AVer TR320/530, PTZ310/330/N, and New TR311/TR333

Camera Integration with Microsoft Teams and Skype Platform

Integrating the New TR, PTZ and TR Cameras with Microsoft Teams and Skype (October 2020)

AVer Pro-AV has high quality image Cameras (TR310/311/311HN/313/333, TR320/530 and PTZ310/330) that will integrate with the Microsoft Teams and Skype workflows for peak performance and ease of use. We will show the configuration process for the New TR, PTZ and TR Camera lines and Microsoft Teams/Skype environment.

Microsoft Teams has enterprise level security, compliance, and manageability as with Office 365, many built in apps, combines instant messaging, video conferencing, calling, and document collaboration. **Skype for Business** will be replaced with Teams at or around July 31, 2021.

Microsoft Skype is typically used to make free video and voice one-to-one and group calls, send instant messaging and share files with other people on Skype. You can use Skype on your mobile, computer or tablet.

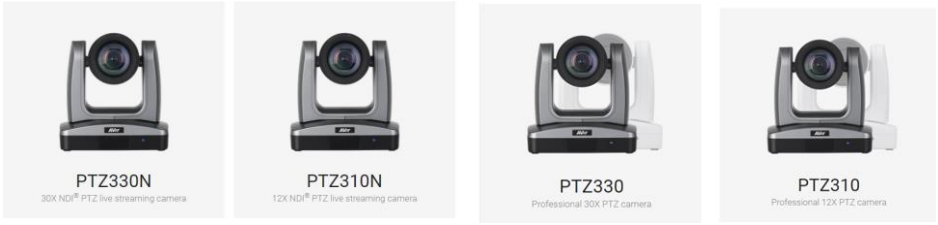
AVer Cameras with Microsoft products

The workflow from the AVer cameras is seamless; there are three main methods to configuring the capture device depending on the environment. We will discuss each environment:

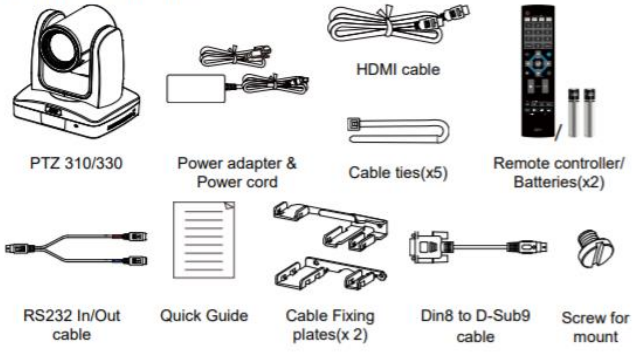
1. SDI / HDMI
2. USB
3. RTSP (Streaming)

AVer PTZ310/330/N Camera Setup

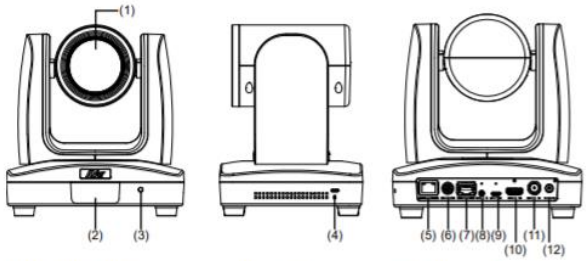
The AVer PTZ310/330(N) and TR320/530 cameras have various video output capabilities; here is a brief overview of each.



Package Contents



Overview

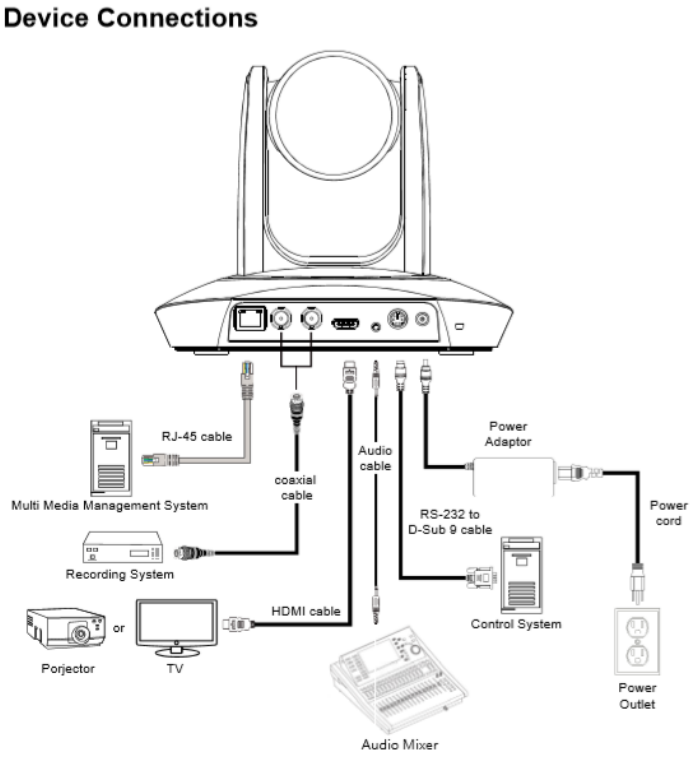


(1) Camera lens
(2) IR sensor
(3) Power indicator
(4) Kensington lock
(5) PoE+ port
(6) RS232 port
(7) RS422 port
(8) Audio IN
(9) micro-USB port
(10) HDMI port
(11) 3G-SDI port
(12) DC Power jack

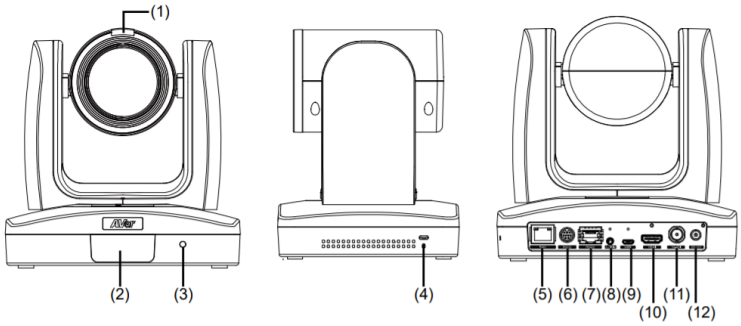
TR 320/530 Camera

TR530	TR320
PAVPTR530	PAVPTR320
2 megapixel	
Up to Full HD 1080P at 60fps	
30X	22X
76° ~ 5°	76° ~ 5°
2 megapixel CMOS	
Up to Full HD 1080P at 60fps	
110°	
Pan: -175° (Left), +175° (Right); Tilt: -30° (Down), +90° (Up)	
2° ~ 50° / Sec	
160° / Sec	

TR 320/530 Camera (Device connections)

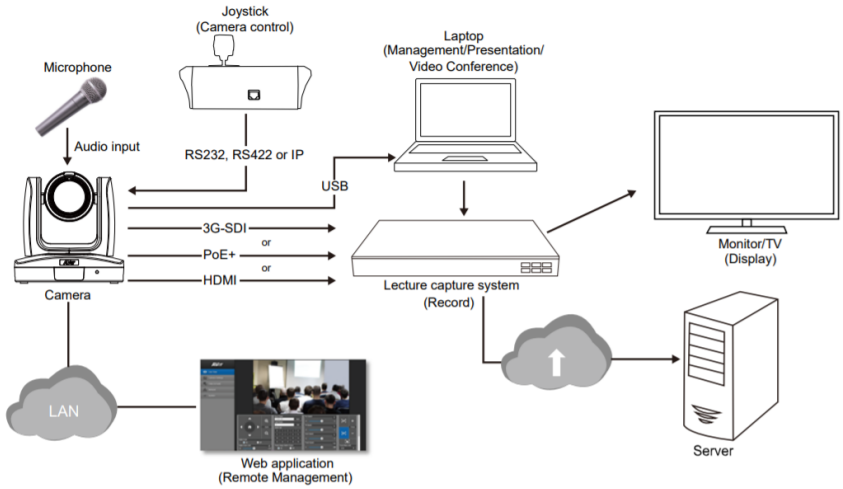


TR310 / 311 / 311HN / 313 / 333 Camera



(1) Tally Lamp (*1)	(5) PoE+ IEEE 802.3AT	(9) USB 3.0 Port (Type C)
(2) IR Sensor	(6) RS232 Port	(10) HDMI Port
(3) Power Indicator	(7) RS422 Port	(11) 3G-SDI Port (*2)
(4) Kensington Lock	(8) Audio In	(12) DC Power Jack

*Line input level: 1Vrms (max.).
*Mic input level: 50mVrms (max.); Supplied voltage: 2.5V
*1: This feature(Tally) is not supported on TR310.
*2: This feature(3G-SDI) is not supported on TR310&TR311HN.



AVer PTZ 310/330/N Camera integration with Microsoft Teams and Skype

The following are the steps needed to configure the AVer Camera with the Microsoft platform. The PTZ camera has various outputs for video; Microsoft can support any one of these video connections.

They are:

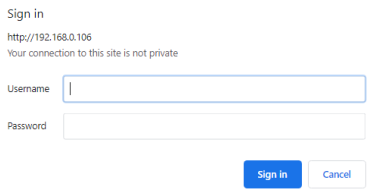
- HDMI
- 3G-SDI (Coaxial connection, SMPTE 424M)
- USB (Micro USB connection on Camera)
- IP - Network - RTMP (RJ45 Gbit network connection)

We can combine the outputs into 2 main groups of emphasis:

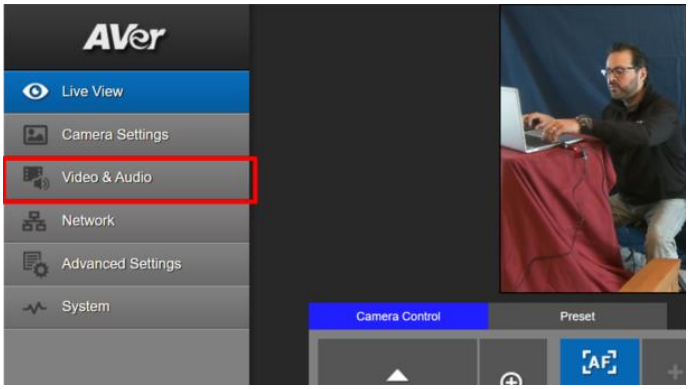
1. **HDMI/SDI/USB connection type**
2. **IP/Streaming (RTMP) connection type**

PTZ 310/330 Camera *HDMI/SDI/USB* Output to Teams

1. Type the IP address of the camera in your Chrome browser (Setup on same subnet) and you should now see the login to the PTZ310/330 camera shown below.

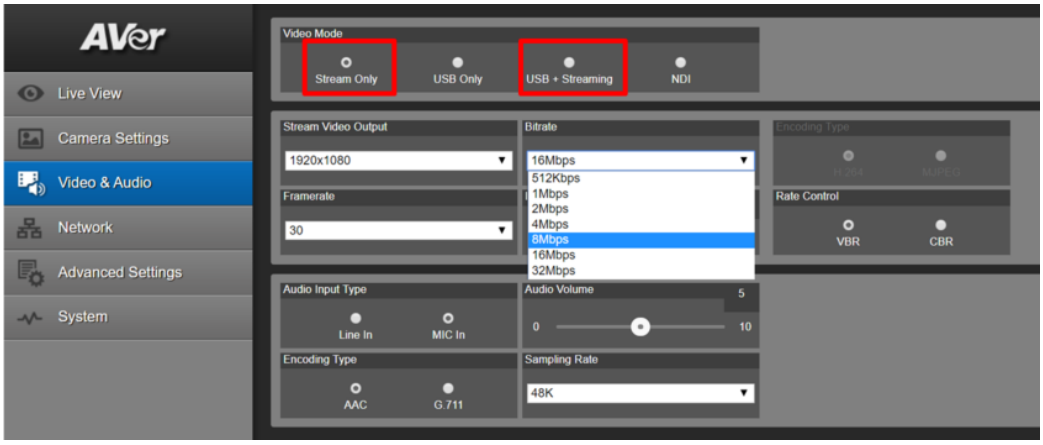


2. The default Username/password is “administrator” or “admin / admin”.
   ***Note:** If this is the first time accessing the PTZ330 camera via the Web login it will ask you to change the Username/Password.
3. Next, you should now see the main login screen with a “Live View” of the PTZ Camera.



4. Next, after selecting the *Video & Audio* setting, verify the Video Mode you are in. In this setup you should *NOT* be in NDI and *Stream Only* Video Mode, as it will disable the USB output.

   ***Note:** Some servers require a minimum bitrate of 2.5Mbps for their environment.



The PTZ Camera will have an SDI/HDMI video output in ALL modes.

