

ADAPTIVE RECOGNITION

TRAFFIC MONITORING CAMERAS

# User Manual

## Einar 5



# EINAR 5

## USER MANUAL

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# 1. OVERVIEW

The Einar cameras have their own web interface through which the camera settings, the **LIVE**, the **PLAYBACK**, the **EVENTS** and the **SETTINGS** interfaces are accessible.

## Note

It is recommended to update the browser to the latest version in order to use properly the web interface of the Einar cameras. (We suggest the use of the Google Chrome).

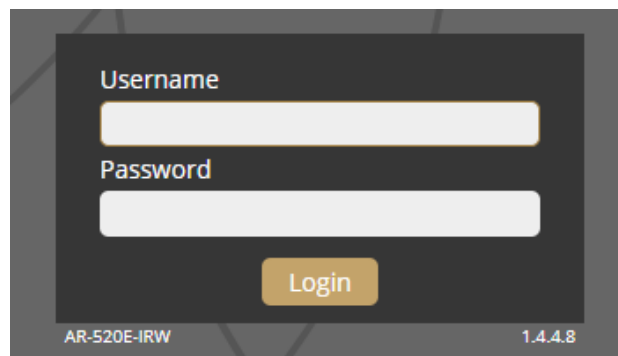
Accessing the web interface:

1. Start a browser and enter the camera IP address into the address bar of the browser.
2. Type the username and the password on the displayed login interface and click on **[Login]**.

The default user account is the following:

**Username:** admin

**Password:** admin



3. After signing in, the web interface of the camera is displayed on which the required settings can be performed.



## 1.1. DEFAULT IP ADDRESS

According to the factory setting of the Einar cameras, they request IP address from the DHCP server. The DHCP server lists the IP addresses of the DHCP clients, thus the received IP addresses belonging to the cameras connected to the network can be seen on that interface.

## 1.2. FINDING CAMERAS

The cameras on the network can be found by using the Einar DeviceTool. During running, the program continuously looks for detectible cameras on the network and displays them in a list where the current IP address of the camera can be read. If the cameras still do not appear, then make sure that the firewall does not block the multicast protocol on the network and the cameras and the PC logically are in the same network range.



## 2. OVERVIEW OF THE WEB INTERFACE

For the camera settings the following menu items are available on the web interface:



### 1. LIVE

The live stream of the camera can be seen.

### 2. PLAYBACK

The recordings stored on the SD card or SMB can be played.

### 3. EVENTS

The user can navigate between the recorded events.

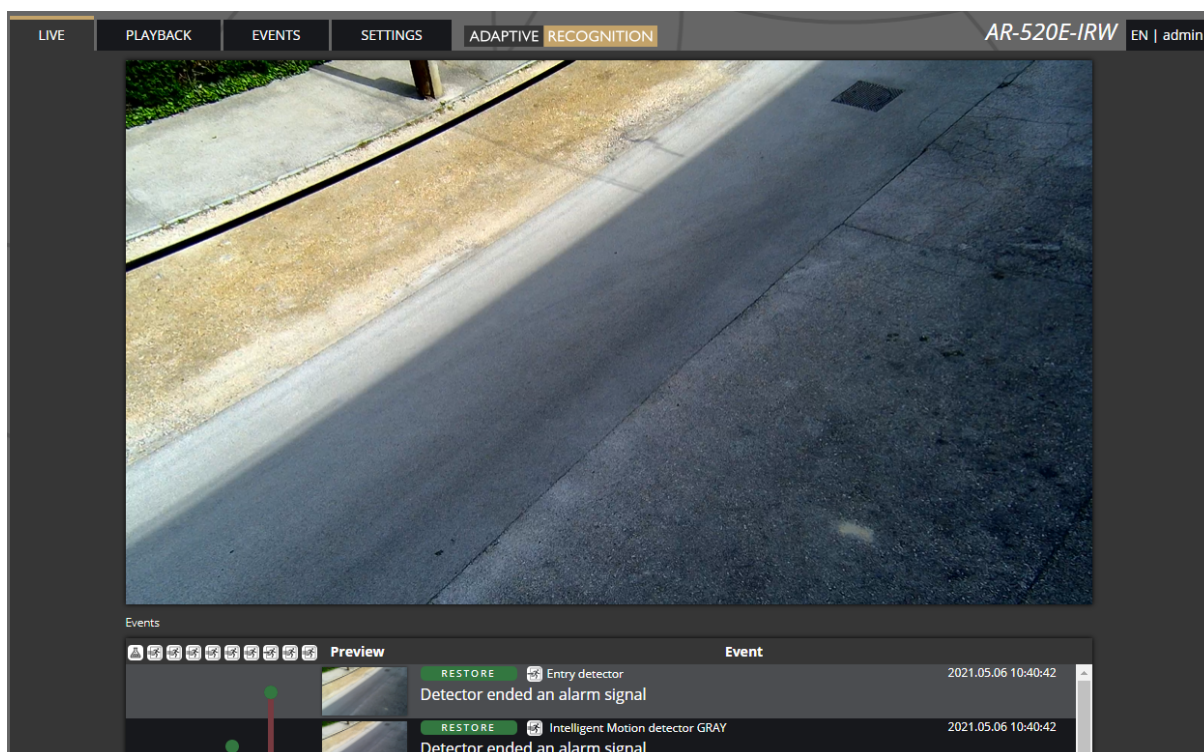
### 4. SETTINGS

Under **SETTINGS** multiple options are accessible:

- Status
- Device
- Network
- Security
- Storage
- I/O
- Service
- Image
- Video
- Lens
- Analytics

### 3. LIVE

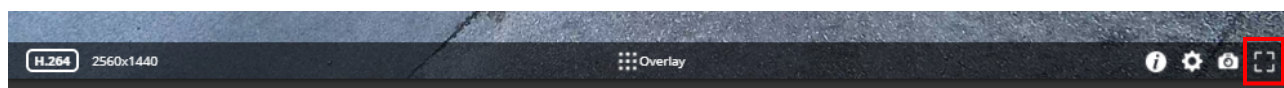
After logging in, the live stream of the camera can be seen which can be found on the **LIVE** tab.



On this interface the current camera image can be seen.

#### 3.1. FULL SCREEN MODE

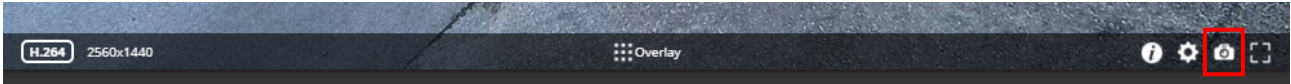
The live stream of the camera can be displayed in full screen by clicking on the icon located in the bottom-right corner of the image.



To exit from the full screen mode, press the ESC keyboard key or click on the icon mentioned above.

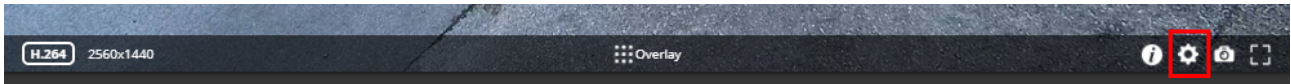
### 3.2. SAVING LIVE STREAM

Next to the **Full screen** icon can be found the **Save image** icon. By clicking on it the current live stream image and the live stream with turned on OSD will be saved. The CTRL + S keyboard shortcut can be used as well.



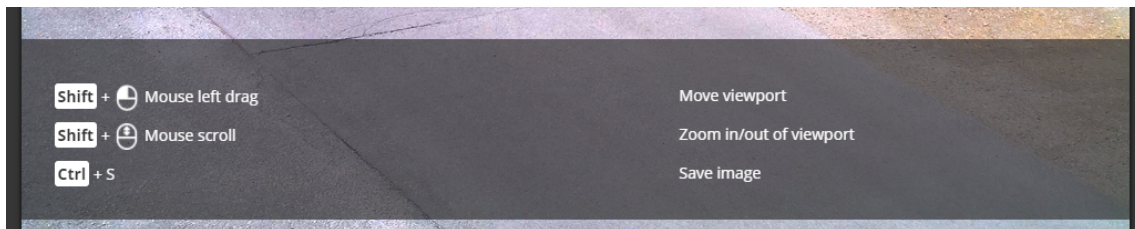
### 3.3. SWITCHING STREAM

The **Switch stream** button is located next to the **Save image** icon. By clicking on it the user can select which stream will be displayed as **LIVE**.



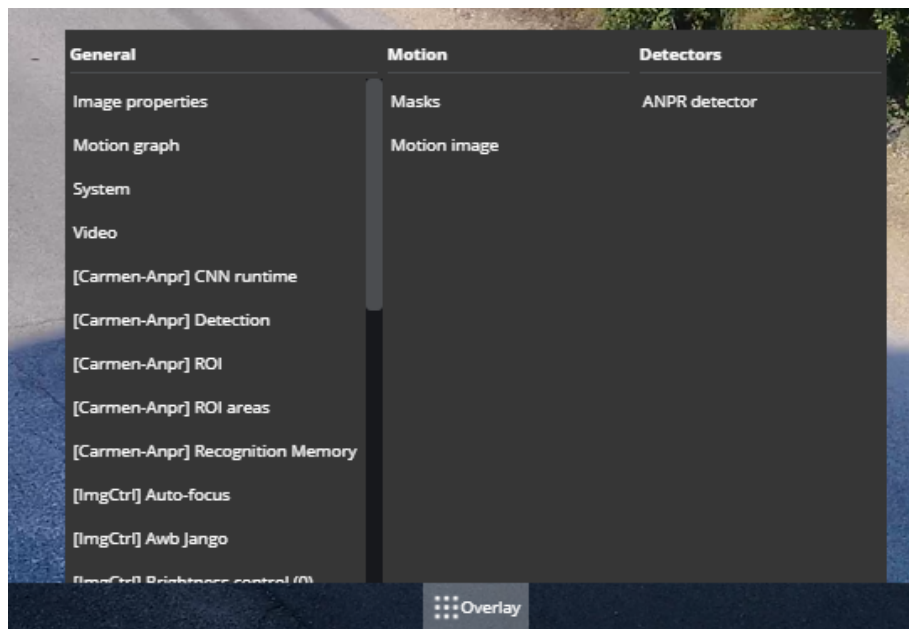
### 3.4. HELP

The last icon in this line is the **Help** button, clicking on which provides useful information.



