

Guideline

MOBOTIX Color Recognition App

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Before You Start

This section contains the following information:

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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**



Legal Notes

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 cameras, 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** > **Marketing & Documentation** > **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** > **Marketing & 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 MOBOTIX Color Recognition App

Intelligent Color Recognition

The app's artificial intelligence-based algorithms simply detects colors in various scenes and environments.

- Detection of user-specified color values within customized detection areas.
- Definition of up to 20 detection areas within the camera's field of view.
- Supports the recognition of all RGB color values.
- Set sensitivity, required percentage within the defined detection area and duration of the associated condition.
- 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.

CAUTION! Thermal sensors are not supported by this app.

Smart Data Interface to MxManagementCenter

This app has a Smart Data interface to MxManagementCenter.

With the MOBOTIX Smart Data System, transaction data can be linked to the video recordings made at the time of the transactions. Smart Data source can be e.g. MOBOTIX Certified Apps (no license required) or general Smart Data sources (license required) like POS systems or license plate recognition systems.

The Smart Data System in MxManagementCenter enables you to quickly find and review any suspicious activities. The Smart Data Bar and the Smart Data View are available for searching and analyzing transactions. The Smart Data Bar provides a direct overview of the most recent transactions (from the last 24 hours) and for this reason it is convenient to use it for reviews and searches.

NOTE! For information on how to use the Smart Data System, see the corresponding online help of the camera software and MxManagementCenter.

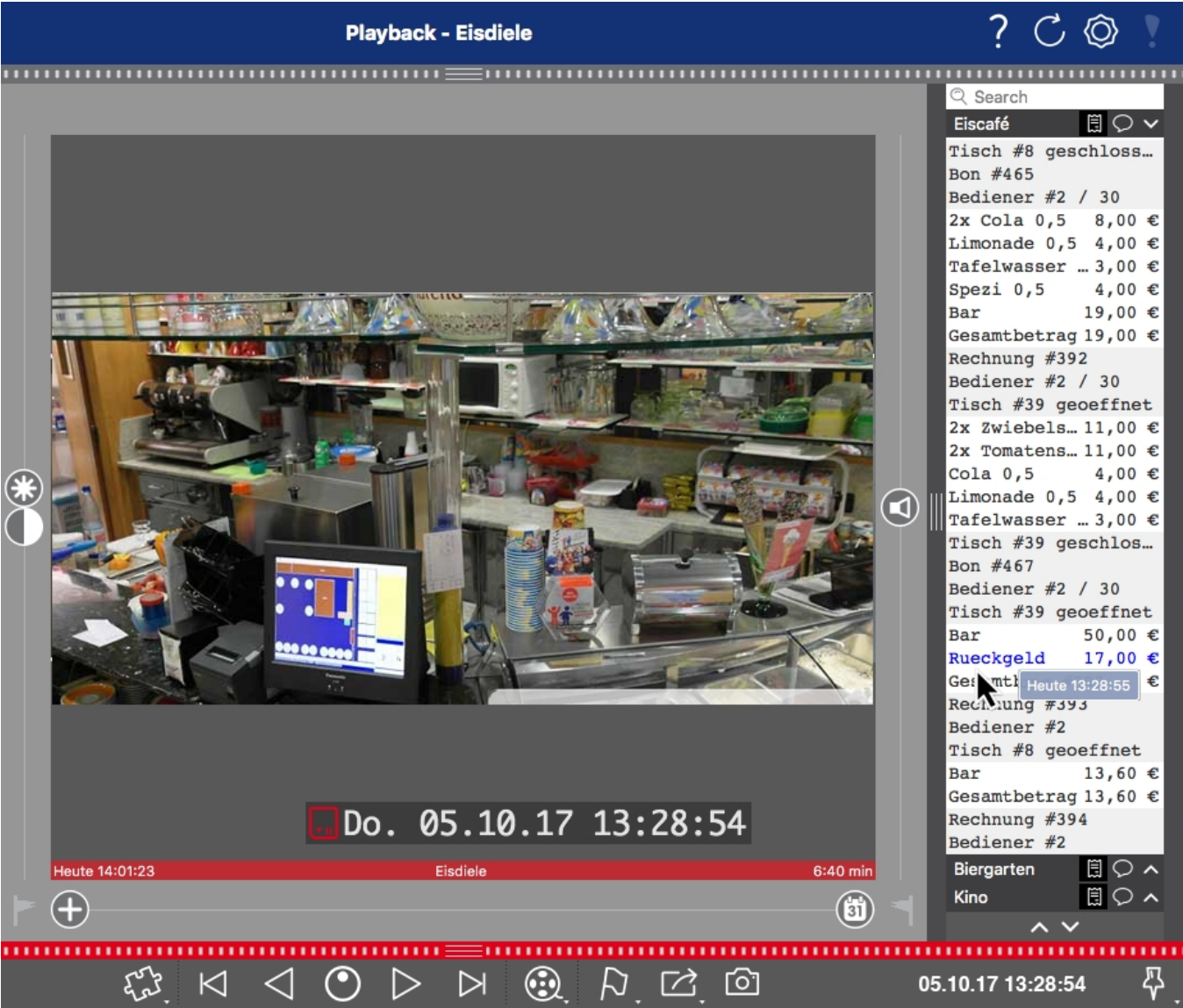


Fig. 1: : Smart Data Bar in MxManagementCenter (Example: POS System)

Technical Specifications

Product Information

Product Name	MOBOTIX Color Recognition App
Order Code	Mx-APP-MX-COR
Supported MOBOTIX Cameras	M73, S74, D71
Minimum Camera Firmware	v7.3.1.x
MxManagementCenter compatibility	- min. MxMC v2.5 - Configuration: Advanced Config license required - Event Search: Smart Data Interface license included

Product Features

App Features	- Detection of user-specified color values within customized detection areas - Definition of up to 20 detection areas within the camera's field of view - Supports the recognition of all RGB color values - Set sensitivity, required percentage within the defined detection area and duration of the associated condition - MOBOTIX events via MxMessageSystem
Maximum number of recognition areas	20
Supported image sensor types	Day, Night, Day/Night
Dual / Multi Sensor usage	Yes
MxMessageSystem supported	Yes
MOBOTIX Events	Yes
ONVIF Events	Yes (Generic Message event)

Hardware / Scene Requirements

the color recognition is detecting any color value in the field of view of the camera or a customized detection area and thus it is not depending on installation or hardware requirements

Minimum area percentage 1% of the image resolution

Technical App Specifications

Synchronous / Asynchronous App asynchronous

Processed frame rate typ. 10 fps

Licensing Certified Apps

The following licenses are available for the MOBOTIX Color Recognition App:

- **30-day test license** pre-installed
- **permanent commercial license**

The usage period begins with activation of the app interface (see)

NOTE! For buying or renewing a license, 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.

