



# Putting temperature solutions into operation

Technology, Process &  
People considerations

## FAQs

# Temperature Screening – Your Questions Answered

## INTRODUCTION AND BACKGROUND

Clearly these are unprecedented times, what is the specific reason that fever screening has emerged onto the market place?

Quite simply, Fever Screening is a means to see if someone has a temperature, which, as we all know, is a symptom of having COVID-19.

Long before COVID-19 arrived in mainland UK we were seeing people at airports and other transportation hubs having their temperature taken. People might recall the images from the TV were of hand held thermometers being placed up against an individual's forehead.

This was being done as a way for screening people for a high temperature and therefore identifying someone with the potential to be carrying COVID-19.

Fever Screening is nothing new. It has been around since SARS in 2002 and MERS in 2012

Today, there are safer, more accurate and efficient methods for screening temperature and this is what we are recommending.

Businesses have a duty of care to do something to secure a safe return to work. Fever Screening delivers reassurance that something is being done.

So, in answer to your question,

Fever Screening has emerged as it assists in preventing the spread of viral diseases by allowing for quick, accurate and safer detection of elevated body temperatures.

## PROVIDING A SAFE RETURN TO WORK

<p>What are some of the key considerations in planning a return to work?</p>	<p>Paramount must be the safety and well being of employees – this includes those returning to offices where individuals may be nervous about travelling and also those concerned about resuming work within an enclosed environment. Also it is important not to forget those continuing to work from home who are used to a team environment and still relatively unused to home working. There are very different considerations businesses need to think about and ensure adequate measures are in place to support both populations.</p>
<p>What are some of the key recommendations in the Government's guidance to businesses?</p>	<p>I think we need to be mindful that any Government guidance has to be quite generic because it applies across so many areas, Within that, some of the key messages are around social distancing, protection of employees within the workplace, risk assessing whatever you do and communicating effectively to your workforce and key stakeholders, It is critical to keep them informed at all times. If there is a communication vacuum, that space can get filled with inaccuracy and speculation</p>
<p>What types of initiatives are businesses undertaking proactively in order to plan for a safe return to work</p>	<p>This list can be extremely lengthy but will include;</p> <ul style="list-style-type: none"><li>■ social distancing within the workplace</li><li>■ providing a means of moving between offices safely including the same floor as well as across different floors</li><li>■ first aid and fire marshall provision - those services must be maintained at the correct levels if you're re-occupying offices</li><li>■ provision of PPE if necessary</li><li>■ enhanced cleaning regimes</li><li>■ contingency planning that activates in the event that someone starts to display Covid-19 symptoms in the workplace.</li></ul> <p>All these and a myriad of other considerations need to be thought through.</p> <p>The key though will be to implement measures that are proportionate, practical, effective and accurately risk assessed</p>

<p>What are some of the key recommendations that have been made to frontline staff such as security officers or facilities staff?</p>	<p>Organisations should continue to follow Government guidance at all times and work to ensure the health, safety and well being of all employees.</p> <p>Advice should always be to reinforce key messages around good health hygiene and social distancing. Regularly communicate with all employees to update them on evolving guidance and to support them by, for instance, signposting them to appropriate welfare support if they need it.</p> <p>One key thing to remember is that any business continuity plan mustn't just include measures to react to whatever emergency triggered the plan initially. Organisations must consider a plan to come out of business continuity mode and return to whatever BAU will look like. This should involve all key stakeholders to ensure a smooth transition.</p>
<p>For those with office based staff what guidance would you give?</p>	<p>The key to risk mitigation is identifying a hazard and removing it from the equation at the earliest opportunity which, in the case of COVID-19, will help prevent the spread of the virus through onward transmission. That is why G4S have adopted temperature screening technology as a one part of our integrated health, safety and security response for our clients.</p>
<p><b>INTRODUCING FEVER SCREENING</b></p>	
<p>So, will temperature screening detect COVID-19?</p>	<p>No. We need to state from the outset that this technology does not detect the presence of COVID-19. The technology is made up of a very accurate thermal camera that can measure temperature. As we all know, running a temperature is one of the symptoms of having the viral infection or fever.</p>
<p>Why is it safe?</p>	<p>The system measures temperature passively, from a safe distance so we are not breaking any physical distancing regulations. Another factor that contributes to safety is the speed of transaction.</p> <p>Compare this with a handheld device where an operator must get close to the subject, and whilst hand held technology might still be passive, a longer time is spent in closer proximity. We all know that proximity and time are two factors that increase the risk of infection.</p>
<p>What exactly does it detect?</p>	<p>It detects an individual's facial temperature exactly in the same way as you would test your own or your child's temperature with a handheld thermometer, but at a distance of 3 meters. As I said, it is very accurate +/- 0.3 Deg C and is highly efficient - allowing multiple people to be screened in a fraction of the time it would take to perform manual tests</p>

