



Senstar Sensor Fusion

8.5

User Guide

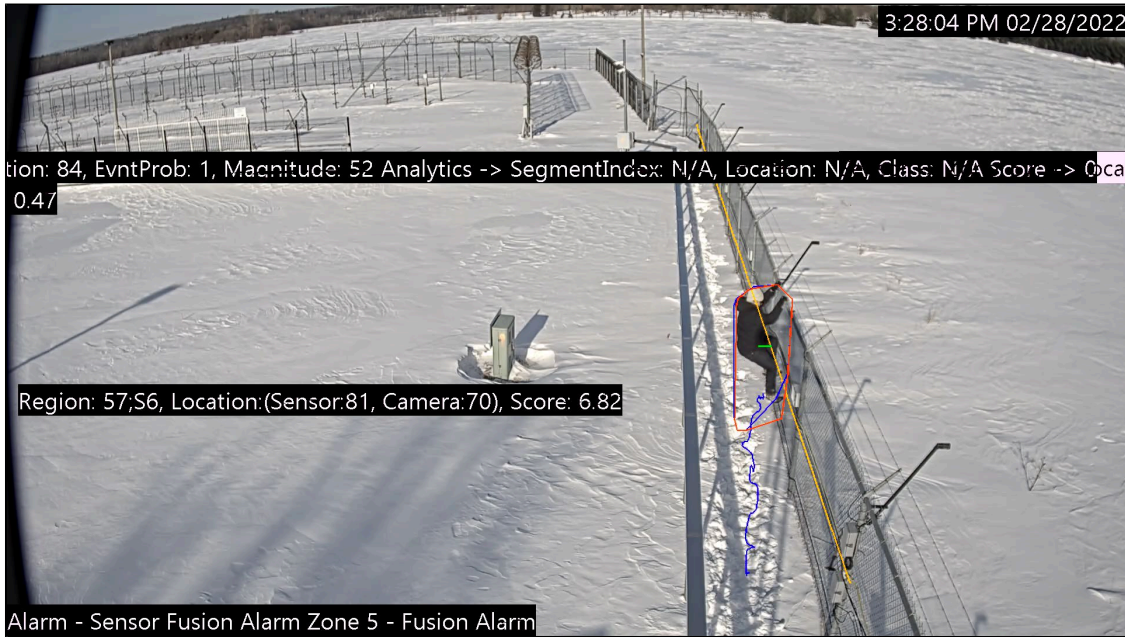
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Senstar Sensor Fusion

The Senstar Sensor Fusion combines a perimeter intrusion detection system data with a dedicated video analytic to significantly improve perimeter intrusion detection while reducing false alarms from each individual sensor.

The Senstar Sensor Fusion uses a video analytic to analyze objects close to the fence and correlates the results with data from the perimeter intrusion detection system. The Senstar Sensor Fusion calculates a probability from the video analytic (data including time, object classification, history, and location) and the perimeter intrusion detection system (data containing time, location, magnitude, and frequency), and uses that probability to trigger an alarm with a higher accuracy than alarms triggered by each system individually.



In addition, the Senstar Sensor Fusion provides redundancy if one of the components experiences a failure. When one component experiences a failure, the Senstar Sensor Fusion shifts the weight of the probability to the functional component and triggers alarms based on that probability.

The Senstar Sensor Fusion currently supports the following Senstar perimeter intrusion detection system technology:

- Senstar FlexZone

Requirements

In addition to the requirements of the Senstar Symphony Server, the Senstar Sensor Fusion requires the following items.

| Requirement | Description |
|-------------|---|
| Hardware | <ul style="list-style-type: none"> • 3.0 GHz processor or greater • 16 GB of RAM or greater • 1 TB of storage or greater |

| Requirement | Description |
|-------------|--|
| Software | <ul style="list-style-type: none"> • Senstar Symphony Server 8.5.x or later • Senstar Symphony Analytics Pack 8.3.x or later • Senstar Network Manager 2.54 or later |
| Licenses | <ul style="list-style-type: none"> • VMS device license • Senstar Sensor Fusion license • Senstar Symphony V8 Network Manager Integration • Senstar Connection to ranging Sensor |
| Cameras | <ul style="list-style-type: none"> • Fixed camera • 1920 x 1080 resolution • 5 FPS minimum |
| PIDS | <ul style="list-style-type: none"> • Senstar FlexZone 60 with Ethernet communication (Silver network) |

You must integrate the Senstar Network Manager with the Senstar Symphony Server to get data from the perimeter intrusion detection system for use with the Senstar Sensor Fusion. For more information on integrating the Senstar Network Manager, see the *Senstar Network Manager Introduction* and *Connect to Senstar Network Manager* topics in the Senstar Symphony Webhelp.

