

Fever Kit

Operation Manual



ARIDEA
SOLUTIONS



Precautions:

Read Before Use



The Aridea Fever Kit is not a medical device and is not intended to diagnose, treat, cure, or prevent any disease or illness. The product and information in this manual are not a substitute for informed medical advice or care. Our product is used at the risk of the consumer.

The Fever Kit was designed to replace the handheld surface temperature devices used in the field today. Our technology is addressed under the FDA's most recent guidance that authorizes thermographic systems "for initial body temperature assessment for triage" regarding COVID-19. Thermographic systems use infrared (IR) to read the surface area temperature. Aridea Solutions sought to develop a non-intrusive, private, battery-powered, portable, high speed and highly accurate device. By combining the premier IR radiometer on the market with our groundbreaking IoT technology, we accomplished this objective with the Fever Kit.

The Fever Kit measures skin temperature to calculate an equivalent internal body temperature to ensure the subjects are within 94° F (34.5° C) to 100.4° F (38° C) degree temperature.

Note: In a controlled environment, the human skin is a few degrees below your internal body temperature because the environment is at a lower temperature than a person's normal 98.6° F (36.7° C) internal temperature.

A person's skin temperature can vary based on surrounding high/low temperatures; therefore, when device is used indoors we recommend that subjects acclimate to an indoor controlled temperature (63° - 73° F, 17.2° - 25.5° C) before use. In most cases, an acclimation period of 2-3 minutes is sufficient for accurate results. In more extreme situations, the acclimation period should be equivalent to the amount of time that the subject spent in the extreme conditions. For outdoor use the subject should acclimate to the current outdoor temperature.

A subject's forehead must be clear to ensure accuracy. Ensure any hair, sweat, or dirt is clear from the subject's forehead.

There is no medical data stored on the device, 100% HIPAA compliant.

Product Description

The Fever Kit is a **no-touch, portable** device designed to screen people for fever. Unlike the handheld surface thermometers currently on the market, our device provides a considerably safer and more efficient alternative. Quickly determine whether your employees or customers are ill within seconds while ensuring a completely contactless experience. The Fever Kit was built on three important principles: Efficiency, Accuracy, and Reliability!

How does the Fever Kit work?

1

An individual approaches the Fever Kit and places their forehead **five inches** from the infrared (IR) sensor.

2

Working in tandem with the microcontroller, the IR sensor captures three separate measurements of the infrared energy radiated from the individual's skin.

3

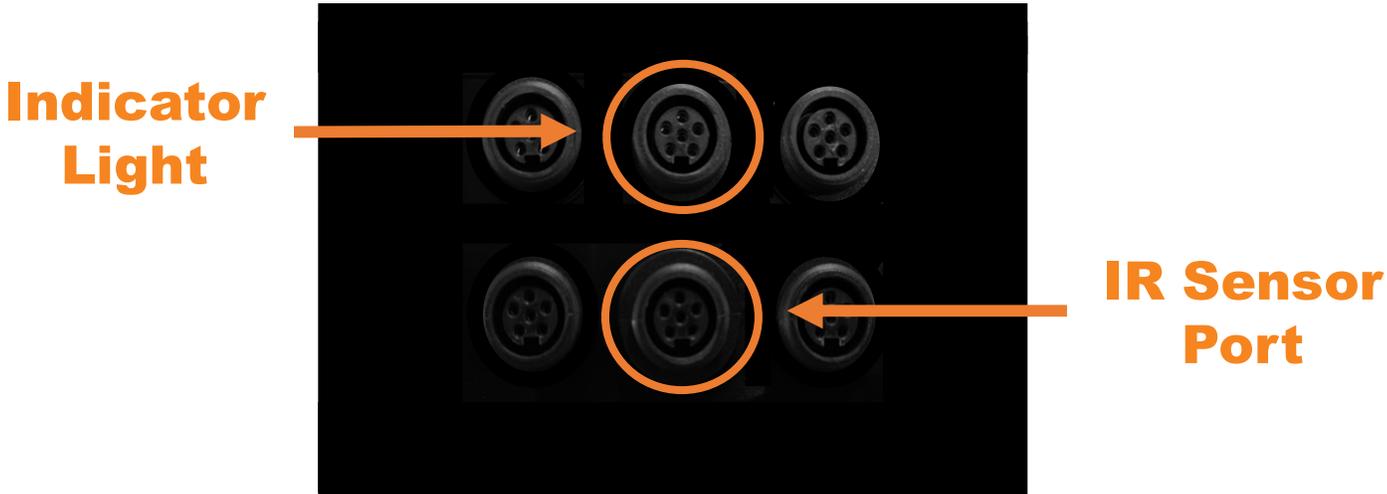
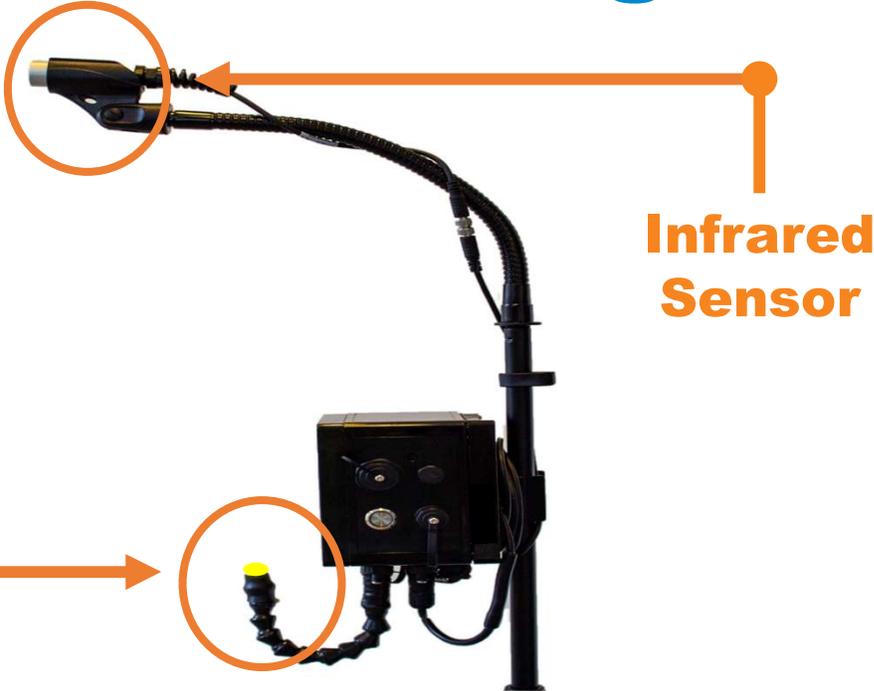
These three measurements are quickly converted to equivalent internal body temperatures. The microcontroller then compares the individual's equivalent temperatures to acceptable temperature ranges.