License Activation of Certified Apps in MxManagementCenter

After a test period commercial licenses must be activated for use with a valid license key.

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**.

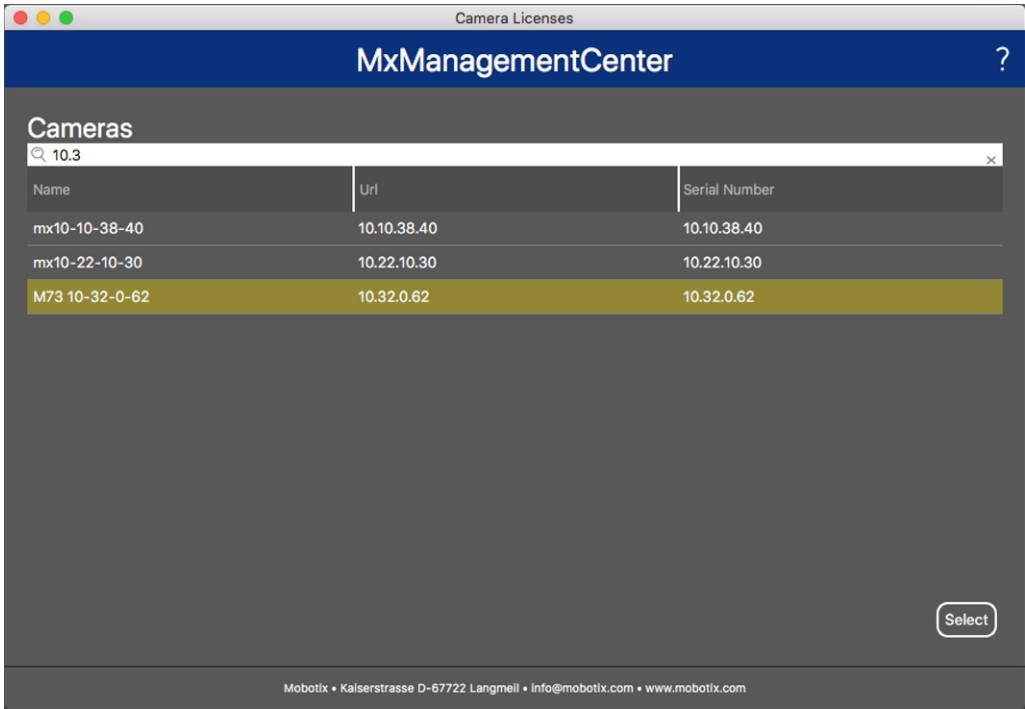


Fig. 2: Overview of Camera App Licenses in MxManagementCenter

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. 3: 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 .