Camera placement

The proper placement of cameras is necessary for the Senstar Sensor Fusion to work correctly.

The effective range for a camera is between 4 meters and 40 meters from the fence segment that the camera monitors. At distances less than 4 meters and greater than 40 meters, the accuracy for determining the location of an object is too low. Follow these general guidelines when mounting cameras:

- Cameras should be mounted at 5 meters or higher.
- Cameras should be mounted at least 4 meters from the fence.

The fence segments that the Senstar Sensor Fusion monitors must have sufficient lighting for the camera. Depending on the camera, this could be infrared lighting for thermal cameras or lighting from the Senstar LM100.

Configuration

Configure the Senstar Sensor Fusion to associate a section of the perimeter intrusion detection system with an area in the camera view.

When you configure the video analytic component of the Senstar Sensor Fusion, you set the position of the camera in relation to the perimeter intrusion detection system, you define the area that the video analytic analyzes, and you set the approximate size of a person in the scene.

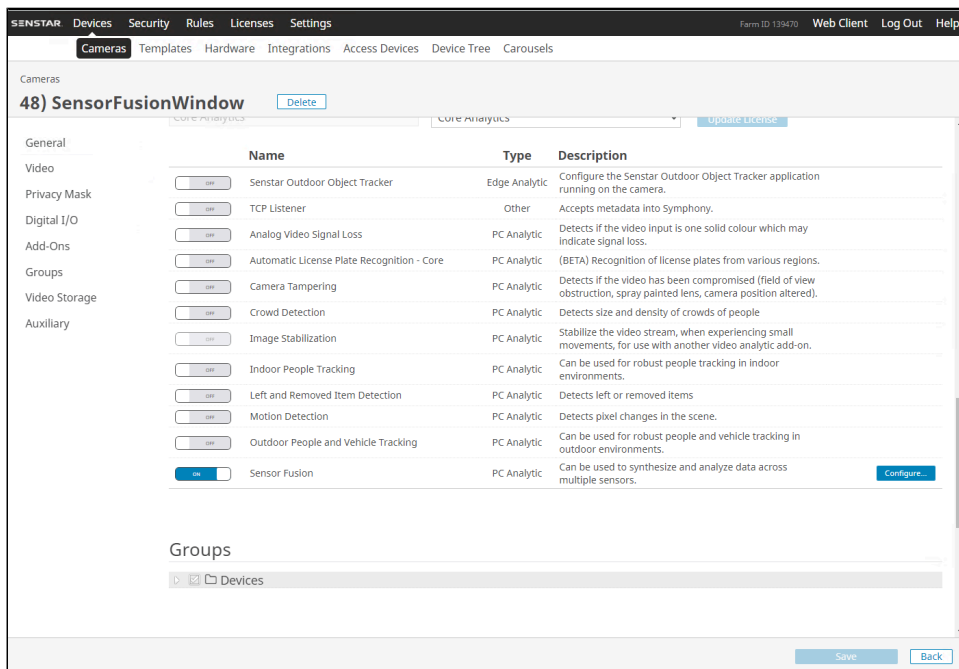
After you configure the video analytic component of the Senstar Sensor Fusion, you can create a rule. To create a rule, you create an event, action set, and schedule for the video analytic, and then add them to the rule.

Configure the Senstar Sensor Fusion

Configure the Senstar Sensor Fusion in the Senstar Symphony Server configuration interface.

For information about specific Senstar Sensor Fusion settings, see the Senstar Sensor Fusion settings topic.

1. In the Senstar Symphony Server configuration interface, click **Devices > Cameras**.
2. Select the camera and click **Edit**.
3. In the **Add-Ons** list, turn Senstar Sensor Fusion on and click **Configure**.



4. In the **Overview** section, configure the resolution and FPS for the camera.

5. In the **Processing Mask** section, set the areas in the image that the camera ignores or analyzes.



6. In the **Calibration** section, calibrate the camera to the scene.

Select **Automatic** to have the video analytic automatically determine the camera position and view information.

Select **Uncalibrated** to run the video analytic without camera position and view information.



Warning: Selecting this option greatly reduces the accuracy of the video analytic.

Select **Manual** to manually set the camera position and view information. You can drag the camera to the correct position or adjust the parameters in the applicable fields. The reference person in the image should match, as closely as possible, the size and position of a real person in the view.

