IP license plate reading cameras

RH Series – ANPR Cameras with OCR

Installation manual

How to install the camera How to
connect to the network
How to set up and manage cameras with your browser

Contents of the manual

The RH series camera range is a range of IP cameras for the readable recording of vehicle license plates and license plate character recognition (OCR). These license plate reading cameras They are normally called ANPR or LPR cameras.

These cameras are designed to allow the recording of car license plates of stationary or moving vehicles up to the maximum speed declared for the various models. They are mounted usually near gates to be able to open a barrier or a gate based on the license plate which is captured. They can also be used to monitor vehicle traffic on urban roads, state or provincial. These cameras can operate in any light condition thanks to the built-in IR illuminators and dedicated glare suppression systems.

These cameras are Onvif IP cameras. They connect to an Ethernet network and are powered by POE or 12VDC (power supply not included). They can be managed over the network via computer, NVR or mobile devices.

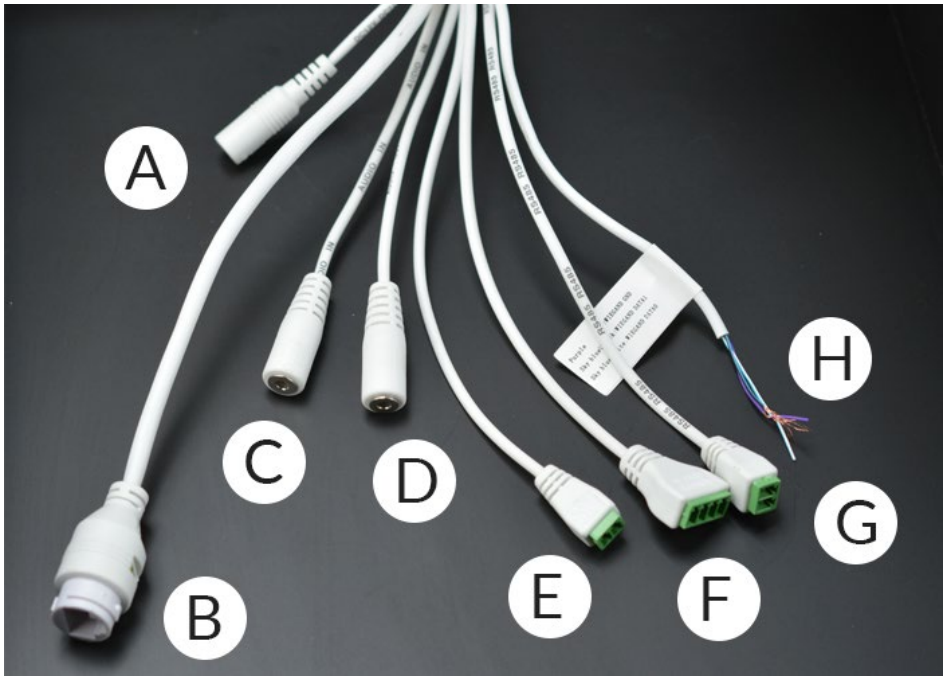
The cameras are supplied with the software tool for configuring the IP address and with the IoVedo.RH software for Windows that allows the management of blacklists and whitelists and can be Also used as a user interface for security personnel. The IoVedo.RH app is included. for Android and iOS, for controlling cameras from mobile devices, with server support P2P for Internet control. SDKs are also available for developing specific software. in relation to the specific application

This manual explains how to connect the camera, how to configure the parameters for the network connection and how to configure the camera with the browser.

Wiring

The RH series cameras feature a weatherproof outdoor enclosure that can be attached to wall or ceiling

The connections are placed on the connecting cable that comes out through the bracket. fixing



A – 12VDC power supply

The 5.5mm DC connector is used to connect a 12VDC power supply (not included) when not you want to use POE power along the network cable. Typically these cameras are power in POE, so this socket is not used, but it is a useful option if POE power is not available, for example in systems with batteries and solar panels.

B – RJ45 network port

RJ45 FEMALE connector for connecting the LAN network. This connector connects to the network, for example for example to a switch port or to the router, using a straight network cable. If you connect the network to a POE switch, or through a POE injector, the camera is powered through the network cable.

C – Audio IN

An external microphone can be connected to this mini-jack for ambient listening, to be used at built-in microphone for ambient listening. The selection between the two microphones can be do in the browser configuration. Connecting an external microphone can be useful for bring the microphone closer to the voice, when the camera is far away, for example by placing the microphone on the assistance column near an access bar.

D – Audio OUT

An external speaker can be connected to this mini-jack to be used instead of the speaker. built-in for two-way dialogue with drivers. Selection between the two speakers is can be done in the browser configuration. Connecting an external speaker can be useful for amplify the audio when the camera is placed far from the vehicle and the internal speaker it wouldn't be enough.

E – ALARM OUT 2

The camera has 2 alarm outputs to operate external devices. Operation of this output 2 (NO/NC, stable/impulsive) is configured with the browser. You can configure the output so that it activates following various events, such as the activation of an input, the detection of movement, of a vehicle or otherwise.

F – ALARM OUT 1 – ALARM IN 1

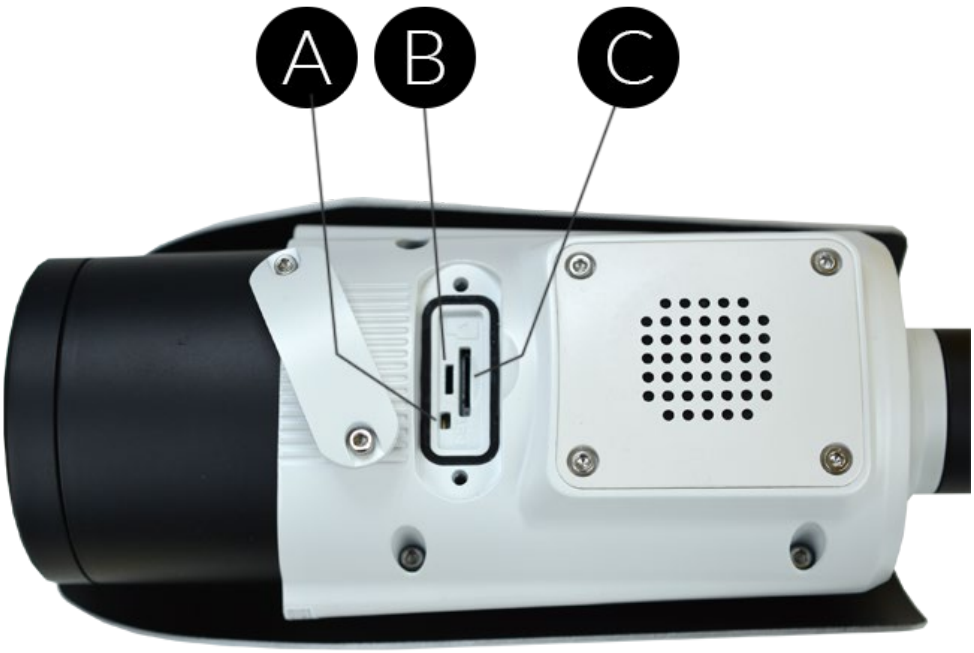
Here you can connect alarm output 1, available in addition to output 2 seen above.
You can also connect an alarm input, such as a contact, a photocell or other.
The operation of this input (NO/NC) is configured with the browser. You can combine activating the input to various actions that the camera will automatically perform, such as activate an output, play a sound message, or send photos via FTP or email

G – RS485

Serial port to control the zoom of the camera with RS485 control console, those used in the control of analog cameras. This port supports PelcoD protocol

H – WIEGAND

Serial port to connect the camera to an access control system that uses this Protocol. The camera supports 26-bit and 34-bit Wiegand.



A – Reset button

Long press to reset to factory settings

B – SD card LED

Lights up BLUE when a working SD card is inserted

C – SD card slot

Insert a micro SD card up to 1TB to save videos and photos. License plate photos, sounds

Custom and black/whitelist data are not saved to the SD card, but to the memory

4GB internal

Assembly

The cameras come with a wall/ceiling mounting bracket designed for
allow the cables to pass through it. The bracket is usually mounted in
cable outlet correspondence. The fixing base has 4 holes for wall fixing with
anchors. The case is waterproof and can be installed outdoors without protection.

IMPORTANCE OF CAMERA POSITIONING

These cameras are designed to read the characters on vehicle license plates.
The positioning of the camera is very important for a good performance of license plate reading and
to avoid reading errors.
In this chapter you will find the information necessary for good positioning.

INCLINATION ON THE HORIZONTAL PLANE

For the character reading to work correctly it is important that the license plate is presented as clearly as possible.
possible horizontal. When mounting the camera, be careful to rotate the front of the
camera clockwise or counterclockwise until the road surface is perfectly horizontal.
This will allow the license plate to be horizontal and easily readable. The inclination of the license plate in the
recovery must never exceed 5° in order to have reliable readings.

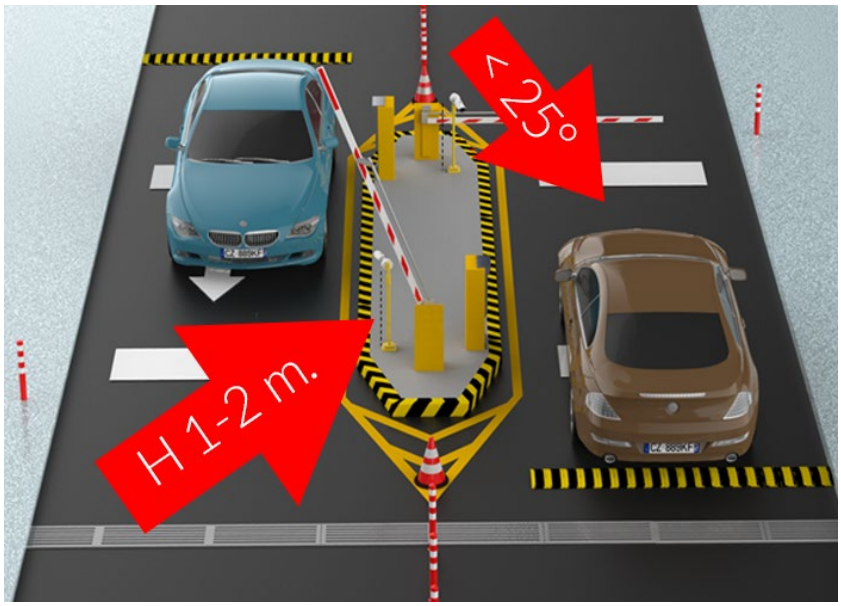
FRONT OR REAR LICENSE PLATE

You can take both the front and rear license plates of the vehicles. If you have a choice, the license plate
Rear is preferable because the rear lights give less glare.

MOUNTING POSITION – GATEWAY CONTROL

In gate control, reading takes place with the vehicle stationary or at very low speed.

- Optimal mounting height: between 1 and 2 metres.
- Optimal shooting angle relative to the direction of travel: less than 25°

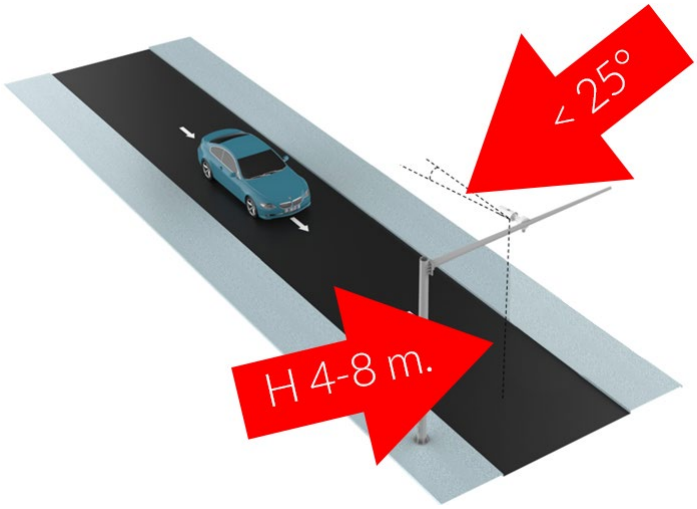


When controlling gates it is important to remember that the OCR algorithm detects license plates that pass through the detection area, entering and exiting the area, for this you need to set the box detecting sufficiently ahead of the stop line so that the vehicle stops when the license plate has already left the detection frame.

MOUNTING POSITION – ABOVE ROAD

In lane control, the camera can be placed above the roadway

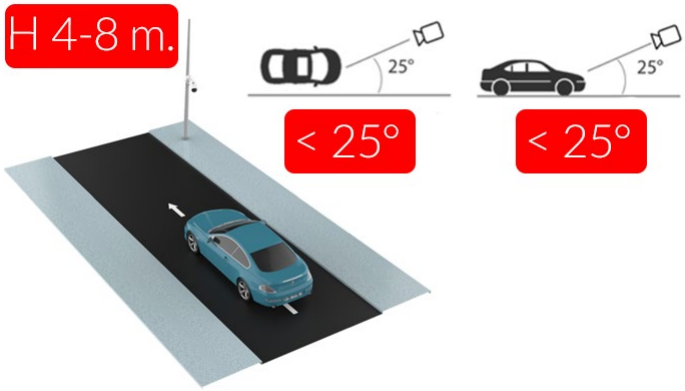
- Optimal mounting height for urban roads: 4-6 metres
- Optimal mounting height on the highway: 6-8 meters
- Vertical shooting angle with respect to the direction of travel: less than 25°
- Number of monitorable lanes: 1-2



MOUNTING POSITION – ROADSIDE

In lane control, the camera can be placed alongside the roadway

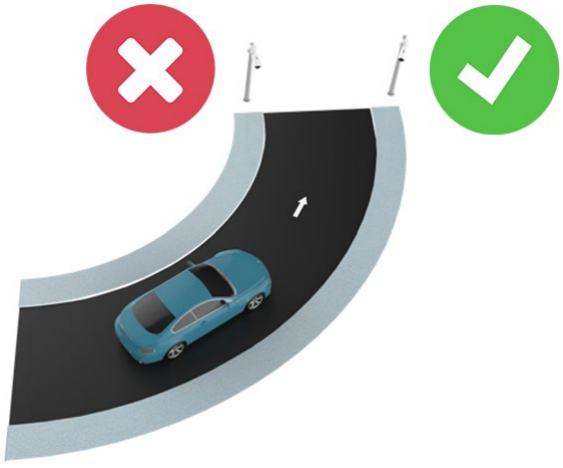
- Optimal mounting height for urban roads: 4-6 metres
- Optimal mounting height on the highway: 6-8 meters
- Vertical shooting angle with respect to the direction of travel: less than 25°
- Horizontal shooting angle with respect to the direction of travel: less than 25°
- Number of monitorable lanes: 1



MOUNTING POSITION – SIDE OF CURVED ROAD

When checking the roadways, it is not advisable to monitor curved sections because the license plate remains in the frame in the reading position for a short time. If this cannot be avoided, position as in the picture.

- Optimal mounting height for urban roads: 4-6 metres
- Vertical shooting angle with respect to the direction of travel: less than 25°
- Horizontal shooting angle with respect to the direction of travel: less than 25°
- Number of monitorable lanes: 1



LENS ADJUSTMENT

During installation, you need to take the time to adjust the lens because this is essential for obtaining a good reading of license plates. The objective of these cameras It is motorized, so you can easily adjust it from your computer with the browser, from your phone with the app or from NVR. The adjustment should ideally be performed by placing a vehicle in the reading position and adjusting the zoom so that the license plate appears as large as possible within the image. normally the zoom is adjusted so as to frame the roadway well without filming uselessly surrounding space. Please remember that license plate reading cameras must only frame the license plate. and they do not serve as context cameras to see the surrounding environment. For this function can be used alongside normal cameras.