4

Finally, the LED light turns **Red** to indicate a **Fever** or **Green** to indicate **No Fever**. The entire process takes no longer than five seconds.

Green	Indicates No Fever 94°-100.4°
Yellow	Stand-By
Red	Indicates Fever > 100.4°

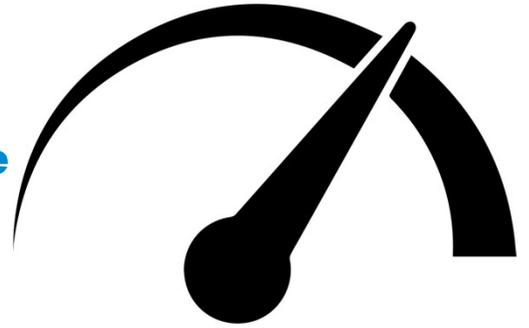
Product Diagram



Why use the Fever Kit?

High Speed

Within five seconds, the device collects three separate temperature measurements, compares them to acceptable ranges, and indicates the results.

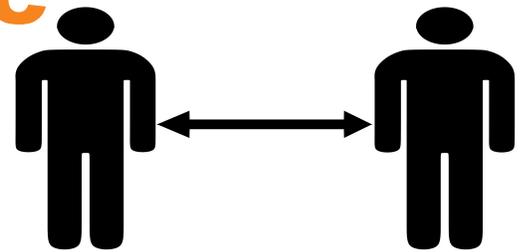


Easy Operation

The Fever Kit is a Hands-free device with the LED light clearly indicating either **Green** meaning **Go**, or **Red** meaning **Stop**.

Safe and Hygienic

No physical interaction is required as the temperature scans are taken through a IR sensor, 5" away.



Accurate and Trustworthy

With an uncertainty of only $\pm .32^{\circ} \text{ F}$ (0.17° C) and a 2" radius at 5", the sensor is clearly collects accurate and dependable temperature measurements. Not to mention, the same IR sensor is currently used in the International Space Station's Advanced Plant Habitat.

Screen 500 Employees for fever in under 30 minutes with only two kits!

Product Specifications

Dimensions

Control Box	6" by 6" and 5" deep
Infrared Radiometer	4" long and 1" diameter
Stand	Mounted on portable tripod stand that adjusts from 5' to 6'6"

Microcontroller

Type	Libelium Wasp Mote: Plus & Sense
Material	Polycarbonate
Battery	Lithium Ion; Runs 12 hours on a single charge
Approx. Weight	800g

Infrared Radiometer

Manufactured By	Apogee Instruments
Rugged Housing	Anodized aluminum body with fully-potted electronics. The outer radiation shield reduces thermal fluctuations
Field of View	22°
Temperature Measurement Range	-67° to 176° F (-55° to 80° C); 0 to 100 % relative humidity (non-condensing)
Calibration Traceability	Combines a thermopile detector and a National Institute of Standards and Technology (NIST) traceable thermistor to measure a mV response proportional to the thermal radiation balance between the target temperature and the thermopile temperature. IRRs are placed in a temperature controlled housing, which is thermally insulated from a blackbody cone. The housing, pointed at a blackbody cone, is temperature cycled through various sensor body set-points. The blackbody cone temperature is likewise cycled through multiple temperature set-points relative to each sensor body temperature set-point. A linear fit is used to model each sensor body set-point with the respective blackbody cone set-points versus the thermopile signal at those set-points. The slopes and y-intercepts of all linear fits corresponding to each sensor body temperature are then fit to a second order polynomial to adequately interpolate between the calibrated set-points. These two sets of second order polynomial coefficients render the custom calibration coefficients for each sensor.

