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VISION ON SAFETY

Tampering detection

keep your cameras and your organization in top shape

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Tampering detection: keep your cameras and your organization in top shape

Why should your organization invest in camera tampering detection? And what can this technology do exactly?

Governments and companies are increasingly investing in surveillance networks and cameras. With technology becoming smarter, more accessible and more powerful, organizations are increasingly relying on cameras to keep facilities safe or to collect evidence. This also means that the maintenance of these devices has become ever more critical.

Maintenance staff needs to be sure that cameras are working properly and that events are detected when they occur. However, many things can happen that prevent a camera from functioning. The camera can be turned into a different direction, criminals or vandals may cover the lens with paint, or dirt on the camera lens may deteriorate the performance of a video surveillance system.

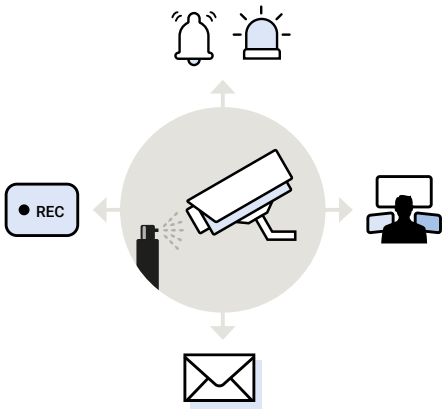
Basic tampering detection won't cut it

Many of today's cameras and video management systems have some kind of basic tampering detection functionality built in. This enables camera owners to receive alerts whenever the camera has been tampered with or when the image quality has deteriorated. However, in many cases, basic tampering detection is either not accurate enough or it cannot be customized to suit the specific environmental conditions. As a result, operators receive so many unwanted alerts that the tampering detection functionality becomes unpractical and is turned off altogether.

The importance of a professional tampering detection solution increases as the number of cameras grows. In some organizations, such as casinos, penitentiary institutions, university campuses, or public buildings, the number of cameras can run into the hundreds, even thousands. In these cases, manual camera inspections become too time-consuming and costly. A professional, automated tampering detection solution is then no longer a nice-to-have, but a must.

Tampering detection for professonial environments

In this eBook, we discuss why you need a professional tampering detection solution that can provide accurate and timely warnings and that enable your organization to schedule its camera maintenance rounds more efficiently. And we have a look at what a professional tampering detection solution on your surveillance camera should be able to do.



10 reasons to invest in a professional tampering detection solution

① **You don't want to miss critical events.**

The most obvious reason to invest in tampering detection is that your organization cannot afford to miss critical events. Imagine missing the development of a fire because your smoke detection camera was moved into the wrong direction. Or imagine being unable to identify a burglar because your camera lens was dirty. With timely and powerful tampering detection, you reduce the chances of missing any critical event.

② **Every technology needs looking after.**

However expensive, sophisticated or powerful your camera may be, every technology needs to be looked after. Camera lenses will get dirty. Especially with outside installations or in environments where dust, dirt, smoke or vapor are frequent, the image quality may deteriorate faster. Also at people-intensive sites, the chances of your cameras being moved or pushed, either on purpose or unintentionally, are high. A tampering detection solution will enable you to take the appropriate maintenance actions in time.

③ **Malfunctions can last long before you become aware of them.**

If your camera images are not actively monitored by an operator, a lot of time can pass before you become aware of a camera malfunction. Especially with larger camera networks, where it is practically impossible to perform frequent manual inspections, there may be long periods where your cameras will miss critical events. A professional tampering detection solution will generate alerts upon every tampering event, so you are notified in time.

④ **A well-functioning camera is a legal obligation.**

Tampering detection can help you to comply with legal requirements. In some environments, CCTV cameras are a legal obligation. In penitentiary institutions, CCTV is used to prevent and detect crime, and maintain the security. In casinos, a camera network is required to keep a record of any incidents or violations (pickpocketing, employee stealing, and card cheating) recorded on video. When a camera fails or when the image quality has deteriorated, this legal requirement is no longer met.

⑤ **You want to prevent infringement of privacy.**

Masking zones are configurable areas in the camera image that are excluded from monitoring. Masks may be necessary if the camera's field of view covers a public area or another restricted zone. When the camera has been pushed or moved, the field of view has changed as well and the mask may no longer cover the restricted area. This way, camera owners risk violating privacy regulations. A tampering detection solution can warn you in time when the camera is out of position, so you can restore the privacy mask again.

⑥ **You want to make maximum use of your video analytics.**

Video analytics are becoming smarter and more powerful every day in detecting people, objects or events in the camera image. But what is the use of good analytics when the camera image is bad? Analytics can only work when they have a high-quality image, that is not out of focus and that is pointed in the right direction. If these conditions are not met, then your risk missing important events.

⑦ **You want to save on manual inspections.**

Manual camera inspections can be costly and time-consuming. With a professional tampering detection solution, you can remove a lot of the manual inspection work and save big on man hours. With an automated tampering detection solution, you only need to send out your maintenance team when there is an alert about a malfunctioning camera.