SHOOTING ANGLE

The angle between the camera's line of sight and the direction of travel of the vehicles must be kept within the limits specified in the previous paragraphs. The optimal reading would be achieved with the camera placed in front of the license plate, which is obviously impossible. However, it is necessary to try to limit the minimize the misalignment because this directly affects the accuracy of the reading.

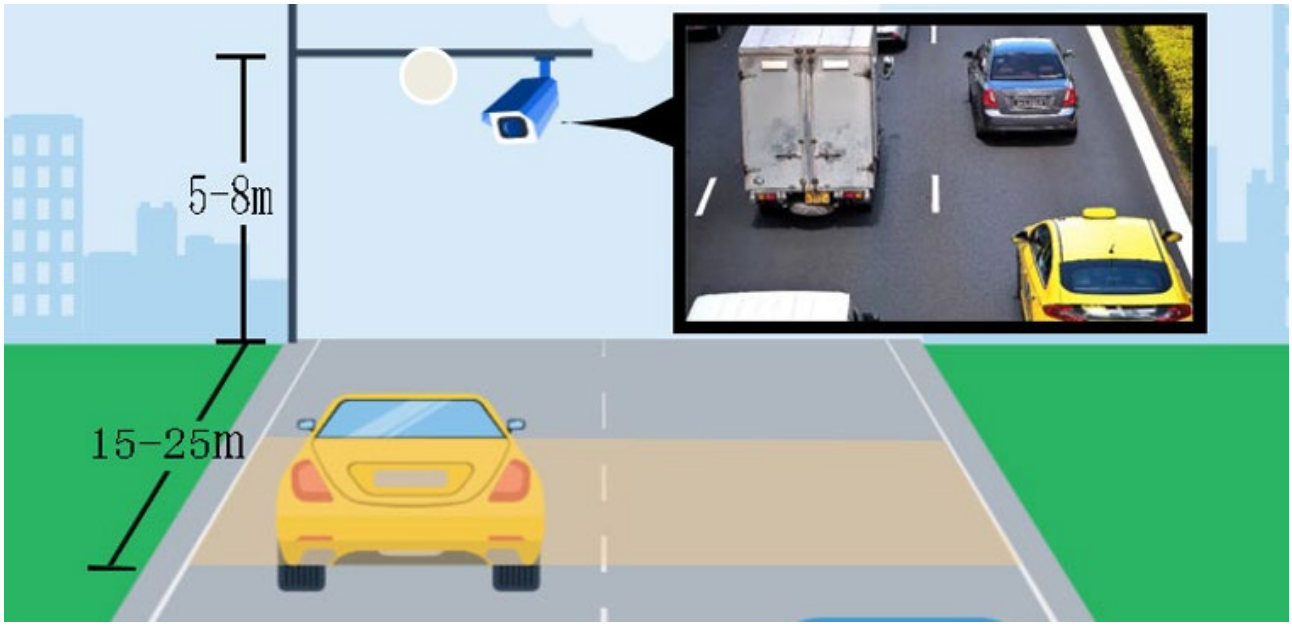
	IDEAL	ACCEPTABLE	MINIMUM	UNACCEPTABLE
Rotation angle				
Vertical angle				
Horizontal angle				
OCR accuracy	100%	95-96%	90%	

LIGHT SENSOR

The camera is equipped with a CDS sensor that allows it to detect the ambient brightness
It is necessary to avoid that light sources close to the camera distort the detection of this
sensor, because in this case the camera will not work properly at night. Above all
it is necessary to avoid the presence of lighting in the vicinity of the camera
would prevent the LEDs from turning on.
For proper operation, make sure that the front LEDs of the camera light up at night.
red.

READING DISTANCE

The camera is equipped with a powerful infrared illuminator capable of illuminating up to 80 meters
and an adjustable zoom lens. Although it is possible to read license plates even at distances
higher or lower, for optimal reading performance, it is recommended to position the
camera so that the reading area is located at a distance of between 15 and 25 meters from the
camera.



Network connection

The camera has an RJ45 network port that must be connected with a network cable to a switch in the network. The camera supports POE power, so if your switch supplies POE power
The camera will work with just the network cable. If your switch doesn't provide power, however, POE then you need to power the camera separately, providing 12V power with a
local power supply (not included).

Once the network and power are connected, check that the LEDs on the switch port start to light up. flashing. This means the camera is working and you can continue
IP address configuration. For convenience, the camera also has two network LEDs on the network connector so you can check the proper functioning of the communication even from the camera side.

Network Configuration

After connecting the camera to the network, you need to proceed with configuring the network parameters so that the camera can be accessed from a computer. It is used the configuration software for RH TOOLS cameras

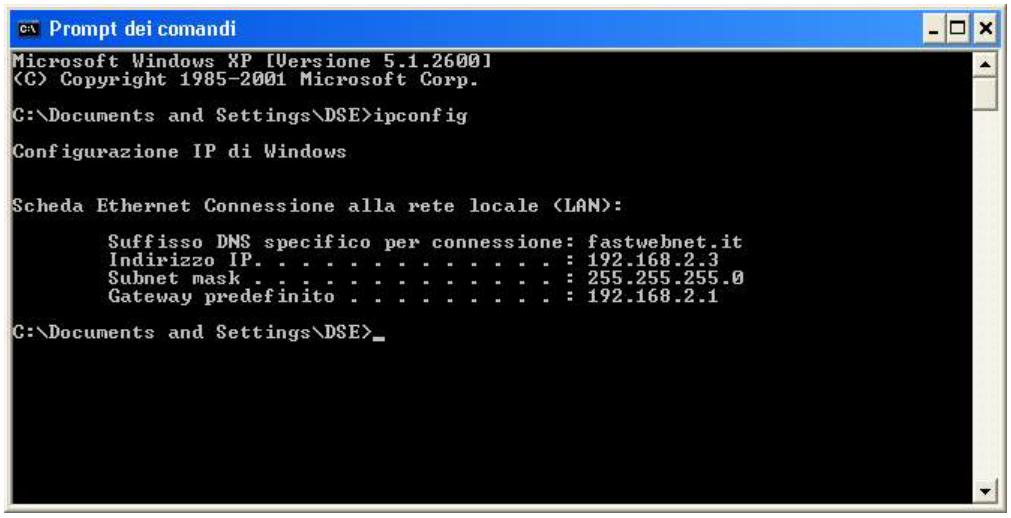
RH TOOLS SOFTWARE

To assign the correct IP address to the camera, use the configuration software TOOLS that can be downloaded from our website SOFTWARE section | IP CAMERAS | RH SERIES. Among the functions of this software is the ability to detect the presence of the camera on the network, whatever its address, and allow you to change the camera address so to be consistent with the local network. In fact, remember that for the camera to be visible to other PCs on the network, the first 3 parts of the IP address must be same as the other network PCs and the subnet mask should also be the same. It is advisable to connect in network one camera at a time and insert new ones only after configuring the previous ones.

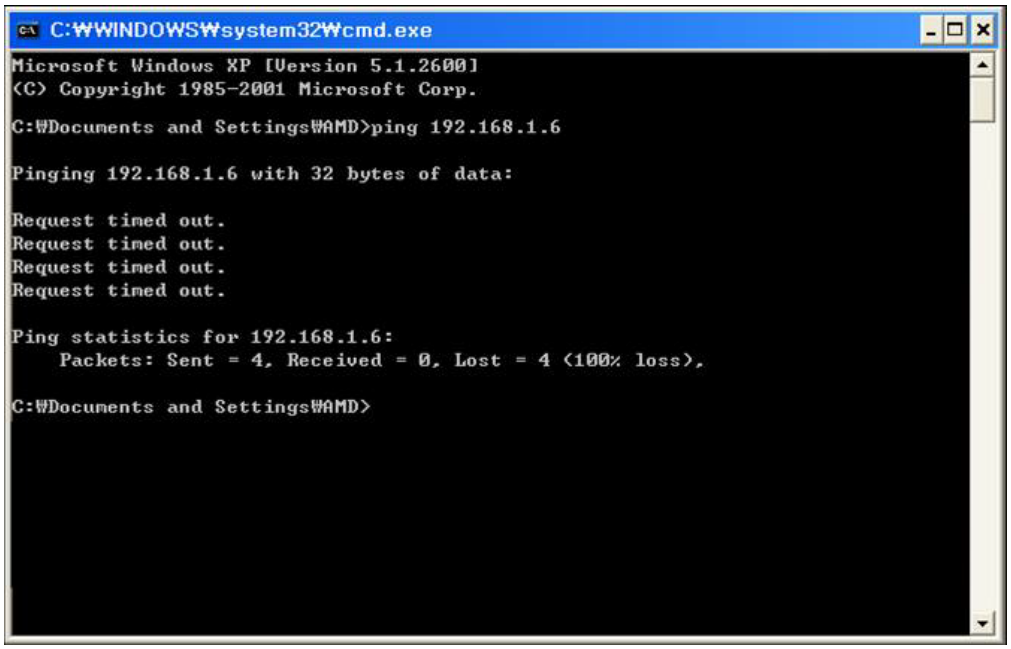
PRELIMINARY CHECKS

Before proceeding, you need to obtain some information from your network administrator about the IP address management used on your network. You need to know an IP address. to be able to assign to the camera that is not the same as any other device already present on the network. If you are unsure about how your network works, you can use some commands in the DOS PROMPT.

On a network PC, launch a DOS window available among the Windows accessory programs. Type IPCONFIG at the command prompt and press ENTER. The parameters will appear. TCP/IP. The second line is the IP address assigned to your computer.



In the example above the address of the PC you are working on is 192.168.2.3 and the subnet
The mask used is the classic 255.255.255.0. You can therefore assign a
address of your choice such as 192.168.2.XXX, where XXX stands for a number between 0 and 255.
It's important**choose an address that is not already used by others**
equipmentnetwork. To verify that the chosen address is free, try performing
a PING from the same DOS window by typing PING followed by a space and the IP that
you want to assign to the camera. If there is no device matching the
that address, you will receive 4 REQUEST TIME OUT as in the following example:



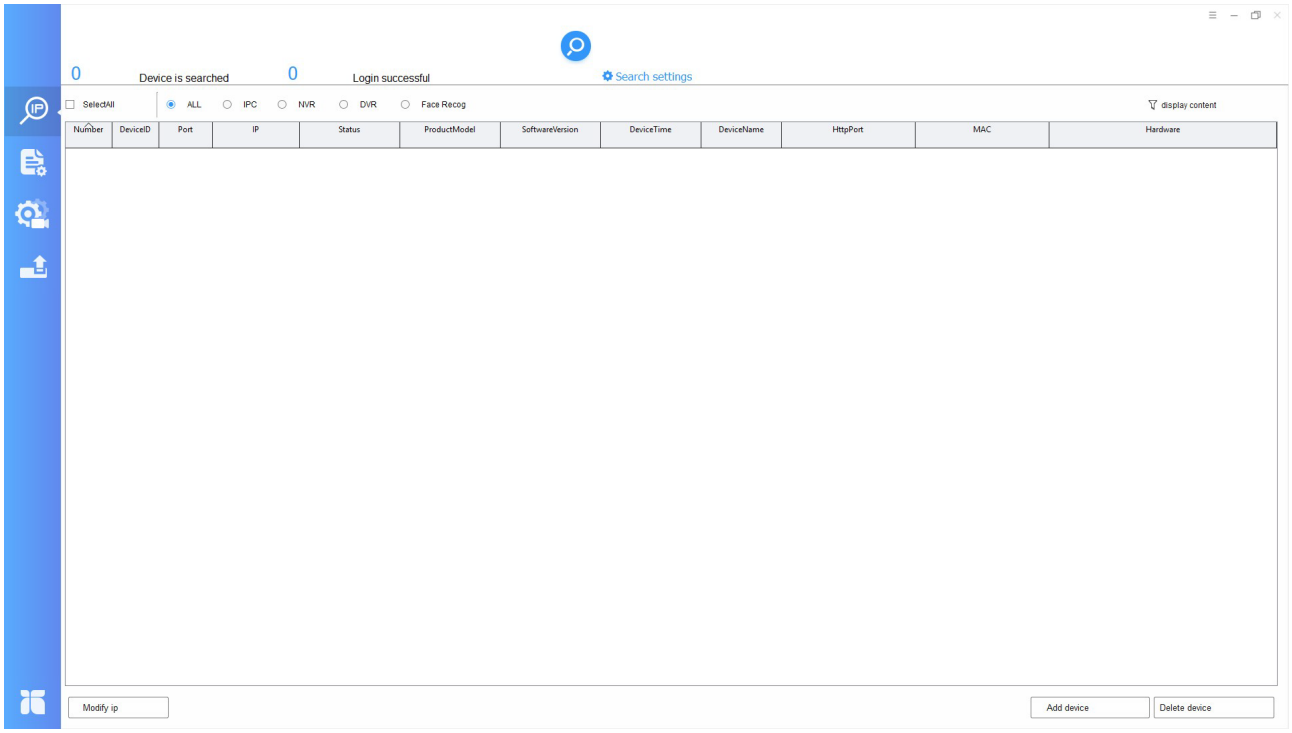
All cameras support automatic IP address assignment by a
DHCP server. However, this mode is not recommended because in the event of a network failure
or restarting the equipment it is possible that the cameras change IP address making
NVR reconfiguration required.

USING THE TOOLS CONFIGURATION SOFTWARE TO ASSIGN THE IP ADDRESS

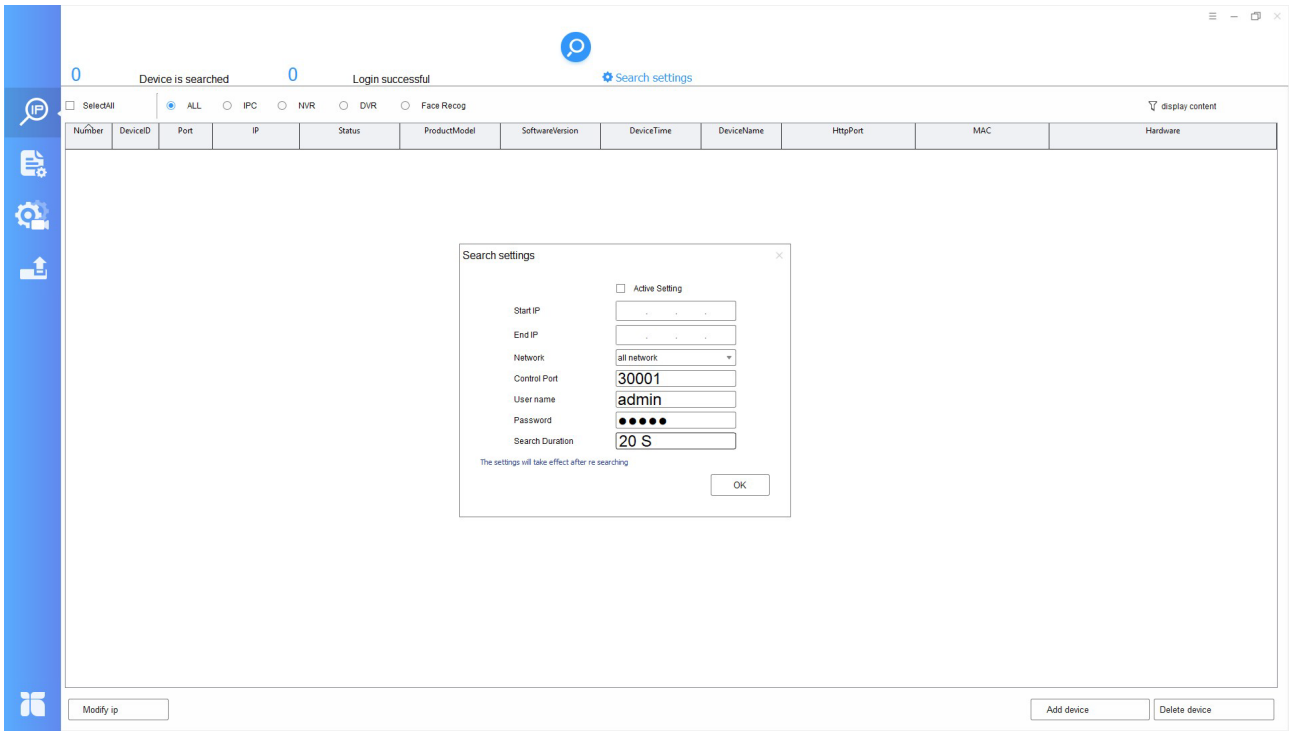
After connecting the camera you need to change the camera address to
assign one consistent with your network (first 3 parts of the address common to all
network equipment).

