Araani Fire Guard

V3.01.08

USER- & INSTALLATION MANUAL

Copyright Notice

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Safety instructions

Definition of symbols

HAZARD STATEMENTS

Danger:	Indicates a hazardous situation which, if not avoided, *will* result in serious injury or death.
Warning:	Indicates a hazardous situation which, if not avoided, *could* result in serious injury or death.
Caution:	Indicates a hazardous situation which, if not avoided, *might* result in moderate or minor injury.
Notice:	Indicates a situation which, if not avoided, might result in property damage or in an undesirable result or state.

OTHERS

Information:	Indicates a shortcut or any other useful indication.
Attention:	Indicates an element which requires extra attention, not necessarily a hazard

Disclaimer

Danger:

The end user should be aware that fire safety is subject to strict standards and regulations.
Araani Fire Guard can never replace a mandatory fire detector. A solution equipped with Araani Fire Guard is also not intended to be linked with a fire alarm control panel. For such function, Araani refers to its certified solutions (SmokeCatcher Certified, FlameCatcher Certified).
Fire indications by Araani Fire Guard should only be raised after human verification.

SAFETY INFORMATION

Attention:

- Please read this document carefully before installing, using, or interacting with the Araani Fire Guard software or products running this software.
- This document must be kept for future reference.

Introduction

About this manual

This manual describes the installation and usage of the Araani Fire Guard software.
Please read this document carefully before installing, using, or interacting with the Araani Fire Guard software or products running this software.
The manual expects the reader to have some basic knowledge about video surveillance and the use of cameras.
Please refer to the camera documentation for any information that is related to the use, installation, or restrictions of the camera on which this software is or will be installed.

Liability

Every care has been taken in the preparation of this document. Please inform Araani NV of any inaccuracies or omissions. Araani NV cannot be held responsible for damage caused by technical or typographical errors and reserves the right to make changes to the product and manuals without prior notice. Araani NV makes no warranty of any kind regarding the material contained within this document, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Araani NV shall not be liable nor responsible for incidental or consequential damages in connection with the furnishing, performance or use of this material. This product is only to be used for its intended purpose.

Contact and support

Should you require any technical assistance, please contact your Araani reseller. If your questions cannot be answered immediately, your reseller will forward your queries through the appropriate channels to ensure a rapid response.
If you are a reseller, please contact your direct contact person, or contact our support staff via support@araani.com.

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Product description

Overview

Araani Fire Guard is an intelligent video surveillance solution, that will trigger an alarm if it sees smoke, smoke like phenomena (steam, damp, dust) or flames.

Araani Fire Guard is an edge-based video analytics software that runs on an Axis® camera. Although it cannot replace a primary fire detector, Araani Fire Guard does support control room operators, surveillance guards and security staff in preventing fires. Araani Fire Guard is typically used in situations where there is no obligation for fire detection or where there is already detection in place, but you nevertheless want to have an earlier warning.

Araani Fire Guard is an early warning system. By detecting smoke and/or flames in a very early stage of a fire and raising an alarm on the surveillance display, operators can verify the situation and take preventive actions to limit the impact of an incident.

Araani Fire Guard runs on compatible Axis® cameras and analyses the image real-time for any indication of smoke or flames. When detected, it generates an alarm that can be overlaid on the screen as a text label as well as a dynamic zone border, highlighting the location of the alarm in the field of view.

How to install Araani Fire Guard

System requirements

CAMERA REQUIREMENTS

The Araani Fire Guard software is compatible with a broad range of Axis® cameras. To run the Araani Fire Guard, a camera with recent chipset and firmware is required. For proper detection, the camera needs to have sufficient resolution and light sensitivity.
The camera needs to comply with the following characteristics:

- **Brand**: Axis® (https://www.axis.com/).
- **Chipset**: Artpec-6 or Artpec-7.
- **Firmware**: Latest qualified Axis® LTS (= long-term support) firmware.
  Firmware can be downloaded at https://www.axis.com/support/firmware.
  Refer to your camera manual on how to install firmware on the device or follow the steps under Camera firmware.
- **Resolution**: 1920 x 1080 or higher.
- **Framerate:** 12 fps or higher.
- **Aspect ratio**: 16:9 or 19:6 (*).

Notice: Check the Araani Fire Guard release notes to verify what Axis software versions are compatible with your Araani Fire Guard software version. Using an incompatible or untested version may result in malfunction, errors or detection performance issues.

(*) **Attention:** After changing the aspect ratio, a restart of the Araani Fire Guard software is required.

Additional requirements may be applicable, depending on site- and cabling specifics. such as:

- External power supply availability or power over Ethernet (PoE).
- Environmental requirements, e.g., temperature, humidity, etc.
- Safety requirements, e.g., protected zone, ATEX, etc.
- Etc.

Consider all these requirements when selecting the appropriate camera type. Axis® offers a wide range of camera models to comply to specific field needs.

An up-to-date list of compatible cameras is available online:
https://www.araani.com/en/solutions/surveillance/araani-fire-guard/fire-guard-camera-compatibility/.

AXIS® STREAMING LIMITATIONS

In setting up your system, pay attention to the fact that total streaming video capacity of an Axis® camera may be limited. For Araani analytics to work properly, the camera should be capable of delivering an application-specific video stream at HD (1920 x 1080) resolution. In combination with other video streams for recording, visualization, etc., the total computational capacity of the camera could be exceeded which will result in failure of the analytics.
The amount and complexity of video streams that can be delivered simultaneously by an Axis camera is limited by the performance of the processor. The computational load of a stream is expressed in megapixels per second (mps) and is calculated using the following formula:

P_{stream} = horizontal resolution (pixels) x vertical resolution (pixels) x frame rate (fps = frames per second) /1.000.000

The total streaming capacity is obtained by adding the load of all unique streams. Only unique streams are counted for as requesting twice the same video stream (same resolution, frame rate, encoding type, compression, etc.) from a camera does not require separate encoding and as such does not increase the computational requirements.

$P_{CPU} = \Sigma$ unique P_{stream}

Araani fire detection analytics requires a stream of 1920 x 1080 at 12 frames per second, thus:

P_{Araani} = 1920 x 1080 x 12 = 24,9 mps

This stream should be considered when calculating the total load.
The streaming load is practically independent of the encoding type (H264 versus H265).
The maximum capacity for a camera depends on the type of processor. Currently, two generations of processor are common in the Axis offering, named ARTPEC-6 and ARTPEC-7. These are the limits for both processor types:

- ARTPEC-6 maximum total streaming capacity = approximately 310 mps.
- ARTPEC-7 maximum total streaming capacity = approximately 367 mps.

In case of doubt, contact your supplier to know what processor type is used in your cameras.
As video stream compression is occurring in a dedicated part of the CPU, these limits are practically independent of other processor activities such as image optimization, mirroring or ACAP-based analytics.
For proper functioning of Araani fire detection analytics, make sure the total stream demand - including the required analytics stream - does not exceed this limit and preferably add some margin. If that limit is exceeded, the camera will lower the frame rate on ALL streams and as a result, Araani analytics will no longer work.

Example: A 4K CCTV system requires one high resolution stream for visualization and one HD resolution stream for recording.

Stream role	Resolution	P_{stream}
Visualization	3840 x 2160 @ 25 fps	207,4 mps
Recording	1920 x 1080 @ 25 fps	51,8 mps
Araani analytics	1920 x 1080 @ 12 fps	24,9 mps
Total		**284,1 mps**

The total load in this example is well below the limit of both processor types, so this will work fine. Adding another HD recording stream with different settings for example would exceed the maximum performance of an ARTPEC-6 based camera and analytics will fail to run on such combination.

LENS REQUIREMENTS

Selection of the lens depends on:

- **Field of view** to cover. Most lenses today are multifocal, allowing adaptation at installation time to fit the environment. Online lens calculators can help to select the proper focal range.
- **Area of risk.**
- **Light conditions**: day / night / seasons.
- **Light stability** / light changes.
- **Uniformity** of illumination.
- **Interchangeable lens.**
- Etc.

Consult with your camera supplier for proper selection of the lens type and specifications.

ENVIRONMENT REQUIREMENTS

The sensitivity and performance of the Araani Fire Guard system are impacted partially by the environment it is operating in. Consider these basic guidelines with each installation for optimal performance:

Light:
For smoke recognition, there should be sufficient light 24/7 in the complete field of view.
As a general guideline, smoke recognition requires light from 5 lux onwards, depending on the exact camera model. However, the minimal required light level is dependent on the exact camera type.
Flame recognition does not require light = 0 lux. It works in complete dark environment.

⚠ Notice: Using (built-in) infrared illumination is possible but will disable the flame detection as for flame detection a colour image is required.

Dark / bright spots:
Avoid combination of very dark and extreme bright spots in the field of view. This will stress the dynamic range of the camera and make the image quality unstable, resulting in an overall darker image.
For indoor cameras:

- Do not point the camera to exterior windows, and portals.
- Avoid the presence of direct light sources in the field of view. If this cannot be avoided, adjust the detection zone to mask these areas out.

For outdoor cameras:

- Avoid east or west orientation, where the sun gets low and potentially may blind the camera.
- Avoid having horizon in the field of view of the camera at all.

Contrast:
There should be sufficient contrast in the field of view. Do not point the camera to white walls or large areas without contrast.

Sun:
Avoid direct sunlight or bright reflections of the sun falling straight into the lens.

False triggers:
Avoid sources of dust, damp, or smoke (e.g., from operating machines) in the field of view during normal operation. These could lead to recurring false detections.

Outdoor:
Outdoor conditions are more susceptible to false alarms. For outdoor applications, try to control and stabilize environmental conditions as much as possible e.g., protecting the scene from varying weather conditions, apply stable lighting conditions, etc.

To further optimize the detection or to avoid false triggering of alarms e.g., due to very dynamic or badly illuminated zones in the field of view, the detection can be restricted to certain zones in the field of view. These zones can be drawn in the app configuration screen in the browser itself, see section Configuring detection zones.
By default, the detection area is the whole field of view. If detection zones are defined, this will override the default and detection will only occur only in the defined zones.
Adjust the sensitivity parameters of Araani Fire Guard if problems persist.

Camera positioning

SITE ASSESSMENT

For maximum protection, it is recommended to perform a site survey before installing cameras with Araani Fire Guard. This allows you to identify risk areas and take those into account when positioning new cameras.

- Define the hot spots:
  What is the type of risk? Can the fire start at any location in the field of view or is there specific risk related to a machinery or a critical part of a scene?
- For smoke detection, estimate the smoke flow:
  Estimate where smoke may flow in case of an incident. Dependent on this estimation, preferably select a camera position that will visualize the smoke in the fastest and largest way. Focus on where the smoke will flow, rather than the risk area.
  Will smoke ascend to the ceiling or will there be stratification?
  Will smoke be dispersed over the whole area by ventilation or forced air flow?
- System redundancy:
  To guarantee full coverage on very large areas, multiple cameras will be needed. To avoid blind spots, make sure the field of views of the cameras overlap with a minimum of 20%.

CAMERA POSITION / FIELD OF VIEW

Based on the site assessment, preferably select a camera position that maximizes the visualization of potential smoke or flames.

