STANLEY Security

Human Temperature Detection

Customer Brief

Key Considerations for Your Facility

- Compliance with Appropriate Regulatory Bodies
- Understand Thermal Camera Capabilities
- Part of Comprehensive Security Program
- Investment for Long-Term Security Strategy

Check out our recent blog post to learn more about considerations for Human Temperature Detection

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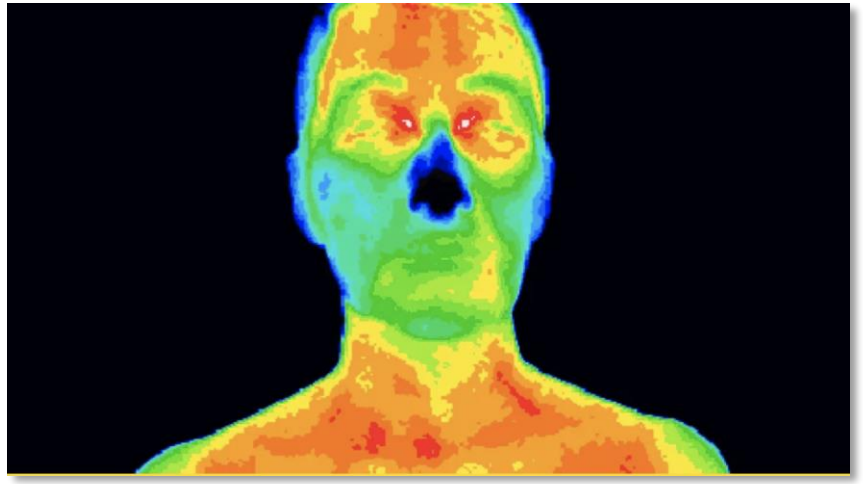
FOR THOSE WHO MAKE THE WORLD™ SAFER

Not a Medical Diagnostic Solution

- A classification of temperature threshold detection
- A precautionary measure to reduce/mitigate risk
- Not intended to diagnose COVID-19 or any other medical disease or virus affecting personnel or visitors
- Designed to detect temperature out of a specified range & engage the classified individual based on defined company process.



Should be part of comprehensive security program

Not a stand-alone solution

Thermal Cameras 101

Use Cases

- **Environment**
  - Indoor as it requires a controlled environment between 68-75° F with relative humidity of <50%
  - If outdoor screening is required, it would have to be tented and maintain the same perimeters stated for indoor
- **Choke Point – Pause & Scan**
  - Controlled environment, 1 person at the time @ 4-12ft distance – lens + model dependent
  - Black body heat source reference or temperature averaging "periodic calibration required"
  - Temperature captured from inner eye for highest accuracy
- **Mass Surveillance Monitoring**
  - Not as accurate and less controlled application & subjects

Fig. 1. Choke Point – Pause & Scan

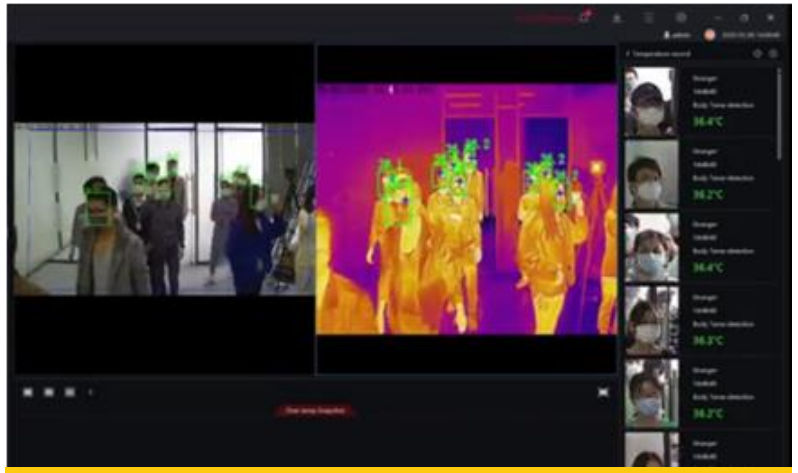


Fig. 2. Surveillance – Free Flow

* Not supported at this time based on uncontrolled environment & subject movement in a detection region

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Thermal Cameras 101

Concepts & Terminology

- *Temperature Accuracy*
  - *E.g: <0.5 °C or 0.8 °F – is relative accuracy but does not indicate the true temperature (Absolute Precision)*
- *Imager/Pixel resolution & Lens*
  - *Affects the measuring distance (subject to camera read range)*
- *Temperature measurement spot*
  - *Mean temperature of each pixel should be obtained – solutions that use the corner of the inner-eye canthus have the best accuracy*
- *FDA 510K Clearance (Health Canada similar)*
  - *US FDA requirement to market to applications or sell solutions with the intent to use as a measure of human body temperature for the purpose of health classification (virus or other)*

- *ISO 13154-2017*
  - *International standard for the deployment of and process for solutions that measure febrile conditions of humans*
- *Black Body - A heated calibration source with a precise temperature in this case to 98.6° F, and is the basis for accurate calibration of infrared/thermal camera to achieve the proper temperature accuracy (<0.5 °C/0.8 °F)*

- Note: Thermal cameras are calibrated to a black body at the manufacturer, so they are optimized to the range and accuracy level for the intended application. Some are designed to use it as a reference upon deployment "per ISO 13154:2017" and others use statistical averaging of know human references .