Video Standard->	Stream Only (Various)	USB Only (Various)	USB + Streaming (Various)	NDI (1080p/60)
SDI Output	✓	✓	✓	✓
HDMI Output	✓	✓	✓	✓
USB Output	x	✓	✓	x
RTSP Output	✓	x	✓	✓

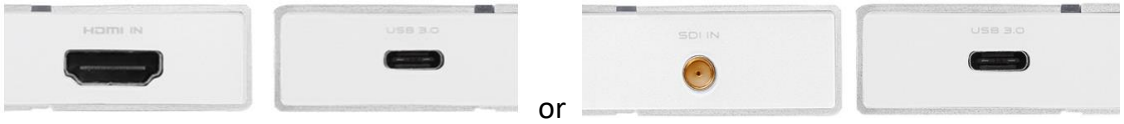
PTZ310/330 Camera HDMI/SDI/USB connection to Microsoft

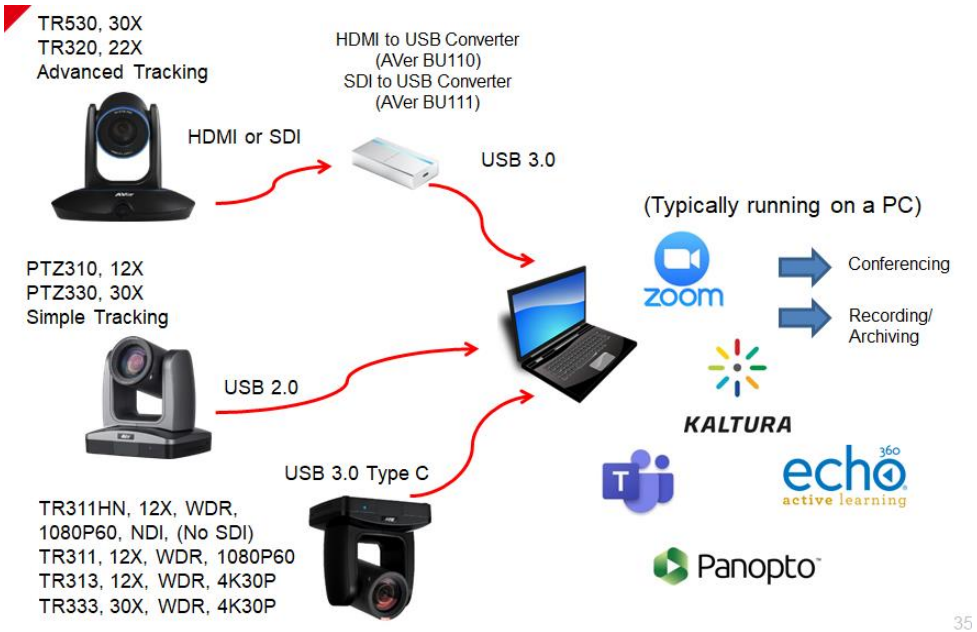
When connecting the camera to a Microsoft Teams/Skype platform the PTZ310/330 provides HDMI, SDI, and USB output standards. If you are using a desktop with a video capture card, at times they can have a direct HDMI input connection with high performance data transfer.

If you are using a laptop to capture video, you can use a direct USB connection, a portable HDMI to USB dongle like the AVer Media BU110, or a portable SDI to USB dongle like the AVer Media BU111 which provides a high speed, high quality connection.

Two Likely Scenarios:

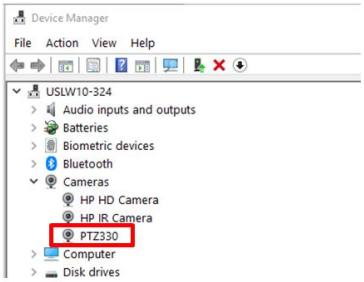
- HDMI or USB direct connection from PTZ camera
- HDMI / SDI connection using an AVer Media converter to USB connection





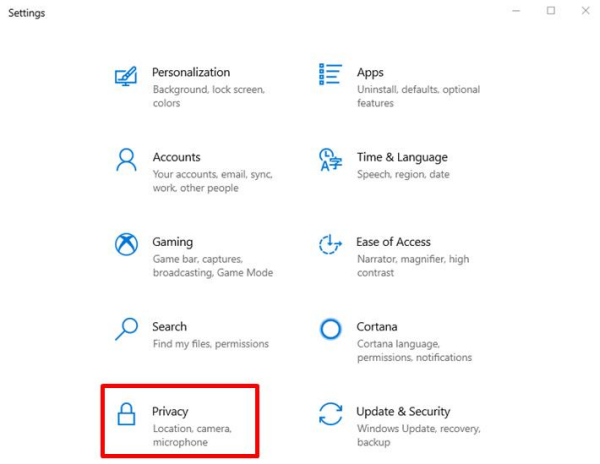
Microsoft OS Device Manager

Once the AVer PTZ310/330 Camera has been connected to a USB port on the PC using the USB to Micro-USB cable provided, verify that Windows does see the camera in the “Device Manager” window under Cameras.

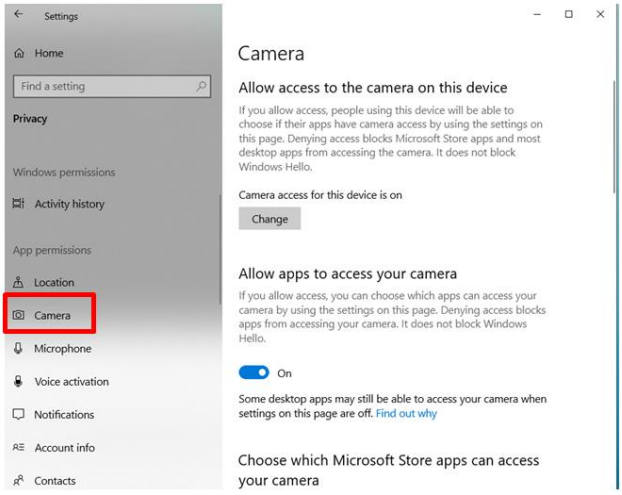


Microsoft Teams Desktop App

1. One of the very first things to check is if Microsoft Teams has permission to access your camera and microphone. There are instances where the App will not detect your camera if left disabled in your PC’s settings.
2. Press the ***Windows Key*** and ***I*** key together. This will bring up the ***Windows Settings*** page.



3. Next, look for the ***Privacy*** setting and select it.
4. Next, from the left sidebar, under ***App permissions*** click on ***Camera***.



Microsoft Teams Desktop App (continued)

5. Next, on the ***Camera*** page, you want to make sure the option ***Allow Apps to access camera*** is turned ***On.***
6. You also want to make sure that under ***Choose which app can access your camera,*** that ***Microsoft Teams*** is turned ***On.***
7. Now Microsoft Teams will appear here in this list if you have the Microsoft Teams desktop app installed.

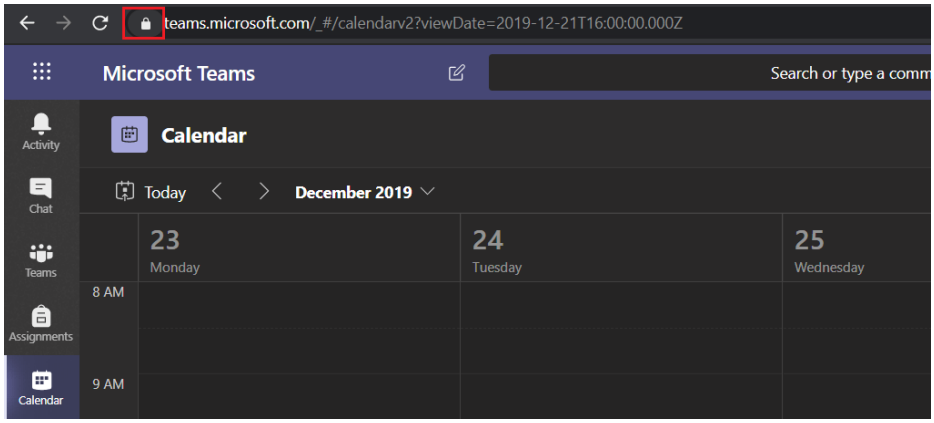
Microsoft Teams Web App

If you are using your web browser instead of using Microsoft Teams Windows app, you will need to make sure that the site has given permission to use your camera.

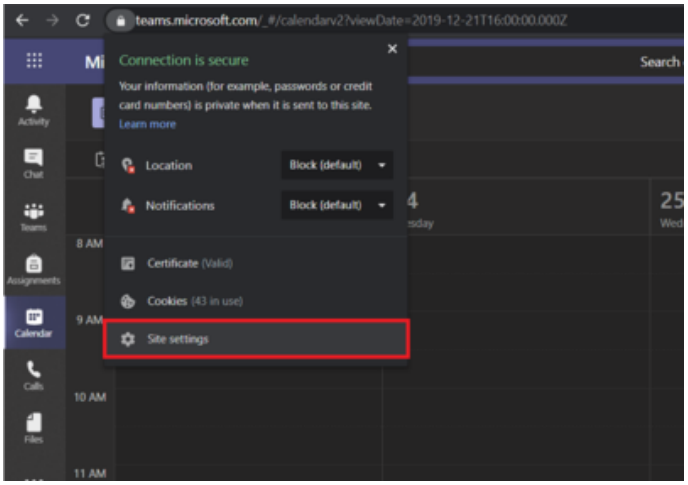
1. Go to **Microsoft Teams** using your search browser (Google Chrome or Mozilla Firefox).
2. Depending on your search browser, proceed with its appropriate steps:

   Google Chrome

   Click on the lock icon in the search URL box (at the top) as shown below.

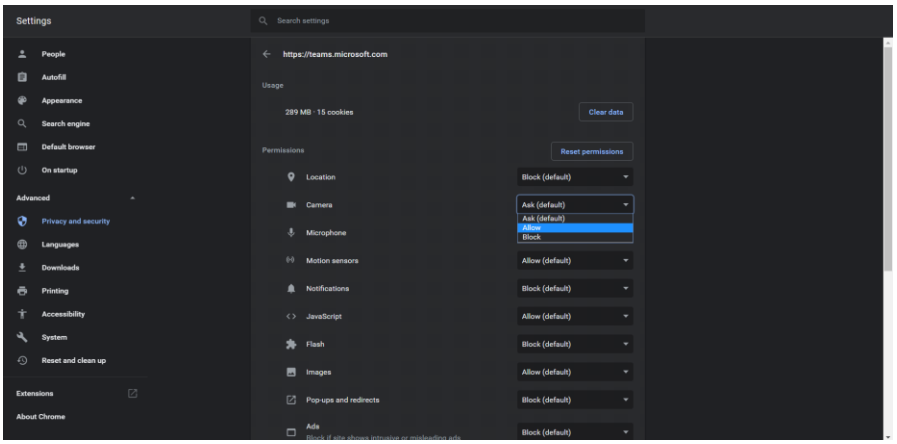


3. Next, click ***Site Settings.***



Microsoft Teams Web App (continued)

4. You will be brought to your Google Chrome settings where under ***Permissions*** you will want to make sure that ***Camera*** is set to ***Allow*** rather than ***Block*** or ***Ask***.



Ask is a secure option if you do not want your camera turned on without being prompted every time you access Microsoft Teams. ***Block*** prevents Microsoft Teams from accessing or even detecting your camera.

Mozilla Firefox: Click on the Firefox menu button ☰ Mozilla Firefox menu and select **Options**.

1. Next, click **Privacy & Security** from the left menu.
2. Then scroll down to the **Permissions** section and click the **Settings** button for the **Camera** option.
3. Now enter the website URL in the search field for the site that you want to access your camera. In our case, we will need to enter https://teams.microsoft.com/ to allow **Microsoft Teams** access to our camera. Hit the **Enter key**.

Firefox makes it a secure and straightforward way to handle the websites that you want to provide access and the ones to not. You can remove it at any time by selecting it from the list and clicking the **Remove Website**. Finally don't forget to select the **Save changes** button!

4. Try testing to see if your camera works after enabling the camera access for the Microsoft Teams web app.

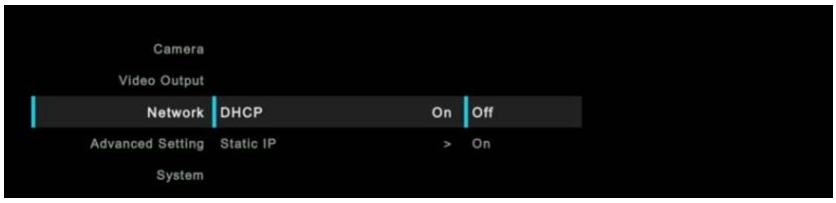
IP/STREAMING (RTMP)

PTZ Camera RTMP Output to Microsoft Teams using Microsoft Stream

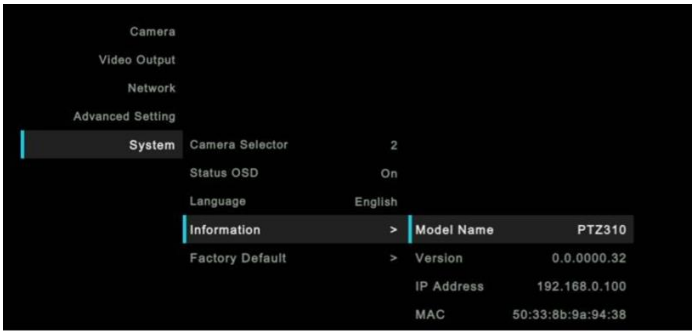
Microsoft Stream accepts live feeds from a variety of different encoders that output RTMP or RTMPS.

Below we will cover how to configure the PTZ camera manually for a Live event.

