

Introduction

Thermal Entry Screening

In our changing world the threats to human health posed by viruses are intensifying. Businesses are morally or legally obliged to take precautionary measures to protect visitors and employees and reduce the chances of infection. Detection of elevated body temperature is an important factor in ensuring safety of visitors and employees. The InfraSpector Expanse is based on an IR thermal imaging camera or sensor. Its contactless measurement characteristics are optimised for the human body temperature range.

The InfraSpector Expanse can recognised as a fast and pragmatic tool for this purpose, not only for the current global Coronavirus crisis, but also as an innovative long-term solution, to protect and reduce illness by limiting the spread of infections. Investment can reduce illness absence and risks of infection without the need for additional staff to operate the equipment. In many countries recommendations and sometimes mandatory regulations have been made for this type of screening.

<u>Applications</u>

The Thermal Entry Screening Portal can be used in different applications such as:

- Public services: Airports, railway stations, town halls, public authorities, schools, hospitals*.
- Essential companies: Shopping centres, supermarkets, bakeries, pharmacies.
- Social meeting places: Churches, theatres, museums, stadiums, bars, restaurants.
- Private companies: Factories, offices, hotels, retail.

<u>Privacy</u>

Despite the presence of a camera, only thermal images are used for screening. These images do not contain any optical details, just temperature zones. InfraSpector Expanse have no face recognition nor recording functionality. Depending on the application, authorities (GDPR, H&S) have regulations regarding privacy and use of medical data. Examples are voluntary screening or isolated use from other systems. Additionally, measures after positive detection can be of importance (like use of facials masks or entry disallowance). For your application, it is recommended to verify privacy and medical issues with local authorities prior to use of the system.

Mek Europe/Americas

Has specialized in electronics inspection for more than 25 years. With leading AOI technology (2D/3D Automated Optical Inspection), Mek supplies to the electronics manufacturing industry globally for PCB-Assembly inspection.

Mek-Europe distributes and supports a portfolio of innovative AOI machines from Japanese manufacturers Marantz Electronics (Mek) and Nagoya Electric Works, across Europe, Americas, Middle East and Africa. Drawing on its expertise in innovative inspection technology Mek Europe/Americas has expanded its product range with the introduction of the InfraSpector- an inspection solution based on thermal imaging.



Features

Thermal Entry Screening System	Detection of elevated body temperature (as symptom of fever)
Thermal detection based on infrared imaging technology	Contactless measurement
Camera model (infraSpector Expanse) continuous measurement by non-stop-walk-through	Maximum capacity of 16 persons at once, at 20 fps
Measurement accuracy ± 0.3°C (32.54 F)	Reliable detection of elevated body temperature
Modular design	Easy and quick self-assembly & install
Audible and/or visual alarm upon detection of elevated temperature	Automatic Thermal Entry Screening without need for an operator
Detailed thermal image visible	Manual supervision possible
Automatically detects the highest temperature within a ther- mal image	Reliable detection independent of body height
Black body	Maintane prefect calibration for ambient variations
External interfacing possibilities	Connectivity to external access system
Theory of temperature measurement range	-20 °C ~ 60 °C (-4°F ~ 140°F)





The infraSpector eXpance is a fever screening system suitable to be used in areas where there are large groups of people such as airports, seaports and public places such as shopping centres.

It is a fixed camera that has a powerful 384x288 IR detector which delivers 110,592 pixels to the end-user's screen.

The thermal video/images have a temperature measurement range of -20 °C ~ +60 °C and measurement accuracy of ≤ 0.3 °C which makes this ideal for fever screening programmes.

It also comes with a range of temperature measurement tools which includes Motion detection, Disk alarm, I/O alarm, Temperature alarm and many more.

The infraSpector Expanse allows non-invasive fever screening to take place meaning there is no major distruptions to the flow of people in an area.



Online monitoring for rapid temperature measurement: Simultaneous detection of up to16 targets, at 20 fps\

Efficient temperature measurement



Archives Management:

Data management

• Temperature data

Data structuring

• Health archives

Health status

 Batch import/export Self-learning algorithm, face library regular update



Multilevel Distribution Architecture:

- 3 levels distribution deployment
- Servers and Clients management based on different project scale



Mobile APP:

- Real-time health data monitoring
- Health data statistics , user receives health report



Pre Warning Management

- Face detection intelligent technology works in combination with temperature measurement technology, it provides the location of the over- temperature target solving a problem when over- temperature target information cannot be confirmed immediately, at the same time camera provides materials for a further supervision and sends a report
- Audio support



Health Archives Management:

Data Statistics Report: Statistic reports and analysis according to

• Age/Gender/ Time/Type and illness/Location



System Management

• System status monitoring, system configuration, operation log, abnormal log, debug information etc.



Blackbody Specification

Description:

Product features: The application of these sources are calibrations of IR thermometers, IR sensors and thermal imagers which are used for human body temperature measurement.

A black body or blackbody is an idealized physical body that absorbs all incident electromagnetic radiation, regardless of frequency or angle of incidence.

