

Outdoor Video Security eBook Best Practices....and Mistakes

Yes, **it is possible** to have reliable, affordable outdoor video security that you can count on 24-hours/day, without nuisance alerts or misdetects.

This eBook will show you the way.



Let's face it. Securing outdoor areas is hard.

There's a lot to think about when you need to secure perimeters and outdoor areas. There are site surveys and system designs, poles and power, budget approvals and cost overruns.

There are technical choices – should you use video analytics, visible or thermal, HD cameras or PTZs? Just knowing where to start can be hard enough.

And then there are real concerns about nuisance alerts and misdetects. High-profile break-ins at airports or national landmarks seem to make the news all the time.

CBS/AP / April 9, 2015, 11:43 AM

Report on airport breaches prompts new security questions

US | Thu Aug 2, 2012 6:50pm EDT

U.S. nuclear bomb facility shut after security breach

WASHINGTON | BY MARK HOSENBALL

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“Alarms go
off so
frequently
we stopped
paying
attention.”



Consider what happened at the Y-12 Nuclear Weapons Plant in the US.

According to the NY Times, intruders were able to cut through the fence and spend **hours** just on the other side of the wall from highly enriched uranium even after triggering alarms and sensors.

Security officers admitted afterwards that nuisance alarms go off so frequently **they stopped paying attention.**

It's a story told too often at too many sites.

Why can't an outdoor system work like a burglar alarm?



When you set your house alarm and leave for work, you know you won't get calls all day about false alarms. And if you did, what's the first thing you'd do?

You'd shut the system off.

Of course this doesn't happen – home alarms detect break-ins like you expect them to, notifying a monitoring company - and maybe the police – to respond.

They work so well, you have confidence every time you leave.

Why should it be different outdoors?

It doesn't have to be. It's now possible to secure outdoor areas as reliably as the alarm system that protects your home, just by following best practices and avoiding common mistakes. So read on.

Outdoor Security – What's So Different?

Indoor burglar alarms work as we expect because there's no wind or rain or snow, and lighting is consistent, so door, window and motion sensors detect intruders every time.

But outdoors? It's the *exact opposite* - everything moves outside. The wind blows trees, clouds and debris. The sun makes shadows and reflections, and the weather changes constantly.

Given all this movement and change, outdoor sensors have a hard time detecting people and vehicles with accuracy unless you take a very different approach than you would inside.

But even with the difficulties, you can use smart video cameras to detect intruders outdoors with a very high degree of accuracy and low cost.

Do You Need Security or Surveillance?

You may be thinking, “what’s the difference?”
But it’s the most important question to
answer.



Video **security** means automatically detecting intruders when they enter a secured area.

Video **surveillance** means cameras recording video that may never be seen.

At one time we expected guards would “catch” intruders by watching surveillance cameras. But now we know that most cameras go unwatched, because even the most alert person gets tired staring at screens – after minutes.

Imagine if you replaced your home's window, door and motion sensors with surveillance cameras. While you were away, burglars might break in and do what they want, and when you returned, you would have recordings of them stealing or vandalizing your property, long after you could do anything about it.

It's hard to believe, but this is the typical level of security provided by most outdoor surveillance cameras today.

And that's not security.





Whether you're protecting critical assets like airports, refineries, bridges, or chemical plants, or smaller sites like car lots or maintenance yards, you need to know in **real time** when an intrusion is taking place so you can respond.

For these applications, "smart" video detection cameras combine the strengths of machines and people. Smart cameras use video analytics to watch the scene automatically, and to alert people with video verification when a human response is needed.

This lets you tie the two applications together – **detection** and **surveillance** - to create a **video security solution**. Computers never get tired, and people know what to do when an alert comes in. You also get a recording of the incident for forensics, which can be important for use as evidence later.

Use Thermal Cameras for Security Outdoors

Since video security starts with detection, the alert must be **accurate**. Outdoors, it's almost impossible to achieve accuracy with a visible camera, and the reason is lighting.



Thermal cameras “see” heat rather than light, so they are perfect human detectors under all conditions, from zero light to bright sun, in rain, snow or humidity. They ignore the movement that causes nuisance alerts with visible cameras, like **headlights** and **reflections**. Thermal cameras also eliminate the expense, power and difficulty of lighting large outdoor areas. And they cover **huge areas** with a single device.

Under almost all conditions, **visible cameras are not a reliable**, cost-effective detection system outdoors.

Can You Afford Thermal?

Thermal cameras were originally used for government or military applications. Today they're approaching the price of visible cameras, making them available for commercial use.

