

AVer PTZ310N/330N and TR311/333 Camera NDI Video Mode

Integration with Panopto (November 2020)

Steps to integrate the Aver PTZ and New TR Camera with Panopto in NDI Video Mode and using <u>NewTek NDI Tools</u>

AVer Pro-AV has high quality image Cameras (TR320/530, PTZ310/330, and TR311/333) that will integrate with Panopto workflows for peak performance and ease of use. We will show the configuration process for both the TR and PTZ Camera lines and Panopto software.

Panopto has an easy to use online video platform solution for video management, recording, live streaming, video search, quizzing, analytics, and more. Panopto supports the NDI/HX standard via the NewTek NDI Virtual Input driver, which can be downloaded from NewTek's website: https://www.newtek.com/ndi/tools/

NDI is a high performance standard that allows anyone to use real time, ultra-low latency video on existing IP video networks. For this configuration the PTZ310N and PTZ330N or the TR311HN, TR311, TR313, and TR333 are used, the "N" designates that the camera has the ability to integrate with the NewTek NDI protocol. Current PTZ310/330 cameras in the field are not upgradeable to support NDI, but the TR311, TR313, and TR333 are upgradeable with a license key at an additional cost.

- Chrome Browser, version 79.0.3945.xxx and later.
- Panopto user account.
- NDI Tools 4.1/3.5
- Windows 10 Pro OS, i7 Processor, 16GB Memory, used in this setup.

NDI Minimum System Hardware Requirements:

- 64-bit Microsoft[®] Windows 7 operating system (OS) or better recommended
- Intel i3 or i5 Sandy Bridge CPU (Quad/Six core) or better with integrated GPU (NVIDIA discrete GPU, with 2GB video memory or better recommended)
- 8GB RAM
- Gigabit connection or better
- Display with screen resolution of 1024 x 768 or higher *Mac OS X versions of select tools also available.

*Minimum system requirements and features may vary. *Subject to change without notice.

PTZ310N/330N Camera

• AVer PTZ330/N Camera and accessories.





(9) micro-USB port (10) HDMI port (11) 3G-SDI port (12) DC Power jack

NDI 4 Tools Installation

- 1. If NDI 4 Tools software is not installed, go to https://www.ndi.tv/ to download and install.
- 2. From the NDI website, select NDI->NDI Tools, and then scroll down to NDI Tools 4.x to download.





3. Next, select "NDI Tools for Windows" download.



4. You will be asked to register for the Download, Name, Company, email, etc. then you should see a follow up email for the following to continue with the download.



- 5. During the installation select the NDI | HX Drivers and Virtual Camera. You can also install other applications but these are not required for Panopto integration.
- 6. You can also select to **Run NDI Virtual Input at Windows Start**. This is a recommended step for Panopto for Windows Desktop and a requirement for Panopto Remote Recorder.

NDI 4 Tools Installation (continued)

Select Components Which components should be installed?		Ĵ
Select the components you want to install; clear the components you do not install. Click Next when you are ready to continue.	want to	
Custom installation	~	
MDI HX Drivers Scan Converter Studio Monitor Create default web password Test Pattern Generator Virtual Camera (integration for Skype, GotoMeeting, Zoom, etc) Vortual Camera (integration for Skype, GotoMeeting, Zoom, etc) VLC Media Player plugin	~	
Current selection requires at least 33.3 MB of disk space.		_
< Back Next >	Can	cel

- 7. You may need to restart your computer following the installation.
- 8. Once installed, you should have the following on your Windows Start Menu:



AVer PTZ310/330N Camera Video Mode

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.

Camera				
Video Output				
Network	DHCP	On	Off	
Advanced Setting	Static IP			
System				

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

Camera Video Output Network				
Advanced Setting	Camera Selector Status OSD Language	2 On English		
	Information		Model Name	PTZ310
	Factory Default		Version IP Address MAC	0.0.0000.32 192.168.0.100 50:33:8b:9a:94:38

 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.