### 3.5. OVERLAY






In the middle at the bottom of the window the **Overlay** button is located where the OSD can be turned on/off and the masks of the applied detectors, image information, motion data etc. can be viewed.



### 3.6. EVENT PREVIEW

The event preview section can be found under the live stream image where the notifications about the latest received events are displayed.

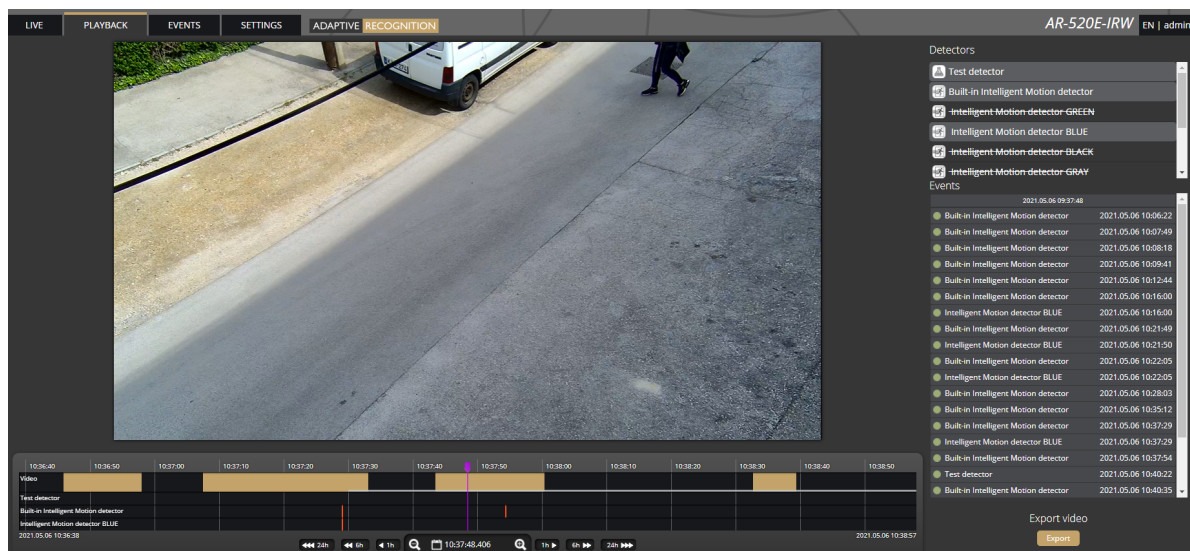
The **"SIGNAL"** text with red colored background and date indicates the beginning of the event. In case the event is through, the **"RESTORE"** text with green colored background will appear. In case of ANPR event, the **"EVENT"** text with purple colored background will be displayed.

| Preview  | Event               |
|--|---------------------|
|  ANPR detector  | 2021.05.03 09:52:11 |
| <b>EVENT</b>  ANPR detector<br>License plate read: (HUN) NOW956 (confidence: 85%) | 2021.05.03 09:52:11 |
| <b>EVENT</b>  ANPR detector<br>License plate read: (HUN) NOW956 (confidence: 86%) | 2021.05.03 09:52:03 |
| <b>EVENT</b>  ANPR detector<br>License plate read: (HUN) RCU895 (confidence: 85%) | 2021.05.03 09:52:03 |
| <b>EVENT</b>  ANPR detector<br>License plate read: (HUN) RCU895 (confidence: 83%) |                     |

In the window the date of the event can also be seen and by clicking on the preview image a window pops up where the display of the requested data can be enhanced.

## 4. PLAYBACK

The **PLAYBACK** interface is accessible if the storage is turned on. By clicking on this tab, the recordings stored on the SD card will be listed and can be played by clicking on the required one.

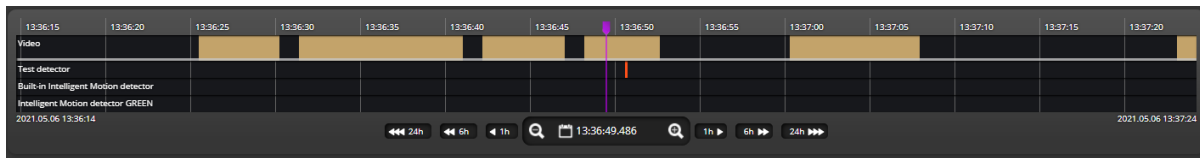


### Note

In case the storage is turned off but the storage device is available, then the previously recorded elements can be viewed and played if the storage function is switched on.

## 4.1. SEARCH AMONG THE RECORDINGS

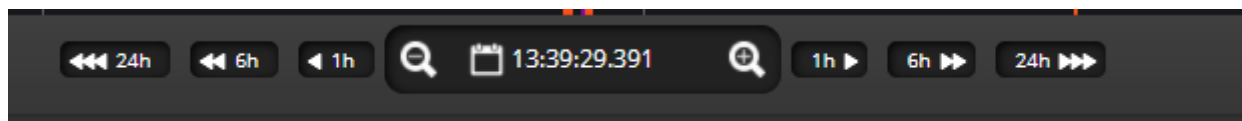
The searching among the recordings can be performed by using the timeline and calendar. The timeline is the black bar under the camera image. The blue or gold bands indicate those time intervals where recordings exist. Under this section the currently selected detectors are located. The red markers point where events have taken place.



The displayed timeline can be changed by clicking and holding the left mouse button and moving it to the left (backward in time) and/or to the right (forward in time) and by clicking on a desired date, the timeline will skip to that point.

The displayed white stripe at the bottom of the blue or gold timeline indicates the video parts ready to be played.

In the middle of the timeline (see image above) there is a purple marker which shows where you are in the playback and under this section the current time of the playback can be seen.



The magnifying glasses located under the timeline serve to increase (magnifying glass with + sign) or decrease (magnifying glass with – sign) the time interval found on the timeline.

On the middle of this panel there is a calendar with the help of which the user can select the period to be played according to year/month/day hour/minute/second.

The current time of the computer can be set with the "Now" button. After clicking on the [Done] button, the playback skips to the selected date.

The small image that appears when the mouse cursor positioned over the timeline serves to find easier the searched event.

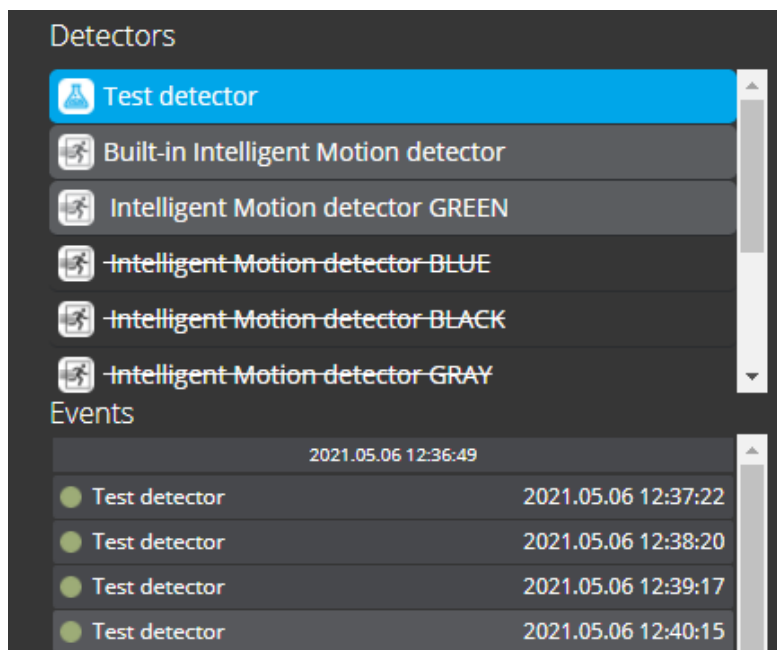
By moving the cursor over the image, an OSD menu appears the functionality of which is identical to the menu located on the live stream.

The playback speed can be modified by moving the cursor over the image, thus the OSD menu appears where the cogwheel icon is to be clicked on. The help and the image saving options also work on this interface.



## 4.2. FILTERING THE DETECTORS

A list about the configured detectors and events related to them can be found on the right of the **PLAYBACK** interface.



The display of the events can be turned on/off on the timeline and in the list by clicking on the detector. By clicking on an event selected from the list, the playback immediately skips to the time when the event occurred.

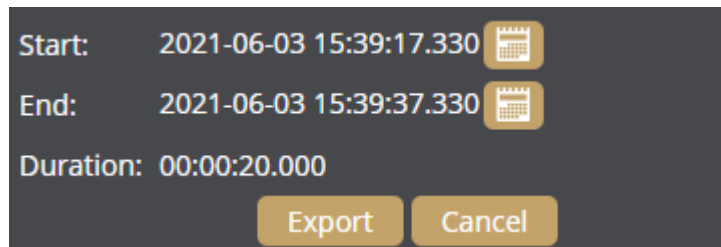
If the cursor is hovered over an event located in the list, the detector related to the event is highlighted in blue or gold above the list. Also vice versa, if the cursor is hovered over the detector, the events related to the detector will be highlighted in the list below.



### 4.3. EXPORTING THE RECORDINGS

The important video clips can be exported. The video clip can be saved as an mp4 file and can be played and viewed by most programs capable of playing videos.

The "**Export**" button is located in the bottom-right corner of the **PLAYBACK** interface. By clicking on this button, a dialog box pops up, and 2 gold arrows appear on the timeline.



