ZKTeco

ZK-LPR Car ID
User Manual

ZKTeco

Index

History:

Date	Creator	Details
11.03.2020	Luis Rodríguez	Initial Document
16.03.2020	Samuel Muñoz	Audit

1. Overview

ZKTeco is a powerful LPR application developed, embedded in the cameras.

ZKTeco is the all in one product to plug and play, ready to read plates just out of the box.

It Includes an interface web application that allows you to manage different scenarios, avoiding extra hardware and software installations.

2. Installation Requirements

2.1. Camera requirements

LPR ZK Camera support a 64GB Micro SD recommended quality Q10
The micro SD should be formatted in **EXT4 format.**

List of compatible cameras:

- BL-852Q38A – LP
- DL-852Q28B-LP

Minimum firmware XXXX

General compatibility: Cameras with processor Hisilicon Hi3519 and Linux System

2.2. Storage requirement

The preset values suppose a **40% of JPEG compression** (default system value)

In the following table we can find ***estimation of size*** requirements:

Size/Registers	1	1000	5000	10000	100000
640x480	13KB	12.7 MB	63.5 MB	127 MB	1.24 GB
800x600	20KB	19.5 MB	97.7 MB	195.3 MB	1.9 GB
1280x720	25KB	24.4 MB	122 MB	244.14 MB	2.38 GB
1600x904	70KB	68.35 MB	341.8 MB	683.6 MB	6.68 GB
1920x1080	110KB	107.4 MB	537,1 MB	1.05 GB	10.5 GB

Estimation with an affluence of 100 cars per day.

Size/GB	2	8	16	32	64
640x480	4.4 years	17.6 years	30.53 years	70 years	140 years
800x600	2.8 years	11.5 years	20.3 years	40.5 years	90 years
1280x720	2.27 years	9.1 years	10.8 years	30.7 years	70.3 years
1600x904	290 days	3.2 years	6.5 years	10.3 years	20.6 years
1920x1080	190 days	2 years	4.16 years	8.3 years	10.6 years

Estimation with an affluence of 1000 cars per day.

Size/GB	2	8	16	32	64
640x480	161 days	645 days	3.53 years	7 years	14 years
800x600	105 days	420 days	2.3 years	4.5 years	9 years
1280x720	83 days	335 days	1.8 years	3.7 years	7.3 years
1600x904	29 days	119 days	239 days	1.3 years	2.6 years
1920x1080	19 days	76 days	152 days	305 days	1.6 years

Estimation with an affluence of 10000 cars per day.

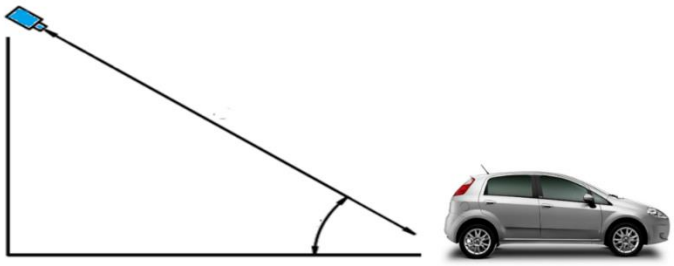
Size/GB	2	8	16	32	64
640x480	16 days	64 days	128 days	256 days	512 days
800x600	10 days	42 days	84 days	168 days	336 days
1280x720	8 days	33 days	66 days	132 days	264 days
1600x904	2 days	11 days	23 days	46 days	92 days
1920x1080	1 days	7 days	15 days	30 days	60 days

2.3. License Plate Character size

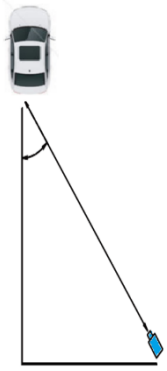
Characters in license plates must have an average height between 20 to 80 pixels, being 25 pixels a good reference value. Less resolution may lead character confusion in some countries. In addition, camera sensitivity affects too. For countries in which there are different character sizes on their license plates, this fact must be kept in mind, so the small characters are included in the detection range.

2.4. Camera Positioning

Recommended vertical angles are approximately 20º. The maximum recommended value is 35º.



Recommended horizontal angles are approximately 20º. The maximum recommended value is 35º.



The angle between the plates and the X axis of the scene must be inferior to 25º.

Recommended Parametrization

It should be mentioned that the following recommendations and specifications, are general and may vary depending on the brand and model of the selected camera and the country they are to be installed.

Common *Scenario*

Common scenario: 1 lane

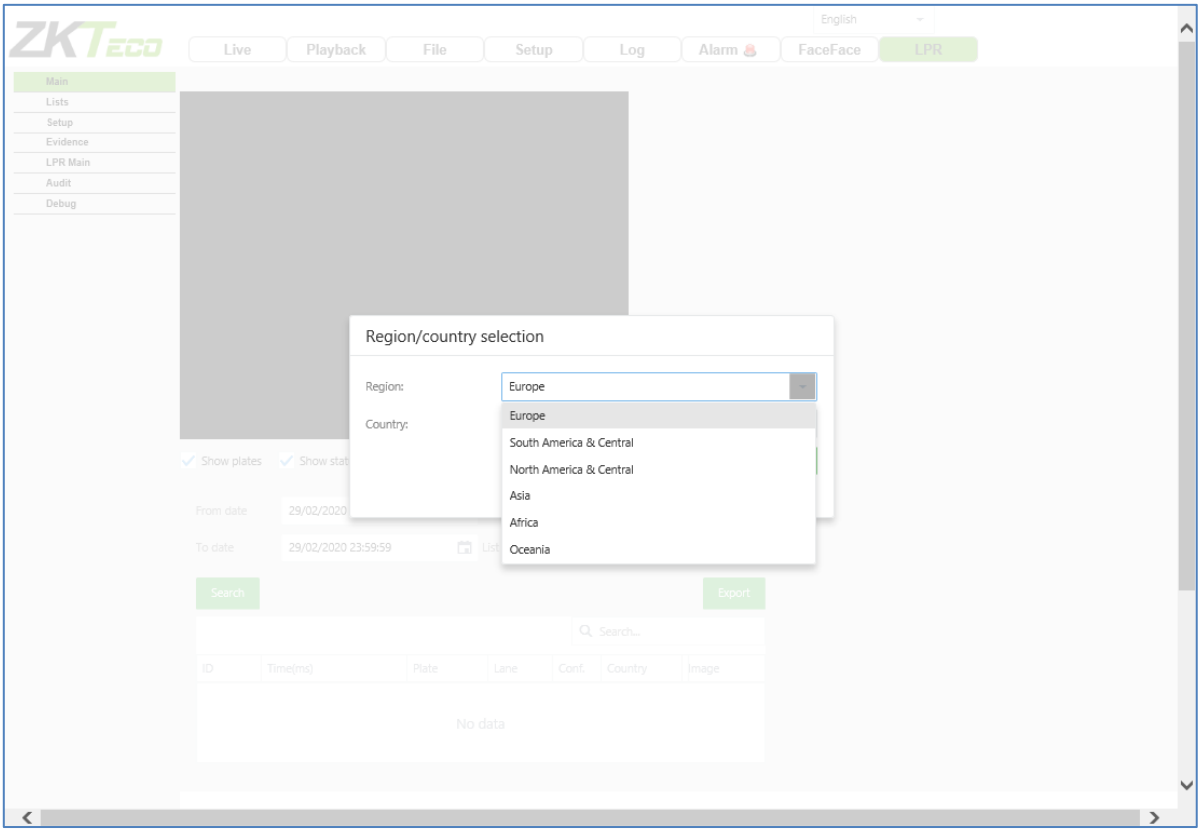
Sensor size: VGA o 1 MP

Height of camera on pole: 1 - 1.5 metros

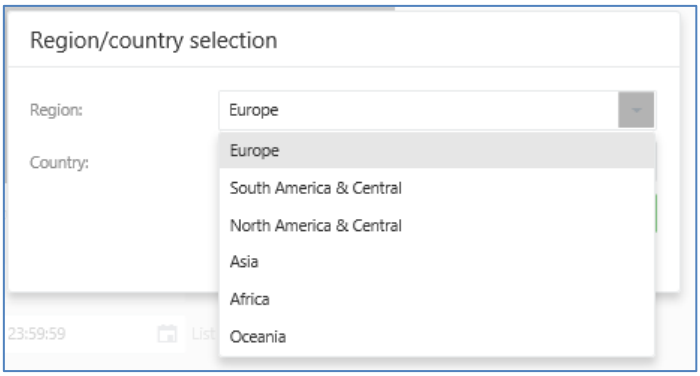
3. Access to ZKTeco

3.1. First access (selection country)

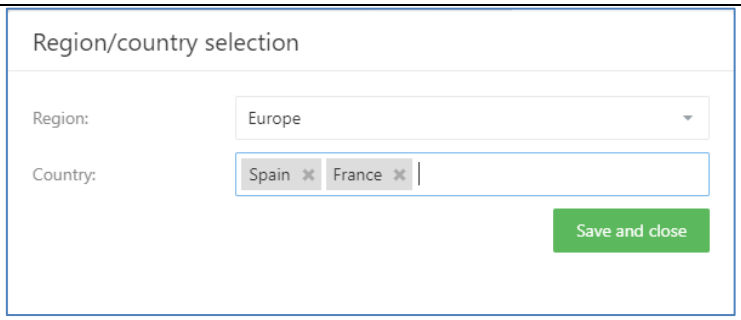
Upon the first access to the web ZKTeco the system will ask us for the region and country.
The country selection is mandatory to define the country(s) of license plate to read.



First select the Region:



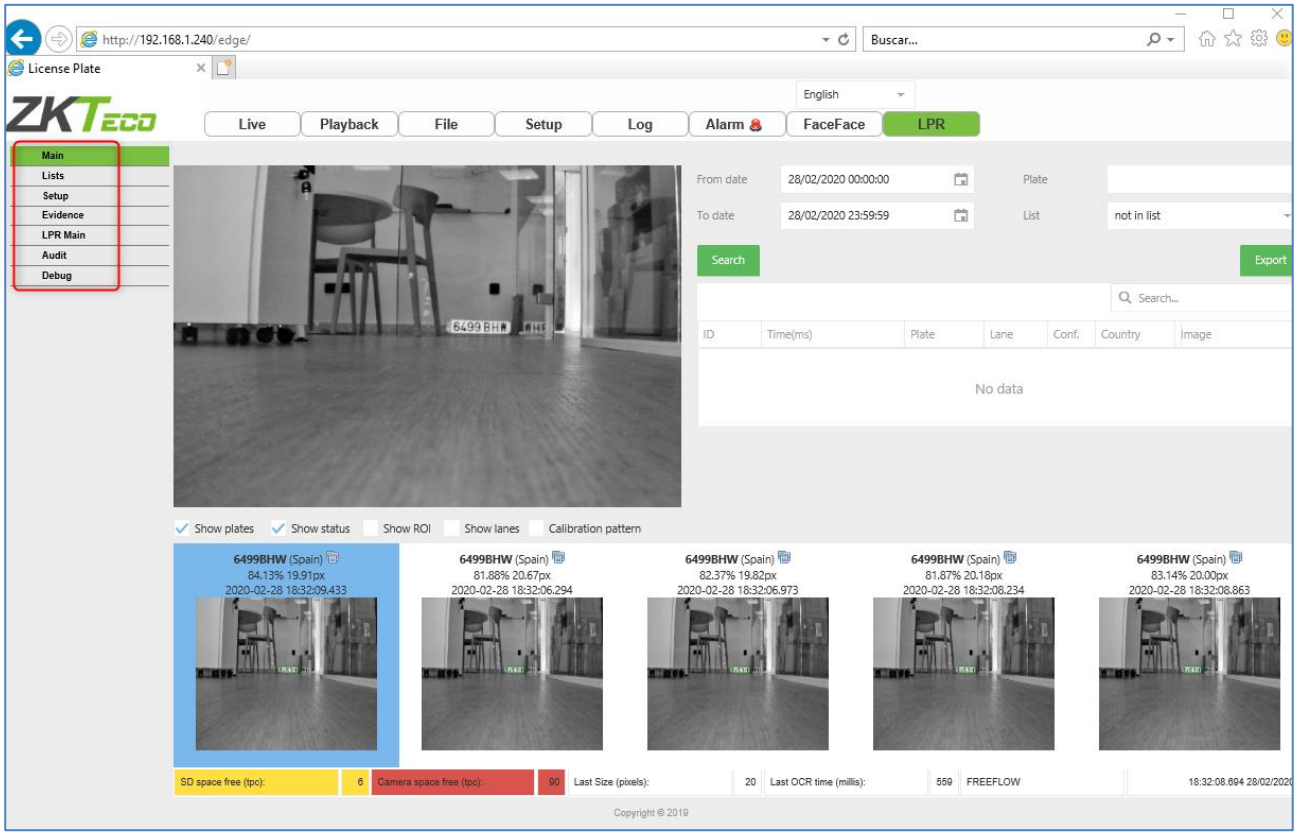
Now select the countries in the region. Multiple selection is available.


Region/country selection
Region:
Europe
Country:
Spain
France
Save and close

4. Web View

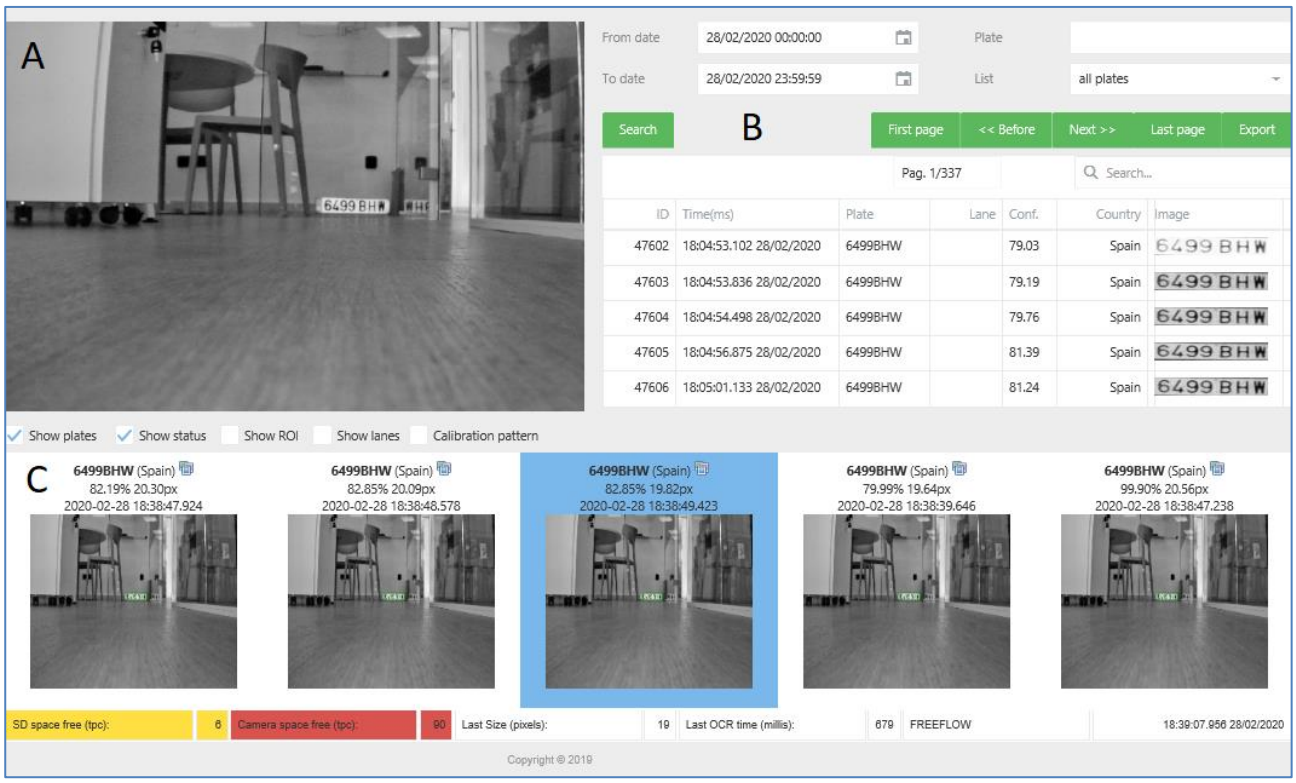
4.1. Tab

The top of the screen has a tab menu, it is marked with a red rectangle is the MENU toolbar with all the available options.



4.2. Live Tab

The live tab shows the cameras live view. (this tab is divided into 3 different areas) We have divided it into 3 parts: The Monitor Panel (labeled A), The Results Panel (labeled B) and the Info Panel (labeled C).



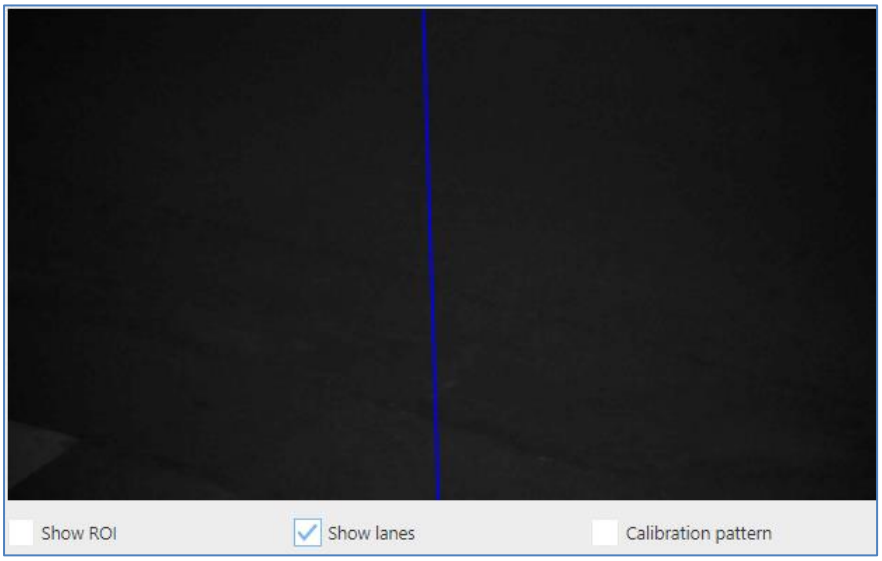
Monitor Panel: Live image what the camera is streaming.

Under the live there is three checks:

Show ROI: Checking you can see a red square indicating the ROI (Region of interest) defined in the parameters, this area is the only section of the image where engine will try to find plates.

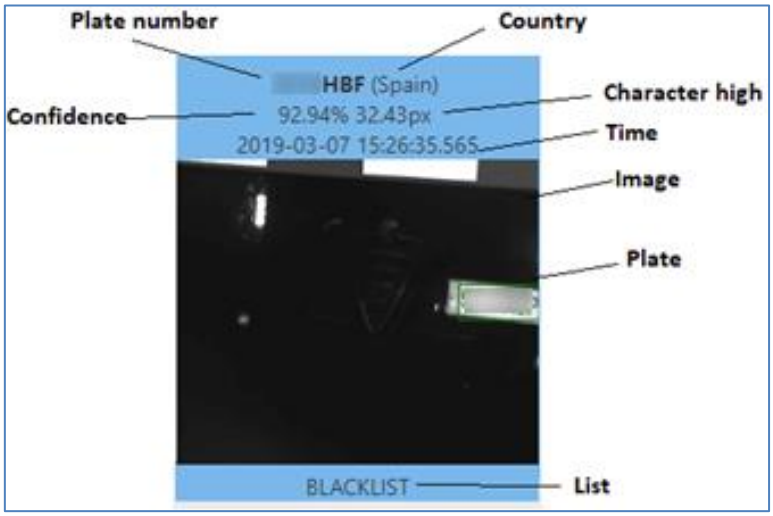

6499 BH
Show plates
Show status
Show ROI
Show lanes
Calibration pattern

Show lanes: Checking you can see a blue line defining the lanes we have configured in the parameters, the plates in the left side of the screen are plates captured in lane 1, the plates in the right side of the screen in lane 2.



Calibration pattern: Checking you can see white lines indicating the minimum character size. The vertical space between lines is 25 pixels, the plate number must be higher this space.

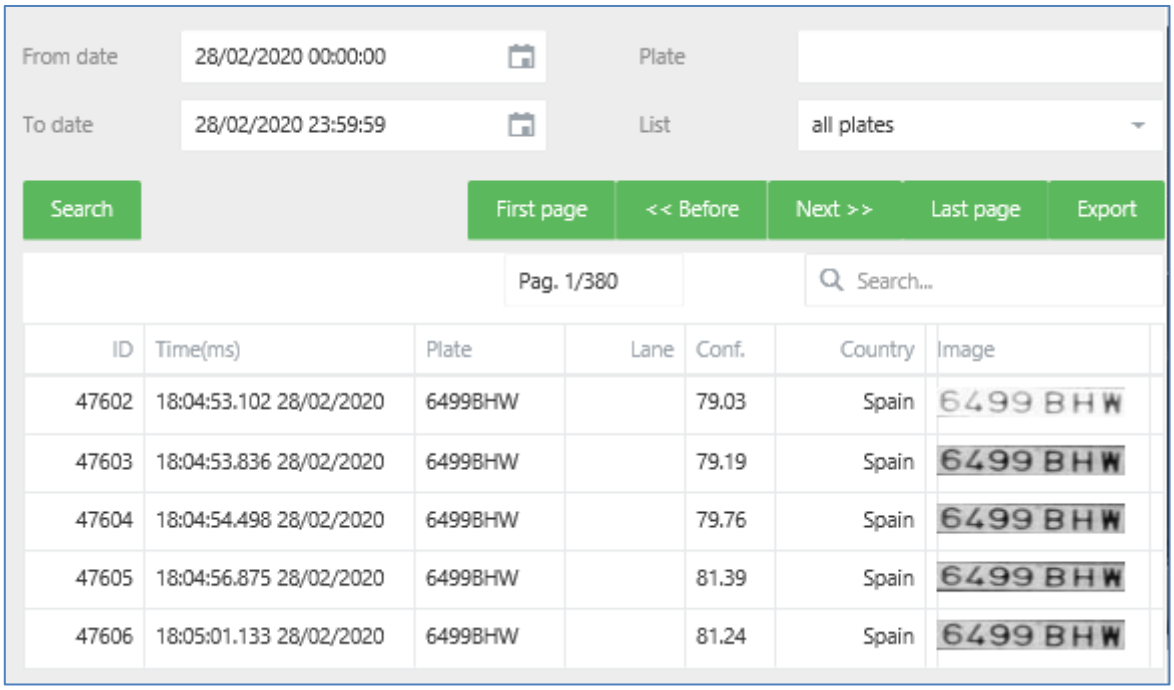
Results Panel: Shows the latest results, we highlight the last result with a Blue outline. The results will provide:



- ID
- TIME
- PLATE
- LANE
- CONFIDENCE
- COUNTRY
- IMAGE

4.3. Review Tab

The review tab allows us to search, filter and consult the results.



From Date: Select the date when do you want to initiate the search

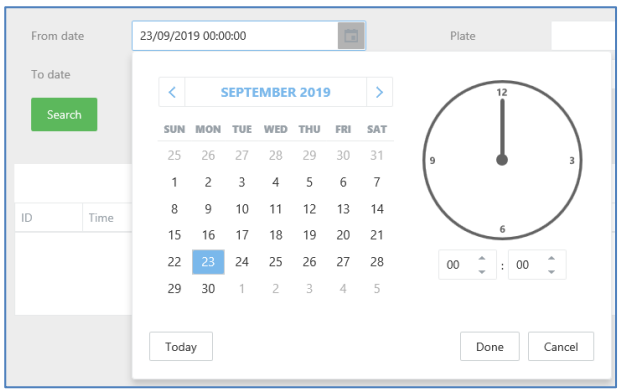
To Date: Select the date until you wish to search.

Plate: Allows you to search partially, entering a few numbers or letters of the license plate. This option will search all plates that coincide will the desired query.

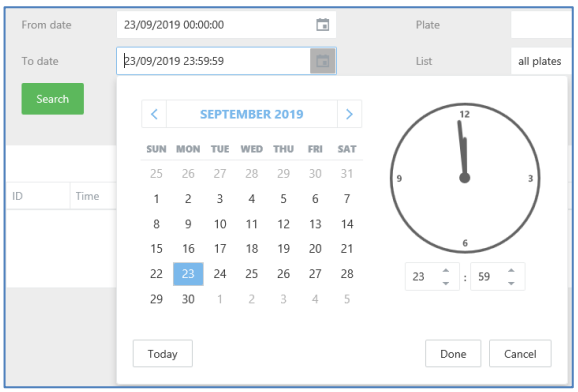
List: Allows you to filter by lists, meaning it will show you all plates that belong to a list.

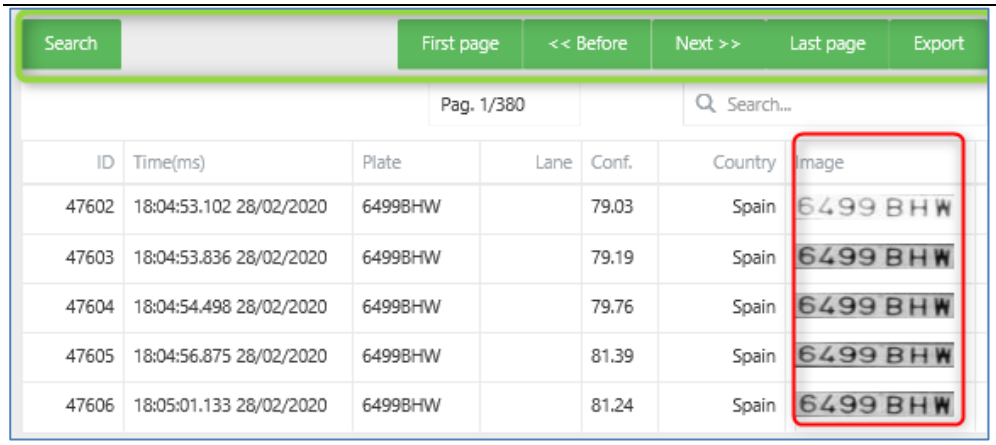
For example, if you wish to search for a specific plate by date, from 02/10 to 02/12.

From Date:



To Date:



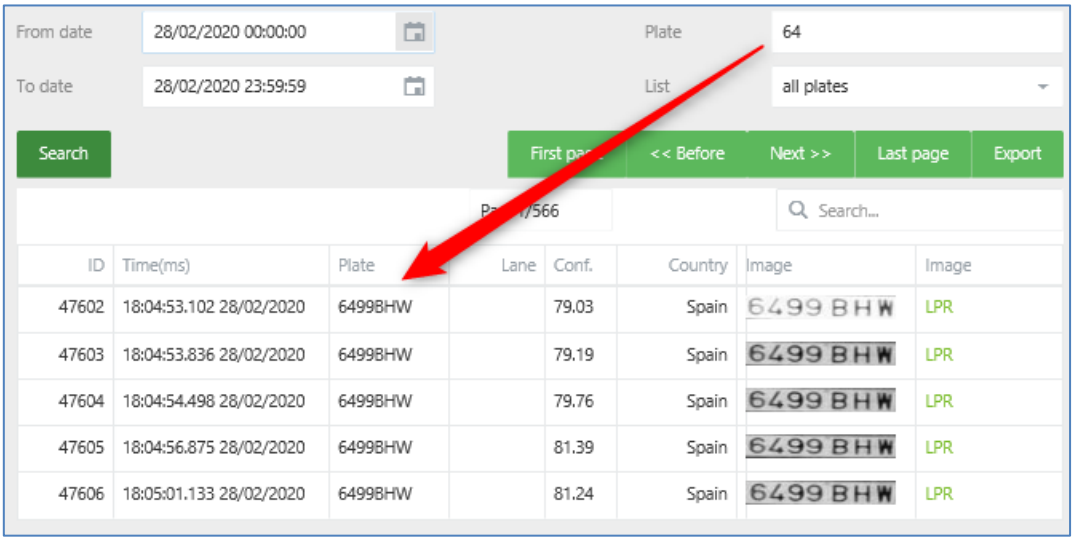


The green box corresponds to the amount of results do you want to view per page.

The Red Box shows the license plate number images. If you move the mouse cursor over any image you will obtain a larger image.

There is a download image option.

Searching for a license plate which we only remember a few letters or numbers. In this case, all you need to do is enter a part of the plate in the PLATE filter and search.