WORK Devk	ce		r	Login				
tel(R) Ethe	met Connection (6) I219-V 💌	Search	User	ID	Pas	sword	
				-				
twork Setti	ng Date/Time Si	etting Maintena	ince Import/Export	Config				
Select i	an 1							
No	Status	Program	Model Name	Davica Nama	EM/ vertice	IDual Address	MaC Address	ID.4
	Working	Progress	Tracking Camera	Tracking Camera	0.0.1000.41	10.10.0.165:80	00:18:1a:04:b5:4d	[]:8
2	Working		PTZ330	PTZ330	0.0.0000.55	10.10.0.46:80	00:18:1a:04:a4:30	[]:8
<							-	
Settings								
Device Nar	ne:			Start IP Address:		*: *		
				End IP Address:		* *		
OHOP Static I	P			Subnet Mask:				
				Gateway:		10 A		
				Primary DNS:				
"Auto sea	rch will start after	settings change	61					

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.

Sign in			
http://192.16 Your connect	8.0.106 ion to this site is not private		
Username			
Password			
		Sign in	Cancel

AVer PTZ310/330N Camera Video Mode (continued)

- 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 "NDI" selected for Video
Mode. Select your Stream Video Output, Bitrate, Framerate, Encoding, etc.
*Note: The camera will need to re-boot when changing to/from NDI video mode.

AVer	Video Mode	•	•	0				
Live View	Stream Only	USB Only	USB + Streaming	NDI				
Camera Settings	Stream Video Output	×	Bitrate	_		Encoding Type	•	
🧤 Video & Audio	Framerate	· ·	I-VOP Interval (S)		1s	H 264 Rate Control		
Hetwork	60	v	I •		- 10	O VBR	CBR	
Advanced Settings	Audio Input Type	_	Audio Volume	_	5			
-v- System	Line In	O MIC In	0		- 10			
	Encoding Type		Sampling Rate		_			
	AAC	G.711	48K		Ŧ			

***Note:** The STREAM Video Output, Framerate, Encoding type, and Sampling Rate settings are only for viewing, they are not adjustable in NDI mode.

6. The Rate Control setting should be set to CBR, there have been better results seen using this option.

AVer PTZ310/330N Camera Video Mode (continued)

AVer	Video Mode					
Live View	Stream Only	USB Only	USB + Streaming	O NDI		
Camera Settings	Stream Video Output		Bitrate		Encoding Type	
Video & Audio	1920x1080 Framerate		8Mbps	16	H.264 Rate Control	MJPEG
Handreich Network	60		1 0	10	• VBR	O CBR
Advanced Settings	Audio Input Type	_	Audio Volume	5		
-v- System	Line In	O MIC In	••	10		
	Encoding Type		Sampling Rate			
	AAC		48K	۲		

7. Setting the Bitrate to 8Mbps is also recommended, but you may see different results on your network with other settings.

	Stream Only (Various)	USB Only (Various)	USB + Streaming (Various)	NDI (1080p/60)
SDI Output	\checkmark	\checkmark	\checkmark	✓
HDMI Output	×	\checkmark	✓	✓
USB Output	x	\checkmark	\checkmark	x
RTSP Output	✓	x	✓	✓

In the System page you can set the identity name Camera ID (NDI) for display on the NDI interface. After choosing your name press "Set" to make the change. *Note: A reboot of the camera is necessary for the name change. The firmware version can also be verified from the System page.

AVer Live View Camera Settings	Upgrade firmware Model Name PTZ330 Choose File No filhosen Upgrade IP 192 168 0.107 Factory Default MAC 00 18:1A:04 A4:30 Reset To Factory Default Firmware Version 0.00000 55-N
Video & Audio	OSD Display Status OSD Auto HDMI 3G-SDI On Off
Advanced Settings System	Language Login English Login Name administrator Login Password
	Camera ID(NDI) PTZ330N Set Change Cancel
	Latency Reduction Power Saving On Off On Off

9. The following characters can be used for the Camera ID description; there is a limit of 10 characters for the name.

Numeric characters	0123456789
Alphabetical characters	ABCDEFGHIJKLMNOPQRSTUVWXYZ
(upper and lower cases)	abcdefghijklmnopqrstuvwxyz
Symbols	! @ # \$ % ^ & *() , . /\ ; :" ` + = < > ? [] { } ` ~ \ /

NDI Virtual Input

Using the NDI Virtual Input it gives you the ability of suppling a high quality video source to Skype or Zoom meeting, (i.e. from PTZ330N), here is how to configure a "Virtual Input" from NDI.

