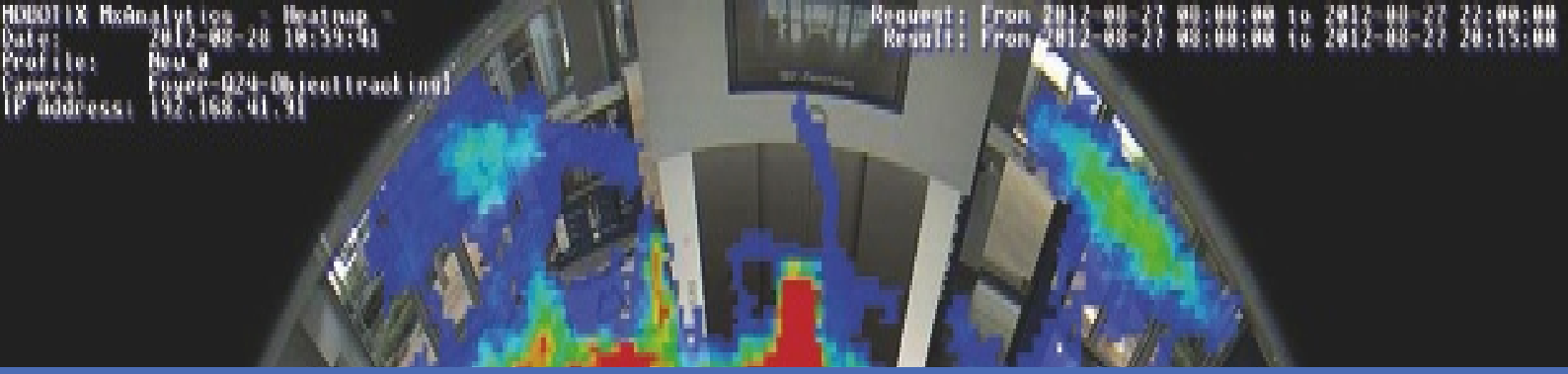
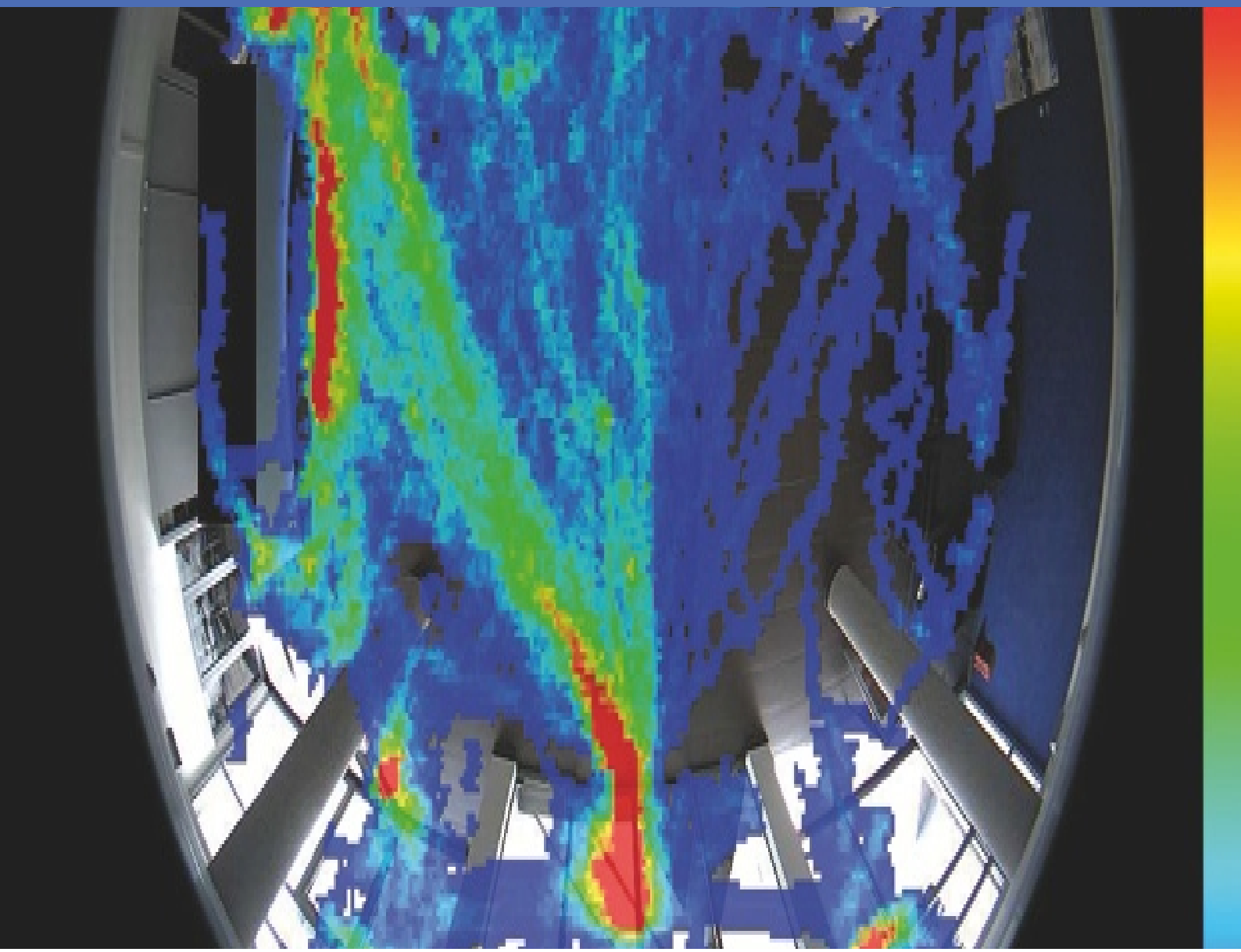


Guideline

MOBOTIX MxAnalytics App

© 2021 MOBOTIX AG



BeyondHumanVision

MOBOTIX

V1.04_4/6/2021, Order Code: N/A

Table of Contents

Table of Contents 2

Support 3

Imprint 5

Legal Notes 6

About MxAnalytics App 8

Technical Specifications 9

Licensing Certified Apps 11

Managing Licenses in MxManagementCenter 11

Activation of the Certified App Interface 18

Configuration of MxAnalytics App 19

About MxMessageSystem 25

What is MxMessageSystem? 25

Facts about MxMessages 25

Basic configuration: Processing the automatically generated app events 26

Advanced Configuration: Processing the meta data transmitted by apps 30

Support

If you need technical support, please contact your MOBOTIX dealer. If your dealer cannot help you, he will contact the support channel to get an answer for you as quickly as possible.

If you have internet access, you can open the MOBOTIX help desk to find additional information and software updates. Please visit:

www.mobotix.com > Support > Help Desk

Imprint

This document is part of the product MxAnalytics App distributed by MOBOTIX AG. The document describes how to use and to configure the product and its components.

Subject to change without notice.

Copyright Information

This document is protected by copyright. Passing on information to others is not permitted without the prior written consent of MOBOTIX AG. Violations will be subject to criminal punishment.

Patent and Copy Protection

All rights reserved. Trademarks or registered trademarks belong to the corresponding owners.

Address

MOBOTIX AG
Kaiserstrasse
67722 Langmeil

Germany
Phone: +49 6302 9816-103
E-Mail: sales@mobotix.com
Internet: www.mobotix.com

Legal Notes

Special Export Regulations!

Cameras with thermal image sensors ("thermal cameras") are subject to the special export regulations of the U.S.A. and including the ITAR (International Traffic in Arms Regulation):

- According to the currently applicable export regulations of the U.S.A. and the ITAR, cameras with thermal image sensors or parts thereof must not be exported to countries embargoed by the U.S.A., except if a special permit can be presented. At present, this applies to the following countries: Crimea region of Ukraine, Cuba, Iran, North Korea, Sudan, and Syria. The same export ban applies to all persons and institutions listed in "The Denied Persons List" (see www.bis.doc.gov, "Policy Guidance > Lists of Parties of Concern"; https://www.treasury.gov/resource-center/sanctions/sdn-list/pages/default.aspx).
- Under no circumstances must the camera itself or its thermal image sensors be used in the design, the development or in the production of nuclear, biological or chemical weapons or in the weapons themselves.

Legal Aspects of Video and Sound Recording

You must comply with all data protection regulations for video and sound monitoring when using MOBOTIX AG products. Depending on national laws and the installation location of the MxAnalytics App, the recording of video and sound data may be subject to special documentation or it may be prohibited. All users of MOBOTIX products are therefore required to familiarize themselves with all applicable regulations and to comply with these laws. MOBOTIX AG is not liable for any illegal use of its products.

