



VS-2000-DEC

H.264 Decoder

User Manual



Contact Information

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1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.

5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
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11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.

NOM Statement

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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1. Specifications

Approvals	CE, FCC, RoHS compliant
Connectors	Video: Input: (1) LAN, Output: (1) HDMI Audio: Input: (1) LAN, Output: (1) Phoenix connector; Audio Format: Input: Audio embedded in streaming media: Output: Unbalanced stereo audio
Video Type	Input: H.264/MPEG-4 AVC Output: HDMI 1.4
Video Impedence	100 ohms
Resolutions (Input)	Input Video: 480p @ 60Hz – 1920 x 1200 @ 60 Hz
Resolutions (Output)	Output Video: HDMI Input: 640 x 480 ⁸ , 800 x 600 ⁸ , 1024 x 768 ⁸ , 1280 x 768 ⁸ , 1280 x 800 ⁸ , 1280 x 1024 ⁸ , 1360 x 768 ⁸ , 1366 x 768 ⁸ , 1440 x 900 ⁸ , 1400 x 1050 ⁸ , 1600 x 1200 ⁸ , 1680 x 1050 ⁸ , 1920 x 1200 ⁸ , 720 x 480 ⁸ (480P), 720 x 576 ⁶ (576P), 1280 x 720 ⁵ (720P@30Hz), 1280 x 720 ⁶ (720P@50Hz), 1280 x 720 ⁸ (720P@60Hz), 1920 x 1080 ² (1080P@24Hz), 1920 x 1080 ³ (1080P@25Hz), 1920 x 1080 ⁵ (1080P@30Hz), 1920 x 1080 ⁶ (1080P@50Hz), 1920 x 1080 ⁸ (1080P@60Hz)
Control:	
Control Method	LAN (Web GUI and Telnet)
Web Browser Supported	Internet Explorer, Microsoft Edge, Firefox, Chrome (Recommended)

Chapter 1: Specifications

1. Specifications (continued)

General	
Operating Temperature/ Humidity	32 to 113° F (0 to 45° C), 10 to 90%, non-condensing
Storage Temperature/ Humidity	-4 to 140° F (-20 to 70° C), 10 to 90%, non-condensing
Power	12 VDC, 1 A
Device Power Consumption	DC Adapter: 6 W (Max.) PoE: 10 W (Min.) for safe operation
ESD Protection	Human body model: ±8kV (air-gap discharge) ±4kV (contact discharge)
Surge Protection	Voltage: ±1 kV
Dimensions	Product: 3.0"H x 12.2"W x 7.1"D (7.6 x 31 x 18 cm)
Weight	3.86 lb. (1.75 kg)

2. Overview

2.1 Introduction

The VS-2000-DEC Decoder works with a VS-2000-ENC Encoder to deliver an A/V signal over a LAN or WAN.

The VS-2000-DEC employs standards-based H.264 video compression technology that decodes video content with visual lossless quality at a link using limited bandwidth. The Decoder supports AAC audio encoding technology so the audio signal can be delivered with low bandwidth but high quality.

Compatible with diversified network: The decoder can receive media data by multiple approaches so to work in many different network environments. Multicast mode saves bandwidth and unicast mode works with unmanaged switches. Even in a network protected by a firewall, the decoder can activate RTP over RTSP mode to receive media data without requiring a new UDP port.

Optimized controlling methods: To achieve pairing, the user just needs to configure the IP address of the encoder. The decoder will negotiate with the encoder and try to obtain the media stream by the most suitable approach. Manage the decoder via web UI or Telnet API. Use the web UI to control it through a common web browser. Use Telnet API control the decoder via a 3rd-party system.

2.2 Features

- Uses with H.264 and AAC codec technology, providing high video/audio quality while using low bandwidth.
- Supports HDMI input signals up to 1920 x 1200@60Hz, including Full HD1080P@60Hz — VS-2000-ENC supports a wide range of input resolutions, from standard definition up to the high resolutions.
- Receive TS data with unicast or multicast method, UDP and RTP payload are both supported, and RTP over RTSP is supported.
- Uses RTSP protocol to negotiate with the encoder to get the address of the media data;
- Supports resolutions up to 1920 x 1080 @ 60Hz and 1920 x 1200 @ 60 Hz.
- Uses static IP and DHCP.
- Works with Bonjour protocol; can be discovered by a Bonjour browser.
- Control the display through RS-232 or CEC.
- “Where am I” feature supported: once the decoder receives a “locate device” command, the status indicator will blink with a special mode to indicate its physical position.