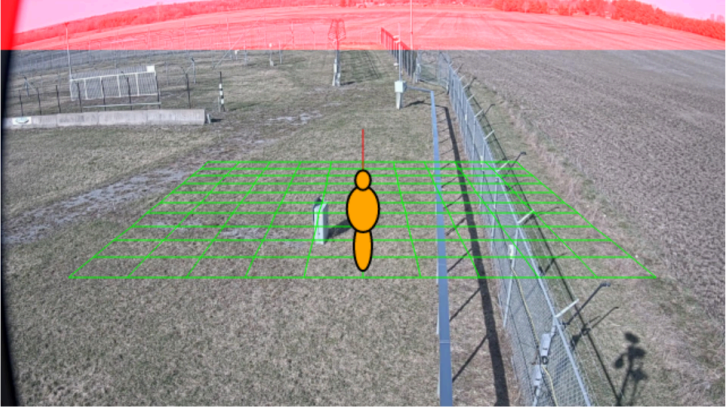
Calibration


Type

Manual

Manually set the camera position and field of view information.

Instructions





Field of view (degrees)

60

Pan (degrees)

0

Twist (degrees)

0

Height (meters)

4

Distance (meters)

15

Zoom In

Zoom Out

7. In the **Sensitivity** section, set how sensitive the Senstar Sensor Fusion is to contrast and motion, and select which options to enable to optimize the camera for the environment.

Sensitivity

Decrease Sensitivity

Increase Sensitivity

Object Contrast

Object Motion

Background Motion

Options

☒ Shadow Suppression (Simple)

☐ Shadow Suppression (Complex)

☐ Snow Suppression

☐ Dynamic Background

☐ Thermal Camera

☐ Detect Distant Objects

8. In the **Sensor Segments** section, draw the segments of the of the perimeter intrusion detection system.

Sensor Segments

Instructions



☒ Show Measures

Sensor Segment 1

X

Select a Device

Select a Zone

Range

0

To

7

Reference Points

8

Scale

24

Confidence Level

5

Buffer Zone Distance

1

The sensor segments do not have to cover the entire perimeter intrusion detection system. The coverage of the Senstar Sensor Fusion does not depend on the perimeter intrusion detection system zone configuration; the sensor segments can be part of a single zone, part or multiple zones, or match a zone exactly.

- a) In the image, click and drag to draw a sensor segment that matches both the position and location of the applicable perimeter intrusion detection system zone.
- b) Select **Show Measures**.
Displaying measurements is optional, but the measurements make it easier to add sensor segments.
- c) In the **Name** field, type a name for the sensor segment.
- d) In the **Select a Device** list, select the perimeter intrusion detection system that provides information to the Senstar Sensor Fusion.
- e) In the **Zone** list, select the perimeter intrusion detection system zone that the sensor segment matches.
- f) Set the length of the sensor segment in the **Range** and **To** fields.

The **Range** value should match the starting point of the perimeter intrusion detection system zone.

Example settings

| PIDS zone | PIDS length | Range value | To value |
|-----------|-------------|-------------|----------|
| 1 | 10 | 0 | 10 |
| 2 | 20 | 10 | 30 |
| 3 | 10 | 30 | 40 |

- g) In the **Reference Points** field, select how many reference points you want on the sensor segment.

You should add as many reference points as there are fence posts in the perimeter intrusion detection system zone.



Warning: When you add additional reference points to the sensor segment, the yellow lines that mark the buffer zone will converge on the end of the sensor segment. The buffer zones lines will return to normal once you set the **Scale** value in the next step.

- h) In the **Scale** field, adjust the scale of the sensor segment so that the reference points match the fence posts included in the length of the sensor segment.



Tip: To set the scale correctly, focus on two reference points and adjust the scale so that the reference points in the image match the fence posts.


- i) In the **Confidence** field, set how confident the Senstar Sensor Fusion must be to raise an alarm.
j) In the **Buffer Zone Distance** field, set how far from the sensor segment (and the perimeter intrusion detection system zone) the video analytic looks for objects.

