

MICRO IP CAMERA

Integration Manual

V006

Micro IP Camera Integration Manual

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1. Introduction

This manual is designed help users of the Micro IP Camera RAC-1000 and RB-1057 get familiar with the integration and usage of the system.

Reach Robotics website and Help Centre

Our website, www.reachrobotics.com, holds all our documentation as well as FAQs, knowledge articles, and downloads. You can find some quick links below:

- [Datasheets and manuals](#)
- [FAQs](#)
- [Product theory](#)
- [Software downloads](#)

Reach Robotics contacts

If you can't find what you're looking for on our website or Help Centre, please get in touch with Reach Robotics Support at support@reachrobotics.com. You can also get in touch with us at sales@reachrobotics.com (for all sales enquiries), or info@reachrobotics.com (for any other enquiries).

Feedback

If anything in our manuals, FAQs or knowledge articles is out-of-date, poorly explained, or erroneous, please do not hesitate to let us know. We always appreciate the opportunity to improve our documentation for the benefit of all users.

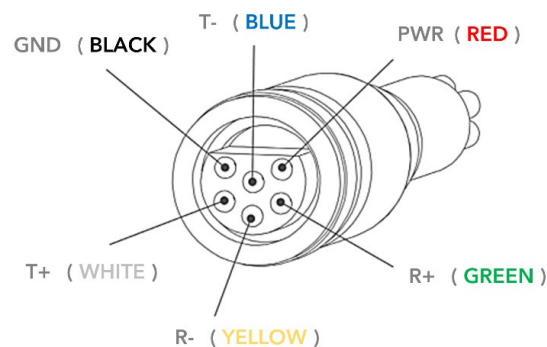
2. Connecting Micro IP Camera

2.1. Electrical connection

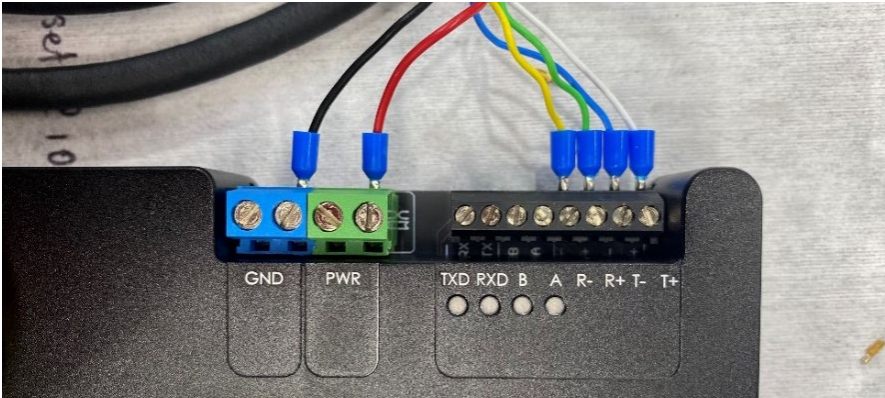
The Micro IP cameras use Ethernet to connect to your computer or ROV. The Ethernet connection requires four pins on the supplied Breakout Board (BOB) or your own breadboard, those pins being R-, R+, T- and T+.

2.1.1. RAC-1000

The RAC-1000 Micro IP camera is typically used with the Reach Alpha manipulators. This camera comes with an unterminated Impulse whip cable containing 6 wires including power, ground and the 4 Ethernet connections. The pinout for this cable is shown below.

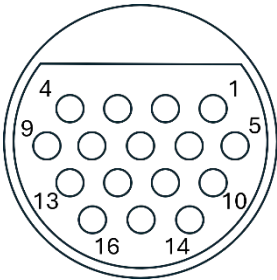


To connect the RAC-1000, the unterminated whip cable must be connected to both an Ethernet cable and a 12-48 V DC power source. The Ethernet cable can then be connected directly to your computer to view the camera feed. The connections using the supplied BOB are shown below.



2.1.2. RB-1057

The RB-1057 camera is designed for compatibility with the Reach Bravo manipulators. This camera can be mounted directly onto the wrist module, with all cabling connected internally. It can only be accessed over the default IP address if the Bravo is on the same subnet, so if unit IP addresses must be changed, it is recommended to set up the camera first before changing its or the Bravo's IP settings. The pinout for the Omnetics connector on the camera is shown below.



