mail: info@labunlimited.co.uk
Web: www.labunlimited.co.uk

Quick Start Guide

Congratulations on purchasing IR-CAM-FEVER for Thermography —
The thermography camera that is changing the way thermal imaging technology works.

Your IR-CAM-FEVER comes with the following items:

- USB-OTG cables
- Quick Start Guide and Warranty
- Single Board Android Computer

Read This First

- The IR-CAM-FEVER device should be connected to the single board computer (SBC) through the USB cable. The application that runs the IR-CAM-FEVER is preinstalled on the SBC.

- Connect the SBC to a monitor through the HDMI plug and a mouse to a USB plug and run the IR-CAM-FEVER aplication.

- Attach the IR-CAM-FEVER a tripod or any other fixed stationary point by a ¼ inch screw.

- Attach the SBC to a fixed location.

Take Note

- IR-CAM-FEVER can work as well with a standard Android device by downloading the IR-CAM-FEVER application from Google Play and running the application. The connection to the phone is via the USB OTG cable.
- Connect all the cabling before you connect the SBC to the power supply.
- In case the application is not installed on the SBC please contact MRC and the application would be sent to you.

Compatibility

- The IR-CAM-FEVER calibration tables are pre-installed on the SBC, if you change the SBC, connect the SBC to an ethernet connection, plug-in the IR-CAM-FEVER, and open the app to download the correct calibration tables.
- IR-CAM-FEVER was designed to work with the SBC and the preinstalled software.
- IR-CAM-FEVER will only operate with mobile devices supporting USB OTG (also called USB host).
- IR-CAM-FEVER requires a USB OTG cable supplied in the box.
- IR-CAM-FEVER will operate on Android version 6 (Marshmallow) and up.

Connecting the Android Single Board Computer (SBC)

- Connect the power cable to the SBC **(1)**.
- Attach a mouse to the USB port **(2)**.
- Attach a screen to the HDMI port **(3)**.
- Turn on the SBC.
- With the cable supplied, connect the IR-CAM-FEVER USB OTG micro-USB connection to the IR-CAM-FEVER device **(5)** and the USB to the SBC **(4)**.
- The IR-CAM-FEVER application should automatically open (if not, open the app manually) when the cable is connected from the IR-CAM-FEVER to the computer.
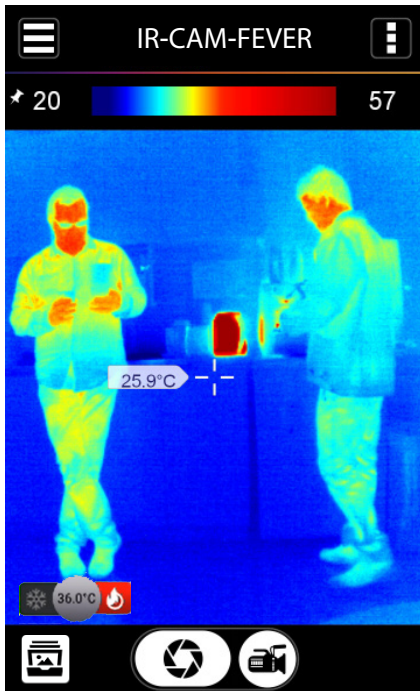
Application Overview

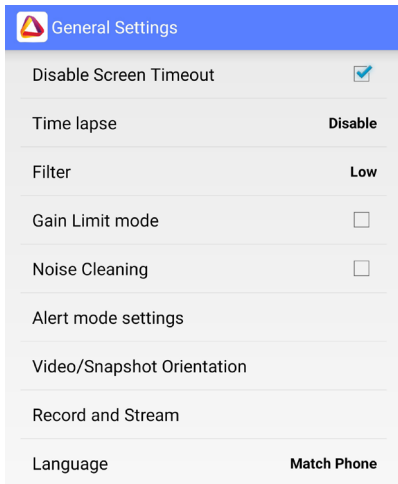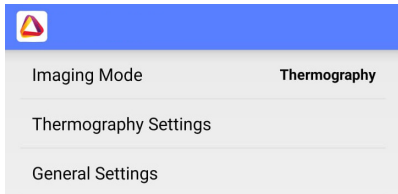| Icon	Description
☰	Settings Menu
⋮	Quick Access Menu
25📌	Temperature Range & Lock Buttons
🌡️	Temperature Scale
🖼️	Gallery
🔘	Image Recording
📹	Video Recording

