

OptoTherm ThermoScreen

Infrared Mass Fever Screening System

Fast, Safe, Effective

ThermoScreen's patent-pending technology provides the most accurate and effective method of mass fever screening available. By identifying people who may be infected, ThermoScreen can help prevent the spread of contagious diseases such as H1N1 and seasonal influenza.

Common Applications

Hospitals	Quickly detect patients and visitors with high fevers
Airports	Prevent passengers from spreading contagious diseases
Businesses	Safeguard the health of patrons and employees
Schools	Help provide a safe environment for students and faculty

Features

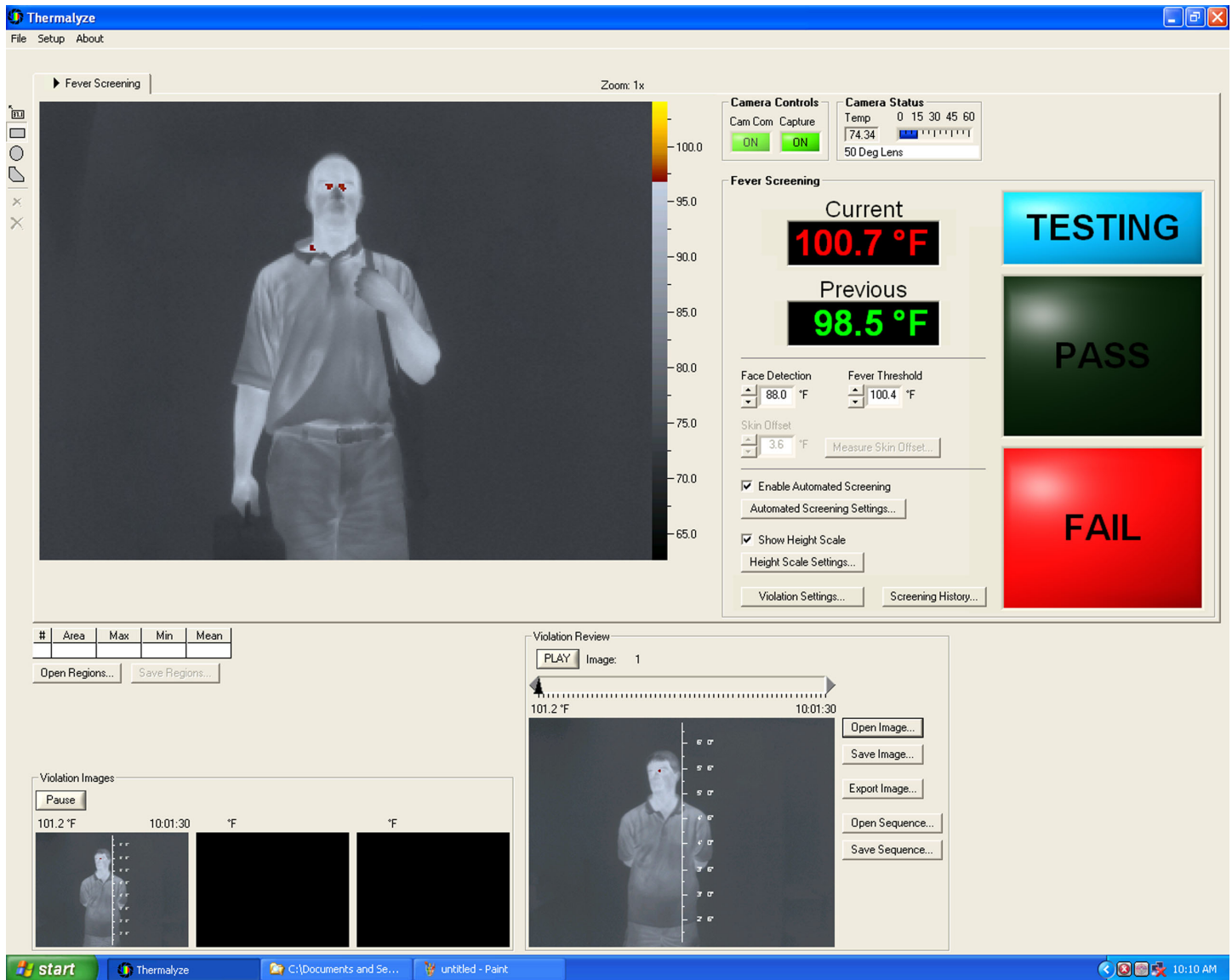
- Operator-free automated screening
- 0.05°C sensitivity; 0.3°C accuracy
- All-inclusive turnkey system
- Automatic ambient compensation
- Verbal commands and audible alarms
- Historical data display and graphing
- Mobile platform
- No external calibration source required