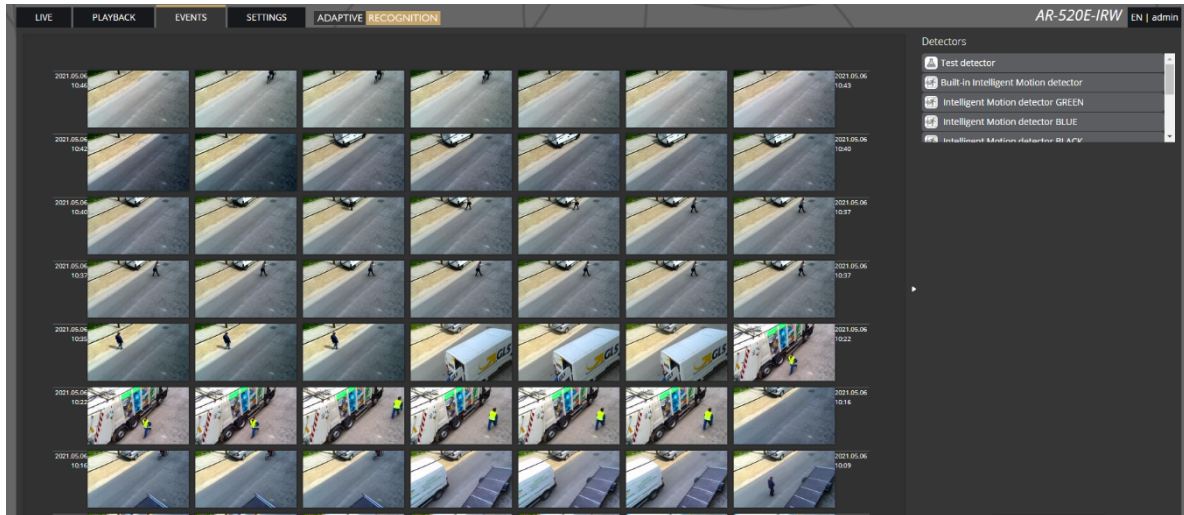
With the help of the arrows the start and the end of the video clip to be saved can be set or can be entered manually by specifying the "**Start**" and the "**End**" dates. The duration of the video to be exported is displayed in the bottom line ("**Duration**").

#### Note

The exact time can be adjusted by clicking on the calendar icon.

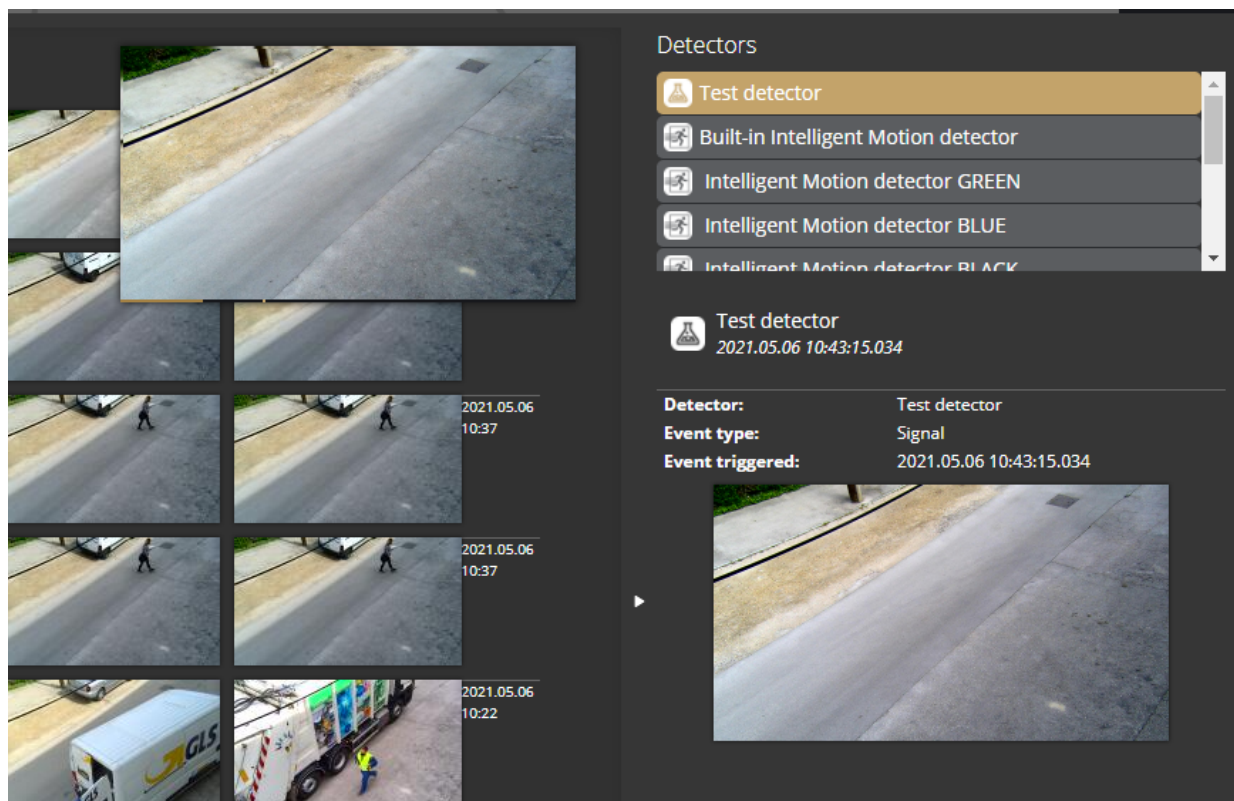
## 5. EVENTS

The **EVENTS** interface is accessible if the storage is turned on. By clicking on this tab, all events recorded by the camera will be listed.

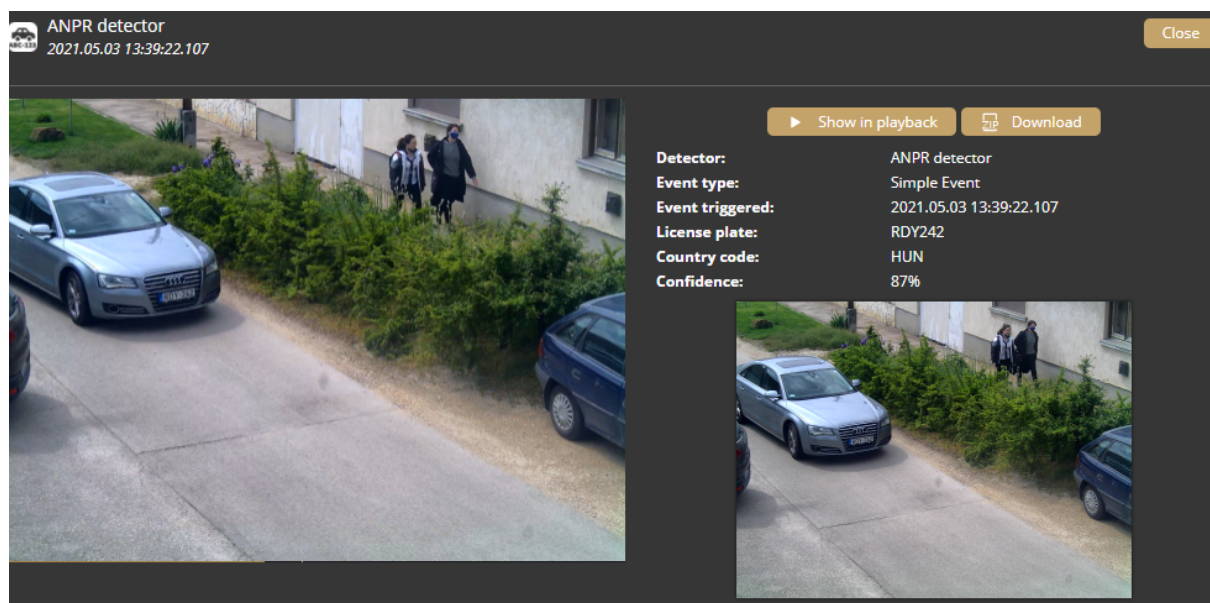


In the event browser the user can navigate between the recorded events with the scroll wheel. The events appear as small images. The latest events are at the top.

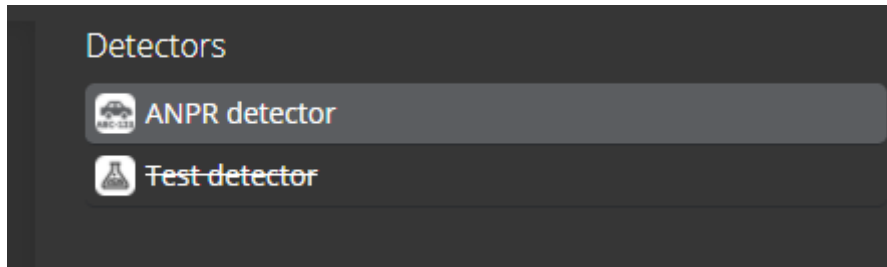
If the cursor is hovered over an event, the detector related to the event is highlighted in blue or gold in the list on the right and after a few seconds a video clip will be played.



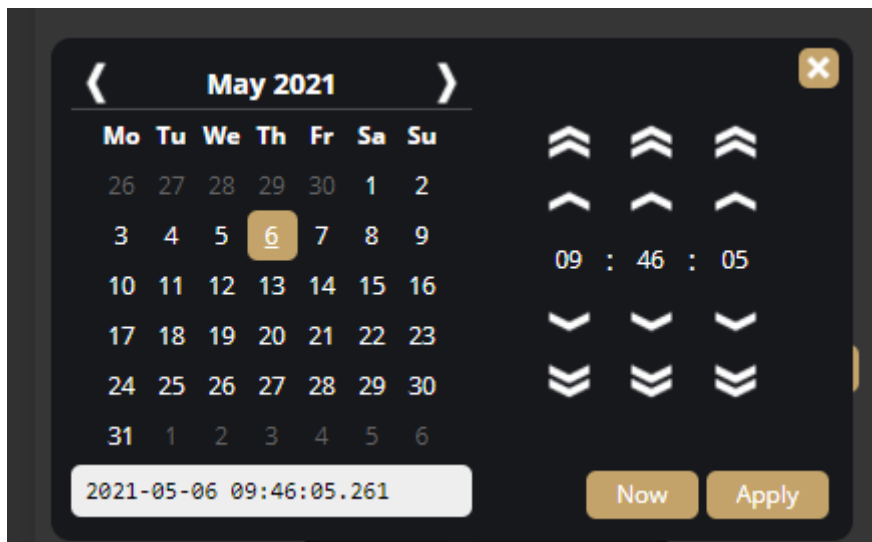
In the case of clicking on the event, a window pops up where the video clip and other data belonging to the event can be viewed. The interface can be redirected to the **PLAYBACK** menu item by clicking on the **[Show in playback]** button. The data belonging to the event can be saved as a ZIP file by clicking on the **[Download]** button.