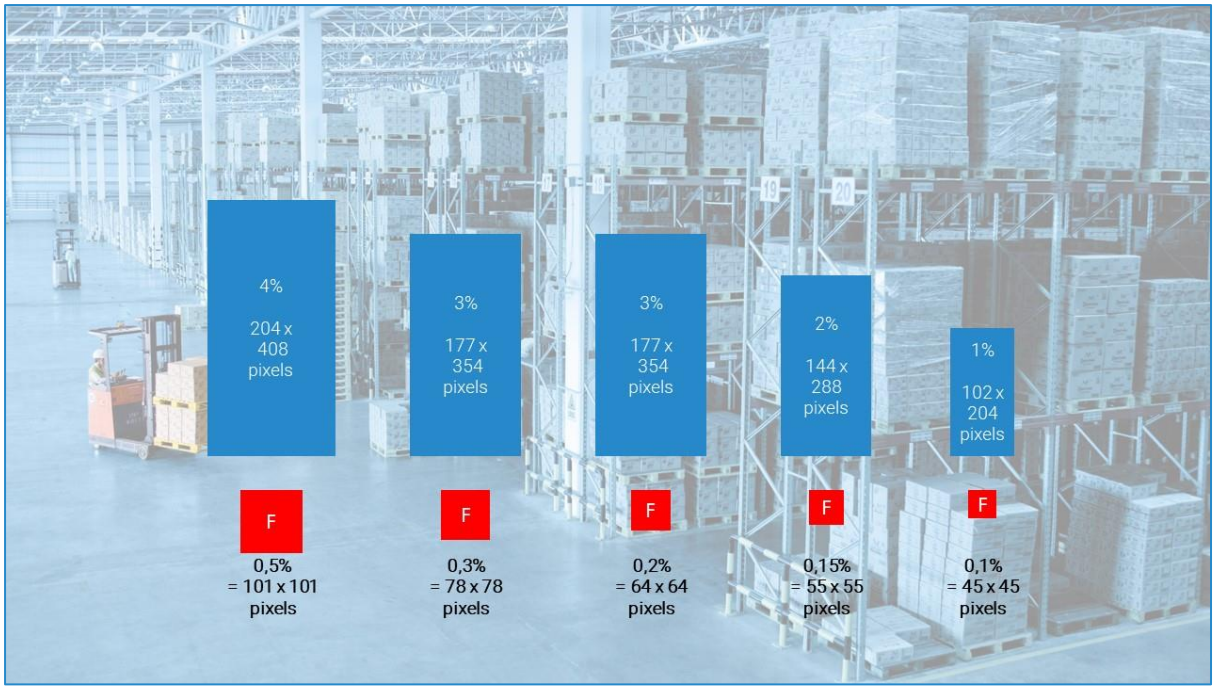
- At default sensitivity level, Araani Fire Guard algorithm will trigger alarm when **smoke** covers approximately 3**% of the field of view** during **5 seconds** at the same location in the field of view.
- Araani Fire Guard algorithm will trigger alarm when the **flame** size exceeds **0,2% of the field of view** and the flame was detected for at least **20 seconds** at the same location in the field of view.

For a camera with 1920 x 1080 resolution, 3% is a zone of 249 x 249 pixels and 0,2% is a zone of 64 x 64 pixels.
As an indirect result: the smaller the field of view, the higher the sensitivity, and the further away from the camera, the lower the sensitivity.

The minimum required coverage for smoke and flames to be recognized depend on the sensitivity setting as per table below.

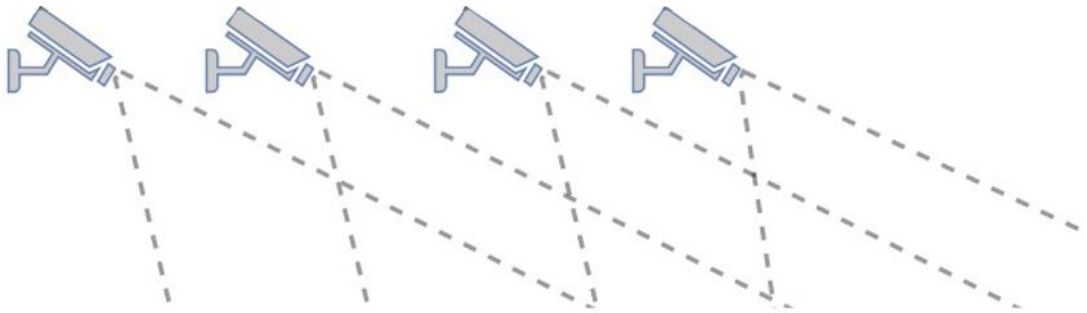
Sensitivity setting	Minimal smoke size (% of field of view)	Minimal flame size (% field of view)
1	4%	0,5%
2	3%	0,3%
3	3%	0,2%
4	2%	0,15%
5	1%	0,1%

Below is a graphical representation of smoke and flame detection threshold for different sensitivity settings on a 1920 x 1080 image, assuming a 1:2 aspect ratio of smoke clouds.

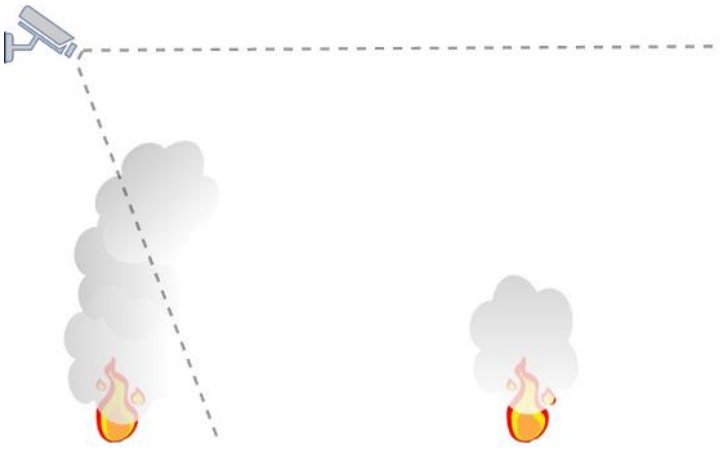


Adjust the zoom / focus of the camera lens according to the Axis® focus procedure as described in the camera manual. Do not forget to tighten the screws after setting up the focus and zoom to ensure they stay fixed.

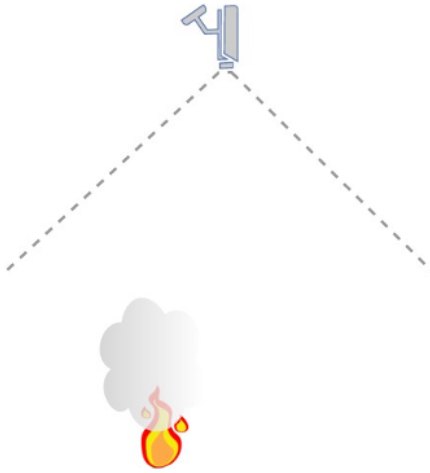
Also consider the environment requirements described above when positioning the camera and adjusting the field of view. In large areas, you may consider providing redundant coverage by adjacent cameras.



Recommended field of view for low camera positions:



Recommended field of view for high camera positions:



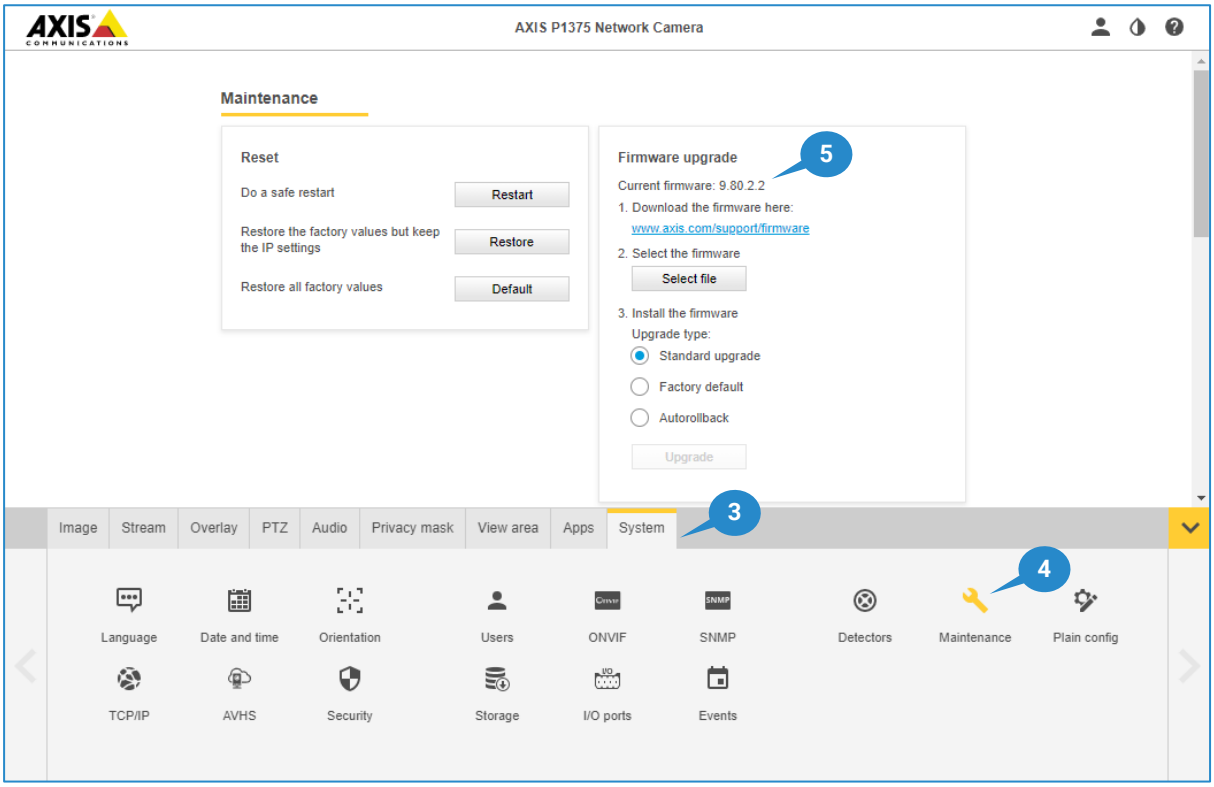
Information: Axis® provides a lens calculator tool on their website that assists in determining the field of view, based on lens type and focal length, mounting height, and distance in the scene.

Camera configuration

CAMERA FIRMWARE

Before installing Araani Fire Guard software, verify if your camera has the required firmware (see: Camera requirements).
To verify the firmware version of your camera, perform the following steps:

1. Connect with a laptop, tablet, or smart phone to your camera, using your internet browser software and login to the camera webpage.
   Refer to the camera user manual on how to do this.
2. Open the settings window by clicking the “settings” button in the bottom right of the camera webpage.
3. Select the “System” tab in the control panel.
4. Select “Maintenance” in the control panel.
5. The current firmware version is displayed in the Firmware upgrade section of the maintenance screen, as indicated in the screenshot below.