And remember, you don't have to install lights with thermal cameras, which lowers costs further, while thermal cameras detect much greater distances than visible cameras – covering areas **bigger than a football field**.

That means you need fewer thermal cameras to secure the same area – and fewer poles, power, infrastructure and complexity. Given the falling costs, **even the most fundamental security function** – theft prevention – now makes sense for thermal cameras.

If your goal is to detect intruders at all times, under all conditions, **you really need to use thermal**.

Lowering Costs: Wide-Area Systems for Critical Spots

Many outdoor sites are spread over large areas – making it costly to protect the entire perimeter at once. A new way of thinking starts smaller by first securing your most vulnerable areas, and expanding the system as budgets allow. For example, if you detect intruders approaching your critical asset inside the perimeter, you solve your most important outdoor security problems right away.

This is where recent innovations play a big role. Today, a single smart thermal camera can detect intruders with great accuracy over huge areas covering **thousands of square meters**.

In this way, critical sites can immediately address their security challenges with great effectiveness for the cost of a few cameras. Such systems can easily be expanded into a full-scale perimeter system at a later date as budgets permit.



**A single thermal detection camera
can cover an area the size of a
football field**

What About HD Cameras?

Use HD cameras for assessment, not as the detection source

Conventional wisdom suggests that High Definition or HD cameras might be useful for intrusion detection, but practically speaking, these cameras are better suited for **assessing an alarm.**

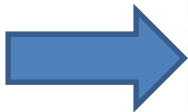
Why? HD cameras create images from visible light - any interference from daytime reflections such as the sun reflecting off water, or car headlights sweeping through the camera's view will cause too many nuisance alerts for reliable analytic detection.

Of course, once you have detected an intruder and have been automatically alerted to the security event, HD cameras can prove helpful in providing detailed information about that event.

What About PTZs?

Pan Tilt Zoom cameras, or PTZ's, also serve an important function in a surveillance application. But trying to manually steer a PTZ camera's narrow field of view to find an intruder over a sprawling outdoor area is like finding a needle in a haystack. It's almost impossible.

That's a car detected over 600 meters!



Use thermal for long-range detection...

Instead, you can choose a smart camera that **automatically steers PTZ's** to the precise location of a detected target. These "auto-steered" PTZs will give an operator a close view of the intrusion and can be very helpful in assessing the situation quickly.

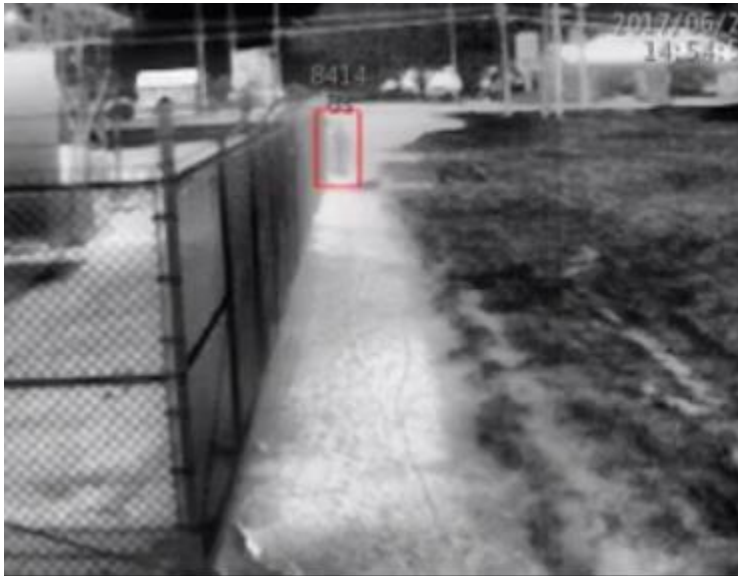


use PTZs for an up-close view

Can You Combine Thermal & Visible in One?

Some smart cameras now combine the best of both systems - they use lower-cost thermal imagers optimized for **detection** and HD visible for color **assessment**.

This gives you all the advantages of thermal, like longer-ranges, 24-hour accuracy, and low nuisance alerts – with the benefits of HD color on the target, in one affordable package.



Some cameras now use thermal for detection...

and HD visible for alarm assessment

A close-up, slightly blurred background of a silver chain-link fence. The fence is made of interlocking diamond-shaped metal links. The background behind the fence is a mix of brown and grey tones, suggesting an outdoor setting like a field or parking lot. A semi-transparent white rectangular box is centered over the fence, containing the main text.