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

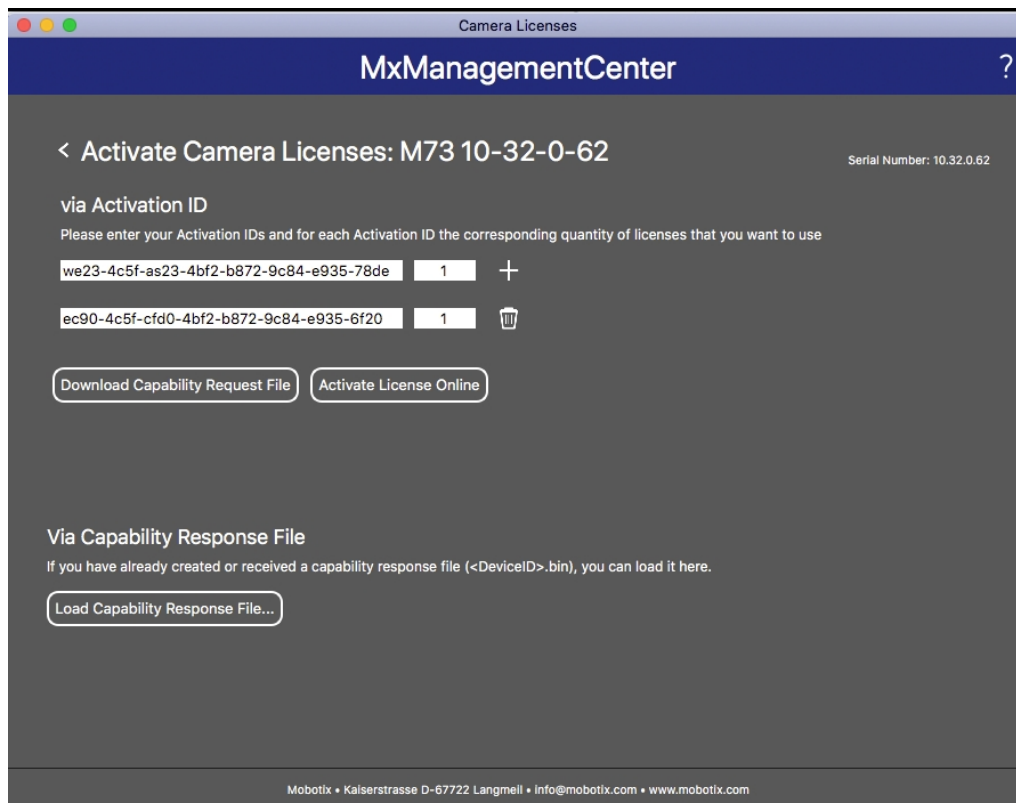


Fig. 4: Adding licenses

Successful activation

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

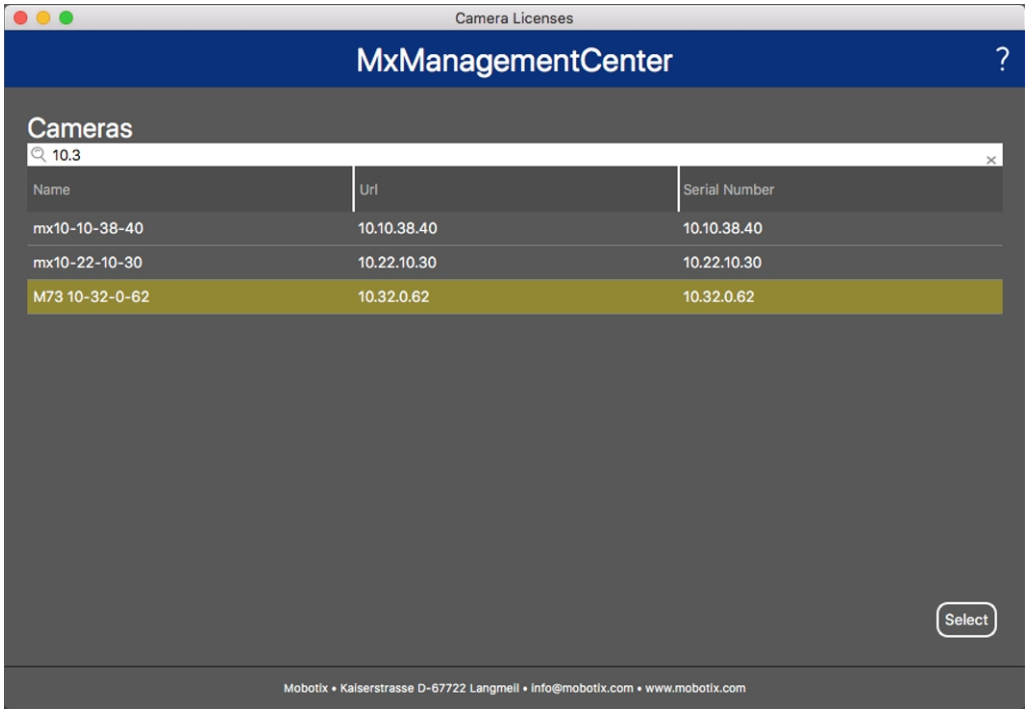
Failed activation (missing internet connection)

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. 12).

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.

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



The screenshot shows the 'Camera Licenses' window in MxManagementCenter. It features a search bar with '10.3' and a table of camera licenses. The table has columns for Name, Url, and Serial Number. The third row, 'M73 10-32-0-62', is highlighted in yellow. A 'Select' button is at the bottom right.

Name	Url	Serial Number
mx10-10-38-40	10.10.38.40	10.10.38.40
mx10-22-10-30	10.22.10.30	10.22.10.30
M73 10-32-0-62	10.32.0.62	10.32.0.62

Fig. 5: 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**.



The screenshot shows the 'Camera License Status' for camera 'mx10-251-1-235'. It displays a table of installed licenses with columns for Name, Expiration, and Quantity. All licenses are 'Permanent' and 'Unlimited'. A warning message at the bottom states 'Camera time is incorrect. Please reset your camera time before activating Licenses'. An 'Activate License' button is at the bottom right.

Name	Expiration	Quantity
MxWheelDetector	Permanent	Unlimited
iot_plugin_a	Permanent	Unlimited
iot_plugin_b	Permanent	Unlimited
iot_plugin_c	Permanent	Unlimited
iot_plugin_d	Permanent	Unlimited
iot_plugin_e	Permanent	Unlimited
iot_plugin_f	Permanent	Unlimited
iot_plugin_g	Permanent	Unlimited
iot_plugin_h	Permanent	Unlimited
iot_plugin_i	Permanent	Unlimited

Fig. 6: 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.

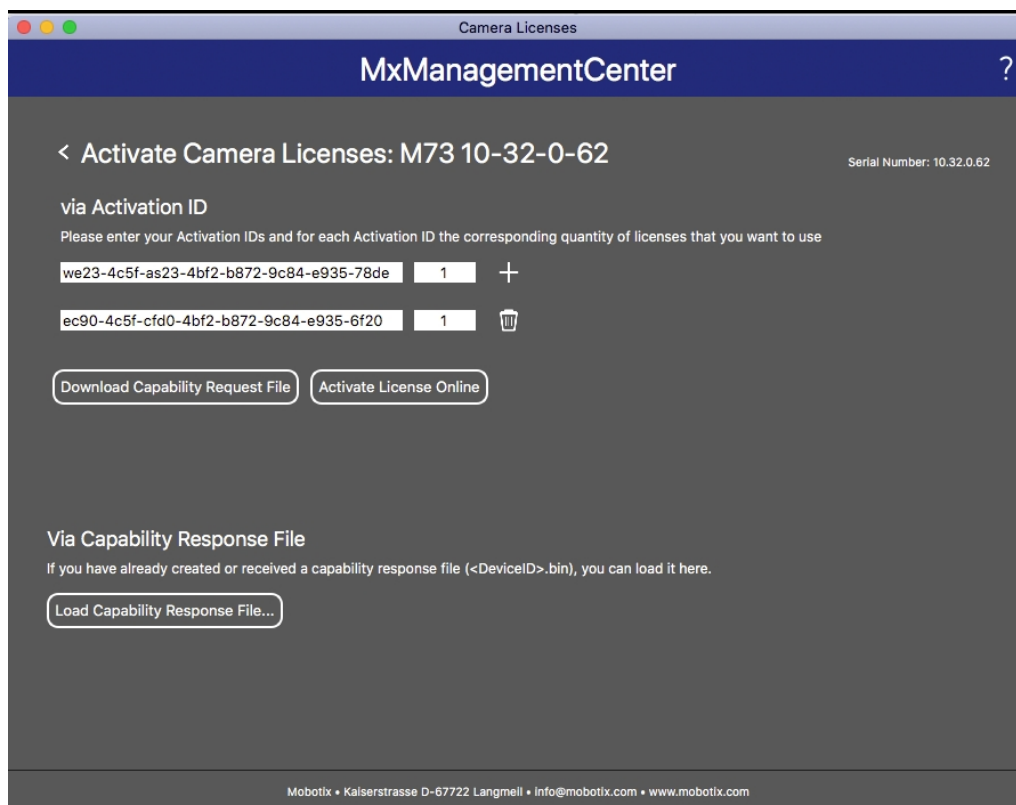


Fig. 7: Adding licenses

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.

Managing Licenses in MxManagementCenter

In MxManagementCenter you can comfortably manage 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**.