1. Go to Windows Start Menu, select NDI's Virtual Input application.



2. Next, it will open and place an icon on your System Tray.

^		H	н П	-1.0	12:16 PM	=
\sim	NDI,	۲ <u> </u>	┺╼┙	N 10	2/25/2020	2

3. Next, Right-Click on the NDI icon, you should have the ability to select AVER->PTZ330.

	AVER >		PTZ330N
	None		
	Audio >		
	ndi.tv		115% 🗩 🚽
1	Exit		
	3	ľ	刻 山 石 花 く か

4. Next, verify that your selection is for AVER->PTZ330N, Right-click on icon to verify check marks are there.

	\checkmark	AVER	>	\checkmark	PTZ330N	
8		None		>		
8		Audio ndi.tv	>	9	NDI Virtual	Input
Ų		Exit		<u>, ()</u>		

Panopto for Windows System Video Input (NDI)

1. Go to the Panopto's desktop client; select the NDI source from the list.



2. Next, you should be seeing the NDI video from the PTZ camera. If not, go to the NewTek NDI Studio Monitor to verify video from the camera.

NDI Studio Monitor

Using NDI Studio Monitor is a quick way to verify that the AVer PTZ camera is outputting NDI video.

1. Go to Windows Start Menu, select NDI's Studio Monitor.



2. Next, the NDI Studio Monitor window will open, it may display AVer video or may display NDI's default video of "None".



NDI Studio Monitor (continued)

3. Next, to view AVER video, select the Menu box displayed on upper left, then select "AVER PTZ330N". You can also "right-click" anywhere within the window to access the menu.



4. Next, you should now be viewing the AVER PTZ330/310N video as a source and displays the Video Standard (1080/60p) from AVer Camera.



5. At this point, you can close the window and have verified NDI video from PTZ camera is working.

PTZ Camera Control from NDI Studio Monitor

The NDI Studio Monitor allows you to view or display any number of NDI video sources across the network, such as the AVer PTZ310/330N camera. There is also remote control of PTZ, recording, and configuration of an applicable source. We will discuss the NDI PTZ control of the AVer PTZ310/330N camera.

1. Go to Windows Start Menu, select NDI's Studio Monitor.



 Next, the NDI Studio Monitor window will open, it may display AVer video or may display NDI's default video of "None". If "None" is displayed, select the Menu box (or right-click on display), then select AVER->PTZ330N as the source.



3. You should now be seeing the PTZ310/330 video, to activate the controls, move your mouse over the window.



4. The NDI AVer camera controls are Pan, Tilt, Zoom, Manual Focus, Automatic Focus, and Position Presets.

PTZ Camera Control from NDI Studio Monitor (continued)



- 5. Initially there will *not* be a blue dot in any of the controls, move your mouse over to the Pan/Tilt control area, and then left click hold. You will now have a "Joystick" type control of the AVer camera.
- 6. Move your cursor over the Zoom control, left click hold, you can control the Zoom of the camera.
- To create a "Preset", adjust the camera to the preferred position, then select "Store" followed by one of the 9 presets.



8. This concludes the AVer PTZ330 camera control section with NDI Studio Monitor.

Panopto Remote Recording

1. As an Administrator, from the Panopto VCMS select System -> Remote Recorders.



- 2. Next, select the remote recorder you have configured with the NDI virtual input, and choose the configuration.
- 3. Next, select the NewTek NDI Video source as a Primary or secondary source. You can also choose to select the Line (NewTek NDI Audio) source if you are using the input as an audio source as well.

🖴 Panopto	Remo	te Recorder				×
Preview	Remote F	Recorder Information				
Configuration	Name		Panopto Remote Reco	order Edit		
Access	Machi	ne Name	Panopto Remote Reco	order		
	Machine IP Version		217.138.114.37			
			5.6.0.39953			
	Device Co	onfiguration				
	Capture	Device Name		Primary Video	Primary Audio	
		Microsoft Camera Front Microsoft Camera Rear				
	*	NewTek NDI Video		•		
		Line (NewTek NDI Audio	D)			
		Microphone Array (Real Audio(SST))	tek High Definition			
		Capture Screen				
		Capture Slides				
		Capture Computer Aud	io			

4. You are now able to record into Panopto with your configured NDI source.

NDI Bandwidth

The following table is intended as a guide for calculating bandwidth needs based on video resolutions and frame rates. Each reference stream includes 16 channels of audio. ***Note:** Information provided by NewTek NDI Technical brief.