Pin	Function	Pin	Function
1	RX-	9	TX+
2	CAN L	10	GND
3	CAN H	11	PWR
4	TX-	12	PWR
5	RX+	13	GND
6	GND	14	PWR
7	GND	15	PWR
8	GND	16	PWR

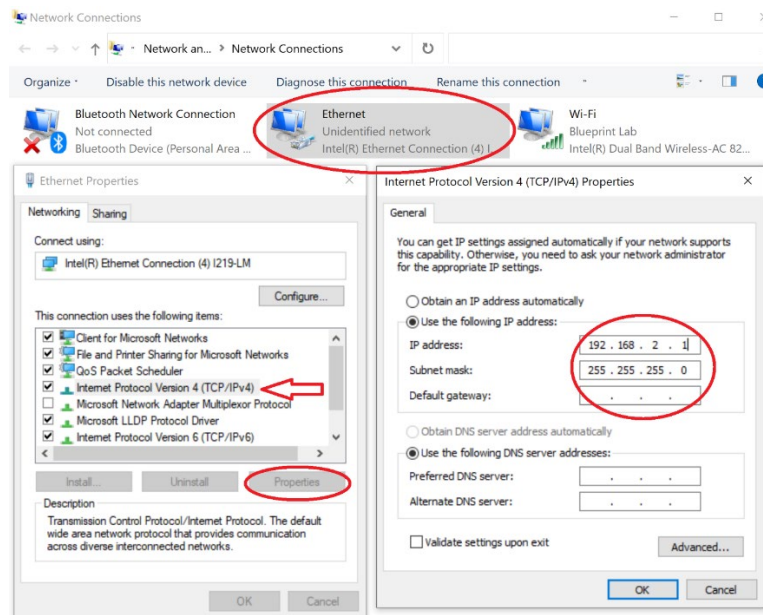
2.2.Ethernet connection

The IP camera has a default IP address of **192.168.2.10**. To connect the camera to a PC, you must configure the Ethernet port to which it is connected and ensure it is set to the same subnet as the camera.

Go to **Control Panel > Network and Internet > Network and Sharing Centre > Change adapter settings**, then right click on the camera Ethernet port and select **Properties**.

In the window that opens, select **Internet Protocol Version 4** and click **Properties**. Another window will open, where you can enter an IP address for the Ethernet port. This address should be set to **192.168.2.xx**, where **xx** represents a port number that has not been used. This number should not be 10, as this is taken by the camera.

The subnet mask should enter automatically. If not, it should be entered as **255.255.255.0**. Click **OK** in each window to complete this step.



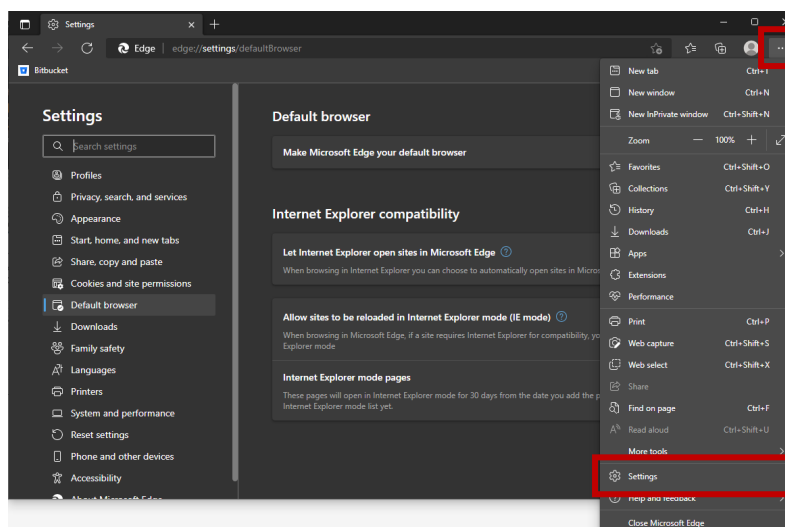
3. Configuring the camera

Configuring the camera must be done through Internet Explorer/Microsoft Edge using an ActiveX plugin.

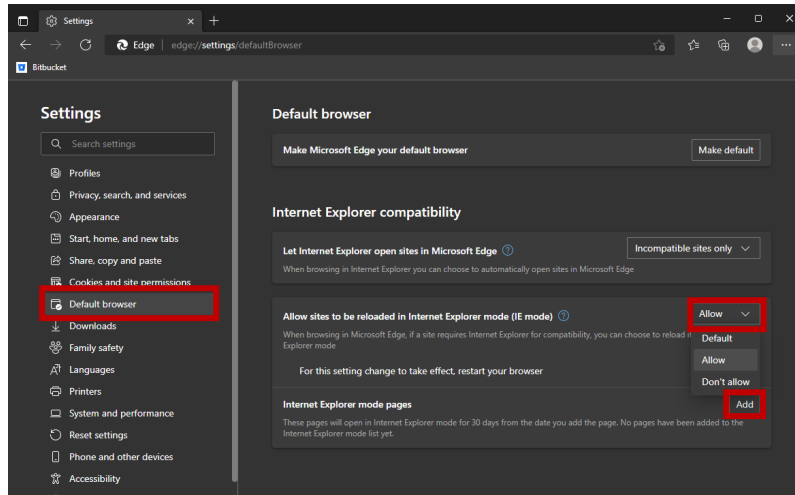
3.1. Setting up the web browser interface

Open your browser. If using Microsoft Edge, it must be set up in Internet Explorer Mode for the plugin to work.