<p>What makes up effective temperature screening?</p>	<p>This system's effectiveness is borne from the very fact that it is passive yet highly accurate.</p> <p>Individuals' temperatures are measured as they walk through the screening channel. It is in fact possible to screen 30 targets simultaneously but the way we are seeing it used at the moment is in a linear fashion therefore people get screened in turn, that said it is still very efficient.</p>
<p>Why is it important to think more than just deploying the technology on its own from a security point of view?</p>	<p>This technology should be seen as an addition to a site's overall security solution. It is an extra layer of defence, and we would not recommend using this technology to replace any existing screening or detection methods that are looking for other things.</p> <p>Typically we would see this technology being the first layer of a site's Detect solution within a Site Entry Function. This is why I referred earlier to it being used in a linear fashion. When we see things starting to return to the new normal, we can see this technology being used where individuals enter places on mass for example, airports, stadia, shopping centres etc. It is still a front line measure for detection however.</p>
<p>Can you give an overview of what you believe to be an effective temperature screening process</p>	<p>Yes, the most effective use of this technology would be to place this right at the start of your site entry process so individuals would go through temperature screening first before any other control.</p> <p>If an individual passes temperature screening, they can move on to the next stage, whatever that may be. The further back you can safely push the process from the heart of your operation, the better. Clearly placing temperature Screening at the end of your site entry process would be wrong - this would be analogous with searching hand luggage whilst airborne in an aeroplane.</p> <p>Implementing the process might require all staff to come in through one entrance so that they can be screened, or it may require more than one screening location. It all depends on the layout of the site.</p> <p>The number of screening lanes will be dependant on a number of factors such as how many people you want to get into your site over what period of time as well as the size of the site.</p>

<p>Obviously speed of transaction is a consideration to prevent congestion and a bad experience. Exactly how many people can the system screen per hour?</p>	<p>The system can process up to 30 people at a time but with social distancing and moving people through a screening channel in a linear fashion in reality you would be looking at between 3500 to 7000 people per hour.</p> <p>The system can actually operate faster than it can be approached so the defining factor for speed of transaction is a controlled walking speed as well as physical distancing within the queue.</p>
<p>What are the actions typically taken in the event of a positive reading?</p>	<p>We must remember that the aim of temperature screening is to prevent or slow down the spread of viral diseases by screening out individuals who have a fever and therefore may be carrying a virus.</p> <p>Typically the action would be to deny access to anyone who has a temperature that is out of range (remembering that the system is highly accurate). It is possible to have a False Positive result i.e have a skin temperature that is above or below the normal range but have a core temperature that is in normal range. Typically when someone first indicates as having a temperature above or below normal range, they are re-tested immediately. If they fail again, they are quarantined for 15 minutes and tested again. If they fail a third time the typical practice we have seen is to deny access to site for the recommended period.</p> <p>Reasons for false positives include getting out of a car that has had the heating/ air conditioning on and immediately going into screening or having recently done physical exercise. Simple working practices such as advising people not to present themselves immediately after exercise can reduce false positives.</p>
<p>You have a vast amount of experience in temperature screening - what percentage of positives readings have you had?</p>	<p>Across all of our installations we are screening c85,000 people per month. We are seeing false positive rates of 1.5% and positive rates of 0.1%</p>
<p>What are some of the key limitations to be aware of around temperature screening?</p>	<p>As already stated, we need to be cognisant of the fact that this is not a silver bullet to catch everyone that has COVID-19. It is a layer of defence that will detect individuals that have a fever, and having a fever is one of the signs of having a virus.</p>
<p>Can you talk round some recent examples of where it has been deployed?</p>	<p>We have installed these in many different types of sites: large construction, manufacturing, distribution, Health Care etc</p> <p>The system is appropriate for any site that needs to monitor pedestrians entering the premises</p>