Proceed as follows:

1. Download and install the setup program on a computer connected to the same network
   of the camera. Start the program

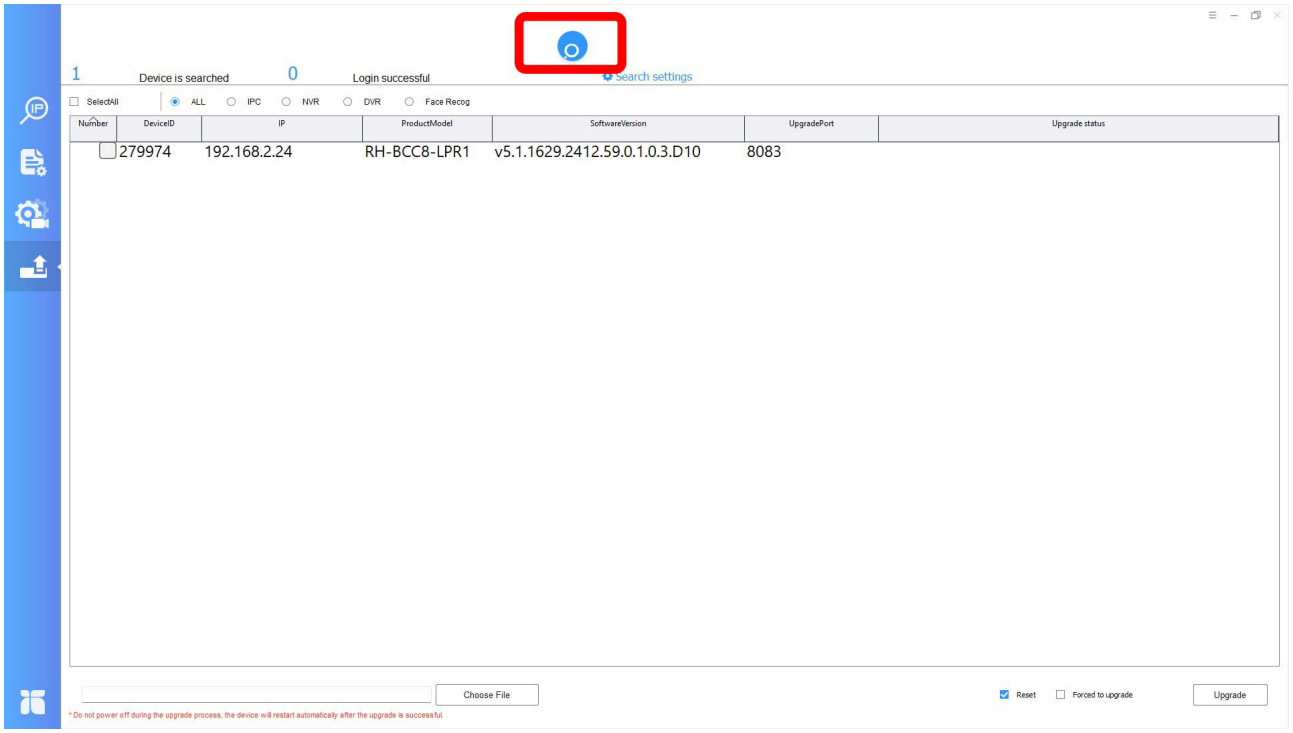


2. Press the SEARCH SETTING button and set the default login password 123456 in the password field so that the program can access the devices. Normally you can leave the other parameters unchanged.

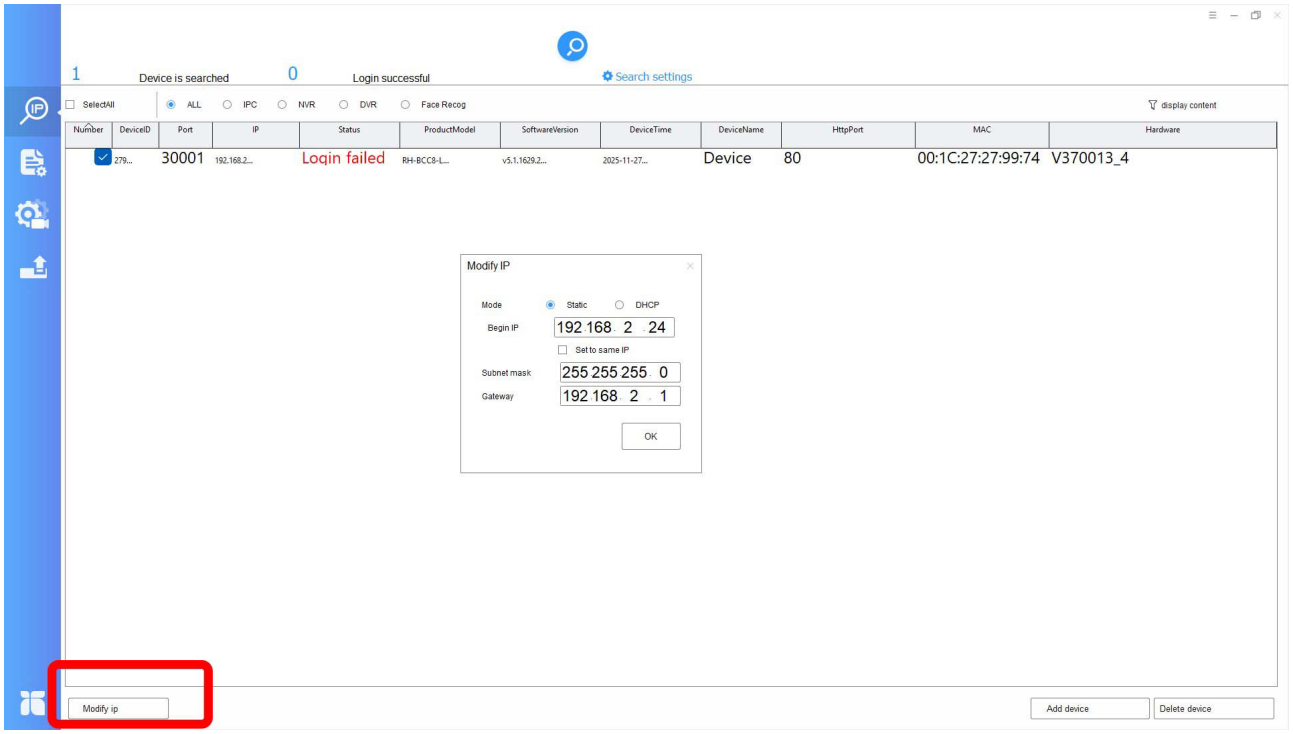


3. Press the search button with the magnifying glass at the top center of the page to start the search in

camera network. The configuration software searches for RH series cameras on the network and list in the grid. The software finds cameras even with a different network segment than computer



4. Select the camera and press the MODIFY IP button at the bottom left of the window



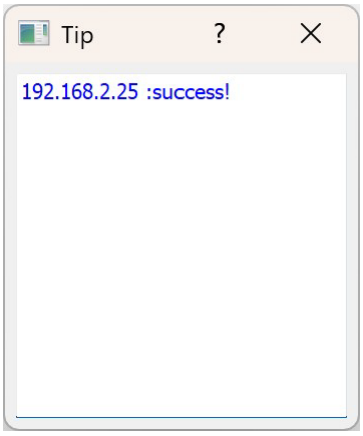
5. Enter the correct network parameters you want to assign to the camera.**The IP address**

must have the first 3 digits equal to those used by your network and not be used by others equipment, as we have explained extensively in the previous chapter.**SUBNET MASK**must be the one used by your network (typically 255.255.255.0).**gateway**And the address of the network equipment that allows access to the Internet (usually a router with the network address xxx.xxx.xxx. 1). You can edit the network parameters as you like by writing in the boxes. If you are asked for the camera's login credentials, use the factory setting:

USER: admin

PASSWORD: 123456

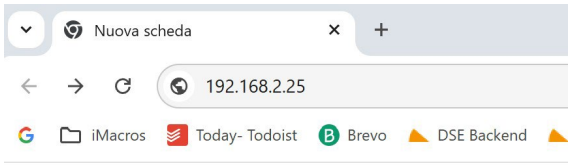
6. Press OK to transfer the configuration to the camera.



7. You're done. Now the camera is configured correctly to communicate with your network and you're ready to connect to the software. Wait a few minutes and press the button again. Search to verify the camera's new address. If you have other cameras, connect them. one at a time and assign different addresses to each of them.

Browser access

To control and configure these cameras you can use common Internet browsers,
like Chrome, Firefox etc.
Open your browser and type the camera's IP address in the address bar.

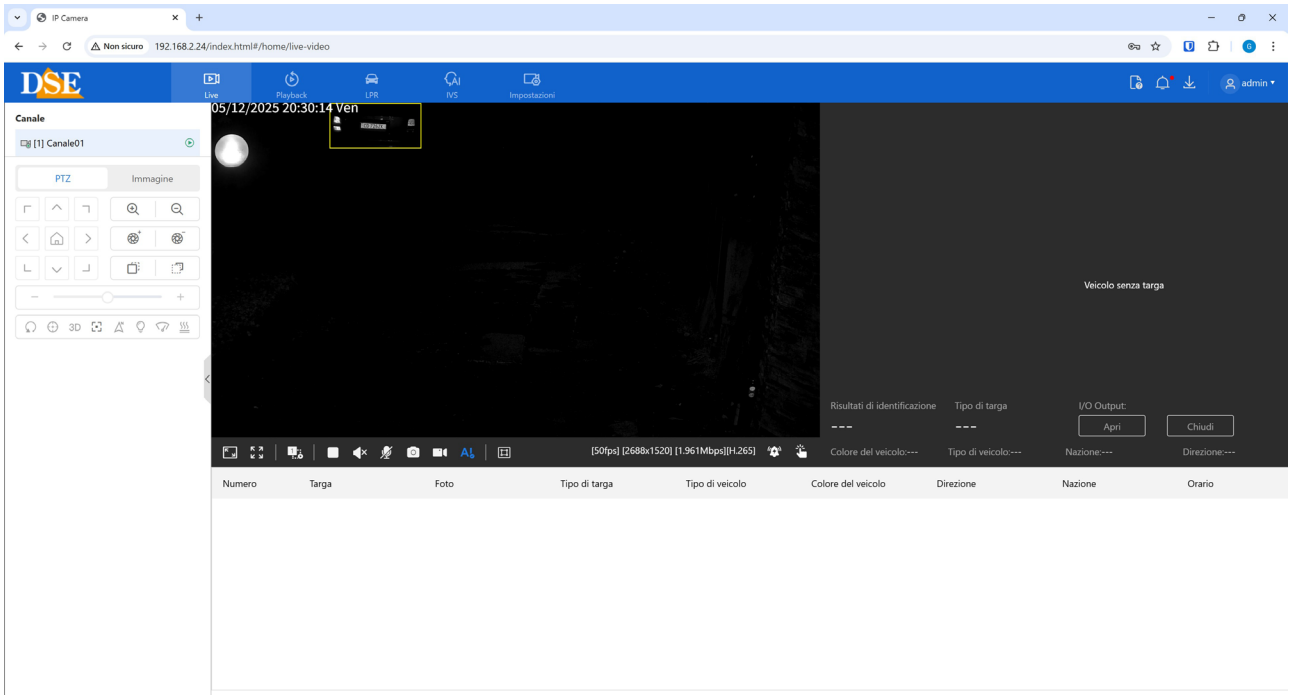


The camera is equipped with a web user interface, compatible with all common browsers, which allows the use and configuration of the camera.

On the login page, choose the language (the default is Italian) and enter your login credentials.
of the camera that are factory:

USER: admin

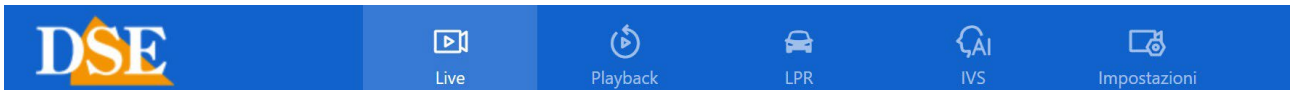
PASSWORD: 123456



If the login page does not appear, check the network settings you have set in camera, starting from the previous chapter.

WEB PAGE SECTIONS

The camera's web page is made up of several sections which can be accessed from the menu at the top



LIVE – Contains real-time video and camera controls

PLAYBACK – Allows you to review recordings saved on the SD card memory

LPR – Contains the license plate reading settings

AI/IVS – Contains the settings for the camera's intelligent detections

SETTINGS – Contains all the settings of the general functions of the camera

The top navigation bar contains an information section on the right

TO B C D

A – INFO - Information on managing two-way dialogue

B – NOTIFICATIONS – If an event occurs, this icon has a red dot and by clicking it consult the event details

C – DOWNLOAD – If you are downloading files from the camera's SD card, you can check here download progress

D – USER – View the logged in user, log out, or change password

VIDEO CONTROLS

Below the camera image pane are the live video controls.

