

Elevated Skin Temperature Screening kits

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For the warranty on this product please visit https://infrasensing.com/
OPENING SENSORGATEWAY, ADDON, EXPANSION HUB, SENSOR OR ANY OTHER
HARDWARE VOIDS THE WARRANTY

Safety Precautions

CAUTION

For safety reasons, the SensorGateways (base units), PCs, add-ons, expansion hubs and sensor probes may never be moved, disconnected, connected fully or partially covered while operating. Disconnect any power supply before performing installation or maintenance work.

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH FOR POWER SENSORS OR SENSORS IN ELECTRICAL ENVIRONMENTS

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. In the USA, see NFPA 70E.
- Only qualified electrical workers should install electrical equipment like our power sensors. Such work should be performed only after reading this entire set of instructions.
- NEVER install if something is not clear.
- NEVER work alone.
- Before performing visual inspections, tests, or maintenance on this equipment, disconnect all sources of electric power. Assume that all circuits are live until they have been completely de-energized, tested, and tagged.
- Turn off all power supplying the power sensors and the equipment (such as base units) in

which it is installed before working on it.

- Always use a properly rated voltage sensing device to confirm that all power is off.
- The successful operation of this equipment depends upon proper handling, installation, and operation. Neglecting fundamental installation requirements may lead to personal injury as well as damage to electrical equipment or other property.
- NEVER bypass external fusing.
- Before performing testing on any equipment in which the power sensors are installed, disconnect all input and output wires to the power meter. High voltage testing may damage electronic components contained in the electronics.
- The power sensors should be installed in a suitable electrical enclosure.

Failure to follow the above instructions may result in damage of the equipment, serious personal injury or death.			

ELEVATED SKIN TEMPERATURE KITS DISCLAIMER

The IR spot sensors are not medical grade devices. The sensors are not designed for the specific intention of human fever detection nor the diagnosis, mitigation or prevention of disease or health conditions. A person may be carrying or transmitting diseases without having an elevated skin temperature.

Where the use of our products is permitted, they should always be complemented with medical grade devices for confirmation and additional screening. Operation of the sensors should always be supervised by a medical professional.

The device should be operated indoors within a 20-25C (68-75F) temperature environment for its 0.5C(0.9F) accuracy. Different temperatures may affect the accuracy of the device. Allow 5 minutes for the device to warm up before performing any measurements.

In the USA the use of our sensors should also follow the Enforcement Policy for Telethermographic Systems During the Coronavirus Disease 2019 (COVID-19) Public Health Emergency from the FDA.

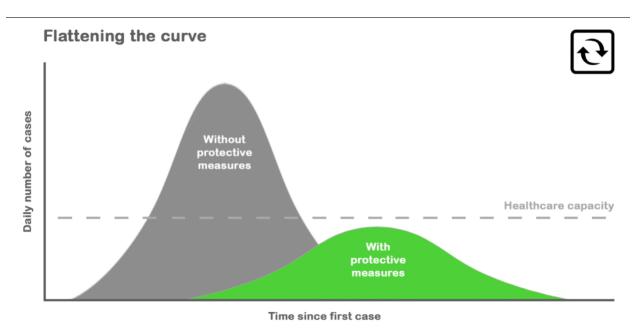
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1. Overview

Simple cost-effective solutions to limit the spread of the on-going pandemic. Countries have shown that it is possible to reduce the spreading of the SARS-CoV-2 or Novel Corona virus by implementing strong protective measures while trying to keep the economy going.

One of those measures is the use of non-contact infrared thermometry temperature measurement to screen for elevated skin temperatures (EST) in the workplace..



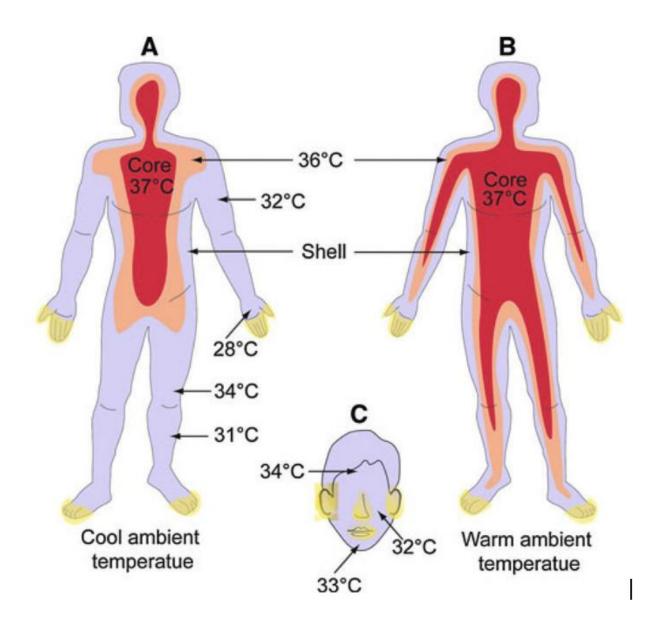
Source: CDC

By modifying our hardware, we have developed an emergency solution enabling to monitor skin temperature.

2. Best Practices

2.1. Elevated skin temperature versus body core temperature.

An infrared sensor does not monitor the core body temperature but the radiated temperature of the skin. It is important to understand that the skin temperature is not the same as the core body temperature. The known fever temperature of 37.5°C or 100.4°F is the core body temperature. Skin temperature is significantly lower.



Studies following the SARS and N1H1 outbreaks were conducted in respect to IR temperature scanning of people to detect potential cases of fever. We recommend the user of the system to read the sources below.

If the event of a potential elevated skin temperature being recorded, it is important that this should always be confirmed using a secondary screening with a medical grade device.