It does not only absorb radiation but can also emit radiation. The name "black body" is given because it absorbs radiation in all frequencies, not because it only absorbs.

Blackbody radiation is radiation produced by heated objects, particularly from a blackbody.

A blackbody is an object that absorbs all radiation (visible light, infrared light, ultraviolet light, etc.) that falls on it. This also means that it will also radiate at all frequencies that heat energy produces in it.

Without the blackbody real-time calibration, the camera's temperature reading could drift from $\pm 1^\circ C\,$ to $\pm\,2\,^\circ C$.

With the blackbody, a real-time homogeneity calibration will be performed by system to ensure and improve the accuracy of the system up to ±0.3 $^{\circ}\rm C$.



Charicaristics Blackbody		
Temperature Range	40 °C (Ambient temp. +5.0 °C to 50 °C)	
Emissive Area	70mm x 70mm	
Temperature Resolution	0.1°C	
Accuracy	±0.2C(@40C)	
Stability	±(0.1~0.2) °C /30min	
Emissivity	0.97±0.02	
Power Supply	220V AC 50Hz 50W	
Dimension/Weight	W110mm x H120mm x D180mm, 1.8kg	
Operating ambient temp.	0 °C ~40C / < 80%RH	
Option	RS485 communication	

infraspectar

Features CK350-NVR32 server:

- Up to 16 CK350-F Fever cameras access
- Up to 32CH Picture stream with facial recognition and temperature data
- Up to 20 Facial pictures /sec processing
- Up to 16 Facial databases with 10,000 face images in total
- 2 RJ45 10M/100M/1000M network interface
- Simultaneous HDMI&VGA up to 4K output
- Easy to use same interface of GUI/WEB/Client







Specifications eXpanse (IR Camera)

	Thermal Camera		
Detector Type	Uncooled IRFPA Microbolometer		
Effective Pixels	384(H) ×288(∨)		
Pixel Size	17um		
Thermal Sensitivity (NETD)	40mK @F1.0, 300K		
Spectral Range	8~14um		
Image Setting	Polarity LUT/ DVE/ Mirror/ FCC/ /3D DNR Brightness/Contrast/ ROI		
Color Palettes	Black-Heat /White-Heat/Rainbow/Iron-Red up to 17 modes		
	Thermal Lens		
Lens Type	Fixed		
Focus Control	Manual Focus		
Focal Length	8mm		
F No.	F1.0		
Angle of View	H: 46°, V:35.3°		
	Visible Camera		
Image Sensor	1/1.9" Sony CMOS		
Effective Resolution	1920(H)×1080(∨)		
Shutter Speed	1/50 ~ 1/64,000s		
Wide Dynamic Range	True WDR 120dB		
Min. Illumination	Color: 0.01Lux @ (F1.2, AGC ON) B/W: 0.001Lux @ (F1.2, AGC ON)		
S/N Ratio	More than 55dB		
Focal Length	2.7 ~ 12mm		
Max Aperture	F1.6~ F2.9		
Angle of View	105°~ 32°		
Focus Control	Motorized		
	Video and Audio		
Compression	H.265, H.264, MJPEG		
Frame Rate	Main Stream: Thermal: D1 @25/30fps Visible: 1920×1080/1280×720 @25/30fps Sub Stream: Thermal: CIF @25/30fps Visible: D1/VGA/640×360/CIF/QCIF/QVGA @25/30fps		
Bit Rate Control	CBR/VBR		
Bit Rate	Thermal: 100Kbps~6Mbps Visible: main stream: 500Kbps~10Mbps; sub stream: 100Kbps~6Kbps		
Region of Interest	Off / On (8 Zone, Rectangle)		
Digital Zoom	16x		
Mirror	Support		
Defog	Support		
Motion Detection	Support		
Privacy Masking	Off / On (4 Area, Rectangle)		
DVE Image Enhance	Support		
Audio Compression	G.711, AMR, RAW_PCM (Optional)		