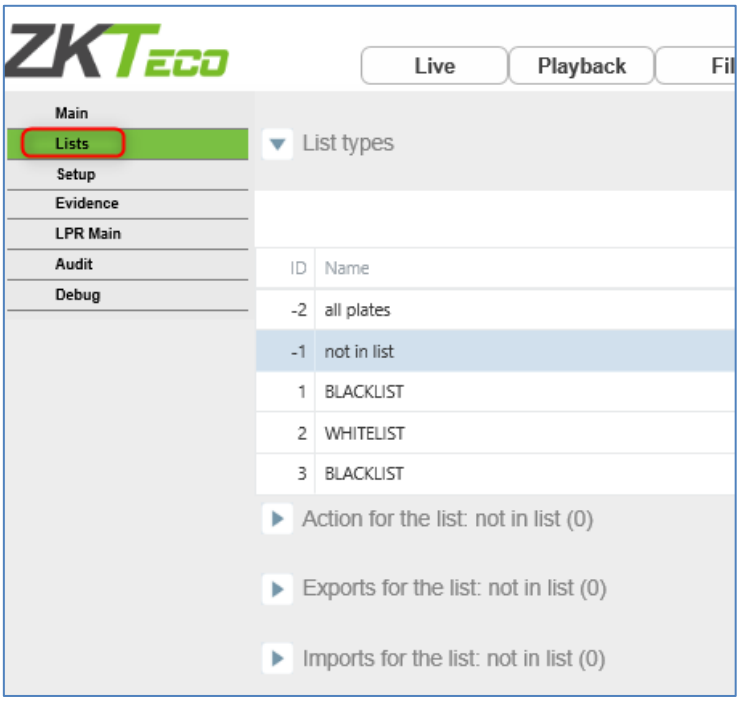
ID	Time(ms)	Plate	Lane	Conf.	Country	Image	Image
47602	18:04:53.102 28/02/2020	6499BHW		79.03	Spain		LPR
47603	18:04:53.836 28/02/2020	6499BHW		79.19	Spain		LPR
47604	18:04:54.498 28/02/2020	6499BHW		79.76	Spain		LPR
47605	18:04:56.875 28/02/2020	6499BHW		81.39	Spain		LPR
47606	18:05:01.133 28/02/2020	6499BHW		81.24	Spain		LPR

You also can search for license plates that are in a list.

1503	11:21:43.254 28/02/2019			99.10	Spain	BLACKLIST
1504	11:22:20.612 28/02/2019			93.55	Spain	
1505	11:22:34.864 28/02/2019			99.90	Spain	
1506	11:23:27.830 28/02/2019			95.53	Spain	
1507	11:24:47.292 28/02/2019			86.34	Spain	BLACKLIST

4.4. List Tab

In this tab you can create lists, a list is a group of license plates that will trigger an action, ZKTeco allows you perform different actions to any list.
By default, there are 4 lists created, ALL PLATES, NOT IN LIST, BLACKLIST, and WHITELIST. You can edit, delete or add more lists.



In the lists tab we have the following options:

List: Will show all the lists created

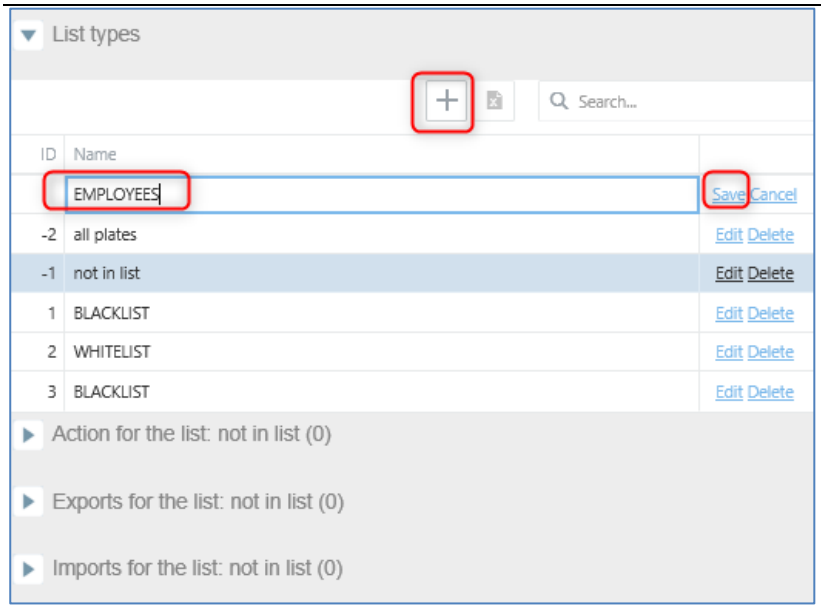
Action: Will show all the actions created by list.

Export: Allows you export a single list or if all plates are selected it will create a unique file with all the licenses plates that belong to that list.

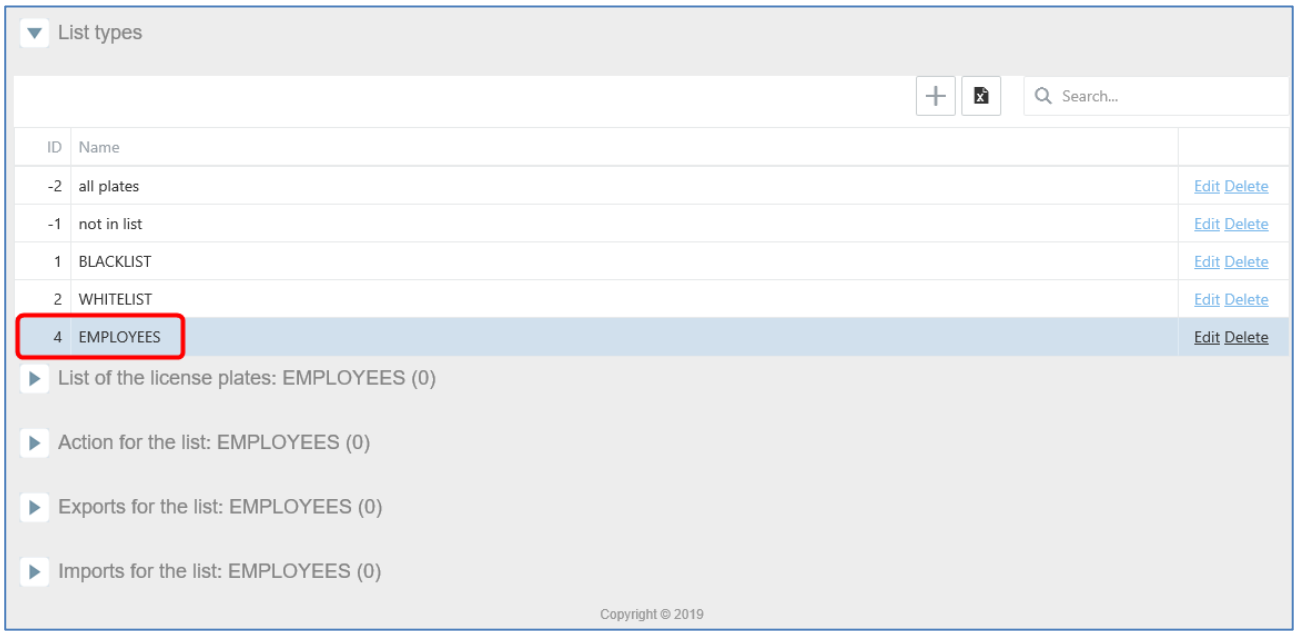
Import: Allows you import a single list or if all plates are selected it will create a unique file with all the licenses plates that belong to that list.

Let's create a new list and call it “EMPLOYEES”

Click on the “+” button, text the list name and click on “Save”.

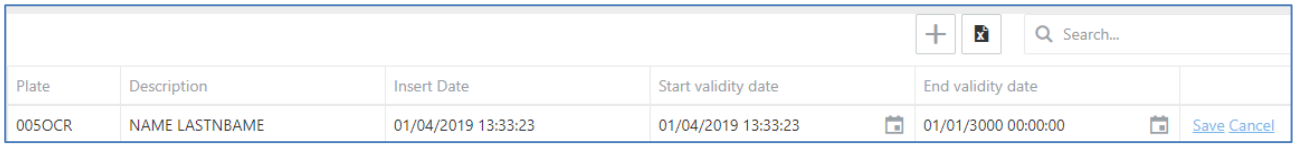


Now we are going to configure an action for this list, in other words, what we expect to happen if we read a license plate.
Click on “EMPLOYEES” list to see the options.

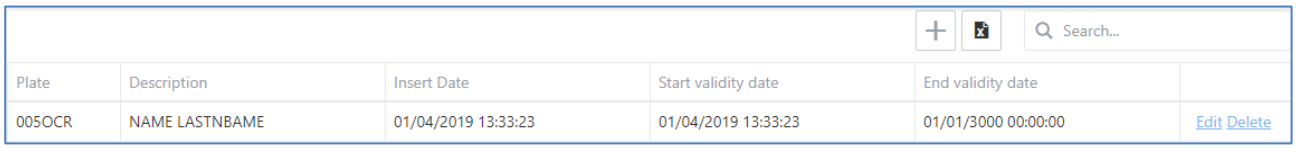


List of the license plates: EMPLOYEES

Add a new license plate, click on the “+” button and fill in the grid.



To edit or delete a license plate in that list, just click on the plate and then:

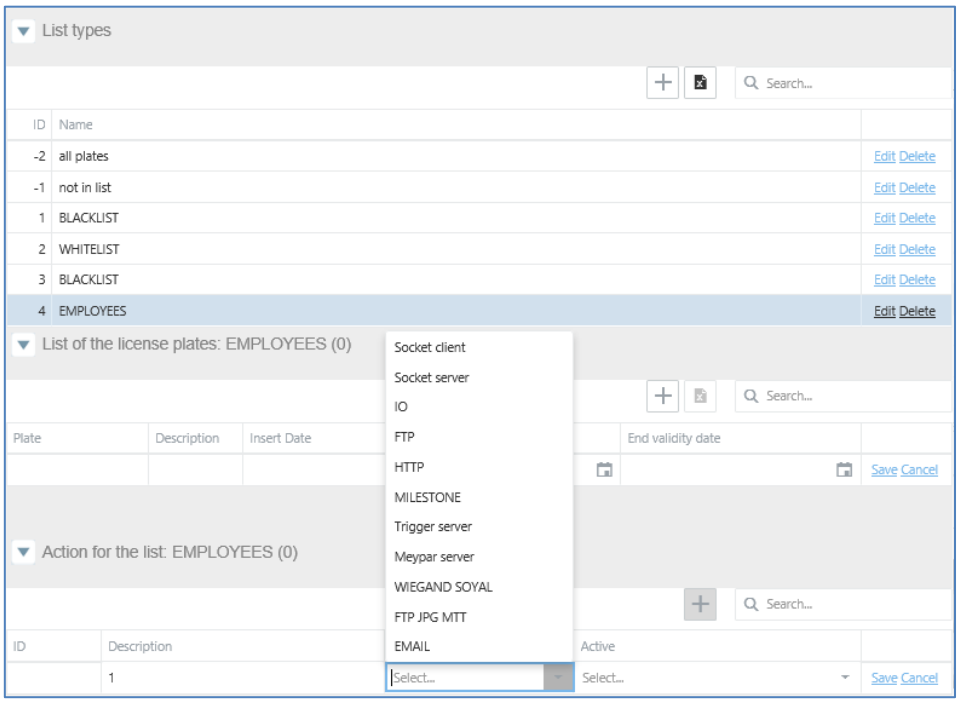


*In case if the system works in trigger mode and we want to execute a no plate action, we have to add NO_PLATE to the list.

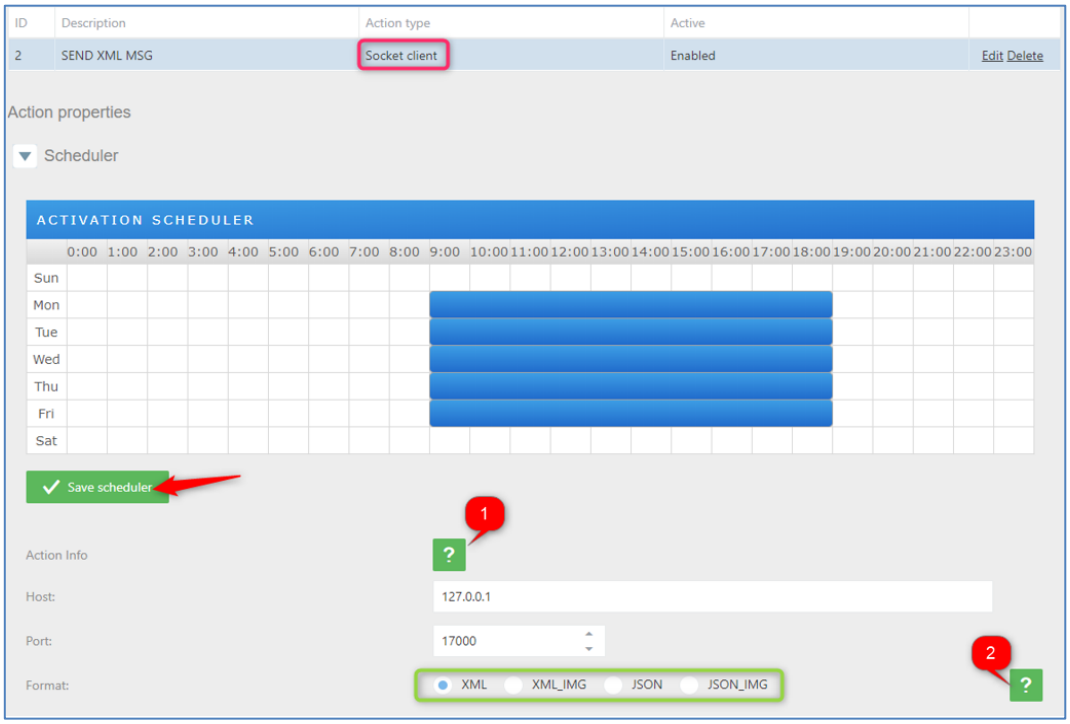
Action for the list: Here are all the actions we can configure for each list.

- **Socket Client**: Enable a socket connection to send messages as XML or JSON
- **Socket Server**: Open a port in the camera to listen to hosts to send messages as XML or JSON.
- **IO**: Enable inbound and outbound digital signals in the camera.
- **FTP**: store the results in an FTP server.
- **HTTP**: send a request using this protocol to a server.
- **MILESTONE**: send an analytic event to Milestone VMS.
- **WIEGAND**: send a signal to Wiegand middleware board.
- **Trigger Server**: Enable a port that sends the read response when a trigger message arrives.
- **WIEGAND SOYAL**: send a signal to Wiegand middleware board (Same action than Wiegand).
- **FTP JPG MTT**: the functionality it's the same one realized with FTP, with a few differences because with this one you can create a structure of subfolders, contains information like camera, year, month and day.
- **EMAIL:** send an email.

A list can perform several actions, depending on the scenario and needs.
Having the Employees list selected, click on "Action for the list" and then click on the + button.

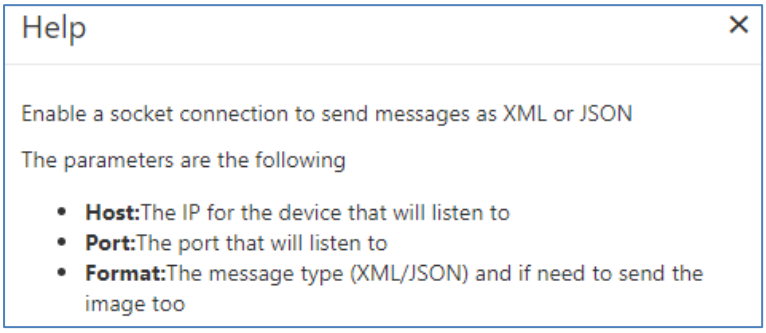


1. Configuring the action ***Socket Client*** because you want to send the results to another device, using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = Socket Client”.



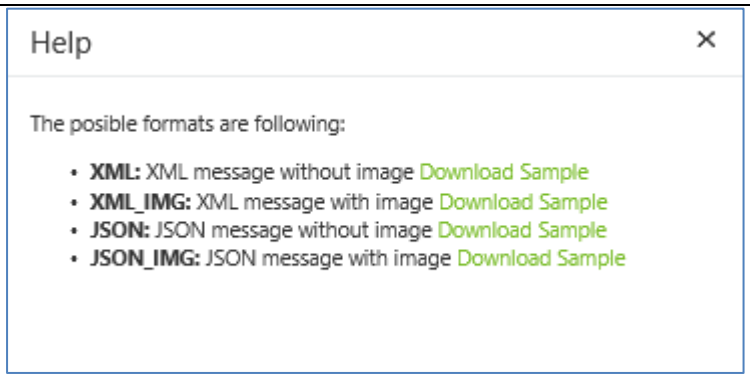
Set the scheduler as needed and click on “SAVE SCHEDULER”.

Action Info: Click on  for more information.

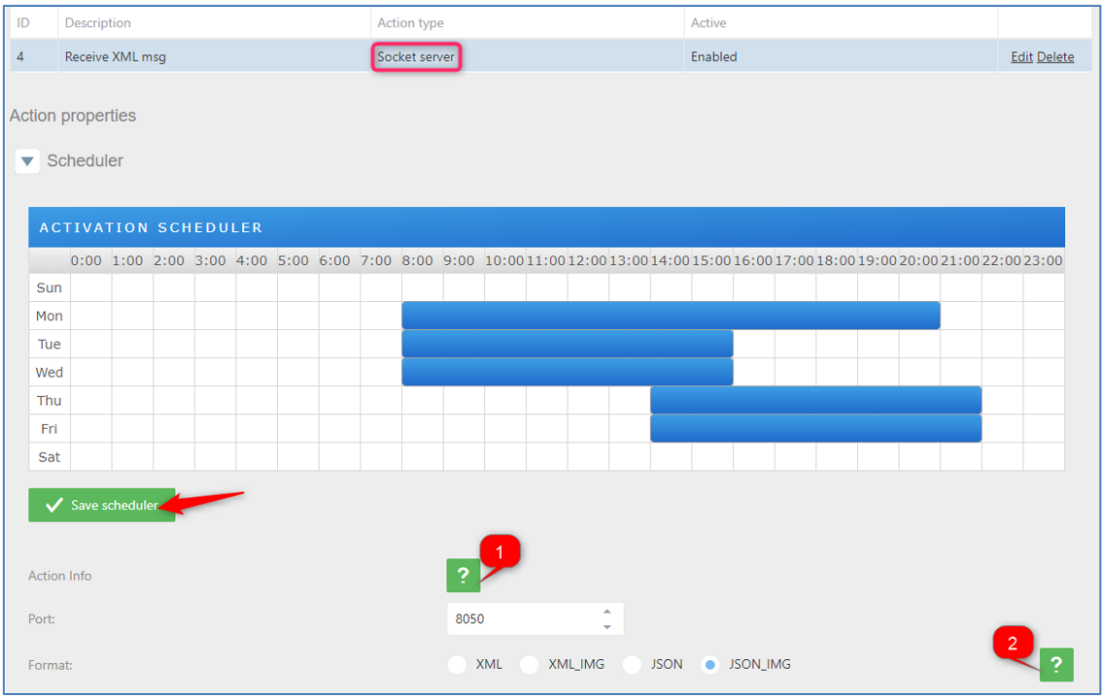


Select which message format you will use to send the information.

Click on  for more information about format type.

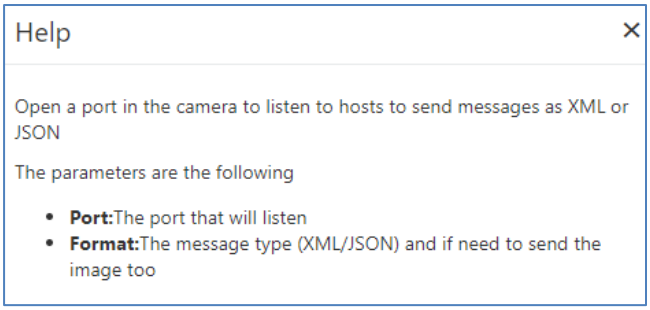

Help
The posible formats are following:
XML: XML message without image Download Sample
XML_IMG: XML message with image Download Sample
JSON: JSON message without image Download Sample
JSON_IMG: JSON message with image Download Sample

2. Configuring the action ***Socket Server*** will use the camera to receive messages from other devices.

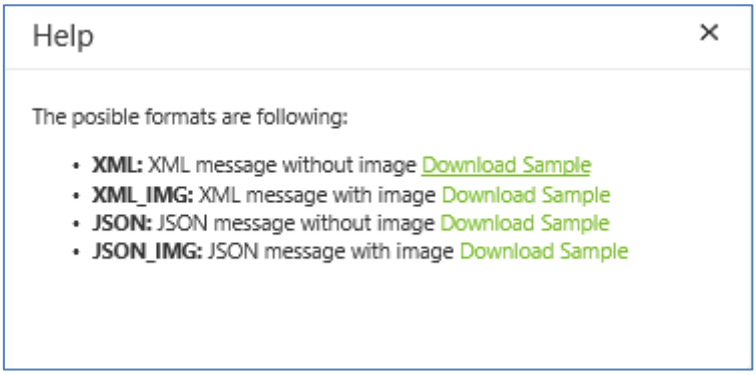


Set the scheduler as needed and click on “SAVE SCHEDULER”.

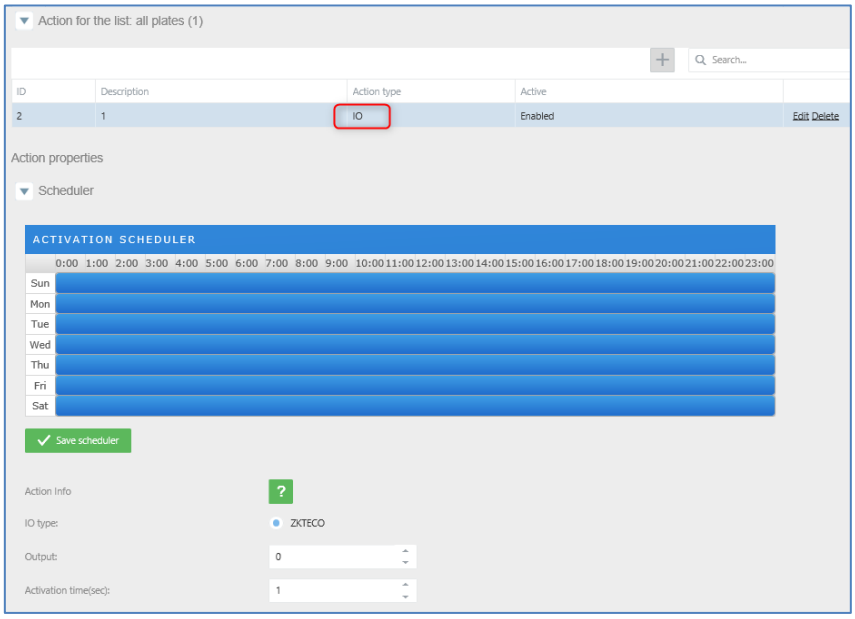
Action Info: Click on  for more information.



Click on  for more information about format type.

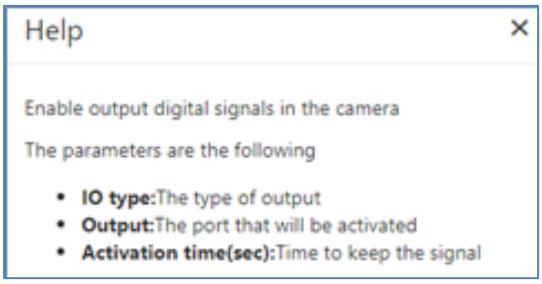


3. Configuring the action ***IO*** to open a gate for those plates that belong to the list EMPLOYEES. Click on “Action for the list” and add a new action pressing “+” and then select in “Action type = IO”



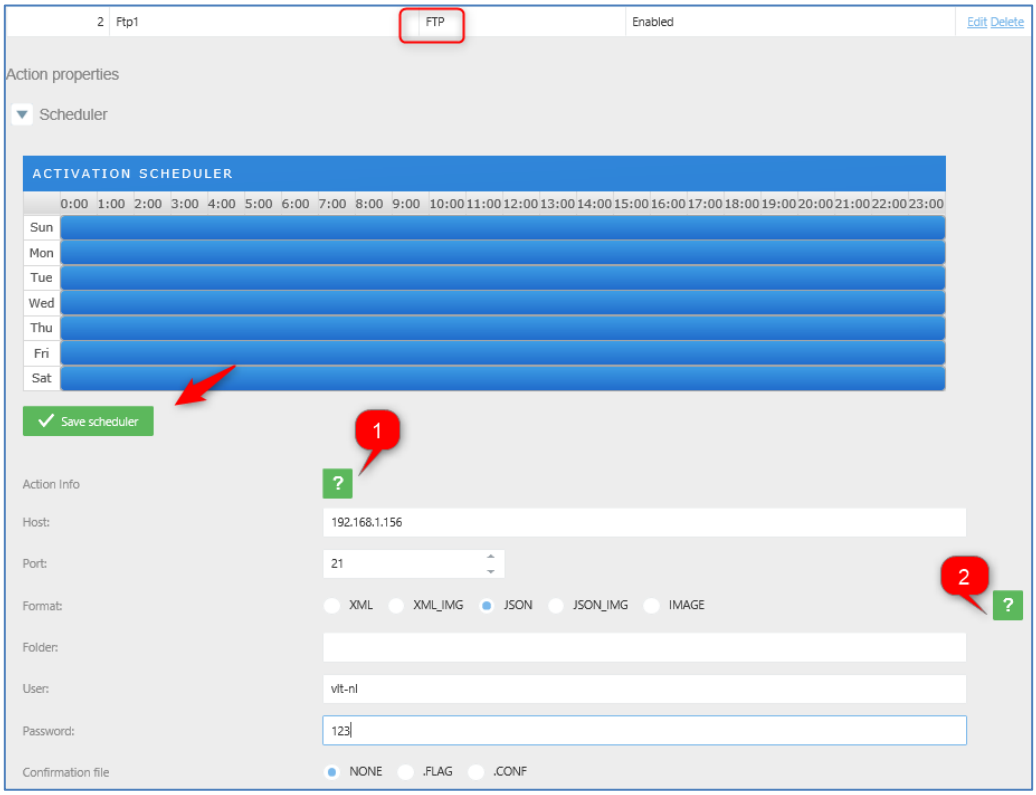
Set the scheduler as needed and click on “SAVE SCHEDULER”.

Click on  for more information about how to configure.



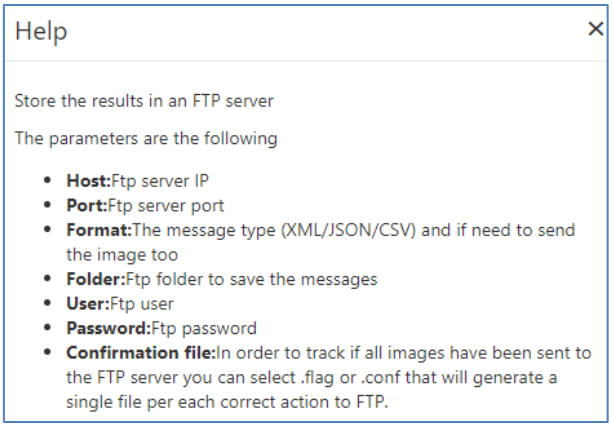
In this case, every time we read a license plate that is in the EMPLOYEES list, we send a signal to the camera I/O to open the gate.

4. Configuring the action ***FTP*** to send an XML, JSON or image to an FTP server. Using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = FTP”



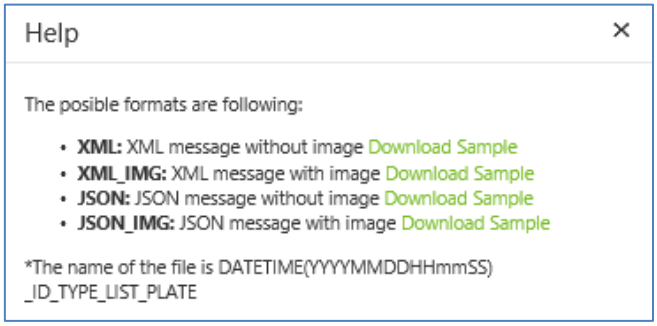
Set the scheduler as needed and click on “SAVE SCHEDULER”.

Click on  for more information about how to configure.



Select which message format you will use to send the information.

Click on  for more information about format type.


Help
The posible formats are following:
XML: XML message without image Download Sample
XML_IMG: XML message with image Download Sample
JSON: JSON message without image Download Sample
JSON_IMG: JSON message with image Download Sample
*The name of the file is DATETIME(YYYYMMDDHHmmSS)
_ID_TYPE_LIST_PLATE

5. Configuring the action ***HTTP*** to send analytic events to a VMS. Using the EMPLOYEES list, click on "Action for the list" and add a new action pressing "+" and then select in "Action type = HTTP"

You can use wildcards in the "Url" param to include some information in the http petition:

#DTE# Time stamp of the image captured.