Security You Can Rely On...
Best Practices for
Outdoors

Best Practice: Choose Cameras Built for Outdoors

Outdoor cameras have to survive the elements. Choose systems that are properly designed to handle temperature changes and keep out humidity, snow or even blowing sand.

Look for the NEMA 4X or IP66 (or higher) rating on the camera's specifications.



Best Practice: Image Stabilization Reduces False Alerts

Many outdoor video security systems are naturally impacted by winds or vibrations from planes, trains, weather and machinery. Even a small breeze will cause a pole-mounted camera to move considerably. It's difficult for smart cameras to detect movement in a scene when its whole field of view is also moving from wind.

For indoor surveillance applications, this isn't a problem. Outdoors, it's a major cause of either misdetects or nuisance alarms.

The best way to overcome the impact from wind or vibrations is to choose cameras that first stabilize the image, before the video analytics take place. Such built-in stabilization will help alleviate this common but often overlooked problem.

You should also choose **high quality poles**, and avoid wood telephone/utility poles. (In addition to swaying, wood poles will shrink, causing detection zones to shift.)

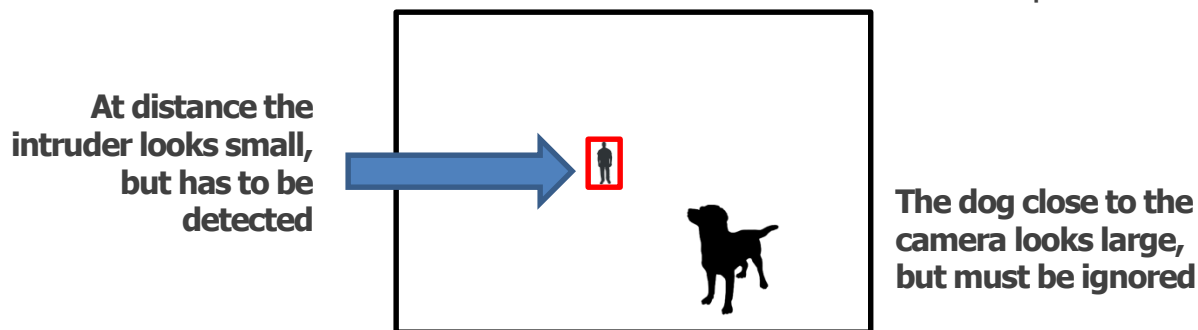
Best Practice: Geo-Registration for Accuracy

Security cameras detect movement, but outdoors everything moves - trees, foliage, small animals, and blowing debris can trigger a huge number of false alarms unless properly addressed.

One way to reduce these nuisance alerts is through geo-registration, which means all objects in the camera's field of view are mapped to GPS coordinates. The camera's software uses these references to determine the true size and location of every object.

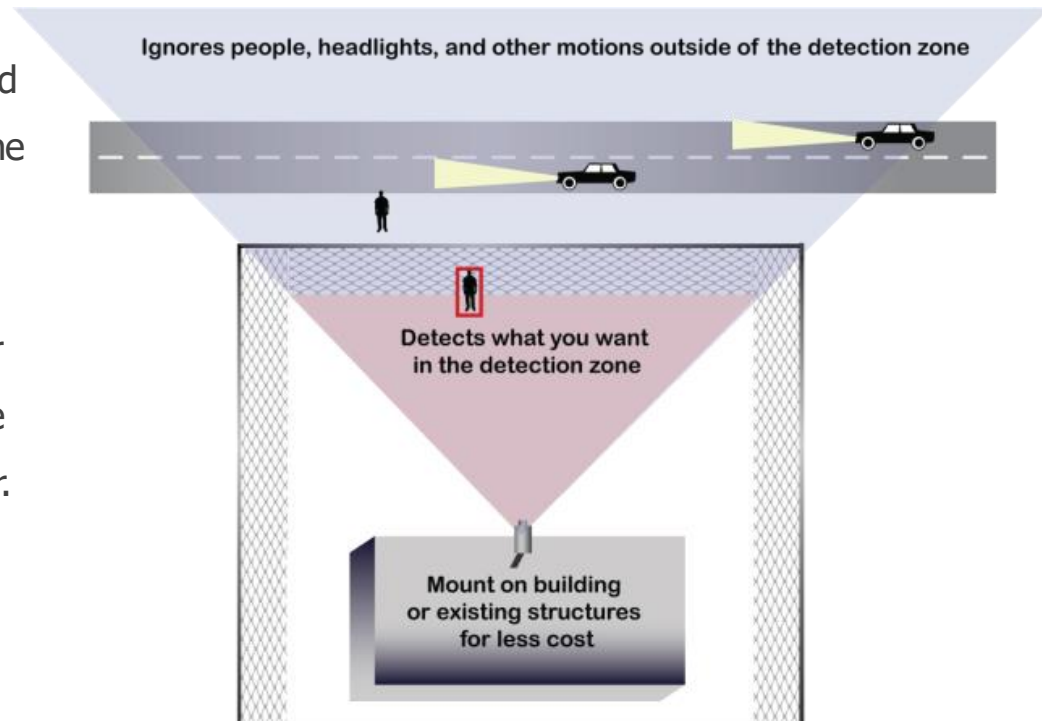
This is really important. Human vision has depth perception – we can tell which object is close and which is far. But a “one-eyed” camera can't, unless it's geo-registered.