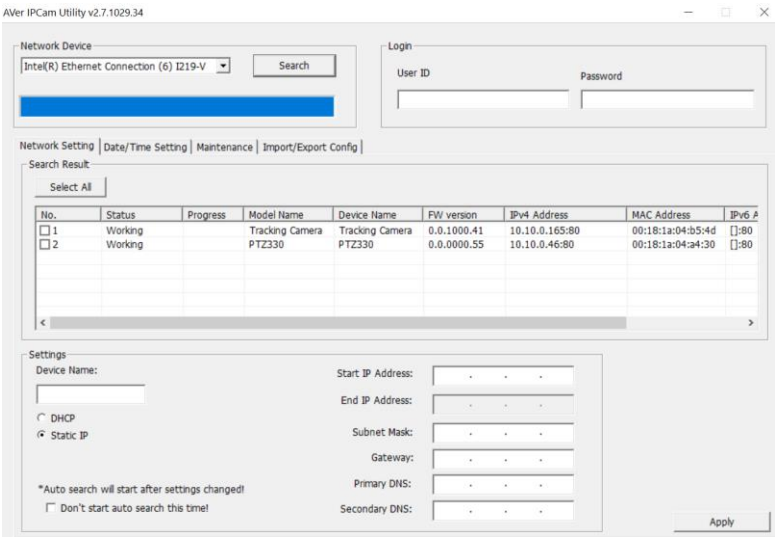
1. Connect the PTZ330 camera via RJ45 Network Cat5E (or better) connection; verify IP address of Camera in order to connect via Web browser. If IP address is not known, locate the remote, select the "Menu" icon and navigate to the "**Network->DHCP->**" setting, verify DHCP is set to "On" in order to grab an available IP address. If you are reserving IP addresses, verify it is set to "OFF" and that the correct IP address has been set.
   Go to **Network > DHCP > On**.



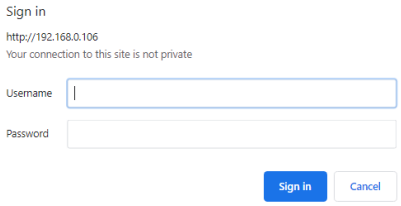
   After turning DHCP on, go to **System > Information** to view the IP address.



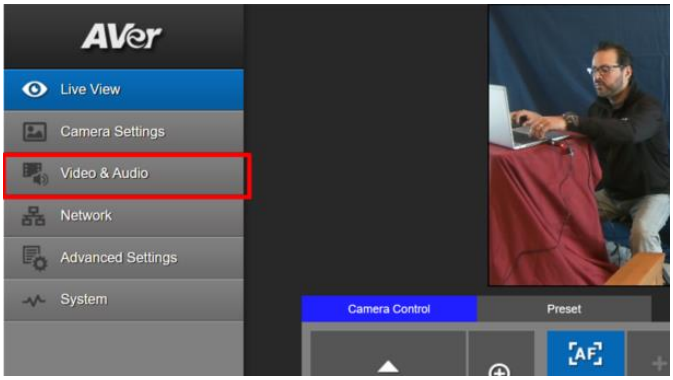
2. Another way to find the Camera IP address (On same Subnet) is to use the AVer IPCam Utility to find the camera. AVer software can be found here: https://www.aver.com/download-center.



3. Once you have the IP address setup, type the IP address in your Chrome browser (Setup on same subnet) and you should now see the login to the PTZ330 camera shown below.

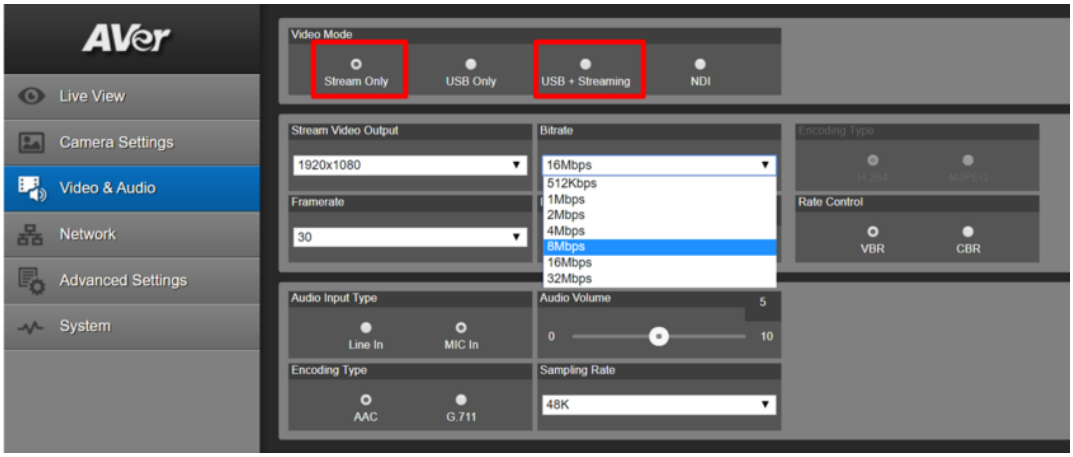


4. The default Username/password is “administrator” or “admin / admin”.
   ***Note:** If this is the first time accessing the PTZ330 camera via the Web login it will ask you to change the Username/Password.
5. Next, you should now see the main login screen with a “Live View” of the PTZ Camera.



Next, after selecting the *Video & Audio* setting, verify that you have either “Stream Only” selected or “USB + Streaming” selected. Select your Stream Video Output, Bitrate, Framerate, Encoding, etc.

***Note:** Some servers require a minimum bitrate of 2.5Mbps for their environment.



Video Standard->	Stream Only (Various)	USB Only (Various)	USB + Streaming (Various)	NDI (1080p/60)
SDI Output	✓	✓	✓	✓
HDMI Output	✓	✓	✓	✓
USB Output	x	✓	✓	x
RTSP Output	✓	x	✓	✓

Recommended settings from Microsoft

Ingest protocols

- Single bitrate RTMPS or RTMP

Video format

- Codec: H.264
- Profile: High (Level 4.0)
- Bitrate: Up to 5Mbps (5000 kbps)
- Strict Constant Bitrate (CBR)
- Keyframe/GOP: 2 seconds

  There must be an IDR frame at the beginning of each GOP

  Frame Rate: 29.97 or 30fps

  Resolution: 1280 x 720 (720P)

  Interlace Mode: Progressive
- Pixel Aspect Ratio (PAR): Square

Audio format

- Codec: AAC (LC)
- Bitrate: 192 kbps
- Sample Rate: 48 kHz or 44.1 kHz (recommend 48 kHz)

Playback requirements

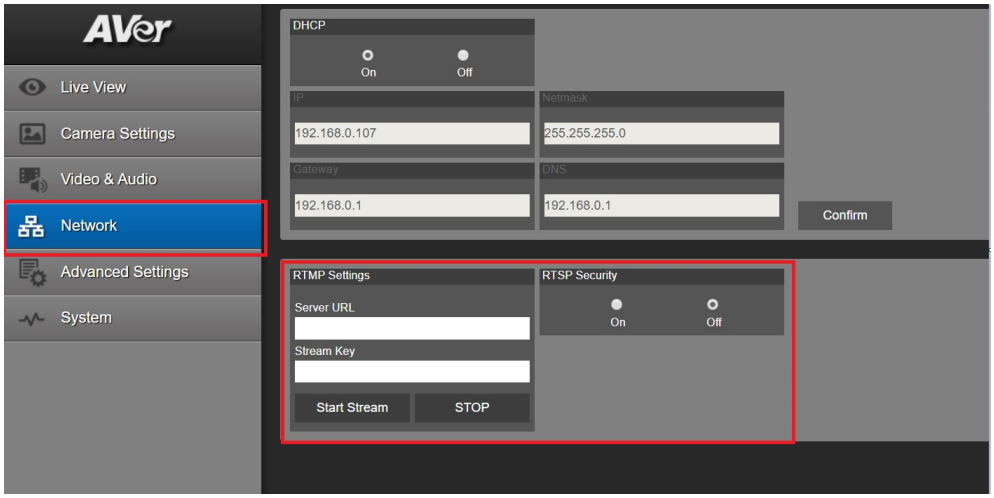
- Both an audio and video stream must be present in order to playback content in Microsoft Stream.

Configuration tips

- Whenever possible, use a hardwired internet connection.
- A good rule of thumb when determining bandwidth requirements is to double the streaming bitrates. While this is not a mandatory requirement, it will help mitigate the impact of network congestion.
- When using software based encoders, close any unnecessary programs.
- Don't change your encoder configuration after it has started pushing. It has negative effects on the event and can cause the event to be unstable. If you want to do this before the event has started, you must disconnect using the producer controls in Microsoft Stream and start setup again.
- If the encoder is disconnected during the live event, reconnect it keeping the same timestamps of continuing process. Note that any discontinuity may cause audio or video issues on certain browsers and devices.
- Give yourself ample time to setup your event. For high scale events, it’s recommended to start the setup an hour before your event.

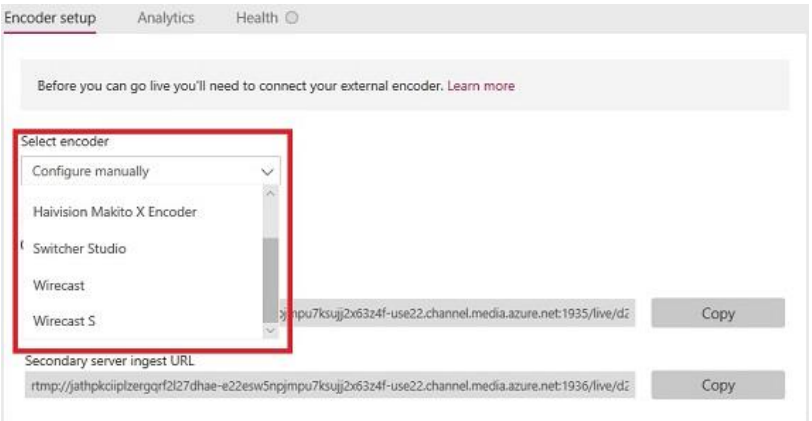
IP/STREAMING (RTMP)

6. Next, select the *Network* setting; this is where you will enter the RTMP *Server URL* and *Stream Key*. *RTSP Security* to either “On” or “Off” depending if you want encryption when using *RTSP*.

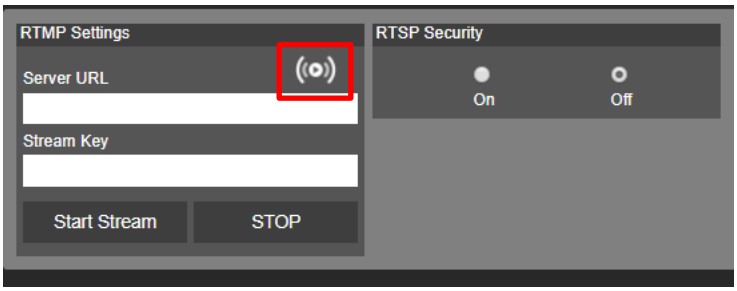


***Note:** Once streaming has started do not change the Stream Video Output on the fly, you will need to “Stop” streaming, change the Stream Video Output, then ”Start” the stream again.

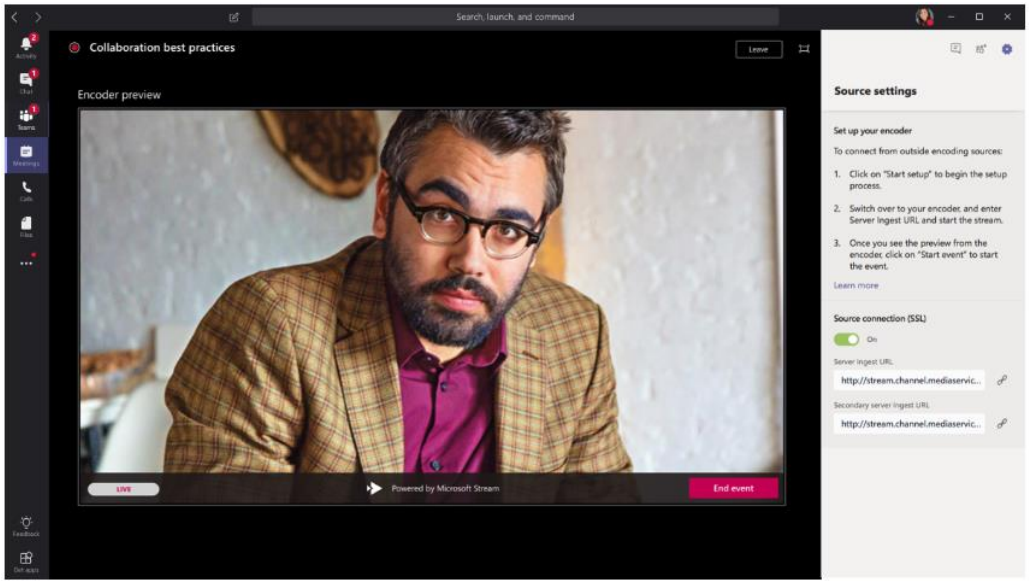
7. Next, go to your Microsoft Stream account and login to obtain the *Server URL* and *Stream name/key*. Once obtained, you will copy that information and paste it into the PTZ Camera *Server URL* and *Stream Key* fields.



8. Next, go back to the PTZ WebLogin and select *Start Stream*; this will begin the stream to Microsoft Stream. You should see a *Streaming* icon appear to indicate the process has started.



9. To verify, go to Microsoft Stream and verify you are able to see the preview of the video feed from the PTZ330 camera in **Encoder preview**.



10. To end the streaming feed from the PTZ camera, go to the WebLogin and select "*STOP*".
11. To verify, go back to your Microsoft Stream preview, it should now be displaying "nothing".

Microsoft Teams configuration

In a Teams live event, you can stream video from an external encoder to Microsoft Stream if the encoder supports Real-Time Messaging Protocol (RTMP).