#IDCAM# Camera identifier

#PLT# Plate number

#CNF# Global confidence

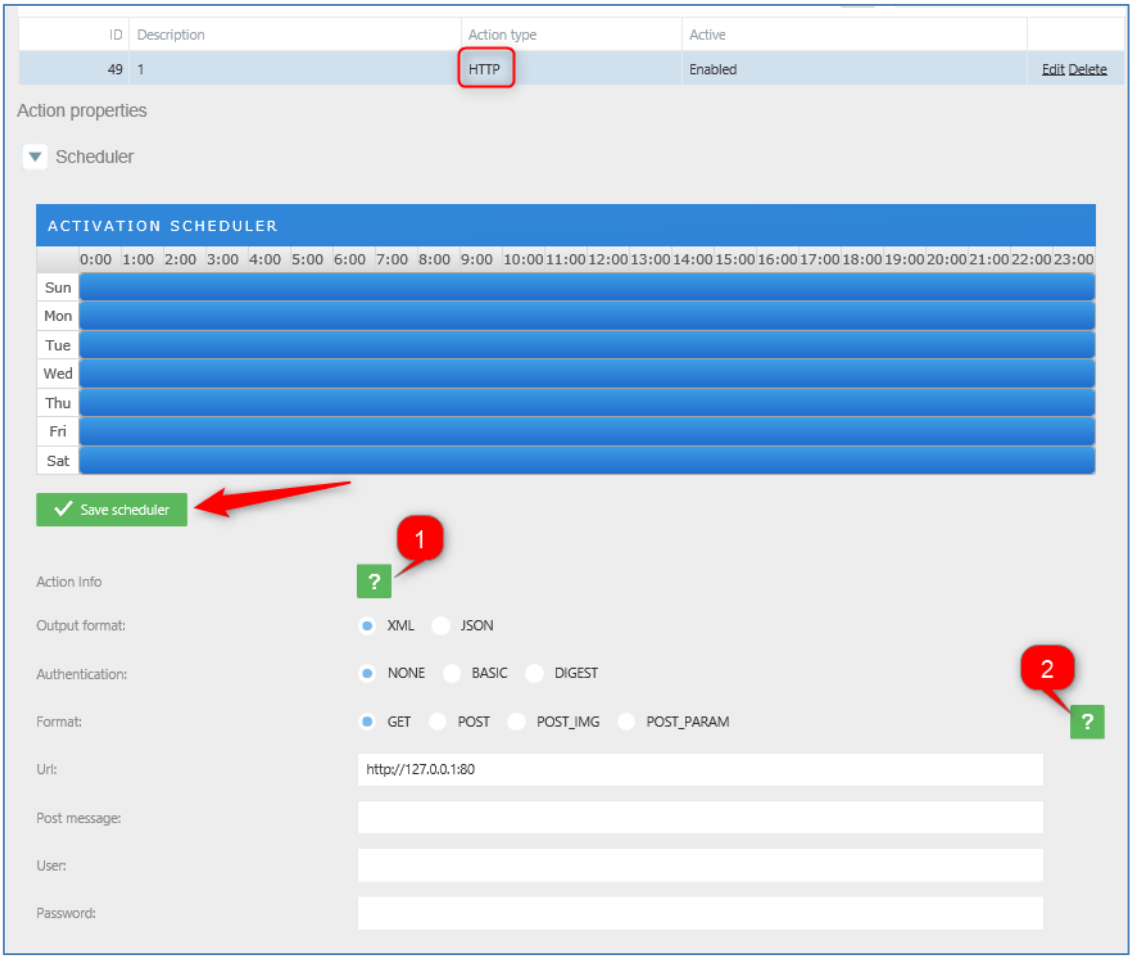
#IDLAN# Lane identifier (1 or 2)

#IDLIST# List of list identifiers separated by []. [-1] not in list

Examples:

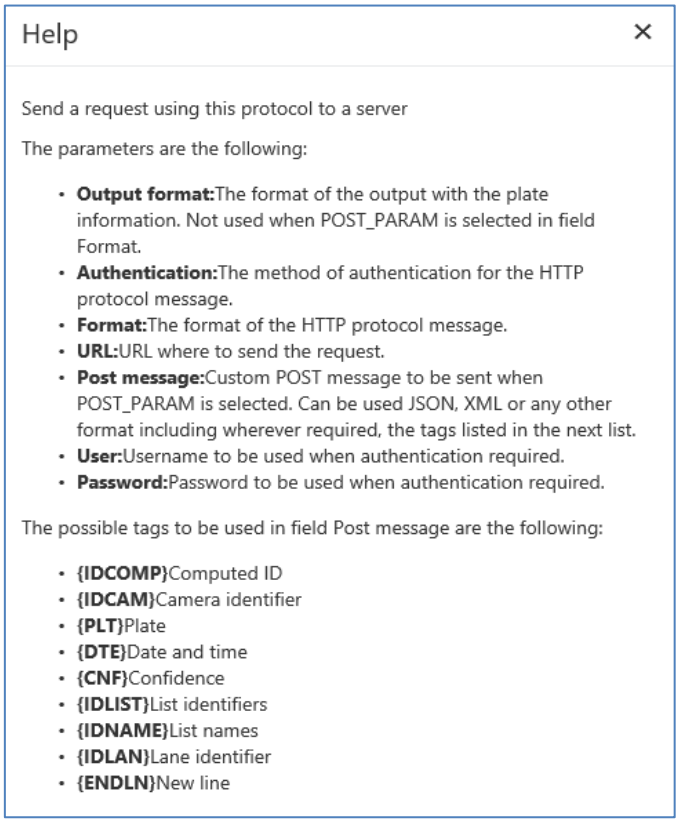
http://192.168.1.23:80?plate=#PLT#&time=#DTE#
http://192.168.1.23:80?plate=0715GYC&time=2019-09-27T18:49:19.912

http://192.168.1.34:8090?plate=#PLT#&cam=#IDCAM#&time=#DTE#&conf=#CNF#&lane=#IDLAN#&list=#IDLIST#
http://192.168.1.34:8090?plate=0715GYC&cam=1&time=2019-09-27T18:52:49.929&conf=99.90&lane=2&list=[-1]

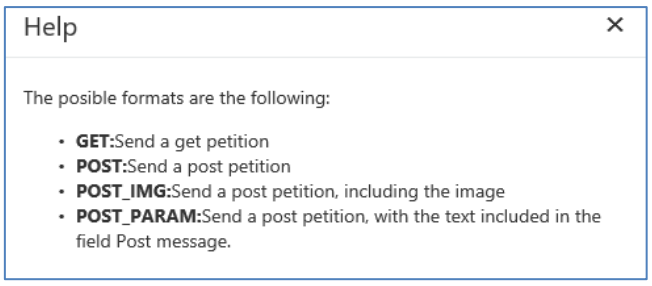


Set the scheduler as needed and click on "SAVE SCHEDULER".

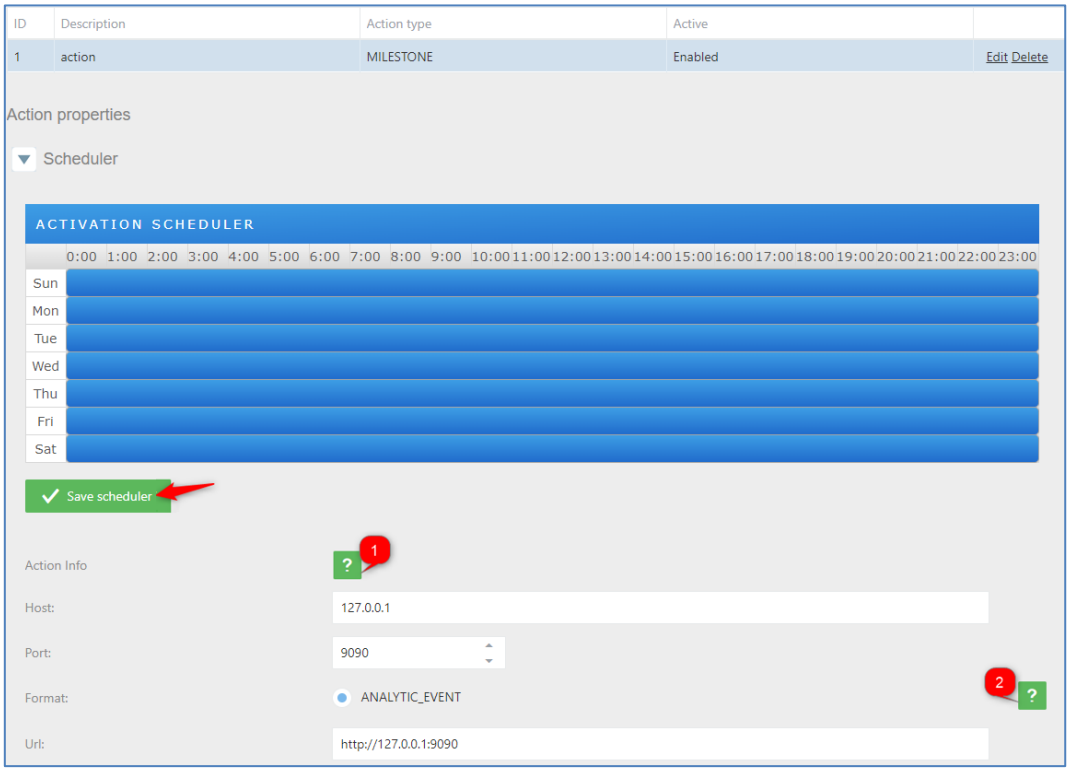
Click on  for more information about how to configure.



Click on  for more information about format type.

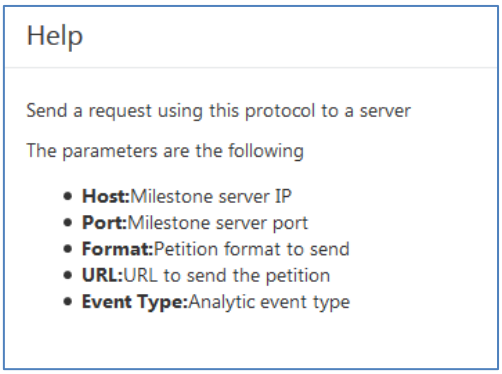


6. Configuring the action ***MILESTONE*** to send analytic events to a Milestone VMS. Using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = MILESTONE”.

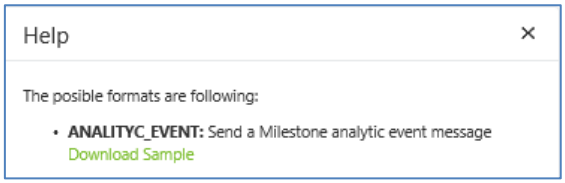


Set the scheduler as needed and click on “SAVE SCHEDULER”.

Click on  for more information about how to configure.

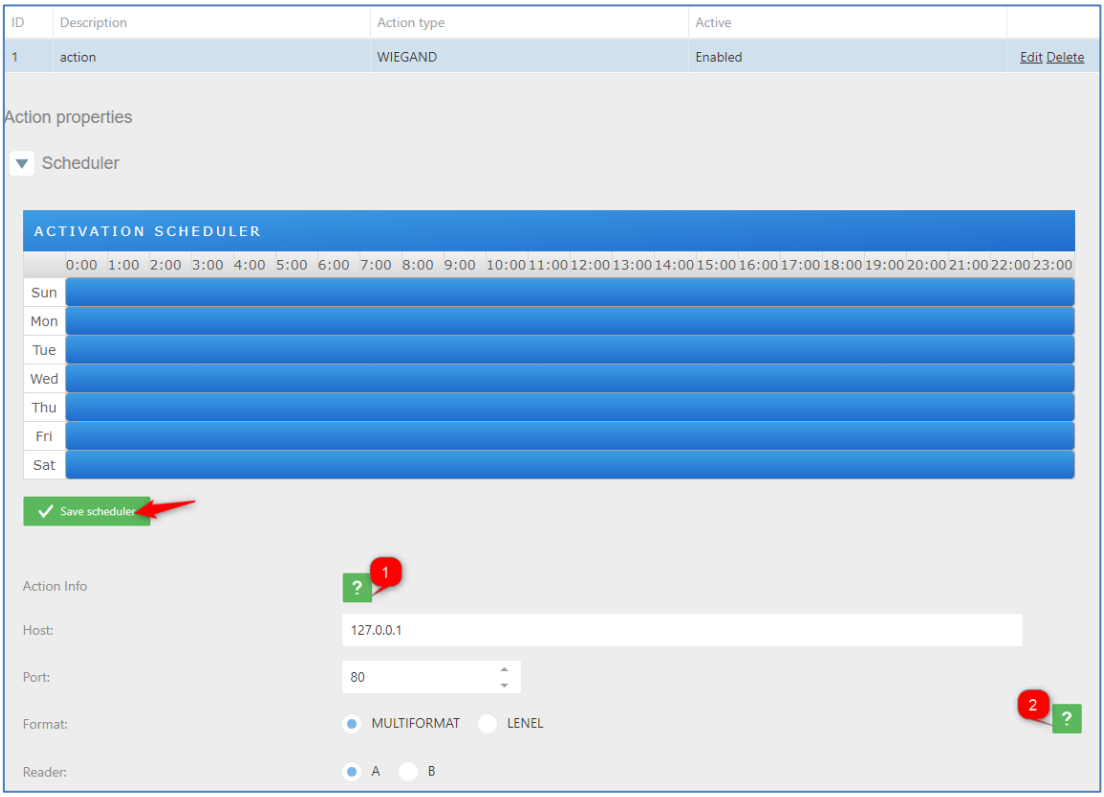


Click on  for more information about format type.



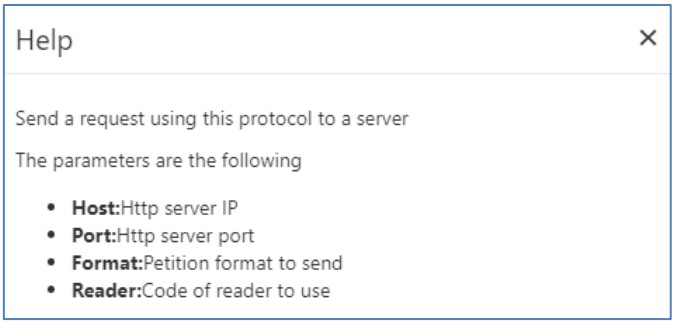
See chapter 4.4.1 to know more information to how configure Milestone.

7. Configuring the action **WIEGAND** to send analytic events to a Wiegand middleware board. Using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = WIEGAND”

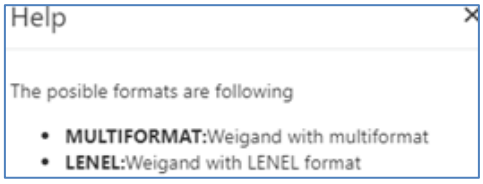


Set the scheduler as needed and click on “SAVE SCHEDULER”.

Click on  for more information about how to configure.



Click on  for more information about format type.



8. Configuring the action **Trigger Server** will use the camera to receive triggers from other devices and send a message. Using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = Trigger Server”.

This mode is designed to work with trigger mode, the client connect to the server socket and send the message specified in the “Trigger mode”, received this message (another message is discarded) make a trigger to the camera an take a picture to process the engine. After engine processed send a message with the format specified in the “Format response”

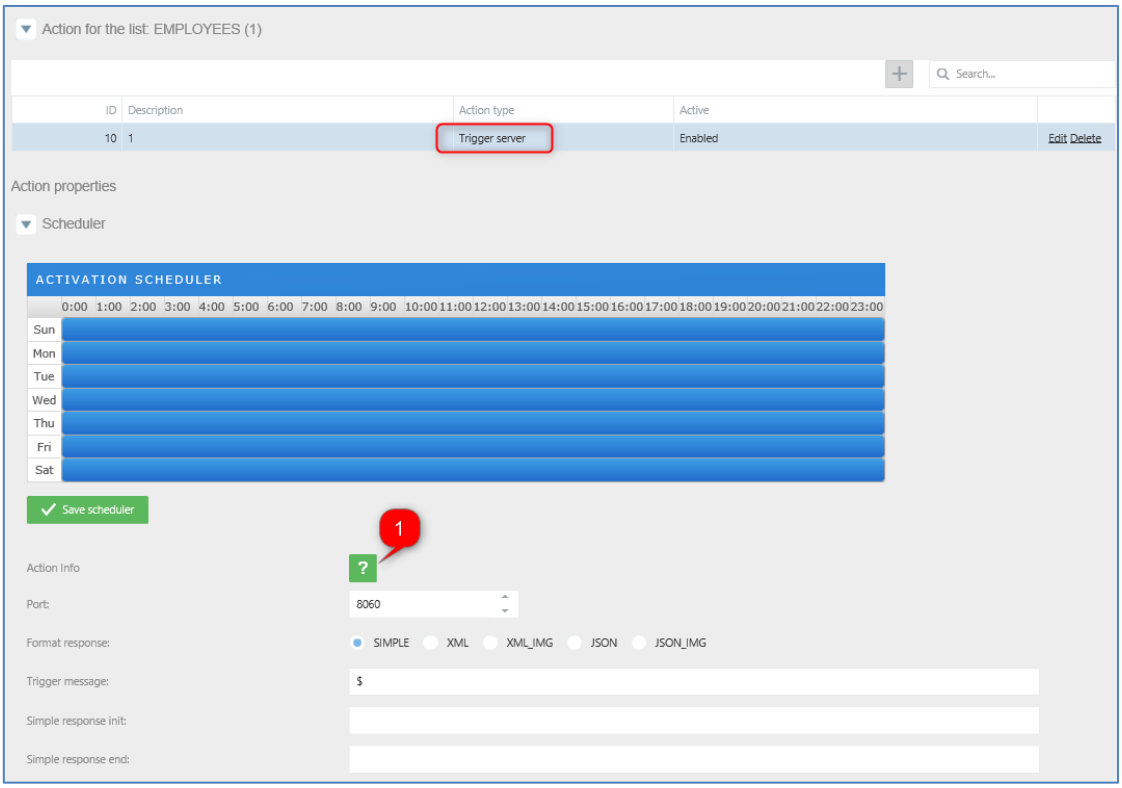
SIMPLE: Just the plate number

XML a message in format XML

XML_IMG a message in XML format including the image in base64 format

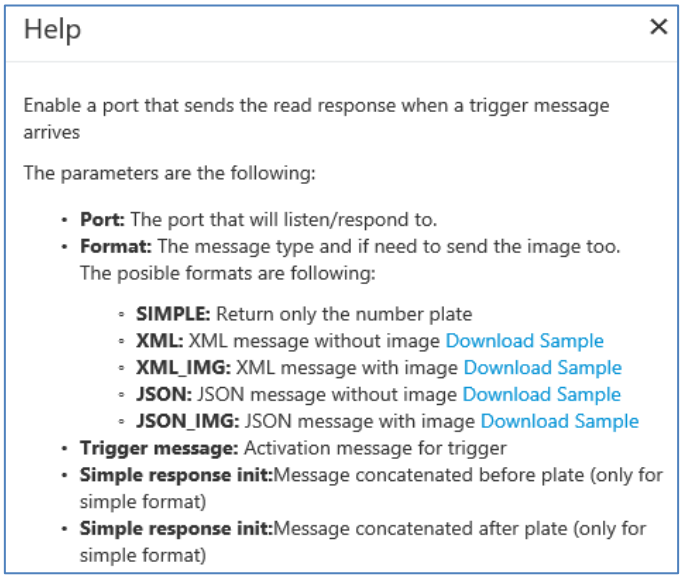
JSON a message in format JSON

JSON_IMG a message in JSON format including the image in base64 format

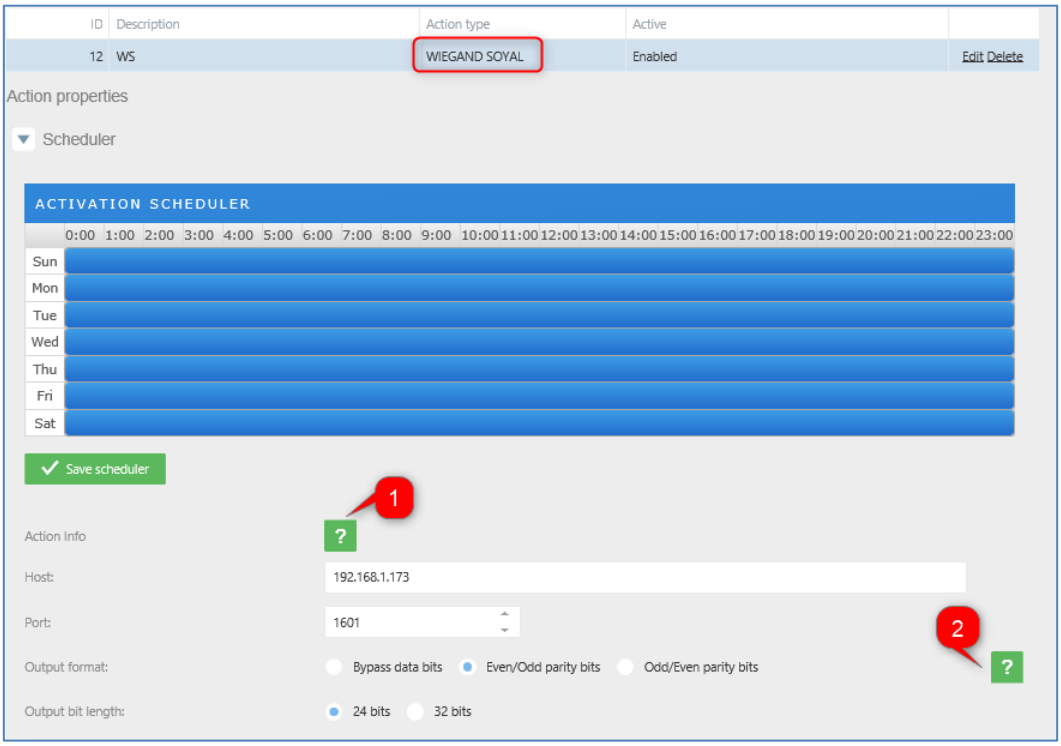


Set the scheduler as needed and click on “SAVE SCHEDULER”.

Click on  for more information about how to configure.

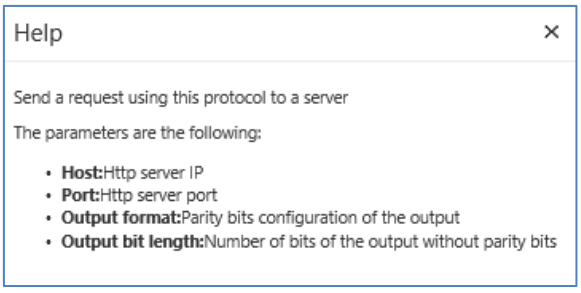

Help
Enable a port that sends the read response when a trigger message arrives
The parameters are the following:
Port: The port that will listen/respond to.
Format: The message type and if need to send the image too. The posible formats are following:
SIMPLE: Return only the number plate
XML: XML message without image Download Sample
XML_IMG: XML message with image Download Sample
JSON: JSON message without image Download Sample
JSON_IMG: JSON message with image Download Sample
Trigger message: Activation message for trigger
Simple response init:Message concatenated before plate (only for simple format)
Simple response init:Message concatenated after plate (only for simple format)

9. Configuring the action **WIEGAND SOYAL** to send analytic events to a Wiegand middleware board. Using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = WIEGAND”.

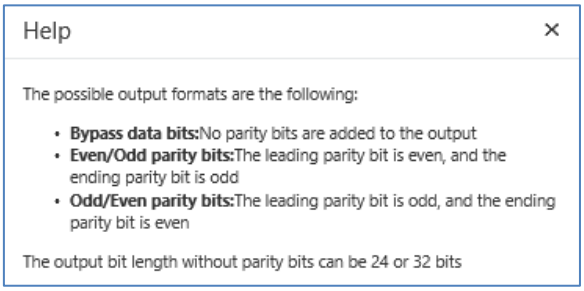


Set the scheduler as needed and click on “SAVE SCHEDULER”.

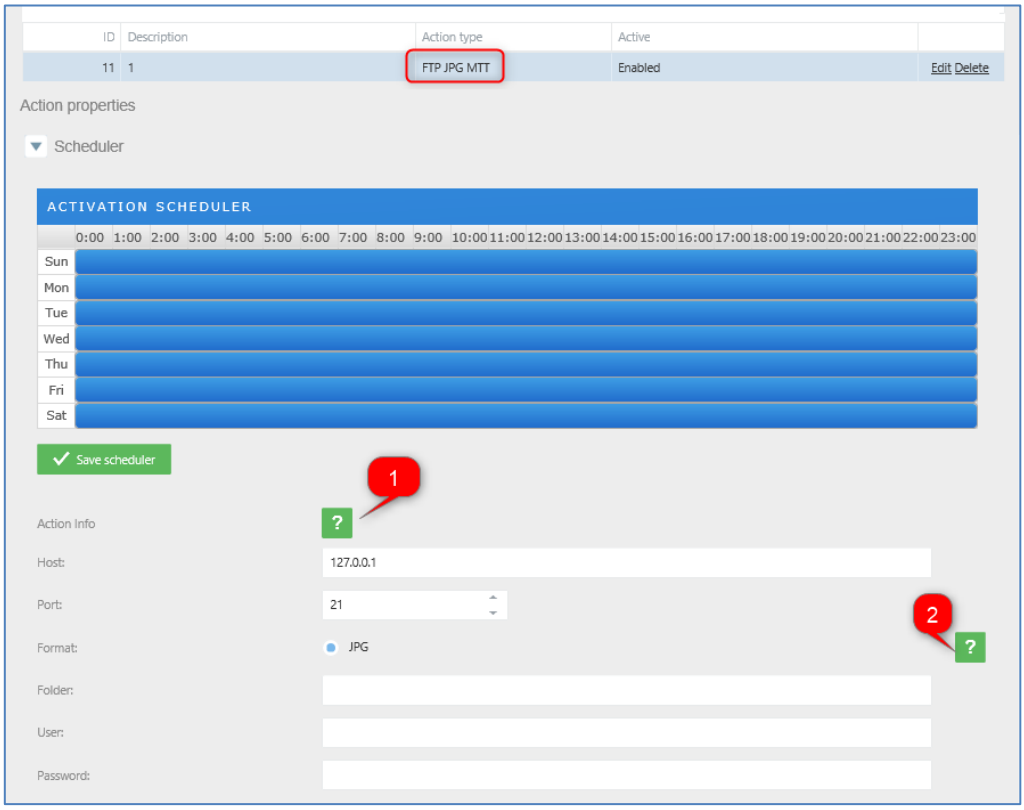
Click on  for more information about how to configure.



Click on  for more information about format type.

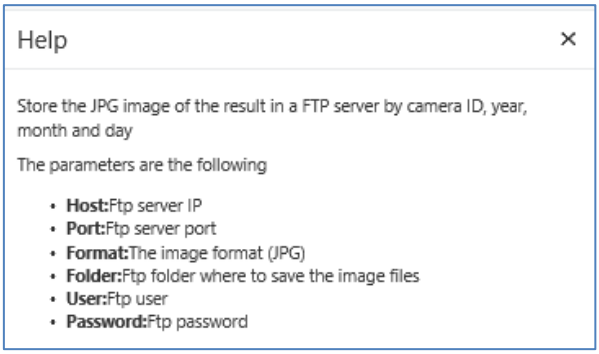


10. Configuring the action **FTP JPG MTT** using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = FTP JPG MTT”.

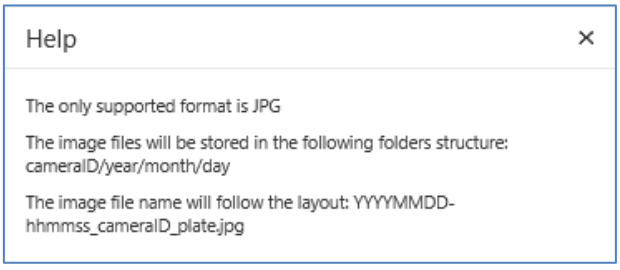


Set the scheduler as needed and click on “SAVE SCHEDULER”.

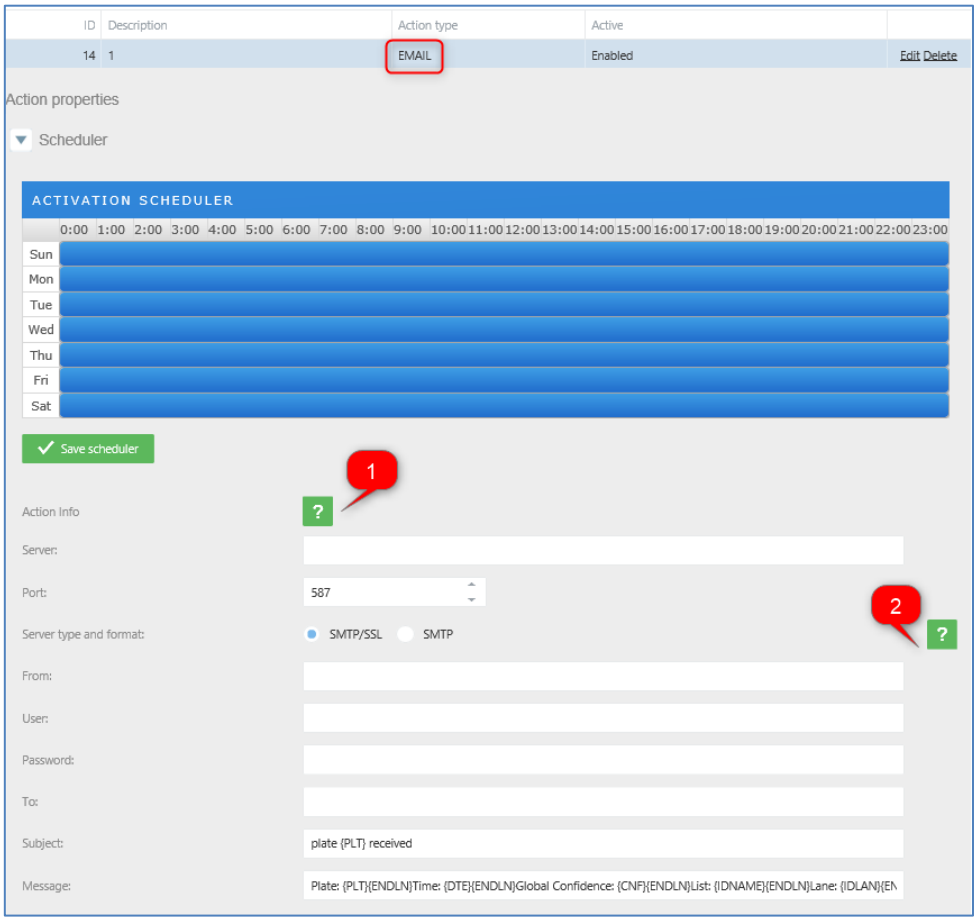
Click on  for more information about how to configure.