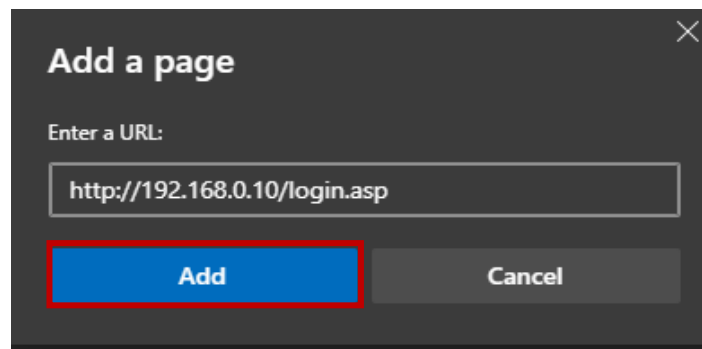
Open Microsoft Edge and go to **Settings** (three dots in the top right corner).



Go to the **Default Browser** section. Change the option to let sites be reloaded in **Internet Explorer Mode (IE Mode)**.

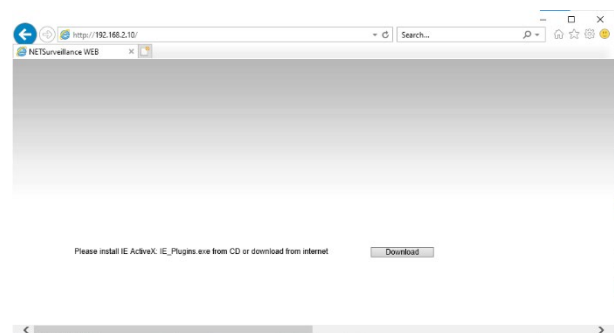
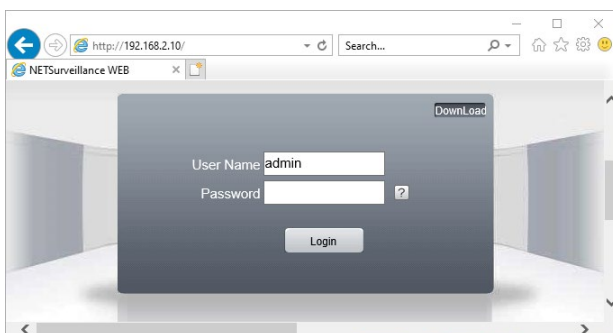


Press **Add** then type in the camera's log in page using the default IP address (<http://192.168.2.10/login.asp>).

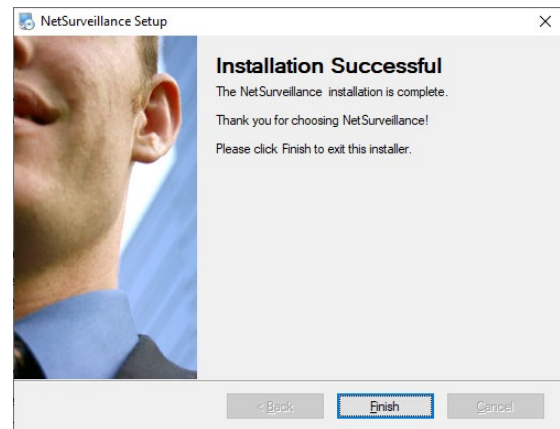
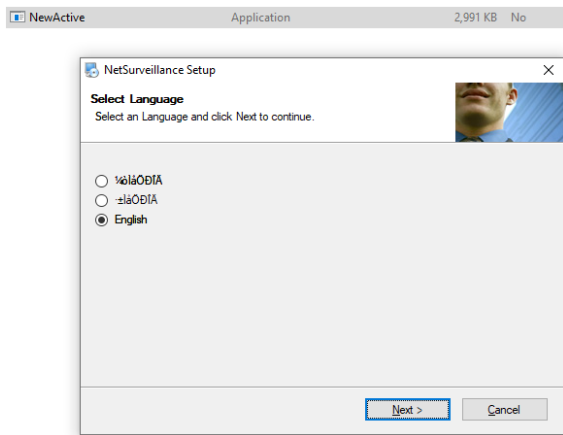


3.2.Installing the ActiveX plugin

Using Internet Explorer/Microsoft Edge, enter the camera's default IP address **192.168.2.10** in the address bar. If you have the ActiveX plugin installed, the camera login page will show (left). Otherwise, you'll be prompted to download and install the ActiveX plugin (right). [Contact Support](#) if you are unable to download the plugin.



If you see the screen on the right, follow installation instruction for ActiveX (Net Surveillance) application.



Refresh the browser and log into the camera interface using the following credentials:

- **Username:** admin
- **Password:** <blank>

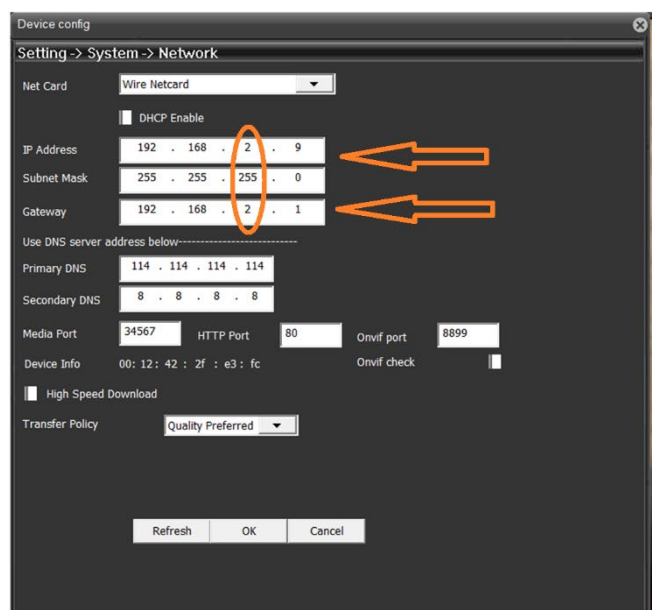
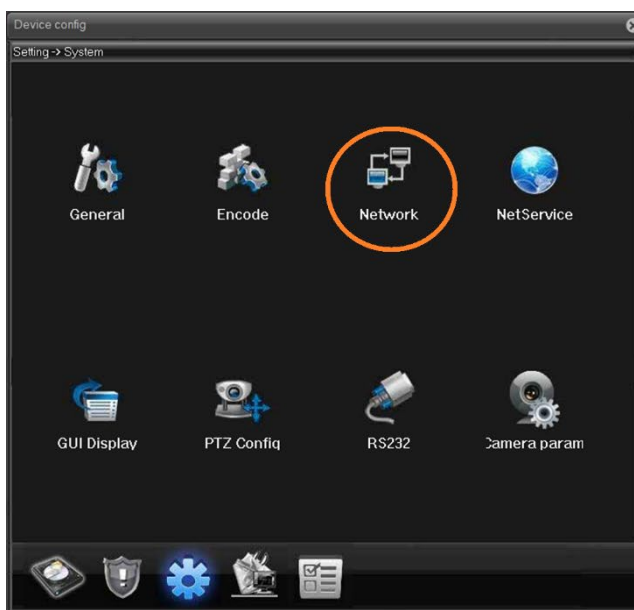
Note 1: Internet Explorer or Microsoft Edge *MUST* be used since the ActiveX plugin is not compatible with other browsers.

Note 2: If you get an error about the version of the browser, go to the ellipsis in the top right corner of the window and choose “Reload in Internet Explorer Mode”.

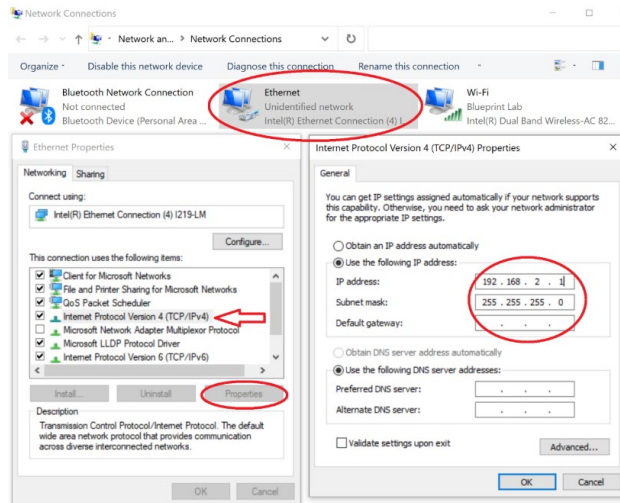
Note 3: You may need to change the language of the camera to English.

3.1. Changing IP address

The IP address of the camera can be changed through ActiveX. This is useful if the subnet (circled in orange) needs to be changed to match the rest of the network. To change the IP address, going into **Device Config** and click the **Settings** gear icon. From there select **Network**. This will bring up a panel showing the IP address of the camera.

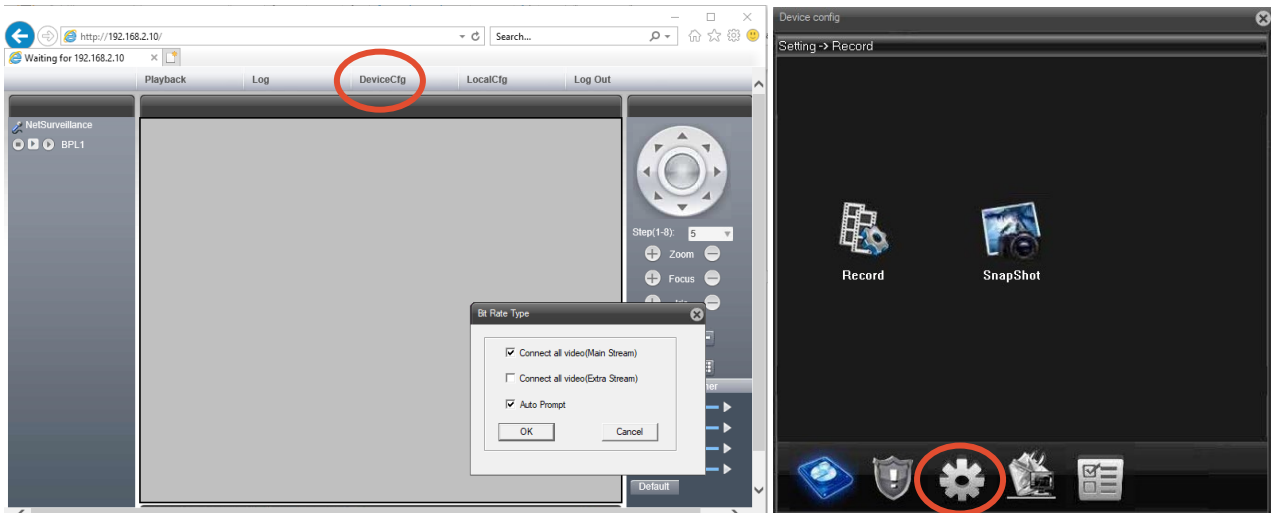


Ensure that the subnet is changed in both the IP address and the Gateway, then click **OK**. The video feed will disappear since the IP address has changed. To restore the feed, the IP address must be changed in your computer settings as well to match the new address. Once this has been done, enter the new IP address in your browser. The ActiveX video feed should reappear.

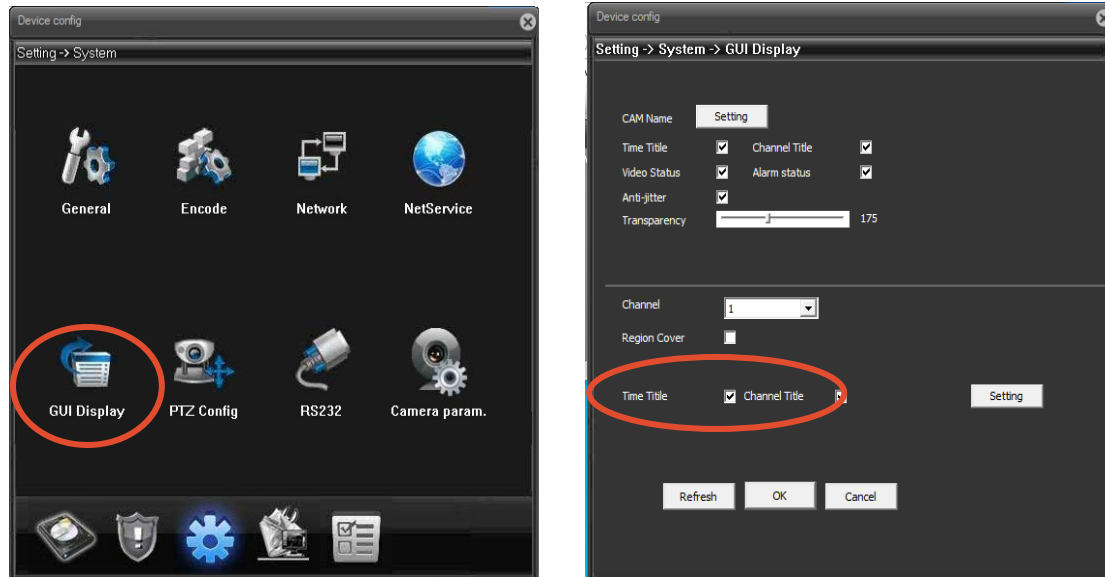


3.2.Editing GUI display settings

Open **Device Config** and navigate to the **Settings** gear icon.



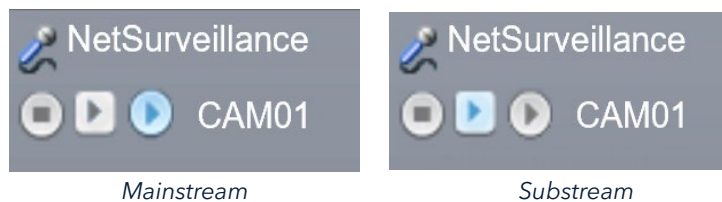
Select **GUI Display**. The Channel and Time titles can be removed by toggling the corresponding tick boxes. These tick boxes are highlighted for the secondary stream in the image below.



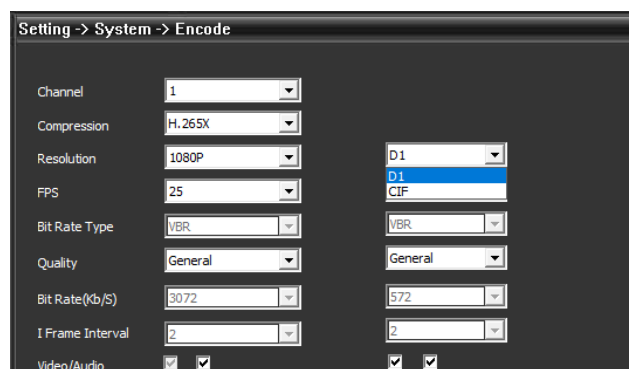
Select **OK** to save the changes and verify that they are saved by opening the camera stream.