9. Click **OK**.

10. Click **Save**.

Senstar Sensor Fusion settings

Overview

| Setting | Description |
|--|--|
| Analysis Resolution | Select the resolution that the Senstar Sensor Fusion uses to analyze video frames. |
| Analysis FPS | Select the number of frames per second that Senstar Sensor Fusion uses to analyze video. |
| Automatically Select Resolution Based on Calibration | Select to automatically set the analysis resolution based on the settings in the Calibration section. |
| Simple Mode | Select whether to hide or display the advanced settings.  Warning: Changing the advanced settings can adversely affect the performance of the video analytic. |



Processing Mask

| Setting | Description |
|--------------|--|
| Drawing Mode | Select whether the paintbrush marks areas in the processing mask image to include (Analyze) or exclude (Ignore). |
| Size | Select the size of the paintbrush that you use to draw on the processing mask image. |

Calibration

| Setting | Description |
|-------------------------|---|
| Type | Select the type of calibration. Manual allows you to set the camera position. Automatic allows the Outdoor People and Vehicle Tracking video analytic to set the camera position and field of view. Uncalibrated runs the Outdoor People and Vehicle Tracking video analytic without camera position and field of view information. |
| Zoom In | Click to make the calibration diagram larger. |
| Zoom Out | Click to make the calibration diagram smaller. |
| Field of view (degrees) | Define the horizontal field of view (in degrees) for the camera. |
| Pan (degrees) | Define the rotation around the vertical axis of the camera in relation to the scene. |
| Twist (degrees) | Define the rotation around the horizontal axis of the camera in relation to the scene. |
| Height (meters) | Define the vertical distance from the camera to the ground. |
| Distance (meters) | Define the horizontal distance from the camera to the center of the scene. |

Sensitivity

| Setting | Description |
|------------------------------|---|
| Object Contrast | Use the slider to set how sensitive the Senstar Sensor Fusion is to differences between objects and the background. |
| Object Motion | Use the slider to set how sensitive the Senstar Sensor Fusion is to foreground motion when detecting objects. |
| Background Motion | Use the slider to set how sensitive the Senstar Sensor Fusion is to background motion when detecting objects. |
| Shadow Suppression (Simple) | Select to use simple shadow suppression. Simple shadow suppression is effective where there are light shadows in the scene.  CAUTION: Do not use shadow suppression with thermal cameras. |
| Shadow Suppression (Complex) | Select to use complex shadow suppression. Complex shadow suppression is effective where there are dark shadows in the scene.  CAUTION: Do not use shadow suppression with thermal cameras. |
| Snow Suppression | Select to have the video analytic ignore the motion of snow in the scene. |

| Setting | Description |
|------------------------|---|
| Dynamic Background | Select to have the video analytic ignore periodic movement in the background of the scene. This setting is effective for outdoor scenes where weather can cause motion in the background. |
| Thermal Camera | Select if the camera is a thermal camera. |
| Detect Distant Objects | Select to have the video analytic attempt to detect objects in the distance. |

Sensor Segments

| Setting | Description |
|--------------------------|--|
| Show measures | Select to show the distance (meters) between reference points on the image. |
| Segment name | Type a name for the sensor segment. |
| Select a Device | Select the perimeter intrusion detection system that provides the data to the Senstar Sensor Fusion. |
| Select a Zone | Select the zone from the perimeter intrusion detection system that you want to configure the . |
| Range | Set the distance where the camera starts monitoring the fence. This value corresponds to the distance from the perimeter intrusion detection system. |
| To | Set the distance where the camera stops monitoring the fence. This value corresponds to the distance from the perimeter intrusion detection system. |
| Reference Points | Set how many reference points are on the sensor segment. The reference points need to map to equidistant fence posts or markers placed manually near the fence. The Senstar Sensor Fusion video analytic uses the reference points to generate accurate alarms. |
| Scale | Set the scale to adjust the distance between the reference points. |
| Confidence Level | Set how confident the video analytic must be to raise an alarm. The range for this setting is 1 to 10, where 1 is the lowest level of confidence and 10 is the highest level of confidence. A setting of 1 will generate more alarms and a setting of 10 will generate fewer alarms. |
| Buffer Zone Distance (m) | <p>Set the distance (meters) from the sensor segment where the video analytic starts analyzing the scene.</p> <p>For example, if you set the buffer zone to 5 meters, the video analytic analyses any object that comes within 5 meters of the sensor segment.</p> |

Import / Export

| Setting | Description |
|------------|---|
| Import XML | Click this button to import a configuration XML file. |
| Export XML | Click this button to export the configuration XML file. |

Create an event

You can create an event that triggers a rule on the Senstar Symphony Server.

When the Senstar Symphony Server receives input from a device, it can trigger a rule. Different devices can trigger rules in different ways. For additional information on devices, see the manufacturer's documentation.