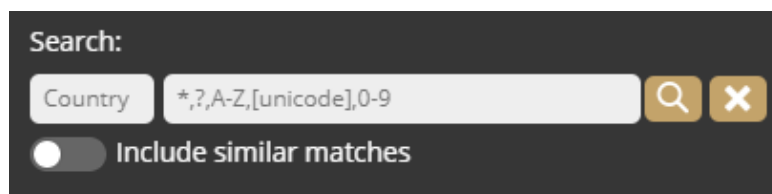
The configured detectors are displayed on the right. By moving the cursor over the detector, the events related to the detector will be highlighted in the event browser. By clicking on the detector, the display of its events can be turned on/off.



A calendar appears by clicking on the time located in the bottom-right corner. In the calendar after setting the appropriate time and clicking on the **[Apply]** button, the browser skips to the specified time.



There is a license plate search option on the **EVENTS** interface in case of ANPR cameras. Similar license plates can be listed if the "Include similar matches" is turned on.



## 6. SETTINGS

Under **SETTINGS** the parameters required for the optimal operation of the camera can be set.

### 6.1. SYSTEM / STATUS

On this interface a summary about the important data of the camera, the status of the detectors, the operating time and the ANPR licenses can be found.

**Device**

|              |                       |           |             |
|--------------|-----------------------|-----------|-------------|
| Name:        | ICAM-000A             | Type:     | AR-520N-IRT |
| Description: | Intelligent IP camera | Serial:   | 220000A     |
| Datetime:    | 2021.05.06 10:54:29   | Firmware: | 1.4.5.56    |
| Storage:     | Enabled               | Location: | <i>n/a</i>  |
| License:     | ANPR engine >         |           | Uptime:     |
| License key: | CARMEN SPI - 1189901  |           |             |

**Network**

|                   |   |      |                  |
|-------------------|---|------|------------------|
| Wired connection: | 192.168.128.163, 169.254.0.10<br>(MAC: 00:19:b4:00:00:0a) | DNS: | 1.1.1.1, 8.8.8.8 |
|-------------------|---|------|------------------|

**Video**

|           |   |
|-----------|---|
| Stream 1: | H.264: 2560x1920 (bitrate: 6000 kbit/s, GOP: 30)<br>M-JPEG: 2560x1920 (bitrate: 30000 kbit/s) |
| Stream 2: | H.264: 1920x1440 (bitrate: 3500 kbit/s, GOP: 30)<br>M-JPEG: 1920x1440 (bitrate: 17000 kbit/s) |

**Detectors**

- ANPR detector
- Test detector

## 6.2. SYSTEM / DEVICE

On the **Device** interface the following can be performed:

- Modify the description and the location of the device
- Reboot the device remotely
- Perform factory reset (after clicking on the button the original manufacturer settings are restored except for the network settings)
- Set the date and time
- Upload firmware, ANPR engine and license

The screenshot displays the 'Device' configuration interface, divided into three main sections: General, Date & time, and Maintenance.

- General:** Includes fields for 'Device name' (ICAM-0006), 'Device description' (Intelligent IP camera), and 'Location (DD)' with latitude (47.189951) and longitude (18.410346) fields. A 'Save' button is present.
- Date & time:** Shows 'Device time' as 5/6/2021, 11:06:14 AM with a calendar icon and a 'Sync' button. A 'Use NTP' toggle is turned on, and 'NTP servers' includes 'time.google.com' with an 'Add' button. A 'Save' button is also present.
- Maintenance:** Contains buttons for 'Perform reboot', 'Perform reset', 'Browse files...' (with 'Upload firmware' button), 'Browse files...' (with 'Upload engine' button), and 'Browse files...' (with 'Upload license' button'). It also displays 'Current firmware version: 1.5.0.0' and 'Current ANPR engine: 7.3.13.40 EUR'.

### Date & time settings

The current time of the camera is displayed at the **Device time** in the following format: day/month/year hour:minute:second. The device time can be set manually by clicking on the **calendar icon**. The device can be synchronized to the computer time with the **Sync** button next to the calendar icon.

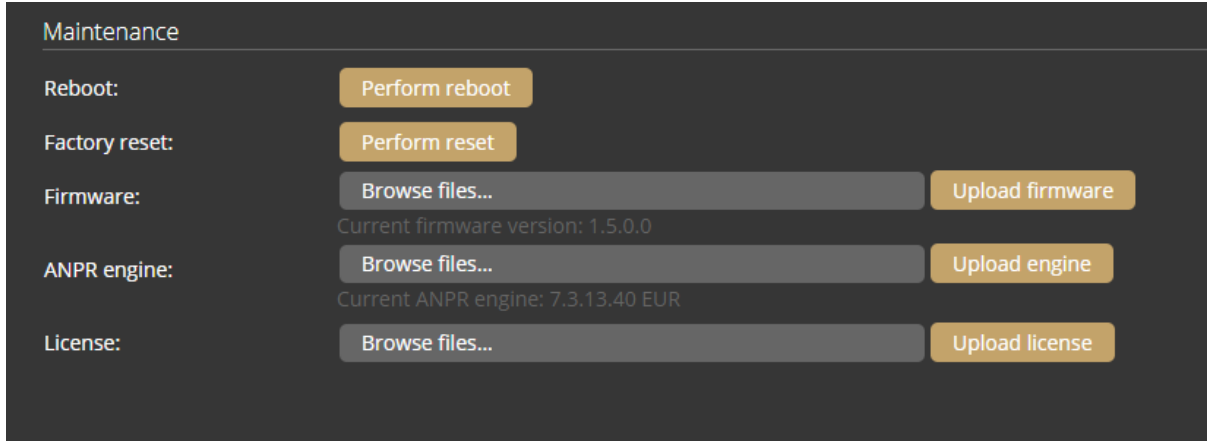
It is possible to use NTP servers. In order to apply NTP servers, turn on the **"Use NTP"** option and add an NTP server to the field of the **NTP servers**.

#### ! Important!

In the case of the camera being registered to the Intellio server, do not use NTP servers.

## Firmware, ANPR, License update

Click **[Browse files...]** on the field to be modified, then select the Firmware (.ifw), ANPR (.iep) or License (.ukeys) files to be uploaded. Finally, click on the corresponding upload button.



The update process can be interrupted by clicking on the **[Cancel]** button located on the panel showing the status of the upload.

When the upload is finished (in the case of uploading license before the update process), the camera asks a security question whether the user is certain about the modification. If you choose "No", the update process is interrupted and the camera operates with the previous settings. In the case of choosing "Yes", the update continues. Updating and rebooting the camera may take a few minutes. Thereafter the device will be in an operational state with the new settings.

### ! Important!

During the update process do not unplug the camera.

## 6.3. SYTEM / NETWORK

In the **Network** menu item, the network settings are available. The IP address assigned to the camera can be static or dynamic.

Default DNS: 8.8.8.8

The screenshot displays the network configuration page. At the top, there are tabs for 'Settings' and 'Monitoring'. Under 'Settings', there are fields for 'DNS servers' (with '2.3.5.8' entered and an 'Add' button), 'DNS search domain' (with an 'Add' button), and 'Default interface' (set to 'Wired connection'). A 'Save' button is visible. Below this is the 'Interfaces' section, with a sub-tab for 'Wired connection'. It shows the 'MAC address' as '00:19:b4:00:00:06'. The 'Mode' is set to 'Static address' (with 'DHCP' also available). A 'Fallback to static' toggle is turned on. A table lists 'Current address' and 'Fallback to static' options with their subnets. Below the table are input fields for 'Address', 'Netmask', and 'Gateway', followed by another 'Save' button.

| Current address | Subnet        | Mode   |
|-----------------|---------------|--------|
| 192.168.129.51  | 255.255.248.0 | dhcp   |
| 169.254.0.6     | 255.255.0.0   | static |

### Fallback to static

In the case of setting the device to DHCP, the "**Fallback to static**" option will be accessible. An alternative static IP address can be specified to which the camera connects if it disconnects from the DHCP range.



## Monitoring

On the **Monitoring** tab the media outputs (e.g., IVS connection) and their data can be viewed. Besides, all crossing data traffic can be seen sorted by adapters.

The screenshot shows the 'Monitoring' tab with two sections:

**Media streams**

| Client          | Type | Send        | Waiting      | Dropped   | Uptime                       |
|-----------------|------|-------------|--------------|-----------|------------------------------|
| 169.254.3.1     | RTSP | 1.45 Mbit/s | -180223865 B | 171.87 MB | 1 hour 51 minutes 25 seconds |
| 192.168.135.232 | IVS  | 7.1 Mbit/s  | 0 B          | 10.67 MB  | 1 hour 9 minutes 27 seconds  |
| 192.168.135.232 | IVS  | 0 bit/s     | 0 B          | 0 B       | 1 hour 9 minutes 27 seconds  |

**Interfaces**

| Interface        | Send        | Receive     |
|------------------|-------------|-------------|
| Wired connection | 4.96 Mbit/s | 1.64 Mbit/s |

## 6.4. SYSTEM / SECURITY

In the **Users** database the maintenance of the user data can be performed, like:

- Add new users
- Delete users
- Modify the already existing user profiles

The default user is "**admin**".

When adding a new user, three levels of permissions can be set:

1. **Administrator:** The administrator can view the live stream and the playback too, as well as they can set every function.
2. **User:** The user only has access to the **LIVE** and **PLAYBACK** menu items, they cannot modify the camera settings, but these are visible to them.
3. **Operator:** The operator only has access to the **LIVE** and **PLAYBACK** menu items, they cannot modify the camera settings, but these are visible to them.

The screenshot shows the 'Users' management interface with the following data:

| Username | Role          | Edit | Delete |
|----------|---------------|------|--------|
| admin    | Administrator | Edit | Delete |
| user     | User          | Edit | Delete |

A 'New user' button is located below the table.

## Sessions

At **Lockout policy** the maximum number of failed login attempts can be adjusted. After reaching the specified number, the device blocks that session. By default, after 3 failed login attempts the camera blocks the client for 1 minute. In order to enhance the network security, it is possible to modify these parameters. The number of the **Maximum attempts** may vary between 1 and 10. The duration of the block can be set between 30 seconds and 7 days.

