**MVQEMELL** 

# Pro Convert<sup>TM</sup> Encoders

User Manual, Reference and FAQ





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## **Getting Started**



#### Overview

Pro Convert<sup>TM</sup> family of NDI<sup>®</sup> encoders, built on NewTek's extremely popular NDI media-over-IP technology, help users reliably bring traditional video signals into IP-based live production and AV infrastructures. Available in 4K and 1080p60 configurations with a choice of input interfaces, the converters enable users to easily and cost-effectively connect their existing equipment into NDIenabled networks.

The ultra-compact Pro Convert devices are ideal for both in-studio and portable field use. Value-added features for live production applications include a 1/4"-20 thread for standard camera-mounting accessories, preview and program tally lights, and NDI-based PTZ camera control. The units can be powered by the included AC adapter or via Power over Ethernet (PoE) for further deployment simplicity.

#### **Key Features**

- Support for NDI.
- Support for encoding videos and embedded audio.
- Support for PoE (Power over Ethernet).
- Support for plug-and-play.
- Support for Ethernet over USB.
- Support for connection and management of PTZ camera.
- Support for web-based UI remote control.

## System Requirements

#### Network

Gigabit Ethernet

#### Supported Web Browser for the Web UI

- Google Chrome version 49 and above
- Microsoft Internet Explorer 11
- Microsoft Edge
- Mozilla Firefox version 61 and above
- Apple Safari 11.1 and above
- Opera 55.0.2994.44 and above

#### Supported Software

- OBS
- XSplit
- vMix
- VidBlasterX
- Wirecast
- streamstar SW
- mimoLive
- Any other NewTek NDI<sup>®</sup> based decoding or streaming software

#### Pro Convert Encoder

Magewell has launched the following Pro Convert NDI<sup>®</sup> encoders, and there are more products to be released. For the latest listed converters, please visit our official website to find the Pro Convert Encoder Family.

- Pro Convert HDMI 4K Plus
- Pro Convert HDMI Plus
- Pro Convert HDMI TX
- Pro Convert 12G SDI 4K Plus
- Pro Convert SDI 4K Plus
- Pro Convert SDI Plus
- Pro Convert SDI TX

# Installation

## Safety Information

#### **Electrical Safety**

- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that you are using the correct power adapter for the local voltage. If you are not sure about the voltage of the electrical outlet you are using, contact • your local power company.
- If the power adapter is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer for help.

#### **Operation Safety**

- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you notice any damage, contact your dealer • immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact your dealer or the Magewell Support Team via support@magewell.net.

## **Interfaces & Indicators**

Input interface of Pro Convert varies according to its supported signal type.

Pro Convert HDMI 4K Plus/Pro Convert HDMI Plus



Note:The SD card function is not available currently.

HDMI Output Output Indicator PTZ Control + Tally Light out Indicator

HDMI Input

Pro Convert 12G SDI 4K Plus/Pro Convert SDI 4K Plus/Pro Convert SDI Plus



Note:The SD card function is not available currently.

SDI Output **Output Indicator** PTZ Control + Tally Light

#### Pro Convert HDMI TX



Note:The SD card function is not available currently.

PTZ Control + Tally light

#### Pro Convert SDI TX



Note:The SD card function is not available currently.

PTZ Control + Tally light

## **Connections**

Interfaces and cables varies according to signal supported by Pro Convert. Here takes Pro Convert HDMI 4K Plus as an example to describe the cabling.



Figure 1. Pro Convert HDMI 4K Plus/Pro Convert HDMI Plus



Figure 2. Pro Convert 12G SDI 4K Plus/Pro Convert SDI 4K Plus/Pro Convert SDI Plus

- Plug in the USB cable. 1.
  - For power supply: Connect the other end of the USB cable to the power adapter.
  - For Ethernet over USB (RNDIS/ECM): Connect the other end of the USB • cable to your computer.
- Plug in the Ethernet cable. 2.
  - For PoE: Connect the other end of the Ethernet cable to a PoE switch or a PoE adapter for power and Ethernet connection.
  - For Ethernet connection: To ensure high speed transmission, it is • recommended to connect the Pro Convert unit to a gigabit network.
- Plug in the HDMI/SDI cable to connect to the input signal source. 3.
- Plug in a PTZ cable to connect to a PTZ camera, an external Magewell 4. Tally light, or a LED matrix screen.
- Plug in another HDMI/SDI cable to loopthrough the signal (if needed). 5. There is not an output interface in the Pro Convert HDMI/SDI TX devices.



Figure3. Pro Convert HDMI TX



Figure4. Pro Convert SDI TX

# Web UI Configuration

Pro Convert allows to be controlled via a web-based user interface. With the Web UI, you can monitor the device's working status, input signal status, and configure settings for your sessions.

This chapter takes the Pro Convert HDMI 4K Plus as an example to describe how to access and remotely control your unit via the Web UI, other products consider the same operations.



## Accessing the Web UI

If you know your device's IP address, type it into your web browser to display the Web UI. Alternatively, you can access the Web UI in one of the following ways. (1) For Windows7/8/8.1/10 users, you can find and access your Pro Convert device as a Network device in a File Explorer window. (2) Using the Ethernet over USB function. (3) Using NewTek's NDI Studio Monitor, if it's installed on your system.

#### Solution 1: using Windows File Explorer

This method is available for Windows7/8/8.1/10 users.

- Connect your converter via Ethernet and power it up as shown on Step 1 the left Figure1. Connections.
- Open a File Explorer window in one of the following ways. Step 2
  - Click on the Start II button and find File Explorer in the Start menu.
  - Press the Windows logo key 📕 + E.
  - Select the folder icon on the taskbar.

Figure1. Connections

💣 i 🛃 = i Networ	k			- 🗆 ×
File Network V	/iew			~ 🕐
🔶 🔶 × 🛧 💣 > I	Network >		✓ <sup>™</sup> Searce	ch Network 🔎
৵ Quick access ConeDrive OneDrive	<ul> <li>Computer (5)</li> <li>Media Devices (13)</li> <li>Multifunction Devices (1)</li> </ul>			
This PC	V Other Devices (9)			
This PC Network	Pro Convert #01 (B401180927001)	Pro Convert #02 (B401180927002)	Pro Convert #06 (B401180706006)	
	Pro Convert #07 (B401180927007)	Pro Convert #08 (B401180927008)	(B401180927009)	
		U	U	
	> Printers (2)			
	> Scanners (1)			

Figure2. Find your Pro Convert device in the Network > Other Devices section

- Select the **Network** at the bottom of the list of items on the left side Step 3 of the File Explorer.
- Turn on the network discovery function if prompted. Step 4
- Find your Pro Convert device in the **Other Devices** section, where it Step 5 will be shown as "Pro Convert + #board index + (serial number)".
  - The serial number (marked on your device) will be in a form like "B401180706006".
  - The **board index** (the rotary switch number on your device) is shown like "06" or "#06".
- Double click the converter icon to open the Web UI of the device in Step 6 your web browser.



	DESKTOP-ASCNS3Q	>			
	DESKTOP-D5OSJ5L	>			
	DESKTOP-UOVST2V	>			
	HD Camera	>			
	MYPC	>			_
~	PRO CONVERT	>	~	#00 (B401180706006)	
	PRO CONVERT AA	>		#00 (B401180706020)	
	Settings	>		#01 (B401180706008)	
	Disconnect NDI.NewTek.com				
	Exit				

Figure 1. Select NDI stream in NDI Studio Monitor

#### Solution 2: using Ethernet over USB

RNDIS (For Microsoft)/ECM (For Mac/Linux) provides a virtual Ethernet link to the computer's operating system.

- Connect the device and your computer using a USB cable as shown Step 1 on the left.
- Step 2 Type the Ethernet over USB IP address in your web browser. The default address is http://192.168.66.1.

The pop-up web UI of the connected device will be shown in your browser.

Please do not change it unless there is a conflict in your network.

 $\triangle$  Do not connect more than one converter simultaneously to the same system via Ethernet over USB.

#### Solution 3: using the NDI Studio Monitor

Step 1 Connect your converter via Ethernet and power it up as shown in the Figure1. Connections in Solution 1.

> The unit will automatically obtain an IP address by default. If you want to set up a fixed IP address for your device, see Setting Network.

- Download and install the free NDI Studio Monitor software on a Step 2 computer which is in the same LAN as the converter. The software can be found on the NewTek official website at www.newtek.com/ndi/tools.
- Launch the NDI Studio Monitor software on your computer. Step 3



Figure2. Click the gear icon to open the Web UI

The application will automatically search for compatible devices on the same LAN.

Click Menu button 🔳 at the top-left of the window, and select your Step 4 converter - device name > channel name.

The video stream from the chosen channel will be displayed.

Click the gear icon at the bottom right of the Studio Monitor. Step 5 The pop-up web UI of the selected device will be shown in your web browser.

m/GEWELL°	English -
	SIGN IN Enter your account and password User name
Pro Convert	TM Password
	SIGN IN Forgot your password?

MVGEMELT.	Dashboard	Signal	Video	NDI®	PTZ	System	🗶 Admin 🔺
Pro Convert™ sdi tx		Device name Serial number Hardware versi Firmware versi CPU 5.56% © Up Time 1 d 23 h 13 m		1 A406181119 A 1.1.207 Memory 41.80%	001	ပြီ Core Temperature 89.08 deg C	Change password Sign out Reboot
ETHERNET		Connection 1.0 Gbps		IP Address 10.10.10.143		Send 77.94 Mbps	Receive 709 Kbps
USB RNDIS		Connection Disconnected		IP Address 192.168.66.1		Send O Kbps	Receive O Kbps

## Signing In/Out

The Web UI allows multi-users to have read/write access to make configuration settings at the same time after login. However, to avoid configuration conflicts, do not operate one device simultaneously.

Signing In: Enter your account and password in the SIGN IN page. Step 1

> • The default administrator account name and password are as follows:

Username: Admin

- Password: Admin
- It is recommended to change the admin password after login (see modify the admin password). Unlike the password, the administrator username cannot be modified.
- Your account will sign out automatically if there is no operation performed within ten minutes.
- Signing Out: Click the drop-list icon  $\frown$  behind your username at Step 2 the top-right of the Web UI, and select **Sign out**. The **Reboot** function requires administrative rights.

#### Dashboard

The Dashboard tab in the web UI can show the real-time status and parameters of the Pro Convert device. Click and enter the Dashboard tab to check the device status.

<b>ΜΛ</b> ΔΕΨΕΓΓ <sub>°</sub>			EDID	NDI®	PTZ		( ۹	Admin 🚽
Pro Convert <sup>™</sup>	Device na Serial num		Pro Con	vert 1211047				
HDMI 4K Plus	Serial num Hardware Firmware	version	B40118 B 1.0.497	1211047				
	Input 1920x108	0i59.94	Output Unconne	ected		Control a (Disconnected)	型 CPU 10.00%	
	短照 Memory 59.25%		Core Tem 43.80 de		) Boar O	d Index	(L) Up Time 3 d 16 h 46 m	
	SD Card 0 MB		S Fan Speed 3107	1				
ETHERNET	Connection 1.0 Gbps		IP Addres 192.168		Send O Kb		Receive 169 Kbps	
	Connection		IP Addres	c	Send		Receive	

#### **Checking Basic Information**

- Device name shows the name of your Pro Convert unit. Only the Administrator can modify the device name in the System > Network tab. For detailed information, refer to Setting Device Name.
- Serial number shows the serial number of your unit, which is also marked on your device.
- Hardware version shows the hardware version of your unit.
- Firmware version shows the current firmware version that's installed in your unit. Only the Administrator can update the firmware, via the Firmware tab. For detailed information, refer to Updating the Firmware.

MV@EMELT₀	Dashboard	Signal Video	EDID NDI®	PTZ System	() Admin 🗸
Pro Convert™ HDMI 4K Plus		Device name Serial number Hardware version Firmware version	Pro Convert B401181211047 B 1.0.497		
		Input 1920x1080i59.94 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Cutput Unconnected	● PTZ Control Visca (Disconnected) ④ Board Index 0	(CPU 10.00% (L) Up Time 3 d 16 h 46 m
		SD Card O MB	(3) Fan Speed 3107		_
ETHERNET		Connection 1.0 Gbps	IP Address 192.168.1.159	Send O Kbps	Receive 169 Kbps
			IP Address		Receive

#### Checking the Current Working Status

- **Input** shows the resolution and frame rate of the current input signal. For more detail about the input, go to the **Signal** tab.
- **Output** shows whether an output device is connected to the Pro Convert device.

NOTE: This parameter is not available for TX models.