Sources:

Detection of body temperature with infrared thermography: accuracy in detection of fever (https://www.researchgate.net/publication/232712926_Detection_of_body_temperature_with_infrared_thermography_accuracy_in_detection_of_fever)

Utility of infrared thermography for screening febrile subjects (http://www.hkmj.org/article_pdfs/hkm1304p109.pdf)

Fever Screening and Detection of Febrile Arrivals at an International Airport in Korea: Association among

Self-reported Fever, Infrared Thermal Camera Scanning, and Tympanic Temperature (https://www.e-epih.org/journal/view.php?doi=10.4178/epih/e2014004)

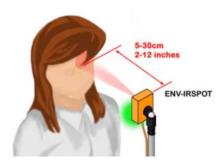
2.2. Temperature accuracy, operation and maintenance

Each sensor has been calibrated against NIST standards using double validation. The calibration has been done at a distance of 5cm and 20cm. The calibration has been done in an environment with an ambient temperature of 20-25C (68-77F).

Annual calibration should be performed by the due date as marked on the sensor.

The IR spot sensors work by capturing the emitted infrared radiation within their field of view. Units are calibrated at a distance of 5cm / 2 inches, at that distance they return the average temperature within a circle of 1.05 cm / 0.41 inch in diameter. The same is repeated at 20cm.

The sensor detects if a person is within the required 5-30cm (2-12in) range and only then does it take the measurement.



The sensor should be operated in an **indoor** environment with a temperature of 20-25C (68-75F). Outside of those ranges the results may be affected and the sensor may lose its 0.5C (0.9F) accuracy. Allow 5 minutes for the device to warm up before doing any measurements.

Your sensor lens should be kept clean at all times.

Temperature accuracy can be affected by the sensor lens. A dirty lens will result in incorrect temperature readings.

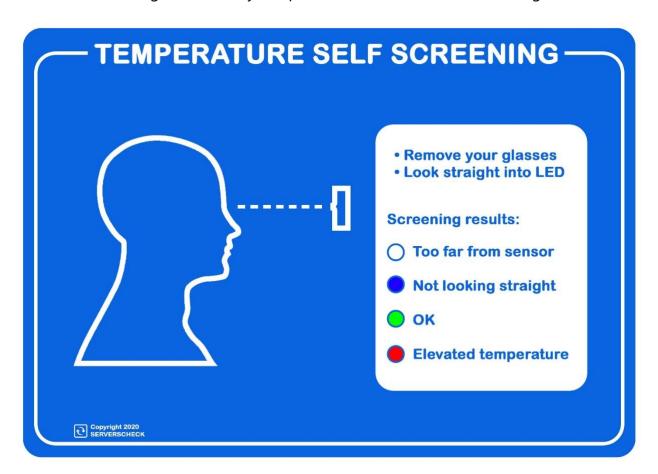
When dirty (fingerprints, touch, dust), then the lens should be cleaned. To clean it, only use an alcohol-based solution with a non-linen cloth. For example: paper based Isopropyl Alcohol wipes.

2.3. Sensor Leds

The colors of the led on the sensor are pre-configured to operate as follows:

- White: nothing detected within a 5-25cm range
- **Blue**: temperature is too cold; a temperature of less than 32.5C or 90F. This often means that the person is not looking straight at the sensor, is wearing glasses or is wearing a face mask
- **Green**: the temperature recorded is within the 32.5-36.5C (90-97.7F) range
- Red: the recorded temperature is above 36.5C / 97.7F Additional screening should be performed to validate recording

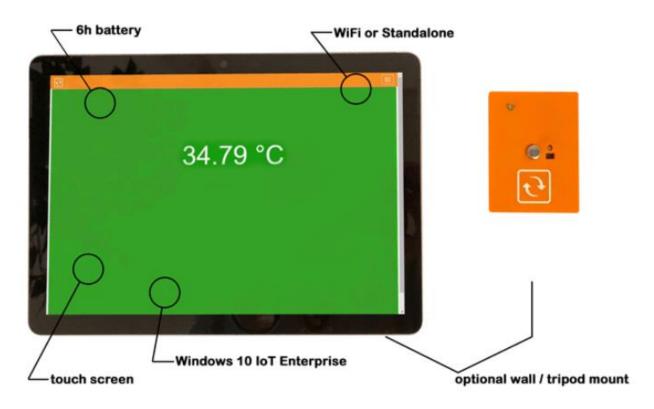
An elevated skin temperature does NOT always mean that a person has a fever. Anxiety, exercising and other factors may lead to elevated skin temperatures. This is why additional screening should always be performed to validate the recording.



3. EST Kit - Temperature IR Spot Sensor

We offer 3 different EST kits: From the cheapest, our IR Spot only kit to the kit expanded with a low res thermal camera sensor. All the kits require the person to stop in front of the kit to get screened.

3.2.1. **EST-IRSPOT-2**



The IR spot sensors operate on a one-to-one. Rather than looking at a crowd of people, this setup scans one person at a time. It would point at the forehead of a person to be screened.

It performs the skin temperature scanning with an accuracy of ± 0.5 °C/ ± 0.9 °F with compensation based on ambient temperature to improve the sensor's accuracy and reduce drifting.

The software on the appliance picks up the sensor reading and shows it as a green or red value. Simultaneously, the data is saved onto the appliance where it can be used for adhoc analysis using trend analysis.

3.2.2. What's in the kit

Following items are included in the EST-IRSPOT kit:



1x Lab calibrated IR spot sensor



1x Microsoft Surface Go 2 - Win 10 IoT Enterprise tablet with required software



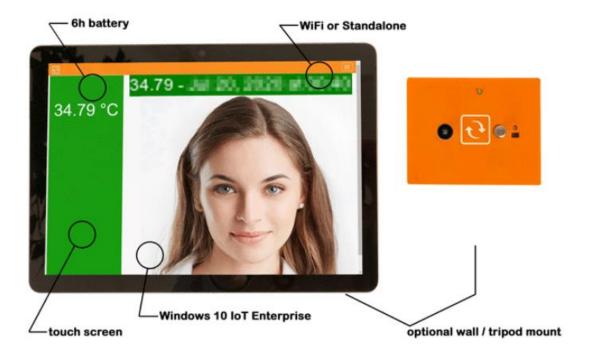
Also included is a USB-C to USB-A cable for the sensor, a 2m USB-A extension cable a power adapter for the appliance. And a USB adapter to connect the sensor going to the Surface