Click on  for more information about format type.

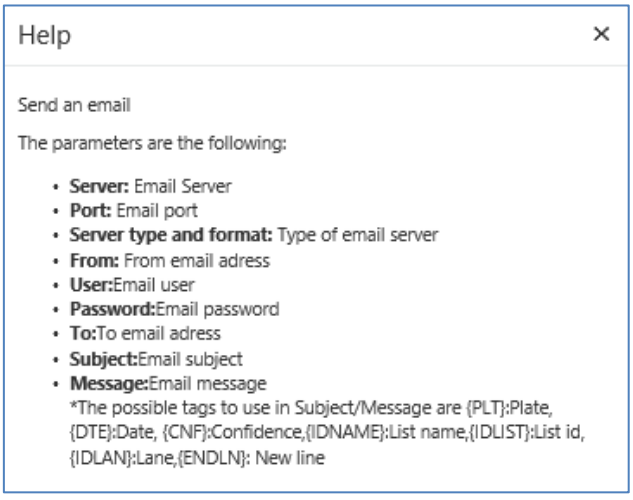


11. Configuring the action **EMAIL** to send messages, using the EMPLOYEES list, click on “Action for the list” and add a new action pressing “+” and then select in “Action type = EMAIL”.

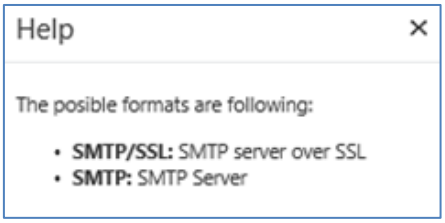


Set the scheduler as needed and click on “SAVE SCHEDULER”.

Click on  for more information about how to configure.

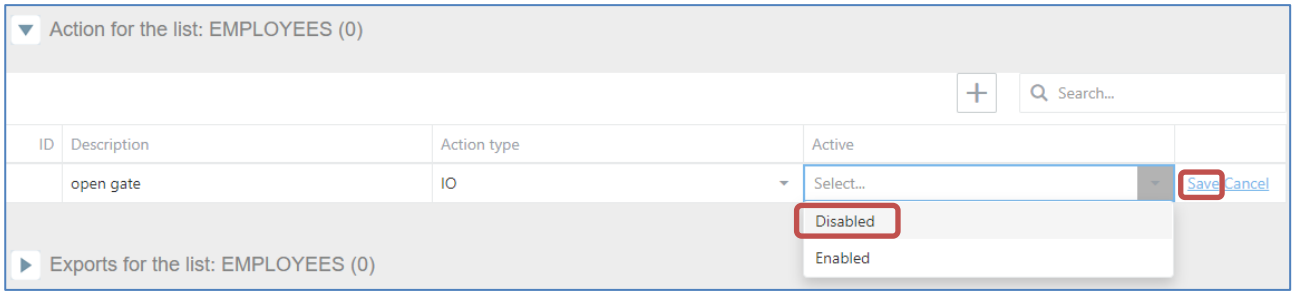


Click on  for more information about format type.

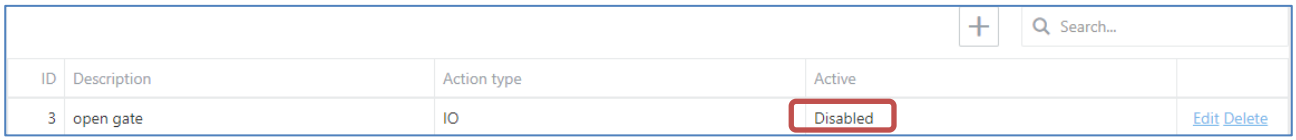


In case, you don't want to continue using an action in a list you can modify able to disable or delete the action.

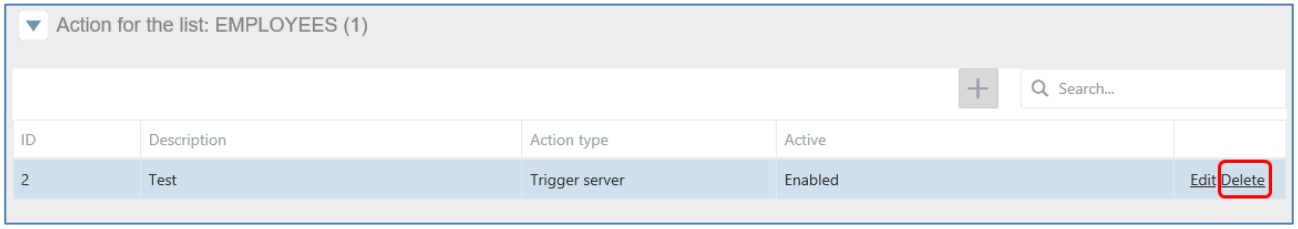
To disable click on the list, select the action and then click on edit option.
In Active change to Disabled and then click on Save.

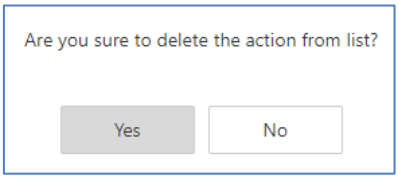


After this change, you will have the action disabled in case you need to use it later.



To delete an action, click on the action and click on the DELETE button and then YES.

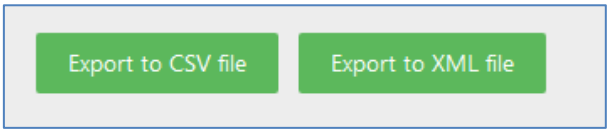




Exports for the list: Here are all the automatic exports we can configure for each list.

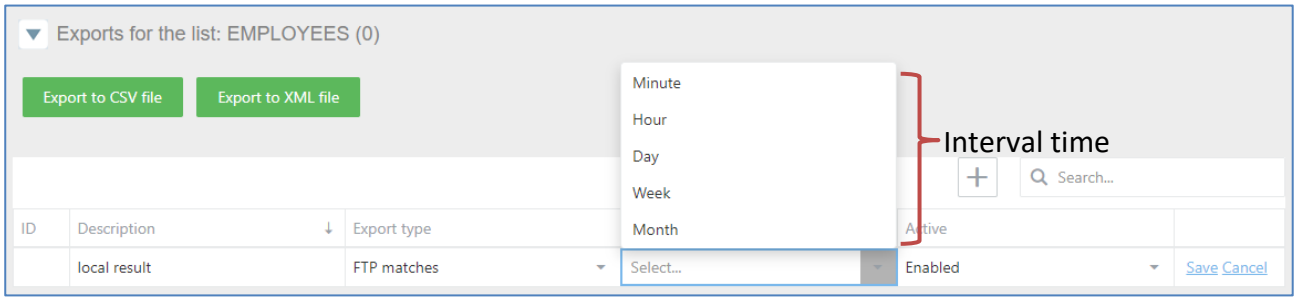
- Local matches: Exports the matches of the list locally
- FTP matches: Exports the matches of the to an FTP server
- Local list: Exports the list locally
- FTP list: Export the list to an FTP server

You can also download the selected list pressing the button “Export to XML file” or “Export to CSV file”

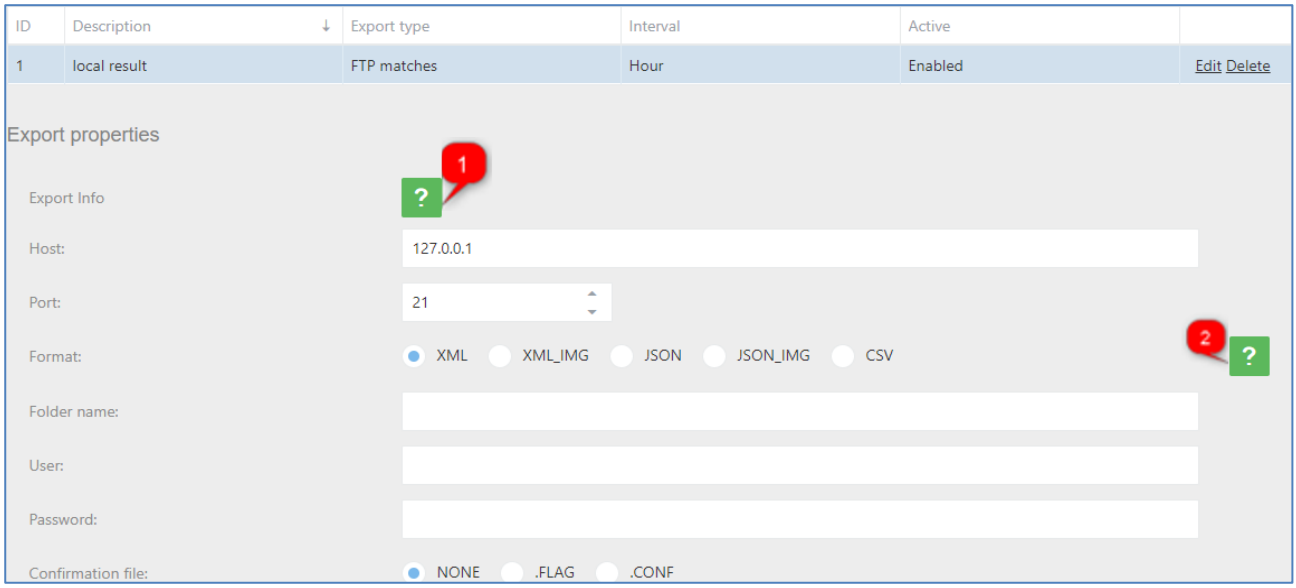


A list can perform several exports, depending on the scenario and needs.
Having the Employees list selected, click on “Exports for the list” and then click on the + button and define the type and interval. The interval can be set as:

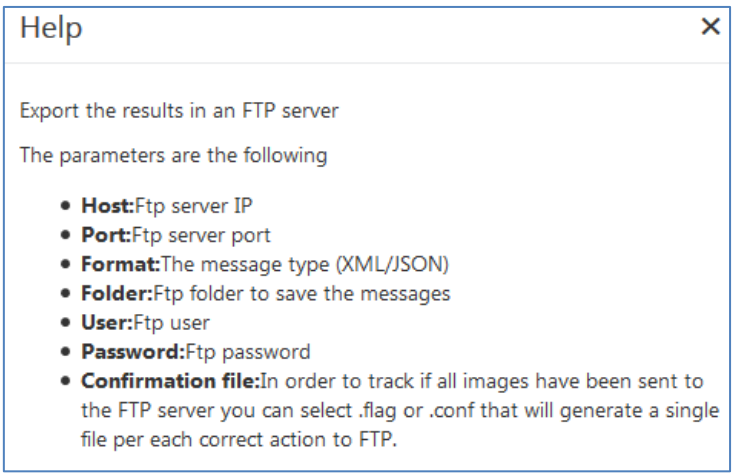
- *Minute:* Will execute the task every minute.
- *Hour:* Will execute the task every hour.
- *Day:* Will execute the task once a day at 23:59:59.
- *Week:* Will execute the task once a week, every Monday at 00:00:00.
- *Month:* Will execute the task once a month, the first day of the month at 23:59:59.



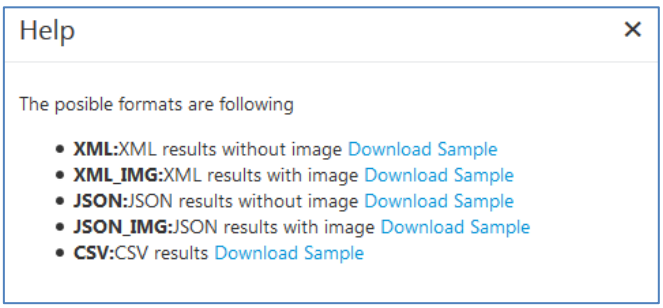
1. Configuring the export ***FTP matches*** to export the results to an ftp result, using the EMPLOYEES list, click on “Export for the list” and add a new export pressing “+” and then select in “Export type = FTP matches”.



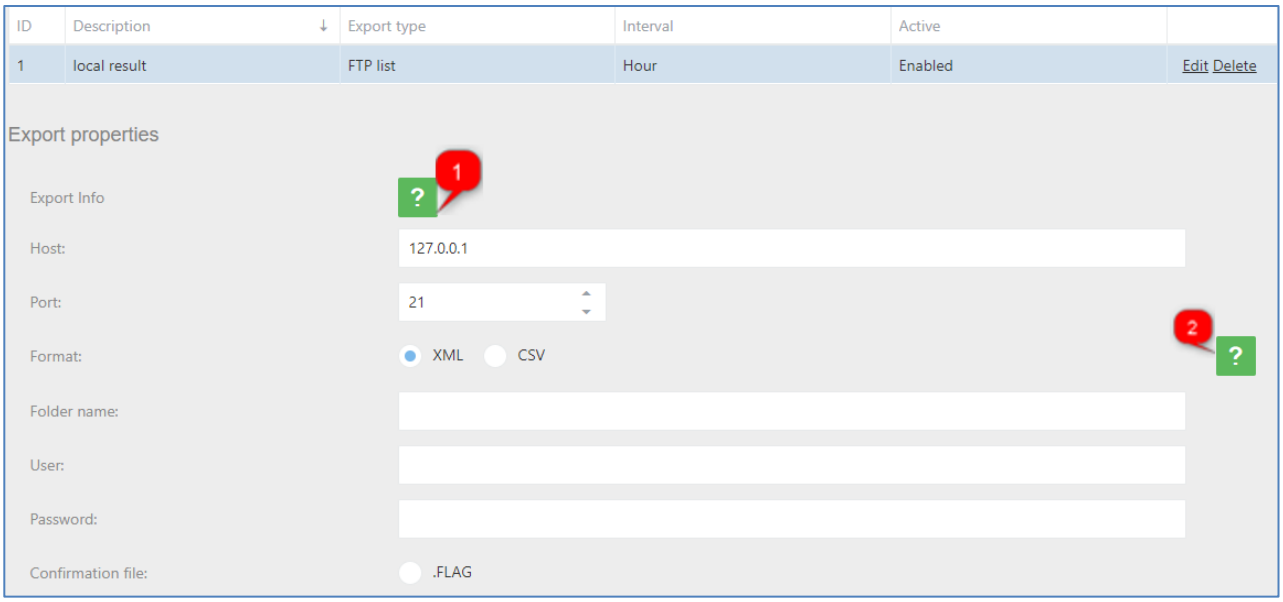
Click on  for more information about how to configure.



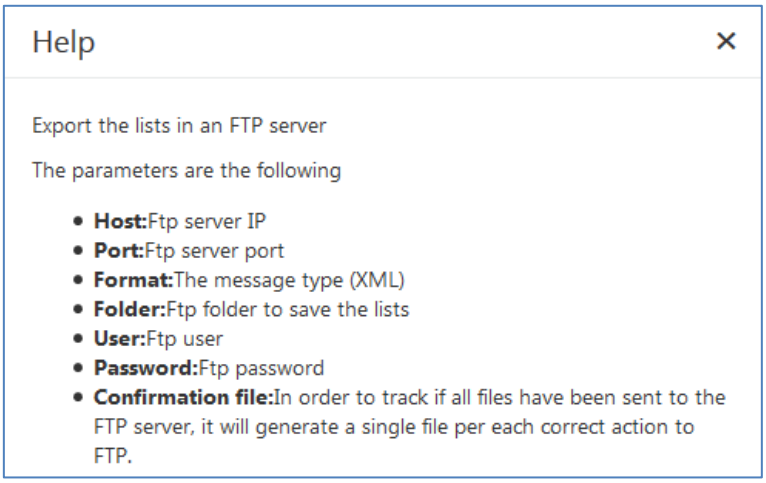
Click on  for more information about format type.



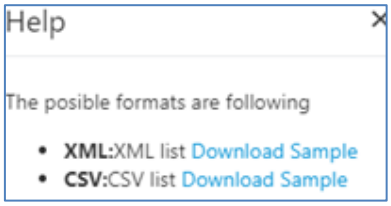
2. Configuring the export ***FTP lists*** to export the list locally, using the EMPLOYEES list, click on "Export for the list" and add a new export pressing "+" and then select in "Export type = FTP list".



Click on  for more information about how to configure.

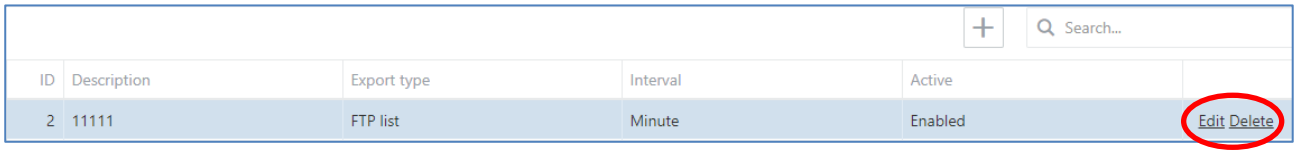


Click on  for more information about format type.

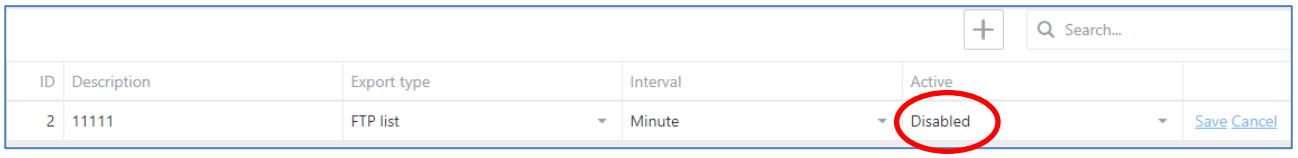


In case, you don't want to continue to use export in a list you are able to disable or delete the action.

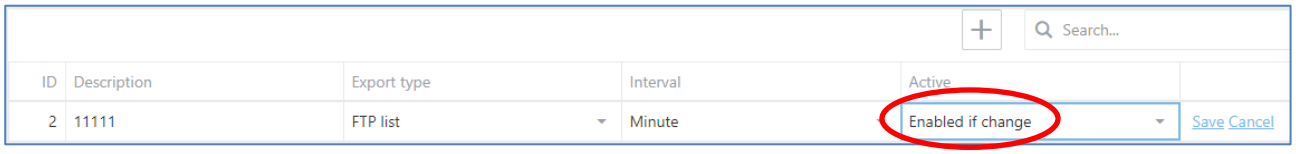
To delete click on the list, select the export and then click on delete option.



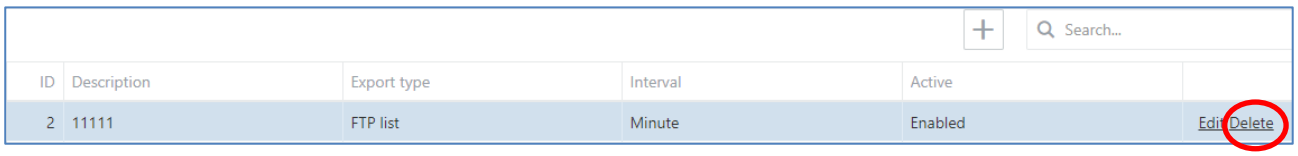
To disable click on the list, select the action and then click on edit option.
In *Active* change to *Disabled* and then click on Save.



After this change, the action disabled in case you need to use it later.
The "Enable if change" state, only do the export if the export type is "Local list" or "FTP list" and export the list only if exits any change.



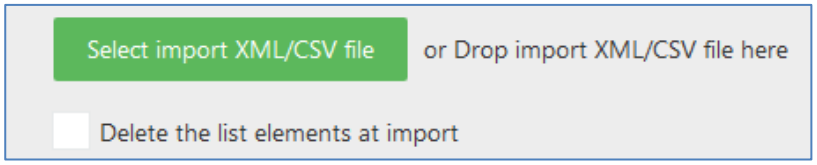
To delete an action, click on the action and click on the DELETE button and then YES.



Import for the list: Here are all the automatic imports we can configure for each list.

- FTP list: Import the list to an FTP server
- SINCRO camera: Import the list from another camera

You can also import the list manually uploading an xml list file.



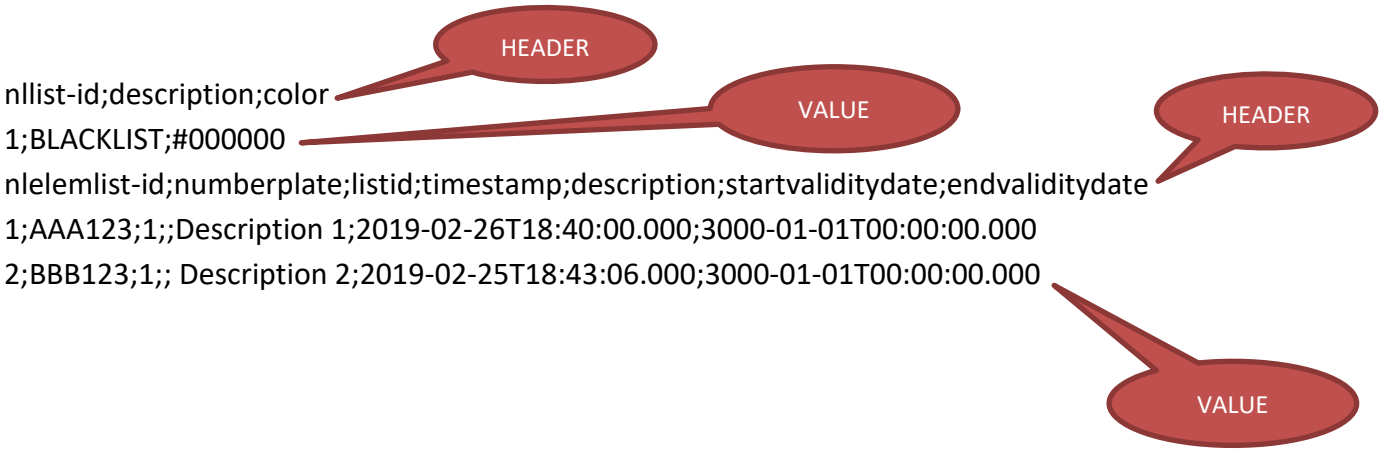
The format of the XML is the following:

```
<?xml version = "1.0" encoding = "utf-8" ?>
<grouplist>
<nllists>
        <nllist id="3" sendserver="0" dateserver="" reserve="" description="EMPLOYEES" color=""/>
</nllists>
<nlelemlists>
<nlelemlist id="1" sendserver="0" dateserver="" reserve="" numberplate="AAA123" listid="3" timestamp="" description="EMP 1" startvaliditydate="2000-01-01T00:00:00.000" endvaliditydate="3000-01-01T00:00:00.000"/>

<nlelemlist id="2" sendserver="0" dateserver="" reserve="" numberplate="BBB321" listid="3" timestamp="" description="EMP 2" startvaliditydate="2000-01-01T00:00:00.000" endvaliditydate="3000-01-01T00:00:00.000"/>

</nlelemlists>
</grouplist>
```

- Grouplist: the main element of the xml
- Nllists: The group of type of lists
- Nlist: The list type element, on:
    - Id= Id of the list
    - Sendserver = Always 0
    - Dateserver= Always “”
    - Reserve = Always “”
    - Description= The name of the list
    - Color = Always “”
- Nlelemlists: the group of the elements of the list

- Nlelemlist: the element in list, on:
  - Id= Id of the element
  - Sendserver = Always 0
  - Dateserver= Always “”
  - Reserve = Always “”
  - Numberplate= Plate number of the element
  - Listid= Id of the list
  - Timestamp= Always “”
  - Description= Description of the plate number
  - Startvaliditydate= Start date of validity period
  - Endvaliditydate= End date of validity period

The format of CSV is the following:



The first block of HEADER-VALUE is the type of list which values are:

- nllist-id: Id of the list
- description: Description of the list
- color: Color of the list (NOT IN USE)

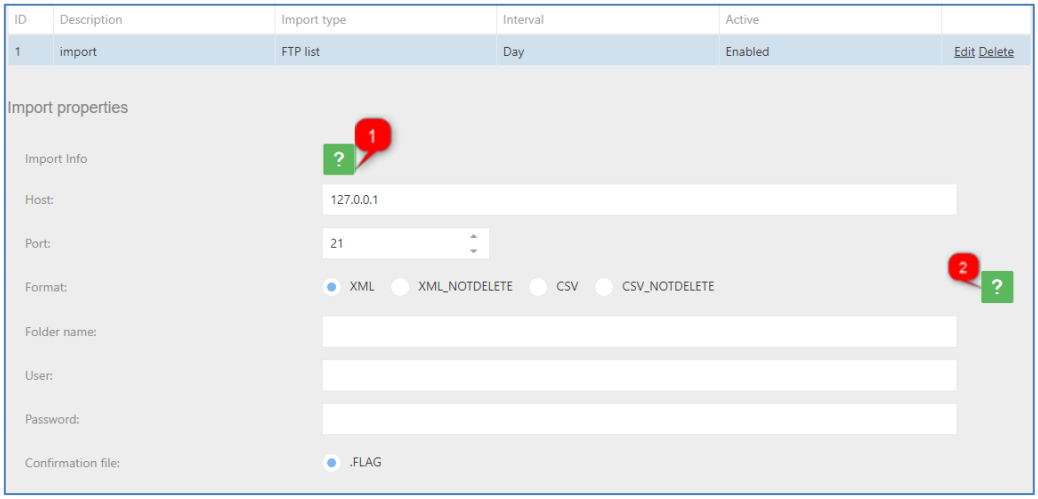
The second block of HEADER-VALUE are the elements of list which values are:

- nlelemlist-id: Id of the list element
- numberplate: Plate number
- listid: Id of list type
- timestamp: Always “”
- description: Description of the number plate.
- Startvaliditydate: Start validity date of the number plate.
- Endvaliditydate End validity date of the number plate.

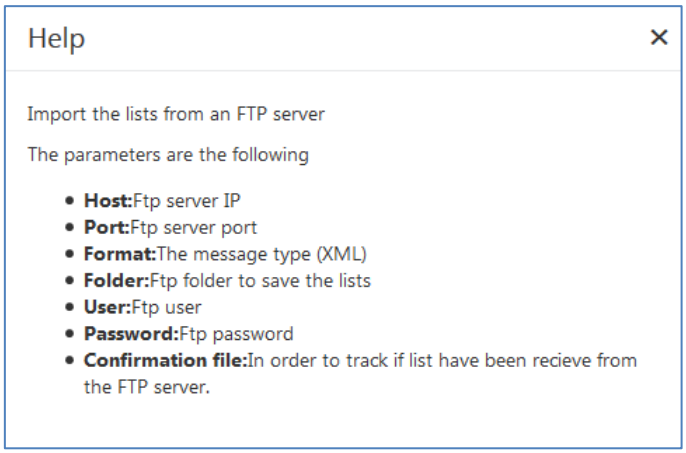
A list can perform several imports, depending on the scenario and needs.
Having the Employees list selected, click on “Imports for the list” and then click on the + button and define the type and interval. The interval can be set as:

- *Minute:* Will execute the task every minute.
- *Hour:* Will execute the task every hour.
- *Day:* Will execute the task once a day at 23:59:59.
- *Week:* Will execute the task once a week, every Monday at 00:00:00.
- *Month:* Will execute the task once a month, the first day of the month at 23:59:59.

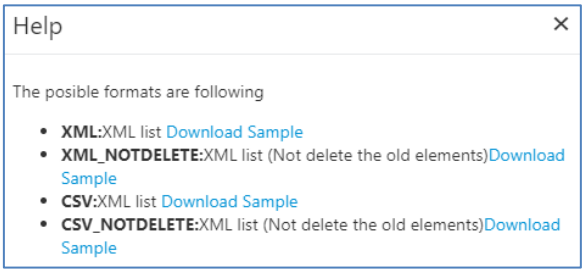
1. Configuring the import ***FTP list*** to import the list from an ftp result, using the EMPLOYEES list, click on “Import for the list” and add a new import pressing “+” and then select in “Import type = FTP list”.