- PTZ Control shows the current protocol configured for the converter to communicate with a PTZ camera in the PTZ tab.
- **CPU** shows the current CPU usage (the load on the processor, shown as a percentage) of the Pro Convert device. CPU usage increases when the device is handling more complex video processing tasks (e.g. encoding at higher resolutions and frame rates).
- **Memory** shows current memory usage. • You can find out the free memory in **System > Report** tab, subject to administrative rights.
- **Core Temperature** shows the current temperature of the unit's processor. • Keeping the device free from dust and avoiding a high-temperature work environment may help to avoid overheating of the device. If the core temperature is approaching 100°C, please try to lower the temperature by ensuring a supply of cooler air.
- **Board Index** shows the rotary switch number. • You can change the number on the rotary switch to set a different Board Index, which can be used in the generation of the NDI source name.
- Up Time shows the elapsed time since your device's last boot-up.
- SD Card shows the capacity of current inserted SD card.

• Fan Speed shows the current speed of fan, which automatically changes according to temperature.

NOTE: This parameter is not available for TX products.

Checking Ethernet Status
--------------------------

- Connection shows Ethernet network connection status.
- IP Address shows Ethernet IP Address. You can manually change it in the System > Network tab with administrative rights.
- Send shows the current Ethernet transmission speed. NDI can generate high bitrate, dependent on resolution, frame rate and picture content. Observing this value will help to guide you in determining how many NDI streams your LAN can handle.
- **Receive** shows the current Ethernet receive speed.

MVCEMELT.	Dashboard	Signal	Video	EDID	NDI®	PTZ	System	(	2) Admin 🗸
Pro Convert™ HDMI 4K Plus		Device nat Serial num Hardware Firmware 1	ber version	Pro Conv B401180 B 1.0.276					
		Input 1920x108 Memory 59,14%	0p60.00	Output Unconne Core Tem, 53.77 de Fan Speec	perature eg C	€ PTZ Co None Board O		CPU 10.53% ① Up Time 3 d 46 m	
ETHERNET		0 MB Connection 1.0 Gbps		3107 IP Addres 192.168		Send 61.97	Mbps	Receive 525 Kbps	
USB RNDIS		Connection High Spee		IP Addres 192.168		Send O Kbp	IS	Receive O Kbps	

HDMI 4K Plus	Serial number	B401180706006			
	Hardware version	В			
	Firmware version	1.0.276			
	Input	Output	PTZ Control		
	1920x1080p60.00	Unconnected	None	10.53%	
		J			
	Memory	Core Temperature	Board Index	L Up Time	
	59.14%	53.77 deg C	0	3 d 46 m	
	0/12/00	560,7 468 6	Ŭ		
		S			
		Fan Speed			
	0 MB	3107			
ETHERNET		IP Address	Send	Receive	
ETTENNET	1.0 Gbps	192.168.1.60	61.97 Mbps	525 Kbps	
USB RNDIS	Connection	IP Address	Send	Receive	
USB RINDIS	High Speed	192.168.66.1	0 Kbps	0 Kbps	
NDI®	General	Tally	QoS	Encoding	
	Name	Preview	Video drop frames	Video	
	#00 (B401180706006)	Off	0	33.90 Mbps	

	SD Card O MB	الح) Fan Speed 3105		
ETHERNET	Connection 1.0 Gbps	IP Address 192.168.1.159	Send O Kbps	Receive 50 Kbps
USB RNDIS	Connection Disconnected	IP Address 192.168.66.1	Send O Kbps	Receive O Kbps
	Disconnected	172.100.00.1		
NDI®	General	Tally	QoS	Encoding
NDI*				
	<b>General</b> Name	<b>Tally</b> Preview	<b>QoS</b> Video drop frames	<b>Encoding</b> Video
	General Name HDMI 4K Plus Clients	Tally Preview ◎ Off Program	QoS Video drop frames O Audio drop frames	Encoding Video O Kbps Audio
	General Name HDMI 4K Plus Clients O	Tally Preview Off Program Off	QoS Video drop frames O Audio drop frames	Encoding Video O Kbps Audio

#### Checking Ethernet over USB Status

- Connection shows Ethernet over USB connection status.
- IP Address shows Ethernet over USB IP Address. By default, it is 192.168.66.1. You can manually change it in the System > Network tab, with administrative rights.
- Send shows current Ethernet over USB send speed.
- **Receive** shows current Ethernet over USB receive speed.

#### Checking NDI<sup>®</sup> Status

Setting NDI parameters refers to NDI.

- $\triangle$  Do not turn off NDI<sup>®</sup> during video transmission.
- General shows NDI source information.
  - Name shows NDI source name configured in the NDI<sup>®</sup> tab.
  - Clients shows the total number of NDI clients receiving the streams sent by your converter.
- Tally shows NDI outputs "on-air" status.
  - **Preview** shows whether the NDI stream has been selected to the Preview bus by any client. If yes, it shows **On** and is green, otherwise, it is **Off** and grey.

- Program shows whether the NDI stream has been selected to the Program bus by any client. If yes, it shows **On** and is red, otherwise, it is Off and grey.
- QoS shows the number of frames dropped in the previous second.
  - Video drop frames shows dropped video frames in the previous second.
  - Audio drop frames shows dropped audio frames in the previous second.
- Encoding shows the encoding speed in the previous second.
  - Video shows the video bitrate for the previous second.
  - Audio shows the audio bitrate for the previous second.
- Video shows output NDI video information.
  - **Resolution** shows the NDI video output resolution that is configured in the Video > OUTPUT section.
  - Field rate shows the NDI video output field rate that is configured in the Video > OUTPUT section.
- Audio Shows NDI audio information.
  - Sampling shows the sampling rate and bit depth of the audio output.
  - Channels shows the total number of NDI audio input channels. The HDMI Plus/4K Plus converter supports up to 8 input/output channels, SDI converter supports 16 input/output channels, and HDMI TX supports 8 input channels and the first 2 output channels.

## Signal

Click and enter the **Signal** tab to check the input signal information detected by the device. The parameters vary with input signal source.

MVQEMELT₀	Dashboard	Signal	Video ED	ND NDI®	PTZ	System	() Admin -
VIDEO STATUS		Resolution	1	1920×1080p, 6	0.00 Hz		
		Color dept	th	8			
		Sampling		4:4:4			
		Aspect rat	io	16:9			
		Color form	nat	BT.709			
		Frame stru	ıct	2D			
		Quantizati	ion range	Limited			
		Saturation	range	Limited			
AUDIO STATUS		Sampling		48000, 16 bits			
		Channels		2			
HDMI STATUS		Mode		HDMI			
		HDCP end	rypted	None			
		VIC		16			
		IT content		False			

MV⊡EMETT₀	Dashboard	Signal	Video	EDID	NDI®	PTZ	System	2	Admin 👻
VIDEO STATUS		Resolu	ution	192	0×1080p, 60	).00 Hz			
		Color	depth	8					
		Sampl	ling	4:4:4	4				
		Aspec	t ratio	16:9	,				
		Color	format	BT.7	'09				
		Frame	e struct	2D					
		Quant	tization range	Limi	ted				
		Satura	ation range	Limi	ted				
AUDIO STATUS		Sampl	ling	480	00, 16 bits				
		Chann	nels	2					
HDMI STATUS		Mode		HDN	MI				
		HDCP	encrypted	Non	e				
		VIC		16					
		IT con	itent	False	e				

#### Checking VIDEO STATUS

- **Resolution** shows the input video pixel resolution & frame rate.
- Color depth shows the input video color depth, in bits.
- Sampling shows the input video color sampling format. •
- Aspect ratio shows the input video aspect ratio.
- Color format shows the input video color encoding format.
- Frame struct shows the input video frame type, 2D or 3D.
- Quantization range shows the quantization range, Full or Limited.
- Saturation range shows the saturation range, e.g. Full or Limited.

#### Checking AUDIO STATUS

- Sampling shows the input audio sampling rate and bit depth.
- Channels shows the number of input audio channels detected.

<b>ΜΛGEWELL°</b>	Dashboard	Signal Video	EDID NDI® PTZ Syst	tem 💽 Admin –
AUDIO STATUS		Sampling	48000, 16 bits	
		Channels	2	
HDMI STATUS		Mode	HDMI	
		HDCP encrypted	None	
		VIC	16	
		IT content	False	
		Pixel rate	148.50 MHz	
		Timing-H total	2200 Pixels	
		Timing-H active	1920 Pixels	
		Timing-H front porch	88 Pixels	
		Timing-H sync width	44 Pixels	
		Timing-H back porch	148 Pixels	
		Timing-V total	1125 Lines	
		Timing-V active	1080 Lines	
		Timing-V front porch	4 Lines	
		Timing-V sync width	5 Lines	
		Timing-V back porch	36 Lines	
			·	
INFO FRAME		AVI		
		Туре	0x82	

#### Checking HDMI STATUS

NOTE: This parameter is available for HDMI products.

- Mode shows the signal type (which is always HDMI for the HDMI product).
- HDCP encrypted shows whether the signal source is HDCP encrypted. In accordance with the related laws and regulations, the device doesn't process HDCP encrypted signals, so the value is None.
- VIC Video Identification Code, which is defined for CEA formats.
- IT content shows whether the transmission package is content.
- 3D struct shows the layout of the two views within a video frame for stereoscopic 3D video. This parameter is only available for 3D signals.
- **3D sub sampling** shows the method for subsampling 3D video. This parameter is only available for 3D input signals.
- **Pixel rate** shows the maximum number of pixels the unit could possibly • write to the local memory in one second.
- Timing-H total shows the total number of pixels, horizontally.
- Timing-H active shows the number of active pixels, horizontally.
- **Timing-H front porch** shows the Front Porch width in pixels.
- Timing-H sync width shows the Sync Pulse width in pixels.
- Timing-H back porch shows Back Porch width in pixels.
- Timing-V total shows the total number of pixels, vertically.
- Timing-V active shows the number of active pixels, vertically.
- Timing-V front porch shows the size of the vertical Front Porch in pixels.
- Timing-V sync width shows the width of the vertical Sync Pulse in pixels.

VIDEO STATUS	Resolution	1920×1080p, 60.00 Hz					
	Color depth	10					
	Sampling	4:2:2					
	Aspect ratio	16:9					
	Color format	BT.709					
	Frame struct	2D					
	Quantization range	Limited					
	Saturation range	Limited					
AUDIO STATUS		48000, 24 bits					
AUDIO STATUS		48000, 24 DITS					
AUDIO STATUS	Sampling Channels	48000, 24 bits 8					
AUDIO STATUS	Sampling Channels						
AUDIO STATUS							
SDI STATUS							
	Channels	8					
	Channels Link type	8 Single link					
	Channels Link type Link speed	8 Single link 3G					
	Channels Link type Link speed Stream type	8 Single link 3G Single stream					
	Channels Link type Link speed Stream type Level B	8 Single link 3G Single stream False					
	Link type Link speed Stream type Level B Interlaced	8 Single link 3G Single stream False False					
	Link type         Link speed         Stream type         Level B         Interlaced         Assignment	8       Single link       3G       Single stream       False       False       0					
	Link type         Link speed         Stream type         Level B         Interlaced         Assignment         ST 352 payload ID	8       Single link       3G       Single stream       False       Palse       0       0       0x0000000					
	Link type         Link speed         Stream type         Level B         Interlaced         Assignment         ST 352 payload ID         H total	8       Single link       3G       Single stream       False       False       0       0x0000000       2200 Pixels					

#### **Checking SDI STATUS**

NOTE: This parameter is available for SDI products.

- Link type shows link type of input SDI signal, including single link, dual link, quad link.
- Link speed shows the current data speed.
- Stream type shows the number of streams that is contained in the data • source.
- Level B shows whether the input signal is level B format.
- Interlaced shows whether the input signal is interlaced.
- Assignment shows the link number, especially when be fed into a source of multi-link interfaces.
- ST 352 payload ID shows the SMPTE ST 352 video payload identification code for SDI.
- H total shows the total number of pixels, horizontally.
- V total shows the total number of pixels, vertically.
- H active shows the number of active pixels, horizontally.
- V active shows the number of active pixels, vertically.

INFO FRAME	AVI	
	Туре	0x82
	Version	0x02
	Length	13 bytes
	Checksum	0x07
	Data	50 08 00 10 00 00 00 00 00 00 00 00 00
	AUDIO	
	Туре	0x84
	Version	0x01
	Length	10 bytes
	Checksum	0x70
	Data	01 00 00 00 00 00 00 00 00 00

#### Checking INFO FRAME

NOTE: The parameters are available for products which support to input HDMI signals.

