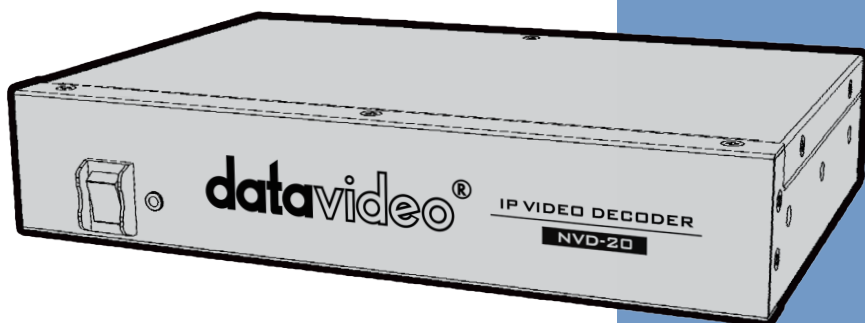


datavideo



**IP VIDEO DECODER
NVD-20**

Instruction Manual

www.datavideo.com

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Warnings and Precautions

1. Read all of these warnings and save them for later reference.
2. Follow all warnings and instructions marked on this unit.
3. Unplug this unit from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this unit in or near water.
5. Do not place this unit on an unstable cart, stand, or table. The unit may fall, causing serious damage.
6. Slots and openings on the cabinet top, back, and bottom are provided for ventilation. To ensure safe and reliable operation of this unit, and to protect it from overheating, do not block or cover these openings. Do not place this unit on a bed, sofa, rug, or similar surface, as the ventilation openings on the bottom of the cabinet will be blocked. This unit should never be placed near or over a heat register or radiator. This unit should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should only be operated from the type of power source indicated on the marking label of the AC adapter. If you are not sure of the type of power available, consult your Datavideo dealer or your local power company.
8. Do not allow anything to rest on the power cord. Do not locate this unit where the power cord will be walked on, rolled over, or otherwise stressed.
9. If an extension cord must be used with this unit, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord's rating.
10. Make sure that the total amperes of all the units that are plugged into a single wall outlet do not exceed 15 amperes.
11. Never push objects of any kind into this unit through the cabinet ventilation slots, as they may touch dangerous voltage points or short out parts that could result in risk of fire or electric shock. Never spill liquid of any kind onto or into this unit.
12. Except as specifically explained elsewhere in this manual, do not attempt to service this product yourself. Opening or removing covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks, and will void your warranty. Refer all service issues to qualified service personnel.
13. Unplug this product from the wall outlet and refer to qualified service personnel under the following conditions:
 - a. When the power cord is damaged or frayed;
 - b. When liquid has spilled into the unit;
 - c. When the product has been exposed to rain or water;
 - d. When the product does not operate normally under normal operating conditions. Adjust only those controls that are covered by the operating instructions in this manual; improper adjustment of other controls may result in damage to the unit and may often require extensive work by a qualified technician to restore the unit to normal operation;
 - e. When the product has been dropped or the cabinet has been damaged;
 - f. When the product exhibits a distinct change in performance, indicating a need for service.

Warranty

Standard Warranty

- Datavideo equipment are guaranteed against any manufacturing defects for one year from the date of purchase.
- The original purchase invoice or other documentary evidence should be supplied at the time of any request for repair under warranty.
- The product warranty period begins on the purchase date. If the purchase date is unknown, the product warranty period begins on the thirtieth day after shipment from a Datavideo office.
- All non-Datavideo manufactured products (product without Datavideo logo) have only one year warranty from the date of purchase.
- Damage caused by accident, misuse, unauthorized repairs, sand, grit or water is not covered under warranty.
- Viruses and malware infections on the computer systems are not covered under warranty.
- Any errors that are caused by unauthorized third-party software installations, which are not required by our computer systems, are not covered under warranty.
- All mail or transportation costs including insurance are at the expense of the owner.
- All other claims of any nature are not covered.
- All accessories including headphones, cables, and batteries are not covered under warranty.
- Warranty only valid in the country or region of purchase.
- Your statutory rights are not affected.