1. In Teams, select **Calendar Meetings button**, then your live event, and **Join**.
2. Until you start the event, you'll see the title, date, and time in the **Encoder preview** window.
3. Click **Start setup**. ***Note:** Setup may take some time to complete.
4. Once you see the message **Ready to connect,** go to the **Settings** tab and copy the Server ingest URL into the encoder (PTZ Camera) to start ingesting.
5. Once you start streaming from the PTZ camera to *Stream* using the ingest URL, you should see the preview of the video in **Encoder Preview.**
6. Once satisfied with the setup and video preview, click **Start event**. Once the live event starts, the video from the PTZ camera is broadcast to the event.
7. To end the event, click **End event. *Note:** Once the live event ends, it cannot be restarted.
8. This concludes the AVer PTZ330 Camera Streaming with a Microsoft setup.

AVer TR 320/530 Camera integration with Microsoft Teams and Skype

Here are the steps to configure the AVer Camera while using the Microsoft Teams platform.
The TR camera has various outputs for video and an audio Line-in; Microsoft can support any one of these audio/video connections.

They are:

- HDMI
- 3G-SDI (x2) (Coaxial connection, SMPTE 424M)
- IP - Network - RTMP (RJ45 network connection)
- Audio Line-In (Use with Powered Mic or Audio Mixer, 1vrms)

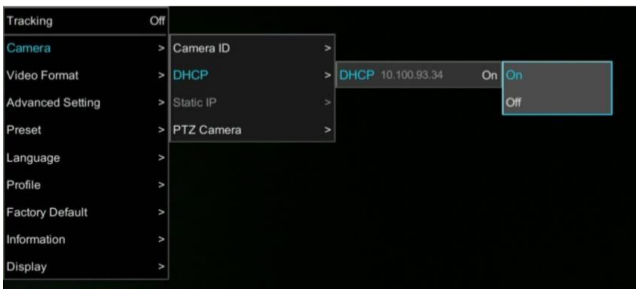
We can combine the outputs into 2 main groups of emphasis:

1. **HDMI/SDI connection type**
2. **IP/Streaming (RTMP) connection type**

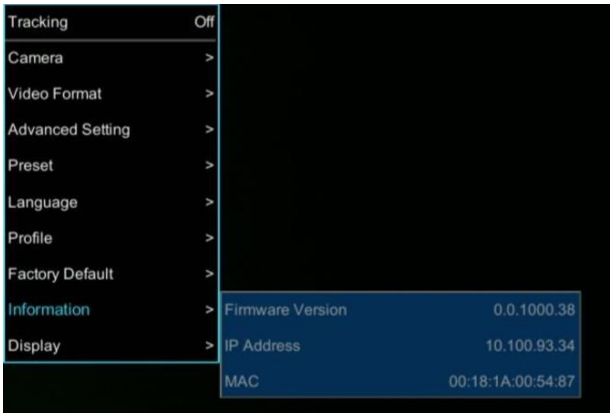
TR530/320 Camera *HDMI/SDI* Output to Microsoft Teams

If you are using a laptop to capture video, a portable HDMI to USB dongle like the AVer Media BU110 and BU111 provides a high speed, high quality connection.

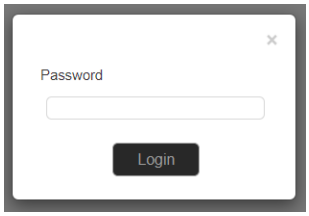
1. Connect the TR530 camera via RJ45 Network Cat5E (or better) cable; verify IP address of Camera in order to connect via Web browser. If IP address is not known, locate the remote, select the "Menu" icon and navigate to the "**Camera->DHCP->**" setting, verify DHCP is set to "On" in order to grab an available IP address. If you are reserving IP addresses, verify it is set to "OFF" and that the correct IP address has been set.
   Go to **Camera > DHCP > DHCP >On**.



   After turning DHCP on, go to **Information** to view the IP address.

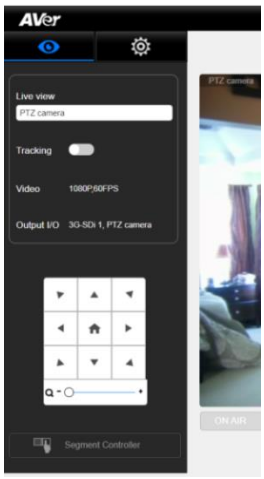


2. Another way to find the Camera IP address (On same Subnet) is to use the AVer IPCam Utility to find the camera. AVer software can be found here: https://www.aver.com/download-center.
3. Next, type the IP address in your Chrome browser (Setup on same subnet) and you should now see a login to the TR320/530 camera shown below.

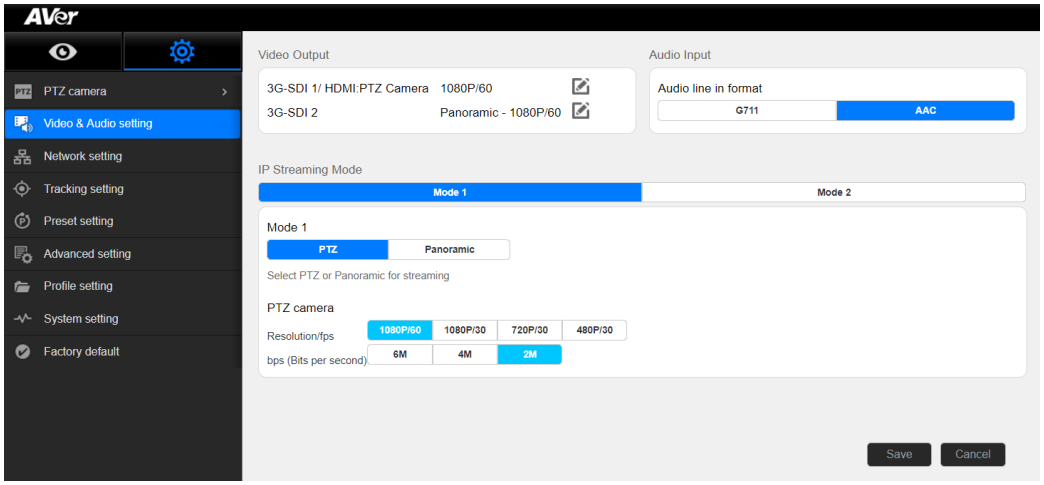


4. The default password is "admin".

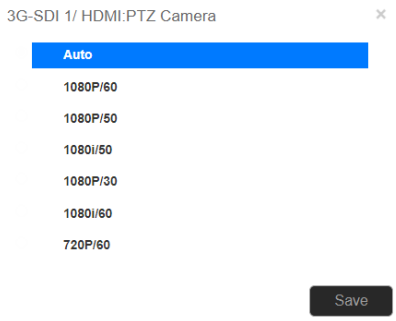
5. Next, you should now see the main login screen with a “Live View” of the TR Camera.



6. Next, select the settings gearbox  , then select ***Video & Audio setting***, this is where you can select the Video Output of the TR320/530.



7. Next, selecting 3G-SDI / HDMI will open the following window, allowing you to choose which video standard or the ability to set it to *Auto*.



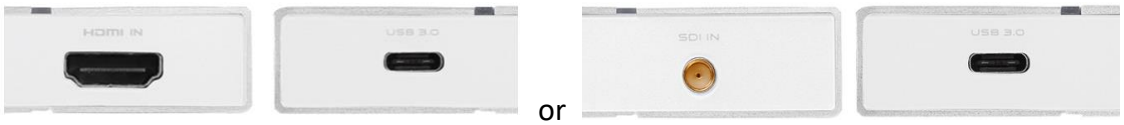
***Note:** Only the standards listed are currently available, no 29.97/59.94 video selection.

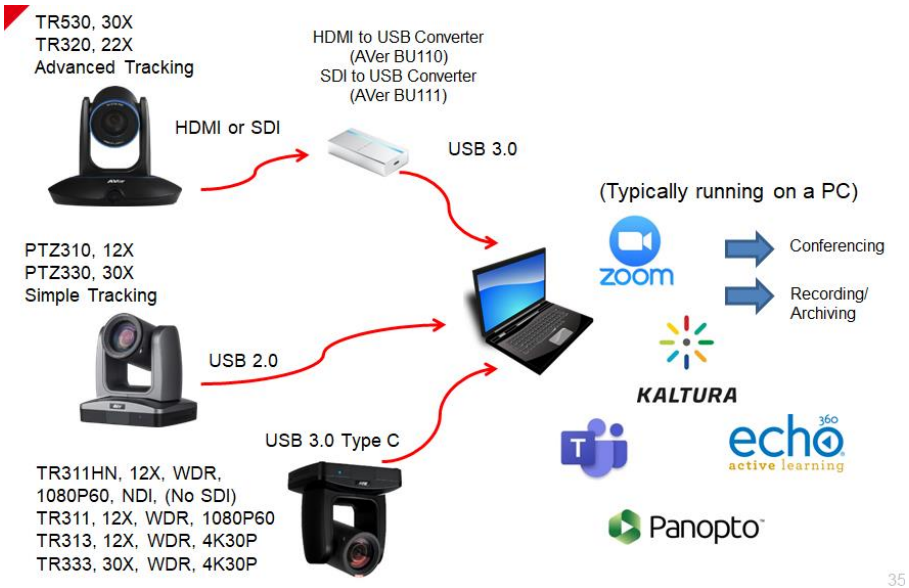
TR320/530 Camera HDMI/SDI connection to Microsoft Teams

The TR camera does not offer a direct USB output, like the PTZ camera does. If the PC you are using happens to have an HDMI Input connection, you can direct connect to it. If there is no HDMI Input and you are using a laptop to capture video, a portable HDMI/SDI to USB dongle like the AVer Media BU110 and BU111 provides a high speed, high quality connection.

Likely Scenario:

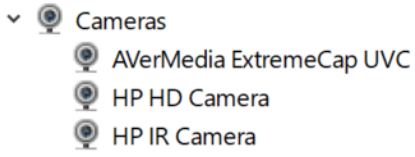
- HDMI / SDI connection using an AVer Media converter to USB





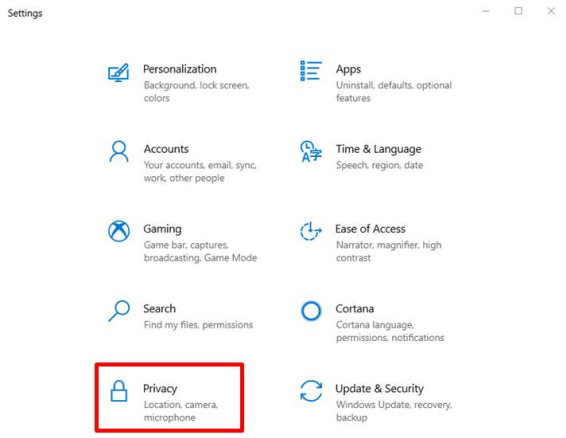
Microsoft OS Device Manager

Once the AVer TR320/530 Camera has been connected to a USB port on the PC using the HDMI to USB converter, verify that Windows does see the camera in the “Device Manager” window under Cameras. Depending on converter used, in this case the “AVerMedia ExtremeCap UVC”.

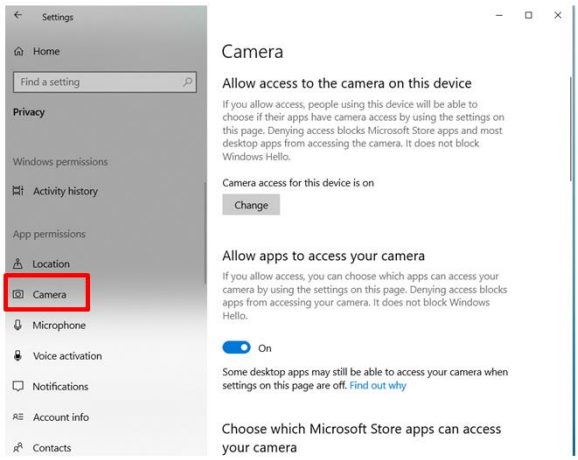


Microsoft Teams Desktop App

1. One of the very first things to check is if Microsoft Teams has permission to access your camera and microphone. There are instances where the App will not detect your camera if left disabled in your PC's settings.
2. Press the ***Windows Key*** and ***I*** key together. This will bring up the ***Windows Settings*** page.



3. Next, look for the ***Privacy*** setting and select it.
4. Next, from the left sidebar, under ***App permissions*** click on ***Camera***.



5. Next, on the ***Camera*** page, you want to make sure the option ***Allow Apps to access camera*** is turned ***On.***
6. You also want to make sure that under ***Choose which app can access your camera,*** that ***Microsoft Teams*** is turned ***On.***
7. Now Microsoft Teams will appear here in this list if you have the Microsoft Teams desktop app installed.

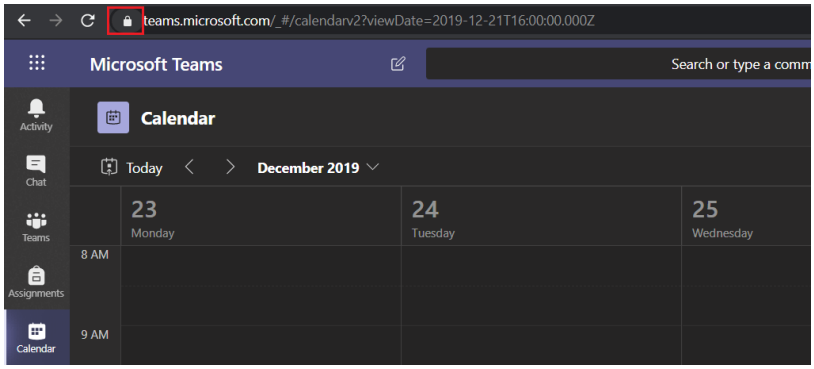
Microsoft Teams Web App

If you are using your web browser instead of using Microsoft Teams Windows app, you will need to make sure that the site has given permission to use your camera.