Assembly and Charging

For directions on Assembling and Charging your Fever Kit, refer to the Setup Guide. For additional questions or to reach our service center, please call 304-250-6366 or email us at support@aridea.com.

Note: We recommend to power the device during operation whenever possible. However, the device can operate on battery for 8-12 hours.

Note: During assembly, please ensure that both the **LED indicator** and **IR sensor** cable are securely fastened in the proper ports. It is possible for these accessories to loosen during shipment.

Cleaning and Care

Infrared (IR) Sensor:

Sensors can go for many months and stay clean in most environments; however, frequent cleaning is needed in other extreme environments. Clean the inner threads and sensor window using a cotton swab dipped in a non-abrasive solvent. We recommend using a mild ammonia-based solution for best results. It is imperative to use gentle pressure on the window to avoid scratching the thin optical coating. **Let the solvent do the cleaning, not mechanical force.** The cleaning should be repeated with a second, fresh cotton swab to ensure a completely clear window.

Microcontroller Enclosure:

Clean the enclosure by rubbing with a dry cloth. Optionally, a standard, non-abrasive solution may be used.

Re-calibration or Faulty Hardware

Each Fever Kit uses a **CERTIFIED** research grade sensor that combines a thermopile and NIST thermistor to measure the thermal radiation of the target. The microcontroller is factory calibrated and designed for maintenance-free use.

For the infrared sensor, Aridea Solutions recommends re-calibration every two years. However, calibration cycles may be longer (or shorter) depending on your requirements and demands. **Note:** Calibration can be requested at anytime by calling our service center. A technician will issue a Return Merchandise Authorization (RMA) and quickly coordinate the process.

The re-calibration fee is \$425.

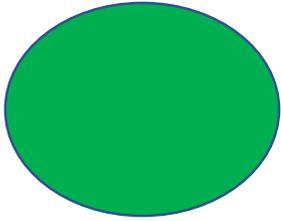
If you feel that the sensor is defective and requires warranty repair, please call our service center. A technician will guide you through troubleshooting steps to determine any technical issues. If the issues are deemed to be faulty hardware, the technician will issue a Return Merchandise Authorization (RMA) and quickly coordinate the repair or replacement of your Fever Kit.

For additional questions or to reach our service center, please call [304-250-6366](tel:304-250-6366) or email us at support@aridea.com.

Troubleshooting

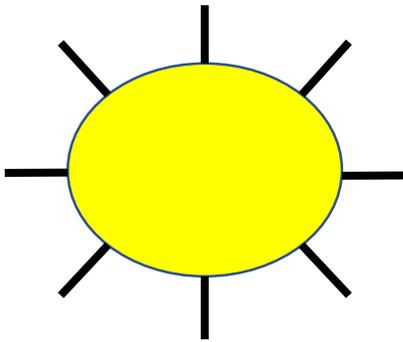
LED Indicator Situation

Solution



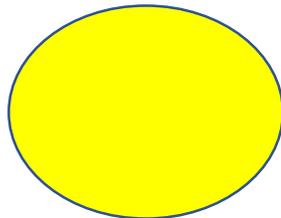
LED indicator fixed on **Green**. This occurs due to the background behind the subject being warmer than room temperature (i.e. window, light, or office equipment). Moreover, this situation is most prevalent when room temperature is above 80 degrees.

Ensure that the IR sensor is facing towards an interior wall that does not receive direct sunlight or other forms of extreme heat.



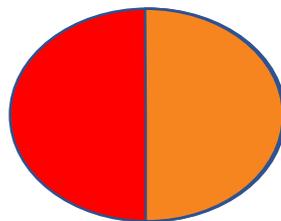
LED indicator is flashing **Yellow**. This signifies low battery.

Plug the Fever Kit into AC power for at least 6 hours to allow for a complete charge.



LED indicator remains **Yellow** after a scan. This is usually caused by skin temperature being exposed to air colder than room temperature.

We ask that the user acclimate to room temperature for 2-3 minutes and scan again. In addition, please ensure that no hair or clothing is blocking the forehead.



LED indicator is a constant **Red** or darker **Orange** when no individual is being scanned. This almost always signifies a faulty LED.

Please contact the support line at 304-250-6366 or support@aridea.com to reach a technician.

More Information



**Want more information? Please
visit our website
<https://aridea.com/fever-kit> for
FAQs and also the most up to
date information on this
product.**