Installers and customers should follow the international guidelines found in ISO 13154-2017

What to Consider

- Have you reviewed legal, agency and privacy impacts within your business?
- Have you built or started developing process and policy in regard to utilizing the technology how to handle/process the detected subjects as well as the processing of information?
- When unpacking and setting up your thermal sensor you must allow time for it to acclimate to the room temperature
- Black Body setup requires time for the temperature to stabilize after power up.
- Be sure to have a neutral background of white, cream or light gray behind the subject
- Make sure that you position the Black Body to stay in the field of view while the subject is in place for thermal scan
- It is best practice to setup a scan area outline on the floor or some point within the proper distance for an accurate reading
- Subject must look straight forward at the thermal sensor and remove glasses if wearing any
- Direct sunlight, lights or elevated heat sources should not be in the field of view. As well some solutions may alarm from hot coffee.
- The location of the scans should be in a controlled environment not having large swings in temperature
- Alignment from thermal sensor to black body is extremely important for continued accuracy and tight tolerances
- Weather can impact the reading accuracy as it relates to what your reference temperature is set to. Cold weather may require different calibrations as well extremely hot conditions. Recalibrate to the conditions.

Customer Responsibilities

- Customer needs to build a process/policy and dedicate appropriate resources to monitor and calibrate the solution as required.
- Keep in mind your legal obligations as you handle and process this data and the individuals that are detected with a temperature above the defined threshold
- Make sure you are aware of all the EEOC, ADA, FDA and other regulatory requirements that affect your business in deploying this type of solution
- This is not a medical device or an elimination of viruses or other possible illnesses that have a temperature higher than 100.4 F degrees
- The customer should make sure to also follow guidelines in place by the CDC as it relates to those issues that have initiated the use of this technology in their environment
- The deployment of thermal technology for the intended use to classify or detect individuals with temperature beyond a defined threshold should follow the standards defined in ISO/TR 13154:2017

ISO Summary:
Environment, Site, Setup, Calibration & Subjects

- Site setup controlled flow near entrances, indoors and controlled temperature | 68 to 75 F & <50% humidity
  - No direct sunlight, reflective surfaces or heat sources
  - Works best with "light neutral colored" and uniformed backgrounds "no black walls"
- Subjects stand individually at a marked area, pause and look at the camera
  - Distance from subject to camera is defined by the resolution and lens FOV
    - Typically 4-12ft depending on solution
    - Approximately 30% of the subjects face must fill the FOV for best readings
  - Recommended to have no facial obstructions or previous large temperature variants affecting the face
  - Remove glasses, hoods or other obstructions covering the eyes, face or forehead
  - Subject should be positioned directly in front of the camera with face looking into lens
  - Considerations should be taken with subjects carry hot objects like coffee or other items
- Calibration system types
  - Best to reference subjects temperature adjacent the inner eye canthus area
  - Changes in the environmental or subject temperatures require recalibration and a general rule of a daily reference check
  - Ensure subject height range is considered for proper FOV
  - Calibration with black body (example Seek & ICI)
    - Must be near subject as it relates to same area of the scan line and fully visible in the camera FOV with the subject
  - System using no black body but doing subject reference temperature averaging is done by reading the temperature of (5-10) good reference subjects during calibration (example FLIR)

- Target is subject "persons" face
  - Range from camera to subject dependent upon model & lens
- Threshold temperature is the temperature range for a high detection and is usually 1.8 to 2 degrees above the average temperature captured for that period of time
  - The threshold may need to change if the climate or environment experiences change that affects the human skin temperature
- Secondary temperature scan of high temperature subjects is ***recommended*** via a medically approved clinical thermometer followed by companies defined process
  - Process to handle the processing of affected person and proper paperwork/documentation
  - Station should be setup near but adjacent the primary screening area – no cross contamination of clean verses detection alarm subjects
  - Staffing personnel should be properly protected with PPE and cleaning agents and trained for using the clinical temperature devices
- Operator should be trained in the use of the equipment, identifying faults and company process
  - Operator or other facilities personnel should verify proper calibration & detection regularly
  - Operator should be able to visualize and discern the rainbow color scale
- Process should be designed to address key times or events throughout the year when individuals are at high risk or a crisis occurs
- Collection and processing of the data should follow standards, privacy and company guidelines