3.2.3. Optional Expansion and add-ons

Adjustable Tripod with mount adapter for the sensor



3.3.EST-CAMERA-2



This kit has the same capabilities as the EST-IRSPOT with the addition of a camera module to take snapshot of screened person with their temperature and time stamp

3.3.1. What's in the kit

Following items are included in the EST-CAMERA-2 kit:





1x Lab calibrated IR spot sensor with 2MP camera



1x Microsoft Surface Go 2 - Win 10 IoT Enterprise tablet with required software



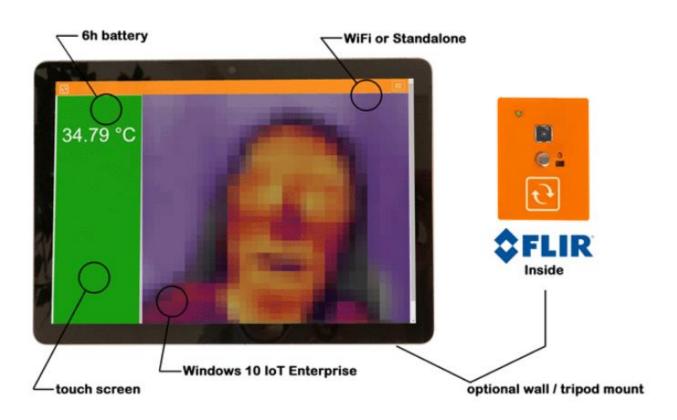
Also included is a USB-C to USB-A cable for the sensor, a 2m USB-A extension cable a power adapter for the appliance. And a USB adapter to connect the sensor going to the Surface

3.3.2. Optional Expansion and add-ons

Adjustable Tripod with mount adapter for the sensor



3.3.3. EST-THERMAL-2



EST-IRSPOT-THERMAL - With the optional thermal camera, the entire face will be scanned in 4800 points instead of just one measurement with the IR spot sensor. The hottest detected temperature will be retained. This ensures that the entire face is screened.

3.3.4. What's in the kit

Following items are included in the EST-THERMAL-2 kit:





1x Lab calibrated ENV-THIMG-M2-U



1x Microsoft Surface Go 2 - Win 10 IoT Enterprise tablet with required software



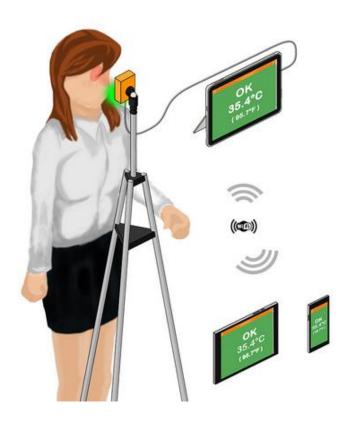
Also included is a USB-C to USB-A cable for the sensor, a 2m USB-A extension cable a power adapter for the appliance. And a USB adapter to connect the sensor going to the Surface

3.3.5. Optional Expansion and add-ons

Adjustable Tripod with mount adapter for the IR spot sensor



4. How it works



The software scans with the IR spot or thermal camera for a human skin temperature range; which is typically between 33.6°C and 36.9°C. When a temperature is found that is above the user defined threshold, then an alarm is raised: visual (red) and audible (sound).

It supports wifi at 2.4Ghz and 5Ghz. With Windows on board this means that you can either connect the tablet PC to your own access points. However you can also configure the tablet PC to become a hotspot on its own enabling you to access wirelessly the software running on the tablet.

If you don't want to connect it to any network, then it can still operate in a standalone mode.

Using the Surface's built-in battery, the kit can operate on a single battery charge for up to 6 hours.

5. Set up instructions

In this section we will outline how the entire kit can be set up using different configuration possibilities.

Before starting, take care of following default login details for the hardware contained in the kit.

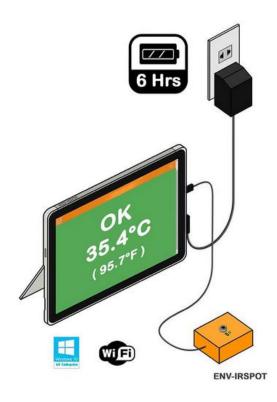
Surface Go 2

- Username is "serverscheck"
- Password is "admin"

Monitoring Software

- Username is "admin"
- Password is "admin"

5.1. How to set and power up Surface Go 2



The sensor connects via USB-C to the Surface Go 2 which is shipped with the solution. Unlike regular Surface Go 2, this version ships with Windows 10 IoT Enterprise. This enables you to connect the tablet to a company / enterprise network. As you have full admin rights on it, you can integrate it within your corporate network and customize any of the settings.

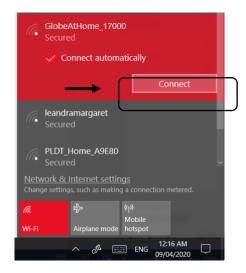
You have full administration rights to the PC. This allows you to configure security settings as per requirements in your corporate environment. You can also operate it fully standalone; not connected to any kind of network.

5.2. Connecting the Surface Go 2 to your Wifi network (2.4Ghz / 5Ghz)

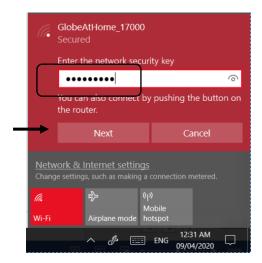
1. Click on the wireless icon in the bottom-right corner of the taskbar. (If you don't see the button, click the up-arrow button on the left side of the clock.)



2. Select the wireless network you want to connect to. You may check the "Connect automatically" option . Click the Connect button.