Three Year Warranty

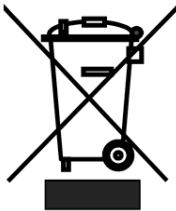
- All Datavideo products purchased after July 1st, 2017 are qualified for a free two years extension to the standard warranty, providing the product is registered with Datavideo within 30 days of purchase.
- Certain parts with limited lifetime expectancy such as LCD panels, DVD drives, Hard Drive, Solid State Drive, SD Card, USB Thumb Drive, Lighting, Camera module, PCIe Card are covered for 1 year.
- The three-year warranty must be registered on Datavideo's official website or with your local Datavideo office or one of its authorized distributors within 30 days of purchase.



Disclaimer of Product & Services

The information offered in this instruction manual is intended as a guide only. At all times, Datavideo Technologies will try to give correct, complete and suitable information. However, Datavideo Technologies cannot exclude that some information in this manual, from time to time, may not be correct or may be incomplete. This manual may contain typing errors, omissions or incorrect information. Datavideo Technologies always recommend that you double check the information in this document for accuracy before making any purchase decision or using the product. Datavideo Technologies is not responsible for any omissions or errors, or for any subsequent loss or damage caused by using the information contained within this manual. Further advice on the content of this manual or on the product can be obtained by contacting your local Datavideo Office or dealer.

Disposal



For EU Customers only - WEEE Marking

This symbol on the product indicates that it will not be treated as household waste. It must be handed over to the applicable take back scheme for the recycling of Waste Electrical and Electronic Equipment. For more detailed information about the recycling of this product, please contact your local Datavideo office.

Product Overview

The Datavideo NVD-20 is a wired IP video decoder with HDMI, Composite and analogue audio outputs.

The NVD-20 decodes all common protocols including RTP/RTSP, RTMP, UDP, TCP, HTTP, HLS and MPEG-TS and can output SD/HD video at resolutions up to 1080p60.

The NVD-20 is the perfect partner to the Datavideo NVS-20 IP encoder allowing full HD point to point video links over Ethernet, WiFi or the Internet.

That's Datavideo, sharing the value!

Features

- Operates on standard 10/100Mb Ethernet networks
- Excellent image quality with very low delay
- Unicast and multicast support
- Supports RTP/RTSP (Unicast/Multicast), RTMP, UDP (Unicast/Multicast), TCP, HTTP, HLS and MPEG-TS
- Feature-rich WebUI for configuration and control
- Built in video scaler
- Supports Full HD video and audio
- Supports simultaneous digital embedded and analogue audio output
- Small form factor, rack mountable using RMK-1
- 12V DC input

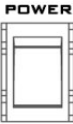
Video Outputs – Choose from:

- HDMI
- Composite [CVBS via BNC socket]

Audio Outputs:

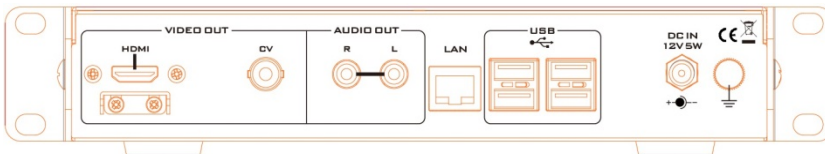
- Unbalanced RCA Phono sockets
- Embedded HDMI audio

Front Panel



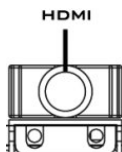
Power On/Off Switch
Switches the power On / Off

Rear Panel



AUDIO OUT (RCA)

RCA stereo for a line level analogue audio.



HDMI OUT

HDMI digital signal output connector.



CVBS OUT (BNC)

Composite video output



Ethernet Port (RJ-45)