1. In the Senstar Symphony Server configuration interface, click **Rules > Events**.
2. Click **New Event**.
3. Type a name for the event.
4. To add a device, perform the following tasks:
 - a) Click **Add Devices**.
 - b) Select the device.
 - c) Click **OK**.
5. Perform one of the follow tasks:
 - If you add a camera, select the video engine and configure how it triggers a rule.
 - If you add a metadata device, select the input and configure how it triggers a rule.
 - If you add an access control device, select the readers and inputs, and configure how they trigger a rule.
6. Click **Save**.

Senstar Sensor Fusion event settings

The following settings determine when the Senstar Sensor Fusion triggers events on the Senstar Symphony Server.

You can configure the Senstar Sensor Fusion to trigger events from the video analytic, the perimeter intrusion detection system, or both.

The screenshot shows the 'Properties' tab for 'SensorFusionWindow' in the Senstar Symphony Server configuration interface. The interface includes a top navigation bar with 'Rules', 'Events', 'Action Sets', and 'Schedules'. The 'Events' tab is selected. On the left, there is a sidebar with 'Properties' and 'Fusion Events'. The main area shows the 'SensorFusionWindow' configuration. It includes a 'Name' field with a red 'Required' label and a placeholder 'Enter a name here...'. Below this, there are two sections: 'Class' and 'Segments'. The 'Class' section has three checkboxes: 'People', 'Vehicles', and 'Unknown', all of which are checked. The 'Segments' section has one checkbox: 'Sensor Segment 1', which is also checked. At the bottom right, there are 'Save' and 'Cancel' buttons.

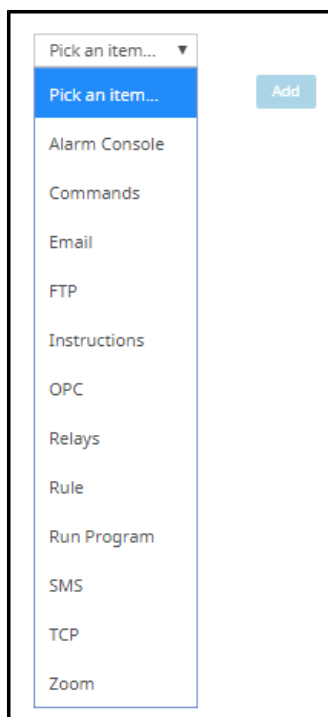
| Setting | Description |
|----------|--|
| People | Select if the Senstar Sensor Fusion should trigger events when it detects a person. |
| Vehicles | Select if the Senstar Sensor Fusion should trigger events when it detects a vehicle. |
| Unknown | Select if the Senstar Sensor Fusion should trigger events when it detects an unknown object. |
| Segments | Select the sensor segments for which the Senstar Sensor Fusion should trigger events. |

Create an action set

You can create an action set to determine what actions the Senstar Symphony Server takes when rule is triggered.

1. In the Senstar Symphony Server configuration interface, click **Rules > Action Sets**.
2. Click **New Action Set**.
3. Type a name for the action set.
4. In the **Alarm** list, select the cameras to view when an alarm occurs.
5. In the **Record** list, select the cameras that record footage when an alarm occurs.
6. To add other actions, perform the following tasks:

- a) In the **Pick an item** list, select an action.



- b) Click **Add**.
 - c) Configure the settings for the action.
7. Click **Save**.

Create a schedule

You can create a schedule to determine when a rule is active.

1. In the Senstar Symphony Server configuration interface, click **Rules > Schedules**.
2. Click **Add Schedule**.
3. Type a name for the schedule.
4. Define the active and inactive times for the schedule.
5. If required, add exceptions to the schedule.
 - a) Select a date.
 - b) Select whether to repeat the exception every year on that date.
 - c) Click **Add Exception**.
 - d) Define the active and inactive times for the exception.
6. Click **Save**.

Create a rule

You can create a rule to trigger the Senstar Symphony Server to perform actions.

1. In the Senstar Symphony Server configuration interface, click **Rules > Rules**.
2. Click **Add**.
3. Type a name for the rule.
4. Enable or disable the rule.
5. Add an existing event to the rule or create a new event to add to the rule.
6. If you add multiple events to the rule, select how the events must occur to trigger the rule.

- Select **in sequence** to trigger a rule when the events occur in the order in which the Senstar Symphony Server configuration interface lists the events.
 - Select **within a time period of** and specify the number of seconds to trigger an rule when all of the events occur in the specified time period.
7. Add an existing action set to the rule or create a new action set to add to the rule.
 8. Add an existing schedule to the rule or create a new schedule to add to the rule.
 9. Click **Save**.

Legal information

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