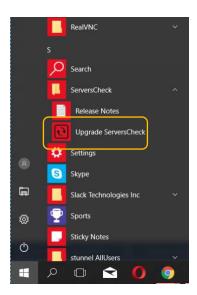
3. Enter the network security key (Password of your Wifi) and then click Next. Once successful you will be connected through your Wifi



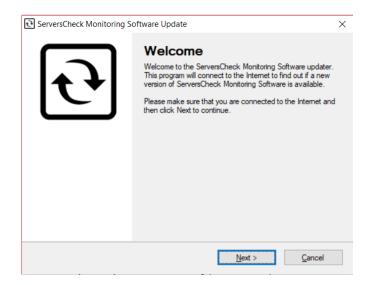
5.3. Software Upgrade

Software upgrade lets you stay updated with the latest features of the software. To do this an Internet connection is required.

1. Click on the start button (Window Icon) located on the lower left corner of your screen, and then scroll down till you see the ServersCheck folder. Click on the dropdown button and then select "Upgrade ServersCheck"



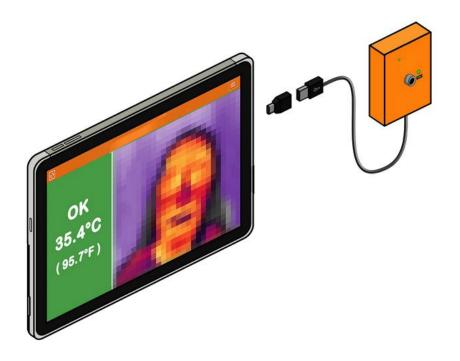
2. An upgrade window will appear to guide you through the process.



- 3. Just click on Next and finish the process.
- 4. Once the software is updated, restart your appliance.

5.4. Connecting the sensor into your Surface go 2 (USB)

1. Connect the sensor to the available USB-C port of your Surface using the cables that comes with the kit



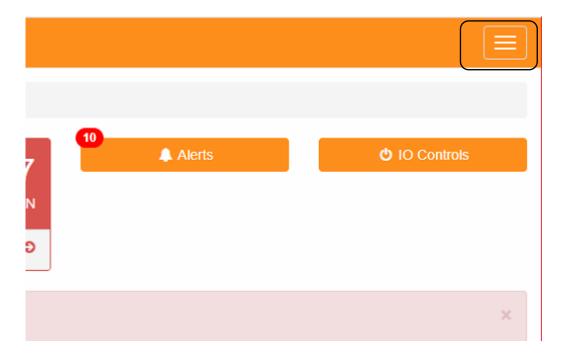


5.5. Adding the Sensor data into your Monitoring Software

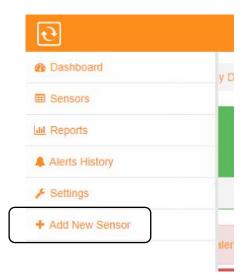
1. To open the software, click on the ServersCheck Monitoring icon on your desktop. You may also access your software by typing in "localhost" on your web browser.



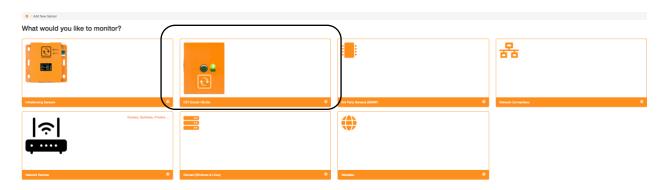
2. Click on the Menu icon located on the upper right portion of the software page.



3. A menu will appear on the left side, click on "Add New Sensor"



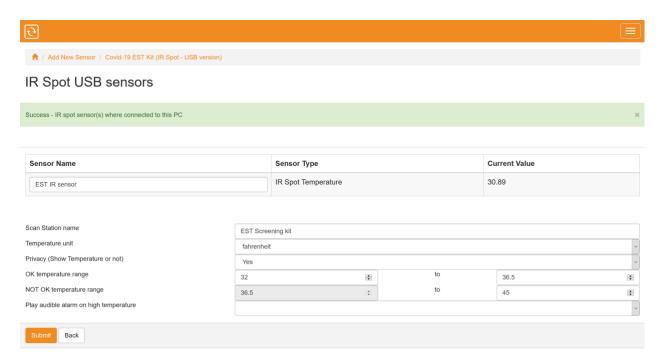
4. Click on the EST kit option



5. The software will now scan the USB ports to see if a sensor is connected to it.



6. Your sensor should appear, along with configuration to set the temperature threshold. As shown on the image below, our recommended set up will be configured by default. You may also label the Station name where the sensor will be installed.



- Scan Station name Label of the station the kit would be deployed
- Temperature Unit Celcius or Fahrenheit
- Privacy Option to show the temperature values or not, if the option is set to not show values.

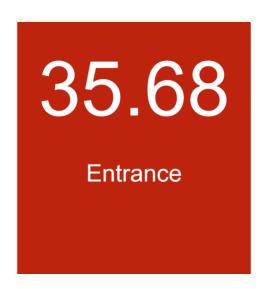
Color Code for Live Screen:

Red – Above the value of the threshold Green – Within the value of the threshold Orange – Value is too High or too low

Below is the screen when you don't want to show the temperature

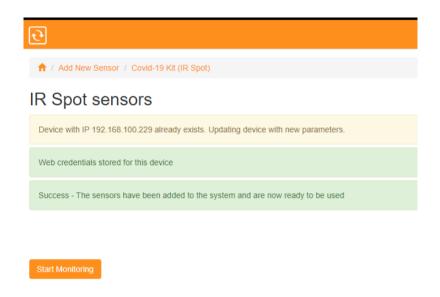


Below is the screen when you show the values

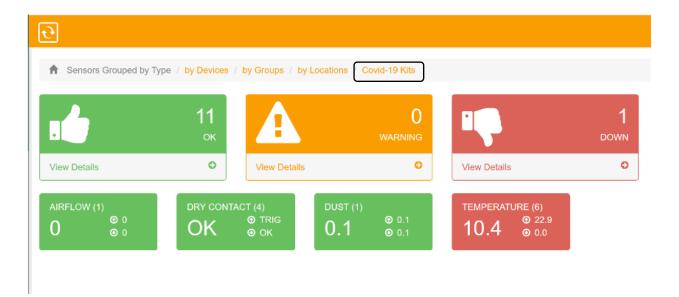


- OK temperature range Where you set the approved temperature
- Not OK temperature range Where you set the temperature threshold that needs attention
- Play audible alarm on high temperature

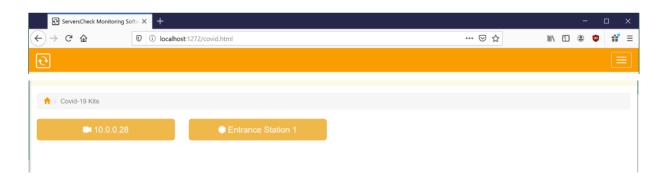
7. After adding your sensor, you may click on start monitoring.