Example NDI video stream	Approximate bandwidth required
1 x UHDp60 video stream	250 Mbps
1 x UHDp30 video stream	200 Mbps
1 x 1080p60 video stream	125 Mbps
1 x 1080i60 video stream	100 Mbps
1 x 720p60 video stream	90 Mbps
1 x SD video stream	20 Mbps

Table 1. Bandwidth Requirements. The approximate bandwidth required per NDI video stream for common video resolutions and frame rates.

TR310/333 AI Tracking Camera

AVer has (5) NEW TR AI Tracking cameras available, they are the TR310, TR311HN, TR311, TR313, and TR333. These cameras use advanced artificial intelligence (AI) technology to effectively track your speaker or Zone track without a dedicated camera operator. All the cameras have the same Tracking Modes and can be setup to stream via RTMP the same way.



AVer TR310/330 Camera and accessories

TR310/333 AI Tracking Camera Video Mode

1. Connect the TR311/333 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 camera remote with HDMI output connected, select the "Menu" button 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**.

	Camera					
N N	/ideo Output					
	Network	рнср	0	ı c	off	
Adva	nced Setting	Static IP			n	
	System					

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

Camera Video Output				
Network Advanced Setting				
System	Camera Selector			
	Status OSD	On		
	Language	English		
	Information		Model Name	PTZ310
	Factory Default		Version	0.0.0000.32
			IP Address	192.168.0.100
			MAC	50:33:8b:9a:94:38

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.

CWORK Devi	ce		-	Login					
tel(R) Ethe	rnet Connection (6) I219-V 🔹	Search	User	ID		Password		
									_
twork Sett	ing Date/Time Se	etting Maintena	nce Import/Export	Config					
Search Resu	it								
Select	All								
No.	Status	Progress	Model Name	Device Name	FW version	IPv4 Address	M	AC Address	IPv6
	Working		Tracking Camera	Tracking Camera	0.0.1000.41	10.10.0.165:8	0 00	:18:1a:04:b5:4d	[]:80
2	Working		PTZ330	PTZ330	0.0.0000.55	10.10.0.46:80	00	:18:1a:04:a4:30	[]:8
٢.									
Settings									
Device Na	me:			Start IP Address:		4. A			
I				End IP Address:		1. 1			
C DHCP					-				
 Static I 	IP			Subnet Mask:		· ·			
				Gateway:		10 X			
"Auto sez	urch will start after	settings change	di	Primary DNS:		1. X.			
T Don'	t start auto search	this time!		Secondary DNS:		x x			

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.

Sign in			
http://192.16 Your connect	8.0.106 ion to this site is not private		
Username			
Password			
		Sign in	Cancel

- 4. The default Username/password is "administrator" or "admin / admin".
 *Note: If this is the first time accessing the TR311/333 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 TR311/333 Camera.



 Next, after selecting the Video & Audio setting, verify that you have "NDI" selected for Video Mode. Select your Stream Video Output, Bitrate, Framerate, Encoding, etc.
 *Note: The camera will need to re-boot when changing to/from NDI video mode.

	AVer	Priority Mode					
	-1.9	•	•				
o	Live View	2160p	1080p				
•4	Camera Settings	Power Frequency	•				
	Video & Audio	50Hz 59.94Hz	60Hz				
몲	Network	Video Mode					
۰	Tracking Settings	USB + Streaming Stream Only USB Only	~				
~~	System	USB + Streaming NDI		Bitrate		Encoding Type	
		1920x1080	~	4Mbps	~	O H.264	Н.265
		Framerate		I-VOP Interval (S)	1s	Rate Control	
		60	~	1 🚱	10	0 VBR	O CBR

***Note:** The STREAM Video Output, Framerate, Encoding type, and Sampling Rate settings are only for viewing, they are not adjustable in NDI mode.