TO B C D ANDF G HI THE M NO

A – Fit video aspect ratio to window or keep original aspect ratio

B – Bring the video to full screen (ESC to exit)

C – Select the video stream received from the camera (1,2,3)

D – Stop live video

E – Activate audio listening from the camera

F – Activate two-way dialogue via the camera speaker (see instructions ? in the command bar (top right)

G – Save a photo of the live image

H – Record live video

I – Live video with AI object recognition

L – Highlight detected objects with a frame

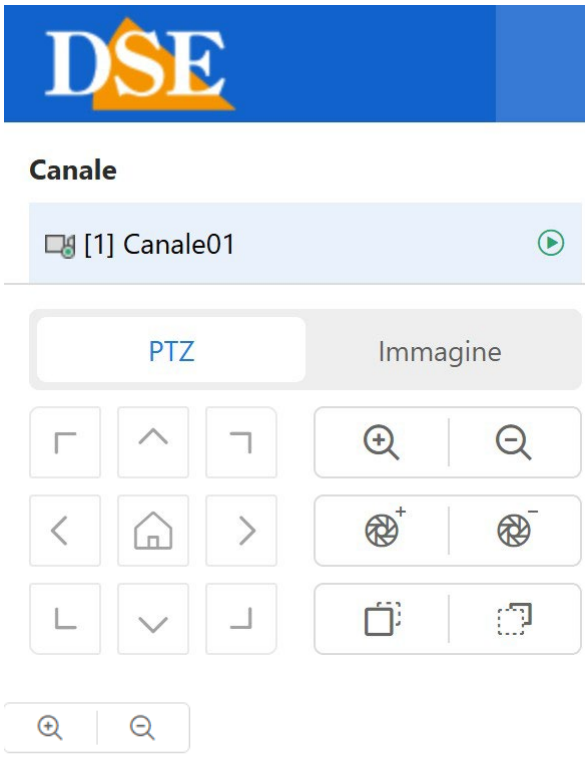
M – Video streaming information (Frame rate | Resolution | Bandwidth | Compression)

N – Silence alarm

O – Directly control the relay outputs on board the camera

OBJECTIVE CONTROLS

To the left of the live image are the lens controls among the PTZ panel buttons



ZOOM +/- - Adjusts the zoom in and out

APERTURE +/- Manually adjust the shutter aperture

FOCUS – Manually adjust the focus

Lens adjustment for license plate reading

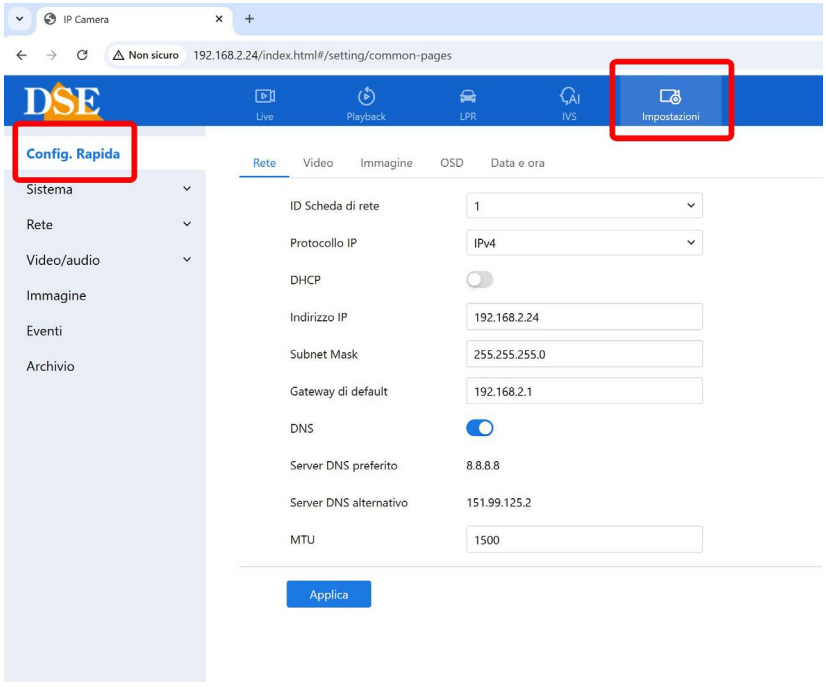
For a good reading of the license plates, the lens must be adjusted carefully to provide the algorithm with a better image as possible.

First adjust the**ZOOM**with the +/- buttons. You need to frame only the roadway, without unnecessary space around it so that the license plate appears as large as possible in the image.

The camera is equipped with**AUTOFOCUS**,so normally, once you set the zoom you don't you need to intervene on the focus controls. It also automatically adjusts the shutter in based on the metering settings, so you usually don't need to change the shutter with the buttons + /-

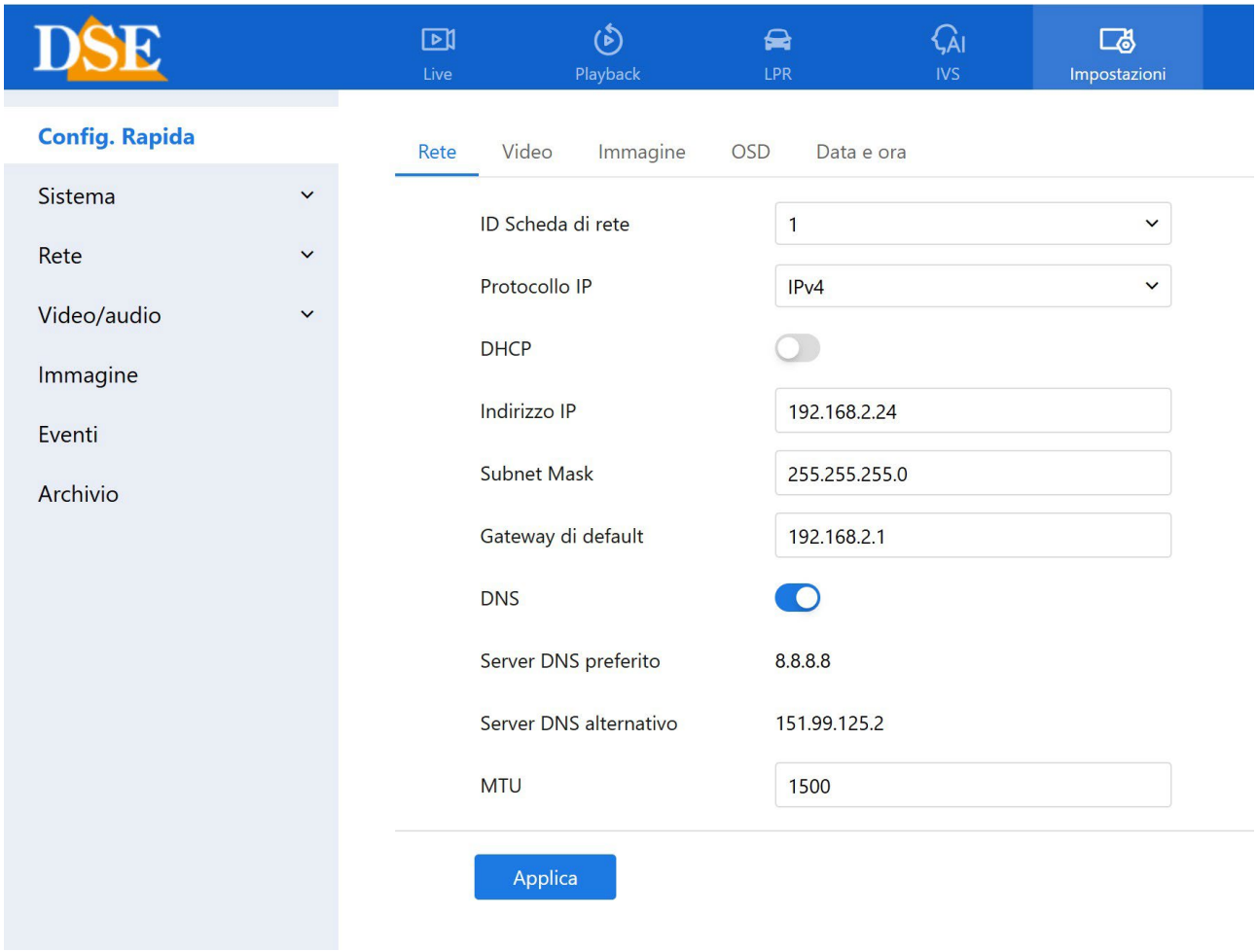
Image settings for license plate shooting

In order to read the characters on the license plates, the first thing that is essential is that the camera provides to the OCR algorithm an image where the license plate characters are perfectly visible, in all light conditions and for all expected speeds.
In this chapter we will look at the settings that determine the visual quality of the fonts. license plates. These camera settings are found in the SETTINGS section
The first entry in this section, in the left bar, is**QUICK CONFIG.**and contains the Selection of essential settings for license plate reading. There are 5 pages that, when browsed, one by one, they allow you to review the parameters that determine the correct reading of the license plates. In this section of the manual we analyze them one by one.
The camera is factory set for license plate reading and normally it is not necessary intervene in these parameters, if not to correct recovery situations optimal.



NET

The first section of the quick start concerns the network settings. These parameters are normally already set with the configuration tool, as shown above. Here you can review them and possibly modify or complete them if necessary.



VIDEO

Video settings are the encoding parameters of the camera's 3 video streams.Everything is fine

The camera can generate up to 3 different types of video streams that you can choose from the client when connecting. The most important streams are stream 1 (main

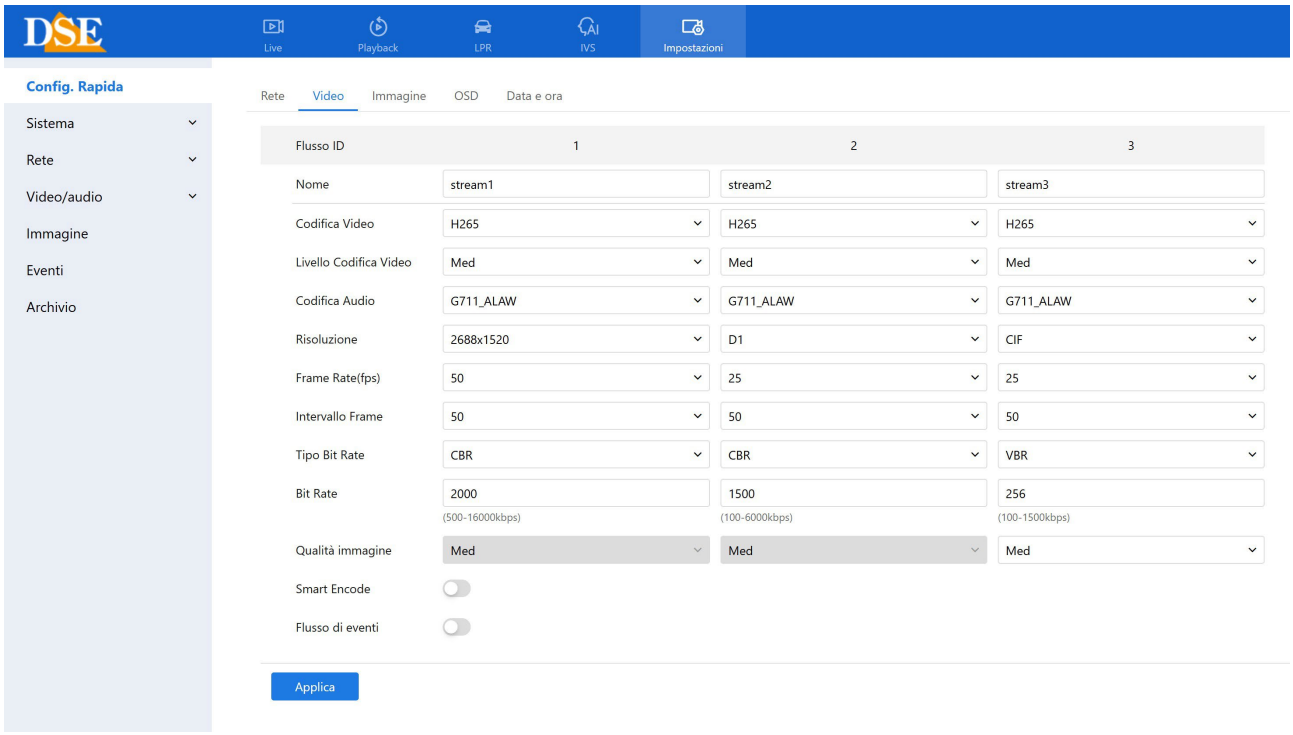
stream) and stream 2 (sub stream) which are used by NVRs.

As a rule**there is no need to intervene in these settings, which are already set factory**.

However, it may be useful to set the**H265 compression,**to have a lighter streaming

compared to the default H264. You may also find it useful to reduce the bandwidth allocated to streaming. primary, if you want to have more fluidity of live viewing when you are in the browser.

Here is an explanation of the various parameters in the VIDEO section.



STREAM ID – Choose the stream to schedule: 1, 2 or 3.

NAME – Assign a custom identifying name to the stream

VIDEO CODING – Selects the video compression. The factory default compression is selected.
H264, for maximum compatibility with all NVRs. However, if you have a recent NVR, it is advisable
Select H265 for smoother streaming and smoother images.
It is recommended to keep the same compression encoding on all 3 streams.

VIDEO CODING LEVEL – You can adjust the video compression, lower for higher quality
video and higher for less bandwidth usage.

AUDIO CODING – Sets the compression of the audio that is included in the video. It is recommended to keep the default.

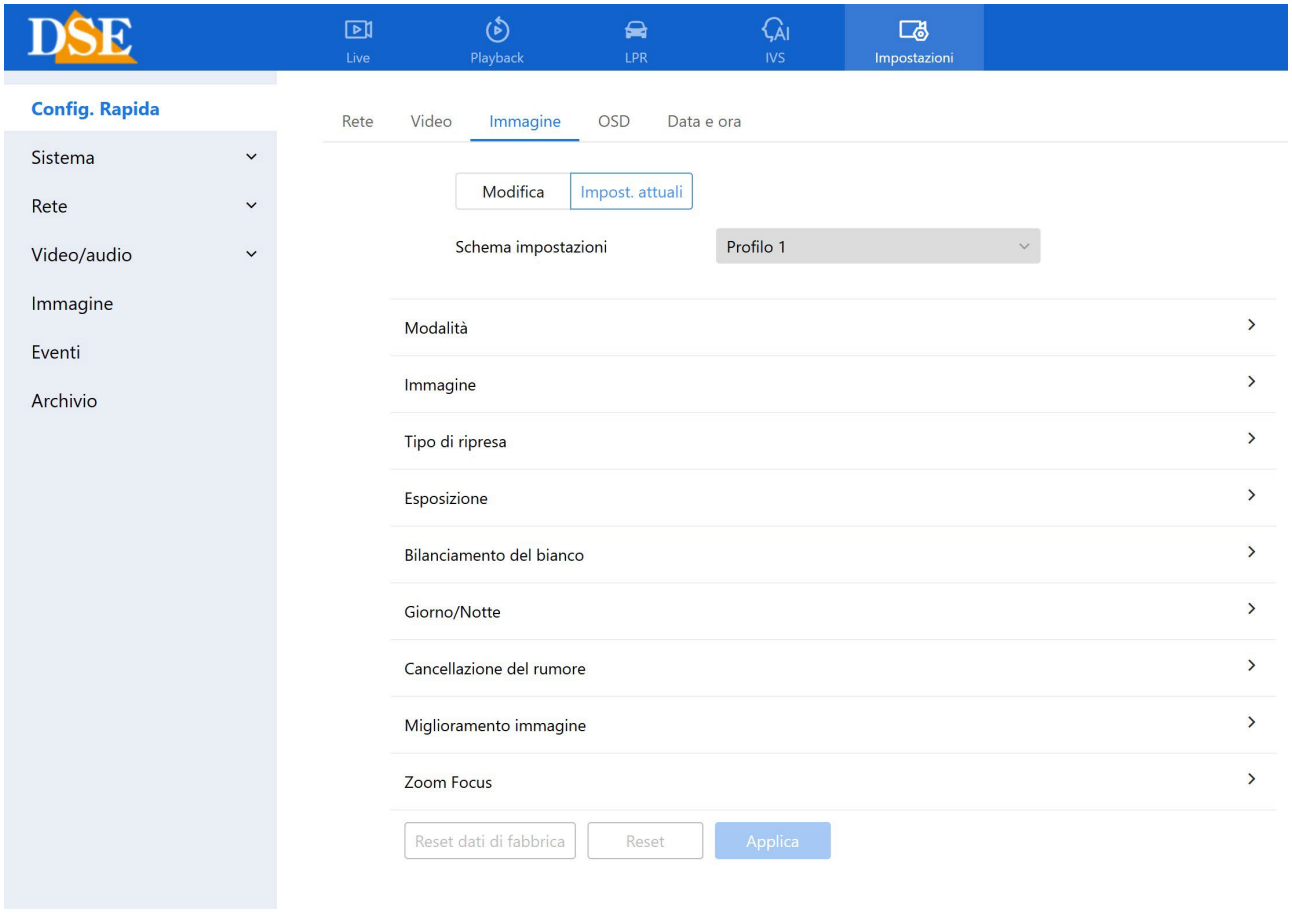
RESOLUTION – Defines the streaming resolution. The highest resolution is usually used.
for stream 1 and lower resolutions, D1 and CIF, for other streams. Lower the resolution
makes streaming lighter, but it is not recommended on these cameras because the quality
license plate reading would be affected.

FRAME RATE – This is the number of frames per second that make up the video stream. Consider
that 25 fps corresponds to the so-called real-time, that is, the television standard in which the eye
human does not perceive individual frames, but a single uninterrupted sequence. These
license plate reading cameras however work with a main stream at 50 f/sec to improve the
License plate reading for fast-moving vehicles. Lowering the frame rate makes streaming smoother.
light, but it is not recommended on these cameras because the quality of license plate reading is
would suffer.

