SENSTAR

Solar Park Physical Security Guide

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Given their rising importance to the energy mix, the geographical footprint and remote locations of photovoltaic (PV) solar parks create unique security challenges. While specific security requirements vary by jurisdiction, the primary objective remains consistent: safeguarding the electric grid distribution system from physical disruptions and unauthorized access.

Senstar provides field-proven solutions tailored for the solar industry. Our portfolio of sensors and software helps operators move beyond basic security, providing a comprehensive security posture designed to deter, detect, delay, assess, and respond to potential threats.

Deter & Delay
Physical barriers and intelligent lighting to discourage intruders.

Detect & Assess
Perimeter intrusion detection sensors (PIDS) and AI-driven video

Communicate & Respond
Integrated Video and Security Management Software (VMS/SMS) that ensures rapid alerts and coordinated response protocols.

DETECTION AND DETERRENCE AT THE PERIMETER

A security fence along the perimeter of a solar park is the first line of defense. But, by itself, it is only a minor deterrent to determined intruders – they can cut-through or climb it in seconds. Once inside, intruders can threaten service, cause extensive damage, steal copper and other supplies, and/or fatally injure themselves.

Senstar offers a range of products that bring intelligence out to the perimeter. Intelligent lighting functions as an active deterrent while sensors and surveillance cameras detect and locate intrusion attempts. Perimeter detection enables a range of security responses, including triggering the site's alarm system, queuing up camera systems, and engaging deterrence devices like audio messages or additional lighting.

Interior areas can also be protected. As Senstar sensors share common communication protocols, a mix of sensors may be deployed at a site without adding additional infrastructure.

FUNCTION	PRODUCT	BENEFIT
DETER	Senstar sensors	Senstar intrusion detection sensors can trigger on-site deterrence devices like security lights or sirens
	Senstar LM100	Intelligent lighting and intrusion detection illuminates the perimeter. Can strobe at intrusion location.
	Video analytics	Enable deterrence devices (lights, audio) via early pre-intrusion detection
	Senstar Symphony Common Operating Platform	Software allows two-way audio support which enables voice down capability, so security personnel can speak to intruders
DETECT	FiberPatrol	Fence-mounted perimeter intrusion detection (fiber optic)
	FlexZone	Fence-mounted perimeter intrusion detection (cable)
	Senstar LM100	Perimeter intrusion detection (accelerometers in luminaires)
	Senstar MultiSensor	Fence, wall, or structure intrusion detection
	Smart 3D LiDAR	Perimeter, gate, or area intrusion (3D alarm zones)
	Wireless Gate Sensor	Gate protection (accelerometer)
	UltraWave	Gate and area protection (microwave)
	Video analytics	Detect and track intruders and vehicles near, at, and inside the perimeter

Multi-layered security at a solar park may include fence-mounted perimeter intrusion detection sensors, AI-powered analytics, and security lighting.

ASSESS, COMMUNICATE AND RESPOND TO SECURITY THREATS

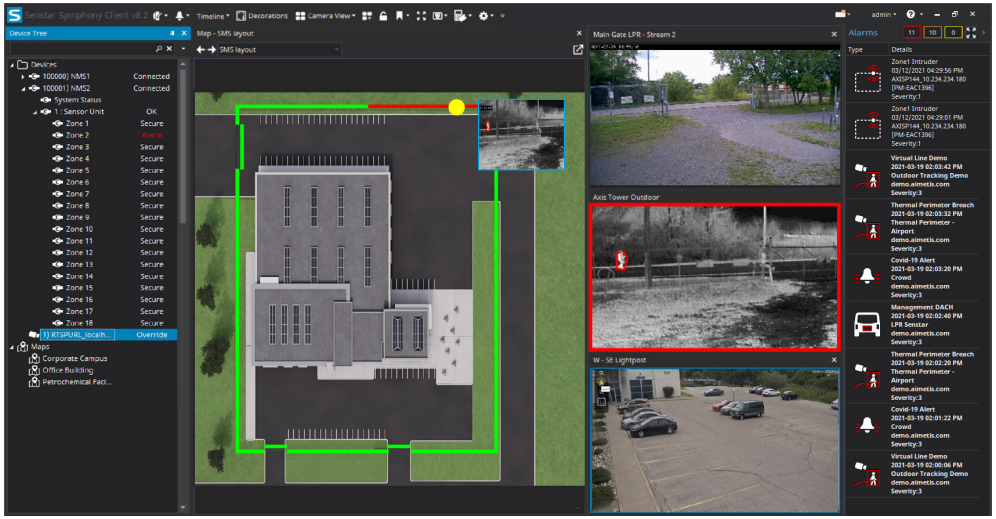
The Senstar Symphony Common Operating Platform complements perimeter sensors by providing remote assessment, communication, and response capabilities:

- Efficiently monitor multiple sites from a central location
- View surveillance video from all major camera manufacturers, including video from low-light and thermal devices
- Employ video analytics to enhance monitoring capabilities while reducing operator workload
- Use sophisticated intelligent search for post-incident analysis

STREAMLINED VIDEO MANAGEMENT

The Senstar Symphony Common operating Platform enables operators to control their entire video surveillance system from a central location. Operator features include:

- Integrated sensor, video analytic and access control events
- On-site I/O device control, including 2-way intercoms
- Automated detection and tracking of vehicles and people
- Rules engine for automated workflows



Senstar Symphony links sensor, video analytic, and access control events to multiple cameras, a graphical map, and event-specific actions and operator instructions..

FUNCTION	PRODUCT	BENEFIT
ASSESS / COMMUNICATE	All Senstar sensors	Zone or distance-based locating. Direct PTZ cameras to intrusion location
	Senstar LM100	Uniform lighting along the perimeter enhances the assessment value of video cameras
	Senstar MultiSensor	Close-up image capture at intrusion location
	Smart 3D LiDAR	High-density real-time point cloud viewable as RTSP video stream
	Senstar Symphony Common Operating Platform	Camera callup, auto-PTZ and video analytic overlays
	AI video analytics	Identify vehicles and people via license plate recognition and face recognition
	Senstar Symphony Common Operating Platform	Streamline display of alarm, video, and location data
RESPOND	Senstar Symphony Common Operating Platform	Provide response forces with key data, including mobile apps, and accurate location information

MOBILE SUPPORT FOR ON-CALL STAFF

Senstar Symphony can support on-call staff with a variety of functionality from their mobile device, including device notifications, email/SMS alerts (with captured images), access to individual cameras, and on-device video recording.

EQUIPMENT AND SOFTWARE DESIGNED FOR SOLAR PARKS

In addition to effective assessment and response tools, energy utilities require scalable solutions that are suitable for deployment across large numbers of sites, are ultra-reliable, maintain a low nuisance alarm rate, and incorporate robust architectures that avoid downtime and unscheduled maintenance visits.

MADE FOR HARSH CONDITIONS

Senstar sensors are designed for use in harsh environments. The outdoor equipment is designed to operate across a wide temperature range (typically –40 to 70 °C / –40 to 158 °F) and includes advanced algorithms that minimize nuisance alarms generated by wind, rain, and snow.

ON-SITE FAULT TOLERANCE

Senstar sensors include support for bi-directional loop networks, device redundancy, power supplies and network connections, so that a failure of one component or sensor does not bring down the entire system.

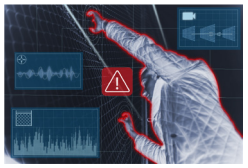
REMOTE MANAGEMENT AND LOCAL FALLBACK

Site sensors can be managed by the Senstar Rugged Controller, designed for use at unmanned sites. It offers remote management, WAN/SCADA support, and local fallback capabilities to simplify administration and to provide local fallback if network connectivity is lost.

SCALABLE, MULTI-SITE VIDEO MANAGEMENT SOFTWARE

The Senstar Symphony Common Operating Platform uses a scalable architecture that offers a feature set ideal for critical infrastructure operators:

- Edge storage – Video may be stored on-camera or edge devices to prevent the loss of critical video if network connectivity is disrupted.
- Licensing – Per-camera licensing makes Senstar Symphony ideal for gradual rollouts, as additional cameras can be added as required. Video analytic licenses are moveable – existing licenses can be repurposed to meet changing security demands.
- Built-in failover – Senstar Symphony includes support for redundancy and failover.



ELIMINATE NUISANCE ALARMS

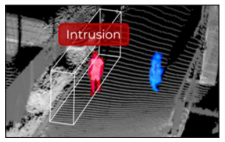
There is a cost for nuisance/false alarms – ranging from expensive truck rolls to security operator distractions to outright system mistrust. Senstar, with its inovative enironmental rejection algorithms, AI learning, and Sensor Fusion technologies, as well as its cutting-edge MultiSensor and Smart 3D LiDAR solutions, can defeat nuisance alarms once and for all.