Declaration of Conformity

The products of MOBOTIX AG are certified according to the applicable regulations of the EC and other countries. You can find the declarations of conformity for the products of MOBOTIX AG on www.mobotix.com under Support > Download Center > Certificates & Declarations of Conformity.

RoHS Declaration

The products of MOBOTIX AG are in full compliance with European Unions Restrictions of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS Directive 2011/65/EC) as far as they are subject to these regulations (for the RoHS Declaration of MOBOTIX, please see www.mobotix.com, Support > Download Center > Documentation > Brochures & Guides > Certificates).

Disposal

Electrical and electronic products contain many valuable materials. For this reason, we recommend that you dispose of MOBOTIX products at the end of their service life in accordance with all legal requirements and regulations (or deposit these products at a municipal collection center). MOBOTIX products must not be

disposed of in household waste! If the product contains a battery, please dispose of the battery separately (the corresponding product manuals contain specific directions if the product contains a battery).

Disclaimer

MOBOTIX AG does not assume any responsibility for damages, which are the result of improper use or failure to comply to the manuals or the applicable rules and regulations. Our General Terms and Conditions apply. You can download the current version of the **General Terms and Conditions** from our website at www.-mobotix.com by clicking on the corresponding link at the bottom of every page.

About MxAnalytics App

Certified App for License Plate Recognition

The app's artificial intelligence-based algorithms, which have already been successfully tested in numerous European markets, allow the reliable recognition of single and two-line license plates of vehicles in the supported regions of origin (Latin and Hebrew characters and numbers). The app can be tested free of charge for 30 days and is activated by license for an unlimited period of time. Typical application areas for the app are: Parking management, access control and regulation, traffic monitoring.

- App delivers events via MxMessageSystem in real-time
- Integrated recognition protocol (last 1000 recognized license plates)
- Detection with at least 95 % accuracy (depending on environmental conditions)
- Camera can be online or offline
- Configuration of the application also via MxManagementCenter (free Advanced Config license required)
- Can be used with all cameras of the MOBOTIX 7 system platform

Best suited for the requirements of the following industries:

Utilities, Energy & Mining; Industry & Production, Government, Traffic & Transportation, Retail, Healthcare, Education & Science

Smart Data Interface

This app has a Smart Data interface to MxManagementCenter. For information on how to configure, see the corresponding online help of the camera software and MxManagementCenter.

Caution

Thermal sensors are not supported by this app.

Technical Specifications

Product Information

Product Name	MxAnalytics App
Supported MOBOTIX Cameras	Mx-M73A, Mx-S74A
Minimum Camera Firmware	V7.0.6.x
MxManagementCenter Integration	- min. MxMC v2.4 - Advanced Config license required

Product Features

App Features	Available Analytics Features: ■ People / Object Counting ■ Heatmap ■ Restricted Area (Motion Detection) ■ time table to enable MxAnalytics only within defined schedules (e.g. opening hours) ■ auto-generated people / object counting reports ■ auto-generated heatmap reports ■ MOBOTIX events via MxMessageSystem
Maximum number of detection areas	20
Maximum number of counting corridors	16
Maximum number of restricted areas	20
Supported image sensor types	Day, Night, Day/Night
Dual / Multi Sensor usage	Yes
MxMessageSystem supported	Yes

Report export formats	Counting reports: CSV and HTML (table view) Heatmap reports: JPEG
MOBOTIX events	Yes
ONVIF Events	*

Scene Requirements

Recommended camera position	ceiling mounted (recommended), wall mounted
Recommended installation height (camera)	2,5 - 10 m (depending on lens variant)
Recommended viewing angle on object	+- 30° (ceiling mount perspective)
Minimum object size	250px

Technical App Specifications

Synchronous / Asynchronous App	Asynchronous
Accuracy	Typ. 97% (considering scene & technical requirements)
Processed number of frames per second	Typ. 20 fps

Licensing Certified Apps

The following licenses are available for the MxAnalytics App:

- **30-day test license** pre-installed
- **1 year commercial license**
- **2 year commercial license**

The usage period begins with activation of the app (see Activation of the Certified App Interface, p. 18).

Note
For buying or renewing a license pleas contact your MOBOTIX Partner.

Note
Apps are usually pre-installed with the firmware. In rare cases, apps must be downloaded from the website and installed. In this case see **www.mobotix.com > Support > Download Center > Marketing & Documentation**, download and install the app.

Managing Licenses in MxManagementCenter

After a test period commercial licenses must be activated for use with a valid license key.
Activation of Certified Apps and events

Online-Activation

After receiving the activation IDs, activate them in MxMC as follows:

1. Select from the menu **Window > Camera App Licenses**.
2. Select the camera on which you want to license apps and click **Select**.

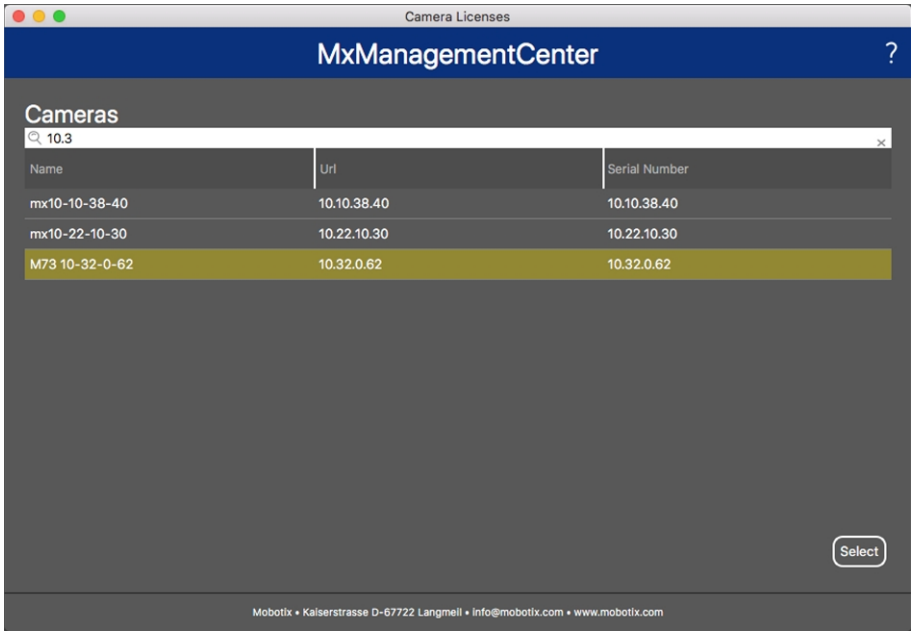


Fig. 1: Overview of Camera App Licenses in MxManagementCenter

Note

If necessary, correct the time set on the camera.

1. An overview of the licenses installed on the camera may be displayed. Click **Activate License**.

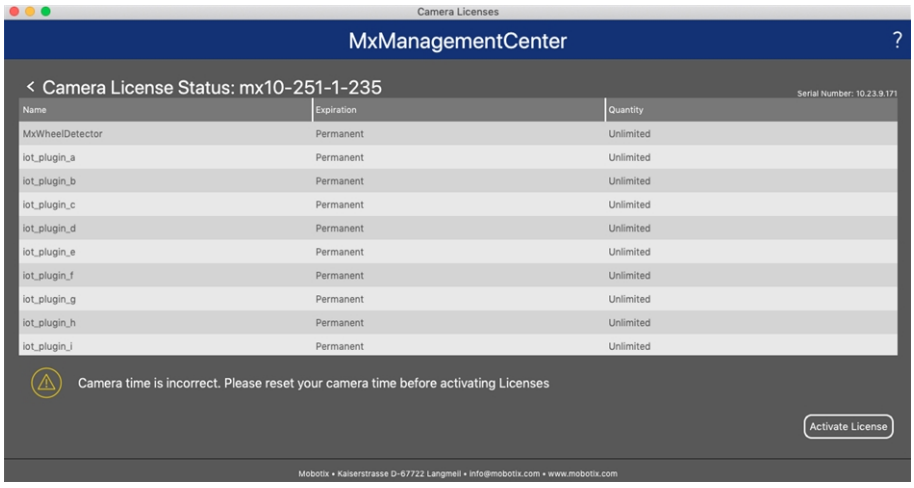


Fig. 2: Overview of the licenses installed on the camera

Note

If necessary, correct the time set on the camera.

2. Enter a valid Activation ID and specify the number of licenses to install on this computer.
3. If you want to license another product, click on . In the new row, enter the appropriate Activation ID and the number of licenses you want.
4. To remove a line click .

5. When you have entered all Activation IDs, click **Activate License Online**. During activation, **MxMC** connects to the license server. This requires an Internet connection.