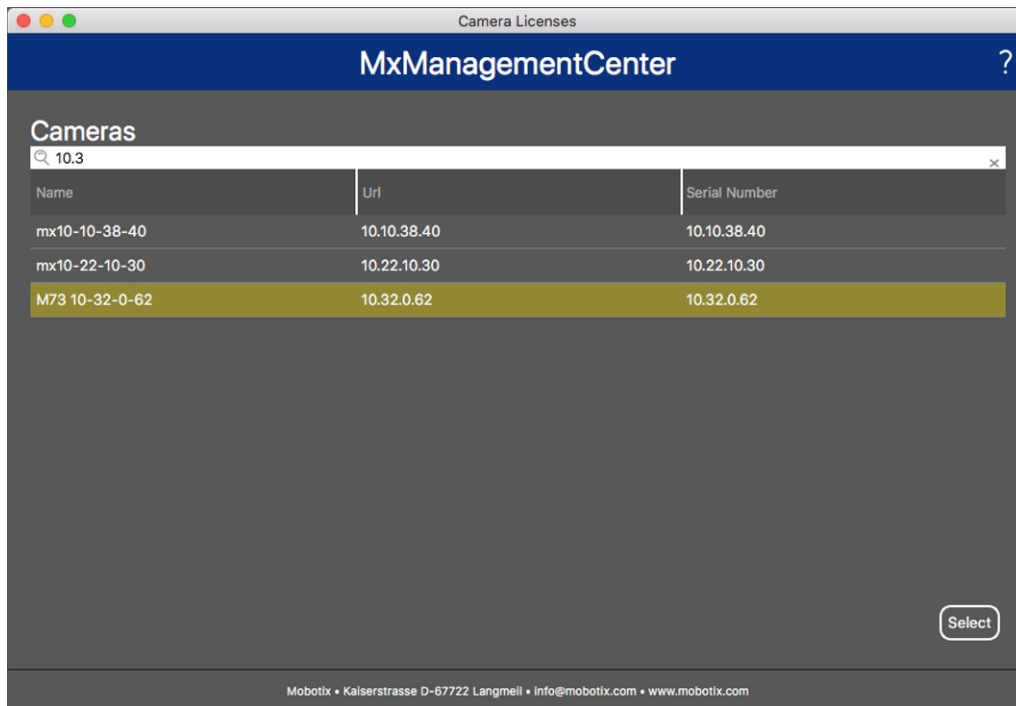


Fig. 8: Overview of Camera App Licenses in MxManagementCenter

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



Fig. 9: 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

CAUTION! The MOBOTIX Color Recognition 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](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](http(s)://<Camera IP address>/control/app_config)).

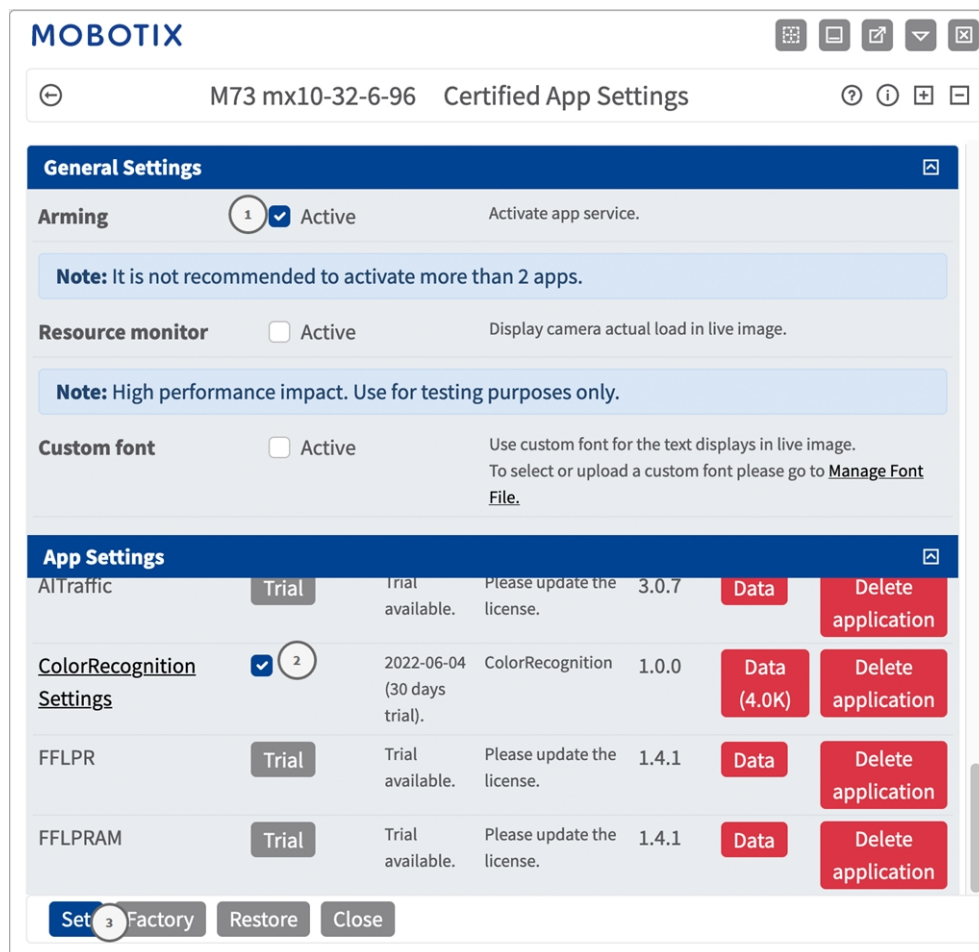


Fig. 10: Activation of Certified Apps

2. Under **General Settings** activate the **Arming**① of the app service.
3. Under **App Settings** check the **Active** option ② and click **Set**③.
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 MOBOTIX Color Recognition App, p. 19](#).

Activation of the Certified App Interface

Managing Licenses in MxManagementCenter

6. Under **General Settings** activate the **Arming**① of the app service.
7. Under **App Settings** check the **Active** option ② and click **Set**③ .
8. Click on the name of the App to be configured to open the Apps user interface.
9. For configuration of the App see [Configuration of MOBOTIX Color Recognition App, p. 19](#).

Configuration of MOBOTIX Color Recognition App

NOTE! The user must have access to the setup menu ([http\(s\)://<Camera IP address>/control](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](http(s)://<Camera IP address>/control/app_config)).
2. Click on the name of the **MOBOTIX Color Recognition App**.

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

Detection Settings

The following configurations should be taken into account:

⊖

M73 mx10-32-6-96

ColorRecognition Settings

ⓘ ⓘ ⛶ ⛶

ColorRecognition

Detection

Advanced☒

Allow for more detailed color selection

Detection areas

Name

Storage 001

Color recognition profiles.

Active

☒

Area

Sensor

0

Polygon

780 x 510

780 x 510

780 x 510

Edit Polygon 1

2

3

Plot area

☐

Mode

higher than

Threshold

10

Color

Chroma tolerance

10

Saturation tolerance

10

Brightness tolerance

10

Set

Factory

Restore

Close

Fig. 11: Detection settings

Advanced: Check to allow more detailed color selection.