Quick Tips

- To change the color palette, swipe the image right or left.
- To set the temperature threshold to "hot-red" and "cold-blue" palettes, press the temperature reading in the middle of the temperature scale.
- To change the temperature from Celcius to Fahrenheit, click on the settings button ☰ , click on **Theromography Settings** and then on **Units**.
- Pinch the touch screen for digital zoom.
- To use the automatic temperature range, press the current temperature and then press the (✖) button on the dial.
- For best performance, the ambient room temperature should be 25° C.
- For optimal performance wait between 8-10 minutes from start-up, to allow the IR-CAM-FEVER to reach an initial steady temperature state.
- In order to establish a baseline temperature, have 3 healthy people with regular temperatures pass in front of the camera. Calculate from the highest temperature of the 3 people and rasie the temperature dial 1.5° C (see **Configuring the Alert** for instructions). This will be the threshold for the alert for an individual with a fever.
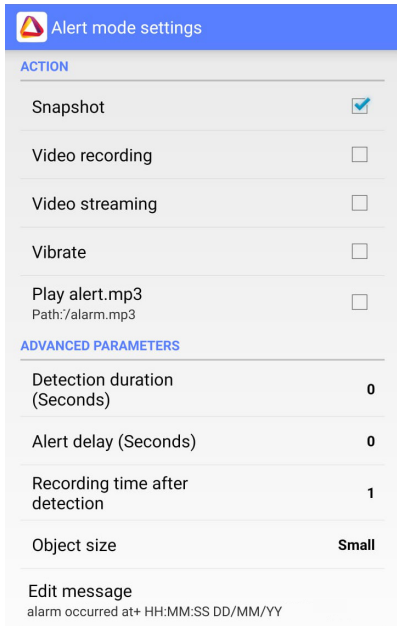
- If you are using a 6.8mm lens, a person should stand 3-5m from the camera.
- If you are using a 19mm lens, a person should stand 6-10m from the camera.
- The temperature indicator will give the surface temperature of the individual with the hottest temperature in the field of view, or the configured region of interest.
- When you receive an alert for an individual, check more thoroughly with a thermometer.
- The IR-CAM-FEVER is affected by the ambient temperature of its surroundings and it provides relative temperature readings, as opposed to a thermometer which gives absolute temperature readings.
- While the baseline may change, the hightened temperature reading of a feverish individual will give an alert.

- **Note:** The skin temperature of a person may be affected by; extreme temperatures such as extreme cold or standing near a heat source, drinking significant quantities of alcolhol, taking temperature altering drugs, or strenuous exercise.

△	
Imaging Mode	**Thermography**
Thermography Settings	
General Settings	

△ General Settings	
Disable Screen Timeout	☑
Time lapse	**Disable**
Filter	**Low**
Gain Limit mode	☐
Noise Cleaning	☐
Alert mode settings	
Video/Snapshot Orientation	
Record and Stream	
Language	**Match Phone**

Configuring the IR-CAM-FEVER

≡ Click on **Settings** menu on the top left of the IR-CAM-FEVER screen.

- This will open the settings menu.

- Click on **General Settings**.

- Ensure **Time lapse** is on **Disable**.

- The orientation of the video or snapshot can be also be amended from the **General Settings** menu, by clicking on Video/Snapshot orientation.

- Click on **Alert mode settings** (see next page for instructions).

Alert mode settings

ACTION

Snapshot ☑

Video recording ☐

Video streaming ☐

Vibrate ☐

Play alert.mp3
Path:/alarm.mp3 ☐

ADVANCED PARAMETERS

Detection duration (Seconds) **0**

Alert delay (Seconds) **0**

Recording time after detection **1**

Object size **Small**

Edit message
alarm occurred at+ HH:MM:SS DD/MM/YY

Configuring the Alert Mode

- Go to **Advanced Parameters** in the Alert mode settings menu and ensure the settings are as follows: -
- Check **Play alert** for the alert sound.
- - **Detection duration** is **0** (seconds).
- - **Alert delay** is **0** (seconds).
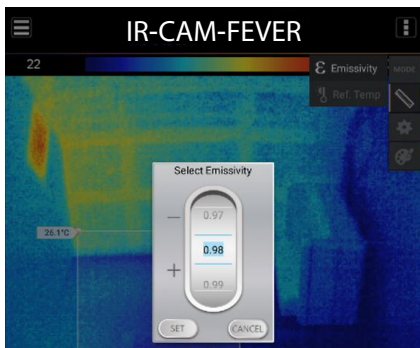- - **Recording time after detection** is **1** (minute).