3.3.Changing resolution

The camera has two video streams, a mainstream and a substream. The resolution of the mainstream is 1920x1080 and the resolution of the substream can be either 720x480 or 360x240, depending on what you select. To switch between the substream and the mainstream, select the desired stream in the top left corner of the display.



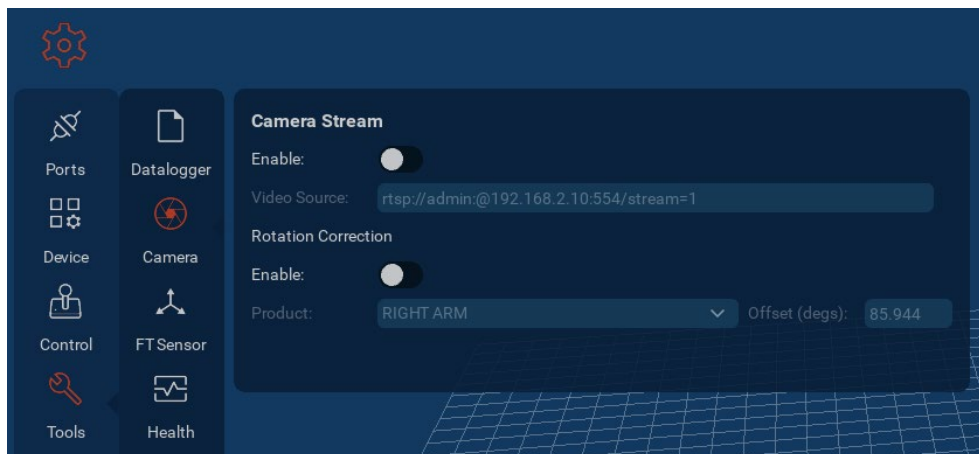
To change the resolution of the substream, in the **Device Config** panel, click on the **Settings** cog, and then select **Encode**. In the second drop-down menu next to Resolution you can select either D1 or CIF. The resolution of D1 is 720x480, and CIF is 360x240. This changes the stream 1 (substream) properties of the camera.



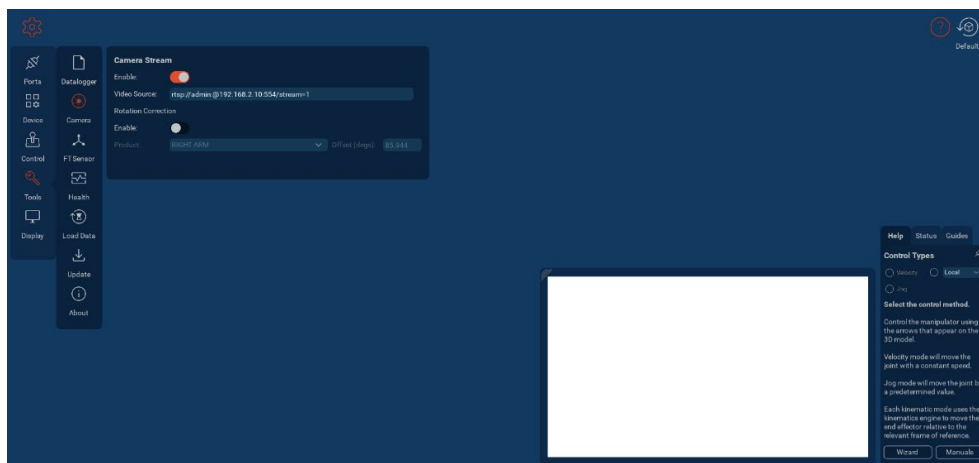
4. Viewing camera feed

4.1. Reach Control

Open Reach Control and go to **Settings > Tools > Camera**. Note that the Video Source field should read **rtsp://admin:@192.168.2.10:554/stream=1**.



Toggle the **Enable** switch below Camera Stream to open the camera feed. If the camera is connected correctly, the feed should appear in the white window. This window can be resized by dragging the top left corner.