Besides, the list of the **Active sessions** and the list of the **Blocked clients** can be seen on this interface.

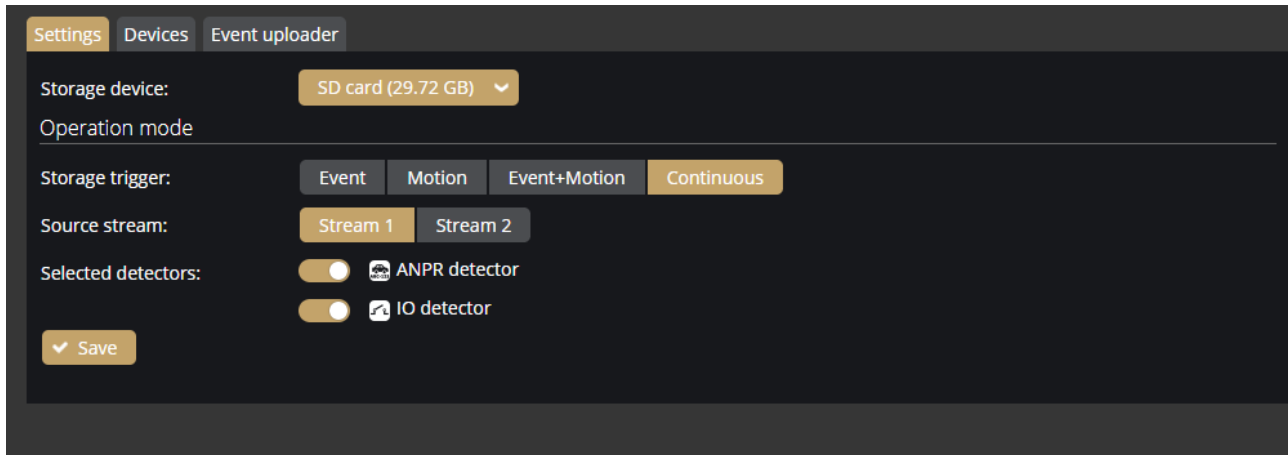
The screenshot shows the 'Sessions' configuration page. At the top, there are tabs for 'Users' and 'Sessions'. The 'Lockout policy' section explains that the camera blocks clients for repeated failed authentications. It features a slider for 'Maximum attempts' set to 3 and a dropdown for 'Block duration' set to 1 minute. A 'Save' button is located below these settings. The 'Active sessions' section contains a table with columns for Client, User, and Last seen. The 'Blocked clients' section is currently empty, displaying 'No clients are blocked'.

| Client          | User  | Last seen            |
|-----------------|-------|----------------------|
| 192.168.135.232 | admin | 2 minutes 24 seconds |
| 192.168.135.232 | admin | 2 minutes 24 seconds |
| 169.254.255.248 | admin | now                  |
| 192.168.135.232 | admin | 2 minutes 24 seconds |

| Client                 | Blocked for |
|------------------------|-------------|
| No clients are blocked |             |

## 6.5. SYSTEM / STORAGE

The settings related to the storage can be performed at **Storage**. After enabling the storage function, select a storage drive at **Storage device** where the images are to be saved.



### Operation mode

Under **Operation mode** the **Storage Trigger** can be selected. The image sequences will be saved based on this selection.

#### ! Important!

These settings only have an impact on the storage drive. They do not affect the storage in the IVS.

The following can be selected as a **Storage Trigger**:

- **Event**: Only those image sequences will be stored which have taken place during the signaling of one of the detectors.
- **Motion**: When the camera detects motion, the storage process starts and finishes when the motion is over.
- **Event+Motion**: Storage is performed in cases of both an **Event** and **Motion**.
- **Continuous**: The storage function saves every frame regardless of event and motion.

## Recordings before and after activation (seconds)

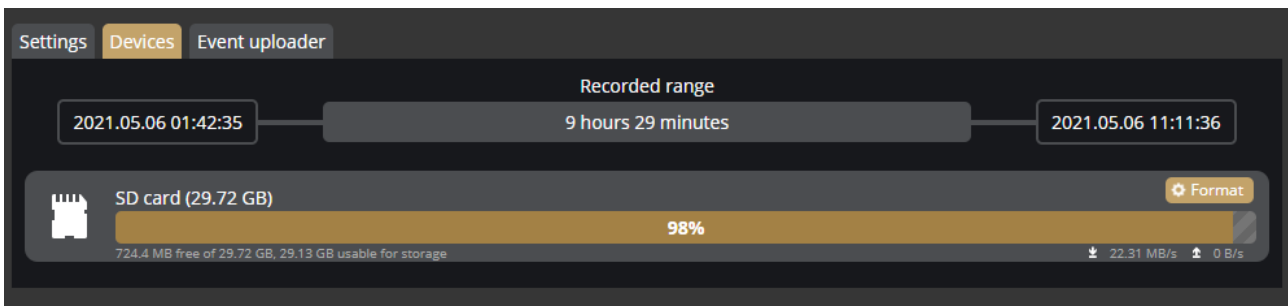
The time (in seconds) of the recording before and after the events can be regulated with the help of the sliders.

## Selected detectors

It may not be necessary to record at every detector signaling thus the user can select which detector signals should trigger the recording.

## Devices

Under the **Devices** tab information about the data of the SD card, the length of the recordings, the available storage and the writing speed can be found.



## Formatting the SD card

With the "Format" button the immediate formatting of the storage unit can be started. After clicking on the **[Format]** button, a window pops up where the **[Yes]** button is to be clicked. Thereafter the operation begins. The capacity bar indicates the remaining time of the formatting process.

### ! Important!

The formatting deletes every data from the SD card.

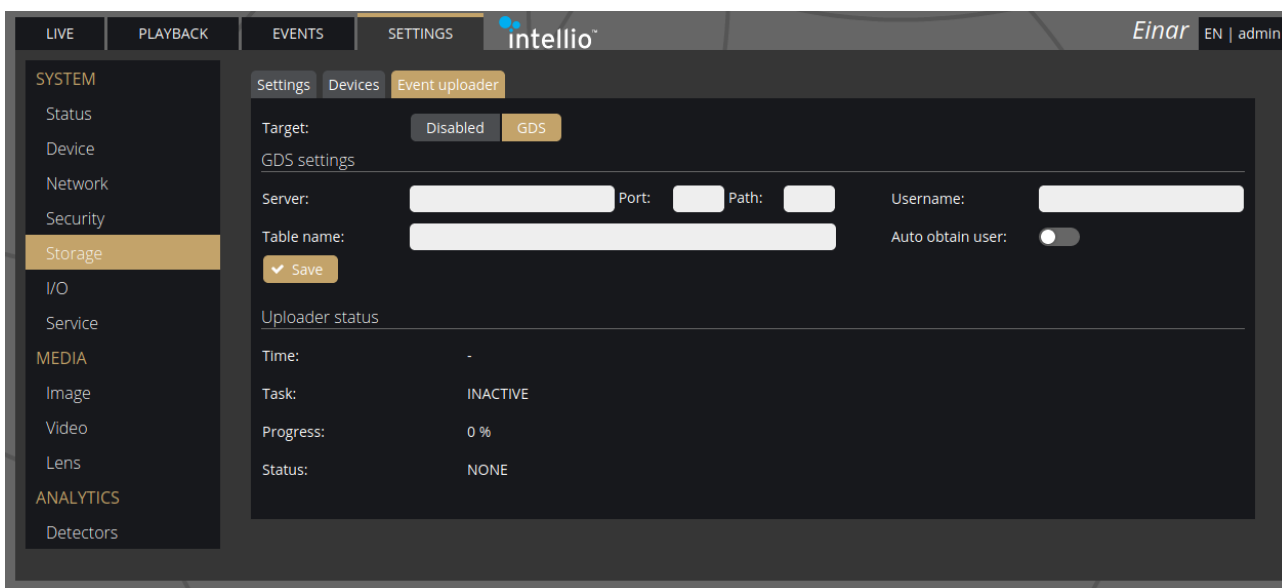
## Setting of the GDS upload

Enable the upload to the GDS at "**Target**", then enter the required data to set the GDS server.

The following fields should be defined:

- **Server:** Address (IPv4) of the GDS server
- **Port:** Access port of the GDS server
- **Path:** Access within the server
- **Table name:** The name of the GDS table where the upload will be done
- **Username:** Username required for the identification
- **Auto obtain user:** The username can be queried automatically. The device queries the user token which will be the user, however it has to be authorized manually from the GDS site by a second party.

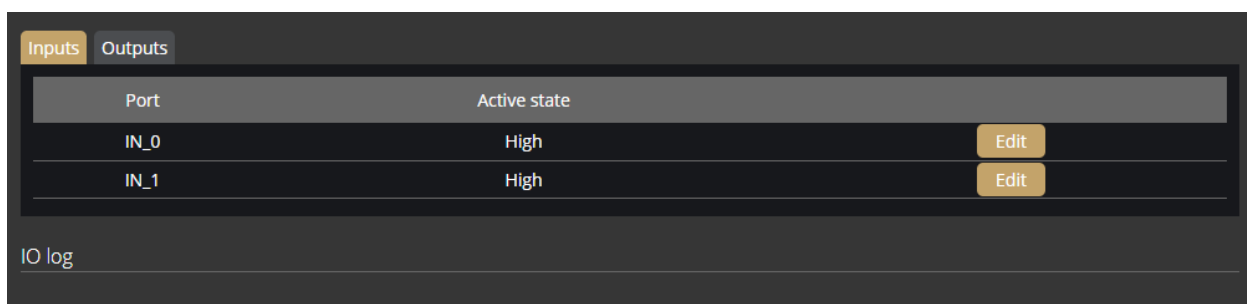
In the **Uploader status** section, the status and the data of the uploader can be seen.



## 6.6. SYSTEM / IO

The I/O ports allow communication between the information processing system (in this case the camera) and the outside world (e.g., a person, computers, alarms, barriers etc).