⑧ **You want to plan your maintenance.**

A professional tampering detection solution will alert you of image degradation well before the image becomes unusable. This gives your maintenance team enough time to plan inspection rounds well in advance, hereby making optimal use of your human resources.

⑨ **You want to maximize your return on investment.**

CCTV security systems are considerable investments. You want to be sure that your investment pays off. With a professional tampering detection solution, you are always sure that your camera network is operating adequately, and that the return on your investment is guaranteed.

⑩ **You want a practical system without the unwanted alarms.**

The big difference between a basic and a professional tampering solution is the customizability. Instead of just switching the tampering feature on and off, you should be able to adapt your settings to suit the lighting conditions, operational time (day or night) or atmospheric conditions (considering dust or vapor). This way, you will avoid that the system generates too many unwanted alarms and that it becomes practically unusable.

What should a professional tampering detection solution be able to do?

Cameras with this functionality will detect tampering events or reduced image quality in real time, allowing you to get notified in time and take the appropriate maintenance actions. A wide range of detected events can be distinguished. For every installation, it's important to distinguish between sudden changes (tampering) and slow changes in image quality. To avoid unwanted alarms, the detection sensitivity for each of these events should be adapted to the environment.

Tampering detection

Tampering detection roughly includes three categories of events:

1. **A blocked or blurred camera image, for example:**
   - Spray paint on the camera
   - A truck parked in the camera's field of view
   - A stack of boxes piled up in the camera's field of view
   - Dirt stains on the lens
   - Precipitation that stays on the lens
   - Frost on the camera window

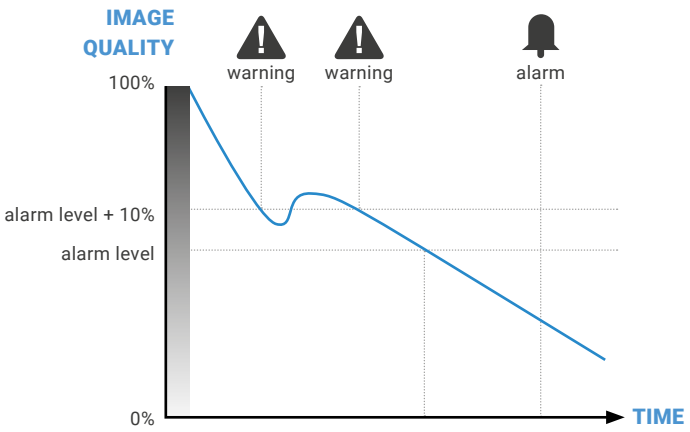
2. **Unusual brightness levels: too bright or too dark camera image**
   - Direct sunlight directed towards the camera
   - A flashlight pointed at the camera
   - An unwanted or unintentional change of camera settings

3. **Out of home position: A camera that is out of position or out of focus can change the field of view and impact the privacy masking settings. A changed field of view can be caused by:**
   - Someone intentionally changing the camera direction
   - An unintentional collision with the camera

To avoid unwanted alarms, tampering detection will not be activated for very short events, such as a passing bird.

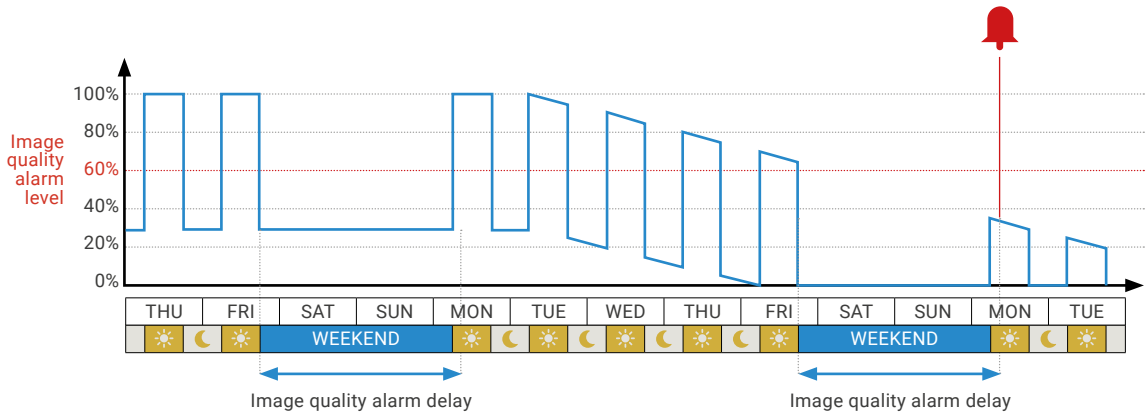
Detection of reduced image quality

An alarm can be generated if the camera image quality is too low continuously and for a predefined, configurable time span. This should be configurable. For example, you may not want to trigger an alert for short periods of reduced image quality.



You can also configure your camera to generate alerts whenever the image quality is approaching its alarm level. This enables you to organize your preventive maintenance rounds more efficiently. For example, you may want to configure your solution to generate a warning when the image quality is 10% above the preset threshold.