In other streams, the standard setting is 25 fps, but it is also possible to reduce this.
parameter up to 10/12 f/sec without perceiving big differences in video fluidity and
saving a lot of bandwidth.
FRAME INTERVAL – It is the interval between 2 consecutive I-Frames in H.264/H265 compression. It is
a very specific parameter in the operation of video compression: the smaller the interval,
The higher the video quality, the better. It is recommended to keep the default value.
BIT RATE TYPE -This section gives you the possibility to choose between two different management modes
of the occupied bandwidth: CONSTANT BIT RATE (CBR) and VARIABLE BIT RATE (VBR).
In CBR mode the camera maintains a constant Bit Rate which can be set in the
box below. In VBR mode, however, the camera changes the bit rate in the various
operating conditions to maintain consistent video quality.
Under the checkbox you can set the maximum bandwidth (Bitrate) that the camera will be able to
occupy and also the video quality, only in VBR. In the main stream it is better to keep the value of
Factory Bit Rate is 4000Kbps. However, if you notice a choppy image in the client, for example
for example by connecting with a browser or with a computer with few resources, you could consider
lower the bitrate for example to 2000Kbps in order to use greater video compression and
lighten the client's load without sacrificing either resolution or frame rate.
SMART ENCODE – Automatically sets the main encoding parameters recommended for
license plate reading.
STREAM IN DETECTION – Allows you to set a video stream of different quality at the moment
where a license plate is detected. With this setting you can set a more compressed video.
which increases in weight and quality when a license plate is read.

IMAGE

The IMAGE section contains the image adjustments and is essential to make sure that
the camera can record legible characters in all lighting conditions. Only if the
the camera always captures the license plate characters well, the OCR algorithm will be able to provide
accurate readings.
Even in this case the camera is supplied already configured to record license plates in the
majority of applications and it is only necessary to intervene if reading problems arise.
The camera allows you to store 4 settings profilesthat can be
store and activate as desired, either manually or automatically. You can use these
profiles to test different configurations.



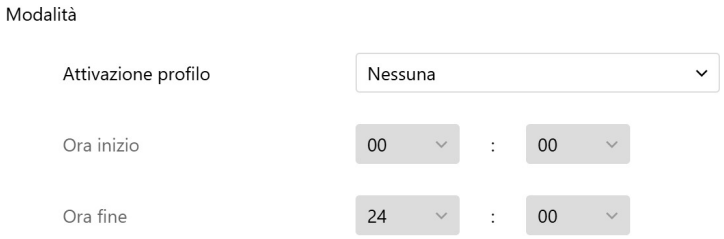
CURRENT SETTINGS – This page is divided into two pages: Current Settings and Edit. If Select current settings. The page parameters will not be editable. This section represents the set of settings that the camera is actually using at that moment.

If you want to edit the parameters you must select Edit

EDIT – If you select this button the page parameters become editable. You can Configure the parameters as desired and save with the APPLY button

SETTINGS DIAGRAM – The camera allows you to set up to 4 sets of settings (PROFILE 1,2,3,4) which can be activated at will or even automatically. Normally You can only use profile 1, but it may be useful to store other sets of settings to activate at certain times of the day when different situations occur. Another usefulness of these sets of settings consists in being able to modify profiles 2,3,4 to do tests, leaving unchanged set option 1. This way you can compare different sets of settings to see the one that offers the best performance in your shooting. To activate a profile, so that it is used by the camera, just select it in the edit section and press Apply.

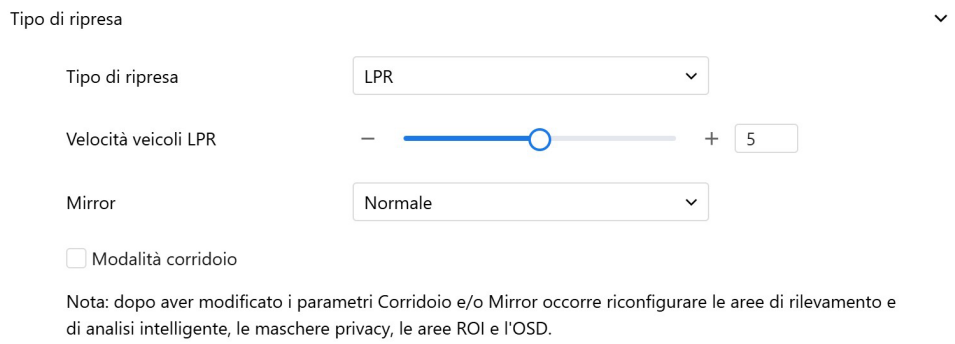
MODE – Here you select how to automatically activate the video presets (Profile 1,2,3,4).



You can useNo Mode' to continuously use the selected and visible set of Options in the Standard Mode section. Or you can useTime slot to activate the settings set selected in a certain time slot. You can also useConnected to D/N to use profile 1 of day and profile 2 at night.

IMAGE – Contains adjustments for Brightness, Saturation, Contrast, Sharpness

SHOOTING TYPE – Here you set the camera shooting according to its position assembly

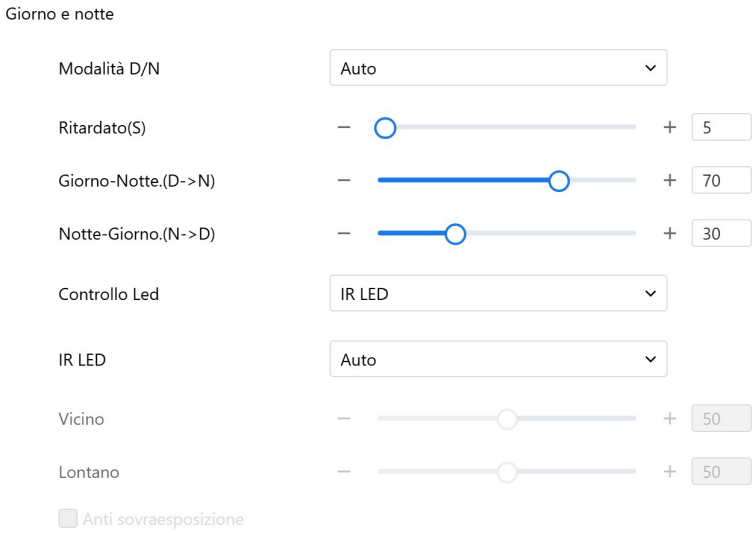


The first box at the topType of shot should be set toLPR . In this way many of the parameters The following entries will be preset for license plate reading and will not be editable. You can Change this setting only if you want to use the camera as a normal camera and not for its LPR function. The boxMirror allows you to flip the image horizontally and/or vertically, depending on how the camera is mounted to have the license plate lettering with the characters in the correct direction, from left to right. Finally, the corridor mode allows you to generate a video rotated with the short side of the image horizontal and the long side vertical.

LPR VEHICLE SPEED – This cursor, located in the SHOOTING TYPE window, has great importance and is set based on the expected speed of the vehicles. High level means a speed faster than the electronic shutter, more suitable for fast media but providing a sharper image dark. Low level means a slower shutter which provides a brighter image, but It is not suitable for shooting fast vehicles. If the vehicles are very slow or stationary, as in control crossings, you can set a low LPR speed, so you will have clearer images, especially at night. If you shoot fast vehicles on the road it is better to use a high LPR level even if the overall image it will be darker.

This slider automatically sets the shutter parameters so the shutter parameters

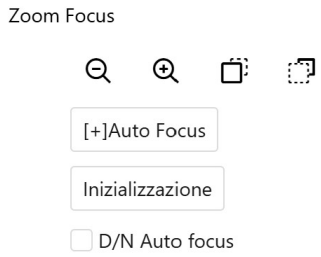
The following item's display will not be accessible.
EXPOSURE – Here you will find the shutter control parameters that determine
the brightness of the image. If you have selected in theRecovery: License Plate Recognition Not
you will be able to modify these parameters which are set automatically depending on the
speed of the vehicles you have set.
WHITE BALANCE – You can correct the white color tones to match the rendering
of colors to the lighting used
DAY/NIGHT – Here you can adjust the activation of the camera lighting LEDs in the
Day/Night transition



Normally the following is used:Auto D/N Mode so that the camera switches from mode by itself
Day to Night mode, depending on the light, or you can always force one of the two modes,
or you can schedule the passage on an hourly basis.
In LPR cameras the day/night switch is normally left automatic, as in
factory.
In automatic switching you can change the brightness threshold that determines the switching and
If necessary, insert a delay to prevent short flashes from causing a nuisance.Check
LED You can disable the LEDs, which is not a good idea if the camera needs to shoot in the dark.IR LED
determines the power of the LEDs which is normally left Automatic based on the zoom, but it can be
change manually, for example if the license plate is whitened because the recording takes place at
very close range.
NOISE CANCELLATION – You can use 2D and 3D video noise cancellation to
eliminate any disturbances
IMAGE ENHANCEMENT – Here you have digital image corrections available
video (WDR, HLC, BLC etc). If you have selected in theScene: License Plate Recognition Not
you will be able to modify these parameters which are preset for a good reading during the day and at night.

Night.

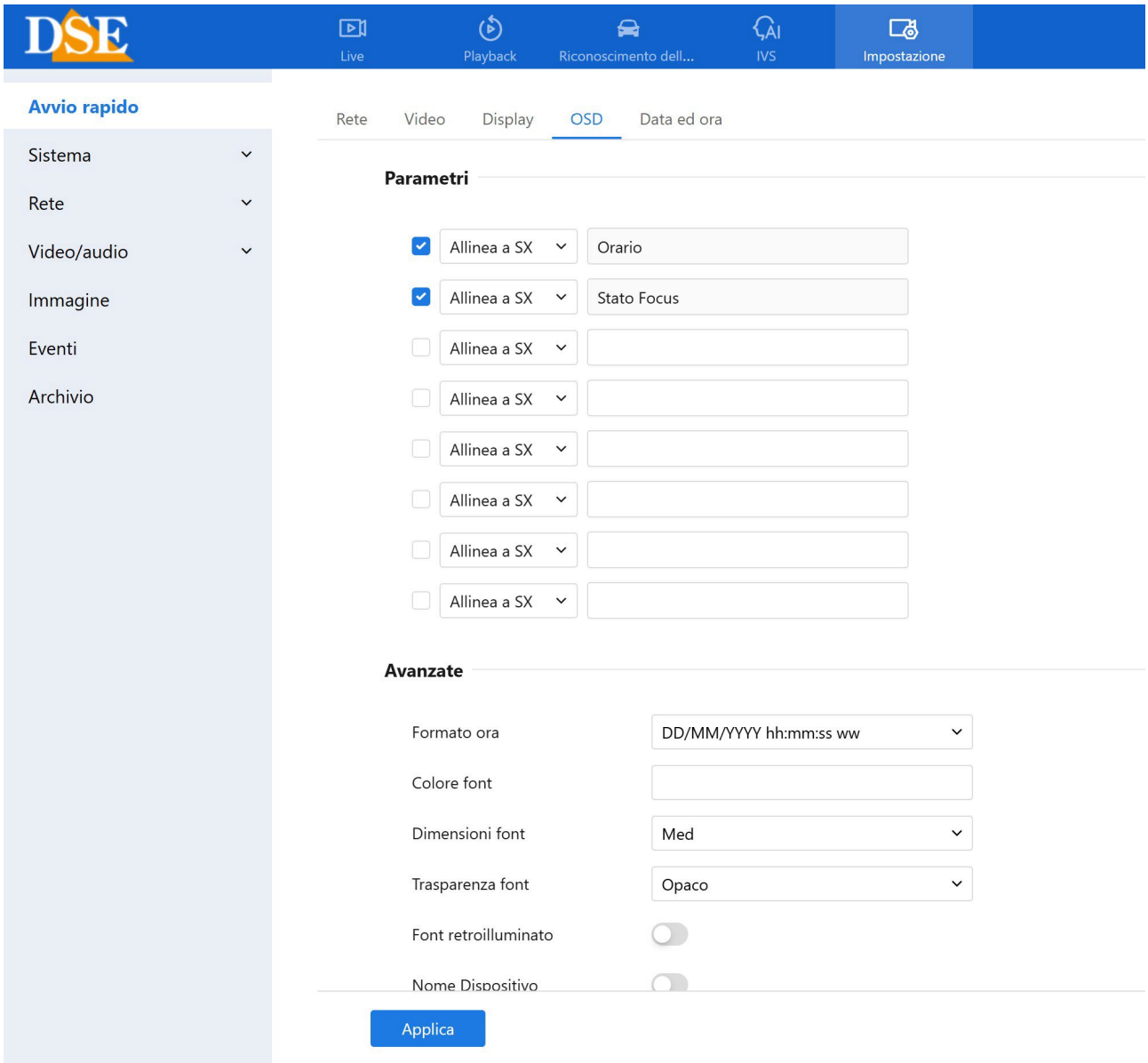
ZOOM FOCUS – Here you can adjust the camera's motorized lens.



You have the zoom +/- and focus +/- controls at your disposal. You can also activate the autofocus to adjust automatically focus and initialize the lens, which is useful to do if, after mounting the camera, it seems like the autofocus can't focus perfectly on the license plate.
The optionD/N autofocus automatically activates auto focus adjustment every time day/night transition to compensate for the focus shift when moving from natural light to daylight IR.

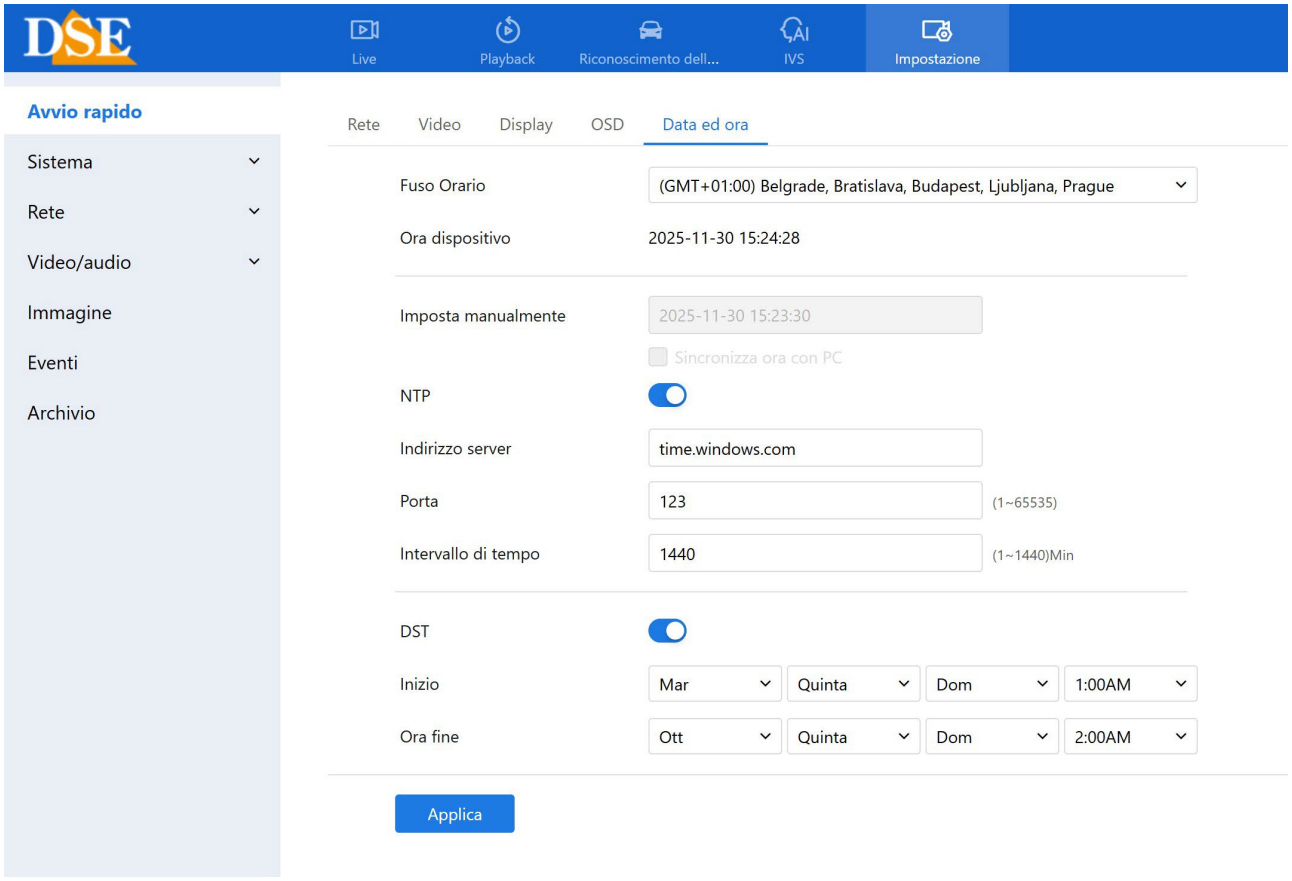
OSD

The OSD section allows you to set the overlays you want to have on the image.
of the camera and their position on the screen.