8. Also on the homepage, under the ServersCheck logo, "Sensor Group by Type" click on "Covid-19 Kits". You may click the option and be brought to the same page



9. You should see an icon with default name EST Screening kit and or the name of the station you have assigned click on your sensor.



10. By clicking on your device, you can see the live data.



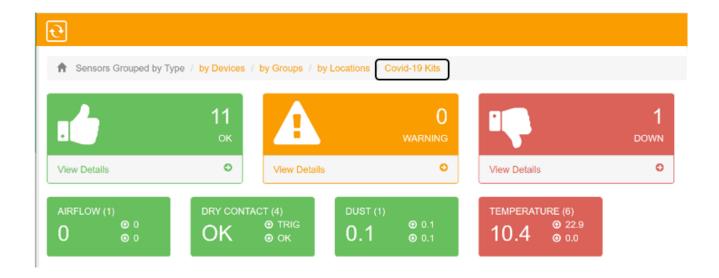
Note: Live data screen should always be open for data to continuously be recorded to our software. Indication is the screen above. If you're not on that window data being saved will stop. During monitoring make sure that you are always on the live screen page.

11. Congratulations! Your Covid19 Kit is now ready for use.

If you have an EST-KIT-CAMERA, then go to section 6.8 to update the sensor to activate the camera option.

5.6. **Updating your EST Kit Settings**

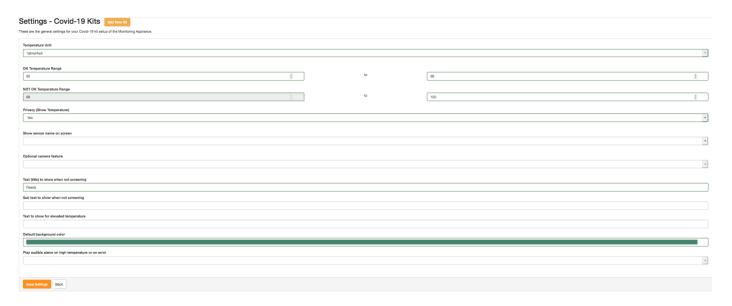
You can always update your EST kit settings by following the steps below.



1. Then click on Covid – settings.



2. The settings page would show up similar to the page when we add a Kit.



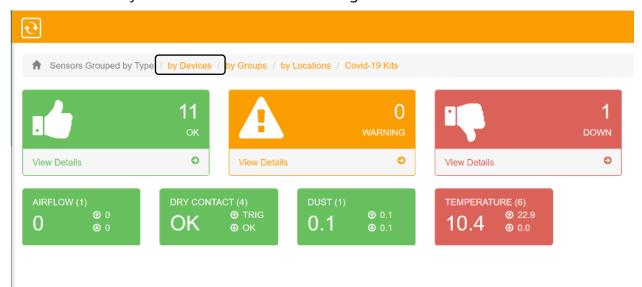
You can edit the text that shows on the screen when not screening and when your privacy mode is turned ON you may also input a text message to display when elevated temperature is detected otherwise it will just show a blank red screen.

Also when you have the EST-IRSPOT-CAMERA or the EST-IRSPOT-THERMAL then make sure to select the right option in the above screen and set the option to **Yes**

3. Once you're done updating you may click on Save Settings and the new configuration will be applied.

5.7. Deleting your EST Sensor

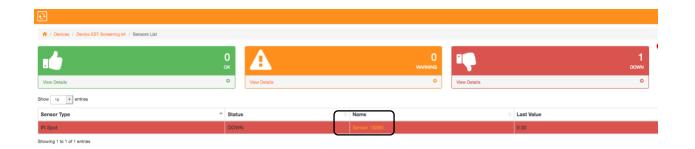
1. click on "by devices" as shown on the image.



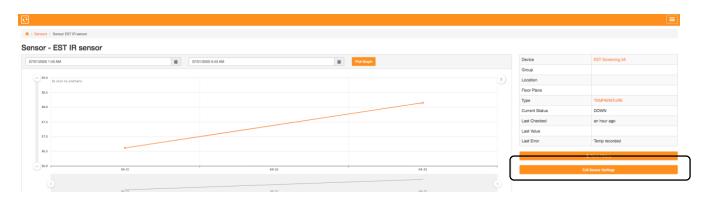
2. Then click on the EST-Screening kit or the name of the device you have added.



3. Then click on your sensor.



4. Then click on "Edit Sensor Settings".



5. Then click on delete sensor, located at the lower right corner.



6. Afterwards go back to the home bage and re-do steps 1-2 to go back to the device window. This time instead of clicking the sensor we have to click "Edit Device".



7. Then click on delete device, located at the lower right corner of the page.



8. After successfully deleting your device, you should no longer see it on your covid page.



6. Setup of optional items

6.1. Installing the sensor on the Optional Tripod

The optional tripod mount comes with a mount that place our sensors.



1. Using the 1st part on the image above, screw it on the top of the tripod.





2. Next is to stick the adhesive (White side of the mounting plate) on your sensor.



3. You can now mount the sensor on your tripod.



Here is an example on how it is set up.