#### Checking AVI

- Type shows the packet type.
- Version shows the packet Version.
- Length shows the length of the AVI InfoFrame payload.
- Checksum shows the packet checksum.
- Data shows the InfoFrame payload.

INFO FRAME	AVI	
	Туре	0x82
	Version	0x02
	Length	13 bytes
	Checksum	0x07
	Data	50 08 00 10 00 00 00 00 00 00 00 00 00
	AUDIO	
	AUDIO Type	0x84
		0x84 0x01
	Туре	
	Type Version	0x01
	Type Version Length	0x01 10 bytes

#### Checking AUDIO

- Type shows the packet type.
- Version shows the packet version.
- Length shows the length of audio InfoFrame payload.
- Checksum shows the packet checksum.
- Data shows the InfoFrame payload.

AUDIO	
Туре	0x84
Version	0x01
Length	10 bytes
Checksum	0x70
Data	01 00 00 00 00 00 00 00 00 00
MW-SPD	
MW-SPD	0.00
MW-SPD	0x83
	0x83 0x01
Туре	
Type Version	0x01

## Checking MW-SPD

MW-SPD only displays when connecting a video game, like a PlayStation, or an Xbox.

- Type shows the packet type.
- Version shows the packet version.
- Length shows the length of source product description InfoFrame payload.
- Checksum shows the packet checksum.
- Data shows the InfoFrame payload.

#### Video

Click and enter Video tab to check the information detected by the device, and modify the video format according to your needs. By clicking Reset to Default in the bottom right corner of the page, you can cancel your modified settings.

m∧GEWELL°	Dashboard	Signal	Video	EDID	NDI®	PTZ	System	🕑 Admin 🚽
INPUT		🗹 Col	or format:	YUV BT.70	19			•
		🔽 Qua	antization:	Limited				•
220.0500								
PROCESS		🔅 Brig	htness			•		0 O
		Con	trast		•			100 0
		🕥 Satu	iration			•		100 9
		🔘 Hue				•		0 0
		Deinterl		None				
								•
		Special e	effect:	Mirror				

#### Setting INPUT Format

By default, INPUT shows the input information extracted from the signal. If a non-standard signal is incorrectly recognized by the device, you can manually adjust the parameters to correct it.

Color format

Check the box to select other options, including RGB, YUV BT.601, YUV BT.709 and YUV BT.2020.

Quantization

Check the box to select other options, including Full and Limited.

#### Setting PROCESS Format

By default, the video format of NDI streams is the same as that of input source. By clicking Reset to Default in the bottom right corner of the page, you can cancel your settings.

Brightness

Drag the slider bars to adjust it. Click  $\odot$  to restore to default.

Contrast

Drag the slider bars to adjust it. Click  $\odot$  to restore to default.

Saturation

⋒⋏⋤⋹⋓⋹∊∊	Dashboard	Signal	Video	EDID	NDI®	PTZ	System	(1) Admin -
INPUT			or format: antization:	YUV BT.709	)			•
PROCESS		<ul> <li>Brig</li> <li>Con</li> <li>Satu</li> <li>Hue</li> </ul>	trast Iration		•	• •		0 0 100 0 100 0
		Deinterla Special e		None				-

	Saturation	•	100 <b>?</b>
	O Hue		0 0
	Deinterlace:	None	-
	Special effect:	Mirror	
OUTPUT	Resolution:	Follow input	-
	Frame rate:	Follow input	•
	Full frame rate for low	v res stream:	
	Aspect ratio:	- 16 + : - 9	+
	Color format:	YUV BT.709	-
	Quantization:	Limited	-
	Saturation:	Limited	-

Drag the slider bars to adjust it. Click  $\odot$  to restore to default.

Hue

Drag the slider bars to adjust it. Click  $\odot$  to restore to default.

Deinterlace

Select other deinterlace options, including:

- None: an interlaced source will be encoded with both fields intact.
- Top field: Duplicate the upper field data vertically to create a full frame.
- Bottom field: Duplicate the lower field data to create a full frame.
- Special effect

Check the box to set a mirror effect (horizontal flip) of the video.

#### Setting OUTPUT Format

By default, the video format of the NDI output stream is the same as that of input source.

Resolution

Follow input is the default. Select or customize your own resolution if necessary.

Frame rate

Follow input is the default. Reduced rates are a Half, a Third or a Quarter of the input frame rate.

Full frame rate for low bandwidth

If the low-bandwidth mode is enabled when using the NDI stream receiver application (such as Studio Monitor, Pro Convert decoder), user would preview/capture the video stream with low resolution and low frame rate,

ooth fields intact. to create a full frame. ate a full frame.

which greatly reduces the bandwidth requirement. At this time, if the Full frame rate for low res stream function is enabled, user can preview/capture a video at a low resolution but more smooth video. Since the frame rate is the same as that of the input signal but the bandwidth requirements is reduced. Turning this feature on without the low-bandwidth mode will not affect the video stream.

Aspect ratio

Check the box to set a different aspect ratio, then select values for the ratio.

Color format

Check the box to select other options, including: YUV BT.601, YUV BT.709, YUV BT.2020.

Quantization

Check the box to select other options, including: Full, Limited.

Saturation

Check the box to select other options, including: Full, Limited, Extended.

#### Setting Encoding Bitrate Ratio

The range of bitrate ratio is 50% to 200%. It is recommended to use the default value of 100%.

A higher bitrate ratio is better for a good image quality and requires higher bandwidth, while a lower one might lead to less satisfactory image quality but require lower bandwidth.

	Color format:		* *
	Saturation:	Limited	~
,			
ENCODING	Bitrate ratio The range is 50% to 2	• 200%. It is recommended to use the default value	of 100%.
ENCODING	The range is 50% to 2	00%. It is recommended to use the default value is better for a good image quality, while a lower o	of 100%.

#### **EDID**

Click and enter the EDID tab to check the EDID information. By clicking Reset to Default in the bottom right corner of the page, you can cancel your settings. This tab is only available for HDMI products.

MV@EMELT₀ 	Dashboard	Signal Vide	eo E	DID		N	DI®		PTZ	2	Syste	em					👤 Admin -
INPUT PORT		SmartEDID™	🗌 Кеер	o last	~	Ado	d auc	lio	🗹 Lin	nited p	ixel (	lock	:	1			
Settings for the EDI	D of the converter.	Offset	0	1 2	3	4	5	6	7	8	9	А	В	С	D	E F	
SmartEDID <sup>™</sup> solves	an a filiata su la an	00	00 F	F FF	FF	FF	FF	FF	00	34	F7	01	00	01	00 e	0 00	
connecting a loop-tl		10	01 1	A 01	03	80	00	00	78	02	EE	95	A3	54	4C 9	9 26	
connecting a loop-ti	irougii device.	20	0F 5	0 54	FF	FF	80	31	40	45	40	61	40	71	40 8	1 80	
		30	D1 0	0 E1	C0	01	00	08	E8	00	30	F2	70	5A	80 E	0 58	
		40	8A 0	0 50	1D	74	00	00	1E	02	ЗA	80	18	71	38 2	D 40	
		50	58 2	C 45	00	50	1D	74	00	00	1E	00	00	00	FD 0	0 0F	
		60	96 0	F 87	ЗC	00	00	00	00	00	00	00	00	00	00 e	Ø FC	
		70	00 4	D 41	47	45	57	45	4C	4C	ØA	20	20	20	20 0	1 66	
		80	02 0	3 51	F1	57	61	10	1F	04	13	05	14	20	21 2	2 5D	
		90	5E 5	F 60	65	66	62	63	64	07	16	03	12	32	09 7	'F 07	
		AØ	15 0	7 50	ЗD	06	C0	57	06	00	5F	7F	01	67	7F @	0 83	
		BØ	4F 0	0 00	E2	00	ØF	6E	03	ØC	00	10	00	B8	78 2	1 10	
		CO	80 0	1 02	03	04	67	D8	5D	C4	01	78	80	03	E3 (	F 01	
											D	efaul	t	Imp	ort	Exp	port
OUTPUT PORT		Offset	0	12	3	4	5	6	7	8	9	A	В	С	D	EF	
		00															
Settings for the EDI	D obtained from	10															
the device which ou	tput port is	20															
connected to.		20											-				

#### Setting SmartEDID<sup>TM</sup>

NOTE: This function is available for Pro Convert HDMI Plus/4K Plus products.

- SmartEDID<sup>TM</sup>
  - SmartEDID<sup>TM</sup> is enabled by default. When it is disabled, other related functions can not be set.
  - Depending on the input capability of the converter and that of the device connected to the loop-through interface, the converter will smartly select to send the EDID to the video source device, to ensure both the converter and the loop-through device can obtain the signal they support.
- Keep last
  - Keep the last EDID value used.
  - This function is disabled by default. To enable it, the SmartEDID function should also be enabled. When Keep Last is enabled and the loopthrough device is disconnected, the current EDID will still be used. The converter will continue receiving signal so the video capture and encoding continues. Otherwise, the converter will resend its EDID to the source device for it to redetermine what format of signal to send. As a result, there could be an interruption to the source signal for a short time.

- Force the source device to output audio.
- If users connect a monitor which doesn't support audio to the loopthrough output, the source device will decide not to output audio. As a result, the Pro Convert will not get any audio input. If Add Audio is enabled, the Pro Convert will communicate with the video source device, forcing it to output audio.
- Limited pixel clock
  - If enabled, when the pixel resolution of the loop-through device is beyond the capability of the Pro Convert, a lower pixel resolution will be used in order to avoid the output producing a blank screen.

#### Setting INPUT EDID

Any of the following actions can be performed on the input EDID of the device.

- **Default**: Click **Default** to reset the current EDID to default values.
- Import: Click and select an EDID file to import a local EDID file.
- **Export**: Click and set the file name to export the current EDID as a .bin file.