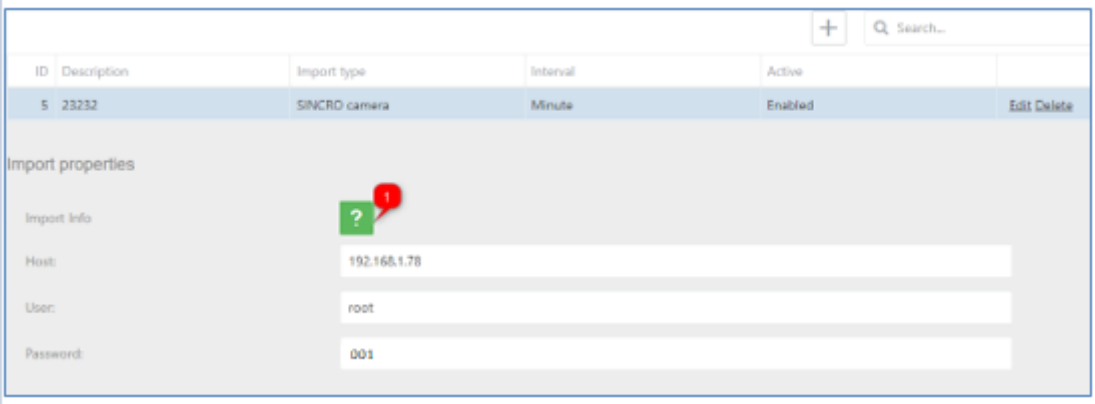
Click on  for more information about how to configure.



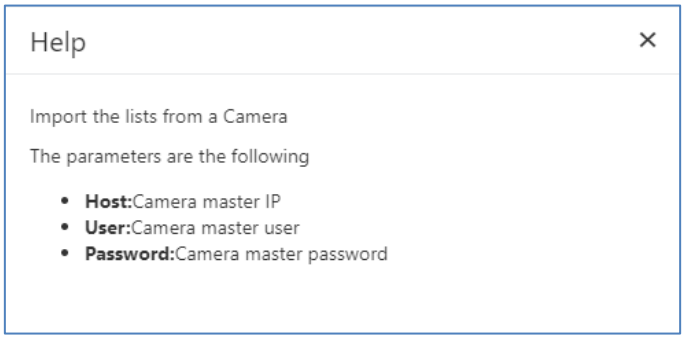
Click on  for more information about format type.



2. Configuring the import ***SINCRO camera*** to import the list from another camera, using the EMPLOYEES list, click on "Import for the list" and add a new import pressing "+" and then select in "Import type = SINCRO Camera".



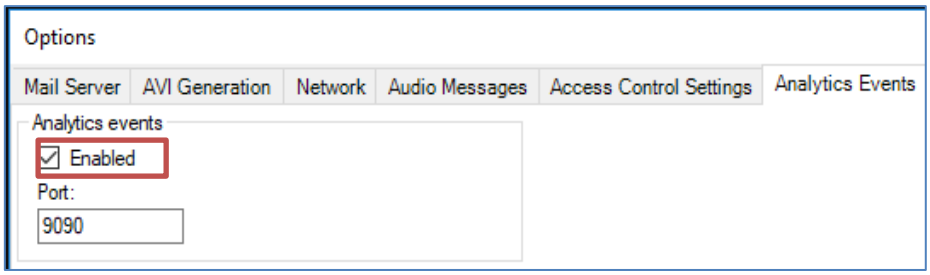
Click on  for more information about how to configure.



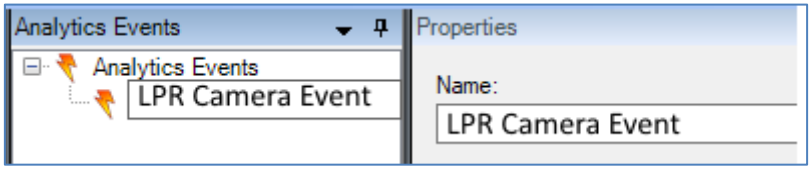
4.4.1 Configure Milestone

Once the Milestone action is configured, we need set up Milestone server to process our action. To do this, we follow the next steps:

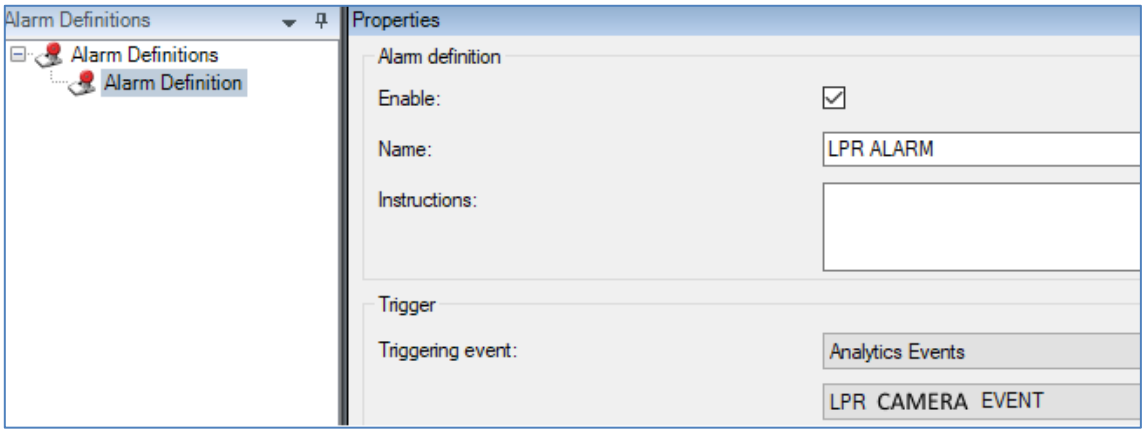
1- Enable analytic events.
   a. We click to Tool -> Options and select the “Analytics Event” tab. At this tab we will active the Analytics events.



2- Create the analytic event.
   a. We do a click at Rules and Events -> Analytics Events. And then right button to create a new analytic event. The name must be the same that defined at Event type of action.

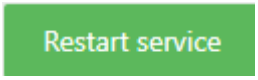


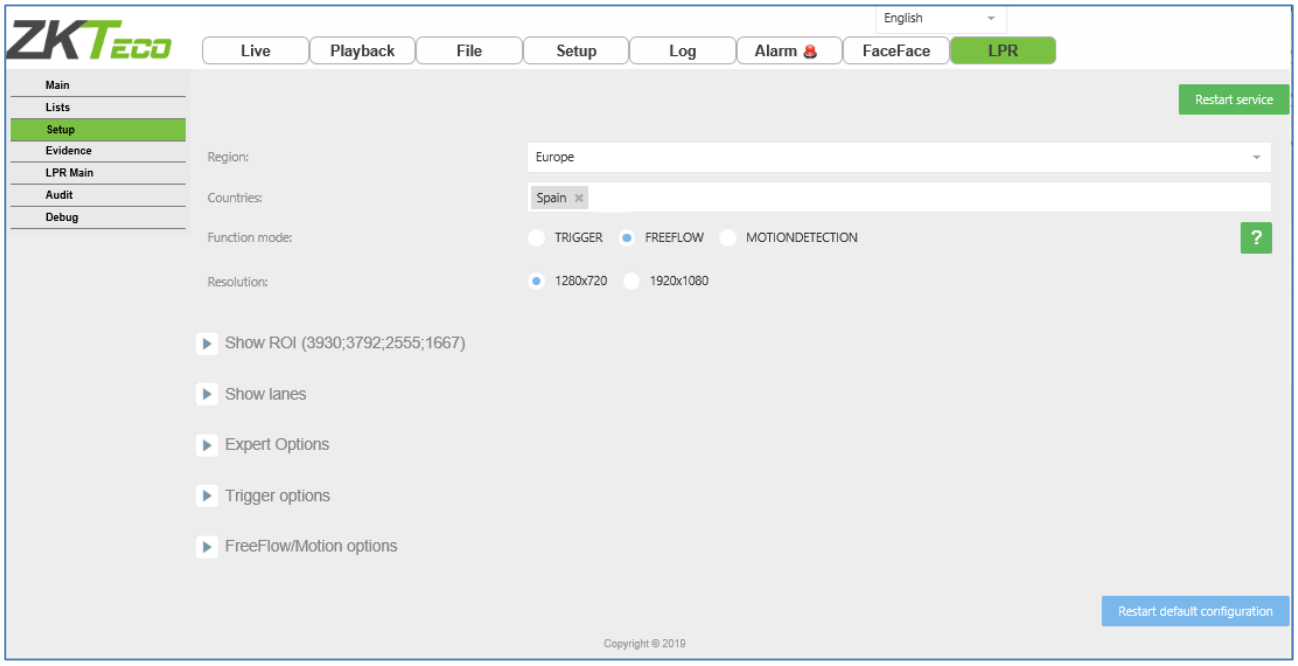
3- Create an alarm definition.
   a. We do a right click at Alarm definition and we create a new alarm definition on:
      i. Enable: This alarm is enabled at system
      ii. Name: The alarm name
      iii. Triggering event: We must select Analytic Events
      iv. Triggering event source: We must select the before created analytic event
      v. Source: We must select the camera at milestone system



4.5. SETUP

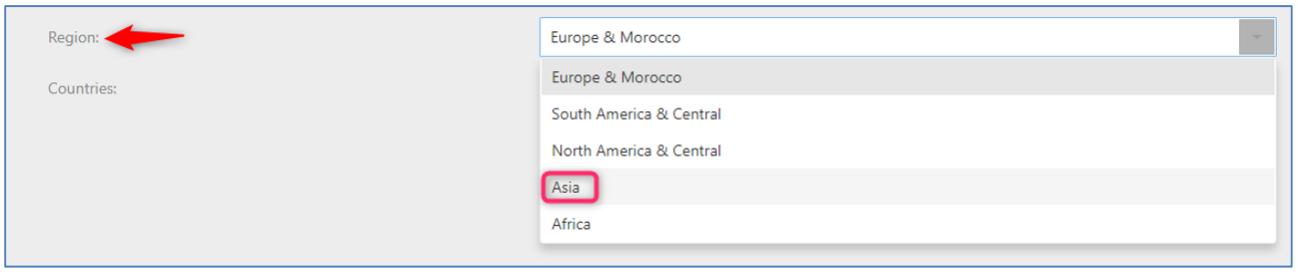
In this tab, we will set the proper configuration for the camera depending on the scenario where will be located (indoor, outdoor) and the necessity (parking, control of access points, security, tolls, road offenses, etc.).

All the options after modified requires a service reset. 

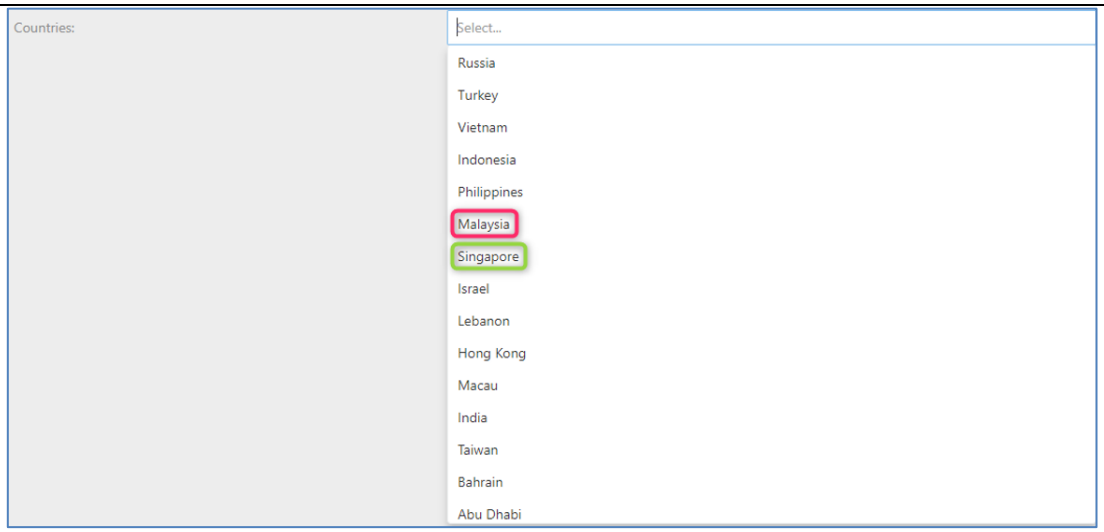


Depending on which region you select it will list the countries in that region. In case the country you are searching for isn't listed please contact to the manufacturer.
Let's configure ZKTeco to read plates from Malaysia and Singapore.

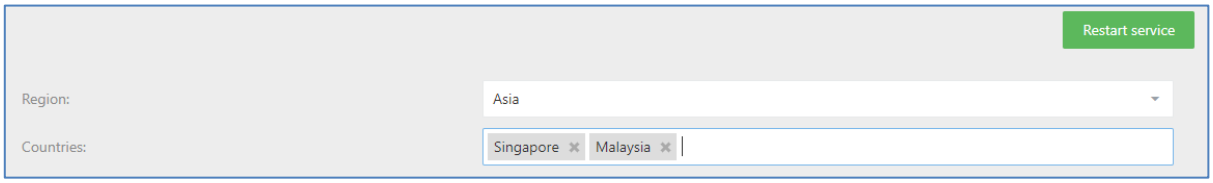
In Region, list and select ASIA



In countries, search and select one by one the countries.

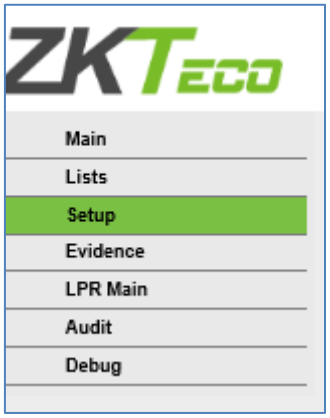


After selecting the countries, restart service clicking on Restart service button.
Now you are ready to read license plates for these two countries.



Next you need to select the camera function mode:
Trigger: The camera will read if a trigger is active such as induction loop, laser, etc.
Free Flow: The camera is continuously processing all the images, is not recommended unless there is a constant flow of vehicles.
Motion Detection (Set by default): The camera will read if detect any change in the image.

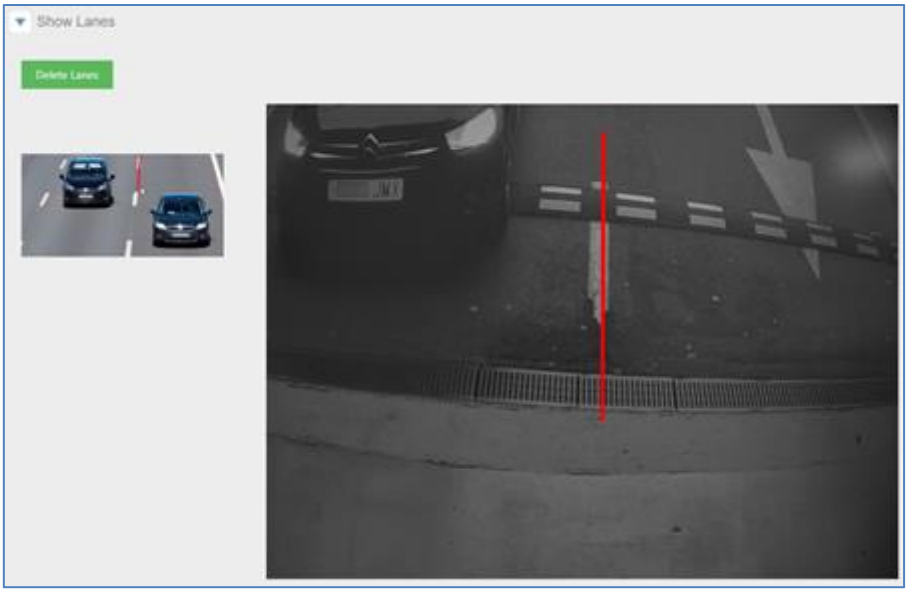
You also need to configure the camera resolution, which image size do you need to process, this will depend on the distance where you will read the license plate. This set up doesn't affect the camera resolution configuration because are independent one from each other.
*Camera resolution set by default is: 1280*720*



Show ROI: Let you draw a *region of interest* in the image, which part of the image do you want to process and read.

Click on “Show ROI”, the wizard will guide you on how to draw it.
Draw 2 points into the road following the steps:
1.- Draw top left point.
2.- Draw bottom right point.
To reset ROI, click on “RESET ROI” button.
Click on the “RESTART SERVICE” button to take effect. Restart service

Show Lanes: Let you draw a line to configure 2 lanes, depending on how you draw the line ZKTeco will consider which lanes are going to be.



Click on “Show Lanes”, the wizard will guide you on how to draw it.

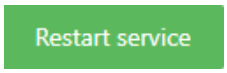
Draw 2 points into the road following the steps:

1.- Draw top point.

2.- Draw bottom point.

To reset ROI, click on “Delete Lanes” button.

Click on the “RESTART SERVICE” button to take effect.



ZKTeco will read the license plate and indicate on which lane they were detected.

Expert Options: Here is the recommended configuration for best performance if Motion Detection (default configuration) is selected.

Minimum character height: Minimum character size. Very useful for cases where you want to ensure a minimum character size. 25 being the recommendation

Maximum character height: Maximum character size. Very useful for cases where you want to ensure a maximum character size.

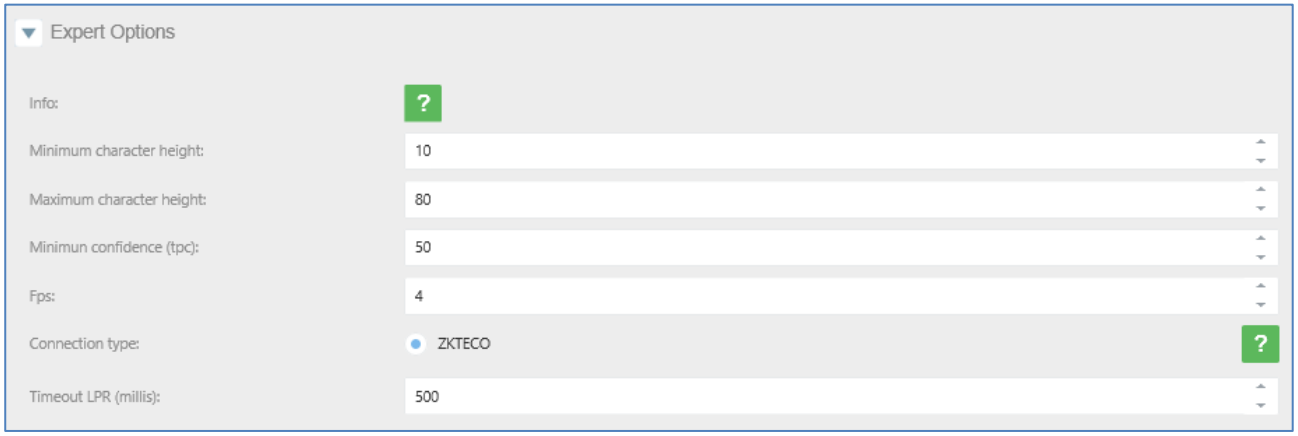
Minimum Confidence (%): Minimum reliability in the reading of a license plate to consider it valid. Reliability is a parameter returned by the engine for recognizing license plates (value of 1-100, where 100 is the most reliable). 80 being the recommendation

FPS: Maximum frames per second to process. 5 being the recommendation

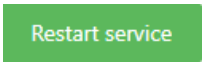
Connection Type: You need to select the option, how you will get the image to process

ZKTeco: Camera streaming.

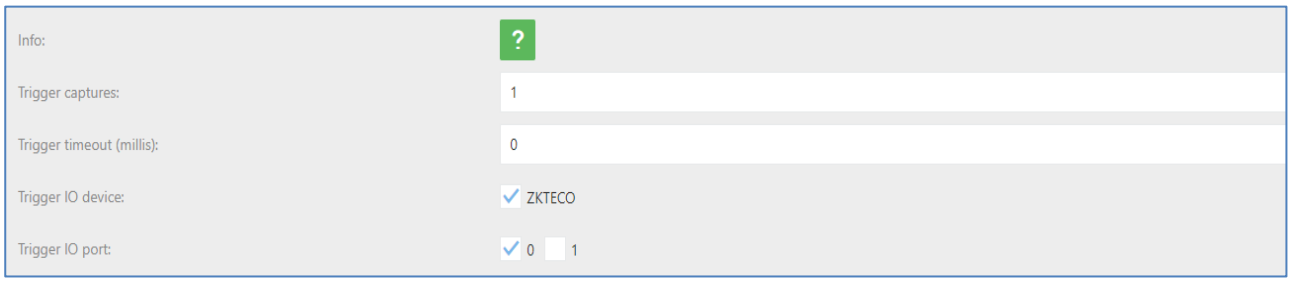
Timeout LPR (millis): This value is the maximum time for the LPR recognition, the default value 0 is not limited. When the process is upper the time stop and send the best result found until this moment.



Click on the “RESTART SERVICE” button to take effect.



Trigger Mode: ZKTeco is normally in an idle state. When a trigger command is received, it performs a variable number of captures, depending on configuration, and returns a result. Results from different triggering events are independent of one another, that is, if the same vehicle, is still present on a second trigger command, the same license plate will be returned a second time. On every trigger, it performs captures until the number exceeds NCaptures, or the time exceeds Timeout.

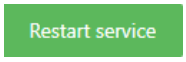


Trigger Captures: How many images do you want to process and read license plates to stop. In case to use the capture option, the trigger timeout must be 0.

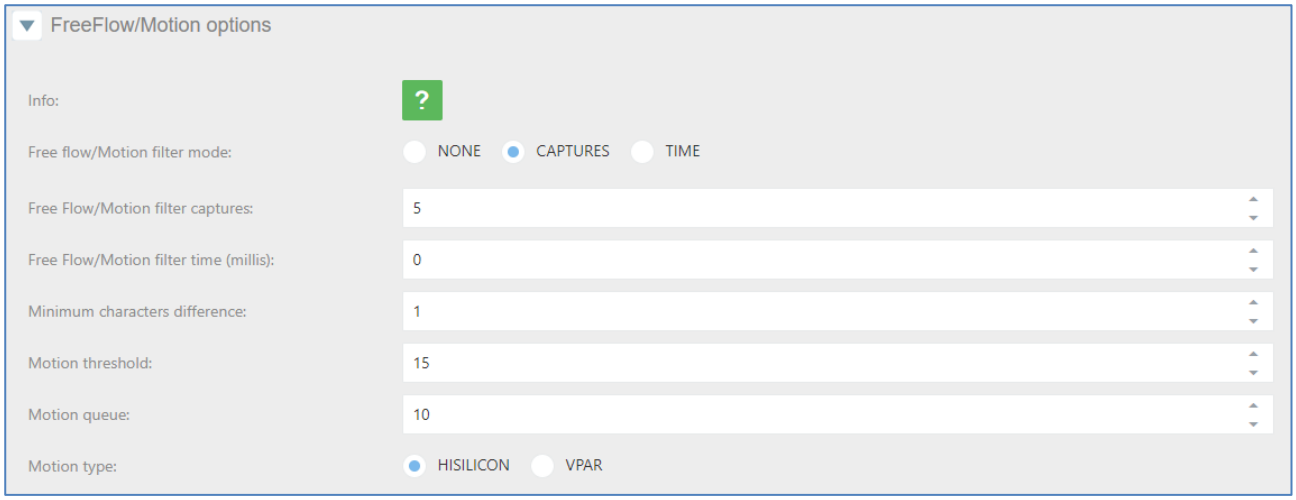
Trigger Timeout: How many seconds do you want to process and read license plates to stop. In case to use the timeout option, the trigger captures must be 50.

Trigger IO Device: If selected, the Digital Input ports will activate.

Trigger IO Port: Choose which digital input port you will use.

Click on the "RESTART SERVICE" button to take effect. 

FreeFlow/Motion options: ZKTeco continuously runs OCR on the receiving frames. Whenever a new vehicle enters the scene, a new result is sent through the notification socket.



In the FreeFlow/Motion option you can define repetition filters.

Free Flow/Motion filter captures: For a result to be considered valid, the last license plate read must not be among the last N recognized as valid. This filter is useful for traffic jams, where the cameras may be reading N license plates continually in a closed cycle.

Free Flow/Motion filter time (millis): Minimum time elapsed from the detection of the same license plate to it being accepted again in the system.

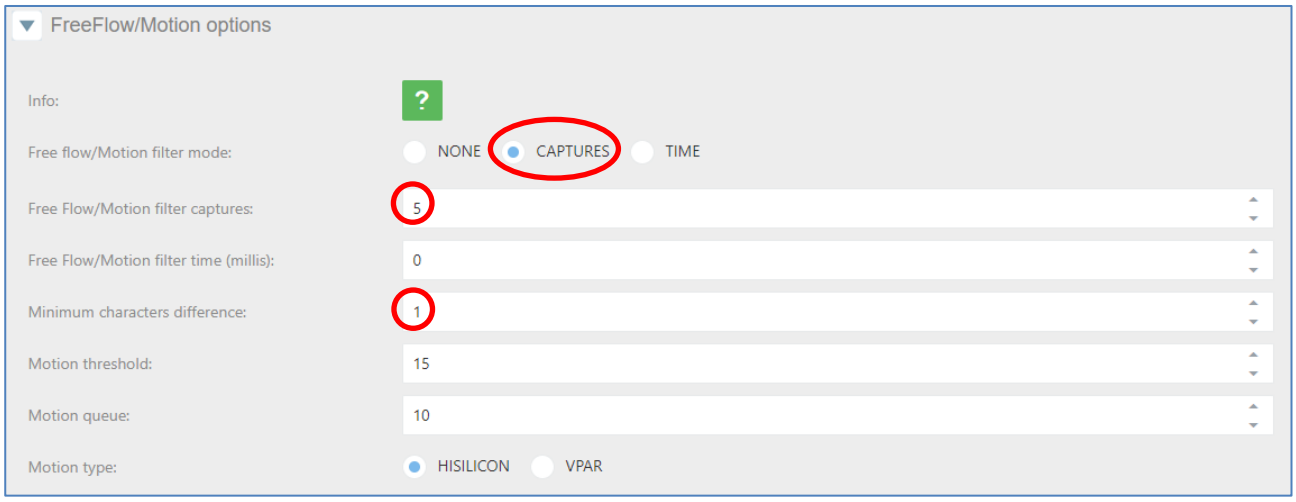
Minimum characters difference: Is the number of characters between two plates to consider a plate different (AAAA to AAAB is 1 character different)
Motion threshold: Is the sensibility value for the VPAR motion.
Motion queue: Is the number of images stored in a queue to process in MOTION mode.
Motion type: The type of imagen comparison in MOTION mode.

VPAR: Using the LPR library.

HISILICON: (default) New process using the HISILICON processor.

For example, you have the camera in a Parking and there is a traffic jam, you don't want to read the same license plate over and over, in that case, the best filter is for captures, please do the following.

Having selected, Free Flow mode, click on "Free Flow options", click on "Free Flow filter mode" and select the filter "captures"



With this configuration, once a license plate is read, won't be read again until another 5 different license plates have been read. The difference between plate has to be more than 1.

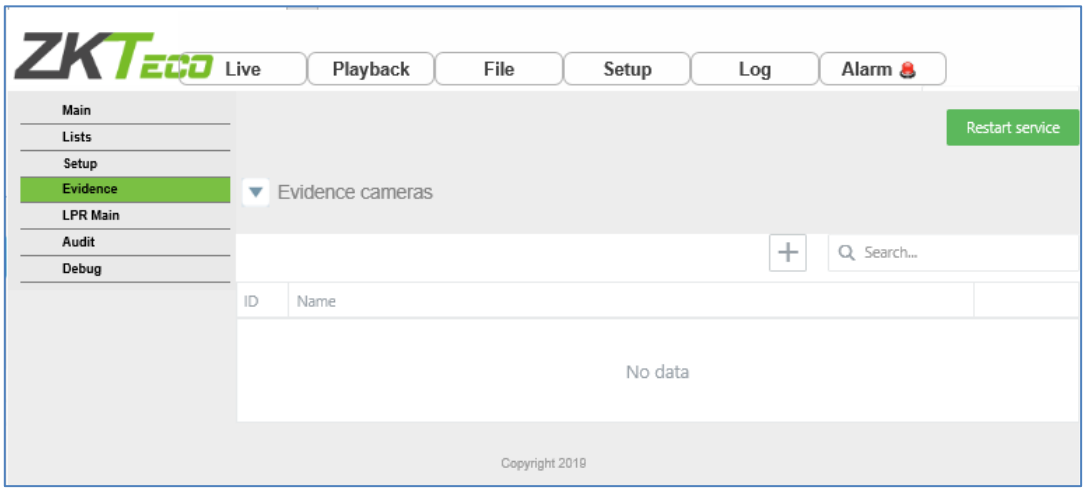
The motion threshold is the threshold to consider an image different from other image, for the motion mode. Value from 0 to 100.

After all, changes are done, remember always to restart service, clicking on Restart service button.