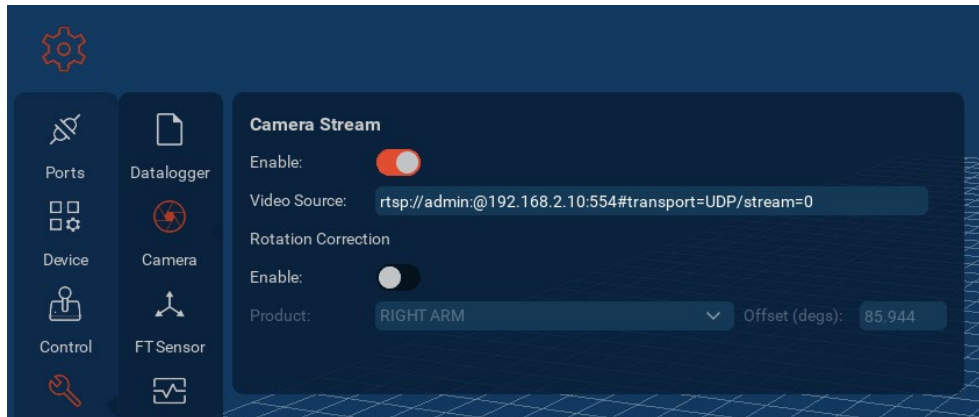


If a higher resolution is desired, the stream can be set to 0 to access the mainstream. This can be changed in the video source field by entering **rtsp://admin:@192.168.2.10:554/stream=0**. The mainstream has a resolution of 1920x1080.

4.1.1. Connecting to UDP stream

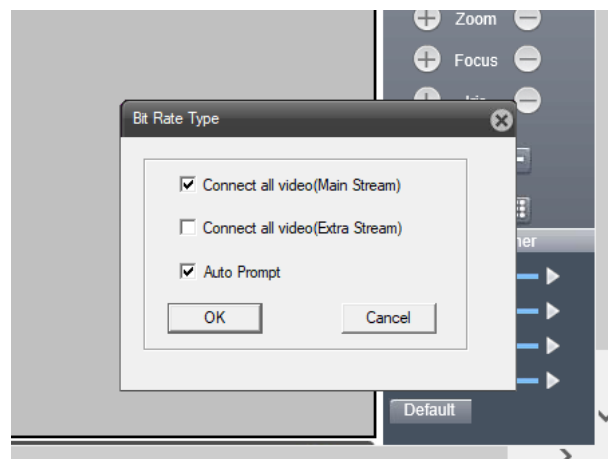
It is possible to use a UDP connection to access the camera feed in Reach Control. This communication protocol is faster and more robust against data loss. To use a UDP connection, enter the camera address as

rtsp://admin:@192.168.2.10:554#transport=UDP/stream=0. This method will work for stream 0 and stream 1.



4.2. Web browser

When the web browser interface is logged into the camera, you'll be prompted with the following screen. You can display the mainstream by clicking **OK** to the default settings. The secondary stream can be shown by selecting **Connect all video (Extra Stream)**.

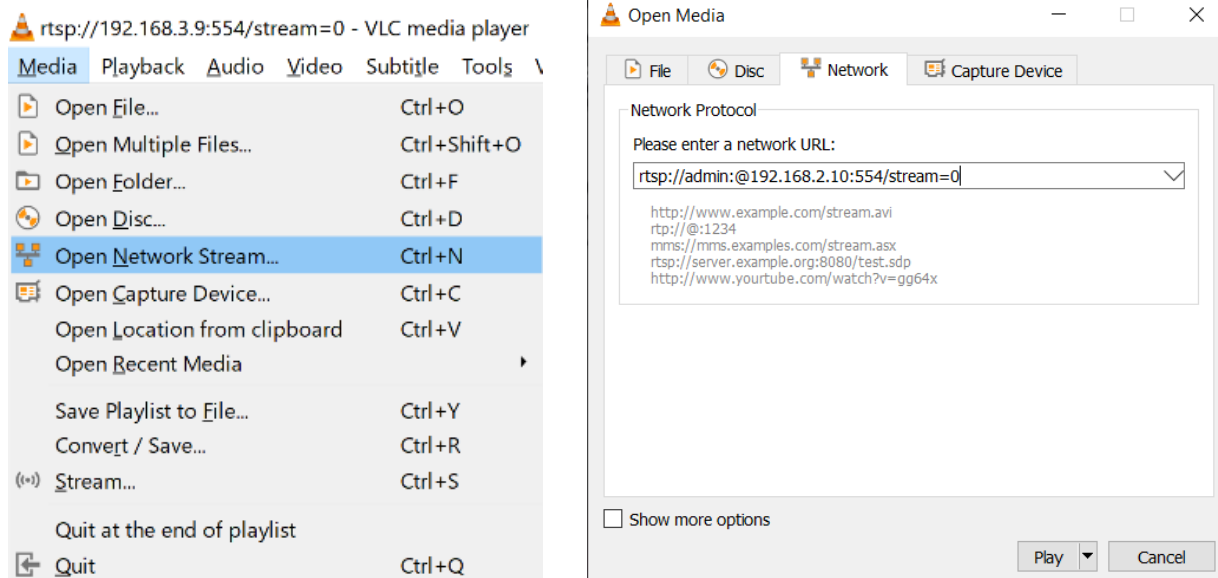


Note: The secondary stream is used by the Reach Control interface.

4.3. VLC Media Player

To view the camera feed with VLC Media Player, select the **Media** drop down menu, and then select **Open Network Stream**. Enter the address **rtsp://admin:@192.168.2.10:554/stream=0** to access the mainstream.

Ensure the IP address is correct if it has been changed, and the desired stream is used. The substream can be accessed by setting **stream=1** in the feed address. Resolution information can be viewed in **Tools > Codec Information**.



