Contactless Skin Temperature Scanning.

E.S.T.™
Elevated Skin Temperature System

Automatically prescreen everyone entering your building.

NDAA COMPLIANT PRODUCTS

DW DIGITAL WATCHDOG®

digital-watchdog.com

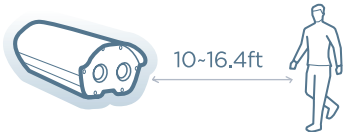
E.S.T.™
Elevated Skin Temperature System

Detect. Follow up. Protect.

Following the U.S. FDA's COVID-19 Enforcement Policy criteria released in April 2020, the DW E.S.T. is an NDAA/TSA and FDA compliant security-grade thermal camera that provides a low-impact, contactless alternative to traditional screening methods. At a distance of 6.5~16.4ft (10ft is recommended), with ±0.36°F (±0.2°C) accuracy tolerance, the E.S.T. scanning solution provides a high degree of flexibility to meet the individual requirements of a wide variety of installations.

1 Install

With a ±0.36°F/0.2°C accuracy variance, set the camera to a single person reading mode at 10~16.4 feet effective distance from people and 10~14.7 feet from the Blackbody.



2 Screen

DW E.S.T. scans the skin temperature around a person's face. An LED strobe is activated when temperature is detected above the set threshold.

3 Verify

Confirm results with a secondary screening medical tool, such as a thermometer, and medical questionnaire.

Single Product Integrated Solution

2.1MP Resolution Visible Camera

Various Distance Scanning

Interactive Alarm Outputs

Software-Side Data Processing

Smart Auto-Calibrate by Blackbody

Features:

- A flexible, single product, integrated solution
- Enables high-throughput prescreening of people to detect indications of elevated skin temperature
- Detailed scanner images showing a skin temperature for each person
- NDAA/TSA and FDA compliant
- At a distance of 6.5~16.4ft (10ft is recommended), provides a high degree of flexibility to meet the individual situational awareness requirements of a wide variety of installations
- Dual image sensor with thermal detect
- Data processing on the software side
- High accuracy smart auto-calibration with Blackbody sensor
- Smart auto-calibration between the software and Blackbody
- Includes prescreening management software with an easy user interface.
- Large sensor (384x288), 4x more data
- Alarm outputs for access control integration
- Privacy masks mode
- Multiple view options, including split view, PIP and single view modes
- Temperature view color scheme adjustment
- Tripods included for an out-of-the-box solution (DW-ESTS)

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Compliance

DW® IP cameras, analog cameras, NVRs, DVRs, network devices and management software sold and distributed worldwide are designed and developed in U.S.A. and Korea.

Manufacturing is done in Korea and Vietnam.

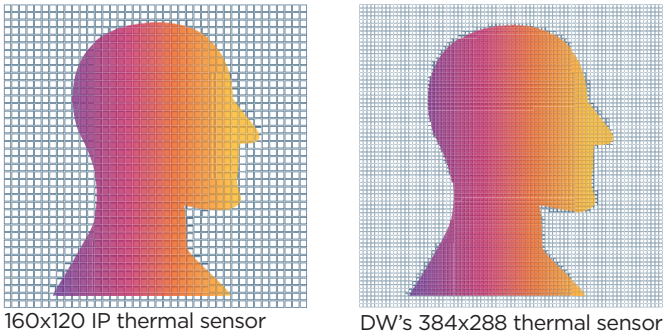
To learn more:
http://www.digital-watchdog.com/ndaa

GSA

Trade Agreements Act FAR 52.225-5

Larger Sensor, 4x More Data Delivers Greater Accuracy

DW's E.S.T. system uses a 384x288 sensor, providing 4x more data processing power and higher accuracy than conventional IP thermal cameras.