6.2. Wall mount the sensors

To wall-mount the sensors, we recommend the use of 3M Command Strips Small Size. See mount instructions on following URL:

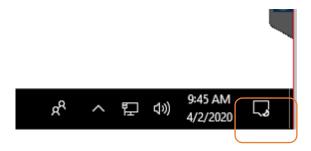
https://multimedia.3m.com/mws/media/1132651O/command-instructions-17201es.pdf

Order URL: https://www.amazon.com/Command-Refill-Strips-Small-GP022-64NA/dp/B0751RPC6Q/ref=sr_1_4?dchild=1&keywords=3m+command+strips+small&qid=1591557669&sr=8-4

6.3. Connecting your Surface Go to a wireless display.

Since our Surface Go 2 is using the Windows 10 operating system, it is compatible with some wireless display connection such as miracast or screen mirroring.

1. On your Surface touch display click on the options icon located on the right side of the time.



2. Then click on all settings.

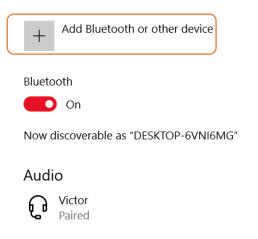


3. Then click on Devices.

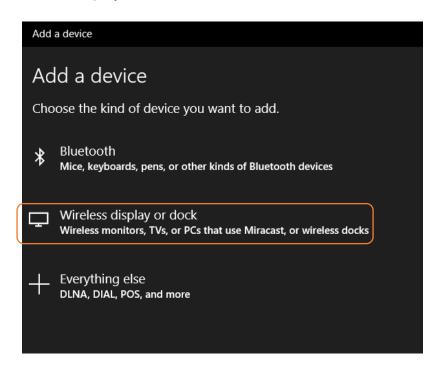


4. Click on "Add Bluetooth or other device"

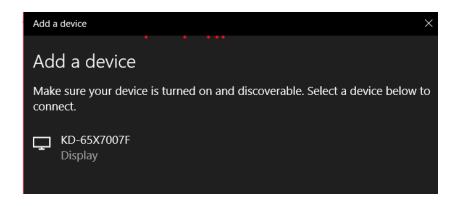
Bluetooth & other devices



5. Choose Wireless display or dock



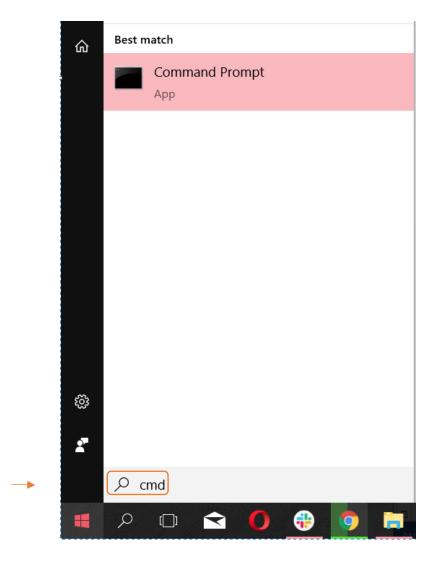
6. The next window will show the available display, Make sure that your device is discoverable. Choose the desired device to display your screen.



7. With screen mirror you can have 2 or more display Monitors showing the result of the scan.

6.4. Connecting to the software using your smart phone or tablet

- 1. Connect your smart phone or tablet (Wifi) to the same network as your Surface Go.
- 2. Identify the IP address of your Surface, to do this go to the screen of your Surface and then click on the windows logo and then type in "cmd" and then press Enter.



3. A black window will appear (Command Prompt window), type in "ipconfig" on the new window and press Enter.

```
Microsoft Windows [Version 10.0.15063]

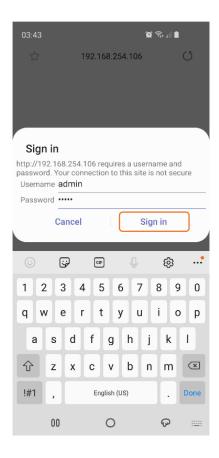
(c) 2017 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32\sipconfig
```

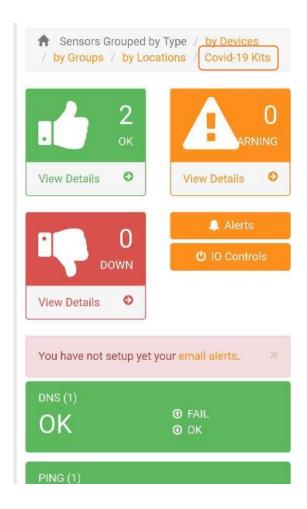
4. Upon pressing enter sets of numbers will appear, take note of the numbers for the "IPv4 Address"

5. In our example the IP address the Surface Go is 192.168.254.106, now go to your smart phone or tablet that is connected to the same network.

6. Open a browser and type in the IP address that we got earlier, In our example it is 192.168.254.106, you will be prompted with a username and password, just type in "admin" for the username and "admin" for the password and then sign in.



7. You will now see the home page of your monitoring software and to view your Covid19 special page, with your sensor already added on your Surface Go click on "Covid-19 Kits".



8. Then click on the IP address of your SensorGateway or the name of your Sensor Kit.



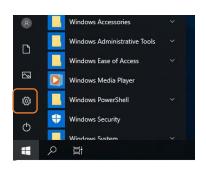
9. If you have already set up the sensor as per previous instructions you can now see the live image on your Mobile device.

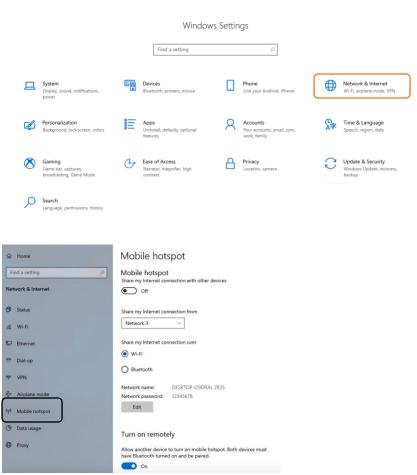
6.5. Mobile Hotspot

Mobile Hotspot is a feature built in on windows 10 where you can share your PC's internet connection and access the software directly.