Settings for the EDID of the converter.	Offset	0	1	2	3	4	5	6	7	8	9		A E	C	D	E	F
SmartEDID <sup>™</sup> solves conflicts when	00	00	FF	FF	FF	FF	FF	FF	00	34	E F	00	) D1	. 4E	61	BC	00
connecting a loop-through device.	10	01	14	01	03	80	30	1B	78	ØF	E	95	A A	54	4C	99	26
service and a reaction of the service of the servic	20	ØF	50	54	FF	FF	80	81	00	81	. 40	82	. 80	95	00	A9	40
	30	B3	00	D1	00	D1	40	E2	68	00	A A	) A(	46	) 2E	60	30	20
	40	36	00	C4	8E	21	00	00	1A	28	30	8	) A6	70	BØ	23	40
	50	30	20	36	00	C4	8E	21	00	00	1/	00	00	00	FC	00	58
	60	49	31	30	30	44	45	20	34	4E	0/	20	20	00	00	00	FD
	70	00	19	78	0C	FF	1E	00	00	00	00	0	00	00	00	01	4B
	80	02	03	32	71	4F	06	15	02	11	13	04	14	05	20	21	22
	90	1F	10	40	ЗF	26	ØF	7F	07	09	7	0	83	2F	00	00	72
	AØ	03	0C	00	20	00	88	ЗC	20	Ce	84	0:	. 02	. 03	04	01	41
	BØ	FF	FF	04	74	00	30	F2	70	54	80	B	58	8A	00	C4	8E
	CØ	21	00	00	1E	00	00	00	00	00	00	0	00	00	00	00	00
OUTPUT PORT	Offset	0	1	2	3	4	5	6	7	8	: 9	)	\ E		D	E	F
	Offset 00								7								
Settings for the EDID obtained from		00	FF	FF	FF	FF		FF	00	34	F		) E1		61	BC	00
Settings for the EDID obtained from the device which output port is	00	00	FF 19	FF 01	FF 03	FF 80	FF	FF 1B	00 78	34 07	F	00 91	) E1 5 A3	. 4E	61 4C	BC 99	00 26
Settings for the EDID obtained from	00 10	00 01	FF 19 50	FF 01 54	FF Ø3 FF	FF 80 FF	FF 30	FF 1B 81	00 78 C0	34 07 81	E E	00 95 83	) E1 5 A3	4E	61 4C 00	ВС 99 А9	00 26 40
Settings for the EDID obtained from the device which output port is	00 10 20	00 01 0F	FF 19 50 00	FF 01 54 D1	FF 03 FF C0	FF 80 FF D1	FF 30 80	FF 1B 81 F3	00 78 C0 39	34 07 81 80	E E E	00 91 82 83 72	E1 A3 40	4E 54 95	61 4C 00 40	BC 99 A9 58	00 26 40 2C
Settings for the EDID obtained from the device which output port is	00 10 20 30	00 01 0F B3 45	FF 19 50 00 00	FF 01 54 D1 C4	FF 03 FF C0 8E	FF 80 FF D1 21	FF 30 80 00	FF 1B 81 F3 00	00 78 C0 39 1A	34 07 81 80 28	F: EE 00 18 30	00 91 82 83 72	9 E1 5 A3 40 38 9 A0	4E 54 95 2D	61 4C 00 40 B0	BC 99 A9 58 23	00 26 40 2C 40
Settings for the EDID obtained from the device which output port is	00 10 20 30 40	00 01 0F B3 45 30	FF 19 50 00 00 20	FF 01 54 D1 C4 36	FF 03 FF C0 8E 00	FF 80 FF D1 21 C4	FF 30 80 00 00	FF 1B 81 F3 00 21	00 78 C0 39 1A 00	34 07 81 86 28	F: EF 00 18 30 18	91 92 82 83 72 80 80 80 80 80	) E1 5 A3 40 38 9 A0	4E 54 95 2D 70	61 4C 00 40 B0 FC	BC 99 A9 58 23 00	00 26 40 2C 40 50
Settings for the EDID obtained from the device which output port is	00 10 20 30 40 50	00 01 0F B3 45 30 72	FF 19 50 00 00 20 6F	FF 01 54 D1 C4 36 20	FF 03 FF C0 8E 00 43	FF 80 FF D1 21 C4 61	FF 30 80 00 00 8E	FF 1B 81 F3 00 21 74	00 78 C0 39 1A 00 75	34 07 81 80 28 00 72	F: EF 00 18 30 18 30 18 50 18	95 95 87 87 80 80 80 80 80 80 80 80 80 80 80 80 80	<ul> <li>E1</li> <li>A3</li> <li>46</li> <li>38</li> <li>A6</li> <li>A</li></ul>	4E 54 95 2D 70 00	61 4C 00 40 B0 FC 00	BC 99 A9 58 23 00 00	00 26 40 2C 40 50 FD
Settings for the EDID obtained from the device which output port is	00 10 20 30 40 50 60	00 01 0F B3 45 30 72 00	FF 19 50 00 20 6F 19	FF 01 54 D1 C4 36 20 78	FF 03 FF C0 8E 00 43 0C	FF 80 FF D1 21 C4 61 78	FF 30 80 00 00 8E 70	FF 1B 81 F3 00 21 74 00	00 78 C0 39 1A 00 75 0A	34 07 81 86 28 06 72 26	F: 00 18 30 18 18 18 18 18 18 18 18 18 18	91 92 82 83 72 80 80 80 80 80 80 80 90 90 90 90 90 90 90 90 90 90 90 90 90	<ul> <li>E1</li> <li>A3</li> <li>A4</li> <li>A6</li> &lt;</ul>	4E 54 95 2D 70 00 00	61 4C 00 40 B0 FC 00 20	BC 99 A9 58 23 00 00 01	00 26 40 2C 40 50 FD D4
Settings for the EDID obtained from the device which output port is	00 10 20 30 40 50 60 70	00 01 0F 83 45 30 72 00 02	FF 19 50 00 20 6F 19 03	FF 01 54 D1 C4 36 20 78 2F	FF 03 FF C0 8E 00 43 0C 71	FF 80 FF D1 21 C4 61 78 50	FF 30 80 00 80 80 80 81 70	FF 1B 81 F3 00 21 74 00 02	00 78 C0 39 1A 00 75 0A 03	34 07 81 86 28 06 72 26 04	F: 00 18 30 18 18 18 18 18 18 18 18 18 18	91 92 93 72 80 90 90 90	<ul> <li>E1</li> <li>A3</li> <li>A6</li> &lt;</ul>	4E 54 95 2D 70 00 00 00 20	61 4C 00 40 B0 FC 00 20 13	BC 99 A9 58 23 00 00 01 14	00 26 40 2C 40 50 FD D4 1F
Settings for the EDID obtained from the device which output port is	00 10 20 30 40 50 60 70 80	00 01 0F 83 45 30 72 00 02 20	FF 19 50 00 20 6F 19 03 21	FF 01 54 D1 C4 36 20 78 2F 22	FF 03 FF 00 8E 00 43 0C 71 06	FF 80 FF D1 21 C4 61 78 50 15	FF 30 80 00 80 8E 70 11 01	FF 1B 81 F3 00 21 74 00 02 0F	00 78 C0 39 1A 00 75 0A 03 7F	34 07 81 86 28 06 72 26 04 07	F: F: 00 18 30 18 18 18 18 18 18 18 18 18 18	99 98 77 80 80 80 80 80 80 90 90 90 90 90 90 90 90	<ul> <li>E1</li> <li>A3</li> <li>A4</li> <li>A6</li> &lt;</ul>	. 4E 54 95 2D 70 00 00 20 12	61 4C 00 40 B0 FC 00 20 13 2F	BC 99 A9 58 23 00 00 01 14 00	00 26 40 2C 40 50 FD D4 1F 00
Settings for the EDID obtained from the device which output port is	00 10 20 30 40 50 60 70 80 90	00 01 0F B3 45 30 72 00 02 20 6E	FF 19 50 00 20 6F 19 03 21 03	FF 01 54 D1 C4 36 20 78 2F 22 0C	FF 03 FF 00 8E 00 43 0C 71 06 00	FF 80 FF D1 21 C4 61 78 50 15 20	FF 30 80 00 80 80 80 70 11 01 26	FF 1B 81 F3 00 21 74 00 02 0F F8	00 78 C0 39 1A 00 75 0A 03 7F 2D	34 07 81 86 28 06 72 26 04 07 26 04	F; EE 00 18 30 10 10 10 20 40 99 20 09 00 00 00	/ 00 99 82 87 80 80 90 90 90 90 90 90 90 90 90 9	<ul> <li>E1</li> <li>A3</li> <li>A40</li> <li>A60</li> <l< td=""><td>4E 54 95 2D 70 00 00 20 20 12 83</td><td>61 40 40 60 FC 00 20 13 2F FF</td><td>BC 99 A9 58 23 00 00 01 14 00 FF</td><td>00 26 40 2C 40 50 FD D4 1F 00 F3</td></l<></ul>	4E 54 95 2D 70 00 00 20 20 12 83	61 40 40 60 FC 00 20 13 2F FF	BC 99 A9 58 23 00 00 01 14 00 FF	00 26 40 2C 40 50 FD D4 1F 00 F3
Settings for the EDID obtained from the device which output port is	00 10 20 30 40 50 60 70 80 90 A0	00 01 0F B3 45 30 72 00 02 20 6E	FF 19 50 00 20 6F 19 03 21 03 80	FF 01 54 01 20 78 2F 22 0C 18	FF 03 FF 00 43 00 71 06 00 71	FF 80 FF D1 21 C4 61 78 50 15 20 38	FF 30 80 00 80 80 70 11 01 26 00	FF 1B 81 F3 00 21 74 00 02 0F F8 40	00 78 C0 39 1A 00 75 0A 03 7F 2D 58	34 07 81 86 28 06 72 26 04 07 26 04 07 26 04	<ul> <li>F.</li> &lt;</ul>	7 00 9 9 9 82 9 82 9 82 9 82 9 82 9 82 9 90 9 20 9 71 9 90 9 71 9 90 9 90 9 90 9 90 9 90 9 91 9 92 9	<ul> <li>E1</li> <li>A3</li> <li>A4</li> <li>A6</li> <li>A</li></ul>	4E 54 95 2D 70 00 00 20 12 83 . 41	61 4C 00 40 B0 FC 00 20 13 2F FF 21	BC 99 A9 58 23 00 00 01 14 00 FF 00	00 26 40 2C 40 50 FD D4 1F 00 F3 00

## Checking OUTPUT EDID

OUTPUT EDID shows the EDID of the connected loop-through device. NOTE: This section is not available for TX products.

• **Export**: Click and set the file name to export the current EDID as a .bin file.

NDI<sup>®</sup> is a standard developed by NewTek to transport IP video over a LAN with high-quality and low latency. Note that you need to click **Apply** at the bottom-right corner of the page to save changes.

MAGEWELL* Dasi	nboard Signal Video	o NDI® PTZ System	👤 Admin 🚽
NDI®	Source Video		
Settings for NDI which is a standard developed by NewTek to share video on a local Ethernet network.	Group name: Source name:	public #%board-id% (%serial-no%) %board-id% and %serial-no% are the only variables sup name. serial-no indicates the serial number of the device rotary switch number. The current device name is: #00 (	e. board-id indicates the
	Audio Reference Level	EBU	•
	Discovery Server		
	Server IP:	10.10.14.147	
	Transport Mode	TCP (Uni-Connection)	•
	Failover		
	Source name	DESKTOP-FVR2TCO (Test Pattern)	Change

Figure 1. Set Source Video parameters in the Web UI

DESKTOP-ASCNS3	0 >			
DESKTOP-D5OSJ5				
DESKTOP-UOVST2	V >			
HD Camera	>			
MYPC	>			
PRO CONVERT	>	~	#00 (B401180706006)	
PRO CONVERT AA	× >		#00 (B401180706020)	
Settings	>		#01 (B401180706008)	
Disconnect				
NDI.NewTek.com				

Figure 2. Monitor Pro Convert devices using NDI Studio Monitor

#### Setting Source Video

- Group name shows the group that receives NDI streams sent by your converter.
  - The group name is non case-sensitive, and should contain A to Z, a to z, 0 to 9 and special characters like \_-. The group name entry can contain comma-separated values, allowing your converter to send to all the groups listed here.
  - The default group is **public** group.
  - To make a private NDI group, refer to Creating a Private Group.
- **Source name** shows the NDI source name used for your converter. •
  - By default, the source name is **#%board-id% (%serial-no%)**. when you monitor Pro Convert devices using NDI Studio Monitor, the NDI stream name is displayed as on the left in Figure 2.
  - You can change the **board-id** via the rotary switch on your unit.
  - serial-no indicates the unit's serial number, as per the barcode label.
  - %board-id% and %serial-no% are the only supported variables.
  - You can change the Source Name to a string with maximum of 30 characters, containing A to Z, a to z, 0 to 9, spaces and special characters like \_-#()%.
  - If no text is entered for the Source Name, it will take the default value

NDI®	Source V	/ideo				
	Group na	ame:	magewell0	1		
Settings for NDI whic developed by NewTel	Source n	name:	#%board-id	% (%serial-nc	0%)	
a local Ethernet netw			#00 (B40118	0706006)		

#### How to create a private NDI Group

By default, all NDI channels are in the **public** group, visible to all NDI clients on the same LAN. Here's a walkthrough of the basics for creating and joining private groups.

#### 1. Creating a Private Group In Web UI

- Access the Web UI, and sign in with your account. Then click and Step 1 enter the **NDI**<sup>®</sup> tab.
- Change the **Group name**. Here for example, magewell01. Step 2 A converter is allowed to send streams to multiple groups when setting the **Group name** as comma-separated values, such as "magewell01,magewell02,magewell03,magewell04".
- Step 3 Click **Apply** to save your changes. Now, any NDI-enabled clients of groups magewell01, magewell02, magewell03, or magewell04 can receive video streams sent by your converter on the same LAN.

**#%board-id% (%serial-no%)** automatically after clicking **Apply**.



M/GEWELL:	Dashboard	Signal	Video	NDI®	PTZ	System	👤 Admin 🗸	
NDI* C Settings for NDI which is a standard developed by NewTek to share vide a local Ethernet network.	ł	Source Video Group name: Source name:		name. serial-no in	%serial-no% a dicates the se	re the only variables supported by t rial number of the device, board-ld nt device name is: #00 (A4062003	indicates the	
		Audio Reference I	evel	EBU			-	
		Discovery Server						
		Server IP:		10.10.14.147				
		Transport Mode		ICP (Uni-Conn	ection)		•	
		Failover						
		Source name	D	ESKTOP-FVR2	TCO (Test Pa	ittern)	Change	

#### 2. Joining In the Private Group In NDI Access Manager

- Download and install the **NDI tools** from the NewTek official site Step 4 www.newtek.com/ndi/tools for free.
- Launch the NDI Access Manager in your system. Step 5
- Step 6 Click New in Receive Groups section in the Groups tab, and add the same group that was created in the Pro Convert Web UI. Here for example, magewell01.
- Click **OK**. Step 7

#### Setting Audio Reference Level

Two ways are provided for audio values conversion between source and output signal including EBU and SMPTE. By default, it is SMPTE.