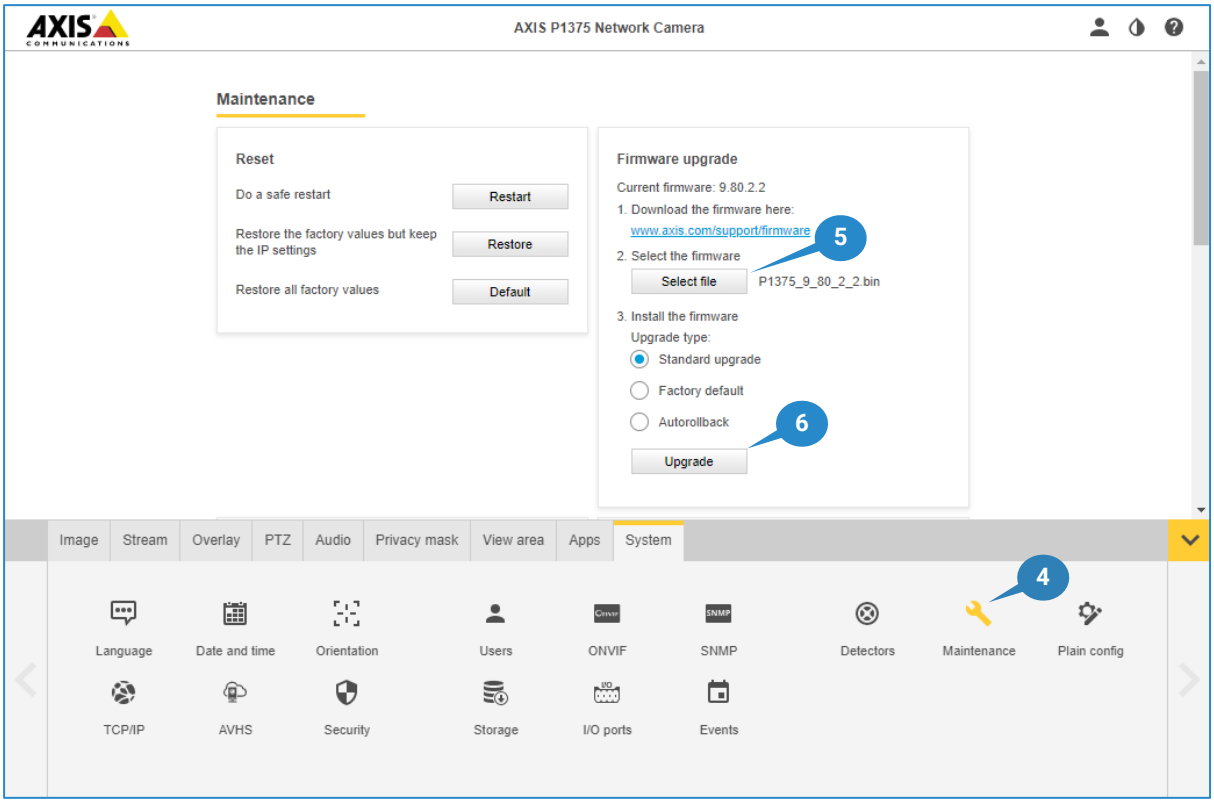


If the version is not compliant to the camera requirements for Araani Fire Guard, you can download the required firmware from https://www.axis.com/support/firmware.

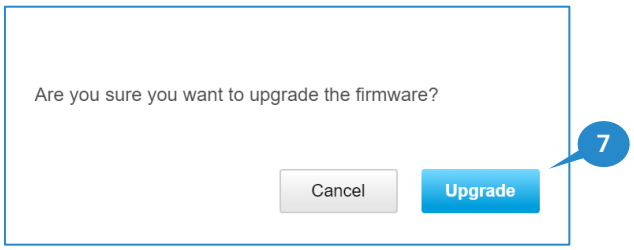
Follow these steps to upgrade the firmware version of your camera:

1. Connect with a laptop, tablet, or smart phone to your camera, using your internet browser software and login to the camera webpage.
   Refer to the camera user manual on how to do this.
2. Open the settings window by clicking the “settings” button in the bottom right of the camera webpage.
3. Select the “System” tab in the control panel.
4. Select “Maintenance” in the control panel.

5. Select “Select file” and browse for the new downloaded firmware file.
6. Select “Upgrade”.



7. Confirm the upgrade by selecting “Upgrade”.

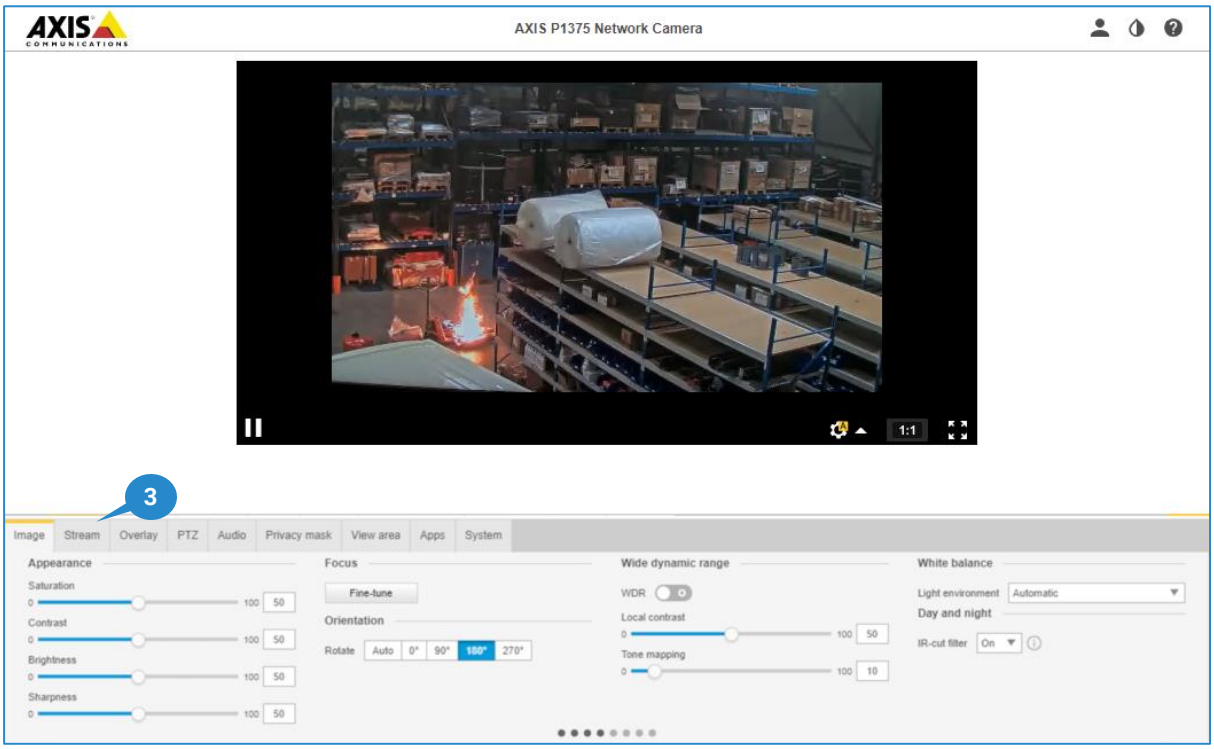


8. The camera will start uploading firmware, updating the system and finally reboot. This may take a few minutes.
9. Verify if the camera is properly upgraded by checking the version again in the maintenance menu.

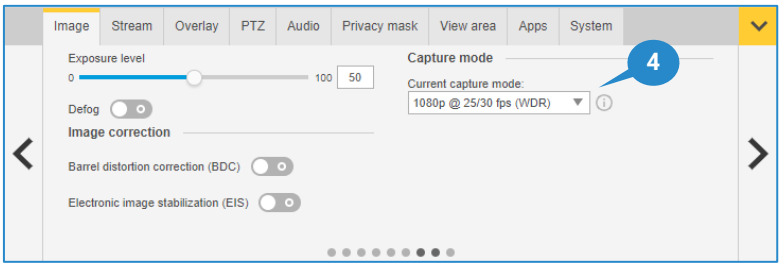
CAMERA CONFIGURATION

Before changing the parameters, first verify if the **Current capture mode** is correct, as this will require restarting the camera. To verify this, perform the following steps:

1. Connect with a laptop, tablet, or smart phone to your camera, using your internet browser software and login to the camera webpage.
   Refer to the camera user manual on how to do this.
2. Open the settings window by clicking the “Settings” button in the bottom right of the camera webpage.
3. Select the “Image” tab in the control panel.



4. Scroll to the left or right of the image tab, using the arrows and find “**Current capture mode**” setting.
   Select 1080p @25/30 fps (exact description may differ, depending on your camera model, make sure that the aspect ratio is 16:9 or 9:16). After changing this setting a restart of the camera will be required.



Once the capture mode is correct, you can start modifying the camera parameters.

For optimized smoke and flame detection performance, the camera should be configured with following recommended settings (mandatory settings are followed by mandatory):

- Image
  - Wide dynamic range
    - WDR: recommended OFF to avoid image artefacts.
      Only use when required (e.g. environment with non-uniform lighting) and no artefacts are generated by WDR.
    - Local contrast: 50
    - Tone mapping: max 30 (mandatory)[1]
  - White balance:
    - Light environment: Automatic
  - Day and night:
    - IR-cut filter: ON or AUTO

      ⚠ Warning: When the IR-cut filter is on AUTO, the camera will switch to infrared mode when the light level is too low. This will disable the flame detection as for flame detection a colour image is required.
    - Threshold: Free to choose.
  - Exposure:
    - Exposure mode: Automatic
    - Exposure zone: Automatic
    - Maximum shutter: 1/15s (mandatory)[1]
    - Maximum gain: max 21 dB (mandatory)[1]
    - P-Iris lens: make sure to select the correct lens
    - Blur-noise trade-off: Middle between 'low noise' and 'low motion blur'. In low light circumstances, set to 'low noise'
    - Lock aperture: ON
    - Target aperture: Middle between 'open' and 'closed'
    - Exposure level: 50
    - Defog: off (mandatory)
  - Image correction:
    - Barrel distortion correction (BDC): only if necessary
    - Electronic image stabilization (EIS): only if necessary
  - Capture mode: 1080p @ 25/30 fps (WDR) (exact description may differ, depending on your camera model, make sure that the aspect ratio is 16:9 and WDR is included)
- Stream
  - General:
    - Resolution: always select a 16:9 or 9:16 resolution (mandatory)
    - Frame rate: > 0
      - If no recording on SD card: free to choose
      - If recording on SD card: maximum 4 (mandatory)
    - Compression: 50
  - H.264 and H.265 encoding:
    - Free to choose
  - Audio:
    - Free to choose

[1] If in low-light conditions the image does not reach the required image quality, please adjust in this order: 1. shutter time 2. gain 3. tone mapping. A higher shutter time may cause more motion blur, but this does not affect the detection. A higher gain will cause more noise in the image which may interfere with the detection algorithm. A higher tone mapping will change the colors and will influence the flame detection.

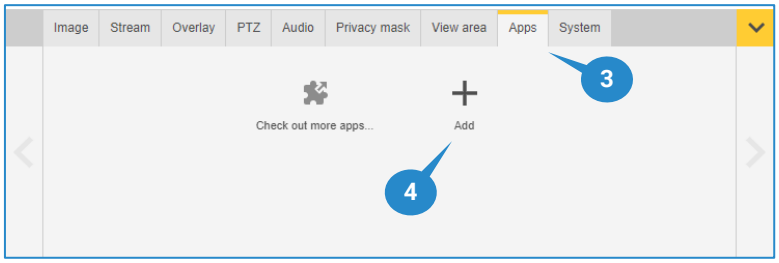
Araani Fire Guard installation

The Araani Fire Guard software comes as an ACAP (Axis® Camera Application Platform) compatible package. The ACAP platform allows Axis® Development Partners (ADP) to build smart applications that run on a wide range of Axis® cameras. Multiple applications can be installed and running on a camera simultaneously.
An ACAP application software package comes in the form of a single file with .eap extension.. Installing the software on an Axis® camera involves uploading the file to the camera, activating the appropriate license, and potentially configuring the application parameters.

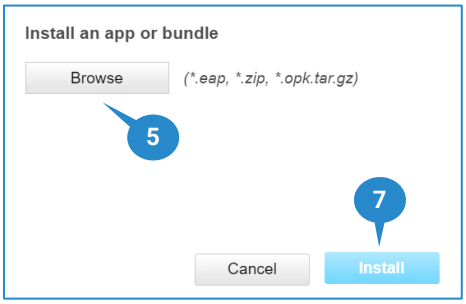
INSTALLING THE ARAANI FIRE GUARD ACAP

To install the Araani Fire Guard, perform the following steps:

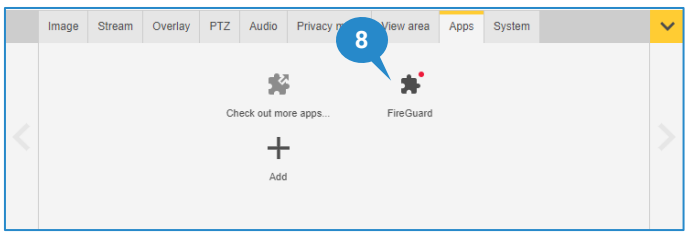
1. Connect with a laptop, tablet, or smart phone to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Open the settings window by clicking the “settings” button in the bottom right of the camera webpage.
3. Select the “Apps” tab in the control panel.
4. Select “Add”.



5. Select “Browse” to browse your local storage for the ACAP file.
6. Select FireGuard_Vx.xx.xx.eap.
7. Select Install.



8. The application will start installing. This may take a few minutes.
   After successful installation, the Araani Fire Guard application should be visible in the “Apps” tab.



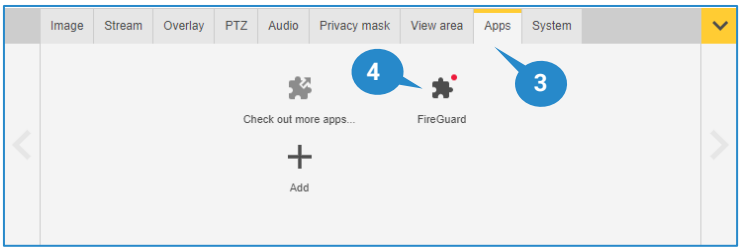
ACTIVATING A FIRE GUARD LICENSE

With the purchase of Araani Fire Guard, a **license activation code** is provided. This code is valid for a number of Araani Fire Guard installations, as purchased.

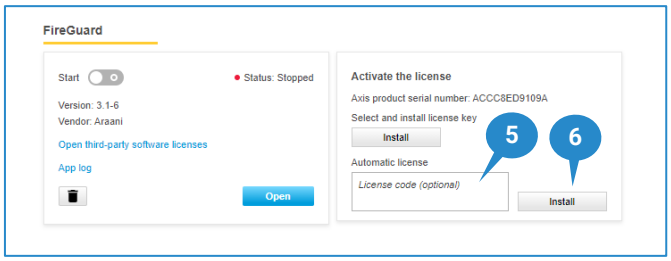
Case 1: the camera is connected to the internet

Perform the steps below to activate the Araani Fire Guard app directly on the camera.

1. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Open the settings window by clicking the “settings” button in the bottom right of the camera webpage.
3. Select the “Apps” tab in the control panel.
4. Select the Araani Fire Guard app.



5. The license activation code can be directly entered in “Automatic license” field.
6. Select “Install”
   The camera will connect to the Axis® licensing system. A license for this camera will be created and automatically installed on the device. The camera will be registered in the Axis® licensing system as being licensed, and the license will be linked to your license activation code and your camera.

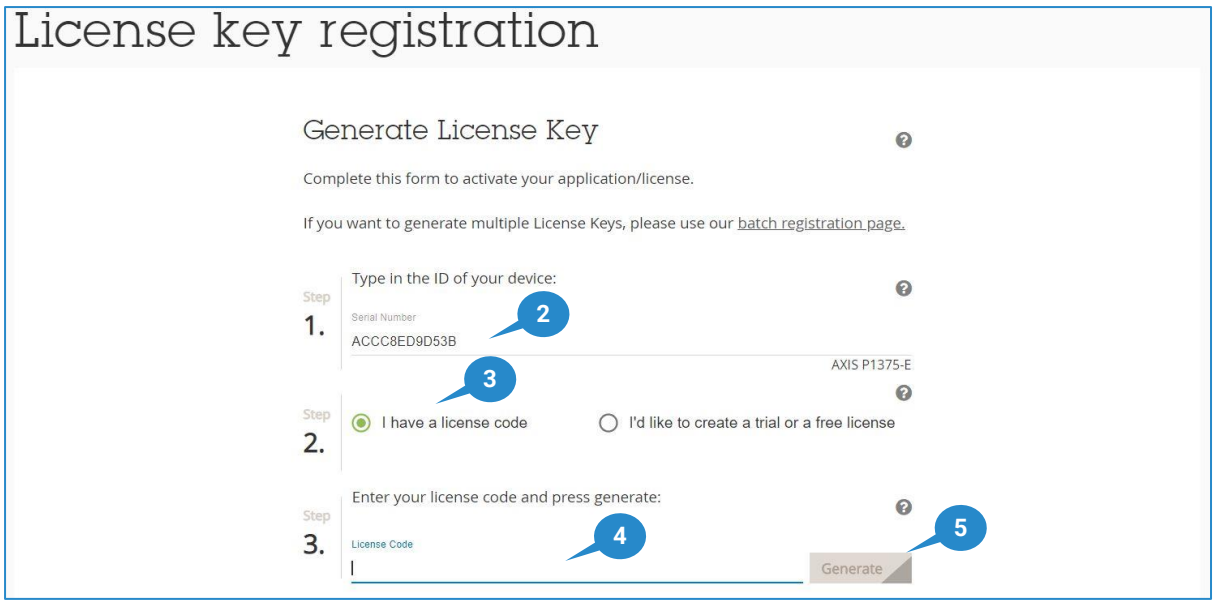


Case 2: the camera has no internet connectivity

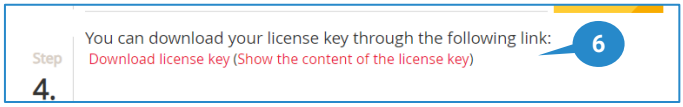
When the camera on which the Araani Fire Guard application is installed has no direct internet connection, a license key must be generated upfront on a computer with internet connection.

To create the license key, perform the steps below.

1. Using your internet browser, connect to https://www.axis.com/products/camera-applications/license-key-registration#/registration.
2. Fill in the serial number of your camera. The serial number can be found on a sticker on your camera housing, indicated by “S/N”.
3. Select “I have a license code”.
4. Fill in the license activation code, received with your purchase.
5. Click “Generate”.

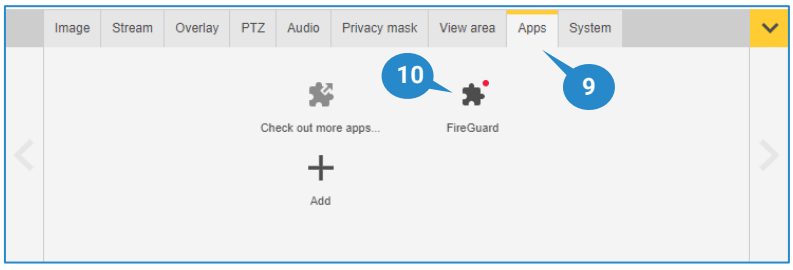


6. A message will appear from which you can download the license key to your local storage.

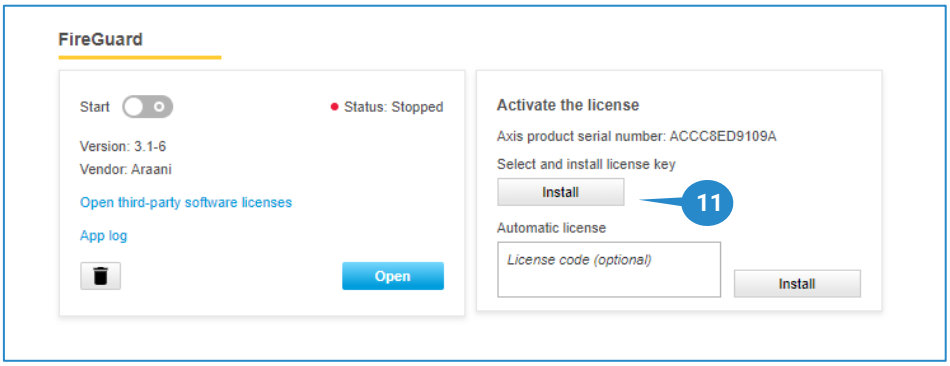


The license key, created in previous steps can now be uploaded and installed on the camera to activate the Araani Fire Guard app. Follow steps below to activate the app:

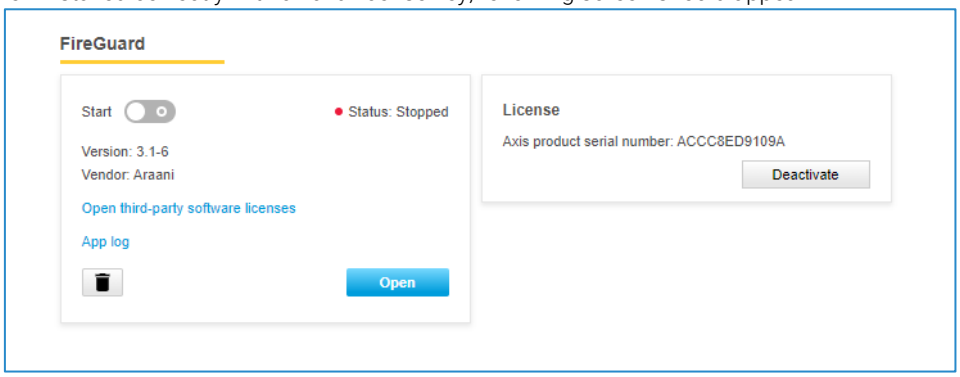
7. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
8. Open the settings window by clicking the “settings” button in the bottom right of the camera webpage.
9. Select the “Apps” tab in the control panel.
10. Select the Araani Fire Guard app.



11. Select “Install” in the “Activate the license” box



12. Browse your storage for the file, downloaded in step 6.
13. When installed correctly with a valid license key, following screen should appear:



ACTIVATE A TRIAL LICENSE FOR ARAANI FIRE GUARD

If you prefer to try out Araani Fire Guard before purchasing, follow the same steps as in Activating a Fire Guard license case 2. In step 3, select “I’d like to create a trial or a free license”. Provide a valid e-mail address if requested. Proceed with the rest of the procedure.

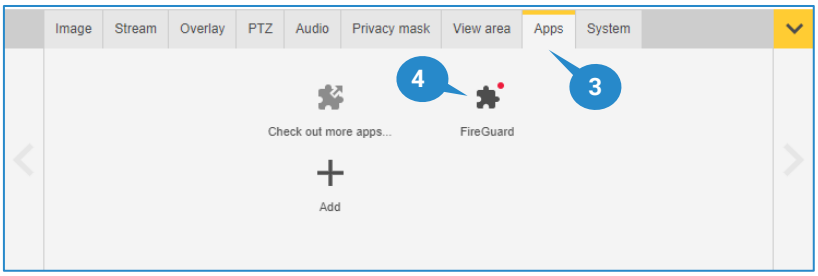
How to use Araani Fire Guard

Starting / stopping Araani Fire Guard

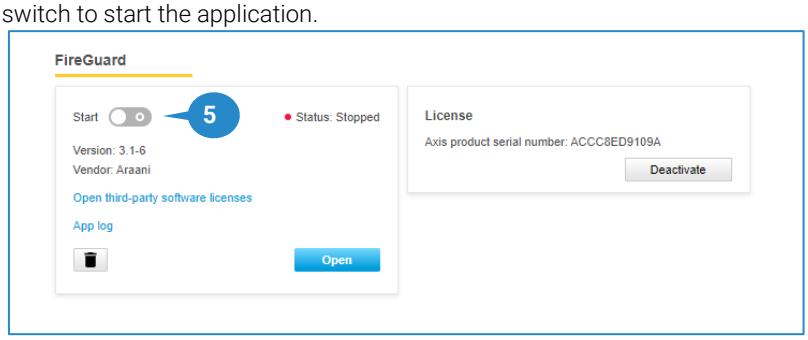
STARTING ARAANI FIRE GUARD

After installation, Araani Fire Guard needs to be started manually. To do so, follow the steps below.

1. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Open the settings window by clicking the “settings” button in the bottom right of the camera webpage.
3. Select the “Apps” tab in the control panel.
4. Select the Araani Fire Guard app.



5. Click the start switch to start the application.



START-UP BEHAVIOUR

At start-up, Araani Fire Guard needs to learn the background of the scene. This takes maximum 5 minutes. During this period, Araani Fire Guard is not fully operational yet. The default start-up state however is “Operational”-mode. The reason for this default behaviour is to prevent Araani Fire Guard to trigger a “Fault Signal” immediately after an upgrade. Within a maximum of **5 minutes**, Araani Fire Guard will either remain in this condition, or go to “Fault Signal” condition.

If the Araani Fire Guard application goes to fault condition after starting up, this can be due to:

- Not enough background contrast
- Scene too dark: the light level is less than the minimum light level

In both cases, review the installation of your camera, taking into account the requirements and recommendations in Environment requirements and Camera Position / Field of view.

STOPPING THE ARAANI FIRE GUARD APP

To stop the Araani Fire Guard app, perform the same steps as Starting the Araani Fire Guard app. When clicking the switch in step 5, the application will be stopped.

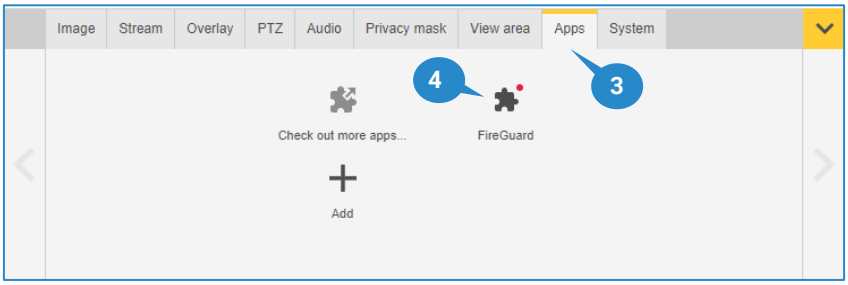
Configuring Araani Fire Guard detection

In most cases, default settings of Araani Fire Guard will work OK. If detection is not satisfactory or too many false alarms occur, you may want to change some of these settings.

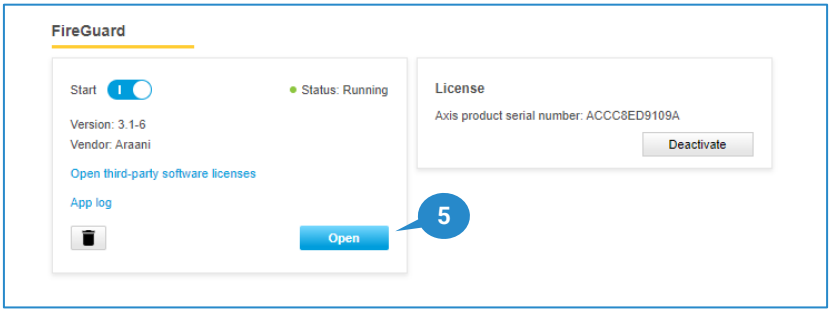
ACCESSING ARAANI FIRE GUARD CONFIGURATION

To access the settings of your detection app on the camera, proceed with steps below.

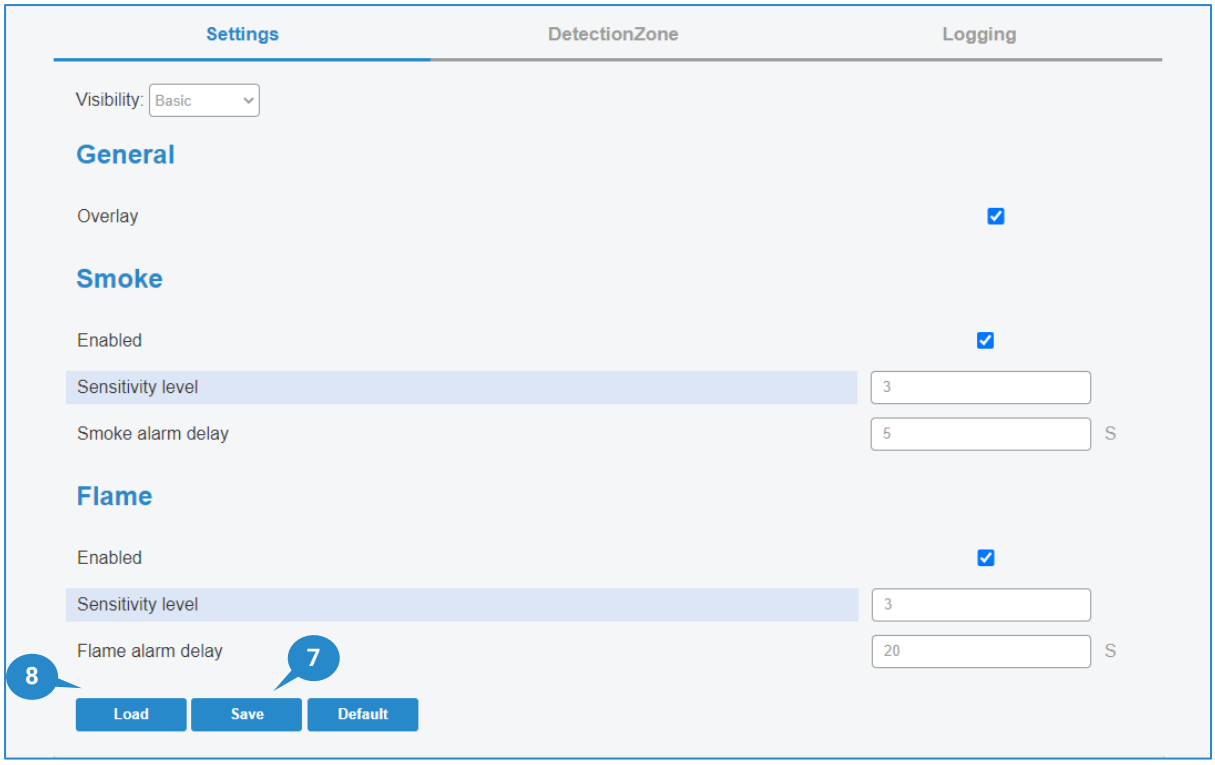
1. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Open the settings window by clicking the “settings” button in the bottom right of the camera webpage.
3. Select the “Apps” tab in the control panel.
4. Select the Araani Fire Guard app.



5. Make sure the application is running, otherwise start Araani Fire Guard. Select “Open”.



6. A new browser window will appear that contains all available settings to configure Araani Fire Guard.



Refer to next sections for detailed information on all available settings.
When settings are changed, an asterisk will appear in the tab header of the configuration page. This indicates that the changed setting is not yet saved. When trying to leave the page without saving, a pop-up warning will appear.

7. Select "Save" to register the new settings in the app.
   "Default" can be used to return all settings to default.
8. "Load" can be used when changes to the settings have been done (but not saved) and one wants to return to the setting as is in the camera.

CONFIGURING SMOKE DETECTION SENSITIVITY

⚠ Notice: changing detection settings may affect detection performance. Only change from default settings if needed.

Enabled
Range = on / off
Default = on
Enables or disables the smoke algorithm

The detection sensitivity of the smoke detection algorithm can be changed by means of two parameters:

Sensitivity level
Range = 1 – 5
Default value = 3

The sensitivity level determines how easily a smoke alarm is triggered. The higher the value, the more sensitive the detection becomes. Lower values may be used to avoid erroneous triggering of alarms but can also lead to non-detection of real events. Higher values may be used to facilitate detection of alarms but can also lead to false alarms.

As a guideline:

- For stable environments with little disturbances, the sensitivity can be increased for a higher probability of smoke detection.
- For very dynamic scenery or outdoor application, the sensitivity may be decreased to avoid excessive triggering of alarms by smoke-like phenomena.

Smoke alarm delay
Range = 2 - 150 seconds
Default value = 5 seconds
To avoid erroneous triggering of smoke alarms due to short disturbances or transitional events in the scenery, an alarm will only be triggered after it has been identified for a certain amount of time at a certain location in the field of view. This is called the alarm delay.

CONFIGURING FLAME DETECTION SENSITIVITY

⚠ **Notice:** changing detection settings may affect detection performance. Only change from default settings if needed.

Enabled
Range = on / off
Default = on
Enables or disables the flame algorithm

The detection sensitivity of the flame detection algorithm can be changed by means of two parameters:

Sensitivity level
Range = 1 – 5
Default value = 3

The sensitivity level determines how easily a flame alarm is triggered. The higher the value, the more sensitive the detection becomes. Lower values may be used to avoid erroneous triggering of alarms but can also lead to non-detection of real events. Higher values may be used to facilitate detection of alarms but can also lead to excessive false alarms.
As a guideline:

- For stable environments with little disturbances, the sensitivity can be increased for a higher probability of flame detection.
- For very dynamic scenery or outdoor application, the sensitivity may be decreased to avoid excessive triggering of alarms by flame-like phenomena.

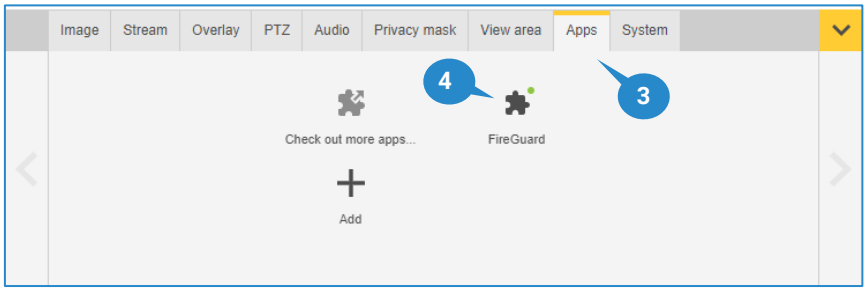
Flame alarm delay
Range = 5 - 120 seconds
Default value = 20 seconds
To avoid erroneous triggering of fire alarms due to short disturbances or transitional events in the scenery, an alarm will only be triggered after it has been identified for a certain amount of time at a certain location in the field of view. This is called “alarm delay”.

CONFIGURING DETECTION ZONES

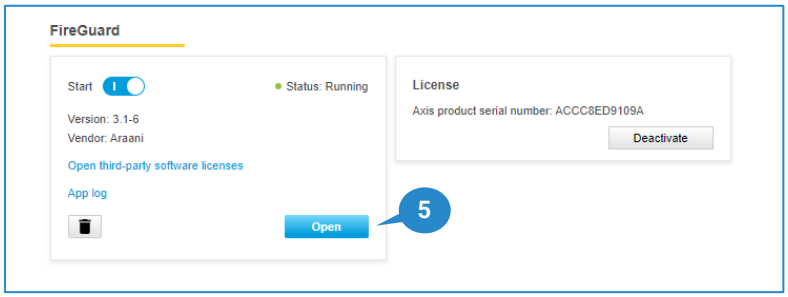
To further optimize the detection or to avoid false triggering of alarms, e.g., due to very dynamic or badly illuminated zones in the field of view, the detection can be restricted to certain zones in the field of view. These zones can be drawn in the app configuration screen in the browser itself.
By default, the detection area is the whole field of view. If detection zones are defined, this will override the default and detection will only occur only in the defined zones.

To define detection zones, perform following steps:

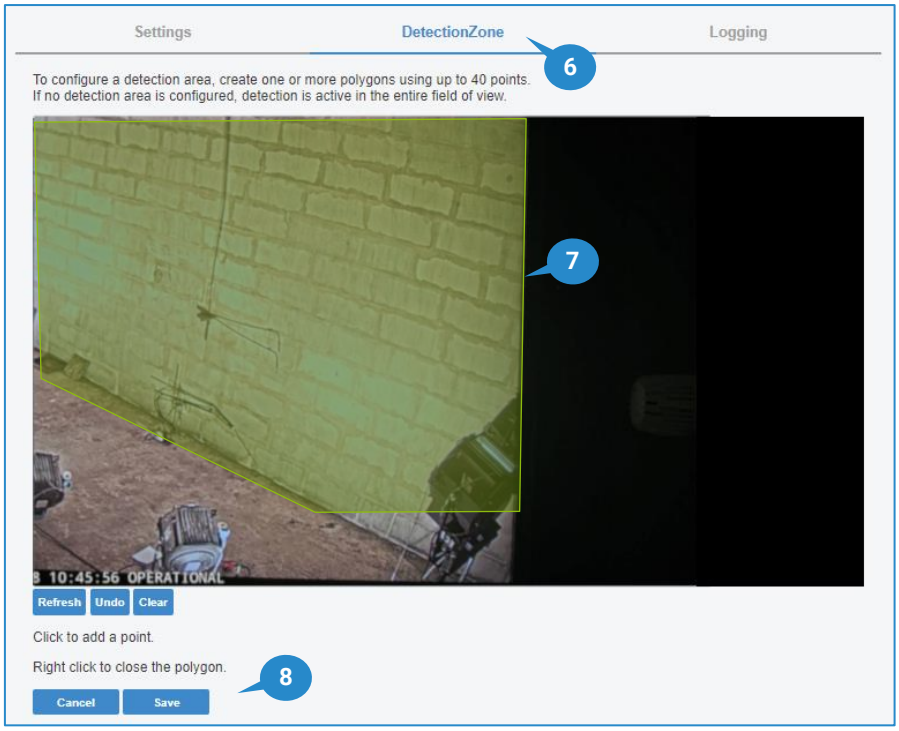
1. Connect to your camera, using your internet browser software and login to the camera webpage.
   Refer to the camera user manual on how to do this.
2. Open the settings window by clicking the “settings” button in the bottom right of the camera webpage.
3. Select the “Apps” tab in the control panel.
4. Select the Araani Fire Guard app.



5. Make sure the application is running, otherwise start Araani Fire Guard.
   Select “Open”



6. A new browser window will appear that contains all available settings to configure Araani Fire Guard.
   Select the “DetectionZone” tab.
7. To draw a polygon detection zone on the visual image:
   a. Left click in the image to add a point.
   b. Right click to close the polygon (you need at least 3 points).
   c. Select “Undo” to undo the last action. Multiple actions can be undone.
   d. Select “Clear” to clear all drawn zones.
   e. Select “Refresh” to refresh the picture with the current live camera image.



8. Select “Save” to save the configuration of detection zones.

Up to 40 points can be used to draw the detection zones. An individual zone must be minimum of 2% of the full image. The sum of the detection zones must be at least cover 25% of the full image. If smaller zones are drawn, a warning pop-up box will appear. Zones may overlap. For detection, the aggregated area is considered.

Configuring display options

To visualize Araani Fire Guard alarms inside the video stream, two options are available:

- Adding text overlay that displays the Araani Fire Guard status.
- Enabling overlay in the app to dynamically draw red bounding boxes around the incident zone.

VIEW ARAANI FIRE GUARD STATUS

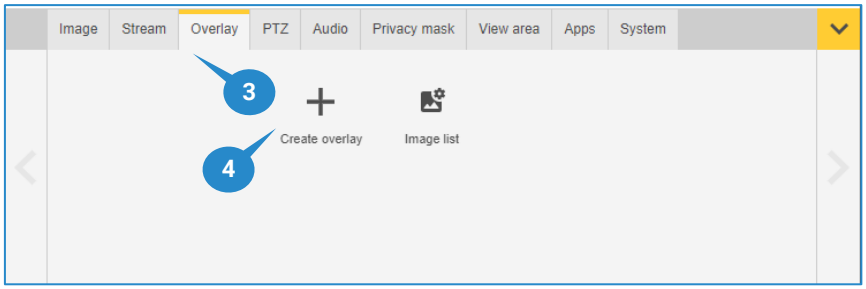
The Araani Fire Guard app status is one of following:

- OPERATIONAL: the app is running; no incident is detected, and detection conditions are ok.
- FAULT: contrast or light level are not sufficient for proper smoke detection; flame is still active.
- ALARM: an incident condition is raised, either smoke or flame is detected.

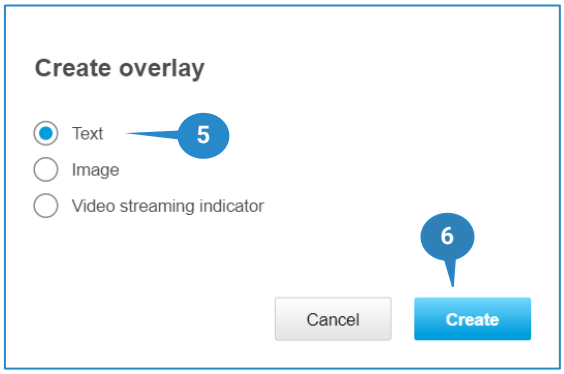
This status can be visualized in the video stream by using the Axis® camera overlay capabilities. To visualize the Araani Fire Guard status on screen, follow these steps:

1. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Open the settings window by clicking the “settings” button in the bottom right of the camera webpage.
3. Select the “Overlay” tab in the control panel.

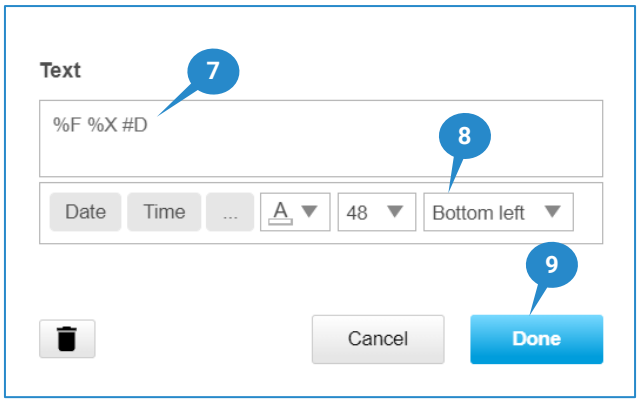
4. Select “Create overlay”.



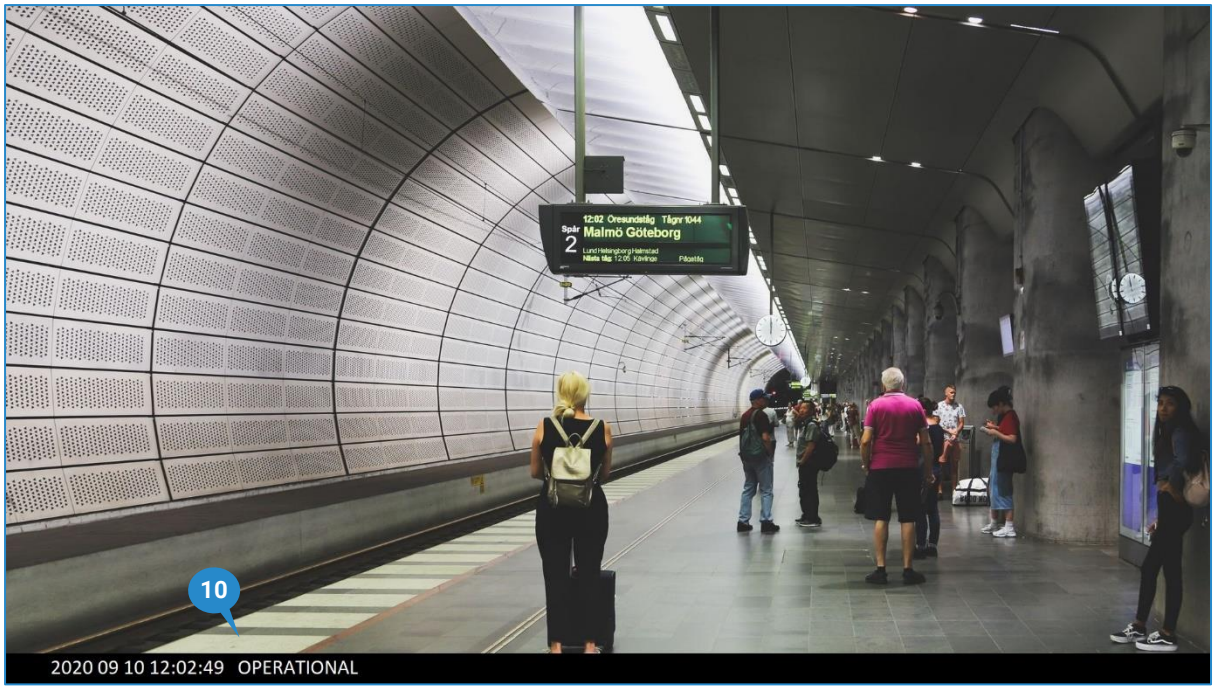
5. Select “Text”.
6. Select “Create”.



7. In the pop-up window that appears, one can create a custom overlay text by using codes. Add #D to the overlay definition to add the Araani Fire Guard status. This can be combined with other custom fields such as date (%F) and time (%X) in the example below. Refer to your camera manual for all available options.
8. In the dropdown box, select the location where you want the overlay to appear in the image. This should always be bottom left or bottom right, to not influence the detection. Font, color and size are customizable.
9. Select “Done”.



10. An overlay text bar will now appear in the video with the selected options, including the Araani Fire Guard status.

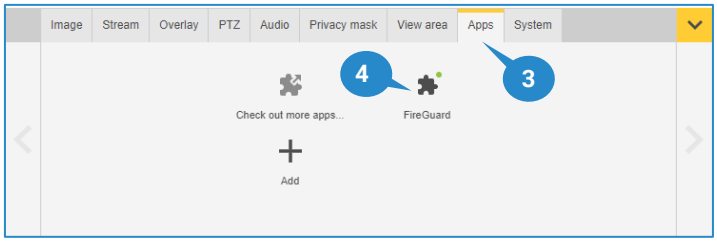


Notice: It is recommended to keep the overlay in the bottom left of the image. This zone will be ignored by the algorithms.

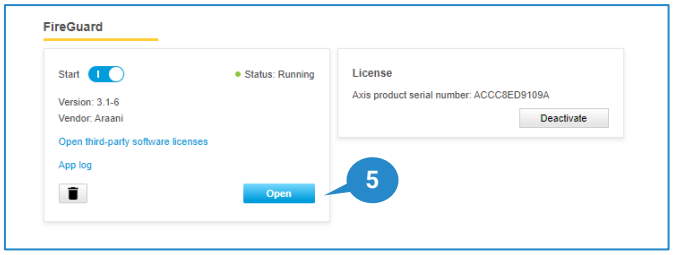
VIEW DETECTION BOUNDING BOX

When smoke or flame is detected, the app can draw a bounding bow around the detected incident in the video stream. This box dynamically changes as the incident zone grows or shrinks. To enable the drawing of this bounding box, it must be enabled in the Araani Fire Guard configuration. Follow steps below to do this:

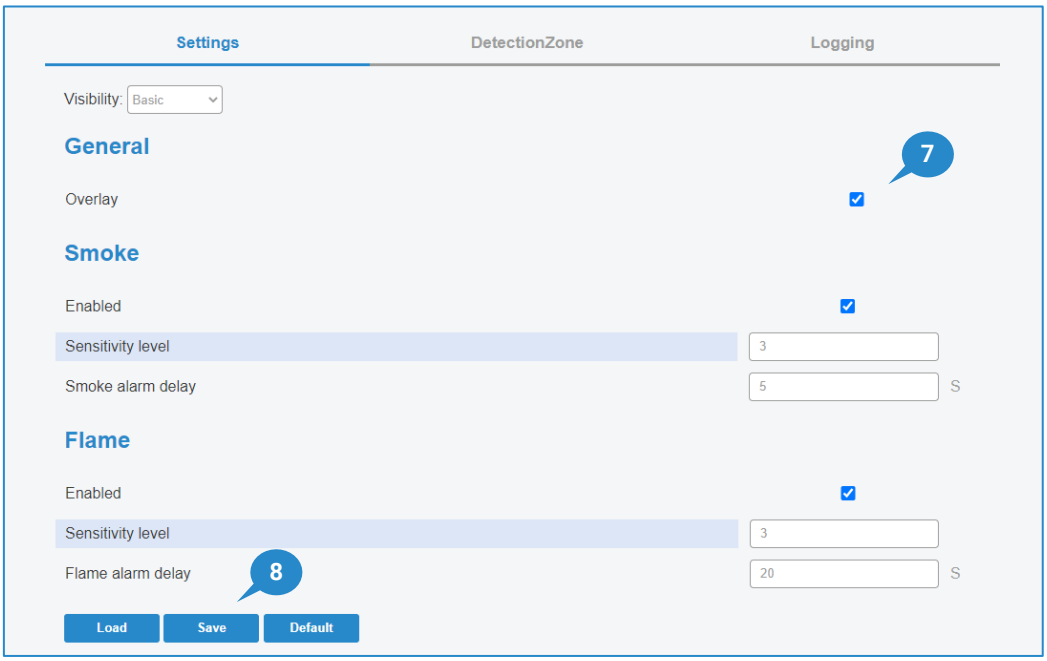
1. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Open the settings window by clicking the “settings” button in the bottom right of the camera webpage.
3. Select the “Apps” tab in the control panel.
4. Select the Araani Fire Guard app.