10/100M base Ethernet Network interface



DC In Socket

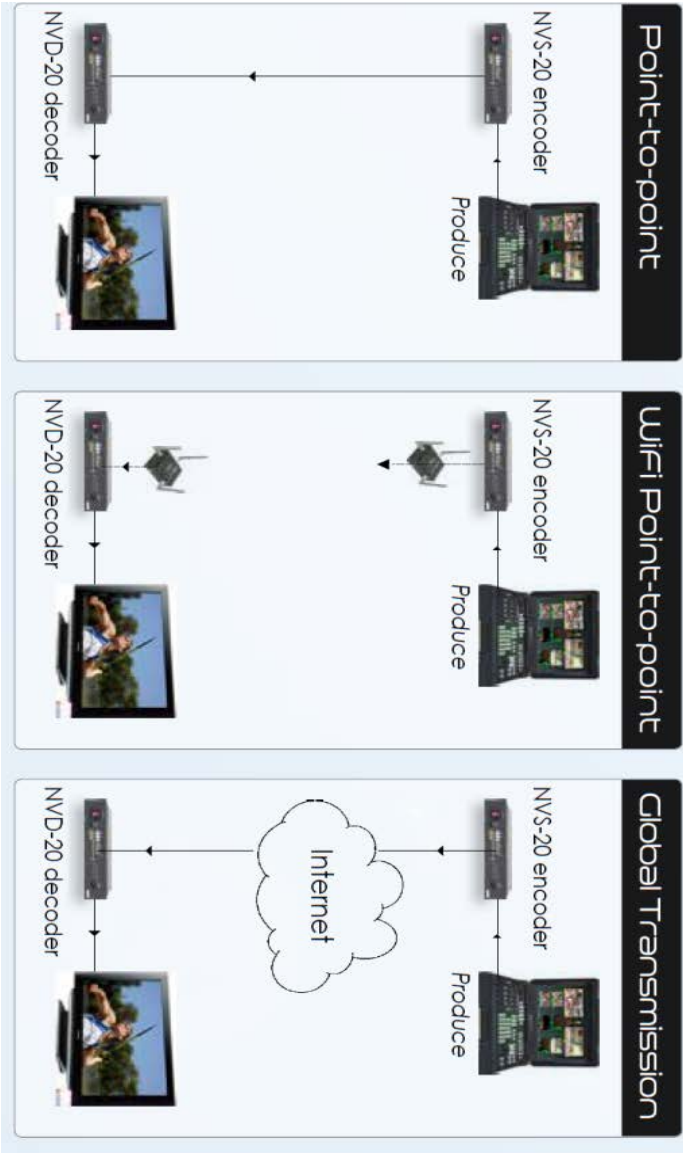
Connect the supplied 12V PSU to this socket. The connection can be secured by screwing the outer fastening ring of the DC In plug to the socket.



USB

Used for connecting a USB mouse, required to install the automatic updates.

Workflow options



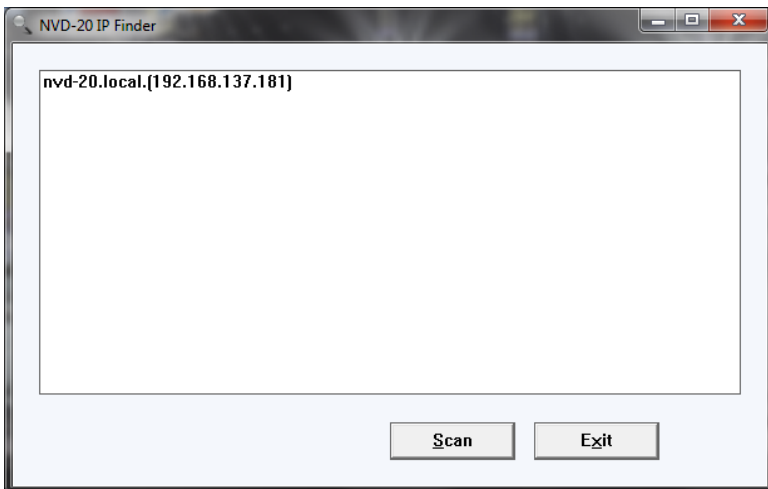
How to find the NVD-20 on an IP network

By default, once the physical connections have been made, the **NVD-20** will try to obtain an IP Address from a DHCP network server. As we will see this can be changed later to a Static IP address if required.

How to use the NVD-20 IP Finder utility software

Datavideo supply a free, *Windows based* utility, called **NVD-20 IP Finder**.

The first time this software is used on the computer you may need to allow it permission through your computers firewall / anti-virus software in order for it to be able to scan or search the local network.



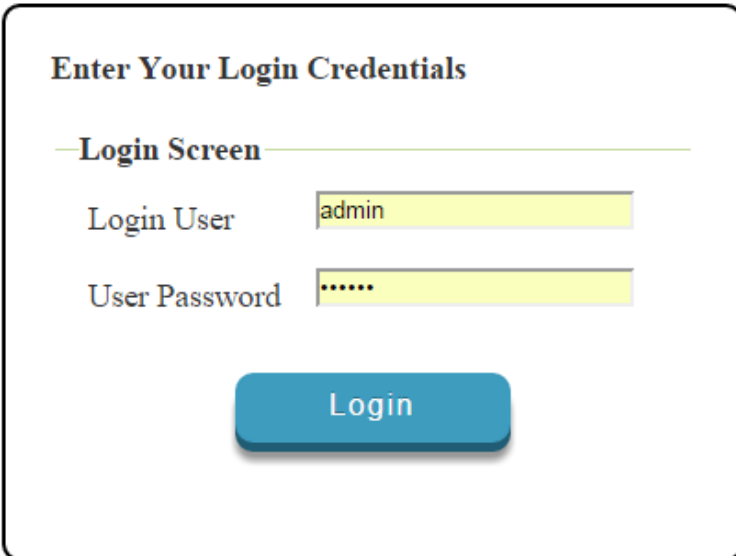
When the utility scans the LAN that the computer is connected to, it displays the current IP address for any NVD-20 units found on this local IP network. Double clicking on the device listed will automatically open your computers default web browser and navigate to the login page of the NVD-20.

If you are using an Apple computer then you can use an alternative utility app such as Fing or Network Analyzer Lite.

NVD-20 Login using a web browser

Type the numbers of the IP address for the NVD-20 into the search bar of the browser. Remember to include the dots in between the numbers. When entered you will then be asked to login to the NVD-20.

Alternatively you can simply double click the IP address listed in the NVD-20 IP finder.

A screenshot of the NVD-20 login interface. It features a title "Enter Your Login Credentials" in a stylized font. Below the title is a horizontal line with the text "Login Screen" in the center. There are two input fields: "Login User" with the text "admin" and "User Password" with six dots. Below these fields is a blue "Login" button with a shadow effect.

Enter Your Login Credentials

— Login Screen —

Login User

User Password

Login

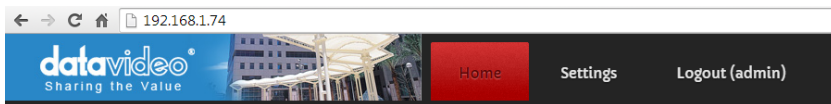
Default Login details

All NVD-20 units are delivered from the factory with the same default user name and password. This can be changed at a later stage to suit your needs.

User = admin **Password** = 000000 [Zero six times]

Please Note: We recommend the Mozilla Firefox web browser

NVD-20 web browser Home page



Welcome to NVD-20 Web Server!

Please click on the Settings menu to configure the decoder for the first time.

By default this device will output via the HDMI interface with embedded audio, for optimal performance please set the output resolution and frame rate to match the source video.

Once we have logged into the NVD-20 we are presented with the **Home** page.

Settings option

When clicked, the Settings option tab will open a new page. There are five sections of settings which can be looked at. These are: **Audio Setup**, **Display Setup**, **Network Setup**, **Live Stream Set Up** and **Account Setup**.

Settings > Audio Setup

By default the NVD-20 will output audio over the digital HDMI connection and the analogue stereo connections. Alternatively you can choose to output digital or analogue audio only.



Settings > Display Setup

By default the NVD-20 will output video over the digital HDMI port at a resolution of 720P 50 fps and YUV colourspace.

Please note: The set resolution is only applied when the stream is decoding, the device will output your monitor's preferred resolution as it boots.

The screenshot shows a web browser window with the address bar displaying '192.168.1.74/#display'. The page header includes the 'datavideo' logo with the tagline 'Sharing the Value' and navigation links for 'Home', 'Settings' (highlighted in red), and 'Logout (admin)'. On the left sidebar, there are five menu items: 'AUD Audio Setup', 'VID Display Setup' (highlighted in blue), 'NET Network Setup', 'LIVE Live Stream Setup', and 'A/C Account Setup'. The main content area is titled 'Display Configuration' and contains a warning: 'Warning, not all resolutions will work on your display'. Below this is a section 'Choose Output' with a dropdown menu 'Output To' set to 'HDMI (Digital)'. Another section 'HDMI' contains three dropdown menus: 'Screen' set to '720p 50', 'Resolution', and 'HDMI' set to 'YUV'. Below these is a 'Misc. Options' section with two checkboxes: 'Deinterlace Source' (unchecked) and 'Disable automatic HDMI clock adjustment' (checked). At the bottom right, there is a blue 'Save Changes' button.

Output To

Here you can select to output video digitally over HDMI or over the SD analogue composite connection.

HDMI (Digital)

When digital is selected you can select a screen resolution from SD PAL/NTSC right up to HD 1080P60. The NVD-20 will scale your source video to match the output resolution however the aspect ratio (4:3 or 16:9) should be matched to avoid black space on the output, for optimal performance match the output resolution to the source video. The colour space can be switched between YUV (YCbCr) and RGB, most video equipment will use the YUV colour space however if the colours appear wrong on your display please try RGB.

