RK Series IP Cameras

ONVIF IP Cameras

Installation Manual

How to connect the camera
How to connect to local and web networks

Contents of the manual

The RK series camera range is a range of network-capable IP cameras.
optimized for use with NVR video recorders.
This manual explains how to connect the camera, how to make basic adjustments
and how to configure the network connection parameters.

Introduction

The RK series consists of IP network cameras with H264/H265 compression and with video resolution up to 4K.
The units connect to a LAN network via the RJ45 port, like a computer or other network drive, and the images can be viewed on PC using the browser or our dedicated clients (IoVedo.RK).
Power supply is possible with 12VDC adapters (not supplied) or via the same network cable thanks to Power technology over Ethernet (POE) supported by all cameras in the range, except the models mini.
RK Series cameras fully support the international ONVIF protocol and are compatible with any software IP recording or network video recorder (NVR) able to handle this standard.
DSE is among the few Italian companies to be member of the Onvif association and guarantees the full compliance of its products with the most up-to-date standard.

Installation

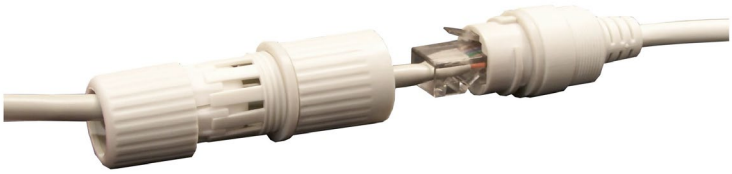
FUNDAMENTAL CONNECTIONS

All RK series cameras always have at least 2 connections: a network socket and a 12VDC power plug

- RJ45 NETWORK PORT - RJ45 FEMALE connector to connect the LAN network. For connection to a network HUB or switch use a straight LAN cable. To directly connect a single PC use a crossover cable.
- POE POWER – The cameras support 802.3af POE power through the network cable. It is the most used form of power supply in CCTV systems because it allows connect each camera with a single cable. To use this form of power supply it is You need to connect the camera to switches with POE ports that can supply power 48V. Alternatively, external POE injectors can be used if the switch or router does not have POE ports. If you use POE power the 12VDC plug does not need to be used.
- 12VDC – Plug to connect a 220VAC/12VDC power supply (not included) if not you want to power the camera in POE through the network cable. Connect a 12VDC power supply of at least 1A. If you connect a power supply to this jack, the camera will automatically stop using POE power.

All RK cameras can be used outdoors and for this reason they have a connector of waterproof and sealed watertight network which must be assembled as shown in the figure. Please note that the waterproof connector is to be considered as an additional protection, because it is always advisable

protect connections from the elements inside junction boxes or by purchasing the special watertight connection boxes to be installed between the camera and the wall.



AUXILIARY CONNECTIONS

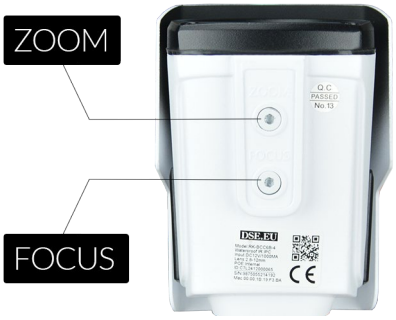
Some camera models have other connections, in addition to the basic ones that we just saw:

- AUDIO INPUT (AUDIO IN) – This is a female RCA connector to which you can connect an external microphone to hear the audio. Usually the microphone also has an RCA female so between the two you will have to place a cable with male RCA on both sides or a male-to-male RCA adapter. The external microphone must be powered separately. Many of our cameras have a built-in microphone so they do not have this external input, however the external microphone can be useful when the camera is placed very high and it is therefore useful to position the microphone in a position more suitable for listening environment.
- AUDIO OUT (AUDIO OUT) - This is a female RCA connector to which you can connect a external speaker. Usually the speaker also has a female RCA so between the two you will need to place a cable with male RCA on both sides or an adapter RCA male-male. The external speaker must be powered separately. The external speaker must be powered separately. use for two-way conversation from app. Several cameras have speaker built-in and no audio output.
- ALARM INPUTS/OUTPUTS – Some cameras have a green terminal block for connect inputs (sensors, contacts) and alarm outputs (horns, lighting) etc.). You can connect contacts to the two terminals of each input (ALARM IN) that can trigger alarm actions. You can manage both NO and NC inputs in the configuration of the camera. The two output terminals (ALARM OUT) are nothing more than a relay contact normally open (NO) with which you can directly control DC loads up to 1A or operate an external power relay to control 220V loads. On the cable of the a label with the legend explaining the arrangement of the terminals is applied to the terminal board connectors.

CONNECTING AND CHECKING NETWORK CONNECTION

It is very important to connect ONLY ONE CAMERA AT A TIME to the network, because, having all the same fixed base address, they would conflict. Only after changing the IP address of the first camera, as will be explained later, you will be able to connect another one.
After connecting the network cable, it is a good idea to check that the LEDs on the switch or network port of the NVR flash, to confirm a good data connection is in progress. If the port LEDs network does not turn on it is impossible to proceed with the configuration because the camera is not working fine. Reasons for the LEDs not turning on could be bad connectors made, cable too long or poor quality, interference, faults.

MANUAL LENS ADJUSTMENT



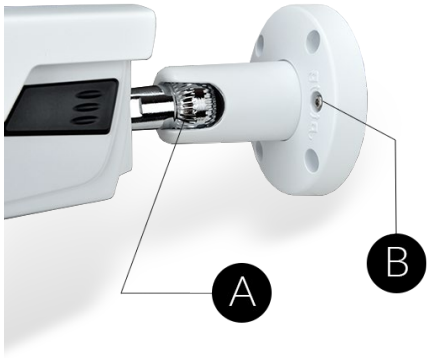
The smallest models in this range are equipped with a fixed, non-adjustable lens. In these models The lens is factory adjusted and does not need to be adjusted on fire.
The larger models, with IR over 30 m, are equipped with adjustable lens that can be adjustable manually or motorized. In the models with manual adjustment there are 2 adjustment screws external adjustments. It is necessary to act, with the supplied key, first on the ZOOM screw to adjust the viewing angle and then on the FOCUS screw to finely adjust the focus.
These adjustments should be made while observing the image on the screen. Take the time necessary to obtain the perfect adjustment because this will have a crucial effect on the quality visual.

ADJUSTING THE MOTORIZED ZOOM LENS

Almost all of our cameras have adjustable lens today they use a motorized lens (Ref. ----Z-) and allow you to adjust the zoom by acting directly via network by connecting with the browser or with our APP, or via the NVR. You can act on the PTZ CONTROLS to set the desired zoom. The focus is automatic.

MOUNTING OF CYLINDRICAL CAMERAS

Cylindrical cameras are equipped with a bracket integrated for wall mounting, specifically designed to allow the passage of cables inside of it and protect them from tampering attempts. The camera is usually mounted in correspondence of the cable outlet so as not to leave exposed cables. The fixing base also has a slot for lateral cable exit if the cables come from laterally in external channel.



The bracket must be fixed to the wall or ceiling with the dowels supplied. On the back of the bracket is a bearing in insulating foam whose function is to eliminate space empty and prevent the penetration of insects.
Using the Allen key supplied, you need to loosen the retaining screw B and then orient the camera thanks to the joint A. Finally, tighten the retaining screw B fully to lock the camera in its position

MOUNTING SPHERICAL CAMERAS

Spherical cameras are composed of the camera globe and from the fixing base which are screwed together. Before To proceed with assembly, you need to unscrew the fixing base separating it from the camera body. Generally, no additional tools to unscrew the fixing base from the camera body, However, if this is tightened too tightly it is possible help yourself by placing a rigid rod, such as a screwdriver, between the two lateral cable outlet slots located in the base.
The fixing base, separate from the camera, is fixed to the wall or on the wall with dowels corresponding to the cable exit hole and it is screwed onto it subsequently the camera body. Before tightening it completely, orient the angle of vision.