Infrared Innovation

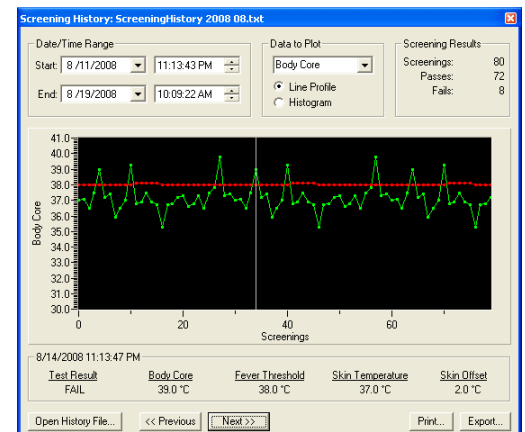
ThermoScreen Software

Thermalize real-time fever screening software was designed specifically for mass human fever screening. The user interface is intuitive and operation requires minimal operator interaction.



Software Features

- Intuitive user interface
- Internal body temperature display
- Automated verbal commands and audible alarms
- Customizable verbal messages
- Automatic ambient compensation
- Review recent violations
- Historical data display and graphing



The Screening History window displays data from all past screenings

How ThermoScreen Works

The ThermoScreen high-accuracy thermal imaging camera, manufactured by OptoTherm, measures skin temperature by detecting the infrared energy that is continuously being emitted from the face. As individuals walk past the screening station, face temperatures above a predefined threshold are detected and displayed in bright colors on the computer screen. An audible alarm is sounded to notify operators that a temperature violation has occurred. ThermoScreen is a completely passive device and emits no harmful radiation.

The mobile mounting stand enables ThermoScreen to be moved quickly to alternate screening locations. ThermoScreen is sold as a complete, fully tested system including a computer with pre-installed hardware and software.

ThermoScreen History

ThermoScreen was developed in response to the need to screen large numbers of individuals for fever during the SARS outbreak in 2003. A primary symptom of infectious diseases, such as influenza, is fever. This has led to monitoring the temperatures of workers and visitors in hospitals, airports, private companies, schools, and other public areas in order to curb the spread of disease. Initially, oral and ear thermometers were used to identify febrile individuals. These devices, if administered properly, can provide accurate body core temperature measurement. However, measurements conducted using oral and ear thermometers are time and labor intensive, require contact with subjects, and are skill-dependent.

ThermoScreen provides a non-invasive, non-contact method of screening large groups of people for fever quickly and easily. Febrile individuals can be detected with minimal inconvenience and disruption to pedestrian flow. In the effort to prevent the spread of infectious diseases, ThermoScreen provides an effective first line of defense.

Automated Screening

OptoTherm's patent-pending Automated Screening Mode (ASM) simplifies the screening process, reduces demands on operators, and improves screening accuracy. ASM detects individuals as they enter the screening area and announces "please stand still and look directly at the camera" through the system speakers. After verifying that the subject is standing still and facing the camera, ThermoScreen performs the screening test and announces "thank you, you may proceed" if no fever violation is detected. Feverish individuals are instructed to "please wait here for an attendant". You can even create custom verbal messages in other languages or to convey specific information. Audible commands allow operators to focus their attention on processing fever violations and directing line control. More than 1,000 individuals can be screened per hour.