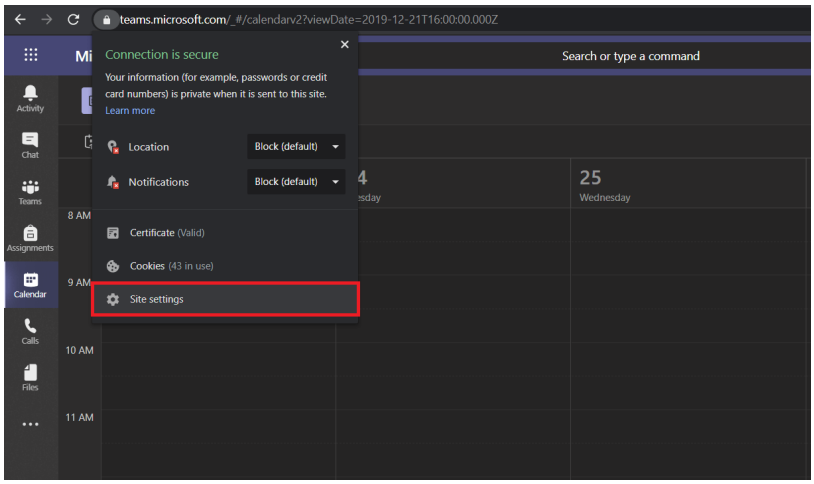
1. Go to **Microsoft Teams** using your search browser (Google Chrome or Mozilla Firefox).
2. Depending on your search browser, proceed with its appropriate steps:

   Google Chrome

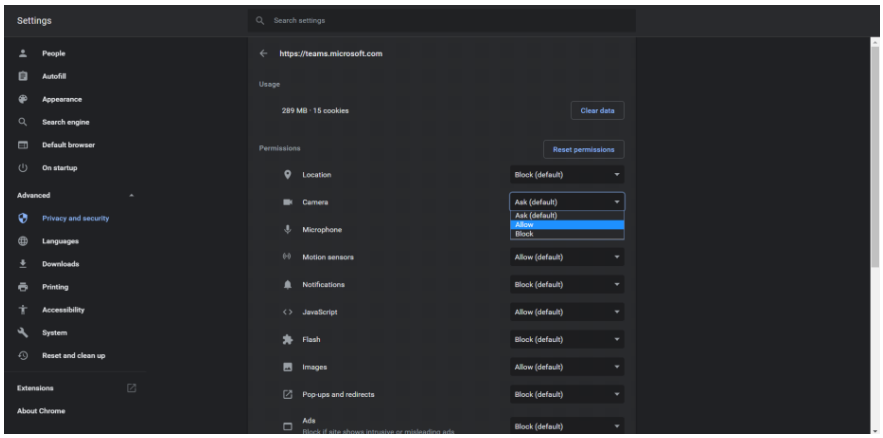
   You need to click on the lock icon in the search URL box (at the top) as shown below.



3. Next, click ***Site Settings.***



4. You will be brought to your Google Chrome settings where under ***Permissions*** you will want to make sure that ***Camera*** is set to ***Allow*** rather than ***Block*** or ***Ask***.



Ask is a secure option if you do not want your camera turned on without being prompted every time you access Microsoft Teams. ***Block*** prevents Microsoft Teams from accessing or even detecting your camera.

Microsoft Teams Web App (continued)

Mozilla Firefox

You need to click on the Firefox menu button  Mozilla Firefox menu and select **Options**.

1. Next, click **Privacy & Security** from the left menu.
2. Then scroll down to the **Permissions** section and click the **Settings**… button for the **Camera** option.
3. Now enter the website URL in the search field for the site that you want to access your camera. In our case, we will need to enter https://teams.microsoft.com/ to allow **Microsoft Teams** access to our camera. Hit the **Enter key**.

Firefox makes it a secure and straightforward way to handle the websites that you want to provide access and the ones to not. You can remove it at any time by selecting it from the list and clicking the **Remove Website**. Finally don't forget to select the **Save changes** button!

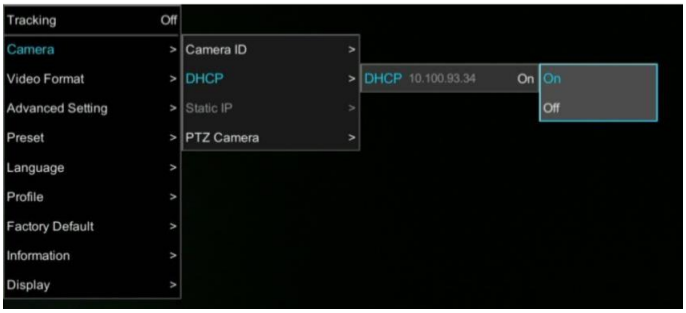
4. Try testing to see if your camera works after enabling the camera access for Microsoft Teams web app.

TR320/530 Camera RTMP Output to Microsoft Teams using Microsoft Stream

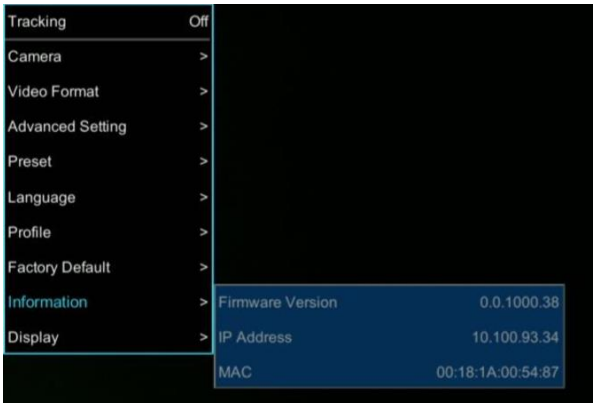
Microsoft Stream accepts live feeds from a variety of different encoders that output RTMP or RTMPS.

Below we will cover how to configure the PTZ camera manually for a Live event.

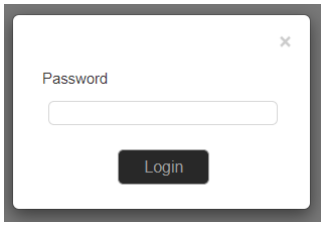
1. Connect the TR530 camera via RJ45 Network Cat5E (or better) cable; verify IP address of Camera in order to connect via Web browser. If IP address is not known, locate the remote, select the "Menu" icon and navigate to the "**Camera->DHCP->**" setting, verify DHCP is set to "On" in order to grab an available IP address. If you are reserving IP addresses, verify it is set to "OFF" and that the correct IP address has been set.
   Go to **Camera > DHCP > DHCP >On**.



   After turning DHCP on, go to **Information** to view the IP address.

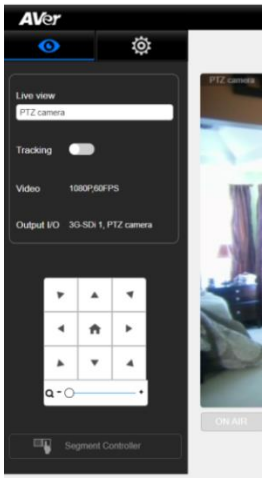


2. Another way to find the Camera IP address (On same Subnet) is to use the AVer IPCam Utility to find the camera. AVer software can be found here: https://www.aver.com/download-center.
3. Next, type the IP address in your Chrome browser (Setup on same subnet) and you should now see a login to the TR320/530 camera shown below.

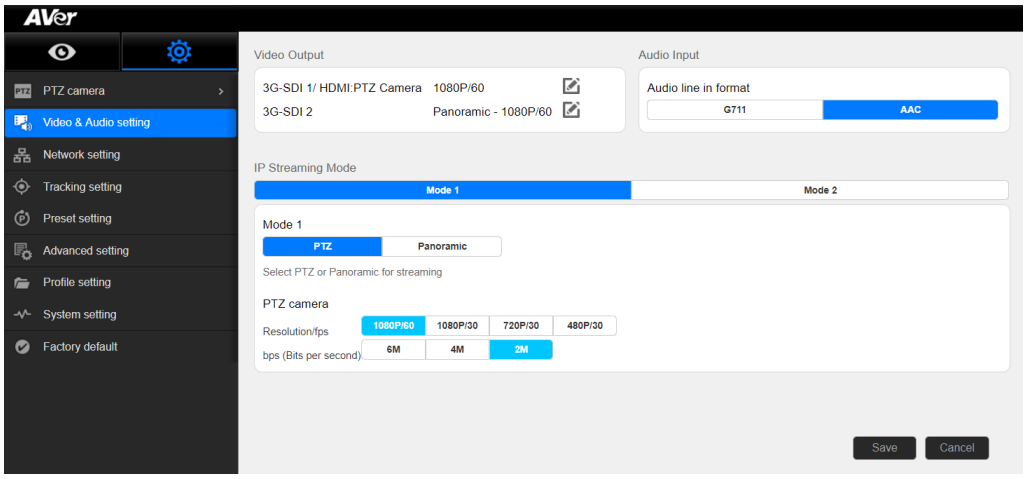


4. The default password is "admin".

5. Next, you should now see the main login screen with a “Live View” of the PTZ Camera.

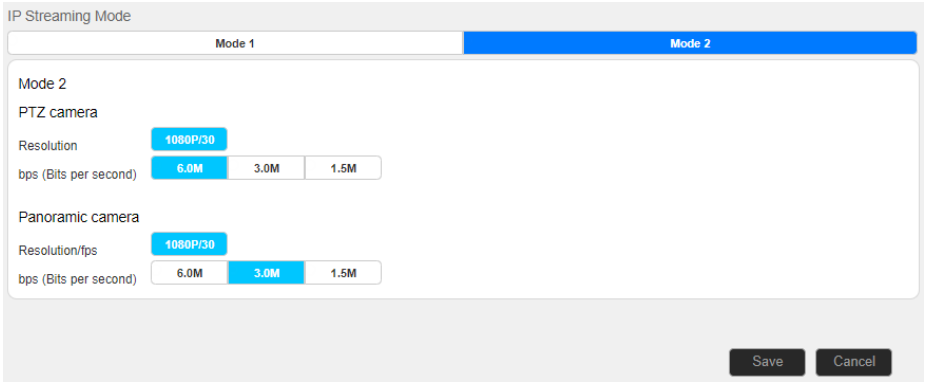


6. Next, select the settings gearbox  , then select *Video & Audio setting*, this is where you can select Video Output, Audio, and the type of Streaming mode to use and Streaming video standard. ***Note:** This *IP Streaming Mode* is used for RTSP and RTMP Streaming.



Mode 1: You will use either the PTZ Camera OR Panoramic Camera view for your stream with varying video selections.

Mode 2: There will be 2 simultaneous streams from PTZ and Panoramic views set to (1080p/30) with adjustable **bps** (bits per second) if selected.



Recommended settings from Microsoft

Ingest protocols

- Single bitrate RTMPS or RTMP

Video format

- Codec: H.264
- Profile: High (Level 4.0)
- Bitrate: Up to 5Mbps (5000 kbps)
- Strict Constant Bitrate (CBR)
- Keyframe/GOP: 2 seconds

  There must be an IDR frame at the beginning of each GOP

  Frame Rate: 29.97 or 30fps

  Resolution: 1280 x 720 (720P)

  Interlace Mode: Progressive
- Pixel Aspect Ratio (PAR): Square

Audio format

- Codec: AAC (LC)
- Bitrate: 192 kbps
- Sample Rate: 48 kHz or 44.1 kHz (recommend 48 kHz)

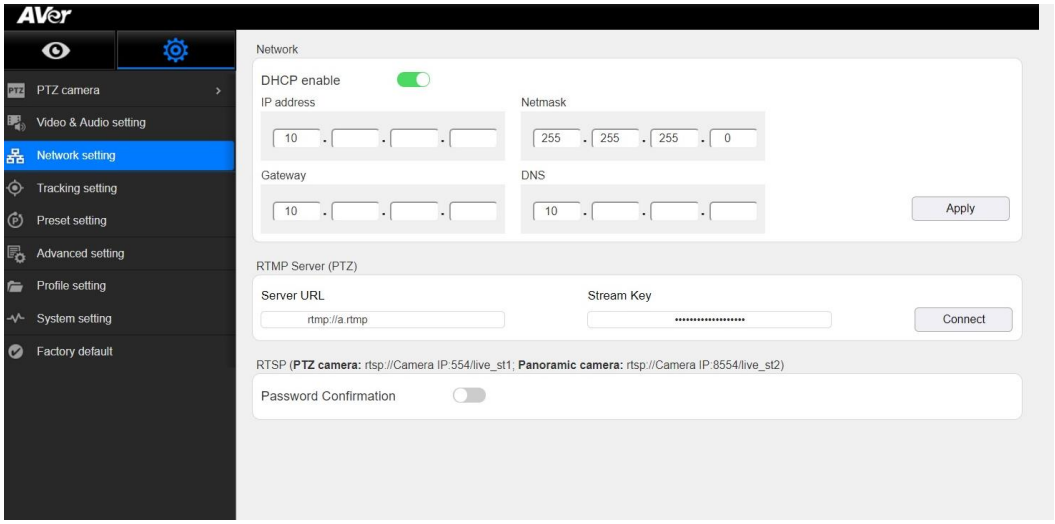
Playback requirements

- Both an audio and video stream must be present in order to playback content in Microsoft Stream.

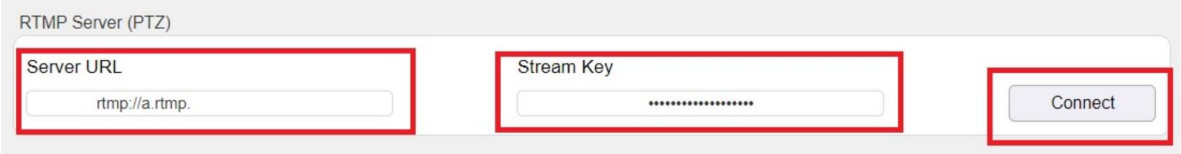
Configuration tips

- Whenever possible, use a hardwired internet connection.
- A good rule of thumb when determining bandwidth requirements is to double the streaming bitrates. While this is not a mandatory requirement, it will help mitigate the impact of network congestion.
- When using software based encoders, close any unnecessary programs.
- Don't change your encoder configuration after it has started pushing. It has negative effects on the event and can cause the event to be unstable. If you want to do this before the event has started, you must disconnect using the producer controls in Microsoft Stream and start setup again.
- If the encoder is disconnected during the live event, reconnect it keeping the same timestamps of continuing process. Note that any discontinuity may cause audio or video issues on certain browsers and devices.
- Give yourself ample time to setup your event. For high scale events, it’s recommended to start the setup an hour before your event.

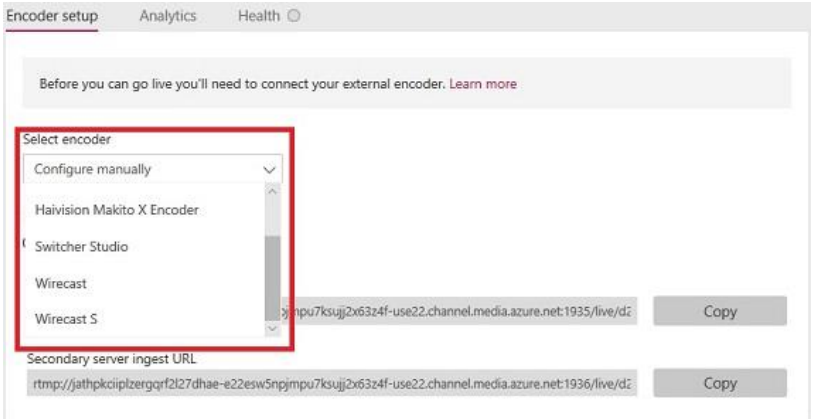
7. Next, select *Network Setting*. You should now see the following information displayed.



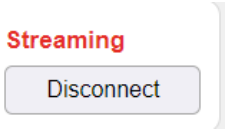
8. Next, notice the *RTMP Server URL* selection, this is where you will "paste" the URL string from *Microsoft Stream* as well as the *Stream Key* from *Microsoft Stream*. ***Note:** The RTMP Stream will use the *PTZ IP Stream Mode* output configuration.



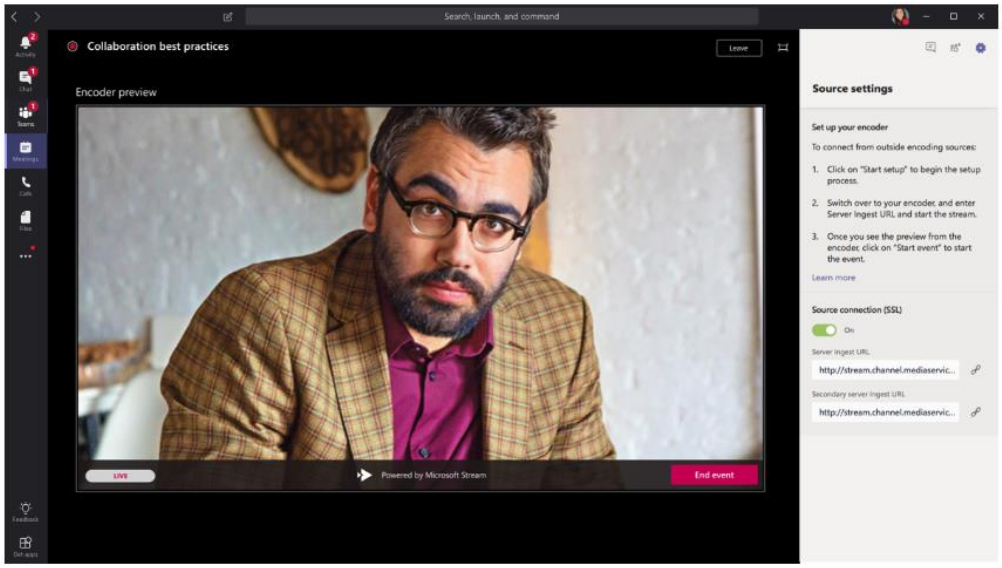
9. Next, go to your Microsoft Stream account and login to obtain the *Server URL* and *Stream name/key*. Once obtained, you will copy that information and paste it into the TR Camera *Server URL* and *Stream Key* fields.



10. Next, to begin the Stream from the TR Camera, select *Connect*, you should see a red "Streaming" text appear, to indicate you are now streaming. This is where you would also "Disconnect" from the stream.



11. To verify, go to Microsoft Stream and verify you can see the preview of the video feed from the TR320/530 camera in **Encoder preview**.



12. To end the streaming feed from the TR camera, go to the WebLogin and select "*Disconnect*".
13. To verify, go back to your Microsoft Stream preview, it should now be displaying "nothing".

Microsoft Teams configuration

In a Teams live event, you can stream video from an external encoder to Microsoft Stream if the encoder supports Real-Time Messaging Protocol (RTMP).

1. In Teams, select **Calendar Meetings button**, then your live event, and **Join**.
2. Until you start the event, you'll see the title, date, and time in the **Encoder preview** window.
3. Click **Start setup**. ***Note:** Setup may take some time to complete.
4. Once you see the message **Ready to connect,** go to the **Settings** tab and copy the Server ingest URL into the encoder (TR Camera) to start ingesting.
5. Once you start streaming from the TR camera to *MS Stream* using the ingest URL, you should see the preview of the video in **Encoder Preview.**
6. Once satisfied with the setup and video preview, click **Start event**. Once the live event starts, the video from the TR camera is broadcast to the event.
7. To end the event, click **End event. *Note:** Once the live event ends, it cannot be restarted.
8. This concludes the AVer TR320/530 Camera Streaming with a Microsoft setup.

TR310/311/311HN/313/333 Camera integration with Microsoft Teams and Skype

The following are the steps needed to configure the AVer Camera with the Microsoft platform. The TR camera has various outputs for video; Microsoft can support any one of these video connections.

They are:

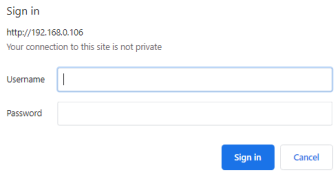
- HDMI
- 3G-SDI (Coaxial connection, SMPTE 424M)
- USB (Micro USB connection on Camera)
- IP - Network - RTMP (RJ45 Gbit network connection)

We can combine the outputs into 2 main groups of emphasis:

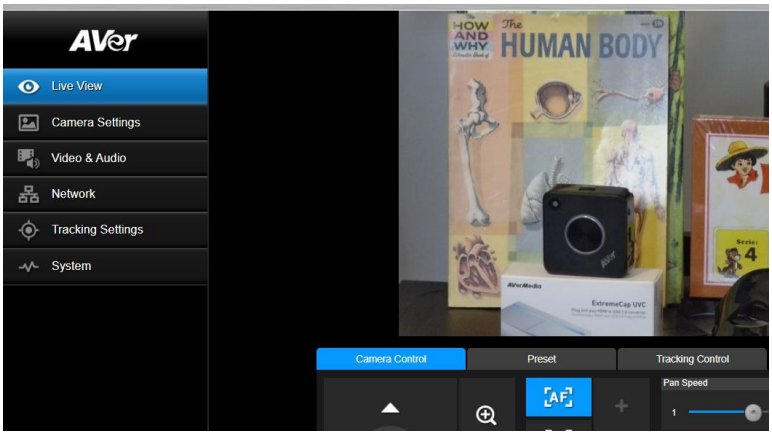
1. **HDMI/SDI/USB connection type**
2. **IP/Streaming (RTMP) connection type**

TR 310/333 Camera *HDMI / SDI / USB* Output to Teams

1. Type the IP address of the camera in your Chrome browser (Setup on same subnet) and you should now see the login to the TR310/333 camera shown below.

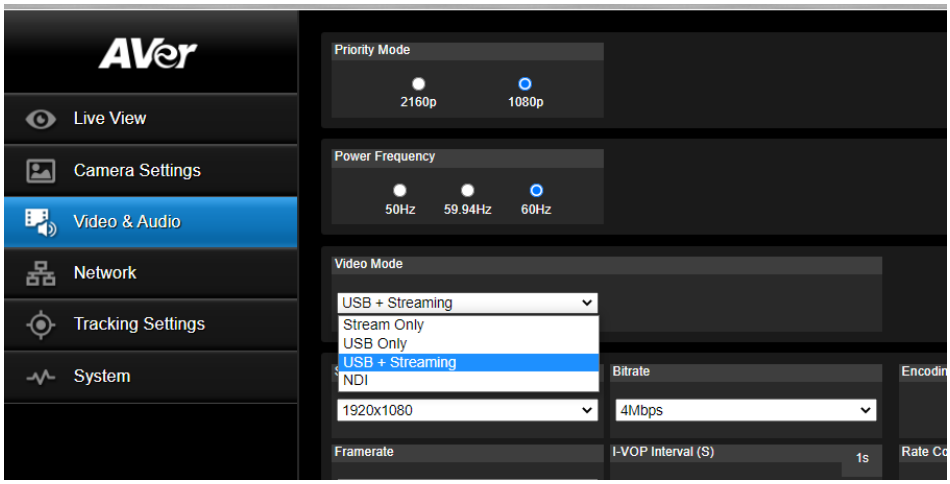


2. The default Username/password is “admin / admin”.
   ***Note:** If this is the first time accessing the TR310/333 camera via the Web login it will ask you to change the Username/Password.
3. Next, you should now see the main login screen with a “Live View” of the PTZ Camera.



4. Next, after selecting the *Video & Audio* setting, verify the Video Mode you are in. In this setup you should *NOT* be in NDI and *Stream Only* Video Mode, as it will disable the USB output.
   ***Note:** Some servers require a minimum bitrate of 2.5Mbps for their environment.

TR 310/333 Camera *HDMI / SDI / USB* Output to Teams (continued)



The PTZ Camera will have an SDI/HDMI video output in ALL modes.

Video Standard->	Stream Only (Various)	USB Only (Various)	USB + Streaming (Various)	NDI (1080p/60)
SDI Output	✓	✓	✓	✓
HDMI Output	✓	✓	✓	✓
USB Output	X	✓	✓	X
RTSP Output	✓	X	✓	✓

TR310 to TR333 Camera USB connected CaptureShare Software

Aver Information Inc. offers a free software for the NEW TR series of cameras, CaptureShare, that works in Windows and MAC. It allows you to be able to configure the TR camera for Presenter and Zone Mode Tracking, as well as some of the basic video settings such as Contrast, Saturation, Mirroring, and video output settings while being ONLY connected to the camera via USB.

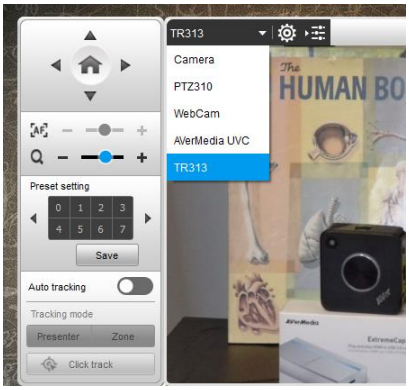
Once downloaded and installed you will have two modules:

- AverCamera Setting Tool; used if you only need control/configuration of the camera.
- CaptureShare; has additional features, like PiP, annotation, recording, streaming, etc.

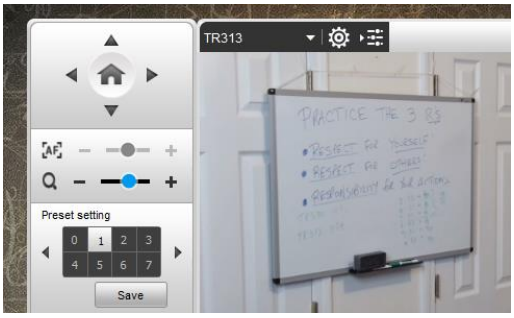
For more detailed information, download the User Manual on the AVer Pro-AV website.
The following is used to setup the TR310/333 camera with CaptureShare.

TR310 to TR333 Camera USB connected CaptureShare Software (continued)

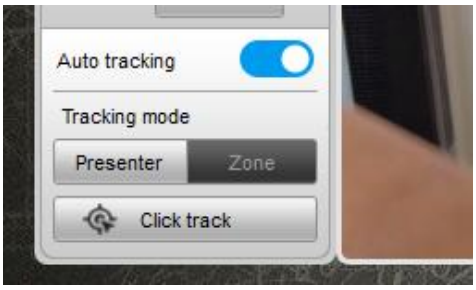
1. Once CaptureShare is opened, select the Camera carrot and then select the TR313 camera as the source.