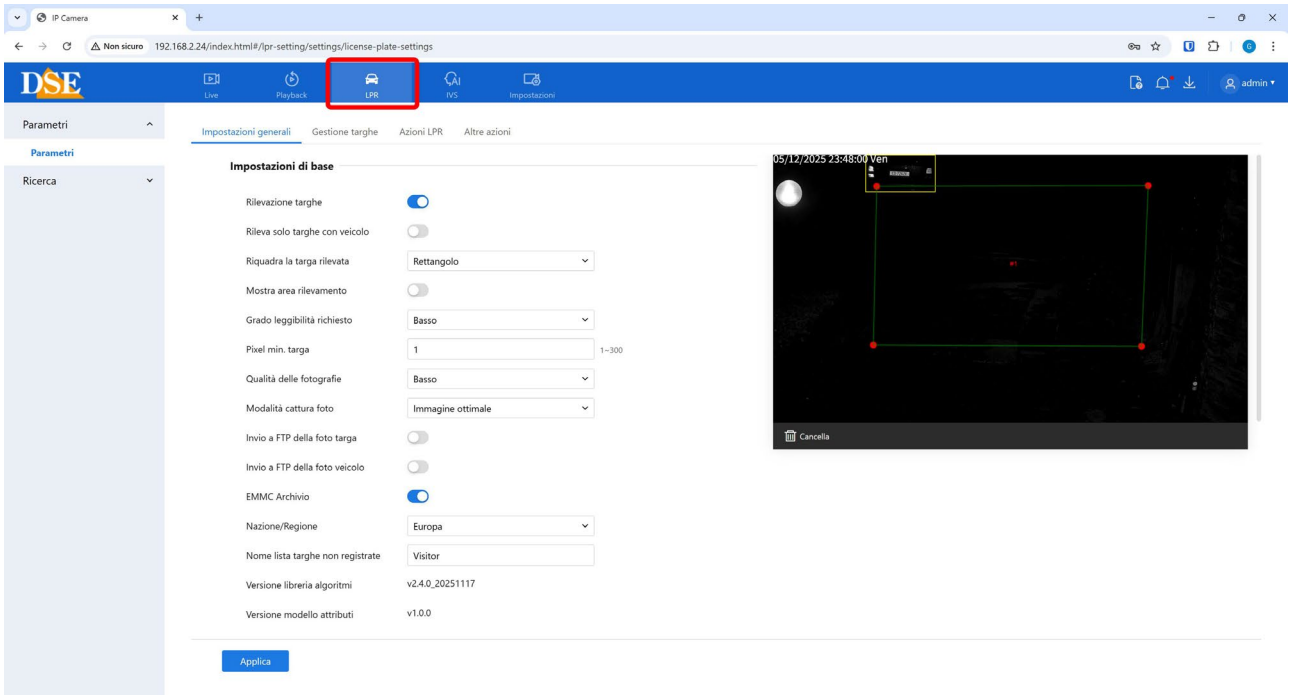
DATE AND TIME

The Date and Time section allows you to set the camera's time. In Italy, the time zone is set. GMT+1 time. If the camera has an Internet connection, it is advisable to activate the NTP synchronization, so that the time and date synchronize automatically via the web and the automatic switch to daylight saving time (DST).


DSE
Live
Playback
Riconoscimento dell...
IVS
Impostazione
Avvio rapido
Sistema
Rete
Video/audio
Immagine
Eventi
Archivio
Rete
Video
Display
OSD
Data ed ora
Fuso Orario
(GMT+01:00) Belgrade, Bratislava, Budapest, Ljubljana, Prague
Ora dispositivo
2025-11-30 15:24:28
Imposta manualmente
2025-11-30 15:23:30
Sincronizza ora con PC
NTP
Indirizzo server
time.windows.com
Porta
123
(1~65535)
Intervallo di tempo
1440
(1~1440)Min
DST
Inizio
Mar
Quinta
Dom
1:00AM
Ora fine
Ott
Quinta
Dom
2:00AM
Applica

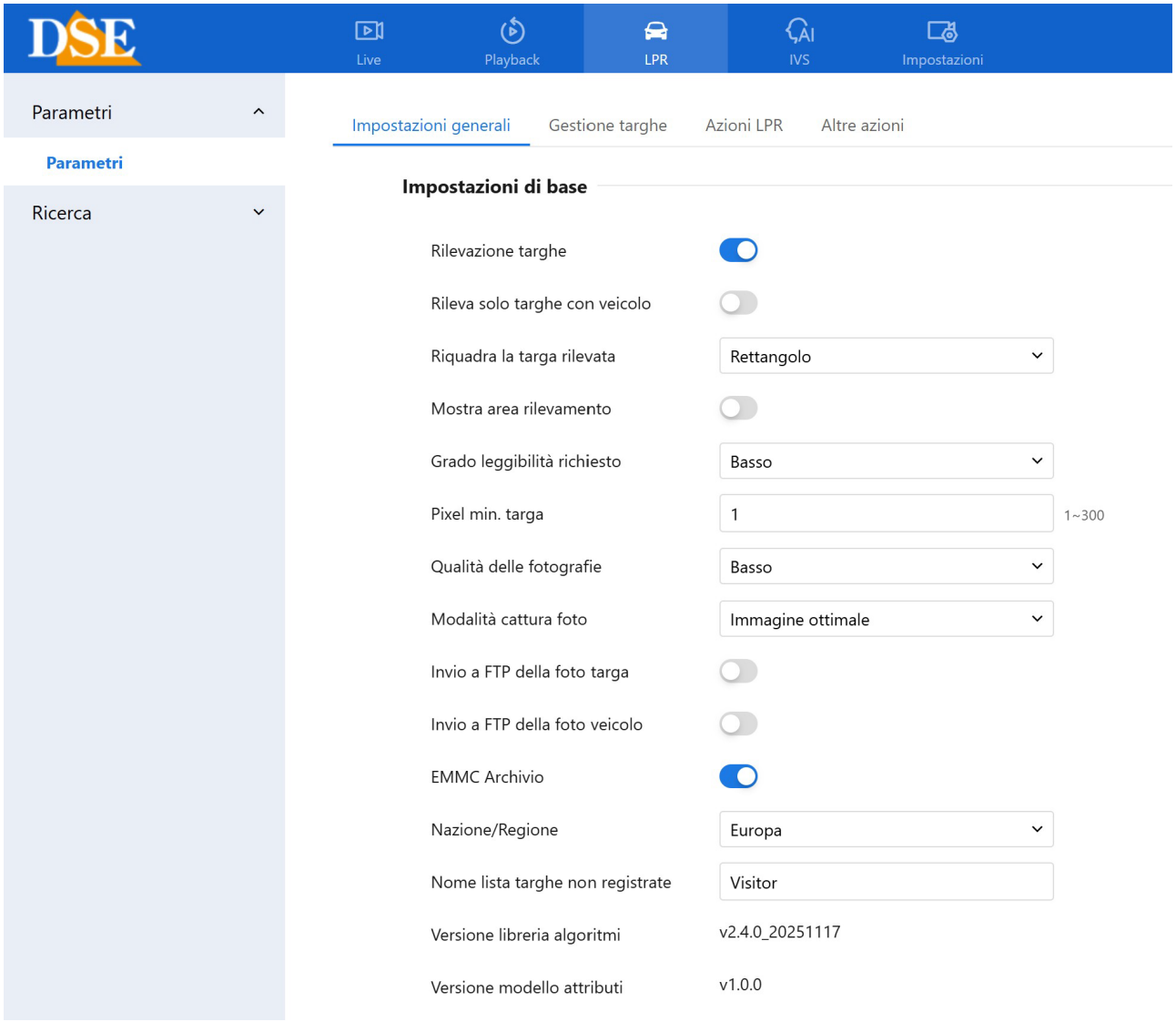
OCR settings for license plate reading

In the previous chapter we saw the adjustments that affect the image of the camera so that it always captures clear, defined characters in all conditions.
In this section, the license plate reading algorithm, known as OCR, is configured.
OCR is the algorithm that transforms the video image from the camera into alphanumeric data.



GENERAL SETTINGS

Here you can set the OCR reading algorithm settings.



LICENSE PLATE DETECTION – Enable to set the following parameters for license plate detection

license plates

DETECT ONLY LICENSE PLATES WITH VEHICLE – If you enable this option the license plate will be detected only if the outline of the vehicle is also visible. This option is used to prevent it from being exposed to The camera only takes a photo of a license plate, deceiving the detection.

BOX THE DETECTED LICENSE PLATE – Here you set the type of box that will appear in overlay around the license plate that has been detected. Rectangle is a rectangular frame, 4 Corners only shows the 4 corners around the license plate and Mosaic means the license plate is pixelated.

SHOW DETECTION AREA – Shows the area set for license plate detection in overlay in live video.

REQUIRED LEVEL OF READABILITY – Indicates how legible a license plate must be in order to be detected. A high value means that the license plate must be perfectly legible in the video to be detected. This means that the reading quality will be very reliable, but also that

License plates that are not perfectly legible may be ignored. It is recommended to set
Initially the factory value is Low and increase it later only if you register
frequent character reading errors and only after having tried to reduce them by intervening in the
image adjustments as seen in the previous chapter.

MIN. PLATE PIXEL – Sets the minimum size in pixels that the license plate must have inside the
of the image to be detected. The value ranges from 1 to 300 pixels. It is recommended to set the value
factory 1 with which all license plates are detected, even very distant ones. Increase the
This value is used to avoid detecting license plates that are far from the camera and instead read only those
closer, a useful function in controlling the gates when more vehicles may present themselves
lined up in the reading area.

PHOTO QUALITY – Indicates the quality of the license plate photo that is saved in the
internal memory of the camera. It is advisable to keep the quality low in order to
store more license plates in the camera.

PHOTO CAPTURE MODE – Defines the moment in which the photo detection is performed
license plate, take a photo and perform the related actions, such as activating the exits.
The camera detects the license plate as soon as it enters the detection rectangle, but does not trigger the trigger
detection instantly but after an interval that is defined in this option.
The recommended option is Optimal. In this mode, the camera waits for the license plate to exit.
from the detection area, then takes the photo at the moment where the license plate is best seen. This
method guarantees better photos and reading, but the detection will only occur when the license plate comes out
from the detection area. As an alternative to Optimal mode, you can set Timer mode.
with which the camera will perform the detection after a fixed preset time from the entrance
of the license plate in the area. When controlling the entrances, with the door opening, it is advisable to use the mode
timed or, if you use the Optimal mode, you have to draw the area a little far from the
stop line, so that the license plate crosses it before stopping.

SENDING THE LICENSE PLATE PHOTO TO FTP – The camera sends the photo of the license plate that has been detected to the
FTP server set in network configuration

SEND VEHICLE PHOTO TO FTP – The camera also sends the vehicle photo to the FTP server,
together with the photo of the license plate

EMMC ARCHIVE – The camera saves license plate photos to the internal memory.
are saved on the 4GB EMMC internal memory, not on the SD card which is used for the
video recordings and general photos.

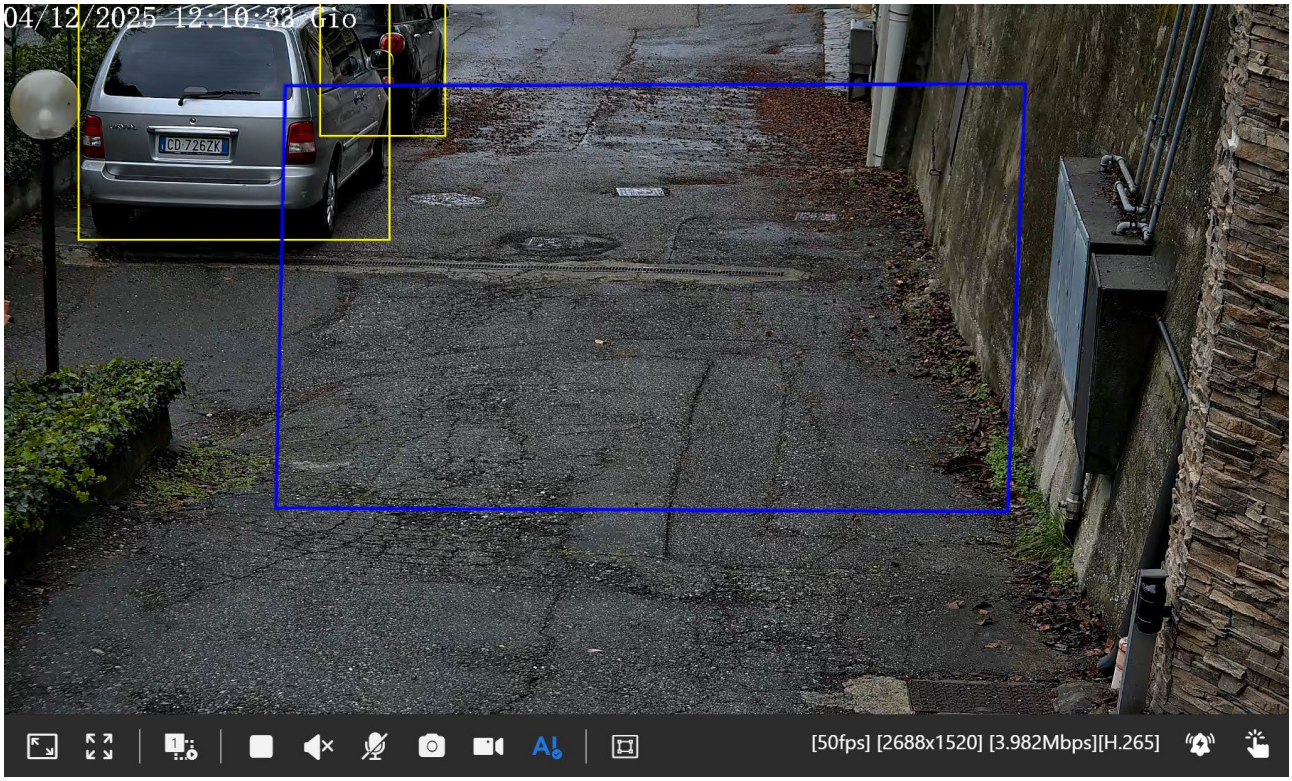
COUNTRY/REGION – You can use the universal OCR mode or use the settings
specific to your geographic area (recommended)

NAME OF THE LIST OF UNREGISTERED PLATES – Enter the name used to define unknown plates,
do not include either in the whitelist or in the blacklist

LANE LIST – In the live video window you can draw detection areas with the mouse

left-clicking to define the corners of the area and right-clicking to
finish. Each detection area you draw will appear in this list as a lane and
You can enable or disable it as you like.
PROGRAMMING – You can enable license plate detection only in certain time slots,
second day of the week

DETECTION AREA DRAWING – This page contains the live image of the
camera to be able to trace the detection areas (so-called lanes) with the mouse. Although
the system can manage many detection areas, it is recommended to set only one detection area
detection for each lane. The detection area must be set to exclude areas where
there may be irrelevant plates, such as the roadside, where they may be found
parked vehicles, but keeping it wide enough to prevent the license plates from being able to
pass through without crossing it completely. It is also advisable to draw an area that the vehicle
crosses completely during its path avoiding the license plate stopping inside.
Here is an example of a detection area on a roadway.