Detection Areas: The following modes are available:

Name: Provide a meaningful name for the Detection Area.

20 / 33

Active: Check to activate the configured detection areas.

Area Sensor: If the camera has multiple image sensors, select the appropriate

Drawing a Detection Area:

1. Click **Edit Polygon** ① to switch into the live image.
2. In the live image click and drag a rectangular recognition area.
3. Drag the corner points to refine the recognition area.
4. In the top right corner of the live view click **Submit** to adopt the coordinates of the rectangle.
5. Optionally click the **bin** icon ② to delete the recognition area.
6. Optionally click the **plus** icon ② to define another Detection Area.

Plot Area: Check to plot detection areas of this profile

Mode: Select the trigger mode according to the threshold:

higher than:

lower than:

Threshold: Percentage of detection area that contains the defined color.

Color: Select the color to be detected. You can define maximum allowed deviations from the selected color in the next steps.

Chroma tolerance: Define in percent how far the chroma value of the detected color may deviate from that of the defined color.

Saturation tolerance: Define in percentage terms how far the saturation value of the detected color may deviate from that of the defined color.

Brightness tolerance: Define in percent how far the brightness value of the detected color may deviate from that of the defined color.

Adding a color definition

Click on plus icon.

Deleting a color definition

Click on the bin icon.

Debug settings

Here you can activate some debug features.

MOBOTIX

M73 mx10-32-6-96 ColorRecognition Settings

ColorRecognition

Detection

Debug

Overlay

☒

Enables plotting of debug overlay, marking the regions that have the relevant color.

Set

Factory

Restore

Close

Overlay: Check to highlight the regions in the image that have the relevant color.

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 7 series equipped with a certified MOBOTIX app).
- Actions that the recipients are to perform are configured individually for each participant of the MxMessageSystem.

MxMessageSystem: Processing the automatically generated app event

Checking automatically generated app events

NOTE! After successfully activating the app (see [Activation of the Certified App Interface, p. 17](#)), a generic message event for this specific app is automatically generated in the camera.

- 1. Go to **Setup-Menu / Event Control / Event Overview**. In section **Message Events** the automatically generated message event profile is named after the application ① (e. g. ColorRecognition).

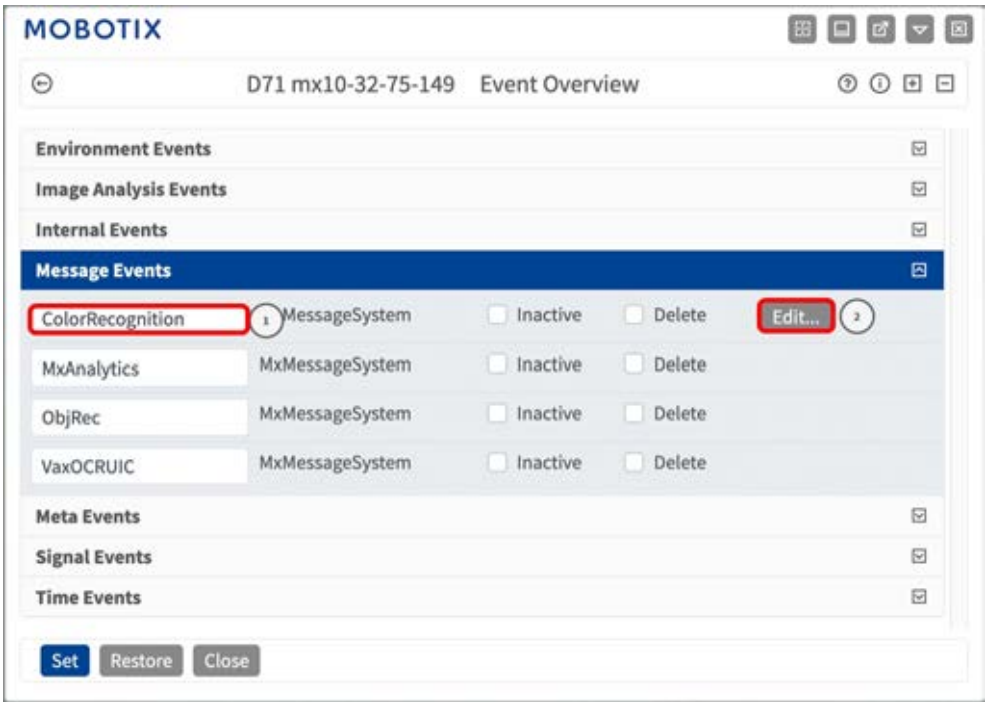


Fig. 12: Example: Generic message event from MOBOTIX Color Recognition App

- Click **Edit** to display a selection of all configured message events.

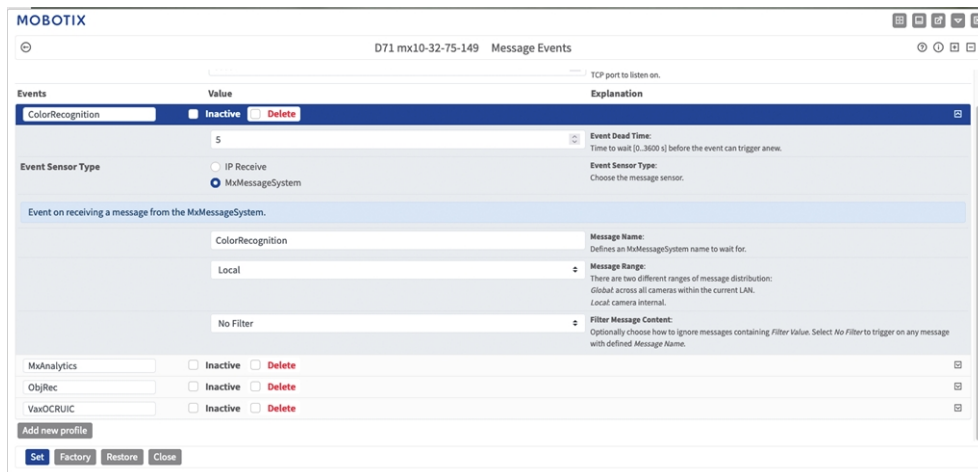


Fig. 13: Example: Generic message event details - no filter

Action handling - Configuration of an action group

CAUTION! 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](http(s)://<Camera IP address>/control/settings))

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

- In the camera web interface, open: **Setup Menu / Event Control / Action Group Overview** ([http\(s\)://<Camera IP address>/control/actions](http(s)://<Camera IP address>/control/actions)).