CONNECTION BOXES

For both the cylindrical and spherical models, watertight boxes are available separately. accommodate the connections, to be mounted between the wall and the bracket. The boxes have cable entry rear, or lateral (watertight cable gland included) and have the fixing holes on the cover

for different models. In our store the compatible box model is indicated based on the camera.

ORIENT THE CAMERA AVOIDING NEARBY OBJECTS

When positioning and orienting the camera, it is necessary to avoid objects near the camera. enter the shooting field, for example edges, poles, gutters, foliage etc. because at night would be strongly illuminated by the camera illuminator causing a strong darkening the rest of the image. For the same reason**you must not let them in in the frame the wall near the camera**. Frame the wall on which the camera is focused is anchored, tilting the shot too much until it is parallel to the wall, it is a very serious mistake frequent which affects good night vision and the functioning of the detections. Also a wall placed next to the camera, out of the field of view, but very close to the camera has the same negative effect.

Aim the camera at a clear area so that it has a nice open view in front of it. and no objects nearby.

Network Configuration automatic with DSE POE NVR

If you have purchased one of our NVRs with integrated POE ports you do not have to worry about the configure the camera address as the NVR will take care of it automatically.
You just need to connect the camera to a POE port on the NVR and wait a few moments for see it appear on the screen.
Automatic configuration only works between our POE cameras and NVRs. production.

Network Configuration manual

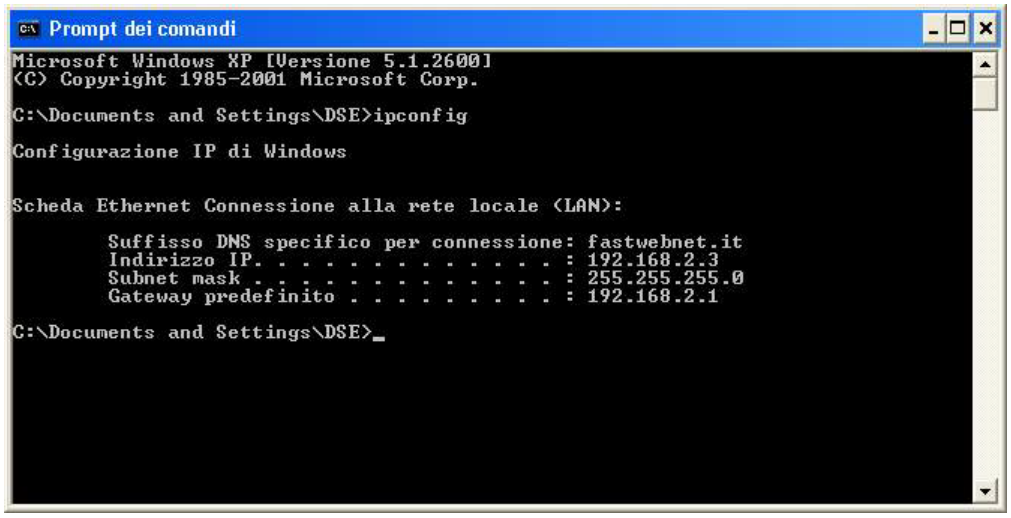
If you connect the camera to a LAN network, such as a network switch or directly to the router, you need to set the correct network parameters manually. Only with correct parameters The camera will be accessible from computers and NVRs.
The cameras are all supplied with**fixed factory address 192.168.1.168**

DOWNLOAD IPTool.RK SOFTWARE

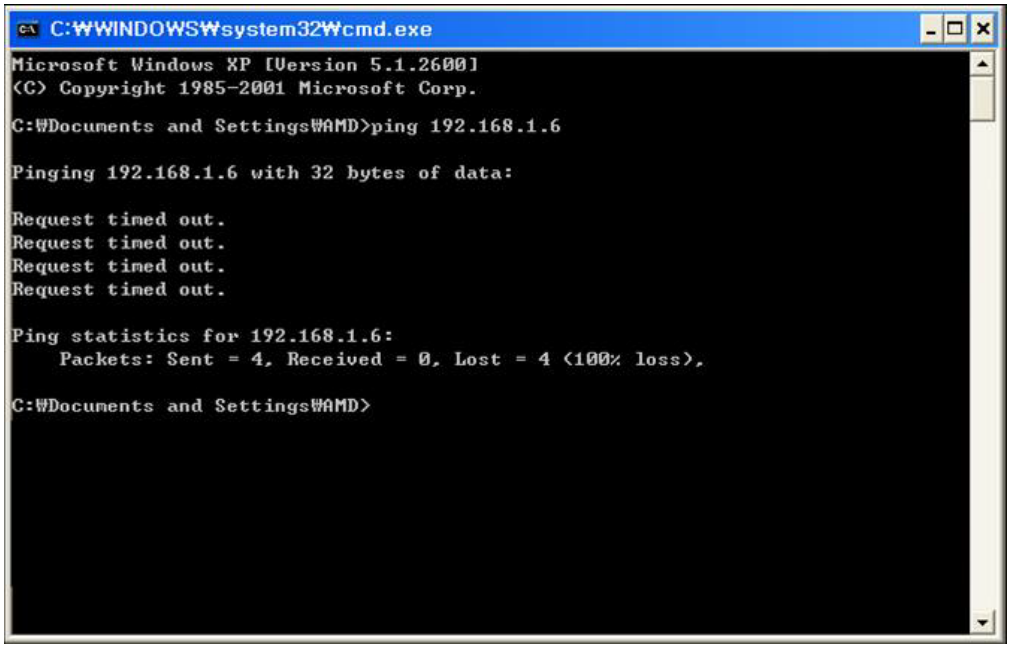
In the software section of our website, in the section dedicated to RK IP cameras, you will find the software**IPTool.RK**that you need to download and install on a PC on the network. The function of this software is to detect the presence of the camera on the network, whatever its address, and allow you to change the camera's address to be consistent with your network.
We remind you that for the camera to be visible from other PCs on the network it is necessary that the first 3 parts of the IP address are the same as other network components and is equal also the subnet mask. To avoid conflicts it is important to connect only one camera to the network at a time and insert new ones only after configuring the previous ones.

PRELIMINARY CHECKS

Before proceeding to assign the IP address to the camera, you need to obtain from the network administrator some information about the IP address management used in your network. You need to know an IP address that you can assign to the camera that is not the same as any other device already present on the network. If you are unsure about the To make your network work 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 in 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 mask used is the classic 255.255.255.0. You can therefore assign a address of your choice of the type 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 equipment**network. To verify that the chosen address is free, try to perform 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 that matches that address, you will receive 4 REQUEST TIME OUT as in the following example:



All our cameras also support automatic IP address assignment from part of a DHCP server. This mode is not recommended however, as in the event of network failure or equipment reboot, it is possible that the cameras change IP address making it necessary to reconfigure the NVR.