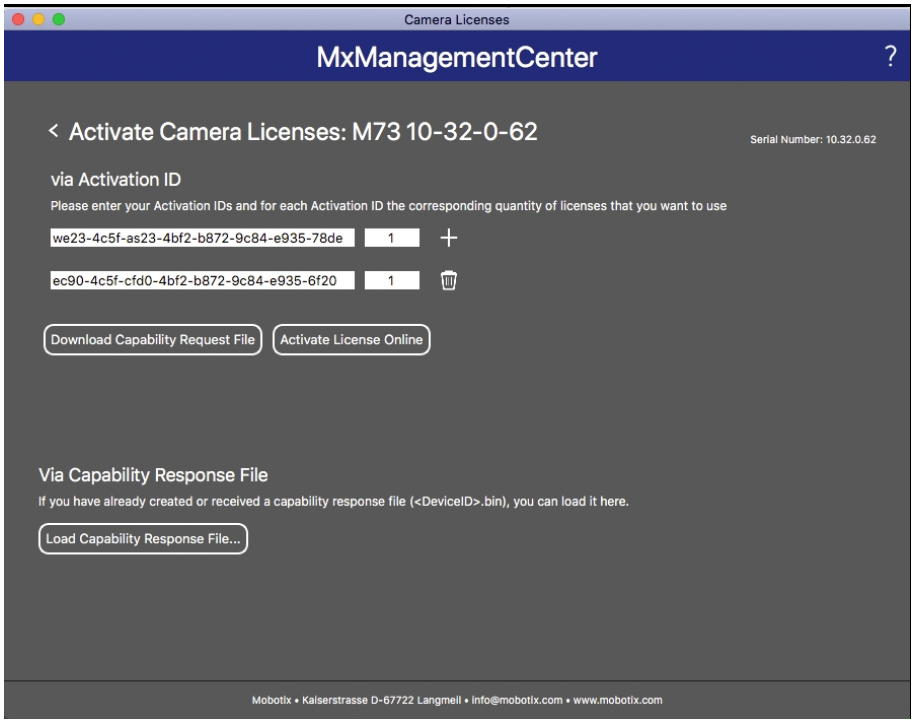


Fig. 3: Adding licenses

Successful activation

After successful activation, a new log in is required to apply the changes. Alternatively, you can return to license management.

Failed activation (missing internet connection)

If the license server cannot be reached, e.g. due to a missing internet connection, apps can also be activated offline. (see Offline Activation, p. 13).

Offline Activation

For offline activation, the partner/installer from whom you purchased the licenses can generate a capability response (.bin file) on the license server to activate their licenses.

1. Select from the menu **Window > Camera App Licenses**.
2. Select the camera on which you want to license apps and click **Select**.

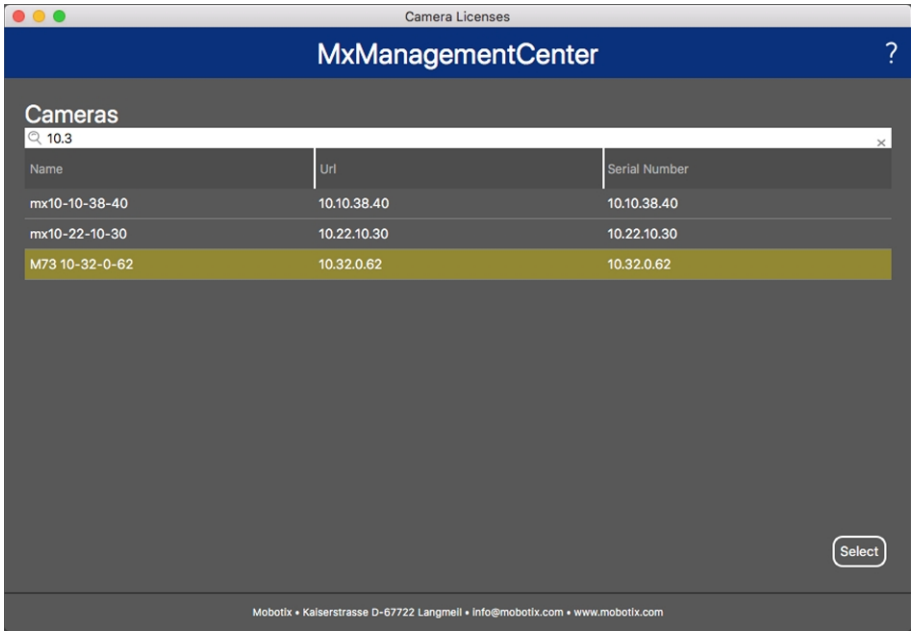


Fig. 4: Overview of Camera App Licenses in MxManagementCenter

Note

If necessary, correct the time set on the camera.

3. An overview of the licenses installed on the camera may be displayed. Click **Activate License**.

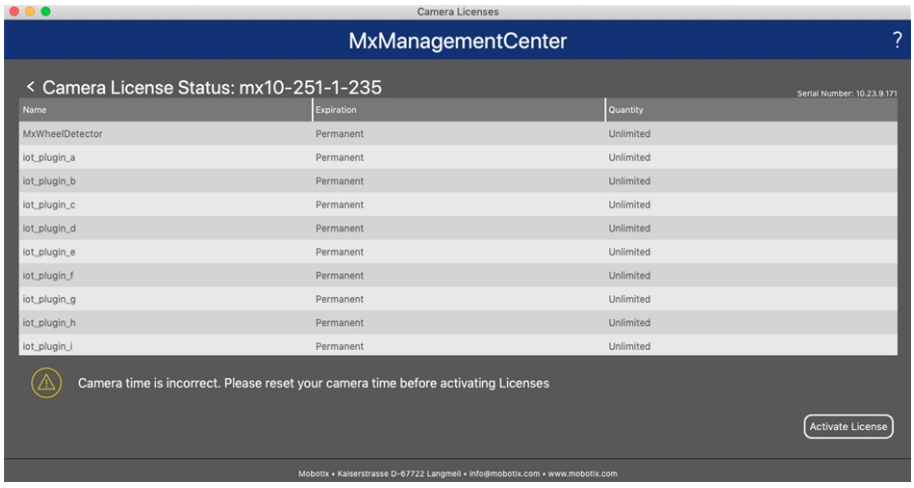


Fig. 5: Overview of the licenses installed on the camera

Note

If necessary, correct the time set on the camera.

4. Enter a valid Activation ID and specify the number of licenses to install on this computer.
5. If you want to license another product, click on . In the new row, enter the appropriate **Activation ID** and the number of licenses you want.
6. If necessary, click to remove a line.

7. When you have entered all Activation IDs, click **Download Capability Request File (.lic)**. and send it to your partner/installer.

Note

This file allows the partner/installer from whom you purchased the licenses to generate a capability response file (.bin) on the license server.

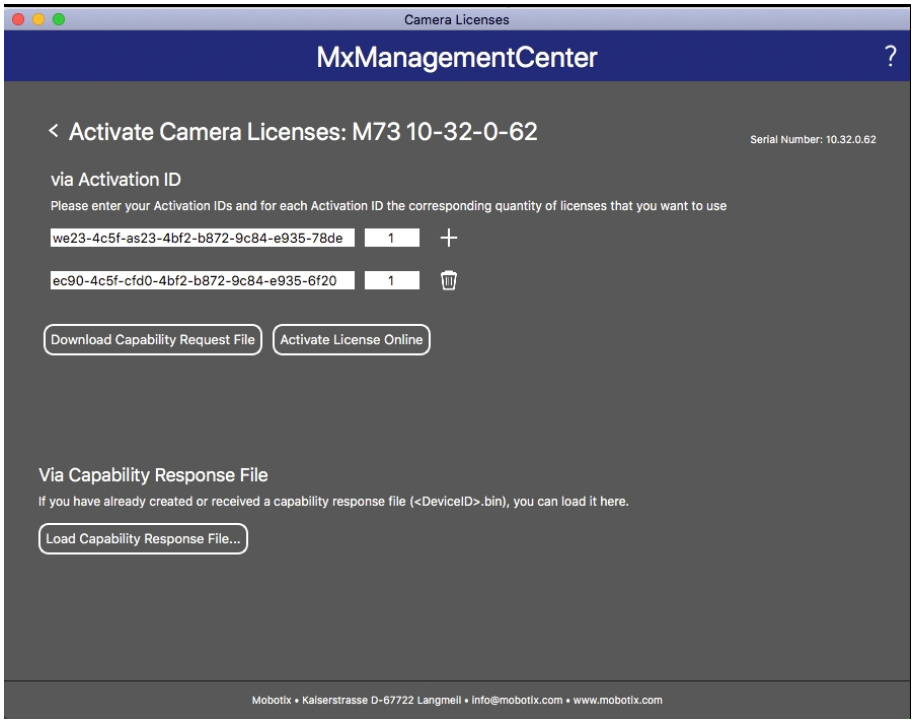


Fig. 6: Adding licenses

8. Click Load Capability Response File and follow the instructions.

Successful activation

After successful activation, a new log in is required to apply the changes. Alternatively, you can return to license management.