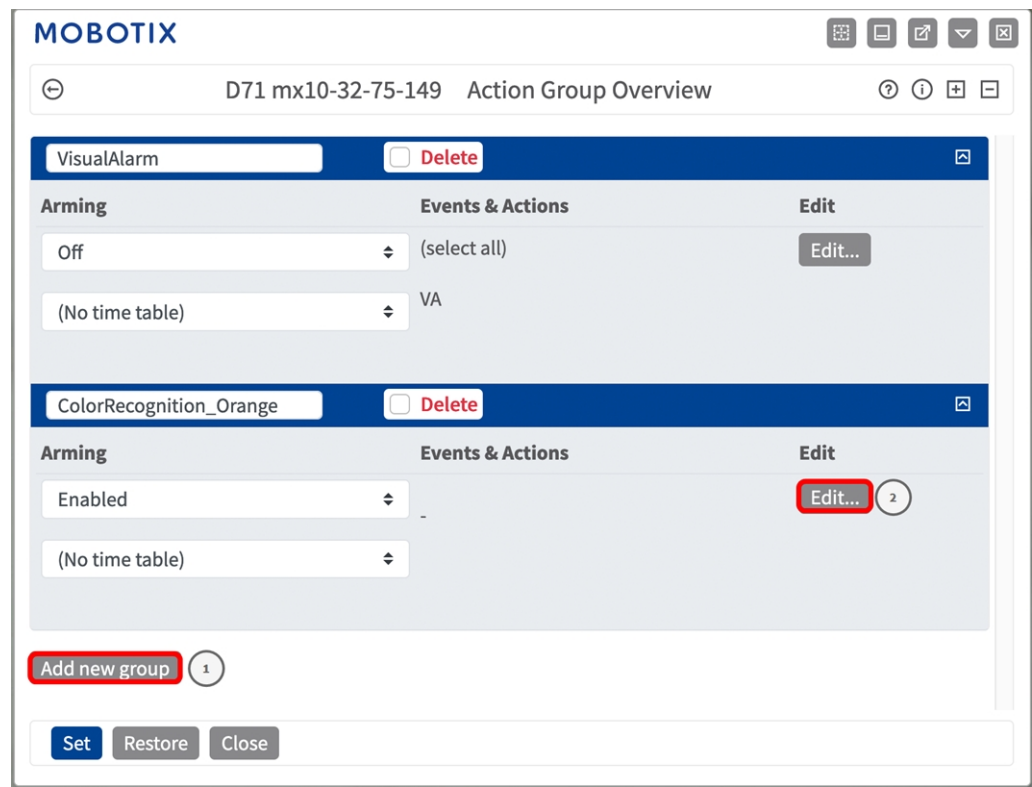


Fig. 14: Defining Action Groups

- 2. Click **Add new group**① and give a meaningful name.
- 3. Click **Edit**② , to configure the group.

MOBOTIX D71 mx10-32-75-149 Action Group Details

General Settings	Value	Explanation
Action Group	ColorRecognition_Orange	Name: The name is purely informational.
	Enabled 3	Arming: Controls this action group: <i>Enabled:</i> activate the group. <i>Off:</i> deactivate the group. <i>St:</i> group armed by signal input. <i>CS:</i> group armed by custom signal as defined in General Event Settings .
	(No time table)	Time Table: Time table for this action profile (Time Tables).
Event Selection	(Image Analysis: VM1) (Image Analysis: VM2) Message: ColorRecognition 4 Message: MxAnalytics Message: ObjRec Message: VaxOCPUIC	Event Selection: Select the events which will trigger the actions below. Use [Ctrl]-Click to select more than one event. Events in parentheses need to be activated first.
Action Details	5	Action Deadtime: Time to wait [0..3600 s] before a new action can take place.
	Simultaneously	Action Chaining: Choose how the status of each subaction influences the execution of all others. <i>Simultaneously:</i> All actions are executed simultaneously. <i>Simultaneously until first success:</i> Simultaneous execution, but as soon as one action succeeds (i.e. has been completed or the phone is picked up), all others are terminated. <i>Consecutively:</i> All actions are executed in the specified order. <i>Consecutively until first success:</i> Consecutive execution, but as soon as one action succeeds, the following actions are not executed. <i>Consecutively until first failure:</i> Consecutive execution, but as soon as one action fails, the following actions are not executed.
Actions	Add new action 5 Set Factory Restore Close	Explanation

Fig. 15: Configuring an Action Group

4. Enable **Arming** 3 of the Action Group.
5. Select your message event in the **Event Selection** list 4 . To select multiple events, hold the shift key.
6. Click **Add new Action** 5 .
7. Select a proper action from list **Action Type and Profile** 6 .

