

# AiDANT Markers User Guide



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## 1. Overview

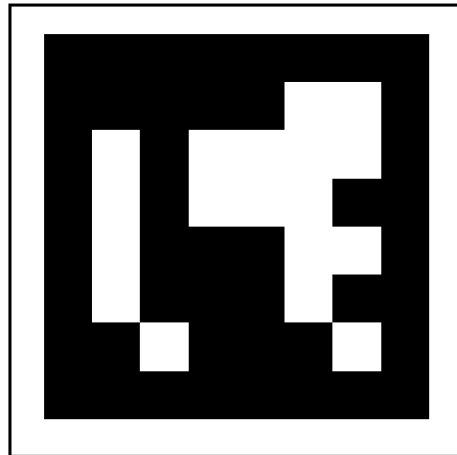
The AiDANT Markers application developed by [AiDANT.ai](https://aiDANT.ai) is an AXIS ACAP application that can be used to monitor an area and notify the user if a marker is present-in or missing-from an area of interest for too long.

## 2. Glossary

Markers	<p>A special image that depicts a unique patter which can be detected by computer vision. <a href="#">You can get the marker file using this link.</a></p> <p>Or you can generate markers with different id <a href="#">using this link.</a> Use 6x6 dictionary only, with possible ids 0-249.</p>
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Area	A polygon with four controls points that can contain the marker.
Dictionary	Markers are grouped into <i>Dictionaries</i> , and the name of the dictionary reflects the marker's resolution in terms of rows, columns. A 4x4 dictionary has 50 different marker IDs, while the 7x7 dictionary has 1000 IDs. Recommended Markers dictionary is 6x6.

A marker looks like this:



## 6x6 ID 1

**Notice the white margin around the detection area. It is required. Recommended dictionary is 6x6.**

### 3. Requirements

In order to run the AiDANT Markers application, you will need:

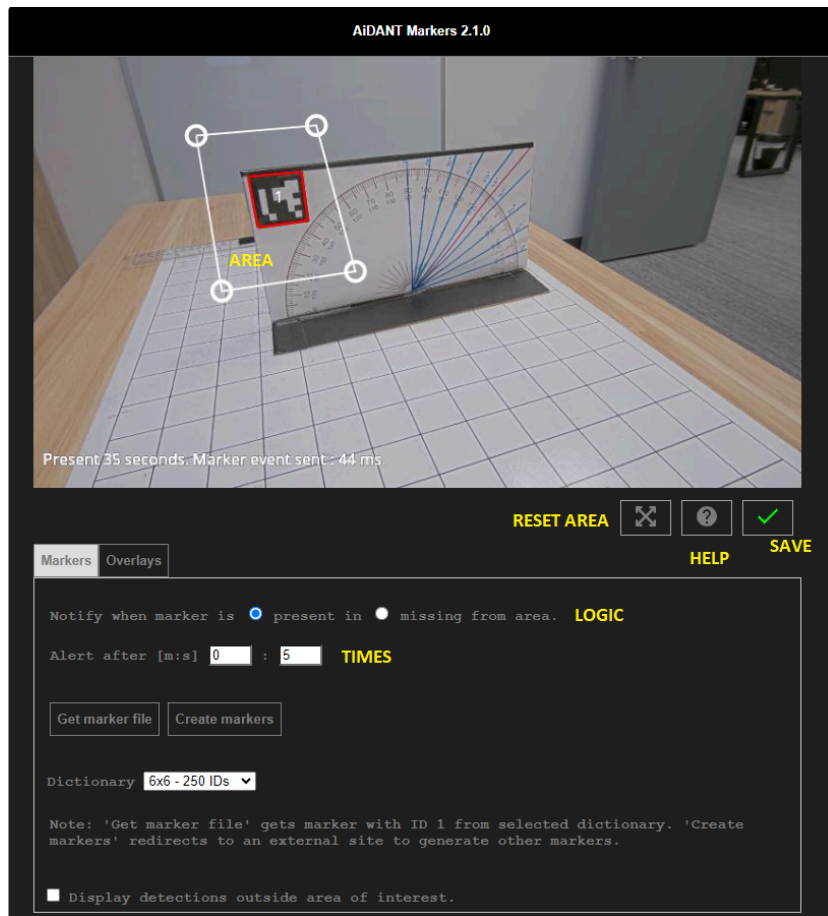
1. An AXIS camera with an ARTPEC-6, ARTPEC-7 or ARTPEC-8 chip excluding multi-sensor.
2. Update the AXIS camera firmware to the latest version.
3. Purchase a license from AiDANT.
4. Download and extract (unzip) the eap application file through the link <https://downloads.aidant.online/>.