5. Make sure the application is running, otherwise start Araani Fire Guard. Select “Open”.



6. A new browser window will appear that contains all available settings to configure Araani Fire Guard. Depending on your license, either smoke detection settings, flame detection settings or both are visible.
7. Select “Overlay” to enable the bounding box in the streaming image.



8. Select “Save” to register the new settings in the app.
9. A bounding box will now appear on the image when an incident is detected.

How to test Araani Fire Guard

Safety precautions

⚠ **Danger:** Make sure to respect all safety precautions imposed in the location where the test will be performed.

⚠ **Danger:** Before and while conducting tests, consider all safety precautions below.

- Wear personal protective equipment:
  - Gloves.
  - Eye protection.
- Use demarcation material to secure the test zone:
  - Cones.
  - Safety ribbon.
- Fire safety:
  - Assure the proximity of a fire extinguisher.

Required materials

SMOKE SIMULATION

To perform a smoke test, try to simulate smoke in a safe way. You can choose from different options to simulate smoke:

- **Smoke pellets**. Make sure the volume of smoke is at least 24m³ in total, use multiple pellets if necessary (to find a local supplier, google: smoke tablets 24m³).
  Accessories:
  - a metal, fireproof cup, or bucket to put the tablets in.
  - a long nose lighter.
- **Smoke machine**. Make sure to use a powerful smoke machine that has capacity of 60 seconds or more of continuous smoke.
  Required:
  - power connection.
  - smoke machine liquid.
- **Other**: be aware of fire hazards before using other ways to test Araani Fire Guard smoke recognition.

FLAME SIMULATION

To perform a flame test, try to simulate flames in a safe way with. You can choose from different options to simulate flames:

- **Flame video**. Use a fireplace video to simulate flames on a screen/laptop/tablet, this type of video can be easily found on YouTube or other video-sharing platforms. Select a video where the flames are present in most of the screen, e.g.:

- 

- **Chemical solvents** or other types of combustibles can be used to create flames, but this is not recommended. This method requires expertise. Do not do this if you are not a fire safety specialist.
- **Other**: be aware of fire hazards before using other ways to test Araani Fire Guard flame recognition.

Test zone setup

Select a safe indoor area to perform the fire tests. For best result, position the test fire in the middle of the field of view.

Pay attention to following issues:

- Smoke:
  - Anticipate on where the smoke will travel (due to airflow, wind, air-conditioning, open doors…) and make sure to position the test fire in such a way that the smoke remains in the camera field of view for a maximum amount of time.
- Flame:
  - When using a fireplace video:
    - Make sure that the screen is perpendicularly oriented towards the camera, to have a proper/clear view off the video.
    - Avoid reflections on the screen.
    - Set the screen to maximum brightness. Araani Fire Guard is looking for light intensity. Screen brightness can never compete with sunlight or bright lamps. Try to avoid these interferences in the field of view during the test or create a detection zone excluding these disturbing factors.
- Described testing methods may not be suitable for outdoor testing. Weather conditions may negatively affect dispersion of generated smoke and outdoor light will interfere with video screens.

- Make sure the site responsible is informed about the tests and you have the authorization to perform the tests.
- Make sure existing smoke alarms are disabled or generated alarms are properly managed and/or inform site safety responsible before conducting tests

Sensitivity versus size

Refer to Camera Position / Field of view chapter for a proper understanding of required smoke and flame sizes before conducting tests.

Test protocol

Step	Action	Check
1.	Install and configure the camera according the Araani Fire Guard manual. Do not forget to check if the camera is compatible and the firmware is supported.	
2.	Activate overlay text and bounding boxes to display the Araani Fire Guard status (see Araani Fire Guard manual to enable this).	
3.	Make sure the site responsible is informed on the tests and you have the authorization to perform the tests. .	
4.	Make sure the alarms the test will generate are managed and will not be escalated.	
5.	Put the test fire in the test fire position as described in 'Test fire position' and place the demarcation.	
6.	Make sure that the test fire has enough fuel to generate smoke during at least x seconds with a coverage of at least x% (see table Sensitivity vs size) at the same location in the field of view. Avoid entering the field of view for refuelling during the test.	
7.	Make sure Araani Fire Guard is running (Operational) and had at least **5 minutes of learning time** on the field of view if you restarted the camera or the application.	
8.	Keep the field of view stable and avoid disturbance from vehicles, door/windows opening/closing, sudden light changes, people walking in the field of view…	
9.	After 5 minutes of a stable field of view, start the test fire, ideally without entering the field of view. If this is impossible try to have only 1 person entering the field of view.	
10.	Araani Fire Guard should detect the smoke/flame and will display this via overlay text and bounding boxes.	

Maintenance and troubleshooting

CAMERA MAINTENANCE

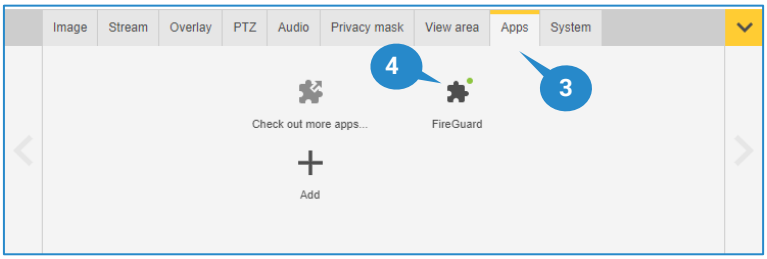
For consistent performance of Araani Fire Guard, periodic maintenance of the camera is necessary.
The time intervals of this maintenance strongly depend on environmental elements such as dust, pollution …
By default, a maintenance procedure should include these steps in the correct order:

1. Stop Araani Fire Guard.
2. Clean lens and/or window of housing (clean the rest of the camera if necessary).
3. Re-focus lens.
4. Control field of view and make sure it is identical to the original field of view.
5. Update the camera firmware if available and if approved by Araani (check camera settings consistency after upgrade).
6. Update Araani Fire Guard software.
7. Start Araani Fire Guard software and check if Araani Fire Guard is still in Operational state after the learning period of 5 minutes.

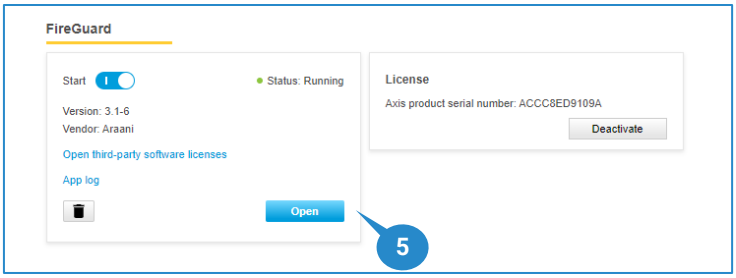
RETRIEVING DIAGNOSTICS INFORMATION

In case of problems with the Araani Fire Guard detection, your support contact may request you to retrieve the logging information from the app. When contacting support services, it is advised to include this information by default in the problem report. Follow steps below to retrieve this diagnostics information.

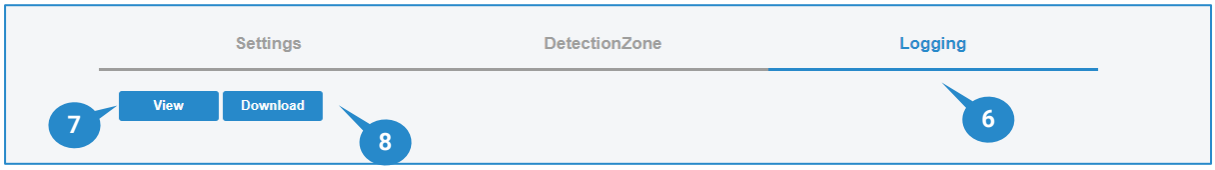
1. Connect to your camera, using your internet browser software and login to the camera webpage. Refer to the camera user manual on how to do this.
2. Open the settings window by clicking the “settings” button in the bottom right of the camera webpage.
3. Select the “Apps” tab in the control panel.
4. Select the Araani Fire Guard app.



5. Select “Open”



6. A new browser window will appear that contains all available settings to configure Araani Fire Guard. Select the “Logging” tab to access the diagnostics page.
7. To view the logging information of the application, select “View”.
8. To download the logging information of the application, select “Download”.
   A text file will be created with extension ‘.log’ that contains all available logging information. This file can be sent to your support contact for diagnosis and troubleshooting.



Technical specification

Functional specification

Type:	Smoke Detection • Detects smoke clouds. Flame detection • Detects flames based on colour, brightness, and motion.
Event types:	Araani Fire Guard can generate following mutual exclusive events: • ALARM = smoke or flame detected. • FAULT SIGNAL = invalid light conditions; only smoke is not working. • OPERATIONAL SIGNAL = normal condition.
Reliability check:	Araani Fire Guard has built-in self-monitoring functionality and will generate a FAULT SIGNAL in following cases: • Image quality degradation to a point where detection is at danger. • Scene is too dark – only an issue for the smoke detection.
Easy set of parameters:	• Alarm delay. • Sensitivity level.

System requirements

Camera compatibility:	Araani Fire Guard is only compatible with Axis® cameras: • Single-sensor visual camera. • Fixed camera, not a PTZ. • Artpec-6 or Artpec-7 chipset. • Aspect ratio 16:9 or 9:16.
Minimum contrast in the field of view:	Araani Fire Guard requires “enough” basic contrast in the background scene. In realistic situations, this constraint is usually fulfilled. In case there is a lack of contrast, Araani Fire Guard will raise a Fault Signal.
Minimum ambient light level:	5 lux or more is required for smoke recognition 24/7 over the whole field of view. However, each camera type has a different sensitivity to low light, so this minimum light level is camera dependent and it can be necessary to have a higher light level. Araani Fire Guard will raise a FAULT SIGNAL if the scene appears too dark on the video. No light is required for flame recognition.

Addendum: Araani Application EULA

This End User License Agreement ("**EULA**") between you, the End User (as defined below), and Araani NV, a registered company with company number 0505.774.826 and registered office at Luipaardstraat 12; 8500 Kortrijk in Belgium ("**Araani**"), sets forth the terms and conditions under which Araani shall provide the End User with a license to the Application (as defined below), as well as the manner in which the End User should (not) use the Application.

Please note that this EULA may be updated from time to time. The latest version shall always be available on Araani's Website and on the Application. Araani shall send the End User a notification in the Application when an update of the EULA is available. The new version enters into effect when the End-User receives the notification.

1. DEFINITIONS

Application	Araani Fire Guard, including any updates, upgrades, enhancements, modifications or new versions made available by Araani to (the) End User(s).
Application Documentation	All written materials, binders, user manuals and other documentation/materials supplied by Araani and related to use of the Application.
Araani Fire Guard	Araani's non-certified Araani Fire Guard, which is an intelligent video surveillance solution, intended to be integrated in a hardware device, that will trigger an alarm if fire (smoke or flame) is detected. Araani Fire Guard can never replace a mandatory fire detector.
EULA	This End User License Agreement which includes (i) the conditions under which the End User shall obtain a license to the Application; and (ii) the manner in which said license/Application should or should not be used by the End User.
End User	The person or legal entity that installs and uses the Application, including its employees or any authorized person acting on its behalf.
External Services	Third party software or hardware to which the Application may have access or with which it may communicate.
Intellectual Property Rights	Any and all of Araani's rights to patents, design, utility models, trademarks, trade names, know-how, trade secrets, copyrights, photography rights and other industrial and intellectual property rights relating to the Application, whether registered or not.
License Fee	Amounts due by the End User for obtaining and using a license to the Application.
Privacy Legislation	(i) the General Data Protection Regulation of 27 April 2016 ("the Regulation of the European Parliament and of the Council on the protection of individuals with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC"), including all future changes and amendments thereof; and/or (ii) all similar national data protection laws that are applicable to the processing of personal data within the scope of this EULA.
Supplier(s)	Araani authorized vendor(s) of the Application or of a hardware device equipped with the Application.
Trial license	The temporary installation and use of the Application in order to evaluate the performance, quality and suitability of the Application.
Website	Araani's official website: https://www.araani.com.

2. SCOPE OF LICENSE

2.1 Standard license to Application

2.1.1 Subject to approval to and compliance with this EULA, Araani grants, for the duration of this EULA (*cfr.* **Article 3**), the End User a limited, personal, non-commercial and non-transferable

license to **(i)** use the Application and/or **(ii)**, install this Application on a hardware device that it owns or controls (where applicable).

2.1.2 The number of allowed installations and uses depends on the type of license:

- ✓ A **single instance license** allows the End User to use and/or install the Application on one (1) hardware device.
- ✓ A **bulk license** allows the End User to use/and or install the Application on the number of hardware devices as described in the order.

2.1.3 The terms of this EULA shall govern the Application as well as any standard upgrades, updates, enhancements or other modifications to the Application provided by Araani, unless such upgrade, update, enhancement or other modification is accompanied by a new or customized End User License Agreement.

2.2 Trial license

2.2.1 Trial licenses are available to the End User for the Application with a limited activation period. Continued use of the Application beyond said activation period requires the purchase of a standard license to the Application.

2.2.2 The terms described in this EULA apply both to standard and to Trial licenses.

2.2.3 By installing the Application with Trial license, the End User automatically acknowledges the Intellectual Property Rights of Araani (*cfr.* **Article 6**).

2.3 Non-transferable

2.3.1 The End User acknowledges that both the standard license (*cfr*. **Article 2.1**) and the Trial license (*cfr.* **Article 2.2**) are non-transferrable. This means that the End User may not / cannot:

- ✓ transfer such licenses to any third parties, including its affiliates. Accordingly, any third party / parties requiring the Application must request their own copy of the license;
- ✓ move licenses to other hardware devices. An activated license is linked to the unique serial number of a specific hardware device and therefore cannot be installed again on other pieces of (a) hardware device(s). Such action requires the purchase of a new license or is subject to a service contract, e.g. in case of hardware failure (provided that this hardware is (still) covered by the warranty);
- ✓ distribute or make the Application available over a network where it could be accessed or downloaded by third parties.

3. DURATION

3.1 This EULA applies for the duration of the use of the Application by the End User, unless terminated in accordance with **Article 9**, and takes effect from the moment that the Application is used on the intended hardware device.

4. CONDITIONS OF USE

4.1 Acceptable use of the Application

4.1.1 The End User hereby agrees to use the Application in accordance with certain restrictions and conditions. In particular, the End User shall not use the Application in a manner that Araani believes:

- ✓ copies (part of) the Application in any way shape or form (except as permitted by this EULA);
- ✓ reverse-engineers, disassembles or otherwise attempts to derive the source code of the Application;
- ✓ modifies, alters, tempers with, or otherwise creates derivative works of the Application;
- ✓ transfers the license to the Application to a third party in violation with **Article 2.3** of this EULA;
- ✓ violates Privacy Legislation;
- ✓ violates or otherwise encroaches on the rights of Araani or others, including, but not limited to, infringing or misappropriating any privacy, human, intellectual property, proprietary right;
- ✓ advocates or induces illegal activity;
- ✓ interferes with or adversely affects the Application or use of the Application by other End Users;
- ✓ is in general to be considered abnormal use of the Application.

4.1.2 The End User commits itself to:

- ✓ apply all reasonable techniques, practices and/or technology (e.g. use of strong passwords that are regularly changed) to prevent unauthorized use of the Application by a third party;
- ✓ always use the latest, updated version of the Application as (and if) made available by Araani (*cfr*. **Article 7.1**);
- ✓ notify any malfunction or disruption (due to, for example, bugs or malicious code) of the Application to the Supplier of which the End User bought the license).

4.2 Legal disclaimer

4.2.1 The End User recognizes that it is aware that fire safety is subject to strict standards and regulations. Accordingly, the End User acknowledges that the Application may never replace a mandatory fire detector. A solution or hardware device equipped with the Application is also not intended to be linked with a fire alarm control panel. For such function, Araani refers to its certified solutions. Fire indications by the Application should only be raised after human verification.

4.2.2 The Application should in all cases be used by the End User only for the purpose for which it is intended, taking into account the specifications indicated above.

4.2.3 In no event can Araani or its affiliates be held accountable for any – direct or indirect – damages for loss or damage of property, death or personal injury to any person caused by (the non-detection of) fires, or related occurrence.

5. DATA PROTECTION

5.1 In principle, access to / the use of the Application by the End User does not automatically result in the processing by Araani of personal data. However, Araani may receive and process the personal data of an End User in the event it is requested by a Supplier to provide second line support;

5.2 In such case, Araani shall process such personal data of the End User in accordance with Privacy Legislation and with the Araani privacy policy as published on the Website: https://www.araani.com/en/standalone-pages/privacy-policy/.

6. INTELLECTUAL PROPERTY RIGHTS

6.1 The End User acknowledges that Araani is and remains the sole owner of all Intellectual Property Rights related to the Application, developed by Araani itself (or by a third party for the benefit of Araani). Nothing in this EULA shall be construed as to limit Araani's right, title and interest in the Application.

6.2 Araani warrants that the Application does not infringe upon the intellectual property rights of any third parties. If a third party (successfully) claims that the Application infringes upon its intellectual property rights, Araani shall obtain the right to use the third-party software or will amend or replace it so as to allow the End User to lawfully use it.

7. WARRANTY

7.1 Compatibility

7.1.1 Araani warrants for one (1) year that the Application shall run on compatible hardware devices and that the Application shall perform substantially as described in the Application Documentation.

7.2 Software maintenance and updates

7.2.1 During the first year of the license, Araani shall (proactively) take all commercially and technically reasonable measures to ensure that the Application is error/defect-free and free of malicious code. To that effect, Araani shall to its best abilities make sure that the Application is regularly updated and shall perform software maintenances if required. Beyond said first year, Araani shall only be required to proactively update the Application to fix severe bugs or other malicious code that make it impossible or seriously prevent the use of the Application (in general or by a specific End User).

7.2.2 The End User acknowledges that the aforementioned is subject to its own efforts to:

- ✓ notify any bugs of or other errors in the Application to the Supplier; and
- ✓ use, at all times, the latest (updated) version(s) of the Applications, if made available to the End User.

7.3 Exemptions

7.3.1 Araani shall not warrant:

- ✓ that the Application shall work on every hardware device and on future versions and upgrades of such hardware device, given the ever evolving and changing nature of technology;
- ✓ that all defects in the Application shall be corrected;
- ✓ the compensation for damage caused by an alteration or a modification made by the End User or another non-authorized person, or the correction or reparation of any malfunction caused by such alteration/modification;
- ✓ the correction or reparation of a malfunction caused by (non-limited) **(i)** the improper use or installation of the Application in violation with **Article 4.1.1**; (ii) negligence of the

End User or any other breach of its commitments under **Article 4.1.2**; or **(iii)** a power surge or failure at the End User's location.

7.3.2 Araani is not responsible for examining or maintaining the compliance of external hardware devices, in which the Application is installed and shall not warrant the compensation of any damage or the correction of any malfunction of the Application caused by such external hardware device.

7.3.3 If national law applicable to the use of the Application provide that certain warranties cannot be excluded or can only be excluded to a limited extent, this EULA shall be interpreted in accordance with such national law provisions.

8. LIMITATION OF LIABILITY

8.1 Araani's liability

8.1.1 Araani's total liability to the End User for all claims relating to this EULA or the use of the Application shall not exceed the License Fee.

8.2 Exemption for indirect damages

8.2.1 Araani shall not be liable for any incidental, special, indirect, or consequential damages whatsoever, such as, but not limited to: damages for loss of property, loss of profits, loss of revenue, loss of data, business interruption, reputational damage, (legal) advisory fees, etc.

8.3 Misuse of the Application

8.3.1 The End User recognizes that the Application cannot be considered as a (substitute for a) smoke detector. Accordingly, Araani cannot be held liable by any person for any damages for loss or damage of property, death or personal injury to any person caused by (the non-detection of) fire or related occurrence.

8.4 Wilful misconduct, gross negligence, personal injury or death

8.4.1 The limitations of liability set forth in this **Article 8** shall not apply to damages caused by wilful misconduct or gross negligence, personal injury or death attributable to Araani or the Application.

9. TERMINATION

9.1 Breach of any of the terms of this EULA by the End User shall result in the immediate revocation of the standard or Trial license. In such case, the End User shall not be entitled to a refund of the License Fee.

9.2 Upon termination (for whatsoever reason), the End User is obliged to destroy all copies of the Application and associated license files, including backup or archival copies on external storage, and uninstall the Application from all hardware devices it owns or controls.

10. EXTERNAL SERVICES

10.1 The End User agrees to use External Services at its sole risk. Araani is not responsible for examining or evaluating the content or accuracy of any External Services, and shall not be liable for any such External Services.

10.2 The End User shall not use the External Services in any manner that is inconsistent with the terms of this EULA or that infringes the Intellectual Property Rights of Araani or any third party.

10.3 External Services may not be available in the End User's languages and may not be appropriate or available for use in any particular location. To the extent the End User chooses to use such External Services, it is solely responsible for compliance with any applicable laws.

10.4 Araani reserves the right to change, suspend, remove, disable or impose access restrictions or limits on any External Services at any time, in which case it shall reasonably notify the End User thereof.

11. MISCELLANEOUS

11.1 End User acknowledges that it has fully read and understood all terms within this EULA.

11.2 This EULA supersedes any other agreement (oral or written) between Araani and the End User with the same scope. The aforementioned does not apply to customized End User License Agreement between the End User and Araani.

11.3 No deviation from this EULA shall be accepted, without prior consent of Araani.

12. GOVERNING LAW AND DISPUTE RESOLUTION

12.1 This EULA and all relations, disputes, claims and other matters arising hereunder (including non-contractual disputes or claims) shall be governed exclusively by, and construed exclusively in accordance with, the laws of Belgium, without regard to conflicts of law provisions.

12.2 The competent courts located in Kortrijk, Belgium shall have exclusive jurisdiction to adjudicate any dispute or claim arising out of or relating to this EULA (including non-contractual disputes or claims).