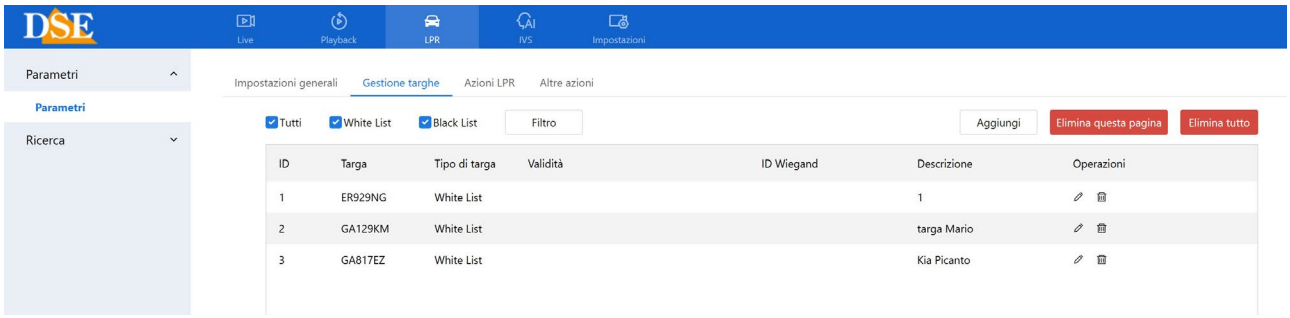


LICENSE PLATE MANAGEMENT

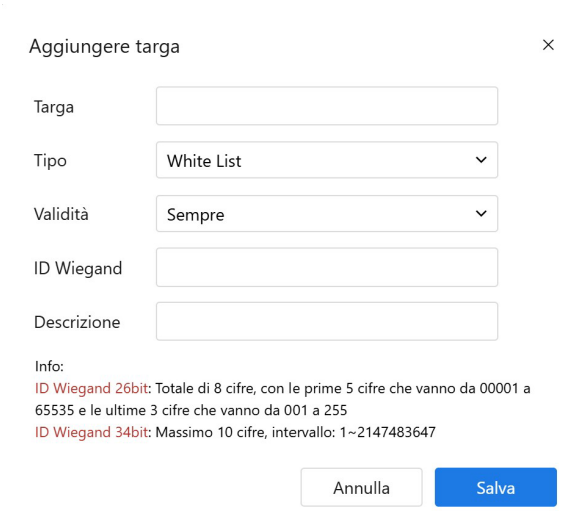
Here you can list all the license plates to be included in the camera's whitelist and blacklist.

The camera allows you to perform different actions depending on whether the detected license plate is in the whitelist, blacklisted or unknown.

The license plate database can contain up to 20,000 license plates which are saved in memory internal camera so that it can perform its functions even in the absence of a network.



ADD – Allows you to add a license plate



LICENSE PLATE – Enter license plate number

TYPE – Choose whether the license plate is included in the Whitelist (authorized vehicles) or the Blacklist (unauthorized vehicles)

authorized)

VALIDITY – You can make the license plate valid always or only in a specific period (start/end with time and date)

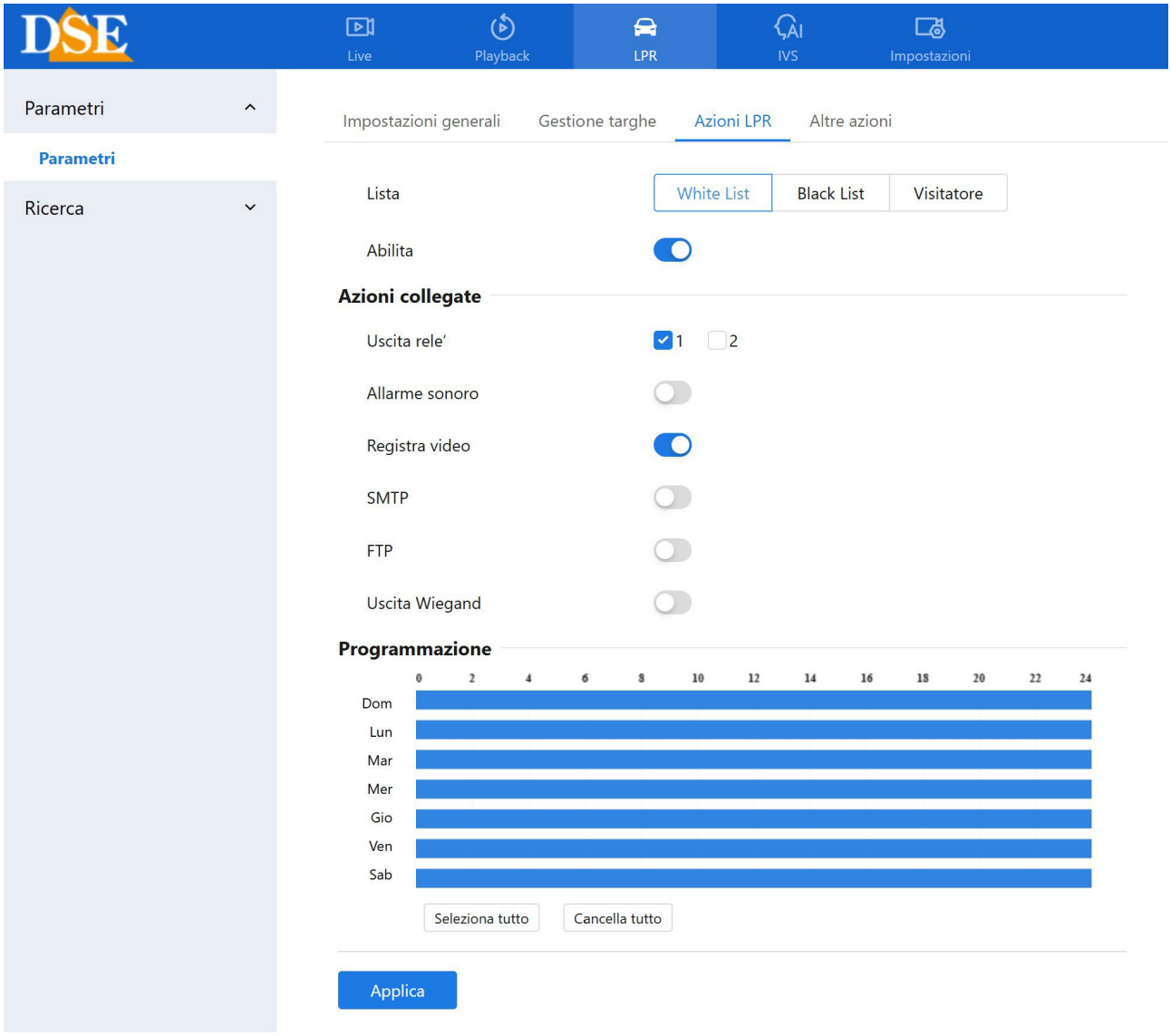
Wiegand ID – Associate this plate with a Wiegand protocol ID for communication with devices external access control

DESCRIPTION – Associate a description with the license plate (e.g. vehicle or driver data)

IMPORT/EXPORT - With the EXPORT button you can export the list of license plates in CSV format and import CSV files with pre-populated license plate lists. If you export a CSV file, Inside you will find instructions on how to compile a list of license plates to be uploaded to the camera. This is a convenient option when you have a list of license plates and want to avoid having to load manually.

LIST EVENTS

Here you can define the actions the camera will perform when it detects a license plate.



LIST - You can insert different actions depending on whether the detected license plate is a whitelisted license plate, or blacklist or visitor (license plate not loaded into the camera)

ENABLE – Activate the selected schedule. Leave disabled if, for example, you don't use it.

blackist.

RELAY OUTPUT – Detecting the license plate activates the relay output on the camera.

The camera has 2 independent relays whose electrical operation is defined in setting/events

AUDIBLE ALARM – Detecting the license plate activates an audible message emitted from the camera speaker. You can define which message to broadcast from the 10 that can be stored.

from the camera. You can replace the factory messages with your own custom wav files in setting/audio/audio file

RECORD VIDEO – The camera saves the video of the vehicle transit in the camera memory.

camera

SMTP – Sends email notification of detected license plate. You can set the email sending parameters and up to to 5 recipients in the Setup/Network/SMTP section

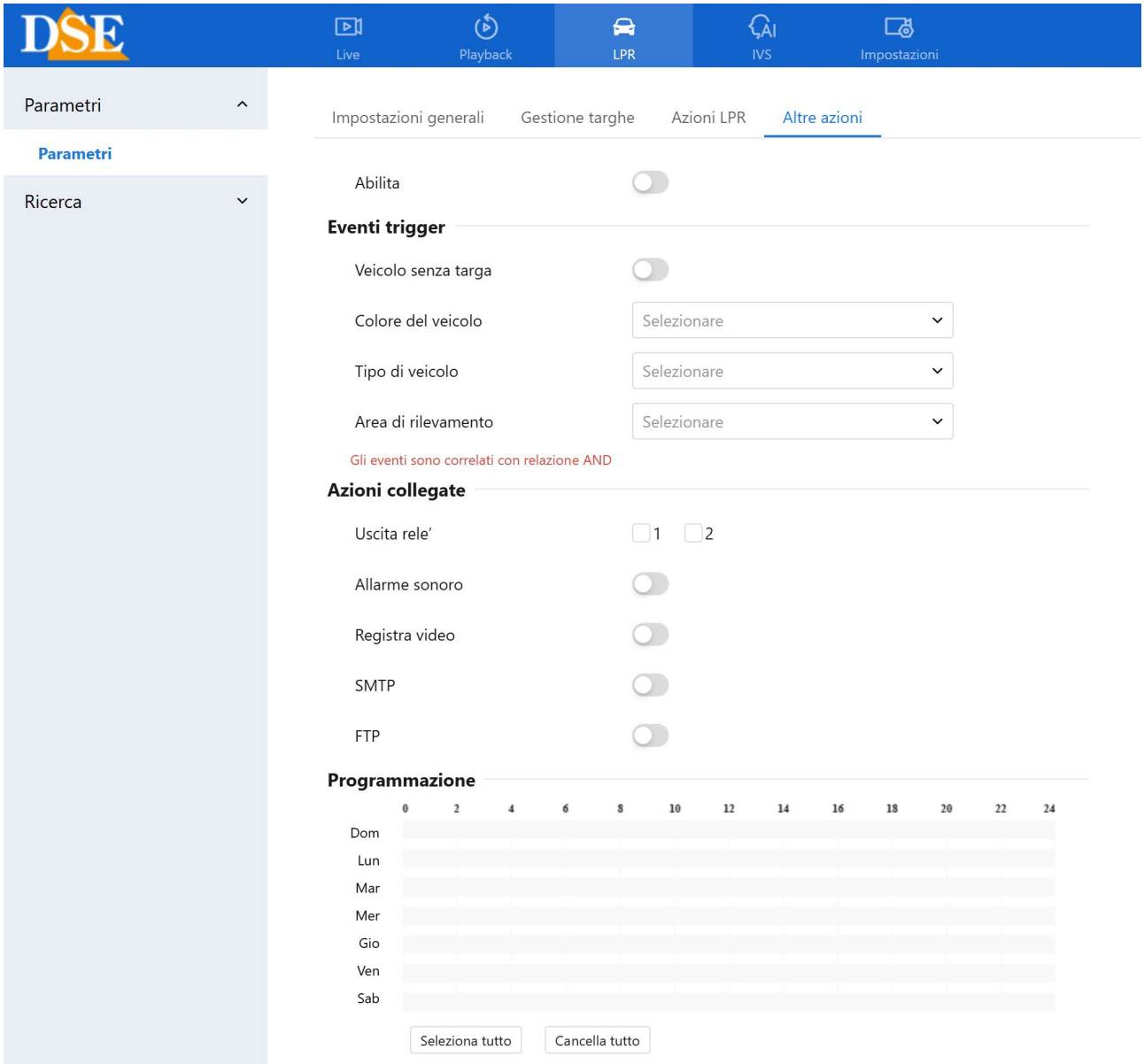
FTP UPLOAD – Send a photo of the detected license plate to the FTP server

WIEGAND OUTPUT – Sends the Wiegand ID associated with the license plate to the Wiegand output intended for dialogue with external access control systems

SCHEDULING – You can enable scheduled actions only in certain time slots depending on the day of the week.

ATTRIBUTED EVENTS

Here you can enter actions to be performed by the camera in case of reading a license plate, but not linked to the detected license plate, but to other details, such as the type of vehicle, lane, etc.



ENABLE – Activates all actions set in this section

TRIGGER EVENTS – You can monitor the following information:

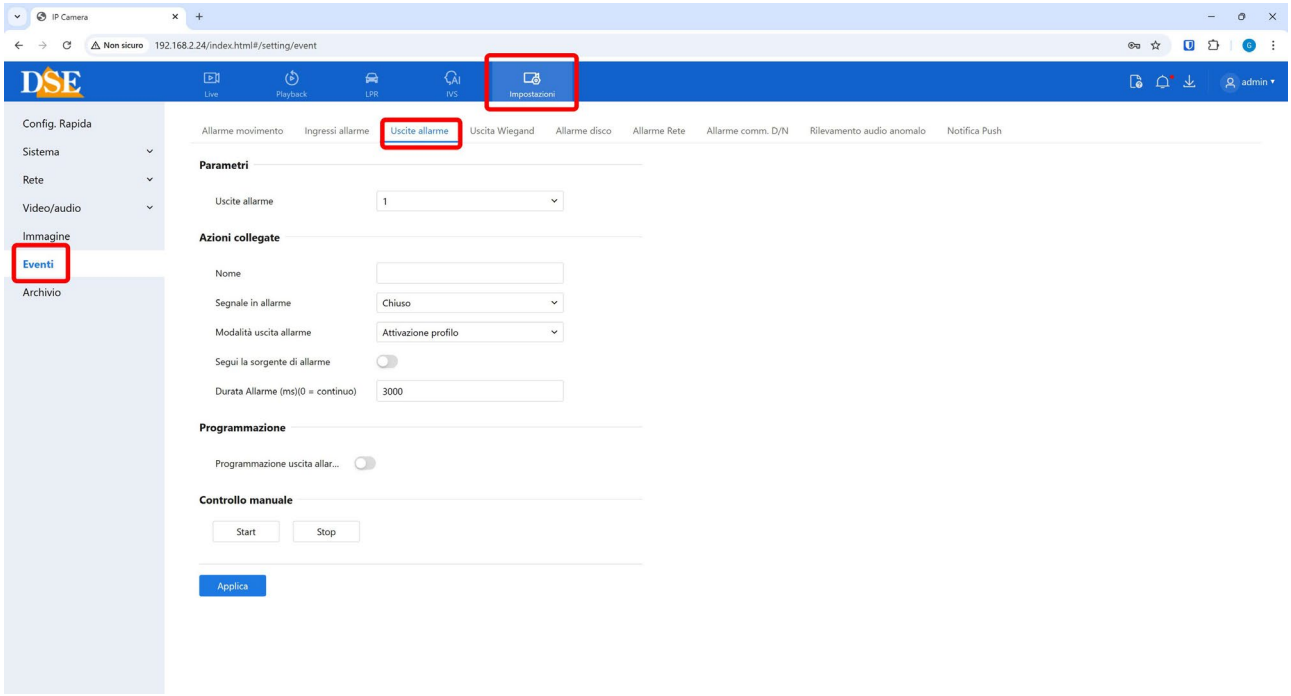
VEHICLE WITHOUT LICENSE PLATE – Detects if a vehicle is detected without a license plate or with an unregistered license plate.
visible
VEHICLE COLOR – Detects vehicles of a specific color
VEHICLE TYPE – Detects vehicles of a certain category (cars, vans, etc.)
DETECTION AREA – Detects which lane the vehicle is traveling in

You can enable one or more of these attributes which will work with AND logic which means that all
The conditions must be met for the event to be generated. For example, if you enable:
Vehicle Type: Car
Lane: 2
Scheduled actions will only be triggered when a car is detected in lane 2, while
a car in lane 1 will not generate these alarms.