MVGEMEL	L° D	Dashboard	Signal	Video	NDI®	PTZ	System	👤 Admin	r.
devel	s for NDI which is a standard oped by NewTek to share video o I Ethernet network.		Source Video Group name: Source name:		name. serial-no in	<b>6serial-no%</b> ard	e the only variables supported by the lai number of the device. <b>Doard-d</b> into 1 device name is <b>XO0 (AA6200324</b>	dicates the	
			Audio Reference	Level	EBU			•	
			Discovery Server Server IP:		10.10.14.147				
			Transport Mode		TCP (Uni-Conne	ection)		•	
			Failover						
			Source name	C	DESKTOP-FVR2	rco (Test Pa	ttern)	Change	

Figure 1 Set discovery server in the Web UI

🚯 NDI Access Manager			– ×
Receive Groups Remote Sources	Output Groups	Advanced	
Receive Mode Auto			i
Transmit Mode			()
Multicast Sending Enabled	π	L 4	
Multicast IP 239.255.0.0	Mask	255.255.0.0	
✓ Use Discovery Server			Ò
Server IP 10.10.111.209			
ndi.tv		ОК	Cancel

Figure 2 Set discovery server in the NDI Access Manager tool

#### Setting Discovery Server

By turning on the Discovery server, the encoder can only be received by the specified receiver, and the mDNS auto-discovery function is unavailable. Pro Convert encoder can be used as a discovery server due to the build-in Discovery Service feature. It starts automatically when device booting, and requires zero configuration. Or you can deploy NDI Discovery Service on another server considering your studio environment.

- 1. Ensure that the receiver and encoder can ping each other. This function works between encoder and receiver that can ping each other even from differential network segment. After setting, the output stream of your encoder can be received by specified server.
- 2. Use Pro Convert encoder as the Discovery Server: in the encoder WebUI, enable **Discovery server**, and specify the **Server IP** to IP address of the Pro Convert encoder.
- 3. Launch the NDI Access Manager tool installed in the receive computer, and specify the discovery server parameters.
  - i. Enter the **Advanced** tab.
  - ii. Disable Multicast Sending Enabled, check Use Discovery Server, and specify Server IP to the IP address of the receiver server running discovery service function.

Note: The Server IP of NDI Access Manager and encoder WebUI should be the same.

Download the NDI Access Manager from the NewTek official site www.newtek.com/ndi/tools for free.
eveloped by NewTek to share video on local Ethernet network.	Source name:	#%board-id% (%serial-no%)
iotai Lihemet network.		%board-id% and %serial-no% are the only variables supported by the device name. serial-no indicates the serial number of the device. board-id indicates the rotary switch number. The current device name is: #00 (B401190213050)
	Audio Reference Level	SMPTE
	Discovery Server	0
	Transport Mode	UDP (Unicast)
		UDP (Unicast)
		UDP (Multicast)
		RUDP (Unicast)
		TCP (Uni-Connection)
		TCP (Multi-Connection)
	PTZ control	
	Web control	C
	Tally	

### Setting Transport Mode

Connections can be established between the encoder and their receivers, including UDP (Unicast), UDP (Multicast), RUDP (Unicast), TCP (Uni-Connection) and TCP (Multi-Connection). Choose a proper one based on your networking conditions. By default, TCP (Multi-Connection) is used.

- UDP (Unicast) indicates that the encoder sends a UDP stream directly to the receiver. It is used where lower latency matters. And multiple simultaneous streams will work independently for multiple receivers.
- UDP (Multicast) indicates that the encoder sends the UDP stream to a multicast group. It is used for one-to-many broadcast for lower CPU utilization. Parameters in a multicast configuration include:
  - Multicast IP ranges from 224.0.0.0 to 239.255.255.1.
  - Subnet Mask can be legitimate value ranging from 255.0.0.0 to 255.255.255.0.
  - Time To Live ranges from 1 to 255. The default value is 4.
- **RUDP (Unicast)**, Reliable User Datagram Protocol, is a connection-oriented and unicast protocol. RUDP helps to maintain the flow control and reliability of data transfer. The transmission control algorithms on both sending and receiving sides guarantee the RUDP capable of recovering from data loss, duplication, delay, and as well as reordering.
- TCP (Uni-Connection) indicates to establish single TCP connection between the encoder and receiver, and transfer all A/V packets are transferred via one port. Compared with UDP (Unicast) or TCP (Multi-Connection), it has lower CPU utilization. It is used where reliable transmission of data matters, which makes it suitable for 4K NDI streams.
- TCP (Multi-Connection) indicates to establish multiple TCP connections

between the encoder and receivers, but transfer aud
packet via different ports. It usually works in a compl
studio. It is used where reliable transmission of data
suitable for 4K NDI streams.

Setting	Fai	lover
Jetting	I ai	

Failover is a method of protecting your NDI transmission from failure. If the source video fails, the backup device begins to provide a service. The initial source will be restored after it recovers. This function is disabled by default.

- Source name shows the backup NDI channel name. Click Change... and select the failover (backup) video device within the same NDI group as the initial source.
- IP Address shows the IP Address of the backup NDI channel. The failover IP Address is automatically obtained after you select the backup NDI source.

ͲΛĠℇ⋓ℇ⅃⅃°		eo EDID			👤 Admin 👻	
	Multicast IP: Subnet mask: Time to live:	239.255	4		+	
	Failover Source name IP Address	DESKTOF 192.168.1	11-0 Pro Capture	HDMI 4K+)	Change	
	Receiver Control					
	PTZ control					
	Web control					

dio packet and video licated networking matters, which makes it

Failover	
Source name DESKTOP-E1N05G4 (11-0 Pro Capture HDMI 4K+) IP Address 192.168.1.97:5961	Change
Receiver Control	
PTZ control Web control	
Tally	
User customized tally lights	
	Apply

Figure 1. Set Receiver Control parameters in the Web UI



Figure2. NDI Studio Monitor: PTZ controller

## Setting Receiver Control

PTZ control

This function is disabled by default. Turn it on when you want to control a connected PTZ camera through the **NDI Studio Monitor**, then the PTZ controller interface will be shown in the NDI Studio Monitor.

Web control

This function is enabled by default. We recommend you keep it turned on, because you cannot open the Web UI by clicking the gear icon in the NDI Studio Monitor if this function is disabled.

Source name     DESKTOP-E1NO5G4 (11-0 Pro Capture HDMI 4K+)     Change       IP Address     192.168.1.97:5961     Change   Receiver Control       PTZ control <ul> <li>Web control</li> <li>Tally</li> <li>User customized tally lights</li> <li>Image: Control</li> <li>Im</li></ul>
PTZ control  Web control
Web control
Tally

## Using Custom Tally Lights

Pro Convert<sup>TM</sup> supports the use of **User customized tally lights** through the definition of the pinouts of the PTZ interface. Note that the second you turn on the switch for this function, the Magewell tally light and LED matrix screen will no longer be working. The pinouts of the PTZ interface see Description of Mini-DIN8 Breakout.

## PTZ

Pro Convert supports control of multiple PTZ cameras through the 8-pin PTZ control socket. Wire PTZ cameras in a daisy chain if you want to control multiple cameras. Click and enter the PTZ tab to set parameters. Note:

- If installing more than one PTZ camera, you need to make sure that all cameras are set to the same protocol ("VISCA"), the same Baud Rate, and are connected in serial mode.
- If the V addresses of the cameras are set to fixed, the IDs must be different for the converter to determine their identities.
- If the V address are not fixed, the converter will assign an ID for the PTZ camera automatically. If multiple cameras are connected, the directly connected one is Device 1, the next one in the chain is Device 2, etc.
- Check your camera manual for instructions on how to set up your PTZ cameras.

PTZ CONTROL Settings for the camera connecting with the Convert device.				
	Protocol	Visca	-	
	Baud rate	38400	•	
	Device ID Invert pan directi	- 1	+	
	Invert tilt directio			
	Advanced Visca P	Parameters »	_	
	Arrange cameras		Apply	

### Setting PTZ Control Parameters

Protocol

Shows the control language that allows the camera and the converter to communicate to each other. For now, VISCA, Visca UDP, Visca UDP2rs232, PELCO-P and PELCO-D protocol are supported. If multiple cameras are connected, all cameras should also be set to VISCA.

Baud rate .

> Shows the control data speed. For example, "9600 baud" means that the PTZ control port is capable of transferring a maximum of 9600 bits per second. If multiple cameras are connected, each camera should be set to the same value as used here.

Options are: 2400, 4800, 9600, 19200 and 38400. By default, the Baud rate is 9600.

Shows the ID of the camera, which allows the controller to identify different PTZ cameras, especially when multiple cameras are connected. The value ranges from 1 to 7. By default, the value is 1.

### Invert pan direction

Turn on to reverse the pan-direction movement. You can enable this function to make control more intuitive when the camera is not installed in the normal position.

#### Invert tilt direction

Turn on to reverse the tilt-direction movement. You can enable this function to make control more intuitive when the camera is not installed in the normal position.

Device ID	[ <sup>-</sup> ] 1	+
Invert pan direction		0
Invert tilt direction		
Advanced Visca Pa	rameters 👳	
Focus near limit	61440	
Focus far Limit	4096	
Pan left limit	-8704	
Pan center	0	
Pan right limit	8704	
Tilt top limit	4608	
Tilt center	0	
Tilt bottom limit	-1024	
Zoom out limit	32512	
Arrange compre-		Annh
Arrange cameras		Apply

#### Advanced Visca Parameters

Pro Convert device supports advanced control of the PTZ camera when using VISCA or Visca UDP. Note the following points when configuration.

- 1. Check the user manual of the camera or contact the manufacturer for detailed control parameters of the camera.
- 2. Convert the values of camera parameters to decimal numbers and fill them in the corresponding parameter options.

Settings for the camera co the Convert device.	nnecting with	(	:		
	Protocol	Visca UDP			
	IP Address				
	Port	1259			
	Device ID	-	1	+	
	Visca UDP messa	age header			
	Invert pan directi	ion			
	Invert tilt directio	on			
	Advanced Visca F	Parameters »			
	Arrange cameras	]		Apply	

#### Control the PTZ camera via Visca UDP

Pro Convert device supports control of the network camera via the Visca UDP protocol, without the need to use a PTZ control line to connect the Pro Convert device to the PTZ camera. The PTZ camera and encoder must be able to ping each other.

Set the encoder parameters as follows.

- Protocol: Visca UDP 1.
- 2. IP Address: The IP address of your camera
- Port: Your camera's Visca protocol network port (check the user 3. manual of the camera or contact the manufacturer to get it)
- 4. Visca UDP message header: Turn this option on if the communication protocol your camera (e.g. SONY camera) uses the Visca UDP header. Or else, the converter may not be able to control the PTZ camera.

the Convert device.			
	Protocol	Visca UDP2rs232	-
	Baud rate	38400	•
	Port	1259	
			Apply

Figure1 Parameters of the encoder

Input: 1 NDI PRO CONVE	ERT (#15 (B403190104001))	
General		
Colour Adjust	Device Type	PTZ Optics VISCA UDP $\qquad \checkmark$
Colour Key	IP Address	192.168.1.210 ~
Colour Correction		(Example: x.x.x.x)
Position		Connect
Multi View		к 🛧 🤊 Zoom
Triggers		$\leftarrow \bullet \rightarrow +$
Tally Lights		
PTZ		<u>к к я - </u>
Advanced	Spe	eed

Figure2 Parameters of the vMix PTZ

### • Control the PTZ camera via Visca UDP2rs232

Use the protocol When a capture software (e.g. vMix) supports PTZ but not NDI PTZ. Set the PTZ parameters of the encoder, PTZ camera and capture software as follows.

- 1. Connect the encoder to the RS232 IN port on the PTZ camera.
- 2. Encoder protocol: Visca UDP2rs232. The **Port** number of the encoder should be the same as that of the vMix protocol port number.
- 3. PTZ camera protocol: Visca
- 4. In the capture software, use Visca UDP or Visca over IP to control PTZ and fill in with the IP address of the encoder. The configuration example of vMix is shown as the left figures.

## System

With administrative rights, you can access the **System** tab to control more functions, such as:

- Creating or removing general user accounts for accessing the converter
- Changing passwords for all users of the converter •
- Changing the converter's name •
- Network settings for joining a specific LAN
- Updating firmware for the latest features and improvements
- Joining Magewell Cloud for remote control
- Exporting reports and logs to get technical support
- Rebooting or resetting the converter to fix problems

Otherwise, the **System** tab is invisible when you log in as a general user.

MVQEMELT.	Dashboard	Signal Video	NDI® PTZ	System	😰 Admin 👻
<u>D</u> User admin	Network	Firmware Add New User	Cloud	Report	Log
USER ADMIN Admin user create and manage users that are stored locally on the Convert device.	E	User name Password Confirm password	Cancel	+ lew User	

### Creating/Removing General Users

After signing in with default admin account, you may need to add general users to give them permissions to do basic operations, like monitoring the device, or setting some of the parameters.