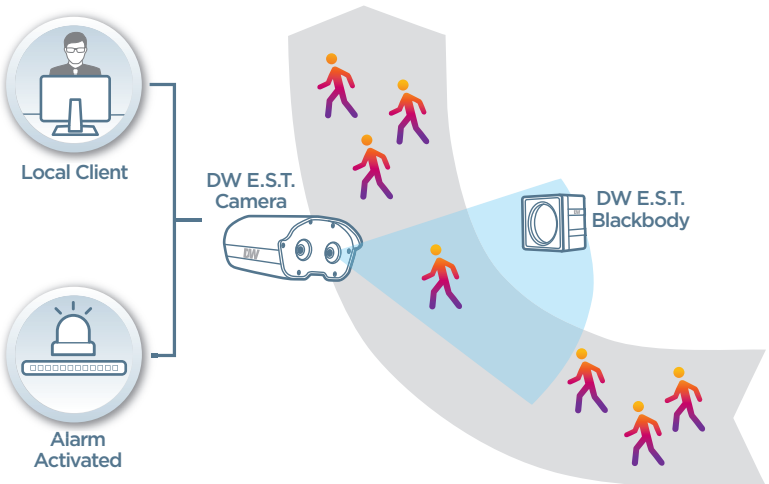


160x120 IP thermal sensor

DW's 384x288 thermal sensor

Interactive

Automatically trigger visual and audible alarms when a person's temperature registers beyond a set threshold. These alarms can be quick alerts to let operators know additional screening is required.



High Accuracy

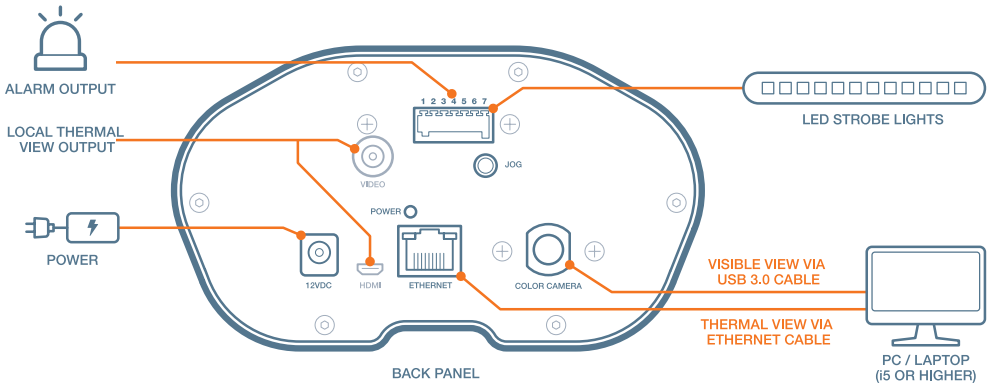
The system provides a high accuracy thermal reading (±0.4°F, ±0.2°C) thanks to its auto-detect Blackbody technology.

A Flexible, Single Product, Integrated Solution

The DW E.S.T. System complements any analog or IP video surveillance application. It is ideal for controlled entrances where skin temperature screening is needed.

Easy to Setup

The DW E.S.T. System can be setup in minutes, visible or concealed from view. It can also be integrated into an existing access control solution using the alarm outputs at the back of the camera.



Data Processing on the Software Side

The DW E.S.T. System transmits the original raw thermal data from 110,592 pixels to the dedicated E.S.T. monitoring software. There, the PC performs the calculations on the data separately, delivering higher accuracy and quicker results.

Smart Auto-Calibration with Blackbody Sensor

The DW E.S.T. software automatically finds where the Blackbody is in the camera's Field of View (FoV), self-calibrating in real-time based on the Blackbody's set temperature. If the Blackbody moves, the software finds it automatically in the camera's FoV.