USING IPTOOL.RK TO ASSIGN IP ADDRESS

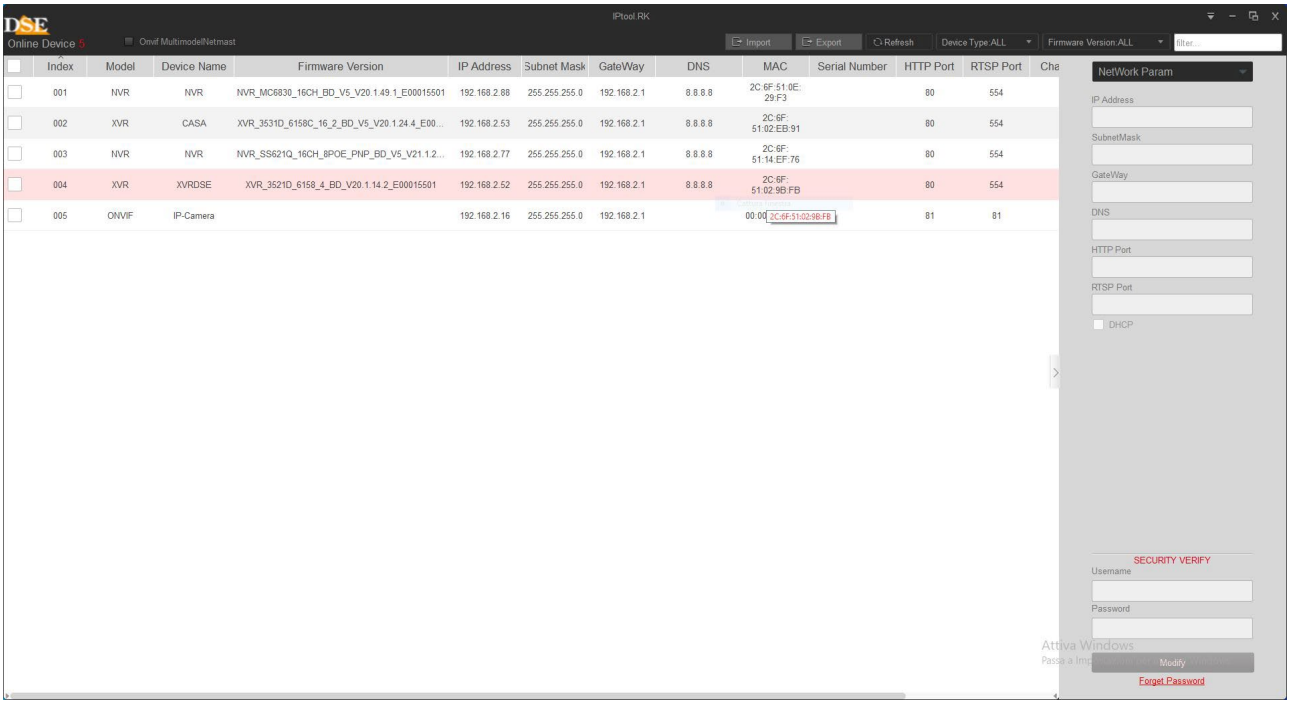
All RK series cameras come pre-set with fixed IP address from factory:

192.168.1.168

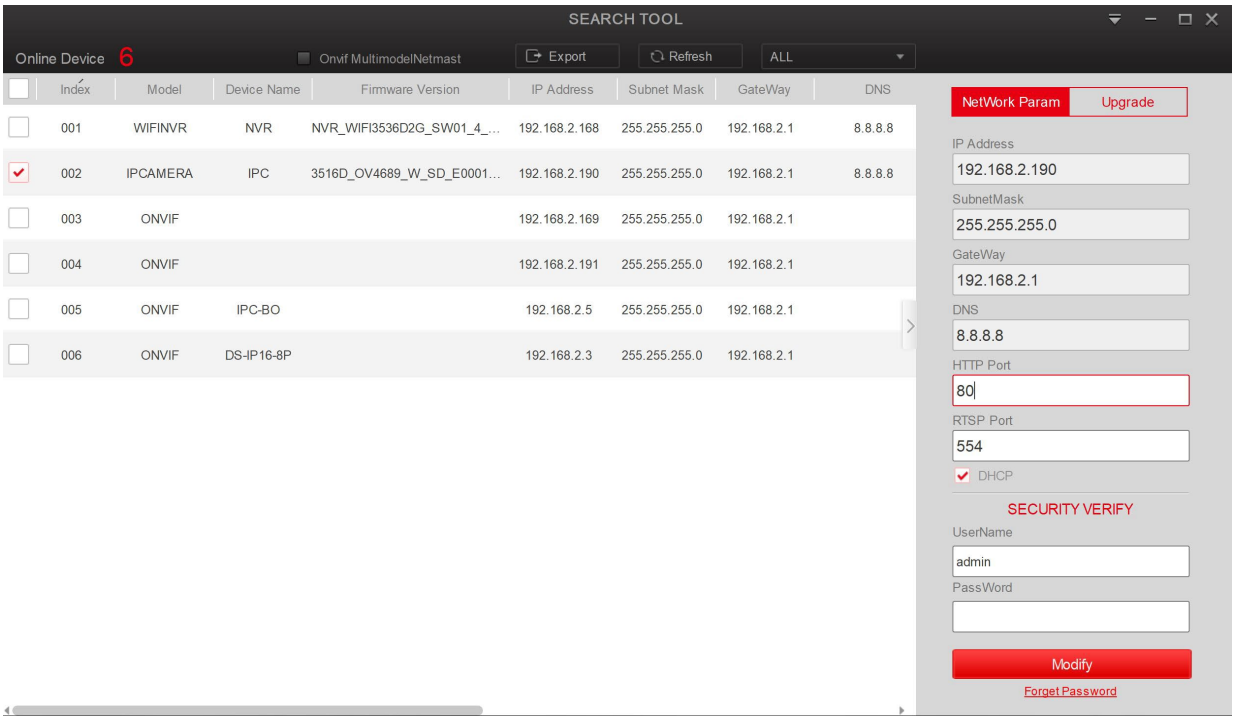
After connecting the camera you need to change the camera address to assign one consistent with your network (first 3 parts of the address common to all network equipment).

Proceed as follows:

1. Download from our site and install the IPTool.RK program on a network computer. Start the program will look like this

2. 

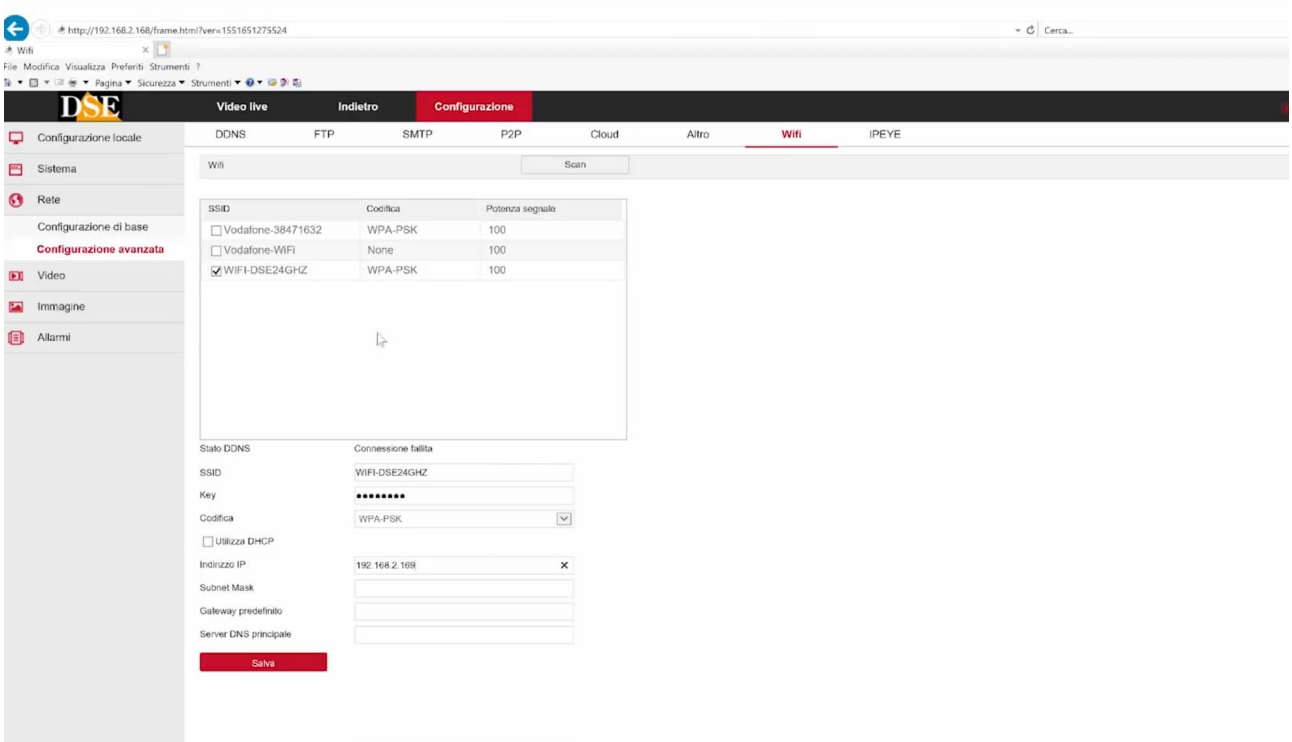
3. The program searches for all DSE RK series devices present on the network (cameras, NVRs and DVRs). Please wait for the search to complete. IPTool.RK can also detect cameras with an address class different from that of the PC you are operating on.
4. At the end of the search, the list of detected cameras will appear. If the camera is not has been detected, check the functionality of the network connections. In the IP ADDRESS column the current IP address of the camera appears. Click on the camera and you will see all other network parameters appear in the section on the right.