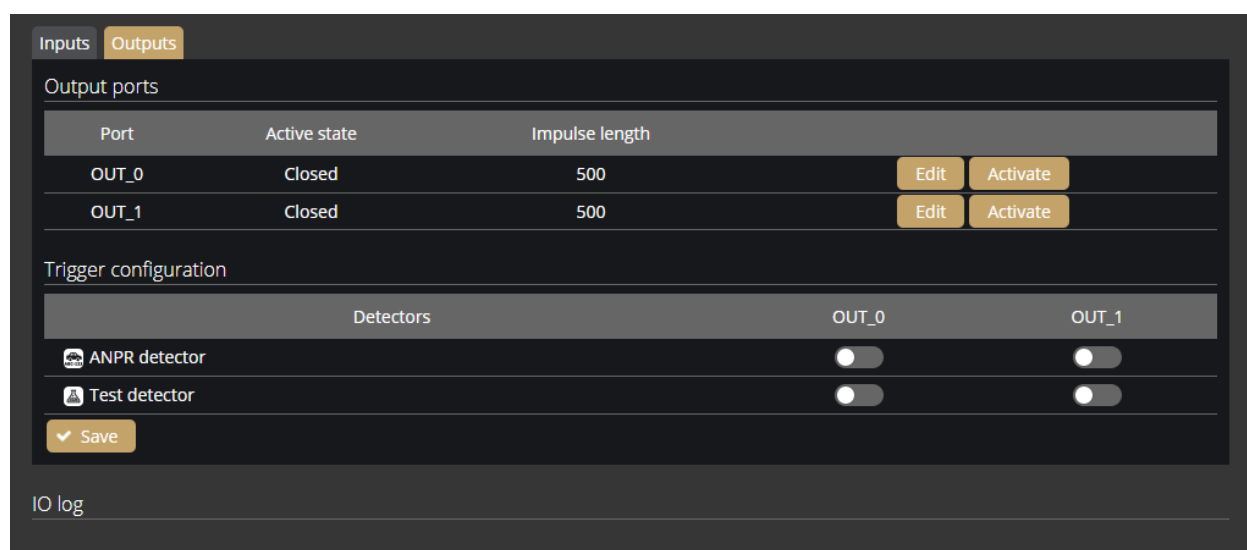
The conditions related to the information coming from the outside world to the camera through the input ports (input signals) can be adjusted by clicking on the **[Edit]** button at the **Inputs** tab. When the **Active state** of a port is set to "Low", then signal is received from an I/O detector if the device connected to the camera closes the circuit. When the **Active state** of a port is set to "High", then signal is received from an I/O detector if the device connected to the camera interrupts the circuit.



The **Output ports** also can be modified at the **Outputs** tab.

The following parameters can be adjusted:

- **Inactive state:** Idle state of the port. If it is "Open", the port is open. If it is "Closed", the port closes.
- **Mode:** In case of activating the output port, the port turns from idle state into active state, therefore the state changes to the opposite (Open → Closed; Closed → Open). In case of **bistable** mode, the port stays in active state until it is deactivated. In **monostable** mode the port after a specified amount of time automatically returns to the idle state.



## 6.7. SYSTEM / SERVICE

### Webserver

- **Service port:** The service port of the Webserver can be specified by filling in the field.

### RTSP

- **Service port:** The service port of the RTSP can be specified by filling in the field.
- **Authentication required:** By selecting "Enabled" the authentication is obligatory when connecting to the RTSP stream.

### SNMP

- **Service enabled:** The SNMP service can be enabled or disabled.
- **Read community:** Password required for the camera properties on SNMP.

### UPnP

- **Allow discovery:** The device discovery provided by the UPnP protocol can be enabled or disabled.

### IVS

- **Service port:** The service port of the IVS can be specified by filling in the field.

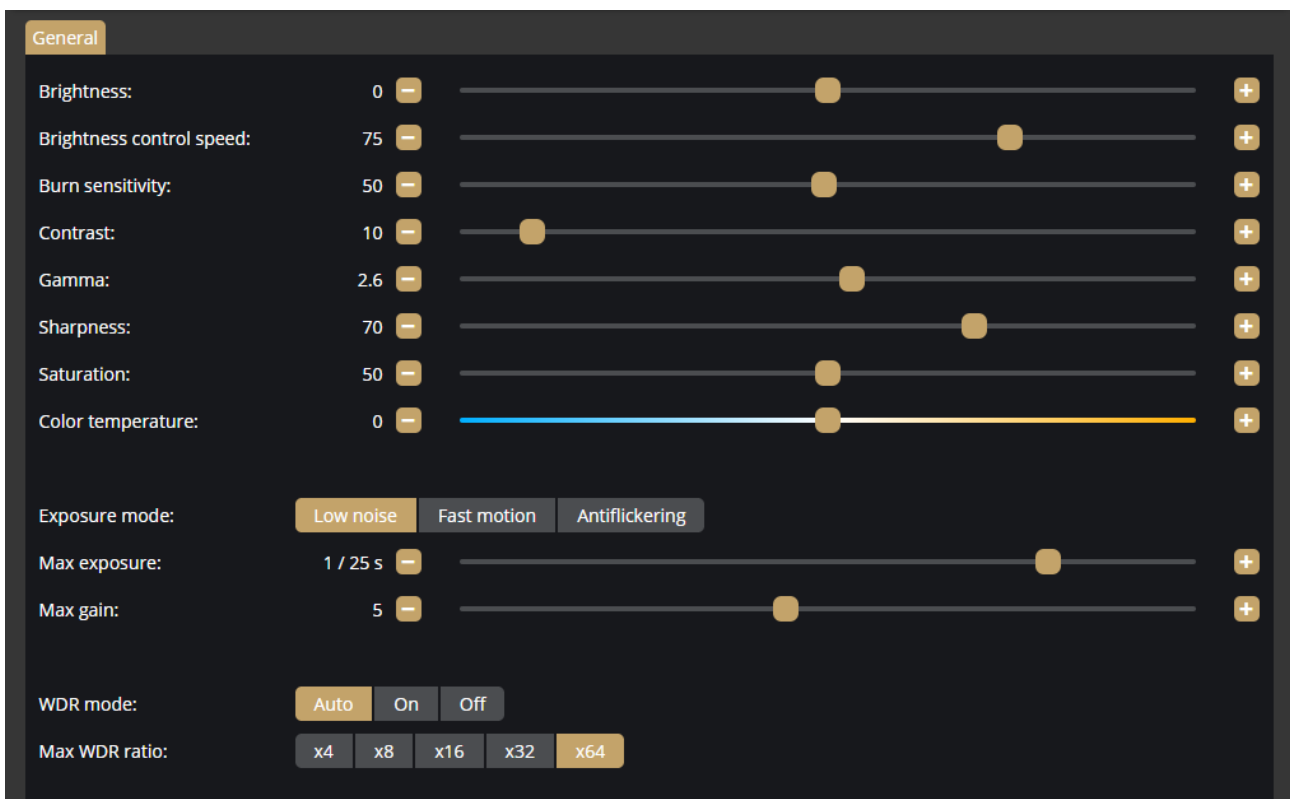
The screenshot displays a configuration interface with a dark background and light text. It is organized into sections for different services:

- Webserver:** A text input field for "Service port" containing the value "80".
- RTSP:** A text input field for "Service port" containing "554", and a toggle switch for "Authentication required" currently set to "Enabled".
- SNMP:** A toggle switch for "Service enabled" currently set to "Enabled", and a text input field for "Read community" containing six dots.
- UPnP:** A toggle switch for "Allow discovery" currently set to "Enabled".
- IVS:** A text input field for "Service port" containing "53539".

At the bottom of the interface, there are two buttons: "Save" with a checkmark icon and "Reset" with a circular arrow icon.

## 6.8. MEDIA / IMAGE

On this configuration interface the image quality can be optimized.

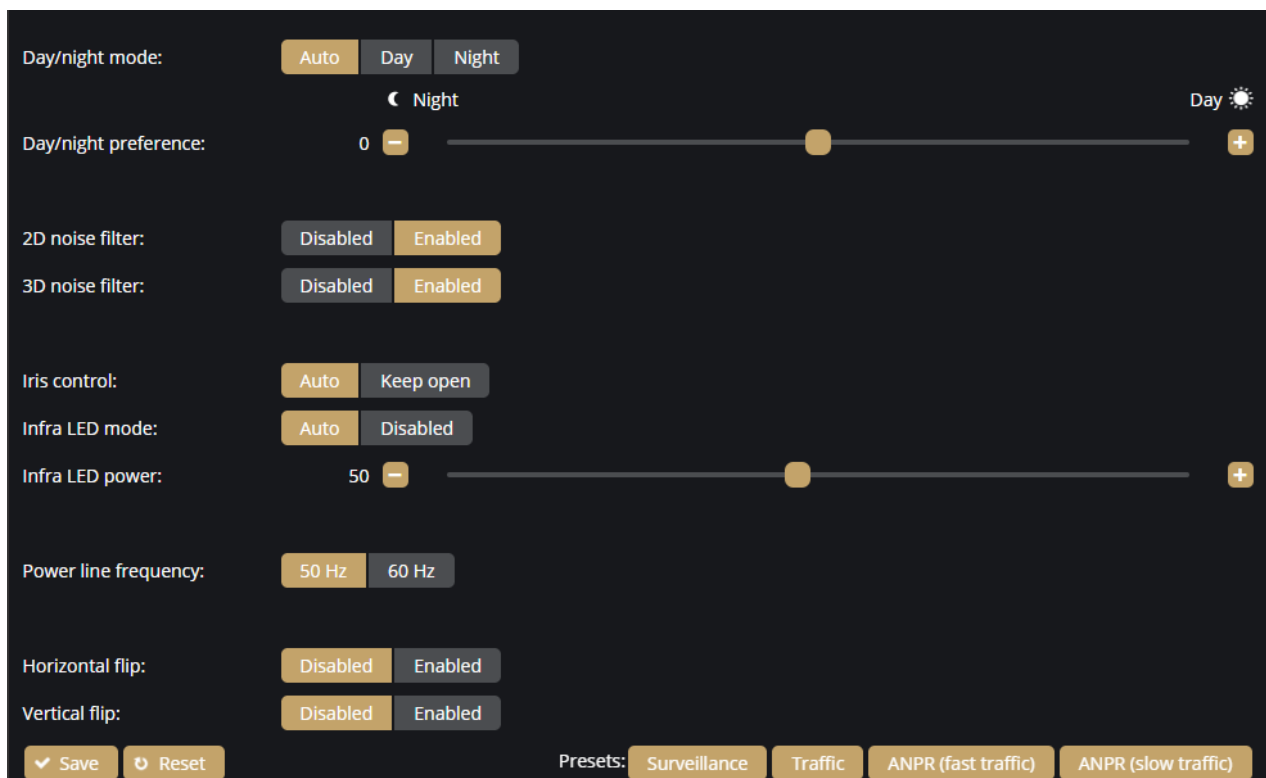


The following elements can be fine-tuned:

- **Brightness:** It sets the image brightness.
- **Brightness control speed:** It sets the speed of adaptation to the changing lighting conditions (e.g., in a dark room the light is switched on and how quickly the camera can adapt to the new lighting condition).
- **Burn sensitivity:** The more sensitive the less burned pixels appear, but the image will be darker.
- **Contrast:** Brightness difference between the brightest and darkest point of the image.
- **Gamma:** It increases the contrast on the darker spots of the image, thereby the details are more visible even in poor lighting conditions.
- **Sharpness:** It makes the details sharper or more blurred.
- **Saturation:** It defines the saturation of colors in the image.
- **Color temperature:** It adjusts the reddish/bluish hue of the image.
- **Exposure mode:** It sets the mode related to the selection of the exposure time.
- **Max exposure:** The camera cannot expose longer than the specified value.
- **Max gain:** The digital gain cannot be greater than the specified value.



- **WDR mode:** Better image quality can be achieved with the Wide Dynamic Range function if the camera image contains both heavily burned and dark spots. The WDR function can be turned on/off or set to automatic.
- **Max WDR ratio:** The WDR merges two images. One of the images adjusts the exposure time to the brighter and the other one to the darker spots. Therefore, the combination of the two images results in less burned bright spots and more visible dark spots. The Max WDR ratio adjusts the maximum overlap of the two images.
- **Day/night mode:** Day and night mode can be chosen manually or automatically.
- **Day/night preference:** A preferred setting of day or night mode can be defined, which is applied in case of automatic shifting.
- **2D noise filter:** Noisy pixels are filtered based on the environment of a pixel.
- **3D noise filter:** The deviation of the same pixels of frames in sequence is used to determine if the image is noisy.
- **Iris control:** The iris can be kept open all the time or can be operated automatically.
- **Infra LED mode:** The infra LED can be operated automatically or can be blocked.
- **Infra LED power:** The brightness of the infra LED can be adjusted.
- **Power line frequency:** The frequency of the power line.
- **Horizontal flip:** Disabling or enabling the horizontal flip.
- **Vertical flip:** Disabling or enabling the vertical flip.

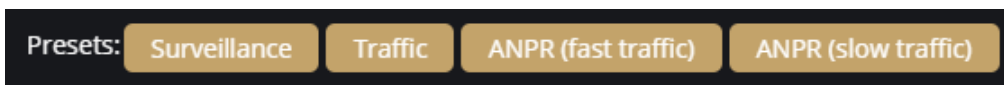


## Presets

Pre-set values can be selected which are calibrated to different situations. These elements are not necessarily ideal settings for all cases, they are to be considered as guidelines. They show generally acceptable image settings for certain scenarios.

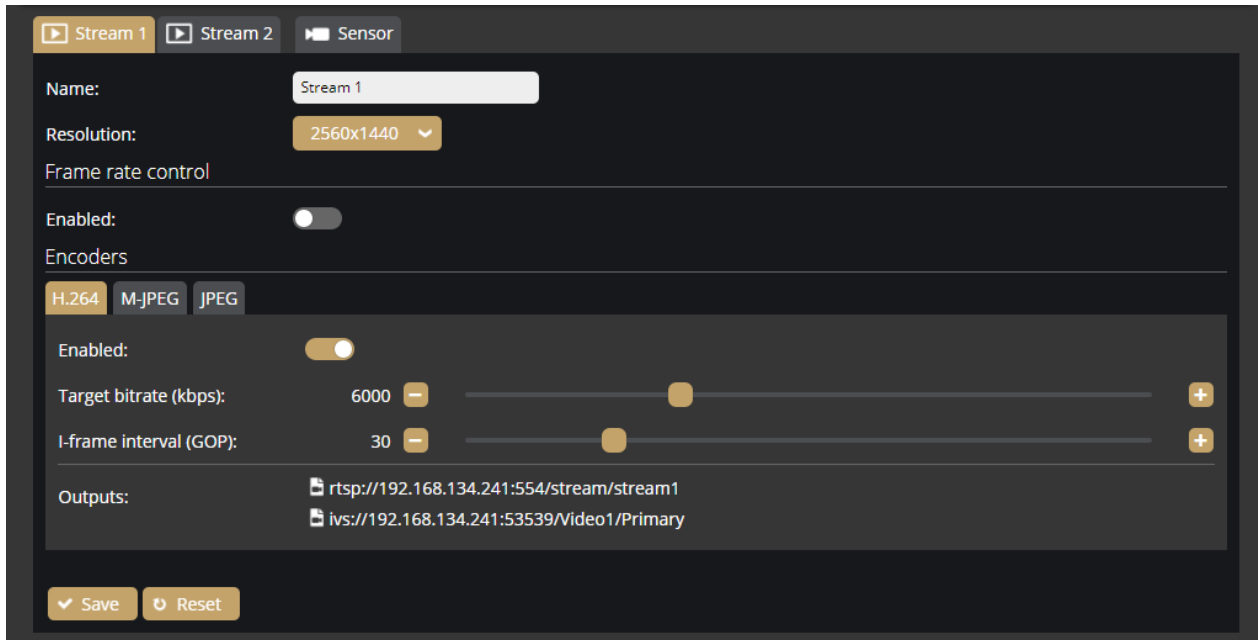
These pre-set values are the following:

- **Surveillance:** General setting for basic motion detection and surveillance
- **Traffic:** General setting for traffic observation
- **ANPR (fast traffic):** Ideal for fast traffic license plate reading
- **ANPR (slow traffic):** Recommended for slow traffic license plate reading



## 6.9. MEDIA / VIDEO

When clicking on the **Video** menu item the functions related to the video encoders are displayed. Above these the livestream of the camera remains visible.



On this interface the settings (name, resolution, frame rate etc.) of the **Stream 1** and **Stream 2** can be performed separately. The **H.264** and the **MJPEG** versions of the streams can be adjusted separately as well as the quality of the thumbnail images also can be defined.

### Frame rate control

It can be enabled or disabled. When it is disabled, the camera operates with maximum FPS regardless of the other settings located on this interface. After enabling it, the following functions can be set:

- **Normal frame rate:** The frame rate of the camera in normal state
- **Condition of reducing the frame rate:** The FPS can be set to be reduced upon Motion (exclusively), Event (exclusively), Motion+Event or never
- **Reduced frame rate:** Rate of the reduced frame rate
- **Recordings before activation:** The length of the stored recordings before the events can be specified
- **Recordings after activation:** The length of the stored recordings after the events can be specified

## Encoders

If it is enabled, the following can be fine-tuned:

- **Target bitrate (kbps):** The bandwidth size can be adjusted.

### Note

The values to be set alternate stream by stream.

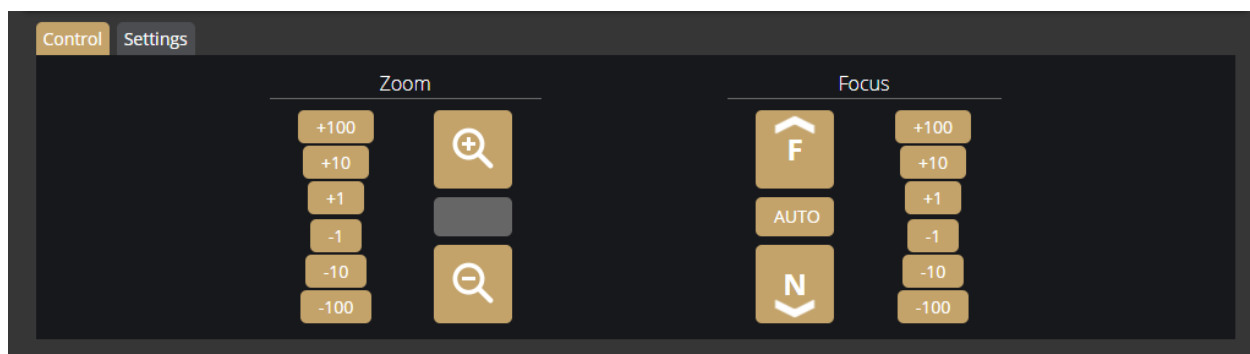
- **I-frame interval (GOP):** The density of the I frames can be specified.

## Sensor

Under **Sensor** tab the aspect ratio can be adjusted which can be 4:3 or 16:9.

## 6.10. MEDIA / LENS

On this interface the lens of the device can be fine-tuned: the **Focus** and the **Zoom** can be customized by using the corresponding buttons.



### Autofocus

The camera possesses autofocus. By default, the autofocus function is enabled, but it can be disabled on the **Settings** tab with the "Change focus when zooming" option. If the "Change focus when zooming" option is turned on, the camera starts to look for the correct value by itself in order to achieve the sharpest image possible. This process starts simultaneously with the zooming.

