

Viz Connect Solo HDMI, 3G & 12G SDI User Guide _{Version 1.0.0}







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There are general best-practice solutions, these include setting the antivirus software to not scan the systems during operating hours and that the Vizrt components, as well as drives on which clips and data are stored, are excluded from their scans (as previously stated, these measures cannot be guaranteed).

Technical Support

For technical support and the latest news of upgrades, documentation, and related products, visit the Vizrt web site at <u>www.vizrt.com</u>.

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Chapter 1 INTRODUCTION AND SETUP

This guide explains how to connect power, sources, and audio-visual sources to your Viz Connect Solo. It also explains how to update, and where you can find additional NDI[®] software to extend your workflow. After completing this section, you will be ready to begin using your device.

SECTION 1.1 OVERVIEW

vizrt¹ Viz Connect Solo 3G NDI

The Viz Connect Solo is a versatile, user-friendly media converter that streamlines IP-based video production for professionals in live events, streaming, sports, gaming, corporate communications, and education. It seamlessly converts video inputs from 3G-SDI, 12G-SDI, or HDMI sources to NDI® High Bandwidth for network integration, or decodes NDI signals for display on monitors, projectors, or video walls, eliminating cable length limitations. Designed for ease of use and compatibility with NDI-supported systems, it simplifies high-quality video transmission over IP, making it an essential tool for diverse production environments without requiring complex setups or technical expertise.

This user guide is for all three Viz Connect Solo models, and a technical specification table is provided on the following page.

Specifications	Viz Connect Solo HDMI	Viz Connect Solo 3G-SDI	Viz Connect Solo 12G-SDI		
Video Input	1 x HDMI	1 x HDMI 1 x 3G/HD/SD-SDI			
Video Output	1 x HDMI	1 x 3G/HD/SD-SDI	1 x 12G-SDI		
Embedded Audio Input	3.5mm Mono Mic Level	.5mm Mono 3.5mm Line Level lic Level			
Embedded Audio Output	3.5mm Line Level	3.5mm Line Level	3.5mm Analog Stereo Line Level		
Audio Channels	4 Encode/ 2 Decode	16 Encode/ 8 Decode	16 Encode/ 8 Decode		
Encoding/Decoding	NDI®				
Network	X RJ-45 port Gigabit Ethernet				
Interface	Web-based user interface for configuration and monitoring				
Tally		Tally support via NDI®			
Format	2160p: 60, 59.94, 30, 29.97, 25 1080p: 60, 59.94, 50, 30, 29.97, 25 720p: 60, 59.94, 50, 29.97 576p: 50 480p: 60, 59.94	1080p: 60, 59.94, 50, 29.97, 25 1080i: 59.94, 50 720p: 60, 59.94, 50, 29.97, 25	2160p: 59.94, 50, 29.97, 25 1080p: 59.94, 50, 29.97, 25 1080i: 59.94, 50 720p: 59.94, 50, 25		
SDI	N/A	75 Ohm impedance SMP	TE ST-424M, ST-292M		
Power	Power over Ethernet or External Power Adaptor DC 5V~18V Power Supply				
Physical	Portable enclosure wit camera mount 3.94 x (100 x 80 x 24 mm) .5	nclosure with threaded screw ount 3.94 x 3.15 x .94 in x 24 mm) .53 lbs (.24 kg) Portable enclosure with threaded screw camera mount 4.33 x 3.7 x 1.1 in (110 x 9! x 28 mm) .66 lbs (.30 kg)			

1.1.1 TECH SPECS

NDľ

SECTION 1.2 GETTING READY

Your viz Connect Solo uses the NDI protocol for audio/video transmission, and more. Your first step will be to install a few NDI utilities appropriate for your computer platform or device:

1. Navigate to <u>ndi.video</u> in your web browser and follow directions to download and install the NDI Tools pack, available at no cost.

NDI Tools provides a valuable array of practical NDI learning tools and utilities, including NDI Studio Monitor, which will not only locate and display the network video output from your Viz Connect Solo unit, but also makes it easy access to its settings.