- Access the Web UI, and sign in as administrator. Step 1
- Click and enter the **System > User Management** tab. Step 2
- Click Add New User. Step 3
- Type in the user name, password, and confirm your password. Step 4
  - The username is a string of 3 to 12 characters, which contains the letters A-Z, a-z, numbers 0-9 and underscore.
  - The password is a string of 1 to 32 characters, which contains the



letters A-Z, a-z, numbers 0-9 and special characters \_-~!@#\$%^&\*-+=.

- Click **OK**. Step 5
- Repeat Step 3 to 5 to add multiple users. Step 6 Converters support the addition of up to 15 general users.
- To delete a user, move the cursor to the user name you want to Step 7 delete, then click the delete button "X" appeared at the top-right corner.
- Confirm the deletion when prompted. Step 8

MAGEWELL*	Dashboard	Signal	Video	NDI®	PTZ	System		😰 Admin 🔺	
								Change password	
Pro Convert <sup>™</sup>		Device name		1				Sign out	
SDI TX		Serial number Hardware vers Firmware versi		A406181119 A 1.1.207	2001			Reboot	
		部 CPU 5.56% ① Up Time 1 d 23 h 13 m		Memory 41.80%		) Core Temperature 89.08 deg C	الله المحالي (ع) Boar O	d Index	
ETHERNET		Connection 1.0 Gbps		IP Address 10.10.10.143	3	Send 77.94 Mbps	Reco 709	ive Kbps	
USB RNDIS		Connection Disconnected		IP Address 192.168.66.1	L	Send O Kbps	Rece O Ki		

MVQEMELT.	Dashboard	Signal V	/ideo NDI® F	PTZ System	() Admin -
L User admin	Network	<b>∏</b> Firmware	Cloud	Report	Log
USER ADMIN Admin user create and manage users that are stored locally on the Convert device.	Admin	Admin	X Magewell Set password	++ Add New User	

#### Setting Password

After login, You can either set up a password in the user account drop-list, or in the **System** tab (with administrative rights).

#### Solution 1: Setting in via the user account drop-list

- Access the Web UI, and sign in with your username and password. Step 1
- Click the drop-list icon  $\checkmark$  beside the logged-in username, and Step 2 click Change password.
- In the prompt window, type in your old password, the new Step 3 password, and confirm your new password. The password is a string of 1 to 32 characters, which contains letters A-Z, a-z, numbers 0-9 and special characters \_~!@#\$%^&\*-+=.
- Click **OK**. Step 4

#### Solution 2: Setting in the System tab

- Access the Web UI and sign in from the administrator account, then Step 1 you can change any user's password.
- Click and enter the **System** tab. Step 2
- Move the cursor to the specific user name, then click Set password. Step 3
- Step 4 In the prompt window, type in and confirm your password. The password is a string of 1 to 32 characters, which contains letters A-Z, a-z, numbers 0-9 and special characters \_~!@#\$%^&\*-+=.
- Click **OK**. Step 5

MVCEMELT.	Dashboard	Signal	Video	NDI® P	Z System	😰 Admin 🚽
L User admin	Network	Firmwa		Cloud	Report	
ETHERNET Settings for device name and IP address of Ethernet.		status: ce name:	1.0 Gbps Pro Conve	ert Convert Convert	:	
	Set I	P Address Manu	ally			
	IP	Address:	10.10.7	7.22		
	Su	ibnet mask:	255.25	5.240.0		
	G	ateway:	10.10.0	).1		
	D	NS server:	10.0.1.	3		

ß	₽			K		
User admin	Network	Firmwa	are	Cloud	Report	Log
ETHERNET	Lin	k status:	1.0 Gbps			
Settings for device name and IP address of Ethernet.	De	vice name:	Pro Convert	Convert Convert		
	Set	t IP Address Manu	ially			
		IP Address:	10.10.7.2	22		
		Subnet mask:	255.255.	240.0		
		Gateway:	10.10.0.1			
		DNS server:	10.0.1.3			
		Apply				

#### Setting Device Name

To change device name in the **System** tab requires administrative rights. By default, the device name is the same as the product model name.

- Access the Web UI, and sign in as administrator. Step 1 Click and enter the **System** tab, then select **Network**. Step 2 Step 3 Enter a new **Device name**. The device name is a string of 1 to 30 non-case sensitive characters,
  - containing letters a to z, A to Z, 0-9, spaces and special characters like \_-+.
- Step 4 Click Apply to save changes, and confirm with Yes when prompted.

#### **Network Settings**

To change network connections in the System tab requires administrative rights. You can change the device name while setting network parameters. By default, the Pro Convert unit automatically detects any connected network. You can set a static IP Address if the device failed to auto-configure using DHCP. If multiple devices are connected using Ethernet over USB, change the RNDIS IP address according to your own arrangement.

#### Setting Ethernet IP Address

- Access the Web UI, and sign in as administrator. Step 1
- Click and enter the **System** tab, then select **Network**. Step 2
- Turn on Set IP Address Manually, then enter a new IP address, Step 3 Subnet mask, Gateway, and DNS server.
- Click **Apply** to save changes. Step 4
- Step 5 When the prompt appears, click **Yes**.

ETHERNET	Link status:	1.0 Gbps
Settings for device name and IP address of Ethernet.	Device name:	Pro Convert
	Set IP Address Ma	nually
	IP Address:	192.168.1.60
	Subnet mask:	255.255.255.0
	Gateway:	192.168.1.1
	DNS server:	10.0.3
	Apply	
USB RNDIS	Link status:	High Speed
Settings for IP address of USB RNDIS.	IP Address:	192.168. 66 .1
	Apply	

Type the manually assigned IP address in your web browser to Step 6 access the Web UI, verifying if the network settings work.

#### Setting Ethernet over USB IP Address

RNDIS (Microsoft's widely used Ethernet over USB protocol)/ECM (Ethernet Control Model) provides a virtual Ethernet link for the converter to connect to a computer operating system. Note:

- It is not recommended that you modify this IP address unless there is a conflict on your LAN.
- Do not connect more than one converter simultaneously to one system when using Ethernet over USB.
- Access the Web UI and sign in as administrator. Step 1
- Click and enter the **System** tab, then select **Network**. Step 2
- Step 3 Enter a new IP address for Ethernet over USB.
- Step 4 Click Apply to save changes, then click Yes when prompted.

	DING SCIVEL.	10.0.1.3
USB RNDIS	Link status:	Disconnected
Settings for ID address of LISP DNDIS		
Settings for IP address of USB RNDIS.	IP Address:	192.168. 66 .1
NTP SERVER	Set NTP Server Addr	ess Manually
	Server address:	tw.pool.ntp.org
	Apply	

Setting an NTP Server

- Access the Web UI and sign in as administrator. Step 1
- Click and enter the System tab, then select Network. Step 2
- Turn on the Set NTP Server Address Manually switch, and type Step 3 the IPv4 address or domain name of an NTP server or pool, such as pool.ntp.org.
- Click Apply to save changes. Step 4

WVGEMELT.	Dashboard	Signal	Video	NDI® PTZ	System	L.	Admin 👻
D User admin N	etwork	Firmware	e	Cloud	Report	Log	
MANUAL UPDATE Drag and drop a downloaded firmware file here to update the device to a specified version manually.			Attach the up	Current version: V date file (.mwf) by drag	1.1.729 & drop or click to upload		
ONLINE UPDATE							
Check and upgrade the	Cu	rrent Version:	V1.1.729			Update	

Figure1. Click Manual update



Figure2. Click Reboot

### Updating the Firmware

To update the firmware via the **System** tab requires administrative rights. Note: Currently online update is not supported.

- Access the Web UI, and sign in as administrator. Step 1
- Click and enter the System tab, then select Firmware. Step 2
- Click on click to update to select the .mwf firmware update file from Step 3 your local storage, or just drag and drop the file from your computer into the upload zone.

You can download the Pro Convert firmware package from the Downloads section of the Magewell website: www.magewell.com/downloads/pro-convert.

Click **Open** to upload the updates package. Step 4 The device will automatically verify the update file.

The unit will upload the file after the file verification is passed.

- Step 5 In the Manual Update window, click Update. DO NOT shut down or reboot the device when updating firmware.
- Click **Reboot** to complete the update. Step 6 The changes take effect after you reboot the device.
- Log in to your unit's Web UI and check the current Firmware Step 7 version in the Dashboard tab.

The Firmware version should have changed to show the number of the new update.



MVCEMELT.	Dashboard	Signal Vid	eo NDI® PTZ	System	👔 Admin 👻
D User admin	Network	Firmware	Cloud	Report	Log
CLOUD					Cancel
		Cloud status	Online		
		Register status	Waiting		
		Cloud address	10.0.1.32		
	1	HTTP port	80		

## **Registering for Magewell Cloud**

Pro Convert can be remotely controlled using Magewell Cloud. Detailed Cloud information refers to official site.

- Click Register... and input parameters in the prompted window.
  - Invitation code: 4-number security code obtained from Magewell Cloud. If none, leave it empty.
  - Cloud address: input IP address or domain name of Cloud.
  - HTTP port: input HTTP port number, which should be consist with that of Cloud.

## **Checking Cloud Status**

- Cloud status: Online or Offline. Online indicates that the communication between device and Cloud platform goes well. On the other hand, Offline indicates the communication is interrupted.
- Register status: shows current status of cloud-join permission, including .
  - Incorrect invitation code: you need to change your registration with correct code.
  - Waiting: registration is successfully submitted to Cloud and you can click Cancel to withdraw the registration.
  - Approved: registration is approved. This device can be remotely controlled.
  - Rejected: Registration is denied.
  - Deleted: Registration is deleted, you can re-apply for joining the Cloud.
- Cloud address: shows IP address or domain name of Cloud.

• HTTP port: shows the HTTP port of device used to communicate with Cloud.

				_
REPORT				
Take a snapshot of all current conditions of the Convert device and export to a file for support.	Pro Conver	t SDI TX		
	Generated at Fri, 22 Oc	t 2021 02:45:31 GMT		
	DEVICE			
	GENERAL			
	Board ID	0		
	Serial	A406181119001		
	Hardware revision	A		
	Firmware version	1.1.207		
	MAC address	70:B3:D5:75:D7:6A		
	Temperature	90.80 degC		
	Up-time	167644 seconds		
	Free memory	72068K bytes		
	ETHERNET			
	State	1000 Mbps		
	Address	10.10.10.143		
	Mask	255.255.240.0		
	Gateway	10.10.0.1		
			Export	

## Exporting Reports and Logs

You can export reports and logs from your converter when you want to get help from the Magewell Support team. These files will help our support engineers get a better understanding of your device status and other related equipment like the source device. These operations require administrative rights.

### Exporting Reports

Step 1	Access the Web UI and sign in as administrator
Step 2	Click and enter the <b>System</b> tab, then select <b>Re</b>
Step 3	Click Export to generate a .html file.
Step 4	When the prompt appears, click <b>Export</b> .

or.

eport.

SYSTEM LOG	Total : 539	events	All 🗌 Information 🗌 Warning 🗌 Error
Track important events	Level	Date & Time	Detail
generated by the device and export them as a file for	(i)	2021-10-19 15:51:56	User 'Admin' (10.10.11.125) logged in, session: 18905
technical support.	(i)	2021-10-19 15:51:49	User 'Admin' (10.10.11.125) logged out, session 18903
	(i)	2021-10-19 15:25:33	User 'Admin' (10.10.11.125) logged in, session: 18903
	Δ	2021-10-18 19:04:08	User '123' (10.10.3.121) session 10170 timeout
	Δ	2021-10-18 18:24:02	User 'Admin' (10.10.11.125) session 10434 timeout
	Ø	User 'Admin' (10.10.11.125) logged in, session: 10434	
	(i)	User '123' (10.10.3.121) logged in, session: 10170	
	()	2021-10-18 16:24:35	User 'Admin' (10.10.3.121) logged out, session 8797
	()	2021-10-18 15:50:45	User 'Admin' (10.10.3.121) logged in, session: 8797
		2021-10-18 13:10:15	User 'Admin' (10.10.3.121) session 392 timeout
	(i)	2021-10-18 10:43:13	User 'Admin' (10.10.3.121) logged in, session: 392
	Δ	2021-10-15 19:18:07	User 'Admin' (10.10.5.241) session 99 timeout
	Δ	2021-10-15 16:18:21	User 'Admin' (10.10.3.121) session 43 timeout
	(i)	2021-10-15 15:50:58	User 'Admin' (10.10.5.241) logged in, session: 99
	Δ	2021-10-15 15:43:02	User 'Admin' (10.10.11.125) session 32 timeout
	(i)	2021-10-15 14:54:18	User 'Admin' (10.10.3.121) logged in, session: 43

#### Clearing/Exporting All Logs

- Step 1 Access the Web UI and sign in as administrator.
- Step 2 Click and enter the System tab, then select Log.
- (Optional) Filter current logs. Step 3

By default, all logs are displayed in the table. Log entries can be categorized as "error", "warning", and "information".