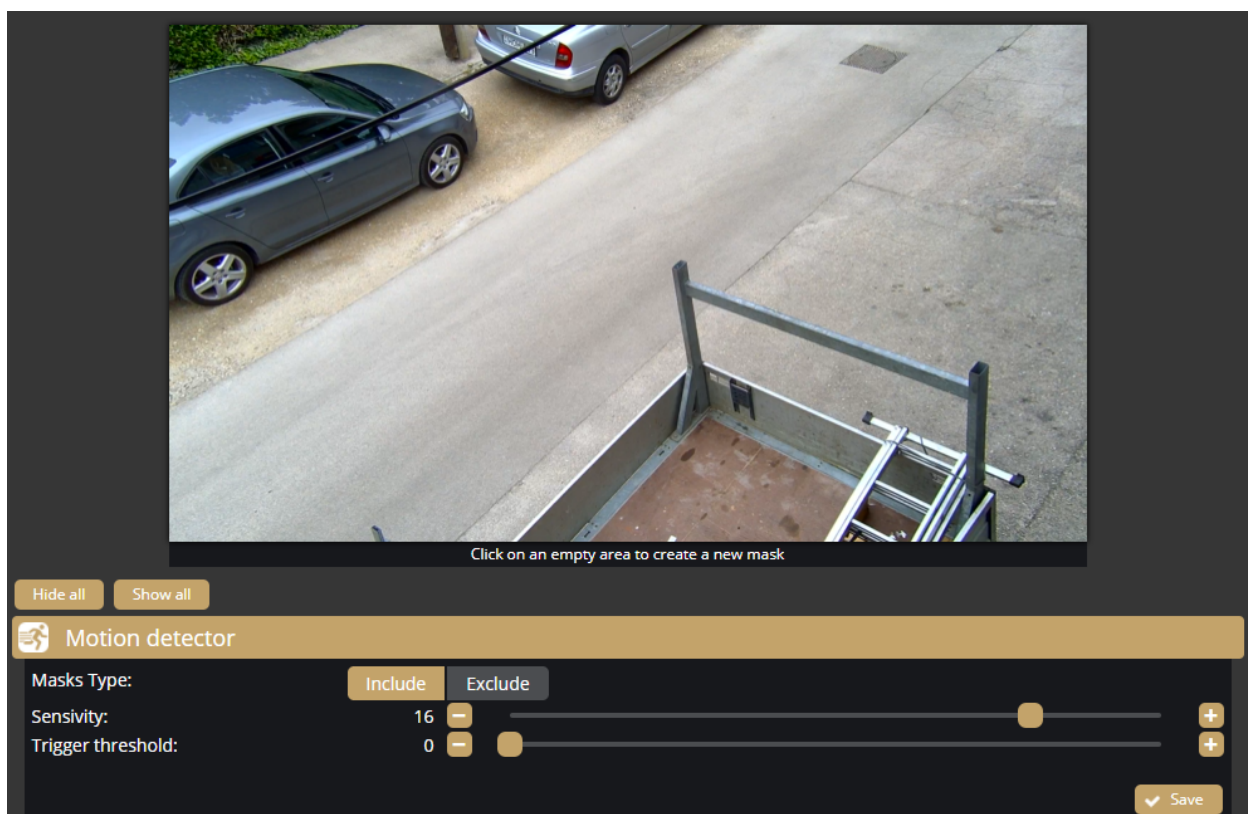
In manual, disabled state the autofocus can be initiated with the "AUTO" button located in the **Focus** section.

**Lens distortion correction:** This setting can correct lens distortion occurring at certain zoom settings.

## 6.11. ANALYTICS / DETECTORS

The camera detectors can be added, modified or deleted on this window.

The list of the detectors differs by camera types except for Motion detector which can be found on all types.



### Motion detector and general use of masks

The Motion detector is a fundamental detector which regulates the motion-based storage. It cannot be deleted.

#### Note

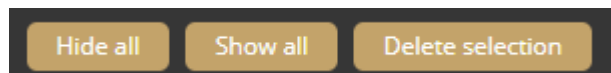
The Motion detector does not induce event, it is responsible for the setting of the motion-based recordings. It can be found on all camera types.

If you click on the detector, then on the live stream a mask can be applied which can be set to exclusive or inclusive with the "**Masks Type**" option. If the mask is set to "**Exclude**", then any recording will not be taken about the motion on the highlighted area. If the mask is set to "**Include**", then recordings will be taken about the motion on the selected area.

The mask can be modified by clicking on the green area.



The mask can be deleted by clicking on the **[Delete selection]** button located under the live stream:



**Sensitivity:** It sets the sensitivity of the motion detector.

**Trigger threshold:** It can be used to define the sufficient level of motion in the image in order to trigger the event. Further filtering can be done with the previously set sensitivity conditions to determine the degree of action intensity which triggers recording. The "motion diagram" is the OSD belonging to the setting which can provide visual assistance.



## ANPR detector and ANPR engine

The ANPR detector and the ANPR engine perform the reading of license plates in combination.

### ! Important!

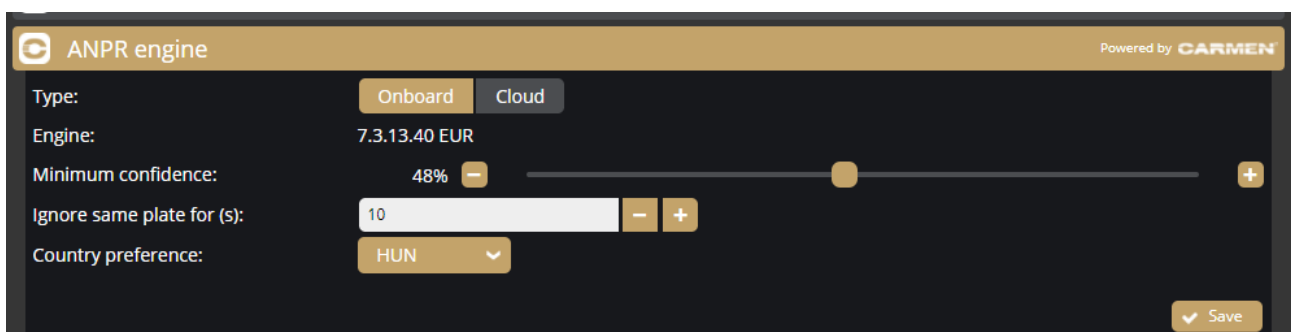
The both must be present on the camera in order to operate the system. They are only present on the cameras designed to read license plate.

## ANPR engine

The ANPR engine is a default detector which is in fact not a "real detector", but rather the engine of the license plate reading system.

The primary functions of the ANPR can be adjusted:

- **Type:** Allows the user to make a choice between **Onboard** and **Cloud** processing.
- **Engine:** The current ANPR version and region can be seen.
- **Minimum confidence:** The slider can be used to define what reading confidence percentage should trigger an event. A low value potentially results in more reading errors. A high value potentially leads to missed reading cases. Therefore, the values between **50-70%** are recommended.
- **Ignore same plate for (s):** A time limit can be set for previously read license plate. This value determines a waiting time in seconds before the license plate is read again.
- **Country preference:** The selected region is prioritized and read with higher confidence value by the license reading system. While the license plates from other regions are managed with lower confidence value.





## ANPR detector

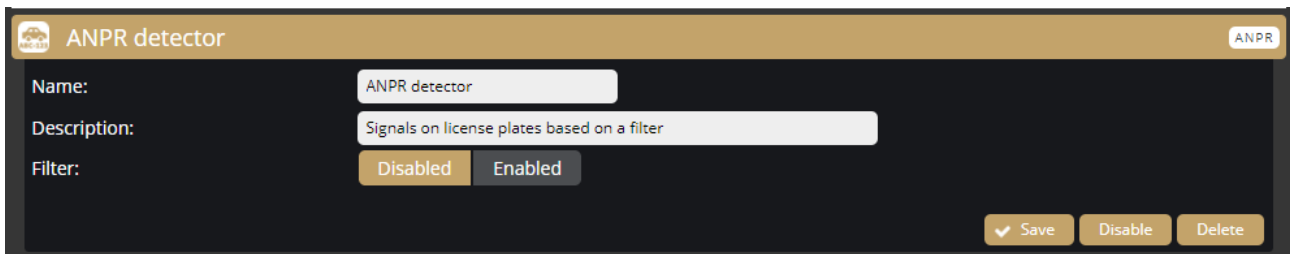
The ANPR detector is responsible for transmitting the events.

### ! Important!

The ANPR detector must be defined separately. The primary functions of the detector cannot be set at ANPR detector section, but on the interface of the ANPR engine.

The following can be adjusted on the **ANPR detector** interface:

- **Name:** The name of the detector can be entered.
- **Description:** A brief description can be added to the detector.
- **Filter:** The system can be set to read exclusively certain license plates.



The screenshot shows the configuration interface for an ANPR detector. The title bar reads "ANPR detector" with an "ANPR" label on the right. The interface includes three input fields: "Name:" with the value "ANPR detector", "Description:" with the value "Signals on license plates based on a filter", and "Filter:" with two radio buttons, "Disabled" (selected) and "Enabled". At the bottom right, there are three buttons: "Save", "Disable", and "Delete".



## Built-in Intelligent Motion detector

The Built-in Motion detector is a tracker-based motion detecting detector.

### Note

As opposed to the regular Motion detector, the Built-in Motion detector generates event in case motion is detected. It is only present on tracker cameras (not license plate reader cameras).

The following values can be defined on the **Built-in Intelligent Motion detector** interface:

- **Name:** The name of the detector can be entered.
- **Description:** A brief description can be added to the detector.
- **Violation time (ms):** A time interval can be defined in milliseconds which determines the duration an object has to be present in the image in order to generate an event.
- **Tracked objects:** The objects to be tracked can be selected.
- **Object colors:** The color of the triggered objects can be selected.
- **Confidence filter:** An object can only generate an event if the calculated confidence of the object is higher than the specified value of the **Confidence filter**.

The screenshot shows the configuration interface for the 'Built-in Intelligent Motion detector'. The interface is dark-themed with a gold header bar. The title 'Built-in Intelligent Motion detector' is on the left, and 'iTracking' is on the right. The configuration fields are as follows:

- Name:** A text input field containing 'Built-in Intelligent Motion detectc'.
- Description:** A text input field containing 'Signals if tracked objects are moving in selected area'.
- Violation time (ms):** A numeric input field with '0' and minus/plus buttons.
- Tracked objects:** A row of four toggle switches: 'Other' (off), 'Vehicle' (off), 'Pedestrian' (off), and 'Animal' (off).
- Object colors:** A row of seven toggle switches: 'Red' (off), 'Green' (off), 'Blue' (off), 'Yellow' (off), 'White' (off), 'Black' (off), and 'Gray' (off).
- Confidence filter:** Two buttons: 'Disabled' (selected) and 'Enabled'.

At the bottom right, there are two buttons: 'Save' and 'Disable'.

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