PHYSICAL SECURITY SAMPLE PLAN

Site	Solar park
Physical threats	Copper theft, vandalism, sabotage and trespassing
Operational threats	Unauthorized access to outdoor equipment, buildings and indoor systems
General deterrence practices	• Security lighting (passive + active) • Automated PA system • 2-way intercoms at entrances • Perimeter signage and warnings • Overt video surveillance

TACTIC	DETERRENCE	DETECTION	DELAY	ASSESSMENT	COMMUNICATION	RESPONSE
Cut, climb or lift fence fabric	Security fence or wall with outrigging Perimeter lighting PA system	Fence sensor LiDAR AI video analytics	High quality and maintained security fence or wall	Surveillance system Security lighting 2-way intercom	Automated electronic notifications Email SMS Mobile app) Site security events linked to specific procedures and contact information	Local security forces
Climb gate	Security gate with outrigging Perimeter lighting PA system	Fence or gate sensor LiDAR AI video analytics	High quality and maintained security gate			
Break or bypass gate lock	Security hardware 2-way intercom Surveillance system	Fence or gate sensor LiDAR Latch contact AI video analytics	Security hardware			
Tunnel under fence or gate	Below-ground fence structure Hardened surface (e.g. concrete) Surveillance system	Buried fiber optic sensor AI video analytics	High quality and maintained security fence Hardened surface (e.g. concrete)			
Firearms and explosive devices	Ballistic fencing/walls	AI video analytics Audio sensors				
Ladder-assisted climb or elevated position perimeter crossing	Security fence with outrigging Perimeter lighting PA system	Fence or gate sensor LiDAR AI video analytics	Elevated position perimeter crossing			
Vehicle ramming	Security fence or wall Anti-vehicle bollards	Fence or gate sensor LiDAR AI video analytics	Security fence or wall Anti-vehicle bollards			
Access via false or misappropriated credentials	Access control system Surveillance system	Schedule-based access License plate and/or face recognition analytics				

1 DETECT INTRUDERS AT THE PERIMETER



Smart 3D LiDAR
Detect and track activity inside and outside perimeter via 3D detection zones.

AI Video Analytics
Leverage existing surveillance infrastructure. Detect activity and classify based on type (person, vehicle, other)

Senstar LM100
Ideal for new sites or those requiring security lighting

FiberPatrol
Fiber optic sensor, ideal for sites with existing security lighting

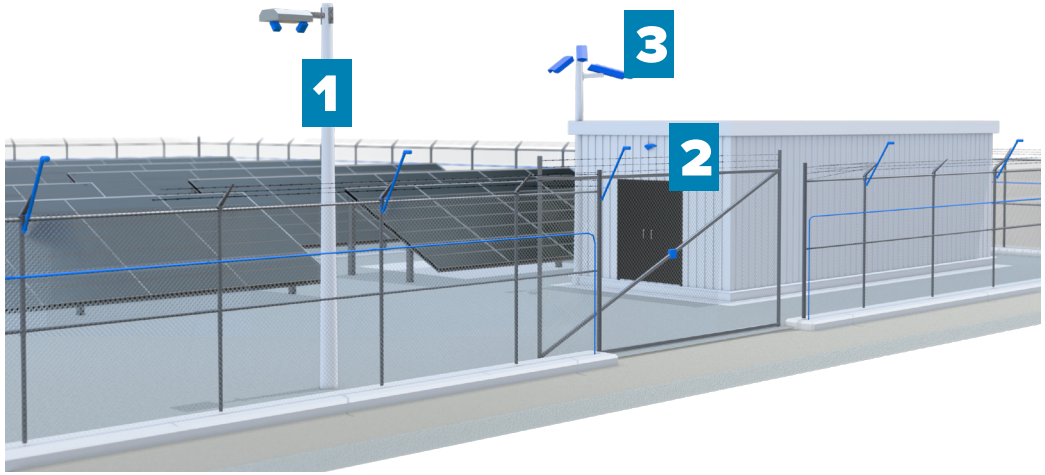
FlexZone
Ideal for sites with existing security lighting

2 MONITOR GATES AND OPEN AREAS

Sliding Gates
Monitor gate activity with Wireless Gate Sensor, Senstar MultiSensor or Smart 3D LiDAR.

Swinging Gates
Attach FlexZone, FiberPatrol, or Senstar LM100 directly to gate panels

Open Areas
Monitor open areas with Smart 3D LiDAR, Senstar MultiSensor, or UltraWave microwaves



3 TRANSFORM PASSIVE SURVEILLANCE INTO AN ACTIVE RESPONSE

Senstar Symphony Common Operating Platform supports cameras from all major manufacturers, including low-light and thermal models:

- Fixed cameras – Use outdoor video analytics to detect intruders outside and inside the fenceline
- PTZ cameras – Apply PTZ tracking analytics for hands-free camera control
- View precise location of perimeter intrusions on custom maps and link alarms to specific cameras.
- View LiDAR real-time 3D high-density point clouds and alarm status
- Intercoms – Use 2-way audio to deter intruders
- Device control – Trigger local deterent mechanisms, including security lights and pre-recorded messages
- Alert on-call staff – Provide on-call security staff with access to alarms, photos and video feeds, and mobile recording
- Identify people and vehicles using license and face recognition analytics

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