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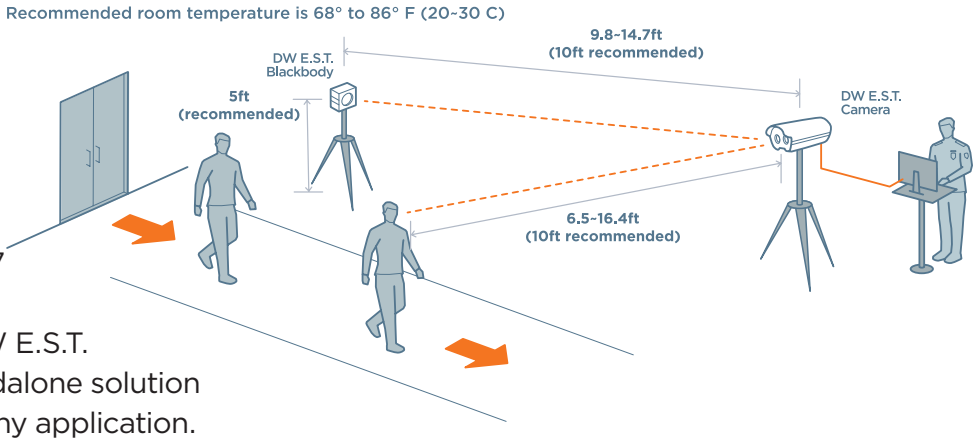
Various Distances, Same Quality Readings

With a ±0.36°F (±0.2°C) accuracy variance (set to single person reading mode at a distance of 6.5 to 16.4 feet from people (10 feet is recommended) and 9.8 to 14.7 feet from the Blackbody (10 feet is recommended), the DW E.S.T. system provides an ideal standalone solution to meet the requirements of any application.



Combating the Spread of Infections

DW's E.S.T. system detects elevated facial skin temperatures. Skin temperature measurements should always be used as part of a larger screening solution, combined with medical devices such as a thermometer and questionnaire screening. A complete and comprehensive screening system may help implement a disease prevention policy for all visitors, customers and employees.

DW'S E.S.T. system provides a quick, contactless screening solution for initial screening for people on the go. Every industry and institution may benefit from implementing a skin temperature screening system.

Education Facilities

- Temperature screening solution to be added to existing secured entrances
- Single and multiple entrance solutions
- High-traffic areas with large throughput
- NDAA/TAA compliant solution

Manufacturing/Infrastructure

- Multiple entrances requiring screening stations
- High-traffic areas with large throughput
- Stadiums
- Hospitals
- Commercial buildings
- Fulfillment centers
- Transportation centers
- Manufacturing facilities

Retail and SMB

- Low-traffic areas with minimal throughput
- Single or few entrances
- Easily-deployed, low-technical complexity deployment
- Banks
- Gyms
- Urgent care centers
- Assisted living facilities
- Hotels
- Stores
- Small offices

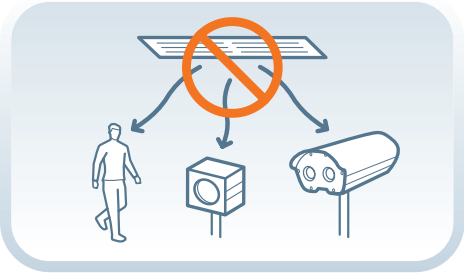
Questions to Consider

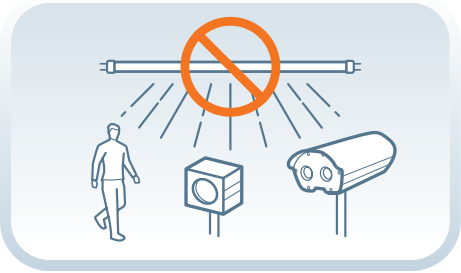
When looking to add a skin temperature screening solution, consider each solution's specifications and features. Here are some questions and specifications to take into account:

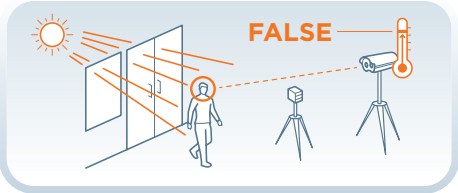
Where to Screen?

