Benefits of Ranging Sensors

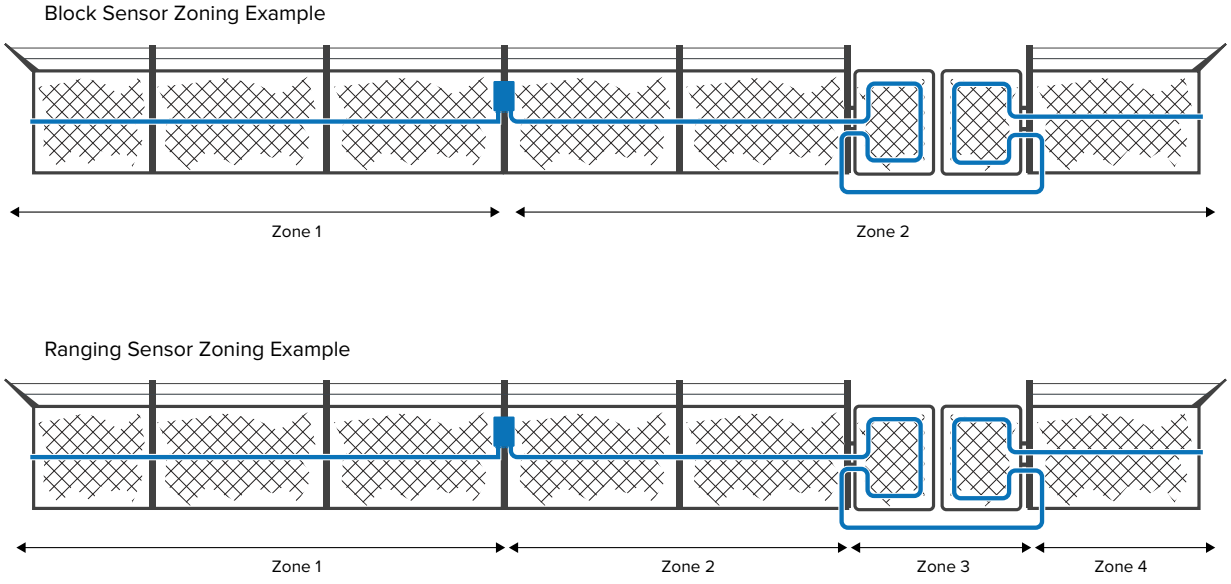
By Stewart Dewar, Senstar Product Manager

Perimeter intrusion detection sensors are highly effective solutions for securing a site. When buried, they provide a covert sensor that is virtually impossible for an intruder to bypass without being detected. When fence-mounted, they turn the existing fence into a smart fence, detecting any attempt to cut, climb, or break through its fabric. Detection at the perimeter enables the security system to respond while the intruder is still outside the protected area by calling up cameras and engaging deterrence devices like security lights and sirens.

Block vs ranging sensors

Based on the granularity of alarm information presented to the security system, fence-mounted sensors can be divided into two categories: block and ranging.

- Block sensors – Each sensor functions as an individual alarm zone. For example, Senstar's FlexPS microphonic fence sensor uses two sensor cables (A and B), resulting in two alarms zones.
- Ranging sensors – The sensor has distance-measuring capabilities, enabling it to determine the location along the sensor cable where the disturbance event is occurring. For example, Senstar's FlexZone and FiberPatrol locate intrusions to within 1 to 4 m (3 to 13 ft).



Block sensors need physical field units to define the start and end of zones. Ranging sensors allow a continuous run of sensor cable to be broken into zones through software. Note that some sensors, like the FlexZone-4, may report to security systems at the zone level but are still considered ranging sensors as they use distance information internally when analyzing disturbances.

While block sensors have their place, especially at smaller sites that require only a handful of alarm zones, ranging sensors offer numerous benefits that improve performance while lowering overall operating costs, including a lower nuisance alarm rate and lower installation/maintenance costs.

ARTICLE

Avoid weather-related nuisance alarms

Anytime an intrusion detection sensor is attached to a fence, there is the potential for nuisance alarms generated by strong winds. Modern fence sensors employ various algorithms to distinguish between weather-related disturbances and true intrusions. The effectiveness of these algorithms in large part determines the end-user's overall level of satisfaction with the system.

Sensors with ranging capabilities can improve their weather-rejecting capabilities by using a technique known as environmental disaggregation. The sensors can differentiate between weather-induced disturbances

Ranging sensors distinguish beween localized and distributed weather-induced disturbances

Define zones in software

Alarm zones in ranging sensors are defined in software, not by physical equipment placement. This lowers installation costs by reducing the number of field boxes to be installed, as extra equipment isn't needed to meet zone requirements. This also simplifies the protection of gates and culvert coverings, as the cable can be looped across them and configured in software as a separate detection zone.