5. Of particular importance is the IP address (IP ADDRESS) which must have the same class of the network (first three groups of equal digits) and the SUBNET MASK which must be the same used by the network (usually 255.255.255.0). The gateway is the router address, usually the number 1 of the network. DNS is important for the camera to recognize websites for name and can, for example, send emails. If you do not know the DNS of your provider Internet you can enter Google DNS: 8.8.8.8. You can edit the network parameters at please write in the boxes. Don't forget to also enter your login credentials of the camera (factory**admin/admin or admin/123456**)
6. Press MODIFY to transfer the new configuration to the camera. Wait at least one minute and in any case until, by pressing the SEARCH button, the camera is not detected with the new address.

WIFI camera installation

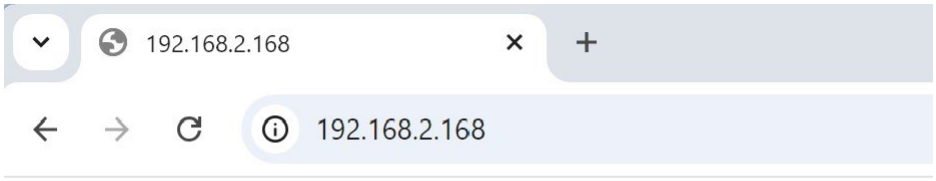
The RK Series cameras with WiFi are installed like wired cameras, but with the additional need of the connection to the local wifi network. Initially you need to connect the camera with the network cable and assign a wired IP address. Then you access the NETWORK configuration – ADVANCED CONFIGURATION – WIFI and connect the camera to your WiFi network. You need Select your access point and enter your network login credentials.
It is possible to connect to the WiFi network in DHCP mode, with automatic address assignment or set a static IP address. As with the wired connection, this second option it is recommended for greater stability of the system over time.



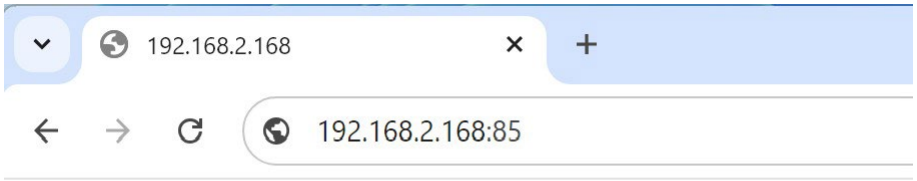
When the camera shows Successful Connection to the WiFi network it will have two IP addresses: one on the wired network and one on the wifi network. You can now disconnect the network cable and keep the only connect with WiFi address.

Access with all browsers

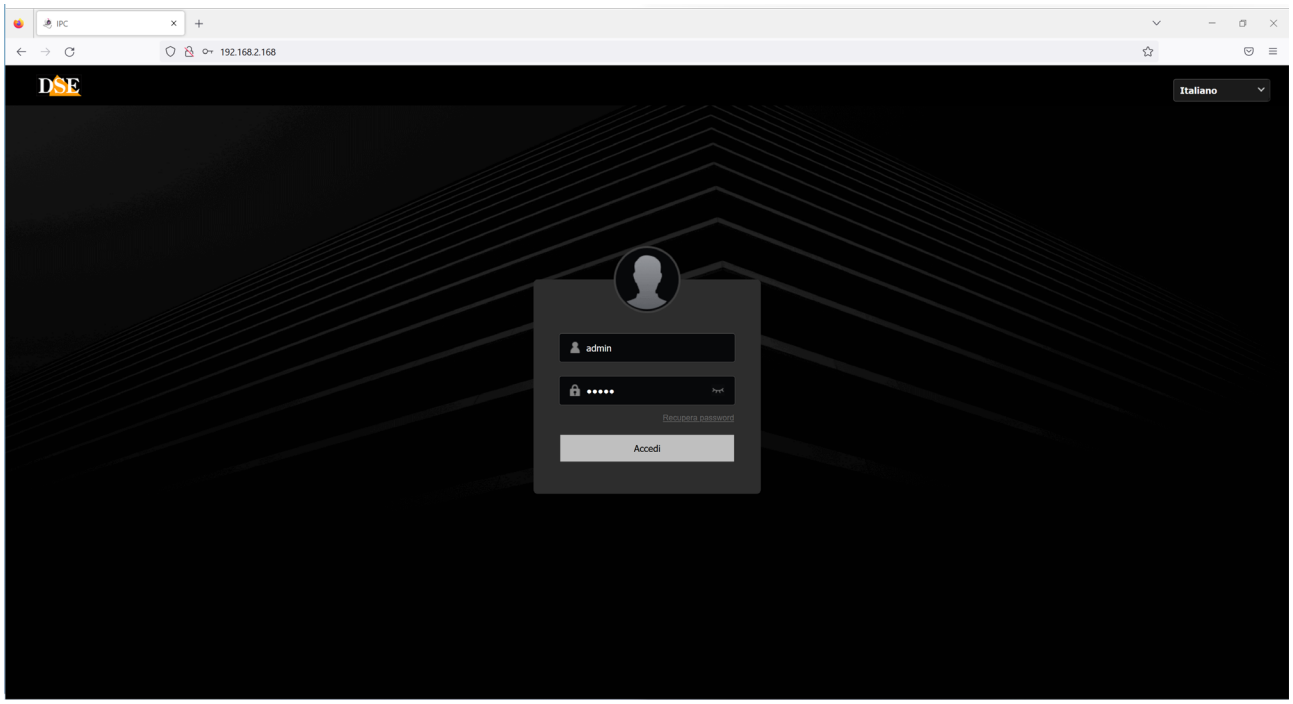
Once the network parameters have been set correctly, you can log in for the first time.
towards the camera using the Internet browser.
Today**Our RK cameras support all common browsers such as Chrome, Firefox or Safari**, the older generation models, produced up to 2021, instead required
INTERNET EXPLORER.
To access with a browser, such as Google Chrome, Firefox, Edge or Safari, just use a PC
connected to the same network as the camera and type the camera's IP address in the address bar
browser search



It is not necessary to specify the connection port as the cameras use
It sets http port 80, which is the one normally used by browsers.
If for any reason you need to change the HTTP port in your browser settings
camera then it will be necessary to specify in the browser the port to call by making it
follow the IP address. In this example we are calling the IP 192.168.2.168 on the port
85.



If the connection to the camera is successful, the log-in window appears.



The factory login data for RK Series cameras are:

Firmware versions up to 2024

USERNAME: admin PASSWORD: admin

Firmware versions from 2025

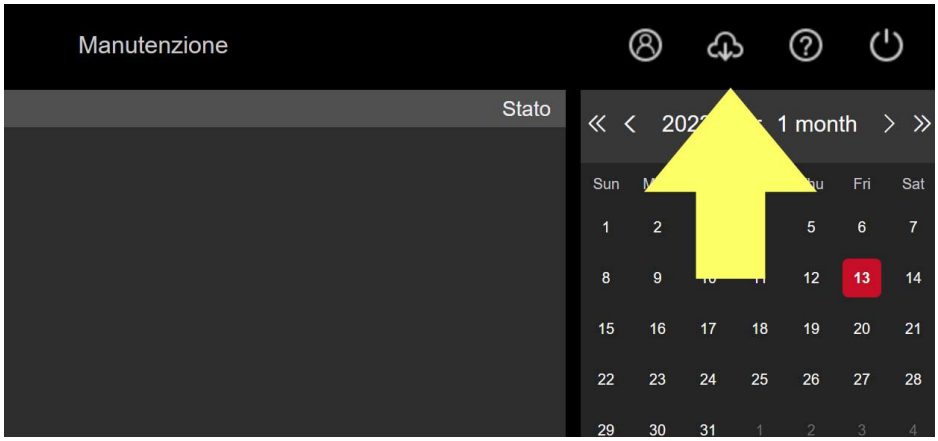
USERNAME: admin PASSWORD: 123456

You access the camera control mask.

The commands in the window are described in detail in the configuration manual.

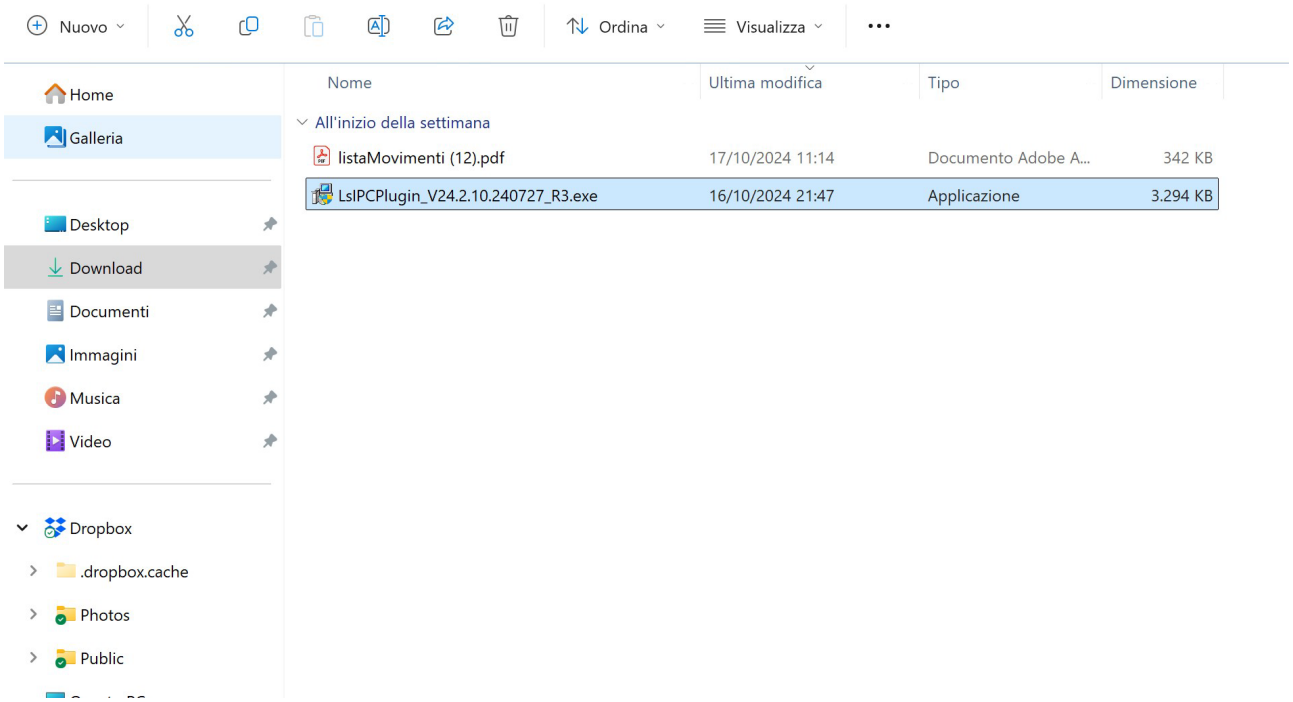
PLUGIN INSTALLATION

It is possible to connect to the camera with all browsers without installing any plugin and enjoy all live viewing and configuration functions. Only for some advanced functions, such as for example, being able to play recordings stored on the SD card and use two-way audio, you need to install a plugin add-on, common for all browsers, which is download by pressing the download button at the top right



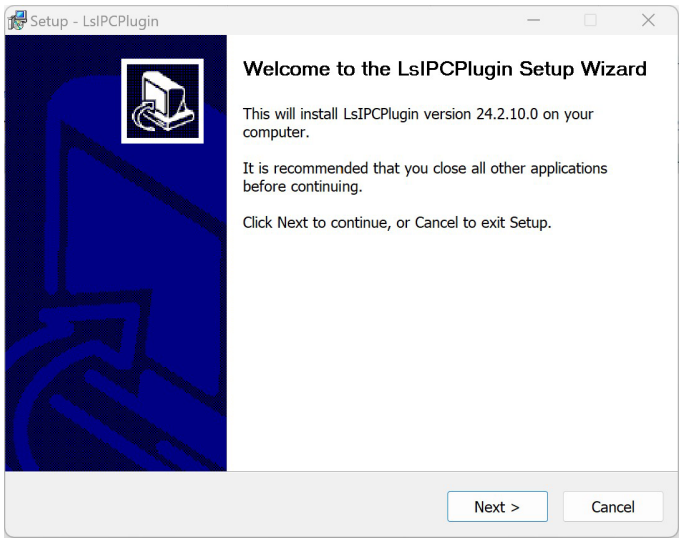
You need to download and install the plugin to be able to control all the functions of the app with your browser.
camera.

WARNING – The plugin is an executable file that is downloaded to the download folder and therefore can be recognized as a virus by many antivirus programs and even by the protection itself
browser and operating system antivirus. You may receive several messages warning you
of the dangerousness of the file, both during download and during subsequent installation. You must
of course allow download and installation because the file is absolutely safe.
Disable antivirus and agree to continue downloading and installing if any warnings appear.
They warn you of the presence of a dangerous file.
Once the download is complete you should find the executable file in the download folder

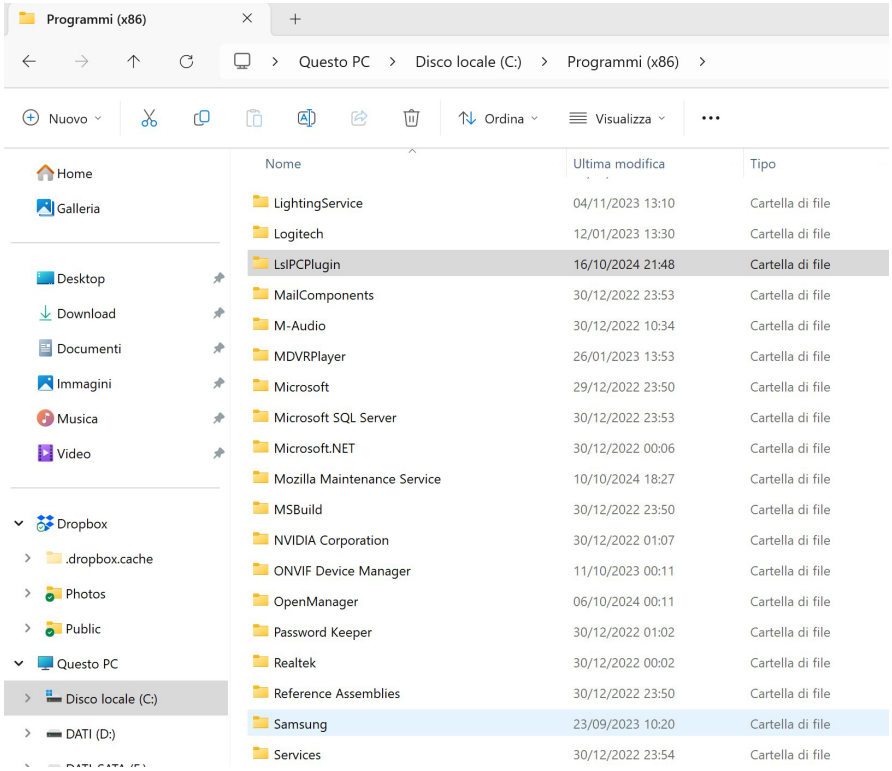


Now install the plugin. Before running the file disable antivirus and close all windows.

browser you are running.



You will not have fully installed the plugin until you see the progress bar that shows the installation in progress and the final message of installation complete. When finished of the installation you will find a new program in the programs folder.



Now you have installed the plugin for connecting with browsers. By default this plugin will start automatically when your computer starts.

MAXIMUM NUMBER OF CONNECTED CLIENTS

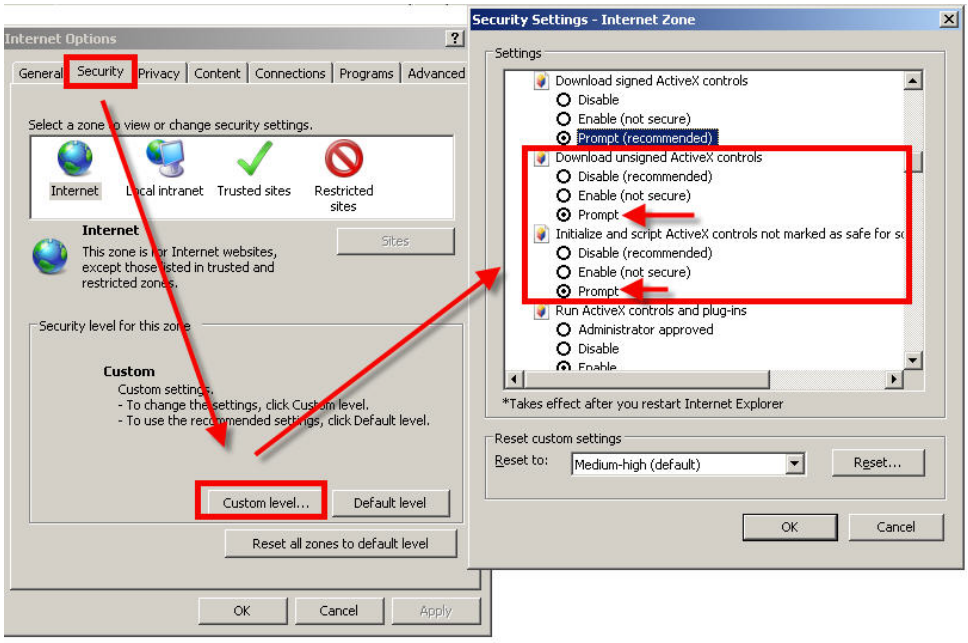
Each camera accepts up to 15 simultaneous connections from as many remote clients.

Access with Internet Explorer for external cameras production

Older generation RK cameras did not support all browsers, but required
Internet Explorer only.
Internet Explorer is also present in Windows 10, by searching for Internet Explorer in the taskbar search. From Windows 11 you can use the browser**Edge in IE mode**.

ENABLE ACTIVEX EXECUTION

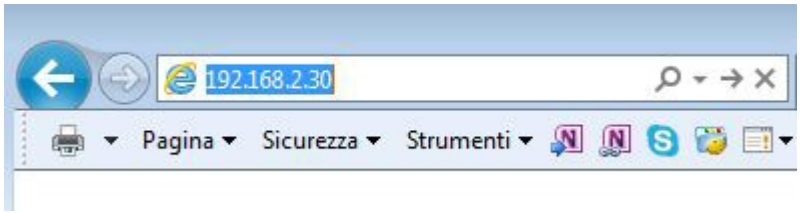
To access with Internet Explorer it is essential to install the activeX plugin. Before
To proceed with the connection, you need to enable the execution of ActiveX not marked as safe. In Internet Explorer choose TOOLS/INTERNET OPTIONS



In the PROTECTION folder, choose the area of interest (Internet or Local network) and click LEVEL CUSTOM. Enable all items that concern the download and execution of ActiveX in especially those NOT marked as safe. You can set the entries
either ENABLE or ASK FOR CONFIRMATION. Finally, save and restart the browser.

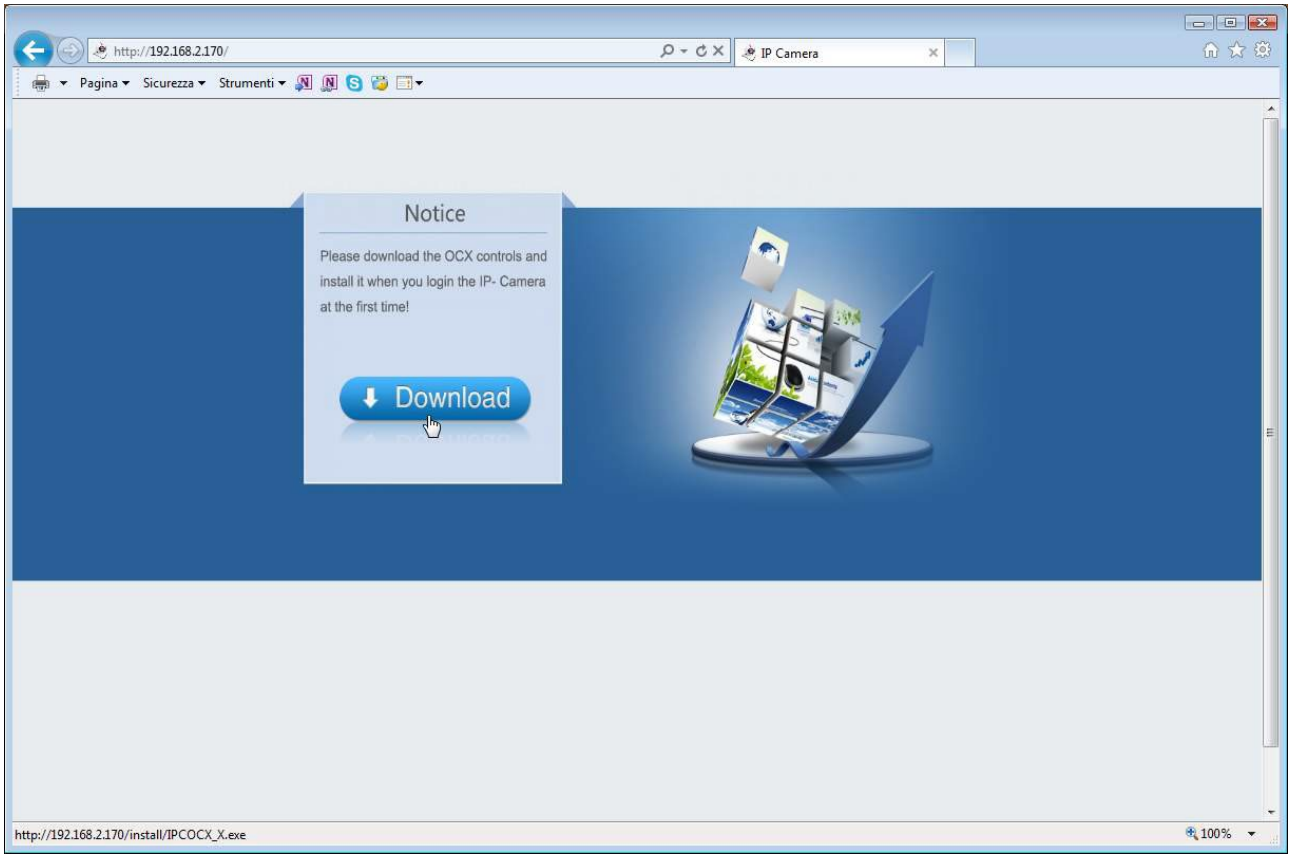
ACCESS WITH INTERNET EXPLORER

To access the camera with Internet Explorer type in the address box,
the IP address you assigned to it. In the example below we make a connection on
internal network of the camera with IP address 192.168.2.30.

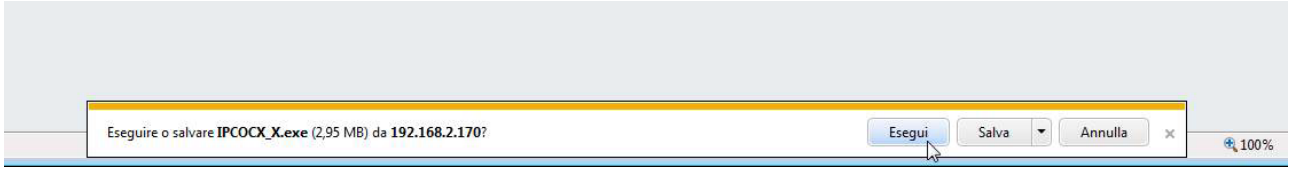


INSTALLATION OF ACTIVEX

In order for the RK series IP cameras to be viewable on the browser, it is
you need to install ActiveX components. The first time you log in, the camera
will detect the lack of these components and will display the following window.