<p>The market is currently being saturated with information which makes making informed decisions hard.</p> <p>What are the main variables to consider when choosing a temperature screening solution?</p>	<p>There is lot of data to look at from many and various manufacturers. All claiming to have particular USPs that are difficult to assess objectively.</p> <p>The two prime criteria to focus on are;</p> <p>Resolution - the higher the numbers the better.</p> <p>Accuracy - The lower the number the better</p> <p>Remember to check if the stated accuracy requires the use of a black body calibration unit as this is a relatively expensive addition and the headline cost may not include it for 0.5% accuracy - but it will be required for 0.3%</p>
<p>What are the different product options and the pros and cons of each option?</p>	<p>There are 3 main “types</p> <p>Handhelds - Pro is the cheapest option</p> <p>Cons -Typically very low resolution and accuracy. The big con of handheld is that operators typically have to break the social distancing rule to use it successfully.</p> <p>Handheld manufacturer’s state that low resolution is not an issue as you get the unit v close to the person being scanned. A proper catch 22 situation!</p> <p>Tripod Mounted Installation -Pro’s would be - rapid deployment &lt; 1 day - Minimal involvement from client FM - we only req 230x within circa 20M</p> <p>Cons - looks like a temporary install (it is) and aesthetics might not be up to the standards of the environment it is installed in - The tripods could get knocked and put the system out of alignment.</p> <p>Fixed Installation - Pros’s would be - can be installed more aesthetically - Equipment can be securely fixed and much less likely to be moved out of alignment - potential for integration to other building systems (Access control etc)</p> <p>Cons - longer install and therefore more costly - we will require permanent 230v supplies adjacent to some of the equipment - We may require access and use of the clients network.</p>

<p>With that in mind What should make up a technology screening technology kit?</p>	<p>Three key components of our preferred solution are;</p> <ul style="list-style-type: none"> <li>■ hybrid sensor which has a thermal and optical camera</li> <li>■ blackbody calibration unit this ensures the accuracy of the system to 0.3C</li> <li>■ temperature screening station for the operators to monitor pedestrians entering the screening area</li> </ul>
<p>Why is it best practice to include a blackbody calibration unit?</p>	<p>A black body is essential to provide a calibrated and CONSTANT temperature reference. This reference temperature is used by the system to compare the heat radiation emanating from the person being scanned.</p> <p>Without it a skin temperature scanning device cannot achieve 0.3 deg C accuracy (as of today) which is a recognised accuracy metric within medical standards.</p>
<p>Are there any GDPR implications?</p>	<p>The data that is captured (or not) is still data and needs to be written into your existing GDPR policies. If you have a policy for CCTV it will almost certainly be close to allowing these systems to be added.</p> <p>The systems are configurable to store the data from zero (never) to multiples of hours dependant on HDD site &amp; activity.</p> <p>Most systems can also be configured to only record positive readings.</p> <p>There is still ongoing debate as to whether this situation falls under “ Significant public interest”</p>
<p>Can you talk around a normal installation?</p>	<p>The system can be deployed as a fixed or temporary solution. The majority of installations to date have been temporary installations the cameras and blackbody units are installed on tripods cabled back to the screening station. This can be deployed very quickly in a few hours followed by training of the operators the system is very easy to use.</p>
<p>Do the screening systems have to be installed inside or is there any way of installing them outside if there is a limitation in space?</p>	<p>The requirement is for an internal environment - if that can be replicated in an external temporary structure then it will be ok - the important considerations are that is is between 10 &amp; 35 deg C - draught / wind proof and not subject to sudden changes in temperature or light levels - avoiding highly reflective or indeed heat absorbing surfaces would also be recommended.</p>