Environmental factors such as airflow and sunlight can influence the accuracy of your measurement.

- Set your screening station indoors. Solar loading or reflection could cause false alarms. Hot objects could inflate measurements if the thermal camera detects them.
- Strong fluorescent lighting above or around the camera, the Blackbody or the camera's FOV could impact the temperature readings.
- Heating and cooling ducts provide airflow that may create convective heat transfer conditions. This could artificially raise or lower the skin surface temperature of the screening subject.



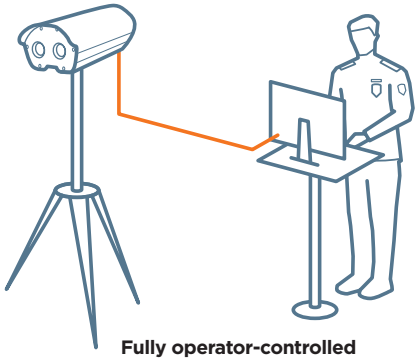




Which Screening is Best for me?

The skin temperature screening market includes multiple solutions and options. Consider crowd scanning, Blackbody references, relative vs. absolute readings and outdoor versus indoor. Finding the right technology provider, integrators and installers who understand the standards and regulations is paramount to ensure your solution meets your needs, as well as standards, requirements and recommendations.

DW E.S.T. Camera



Fully operator-controlled
All gate passages are controlled by trained E.S.T.-operators.

Sensitivity

Skin temperature screening solutions' sensitivity is measured by Noise Equivalent Temperature Difference (NETD) in millikelvins (mK). NETD specifies the smallest temperature difference the camera can distinguish clearly of the camera's noise. The lower the mK is, the camera will produce a more detailed and more accurate image. DW's E.S.T. camera has a sensitivity rate of 50mK at F1.0.

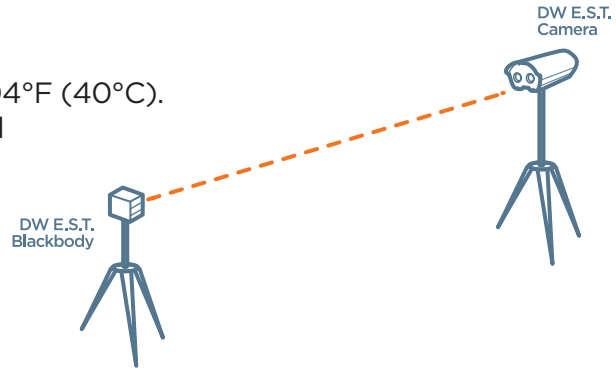
Accuracy

The accuracy of a skin temperature screening solution tells you the absolute measurement error of a target's skin temperature. Elevated skin temperature screening should have high accuracy levels of ±0.3°C (0.5°F) or lower. To help achieve high accuracy measurements, the camera's temperature reference should be adjusted frequently and according to the flow of people and environmental impact.

Maximizing Your Solution's Success

What is a Blackbody and Should I Use it?

A Blackbody constantly emits a heat signature of 104°F (40°C). It is used as a reference source for the camera. When placed across from the camera, a Blackbody helps maintain the camera calibrated, increasing data accuracy.



Once the Blackbody is mounted properly in the camera's FOV, the E.S.T. monitoring software auto-calibrates in real-time the readings from the camera

When purchasing a camera with no Blackbody, DW's cameras are calibrated at the factory. It is highly recommended using at least one Blackbody per installation to guarantee proper calibration and accurate data is collected.

Relative vs. Absolute Temperature Measurements

Environmental and physical factors can cause variations in skin temperature throughout the day. When using an absolute temperature measurement, the temperatures of people with and without fever can overlap. This may result in:

- False alarms: Setting the threshold too low may result in elevated skin temperature detections in people who do not have a fever.
- Missed fevers: Setting the threshold too high poses the risk of missing people who have a fever but remain below the threshold temperature.