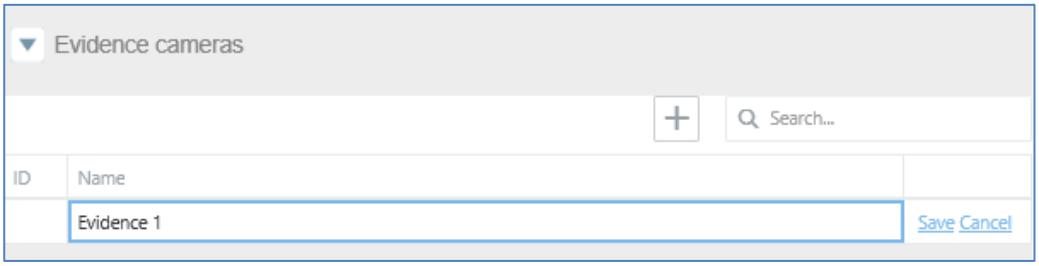
If you need to restart all configuration for this section, click on Restart default configuration button.

4.6. Evidence

In this tab, configure the Evidence Camera:

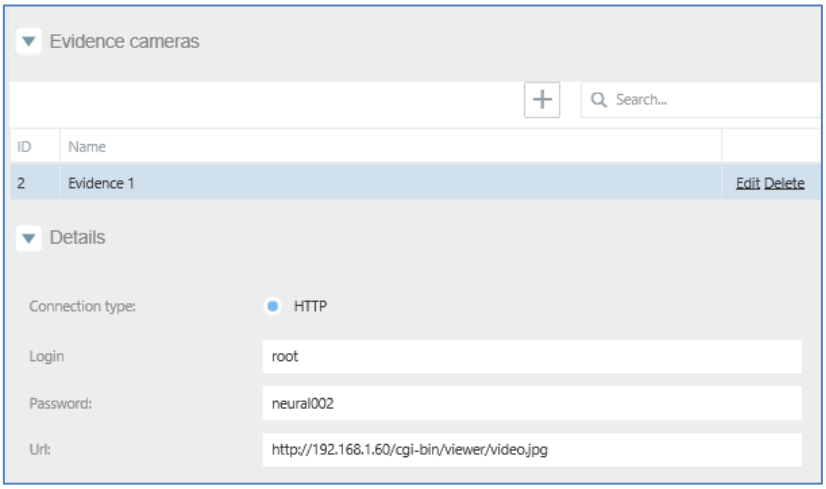


To add a new evidence camera: Click on the "+" button, text the evidence camera name and click on "Save".



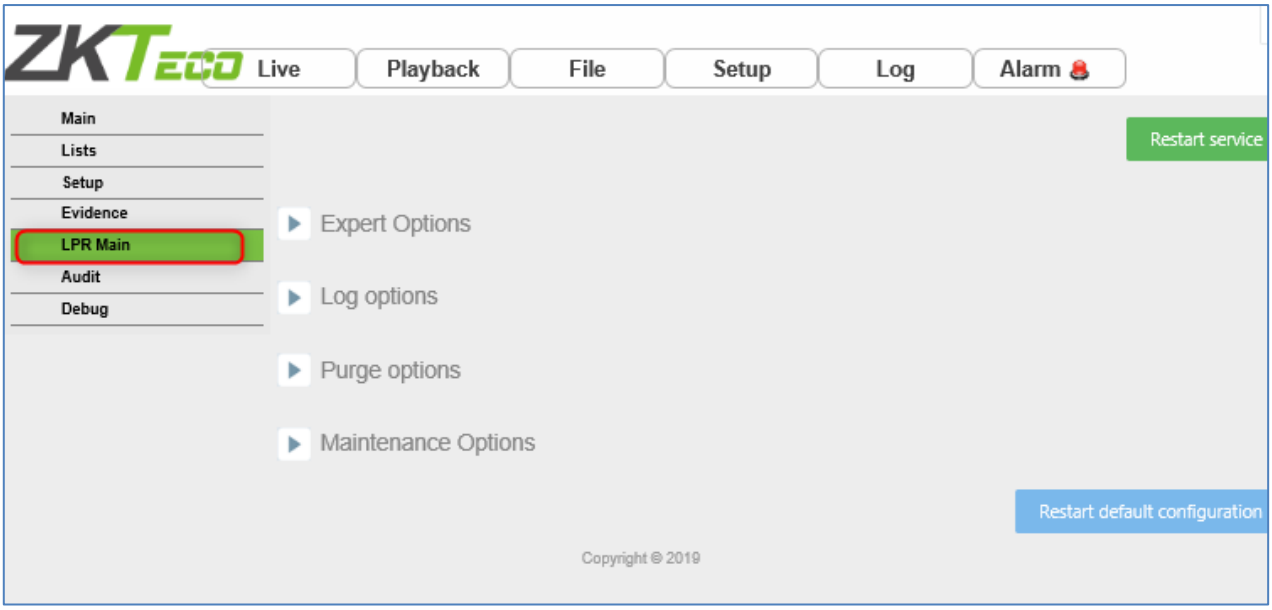
Details: here we set up the connection parameters to the evidence camera

FPS: Maximum frames per second to process. 5 being the recommendation.
Connection type: for the moment only HTTP connection.
Login: login user of camera. Password: Password of camera.
URL: URL in jpg format of the camera.



4.7. LPR MAIN

In this tab, configure general parameters:

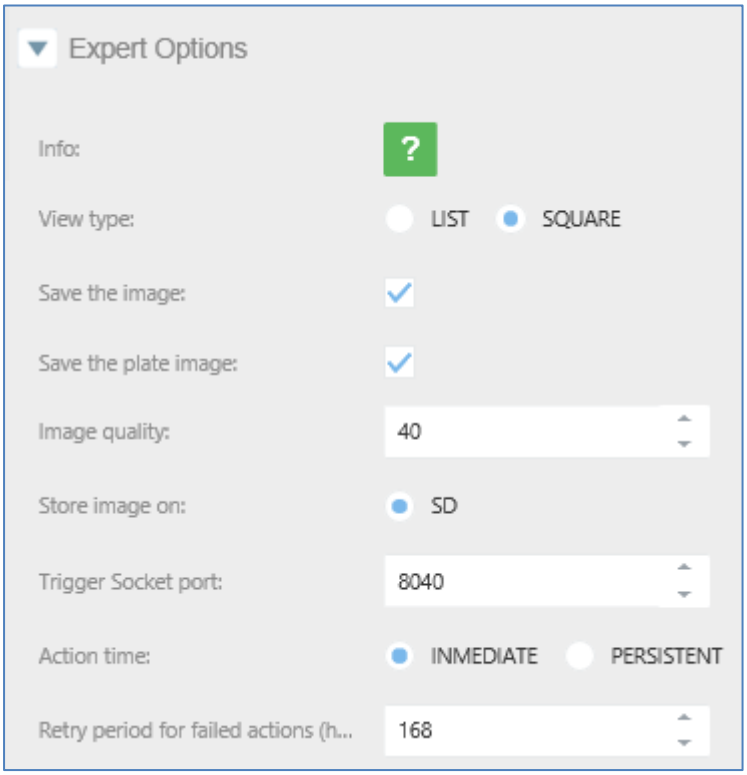


Expert Options:

View type: you can select how you prefer to see in main tab, in list or square.
Save the image: If selected, will store in a folder the complete image.
Save the plate image: If selected, will store in a folder only the license plate image.
Image quality: will store the image with the compression configured here.
Store image on: will store data on an SD or in the camera. We strongly recommend adding an SD card in the camera.
Trigger Socket Port: Will enter the port we want to use for sending XML/JSON messages.
Action time:

- Immediate: The action will enqueue in memory and will be execute it
- Persistent: The action will save in DB and will be execute it.

Retry period for failed actions:

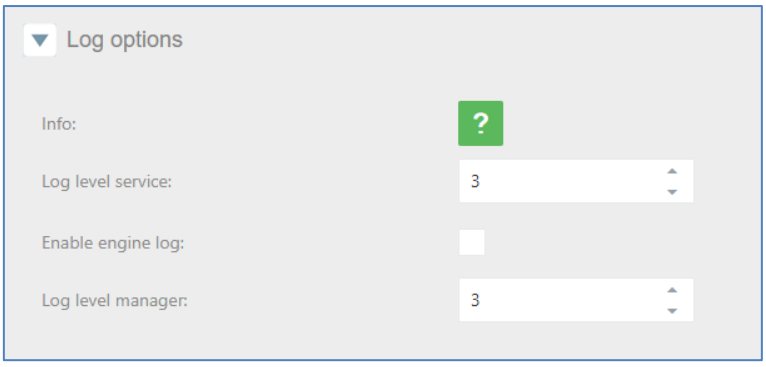


Log Options:

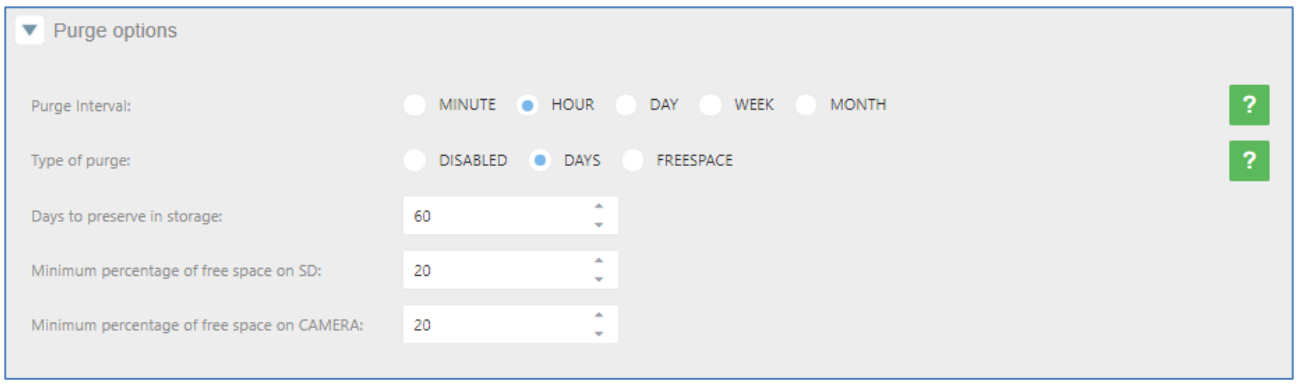
Log Level: Let you determine the log level to register what is going on with ZKTeco. By default, is set to 3. Level 4 and 5 are for experts and debugging team.

Activate log engine: Select only if debugging mode is necessary, only for expert technicians.

Log Level CGI (manager): Let you determine the log level to register what is going on with the CGI. By default, is set to 3. Level 4 and 5 are for experts and debugging team.



Purge Options: Here we will determine how many days or register of data we need to keep.



Purge Interval: Schedule when do you want to execute the purge.

Hour: Will execute the task every hour.

Day: Will execute the task once a day at 23:59:59.

Week: Will execute the task once a week, every Monday at 00:00:00.

Month: Will execute the task once a month, the first day of the month at 23:59:59.

Type of purge in database: Set how and what do you want to purge.

Disabled: Won't execute any purge.

Days: Will purge by days, keeping data for the last days.

Freespace: Will purge depending on the free space in the SD or in the camera.

Once you have defined when and what do you want to purge, you need to set the variables to execute the task.

Purge by days:

Delete database before (days): Will keep data of the last (XX) days and purge the rest.

Delete files before (days): Will keep files of the last (XX) days and purge the rest.

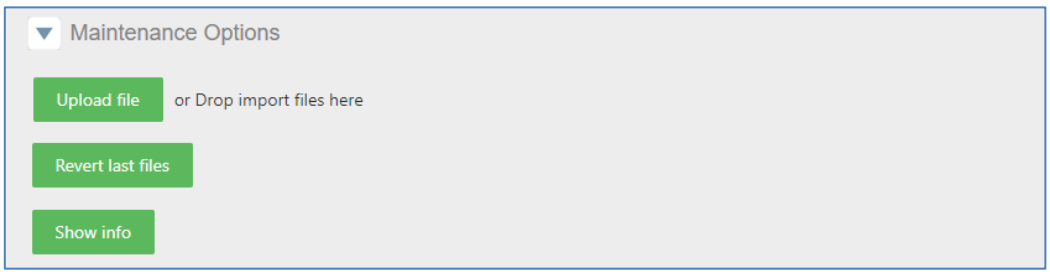
Purge by Free Space:

Delete files and database on SD below (percent): Will delete data in database and files stored until free space on the SD is lower than configured.

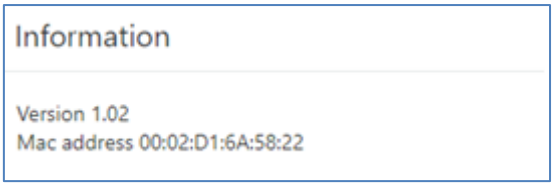
Delete files and database on CAMERA below (percent): Will delete data in database and files stored until free space in the camera is lower than configured.

Maintenance Options:

In this section you can upload files for camera configuration, licensing, update ZKTeco version, change the logo and upload images for the path option showed in the Camera Configuration tab.



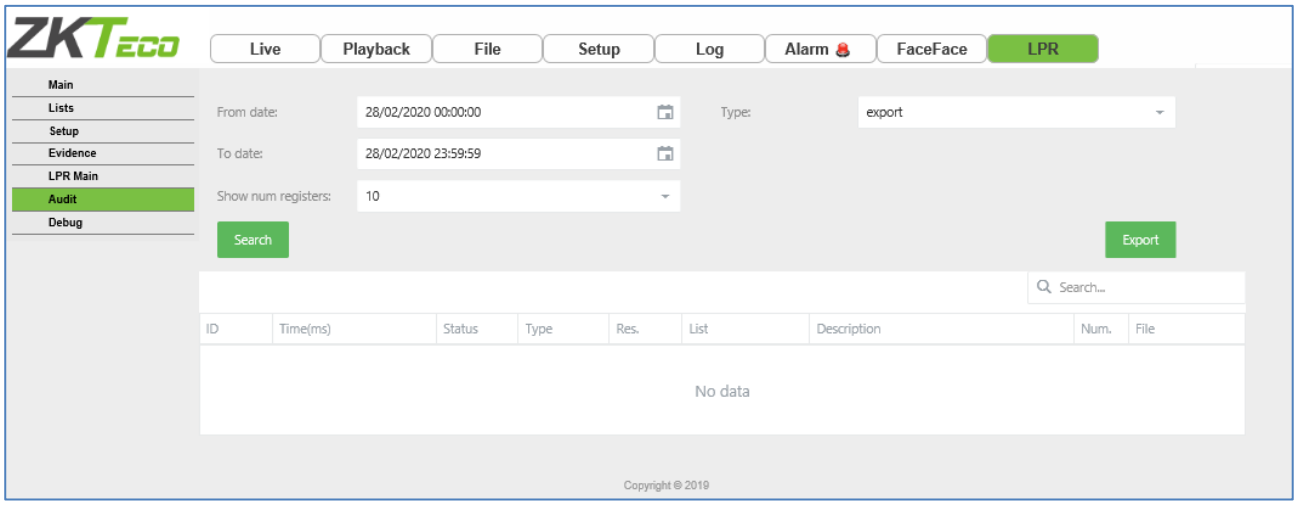
Upload File: Let you upload a file.
Revert last files: If after applying changes with the uploaded files, it doesn't work correctly you can revert changes.
Show Info: Show you information about the version and camera MAC ADDRESS.



In case you want to revert, all changes done and want to get back to the default configuration, click on Restart default configuration button.

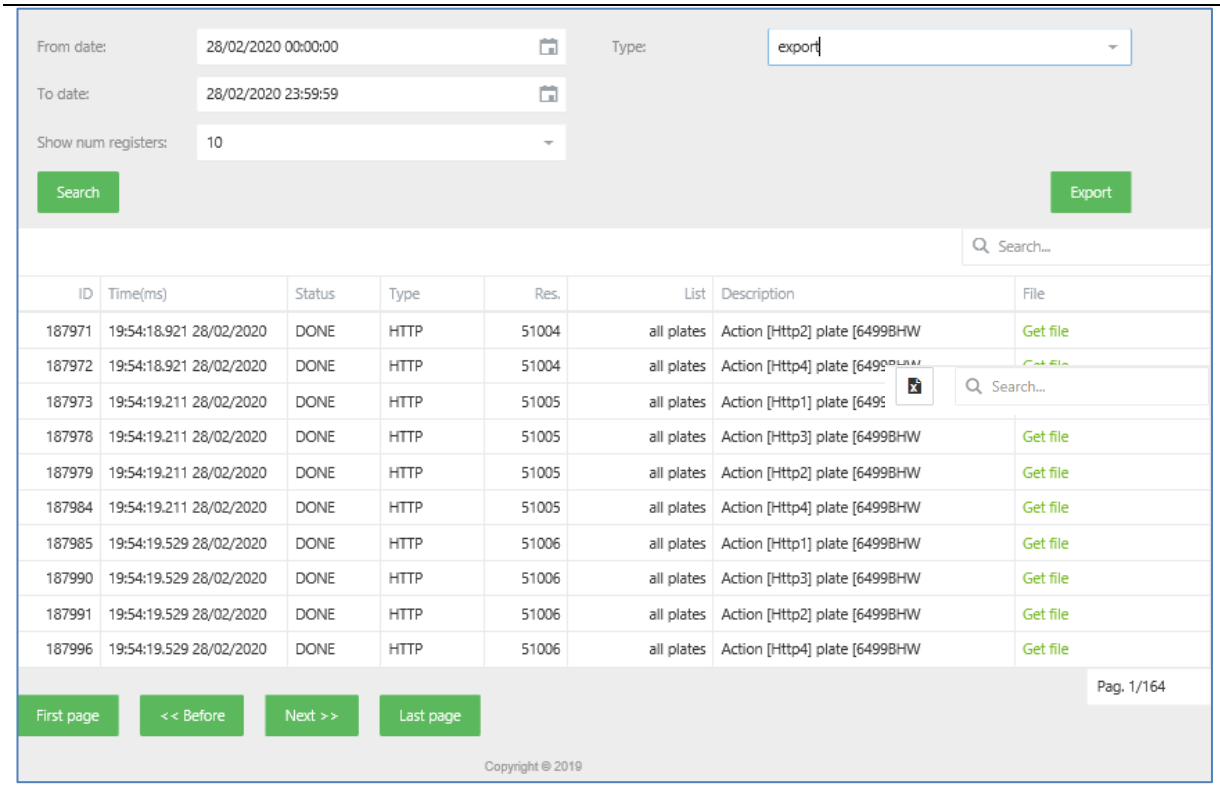
4.8. Audit Tab

The camera registers actions like export and import lists and actions executed depending on the list configurations.
In the Audit tab, you can search by dates information related to these actions.

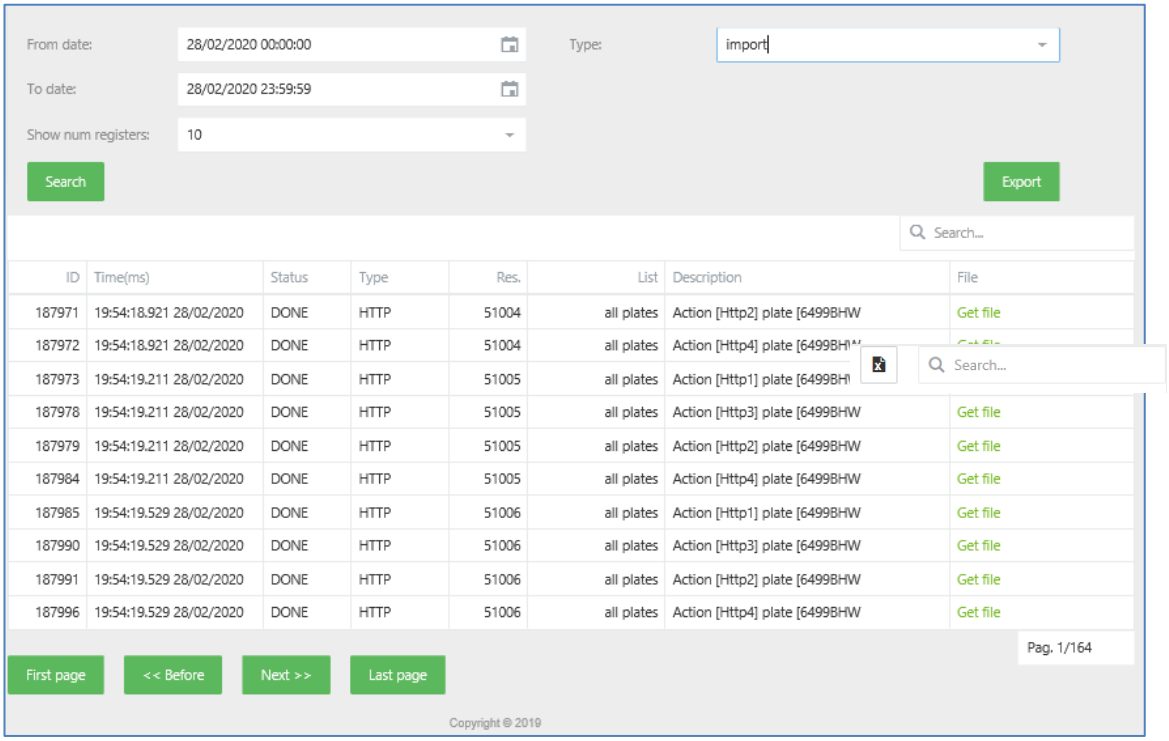


You can search in the stored actions by dates and by type of action.
Export: Will show you automatic exports done
Import: Will show you automatic imports done.
Action: Will show you automatic actions triggered on the lists.
The result of the search can be exported and downloaded.

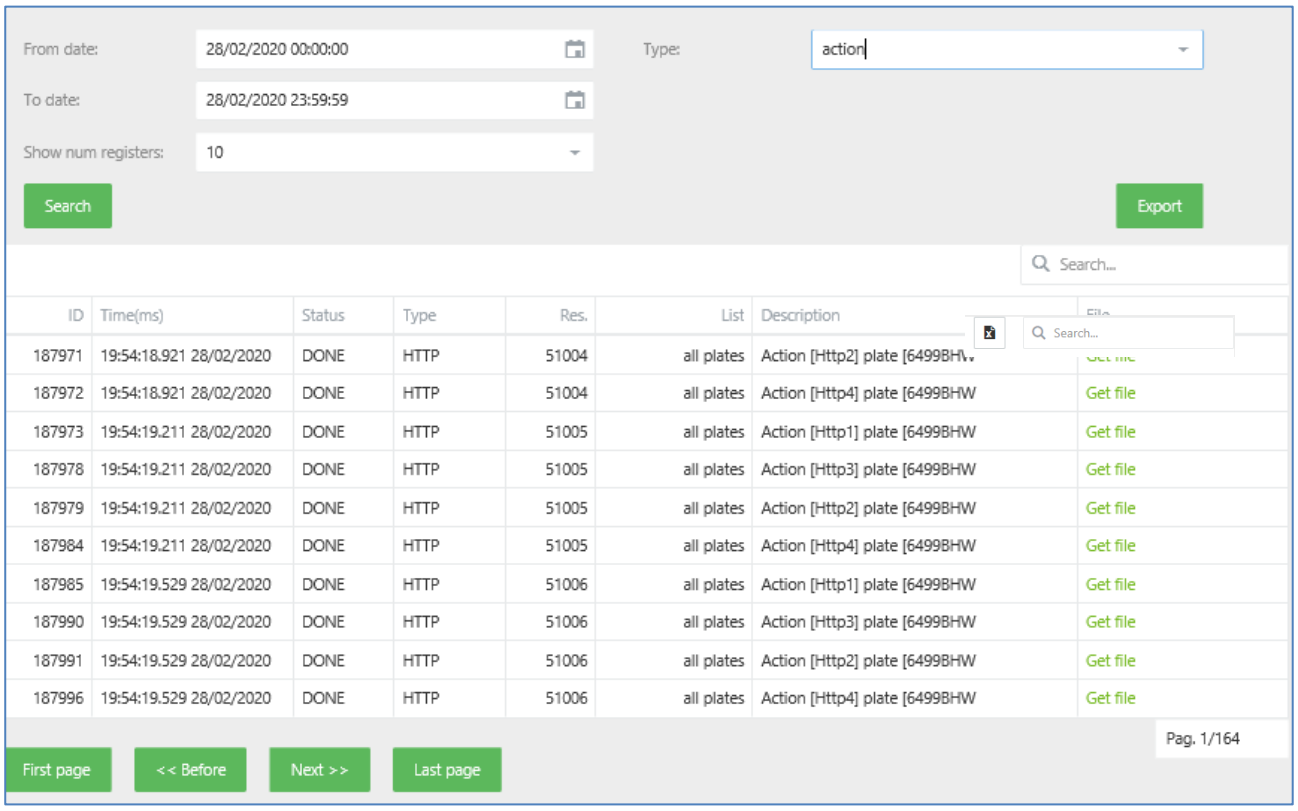
Exports example:



Imports example:



Actions example:


From date:
28/02/2020 00:00:00
Type:
action
To date:
28/02/2020 23:59:59
Show num registers:
10
Search
Export
Search...
ID
Time(ms)
Status
Type
Res.
List
Description
187971 19:54:18.921 28/02/2020 DONE HTTP 51004 all plates Action [Http2] plate [6499BHW
187972 19:54:18.921 28/02/2020 DONE HTTP 51004 all plates Action [Http4] plate [6499BHW Get file
187973 19:54:19.211 28/02/2020 DONE HTTP 51005 all plates Action [Http1] plate [6499BHW Get file
187978 19:54:19.211 28/02/2020 DONE HTTP 51005 all plates Action [Http3] plate [6499BHW Get file
187979 19:54:19.211 28/02/2020 DONE HTTP 51005 all plates Action [Http2] plate [6499BHW Get file
187984 19:54:19.211 28/02/2020 DONE HTTP 51005 all plates Action [Http4] plate [6499BHW Get file
187985 19:54:19.529 28/02/2020 DONE HTTP 51006 all plates Action [Http1] plate [6499BHW Get file
187990 19:54:19.529 28/02/2020 DONE HTTP 51006 all plates Action [Http3] plate [6499BHW Get file
187991 19:54:19.529 28/02/2020 DONE HTTP 51006 all plates Action [Http2] plate [6499BHW Get file
187996 19:54:19.529 28/02/2020 DONE HTTP 51006 all plates Action [Http4] plate [6499BHW Get file
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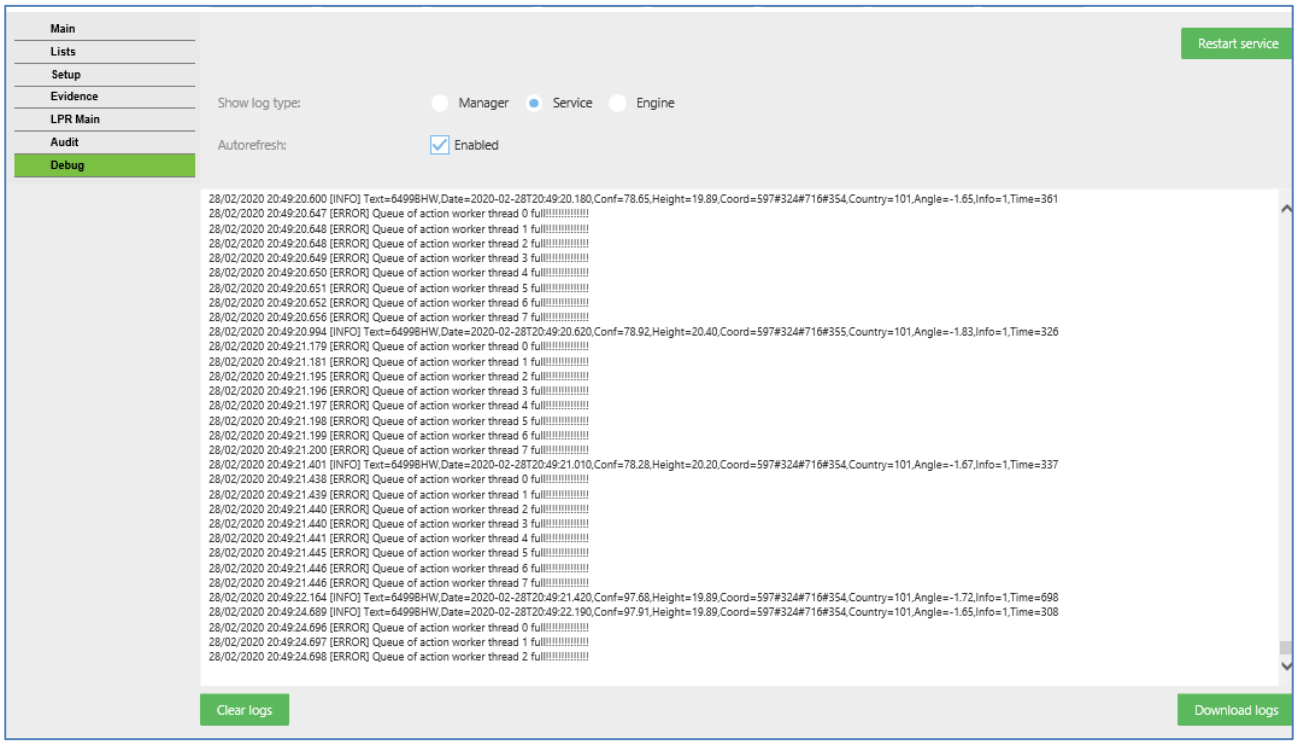
Next >>
Last page

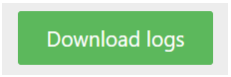
4.9. DEBUG

In this TAB the user can see /download different logs. Logs are activated and setup in General Configuration TAB.