Chapter 2: Overview

- Has one Ethernet input, one HDMI output, one analog audio output, one RS-232 input, and 12-VDC power.
- Control via Telnet API and web UI.
- Supports two power modes: 12 VDC and PoE.

2.3 What's Included

- (1) VS-2000-DEC
- (2) Phoenix connectors
- (1) 12-VDC, 1-A power adapter
- (2) mounting ears

2.4 Hardware Description

Figures 2-1 and 2-2 show the front and back panels of the decoder. Table 2-1 describes its components.



Figure 2-1. VS-2000-DEC front panel.



Figure 2-2. VS-2000-DEC back panel.

Table 2-1. VS-2000-DEC components.

Number	Component	Status	Description
1	Power Indicator (red)	ON	VS-2000-DEC is powered on.
		OFF	VS-2000-DEC is powered off.
2	Status Indicator (blue)	ON	VS-2000-DEC works properly
		OFF	VS-2000-DEC is idle
		Blinks every two seconds.	VS-2000-DEC can't connect to the corresponding decoder.
		Blinks for ten seconds	VS-2000-DEC is executing a "locate device" command
3	Grounding screw	Connected to ground	Prevents electric shock and device damage
4	Power input connector	Connected	Connects to the supplied 12-VDC, 1-A power adapter.
		Not connected	Unit powered via PoE.
<p><i>NOTE: We recommend powering the VS-2000-DEC using either a power adapter or a PoE switch instead of using both at the same time. For example, if you use a power adapter, make sure that the PoE function of the connected switch's LAN port is disabled or use a non-PoE switch.</i></p>			

Chapter 2: Overview

Table 2-1. VS-2000-DEC components.

Number	Component	Status	Description
5	(1) LAN (PoE) connector	Video Input	Links to an Ethernet switch for streaming media input. <i>NOTE: If you use a PoE Ethernet switch, decoder can be powered by this switch, eliminating the need for a nearby power outlet.</i>
6	(1) HDMI OUT connector	Video Output	Attaches to an A/V device such as an HDMI display device.
7	(1) 3.5-mm 3-pin Phoenix connector	Audio Output	Connects to an audio output device such as an amplifier and a speaker.
8	(1) RS-232-1	Debug Port	Connects to an RS-232 device such as a computer for debugging VS-2000-DEC.
9	(1) RS-232-2, 3.5-mm 3-pin Phoenix connector	Not used	This port is reserved for future use..

NOTE: If you use a PoE Ethernet switch, the VS-2000-DEC can be powered by this switch, eliminating the need for a nearby power outlet.

If the PoE switch is unable to provide enough power, connect the VS-2000-DEC to the supplied power adapter and disable the PoE function of the connected LAN port in the switch.

3. Hardware Installation

WARNING:

Before the installation, disconnect the power supplies from all the devices.

During the installation, do not connect the VS-2000-DEC via PoE to a power source equipment and its power adapter at the same time.

The following illustration describes a common application. Your application may vary. After connection is complete, use a third-party encoder to view the intended application.

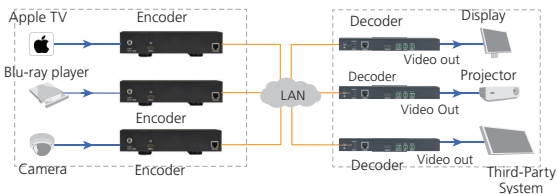


Figure 3-1. Typical installation.

Chapter 4: Operation

4. Operation

4.1 Logging In to the Web-based Configuration Page

1. Make sure that your encoder, computer, and VS-2000-DEC are on the same subnet.
2. Start a browser.
3. In the address bar, enter the default IP address 192.168.10.254.
4. In the displayed login dialog box, enter the default password "admin".
5. Click Login.

NOTE: If you want your browser to remember your login password, select the check box next to "Remember Password" before login.

If you forgot the login IP address and password, restore the VS-2000-DEC to its factory defaults, and then use the default settings. For more information, see Section 4.3.2, Network Page, and Section 4.3.3, Password Page.