Composite (Analogue)

When analogue is selected the UI will change and you can only select between PAL and NTSC resolution with a 4:3 or 16:9 aspect ratio.

Display Configuration

Warning , not all resolutions will work on your display

Choose Output

Output To Composite (Analog) ▾

Composite

Composite PAL ▾

Mode



Aspect Ratio 4:3 ▾

Settings > Network Setup

By default the NVD-20 will obtain its IP address automatically from a DHCP server.

If you intend to use the NVD-20 directly connected to a PC or network without a DHCP server then you should assign a manually set IP address by selecting 'Static Configuration'.

We recommend that only advanced users who are aware of IP addressing set the manual 'Static Configuration' IP address. Your local network administrator or I.T. support may be able to help you with this.

HomeSettingsLogout (admin)

AUDAudio Setup

VIDDisplay Setup

NETNetwork Setup

LIVELive Stream Setup

A/CAccount Setup

Network Configuration. Mandatory Fields marked *

IPv4 Configuration

Network Type ☐ Automatic Configuration(DHCP)
☒ Static Configuration

Static IPv4

IP Address

Subnet Mask

Gateway IP

DNS1

DNS2

Save Changes

Settings > Live Stream Setup

From this page you can configure the source stream for the decoder.
The NVD-20 supports the following stream types:

- RTSP over UDP (Unicast / Multicast)
- RTSP over TCP
- RTSP over HTTP
- MPEG-TS over UDP
- RTMP over TCP
- UDP raw (Unicast/Multicast)
- HLS over HTTP
- MPEG-TS over TCP Pull

Stream Configuration.

— Choose Input Stream —

Input Stream

Buffer Size seconds

RTSP Protocol

Save Changes

Input Stream

Enter the URL for the source stream here

Buffer Size

This determines how much video is buffered before playback starts, the default 0.5 seconds is fine for streaming over Ethernet or but a larger buffer may be required to achieve smooth video when streaming over the internet or WiFi. If you notice the video stuttering or the audio breaking up you should increase the buffer size.

RTSP protocol

Only displayed if a RTSP stream is being used, the transport protocol can be manually specified.

MISC. Options

Enable Safe Buffering (TCP Only) can only be used with TCP based stream types, recommended for use with HTTP:// type streams or progressive download HLS streams.

Settings > Account Setup

The NVD-20 has one admin user account and password. This account is used to keep the NVD-20 secure and gives access to the streaming settings.

Default user name = **admin** Default password = **000000** [Zero six times]

This section describes how to change the default username and

password shown above to something new which is more secure.

—User Credentials Management—

[admin](#)

—Manage User - admin—

User	admin
Password	<input type="password"/>
Confirm Pass.	<input type="password"/>

1. Log in with the NVD-20 server as normal using the computer web browser.
2. Click **Setting**
3. Click **Account Setup**
4. Click admin and then enter the new **user name and password**.
5. Click 'Save Changes'

Please Note: Please be careful and memorize the new login details as the old or default login is deleted during this process.

Decoding video from the NVS-20/25 encoder

The decode video from the NVS the NVD-20 must be on the same local network (Ethernet/WiFi) or be able to access the NVS stream over the internet.

When the NVS is in RTSP TCP/UDP mode (Recommended for LAN)

Simply copy the RTSP URL from the 'Live' tab of the NVS and enter it into the 'Input Stream' field on the NVD-20. When streaming over LAN it is recommended to set the NVS in RTSP (TCP/UDP) mode.

When the NVS is in RTMP mode Local server mode

Simply copy the RTSP URL from the 'Live' tab of the NVS and enter it into the 'Input Stream' field on the NVD-20

When the NVS-20 is in HLS mode

Simply copy the HLS URL from the 'Live' tab of the NVS and enter it into the 'Input Stream' field on the NVD-25

Please Note: When in HLS mode the buffer size should be set to 1.0 seconds or higher, if you notice audio artifacts you must increase the buffer size or enable the 'Safe Buffering' option.

Decoding other stream types

To decode other stream types such as UDP multicast or TCP simply enter the stream URL into the 'Input Stream' field of the NVD-20.

Listening for a Pushed UDP Stream

To listen for a pushed UDP stream enter the following URL into the 'Input Stream' field of the NVD-20.

UDP://@:9710

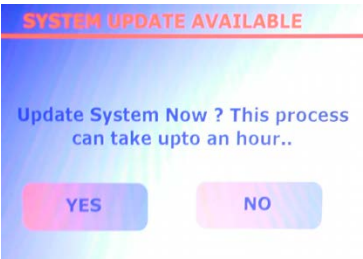
Replacing 9710 with the port number of the pushed stream.

Automatic Firmware Updates

The NVD-20 features an automatic update system to avoid the need for the user to have to manually install firmware upgrades.

The NVD-20 will automatically check for updates whenever it is connected to the internet.

You will be notified if an update is available when the unit is next started. A firmware update question will appear for 10 seconds on the selected video output (HDMI or Composite), to update simply click on the Yes button and then follow the prompts.



Please note: A USB mouse must be connected to install updates.

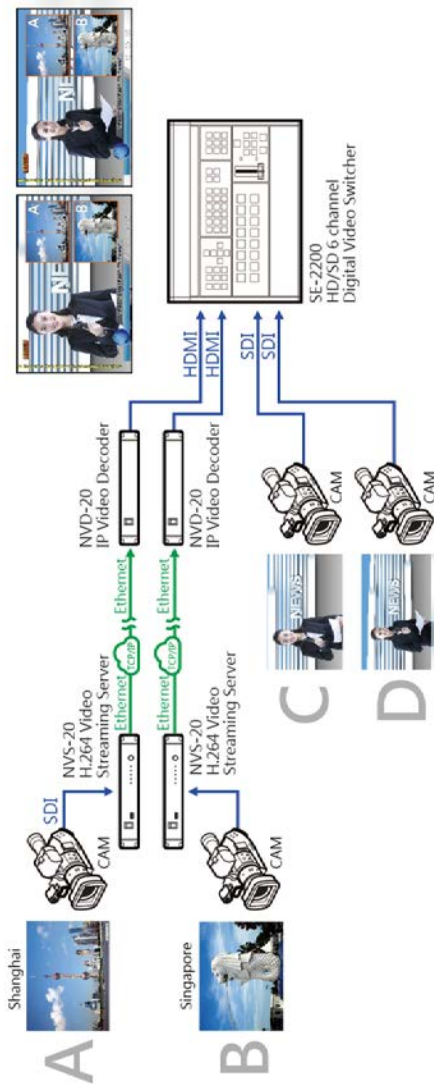
Port Forwarding on your firewall / router

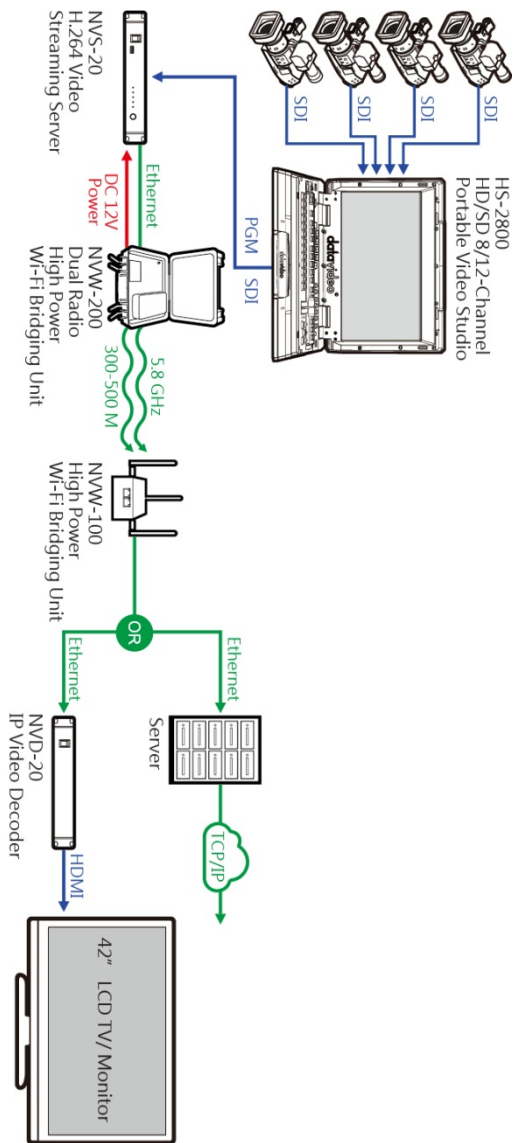
So that an NVS-20 video stream can be seen on the internet (beyond the default gateway) certain network related ‘ports’ should be opened on your router or firewall. Your local network administrator or I.T. support should be able to help you with this.