<p>What about handheld devices - is there a place for handheld?</p>	<p>In certain scenarios, yes they potentially have a place, but you need to understand their limitations</p> <ol style="list-style-type: none"> <li>1) They are slower to process people through the screening environment (approx 25/min)</li> <li>2) They are less accurate than a static system (only 0.5C)</li> </ol> <p>We have to stress when using the handheld it is essential the operator is wearing appropriate PPE due to limited read range.</p> <p>Our preference is the higher resolution camera with blackbox calibration unit for accuracy</p>
<p>Can we talk a little about resolution and accuracy - why are they so important?</p>	<p>These systems work on the same principle as a visible light CCTV camera and the higher the resolution the more detail it can see.</p> <p><b>Resolution</b></p> <p>Its a known fact that an elevated fever appears in a small area (usually the area of the tear duct) - and spreads out and grows over time. A higher resolution camera may pick up the smaller area of elevated temperature on a day that the lower resolution model may not till the following day or later.</p> <p>So the resolution is all about catching the information as early as possible.</p> <p><b>Accuracy</b></p> <p>Accuracy relates to the manufacturers confidence in the margin of error based on the efficiency of their thermal hardware and firmware to analyse it.</p> <p>You will naturally get more false positives on a 0.5 deg C unit than a 0.3 deg C unit. There is also more opportunity for missing lower temperature scale of fever temperature if the unit is not v carefully calibrated.</p>

<p>You mention +/- 0.5 Deg c for Handhelds and +/- 0.3 for static cameras - those figures are not that far apart?</p>	<p>The values we are working to are quite precise and in a limited range - whilst 0.2 deg C does not sound a lot - it is actually an accuracy variance of 66%.</p> <p>There are no current standards for these systems used in this way (although we imagine they are pending) - however standards DO exist for medical cameras using thermographic (infra red temperature reading) methods, and the guidance in these document refers to an acceptable variance of 0.3 deg C being the requirement.</p> <p>It is worth reminding the reader that these systems are NOT presently classified as medical devices.</p>
<p>What changes have you seen since Fever Screening was launched</p>	<p>The market has been flooded with offerings. Since the initial introduction of the camera solution we are now seeing multiple fixed &amp; handheld camera options plus integrated access control pedestals. This has added to the confusion in the market hence the reason we have fully invested in identifying the correct solutions for our clients.</p>
<p>How can you be sure the temperature detection is accurate?</p>	<p>We carried out a field trial for a group who were screened using the system and also had their temperature taken using an in ear thermometer which confirmed the system accuracy of 0.3deg</p>
<p>It sounds like a complicated set up - how quickly can it be set up and operational?</p>	<p>No, it's a very simple and straightforward installation.</p> <p>The system can be deployed as a fixed or temporary solution. The majority of installations to date have been Temporary installations. The cameras and blackbody units are installed on tripods cabled back to the screening station and this can be deployed very quickly in a few hours.</p> <p>A permanent solution takes longer due to install time on camera brackets etc. but is still generally done in less than a day.</p> <p>This is followed by training of the operators. As the system is very easy to use operator training is generally less than 30 minutes.</p>

<p>Can you talk around some of the screening process principles of use?</p>	<p>The most important principle is positive control. You need to positively control the flow of your individuals through the screening channel, maintaining the two meter separation or current physical distancing guidelines. A linear approach is important, you don't want a gaggle of people bunched up waiting to be screened. Having an assembly area that is large enough to contain the maximum amount of pedestrian traffic that is expected such that they can all be 2 or more meters apart, and from here they fall into the line or queue. Having an SOP to follow if you have a positive reading is key. Starting your Fever Screening process as soon as possible within your staff/visitor entry procedure is vital. The final principle alongside positive control would be communication. Communicate with your staff, this will be a change in culture. Consider also consulting with unions if applicable as well as the use of signage.</p>
<p>What is some of the key information required to make sure the solution is specified correctly?</p>	<p>We need to understand the environment and some other factors such as –</p> <ul style="list-style-type: none"> <li>■ How many entrances are there to the site?</li> <li>■ What is the throughput/ footfall?</li> <li>■ Is there 230V supply in the proposed screening area?</li> <li>■ Is there a desk or screened off area in reception?</li> <li>■ Does the client have temporary barriers?</li> <li>■ Does the client have an existing screening plan?</li> <li>■ Describe the current access process?</li> <li>■ Are there suitable mounting locations?</li> </ul> <p>This information helps us to propose the correct solution.</p>
<p>What will we (a client) need to have prepared in advance of the installation?</p>	<p>The client will need to have prepared;-</p> <ul style="list-style-type: none"> <li>■ Marshalling / social distance control</li> <li>■ Queue management to suit the requirements of the detection process (defined width - defined route)</li> <li>■ 230 v supply / location for operator</li> <li>■ Person available to be trained on day of installation</li> </ul> <p>Please note that the equipment works to tight tolerances and it is important that the queue management is in place and it is not amended after the installation.</p>