SECTION 1.3 INPUT CONNECTIONS

Front Panel of all Viz Connect Solo models:



Viz Connect Solo 3G-SDI & 12G-SDI Back Panel:



- 1. GbE port with PoE Support
- 2. SDI Input
- 3. SDI Output
- 4. 3.5mm Audio
- 5. USB-C
- 6. Tally

Viz Connect Solo HDMI Back Panel:



- GBE port with PoE Support
- 2. HDMI Output
- 3. HMDI Input
 - . 3.5mm Audio
- 5. USB-C
- . Tally
- 1. Supply *power* to the unit, by connecting the supplied power adapter to Viz Connect Solo's USB-C port, located beside the audio input connector. The unit boots as soon as power is supplied. At this point, the three small LED Status Indicator lights will illuminate. (If this does not happen, check your connections, and retry.)
- 2. Continue to connect one end of a network cable to Viz Connect Solo's RJ-45 Ethernet port.
- 3. Connect the other end of the cable to your network switch or router.
- 4. Optional steps:
 - a. Connect an HDMI video cable from a suitable video source to Viz Connect Solo's HDMI input connector.
 - b. If you wish, connect an analog audio source to the 6.35mm audio input. (Stereo audio available in SDI model).

If you connected a video source in step 4 above, your Viz Connect Solo is already sending NDI audio and video to your local network. We will talk about how to access and use it soon, but first let us discuss how to access Viz Connect Solo settings and features.

Hint: In 'mission' critical installations, it is wise to use an uninterruptable power supply (UPS). Likewise, consider A/C "power conditioning", especially in situations where local power is unreliable or 'noisy'. Surge protection is especially important in some locales. Power conditioners can reduce wear on power supplies and other electronics, and provide a further measure of protection from surges, spikes, lightning, and high voltage.

Viz Connect Solo is quite easy to use. In many installations, all you need to do is supply power, connect a video source and your network, and you're ready to go.

Sometimes, though, you will want to access your input module's local settings, perhaps to configure login credentials, update firmware, etc.

Settings are made available by means of Viz Connect Solo's configuration webpage, which you can access from any suitable device (i.e., one with a web browser) on the same network.

Note: You may occasionally find it necessary to delete cached files (sometimes referred to as the browser's "history") before the display refreshes to properly show some recent change. This can happen, for example, after a firmware update.

Some devices provide direct, easy access to Viz Connect Solo's configuration webpage.

For example, when you select output from a Viz Connect Solo as the source for a TriCaster switcher input, a convenient "Device Webpage" button is shown in TriCaster's Input Configuration panel. Simply click this to open the corresponding web control page.

Note: When connecting a camera to your Viz Connect Solo be sure the setting is set to 8-bit.

1.3.2 STUDIO MONITOR



For other platforms, you can use the Studio Monitor application you installed back in Section 1.2 in a similar manner.

Windows platform users can launch Studio Monitor from the system's Start menu, where it will appear in the NDI Tools folder. Among its capabilities, Studio Monitor can detect and display NDI sources available on your network.

OS X users will also find a similar NDI Video Monitor application available to them after installing the NDI Tools pack for their preferred platform.

LOCATING VIZ CONNECT SOLO ON THE NETWORK - WINDOWS

1. Launch Studio Monitor and click the small menu ('hamburger') gadget at upper left to open the application menu.

Among other things, this menu displays all NDI sources detected on your network.

2. Shortly, you should see a new main entry named NDI_SPARKIO added to the menu. Roll the mouse pointer over this label to show the channel names for NDI output streams from any Viz Connect Solo units detected.



Hint: Detection of newly connected NDI sources can take a few moments; in network settings with a great number of NDI sources available, a complete refresh of the source list can take a minute or even more.

When the sub-menu lists multiple NDI channels with the same name, the device IP addresses are shown to further identify them. (NDI users seldom need to bother with mundane matters such as IP addresses.)

Select the newly listed channel for your Viz Connect Solo unit you wish to configure. In a few moments, its video output will appear in the Studio Monitor window.



1. For NDI sources that, like Viz Connect Solo, host a configuration web page, a small configuration (gear) icon appears at lower right when you the mouse pointer is over the Studio Monitor window.

2. Click the gear to open the corresponding web page, popping up a request for you to enter login credentials.

Note: The Microsoft Edge web browser is not fully supported at this time. On Windows platforms, please use another modern web browser or Internet Explorer.

LOCATING VIZ CONNECT SOLO ON THE NETWORK - OS X

The process is similar for OS X users.

- 1. Having launched the Video Monitor application, use the File menu at the top of the Desktop to locate a new main entry named SPARKIO_3G_SDI (unit serial number) or SPARKIO_12G_SDI (unit serial number) or SPARKIO_4K_HDMI (unit serial number).
- 2. Rolling the mouse pointer over this label shows the individual names for the NDI output channels of any Viz Connect Solor units detected on the network.