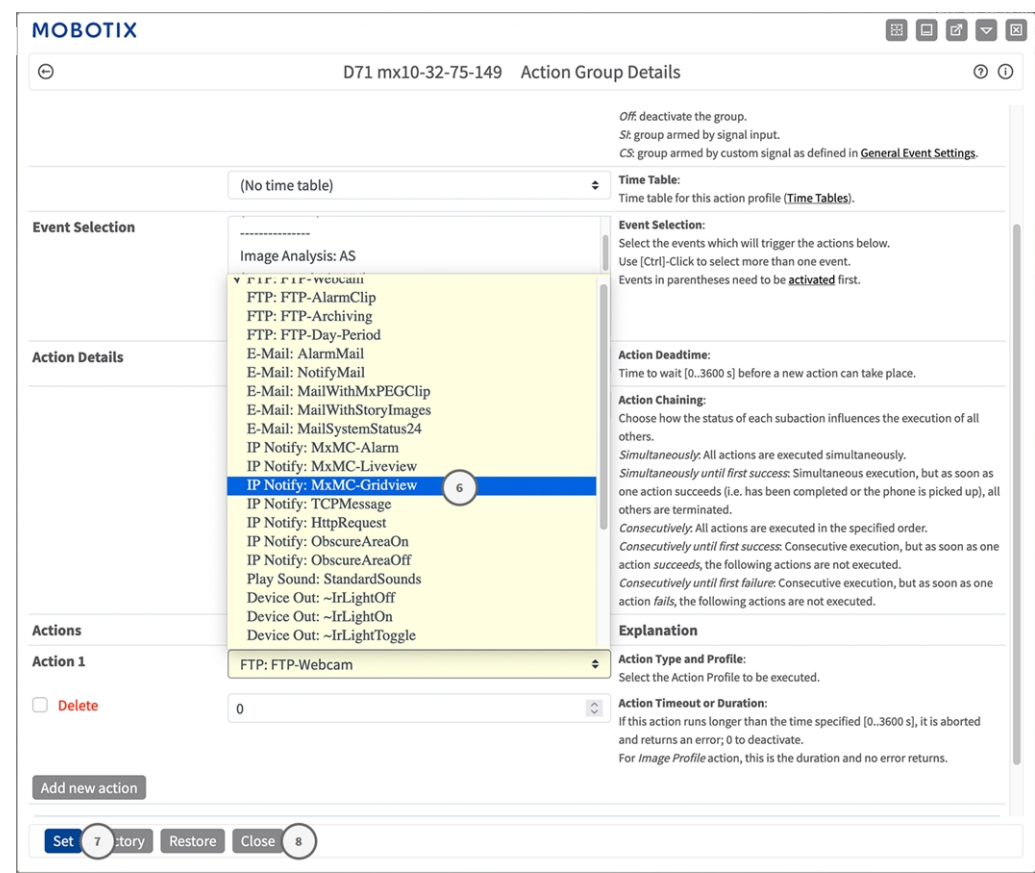


Fig. 16: Select Action Type- and Profile

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".

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).

- Click on the **Set**⁷ button at the end of the dialog box to confirm the settings.
- Click on **Close**⁸ to save your settings permanently.

Action settings - Configuration of the camera recordings

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

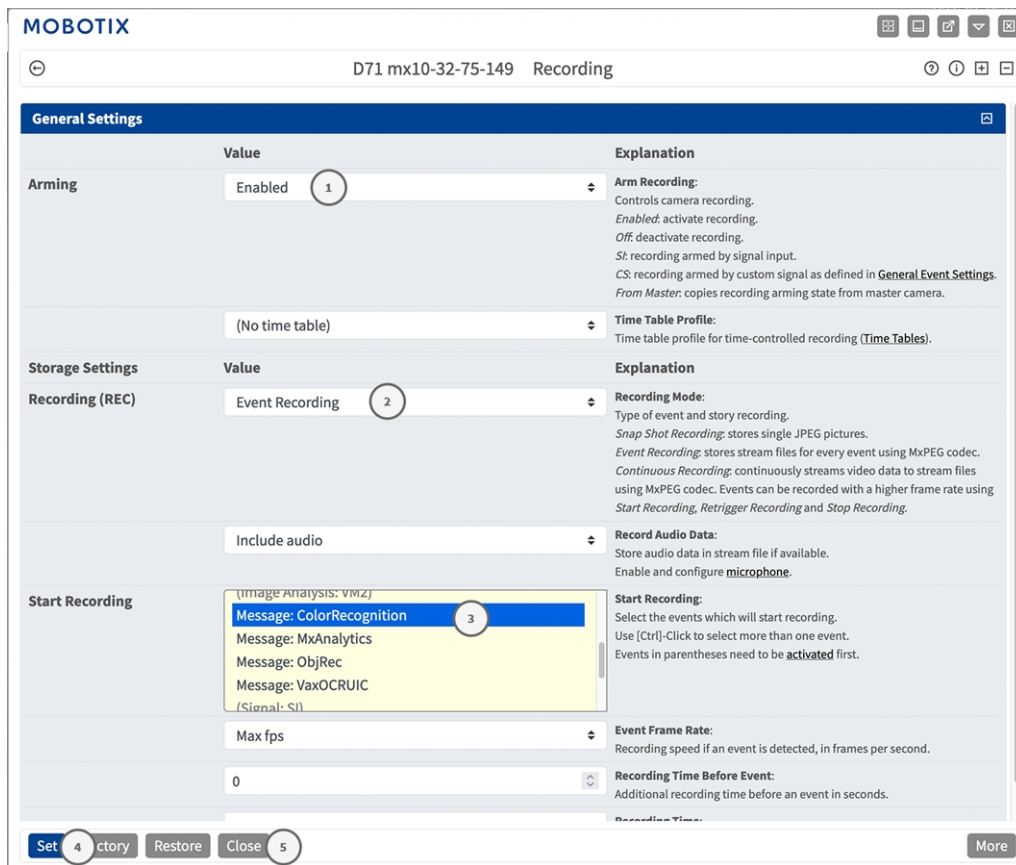


Fig. 17: Configuration of camera recording settings

2. Activate **Arm Recording**① .
3. Under **Storage Settings / Recording (REC)** select a **Recording mode**② . The following modes are available:
 - Snap Shot Recording
 - Event Recording
 - Continuous Recording
4. In list **Start recording**③ select the message event just created.
5. Click on the **Set**④ button at the end of the dialog box to confirm the settings.
6. Click on **Close**⑤ to save your settings permanently.

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

MxMessageSystem: 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.