4.2 Introduction to Functions Page

4.2.1 Stream Page

The screenshot shows the 'Stream' configuration page. At the top left is the 'BLACK BOX NETWORK SERVICES' logo. To the right are 'Features' and 'General' tabs. The main area is titled 'Stream' and contains two sections:

- Source:** A text input field labeled 'Encoder IP or Media URL' containing the IP address '192.168.10.254'. Below the field is an 'Apply' button.
- Settings:** A dropdown menu labeled 'Preferred Transport Mode' with 'udp' selected. Below the dropdown is an 'Apply' button.

Figure 4-1. Stream page.

Table 4-1. Stream page elements.

GUI Element	Description
Encoder IP	Indicates the encoder IP address
Apply	Saves the current settings and applies them to the VS-2000-DEC.

4.3 Introduction to System Page

4.3.1 Device Name Page

The screenshot shows the 'Device Name' configuration page. At the top left is the 'BLACK BOX NETWORK SERVICES' logo. To the right are 'Features' and 'General' tabs. The main content area is titled 'Device Name' and contains a text input field with the value 'IPSD2000-341B2280118A'. Below the input field is a red note: 'Note: The device name must be 1-20 characters in length (letters, numbers, '-' or '_')." An 'Apply' button is located at the bottom right of the form.

Figure 4-2. Device Name page.

Table 4-2. Device Name page elements.

GUI Element	Description
Device Name	Indicates the Device Name page, where you can change the device name.
Device Name	Inputs a new device name. This name can be: Displayed on the browser tab. Displayed and used after Bonjour automatic discovery of the VS-2000-DEC. <i>NOTE: The name must contain 1–20 letters, numbers, hyphen (-) or underscore (_), or their combinations.</i>
Apply	Saves the current settings and applies them to the VS-2000-DEC.

4.3.2 Network Page

Network

IP Mode	Static
IP Address	192.168.10.253
Netmask	255.255.0.0
Gateway	0.0.0.0

Note: After pressing Apply, please reboot the device for settings to take effect.

Apply

Figure 4-3. Network page.

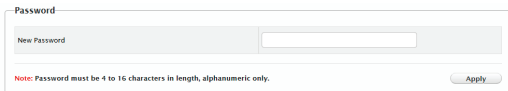
Table 4-3. Network page elements.

GUI Element	Description
Network	<p>Indicates the Network page where you can set the network parameters IP mode (Static or DHCP), IP address, subnet mask and gateway. The default protocol is shown below.</p> <ul style="list-style-type: none"> • IP mode: Static • IP address: 192.168.10.253 • Subnet mask: 255.255.0.0 • Gateway: 0.0.0.0
Apply	Saves the current settings and applies them to the VS-2000-DEC.

NOTE: If the network parameters are changed, reboot the VS-2000-DEC for the changes to take effect.

Chapter 4: Operation

4.3.3 Password Page



The screenshot shows a web form titled "Password". It contains a "New Password" label followed by a text input field. Below the input field, there is a red note: "Note: Password must be 4 to 16 characters in length, alphanumeric only." To the right of the note is an "Apply" button.

Figure 4-4. Password page.

Table 4-4. Password page elements.

GUI Element	Description
Password	Indicates the Password page where you can set a new password.
New Password	Inputs a new password. The default is admin. <i>NOTE: The password must contain 4–16 letters, numbers, or their combinations.</i>
Apply	Saves the current settings and applies them to the VS-2000-DEC.

4.3.4 Idle Pattern Picture Page



Figure 4-5. Idle Pattern Picture page.

Table 4-5. Idle Pattern Picture page elements.e

GUI Element	Description
Idle pattern picture	Indicates the Idle Pattern Picture page where you can set the VS-2000-DEC and output to the display when no active source is available.
File	Shows the uploaded image location on your local computer.
Browse	Browses for an image on your local computer. <i>NOTE: You must upload an image in bmp format that has 1920 x 1080 pixels.</i>
Upload	Uploads the local image to the VS-2000-DEC.

Chapter 4: Operation

4.3.5 Upgrade Page

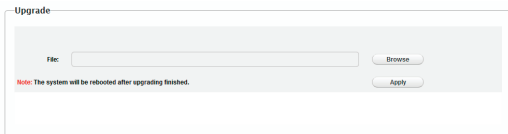



Figure 4-6. Upgrade page.

Table 4-6. Upgrade page elements.

GUI Element	Description
Upgrade	Indicates the Upgrade page where you can upgrade VS-2000-DEC to another version.
File	Shows the upgrade file location on your local computer.
Browse	Browses for an upgrade file on your local computer.
Apply	Saves the current settings and applies them to the VS-2000-DEC. <i>NOTE: VS-2000-ENC reboots automatically to make the settings take effect after upgrade process has completed.</i>

4.3.6 Version Info Page



The screenshot shows a 'Version Info' section with a table containing three rows of data:

Version Info	
Model	IPSD3000
Version	v1.2.2.C50
Build Time	Wed, 04 Jan 2017 08:52:49 +0000

Figure 4-7. Version Info page.

Table 4-7. Version Info page elements.

GUI Element	Description
Version info	Indicates the Version Info page where you can view the device information
Model	Indicates the device model.
Version	Indicates the device version.
Build Time	Indicates the time and date when the device software was built.

Chapter 4: Operation

4.3.7 Commands Page



Figure 4-8. Commands page.

Table 4-8. Commands page elements.

GUI Element	Description
Commands	Indicates the Commands page where you can reboot and restore VS-2000-DEC to its factory defaults.
Locate Device	Locates the device.
Reboot	Reboots VS-2000-DEC.
Reset to Factory Default.	Restores VS-2000-DEC to its factory defaults.

A.1 Introduction

The decoder offers one Ethernet port LAN, which allows you to control and manage this device via API commands.

A.2 Preparation

A third-party device is required to be connected to the VS-2000-DEC network and to log in to the decoder before implementing API commands to control and manage it. In this section, a command line interface (CLI) on Windows 7 is used as an example. You may also use other third-party devices. For more information, see below.

A.2.1 Setting the IP Address on Your Computer

First ensure that your computer with CLI and VS-2000-DEC are on the same subnet. By default, network settings in VS-2000-DEC's LAN (PoE) port are 192.168.10.253/255.255.0.0. You can set your computer's IP address in the 192.168.10.x range with a subnet mask of 255.255.0.0.

A.2.2 Enabling Telnet Client

After setting your computer with CLI and VS-2000-DEC to be on the same subnet, make sure that Telnet Client is enabled on your computer. By default, a Telnet Client is disabled on Windows 7. To turn on a Telnet Client, do as follows:

1. Choose Start > Control Panel > Programs.
2. In Programs and Features area box, click Turn Windows features on or off.
3. In Windows Features dialog box, select Telnet Client check box.

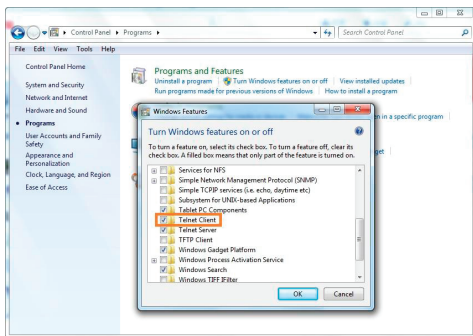


Figure A-1. Windows features dialog box

Appendix: API Commands

A.2.3 Logging In to the Decoder via a Command-Line Interface

Now you can log in to the CLI by performing the procedures in the order presented.

1. Choose Start > Run.
2. In the Run dialog box, enter cmd then click OK.

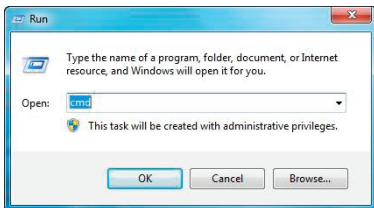


Figure A-2. Run dialog box

3. Enter telnet 192.168.10.253 24, and then press Enter.

NOTE: 192.168.10.253 is the VS-2000-DEC's default IP address and may vary depending on the actual settings. 24 is the default port number.