Click DOWNLOAD to download the activeX components.



You can either run the program directly by choosing RUN or save the file on the local PC and then install it manually. Once the program is installed, a message confirming the installation. At this point restart the browser and Please reconnect.

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 call must have the following syntax:

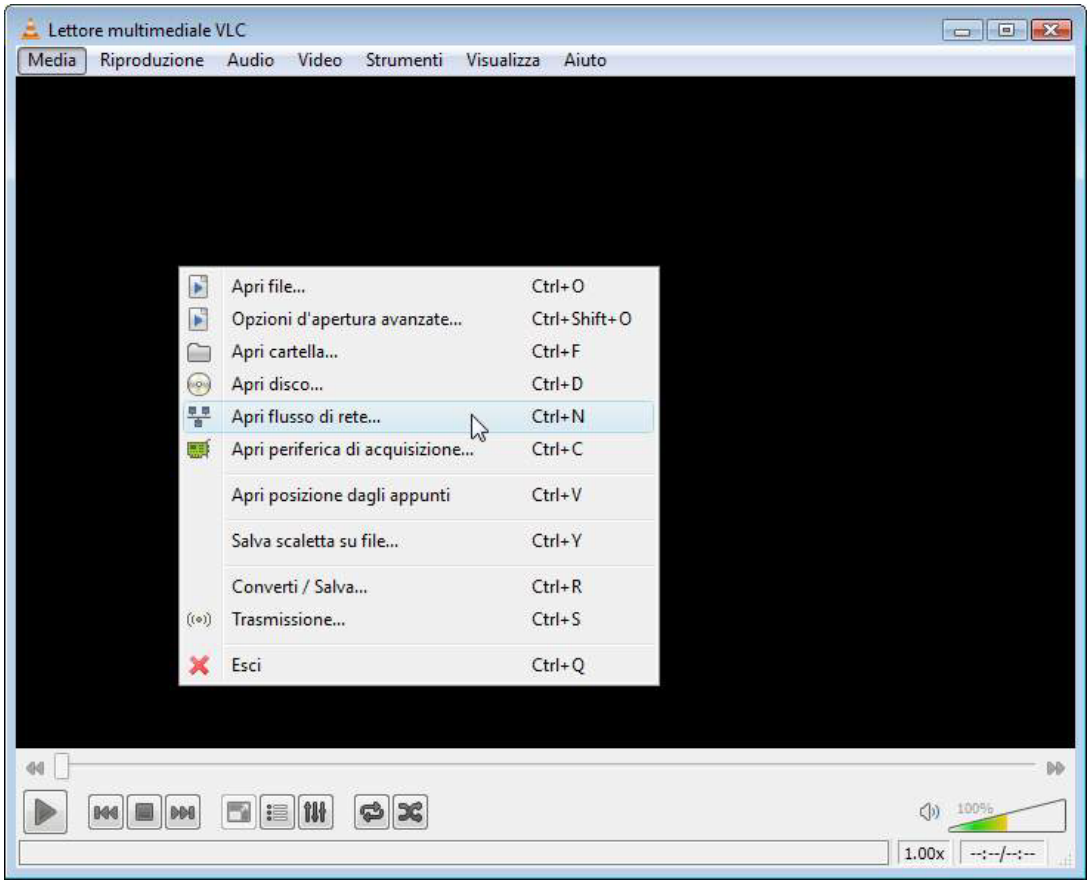
RTSP://IP:PORT/0 **(receives mainstream)**

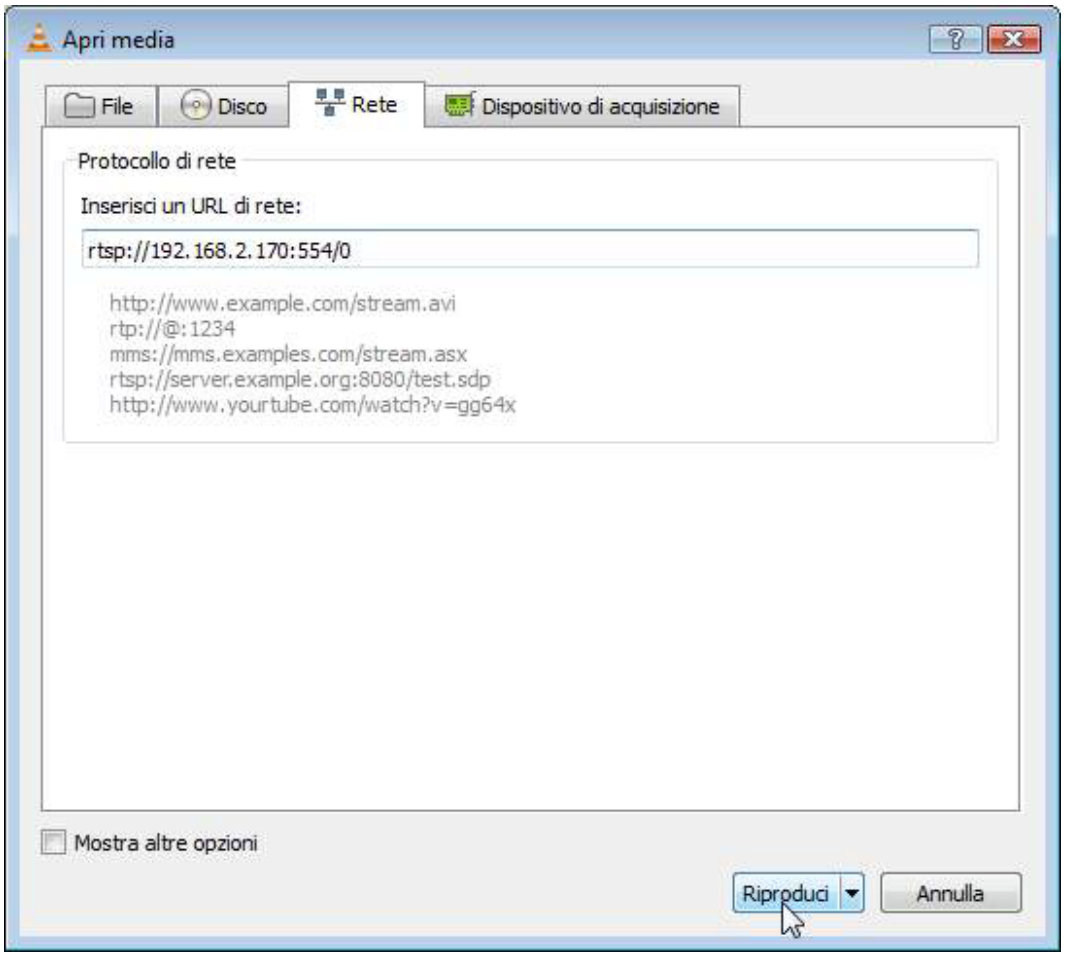
RTSP://IP:PORT/1 **(receives substream)**

Here is an example to receive mainstream from camera 192.168.2.33:

rtsp://192.168.2.33:554/0

Right awayaswork for example with the VLC player:





In the camera settings there is an option called**VIDEO AFTER LOGIN**That
It concerns access via RTSP and allows you to enable or disable the request for
password in this type of connection.

Snapshot recovery in http

RK cameras allow you to take a real-time snapshot of the main stream of the camera using a browser and the following string:

http://IPaddress:port/snap.jpg

For example:
http://192.168.1.168:80/snap.jpg

With this syntax, to obtain the JPG you need to type the camera access credentials.
To avoid the prompt for credentials you can embed them in the string as follows:

http://user:password@IPaddress:port/snap.jpg

For example:
http://admin: admin@192.168.1.168 :80/snap.jpg

Please note that when using http port 80, which is used by default by both RK and RK cameras browser, it is also possible to omit the port specification.