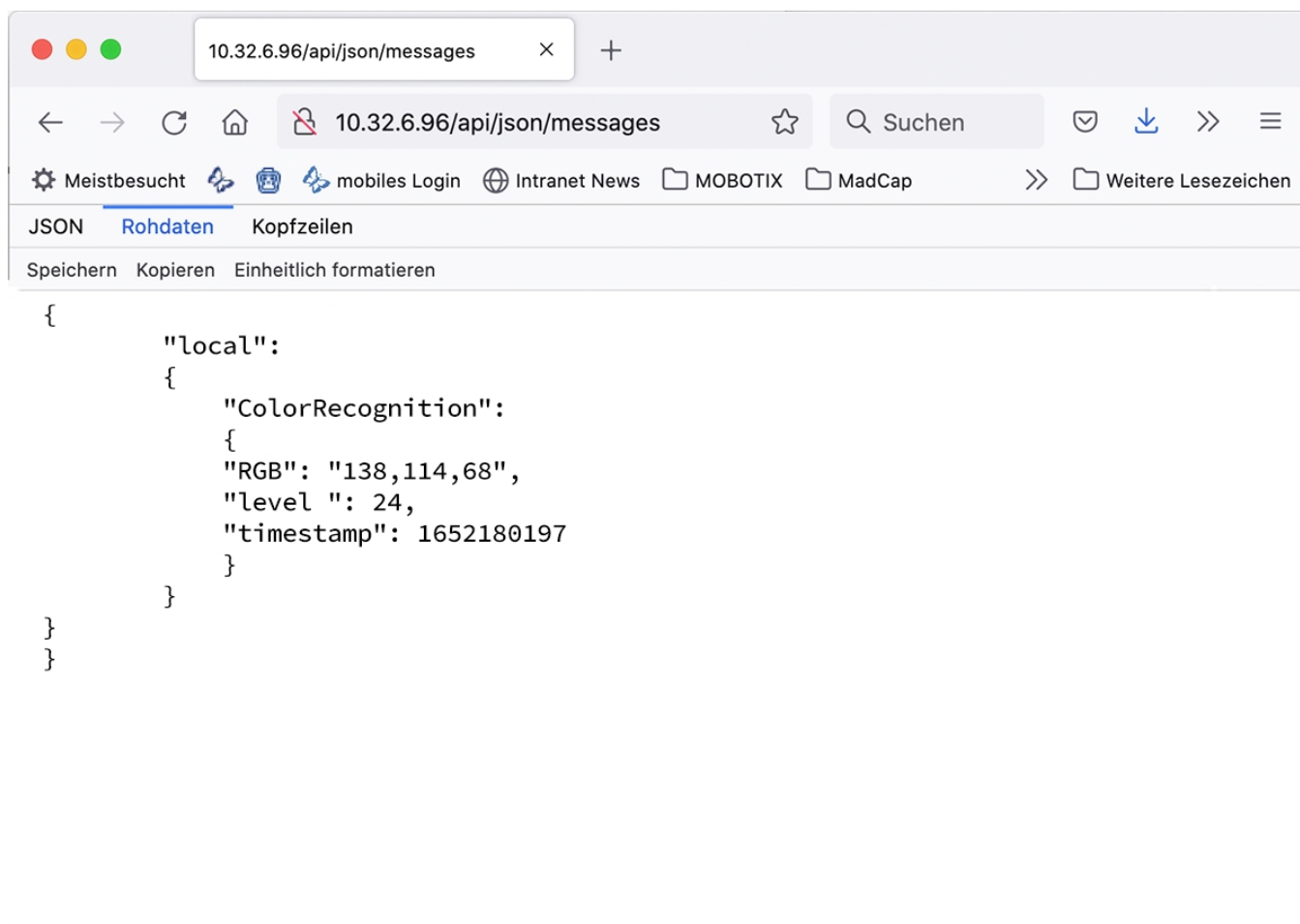


Fig. 18: Example: Meta data transmitted within an MxMessage of the MOBOTIX Color Recognition App

NOTE! To view the meta data structure of the last App event, enter the following URL in the address bar of your browser: [http\(s\)/IPAdresseOfYourCamera/api/json/messages](http(s)/IPAdresseOfYourCamera/api/json/messages)

Creating a Custom Message Event

1. Go to **Setup-Menu / Event Control / Event Overview**. In section **Message Events** the automatically generated message event profile is named after the application ① (e. g. ColorRecognition).

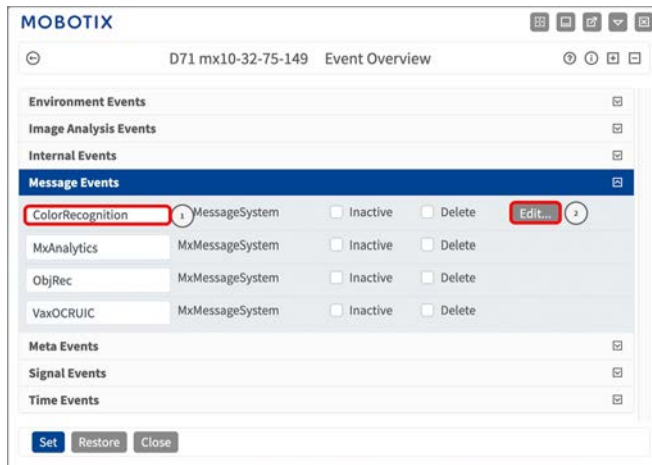


Fig. 19: Example: Generic message event from MOBOTIX Color Recognition App

2. Click **Edit**② to display a selection of all configured message events.

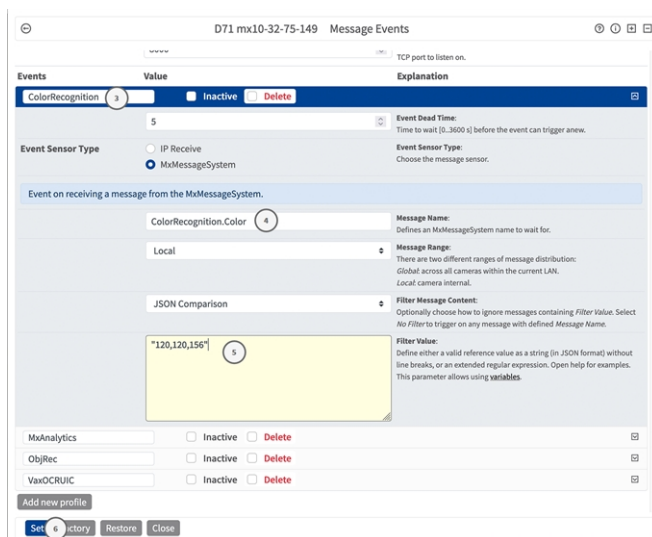


Fig. 20: Example: Black list message event

3. Click on the event (e. g. ColorRecognition) ③ to open the event settings.
4. Configure the parameters of the event profile as follows:
 - **Message Name:** Enter the "Message Name" ④ according to the event documentation of the corresponding app (see [Examples for message names and filter values of the MOBOTIX Color Recognition App, p. 32](#))
 - **Message Range:**
 - Local: Default settings for the MOBOTIX Color Recognition App
 - Global: (MxMessage is forwarded from another MOBOTIX camera in the local network.

- **Filter Message Content:**
 - **No Filter:** Trigger on any message according to the defined **Message Name**.
 - **JSON Comparison:** Select if filter values are to be defined in JSON format.
 - **Regular Expression:** Select if filter values are to be defined as regular expression.

Filter Value: ⓘ see [Examples for message names and filter values of the MOBOTIX Color Recognition App, p. 32.](#)

- **Filter Value:** ⓘ see [Examples for message names and filter values of the MOBOTIX Color Recognition App, p. 32.](#)

CAUTION! “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 **Set** ⓘ at the end of the dialog box to confirm the settings.

Examples for message names and filter values of the MOBOTIX Color Recognition App

	MxMessage-Name	Filter value
Generic Event	ColorRecognition	
Color Event	ColorRecognition.RGB	“120,155,99”
Level Event	ColorRecognition.level	"90"
Timestamp Event	ColorRecognition.timestamp	Date string e. g.: "2021-10- 11T11:48:52+0200"



EN_07/22

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