Highest Screening Accuracy

One of the most important benefits of ASM is improved measurement accuracy. Studies have shown that the temperature of the inside corners of the eyes provides the best correlation with internal body core temperature. Studies have also shown that the temperature measured on moving subjects can be highly inaccurate due to thermal image blur. Because ASM requires individuals to stand still and face the camera while being screened, accurate and consistent screening measurements can be assured.

Automatic Compensation

Another important benefit of ASM is automatic compensation. There are a number of factors that can affect screening measurement accuracy and effectiveness, such as variations in ambient temperature and circadian cycle effects (internal body temperature generally increases during the day and decreases during the night). ThermoScreen compensates for these factors during operation by performing a statistical analysis of previous screening results.

Verbal Commands

Because ThermoScreen automatically announces verbal commands to instruct individuals during the screening process, subjects can be screened faster and more accurately, and operators are able to focus their attention on processing fever violations and line control. In fact, if screening stations are designed properly, a single operator can monitor multiple screening stations simultaneously.

ThermoScreen Advantages

OptoTherm's patent-pending Automated Screening Mode (ASM) provides the most accurate and effective method of mass fever screening available. The requirements to stand still and face the camera while being screened prevent thermal image blur from degrading measurement accuracy and assures that the inside corners of the eyes are measured. Verbal commands announced through the system speakers guide subjects properly through the screening process and notify operators of screening results, allowing them to concentrate on processing fever violations and coordinating line control. Because the temperature threshold that indicates a fever depends on several factors, such as ambient temperature and screening time, **ASM evaluates individuals based on a statistical analysis of previous screenings, not by using a fixed temperature threshold.** ThermoScreen's sophisticated screening algorithms reduce missed detections and minimize false alarms.

Each ThermoScreen system undergoes an extensive calibration process. Software algorithms provide real-time compensation for environmental variables to improve measurement accuracy. Many competing products require an external calibration source to be placed within view of the camera during operation to correct for camera inaccuracy. The use of an external source adds complexity, increases setup time, decreases portability, and places restrictions on the areas in which fever screening can be performed. Furthermore, the use of reference sources can result in measurement instability when misalignment occurs between the camera and source, or when environmental factors, such as changes in ambient air temperature or air currents, cause the source temperature to drift.

System Components

ThermoScreen is supplied as a fully tested and operational system. A full ThermoScreen system includes:

- InfraSight TS thermal imaging camera with lens
- Thermalize TS fever screening software
- Dell tower PC with LCD multimedia monitor
- Mobile mounting stand
- Aluminum camera enclosure
- Camera Link video board with cable
- Camera power supply
- USB camera communication cable
- Screening floor mat
- Software reinstallation disks
- ThermoScreen User Manual
- Tutorial CD
- System assembly tools
- One year warranty

Accessories

- Portable screening wall
- Camera wall mount
- Camera pedestal mount
- Heavy duty tripod



The portable screening wall is positioned behind subjects being screened to block hot or reflective background objects from affecting screening measurements. Dimensions: 10'x80"x2", folds to 29"x80"x27", 30 lbs.

Specifications

Measurement

Accuracy:	+/-0.3°C between 30 to 40°C
Sensitivity:	0.05°C
Temperature Range:	0 to 70°C (32 to 158°F)
Image Capture Rate:	30 frames per second

Detector

Detector:	Uncooled microbolometer
Array Size:	320x240 [TS320] 160x120 [TS160]
Spectral Response:	7-14 microns
Start-Up Time:	2 seconds

Optics [TS320]

Field of View:	50x37.5°
Screening Area:	170x130cm (72x54in)
Screening Distance:	1.8m (6ft)

Optics [TS160]

Field of View:	17x12°
Screening Area:	90x70cm (36x27in)
Screening Distance:	3m (10ft)

Physical

Ambient Operating:	15 to 35°C (59 to 95°F)
Ambient Storage:	-40 to 80°C (-40 to 176°F)
Camera Enclosure:	5kg; 54x17x13cm [TS320] 2kg; 40x12x9cm [TS160]
Enclosure Mounting:	Two 1/4"-20 internal threads
Mobile Stand:	13kg; 185cm w/ 70cm base
Power Requirements:	100/240VAC 50/60Hz

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