Does the system have to be networked?	No, indeed for ease and speed of installation we are providing everything required for a working system with no requirement or involvement of the clients IT teams.
Are there any benefits to networking the system?	There are benefits but this would be assessed on a site by site basis. Some of the benefits this brings would include remote management of access points with remote audio challenge or integration with access control systems and other third party systems.
What will happen on the day of install?	We will have already agreed the layout and positioning of the screening lane and cameras prior to installation day. Once the hardware is installed we would commission the system and then train the client's operator.
What happens if the system gets moved?	The system would need to be recommissioned as the black box alignment is crucial for accuracy. We will give some guidance on realignment, but in some cases it may require an engineer visit to realign
What happens if we can't amend the alignment or indeed there is any other issue with the system	We would provide an element of training for the operator to make small amendments. For significant changes, we would supply support which would assist.  Most interventions have been completed remotely on our installations to date
What happens with the system when this situation is over?  Is the system future proof?	We believe that the requirement for fever screening will continue beyond the current situation.  The equipment can be used as a standard CCTV optical/thermal system and can be incorporated into a much larger system in the future to effectively become part of a standard CCTV rollout.

From a broader perspective, Can you talk a little about the “Contactless Journey”? Why is it important and what does it include? How can thermal temperature screening play a role?

Certainly - as the name implies, the aspiration would be for people to move through buildings without having to make contact with anything, whilst that is the aspiration, it will be a challenge to achieve, however we are putting some thoughts towards how we achieve it in our arena of security and life safety.

Thermal screening when implemented at the entrance to your site or as early in the journey as possible is a proven method to pick up elevated temperature which may be an indicator of fever, identifying these people and not allowing them onto your site removes the possibility of that individual passing through the building and potentially leaving the virus on surfaces they touch in the building.

We understand that some people with the virus may not have an elevated temperature and no thermal fever screening system can ever detect them. It is likely that they will breach that first line of defence.

Implementing a contactless journey strategy wherever possible is the next line of defence towards stopping (or at least reducing) the transmission from those people to others via shared touch points

<p>I appreciate that this technology is constantly evolving. What new features might we see and when?</p>	<p>I agree, our industry is always evolving, but this situation has increased the speed of evolution. Along with new technology we are also looking to apply some of our existing solutions too.</p> <p>Starting with access control, solutions exist around cards or other credentials to make existing cards work at a greater distance – it is worth noting this might also require a different reader technology.</p> <p>Touchless biometrics may also be a consideration, this could be facial recognition / touchless fingerprint or hand readers / touchless iris recognition - technology also exists today that can recognise a person to a very high level of accuracy just by the way they move (Gait recognition).</p> <p>All those solutions have the possibility to give an authorised person access through a secured door etc - with the inclusion of an auto door opener there is no need to touch anything at all to get entry.</p> <p>Egressing a building is simpler to achieve where it is traditionally via a button, there can be replaced with proximity versions - alternatively a different model of button could be fixed at elbow / knee or even foot level - whilst this obviously still requires contact, it is not allowing contact with hands.</p> <p>Alternatively a movement detector could be utilised to open the door on approach.</p> <p>I think its worthwhile and important to note that we appreciate not everyone will have a budget for some of these solutions, but there will almost certainly be some form of solution available to at least assist in the contactless journey in most instances.</p>
<p>Why do we think that screening will become “The New Norm”</p>	<p>As we start to return to normal, or the new normal as it is starting to be referred to I think we will see Fever Screening as a main staple within site entry processes.</p> <p>The main driver behind that is that people will want a level of assurance that things are being done to keep them safe. People will be coming out of lockdown and will want to see measures in place. Business and venues will want to match those that have the technology. We are also seeing a demand for frictionless visitor entry and thermal screening will, in time, be integrated within the frictionless journey as a condition of entry.</p>