To activate:

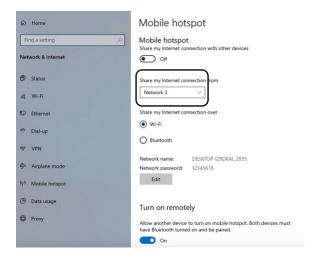
1. Select the Start button, then select Settings > Network & Internet > Mobile hotspot.



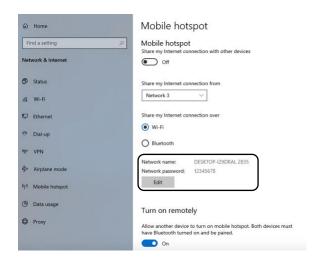


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2. For "Share my Internet connection from", choose the Internet connection you want to share.

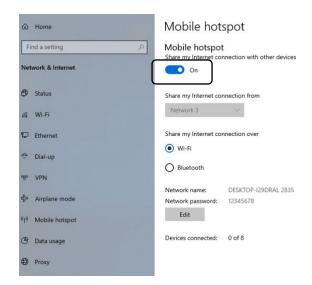


3. Select Edit > enter a new network name and password > Save.

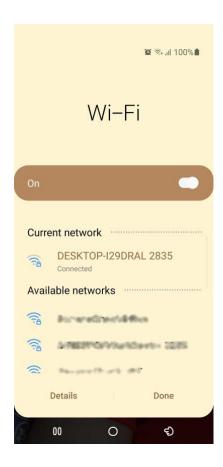


This will serve as your access point name and password

4. Turn ON "Share my Internet connection with other devices".



You should now be able to connect to your appliance wirelessly

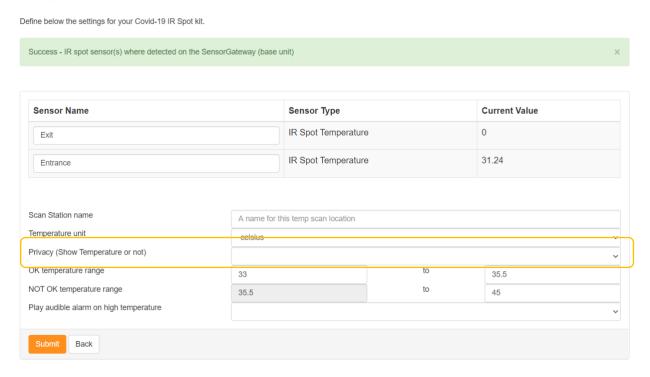


6.6. Privacy mode

Privacy mode lets you choose between showing the temperature values on the live monitoring display or opt to hide it. By default, the settings is set to not show the temperature values.

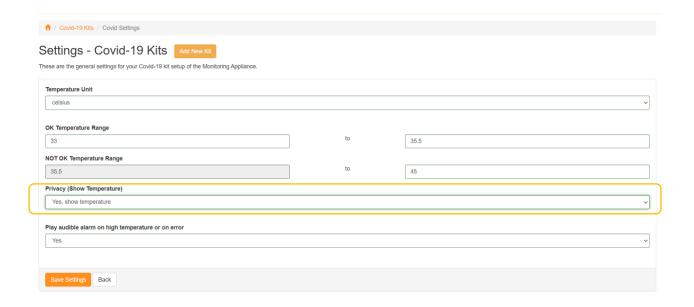
We can access the Privacy mode option upon adding a kit (see section 5.8)

IR Spot sensors

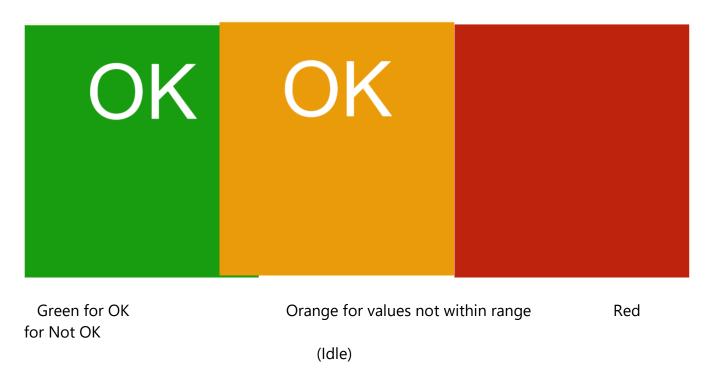


And should you need to update the setting, we can also access it through the Covid settings page.

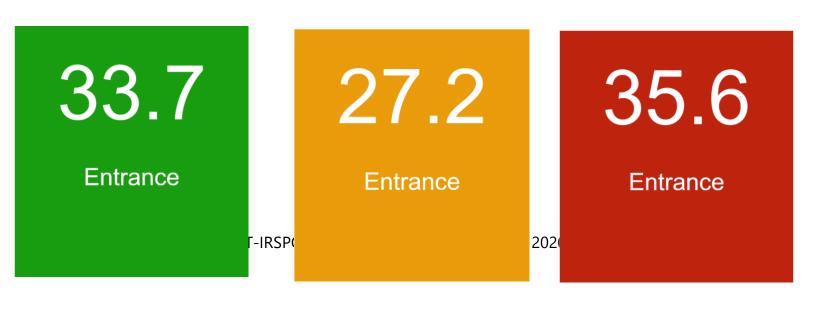
(see section 5.9)



Here are sample screenshots when the Privacy Mode is turned to not show temperature values



And here are sample screenshots when Privacy Mode is turned to show temperature values.