Hint: Detection of newly connected NDI sources can take a few moments; in network settings with a great number of NDI sources available, a complete refresh of the source list can take a minute or even more.

When the sub-menu lists two or more NDI channels with the same name, the source device IP address is shown to further identify them. (Otherwise, NDI users seldom need to bother with matters such as IP addresses)

Select the newly listed channel for the Viz Connect Solo unit you wish to configure. In a few moments, its video output will appear in the Video Monitor window.

3. The Video Monitor Settings menu shows an option near the bottom that lets you open the Device Webpage in your system web browser. Select this item and continue as follows.



1.3.4 AUDIO/VIDEO SETTINGS

At this point, the Viz Connect Solo encoder configuration webpage will be displayed.

Viz Connect Solo I/O (HDMI)	Encoder Dec	coder Network	System Setup	옷 Admin -	i NDI*
No signal Resolution	0 Fps Frame Rate			48000Hz/Stere Audio Format	90
	@≃ Basic	: Settings			
Group	Device Name	N	OI Channel Name		100
Blank for default group	QA_Spark_HDMI-IO		Channel-1		
Audio Source	Volume				
HDMI ~					
			_		
	🐲 Advanc	ed Settings			
NDI Connection					~
Connection	Multicast IP	Net	Mask		
MULTICAST	239.255.0.0	2	55.255.0.0		
Generate			Apply		

Update Your Firmware

We encourage you to keep the firmware on your Vizrt device up to date. Firmware updates may contain bug-fixes, provide improved performance, or even enable new features.

The update process is not complicated – simply follow the steps listed below:

1. Download and unzip the most recent firmware update archive to extract the '.bin' file.



- 2. Click the *System Setup* tab at the top of Viz Connect Solo's webpage and compare the *Firmware Update* shown to the number in the filename of the firmware version you downloaded. If the download has a higher revision number, continue below to perform the update.
- 3. Click the Update Firmware button and click Choose File to show a file explorer.
- 4. Use the file explorer to locate the firmware .bin file and follow the prompts to perform the update.



Viz Connect Solo will reboot during this process, which can take up a few moments. *Please be careful not to interrupt power to the device during the update process.*

5. Following a firmware update, we recommend performing a *Restore* operation. A *Reset buttonhole* is located on the underside of the device, or you can use the *Restore* function from the web page.

<u>Hint:</u> On some web browsers, you may occasionally need to clear the browser's cache (history) to see the result of a firmware update or Factory Reset. Also, please note that it can take a minute or two before the NDI channel name shown in Studio Monitor refreshes.

The IP address of the device can change as a result of a Restore operation. You may need to use Studio Monitor to locate the device on the network and log in again afterward. Also, if you have previously set a manually configured IP address for the unit, you will need to reconfigure the IP settings again following a Restore operation.

Hint: Should you set a custom password and then forget it; you can reset the device to factory defaults using the Factory Reset process.

1.3.5 UTILITIES

Reset, Reboot and Restore buttons are in the pull-down menu under System Setup tab at top of webpage.

- Reconnect breaks and re-establishes the connection between the source and NDIenabled devises and systems.
- **Reboot** restarts the device (a 'warm' reboot).
- Reset Factory Settings has the same effect as pressing the recessed *Reset* pin near the RJ-45 NDI connector on the back of the device for 10 seconds. This resets all settings to their asshipped default states. (On selection, the tally LEDs on the front of the unit progressively cycle to off, then on again a short while later



after defaults have been restored and the unit has rebooted.)

• Firmware Update - may contain bug-fixes, provide improved performance, or even enable new features.



The uppermost section of the web page (under device name) shows Audio/Video format details, the current bitrate and the unit's serial number. These values are automatically detected and are not editable.

1.3.7 DEVICE AND CHANNEL NAME

Image: Basic Settings					
Group	NDI Channel Name				
Blank for default group	QA_Spark_HDMI-IO	Channel-1			

Just beneath, under the heading *Basic Settings*, you will find *Device Name* and *NDI Channel Name* boxes. The entries here determine how your Viz Connect Solo device is identified on your NDI network. These names are editable, allowing you a convenient way to identify the output of specific Viz Connect Solo units to downstream NDI-enabled devices and systems.

Hint: The default name includes the unit serial number, which is also provided on a sticker on the chassis to help you identify a specific device.



Just below, you will see the *Audio Source* menu which offers two options, labeled *Mic In* and *HDMI*. These determine whether Viz Connect Solo uses the embedded audio source (digital audio included with an HDMI video source), or analog audio supplied to its 1/8" line level input connector. The nearby volume control governs the audio output level. The device's nominal audio level is +4dBu.

Chapter 2 NETWORK SETTINGS

^ر vızıt ^۱	Viz Conne	ect Solo I/O (HDMI)	Encoder	Decoder	Network	System Setup	옷 Adm	nin 🔻	Ø	NDI [®]	?
				👗 Network							
		Ethernet					>				
		Local-link (Failsafe)									
		and the second	the second	1	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -						

On the top panel of the webpage, you will find the *Network* heading, which is host to *NDI Connection*, *Ethernet*, and *Local -Link* settings NDI Connection.

2.1.1 NDI CONNECTION

If choosing multicast mode, NDI transmission will be executed in multicast mode. Click *Generate*, a multicast IP will be generated randomly, or you can configure it manually and click *Apply* to take effect.

and the second settings are set of the second settings and the second settings are set of the second s					
NDI Connection					~
Connection		Multicast IP		Net Mask	
Please Select	~				
G	enerate			Apply	

CONNECTION: DEFAULT OR MULTICAST

Although it serves no useful purpose when connecting directly to dedicated NDI inputs, this option may be helpful in some more sophisticated environments. Select *Multicast* to transmit video using multicast, rather than the default unicast method. A suitable multicast address is generated, but you can edit the result manually if you need to. To update the address to another random value, click *Generate. Please take time to consider the following information before enabling this feature.*

MULTICAST OR UNICAST?

Multicast can seem like a bandwidth-saving miracle. Unlike NDI's default mode (unicast), multicast does not require a unique stream from the source to each receiver. When using unicast, each connection to the sender reduces the bandwidth available by a similar amount.

Managed vs. Unmanaged

An un-managed (a.k.a., 'dumb') network switch will broadcast a multicast stream to all devices on the network, with potentially very serious ramifications.

For example, even though a device broadcasts a multicast stream, the un-managed switch will pass *unicast* packets to downstream switches and clients. This can flood the network with unnecessary traffic and slow it down as upstream devices are forced to wait for responses from the oversaturated devices.

By contrast, multicast connections do *not* add significantly to the bandwidth required as connections multiply. You could be forgiven for wondering why anyone would ever turn this option off - yet it is off by default. Why?

This is because multicast requires more careful network configuration. While you might not notice any issues in a simple network setting; a poorly configured environment can have serious impact on more complex networks.

- Specifically, it is essential that IGMP snooping be enabled for each switch on the network. This lets the device listen to traffic between other hosts, switches, and routers, and identify receiving ports using various IP multicast streams.
- In addition, we <u>strongly</u> recommend that all network switches be of the 'managed' type (see the sidebar "Managed vs. Un-managed").

2.1.2 ETHERNET				
	📥 Network			
Ethernet		~		
MAC 🖉	Dynamic			
12:C5:E1:E9:AD:08	DHCP Dynamic	~		
IP	Gateway			
10.28.1.146	10.28.1.1			
Net mask	DNS			
255.255.255.0	10.28.13.5; 10.28.13.7			
	Арріу			
Local-link (Failsafe)		>		

Controls in this section will be quite familiar to anyone who has connected a computer or mobile device to a network and require little explanation.

Typically, networks are configured to automatically supply IP addresses to devices you connect to it by means of a DHCP server. Your device's IP Address resolution method is set to *Dynamic* by default, to take advantage of this scheme. To assign a static IP address to your unit, change the IP Address setting to *Manual*.

2.1.3 LOCAL-LINK (FAILSAFE)

If Viz Connect Solo's default IP Address setting (Dynamic) should ever fail to provide a usable IP address within a minute or two – as when an active DHCP server is not found on the network – you can locate your Viz Connect Solo on the network using its failsafe Local-Link feature.

🖧 Network				
Ethernet	>			
Local-link (Failsafe)	~			
IP	Net mask			
192.168.100.168	255.255.255.0			
Gateway				
	Арріу			

In this scenario, temporarily set the network adapter of your computer to a static IP address such as 192.168.100.1, with a netmask of 255.255.0.0 and connect your Viz Connect Solo.

Then run Studio Monitor on the computer, as described earlier to locate the unit. This will allow you to use Viz Connect Solor's web page to set a suitable static IP of your choosing, following which you can restore the computer's normal network configuration settings.

Chapter 3 NDI DECODING CONFIGURATION

Before using decoding function, please check the Ethernet IP address and log into the webpage for management with this address, and then switch to decoding function.