Access with ONVIF NVR

The RK series IP cameras are cameras optimized for work in systems managed via NVR.
These cameras are usually connected to network video recorders or recording software external.
To do this, the ONVIF standard is used, which these cameras fully support.
To connect the cameras to NVR or ONVIF software, refer to the manuals of the recording equipment. As a rule, NVRs automatically recognize the recording parameters communication to communicate with the cameras.
If manual entry is required, please note that the RK series cameras use the**brings 80**to communicate with NVRs on the onvif protocol.

WEB access with P2P app IoVedo.RK

The Internet connection to IP cameras is usually not made by calling directly the individual cameras but the NVR. For this type of connection you need to do refer to NVR manual.
However, it is also possible to connect directly to the cameras from the web, for example when an NVR is not installed because the system is made up of a few autonomous cameras.

To make connecting via the Internet easier, even without having a static IP and without configure router ports, RK Series cameras use our P2P cloud server.
Remote connection via our cloud server is very simple and requires just a few simple steps. steps. Each camera is distinguished by a 13-digit serial number which is loaded into our cloud server and allows immediate connection with the camera.
You can use 2 types of clients to connect in P2P: our IoVedo.RK app, for Android and iOS, and the our computer software IoVedo.RK available in versions for Windows and MAC.

All the details about the remote connection to our cloud are explained in the manual for remote access that explains the use of our IoVedo.RK app

Direct web access via router with port mapping

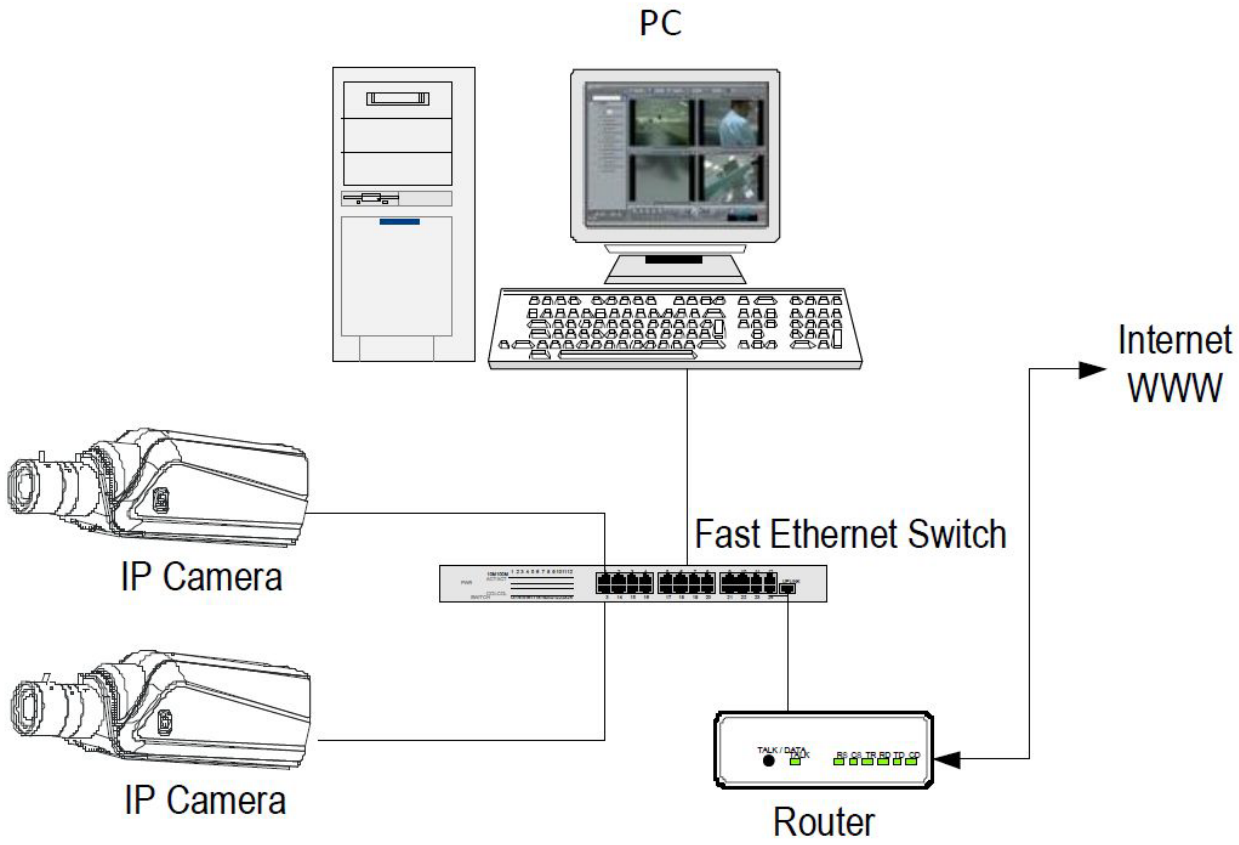
If you want to access your cameras via web, without using our P2P cloud server, you can also do it directly, by calling the WAN side IP address of your router.

In this case, access is not immediate and plug&play, as in the P2P connection seen in previous chapter, and for this reason the direct web connection is recommended only for users with advanced computer skills.

You can connect directly through the web using the same clients you can use on the network.
Local: Internet browser, IoVedo.RK app and IoVedo.RK software. These last 2 clients
They support both P2P connection, by inserting the camera with its serial number, and the connection directly, by entering the camera with the IP address. The Internet browser does not support the P2P connection, but only the connection to the IP address.

Below we provide some instructions for configuring direct internet access

An IP camera system is often placed within a LAN network connected to the Internet.
via a router as in the following diagram



If we use a PC inside the network to view the cameras, the camera addresses (usually of the type 192.168.XXX.XXX) are directly reachable. If instead we want establish the connection through the Internet, using a PC located elsewhere, the addresses internal network will no longer be directly reachable, as the only visible IP address from the web will be what our router will have on its WAN side, that is, towards the outside world. Internet. You can find out the address of your WAN side router with online services, such as examplehttps://www.mio-ip.it/

This address is assigned by your Internet Service Provider (ISP). It is advisable to obtain it from your provider. a fixed address for each connection. If there is no possibility, as in the case of many private subscriptions or mobile connections, it is necessary to use DDNS services (see manual of configuration).

However, it is not sufficient to type the IP address of the WAN-side router into the browser to be able to connect to the cameras. The router in fact acts as a filter and drops any external calls to which has not first been answered by a call from within the network. In order to connect to the cameras it is therefore necessary to insert direction instructions into the router ports which, depending on the router manufacturer, are called NAT, PORT FORWARDING, PORT MAPPING etc.

In practice, you need to access the router configuration, normally with the browser, and enter

instructions so that this directs incoming calls from outside, to the IP address inside the cameras.
Obviously, the addressing is only done for the communication ports that are used by the cameras and which will be detailed below.

The communication ports used by the RK series cameras are as follows:

- **HTTP PORT**: By default 80. The cameras use this port to communicate with the browser. Browsers like Chrome, Firefox etc. use port 80 by default for communication. For example, if we type in the browser's address bar: http://212.12.34.201 will be called the IP address 212.12.34.201 on port 80. If you set a different HTTP port in the camera configuration (e.g. 81, 82 etc.) it will be necessary to specify in the browser which port to use for the call by indicating it after the address with ":" as a separator. For example, if we type http://212.12.34.201:81 it will be called the IP address 212.12.34.201 on port 81.
- **MOBILE DOOR**: By default 6001 is used for the dialogue between the camera and the app IoVedo.RK. It is also used by the IoVedo.RK PC software.
- **RTSP PORT**: Default 554. It is used by the camera to send video to RTSP clients like VLC, Real Player etc..

If there is more than one camera behind the router and you want to be able to reach them individually from the outside you need to assign each of them a different http port. For example example ports 80,81,82 etc.
In the router's NAT settings, each port should be directed to the internal address of the router. corresponding camera.
It is of course possible to avoid this complex port configuration by inserting
in the system an NVR. With an NVR it will be possible to configure access to the NVR only and, through the NVR, it will be
You can control all the cameras connected to it.

Note that many routers require that each NAT direction also be associated with a rule in the firewall section that determines the opening of the affected port. See the your router's manual for more details on how to properly program the port mapping .