### 4. Installation

Once all the requirements are satisfied, please do the following:

1. Access the camera through any web browser.
2. Go to *Settings->Apps* .
3. Click on *Add* and install the .eap application file.
4. Click on *AiDANT Markers* and install the license key file provided to you.

### 5. Main Controls



- Press the 'Reset Area' button to restore area to the default position.
- Press the 'Help' button to open the user guide.
- Press the 'Save' button to save your configuration changes.
- "Get markers file" will display a marker that can be printed.
- "Create markers" redirects to an external site to generate markers. Use 6x6 dictionary only, with possible ids 0-249.
- "Display detections outside area of interest" will render marker detections even if they are not inside the area. Can be used in demo situations, for example.
- "Dictionary" allows for selection of marker dictionary.

## 6. Usage

- Select an area to monitor by dragging the control points until the polygon shape covers the area of interest.
- Select "Present" or "Missing" according to the use case. eg: For door ajar, select "missing" after defining the area.
- Remember to save your changes by pressing the 'Save' button (the green checkmark).

When a target is detected, a bounding box will be shown on the stream in the application. The default color for the markers is green. If a target enters the area of interest, then the marker color changes from green to yellow and a timer displays. If the timer surpasses the time set in the *Alert Time* field, then the marker changes to red.

When the breach has lasted more than then the set time, a notification will be sent.

## 7. Overlays

- You can choose to display the bounding boxes as an overlay in a camera video stream by clicking “*Include detection overlays in this video stream*” and selecting the desired stream.

## 9. Event Triggering

### To setup simple event triggering (any marker):

1. Go to *System->Events*.
2. Click on + under *Rules* and select **AiDANT Markers Alert** under the *Condition* field.
3. Fill in the *Name* field and select an *Action*.

If you wish to set up email notification, click on the *Recipients* tab. Press the + button and fill in the fields.

Once done, you can go back to *Actions* under the *Rules* tab and select the appropriate action you want that requires a recipient.

### To setup advanced event triggering (by marker ID):

First, get yourself some markers with different IDs using “*Create markers*”.

1. Go to *System->Events*.
2. Click on + under *Rules* and select **AiDANT Markers Data** under the *Condition* field.
3. In payload field, set the marker ID number. It is possible to set more than one marker. For example, you plan to trigger on IDs 3 and 5, payload should be: 3,5 (no spaces). If you plan to trigger on markers 7, 7 and 9, payload should be: 7,7,9 (no spaces). Order matters, always start from the lower number (so 4,5,6 is OK, but 6,5,4 is wrong).
4. Fill in the *Name* field and select an *Action*.

If you wish to set up email notification, click on the *Recipients* tab. Press the + button and fill in the fields.

Once done, you can go back to *Actions* under the *Rules* tab and select the appropriate action you want that requires a recipient.

## 10. MQTT Publishing

The application will publish a 'Data Event' whenever the state inside the area of interest changes. For example, if a new marker or markers appear or disappear in the area.

To subscribe to these MQTT events:

1. In camera user interface, open **System/MQTT**.
2. Click “**Connect**” to connect to MQTT, set **Host** IP address.
3. In Tab **MQTT Publication**, add a new **Condition: “AiDANT Markers Data”**, click save or update as needed.

Now any MQTT subscriber can subscribe to the topic:

`“axis/[MAC]/event/tns:axis/CameraApplicationPlatform/AiDANTMarkersApplication/AiDANTMarkersData”`

And receive the data payload in the form of: Markers Ids separated by commas. For example: “1,1,2,2,2,3”.

If the state becomes empty, the data payload will be an empty string.

**Tip:** Use “Axis Metadata Monitor” from Axis communications if you wish to see the MQTT events being published.

## 11. Connecting the events to VMS

### Milestone

To receive events from AiDANT applications in Milestone XProtect:

1. In Milestone XProtect Management Client 'Site Navigation' panel, expand 'Servers/Recording Servers'.
2. In the 'Recording Server' panel select the desired camera and channel to open the 'Properties' dialog.
3. In the 'Properties' dialog', press the button 'Events' (at the bottom).
4. Press the button 'Add' for events to open the 'Select Driver Event' dialog.
5. In the dialog 'Select Driver Event', select the required events associated with your AiDANT product.
6. Create Alarms by selecting 'Alarms/Alarm Definitions', and configuring the definitions accordingly. Remember to save!

As events are 'Stateful', an 'on' event sent by the AiDANT application will appear in Milestone as 'Rising', while an 'off' event sent by the AiDANT application will appear in Milestone as 'Falling'.

**Tip:** If you cannot see the events associated to the camera, you might need to update the remote site hardware.

1. On the central site, expand Servers and select Recording Servers.
2. In the Overview panel, expand the required recording server, select the relevant remote system.
3. Right-click it.
4. Select Update Hardware. This opens the Update hardware dialog box.
5. The dialog box lists all changes (devices removed, updated and added) in the remote system since your Milestone Interconnect setup was established or refreshed last.
6. Click Confirm to update your central site with these changes.

### Genetec

1. In 'Security Center' open the configuration tool and select the desired unit to configure.
2. In the properties tab, enable the desired AiDANT events by selecting the AiDANT application from the applications list, and choosing the events from the 'Application Events' list.
3. Configure your alarms or bookmarks using 'Genetec Actions': In 'General Settings', select 'Actions'. Configure your event-to-action accordingly.

**Tip:** If you cannot see the events associated to the camera, refresh the camera connection.

### AXIS Camera Station

1. Select 'Recording and events/Action Rules'.
2. Click 'New'.
3. Click 'Trigger/Device Event/OK'.
4. Select Device and Event.
5. Filter Active Yes for the ON state and vice versa.
6. Press 'Next' and select your desired action. Finish.

## 12. Tailgating

By combining AiDANT 'Aware' occupancy module with marker detection, we can create a simple yet effective tailgating solution, all inside one AXIS camera. "Markers" detects the position of the door/gate, while "Aware" counts the persons/vehicles. This makes it possible to detect tailgating without interfacing with the gate/door controller via software.

### Instructions for configuring Tailgating

(we will use the word 'gate' but this can be applied to doors, lids, etc.)

#### Physical:

1. Close the gate.
2. Place a sticker marker on the gate.

#### Required software:

1. Install and run "AiDANT Markers" application.
2. Install and run "AiDANT Aware" application.

#### Configuration:

In "Markers" application.

1. Set: Notify when marker is present in area, 0 minutes, 0 second.
2. Place detection area around marker (gate closed).
3. Press "Save".

In "Aware" application:

1. In "Occupancy" tab, set: Notify when total occupancy count is 2.
2. Select "Entrance 1" and draw the entrance on the "inside" of the gate. Set "Appearing in entrance increases count" to false.
3. In "Objects" tab; choose objects to count (persons or vehicles, etc).

If required, we can draw the "Entrance 1" on the "outside" of the gate, then set "Appearing in entrance increases count" to true. For more details about drawing the entrances please refer to the AiDANT Aware user guide or contact AiDANT support.

In **camera system/events** (both apps need to be running by now):

We need a rule that instructs "Markers" to send a "Reset Occupancy" command to "Aware" every time the gate is opened.

Create a "Recipient" called "AwareOccupancyReset".

Type: HTTP  
URL: [http://\[camera IP\]/local/aidant\\_aware/cgi/work.cgi?action=reset\\_total\\_occupancy](http://[camera IP]/local/aidant_aware/cgi/work.cgi?action=reset_total_occupancy)  
Username: [Camera username]  
Password: [Camera password]  
Save

Create a "Rule" called "Markers to Aware Reset".

Condition: Marker Alert  
Action: Send notification through HTTP  
Recipient: AwareOccupancyReset  
Save

Create a "Rule" called "Tailgating" for the Tailgating event.

Condition: AiDANT Aware Occupancy Alert  
Action: Choose whichever action, for example, "Use Overlay while rule is active".  
Save

If using a text overlay please remember to set a value for the text eg: VEHICLE TAILGATING DETECTED and also in the "Overlay" tab of the camera UI, create a text overlay with the placeholder #D to actually display the text.

## 13. Appendix

### Troubleshooting

- The application log can be accessed through the Apps/AiDANT Markers page.
- Please contact [AiDANT Technical Support](#) if you have any questions or comments.
- Markers overlays do not overlap the physical markers:
  - Please note that the display of Markers overlays on external streams that use digital zoom and/or pan settings is supported only for streams that match the native aspect ratio of the camera. For example, if the native aspect ratio of the camera is 16:9, then the display of Markers overlays is supported on any external 16:9 stream, or on any external stream of any aspect ratio that is not using digital PTZ.
  - To ensure that you are not using digital PTZ, in the menu of the camera, under "View Areas", turn off "PTZ", and restart AiDANT Markers.

### Recommended Marker Distances From Camera

You can [download the marker file from here](#) and print it, or order stickers from your local print shop.

For a typical 4MP non-zoomed camera, the minimum size of the marker should be calculated according to the formula.

$$\text{Marker side size} = \text{Marker distance from camera} / 75$$

For zoomed cameras or higher resolutions, the required minimal distance will increase.

Some examples:

<b>Marker distance from camera</b>	<b>Marker side size</b>
0.83 meter (~ 2.7 feet)	1.1 cm (~1/2 inch)
1.65 meters (~5.5 feet)	2.2 cm (~1 inch)
4.2 meters (~14 feet)	5.5 cm (~2 inch)
8.3 meters (~27 feet)	11 cm (~4 inch)
16.5 meters (~55 feet)	22 cm (~8 inch)

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