4.3.1. Connecting to UDP stream

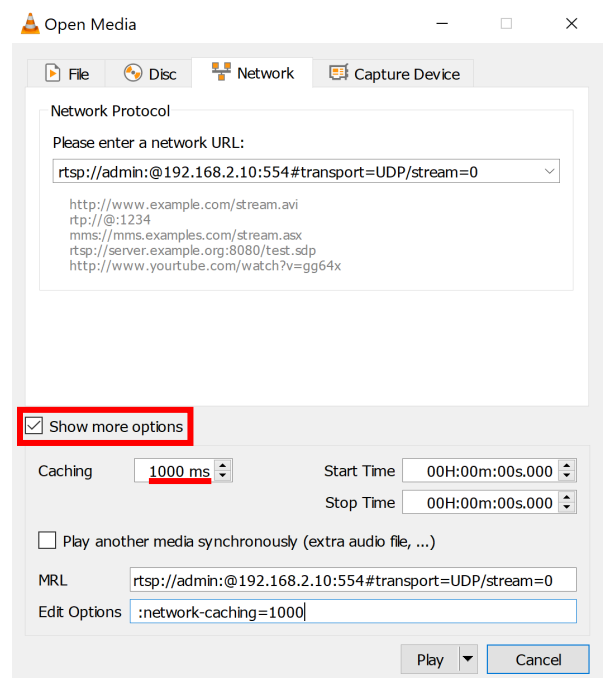
It is possible to use a UDP connection to access the camera feed in VLC Media Player. This communication protocol is faster and more robust against data loss. To use a UDP connection, enter the camera address as **rtsp://admin:@192.168.2.10:554#transport=UDP/stream=0**. This method will work for stream 0 and stream 1.

4.3.2. Latency issues

Users may experience some latency issues or “lag” when viewing the camera feed through VLC Media Player. This can be addressed by lowering the caching value.

Go to **Media > Open Network Stream** and check the **Show more options** box. The window will extend and show an option for changing the cache rate. Reduce this value to between 500ms and 200ms, click **Play** and check the feed to confirm if the latency is acceptable.

Be aware that if the cache value is too low, the feed may freeze. The optimal value can vary between machines so try a few variations to find the optimal level for your set up.



4.4. GStreamer

GStreamer is a software library for handling media, and may be used by those who wish to access the camera stream in their own program rather than using Reach Control or VLC.

To get a low-latency stream through GStreamer, use the code below:

```
sudo gst-launch-1.0 rtspsrc location=rtsp://admin:@192.168.2.11:554/stream=1
latency=0 buffer-mode=auto do-retransmission=false drop-on-latency=true ! decodebin !
autovideosink
```

For more information, please see the [GStreamer website](#).

5. Camera maintenance

Preventative maintenance is strongly recommended to keep your Reach Robotics product functioning as intended and to avoid unscheduled downtime and expensive repairs. Follow the steps in this section to prolong the life of your product.

It is recommended to test the IP camera during any acceptance tests carried out on paired manipulators.

5.1. General product care

Reach Robotics products are intended for use in water or air. Other fluids may have an adverse effect on the materials used in their production.

Cleaning

- Units should be cleaned thoroughly after every deployment, dry or wet.
- After immersion in salt-water, wash units in fresh water to prevent salt deposits and corrosion.
- Remove all debris from the manipulator, focusing particularly on joint closures and jaws to preserve sealing surfaces.
- Do not use harsh chemicals to clean any Reach Robotics products.

Connector care

- Keep connectors protected when not in use.
- Regularly check connector pins for signs of damage or corrosion.
- Ensure female connectors are free of debris – flush with compressed air if necessary.
- Apply silicon grease to both male and female connectors prior to every mating – ensure female connector sockets are greased to 1/10-1/3 of socket depth.

Cable care

- When de-mating connectors, pull the connector rather than the cable to remove it.
- Consider strain relief methods if using externally powered tools at the end-effector of the manipulator.

5.2.Repairs

If your Reach Robotics equipment becomes damaged or faulty, it may need to be returned to Reach Robotics for investigation and repair under a Return Merchandise Authorisation (RMA). Only a Reach Robotics engineer may authorise a return to our factory; the requirement may be determined through a phone call, email, or video call/remote access to the unit. If you suspect that an RMA may be required, please [contact Reach Robotics Support](#).

Please read [this FAQ](#) for a full explanation of the RMA process.

6. Revision history

Version	Date	Author	Notes
V1.0	2022	James Spinks	Initial version
V1.1	13/07/2022	James Spinks	Reach Robotics branding
V1.2	17/08/2022	John Sumskas	Addition of Microsoft Edge browser instructions
V1.3	30/03/2023	Ellie Best	Update of RC screenshots Addition of GStreamer code
V1.4	24/04/2024	Ellie Best	Layout update RB-1057 connection details
V006	04/12/2024	Ellie Best	Update for consistency