- These parameters can be changed by clicking on the name of the setting and clicking the **-** or **+** symbol in the box shown to the right.
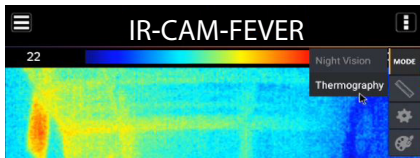
Configuring the Thermography

🔲 Click on the Quick Access Menu

MODE Click on Mode, then Thermography

Configuring the Emissivity

🔲 Click on the Quick Access Menu

Click on the Ruler and then on Emissivity.

- Using the - or + symbols change the Emissivity value to 0.98.
- This can also be done using the on screen keyboard by typing the value 0.98 using your mouse pointer.

Configuring the Alert

▌ Click on the Quick Access Menu

⚙ Click on the Gear symbol

🚨 Alert Click on Alert

- A box will appear on the screen with small circles on each corner.
- Click and drag the box to the area of interest.
- Click and drag the corners of the box to resize the area of interest.

❄ 36.0°C 🔥 Click the flame icon to establish an alert above the threshold.

30 40 50 Adjust the threshold temperature.

FAQ and Troubleshooting

- **Does the camera work on other operating systems (iOS, Windows)?** *IR-CAM-FEVER is designed exclusively to work on Android OS and Linux.*

- **How do I get my hands on the Software Developer's Kit for this?** *We are happy to provide the SDK for you. Contact your account manager to request the SDK agreement. Once signed we will provide you with the SDK.*

- **Why is the temperature on the screen much lower than the average human temperature?** *Thermal imaging processes an image based on the energy emitted off objects in the field of view. This will include a person, hot air from a heater, a computer or a cool gust of wind from an air conditioner. Unlike a thermometer – which measures absolute temperature – a thermal imager will show the temperature in relative terms. As in – what is my temperature relative to the person next to me. To do this we need to establish the baseline temperature, either with a black body, or by using three healthy individuals as described in the setup instructions. Once we've established that baseline, the temperature gradient can be measured very accurately.*

- **Why does the temperature change when a person stands at different ranges camera?** *Since the camera is aggregating all the energy it is receiving in the field of view, the temperature reading will change. The optimal range for a 6.8 millimeter lens on the camera is 2 meters. It can be used effectively up to 5 meters, but it's important to make sure the temperature of a person is measured at the exact distance that the baseline was established. If your setup is designed to read temperatures of people at 3*

meters, for example, make sure that it was calibrated during the setup for people at that range.

- **Why can't I hear the alert?** *Make sure the monitor you are using has speakers and alert sound is enabled in app. The sound comes out through the HDMI cable. Thus it goes into the monitor.*

- **Why does my IR-CAM-FEVER crash when I turn it on?** *Check that the SBC resolution setting matches your monitor resolution. If not, adjust accordingly.*

- **Why after some time does the temperature of the same individuals change?** *Although the camera's steady state takes about 8-10 minutes, it may take another hour or so to truly reach a point where the temperature stops shifting. After an hour, it is recommended to check the temperature and recalibrate the threshold accordingly. Also, since the ambient temperature changes during the day, it is recommended to repeat the process once every 8 hours.*

- **Can the IR-CAM-FEVER be used outside?** *Yes. But you need to adjust the ambient temperature in accordance with the outside temperature as it will probably not be 25 degrees, and you may need to recalibrate the ambient temperature and the baseline as the day progresses and temperatures change. Also, avoid a ifeld of view which is looking at a street in which vehicles (which are hot objects) could pass through it.*

9) **I'm not getting a temperature reading and the screen says "overflow".** *This occurs if an object in the screen surpasses 60°, which is beyond our calibration range. Remove the object and check again. If this error still occurs, reinstall the IR-CAM-FEVER app from an APK provided to you by your account manager.*

Terms and Conditions

Congratulations!
You are now the owner of a new IR-CAM-FEVER world class thermal imaging device which includes hardware and software components (the "Product").
PLEASE READ THIS DOCUMENT CAREFULLY;

1. **GENERAL.** This document represents our entire understanding with respect to its subject matter and supersedes any previous communication or agreements that may exist. Modifications to this document will be made only through a written amendment signed by both parties. This document will be governed by the exclusive laws of the state of Israel, excluding rules as to choice and conflict of law. The courts of Israel will have exclusive jurisdiction over all claims arising out of or relating to this document, and you hereby consent and submit to such exclusive jurisdiction. It is agreed that the United Nations Convention on Contracts for the International Sale of Goods will not apply. Judgments of the foregoing courts will be enforceable in any country.

    PRODUCT USAGE NOTICES
    Attachment to your Mobile Device
    To avoid damage to your Product and mobile device, attachment of the Product to your mobile device should be done with care, securing the locking knob with your fingers only. Do not use any external tools as too much pressure may mark or damage your mobile device.
    Calibration
    The Product makes use of specific calibration data, which was prepared for it in the factory. It is possible that during prolonged field usage of the Product a deterioration of image will be noticed. In such case we recommend that you send in the device, for re-calibration at the factory. Please contact our support team for further instructions.
    Accuracy
    For most accurate temperature measurement results, we recommend that you wait 8-10 minutes after you have started the Product before measuring a temperature.

Disposal of electronic waste

As with most electronic products, this equipment must be disposed of in an environmentally friendly way, and in accordance with existing regulations for electronic waste.

Documentation updates

Our manuals are updated from time to time, and we also issue product-critical notifications occasionally.

2. PRODUCT SAFETY INFORMATION
WARNING

Applicability: Class B Digital Product

This Product has been tested and found to comply with the limits for a Class B digital Product, pursuant to Part 15 of the FCC Rules of the USA. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This Product 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 the Product does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the Product and receiver

Connect the Product into an outlet on a circuit different from that to which the receiver is connected.

Consult the authorized reseller or an experienced radio/TV technician for help.

WARNING
Do not drop the Product or apply pressure on the IR lens as it may break. If the IR lens breaks, do not touch the broken pieces, the pieces can cause injury.

WARNING
Be careful when you touch the Product. Some parts of the Product can be sharp and could cause injury.

WARNING
Do not point the infrared detector (with or without the lens and lens cover) at intensive energy sources, for example products that emit laser radiation, or the sun. This can have unwanted effect on the performance of the Product. It can also cause damage to the detector.

WARNING
Do not use the Product in a temperature environment higher than +50 degrees Celsius (+122 degrees Fahrenheit), unless specified otherwise in user documentation or technical data. High temperatures can cause damage to the detector.

WARNING
The Product is not sealed. Avoid exposure of the Product to water, rain or dust.

WARNING
Do not apply solvents or similar liquids to the detector or lens, as this can cause damage.

WARNING

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

WARNING

The Product allows for field replacement of the lens. Exchanging the lens should be done with great caution as after the removal of the lens the IR detector is exposed until the new lens is installed. While exposed, avoid any contact with the detector. Touching, cleaning or blowing the detector could cause permanent damage. Replacement of lens should be done in a dry area, using clean hands with maximum care.
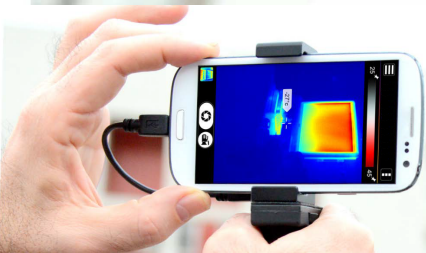
WARNING

Do not use pressurized air from pneumatic air circuits in a workshop to remove dust from the detector. This air contains oil mist intended to lubricate pneumatic tools and is too high of a pressure, this can damage the detector and lens.

WARNING

The device is designed to use 5V DC power supply only, fed thru its micro USB connector. Using any other type of power source is dangerous and may lead to damage.

WARNING

The Product is provided with appropriate USB-OTG cables. Use only the supplied USB OTG cables. Using any other types of cables might not work at all, may fail, and even damage the equipment.