

AiDANT Markers User Guide



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1. Overview

The AiDANT Markers application developed by [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 patten which can be detected by computer vision. You can get the marker file using this link.</p> <p>Or you can generate markers with different id using this link. Use 6x6 dictionary only, with possible ids 0-249.</p>
Area	<p>A polygon with four controls points that can contain the marker.</p>

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.
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A marker looks like this:



A typical marker

3. Requirements

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

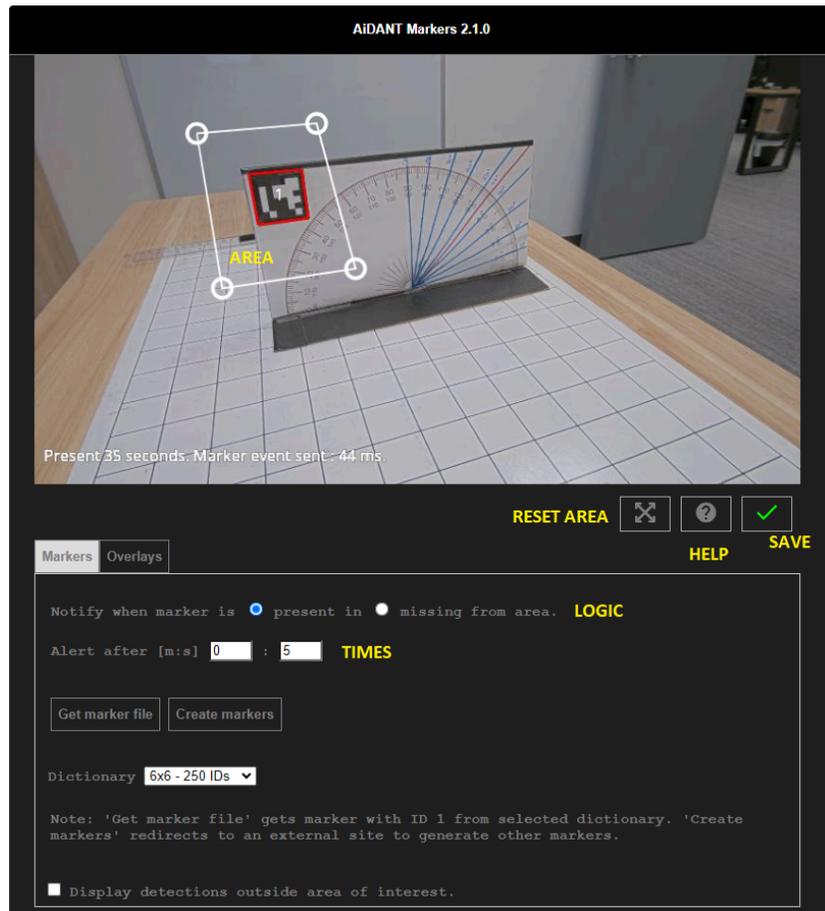
1. An AXIS camera with an ARTPEC-6, ARTPEC-7 or ARTPEC-8 chip excluding multi-sensor.
2. Update the AXIS camera firmware to the latest version.
3. Purchase a license from AiDANT.
4. Download and extract (unzip) the eap application file through the link <https://downloads.aidant.online/>.

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. Axis Camera Station Integration

1. Make sure this application is started inside the camera.
2. Launch Axis Camera Station.
3. Open "Recording and Events", then "Action Rules".
4. Press "New" to create a new action rule.
5. In "Triggers" dialog, press "Add" for a new trigger.
6. Select "Device Event", and press "OK".
7. Select camera and choose the desired trigger event.
8. In the "Actions" dialog, select your desired action.

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. nFor more details about drawing the entrances p[lease 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" ever 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.

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 non-zoomed cameras, the minimum size of the marker should be calculated according to the formula

$$\text{Marker side size} = \text{Marker distance from camera} / 50$$

Some examples:

Marker distance from camera	Marker side size
1 meter (~ 3 feet)	2 cm (~1 inch)
2 meters (~6 feet)	4 cm (~2 inch)
5 meters (~16 feet)	10 cm (~4 inch)
10 meters (~32 feet)	20 cm (~8 inch)
20 meters (~65 feet)	40 cm (~16 inch)