Another practical configuration option is the possibility to skip image quality alarms when your facility closes (when the lights go out) during nights and/or weekends.



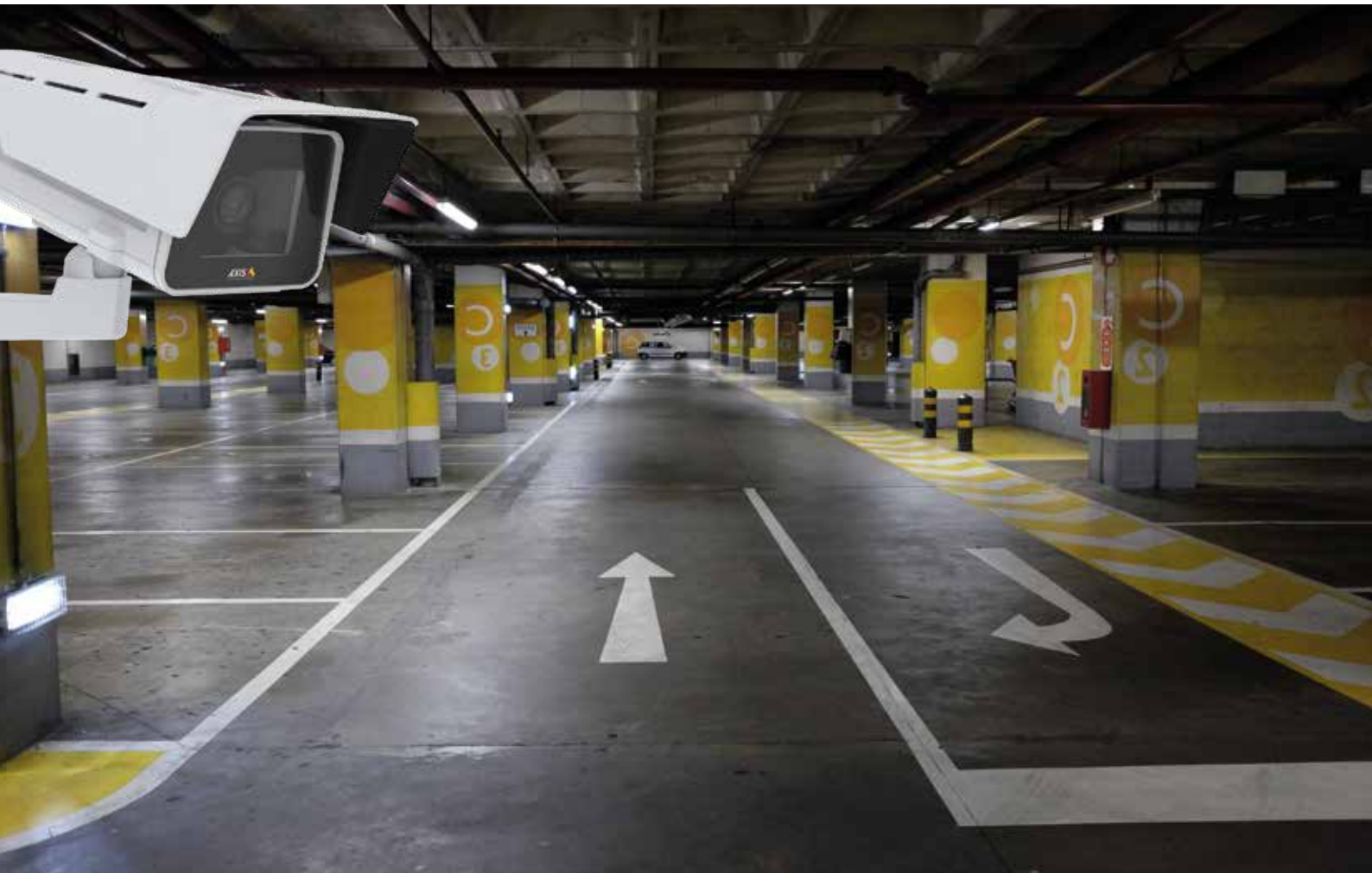
Configuring your alerts

Depending on the environment where you are deploying your cameras, you may want to configure your tampering detection functions (blocking, brightness, out of home, image quality) according to your needs. Most basic tampering detection solutions will offer an all-in-one solution that is impossible to configure. With a professional tampering detection system, you have more flexibility, allowing you to deploy only the functionality that is adapted to your needs and environment.

Araani Tamper Guard

Intelligent tamper & image quality detection

Araani Tamper Guard is an intelligent video surveillance solution that will detect tampering events and reduced image quality in real time. This way, you are always sure of the best camera performance without having to monitor the video feed yourself. This intelligent video surveillance solution from Araani has been developed for Axis cameras and encoders that support the AXIS Camera Application Platform (ACAP). Araani Tamper Guard is easy to configure and tailor to your requirements.



ARAANI® Tamper Guard

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About Araani

Founded in 2014, Araani is a Belgian company specializing in video analytics for people, property and process protection. Araani FireCatcher is an advanced video fire detection solution that has been designed for critical infrastructure protection.

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