Once the camera knows objects' true size and location, you can apply very accurate size and location filters, with is the key to reducing nuisance alerts. This is why smart cameras can filter a dog near the camera but still detect a person far away.



Lowering Costs: Reduce Infrastructure with Geo-Registration

Geo-registration also enables another huge cost advantage: You can aim directly at a fence line and correctly detect intrusions the instant they enter the secure area while ignoring objects outside the detection zone. This lets you mount detection cameras onto existing infrastructure, where power and communications already exist, and reduce the need to install poles at the more remote perimeter.



Best Practice: Know Your Inbound Detection Range

A camera's video analytics detect targets that move into its detection area. So knowing the camera's true range lets you design a dependable system with no gaps.

The best practice is to measure the farthest distance at which the camera can automatically detect a person walking "inbound" or directly toward the camera.

Unless the camera specs explicitly state "Inbound Detection" assume it's crossfield, and test it yourself.

Inbound detection is always less than crossfield because a person moving across the camera's field of view creates a lot of motion, which is easier to detect. But a person walking toward the camera produces little motion, making them harder to detect. In the real world, intruders can enter from any direction, so it's important to design the system for all situations.

When choosing a system, make sure the manufacturer specifies **inbound detection ranges** to prevent security gaps.

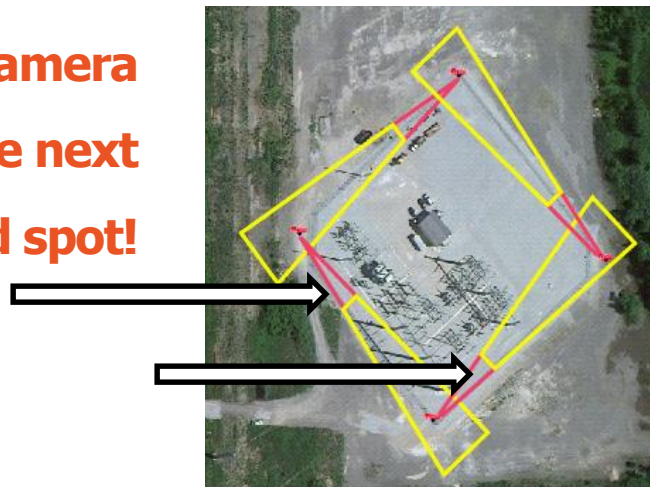


Best Practice: Cover the Blind Spot

A camera's field of view doesn't begin where it's mounted. Instead it can only detect at a measurable distance in front – this is the blind spot. Every security camera has a blind spot, which has to be considered in your security design, or someone will be able to walk right under a camera undetected.

Some outdoor surveillance designs will narrow a security camera's field of view to increase the camera's detection distance in an effort to decrease costs. This is not necessarily a bad concept, but it's important to understand that doing so also makes the blind spot under the camera larger, sometimes doubling the number of cameras required after all.

The view of each camera should cover the next camera's blind spot!



Blind Spots Leave Security Gaps



Longer-Range Cameras Covering Blinds Spots

Tools & Resources

We hope you found these tips and resources helpful. Follow them closely, **and you really can** turn your video security system into an outdoor burglar alarm!



- To perform an online security design of your facility in minutes, visit: www.sightlogix.com/sightsurvey/
- To read more outdoor security tips and best practices, visit: www.sightlogix.com/blog/
- To request a meeting with a solution specialist, email info@sightlogix.com or call +1 609.951.0008 x109

About SightLogix

Sightlogix makes the most accurate and affordable outdoor video security systems you can buy. SightLogix thermal solutions protect the world's most important sites, helping business solve their toughest theft, vandalism and sabotage problems.

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