Manage licenses

In the license management screen, you get a tabular overview of all licenses that have been activated for a camera.

1. Select from the menu **Window > Camera App Licenses**.
2. Select the camera on which you want to license apps and click **Select**.

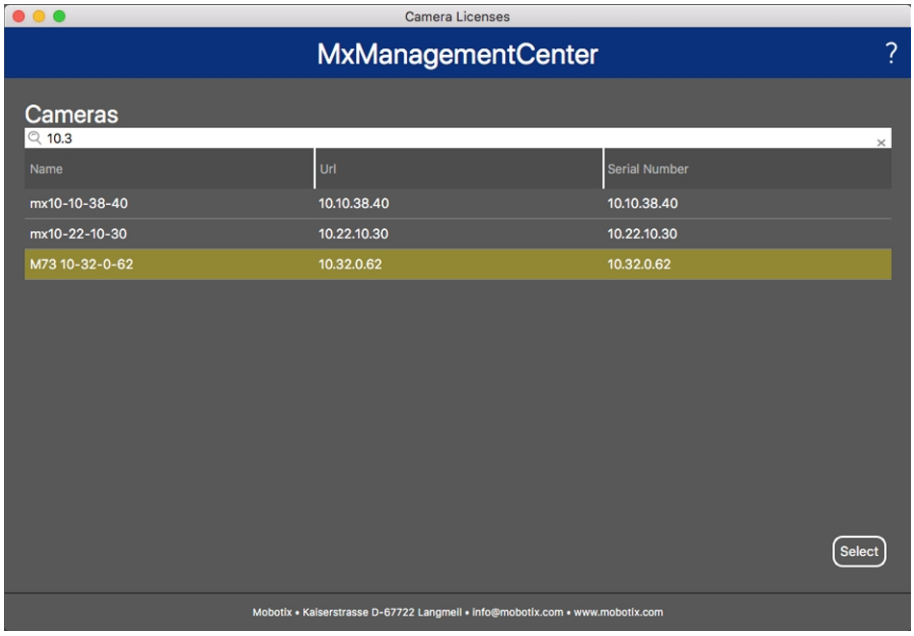


Fig. 7: Overview of Camera App Licenses in MxManagementCenter

An overview of the licenses installed on the camera may be displayed.

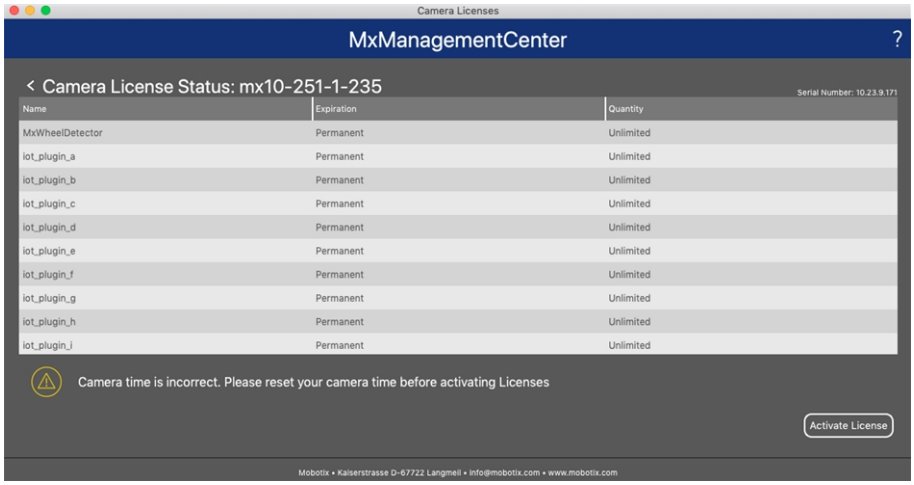


Fig. 8: Overview of the licenses installed on the camera

Note

If necessary, correct the time set on the camera.

Column	Explanation
Name	Name of the licensed app
Expiration	the time limit of the license
Quantity	Number of licenses purchased for a product.
Serial Number	Unique identification determined by MxMC for the device used. If problems occur during licensing, please have the device ID ready.

Synchronize licenses with server

When the program starts, there is no automatic comparison of the licenses between the computer and the license server. Therefore, click **Update** to reload the licenses from the server.

Update licenses

To update temporary licenses, click **Activate Licenses**. The dialog for updating/activating licenses opens.

Note

You need administrator rights to synchronize and update licenses.

Activation of the Certified App Interface

Attention
The MxAnalytics App does not consider obscure areas defined for the live image. Therefore there is no pixelation in obscure areas while configuring the app and during image analysis by the app.

Note
The user must have access to the setup menu (http(s)://<Camera IP address>/control). Therefore check the user rights of the camera.

Activation of Certified Apps and events

1. In the camera web interface, open: **Setup Menu / Certified App Settings** (http(s)://<Camera IP address>/control/app_config).

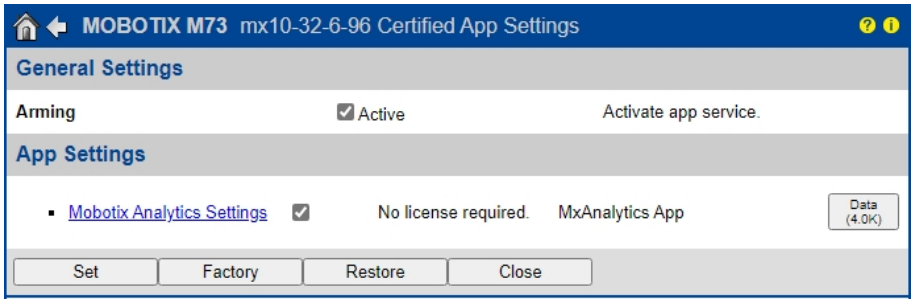


Fig. 9: Certified App: Settings

2. Under **General Settings** activate the **Arming** of the MOBOTIX interface (see screenshot).
3. Under **App Settings** check the **Active** option
4. Click on the name of the App to be configured to open the Apps user interface.
5. For configuration of the App see Configuration of MxAnalytics App, p. 19.

Configuration of MxAnalytics App

Attention
The user must have access to the setup menu (http(s)://<Camera IP address>/control). Therefore check the user rights of the camera.

1. In the camera web interface, open: **Setup Menu / Certified App Settings** (http(s)://<Camera IP address>/control/app_config).
2. Click on the name of the **MxAnalytics App**.

The configuration window of the app appears with the following options:

Basic settings

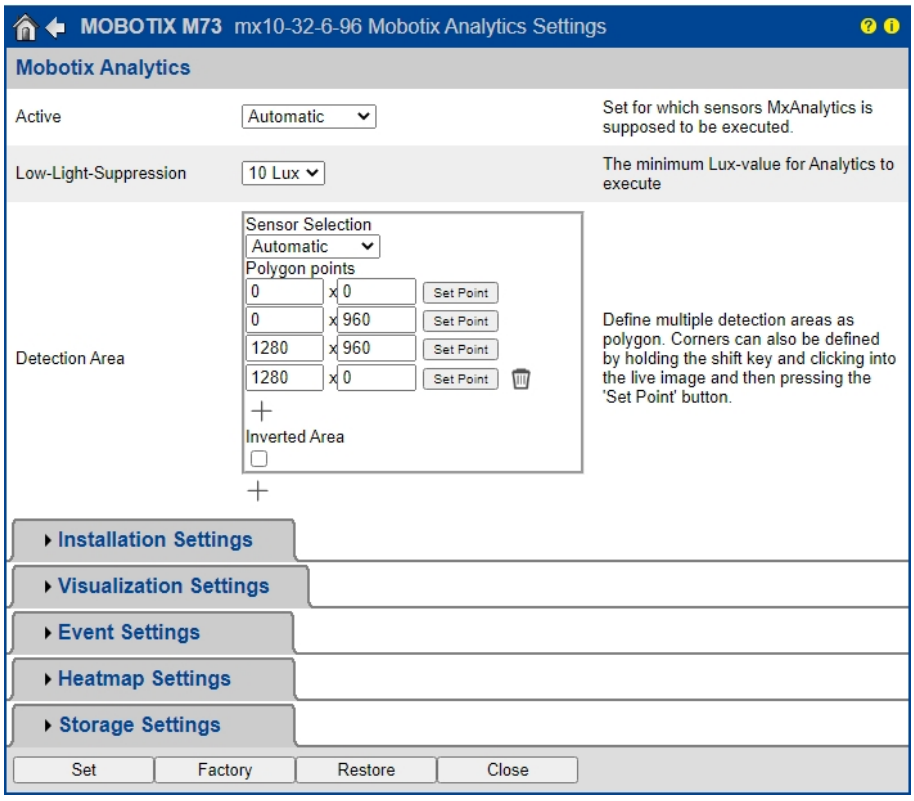
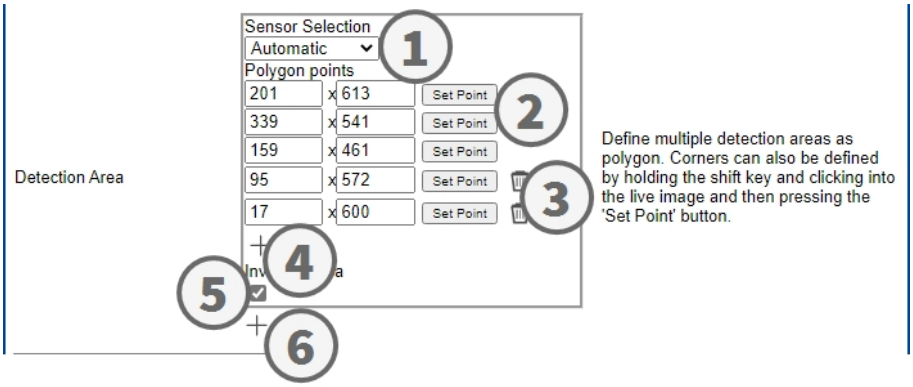


Fig. 10: Basic settings

Active: Select the sensors to be used by the MxAnalytics App.
Low-Light -Supression: Select the minimum lux value for MxAnalytics App to execute.
Detection Area: You can define multiple detection areas as polygon by defining the corner points. Corners can also be defined by holding the shift key and clicking into the live image and then pressing the **Set Point** button.

Drawing a Detection Area



1. Select the sensors to be used for the detection area
2. In the live view hold the **Shift** key and click a corner point of the detection area.
3. In the configuration interface click **Set Point (2)** to adopt the coordinates of the corner point.
4. Repeat steps 2 and 3 to define the next corner points.
5. Optionally click the **bin icon (3)** to delete a zone.
6. Optionally click the **plus icon (4)** to define another corner point.
7. Optionally check **Inverted Area icon (5)** to delete a zone.
8. Optionally click the **plus icon (6)** to define another Detection Area.

Installation settings

For best analytics results camera position as well as the object size need to be specified as accurate as possible.

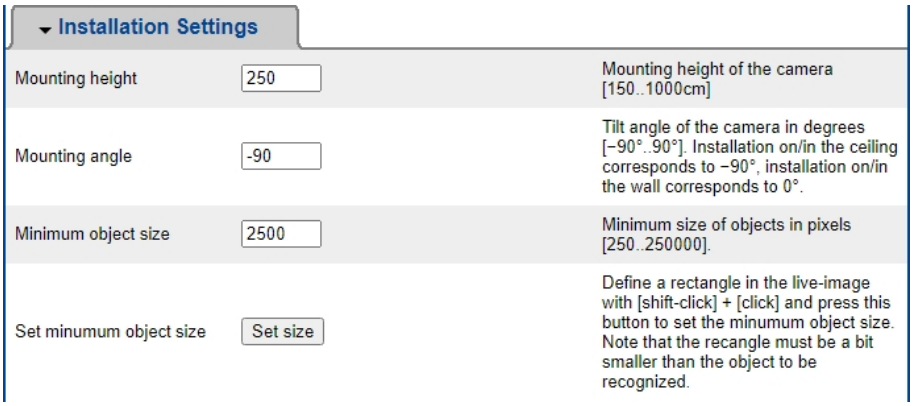


Fig. 11: Installation settings

Mounting height: Mounting height of the camera (150- 1000cm)
Mounting angle: Tilt angle of the camera in degrees [−90°- 90°]. Installation on/in the ceiling corresponds to −90°, installation on/in the wall corresponds to 0°.
Minimum object size: Minimum size of objects in pixels (250 - 250000)
Set minimum object size: In the live image define a rectangle with [shift-click] + [click] and press this button to set the minimum object size.

Note
the rectangle must be a bit smaller than the object to be recognized.

Visualization Settings

Define how the MxAnalytics App objects look in the live image:

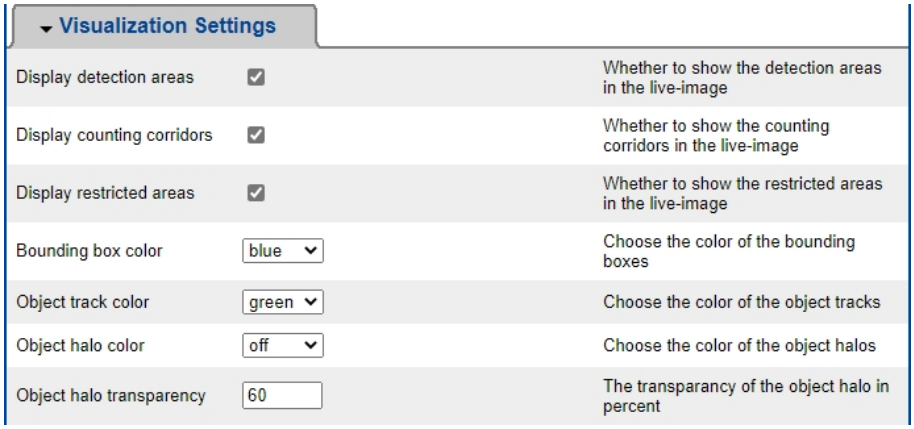


Fig. 12: Visualization settings

Display detection areas: Check to show the detection areas in the live image.
Display counting corridors: Check to show counting corridors in the live image.
Display restricted areas: Check to show restricted areas in the live image.
Bounding box color: Select a bounding box color for detected objects.
Object track color: Select a color for the tracking path of detected objects.
Object halo color: Select a color for the object halos.
Object halo transparency: Enter a transparency value in percent for the object halos.

Event settings

Within the detection areas you can define counting corridors and restricted areas.

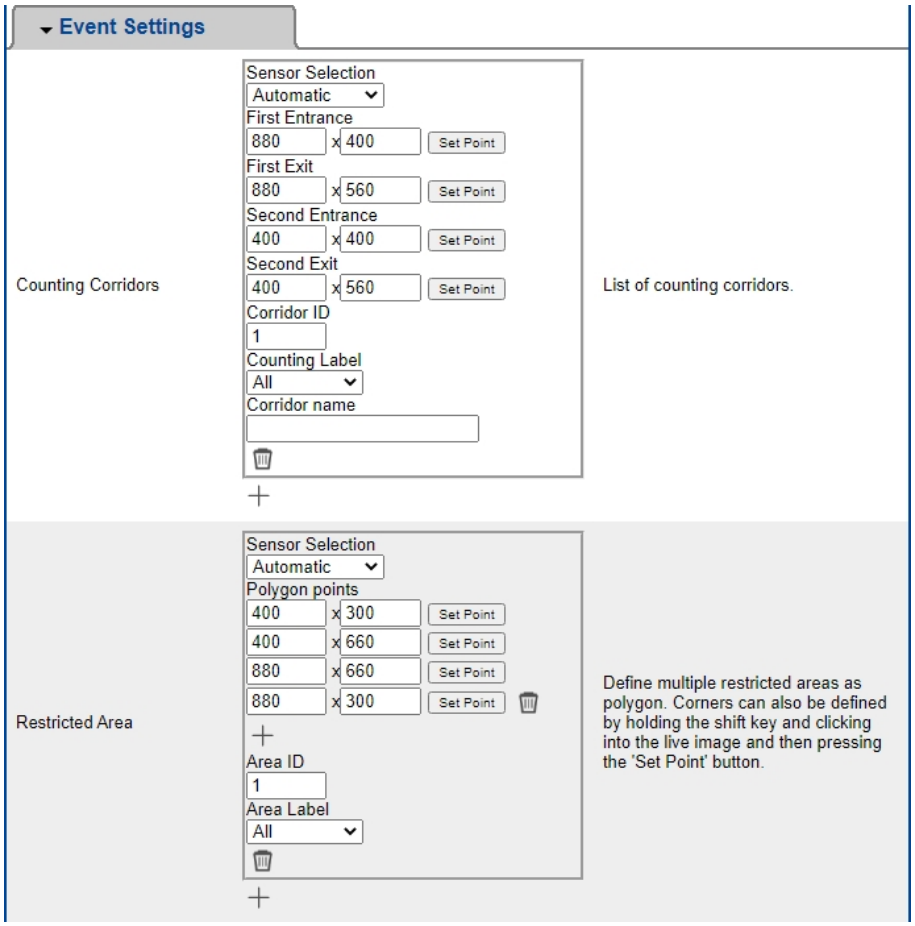


Fig. 13: Event settings

Adding a counting corridor

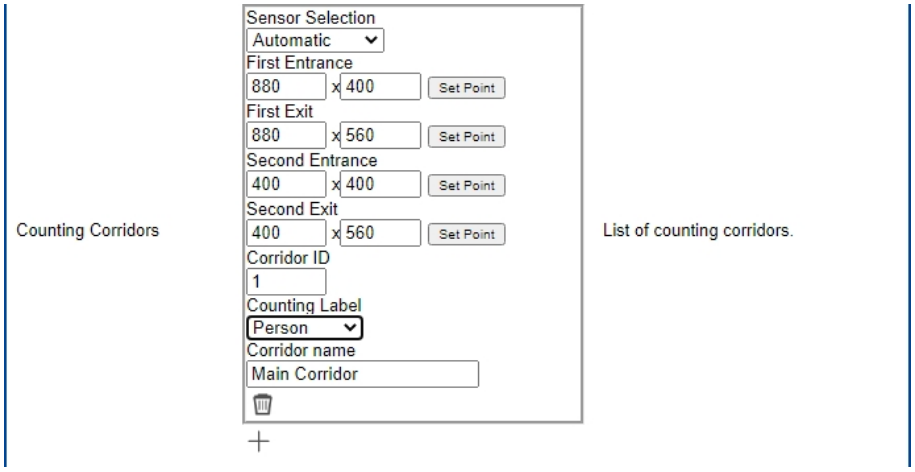


Fig. 14: Adding a counting corridor

1. Select the same sensor as selected in the basic settings.
2. Define the **Entrance points** and **Exit points** of the corridor
   - In the live view hold the **Shift** key and click a corner point of the Entrance/Exit point.
   - In the configuration interface click **Set Point** to adopt the coordinates of the corner point.
   - Repeat steps 2 and 3 to define the next corner points.
3. Set a unique **corridor ID**.
4. Select a counting label to make sure only select objects will be counted.
5. Enter an unique **Corridor name**.
6. Optionally click the **bin icon (3)** to delete a corridor.
7. Optionally click the **plus icon (4)** to define another corner point.

Adding a restricted area

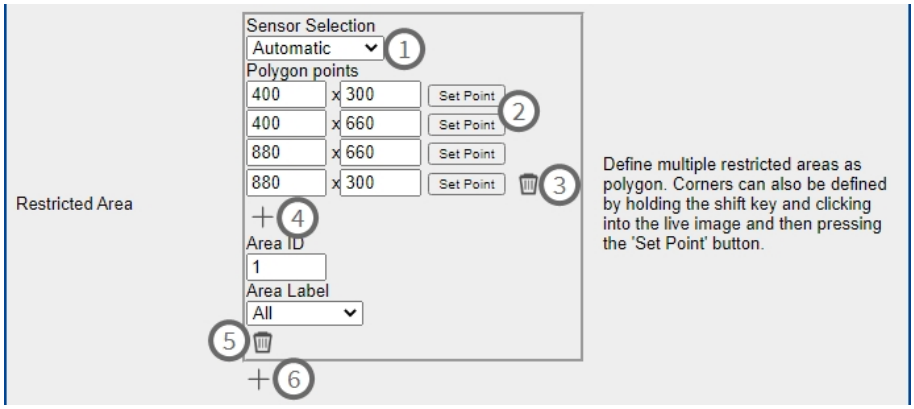


Fig. 15: Adding a restricted area

1. **Select the same sensor (1)** as selected in the basic settings.
2. In the live view hold the **Shift** key and click a corner point of the restricted area.
3. In the configuration interface click **Set Point (2)** to adopt the coordinates of the corner point.
4. Repeat steps 2 and 3 to define the next corner points.
5. Optionally click the **bin icon (3)** to delete a corner point.
6. Optionally click the **plus icon (4)** to define another corner point.
7. Enter an unique **area ID**.
8. Select an **area label** to make sure only select objects will be detected as restricted.
9. Optionally click the **bin icon (5)** to delete a Restricted Area.
10. Optionally click the **plus icon (6)** to define another Restricted Area.

Heatmap Settings

In this section you can define heatmap settings e. g. for crowd analytics.

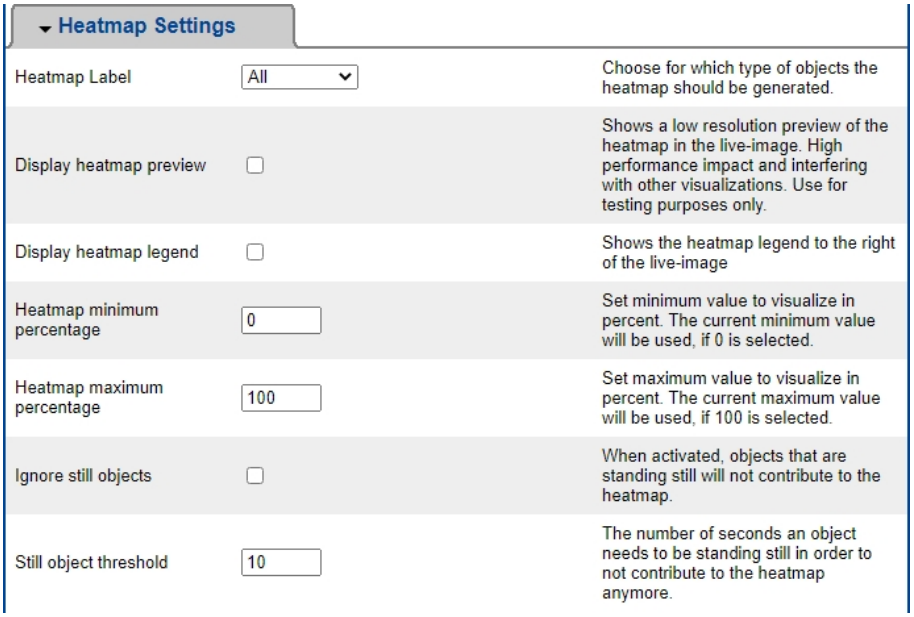


Fig. 16: Heatmap settings

Heatmap Label: Select a heatmap label to make sure only select objects will be used to generate a heatmap.
Display heatmap preview: Check for testing purposes only. Shows a low resolution preview of the heatmap in the live-image. High performance impact and interfering with other visualizations. Use for testing purposes only.
Display heatmap legend: Check to show the heatmap legend to the right of the live-image.
Heatmap minimum percentage: Set the minimum value to visualize in percent. The current minimum value will be used, if 0 is selected.
Heatmap maximum percentage: Set the maximum value to visualize in percent. The current maximum value will be used, if 100 is selected.
Ignore still objects: Check that objects that are standing still will not contribute to the heatmap.
Still object threshold: The number of seconds an object needs to be standing still in order to not contribute to the heatmap anymore.

Storage Settings

Edit how long heatmap and corridor data should be stored:

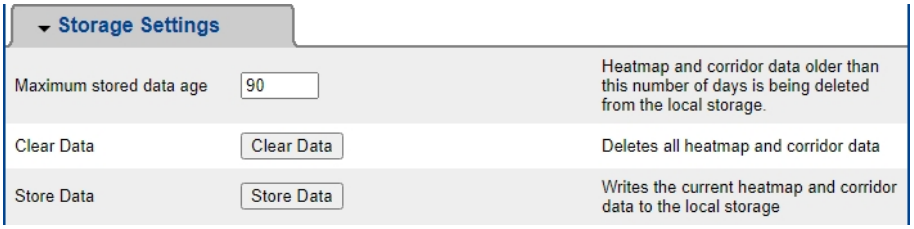


Fig. 17: Storage settings

Maximum storage data age: Enter the number of days after heatmap and corridor data are being deleted from the local storage.
Clear data: Click to delete all heatmap and corridor data.
Store data: Click to write the current heatmap and corridor data to the local storage.

About MxMessageSystem

What is MxMessageSystem?

MxMessageSystem is a communication system based on name oriented messages. This means that a message must have a unique name with a maximum length of 32 bytes.

Each participant can send and receive messages. MOBOTIX cameras can also forward messages within the local network. This way, MxMessages can be distributed over the entire local network (see Message Area: Global).

For example, a MOBOTIX 7 series camera can exchange an MxMessage generated by a camera app with an Mx6 camera that does not support certified MOBOTIX apps.

Facts about MxMessages

- 128-bit encryption ensures privacy and security of message content.
- MxMessages can be distributed from any camera of the Mx6 and 7 series.
- The message range can be defined individually for each MxMessage.
  - **Local:** Camera expects an MxMessage within its own camera system (e.g. through a Certified App).
  - **Global:** the camera expects an MxMessage that is distributed in the local network by another MxMessage device (e.g. another camera of the MOBOTIX 7 series equipped with a certified MOBOTIX app).
- Actions that the recipients are to perform are configured individually for each participant of the MxMessageSystem.

Basic configuration: Processing the automatically generated app events

Checking automatically generated app events

After successfully activating the app (see Activation of the Certified App Interface, p. 18), a generic message event for this specific app is automatically generated in the camera.

- To check the event go to **Setup-Menu / Event Control / Event Overview**.
- The automatically generated message event profile is named after the application (e. g. MxAnalytics).

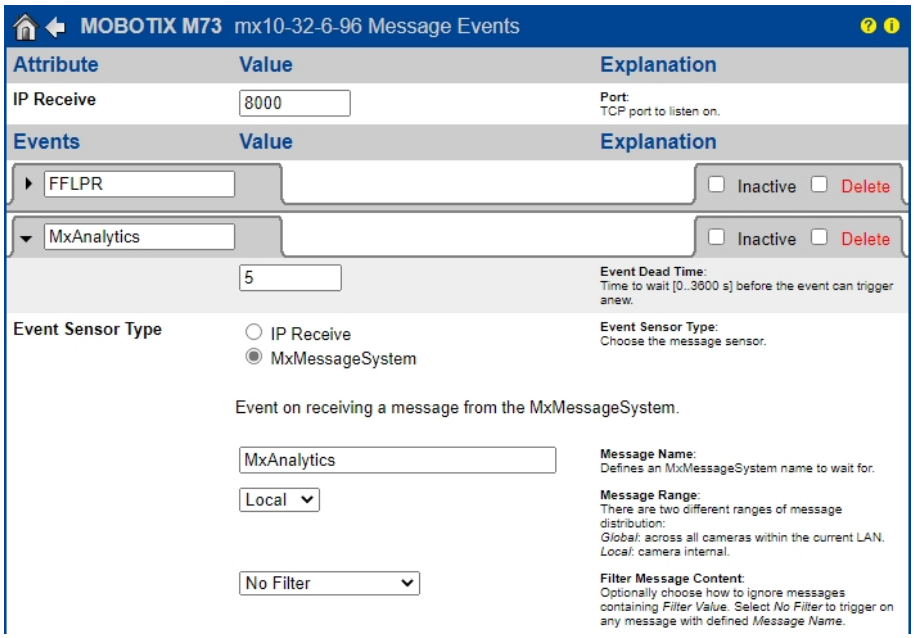


Fig. 18: Example: Generic message event from MxAnalytics App

Action handling - Configuration of an action group

To use events, trigger action groups or record images the general arming of the camera must be enabled (http(s)/<Camera IP address>/control/settings)

An action group defines which action(s) is (are) triggered by the MxAnalytics App event.

1. In the camera web interface, open: **Setup Menu / Action Group Overview** (http(s)://<Camera IP address>/control/actions).

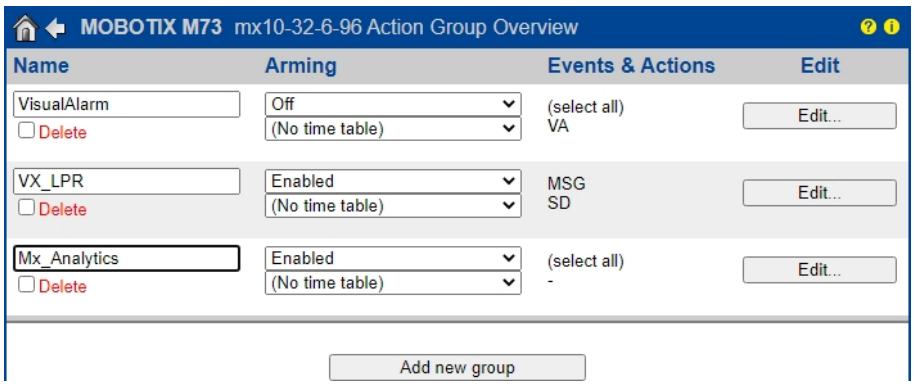


Fig. 19: Defining Action Groups

- Click **Add new group** and give a meaningful name.
- Click **Edit**, to configure the group.

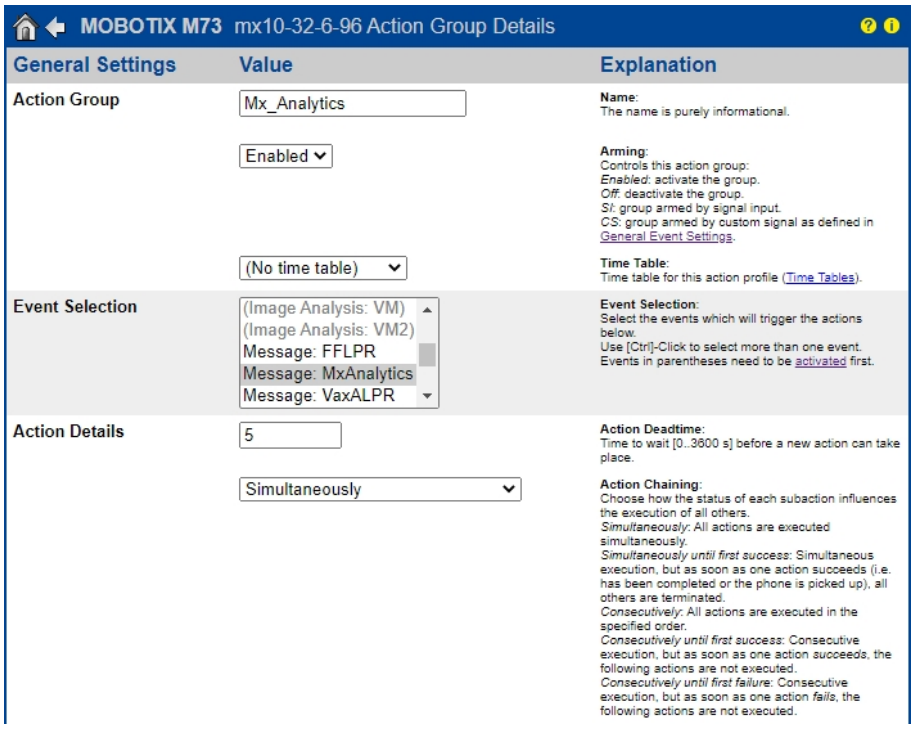


Fig. 20: Configuring an Action Group

1. Activate **Arming** of the Action Group.
2. Select your message event in the **Event selection** list. To select multiple events, press the shift key.
3. Click **Add new Action**
4. Select a proper action from list **Action Type and Profile**.

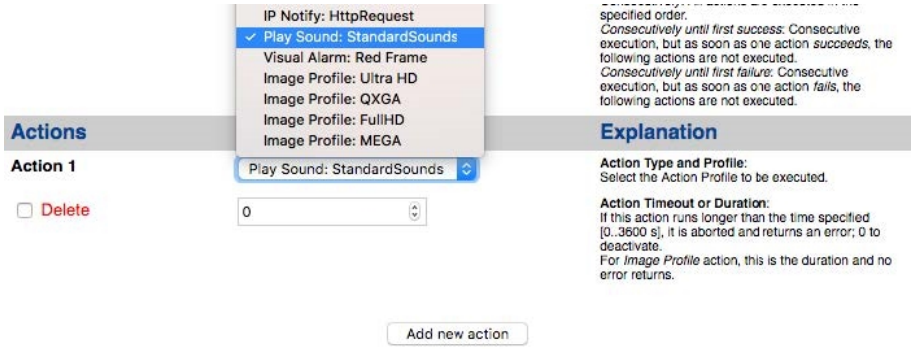


Fig. 21: Select Action Type- and Profile

Note

If the required action profile is not yet available, you can create a new profile in the Admin Menu sections "MxMessageSystem", "Transfer Profiles" and "Audio and VoIP Telephony".

Note

If necessary, you can add further actions by clicking the button again. In this case, please make sure that the "action chaining" is configured correctly (e.g. at the same time).

5. Click on the **Set** button at the end of the dialog box to confirm the settings.

Action settings - Configuration of the camera recordings

1. In the camera web interface, open: **Setup Menu / Event Control / Recording**(http(s)/<Camera IP address>/control/recording).

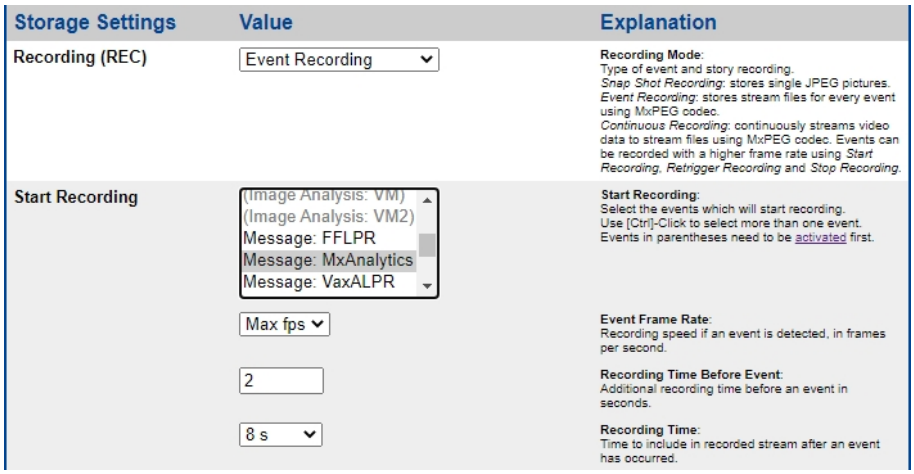


Fig. 22: Configuration of camera recording settings

2. Activate **Arm Recording**.
3. Under **Storage Settings** / **Recording (REC)** select a **Recording mode**. The following modes are available:

   - Snap Shot Recording
   - Event Recording

- Continuous Recording

4. In list **Start recording** select the message event just created.
5. Click on the **Set** button at the end of the dialog box to confirm the settings.
6. Click on **Close** to save your settings permanently.

Note
Alternatively, you can save your settings in the Admin menu under Configuration / Save current configuration to permanent memory.

Advanced Configuration: Processing the meta data transmitted by apps

Meta data transferred within the MxMessageSystem

For each event, the app also transfers meta data to the camera. This data is sent in the form of a JSON schema within an MxMessage.

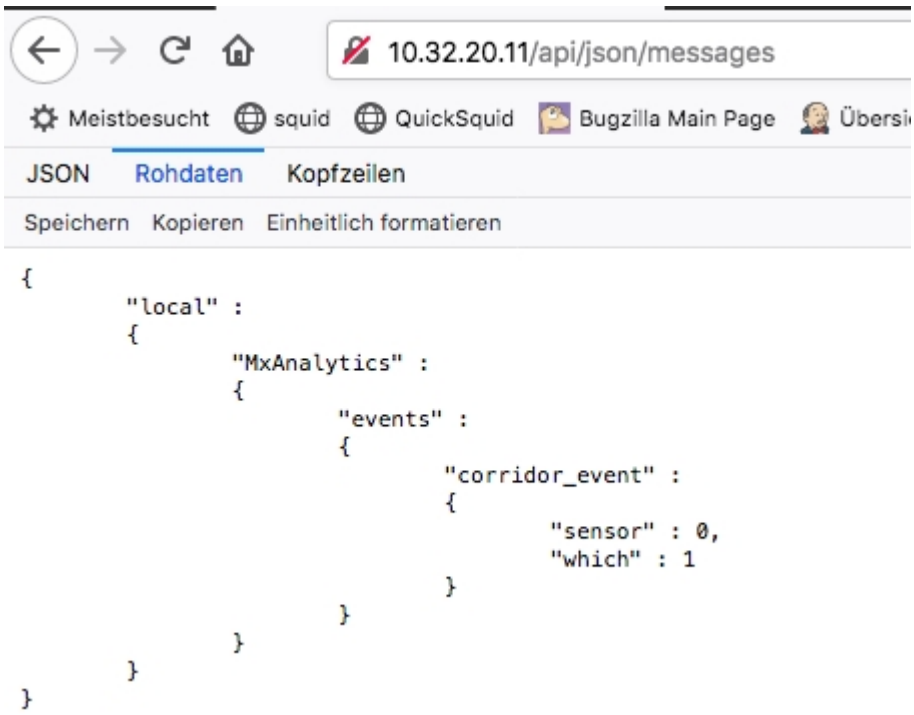


Fig. 23: Example: Meta data transmitted within an MxMessage of the MxAnalytics App

Note

To view the meta data structure of the last App event, open the following URL in a web browser: http (s)/IPAddresseOfYourCamera/api/json/messages

Creating a Custom Message Event

1. In the camera web interface, open: **Setup Menu / Event Control / Event Overview** (http(s)://<Camera IP address>/control/event_msg)

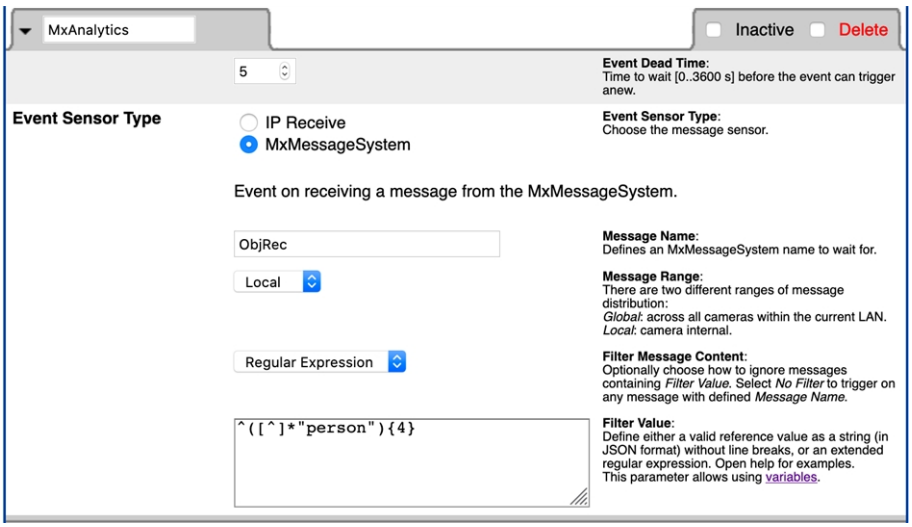


Fig. 24: Configuration of a user-defined event

2. Configure the parameters of the event profile as follows:

   - **Profile Name:** Enter an event related / application related profile name that illustrates the purpose of the profile.
   - **Message Name:** Enter the "Message Name" according to the event documentation of the corresponding app (see table Examples for message names and filter values of the MxAnalytics App, p. 31 below)
   - **Message Range:**
     - Local: Default settings for the MxAnalytics App
     - Global: (MxMessage is forwarded from another MOBOTIX camera in the local network.
   - **Filter Message Content:**
     - Generic Event: “No Filter”
     - Filtered Event: “JSON Comparison”

     Filter Value: see table Examples for message names and filter values of the MxAnalytics App, p. 31.

Attention
“Filter Value“ is used to differentiate the MxMessages of an app / bundle. Use this entry to benefit from individual event types of the apps (if available).
Choose “No Filter” if you want to use all incoming MxMessages as generic event of the related app.

2. Click on the **Set** button at the end of the dialog box to confirm the settings.

Examples for message names and filter values of the MxAnalytics App

MxMessage Name	Filter Value	Explanation
MxAnalytics.events.corridor_event		Message at each corridor increment
MxAnalytics.events.restricted_event		Message on each triggering of a Restricted Area

MxMessage Name	Filter Value	Explanation
MxAnalytics	"sensor":0	Filter message by sensor (in this case sensor 0)
MxAnalytics	"which":5	Filter message by corridor or restricted area ID (in this case 5)
ObjRec	"numObjects":[^0]	Message if any object is found in the image
ObjRec	"car"	Message when a car is detected in the image
ObjRec	"object3“	Message if at least 3 arbitrary objects were found in the image
ObjRec	^([^]*"person"){4}	Message, if at least 4 persons were found

MOBOTIX

BeyondHumanVision

EN_04/21

MOBOTIX AG • Kaiserstrasse • D-67722 Langmeil • Tel.: +49 6302 9816-103 • sales@mobotix.com • www.mobotix.com

MOBOTIX is a trademark of MOBOTIX AG registered in the European Union, the U.S.A., and in other countries. Subject to change without notice. MOBOTIX do not assume any liability for technical or editorial errors or omissions contained herein. All rights reserved. © MOBOTIX AG 2020