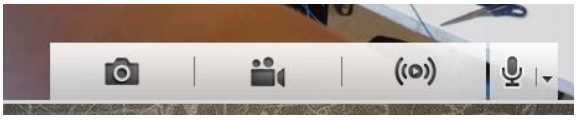
2. Next, you should see video from the camera, and have control via the Up/Down and Left/Right arrows.
3. Use the Up/Down and Left/Right arrows to position the camera to save Preset #1, then select *"Save".* This preset is used when in *Presenter Mode* tracking, if tracking is lost, the camera will automatically go to Preset #1 after 5 seconds.

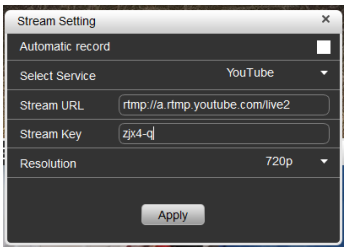


4. Next, save Presets 6, 7, 8, and 9, these presets are used when in *Zone Mode* tracking.
5. You can Enable/Disable Tracking via CaptureShare and the camera remote.



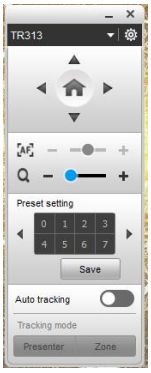
6. You also have the ability to record locally and "stream" out to YouTube/FB/other streaming services once the RTMP Server / RTMP Key are configured.





TR310 to TR333 Camera USB connected CaptureShare Software (continued)

7. Opening the AVerCamera Setting Tool will allow you to setup the camera without the additional tools for Streaming, Recording, etc.



8. This concludes the brief introduction to CaptureShare and the AVerCamera Setting Tool.

TR Camera HDMI/SDI/USB connection to Microsoft

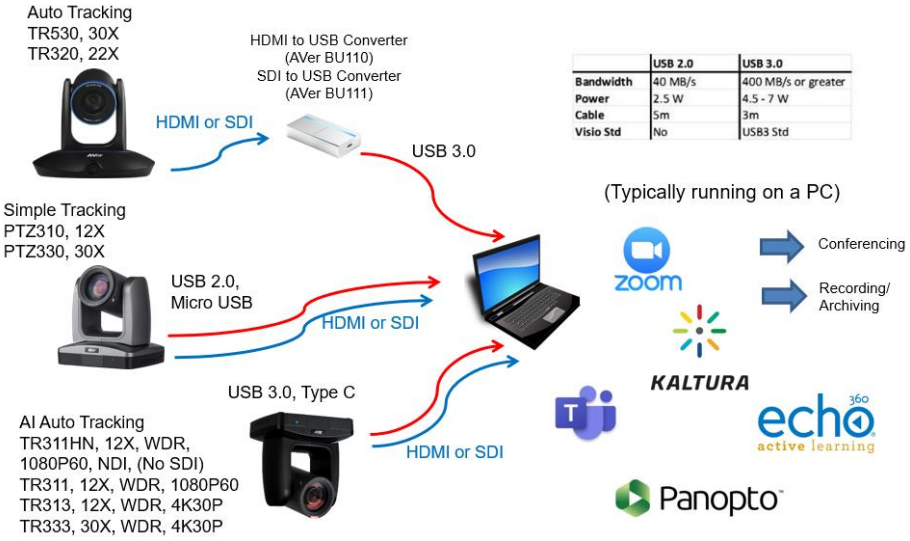
When connecting the camera to a Microsoft Teams/Skype platform the TR311/333 provides HDMI, SDI, and USB output standards. If you are using a desktop with a video capture card, at times they can have a direct HDMI input connection with high performance data transfer.

If you are using a laptop to capture video, you can use a direct USB connection, a portable HDMI to USB dongle like the AVer Media BU110, or a portable SDI to USB dongle like the AVer Media BU111 which provides a high speed, high quality connection.

Two Likely Scenarios:

- HDMI or USB direct connection from TR camera
- HDMI / SDI connection using an AVer Media converter to USB connection

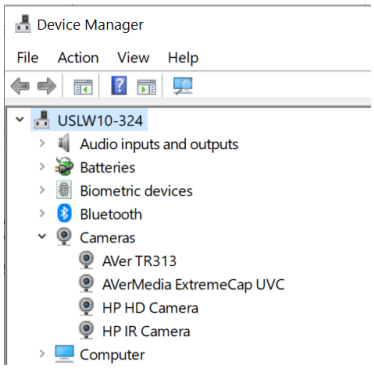
TR Camera HDMI/SDI/USB connection to Microsoft



	USB 2.0	USB 3.0
Bandwidth	40 MB/s	400 MB/s or greater
Power	2.5 W	4.5 - 7 W
Cable	5m	3m
Visio Std	No	USB3 Std

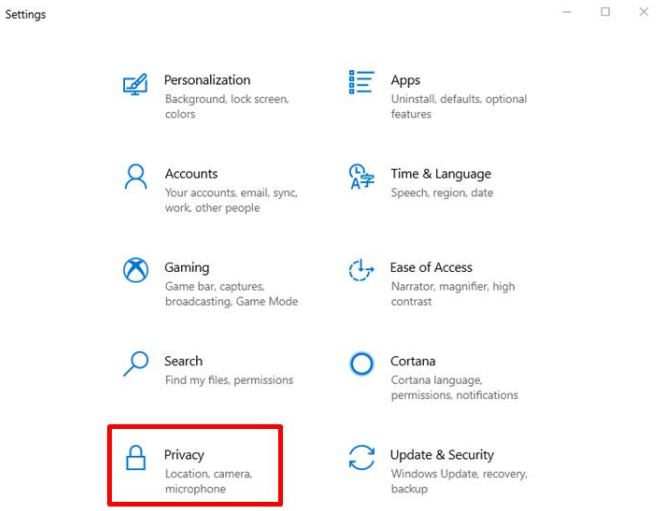
Microsoft OS Device Manager

Once the AVer TR310/333 Camera has been connected to a USB port on the PC using a USB-C to USB-A cable, verify that Windows does see the camera in the “Device Manager” window under Cameras.

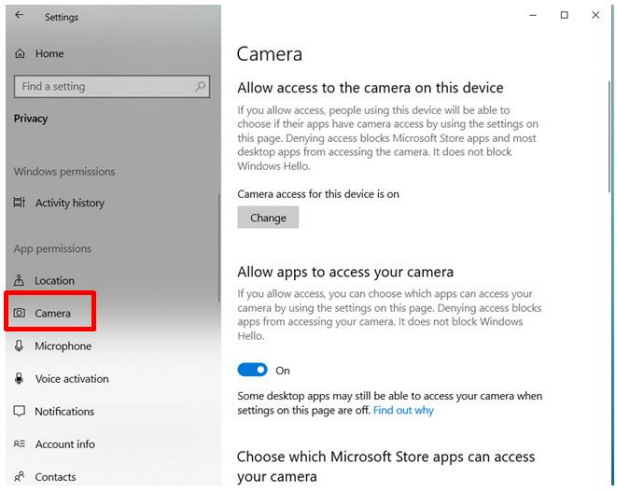


Microsoft Teams Desktop App

1. One of the very first things to check is if Microsoft Teams has permission to access your camera and microphone. There are instances where the App will not detect your camera if left disabled in your PC's settings.
2. Press the ***Windows Key*** and ***I*** key together. This will bring up the ***Windows Settings*** page.



3. Next, look for the ***Privacy*** setting and select it.
4. Next, from the left sidebar, under ***App permissions*** click on ***Camera***.



5. Next, on the ***Camera*** page, you want to make sure the option ***Allow Apps to access camera*** is turned ***On.***
6. You also want to make sure that under ***Choose which app can access your camera,*** that ***Microsoft Teams*** is turned ***On.***
7. Now Microsoft Teams will appear here in this list if you have the Microsoft Teams desktop app installed.

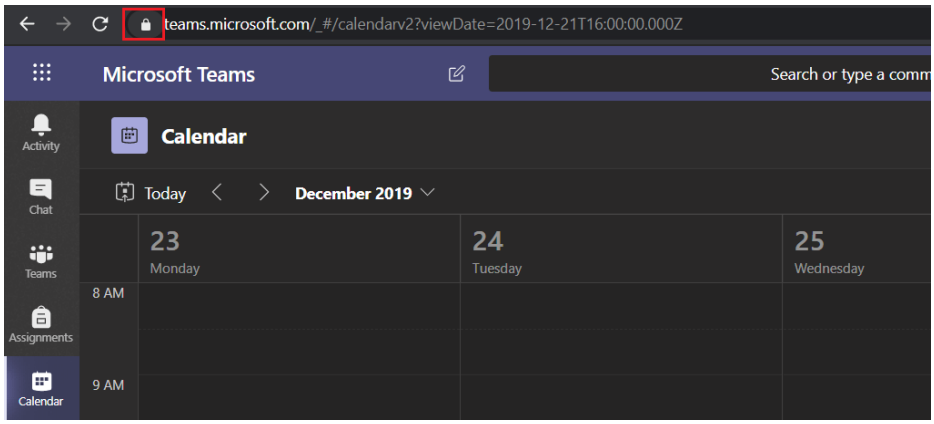
Microsoft Teams Web App

If you are using your web browser instead of using Microsoft Teams Windows app, you will need to make sure that the site has given permission to use your camera.

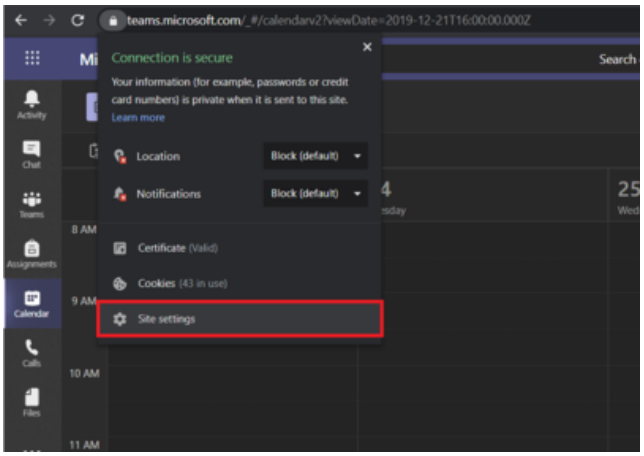
1. Go to **Microsoft Teams** using your search browser (Google Chrome or Mozilla Firefox).
2. Depending on your search browser, proceed with its appropriate steps:

   Google Chrome

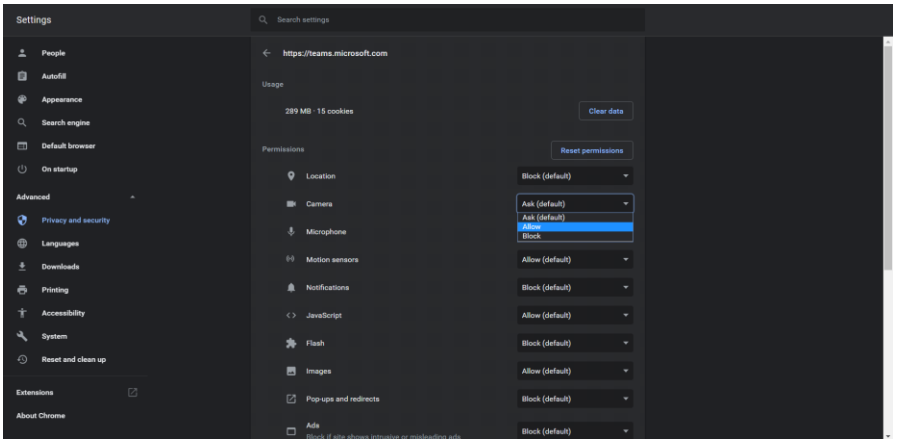
   Click on the lock icon in the search URL box (at the top) as shown below.



3. Next, click ***Site Settings.***



4. You will be brought to your Google Chrome settings where under ***Permissions*** you will want to make sure that ***Camera*** is set to ***Allow*** rather than ***Block*** or ***Ask***.



Ask is a secure option if you do not want your camera turned on without being prompted every time you access Microsoft Teams. ***Block*** prevents Microsoft Teams from accessing or even detecting your camera.

Mozilla Firefox: Click on the Firefox menu button  Mozilla Firefox menu and select **Options**.

5. Next, click **Privacy & Security** from the left menu.
6. Then scroll down to the **Permissions** section and click the **Settings** button for the **Camera** option.
7. Now enter the website URL in the search field for the site that you want to access your camera. In our case, we will need to enter https://teams.microsoft.com/ to allow **Microsoft Teams** access to our camera. Hit the **Enter key**.

Firefox makes it a secure and straightforward way to handle the websites that you want to provide access and the ones to not. You can remove it at any time by selecting it from the list and clicking the **Remove Website**. Finally, don't forget to select the **Save changes** button!

8. Try testing to see if your camera works after enabling the camera access for the Microsoft Teams web app.

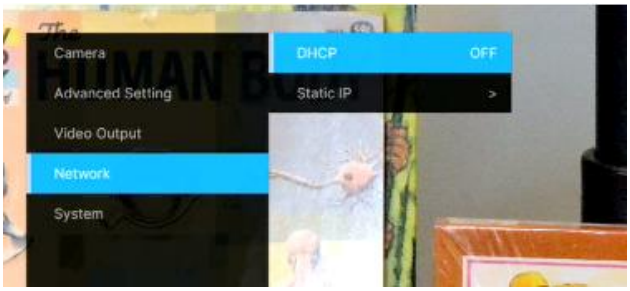
IP/STREAMING (RTMP)

TR Camera RTMP Output to Microsoft Teams using Microsoft Stream

Microsoft Stream accepts live feeds from a variety of different encoders that output RTMP or RTMPS.