Note: Encoding and decoding functions of the device cannot be carried out simultaneously. If the devise is switched to decoding function, encoding function will be stopped. You will receive a pop-up reminder before moving forward.

	Ŷ	Current Decoding Ou	ıtput	ر چ ×
TC1 (Mulitiviewer 1)	48.0KHz / 2 Audio	асн (р)	10.28.1.162 IP Address	OKbps / Ofps Bitrate / Frame Rate
		Decoding Preset	1	⊜ ~
VMC1 (OUT 1) 3 10.28.1.54	VMC1 (MIX 1) 3 10.28.1.54	NC1IO (IN 2) 3 10.28.1.54	NDIHX-PTZUHD (prototype_1, 10.24) 4 10.28.1.149 9	NO_CONNECT_2 (PTZUHD-1, 10.28.1 5 10.28.1.132
		B Source List		Q 🕑 🖸 >
Device Name 🗢	Channel Name		Address	Operation
> VMC1	1		10.28.1.29	\$ ⊙
NC1IO	IN 2		10.28.1.165	# ⊙
PTZUHD	Chan1, 10.281.49	1 400	10.28.1.49	# ⊕
PTZUHD_2	NewCam-2, 10.25	.1.123	10.25.1.123	

DISCOVER NDI SOURCE

In the same subnet, NDI sources can be displayed in the source list through automatic discovery. (See icon descriptions below)

	Q ⊕ ⊖ >		
Device Name 🗢	Channel Name	Address	Operation
> VMC1	I	10.28.1.29	ቆ ⊙
NC1IO	IN 2	10.28.1.165	# ⊙
PTZUHD	Chan1, 10.281.49	10.28.1.49	\$\$ ④
PTZUHD_2	NewCam-2, 10.25.1.123	10.25.1.123	# ⊙

Q	Enter the group name of the NDI source you want to discover.
€	Configure an IP address to manually add a source. For example, you can add a cross network NDI source in this way.
0	Refreshes the NDI sources.
€	For discovered video sources, click to add the source to decoding preset.
邰	Decode and output immediately

3.1.1 OUTPUT OF NDI DECODING

Under *Source List*, you can add up to nine preset decoding sources. By clicking on the NDI source, the device will start to decode the corresponding NDI source, and can be switched and decoded by clicking other NDI sources.

	e			
VMC1 (OUT 1) 3 10.28.1.54	VMC1 (MIX 1) 3 10.28.1.54	NC1IO (IN 2) 3 10.28.1.54	NDIHX-PTZUHD (prototype_1, 10.24) 10.28.1.149	NO_CONNECT_2 (PTZUHD-1, 10.28.1 9 10.28.1.132
6	7	8	9	0 Blank 💌

In the *Decoding Preset* section, there is a blank output box, if switching without video output, the device will output the set color. It can also be used for testing the output to the mointor by choosing a different color.





To the right of the *Decoding Preset* header, you will find a button for setting parameters for a smooth switch. For example, a video or slow transmission can be set to have a longer smooth time.

Smooth Switch Settings		
Smooth Switch		
Select		~
	OK Cancel	

3.1.2 DECODING PARAMETER SETTINGS

Current Decoding Output will display the information of the current decoding NDI source name, channel name, resolution/refresh rate, audio parameters, source IP address, real time bit rate and frame rate.



	Discoverable Information	×
Group	Blank for default group	
Device Name		
NDI Channel Name		
I	OK Cancel	

By clicking the pencil button, (located at the top right of the output pane) you will be able to find *Discoverable Information* by group, device name and NDI channel name.

The gear button allows output parameters to be configured. The resolution of the decoding output will be the same as that of the source. Frame rate and audio sample rate can be set accordingly.

	Output	×
Video Output Format	Frame Rate	
auto	~ _ 0	\sim
Audio Sample Rate		
Please Select		~
•	OK Cancel	

3.1.3 TALLY



Your Vizrt Connect Solo unit provides 'tally' notification from NDI devices supporting it. Specifically, a row of LEDs will light up in red or green to tell you when video output from the device is visible on the Program output or Preview row of a video switcher respectively, as illustrated above.

Note: Viz Connect Solo provides an additional tally light on the back panel.

APPENDIX A: CREDITS

Special thanks to each member of the hard-working R&D team who made this product possible.

Third Party Licenses:

This product uses a number of third-party software libraries under license. Related license requirements are defined in documentation installed on the product. To view these licenses, please click the Additional Licenses link provided in the Help menu on the Startup>Home page shown upon launching the product.