These logs can be useful to help our technical team to diagnose and solve application problems.



The type of the log that the user wants to see must be selected by either manager, Service or Engine. Checking auto update the application will refresh the selected log type.

Sending logs to technical support may be needed. To do that click 

in the bottom of the page.

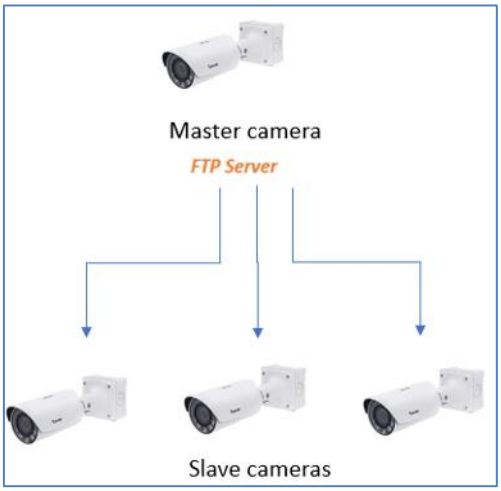
Selected logs will be downloaded in compressed txt format.

5. Camera list synchronization

The ZKTeco system allows a list system synchronized.
One of the cameras works like a master and the other cameras works like a slave.
The master camera uploads the file with the list content and the slave cameras downloads the file.
All the list and elements must be modified in the master camera, the changes will be updated automatically in the slave following the next instructions to configure the master and the slaves.
There is no limit for the number of the cameras slave, the limit is on the FTP server, depends of the number of connections.
Can be synchronized all the lists or only one list.

5.1. Architecture 1

The camera is the FTP server. Must be activated (by default is disable the FTP server)



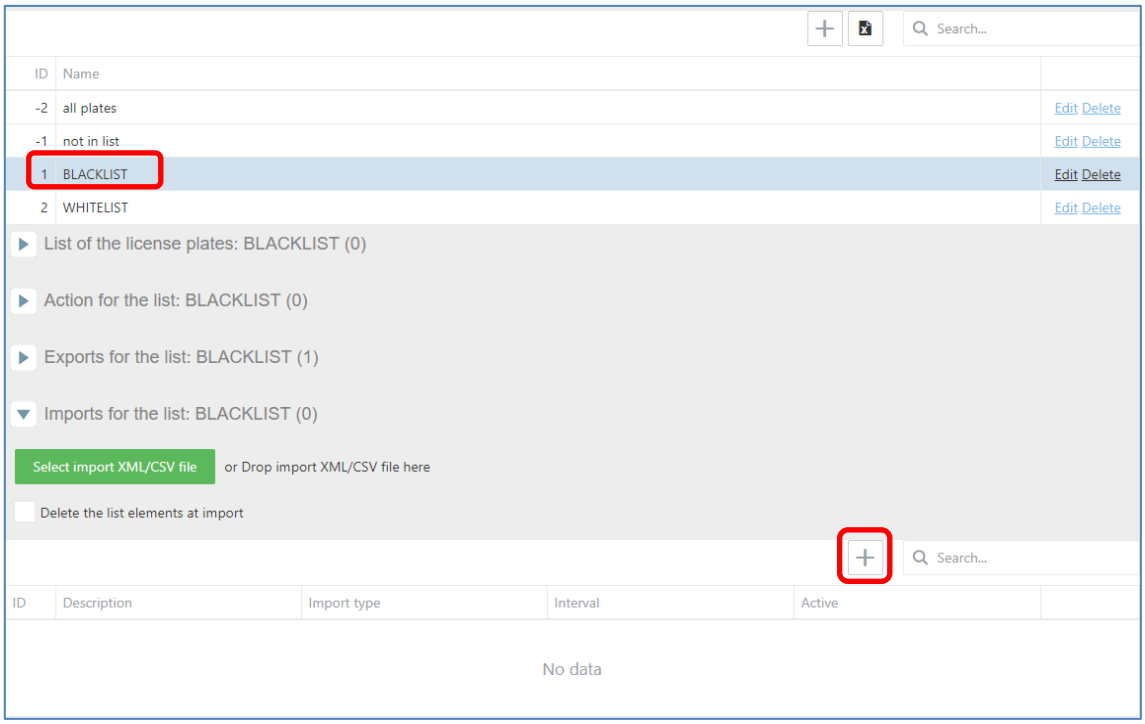
5.1.1. Master configuration

Activation FTP server will do by script.

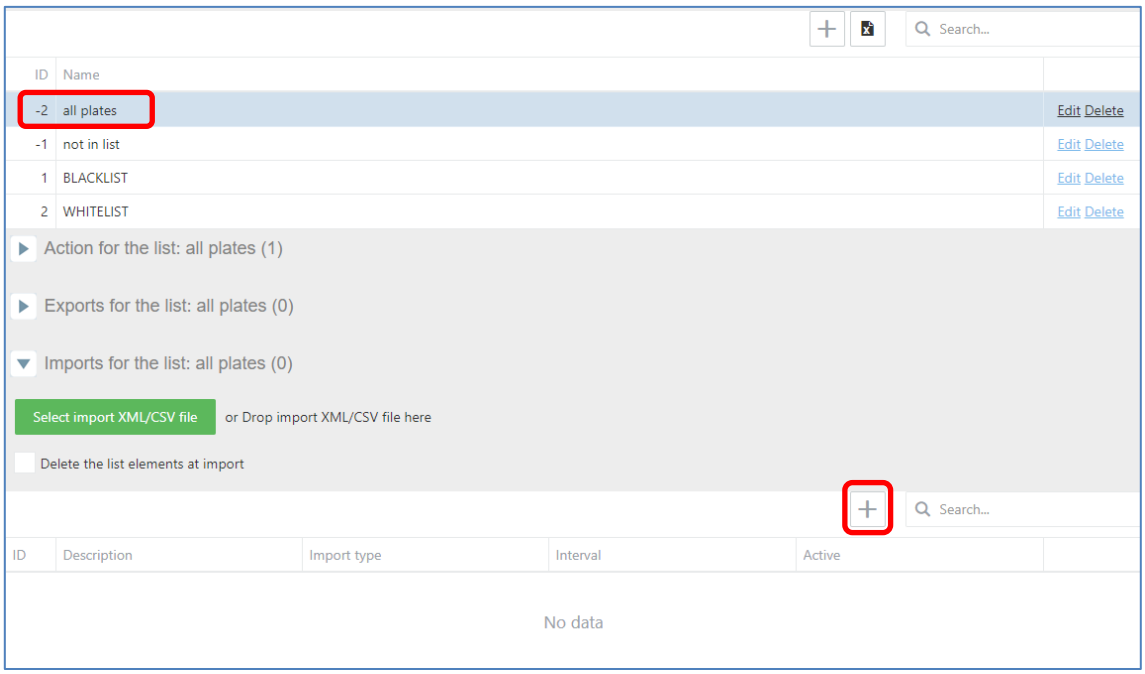
5.1.2. Slave configuration

Access to the List Tab.

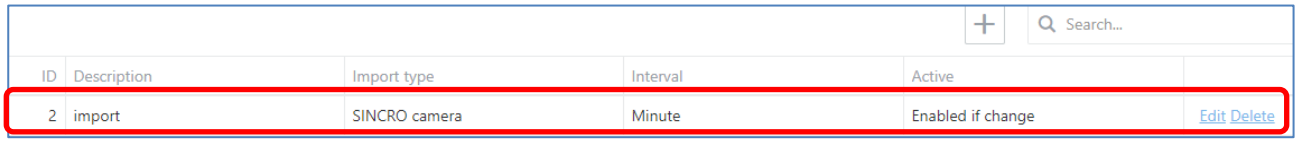
To configure only one list selects the list and make the import in the list.



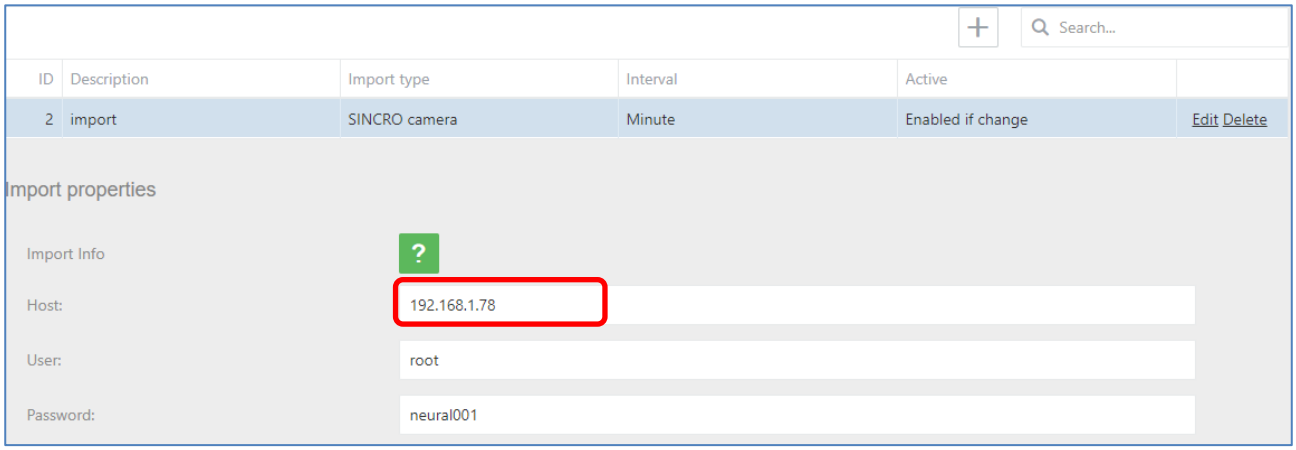
To configure all the list selects all plates.



Create an import each minute (or desirable time) the time enabled if change with the type SINCRO Camera and click Save.

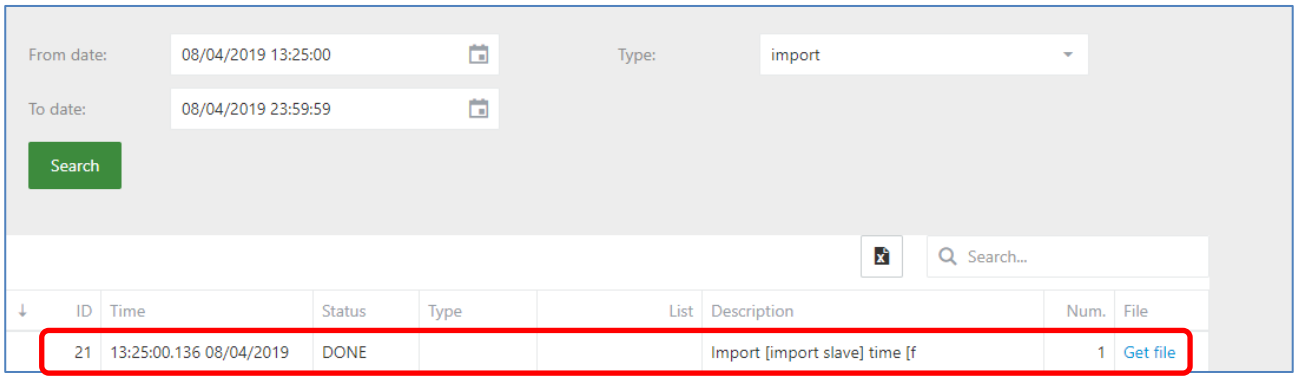


Configure the master camera credentials.



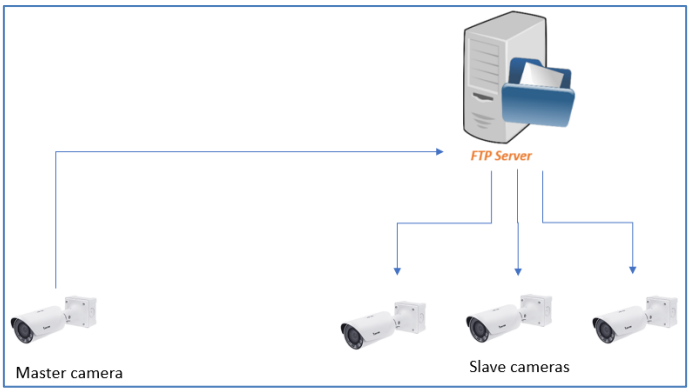
Host: Camera master IP
User: <empty>
Password: <empty>

Can be checked in the Audit Tab.



5.2. Architecture 2

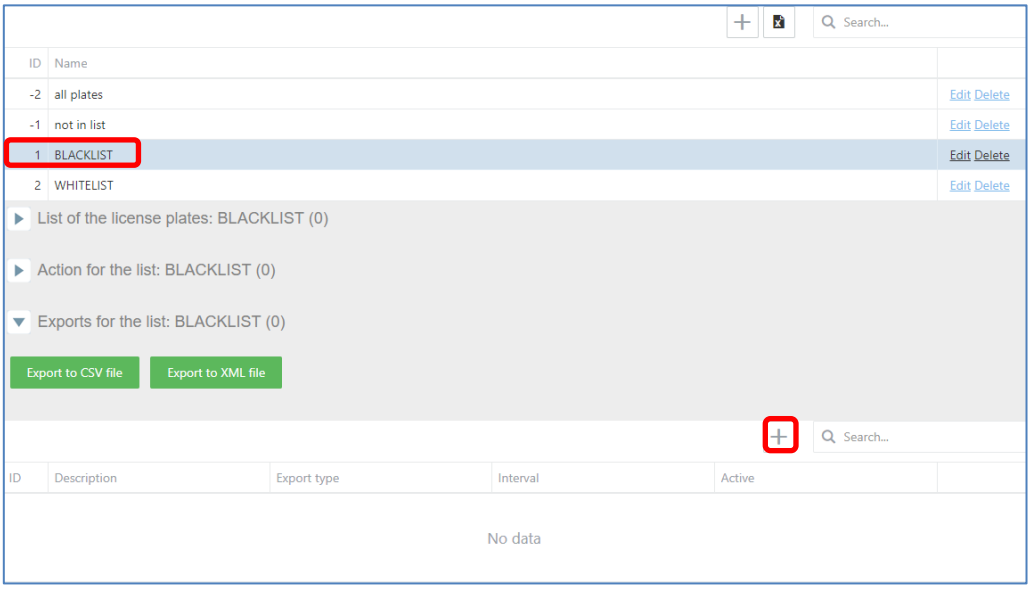
Using FTP server where store the list.



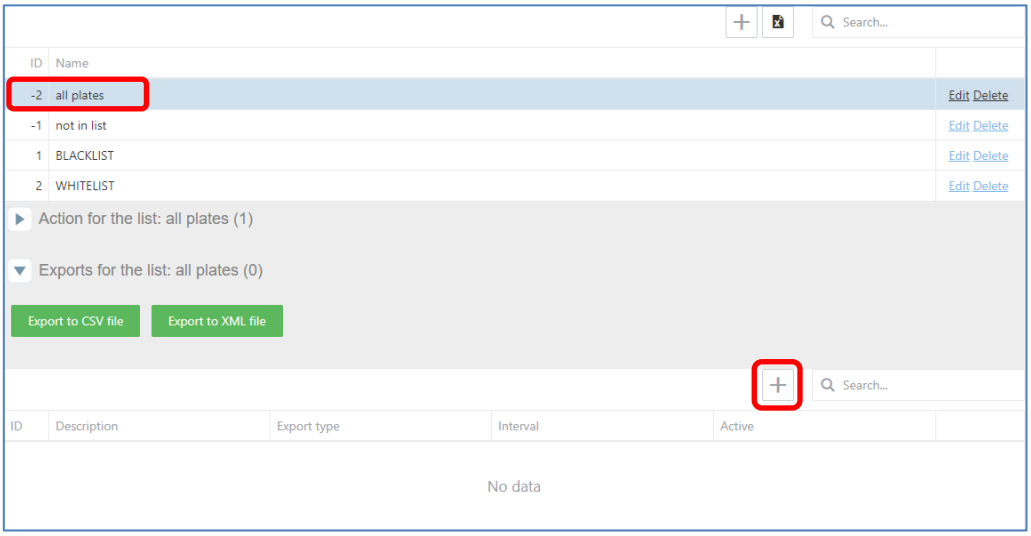
5.2.1. Master configuration

Access to the List Tab.

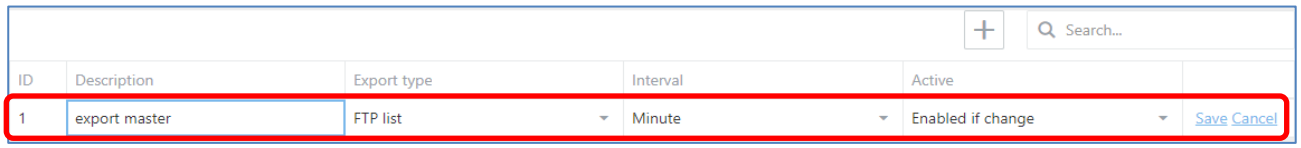
To configure only one list selects the list and make the export in the list.



To configure all the list selects all plates.

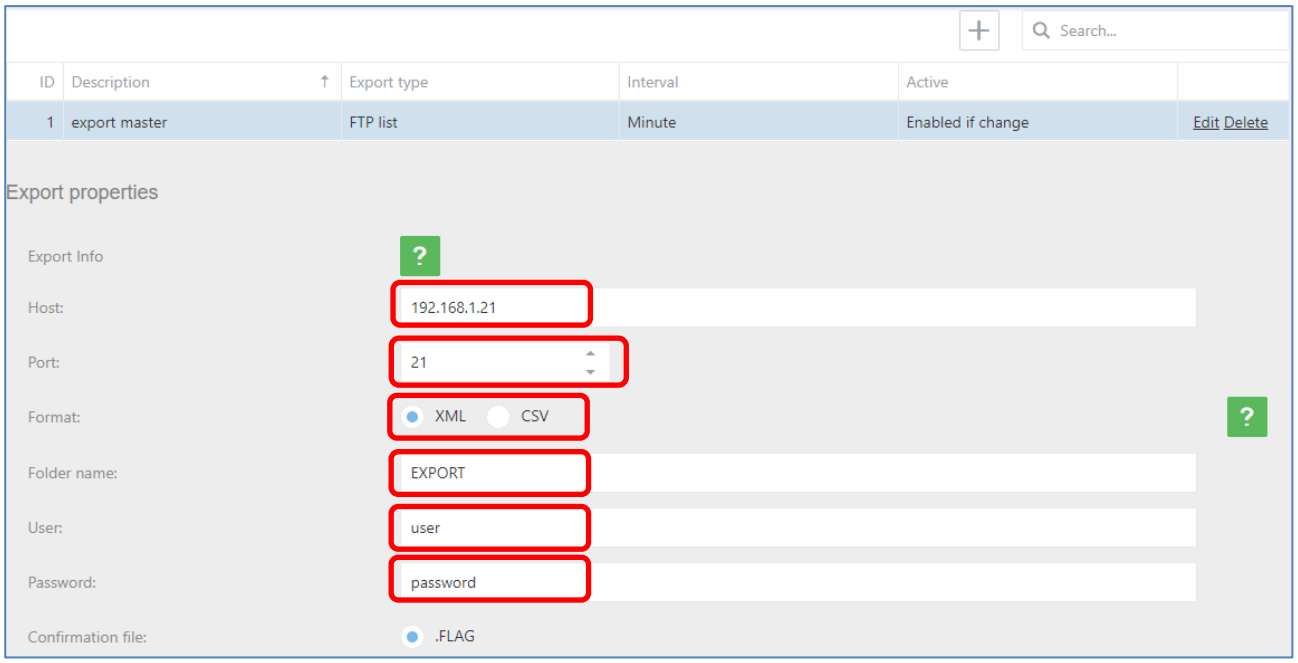


Create an export each minute enabled if change with the type FTP list and click Save.

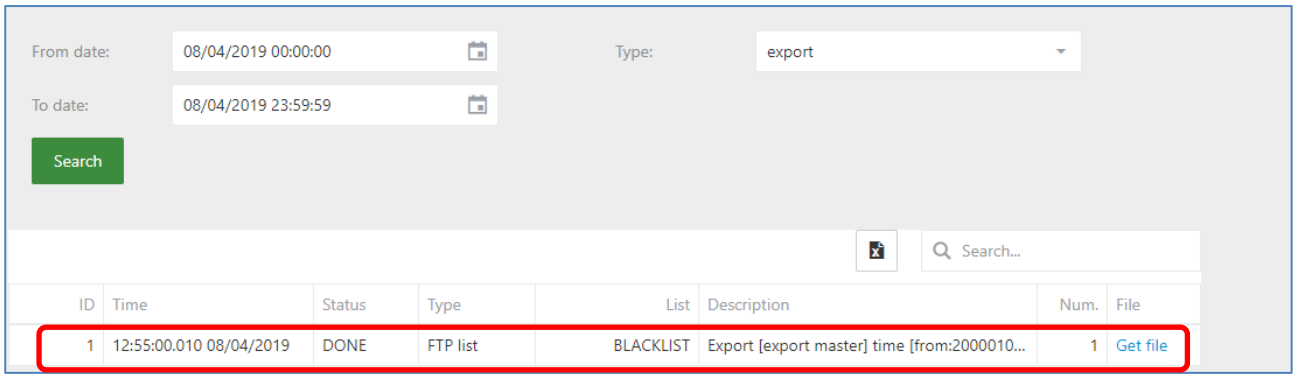


Configure the credentials of the FTP server and the format CSV or XML, can be the booth but must be the same in the slaves.

Just configured the camera master is sending the file to the FTP server.



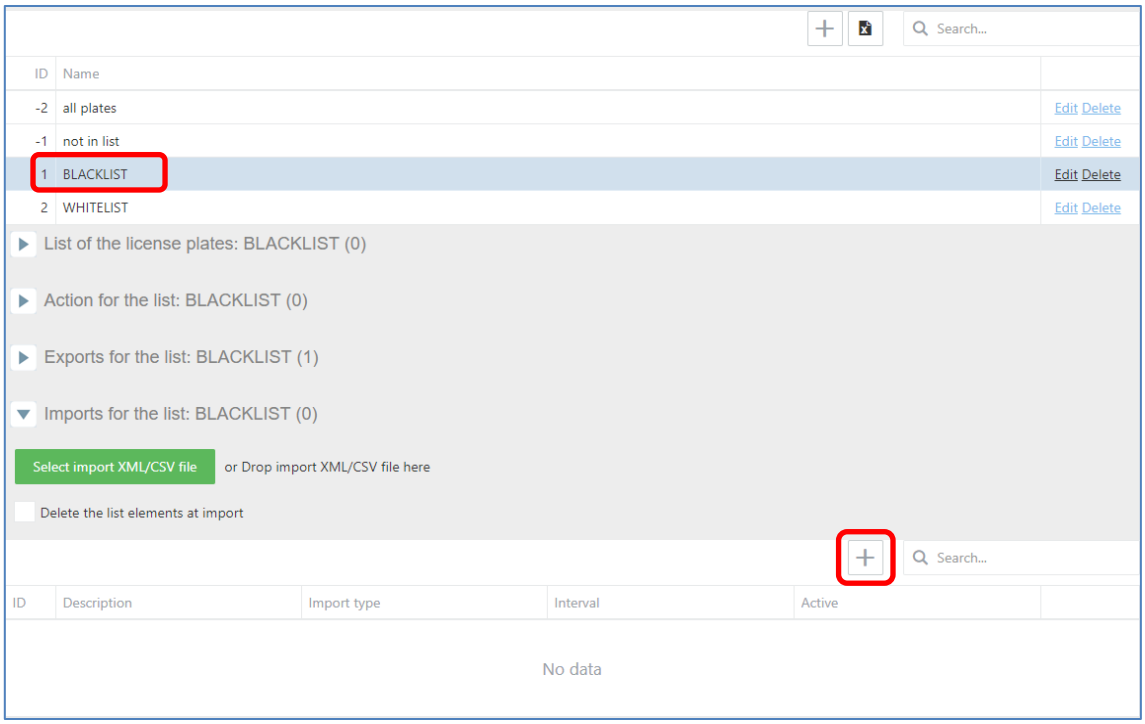
Can be checked in the Audit Tab.



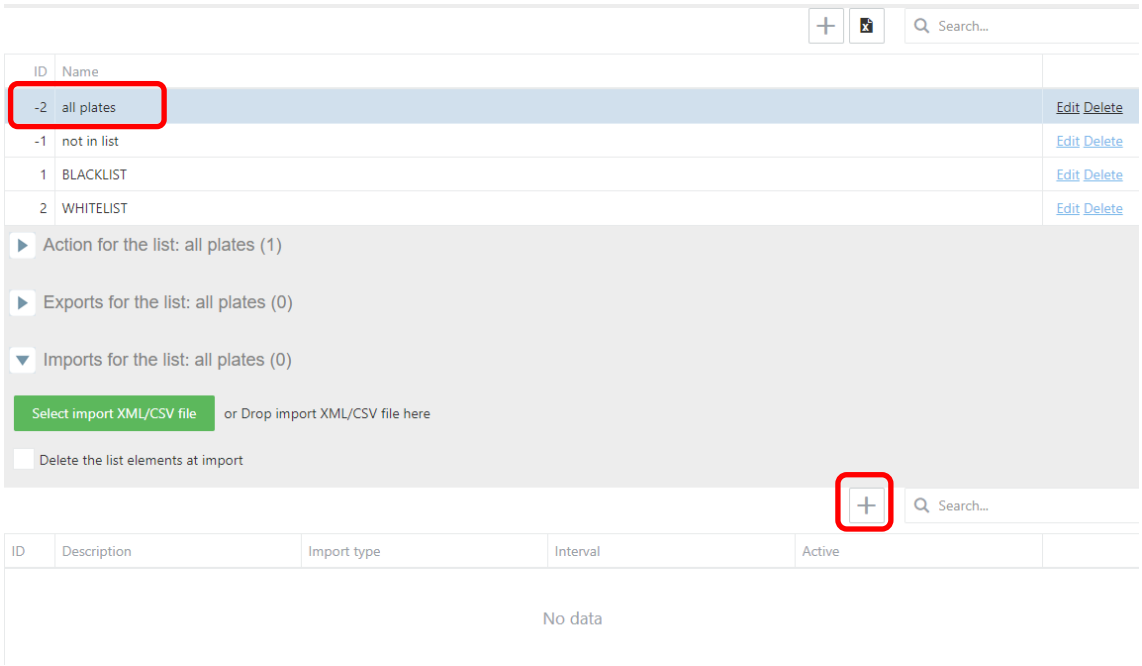
5.2.2. Slave configuration

Access to the List Tab.

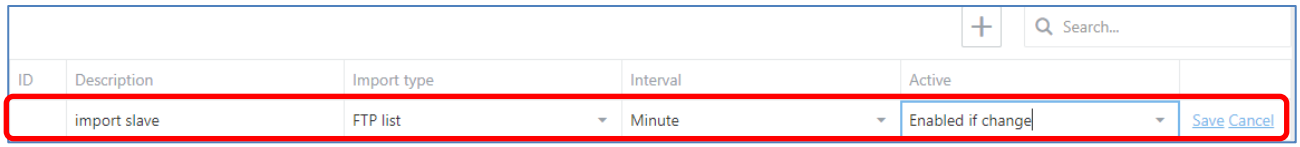
To configure only one list selects the list and make the import in the list.