To address these issues, DW's E.S.T. monitoring software allows users to adjust the temperature threshold using the "Zero Offset" setting.

For example, when used with the camera alone, the E.S.T. monitoring software reads a person's face temperature around 93.2°F (34°C). To display the temperature at 96.8°F (36°C) level, set the 'Zero Offset' value to around 2 degrees. Remember to adjust the alarm temperature by the same value as the Zero Offset.

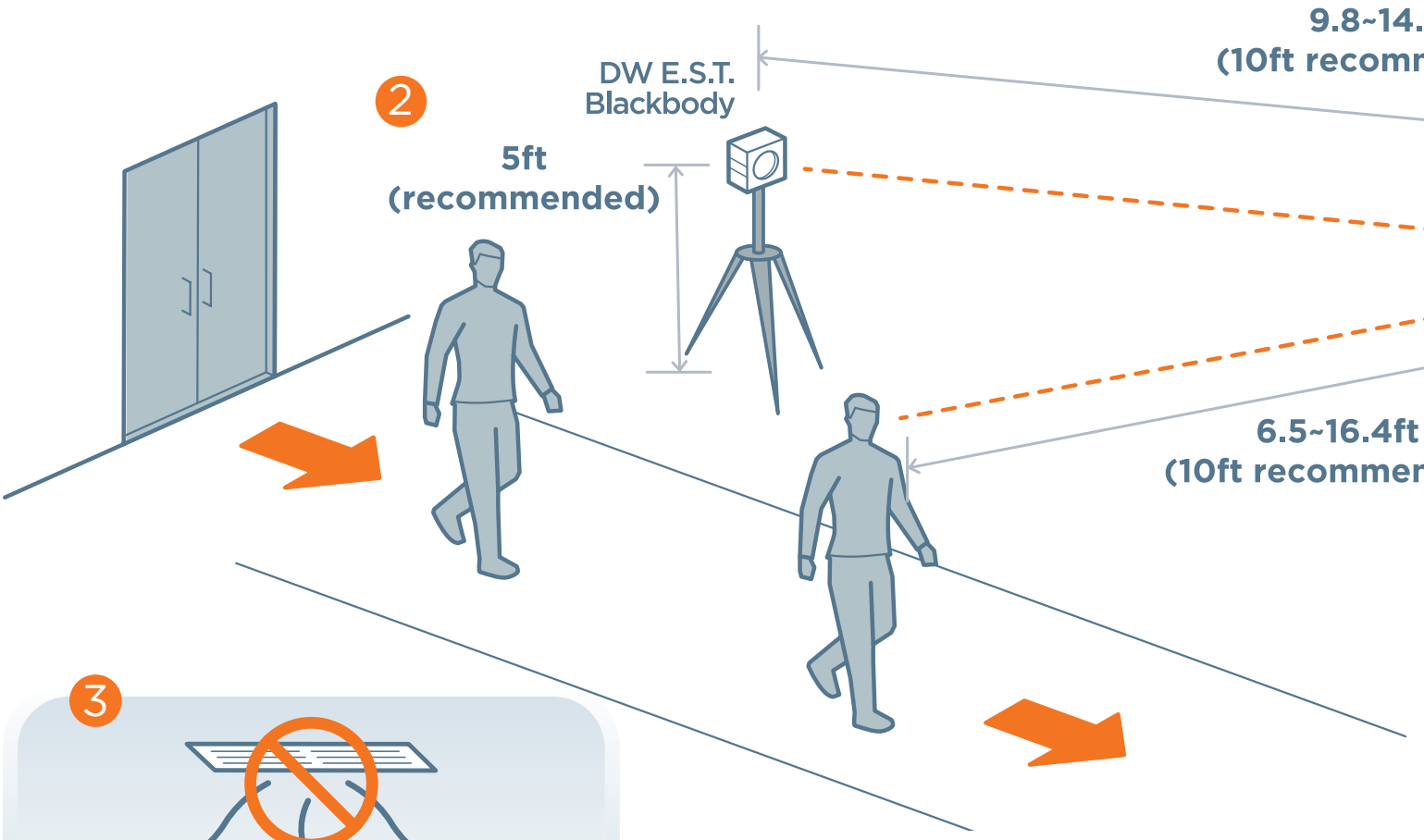
Location, Location, Location

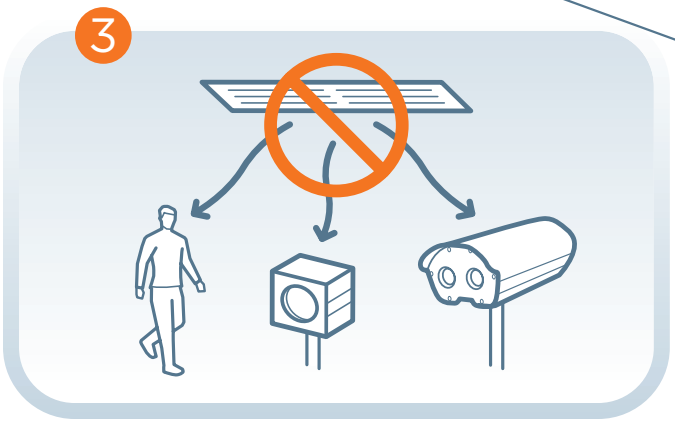
Selecting the right location for your screening station has a direct impact on your screening process. Consider the following:

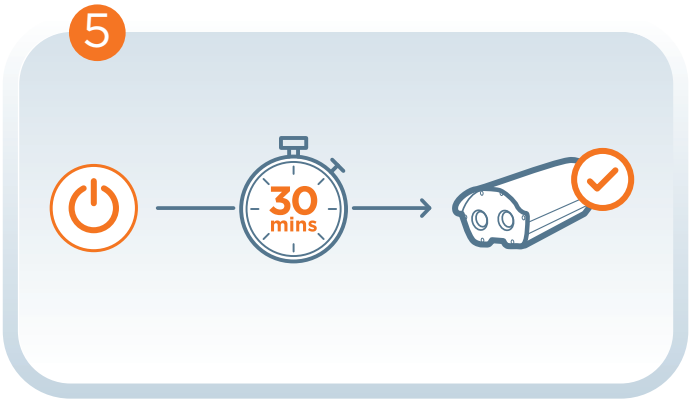
- Indoor screening in a controlled environment is optimal. Consider a location where temperature maintains at 68°F to 86°F (20°C to 30°C) and the relative humidity is under 80 percent.
- Avoid mounting your camera or Blackbody under an air duct and keep out of direct sunlight.
- Keep other heat sources out of the camera's view.
- Reflective backgrounds such as metallic surfaces or windows can increase false readings and temperature errors.
- Install the camera facing away from the door, and at a 20° angle from the screening path.
- Consider the direction of the object's movement. People should be walking in and out of the camera's FOV, not directly towards the camera.