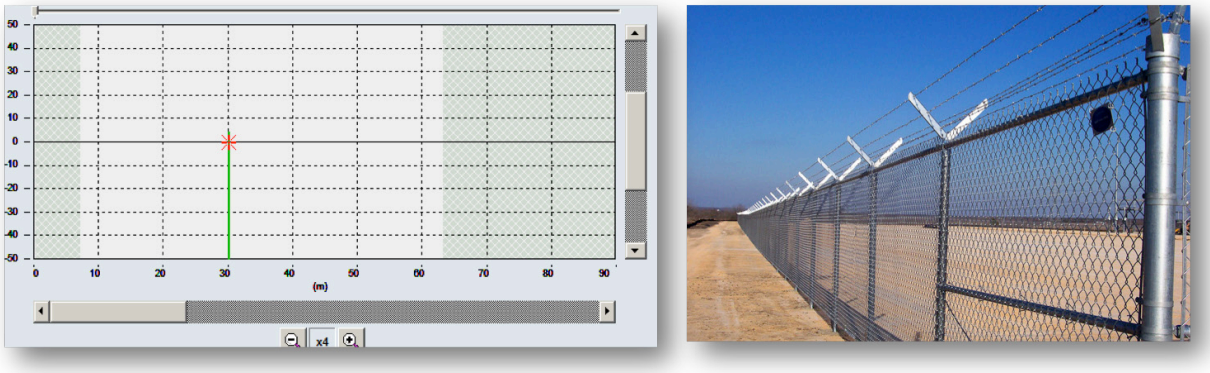
In addition, ranging capabilities better future-proof the system as zones can be adjusted anytime afterwards to accommodate for changes in perimeter infrastructure and usage. For example, the required zone changes when a new surveillance camera or gate entrance is added could necessitate additional equipment with a block sensor. With a ranging sensor, the new camera or gate area is simply a configuration change in software.

In this deployment, the culvert beneath the security fence is protected with the same sensor cable as the fence but is configured as a separate zone in software.

Less walking, more troubleshooting

Ranging provides another practical benefit: the ability to quickly locate sources of nuisance alarms caused by cut, damaged or improperly installed sensor cable, as well as damaged, old, or poorly constructed fences. Loose signs can also cause problems when flapping in the wind.

Even on a relatively short perimeter, carefully inspecting the fence along an entire zone takes considerable time. If the precise location is known before technicians are dispatched, finding and resolving the issue is much easier and takes less time.



A loose sign is a common cause of nuisance alarms. Using tools like Senstar's Universal Configuration Module, technicians can quickly locate and resolve fence-related issues.

Another troubleshooting benefit is that alarm thresholds can be set to different levels within a zone. This is highly beneficial when a fence changes in its construction. For example, if parts of a fence are reinforced or use thicker posts, the alarm threshold can be adjusted to accommodate the changes in rigidity.

Zone gate areas separately

Ranging provides a very practical benefit for sensors used to protect gates: The gate area can be configured as a separate zone on the same sensor, enabling it to be masked or placed in access mode during authorized usage while the fence on each side remains protected (with block sensors, the gate becomes part of a larger
zone or is protected separately by additional equipment).

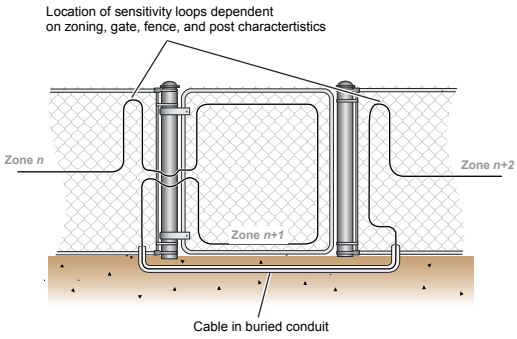


Illustration of FlexZone being used to protect a swinging gate. As the gate has its own zone, it can be masked in software during normal business hours while the fence on each side remains protected.

Ranging sensors go the distance

Perimeter sensors with ranging capabilities enhance site security by providing additional intelligence to the SMS/VMS while also making calibration and maintenance easier. That's why ranging is supported in FlexZone, FiberPatrol, Senstar LM100, and OmniTrax perimeter intrusion detection sensors and is an integral part of the security of thousands of sites' worldwide.

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