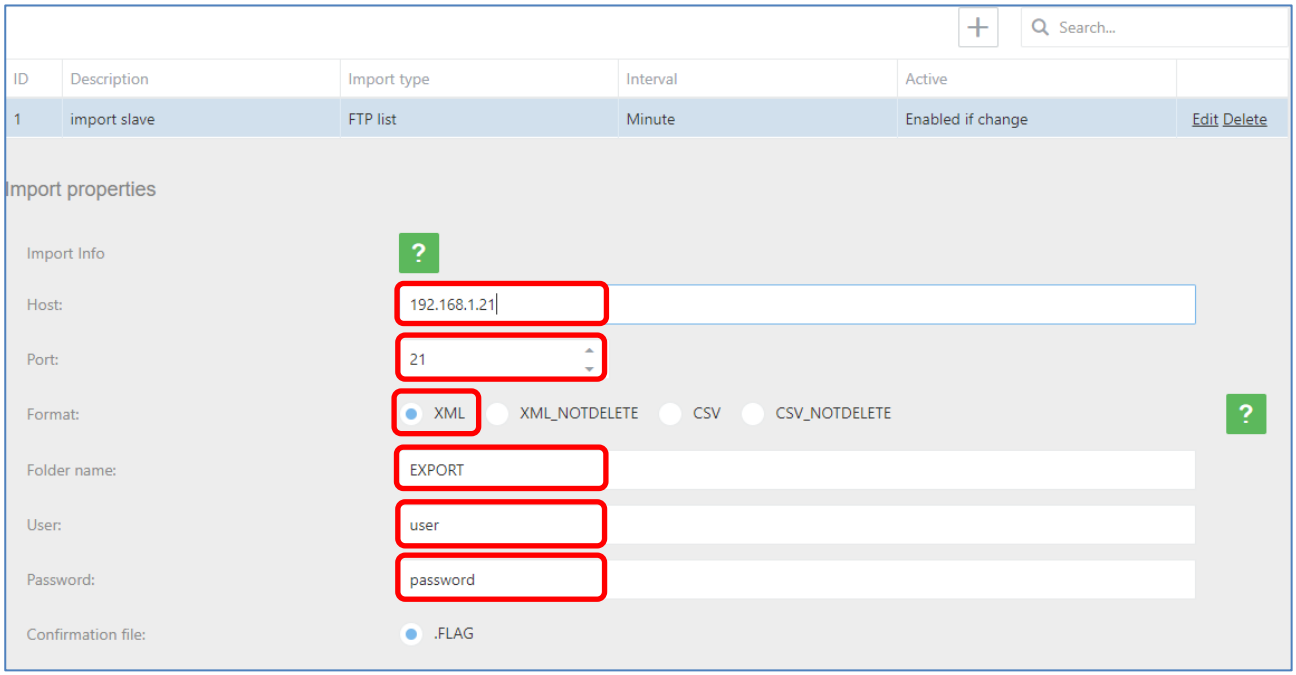
To configure all the list selects all plates.



Create an import each minute (or desirable time) the time enabled if change with the type FTP list and click Save.

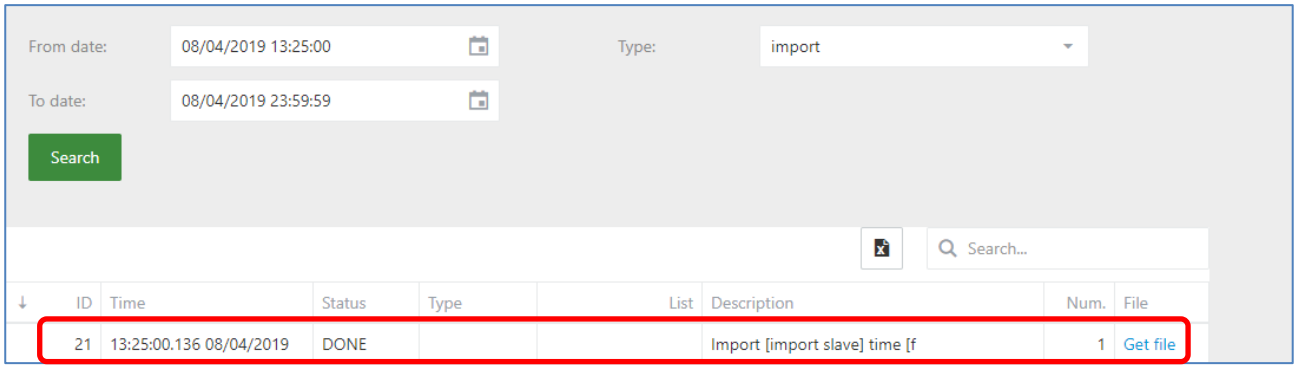


Configure the same credentials of the FTP server and the same format CSV or XML than the master configuration.



If the master selection type format is XML can be selected XML or XML_NOTDELETE, if your selection is XML all the elements not included in each file downloaded will be deleted.
Just configured the camera master is downloading the file from the FTP server.

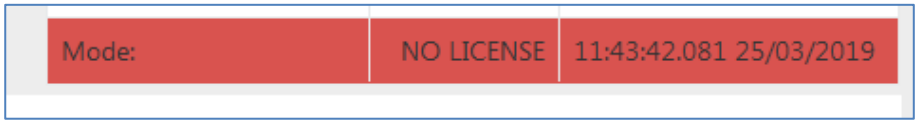
Can be checked in the Audit Tab.



6 Troubleshooting

6.1 Mode: NO LICENSE

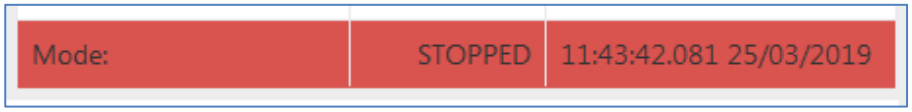
If the camera is not licensed, we find that the mode will be “NO LICENSE” in live page.



To solve this problem, please get in touch with support.

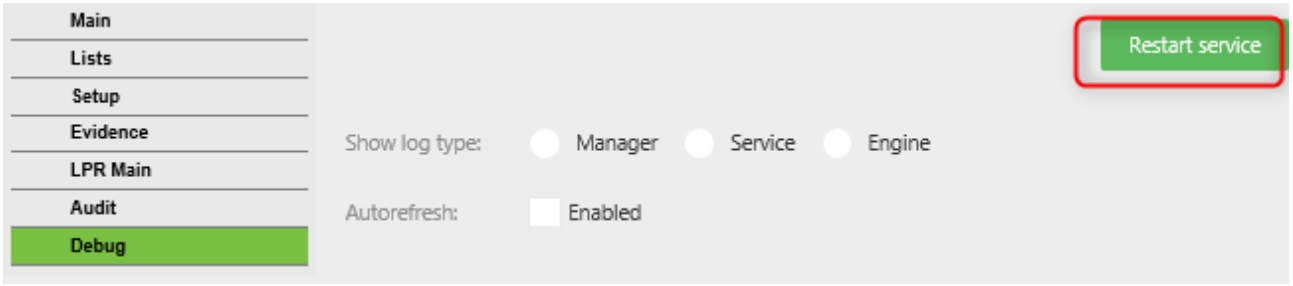
6.2 Mode: STOPPED

If the LPR service is stopped, we find that the mode will be “STOPPED” in live page.



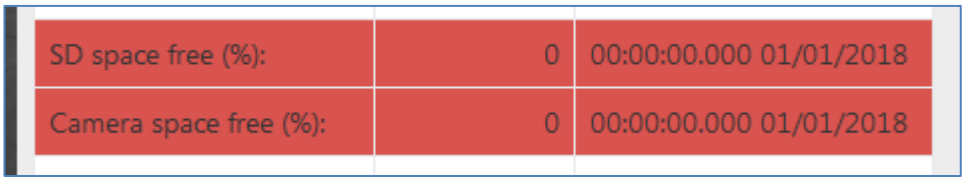
To solve this problem, we will have to reboot the service. You can reboot the service at:

- Logs page:



6.3 Not enough space at Camera or SD

If the camera or SD card has not enough space, the system could fail.

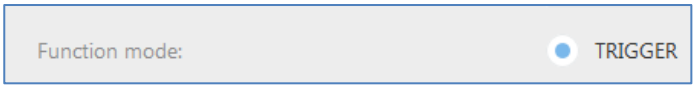


If the space is below 20%, please review the purge option section

6.4 The system does not recognize license plates

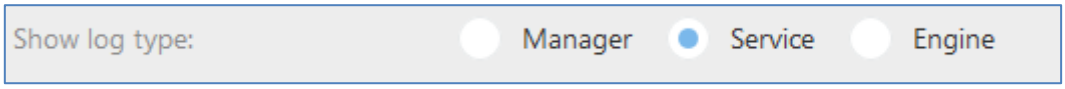
If the system does not recognize license plate, please verify the following steps:

1. The region and country are the right ones. You can check this configuration at LPR configuration.
2. The license plate has a minimum size of 25 pixels. The user can use the calibration pattern at live page to adjust the size of the license plate. The license plate must be between 2 lines.
3. If you the system has a defined ROI, verify that license plate is inside ROI area.
4. If the system is configurated at motion detection mode, please be sure have a movement inside the image.
5. If the system has read a license plate and it do not read anymore, check the filters.
6. If the system is configurated at trigger mode, please check the following points:
    a. Check the mode of in camera (LPR CONFIGURATION):



    b. Check the trigger socket port (GENERAL CONFIGURATION):

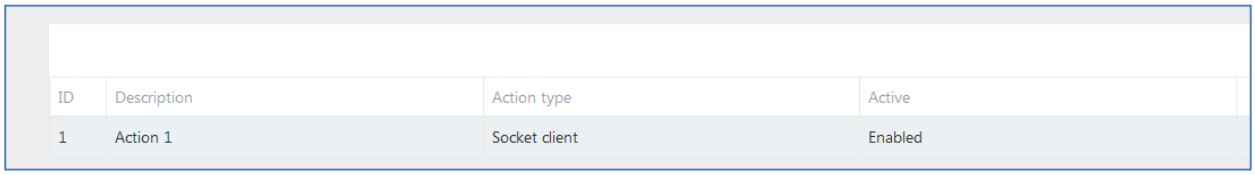
c. Check that the sender device has connection TCP/IP to the camera at defined port. It can be checked via telnet.
d. If the message is received correctly, the system log must show the line:



6.5 Problem with ACTIONS

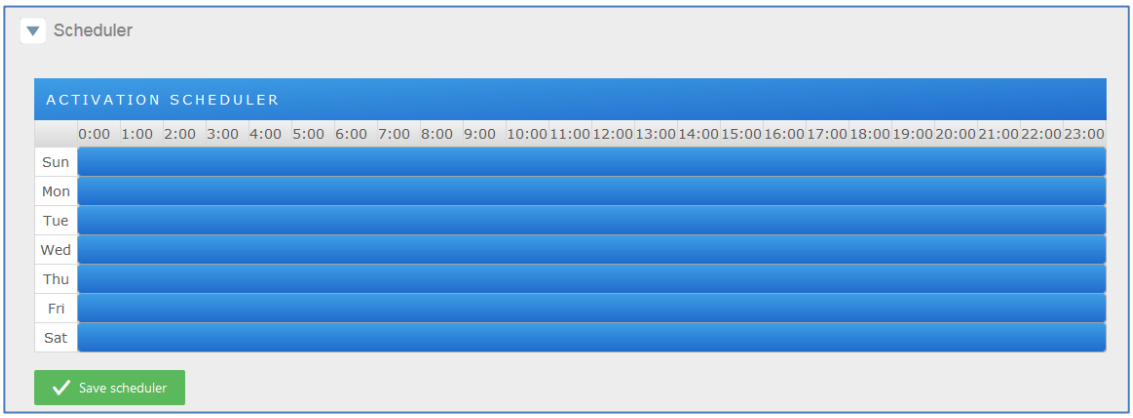
If the action does not execute, verify the following points:

1) The action is enabled.

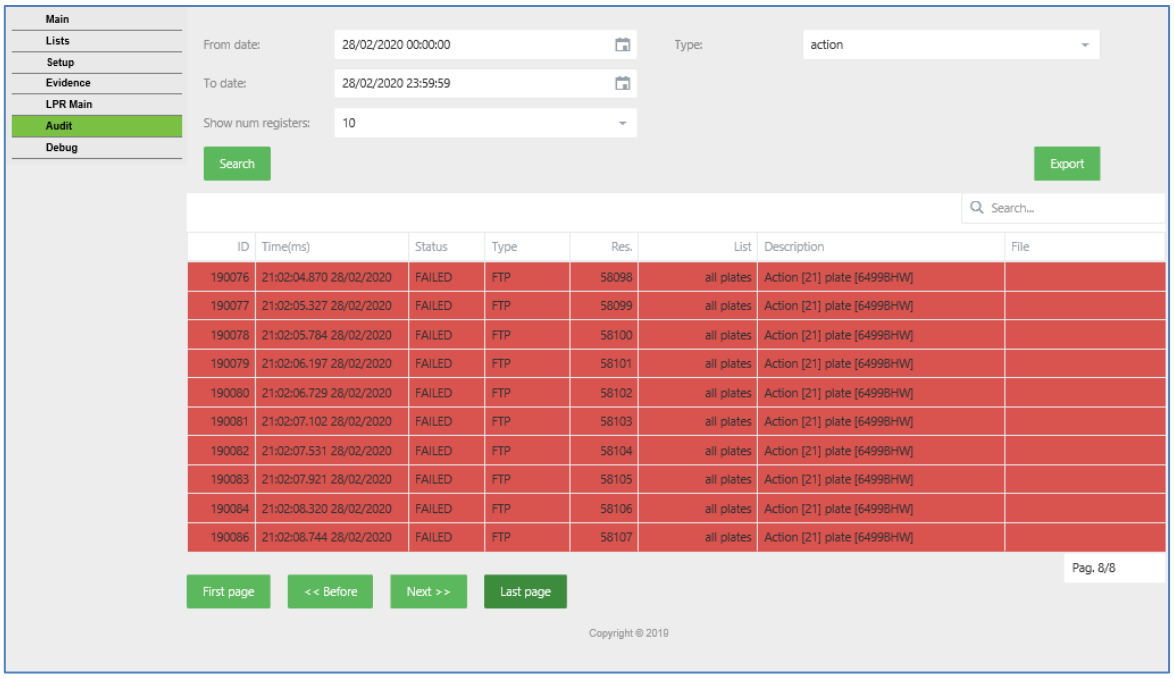


ID	Description	Action type	Active
1	Action 1	Socket client	Enabled

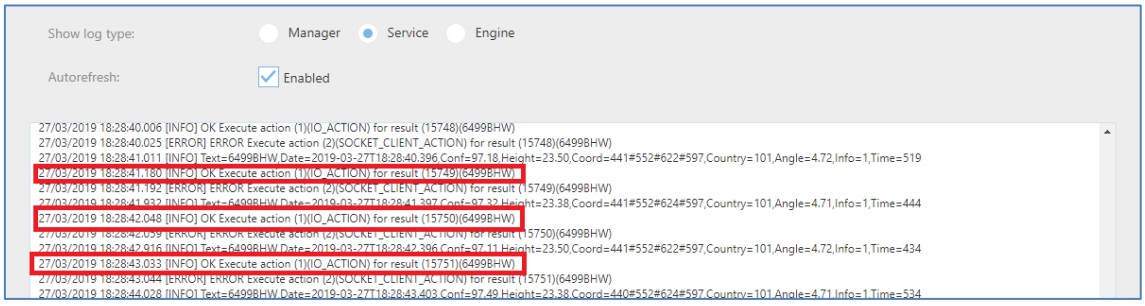
2) The detected plate is in the list that is defined the action.
3) There is a defined action to “all plate” list.
4) The detected plate is not in any list, there is an action defined in “not in list” list.
5) The date of the detection corresponds on a valid time defined in the scheduler.



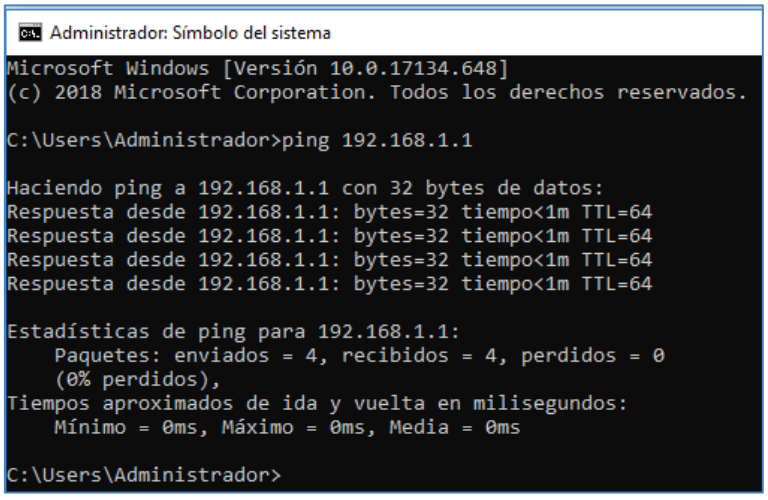
6) Check in Tab Audit if the action has been executed. In red error sent.



7) Check in the logs if the action has been executed. Active Service and Enabled.



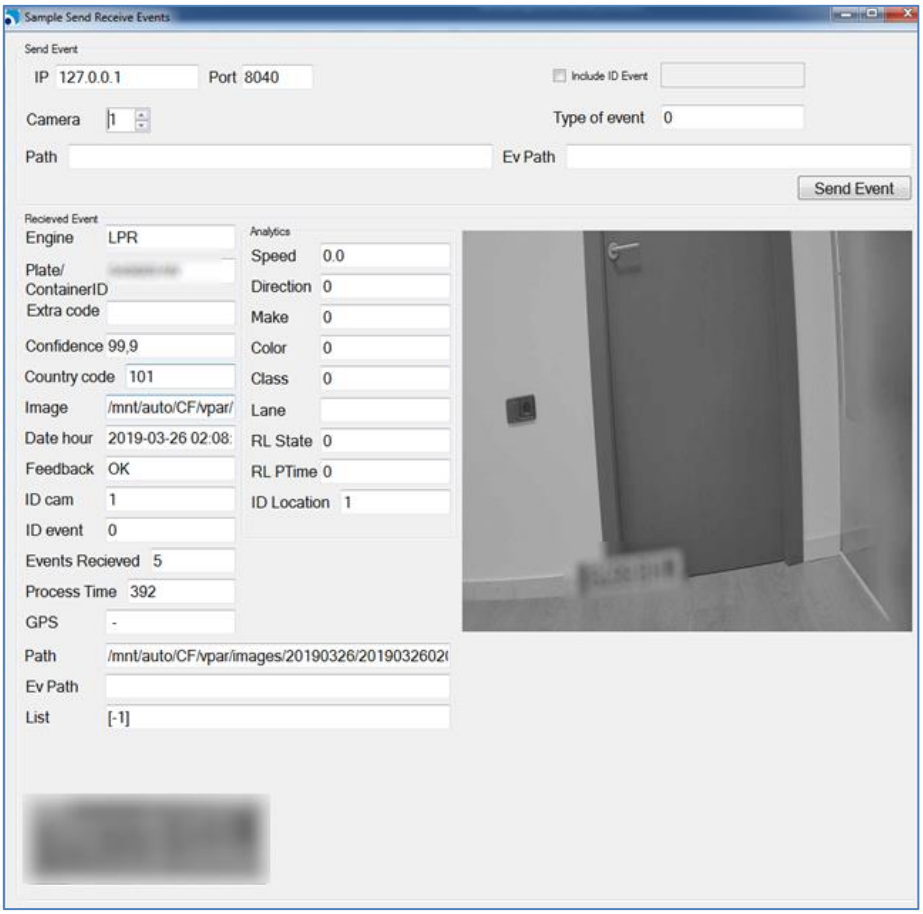
8) Check the connection with the host with a ping command.



6.5.1 Socket client

If the socket client action does not send the message, please check the following points:

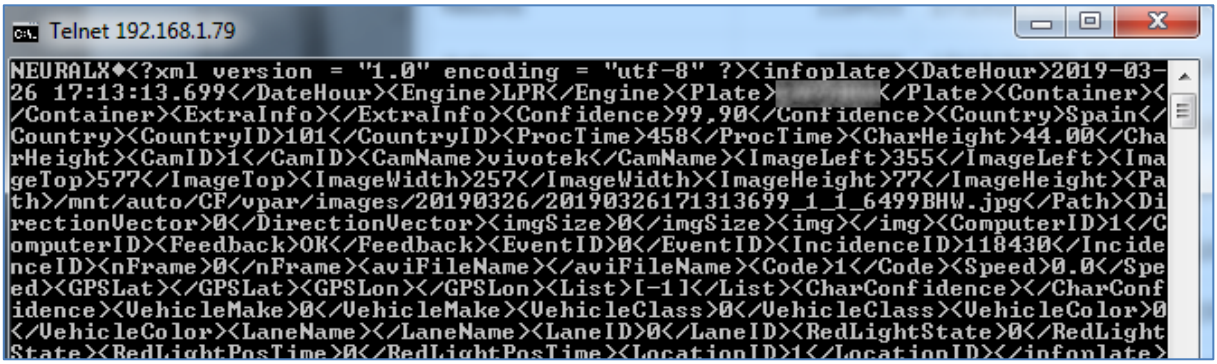
1) Check HOST and Port of defined action.
2) Check the connection that the camera has connection to the HOST/PORT.
3) Download, install and open the sample test program on client computer.
    - www.neurallabs.net/SendReceiveEvents/SendReceiveEvents_x64.zip
    - www.neurallabs.net/SendReceiveEvents/SendReceiveEvents_x86.zip
4) Check the IP from client computer, set port 17000 and read a plate.



6.5.2 Socket server / Trigger server

If the socket server action does not send the message, please check the following points:

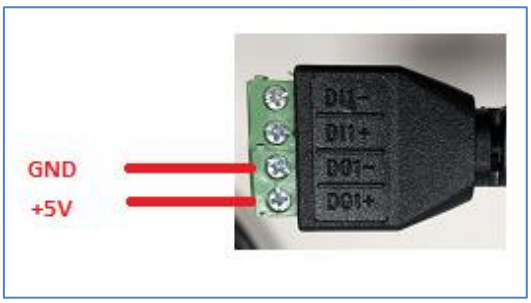
1) Check the defined port
2) Reboot the service if you have defined a new socket server action
3) Open a telnet client to Camera IP and defined port and check that the message is received.



6.5.3 IO

If the IO action does not send the message, please check the following points:

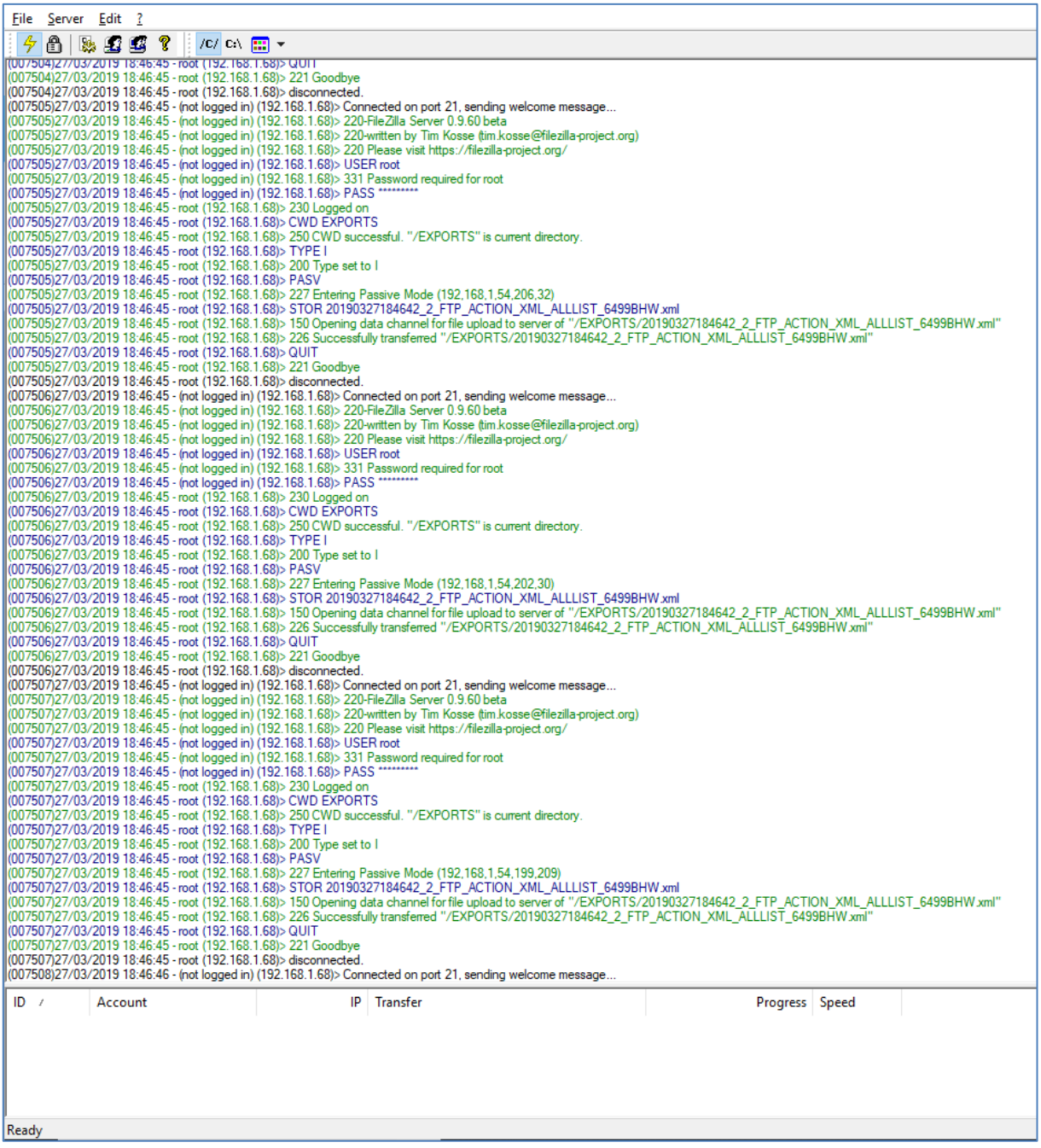
1) Check the defined port
2) Check the defined time
3) With a multimeter, connect to selected port and check that the voltage changes from 0 to 5 V.



6.5.4 FTP

If the FTP action does not send the message, please check the following points:

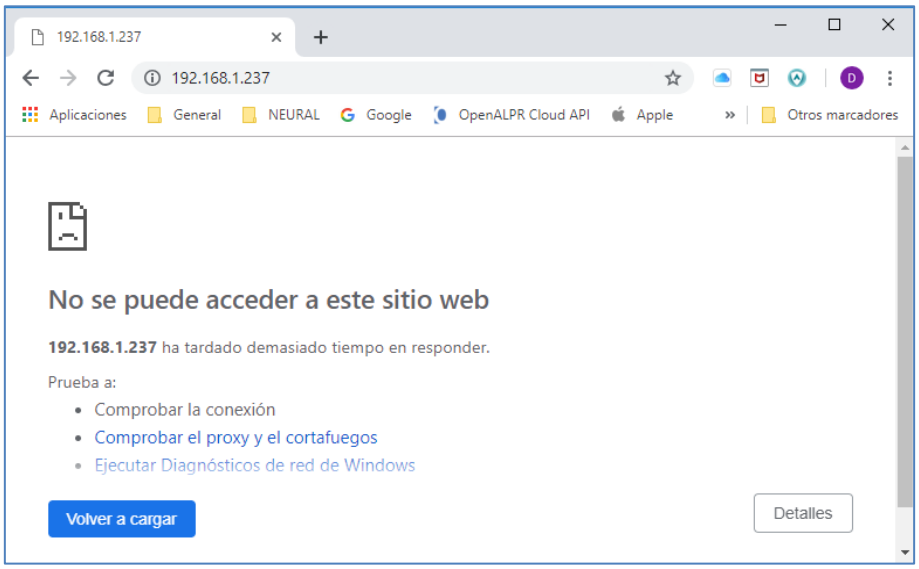
1) Check the defined parameter
2) Check the credentials and access with FTP client
    - https://filezilla-project.org/download.php?type=client
3) Install FTP server like the FileZilla server and check the logs
    - https://dl2.cdn.filezilla-project.org/server/FileZilla_Server-0_9_60_2.exe?h=Fjvi4wvvZmA-MDcp3K9v0Q&x=1553712290



6.5.5 HTTP/MILESTONE/WIEGAND

If the HTTP action does not send the message, please check the following points:

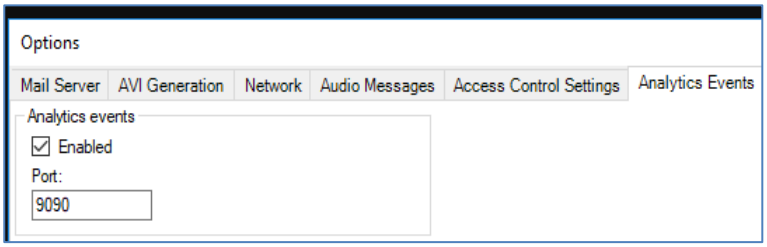
1) Check the defined parameter
2) With an explorer (Internet explorer, Firefox, Chrome) do a request to defined URL and check that the URL respond.
   In this case not responds



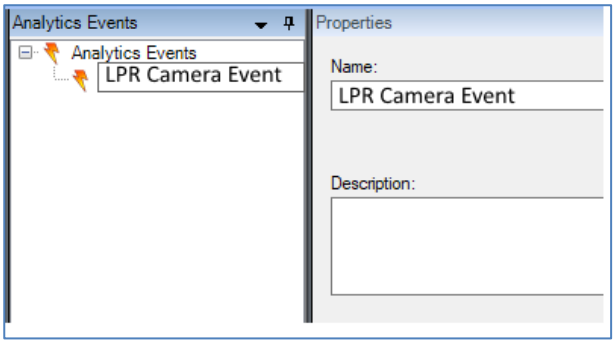
6.5.5 MILESTONE

If the MILESTONE action does not send the message, please check the following points:

3) Check the defined parameter
4) Check in Milestone system that the analytics events are enabled.



5) Check in Milestone system that the analytic event name is “LPR Camera Event”



6) Check in Milestone system that the created alarm uses the before analytic event and related camera.