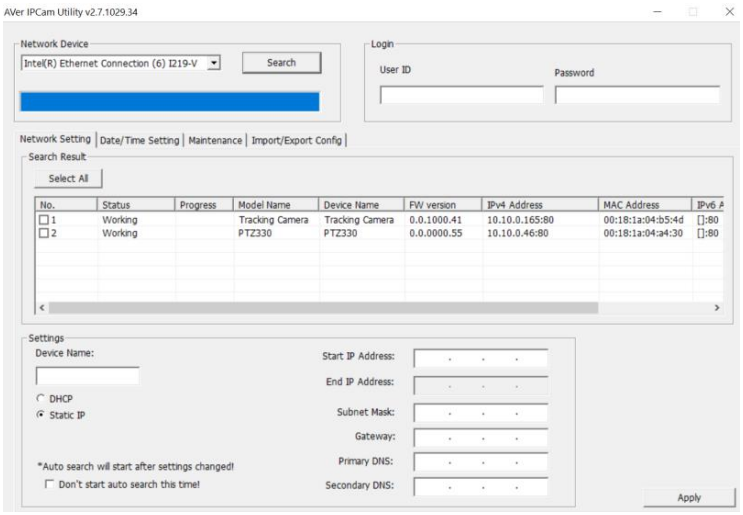
Below we will cover how to configure the TR camera manually for a Live event.

1. Connect the TR310/333 camera via RJ45 Network Cat5E (or better) connection; verify IP address of Camera in order to connect via Web browser. If IP address is not known, locate the remote, select the "Menu" icon and navigate to the "**Network->DHCP->**" setting, verify DHCP is set to "On" in order to grab an available IP address. If you are reserving IP addresses, verify it is set to "OFF" and that the correct IP address has been set.
   Go to **Network > DHCP > On**.

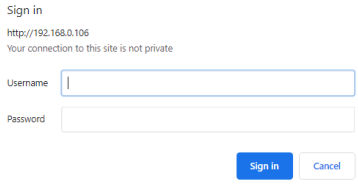


   After turning DHCP on, go to **System > Information** to view the IP address.

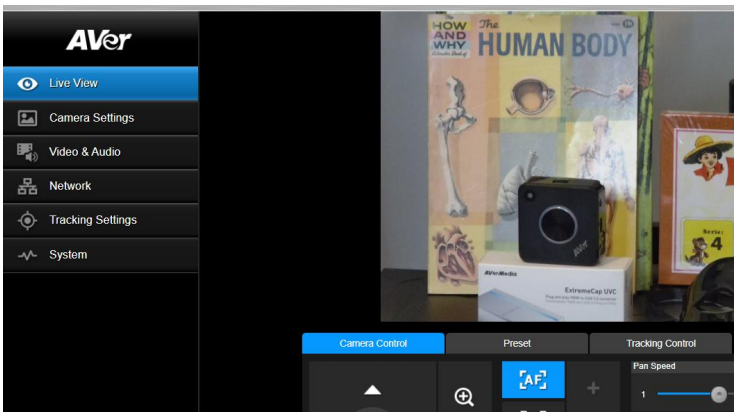
2. Another way to find the Camera IP address (On same Subnet) is to use the AVer IPCam Utility to find the camera. AVer software can be found here: https://www.aver.com/download-center.



3. Once you have the IP address setup, type the IP address in your Chrome browser (Setup on same subnet) and you should now see the login to the TR310/333 camera shown below.



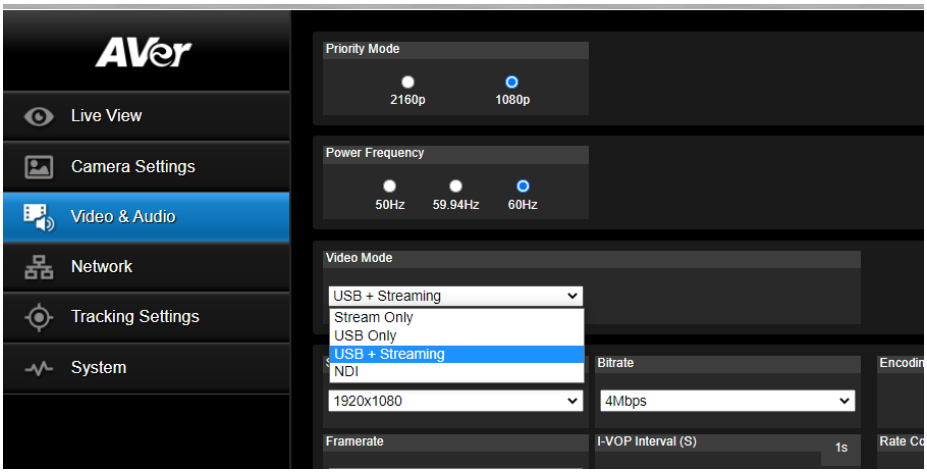
4. The default Username/password is “admin / admin”.
   ***Note:** If this is the first time accessing the TR310/333 camera via the Web login it will ask you to change the Username/Password.
5. Next, you should now see the main login screen with a “Live View” of the PTZ Camera.



Next, after selecting the *Video & Audio* setting, verify that you have either “Stream Only” selected or “USB + Streaming” selected. Select your Stream Video Output, Bitrate, Framerate, Encoding, etc.

***Note:** Some servers require a minimum bitrate of 2.5Mbps for their environment.

***NDI Mode:** If NDI is selected, the USB output is disabled, this is by design.



Recommended settings from Microsoft

Ingest protocols

- Single bitrate RTMPS or RTMP

Video format

- Codec: H.264
- Profile: High (Level 4.0)
- Bitrate: Up to 5Mbps (5000 kbps)
- Strict Constant Bitrate (CBR)
- Keyframe/GOP: 2 seconds

  There must be an IDR frame at the beginning of each GOP

  Frame Rate: 29.97 or 30fps

  Resolution: 1280 x 720 (720P)

  Interlace Mode: Progressive
- Pixel Aspect Ratio (PAR): Square

Audio format

- Codec: AAC (LC)
- Bitrate: 192 kbps
- Sample Rate: 48 kHz or 44.1 kHz (recommend 48 kHz)

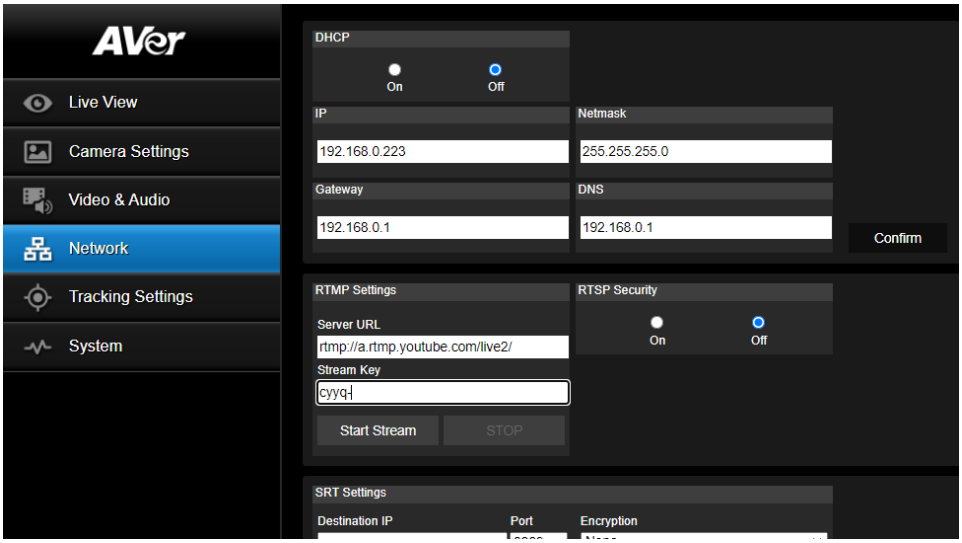
Playback requirements

- Both an audio and video stream must be present in order to playback content in Microsoft Stream.

Configuration tips

- Whenever possible, use a hardwired internet connection.
- A good rule of thumb when determining bandwidth requirements is to double the streaming bitrates. While this is not a mandatory requirement, it will help mitigate the impact of network congestion.
- When using software-based encoders, close any unnecessary programs.
- Don't change your encoder configuration after it has started pushing. It has negative effects on the event and can cause the event to be unstable. If you want to do this before the event has started, you must disconnect using the producer controls in Microsoft Stream and start setup again.
- If the encoder is disconnected during the live event, reconnect it keeping the same timestamps of continuing process. Note that any discontinuity may cause audio or video issues on certain browsers and devices.
- Give yourself ample time to setup your event. For high scale events, it’s recommended to start the setup an hour before your event.

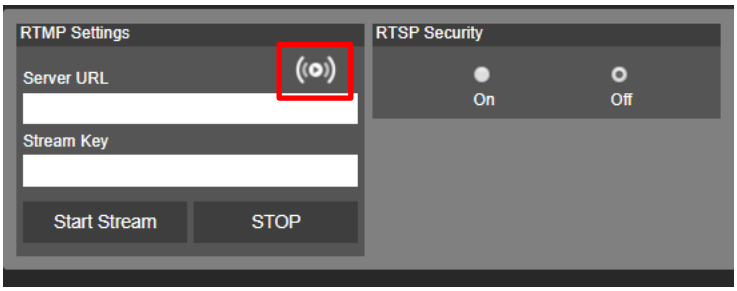
6. Next, select the *Network* setting; this is where you will enter the RTMP *Server URL* and *Stream Key*. Set *RTSP Security* to either "On" or "Off" depending if you want encryption when using *RTSP (Username/Password)*.



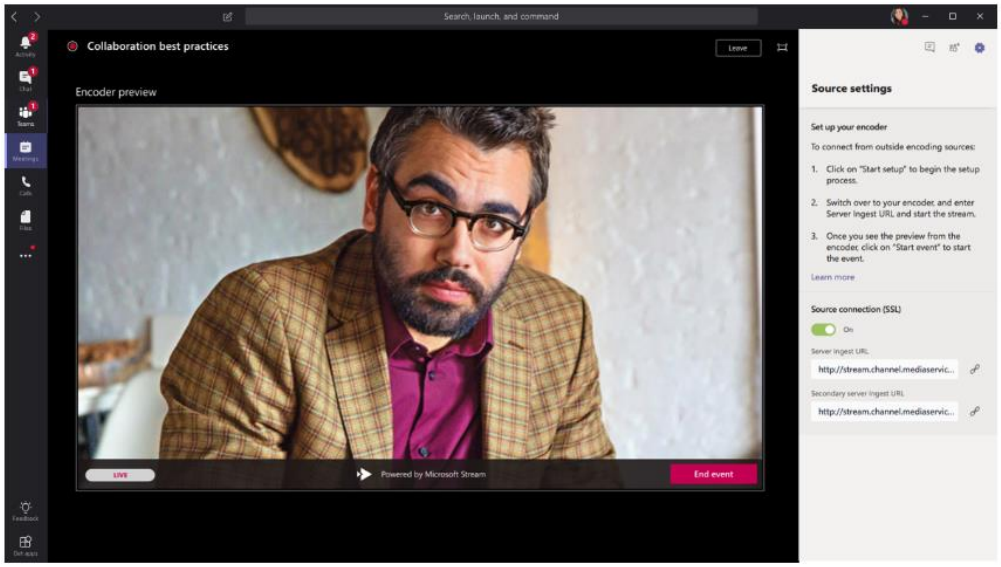
***Note:** Once streaming has started do not change the Stream Video Output on the fly, you will need to "Stop" streaming, change the Stream Video Output, then " Start" the stream again.

7. Next, go to your Microsoft Stream account and login to obtain the *Server URL* and *Stream name/key*. Once obtained, you will copy that information and paste it into the PTZ Camera *Server URL* and *Stream Key* fields.

8. Next, go back to the TR WebLogin and select *Start Stream*; this will begin the stream to Microsoft Stream. You should see a *Streaming* icon appear to indicate the process has started.



9. To verify, go to Microsoft Stream and verify you can see the preview of the video feed from the TR310/333 camera in **Encoder preview**.



10. To end the streaming feed from the PTZ camera, go to the WebLogin and select "*STOP*".
11. To verify, go back to your Microsoft Stream preview, it should now be displaying "nothing".

Microsoft Teams configuration

In a Teams live event, you can stream video from an external encoder to Microsoft Stream if the encoder supports Real-Time Messaging Protocol (RTMP).

1. In Teams, select **Calendar Meetings button**, then your live event, and **Join**.
2. Until you start the event, you'll see the title, date, and time in the **Encoder preview** window.
3. Click **Start setup**. ***Note:** Setup may take some time to complete.
4. Once you see the message **Ready to connect,** go to the **Settings** tab and copy the Server ingest URL into the encoder (TR Camera) to start ingesting.
5. Once you start streaming from the TR camera to *Stream* using the ingest URL, you should see the preview of the video in **Encoder Preview.**
6. Once satisfied with the setup and video preview, click **Start event**. Once the live event starts, the video from the TR camera is broadcast to the event.
7. To end the event, click **End event. *Note:** Once the live event ends, it cannot be restarted.
8. This concludes the AVer TR310/333 Camera Streaming with a Microsoft setup.