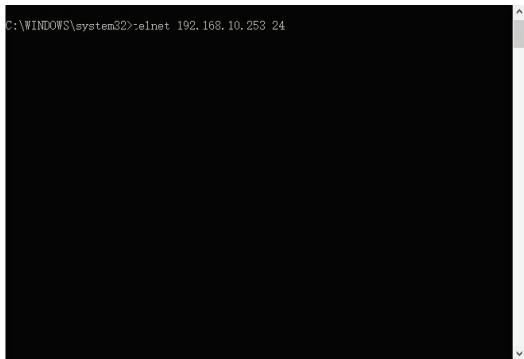


Figure A-3. Telnet screen

4. Enter root, and then press Enter.

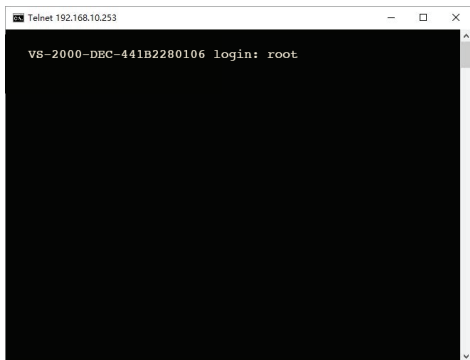


Figure A-4. login screen

5. Use the command line interface below to perform API commands.

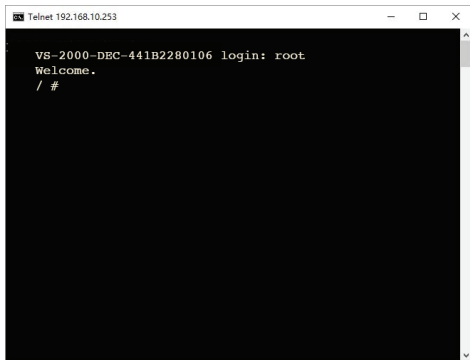


Figure A-5. Command-Line Interface screen

Appendix: API Commands

A.3 Commands Overview

A.3.1 gbconfig command

A script file named "gbconfig" is responsible for most of the API commands and is invoked as a console command. By assigning different arguments to this script file via API commands, a third party device can query and alter the decoder's configurations.

The following table lists all the gbconfig commands in this guide.

Table A-1. gbconfig commands summary

Command	Description
gbconfig --name	Configures the decoder name.
gbconfig --ip-mode	Configures the IP mode by which the decoder acquires an IP address
gbconfig --ip4-addr	Configures an IP address with static IP mode
gbconfig --net-mask	Configures the subnet mask with static IP mode
gbconfig --gateway-ip	Configures the gateway with static IP mode
gbconfig --network-url	Configures the URL the decoder plays, or the IP address of the encoder from which the decoder receives a media stream
gbconfig -s, --show	Queries the response of a implemented API command or the current state of configuration
gbconfig -h, --help	Shows a brief introduction to the gbconfig command sets
gbcontrol --blink-led	Control the decoder to twinkle the status indicator

A.3.2 gbcontrol command

A script file named "gbcontrol" is responsible for some API commands and is invoked as a console command. By assigning different arguments to this script file via API commands, a third-party device can control the decoder.

The following section lists all the gbcontrol commands in this guide.

A.4 gbconfig Command Set

NOTE: In this guide, " " represents a carriage return and a line feed input manually.

A.4.1 gbconfig --name

Request	gbconfig --name namestring
Response	Returns nothing
Description	Configures the decoder name, which is displayed and used after bonjour automatic discovery of the decoder. Reboot decoder for this operation to take effect. The default device name is "VS-2000-DECXXXXXXXXXXXX" in which "XXXXXXXXXXXX" is the decoder MAC address.

NOTE: "namestring" can only include letters, digits, "-" (hyphen) and "_" (underscore).

Example:

To change the device name to "MyVS-2000-DEC-000", do as follows.

Request: gbconfig --name MyVS-2000-DEC-000

Response: [Returns nothing]

Appendix: API Commands

A.4.2 gbconfig --ip-mode

Request	gbconfig --ip-mode {static/dhcp}
Response	Returns nothing
Description	Configures the IP mode by which the decoder acquires an IP address. The decoder supports static IP and DHCP modes and is set to static IP by default. Reboot the decoder for this operation to take effect.

NOTES:

- *"static" sets the decoder to static IP. "dhcp" sets the decoder to DHCP.*
- *To ensure that the decoder works properly using static IP, correctly set its IP address and subnet mask.*
- *To ensure that the decoder works properly using DHCP, an available DHCP server is required on the network to assign an IP address to the decoder.*

Example:

To set the decoder to DHCP, do as follows.