- Total shows the total number of filtered events.
- All: Check to show all logs.

The device can store up to 1000 local log entries. After 1000 entries have been recorded, the oldest entry will be deleted before a new one can be added.

- Information: Check to show information logs which record user • actions or significant system events, e.g. login and signal locked.
- Warning: Check to show warning logs which mean something has not worked as it should. e.g. Ethernet is disconnected or signal is unlocked.
- Error: Check to show error logs which mean some serious error has happened.
- (Optional) Click Export... to get a .html file of all logs. Step 4 When prompted in the window, click Export.
- (Optional) Click **Clear** to delete all logs. Step 5 When prompted in the window, click Yes.

NAGEWELL <sup>®</sup>		NDI® PTZ		🙎 Admin 🔺
				Change password
Pro Convert™	Device name	1		Sign out
SDI TX	Serial number Hardware version Firmware version	A406181119001 A 1.1.207		Reboot
	© CPU 5.56% © Up Time 1 d 23 h 13 m	Memory 41.80%	U Core Temperature 89.08 deg C	<ul> <li>Board Index</li> <li>0</li> </ul>
ETHERNET	Connection 1.0 Gbps	IP Address 10.10.143	Send 77.94 Mbps	Receive 709 Kbps
USB RNDIS	Connection Disconnected	IP Address 192.168.66.1	Send O Kbps	Receive O Kbps

## Rebooting/Resetting Pro Convert

Rebooting/resetting your Pro Convert when problems are encountered.

## Rebooting Pro Convert

- $\triangle$  Rebooting your device will not lose any of your configuration settings.
- Access the Web UI and sign in as administrator. Step 1
- Click the drop-list icon 💌 behind your username at the top-right Step 2 of the Web UI and select **Reboot**.
- When prompted in the window, click **Reboot**. Step 3



Figure1. Connections



Figure2. Reset all settings

## Resetting All Settings

$\triangle$ Warning: Resetting your device will lose all your c	01
---	----

- Connect the device and your computer with the USB cable. Step 1
- Step 2 Launch your web browser and type in the Ethernet over USB address to access the Web UI SIGN IN page.

The default address is http://192.168.66.1. Please do not change it unless there is a conflict in your network.

Click **Reset all settings** at the top right corner of the **SIGN IN** page. Step 3 The reset process may take a few minutes.

onfiguration data.

# FAQ



#### How to supply power to the Pro Convert

There are 2 ways to power your converter as shown in the left figure:

- 1. Via USB: Plug in the supplied 5V power adapter via the USB cable to supply power.
- 2. Via PoE: Plug in an Ethernet cable connected to a PoE switch or a PoE adapter for power and Ethernet connection.

#### Note:

- Pro Convert devices require a 5V DC source with a current rating of no less than 2.1A.
- We recommend that you use only the included Magewell accessories.
- If any included accessory is lost or broken, please contact your Magewell authorized local resellers for help.

## Which version of NDI<sup>®</sup> SDK is compatible with Pro Convert?

NewTek NDI<sup>®</sup> SDK 4.0 and above are compatible with Pro Convert.

## How long it takes for one frame to be input until it is rendered?

After testing, if NDI Monitor, the NewTek official test software is used to preview the NDI stream, the average delay of transmitting 4K@60Hz signal is about 60ms in a Gigabit Ethernet network.

MVQEMEIT.	English +
	SIGN IN Enter your account and password
Pro Convert <sup>™</sup>	User name Password
	SIGN IN Forgot your password?

## How to configure Pro Convert via Web UI

Pro Convert allows you to set up and control via a web-based user interface as either an administrator or a general user. You can get access to the Web UI using Windows File Explorer, through your web browser over a USB connection, or with NDI Studio Monitor software. Here takes the Pro Convert HDMI 4K Plus as an example. Make sure that at least one of the following web browsers is installed in your system.

- Google Chrome version 49 and above
- Microsoft Internet Explorer 11
- Microsoft Edge
- Mozilla Firefox version 61 and above
- Apple Safari 11.1 and above
- Opera 55.0.2994.44 and above



This method is available for Windows7/8/8.1/10 users.

- Connect your converter via Ethernet and power it up as shown on Step 1 the left.
- Open a File Explorer window in one of the following ways. Step 2
  - Click on the Start I button and find File Explorer in the Start menu.
  - Press the Windows logo key # + E.
  - Select the folder icon on the taskbar.



🥑 i 📝	] 🔤 🖛   Network						-	×
File	Network Vi	ew						~ 🕐
$\leftarrow \rightarrow$	× ↑ 💣 > N	etwork >			ٽ ~	Search Netwo	rk	9
	uick access neDrive	> Computer ( > Media Devi						
<mark>∕∆</mark> W	/PS	✓ Other Devic						
	his PC etwork		Pro Convert #01 (B401180927001)	Pro Convert #02 (B401180927002)	Pro Convert # (B40118070600			
			Pro Convert #07 (B401180927007)	Pro Convert #08 (B401180927008)	Pro Convert # (B4011809270			
		> Printers (2)						
		> Scanners (1	)					

. . . http://192.168.66.1

- Select the **Network** view at the bottom of the list of items on the left Step 3 side of the File Explorer.
- Turn on the network discovery function if prompted. Step 4
- Find your Pro Convert device in the **Other Devices** section, where it Step 5 will be shown as "Pro Convert + #board index + (serial number)".
  - The serial number (marked on your device) will be in a form like "B401180706006".
  - The **board index** (the rotary switch number on your device) is shown like "04" or "#04".
- Double click the converter icon to open the Web UI of the device in Step 6 your web browser.

#### 2. Using your web browser over USB

- Connect the Pro Convert device to your computer using the USB Step 1 cable.
- Launch your web browser, and type in USB RNDIS address to access Step 2 the Web UI. The default address is http://192.168.66.1.
- Step 3 Enter your account and password in the SIGN IN page, and configure the device after you login successfully. The default admin account (case-sensitive) is Admin, Admin. It is recommended to change the admin password after log-in.

	DESKTOP-ASCNS3Q	>		
	DESKTOP-D5OSJ5L	Ś		
	DESKTOP-UOVST2V	>		
	HD Camera	>		
	MYPC	>		
$\checkmark$	PRO CONVERT	>	~	#00 (B401180706006)
	PRO CONVERT AA	>		#00 (B401180706020)
	Settings	>		#01 (B401180706008)
	Disconnect			
	NDI.NewTek.com			
	Exit			

Figure 1. Select your NDI channel in NDI Studio Monitor

NewTek NDI - PRO CONVERT (#	00(B401180706006)) (2160/30p)	-		×
3				<b>1</b>
		/		
				-
			ξ	ंद्र
				wy.
				Thr

Figure2. Click the gear icon to open the Web UI.

#### 3. Using NDI Studio Monitor

- From a computer on the same LAN, download and install Studio Step 1 Monitor from NewTek's official site www.newtek.com/ndi/tools for free.
- Run Studio Monitor on your system. Step 2
- Click the Menu icon 🔳 at the top left, and select your NDI channel: Step 3 device name > source name.
- Click the gear icon at the bottom right of the Studio Monitor. Step 4 The web UI of the selected device will open in your web browser.
- Step 5 Enter your account and password in the SIGN IN page, and configure the device after you login successfully. The default admin account (case-sensitive) is Admin, Admin. It is recommended to change the admin password after log-in.

NDI®	Source Video	
Settings for NDI which is a standard developed by NewTek to share video on	Group name:	public
a local Ethernet network.	Source name:	#%board-id% (%serial-no%) %board-id% and %serial-no% are the only variables supported by the device name.serial-on indicates the serial number of the device.board-id indicates the rotary switch number. The current device name is: #00 (A406200324012)
	Audio Reference Level	EBU
	Discovery Server	•
	Server IP:	10.10.14.147
	Transport Mode	TCP (Uni-Connection)
	Failover	

#### How to change device name and source name

Pro Convert allows you to set up and control via a web-based user interface as either an administrator or a general user. Changing the device name requires administrator rights, while changing the source name only requires general user rights.

The following describes the operational steps for changing both parameters via the administrator account. A general user account can only change the video source name, but the steps are the same as those for an administrator. Access the Web UI, and sign in as administrator. Step 1

#### 1. Changing source name

Step 2	Click and enter the $\operatorname{NDI}^{\mathbb{R}}$ tab.
Step 3	Change the <b>Source name</b> .

The default source name is **#%board-id%** (%serial-no%).

- **board-id** indicates the unit's rotary switch number. You can change the **board-id** by operating rotary switch in your unit.
- serial-no indicates the unit's serial number (as shown on the barcode label on its surface).
- %board-id% and %serial-no% are the only supported variables.
- You can change the source name to a string with maximum of 30 case-sensitive characters, which contains A to Z, a to z, 0 to 9, spaces and special characters like \_-#()%.
- The Source Name will be filled in with the default value #%board-id% (%serial-no%) automatically after clicking Apply, if you leave the parameter empty.

MVCEMELT₂				NDI® PTZ		👤 Admin 🚽
L) User admin	Network	Firmwa	re	Cloud	Report	Log
ETHERNET	Link st	atus:	1.0 Gbps			
Settings for device name and IP address of Ethernet.	Device	e name:	Pro Conve	rt Convert Convert		
	Set IP	Address Manua	illy			
	IP /	Address:	10.10.7	.22		
	Sub	onet mask:	255.25	5.240.0		
	Gat	eway:	10.10.0	.1		
	DN	S server:	10.0.1.3	3		



#### Click **Apply** to save your changes. Step 4

<u> </u>	<u>_</u>	•	• •	
- ) (	( hanc	una	dovuco	namo
v	Chanc	IIIIU	device	IIaIIIC

- Click and enter the **System > Network** tab. Step 5
- Step 6 Change the **Device name**.

The device name is a string of 1 to 30 non-case sensitive characters, containing letters a to z, A to Z, 0-9, spaces and special characters like \_-+.

Step 7 Click Apply to save your changes, and then click Yes when prompted.

It may take a few minutes for your settings to take effect.

#### 3. Verify your settings

Click and enter the **Dashboard** tab in the Web UI to check the Step 8 Device name, and Name in the NDI<sup>®</sup> > General section, or verify them by launching NewTek NDI Studio Monitor to check the device name and NDI source name shown there. The values should be the same as your settings.

> Download the Studio Monitor software from the NewTek official website www.newtek.com/ndi/tools for free.



### How to reset a Pro Convert device

 $\triangle$  Warning: Resetting your device will lose all your configuration data.

- Connect your converter to your computer. Step 1
- Step 2 Launch your web browser, and type in the USB RNDIS address to access the Web UI SIGN IN page.

The default address is http://192.168.66.1. Please do not change it unless there is a conflict on your network.

Click **Reset all settings** at the top right corner of the **SIGN IN** page. Step 3 The reset process may take a few minutes.

MVCEMETT	Reset all settings
Pro Convert™	SIGN IN Enter your account and password User name Password
	SIGN IN Forgot your password?

ſ	MV@EMELT.	Dashboard Signa	al Video	EDID NDI®	PTZ Syste	m 💽 Admi	n <del>-</del>
	D User admin	Network	F	irmware	Report	Log	
	FIRMWARE Updade device to the lates enjoy the latest features ar improvements, appreciate	nd	Current Version: New Version:	V1.0.276 Your firmware is up to d	ate. 🕑	Update Manual update	
Figure	e1. Click Manual up	odate					
	FIRMWARE Upgrade device to the I enjoy the latest feature improvements, apprecia	s and		Firmware update con for the	npleted. You need to update to take effec Reboot		
Figure	e2. Click Reboot						

### How to manually update the firmware for Pro Convert

You can update firmware via the Web UI with administrative rights.

- Step 1 Access the Web UI and sign in as administrator.
- Click and enter the System tab, then select Firmware. Step 2
- Click on Manual update. Step 3
- Select the .mwf firmware update file from your local storage. Step 4 You can download the Pro Convert firmware package from the Downloads section of the Magewell website: www.magewell.com/downloads/pro-convert.
- Click **Open** to upload the updates package. Step 5 The device will automatically verify the update file. The unit will upload the file after the file verification is passed.
- Step 6 In the Manual Update window, click Update.

 $\triangle$  DO NOT shut down or reboot the device during updating procedure.

- Step 7 After loading successfully, click **Reboot** to complete the update. The reboot process may take a few minutes.
- Login to the Web UI again and check the current Firmware version Step 8 number in the **Dashboard** tab.

The Firmware version should now show the number of the new update.





Figure1. Connections

## What to do if you forgot the password

If you are a general user, ask your administrator to set a new password for you. If you are the administrator, you need to reset all settings back to default values, then set a new admin password.

#### 1. To reset a general user's password.

- Access the Web UI, and sign in as administrator. Step 1
- Click and enter the System tab. Step 2
- Step 3 Click the Set password link which appears when your mouse hovers over the user name.
- Type in new password and confirm the new password as prompted Step 4 in the window.

The password is a string of 1 to 32 case-sensitive characters, which contains A-Z, a-z, 0-9 and special characters \_-~!@#\$%^&\*-+=.

Step 5 Click **OK**.

2. To set a new admin password.

- Connect the device to a computer with the USB cable. Step 1
- Type in the USB RNDIS address to your web browser. Step 2 The default IP address of USB RNDIS is http://192.168.66.1. Please do not modify it unless there is a conflict on your network.
- Click Reset all settings at the top-right corner of the SIGN IN page. Step 3 The reset process may take a few minutes, and all configuration data will be lost – not just the passwords.
- Sign in to the Web UI via the default admin account (case-sensitive): Step 4 Admin, Admin.

MVQEMELT.	Reset all	settings
	SIGN IN	
<b>Pro Convert</b> ™	Enter your account and password User name	
	Password	
	SIGN IN Forgot your password?	

Figure2. Reset all settings

- Click and enter the **System** tab. Step 5
- Click the Set password link which appears when your mouse hovers Step 6 over the user name.
- Type in new password, and confirm the new password as prompted Step 7 in the window.

The password is a string of 1 to 32 case-sensitive characters, which contains letters A-Z, a-z, numbers 0-9 and special characters \_-~!@#\$%^&\*-+=.

Click **OK**. Step 8



Figure1. Connections

GT Select Command Prompt	_	×
C:\Users\win1064>ipconfig		^
Windows IP Configuration		
Ethernet adapter Ethernet:		
Connection-specific DNS Suffix .: Link-local IPv6 Address : fe80::6c54:b184:f07a:eacd%9 IPv4 Address : 192.168.1.124 Subnet Mask : 255.255.255.0 Default Gateway : 192.168.1.1		
Ethernet adapter Ethernet 2:		
Connection-specific DNS Suffix .: Link-local IPv6 Address : fe80::146b:1130:8511:736f%17 IPv4 Address : 192.168.55.3 Subnet Mask : 255.255.255.0 Default Gateway :		
Ethernet adapter Ethernet 5:		
Connection-specific DNS Suffix . : Link-local IPv6 Address : fe80::d962:b7ac:a87d:82ed%21 IPv4 Address : 192.168.65.2 Subnet Mask : 255.255.255.0 Default Gateway :		J
C:\Users\win1064>		v



## How to retrieve your USB RNDIS IP Address

- Connect the device and your computer with a USB cable as shown Step 1 in the left Figure1. Connections.
- Take the following steps according to your operating system. Step 2
  - For Windows users
    - 1. Type **cmd** in the search bar to start the command interpreter.
    - 2. Type in **ipconfig**, and find an IPv4 address of the form 192.168.xxx.2, as shown in Figure 2. Windows Command Line Interpreter.
  - For Linux users
    - 1. Launch the **terminal**.
    - 2. Type in ifconfig -a, and find an IPv4 address of the form 192.168.xxx.2, as shown in Figure 3. Linux Terminal.
  - For Mac users
    - 1. Click the System Preferences icon in the Dock or choose Apple menu > System Preferences.
    - 2. Choose **Network > Pro Convert**, and check the **IP Address**, as shown in Figure 4. Mac Network.
    - $\triangle$  If 192.168.xxx.2 is taken, the IP address would automatically change to another value within the ranges of 192.168.xxx.2 to 192.168.xxx.254.

Type in 192.168.xxx.1 in your web browser to access the Web UI. Step 3

😣 🗐 🗊 🛛 m	@m-System-Product-Name: ~
	<pre>m-Product-Name:~\$ ifconfig -a Link encap:Ethernet HWaddr 52:a0:c8:a7:36:da inet addr:192.168.66.2 Bcast:192.168.66.255 Mask:255.255.255.0 inet6 addr: fe80::dd8b:5309:1f66:4a2c/64 Scope:Link UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1 RX packets:32 errors:0 dropped:0 overruns:0 frame:0 TX packets:33 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000 RX bytes:4312 (4.3 KB) TX bytes:6811 (6.8 KB)</pre>
enp2s0	Link encap:Ethernet HWaddr 74:d4:35:3d:fd:8c inet addr:192.168.1.193 Bcast:192.168.1.255 Mask:255.255.255.0 inet6 addr: fe80::f27a:b042:8980:a949/64 Scope:Link UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1 RX packets:63136 errors:0 dropped:0 overruns:0 frame:0 TX packets:28725 errors:0 dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000 RX bytes:76043093 (76.0 MB) TX bytes:2715888 (2.7 MB)
ιο	Link encap:Local Loopback inet addr:127.0.0.1 Mask:255.0.0.0 inet6 addr: ::1/128 Scope:Host UP LOOPBACK RUNNING MTU:65536 Metric:1 RX packets:560 errors:0 dropped:0 overruns:0 frame:0

Figure3. Linux Terminal



Figure4. Mac Network



Figure1 vMix PTZ parameters

The encoder and receiver has configured Discovery server, and the Discovery Service deployed in a standalone server, but the receiver cannot get the video stream.

If you are using a standalone Discovery Service server, ensure that the NDI Discovery Service.exe application must have been installed to your standalone server, before the encoder and receiver enabling the Discovery Server.

## How to control the PTZ camera via the Visca UDP2rs232 using vMix

Encoders may use the Visca UDP2rs232 protocol for PTZ control protocol since vMix supports PTZ but not NDI PTZ. Set the PTZ parameters of the encoder, PTZ camera and capture software as follows.

- Connect the encoder to the RS232 IN port of the PTZ camera. 1.
- Set PTZ control protocol of your encoder to Visca UDP2rs232. The port 2. number of the encoder should be the same as that of the vMix protocol port number.

For vMix, the port number of PTZ Optics VISCA UDP is 1259; the port number of Sony Visca UDP is 52381.

- Set PTZ camera protocol to Visca. 3.
- 4. In the vMix, use Visca UDP to control PTZ and fill in with the IP address of the encoder. The vMix configuration is shown as the left figure.

Advanced Visca Parameters ≥					
Focus near limit	61440				
Focus far Limit	4096				
Pan left limit	-8704				
Pan center	0				
Pan right limit	8704				
Tilt top limit	4608				
Tilt center	0				
Tilt bottom limit	-4608				
Zoom out limit	32512				

Advanced settings of PTZ camera

### How to change the advanced settings of PTZ camera

Pro Convert device supports advanced control of the PTZ camera. Steps are as follows:

- 1. Log in to the Pro Convert Web UI.
- 2. In the **PTZ** tab page, set **Protocol** to **Visca** or **Visca UDP**.
- Expand Advanced Visca Parameters at the bottom of the page. 3.
- Check the user manual of the camera or contact the manufacturer for 4. detailed control parameters of the camera.
- 5. Convert the values of camera parameters to decimal numbers and fill them in the corresponding parameter options.
- 6. Click **Apply** to make the above configurations take effect.

Protocol	Visca UDP	-
IP Address	192.168.1.244	
Port	1259	
Device ID	- 1	+
Visca UDP message	header	
Invert pan direction		
Invert tilt direction		
Advanced Visca Par	ameters »	
Arrange cameras		Apply

Set VIsca UDP Protocol

### How to set the Visca UDP protocol of PTZ camera

Pro Convert device supports control of the network camera via the Visca UDP protocol, without the need to use a PTZ control line to connect the Pro Convert device to the PTZ camera. Steps are as follows:

- 1. Log in to the Pro Convert Web UI. For details, refer to How to configure Pro Convert via Web UI.
- 2. In the **PTZ** tab page, set the following parameters:
  - Protocol: Visca UDP
  - IP Address: The IP address of your camera
  - Port: Your camera's Visca protocol network port. Check the user manual of the camera or contact the manufacturer to get it.
  - Visca UDP message header: Turn this option on if the communication protocol your camera (e.g. SONY camera) uses the Visca UDP header.
- 3. Click **Apply** to make the above configurations take effect.

# Support

## Get the Latest Information

If you have any problems using Magewell products or need more technical information, please visit the following channels.

- Tutorial video: www.magewell.com/tv
- YouTube: Magewell
- Knowledge base: www.magewell.com/kb/pro-convert
- Official website: www.magewell.com/pro-convert

## **Technical Support**

- Submit your questions in the online Ticket System: tickets.magewell.com
- Contact the Magewell Technical Support Team at support@magewell.net

# Warranty

## **Limited Warranty**

Except otherwise set between you and Magewell in advance in a written form, the free limited warranty service starts from the date on your proof of purchase. The proof can be: sales contract, formal sales receipt, invoice or delivery note. The earliest date of these proofs is the starting date of the free limited warranty. The period of free limited warranty goes as below:

- Pro Convert Family: two (2) years;
- The USB cable and power adapter provided as accessories: one (1) year.

## How to get the limited warranty

- Please contact the Magewell support team by email (support@magewell.net) first, to determine whether your problem can only be solved by returning it to 1. Magewell for repair. Magewell might ask you to take photos of the front and back of the defective products.
- Magewell will issue an RMA letter to you if it is confirmed that you need to return the faulty product for further examination or repair. Please fill in the RMA with 2. necessary information as required.

If it is regular repair, you will be responsible for the shipping cost, duties and insurance cost (if applicable); if the product is DOA, Magewell will be responsible for the shipping cost.

- 3. If some components need to be replaced, Magewell will decide to repair, renovate or replace the components by itself. Magewell may use new or repaired component to repair the product. The repaired product can be expected to work normally and the performance to remain the same. Repaired products can work in a good working condition and at least function the same as the original unit. The original replaced component will become the property of Magewell and components which are replaced for the client will become his/her property.
- If the product is within warranty, Magewell will repair or replace the faulty units at its own discretion. In circumstances where the faulty unit is replaced by another 4. one, Magewell may use new, repaired or renovated units. The faulty unit will then become the property of Magewell while the replacement unit will become the property of the purchaser.
- If the warranty expires, Magewell will inform the purchaser whether the products can be repaired and the maintenance costs they need to pay. If purchasers 5.

decide to repair, Magewell will repair, renovate, or replace the components after receiving the maintenance costs. If purchasers give up repairing, Magewell will dispose of the faulty unit if the purchaser chooses that option.

- 6. The repaired or replaced product assumes 1) the remaining term of the Warranty of the replaced unit or faulty unit; 2) ninety (90) days from the date of replacement or repair, whichever provides longer coverage for you. The extended warranty is only valid for repaired/replaced components.
- 7. The period of service depends on the client's location (country and area) and the product.

To view the complete warranty policy, please visit www.magewell.com/quality-assurance.

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# **Glossary and Abbreviations**

## **Board Index**

Board Index indicates the rotary switch number located in the Pro Convert. It helps users to mark and identify multiple devices

## ECM

Ethernet Control Model (ECM) provides a virtual Ethernet link for mac users used on top of USB.

## EDID

Extended Display Identification Data (EDID) is a metadata format for display devices to describe their capabilities to a video source.

## Failover

Failover is used to provide a high degree of reliability. It switches to a standby NDI source channel upon the failure of the previously active source.

## NDI®

NDI (Network Device Interface) is a standard developed by NewTek to transport video, audio & metadata over a local Ethernet network. Visit www.newtek.com/ndi/ for more information.

## PoE

Power over Ethernet (PoE) is a networking feature defined by the IEEE 802.3af and 802.3at standards. PoE allows a single cable to provide both data connection and electric power to attached devices.

## PTZ Camera

Pan-tilt-zoom (PTZ) cameras are those that are capable of remote control of direction (pan & tilt) and lens zoom.

## QoS

Quality of service (QoS) is the description or measurement of the overall performance of a service. To quantitatively measure quality of service, several related aspects of the network service are often considered, such as packet loss, etc.

## RNDIS

Remote Network Driver Interface Specification (RNDIS) is a Microsoft proprietary protocol used on top of USB. It provides a virtual Ethernet link to operating systems.

## Tally

Tally lights comprise one or more signal-lamps on a professional video camera or monitor, to show when the device is on-air. A preview tally signal is typically green, while a program one is usually shown using the colour red.