Critical infrastructure protection software

ST-SENS is an “all-in-one” software suite for supervision and management of various optronic sensors, radars (ground FMCW, maritime...) or acoustic. It represents the convergence point of sensors network to ensure automatic monitoring and complete protection of ground and maritime sites, 7/24/365.

ST-SENS steers (analyses?) targets detected by radars, displays and records video streams from various optronic cameras and directs them according to various modes: manual control, patrol with image analysis, positioning on track and tracking (using radar signature or video analysis).

This software suite includes the following modules:

- Control module
- Radar module
- Tracking module
- VCA module

Applications

- Sensitive areas surveillance like ports, airports, chemical and nuclear industries
- Borders and coastal areas surveillance
- Autonomous video surveillance solutions
- Control 24/7/365
ST-SENS is an “all-in-one” middleware supervision and management software solution to control optronic sensors and to interface with different software: video analysis software VCA module, VMS market software, radar management software Radar module control module and the target tracking solution Tracking module.

**EOS (Electro Optic System) control:**
- EOS control / command with access to advanced sensor features,
- Control of several EOS simultaneously,
- PELCO-D, VISCA protocol management – RS or TCP/IP serial link control,
- ONVIF S Profile protocol management.

**Video control / recording via standard VMS:**
- Visualization,
- Continuous recording, programmed or by event,
- Replay, events search on time bar,
- VMS software control from control module by TCP message,
- SDK integration third-party VMC software (GENETEC, MILESTONE...).

**Target tracking with radar control software (Radar module):**
- TCP/IP Communication by socket with radar control software,
- NMEA, XML frame exchange,
- EOS control for target positioning, automatic tracking.

**Video analysis / tracking (Tracking module and VIGISENS-VCA module):**
- Image analysis on preset locations (with various criteria) and loop,
- Real-time target tracking by video analysis.

**Events management:**
- Hardware (IBIT) events database management,
- Alarm events database management (video analysis, radar detection...),
- Replay functionality (videos and metadata).
**Radar module**

*Radar module* is able to drive various radar devices and is part of the ST-SENS software suite. It enables to configure and supervise surveillance situations from a geo-referenced map and to set up radar devices. Radar module interfaces with control module to ensure overlay of video with radar tracks.

**Situations setup:**

- Way Points Import from GPS equipment (GPX files),
- Geo referencing map using singular GPS points,
- Camera location and/or radar settings and associated fine tuning,
- Complex object creation (several radars and cameras managed jointly on a mast, a trailer or a vehicle) and complex events management,
- Intrusion and exclusion zones setting,
- « Dead » zones setting to ignore irrelevant tracks,
- Alarms and triggers for tracking targets by zone,
- Time slots setting for alarm triggering,
- Setup modification possible with way points.
Radar tracks management:

- Radar setting and control – TCP/IP link,
- Radar lobe display on the map (automatic reading of the radar features during the connexion: coverage, orientation, inclination),
- Target tracking and displaying, target state management according to surveillance zones,
- Target exclusion outside the radar lobe,
- Target display persistence after disappearance with adjustable duration,
- Centralized management of radar presets according to weather conditions with user friendly controls (radar by radar or for the entire configuration).

Target tracking

- TCP/IP communication by socket with the camera control software control tracking,
- Several target tracking strategies: monitoring of the most recent track, the closest or all alternately
- Camera azimuth adjustment on reference points,
- Representation of camera field of view: orientation and angle view,
- Manually target designation on map,
- Distance filters to ignore target beyond a desired tracking distance,
- Speed filter to ignore target out of velocity range,
- Live camera selection for one or more devices to follow a selected target,
- Automatic zoom centering on new detected target.

Tracking module

Tracking module is a module of the ST-SENS software suite assisting Sensortec vision systems to automate target tracking.
Available features:

- Digital image stabilization,
- Moving targets tracking on stable background (sky, sea, etc), with conservation of the tracking trajectory on complex background (fast boat tracking, UAV, plane),
- Motion detection and pedestrian tracking; trajectory anticipation in case of temporary hiding of the target,
- Image rotation management or zoom factors,
- Automatic adjustment when monitored, depending on the evolution of the target features,
- Vehicles tracking in a road traffic,
- Manual selection of the target (operator) or automatic detection (algorithm).

VCA module

VCA module is a video analysis software solution.

Competitive advantages:

- Detection in difficult conditions (night, rain, snow, ...),
- Detection of distant targets (from 1 pixel),
- More distant cameras (less numerous),
- Less than 2 false alarms / day per camera.

Compatibility all contexts:

- All image formats: color, BW, IR, Image intensifier..., Analog (PAL/SECAM) and digital (H.264, MJPEG),

Exceptional functions:

- Automatic target tracking/zooming of targets using PTZ device,
- Auto-tracking outside surveillance zones by fixed cameras,
- Controlling surveillance patrols on PTZ domes,
- Target outline signatures,
- Image stabilization, improvement, noise cancellation,
- Contrast Image enhancement,
- Camera aggression detection (blurring, misalignment, masking...).
Performances:
• 5 to 30 images per second, real time clipping,
• 7 logical levels of alarm conditions,
• Surveillance schedule,
• Exceptional sensitivity (from 2 pixels).

Quick start:
• Easy and quick setup,
• Plug and play system (without learning),
• Robustness (low false call rate),
• New analysis after each PTZ movement.