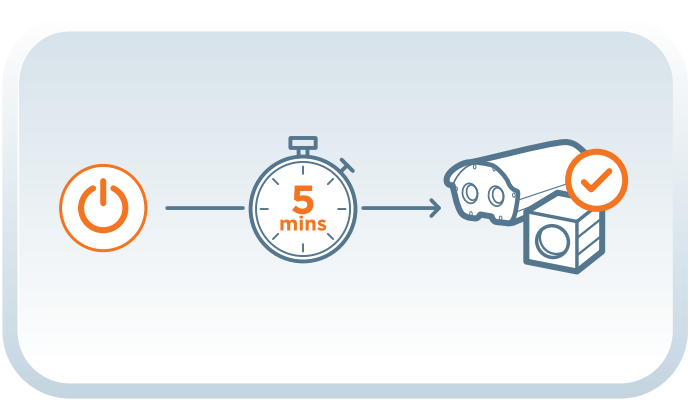
Successful Workflow Example and Notes

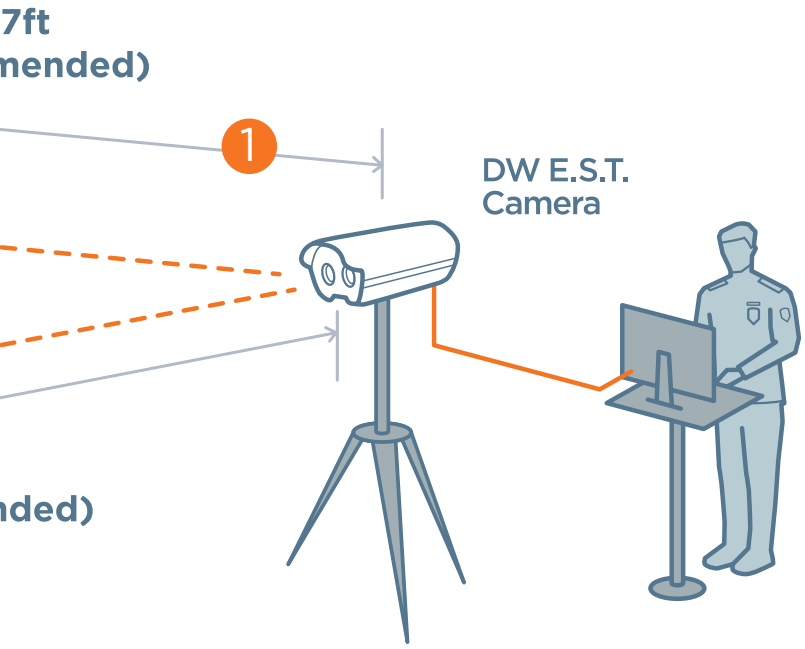
Recommended room temperature is 68° to 86° F (20~30 C)