Enable the “port forwarding” function or open below ports within the router settings.

Web Server/HLS	RTSP	RTMP
80	8554 (over TCP)	1935 (RTMP)
	8000 (over HTTP)	8080 (RTMPT)
	8080 (over HTTP)	8081 (RTMPS)

Setup Diagrams





Datavideo NVD-20 Socket Commands

Using third party applications, users can easily connect to the NVD-20 using Telnet. To establish a connection with the NVD-20 simply open a Telnet connection to the NVD units IP address on port 23.

Please Note: Socket commands are disabled by default, to enable socket commands please check the appropriate option in the 'Network Tab'.

The NVD unit has three responses to commands:

FAILED: shows that the command could not be executed successfully.

OK: shows that the command is executed without any problem.

Invalid Command: shows that the command was not recognized.

The control commands are as follows:

Load [URL] An example of this command would be

Load "rtsp://192.168.1.1/stream1"
OK

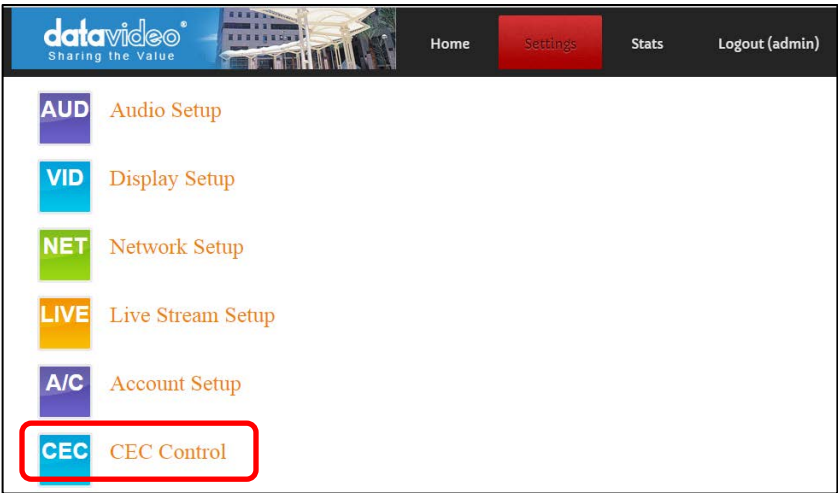
On Sends CEC on command (NVD-20 Only)
Off Sends CEC off command (NVD-20 Only)

Reboot Restarts the unit

Status Prints the current status
(Stream URL & Display information)

CEC Control

This menu option allows remote users to turn the attached HDMI display on or off where the attached monitor supports this feature.



CEC 'on' command was sent to display



CEC 'standby' command was sent to display

Note: The CEC feature needs to be enabled in the attached monitor settings as well as on the NVD-20.

Specifications

Audio/Video Input	Stream Input <ul style="list-style-type: none"> • RTSP over UDP (Unicast / Multicast) • RTSP over TCP • RTSP over HTTP • MPEG-TS over UDP • RTMP over TCP • UDP raw (Unicast/Multicast) • HLS over HTTP • MPEG-TS over TCP Pull
Audio Output	2 x Phono Connectors
	HDMI embedded audio
Video Output	Composite (analogue)
	HDMI (digital)
Network Feature	1x RJ-45 Female (10/100M Ethernet) DHCP/Static IP
Supported Video Resolution	480i 60 (NTSC) 576i 50 (PAL) 720 @ 50p / 60p 1080 @ 50i / 60i 1080 @ 24p / 25p / 30p / 60p
Control	Web browser UI for configuration and control
Update	Automatic firmware upgrade
Power	Input AC 100 ~ 240V Switching Adaptor Output DC 12V / 0.5 A
Environmental Conditions	Operating temperature. : 0~50°C Storage temperature : -10~60°C

NOTE

NOTE

Service & Support

It is our goal to make owning and using Datavideo products a satisfying experience. Our support staff is available to assist you to set up and operate your system. Contact your local office for specific support requests. Plus, please visit www.datavideo.com to access our FAQ section.

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Please visit our website for latest manual update.
www.datavideo.com/product/NVD-20

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Jan-31.2018

Version : E3