Intelligence		
Intelligent Functions	Motion detection, Disk alarm, I/O alarm, Temperature alarm	
IVS	Smart Body Detection, Perimeter, Single Virtual Fences, Double Virtual Fences, Object Left ,Object Removed	
	Temperature Detection	
Detection Mode	Body temperature monitoring	
Detection Preset	Max 16 goals	
Temperature Alarm	Over temperature alarm, Temperature difference alarm	
Accuracy	0.3 C (Emission rate, distance, ambient temperature, etc.)	
Response Time	30ms	
Theory of temperature measurement range	-20 °C ~ 60 °C (-4°F ~ 140°F)	
Temperature display mode	Temperature target >5C, Display absolute temperature value; Temperature target □5C, Display relative temperature value (temperatu- re difference DEV = highest value - average)	
	Network	
Ethernet	RJ-45 (10/100Base-T)	
Protocols:	IPv4/IPv6, HTTP, RTSP/RTP/RTCP, TCP/UDP, DHCP, DNS, PPPOE, SMTP, SIP ,802.1x	
Interoperability	ONVIF, CGI, SDK	
Streaming Method	Unicast	
Max. User Access	10 Users	
Edge Storage	NAS Local PC for instant recording Micro SD card 128GB	
Web Viewer	<ie11, chrome,="" firefox<="" td=""></ie11,>	
Web Language	English, Chinese, Polish, Italian, Portuguese, Spanish. Russian, French, Czech, Hungarian	
	Interface	
Ethernet	1 Ethernet (10/100 Base-T) RJ-45 Connector	
Audio Interface	1ch Audio In,1ch Audio Out	
Alarm	2ch Alarm In,2ch Alarm Out	
RS485	Support	
BNC Output	N/A	
Reset Button	Support (Built-in)	
General		
Power Supply	DC12V/POE (IEEE 802.3af)	
Power Consumption	Max 10W	
Operating Temperature	-30°C~60°C(-22°F~140°F)	
Storage Conditions	0~ 90% RH	
Certifications	CE /FCC	
Ingress Protection	IP66	
Casing	Metal	
Dimensions	212×182×136mm	
Net Weight	2Kg	

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Specifications server

System	
Main Processor	Dual-core embedded processor
Operating System	Embedded LINUX
	Video and Audio
IP Camera Input	32 Channel
Audio I/O	1/1
Two-way Talk	Yes
	Face Recognition
Performance	Max 20 face pictures /sec processing 32ch picture stream face recognition
Stranger Mode	Detect strangers' faces (not in device's face database) Similarity threshold can be set manually
Al Search	Search for image by image Search image by properties
Database Management	Up to 16 face databases with 10,000 face images in total
Database Application	Every data can be applied to any channel
Trigger Events	Buzzer, Alarm push, Alarm prompt, Email, Alarm Out, Compare the result simultaneously, etc.
	Al Recognition
Face	Face comparison results (registrant (name and ID), stranger, channel, similarity)
Vehicle	Recently captured image display
Human Body	Recently captured image display
Non-motor Vehicle	Recently captured image display
Al Search	Time, Properties, Pictures, Gender, Riding style, Vehicle color, License plate
	Display
Interface	2 HDMI, 1 VGA
Resolution	HDMI 1: 1920×1080,1440×900, 1280×1024 HDMI 2: 3840×2160,1920×1080, 1440×900,1280×1024 VGA: 1920×1080, 1440×900, 1280×1024
Decoding Capacity	32ch 720P, 16ch 1080P, 8ch 4MP, 4ch 8MP, 1ch 12MP
Multi-screen Display	1st Screen: 1/4/8/9/16/32/36 2nd Screen: 1/4/8/9/16
	Recording
Compression	H.265+/ H.265/H.264+/H.264
Resolution	12MP, 8MP, 6MP, 5MP, 4MP, 3MP, 1080P, 720P, D1 etc.
Record Rate	320Mbps
Bit Rate	128Kbps ~ 8192Kbps Per Channel
Record Mode	Manual, Schedule (Regular, Continuous, Motion Detection, Video Loss, Ca- mera Tamper, Alarm in, IVS)
Record Interval	Post-record: 30 ~ 60 sec

	Video Detection and Alarm	
Intelligent Functions	Motion detection, Disk alarm, I/O alarm, Temperature alarm	
IVS	Smart Body Detection, Perimeter, Single Virtual Fences, Double Virtual Fences, Object Left ,Object Removed	
Alarm In/Out	16/4	
Playback and Backup		
Sync Playback	16/9/4/1	
Search Mode	Time /Date, Alarm, Picture grid, Event	
Playback Function	Play, Pause, Stop, Rewind, Fast play, Slow Play, Next File, Previous File, Next Camera, Previous Camera, Full Screen, Shuffle, Backup Selection, Digital Zoom	
Backup Mode	USB Device	
	Network	
Network Function	HTTP, HTTPS, TCP/IP, IPv4, UPnP, UDP, RTSP, SMTP, NTP, DNS, DHCP, P2P, IP Filter, DDNS, 802.1X, SNMP, 3G/4G, PPPoE	
Max. User	Access 10 users	
Smart Phone	iPhone, iPad, Android	
Interoperability	onvif, SDK, CGi	
	Storage	
Internal HDD	4 SATA Ports, up to 12TB for each HDD	
eSATA	Support	
Cloud Storage	Support	
	Disk Array	
Array Type	RAID 5, RAID 6, RAID 10	
	Interface	
Interface	2 RJ-45 port (10/100/1000Mbps)	
PoE Interface	N/A	
PoE Max Power	N/A	
USB	3 ports (USB 2.0 x2, USB3.0 x1)	
RS485	Support	
RS232	Support	
General		
Power Supply	AC100V~240V	
Power Consumption	< 15W (without HDD)	
Operating Conditions	-10 °C ~ 50 °C (14 °F ~ 122 °F)	
Storage Conditions	Less than 90% RH	
Certifications	CE/FCC	
Dimensions	440×368.3×70mm	
Net Weight	4.2kg (No disk)	

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