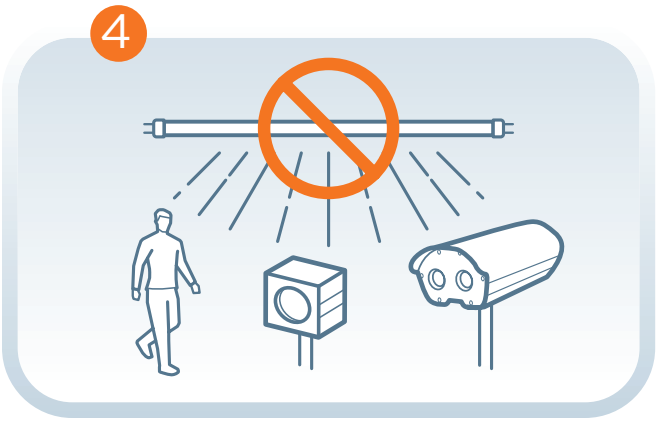


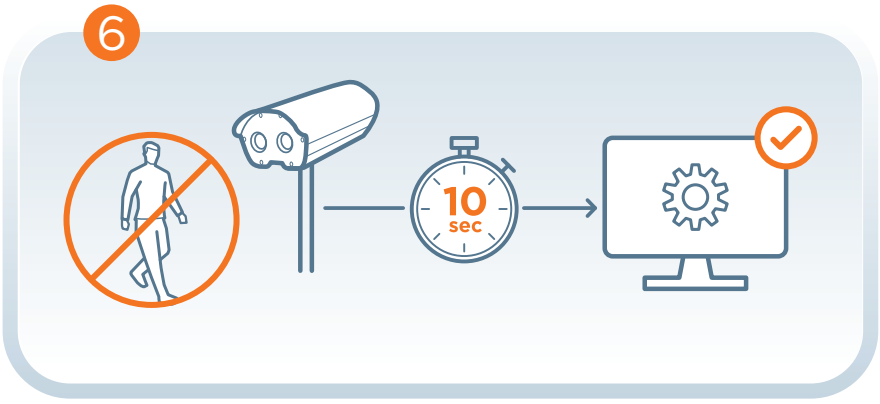






1. Install the camera facing away from the entrance or windows.
2. Make sure people are walking into the camera's FOV rather than straight towards the camera
3. Do not install the camera or Blackbody under an air conditioner duct.
4. Strong fluorescent lights may impact the temperature readings.
5. Allow the camera and Blackbody up to 5 minutes from power-up to calibrate properly. When installing a camera-only solution, allow up to 30 minutes to calibrate.
6. When powering up the E.S.T. monitoring software, keep the camera's FoV clear of people and moving objects for 10 seconds.
7. Always follow elevated temperature readings with additional screening such as a medical thermometer and wellness questionnaire.





Purchasing Options

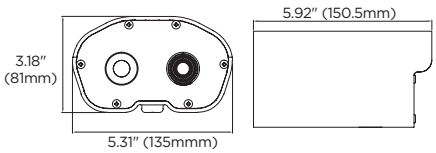
DW-ESTS
Complete kit includes: camera, Blackbody + 2 tripods

DW-ESTCAM
Temperature camera

DW-ESTBLKB
Blackbody

Dimensions

Unit: Inch (mm)



Specifications

TEMPERATURE CAMERA		
Sensor	Micro-bolometer	Uncooled focal plane array
	Resolution	384 x 288
	Pixel pitch	17μm
	Response wavelength	8μm to 14μm
	Temperature sensitivity	50mK@f1.0, 30Hz, 300K
Lens	Lens type	Thermalized lens
	Focal length	8.13mm f1.16
	HFOV/VFOV	47.4°/35.1
	Recommended distance range for best reliable measurement	6.5 to 16.4ft (2m to 5m) 10ft is recommended
	Minimum focus distance	1.64ft (0.5m)
Data output	Interface	Gigabit Ethernet (10/100)
	Data	Temperature raw data of each pixel of the temperature sensor
	Frame rate	30Hz
VISIBLE CAMERA		
Sensor	Image sensor	1/3" progressive CMOS (approx. 2.1MP/1080p)
	Scanning system	16:9 Progressive
	Effective pixel	1920 (H) x 1080 (V)
	Minimum scene illumination	0.2 lux (color), 0.1 lux (B/W)
	Horizontal resolution	1000TVL
Lens	Optic	4.0mm 70° HFOV
Video output	Interface	USB3.0 super-speed
	Format	USB3.0 UVC compliant YUV 422 16bits, uncompressed video
	Resolution and frame rate	1920x1080p @ 30fps
GENERAL - CAMERA		
Operation	Weight	2.2lbs (1000g) including a USB cable from the visible camera
	Dimension (H x W x D)	3.18" x 5.31" x 5.92" (81 x 135 x 150.5mm)
	Power supply	12V DC
	Operating temperature	14°F ~ 104°F (-10°C ~ 40°C)
GENERAL - Blackbody		
Operation	Default fixed temperature	104°F (40°C)
	Effective radiant surface	Φ55
	Temperature resolution	0.01
	Temperature stability	±0.18°F (±0.1°C)
	Temperature accuracy	±0.36°F (±0.2°C)
	Emissivity	0.95
	Temperature sensor	NTC 0.1%
	Weight	0.72 lbs (330g)
	Dimension (H x W x D)	2.83" x 2.83" x 1.92" (72 x 72 x 49mm)
	Power supply	12V DC
	Recommended distance from the camera	9.8 to 14.7ft (3m to 4m) from the camera. Recommended height is 5ft. The closer people walk by the Blackbody, the more accurate the temperature reading will be. 10ft is recommended.
	Operating temperature and humidity	14°F-104°F (-10°C-40°C), under 80% humidity
Warranty		2 year warranty

* Specifications are subject to change without notice.
* This product is not designed by DW for the specific intention of human fever detection nor the diagnosis, mitigation, or prevention of disease or health conditions.

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