Request: gbconfig --ip-mode dhcp

Response: [Returns nothing]

A.4.3 gbconfig --ip4-addr

Request	gbconfig --ip4-addr ip4addr
Response	Returns nothing
Description	Configure an IP address with static IP mode. This configuration is used in static IP mode and takes effect after the decoder is rebooted.

NOTE: "ip4addr" is the decoder's IP address. The default is 192.168.10.253.

Example:

To assign IP address 192.168.2.11 to the decoder, do as follows.

Request: gbconfig --ip4-addr 192.168.2.11

Response: [Returns nothing]

A.4.4 gbconfig --net-mask

Request	gbconfig --net-mask netmask
Response	Returns nothing
Description	Configures the subnet mask with a static IP mode. This configuration is used in static IP mode and takes effect after the decoder is rebooted.

NOTE: "netmask" is the decoder's subnet mask. The default is 255.255.0.0.

Example: To assign subnet mask 255.255.255.0 to the decoder, do as follows.

Request: gbconfig --net-mask 255.255.255.0

Response: [Returns nothing]

Appendix: API Commands

A.4.5 gbconfig --gateway-ip

Request	gbconfig --gateway-ip gateway
Response	Returns nothing
Description	Configures the gateway with static IP mode. This configuration is used in static IP mode and takes effect after the decoder is rebooted.

NOTE: "gateway" is the decoder's gateway. The default is blank.

Example: To assign gateway 192.168.1.1 to the decoder, do as follows.

Request: gbconfig --gateway-ip 192.168.1.1

Response: [Returns nothing]

A.4.6 gbconfig --network-url

Request	gbconfig --encoder-ip {encoderip4addr mediaURL}
Response	Returns nothing
Description	Configures the URL the decoder plays, or the IP address of the encoder from which the decoder receives a media stream.

NOTE: "encoderip4addr " is the IP address of the encoder from which the decoder receives media stream. "mediaURL" is the multicast address of the media stream. The decoder will decide how to use this configuration according to the class of the designated IP address.

The default is 192.168.10.254, namely, the default IP address of VS-2000-ENC.

Example: To receive a media stream from the encoder whose IP address is 192.168.1.33, do as follows.

Request: gbconfig --network-url 192.168.1.33

Response: [Returns nothing]

A.4.7 gbconfig -s

Request	gbconfig {-s/--show} param
Response	Returns a response based on the actual configuration
Description	Queries the response of a implemented API command or the current state of configuration.

NOTES:

- Either "-s" or "--show" is available for use. "-s" is short for "--show" for easy operation.
- "param" is the name of a configuration item such as "--name" in "gbconfig --name".

Example: To query the decoder's name, do as follows.

Request: gbconfig -s ----name

Response: MyVS-2000-DEC

Appendix: API Commands

A.4.8 gbconfig -h

Request	gbconfig {-h/--help}
Response	A brief introduction to the gbconfig command sets. <i>NOTE: Either "-h" or "--help" is available for use. "-h" is short for "--help" for easy operation.</i>
Description	Shows a brief introduction to the gbconfig command sets

Example: To show a brief introduction to the gbconfig command sets, do as follows.

Request: gbconfig -h

Response:

Usage: gbconfig [options]

Options:

--name=[VALUE]	localname for bonjour
--ip-mode=[VALUE]	[dhcp/static]
--ip4-addr=[VALUE]	ip4 addr
--net-mask=[VALUE]	ip4 netmask
--gateway-ip[=VALUE]	gateway ip
--encoder-ip [=VALUE]	encoder ip addr
-s, --show	show the value for the specified items
-h, --help	show this message

gbconfig --name MyEncoder

gbconfig --ip-mode=static --ip4-addr=192.168.1.11 --net-mask=255.255.0.0

gbconfig -s --name

gbconfig --show --ip4-addr --net-mask

A.5 gbcontrol Command Set

A.5.1 gbcontrol --blink-led

Request	gbcontrol --blink-led
Response	Returns nothing
Description	Control the decoder to flash the status indicator. Once it receives this command, the decoder will flash its status indicator with the frequency of 5 Hz during the following 10 seconds. This feature is designed for the user to find the physical position of a certain decoder.

Example: To make the decoder flash the LED, do as follows.

Request: gbcontrol --blink-led

Response: [Returns nothing]

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