Customer Application Discovery Questions

- Have you looked into or considered EEOC, ADA, GDPR, HIPPA or personal privacy issues?
- Have you looked at ISO 13154-2017 standard for deployment, site and ongoing management of this type of solution?
- Is your application Indoor or outdoor?
    - Outdoor is not a controlled environment and not supported unless tented & controlled temperature/humidity (68-75F <50% humidity)
- What is the environment like as it relates to controlled temperature and humidity?
    - Where will this be located within your building
    - It should not be close to HVAC vents, exterior glass or exterior doors
- What is the expected throughput and people flow?
- What is needed within your organization - Choke point “accuracy” vs mass surveillance “placebo”
- What does your setup area field of view “FOV” look like?
    - What distance would we be working with from imager to subject?
        - 9-12ft or greater
        - 4-6ft
        - 2ft or closer
    - The FOV must not to have any reflective surfaces or heat sources
    - The FOV should be neutral and you may want to consider a backdrop of neutral color (gray, cream, tan, white or other neutral color)
- First scan
    - Will you have dedicated trained staff
    - Calibration periodically and or threshold should be managed based on subject exposure changes in climate that affects skin temperature
    - defined area for subject to be scanned and if Black Body is part of the solution it must be in the same area as the subject
- Second scan
    - Second scan – is defined to have for verification via medical thermometer and management of traffic flow with no cross contamination
    - Will you be setting up this secondary scan, dedicate staff and medical instruments with trained staff?
- Stand alone system, SW with PC or tie into existing or new VMS?
- Any system integration needs, alarm outputs or notifications remote to the scan area?

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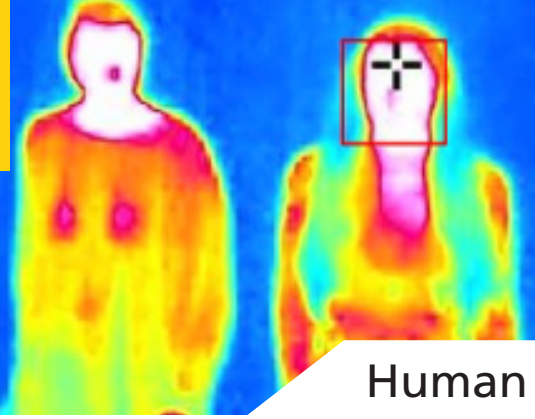
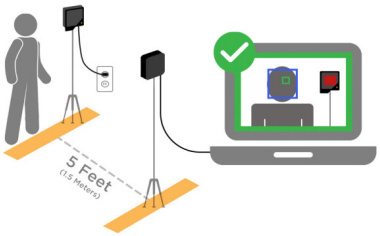


Human Temperature Detection



SEEK SCAN

- Indoor standalone/choke-point pause & scan station
- Performs as a temporal thermometer scan for a safe social distance
- Specifically designed and calibrated for skin temperatur measurement with a fixes heat source refernce
- Windows PC Required

ZKTECO

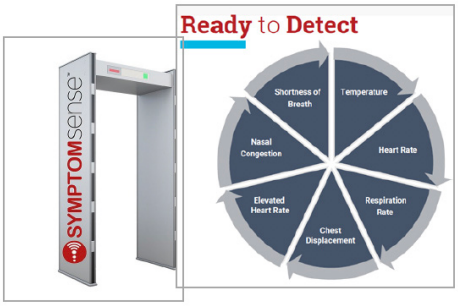
- Indoor standalone/choke-point pause & scan or can be integrated with an existing acess control system
- Facial, palm, temperature and mask detection modes
- Body-temperature detection accurate up to 18" away
- Real-time monitoring with optional ZKBioAccess EP software

FLIR

- Indoor standalone/choke-point pause & scan or can be integrated with an existing acess control system
- Simultaneously integrates with VMS and measurement application using multi-image streaming
- Provides image quality options - 320 x 240 (A400) or 640 x 480 (A700)
- FDA 510K Approved

SOLOINSIGHT / CLOUDGATE

- Complete visitor lifecycle management software multi-location cloud, on-prem or hybrid platform
- Policy and workflow management
- Integrates with your existing access control platforms as well as other tempatures sensors (ZKTeco, Seek, ICI, FLIR and others)
- Preferred Microsoft Azure Partner



SYMPTOMSENSE

- All-in-one, indoor/outdoor, health vital sign screener + metal detector
- 4 key vital signs: external body temperature, respiration rate, heart rate and blood oxygen level
- Used at entrances of critical buildings, hospitals, schools, stadiums, airports and government workplaces
- Rate at a throughput of 720 people tested per hour - capable of processing over 5k people per 8-hour shift