7. The Rate Control setting should be set to CBR, there have been better results seen using this option.

TR310/333 AI Tracking Camera Video Mode (continued)

AV/or	Power Frequency		
Live View			
Camera Settings	Video Mode USB + Streaming ~		
Video & Audio			
据 Network	Stream Video Output	Bitrate	Encoding Type
Tracking Settings	1920x1080 ~	4Mbps ~ 512Kbps	H.264 H.265
	Framerate	1Mbps	Rate Control
-v- System	60 ×	2Mbps 4Mbps 8Mbps	VBR CBR
		32Mbps	
	Audio Input Type	Auto	
	Line In MIC In	0 10	
	Encoding Type	Sampling Rate	

8. Setting the Bitrate to 8Mbps is also recommended, but you may see different results on your network with other settings.

	Stream Only (Various)	USB Only (Various)	USB + Streaming (Various)	NDI (1080p/60)
SDI Output	√	\checkmark	\checkmark	\checkmark
HDMI Output	×	\checkmark	✓	1
USB Output	x	\checkmark	\checkmark	x
RTSP Output	✓	x	✓	\checkmark

9. In the System page you can set the identity name Camera ID (NDI) for display on the NDI interface. After choosing your name press "Set" to make the change. *Note: A reboot of the camera is necessary for the name change. The firmware version can also be verified from the System page as well as entering the NDI activation Key.

AV er	Upgrade firmware Choose File No filosen Upgrade	Model Name TR313 IP Address 192.168.0.223
Live View	Factory Default	Serial Number 5203600900001 MAC Address 00:18:1A:04:4C:7D
Camera Settings	Reset To Factory Default	Firmware Version 0.0.0000.21
Video & Audio	Login	Language
品 Network	Login Name Rich	English
Tracking Settings	Login Password	Camera ID(NDI)
-vv- System	Change Cancel	AVer_NDI_TR313 Set
	Status OSD	NDI Activation
	On Off	enable trial (7 days)

10. The following characters can be used for the Camera ID description; there is a limit of 10 characters for the name.

Numeric characters	0123456789
Alphabetical characters	ABCDEFGHIJKLMNOPQRSTUVWXYZ
(upper and lower cases)	abcdefghijklmnopqrstuvwxyz
Symbols	! @ # \$ % ^ & *() , . /\;:" ' + = < > ? [] { } ` ~ \ /

NDI Virtual Input

Using the NDI Virtual Input, it gives you the ability of suppling a high-quality video source to Teams, Meet or Zoom meeting, (i.e. from TR311HN), here is how to configure a "Virtual Input" from NDI.

1. Go to Windows Start Menu, select NDI's Virtual Input application.



2. Next, it will open and place an icon on your System Tray.



3. Next, Right-Click on the NDI icon, you should have the ability to select AVER->AVER_NDI_TR313.



4. Next, verify that your selection is for AVER->PTZ330N, Right-click on icon to verify check marks are there.

\checkmark	AVER	>	\checkmark	AVer_NDI_TR313
	USLW10-324	>		PTZ310N
	None			
	Audio	>		
	http://ndi.tv		2	8
	Exit			

Panopto for Windows System Video Input (NDI)

1. Go to the Panopto's desktop client; select the NDI source from the list.



2. Next, you should be seeing the NDI video from the PTZ camera. If not, go to the NewTek NDI Studio Monitor to verify video from the camera.

NDI Studio Monitor

Using NDI Studio Monitor is a quick way to verify that the AVer PTZ camera is outputting NDI video.

1. Go to Windows Start Menu, select NDI's Studio Monitor.



2. Next, the NDI Studio Monitor window will open, it may display AVer video or may display NDI's default video of "None".



NDI Studio Monitor (continued)

3. Next, to view AVER video, select the Menu box displayed on upper left, then select the name that was defined for the camera, "AVER_NDI_ TR313". You can also "right-click" anywhere within the window to access the menu.



4. Next, you should now be viewing the AVER TR311/333 video as a source and displays the Video Standard (1080/60p) from AVer Camera. The Video Output and Framerate can be adjusted to your specification for NDI streaming.



5. At this point, you can close the window and have verified NDI video from TR311/333 camera is working.

Check the AVer Pro-AV Website for additional support documentation.

https://www.averusa.com/pro-av/support/