Green for OK for Not OK

Orange for values not within range

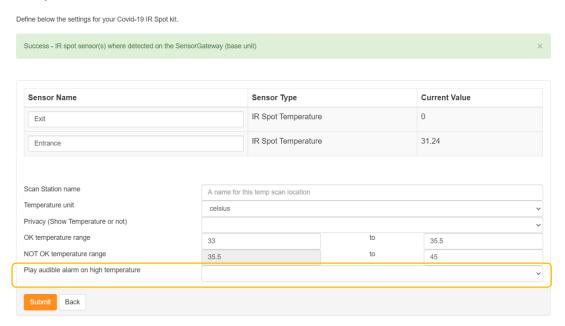
Red

(Idle)

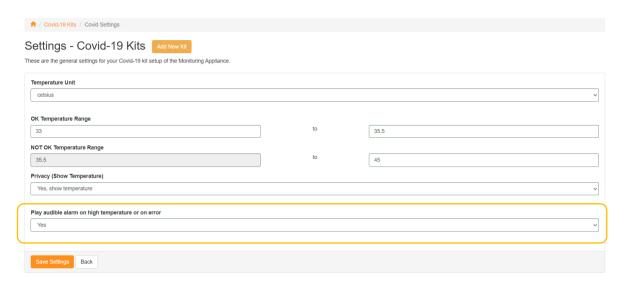
6.7. Audible Alarm

You can set the audible alert when you add a sensor

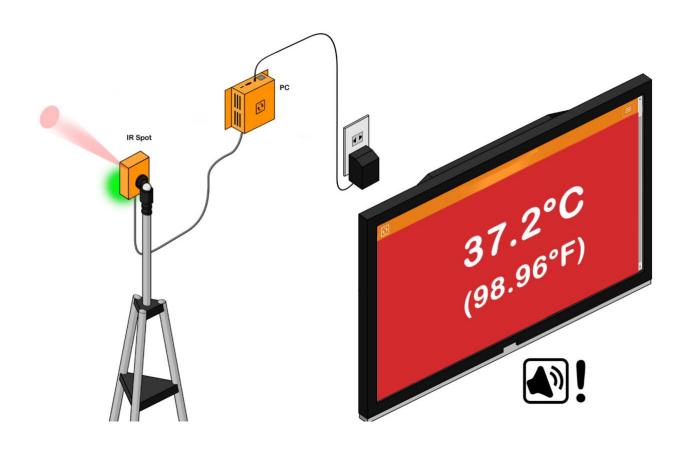
IR Spot sensors



Or through the Covid settings page



When this option is active a sound alarm will be produced when elevated temperature is detected. This option requires sound enabled HDMI monitor or speakers connected to the PC (standard audio jack)

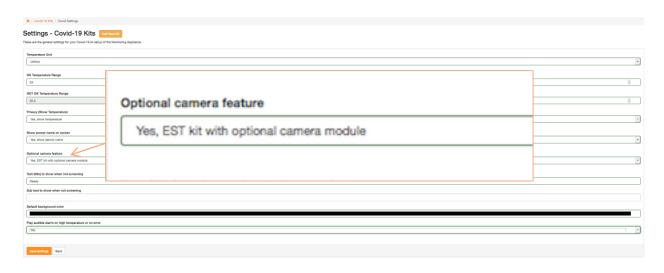


6.8. Optional Camera Feature for the EST-IRSPOT-CAMERA



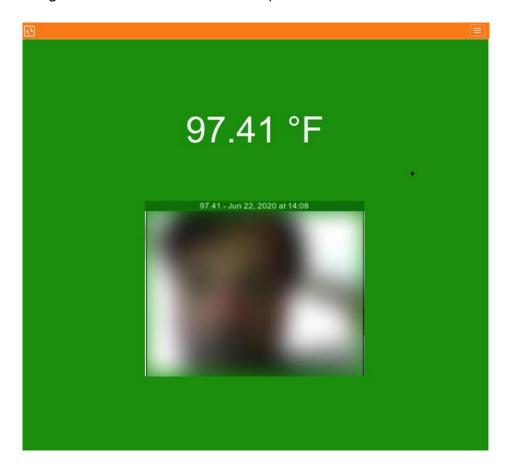
When connecting our EST-IRSPOT-CAMERA, the kit can take a picture of the scanned individual. For auditing purposes, it will be stored on the PC, the picture along with a time stamp and the temperature recording.

To access the option, we just have to go to the covid settings page and choose YES under optional camera feature

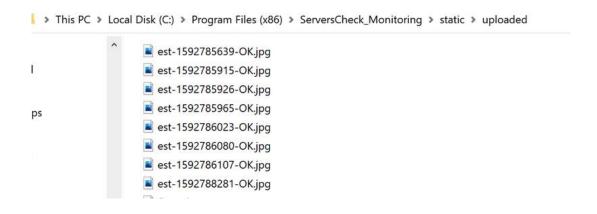


Note: Feature requires software version 16.3.0 or higher.

With the option enabled scan takes 3-5 seconds and would show you the image below when the scan is complete.



the image is then saved in ServersCheck_Monitoring/static/uploaded



7. Support resources

This manual is intended as a quick install guide for our Covid-19 Kit 1 with the IR Spot. The product is based on modifying existing hardware and software to enable the measuring of the temperature of human skin.

As it is based on existing products, additional support resources are available to use the products beyond the initial purpose of live temperature monitoring.

7.1. Free technical support

All products come with a lifetime free technical support. This is available to all customers and is free. To access the free support, you go to https://community.serverscheck.com

Optional paid support is available as ServersCheck Care packages that can be purchased from your myServersCheck account (https://my.serverscheck.com)

7.2. Sensor platform manual

The sensor manual provides more information on how to configure alerts straight from the base unit. For example, you can generate alerts via Email (including Slack integration), SMS, Voice and SNMP trap alerts for the SensorGateway.

Link to user manual of the sensors: http://manuals.serverscheck.com/InfraSensing_Sensors_Platform.pdf

Setting up the threshold for your sensors can be found from pages 29-30 Setting up Email alerts including slack integration can be found from pages 31-38 Setting up SMS and Voice alerts can be found from pages 47-53

7.3. Monitoring Appliance & Software manual

The user manual for the Monitoring Software (and Appliance) is available on http://manuals.serverscheck.com/Serverscheck_Monitoring_Software.pdf

The manual explains how you can create reports, access data and more.