The alarm actions are the same as in the previous paragraph.

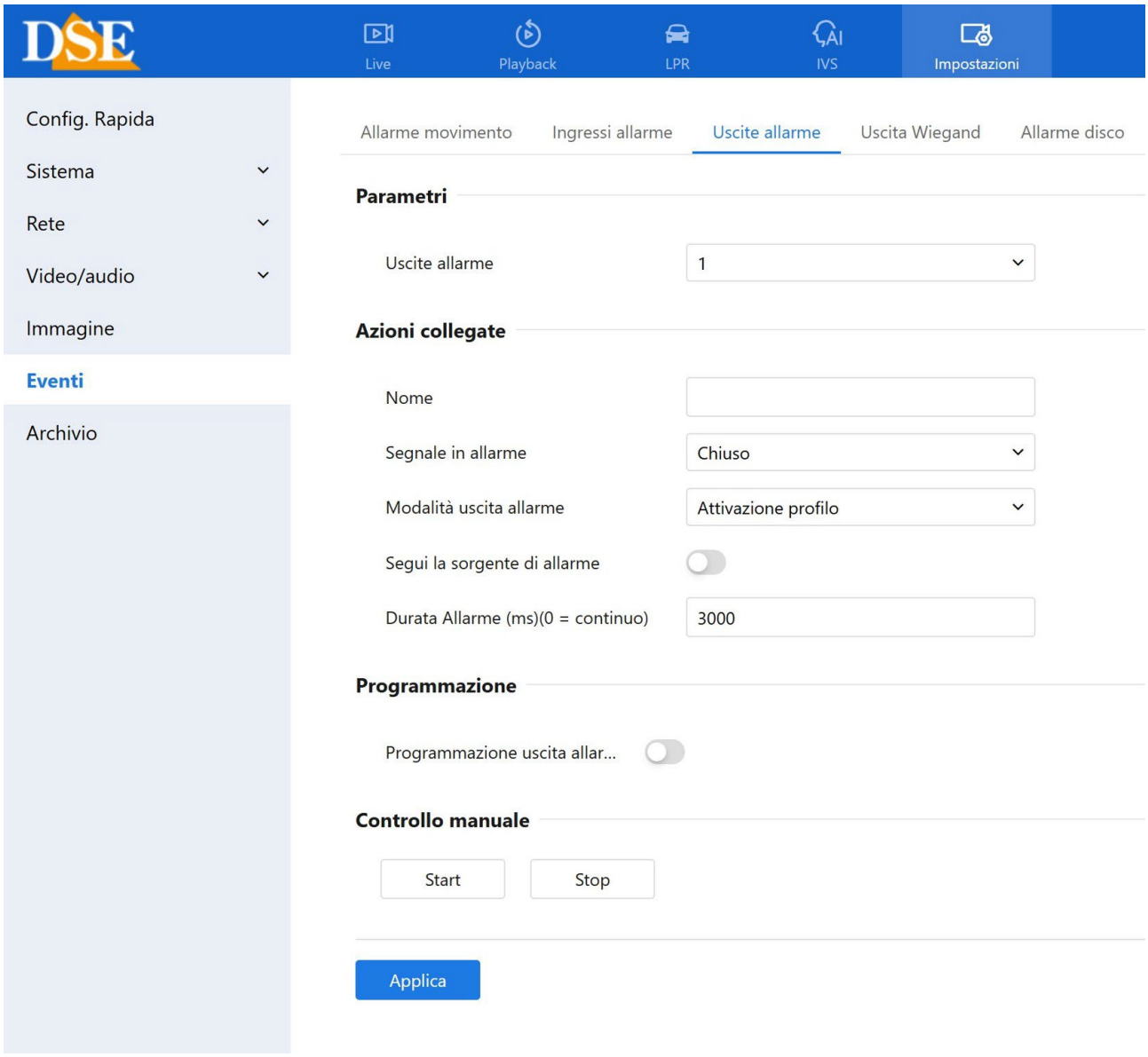
License Plate Reading Settings – Outputs

This section explains how to set the camera outputs that can be triggered in license plate detection. This is an important part if you need to control external devices, like a barrier or a gate.



ALARM OUTPUTS

Each camera has two relays on board to operate devices such as gate openers or access barriers based on license plate detection.



ALARM OUTPUTS – Select the output to configure (1/2)

NAME – Assign a name to the output that reminds you of its function

ALARM SIGNAL – Here you define whether, in an active event condition, the output contact must be open (NC) or closed (NO).

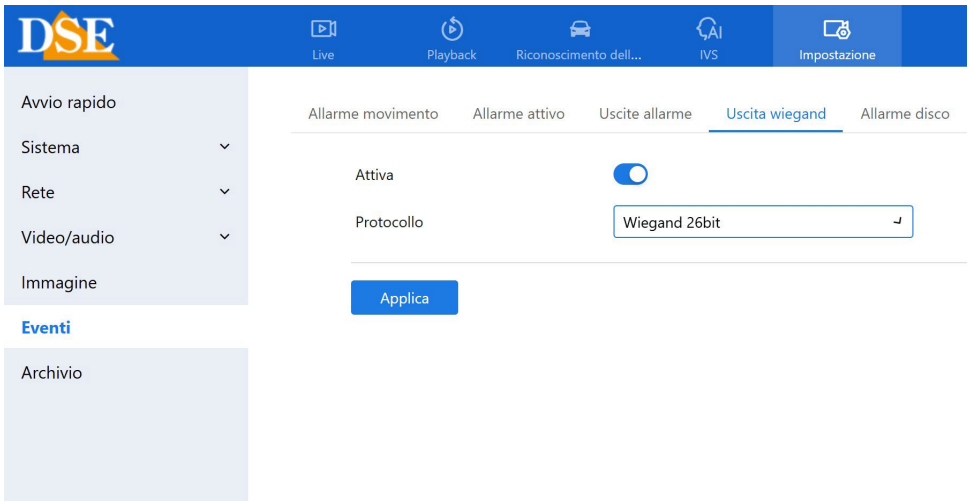
ALARM OUTPUT MODE – Defines whether the output operates in stable mode (switching) or impulsive (programmable frequency)

FOLLOW ALARM SOURCE – Selecting this option will turn the output on and off following the source of the event.

ALARM DURATION – Here you enter how long the output activation should last following a detection. The time is set in milliseconds (e.g. 3 seconds = 3000)
PROGRAMMING – You can enable the relay output to be activated only in certain time slots depending on the day of the week.
MANUAL CONTROL – With these two buttons you can test the manual activation of the output selected.

WIEGAND EXIT

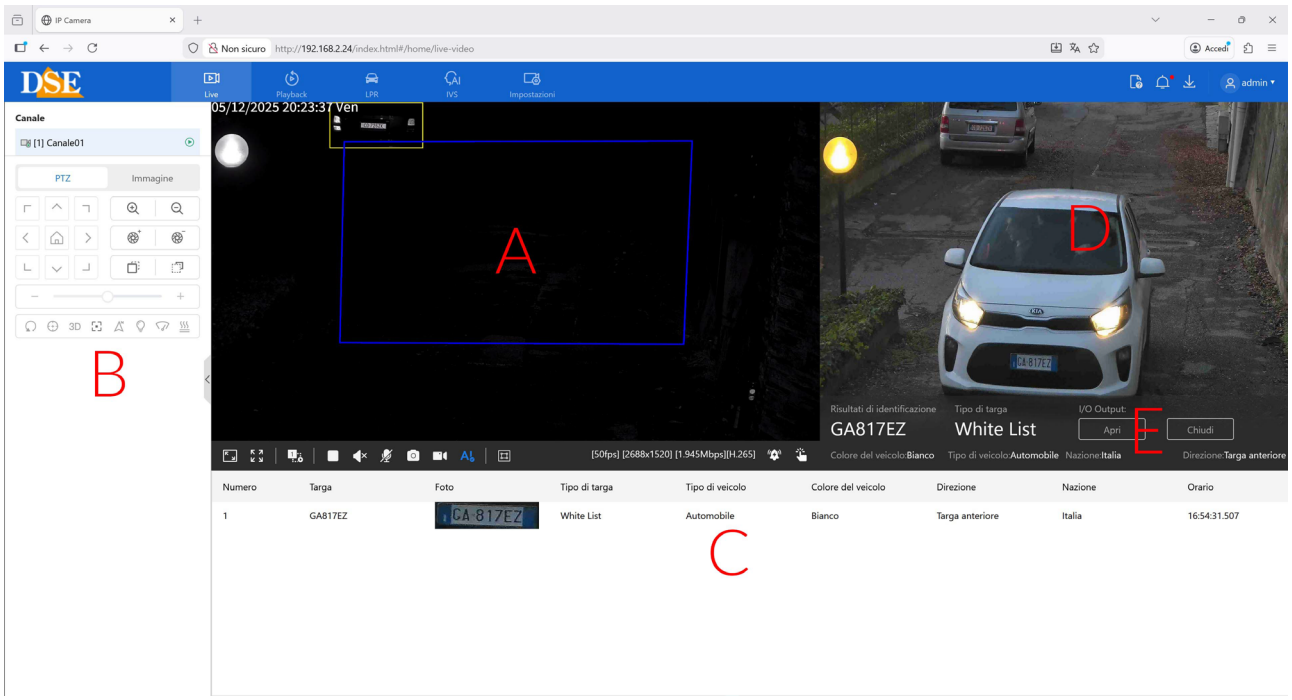
The cameras are equipped with a serial output to communicate with access control systems external using the widespread Wiegand protocol.



ACTIVATE – Activates the serial output on the camera
PROTOCOL – Select protocol type Wiegand 26 or 34 bit, SHA1 26 bit, NEWG 72 bit
Each license plate in the whitelist or blacklist can be associated with a Wiegand ID whose format must respect the parameters of the selected Wiegand protocol.

Live viewing with the browser

The browser live page can be used as a user interface in live license plate checking



A – Live recording

B – Lens control (retractable panel)

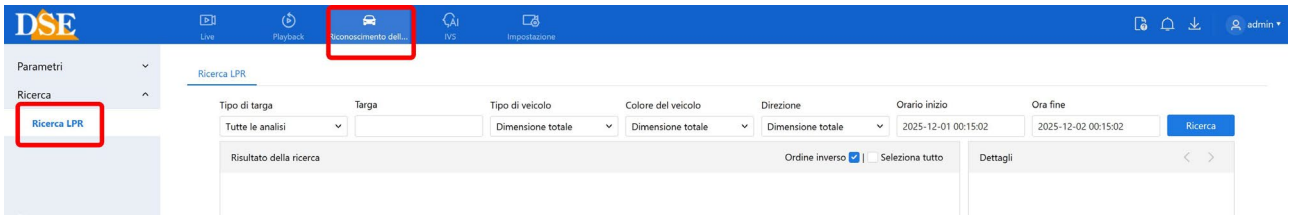
C – List of detected license plates with license plate photo and vehicle details

D – Photo of the vehicle relating to the license plate selected in the list

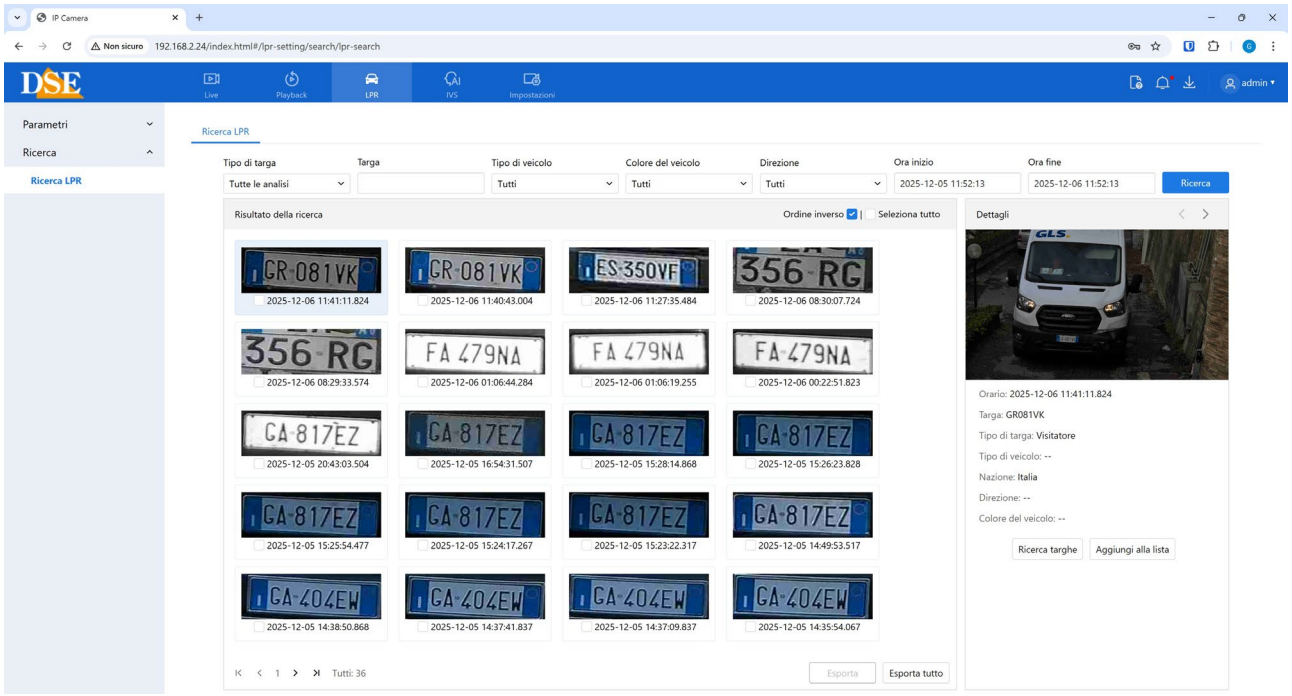
E – Manual exit command for door opener

Search for license plates with the browser

In this section you can search for photos of the detected license plates
which the camera records in the built-in 4GB internal memory. For each detection, the
The camera records 2 photos: the license plate frame and the full image of the vehicle.



Select the search period at the top: Start and End Times. You can filter your search if necessary.
with the available options (White/Black list, Specific license plate, Vehicle type, Vehicle color, Direction
of the movement). Once you have set the search parameters, press Search to see the results.
On the left, a list of detected license plate images appears. Selecting a license plate
the complete image of the vehicle and the survey data appear on the right.



Connection with RTSP player

The cameras support the RTSP protocol which is factory set to use the port 554. You can connect to the camera using any RTSP player such as VLC.
The address to be called must have the following syntax:
rtsp://ip:port/snl/live/cameraid/streamid

Here's an example:
rtsp://192.168.2.24:554/snl/live/1/1

Right awayasfor example, work with the VLC player: